



DCS800-EP Drives 5 - 600 HP

Any trademarks used in this manual are the property of their respective owners.

Table of Contents

Chapter 1	
Introduction	
1.1	Getting Assistance 1-1
1.2	Safety Notices 1-1
Chapter 2	
Product Familiarization	
2.1	Overview 2-1
2.2	Enclosures 2-1
2.3	Connections 2-1
Chapter 3	
Ratings	
3.1	Type Codes - Frame and Current Ratings 3-1
Chapter 4	
Connection Information	
4.1	Typical Cable Sizing and Tightening Torque - North America 4-1
4.2	Typical Cable Sizing and Tightening Torque - Field Supply 4-2
Chapter 5	
Power Wiring	
5.1	Grounding the Control 5-1
5.2	Incoming Power 5-1
5.3	Input Impedance 5-3
5.3.1	Line Reactor 5-3
5.4	Protective Devices 5-3
5.4.1	Mains Cable (AC Line Cable) Short-Circuit Protection 5-3
5.4.2	DC Output Protection 5-3
5.4.3	Circuit Breaker Protection (Optional) 5-3
5.4.4	Motor Connections 5-3
5.5	Feedback 5-3
5.5.1	Analog DC Tachometer Connection 5-3
5.5.2	Pulse Encoder Connection 5-4
5.5.3	Resolvers 5-5
5.6	Field Supply 5-6
5.7	Control Power 5-7
Chapter 6	
Control Wiring	
6.1	Digital Inputs 6-1
6.1.1	External Trip 6-1
6.1.2	Drive Enable 6-1
6.1.3	Other Digital Inputs 6-1
6.2	Analog Inputs 6-2
6.2.1	Analog Inputs Jumper Coding 6-3
6.3	Digital and Relay Outputs 6-3
6.3.1	Digital Outputs 6-3
6.3.2	Relay Outputs 6-4
6.4	Analog Outputs 6-4
6.5	Communications Options 6-4
Chapter 7	
Applying Power	
7.1	Installation Checklist 7-1
7.1.1	Mechanical Installation 7-1
7.1.2	Electrical Installation 7-1
7.2	Drive Operation 7-1
7.3	Apply Incoming Power 7-1
7.4	Commissioning 7-1

Chapter 8

Control Panel (Keypad) and Programming

8.1	Initial Setup	8-1
8.1.1	Control Panel Version Information	8-2
8.1.2	General Display Features	8-2
8.1.3	Assistants (QuickStart)	8-2
8.1.4	Assistants	8-2
8.1.5	Digital Input Selection	8-3
8.1.6	Autotuning	8-3
8.1.7	Parameters Entered By Assistant	8-4
8.2	Programming	8-5
8.3	Output Mode	8-5
8.4	Local / Remote Operation	8-6
8.5	Parameter Backup	8-6

Chapter 9

Macro Selection

9.1	Macro Descriptions	9-1
9.1.1	Factory Macro (Factory)	9-1
9.1.2	Standard Macro (Standard)	9-2
9.1.3	Manual Constant Speed Macro (Man/Const)	9-3
9.1.4	Hand/Auto Macro (Hand/Auto)	9-4
9.1.5	Hand/Motor Pot Macro (Hand/MotPot)	9-5
9.1.6	Motor Pot Macro (MotPot)	9-6
9.1.7	Torque Control Macro (TorqCtrl)	9-7
9.1.8	Torque Limit Macro (TorqLimit)	9-8
9.1.9	2Wire DC Contact US Macro (2WireDCcontUS)	9-9
9.1.10	3Wire DC Contact US Macro (3WireDCcontUS)	9-10
9.1.11	3Wire Standard Macro (3WireStandard)	9-11
9.1.12	3Wire Jog Macro (3WireJog) - FLEXPAC 3000 Replacements	9-12

Chapter 10

Troubleshooting

10.1	Fault Messages	10-1
10.2	Alarm Messages	10-8

Chapter 11

Signals and Parameters

11.1	DCS800-EP Signal Definitions	11-1
11.2	DCS800-EP Parameter Definitions	11-22

Appendix A

Parameter Tables

A.1	Read Only Parameters	A-1
A.2	Group 60 Parameters	A-5

Appendix B

Technical Information

B.1	Technical Specifications	B-1
B.1.1	Digital Inputs Technical Data	B-1
B.1.2	Analog Inputs Technical Data	B-1
B.1.3	Analog Outputs Technical Data	B-2
B.1.4	Digital Outputs Technical Data	B-2
B.1.5	Relay Output Technical Data	B-2
B.1.6	Overload	B-2
B.1.7	Input Reactance	B-2
B.1.8	Fuse Protection	B-3
B.2	Control Transformer	B-4
B.3	AC Contactor	B-4
B.4	Blower Motor Starter Thermal Overload Relay	B-4
B.5	Accessories	B-4
B.5.1	Blower Motor Starter	B-5
B.5.2	Other Replacement Parts	B-5
B.6	Dimensions and Weights	B-6
B.6.1	Dimensional and Weight Data	B-6
B.6.2	Requirements for Installation	B-7

Chapter 1

Introduction

The DCS800 DC industrial drive from ABB combines a power controller with a thyristor power platform that has been proven in factories all over the world. The DCS800-EP boasts a wide power range. The hardware and software are designed with you, the user in mind. Special features make installation and configuration simple and allow you to customize the application to your needs.

The information in this user's guide supports firmware version 3.7.

This guide is intended for qualified electrical personnel familiar with installing, programming and maintaining DC drives. This guide contains information on:

- Installing and wiring the DCS800-EP control
- Programming the control
- Troubleshooting the control

The information supplied in this guide is intended to provide abbreviated information commonly needed to install and commission the DCS800-EP. For complete details about the control see:

- DCS800-EP Installation and Start-Up Manual
- DCS800 Firmware Manual
- DCS800 Hardware Manual

1.1 Getting Assistance

For technical assistance, contact your local sales office. Contact phone numbers are located on the inside back cover of this guide. Before calling, please review the troubleshooting section later in this guide. You will be asked for the drive model number or catalog number that is located on the nameplate along with the drive serial number.

1.2 Safety Notices

This equipment contains voltages that may be in excess of 1000 volts! Electrical shock can cause serious or fatal injury. This equipment may be connected to other machines that have rotating parts or parts that are driven by this equipment. Improper use can cause serious or fatal injury. Only qualified personnel should attempt the start-up procedure or troubleshoot this equipment.

The following statements in this section must be read and understood before proceeding with installation and use of this drive. The below classifications of cautionary statements are used in this user guide:

CLASSIFICATIONS OF CAUTIONARY STATEMENTS

WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in injury or death.

CAUTION: Indicates a potentially hazardous situation which, if not avoided, could result in damage to property.

PRECAUTIONS

WARNING: Do not touch any circuit board, power device or electrical connection before you first ensure that power has been disconnected and there is no high voltage present from this equipment or other equipment to which it is connected. Electrical shock can cause serious or fatal injury. Only qualified personnel should attempt the start-up procedure or troubleshoot this equipment.

WARNING: DC permanent magnet motors can induce voltage and current in the motor leads by rotating the motor shaft. Electrical shock can cause serious or fatal injury. Therefore, do not couple the load to the motor shaft until all motor connections have been made. During any maintenance inspections, be sure the motor shaft will not rotate.

WARNING: Be sure that you are completely familiar with the safe operation of this equipment. This equipment may be connected to other machines that have rotating parts or parts that are controlled by this equipment. Improper use can cause serious or fatal injury. Only qualified personnel should attempt the start-up procedure or troubleshoot this equipment.

WARNING: Do not use motor overload relays with an automatic reset feature. These are dangerous since the process may injure someone if a sudden or unexpected automatic restart occurs. If manual reset relays are not available, disable the automatic restart feature using external control wiring.

WARNING: Be sure the system is properly grounded before applying power. Do not apply AC power before you ensure that all grounding instructions have been followed. Electrical shock can cause serious or fatal injury.

WARNING: Improper operation of control may cause violent motion of the motor shaft and driven equipment. Be certain that unexpected motor shaft movement will not cause injury to personnel or damage to equipment. Certain failure modes of the control can produce peak torque of several times the rated motor torque.

WARNING: Motor circuit may have high voltage present whenever AC power is applied, even when motor is not rotating. Electrical shock can cause serious or fatal injury.

WARNING: Dynamic brake resistors may generate enough heat to ignite combustible materials. Keep all combustible materials and flammable vapors away from brake resistors.

WARNING: **MEDICAL DEVICE/PACEMAKER DANGER** - Magnetic and electromagnetic fields in the vicinity of current carrying conductors and industrial motors can result in a serious health hazard to persons with cardiac pacemakers, internal cardiac defibrillators, neurostimulators, metal implants, cochlear implants, hearing aids, and other medical devices. To avoid risk, stay away from the area surrounding a motor and its current carrying conductors.

CAUTION: Disconnect motor leads (C2, D2, and F+, F-) from control before you perform a dielectric withstand (insulation) test on the motor. Failure to disconnect motor from the control will result in extensive damage to the control. The control is tested at the factory for high voltage/leakage resistance as part of the Underwriters Laboratory requirements.

CAUTION: Suitable for use on a circuit capable of delivering not more than the RMS symmetrical short circuit amperes listed here.

Panel Frame Size	Module Frame Size	HP	RMS Symmetrical Amperes
A	D1	1 - 60	65 kA at maximum 600VAC
B	D2	35 - 125	65 kA at maximum 600VAC
B	D3	75 - 150	65 kA at maximum 600VAC
C	D3	100 - 250	65 kA at maximum 600VAC
C	D4	150 - 300	65 kA at maximum 600VAC
D	D4	400 - 600	65 kA at maximum 600VAC

CAUTION: Do not connect AC power to the drive output terminals C2, D2, F+, F-. These terminals are for supplying power to the motor. Connecting AC power to these terminals may result in damage to the control.

CAUTION: ABB does not recommend using "Grounded Leg Delta" transformer supplies that may create ground loops. Instead, we recommend using a four wire Wye.

• Mains connection

You can use a switch disconnecter (with fuses) in the power supply of the thyristor power converter to disconnect the electrical components of the unit from the power supply for installation and maintenance work. The type of disconnecter as per EN 60947-3, Class B, so as to comply with EU regulations, or a circuit-breaker type which switches off the load circuit by means of an auxiliary contact causing the breaker's main contacts to open. The mains disconnecter must be locked in its "OPEN" position during any installation and maintenance work.

WARNING: Before adjusting the drive and putting it into service, make sure that the motor and driven equipment are suitable for operation throughout the speed range provided by the drive. The drive can be adjusted to operate the motor at speeds above and below the base speed.

WARNING: Do not activate automatic fault reset functions of the Standard Application Program if dangerous situations can occur. When activated, these functions will reset the drive and resume operation after a fault.

WARNING: Do not control the motor with the disconnecting device (disconnecting switch); instead, use the control panel keys and, or commands via the I/O board of the drive.

WARNING: EMERGENCY STOP buttons must be installed at each control desk and at all other control panels requiring an emergency stop function. Pressing the STOP button on the control panel of the thyristor power converter will neither cause an emergency motor stop, nor will the drive be disconnected from any dangerous potential. To avoid unintentional operating states, or to shut the unit down in case of any imminent danger according to the standards in the safety instructions it is not sufficient to merely shut down via signals "RUN", "drive OFF" or "Emergency Stop" respectively "control panel" or "PC tool".

WARNING: Intended use the operating instructions cannot take into consideration every possible system configuration, operation or maintenance. Thus, they mainly give such advice only, which is required by qualified personnel for normal operation of the machines and devices in industrial installations. If in special cases the electrical machines and devices are intended for use in non-industrial installations - which may require stricter safety regulations (e.g. protection against contact by children or similar). These additional safety measures for the installation must be provided by the customer during assembly.

WARNING: The printed circuit boards contain components sensitive to electrostatic discharge. Wear a grounding wrist band when handling the boards. Do not touch the boards unnecessarily.

- WARNING:** Ground the drive, motor and adjoining equipment to ensure personnel safety in all circumstances, and to reduce electromagnetic emission and pick-up.
- WARNING:** Make sure that grounding conductors are adequately sized as required by safety regulations.
- WARNING:** In a multiple-drive installation, connect each drive separately to protective earth (PE).
- WARNING:** Minimize EMC emission and make a 360° high frequency grounding of screened cable entries at the cabinet lead-through.
- WARNING:** Do not install a drive with EMC filter on an ungrounded power system or a high resistance-grounded (over 30 ohms) power system.
- WARNING:** DCS800-EP Size C and D: The drive is heavy. Do not lift it alone. Do not lift the unit by the front cover. Place the unit only on its back.
- WARNING:** Make sure that dust from drilling does not enter the drive when installing. Electrically conductive dust inside the unit may cause damage or lead to malfunction.
- WARNING:** Ensure sufficient cooling.
- WARNING:** Do not fasten the drive by riveting or welding.
- WARNING:** Handle the fiber optic cables with care. When unplugging optic cables, always grab the connector, not the cable itself. Do not touch the ends of the fibers with bare hands as the fiber is extremely sensitive to dirt. The minimum allowed bend radius is 35mm (1.4 in.).

Chapter 2

Product Familiarization

2.1 Overview

The DCS800-EP is designed to provide variable speed control for DC motors. The DSC800 DC Drive is simple to install, configure and use, saving considerable time by providing -

- Quick installation
- Rapid start-up

The drive has common user and process interface with fieldbus, software tools for sizing, commissioning, maintenance and common spare parts.

The Control Panel, (Keypad/Display), has eight control buttons for programming, drive/motor control, display scrolling, and HELP screen. The display is divided into three main areas to show mode of operation, programming parameter values, monitor functions, and menu choices. An aid to simplify drive setup and programming is the ASSISTANTS feature of the Control Panel. The ASSISTANTS offer a 'quick start' method of entering required motor data and performance values along with autotuning for ease of drive startup and operation in the shortest possible time.

DCS800-EP can be used in the wide range of all industrial applications including:

Metals, Vessels, Pulp & Paper, Ski lifts, Material handling, Magnets, Test rigs, Mining, Food & Beverage, Electrolysis, Printing, Battery Chargers, Plastic & Rubber, and more.

2.2 Enclosures

The DCS800-EP is provided as open chassis, IP00, (not NEMA rated). The drive must be mounted in a clean, dry environment and in a vertical position within a cabinet or other enclosure. Minimum clearances must be observed to provide for cabling, cooling air flow, service and maintenance. It is not for use outdoors and should be protected from direct sunlight. See Appendix B for complete environmental and dimensional information.

2.3 Connections

The connections of the DCS800-EP are segmented into the two groups classified as Power Connections and Control Connections.

Access to all connections can be gained by the removal of the front cover.

The power connections are grouped separately from the control connections. The installer must maintain separation between power connections and control connections so that electrical noise does not interfere with proper operation. See subsequent sections on power and control wiring for details of the required connections.

Chapter 3

Ratings

3.1 Type Codes - Frame and Current Ratings

The type code contains information on the specifications and configuration of the drive. The first digits from left express the basic configuration (e.g. DCS800-EP2-0050). The optional selections are given thereafter, on the nameplate by plus code. The main selections are described below. Not all selections are available for all types.

Type code: DCS800 - EP X - YYY Y - ZZ - plus code

The “EP” in the type code designates the panel drive configuration. Further explanation of the type code can be found in the DCS800 Hardware Manual in the chapter “The DCS800”.

Table 3-1

Non-Regenerative (2Q)	Regenerative (4Q)	Module Frame	Panel Frame	460VAC/500VDC			230VAC/240VDC		
				HP	IAC (amps)	IDC (amps)	HP	IAC (amps)	IDC (amps)
DCS800-EP1-0020-05	DCS800-EP2-0025-05	D1	A	10	14	17	5	16	20
DCS800-EP1-0045-05	DCS800-EP2-0050-05	D1	A	20	29	35	10	30	37
DCS800-EP1-0065-05	DCS800-EP2-0075-05	D1	A	30	43	53	15	44	54
DCS800-EP1-0090-05	DCS800-EP2-0100-05	D1	A	40	55	68	20	58	71
DCS800-EP1-0125-05	DCS800-EP2-0140-05	D1	A	60	85	104	30	85	104
DCS800-EP1-0180-05	-	D2	B	75	102	125	35	102	125
-	DCS800-EP2-0200-05	D2	B	100	134	164	50	143	175
DCS800-EP1-0230-05	DCS800-EP2-0260-05	D2	B	125	167	205	60	168	206
DCS800-EP1-0315-05	DCS800-EP2-0350-05	D3	B	150	200	145	75	208	155
DCS800-EP1-0405-05	-	D3	C	200	265	325	100	278	341
-	DCS800-EP2-0450-05	D3	C	200	265	325	100	278	341
DCS800-EP1-0470-05	DCS800-EP2-0520-05	D3	C	250	330	405	125	347	425
DCS800-EP1-0610-05	-	D4	C	300	392	480	150	413	506
-	DCS800-EP2-0680-05	D4	C	300	392	480	150	413	506
DCS800-EP1-0740-05	DCS800-EP2-0820-05	D4	D	400	522	640			
DCS800-EP1-0900-05	DCS800-EP2-1000-05	D4	D	500	649	795			
-	DCS800-EP2-1010-05	D4	D	600	775	950			

Power and current ratings above are based on Heavy Duty rating, 150% overload for 60 seconds, except for 600 HP drive which is rated at 110% overload for 60 seconds.

* DC Amps based on Standard NEMA motor tables. AC Amps = DC Amps * 0.816

WARNING: Do not exceed the continuous and overload current ratings shown above. The drive panel is not designed to withstand higher currents. Failure to adhere to this warning can result in personal injury and/or damage to equipment.

Chapter 4

Connection Information

4.1 Typical Cable Sizing and Tightening Torque - North America

Based on U.S. NEC Table 310.16. No more than 3 current carrying conductors per raceway.

Maximum Ambient Temperature - 40°C

Conductor Temperature Rating - 75°C (except where noted)

Table 4-1 Cable Size and Tightening Torque

Drive Panel	460VAC/500VDC			230VAC/240VDC			AC Input L1, L2, L3	DC Output C2, D2	Ground PE	Tightening Torque (ft-lb)			
	HP	IAC (amps)	IDC (amps)	HP	IAC (amps)	IDC (amps)	Typical Cable	Typical Cable	Minimum Cable ①	with breaker	without breaker		
										L1-L2-L3	L1-L2-L3	C2,D2	PE
DCS800-EP1-0020-05	10	14	17	5	16	20	12 AWG ¹	10 AWG	12 AWG	35 in-lb	10	10	
DCS800-EP2-0025-05	10	14	17	5	16	20	12 AWG ¹	10 AWG	12 AWG	35-40 in-lb	10	10	
DCS800-EP1-0045-05	20	29	35	10	30	37	8 AWG	8 AWG ¹	10 AWG	45 in-lb	10	10	
DCS800-EP2-0050-05	20	29	35	10	30	37	8 AWG	8 AWG ¹	10 AWG	45 in-lb	10	10	
DCS800-EP1-0065-05	30	43	53	15	44	54	6 AWG	4 AWG	10 AWG	45-50 in-lb	10	10	
DCS800-EP2-0075-05	30	43	53	15	44	54	6 AWG	4 AWG	10 AWG	50 in-lb	10	10	
DCS800-EP1-0090-05	40	55	68	20	58	71	4 AWG	2 AWG	8 AWG	50 in-lb	10	10	
DCS800-EP2-0100-05	40	55	68	20	58	71	4 AWG	2 AWG	8 AWG	50 in-lb	10	10	
DCS800-EP1-0125-05	60	85	104	30	86	105	1 AWG	1/0 AWG	6 AWG	50 in-lb	10	10	
DCS800-EP2-0140-05	60	85	104	30	86	105	1 AWG	1/0 AWG	6 AWG	50 in-lb	10	10	
DCS800-EP1-0180-05	75	102	125	30	102	125	1/0 AWG	3/0 AWG	6 AWG	23	15	23	9
DCS800-EP2-0200-05	100	134	164	50	143	175	3/0 AWG	250 MCM	6 AWG	23	21	23	9
DCS800-EP1-0230-05	125	167	205	60	168	206	250 MCM	350 MCM	4 AWG	23	27	23	9
DCS800-EP2-0260-05	125	167	205	60	168	206	250 MCM	350 MCM	4 AWG	23	27	23	9
DCS800-EP1-0315-05	150	200	245	75	208	255	300 MCM ²	350 MCM ²	4 AWG	23	27	23	9
DCS800-EP2-0350-05	150	200	245	75	208	255	300 MCM ²	350 MCM ²	4 AWG	23	27	23	9
DCS800-EP1-0405-05	200	265	325	100	278	341	500 MCM ^{3,5}	2 x 250 MCM ⁴	2 AWG	23	23	23	31
DCS800-EP2-0450-05	200	265	325	100	278	341	500 MCM ^{3,5}	2 x 250 MCM ⁴	2 AWG	23	23	23	31
DCS800-EP1-0470-05	250	330	405	125	347	425	2 x 250 MCM ³	2 x 350 MCM ⁴	2 AWG	23	23	23	31
DCS800-EP2-0520-05	250	330	405	125	347	425	2 x 250 MCM ³	2 x 350 MCM ⁴	2 AWG	23	23	23	31
DCS800-EP1-0610-05	300	392	480	150	413	506	2 x 300 MCM ^{1,3}	2 x 500 MCM ⁴	2 AWG	23	23	23	31
DCS800-EP2-0680-05	300	392	480	150	413	506	2 x 300 MCM ^{1,3}	2 x 500 MCM ⁴	2 AWG	23	23	23	31
DCS800-EP1-0740-05	400	522	640				2 x 500 MCM	3 x 350 MCM	1/0 AWG	31	42	42	31
DCS800-EP2-0820-05	400	522	640				2 x 500 MCM	3 x 350 MCM	1/0 AWG	31	42	42	31
DCS800-EP1-0900-05	500	649	795				3 x 350 MCM	3 x 500 MCM	2/0 AWG	31	42	42	31
DCS800-EP2-1000-05	500	649	795				3 x 350 MCM	3 x 500 MCM	2/0 AWG	31	42	42	31
DCS800-EP2-1010-05	600	775	950				3 x 350 MCM	4 x 500 MCM	2/0 AWG	31	42	42	31

¹ For 230V, use one size larger cable diameter

² Use 90°C wire

³ Unless Circuit Breaker option is selected, connecting cables require copper compression lugs with closed holes to fit the drive's 10mm bolt (2 per terminal).

⁴ Connecting cables require copper compression lugs with closed hole to fit the drive's 10mm bolt (2 per terminal).

⁵ For 230V, use (2) 250 MCM

For drives requiring compression lugs, use these llSCO lugs or equivalents as shown below. Compression lugs to be installed according to the manufacturer's requirements.

Cable Size	Recommended Lug
250 MCM	CRA-250
300 MCM	CRA-300
350 MCM	CRA-350
500 MCM	CRA-500-12

Note: Cable size recommendations in this manual are different from what is shown in the DSC800 Hardware Manual. For DCS800-EP, these recommendations should be followed due to differences in the continuous and overload duty ratings.

① The minimum ground cable recommendation assumes that the overcurrent protection for each drive is selected to provide protection at 125% of the rated drive input current. If the overcurrent protection (e.g. circuit breaker) is sized larger than this, then larger ground cables will need to be determined manually.

4.2 Typical Cable Sizing and Tightening Torque - Field Supply

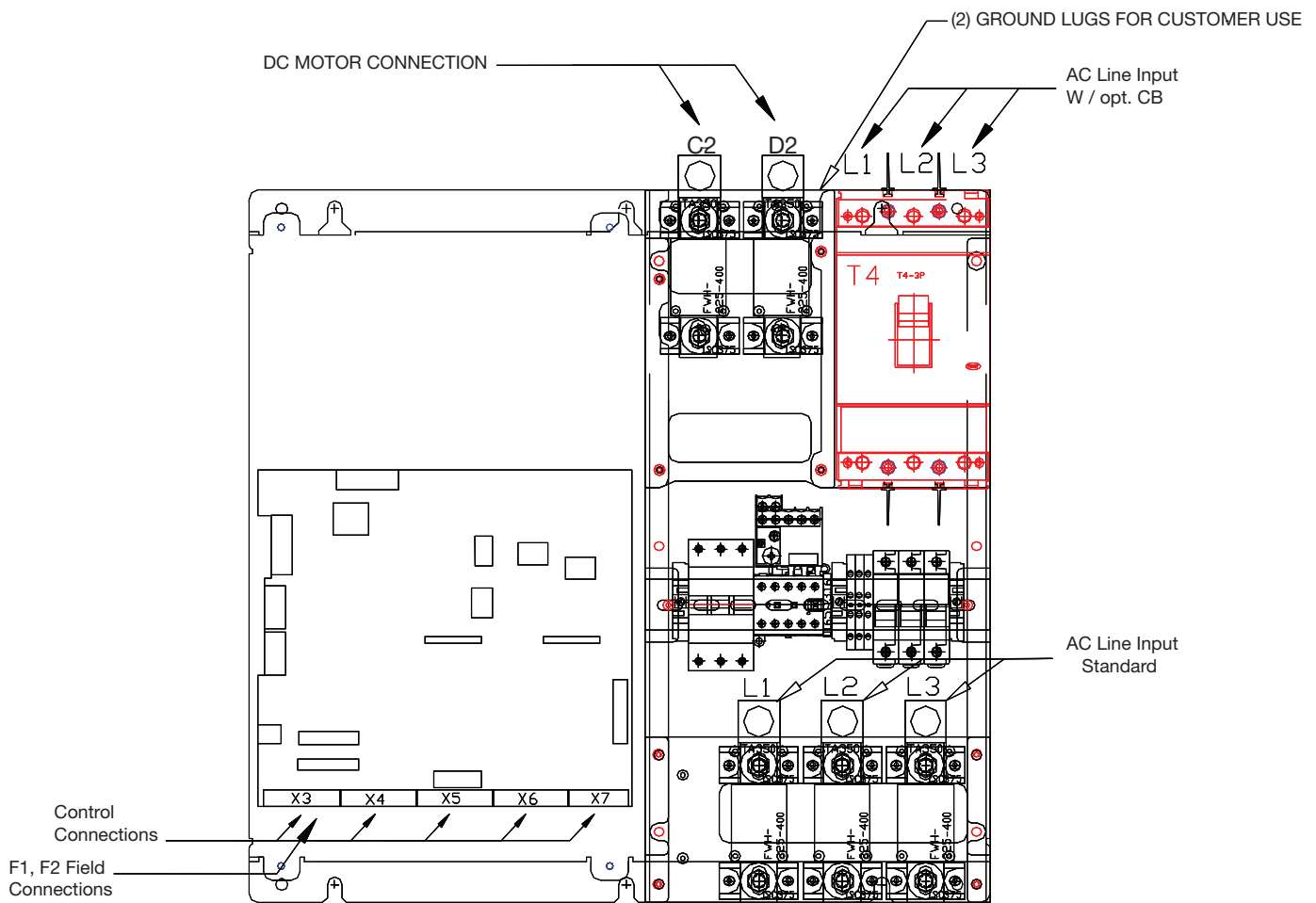
Table 4-2 Field Supply F+, F- Cable Size and Tightening Torque

Size	A	B	B(1), C	C(2), D
DC output current	6 A	15 A	20 A	25 A
Max. cross sectional area	6mm ² /AWG 10	6mm ² /AWG 10	6mm ² /AWG 10	6mm ² /AWG 10
Min. cross sectional area	1mm ² /AWG 16	2.5mm ² /AWG 13	4mm ² /AWG 11	6mm ² /AWG 10
Tightening torque	1.5 through 1.7 Nm			

(1) Frame size B, 230V, 255A, and 460V, 245A included

(2) Frame size C, 460V, 480A included

Figure 4-1 Power/Control Connections



Typical location for input and output terminals.

Chapter 5

Power Wiring

This section outlines the basics of the power wiring for the DCS800-EP.

5.1 Grounding the Control

WARNING: Be sure the system is properly grounded before applying power. Do not apply AC power before you ensure that all grounding instructions have been followed. Electrical shock can cause serious or fatal injury.

WARNING: Printed circuit boards contain components sensitive to electrostatic discharge. Wear a grounding wrist band when handling the boards. Do not touch the boards unnecessarily.

These instructions are intended for all who are responsible for the grounding of the drive. Incorrect grounding can cause physical injury, death or equipment malfunction and increase electromagnetic interference.

- Ground the drive, motor and adjoining equipment to ensure personnel safety in all circumstances, and to reduce electromagnetic emission and pick-up.
- Make sure that grounding conductors are adequately sized as required by safety regulations.
- In a multiple-drive installation, connect each drive separately to protective earth (PE).
- Minimize EMC emission and make a 360° high frequency grounding of screened cable entries at the cabinet lead-through.
- Do not install a drive with EMC filter on an ungrounded power system or a high resistance-grounded (over 30 ohms) power system.

Note:

- Power cable shields are suitable for equipment grounding conductors only when adequately sized to meet safety regulations.
- As the normal leakage current of the drive is higher than 3.5mA AC or 10mA DC (stated by EN50178, 5.2.11.1) a fixed protective earth connection is required.

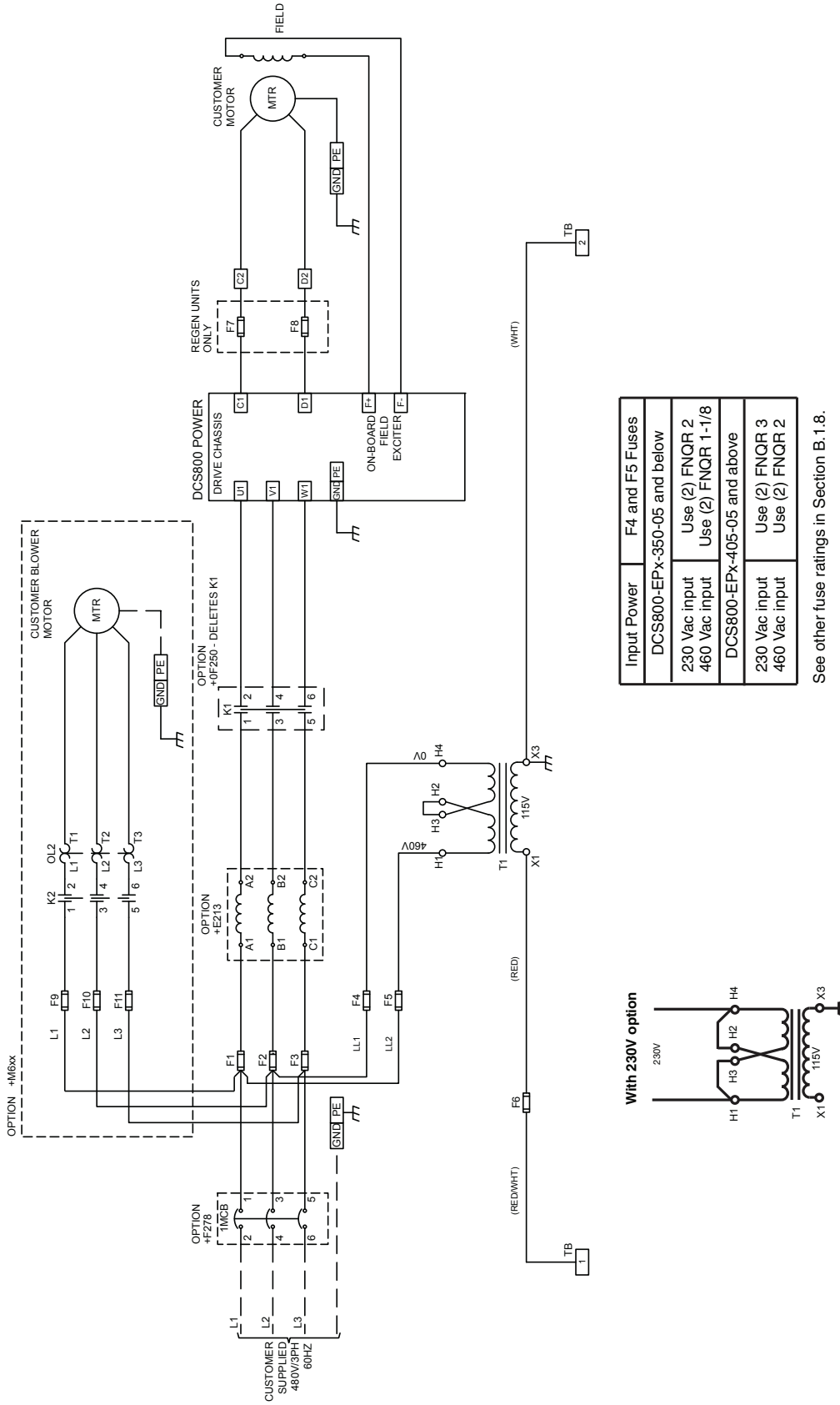
5.2 Incoming Power

The DCS800-EP is designed for the incoming power ratings listed below. If your installation does not meet these ratings, contact your local sales office for support.

Table 5-1 Incoming Power

Description	Rating
Input Voltage, 3-phase	230 or 460VAC as indicated on panel nameplate
Input Voltage Deviation	±10% continuous: ±15% up to 30 cycles
Note: Special consideration must be given to voltage deviation in regen mode	
Rated Frequency	50/60Hz ±2%

Figure 5-1 Power Diagram - 460V Units



5.3 Input Impedance

When thyristor, (SCR), power converters operate, the line voltage is momentarily short-circuited during commutation from one thyristor to the next. This causes voltage dips in the mains PCC, (point of common coupling). This "Line Notching" may affect performance of other equipment powered from the same AC supply. Adding a Line Reactor or Isolation Transformer ahead of the DC drive helps reduce Line Notching.

5.3.1 Line Reactor

In order to ensure optimum drive performance, each DCS800-EP requires a line reactor or isolation transformer on the AC input side of the drive. In some installation sites, a line reactor or transformer may already be in place, and can be used with the DCS800-EP. Drives 150HP and below can be ordered with an internal line reactor, (+E213), but be sure sufficient cabinet depth is available. See DCS800-EP Installation and Start Up Manual for dimensions and reactor recommendations. See Appendix B, Table B-5.

5.4 Protective Devices

The drive protects itself and the input and motor cables against thermal overload when the cables are dimensioned according to the nominal current of the drive. See Tables 4-1 and 4-2.

5.4.1 Mains Cable (AC Line Cable) Short-Circuit Protection

Always protect the input cable with fuses. Size the fuses according to the local safety regulations, appropriate input voltage and the rated current of the drive High-Speed semiconductor fuses provide short-circuit protection.

Note AC Line Fuses: To properly protect the converter, semiconductor fuses on the incoming AC power line are required in all cases. See Appendix B.

5.4.2 DC Output Protection

In no case should standard fusing be used instead of semi-conductor fusing in order to save money on installation. In the event of a fault condition, the small amount of money saved can cause the semi-conductors of the other devices to explode and could also cause fires. Adequate protection against short-circuit and earth fault, as depicted in the EN50178 standard, is possible only with appropriate semi-conductor fuses.

Note DC Output Fuses: Fuses between the motor and the converter are required for all regenerative (4Q) converters. This is to protect the motor and converter if a commutation fault should occur. DC output fuses are the same type and size as AC line fuses.

See Appendix B Table B-2 for fuse type and part number furnished in the DCS800-EP Panel Drive.

5.4.3 Circuit Breaker Protection (Optional)

A circuit breaker is offered for the DCS800-EP.

Circuit Breaker Protection, option plus code +F278, ratings:

Instantaneous trip:

All Drives: Factory set at 300% of rated current.

Thermal overload trip:

60HP (DCS800-EP1-0125-05 and DCS800-EP2-0140-05) only: Factory set to 100% of rated current.

5.4.4 Motor Connections

The motor armature connections are made at the drive terminals C2 and D2, and the motor field connections are made at the field supply terminals F+ and F-. On regenerative drive models with armature fuses installed, the motor armature connections are made at terminals C2 and D2. See Figure 5-1, Power Diagram. Cable sizing and tightening torque is shown in Chapter 4, Table 4-1 and 4-2. (On non-regenerative drives, the drive has terminal blocks or replaces the DC fuse with a busbar.)

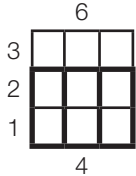
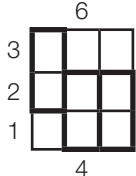
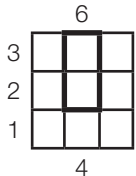
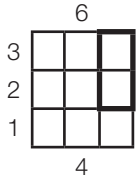
5.5 Feedback

The DCS800-EP has analog DC Tachometer and Pulse Encoder signal inputs provided as standard on the SDCS-CON-4 circuit board, or the SDCD-IOB-3 option board may be used.

5.5.1 Analog DC Tachometer Connection

The analog DC Tachometer input connections are made at terminal strip X3, terminals 1, 2, 3, and 4 (com). The terminal connections used depend on the value of the maximum tachometer voltage. Jumper S1 is set according to the maximum tachometer voltage. See Table 5-2.

Table 5-2

Terminal Strip X3 - Terminal #	Maximum Tachometer Voltage Range	Jumper S1 Position
1	±90 to ±270V	 <p>Default positions</p>
2	±30 to ±90V	
3	±8 to ±30V	
4	GND - 0V	
1	±90 to ±270V	 <p>Filter for AC tach w/rectifier</p>
2	±30 to ±90V	
3	±8 to ±30V	
4	GND - 0V	
1	±90 to ±270V	 <p>Parking Position - Term 4 not grounded</p>
2	±30 to ±90V	
3	±8 to ±30V	
4	OPEN	
1	±90 to ±270V	 <p>Reserved for Option Bd. SDCS-IOB-3 Tach input 2 through X2-23, 24</p>
2	Inputs Ignored	
3	Inputs Ignored	
4	Reserved	

5.5.2 Pulse Encoder Connection

Connecting a pulse encoder to the DCS800-EP converter: The connection diagram for a pulse encoder to the electronics of a DCS converter is quite similar, if the SDCS-CON-4 or the SDCS-IOB-3 is used. The basic difference between these two boards is the galvanically isolated circuit and pulse receivers via opto coupler on the SDCS-IOB-3 board.

Power supply for incremental encoder: SDCS-CON-4 and SDCS-IOB-3 boards have jumpers to select a supply voltage. V17 LED on SDCS-IOB-3 indicates supply is okay.

Table 5-3

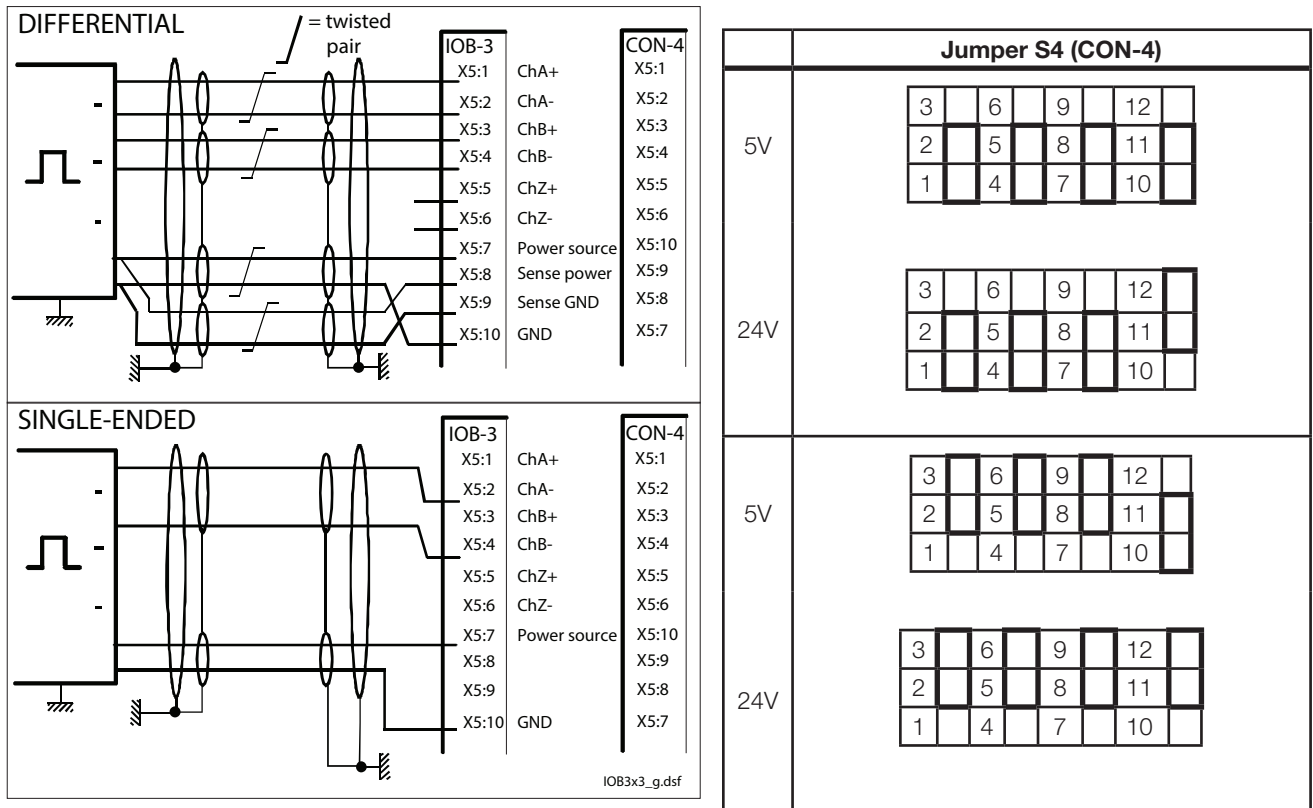
Encoder Supply	Hardware Configuration	
	SDCS-CON-4 supplied by PIN-4	SDCS-IOB-3
5V	sense controlled	sense controlled
12V	-	sense controlled
24V	no sense	no sense

Sense feedback connection is recommended when power supply level for differential pulse encoder is 5V. The wiring is shown on figure below.

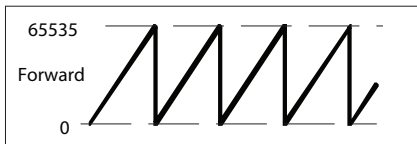
Commissioning hint

Note: if the drive's measured direction of rotation is wrong or does not correspond to measured EMF speed, the SPEEDFB fault (F522) or TACH POLARITY fault (F553) may appear during start-up. If necessary, correct by exchanging the field connection.

Figure 5-2



If with a positive reference the position signal 3.07 or 3.08 signal does not look like the illustration below, then tracks A and A must be exchanged with inverted signals. For single-ended encoders Tracks A and B must be exchanged.



5.5.3 Resolvers

Two options are available for resolver interface. The first option is for applications where the resolver is primarily used as a positioning device, a lifting table, for example. In this case, the RRIA-01 resolver interface adapter can be used. The RSCM-01 can also be used with the RRIA-01 to double the resolver voltage to adapt it to the working range of this board.

Plus code
+L516

Resolver interface adapter (RRIA-01)
Resolver signal conditioning module (RSCM-01)

When speed control is required, or whenever a premium interface is desired, the FEN-21 resolver interface adapter is suggested. The FEN-21 is attached to a DIN-rail mounted extension adapter which communicates to the drive over a fiber optic cable. (COM-81 or -82 is required.) The FEN-21 provides an ultra-smooth speed feedback signal for optimal speed control. (Fiber optic cable and external 24VDC supply also required.)

Field kit code
FEN-21
FEA-01
COM-81 or COM-82

Resolver interface adapter
F-series extension adapter
Optical communication module

5.6 Field Supply

The DCS800-EP has as standard, an on board current regulated field supply. The field supply circuitry on the D1-D4 drives is on the PIN-4 board. This field supply is the same circuit and components used on the optional FEX-425-INT which is used inside the D5 drive. The onboard field supply for the D1-D4 drives is always 3-phase (since it is prewired to the U, V, W terminals). The FEX-425-INT is a half controlled three-phase field converter. The board has circuitry for synchronization and current control. The current measurement circuit is automatically scaled based on rated motor field current. The field exciter is fully controlled and monitored via serial communication from the armature converter. The field exciter is prepared to operate with three phase or single phase input. Terminals U and W are used for single phase input. See Figure 5-1, Power Diagram.

5.7 Control Power

The DCS800-EP has as standard, an on board control circuit transformer. This transformer secondary provides 115VAC to the drives controlling relays, cooling fans, and blower motor starter, (if equipped). The primary of the CCT is normally supplied configured for 460VAC input voltage. It can be reconfigured for 230VAC input. See Figures 5-3 and 5-4 for circuit diagrams. Reference the DCS800-EP Installation and Start-Up Manual for more detailed information.

Figure 5-3 Control Power Diagram C1 - 10HP-250HP (DCS800-EP1-0020 through EP2-0250)

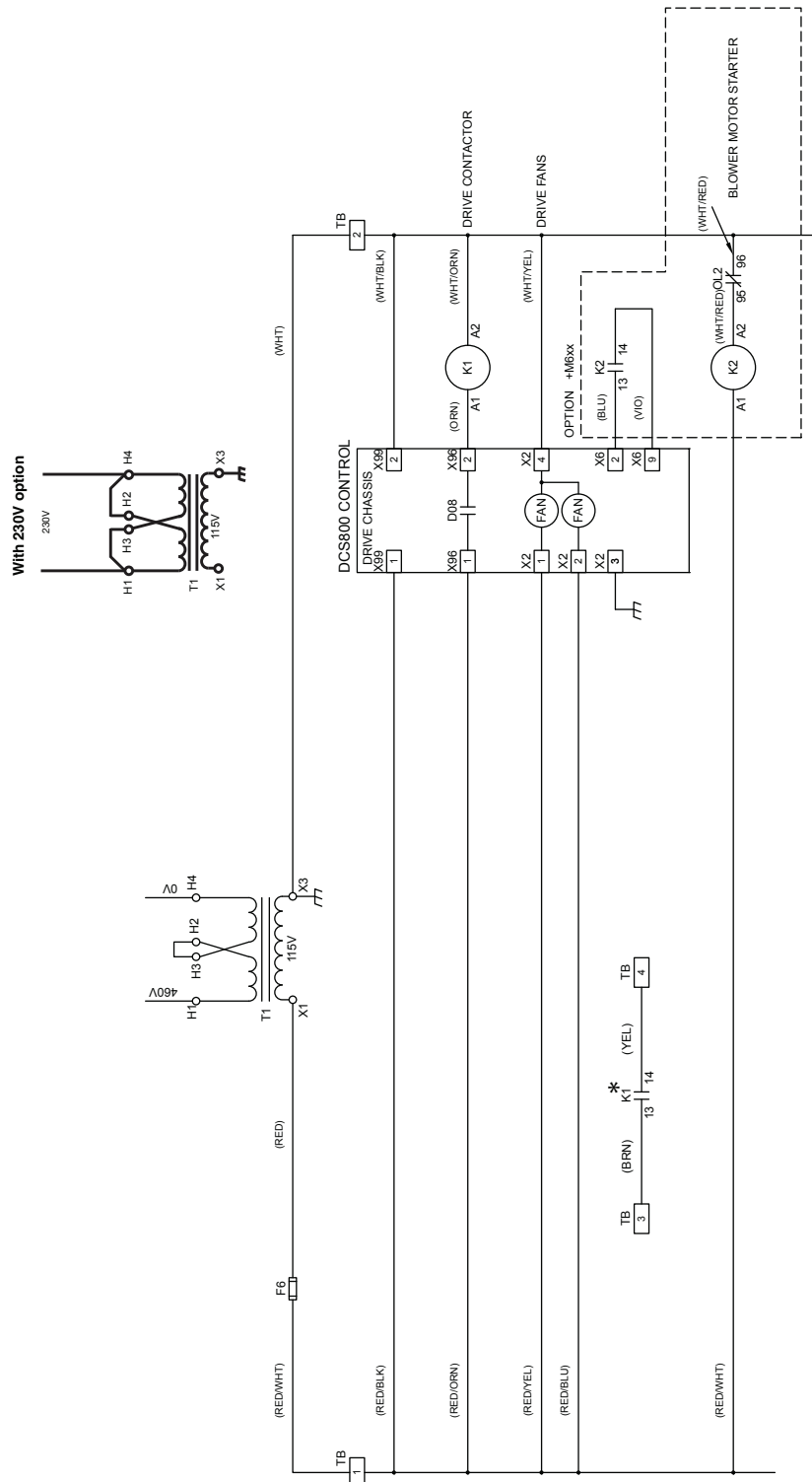
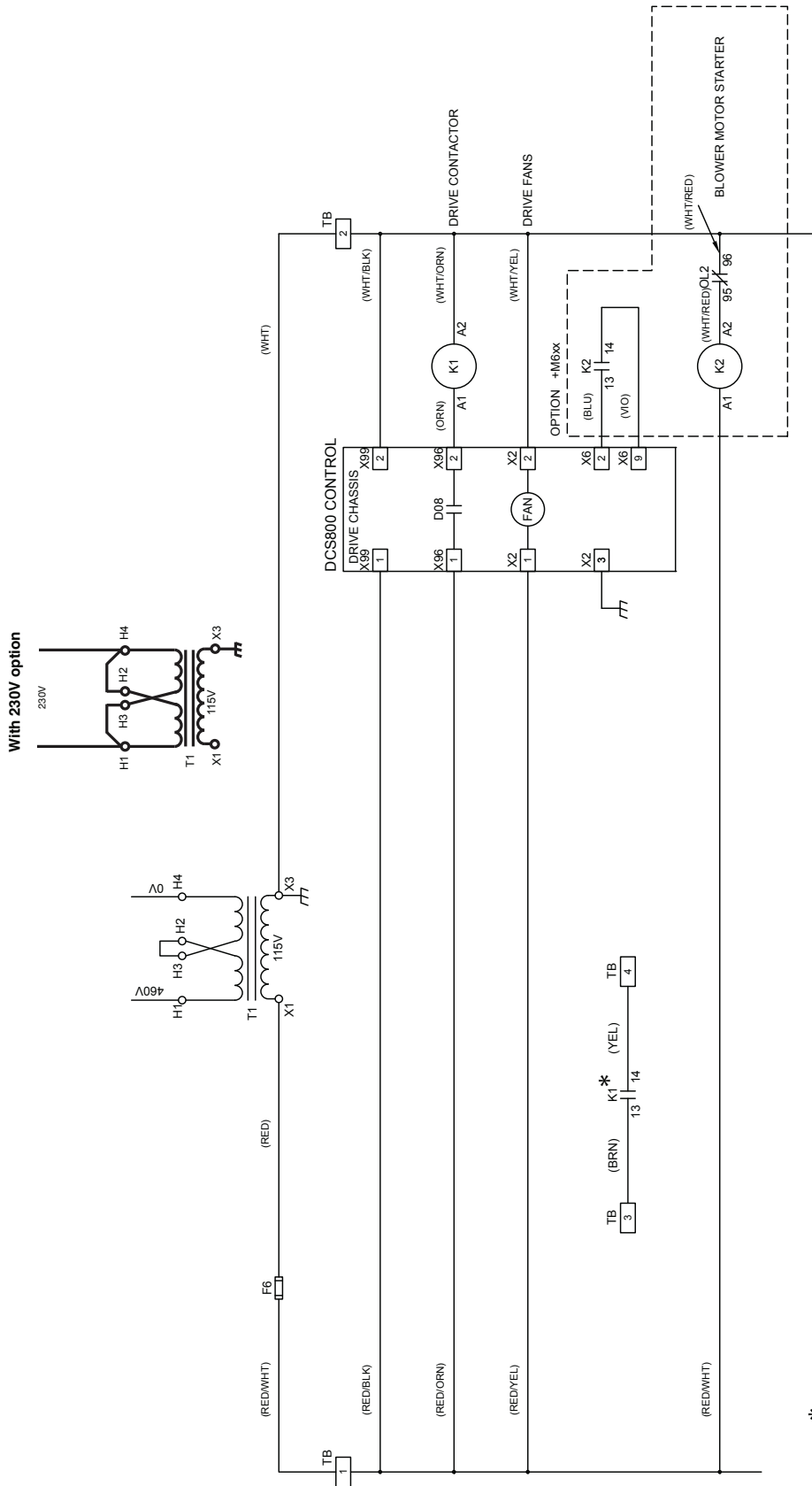


Figure 5-4 Control Power Diagram C2 - 300HP-600HP (DCS800-EP1-0610 through EP2-1010)



* 6 AMPS MAX., 110VAC or 24VDC

Chapter 6

Control Wiring

This section outlines the basics of the control wiring for the DCS800-EP. Sample wiring diagrams are shown later for each of the different selectable macros.

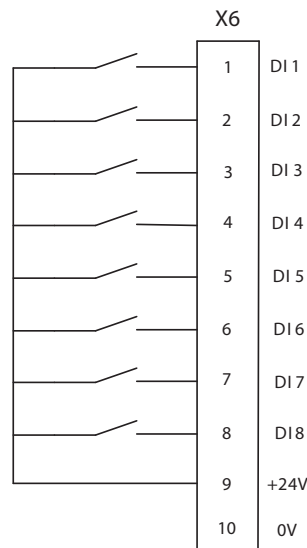
6.1 Digital Inputs

The DCS800-EP is supplied with 8 digital inputs for controlling the drive and motor. The connections for these digital inputs are made on the X6 terminal strip terminals 1 through 8. The function of these digital inputs is set according to the selected application macro but can be individually adjusted as well. Application macros are used to select pre-configured setups which minimize the programming required to commission the drive. There are 12 macros available to fit various applications. 24VDC supply is available at terminal 9 of X6 for the digital control signal inputs. Terminal 10 is a digital common terminal. The digital input functions may be re-programmed to suit the application as required using group 10 parameters. For complete detailed information, see Chapter 9, Macro Selection.

The macros are listed here:

- 3 Wire Jog - Simulates Reliance FlexPak 3000 digital and analog control.
- Factory - Resets all parameters to default values.
- Standard - Motion commanded with RUN, JOG1 or JOG2.
- Manual/Const Spd - Allows for Constant, (Preset) Speeds.
- Hand/Auto - DI2 selects between Hand, (Local I/O) and Auto.
- Hand/Motor Pot - DI4 selects between Hand, (Local I/O), and Motorized Potentiometer.
- MotPot - Speed is always controlled with digital UP and DOWN inputs.
- Torque Control - DI2 switches between SPEED and TORQUE control.
- Torque Limit - AI2 sets TORQUE LIMIT.
- 2 Wire DC Contactor US - Controls DC contactor - Requires CONTACTOR ACK signal.
- 3 Wire DC Contactor US - Controls DC contactor - Requires CONTACTOR ACK signal.
- 3 Wire Standard - Drive Starts and Runs with pulsed input, Stops with opening of STOP input.

Figure 6-1 Digital Inputs



6.1.1 External Trip

Terminals are designated by the selected macro for External trip inputs. The input functions may be E-Stop, Coast Stop, Ext. Alarm, or Ext. Fault. These external trip features may be used as Customer Interlocks, drive Enable, or Run Permissive for various applications.

6.1.2 Drive Enable

A Drive Enable circuit is implemented for a digital input when one of the Application Macros, Factory, Torque Control, or 3-Wire Jog is selected. If an application uses one of the other macros, and an Enable circuit is a requirement, an available digital input may be programmed as an Enable. If the Enable circuit opens while the drive/motor is running, alarm A101 is generated. The drive will continue running until a STOP is asserted. The drive cannot be restarted until the cause of the open ENABLE is determined and closed again.

6.1.3 Other Digital Inputs

Remaining digital inputs that may be required for operating the DCS800-EP properly for the application can be programmed for specific functions such as, Jog, Constant Speeds (presets), Hand/Auto, or additional Run Permissives.

6.2 Analog Inputs





Four analog signal inputs are provided on the standard control board in the DCS800-EP. Three inputs are on the X3 terminal strip, and one is on the X4 terminal strip. By using the on board +10VDC supply, a speed adjustment potentiometer can be used for manual speed control. See simplified diagram Figure 6.2.

6.2.1 Analog Inputs Jumper Coding









Hardware setting for analog inputs AI1 and AI2 for switching from voltage input to current input is accomplished by means of jumpers S2 and S3 on the SDCS-CON-4 Control Board.

Table 6-1 Jumper Coding



















S2 Jumper Coding Diagram

2		4*	AI1 - X3:5-6: $R_{IN} = 200k\Omega$;
1		3*	Range -10V to 0V to +10V
2		4	AI1 - X3:5-6: $R_{IN} = 250k\Omega$; **
1		3	Range $I_{IN} = -20mA$ to +20mA

S3 Jumper Coding Diagram

2		8*	AI2 - X3:7-8: $R_{IN} = 200k\Omega$;
1		7*	Range -10V to 0V to +10V
2		8	AI2 - X3:7-8: $R_{IN} = 250k\Omega$; **
1		7	Range $I_{IN} = -20mA$ to +20mA
2		8*	Jumper parking position 5-6
1		7*	
2		8	Pull-up resistor 4.74k Ω activated at X3.7 for PTC temperature sensor
1		7	

S1 Jumper Coding Diagram

3		9	Jumper parking position No filter; Normal DC Tachometer
2		8*	
1		7	
3		9	Filter for AC Tachometer with rectifier
2		8	
1		7	
3		9	Tachometer input X3:4 connected with 0V / GND
2		8*	
1		7	
3		9	Jumper parking position; no grounding of Tachometer input
2		8	
1		7	
3		9	Tachometer input 1 at X3:4 and X3:1/2/3 at SDCS-IOB-3 / PS5311
2		8*	
1		7	
3		9	Reserved: Tachometer input 2 at X2:23 and X2:24 at SDCS-IOB-3 / PS5311
2		8	
1		7	

* Default value

** 250 Ω x 20mA = 5V = 100%

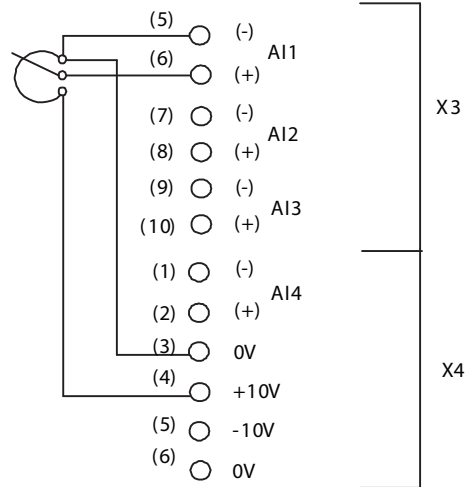
Additional input range for AI1 and AI2 is available by installing the SDCS-IOB-3 option module. The hardware gain can be increased by 10 with jumpers S2 and S3, thus the input range changes from $\pm 10V$ to $\pm 1V$. See DCS800, 3ADW000194R0611, Hardware manual for more information.

Up to eight analog inputs can be utilized by installing up to two additional RAIO-1 option modules.

Terminals 1 through 4 on the X3 terminal strip are provided for analog DC tachometer input signal. The voltage range allowed is from 0 - 8VDC to 0 - 270VDC. Use Jumper S1 to select Filter and grounded/not grounded.

Figure 6.2 shows connection of a potentiometer to AI1 for remote manual speed control.

Figure 6-2 Potentiometer Connection for Manual Speed Control



6.3 Digital and Relay Outputs

The DCS800-EP has digital and relay outputs which may be used to indicate states of various conditions. For example, a relay can be set up to illuminate an external indicator or sound an alarm if the drive trips on a fault.

6.3.1 Digital Outputs

There are 7 digital outputs and 1 Relay output provided in the DCS800-EP. Digital outputs, DO1 through DO7 are Relay Driver outputs limited to 50mA load, (160mA maximum for all 7 outputs). The output voltage is 22VDC unloaded and not regulated, therefore, care must be observed to ensure the outputs are not overloaded to the point that they no longer function. The outputs are short circuit protected. The function of the digital outputs is programmable in parameter group 14.

Note: The factory default settings for:

DO1 is 603 bit 0 = FansON – FansOff

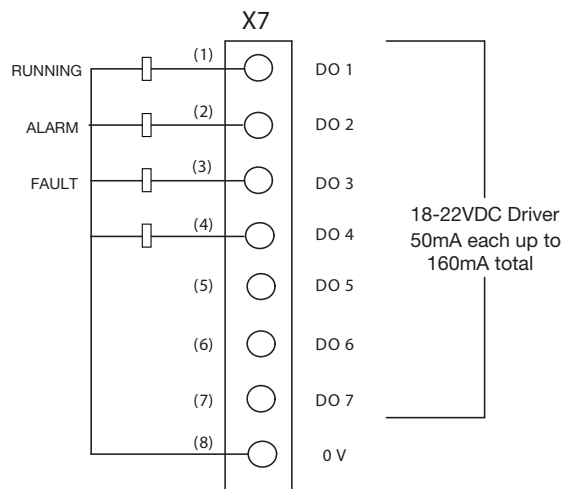
DO2 is 603 bit 5 = FieldON – FieldOff

DO3 is 603 bit 7 = MainContactorOn – MainContactorOff

DO4 thru DO7 is 0

See Appendix B for Technical Data.

Figure 6-3 Digital Outputs



6.3.2 Relay Outputs

Digital Output 8, (DO8), is a relay with the normally open contacts provided on terminal strip X96 terminals 1 and 2.

Note: The factory default setting for DO8 is 603 bit 7 = MainContactorOn – MainContactorOff

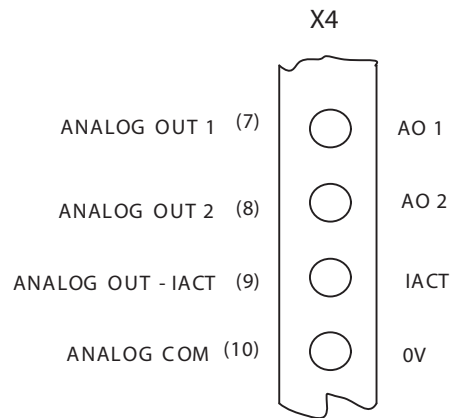
Output contact rating of the DO8 relay:

3A / 24VDC,
0.3A / 115VDC/230VDC max,
3A / 230VAC max

6.4 Analog Outputs

The SDCS-CON-4 includes 3 standard AO's. Two AO's are programmable. The third one, IACT, is fixed and used to display the actual armature current taken directly from the burden resistors. See Appendix B for Analog Outputs Technical Data.

Figure 6-4 Analog Outputs



6.5 Communication Options

Communication options available for the DCS800-EP include:

SDCS-DSL-4 (DCSLink)

The SDCS-DSL board provides drive to drive communication. The communication hardware and protocol is based on CAN bus. The DCSLink can be used for master-follower, and communication to either single phase or three phase field exciter. This is also used for 12-pulse operation. The communication hardware is equipped with an isolated supply and isolated transmitter. The terminator can be set by Jumper S1 and S2. See section DCS Link Wiring in the Hardware Manual.

DDCS channels with SDCS-COM-8

The Distributed Drives Communication System is an optical link. Setup is with parameter group 70, DDCS Control.

When this option is included, DDCS communication can be used with ACS800 drives in a leader-follower configuration. The board is equipped with four optical channels (max. data transmission speed is 4Mb for each optical channel):

- Channel 0 is used to communicate data from the overriding control (FCI, APC2, AC800M, Nxxx-xx (adapter modules for fieldbus), AC80) or via adapter modules from other controllers) to the DCS800-EP-drive.
- Channel 1 is used for DDCS I/O extension. AIMA-01 board see separate documentation.
- Channel 2 (Master-Follower) is used to operate two or more drives dependent on each other.
- Channel 3 is prepared to connect the PC tool for commissioning and maintenance (DriveWindow).
- Connector X19 is used for CDP 312 panel as well as interface board NDPI.

Additional Network Communication Options available:

RCAN-01 CANopen
RCNA-01 ControlNet
RDNA-01 DeviceNet
RETA-01 EtherNet/IP & Modbus/TCP
NETA-01 Ethernet Web Browser
RMBA-01 Modbus-RTU
RPBA-01 Profibus DP
RECA-01 EtherCat
RETA-02 ProfiNet

See respective instruction manuals for more detailed information.

Chapter 7

Applying Power

This section describes the basic start-up procedure of the DCS800-EP. A more detailed description of the signals and parameters involved in the procedure can be found in the Firmware manual.

7.1 Installation Checklist

Check the mechanical and electrical installation of the drive before start-up. Go through the checklist below together with another person. Read the Safety Instructions before you work on the unit.

7.1.1 Mechanical Installation

- The cabinet internal ambient temperature and the external ambient air temperature are within limits (See Mechanical Installation and Technical Data).
- The cabinet is vertically mounted on a non-flammable surface.
- The cooling air can flow freely.
- The motor and the driven equipment are ready for start. (See Planning the Electrical Installation).
- All shield and grounding connections are properly tightened according to specified torque. (See Typical Cable Sizing and Tightening Torque).

7.1.2 Electrical Installation

(See Planning the Electrical Installation, Electrical Installation)

- The drive is properly grounded.
- The AC input voltage matches the drive nominal input voltage.
- The AC input cables are properly seated and tightened to specified torque. (See Typical Cable Sizing and Tightening Torque).
- The motor cables (C2, D2 and F+, F-) are properly seated and tightened to specified torque. (See Typical Cable Sizing and Tightening Torque).
- Proper function of the E-Stop circuitry.
- Fan power wiring is connected.
- Control connections are properly made and logic is sound.
- There are no tools, foreign objects, dust or debris from drilling inside the drive.
- Covers are in place on the drive, motor and any connection boxes.

7.2 Drive Operation

The drive can be operated:

From DriveWindow, DriveWindow Light, DCS800 Control Panel, (LOC), or remotely, (REM), with digital and analog I/O or overriding control.

7.3 Apply Incoming Power

After verifying the above steps in the checklist, close the disconnect switch (or circuit breaker) that has been dedicated to the power source for the DCS800-EP. Verify Control Panel display backlight illuminates thus indicating that power has been applied to the control

7.4 Commissioning

Continue Start-Up by following one of the procedures described.

- DriveWindow Light 2 PC tool. It is highly recommended to use the start-up WIZARD in the DWL 2 PC tool to commission the DCS800-EP. This software is provided on a CD Rom disc furnished with the drive. It offers a very simple step-by-step procedure to enter parameter values needed for initial set up and autotuning. A serial communication cable is needed for interconnection between the PC Com port and X34 9 pin D-shell connector on the drive control board. (A USB to Serial adapter may be needed for PCs that do not have a 9-pin port connector).
- Commissioning can also be easily accomplished by using the Quick Start ASSISTANT feature of the keypad/display. This is also a step-by-step procedure to complete initial start-up and autotuning. See Chapter 8, Control Panel (Keypad) and Programming.
- Another PC tool that can be used for commissioning is DriveWindow. Before starting with the commissioning, connect the drive (via Ch3 on SDCS-COM-8) with DriveWindow (via e.g. initial and NDPC-12).

Detailed information on using any of the above procedures can be found in the DCS800 Firmware Manual - 3ADW000193R0701.

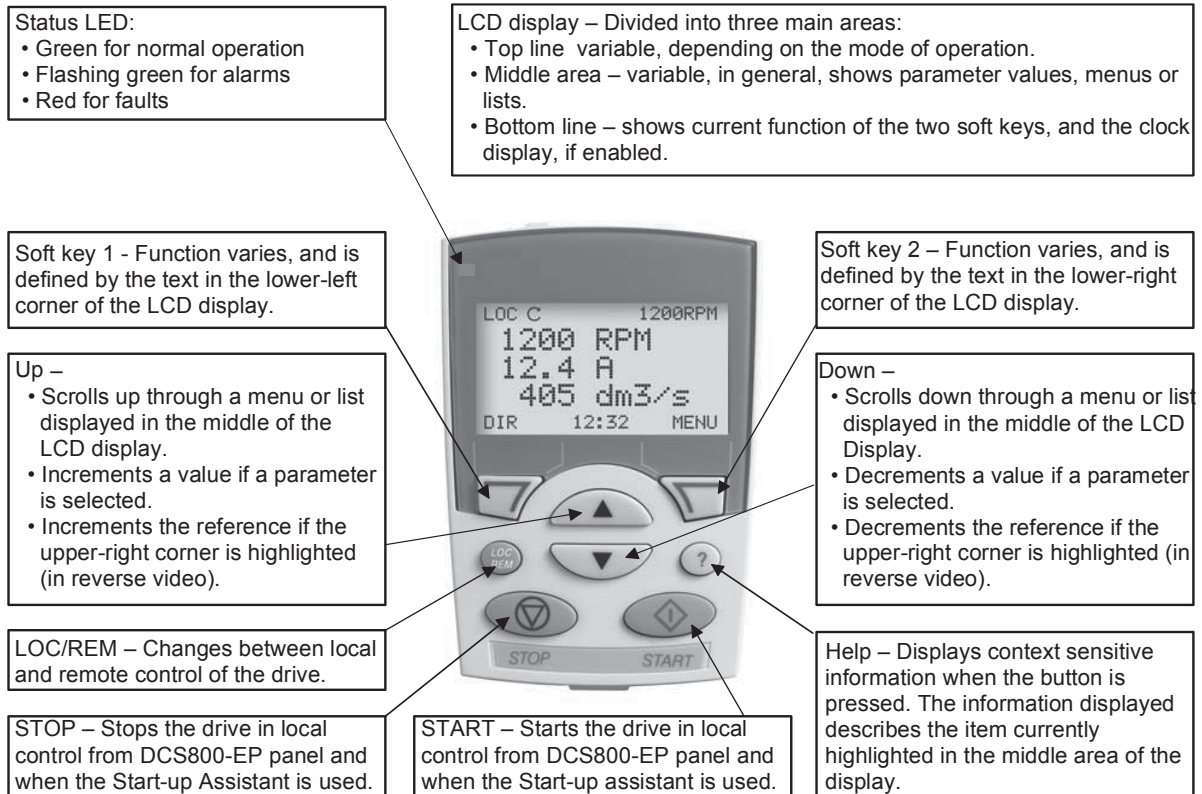
Control Panel (Keypad) and Programming

This section describes the Control Panel for the DCS800-EP. The Control Panel is used for commissioning the drive with START Up Assistants, parameter programming, and operational control (LOC) of the drive. The Control Panel can be used easily while installed in the front cover of the drive or it can be remotely located using optional extender mounting kits.

8.1 Initial Setup

The Control Panel is shown in Figure 8-1 with display and key function descriptions. After the drive is installed and power has been applied according to the steps outlined in Chapter 7, the motor must be identified to the drive, (commissioning).

Figure 8-1 Control Panel (Keypad)



8.1.1 Control Panel Version Information

Prior to turning power on, press and hold the HELP (?) button then apply AC power.

The display will show:

Panel SW: Keypad firmware version.

ROM CRC: Keypad ROM check sum.

Flash Rev: Flash content version.

When the HELP (?) key is released, the display will show OUTPUT MODE.

PANEL VERSION INFO		
Panel SW		x.xx
ROM CRC	xxxxxxxxxx	
Flash Rev:	x.xx	
DCS800Quickstart		Drv

8.1.2 General Display Features

Soft key functions: The soft key functions are defined by the text displayed just above each key. See Figure 8-1.

Display contrast: To adjust display contrast, simultaneously press the MENU key and UP or DOWN, as appropriate.

The following modes are available in the MAIN MENU.

1. ASSISTANTS
 - a. QuickStart
 - b. Macro
 - c. Nameplate Data
 - d. Autotuning Field Curr
 - e. Autotuning Arm Curr
 - f. Speed Feedback
 - g. Autotuning Speed
 - h. Field Weakening
2. PARAMETERS
3. CHANGED PAR
4. FAULT LOGGER
5. CLOCK SET
6. PAR BACKUP

8.1.3 Assistants (QuickStart)

When first powered on, the display will be similar to that shown in Figure 8-1. The Control Panel can be used to commission the drive/motor to a basic operating mode. To begin, press the MENU button then select ASSISTANTS then select QuickStart. At this point, the display shows a question, "Set all parameters to Factory Default?" Select Yes or Skip, press OK. If Yes is selected, all the parameters will be reset to Factory Default values.

LOC ◊ MAIN MENU-----1	
PARAMETERS	
ASSISTANTS	
CHANGED PAR	
EXIT	ENTER

8.1.4 Assistants

You can step through the basic start up assistant beginning with Name Plate Data or select a specific Application Macro from the QuickStart assistant.

Table 8-1 shows the parameters listed from the QuickStart assistant menu.

LOC ◊ ASSISTANTS-----1	
QuickStart	
Macro	
Name Plate Data	
Autotuning Field Curr	
Autotuning Arm Curr	
EXIT	SEL

8.1.5 Parameters Entered By Assistant

Table 8-2 shows the parameters listed from the QuickStart assistant menu.

Table 8-1 Parameters Entered by Assistant

Parameter No.	Parameter Name	Description
99.08	ApplMacro (Application Macro)	Selects the macro (preset parameter sets) to be loaded / stored into the RAM.
99.07	ApplRestore (Application Restore)	Starts the loading/storing of the macro (preset parameter set) selected at 99.08.
99.01	Language	Selects one of six languages.
99.10	NomMainsVolt (Nominal AC Mains Voltage)	Nominal mains voltage of the AC supply.
99.04	M1BaseSpeed (Motor 1 Base Speed)	Motor 1 nameplate base speed. (Usually considered field weakening point).
30.16	M1OvrSpeed (Motor 1 Overspeed)	Drive will trip on F532, MotOverSpeed fault if this value is exceeded.
99.03	M1NomCur (Motor 1 Nominal DC Current)	Motor 1 nominal DC armature current from motor nameplate.
99.02	M1NomVolt (Motor 1 Nominal DC Voltage)	Motor 1 nominal DC armature voltage from motor nameplate.
50.03	M1SpeedFbSel (Motor 1 Speed Feedback Selector)	Motor 1 speed feedback selection.
50.04	M1EncPulseNo (Motor 1 Encoder 1 Pulse Number)	Encoder 1 pulse per revolution, (ppr), number.
50.02	M1EncMeasMode (Motor 1 Encoder 1 Measuring Mode)	Selects the measurement mode for pulse encoder 1.
22.01	AccTime1 (Acceleration Time 1)	Time in seconds to accelerate from zero speed to maximum speed as shown by the scaling value at p2.29.
22.02	DecTime1 (Deceleration Time 1)	Time in seconds to decelerate from maximum speed as shown by the scaling value at p2.29 to zero speed.
20.01	M1SpeedMin (Motor 1 Minimum Speed)	Motor 1 minimum speed value in rpm.
20.02	M1SpeedMax (Motor 1 Maximum Speed)	Motor 1 maximum speed value in rpm.
20.03	M1ZeroSpeedLim (Motor 1 Zero Speed Limit)	RPM value set to denote when the motor is at zero speed.
22.12	JogAccTime (Acceleration Time Jogging)	Time in seconds to accelerate from zero speed to speed scaling value at p2.29 when in JOG.
22.13	JogDecTime (Deceleration Time Jogging)	Time in seconds to decelerate from scaling value at p2.29 to zero speed when in JOG.
23.02	FixedSpeed1 (Fixed Speed 1)	Speed in rpm for fixed speed 1, (preset speed). Also is JOG Speed.
20.12**	M1CurLimBrdg1 (Motor 1 Current Limit of Bridge 1)	Forward current limit in percent of Motor 1 nominal current limit, 99.03.
20.13**	M1CurLimBrdg2 (Motor 1 Current Limit of Bridge 2)	Reverse current limit in percent of Motor 1 nominal current limit, 99.03.
99.12	M1UsedFexType (Motor 1 Used Field Exciter Type)	Selects motor 1 type of field supply, (field exciter).
99.11	M1NomFldCur (Motor 1 Nominal Field Current)	Motor 1 nominal field current from motor nameplate.
30.12	M1FldMinTrip (Motor 1 Minimum Field Trip)	Sets the value of field current below which a fault F541, (field loss), will occur.
44.01	FldCtrlMode (Field Control Mode)	Motor 1 field control mode selection.
44.02*	M1KpFex, value	Proportional gain of the field current controller.
44.03*	M1TiFex, value	Integral time of the field current controller in ms.
45.02*	M1PosLimCtrl (Fex Voltage Limit)	Positive voltage limit for motor 1 field exciter in percent of max field voltage.
43.06*	M1KpArmCur, value	Proportional gain of the current controller.
43.07*	M1TiArmCur, value	Integral time of the current controller.
43.08*	M1DiscontCurLim, value	Threshold continuous/discontinuous current in percent of M1NomCur, 99.03.
43.09*	M1ArmL, value	Inductance of armature circuit in mH.
43.10*	M1ArmR, value	Resistance of armature circuit in mOhms.
24.03*	KpS, value	Proportional gain of the speed controller.
24.09*	TIS, value	Integral time of the speed controller in ms.

* Set using Autotuning Assistants.

****NOTE:** TorqMax (20.05) is internally set equal to M1CurLimBridge1 (20.12) and TorqMin (20.06) is internally set equal to M1CurLimBridge2 (20.13) during the QuickStart process. Current is proportional to torque below base speed but not above base speed. If field weakening is used, and in other rare cases, it may be desirable to have a different value for maximum/minimum torque and current. If this is the case, then, after completing the QuickStart process, set these values individually through browser and DO NOT use QuickStart thereafter.

8.1.6 Digital Input Selection

Digital inputs are assigned to functions when a macro is selected, but these settings can be adjusted independently if desired. The QuickStart Assistant allows this, or you can adjust them using the parameter browser. All the settings are in group 10 except fault/alarm functions which are in group 30.

Notice: Some digital inputs will prevent a successful Autotuning test from taking place and result in a fault, Motor Fan Acknowledge, for example. Disable unused digital input functions or reassign them by adjusting the corresponding parameter (MotFanAck10.06, for example) or correct the problem to prevent faults from occurring.

8.1.7 Autotuning

After entering the setup parameters in the QuickStart Assistant, the user will be directed through the automatic tuning assistants, which are as follows:

- **Field Current Autotuning:** This will measure characteristics of the motor's field winding and calculate tuning values for the field supply (also called "field exciter" or "FEX") controller. This test will put current through the field winding only, so no rotation usually occurs.
- **Armature Current Autotuning:** This will measure the resistance and inductance of the motor's armature winding and calculate tuning values for the armature current controller. This test will put current through the armature winding only, so no rotation usually occurs.
- **Speed Feedback Assistant:** This test will spin the motor and check if feedback is seen on either the tachometer or encoder channel. It will then configure the drive for that device. If no device is detected, the drive will be configured for EMF (transducerless) feedback.
- **Speed Controller Autotuning:** This will rotate the motor briefly to measure mechanical characteristics and calculate tuning values for the speed controller. It is best if this test is done with the motor coupled to the load but be certain it is safe to do so.
- **Field Weakening Assistant:** This test only needs to be done if the motor will be used above base speed. It will rotate the motor at half the nominal speed, then measure the effect at different levels of field current and calculate tuning values for the EMF controller and the field weakening controller.

Each Autotuning procedure is required (except sometimes field weakening). If an Autotuning fails or if you accidentally exit the QuickStart program before all tuning is complete, you may continue the tuning process by selecting the Autotuning procedure directly from the Assistants Menu.

If an Autotuning procedure continues to fail, exit the tuning procedure and see Diagnosis (9.11) in the parameter browser for a code. Then look up the message in Table 8.2.

Table 8-2 Diagnosis (Parameter 9.11)

CODE	MESSAGE
11	Autotuning aborted due to fault or removal of the RUN command [UsedMCW (7.04) bit 3].
12	Autotuning timeout, RUN command [UsedMCW (7.04) bit 3] was not set in time.
13	Motor is still turning, no speed zero indication.
14	Field current not zero.
15	Armature current not zero.
16	Armature voltage measurement circuit open (e.g. not connected) or interrupted. Check also current and torque limits.
17	Armature circuit and/or armature voltage measurement circuit incorrectly connected.
18	No load connected to the armature circuit.
19	Invalid nominal armature current setting. Armature current M1MotNomCur (99.03) is set to zero.
20	Field current does not decrease when the excitation is switched off.
21	Field current actual did not reach field current reference; or no detection of field resistance; or field circuit open (e.g. not connected) or interrupted.
22	No writing of control parameters for speed controller.
23	Tachometer adjustment faulty or not OK or the tachometer voltage is too high during autotuning.
24	Tuning of speed controller, speed feedback assistant or tachometer fine tuning not possible due to speed limitation. See e.g. M1SpeedMin (20.01) and M1SpeedMax (20.02).
25	During these procedures, the motor may reach base speed. Thus full armature voltage is necessary. If the mains voltage is too low, the autotuning procedure is aborted. Check and adjust if needed: Mains voltage; M1NomVolt (99.02); M1BaseSpeed (99.04).
26	Field weakening not allowed. See M1SpeedFbSel (50.03) and FldCtrlMode (44.01).
27	M1CurLimBrdg2 (20.13).
28	Drive instead.
29	No field exciter selected. See M1UsedFexType (99.12)
80	Speed does not reach set point (EMF control).
81	Motor is not accelerating or wrong tachometer polarity (tachometer/encoder).
82	Not enough load (too low inertia) for the detection of speed controller parameters.
83	Drive not in speed control mode. See TorqSel (26.01), TorqSelMod (26.03), TorqMuxMode (26.04).
NOTICE: See DCS800 Firmware Manual for additional codes.	

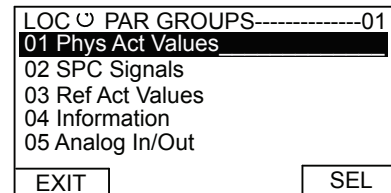
8.2 Programming

Use the parameters mode to view and edit parameter values:

1. Press UP or DOWN arrow key to highlight PARAMETERS in the MAIN MENU, then press ENTER.

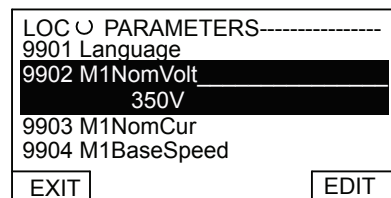


2. Press UP or DOWN to highlight the appropriate parameter group, then press SEL.



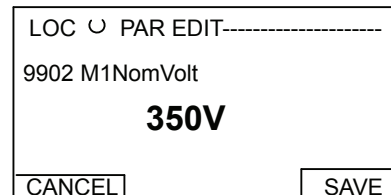
3. Press UP or DOWN to highlight the appropriate parameter in a group, then press EDIT to enter PAR EDIT mode.

Note: The current parameter value appears in the highlighted parameter.



4. Press UP or DOWN to step to the desired parameter value.

Note: While in the EDIT mode to get the parameter default value press UP/DOWN simultaneously.

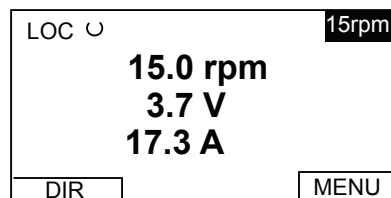


5. Press SAVE to store the modified value and leave the PAR EDIT mode or press CANCEL to leave the PAR EDIT mode without modifications.

6. Press EXIT to return to the listing of parameter groups, and again to step back to the MAIN MENU.

8.3 Output Mode

Use the output mode to read information on the drive's status and to operate the Drive while in local, (LOC). To reach the output mode, press EXIT until the LCD display shows status information as shown.



Status Information

8.4 Local / Remote Operation

The DCS800-EP can be operated via the control panel when in Local, (LOC) or via the terminal strip inputs or network communications when in Remote, (REM). The mode can be changed by pressing the LOC/REM key on the keypad.

While in Local mode the terminal strip inputs or network communication are ignored except for digital inputs programmed for E-stop, External Fault, and/or External Alarm which remain active in Local control mode. To operate the drive from the Control Panel, speed is set with the UP and DOWN arrow keys. The START and STOP keys control motor run/stop, and the direction key, (softkey) will change motor shaft direction of rotation on regenerative drives.

8.5 Parameter Backup

The DCS800-EP Control Panel can store a full set of drive parameters. The parameter backup mode has the following functions:

UPLOAD TO PANEL: Copies all parameters from the drive into the DCS800-EP Control Panel. This includes both user sets (User1 and User2) - if defined - and internal parameters such as those created by tacho fine tuning. The DCS800-EP Control Panel memory is non-volatile and does not depend on its battery. Upload can only be done in drive state Off and local from DCS800-EP Control Panel.

DOWNLOAD FULL SET: Restores the full parameter set from the DCS800-EP Control Panel into the drive. Use this option to restore a drive, or to configure identical drives. Can only be done in drive state Off and local from DCS800-EP Control Panel.

The general procedure for parameter backup operations is:

1. Press the EXIT key to return to the MAIN MENU. Verify control panel is in local mode.
2. Press the UP or DOWN to highlight PAR BACKUP in the MAIN MENU, then press ENTER.
3. Press the UP arrow key to highlight "Upload To Panel", press SEL.
4. After a short time, "Parameter upload successful" will appear on the display.
5. Press the DOWN arrow key to highlight "Backup Info", press SEL.
6. "BACKUP INFO" display will show DRIVE TYPE, DRIVE RATING, and FW VERSION.

To download a parameter set to the drive:

1. Select "Download Full Set" from the PAR BACKUP menu, then press SEL.
2. After a short time, "Parameter download successful completed" will be displayed.
3. Press EXIT to return to the MAIN MENU.



Chapter 9

Macro Selection

This section describes the application macros available in the DCS800-EP. Macros are used to select pre-configured setups which minimize the programming required to commission the drive. There are 12 macros available to fit various applications. The Macro which best fits the application is selected in parameter 99.08 - ApplMacro (Application Macro), then loaded and stored by setting parameter 99.07 - ApplRestore (Application Restore), = Yes. It can also be selected using the QuickStart Assistant.

9.1 Macro Descriptions

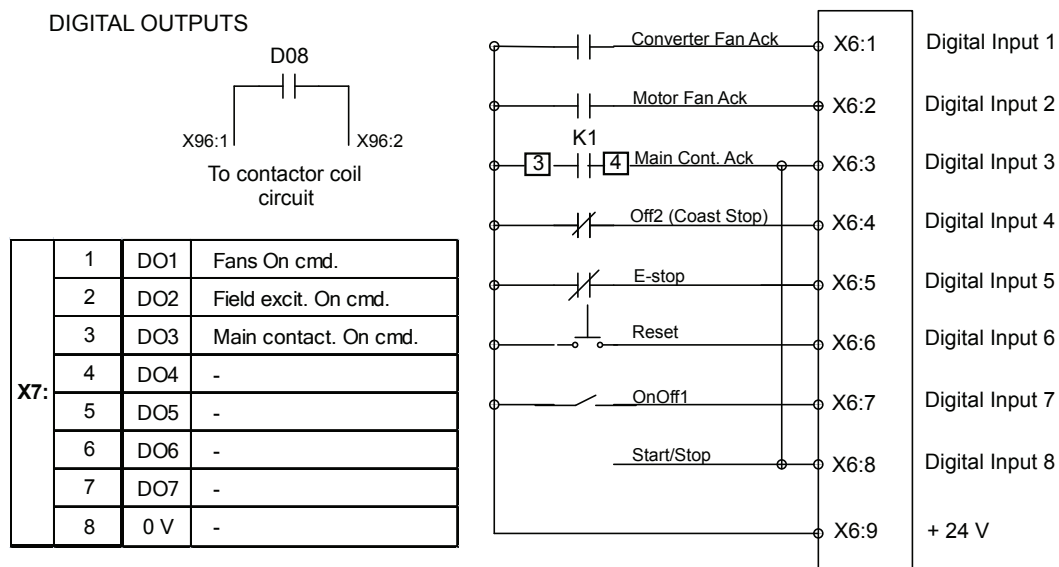
The following paragraphs show a connection diagram that corresponds to each of the Macros with a brief description of the digital and analog input functions.

9.1.1 Factory Macro (Factory)

The Factory Macro sets up a basic digital input configuration. This macro is primarily used as a FACTORY RESET which resets all parameters to the factory default values. This should be done on initial configuration of the drive before loading a different macro. This can also be quite handy to get back to a good "starting point" when a great number of parameter changes may become too complicated and drive operation is not as expected.

Notice: All tuning values will be erased and reset to factory default.

Figure 9-1 Factory Macro Diagram

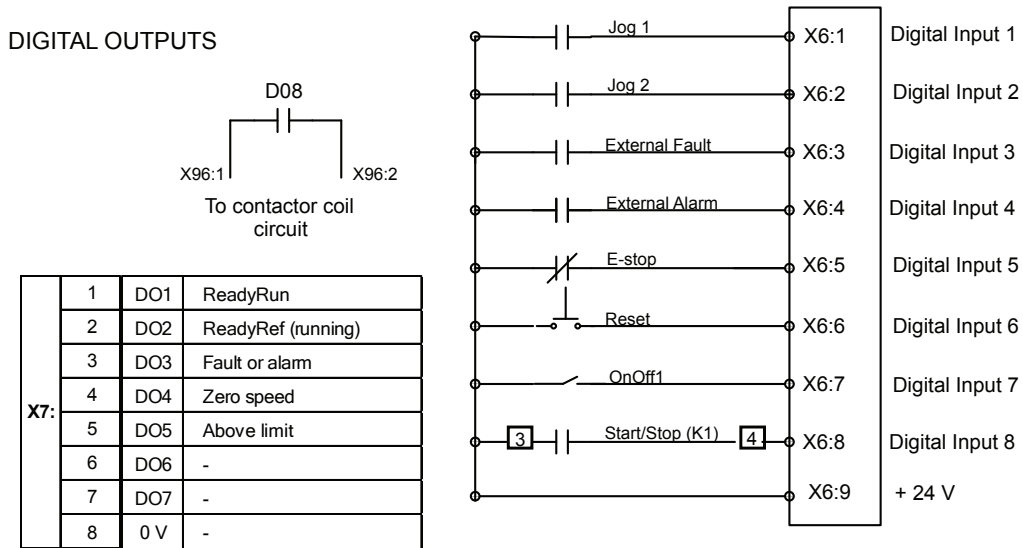


- X6:1 Closed Indicates Converter Fan Acknowledge
- X6:2 Closed Indicates Motor Fan Acknowledge
- X6:3 Closed indicates Main Contactor Acknowledge (K1 Via "M" Aux.)
- X6:4 Open initiates OFF2 (Coast Stop) Must be closed before Run
- X6:5 Open initiates "E-Stop"
- X6:6 Closed Pulse Resets a "Fault"
- X6:7 Closed Initiates "Drive On" and "M" contactor closure
- X6:8 Closed Initiates "Drive Run"

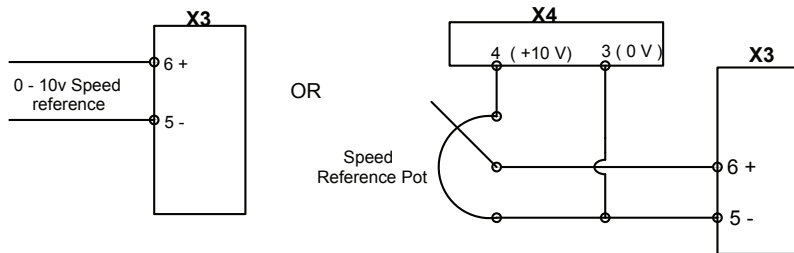
9.1.2 Standard Macro (Standard)

The Standard Macro features two wire START/STOP, JOG 1, and JOG 2. Speed is set at analog input 1, (AI1).

Figure 9-2 Standard Macro Diagram



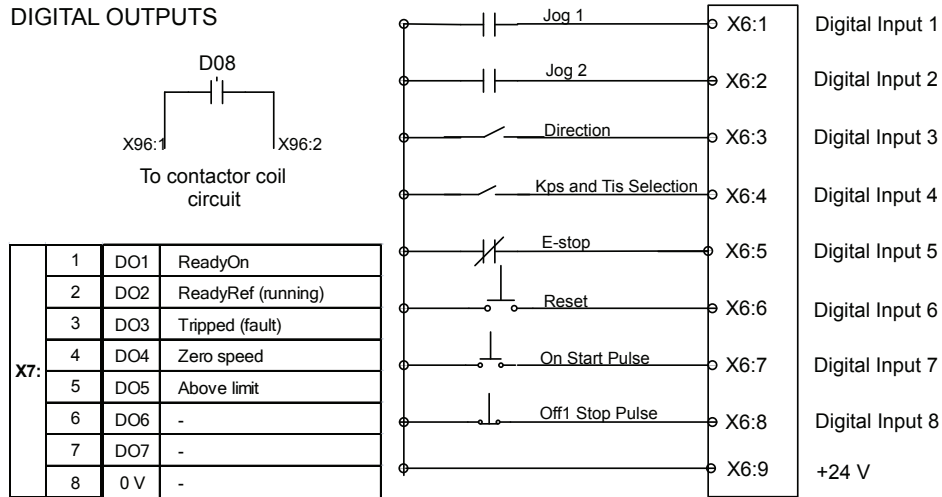
- X6:1 Closed Initiates "Jog Speed 1 "
 - X6:2 Closed Initiates "Jog Speed 2"
 - X6:3 Closed Initiates "External Fault"
 - X6:4 Closed Initiates "External Alarm"
 - X6:5 Open Initiates "E-Stop"
 - X6:6 Closed Pulse Resets a " Fault "
 - X6:7 Closed Initiates "Drive On" and "M" contactor closure
 - X6:8 Closed Initiates "Drive Run" (May use K1 "M" contact Aux.)
- The Default speed reference is 0-10 Volts via Analog Input 1



9.1.3 Manual Constant Speed Macro (Man/Const)

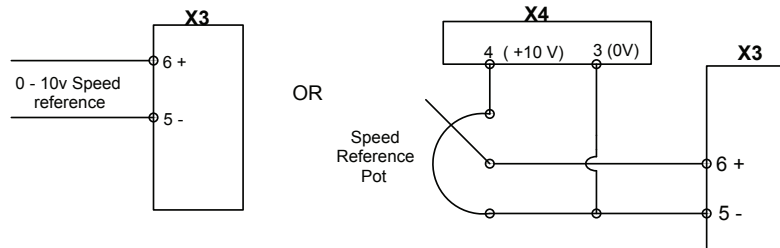
The Manual Constant Speed Macro features three wire START/STOP. Speed is set at AI1. If JOG 1 or JOG 2 is asserted, speed is set to the value of parameter 23.02 or 23.03. Digital Input 4, (DI4), switches to another set of tuning values to run a different motor. **NOTE:** Jog inputs do not initiate motion, only change speed.

Figure 9-3 Manual Constant Speed Macro Diagram



- X6:1 Closed Initiates "Jog Speed 1"
- X6:2 Closed Initiates "Jog Speed 2"
- X6:3 Open = "Forward" / Closed = "Reverse"
- X6:4 KPS and TiS ; Open = Set1, Closed = Set2
- X6:5 Open initiates "E-Stop"
- X6:6 Closed Pulse Resets a "Fault"
- X6:7 Pulse closed initiates "Start"
- X6:8 Pulse open Initiates "Stop"

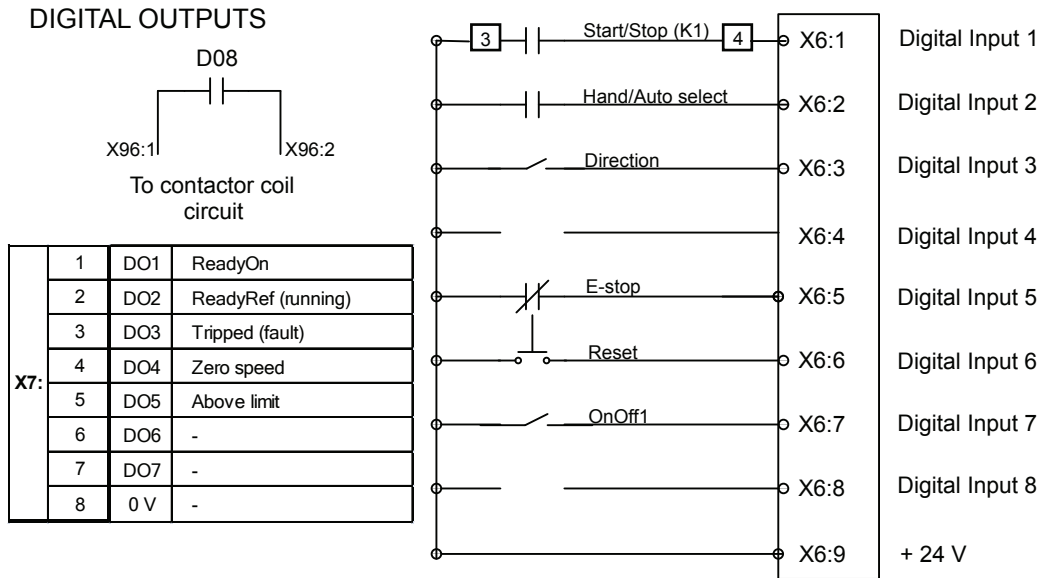
The Default speed reference is 0-10 Volts via Analog Input 1



9.1.4 Hand/Auto Macro (Hand/Auto)

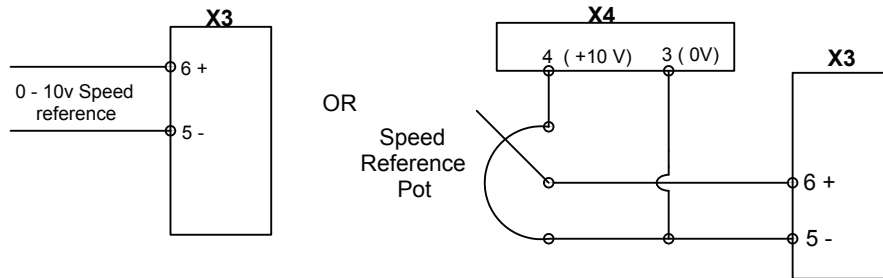
The Hand/Auto Macro features two wire START/STOP, (manual). Hand mode speed is set at AI1. In Auto mode, speed is set via parameter 23.01. Fieldbus module is required.

Figure 9-4 Manual Hand/Auto Macro Diagram



- X6:1 Closed Initiates " Drive Run" (K1 "M" aux can be used)
- X6:2 Open = Hand (Local I/O and AI1) / Closed = Auto (Main control word and 23.01)
- X6:3 Open = "Forward" / Closed =" Reverse"
- X6:4
- X6:5 Open Initiates "E-Stop"
- X6:6 Closed Pulse Resets a "Fault"
- X6:7 Closed Initiates "Drive On" and "M" contactor closure
- X6:8

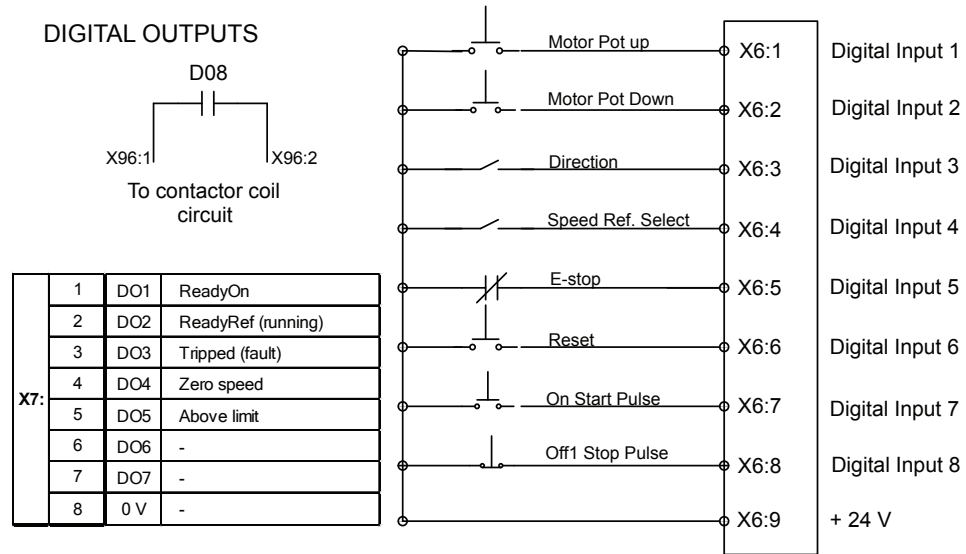
The Default speed reference is 0-10 Volts via Analog Input 1



9.1.5 Hand/Motor Pot Macro (Hand/MotPot)

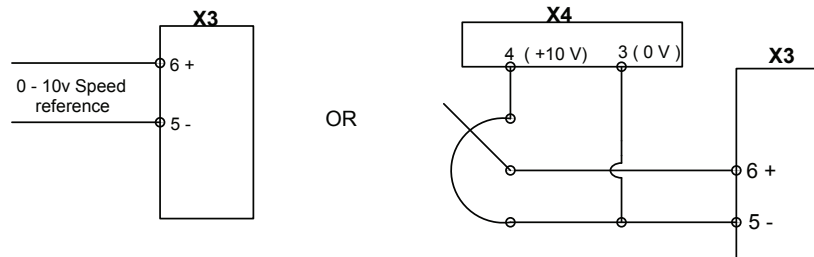
The Hand/Motor Pot Macro features three wire START/STOP. Digital input 4, (DI4), switches between Motor Pot and analog input 1, (AI1).

Figure 9-5 Hand/Motor Pot Macro Diagram



- X6:1 Closed Initiates "Motor Pot UP"
- X6:2 Closed Initiates " Motor Pot Down"
- X6:3 Open = " Forward" / Closed = "Reverse"
- X6:4 Open = Motor Pot / Closed = AI1
- X6:5 Open Initiates "E-Stop"
- X6:6 Closed Resets a "Fault "
- X6:7 Pulse closed initiates "Start"
- X6:8 Pulse open Initiates "Stop"

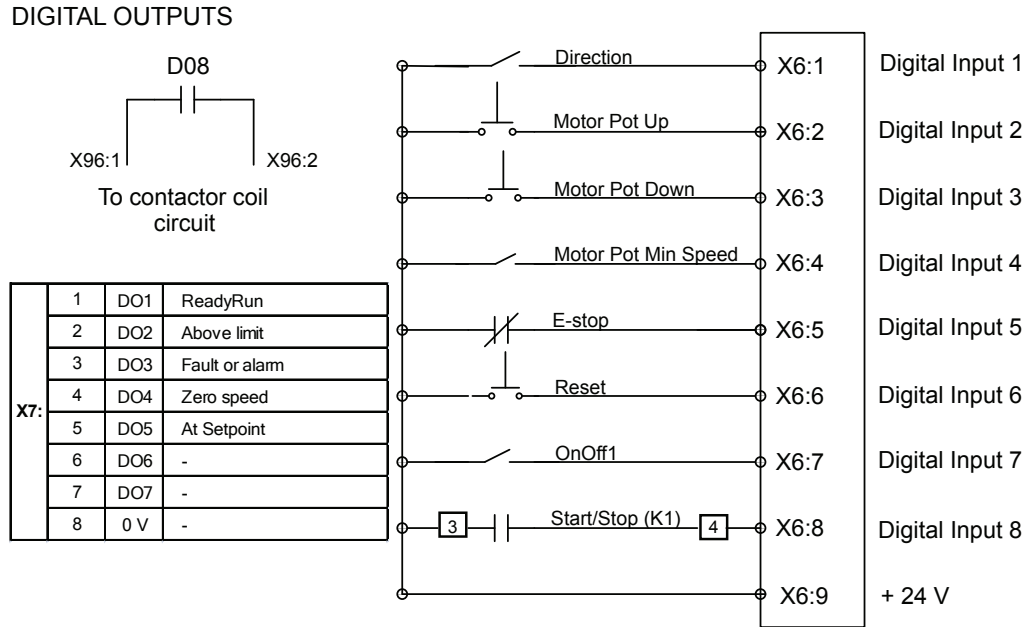
If DI4 is on , Speed is set Via AI1 as shown below



9.1.6 Motor Pot Macro (MotPot)

The Motor Pot Macro features two wire START/STOP. Speed is always controlled via the motor pot up and down inputs, digital input 2 and 3, (DI2, DI3). Digital input 4, (DI4), releases minimum speed to allow Motor Pot Down to reduce to zero speed.

Figure 9-6 Motor Pot Macro Diagram

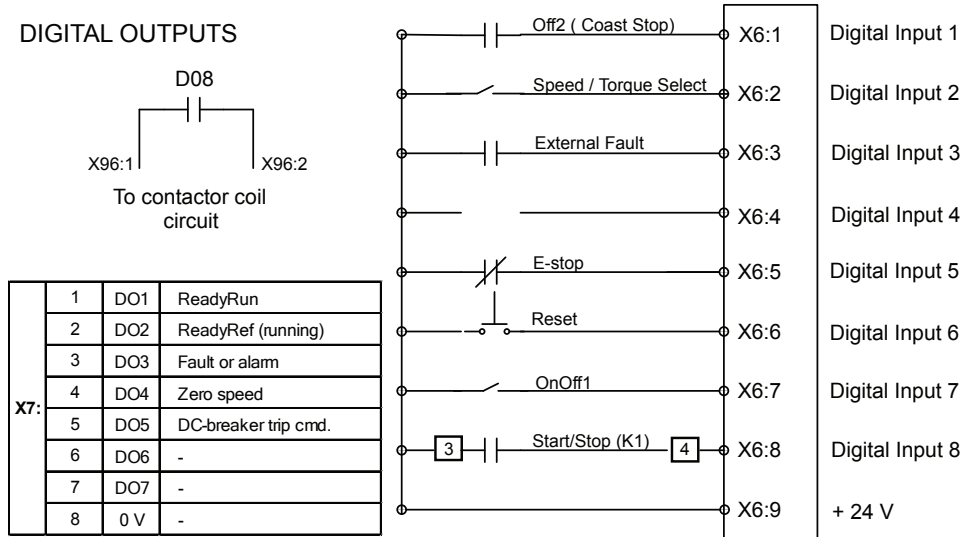


- X6:1 Open = "Forward" / Closed = "Reverse"
- X6:2 Closed Initiates Motor Pot Up
- X6:3 Closed Initiates Motor pot Down
- X6:4 Closed will allow Motor Pot Down to go to "0" Speed
- X6:5 Open Initiates "E-Stop"
- X6:6 Closed Pulse Resets a "Fault"
- X6:7 Closed Initiates "Drive On" and "M" contactor Closure
- X6:8 Closed initiates "Drive Run" (K1 "M" aux may be used)

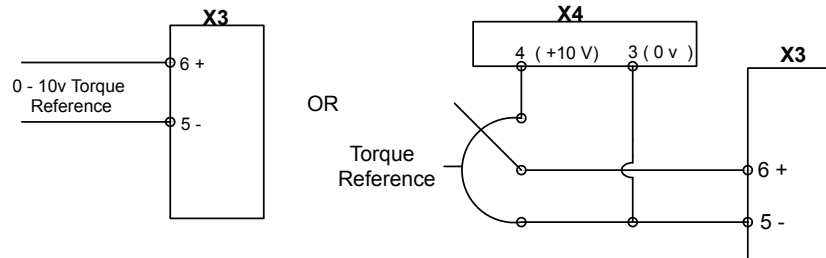
9.1.7 Torque Control (TorqCtrl)

The Torque Control Macro features two wire START/STOP. Digital Input 2, (DI2), switches between Speed and Torque Control. While in Torque Control mode, Analog Input 1, (AI1), is used as reference. While in Speed Control mode, Analog Input 1, (AI1), is used as reference, While is Speed Control, the value at parameter 23.01 is used as reference. Digital Output 4, (DO5), can control a DC contactor.

Figure 9-7 Torque Control Macro Diagram



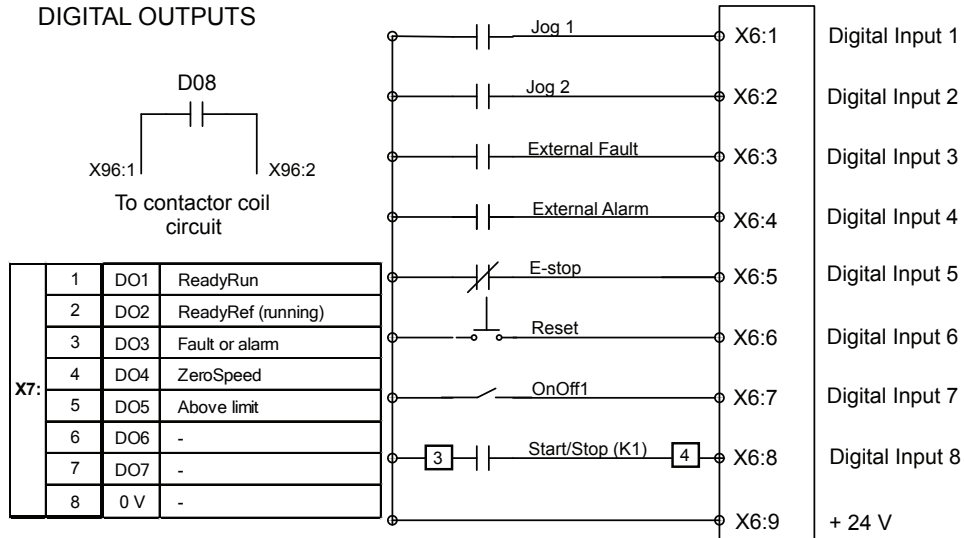
- X6:1 Open initiates OFF2 (Coast Stop) Must be closed before Run
 - X6:2 Open = Speed Control / Closed = Torque Control ; AI1 = Torque Ref. / 23.01 is Speed Ref.
 - X6:3 Closed indicates "External Fault"
 - X6:4
 - X6:5 Open Initiates "E-Stop"
 - X6:6 Closed Pulse Resets a "Fault"
 - X6:7 Closed for on1. Must be closed before "Run"
 - X6:8 Closed Initiates Drive Run (K1 "M" aux may be used)
- AI1 is used as Torque Reference as shown below. In "Speed" control Parameter 23.01 sets Speed Reference Source



9.1.8 Torque Limit Macro (TorqLimit)

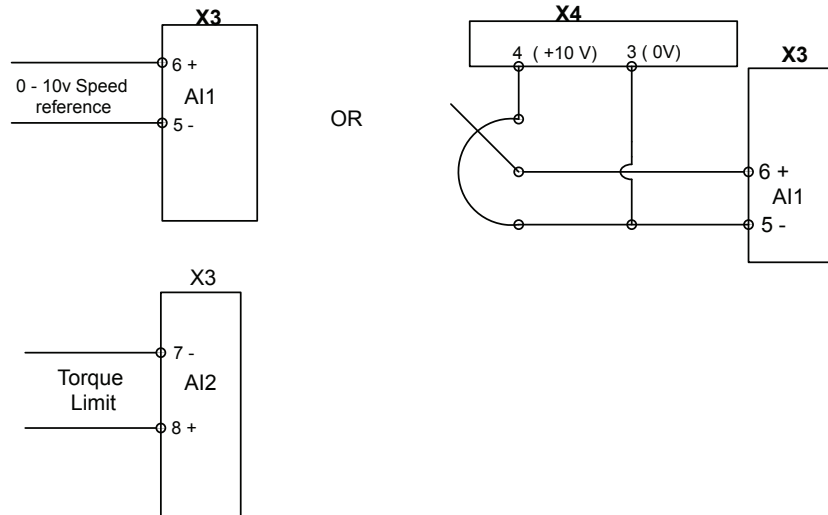
The Torque Limit Macro has the same configuration as the Standard Macro. It features two wire START/STOP, JOG 1 and JOG 2. Speed is set at analog input 1, (AI1) and analog input 2, (AI2) determines Torque Limit.

Figure 9-8 Torque Limit Macro Diagram



- X6:1 Closed Initiates "Jog Speed 1"
- X6:2 Closed Initiates "Jog Speed 2"
- X6:3 Closed Initiates "External Fault"
- X6:4 Closed Initiates "External Alarm"
- X6:5 Open initiates "E-Stop"
- X6:6 Closed Pulse Resets a "Fault"
- X6:7 Closed Initiates "Drive On" and "M" contactor closure
- X6:8 Closed Initiates " Drive Run "(K1 "M" Aux. Contacts may be used)

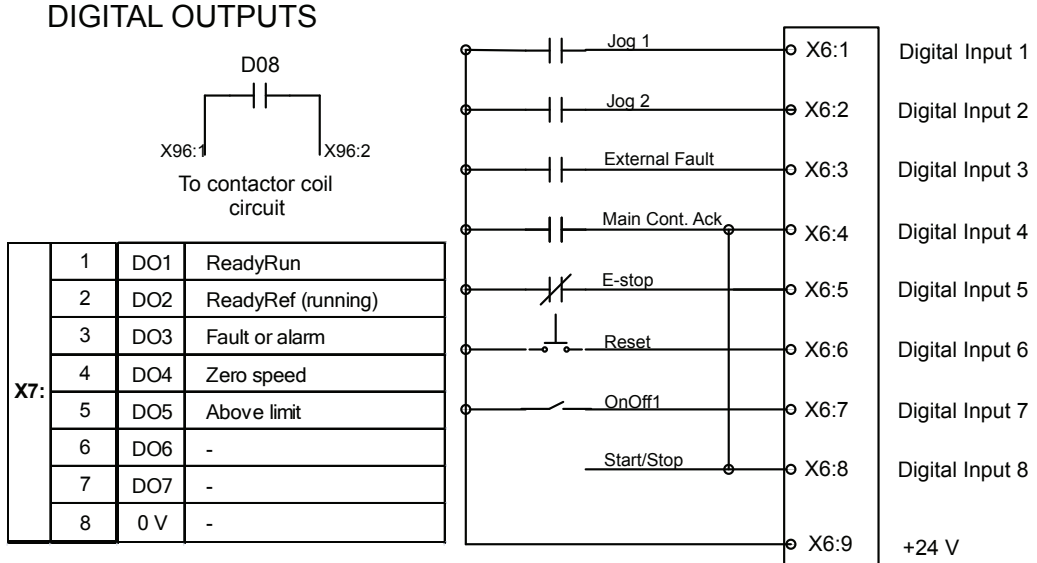
The Default speed reference is 0-10 Volts via Analog Input 1



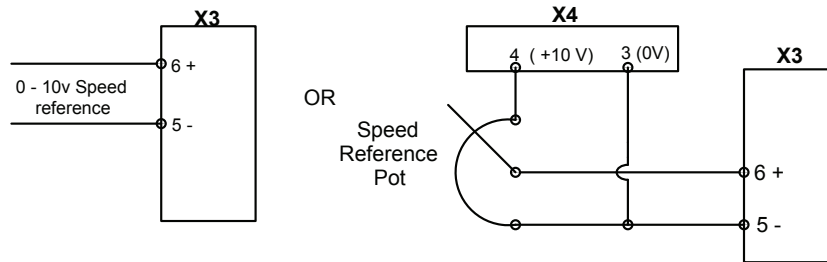
9.1.9 2Wire DC Contact US Macro (2WireDCcontUS)

The Two Wire DC Contact US Macro has the same configuration as the Standard Macro, except it controls a DC contactor and requires a DC contactor acknowledge.

Figure 9-9 2Wire DC Contact US Macro Diagram



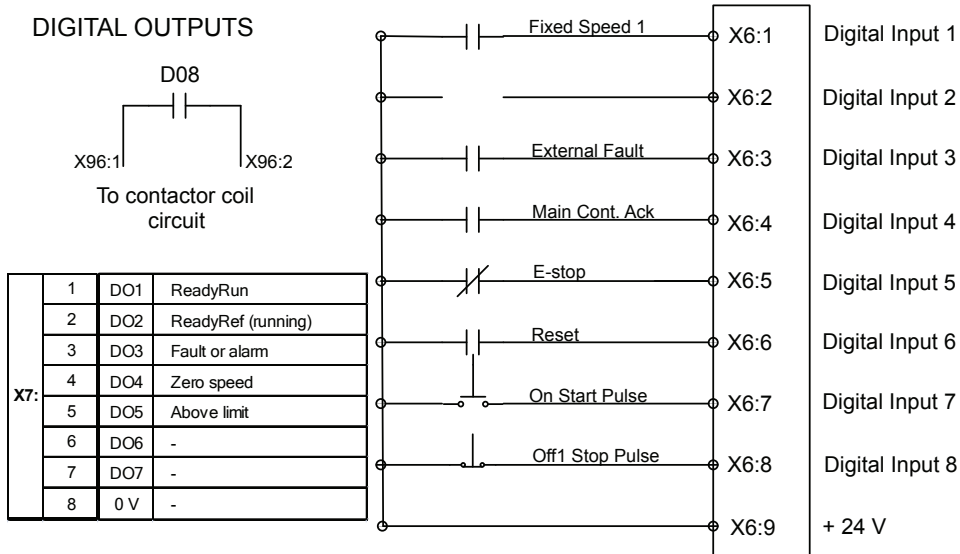
- X6:1 Closed Initiates "Jog Speed 1"
 - X6:2 Closed Initiates "Jog Speed 2"
 - X6:3 Closed Initiates "External Fault"
 - X6:4 Closed via the "M" Contactor Aux.
 - X6:5 Open Initiates "E-Stop"
 - X6:6 Closed (Pulse) Resets a "Fault"
 - X6:7 Closed = "Drive On" (Closes Main Contactor)
 - X6:8 Closed Initiates "Drive Run"
- The Default speed reference is 0-10 Volts via Analog Input 1



9.1.10 3Wire DC Contact US Macro (3WireDCcontUS)

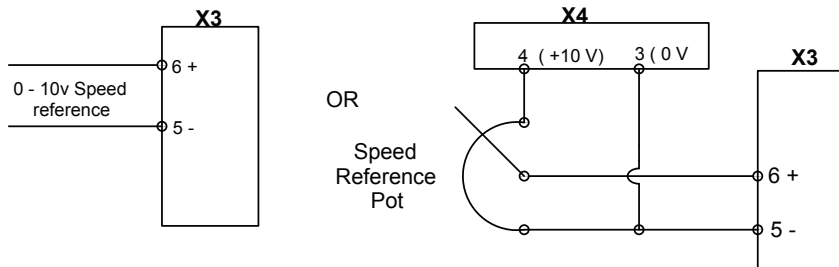
The Three Wire DC Contact US Macro starts with a pulsed start input at digital input 7, (DI7), and stops when digital input 8, (DI8), is pulsed open, (3Wire Control). Speed is set at Analog Input 1, (AI1). When Digital Input 1, (DI1), is asserted, speed is fixed to the value set in parameter 23.02. This Macro controls at DC Contactor and requires a DC contactor acknowledge.

Figure 9-10 3Wire DC Contact US Macro Diagram



- X6:1 Closed Sets Speed at 23.02
- X6:2
- X6:3 Closed Initiates "External Fault"
- X6:4 Closed via "M" Contactor Aux.
- X6:5 Open Initiates "E-Stop"
- X6:6 Closed Pulse Resets a "Fault"
- X6:7 Pulse closed initiates "Start"
- X6:8 Pulse open Initiates "Stop"

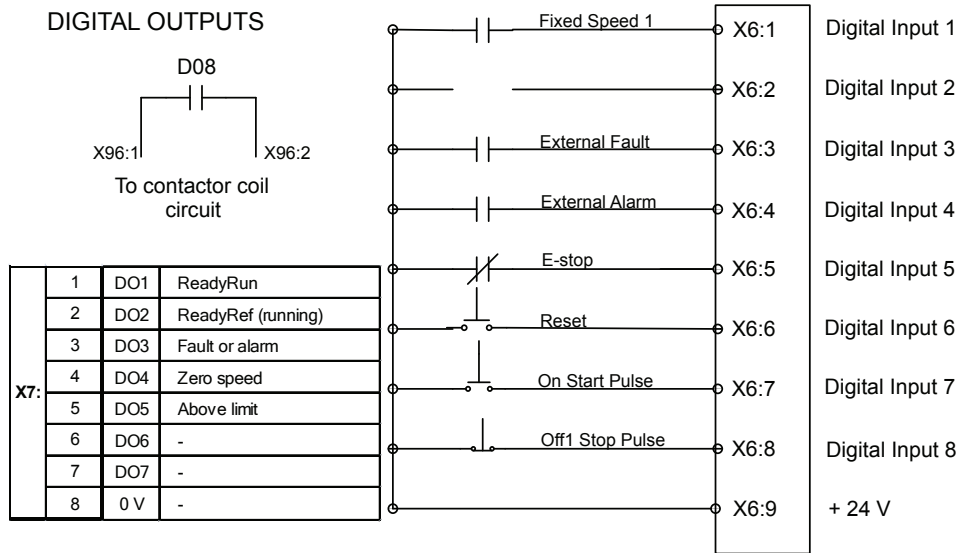
The Default speed reference is 0-10 Volts via Analog Input 1



9.1.11 3Wire Standard Macro (3WireStandard)

The Three Wire Standard Macro is the same as the Three Wire DC Contact US macro. Drive starts with a pulsed start input at Digital Input 7, (DI7), and stops when Digital Input 8 (DI8), is pulsed open, (3Wire Control). Speed is set with Analog Input 1, (AI1). When Digital Input 1, (DI1), is asserted, speed is fixed to the value set in parameter 23.02.

Figure 9-11 3Wire Standard Macro Diagram



X6:1 Closed Sets Speed at (23.02)

X6:2

X6:3 Closed Initiates "External Fault"

X6:4 Closed initiates " External Alarm"

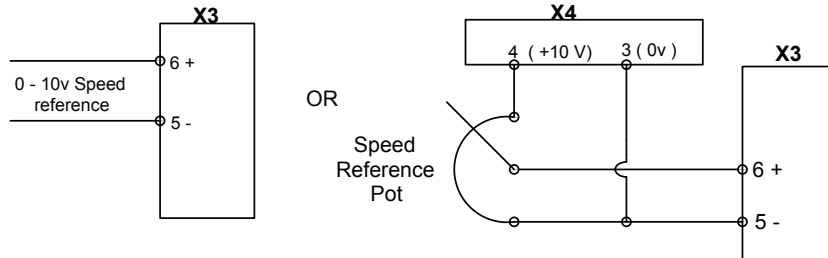
X6:5 Open Initiates "E-Stop"

X6:6 Closed Pulse Resets a "Fault"

X6:7 Pulse closed initiates "Start"

X6:8 Pulse open Initiates "Stop"

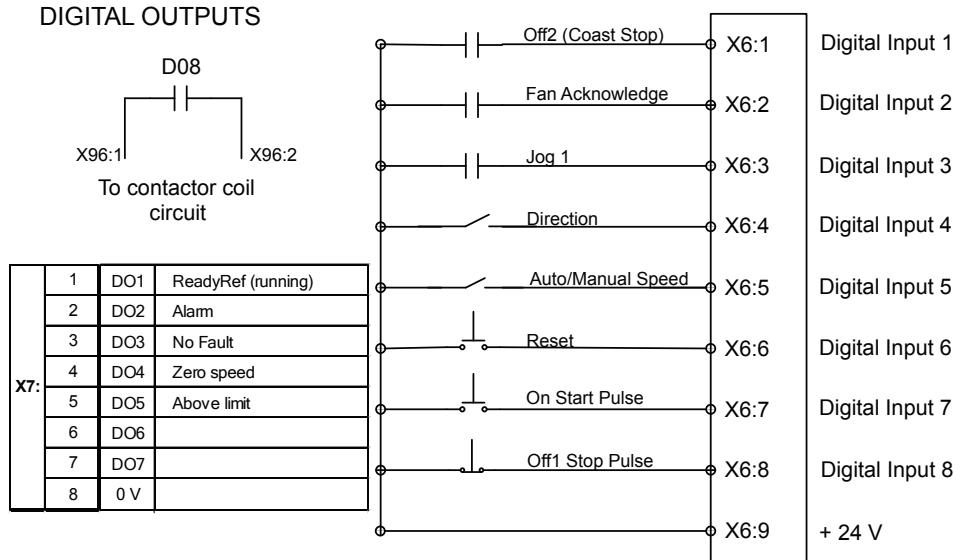
The Default speed reference is 0-10 Volts via Analog Input 1



9.1.12 3Wire Jog Macro (3WireJog) - FLEXPAK 3000 Replacements

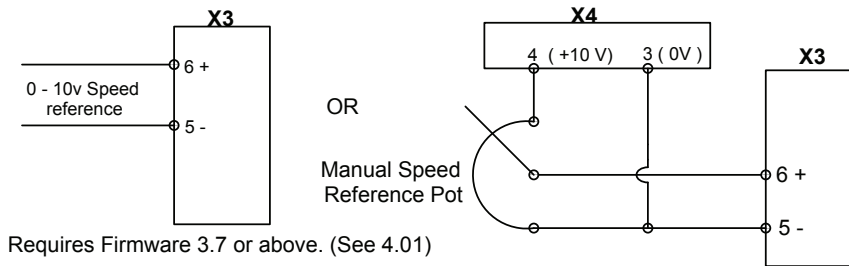
This macro simulates as closely as possible the features and control functions of the Reliance FlexPak 3000 Digital DC drive allowing the DCS800-EP drive to serve as a suitable replacement for many applications. The 3Wire Jog Macro features 3-wire START/STOP control. Digital Input 5, (DI5), switches between MANUAL speed reference Analog Input 1, (AI1), and AUTO speed reference Analog Input 2, (AI2). Jog input at Digital Input 3, (DI3), initiates motion. Digital Input 4, (DI4), can change motor shaft direction when a regenerative, (4Q), drive is used.

Figure 9-12 3Wire Jog Macro Diagram



- X6:1 Open Initiates Coast Stop
- X6:2 Closed Indicates Fan Acknowledge
- X6:3 Closed Initiates "Jog1 Speed"
- X6:4 Open = Forward / Closed = Reverse
- X6:5 Open = Manual Speed Ref. / Closed = Auto Speed Ref.
- X6:6 Closed Pulse Resets a Fault
- X6:7 Pulse closed initiates "Start"
- X6:8 Pulse open Initiates "Stop"

The Manual speed reference is 0-10 Volts via Analog Input 1.
Auto Speed Reference is AI2.



Chapter 10

Troubleshooting

10.1 Fault Messages

Table 10-1 Fault Description, Related Signals & Parameters

Fault Description	Related Signals & Parameters		
The drive will display a fault if this condition is true	Parameter/Signal	Description	Default
F501 - Auxiliary Undervoltage The auxiliary voltage is too low at terminal X99 on PIN-4 or POW-4 Board.		Limit: upper voltage 185V for 230V input 96V for 115V input	Fixed
F502 - Armature Overcurrent The armature current exceeds the overcurrent limit.	ArmOverCurLev (30.09)	Limit: upper current	250 pct
	ConvOvrCur (4.16)	Limit: overcurrent limit (Amps) as calculated from 30.09	
	MotCur (1.06)	Actual: armature current	
F503 - Armature Overvoltage The armature voltage exceeds the overvoltage limit.	ArmOvrVoltLev (30.08)	Limit: upper voltage	120 pct
	ArmVoltActRel (1.13)	Actual: armature voltage	
F504 - Converter Overtemperature The drive internal temperature exceeds the temperature limit.			
	MaxBridgeTemp (4.17)	Limit: upper temperature	Set by type code
	BridgeTemp (1.24)	Actual: bridge temperature	
F505 - Residual current detection The drive has detected a ground fault.	S MaxBrdgTemp(97.04)	Setting: overrides the maximum bridge temperature set by TypeCode (97.04)	0
	ResCurDetectLim (30.06)	Limit: upper current	4 Amps
	ResCurDetectSel (30.05)	Setting: selects source of measured signal; NotUsed disables this fault.	NotUsed
F506 - Motor 1 Overtemperature The motor 1 temperature exceeds the temperature limit.	ResCurDetectDel (30.07)	Setting: selects the time delay	10 ms
	M1FaultLimTemp (31.07)	Limit: upper temperature	0
	Mot1TempMeas (1.22)	Actual: temperature for motor 1	
F507 - Motor 1 Overload Motor overloaded based on calculated thermal curve.	M1TempSel (31.05)	Setting: selects source of measured signal	NotUsed
	M1KlixonSel (31.08)	Setting: selects digital input when a thermoswitch is used	NotUsed
	M1FaultLimLoad (31.04)	Limit: upper	106 pct
F508 - Input/Output Board Not Found or Faulty The drive cannot communicate with a previously known option board such as COM-8x, RAIO, RDIO, IOB-2, IOB-3, RTAC, or DSL-4.	Mot1TempCalc (1.20)	Actual: calculated temp	
	Diagnosis (9.11)	Actual: signal that provides additional details about the actual fault	
	ExtIO Status (4.20)	Actual: signal showing which I/O board is missing or faulty	
	DCSLinkNodeID (94.01)	Setting: selects the node ID for DCSLink communications	0
F509 - Motor 2 Overtemperature The motor 2 temperature exceeds the temperature limit.	Group 98	Setting: parameters that enable I/O boards	
	M2FaultLimTemp (49.37)	Limit: upper temperature	0 °C
	Mot2TempMeas (1.23)	Actual: motor 2 temperature	
	M2TempSel (49.35)	Setting: selects source of measured signal	NotUsed
	M2KlixonSel (49.38)	Setting: selects digital input when a thermoswitch is used	NotUsed
Fault Description	Related Signals & Parameters		
The drive will display a fault if this condition is true	Parameter/Signal	Description	Default

Table 10-1 Fault Description, Related Signals & Parameters (Continued)

F510 - Motor 2 Overload The motor 2 current exceeds the overload limit.	M2FaultLimLoad (49.34)	Limit: upper	106 pct
	M2TempCalc (1.21)	Actual: calculated temp	
F512 - Mains Low Voltage The mains voltage is below the fault limit or the mains voltage is below the alarm limit for an excessive amount of time.	UNetMin1 (30.22)	Limit: lower voltage - alarm	80 pct
	UNetMin2 (30.23)	Limit: lower voltage - fault	60 pct
	MainsVoltAct (1.12)	Actual: mains voltage	
	NomMainsVolt (99.10)	Setting: nominal mains voltage	
	PwrLossTrip (30.21)	Setting: selects the desired action when this fault occurs: immediate or delayed	Immediate
	PowrDownTime (30.24)	Setting: selects the delay before a fault is set after the mains voltage falls below UNetMin1 Alarm limit	500 ms
F513 - Mains Overvoltage The mains voltage is above the fault limit for more than 10 seconds.		Limit: upper voltage - 130% of NomMainsVolt (99.10)	Fixed
	MainsVoltAct (1.12)	Actual: mains voltage	
	NomMainsVolt (99.10)	Setting: nominal mains voltage	
F514 - Mains Not in Sync The synchronization with the mains frequency has been lost.		Limit: upper frequency ($\pm 5\%$ of nominal) and change in freq. ($df/dt = 17\%/sec$)	Fixed
	PLLin (3.20)	Actual: This should be, for 60 Hz, 16667; for 50 Hz, 20000	
F515 - Motor 1 Field Supply (Exciter) Overcurrent The field current is above the fault limit.	M1FidOvrCurLev (30.13)	Limit: upper current	125 pct
	Mot1FidCurRel (1.29)	Actual: field current for motor 1	
F516 - Motor 1 Field Supply (Exciter) Communication Loss DSL-Link communication between the drive and the field supply (Exciter) has stopped for a time longer than the fault limit.	FexTimeOut (94.07)	Limit: time	100 ms
	DCSLinkNodeID (94.01)	Setting: node ID of the drive	0
	M1FexNode (94.08)	Setting: node ID of the Field Supply for Motor 1	21
	M1UsedFexType (99.12)	Setting: selects motor 1 field power supply type	OnBoard
F517 - Armature Current Ripple Current ripple on the DC output exceeds the limit. This is often an indication that one or more thyristors is not working or a fuse is blown.	CurRippleLim (30.19)	Limit: upper current ripple	150 pct
	CurRippleFilt (1.10)	Actual: current ripple	
	CurRippleSel (30.18)	Setting: selects if a fault or alarm is generated when the limit is exceeded.	Fault
F518 - Motor 2 Field Supply (Exciter) Overcurrent The field current is above the fault limit.	M2FidOvrCurLev (49.09)	Limit: upper current	125 pct
	Mot2FidCurRel (1.31)	Actual: field current for motor 2	
F519 - Motor 2 Field Supply (Exciter) Communication Loss DSL-Link communication between the drive and the field supply (Exciter) has stopped for a time longer than the fault limit.	FexTimeOut (94.07)	Limit: time	100 ms
	DCSLinkNodeID (94.01)	Setting: node ID of the drive	0
	M2FexNode (94.09)	Setting: node ID of the Field Supply for Motor 2	30
	M2UsedFexType (49.07)	Setting: selects motor 2 field power supply type	NotUsed
Fault Description	Related Signals & Parameters		
The drive will display a fault if this condition is true	Parameter/Signal	Description	Default
F521 - Field Exciter Missing (Selected Motor)			

Table 10-1 Fault Description, Related Signals & Parameters (Continued)

One or more field supply (exciter) faults is present for the motor currently selected (M1 or M2), including: (for M1) F515, F516, F529, F537 and/or F541; (for M2) F518, F519, F530, F538 and/or F542.	M1UsedFexType (99.12) M2UsedFexType (49.07)	Setting: selects field power supply type for respective motor	OnBoard / NotUsed
	Mot1FexStatus (6.12) Mot2FexStatus (6.13)	Actual: signal showing the status of the field supply (exciter) for the respective motor	
F522 - Speed Feedback (Selected Motor) Speed feedback from a tachometer or encoder is continuously compared to EMF feedback while running. A fault indicates that the EMF was above a limit (30.15) while the motor speed was below a limit (30.14).	EMF FbMonLev (30.15)	Limit: upper EMF voltage	50 Volts
	SpeedFbMonLev (30.14)	Limit: lower tach/encoder speed	15 rpm
	EMF VoltActRel (1.17)	Actual: EMF voltage in percent of M1NomVolt (99.02)	
	SpeedActEMF (1.02)	Actual: EMF speed	
	SpeedActEnc (1.03)	Actual: encoder speed	
	SpeedActTach (1.05)	Actual: tachometer speed	
	M1SpeedFbSel (50.03) M2SpeedFbSel (49.24)	Setting: selects speed feedback type for respective motor	EMF
	SpeedFbFitMode (30.36)	Setting: selects the stopping mode for this fault and others with trip level 3: coast or dynamic brake	CoastStop
SpeedFbFitSel (30.17)	Setting: selects the desired action when this condition occurs such as fault or alarm; stop or switch to EMF feedback.	Fault	
F523 - External Fan Acknowledge Missing The Fan Acknowledge digital input was lost or was not set within 10 seconds.			
	MotFanAck (10.06)	Setting: selects the digital input for Fan Acknowledgement	DI2
F524 - Main Contactor Acknowledge Missing The Main Contactor Acknowledge digital input was lost or was not set within 10 seconds.			
	MainContAck (10.21)	Setting: selects the digital input for Main Contactor Acknowledgement	DI3
F525 - Type Code Mismatch On D1, D2, D3, or D4 modules, the current and voltage range of the type code setting is limited to 1000 Adc and 600 Vac. A fault indicates the existing setting is out of range.			
	TypeCode (97.01)	Setting: selects the type code of the drive as shown on the nameplate	Preset by factory
	ServiceMode (99.06)	Setting: allows the user to change TypeCode (97.01), etc.	Normal Mode
	S ConvScaleCur (97.02)	Setting: adjusts the scaling of the measured DC current	0 Amps
	S ConvScaleVolt (97.03)	Setting: adjusts the scaling of the measured AC voltage	0 Volts
F526 - External Fault Via Digital Input The External Fault digital input was set.			
	ExtFaultSel (30.31)	Setting: selects the digital input for External Fault	NotUsed
	ExtFaultOnSel (30.33)	Setting: selects when this fault is active: always or only when running	Fault

Table 10-1 Fault Description, Related Signals & Parameters (Continued)

Fault Description	Related Signals & Parameters		
	Parameter/Signal	Description	Default
F527 - Converter Fan Acknowledge Missing The Converter Fan Acknowledge digital input was lost or was not set within 10 seconds.	ConvFanAck (10.20)	Setting: selects the digital input for Converter Fan Acknowledge	DI1
	FanDly (21.14)	Setting: selects the length of time the fan should be running after the motor turns off during which the fan acknowledge will still be monitored	0 sec
F528 - Fieldbus Communications Loss Fieldbus Communications have been interrupted for a period longer than a time limit after the first data set from the overriding control has been received.	FBTimeOut (30.35)	Limit: time	100 ms
	CommModule (98.02)	Setting: selects the type of communication module is in use	NotUsed
	CommandSel (10.01)	Setting: selects where the motor-on commands (on, run, and stop) will come from: digital inputs, fieldbus, etc.	Local I/O
	ComLossCtrl (30.28)	Setting: selects the desired action when this condition occurs: fault and ramp stop, coast stop, etc. or alarm and continue	Fault - Ramp Stop
	Group 51	Setting: parameters that set up fieldbus	
F529 - Motor 1 Field Supply (Exciter) not OK A fault was detected by the motor 1 field supply (exciter) during its self diagnosis or there was a power failure in field supply 1.		Check the display or the fault LED on the Field Supply Unit	
F530 - Motor 2 Field Supply (Exciter) not OK A fault was detected by the motor 2 field supply (exciter) during its self diagnosis or there was a power failure in field supply 2.		Check the display or the fault LED on the Field Supply Unit	
F531 - Motor Stalled (Selected Motor) The measured speed is less than the stall speed and the torque is greater than the stall torque for a time greater than the stall time.	StallSpeed (30.02)	Limit: lower speed	5 rpm
	StallTorque (30.03)	Limit: upper torque	75 pct
	StallTime (30.01)	Limit: time Note: 0 disables fault	0 sec
	MotSpeed (1.04)	Actual: motor speed	
	MotTorq (1.08)	Actual: motor torque	
F532 - Motor Overspeed (Selected Motor) The measured speed of the selected motor exceeded the respective overspeed limit.	M1OvrSpeed (30.16)	Limit: upper speed for Motor 1	1800 rpm
	M2OvrSpeed (49.21)	Limit: upper speed for Motor 2	1800 rpm
	MotSpeed (1.04)	Actual: motor speed	
F533 - 12 Pulse Reversal Timeout On 12-pulse systems, armature current direction did not change for a period longer than a time limit after zero current has been detected.	12P RevTimeOut (47.05)	Limit: time	100 ms
	MotCur (1.06)	Actual: armature current	
F534 - 12 Pulse Current Difference For systems configured for 12-pulse parallel operation, the current difference has exceed the limit for a period longer than the limit.	DiffCurLim (47.02)	Limit: upper current	10 pct
	DiffCurDly (47.03)	Limit: time	500 ms

Table 10-1 Fault Description, Related Signals & Parameters (Continued)

Fault Description	Related Signals & Parameters		
	Parameter/Signal	Description	Default
F535 - 12 Pulse Communication On 12-pulse systems, DCS-Link communications between the master and the follower drive have been interrupted for a period longer than the limit.	12P TimeOut (94.03)	Limit: time	100 ms
	DCSLinkNodeID (94.01)	Setting: selects the node ID for DCSLink communications	0
	12P SlaNode (94.04)	Setting: selects the node ID of the follower in the master drive	31
F536 - 12 Pulse Follower Failure A fault has been generated in the 12-pulse follower.			
F537 - Motor 1 Field Supply (Exciter) ready lost Motor 1 field supply (exciter) has lost the ready-for-operation message while running. The AC supply voltage may be missing or no longer in sync.		Check the display or the fault LED on the Field Supply Unit	
F538 - Motor 2 Field Supply (Exciter) ready lost Motor 2 field supply (exciter) has lost the ready-for-operation message while running. The AC voltage may be missing or no longer in sync.		Check the display or the fault LED on the Field Supply Unit	
F539 - Fast Current Rise The current through the drive has risen too quickly, exceeding the limit. This may be caused by a short circuit or incorrect tuning.	ArmCurRiseMax (30.10)	Limit: upper current	325 %/ms
	ConvCurActRel (1.15)	Actual: converter DC current	
F540 - SDCS-COM-8 Faulty The SDCS-COM-8 board is no longer operable.			
F541 - Motor 1 Field Exciter Low Current The motor 1 field current is below the current limit for a period longer than a time limit.	M1FldMinTrip (30.12)	Limit: lower current	50 pct
	FldMinTripDly (45.18)	Limit: time	2000 ms
	Mot1FldCur (1.30)	Actual: field current for motor 1	
F542 - Motor 2 Field Exciter Low Current The motor 2 field current is below the current limit for a period longer than a time limit.	M2FldMinTrip (49.08)	Limit: lower current	50 pct
	FldMinTripDly (45.18)	Limit: time	2000 ms
	Mot2FldCur (1.32)	Actual: field current for motor 2	
F543 - SDCS-COM-8 Communication Loss Overriding control and/or master-follower communications through channel 0 or 2 of the COM-8 have been interrupted for a period longer than the limit.	Ch0 TimeOut (70.04) Ch2 TimeOut (70.14)	Limit: time	100 ms
	Ch0ComLoss Ctrl (70.05) Ch2ComLoss Ctrl (70.15)	Setting: selects if an alarm or fault is to be set as well as the fault stopping method if the respective channel stops working while in motion: ramp, coast, etc.	Ramp Stop
	Ch0DriveBus (71.01)	Setting: selects the communication mode for Channel 0, NO = DDCS; YES = DriveBus	Yes

Table 10-1 Fault Description, Related Signals & Parameters (Continued)

Fault Description	Related Signals & Parameters		
The drive will display a fault if this condition is true	Parameter/Signal	Description	Default
F544 - Peer to Peer, Master-Follower Communication Loss DCS-Link for fieldbus communications have been interrupted for a period longer than the limit.	FB TimeOut (30.35)	Limit: time - R-type fieldbus	100 ms
	MailboxCycle1 (94.13) MailboxCycle2 (94.19) MailboxCycle3 (94.25) MailboxCycle4 (94.31)	Limit: time - DCSLink	100 ms
	Mailbox1 (94.12) Mailbox2 (94.18) Mailbox3 (94.24) Mailbox4 (94.30)	Setting: selects the node ID for the respective mailbox (DCSLink)	0
	ComLossCtrl (30.28)	Setting: selects the desired action when this condition occurs: fault and ramp stop, coast stop, etc. or alarm and continue	Fault - Ramp Stop
F545 - Application Load Failure The application program did not load correctly.	Diagnosis (9.11)	Actual: signal that provides additional details regarding this fault	
F546 - Local Command Loss Communications have been interrupted with the control panel, Drive Window, or Drive Window light while in Local Control Mode.	LocalLossCtrl (30.27)	Setting: selects the desired action when this condition occurs: fault and ramp stop, coast stop, etc. or alarm and continue	Fault - Ramp Stop
F547 - Hardware Failure Hardware failure has been detected.	Diagnosis (9.11)	Actual: signal that provides additional details regarding this fault	
F548 - Firmware Failure Firmware failure has been detected or firmware did not load correctly.	Diagnosis (9.11)	Actual: signal that provides additional details regarding this fault	
F550 - Parameter or Memory Card Read Error Reading the actual parameter set or a user parameter set from either flash or the Memory Card failed. Check that User1 and/or User2 have been saved properly using AppIMacro (99.08). Also check the SDCS-MEM-8 memory card. May also require replacing the SDCS-CON-4 board.			
F551 - Analog Input Out of Range One of the analog input values is below the minimum limit.		Limit: lower voltage - 4mA or 2 Volts	Fixed
	AI1 Val (5.03) AI2 Val (5.04) AI3 Val (5.05) AI4 Val (5.06) AI5 Val (5.07) AI6 Val (5.08)	Actual: voltage at the respective analog input	
	AI Mon4mA (30.29)	Setting: selects the desired action when this condition occurs: fault and ramp stop, coast stop, etc. or alarm and continue	Fault
ConvModeAlx	Setting: selects the type and range for analog inputs 1- 6. This alarm is active if set to 2V-10V Uni. See: 13.03, 13.07, 13.11, 13.15, 13.23, 13.27		

Table 10-1 Fault Description, Related Signals & Parameters (Continued)

Fault Description	Related Signals & Parameters		
	Parameter/Signal	Description	Default
The drive will display a fault if this condition is true			
F552 - Mechanical Brake (Selected Motor) The acknowledge signal for brake open or brake engaged is missing for a period longer than the open or engage limit.	M1BrakeFitTime (42.05) M2BrakeFitTime (49.39)	Limit: time - open	1 sec
	M1BrakeLongTime (42.12) M2BrakeLongTime (49.42)	Limit: time - engage	4 sec
	M1BrakeAckSel (42.02) M2BrakeAckSel (49.29)	Setting: selects the digital input for the brake acknowledge signal	NotUsed
	BrakeFaultFunc (42.06)	Selects the desired action when this condition occurs: fault, alarm, or crane.	Fault
F553 - Tachometer or Encoder Polarity (Selected Motor) Speed feedback polarity from a tachometer or encoder is continuously compared to EMF feedback polarity while running. A fault indicates that the two ran in opposite directions while the motor feedback speed and EMF speed were above absolute limits. If this occurred during start up, try reversing polarity of the motor or the tach/encoder. If this occurred while in production, the tach/encoder may be faulty.	EMF FbMonLev (30.15)	Limit: EMF voltage	50 Volts
	SpeedFbMonLev (30.14)	Limit: tach/encoder speed	15 rpm
	SpeedActEMF (1.02)	Actual: EMF speed	
	SpeedActEnc (1.03)	Actual: encoder speed	
	SpeedActTach (1.05)	Actual: tachometer speed	
F554 - Tachometer Range (Selected Motor) The signal from the tachometer analog input has exceeded a limit. If this occurred during start up, connect the tach to the next higher voltage terminal on drive connector X3 terminals 1, 2 or 3.		Limit: upper voltage - 10 Volts	Fixed
F556 - Torque Proving (Selected Motor) The TorqProvOK signal has not been set within a time limit after the RUN command (7.01 bit3) has been set.	M1TorqProvTime (42.10)	Limit: time Note: 0 disables this fault	0 sec
	TorqProvOK (7.03 bit 11)	A binary signal, set by adaptive program, application program or external controller, which indicates that the torque proving check has been successfully completed	FALSE
F557 - Reversal Time Armature current direction did not change for a period longer than a time limit after zero current was detected. For motors with high inductance (e.g., large motors) or if motor is high voltage compared to the mains voltage, try decreasing RevDly (43.14), then increasing the limit.	ZeroCurTimeOut (97.19)	Limit: time	20 ms
	RevDly (43.14)	Setting: selects the delay time for bridge reversal after zero current has been detected	5 ms

10.2 Alarm Messages

Table 10-2 Alarm Description, Related Signals & Parameters

Alarm Description	Related Signals & Parameters		
	Parameter/Signal	Description	Default
The drive will display an alarm if this condition is true			
A101 - Coast Stop (Off2) via Digital Input The Coast Stop (Off2) digital input is cleared.	Off2 (10.08)	Setting: selects the digital input for Coast Stop (Off2)	DI4
A102 - Emergency Stop (Off3) via Digital Input The Emergency Stop (Off3) digital input is cleared.	Off3 (10.09)	Setting: selects the digital input for E-Stop (Off3)	DI5
A103 - DC Breaker Acknowledge Missing (Selected Motor) The DC Breaker Acknowledge digital input is cleared.	DC BreakAck (10.23)	Setting: selects the digital input for DC Breaker Acknowledge	DI11
A104 - Converter Overtemperature The drive internal temperature is within 5°C of the temperature limit.	MaxBridgeTemp (4.17)	Limit: upper temperature	Set by type code
	BridgeTemp (1.24)	Actual: bridge temperature	
	S MaxBrdgTemp (97.04)	Setting: overrides the maximum bridge temperature set by TypeCode (97.04)	0
A105 - Dynamic Braking in progress For non-US dynamic braking, the DynBrakeAck input is set while in the ON state.	DynBrakeAck (10.22)	Setting: selects the digital input for Dynamic Braking Acknowledge	DI11
	FlyStart (21.10)	Setting: configures flying start which may allow restarting the drive while dynamic braking is in progress	Flying Start
A106 - Motor 1 Overtemperature The motor 1 temperature exceeds the temperature limit.	M1AlarmLimTemp (31.06)	Limit: upper temperature	0
	Mot1TempMeas (1.22)	Actual: temperature for motor 1	
	M1TempSel (31.05)	Setting: selects source of measured signal	NotUsed
	M1KlixonSel (31.08)	Setting: selects digital input when a thermoswitch is used	NotUsed
A107 - Motor 1 Overload The motor 1 current exceeds the overload limit.	M1AlarmLimLoad (31.03)	Limit: upper	102 pct
	M1TempCalc (1.20)	Actual: calculated temp	
A109 - Motor 2 Overtemperature The motor 2 temperature exceeds the temperature limit.	M2AlarmLimTemp (49.36)	Limit: upper temperature	0
	Mot2TempMeas (1.23)	Actual: temperature for motor 2	
	M2TempSel (49.35)	Setting: selects source of measured signal	NotUsed
	M2KlixonSel (49.38)	Setting: selects digital input when a thermoswitch is used	NotUsed
A110 - Motor 2 Overload The motor 2 current exceeds the overload limit.	M2AlarmLimLoad (49.33)	Limit: upper	102 pct
	M2TempCalc (1.21)	Actual: calculated temp	
A111 - Mains Low Voltage The mains voltage is below the alarm limit.	UNetMin1(30.22)	Limit: upper voltage - alarm	80 pct
	MainsVoltAct (1.12)	Actual: mains voltage	
	NomMainsVolt (99.10)	Setting: nominal mains voltage	

Table 10-2 Alarm Description, Related Signals & Parameters Continued

Alarm Description	Related Signals & Parameters		
The drive will display an alarm if this condition is true	Parameter/Signal	Description	Default
A112 - Peer to Peer, Master-Follower Communication Loss DCS-Link or fieldbus communications have been interrupted for a period longer than the limit.	FB TimeOut (30.35)	Limit: time - R-type fieldbus	100 ms
	MailboxCycle1 (94.13)	Limit: time - DCSLink	100 ms
	MailboxCycle2 (94.19)	Limit: time - DCSLink	100 ms
	MailboxCycle3 (94.25)	Limit: time - DCSLink	100 ms
	MailboxCycle4 (94.31)	Limit: time - DCSLink	100 ms
	Mailbox1 (94.12)	Setting: selects the node ID for mailbox 1	0
	Mailbox2 (94.18)	Setting: selects the node ID for mailbox 2	0
	Mailbox3 (94.24)	Setting: selects the node ID for mailbox 3	0
	Mailbox4 (94.30)	Setting: selects the node ID for mailbox 4	0
ComLossCtrl (30.28)	Setting: selects the desired action when this condition occurs: fault and stop or alarm and continue at last speed or fixedspeed 1	Fault -Ramp Stop	
A113 - SDCS-COM-8 Communication Loss Overriding control and/or master-follower communications through channel 0 or 2 of the COM-8 have been interrupted for a period longer than the limit.	Ch0 TimeOut (70.04)	Limit: time - channel 0	100 ms
	Ch2 TimeOut (70.14)	Limit: time - channel 2	100 ms
	Ch0ComLoss Ctrl (70.05)	Setting: selects the desired action when this condition occurs: fault and stop or alarm and continue at last speed or fixedspeed 1	Fault -Ramp Stop
	Ch2ComLoss Ctrl (70.15)	Setting: selects the desired action when this condition occurs: fault and stop or alarm and continue at last speed or fixedspeed 1	Fault -Ramp Stop
	Ch0DriveBus (71.01)	Setting: selects the communication mode for Channel 0, NO = DDCS; YES = DriveBus	Yes
A114 - Armature Current Deviation Current reference differs from current actual by more than a limit for longer than a time limit. See alarm description in DCS800 Firmware Manual for what to check in the event of a fault.		Limit: current - 20% of M1NomCur (99.03) or M2NomCur (49.02)	Fixed
		Time: limit - 5 sec	Fixed
	CurRefUsed (3.12)	Actual: current reference	
	MotCur (1.06)	Actual: armature current	
A115 - Tachometer Range (Selected Motor) If this alarm is present for longer than 10 seconds, the signal from the tachometer analog input exceeded a limit. If present for 10 seconds and then it clears, it is an indication that M1OvrSpeed (30.16) or M2OvrSpeed (49.21) has changed and a new tach fine tuning is required.		Limit: upper voltage - 10 Volts	Fixed
	AlTacho Val (5.01)	Actual: tachometer voltage	
	ServiceMode (99.06)	Setting: initiates tach fine tuning (TachFineTune)	Normal Mode

Table 10-2 Alarm Description, Related Signals & Parameters Continued

Alarm Description	Related Signals & Parameters		
The drive will display an alarm if this condition is true	Parameter/Signal	Description	Default
A116 - Mechanical Brake (Selected Motor) Active only when BrakeFaultFunc (42.06) = CRANE, the acknowledge signal for brake engaged is missing for a period longer than the engage limit.	M1BrakeLongTime (42.12) M2BrakeLongTime (49.42)	Limit: time - engage	4 sec
	M1BrakeAckSel (42.02) M2BrakeAckSel (49.29)	Setting: selects the digital input for the brake acknowledge signal	NotUsed
	BrakeFaultFunc (42.06)	Setting: selects the desired action when this condition occurs: fault, alarm, or crane	Fault
A117 - Armature Current Ripple DC current ripple exceeds the limit. If this occurs during start up, then current controller gain may be set too high. Otherwise, this is often an indication that one or more thyristors is not working or a fuse is blown.	CurRippleLim (30.19)	Limit: upper current ripple	150 pct
	CurRippleFilt (1.10)	Actual: current ripple	
	CurRippleSel (30.18)	Setting: selects if a fault or alarm is generated when the limit is exceeded	Fault
A118 - Found New Application on Memory Card An application has been found on SDCS-MEM8 used with ControlBuilder.	ParApplSave (16.06)	Setting: set to EableAppl to load and enable ControlBuilder application	Done
A119 - Application Mismatch between Drive and Memory Card The applications previously loaded to the drive and the one on the SDCS-MEM8 do not match.	ParApplSave (16.06)	Setting: set to EableAppl to load and enable new ControlBuilder application	Done
A120 - Overvoltage Protection Active The overvoltage protection unit, DCF506-xxxx-51 is active, so the controller is blocking the converter output.	OvrVoltProt (10.13)	Setting: selects the digital input for the signal from the overvoltage protection unit	NotUsed
A121 - Autotuning Failed Autotuning has failed.	Diagnosis (9.11)	Actual: signal that provides additional details regarding this alarm	
A122 - Mechanical Brake (Selected Motor) Active only when BrakeFaultFunc (42.06) ≠ FAULT, the acknowledge signal for brake open or brake engaged is missing for a period longer than the open or engage limit. Or torque actual does not reach the torque limit, used, for example, for cranes with a hanging load.	M1BrakeFltTime (42.05) M2BrakeFltTime (49.39)	Limit: time - open	1 sec
	M1BrakeLongTime (42.12) M2BrakeLongTime (49.42)	Limit: time - engage	4 sec
	StrTorqRef (42.08)	Limit: lower torque	
	M1BrakeAckSel (42.02) M2BrakeAckSel (49.29)	Setting: selects the digital input for the brake acknowledge signal	NotUsed
	BrakeFaultFunc (42.06)	Setting: selects the desired action when this condition occurs: fault, alarm, or crane	Fault
A124 - Speed Scaling Out of Range See: Motor 1: 50.01, 20.01, 20.02, 99.04 Motor 2: 49.22, 49.03, 49.19, 49.20	Diagnosis (9.11)	Actual: signal that provides additional details regarding this alarm	

Table 10-2 Alarm Description, Related Signals & Parameters Continued

Alarm Description	Related Signals & Parameters		
The drive will display an alarm if this condition is true	Parameter/Signal	Description	Default
A125 - Speed Feedback (Selected Motor) Speed feedback from a tachometer or encoder is continuously compared to EMF feedback while running. A fault indicates that the EMF voltage was above a voltage limit (30.15) while the motor speed was below a speed limit (30.14). This usually indicates there is a problem with the tachometer or encoder.	EMF FbMonLev (30.15)	Limit: upper EMF voltage	50 Volts
	SpeedFbMonLev (30.14)	Limit: lower tach/encoder speed	15 rpm
	EMF VoltActRel (1.17)	Actual: EMF voltage in percent of M1NomVolt (99.02)	
	SpeedActEMF (1.02)	Actual: EMF speed	
	SpeedActEnc (1.03)	Actual: encoder speed	
	SpeedActTach (1.05)	Actual: tachometer speed	
	M1SpeedFbSel (50.03) M2SpeedFbSel (49.24)	Setting: selects speed feedback type for respective motor	EMF
	SpeedFbFitSel (30.17)	Setting: selects the desired action when this condition occurs such as fault or alarm; stop or switch to EMF feedback.	Fault
A126 - External Alarm via Digital Input The External Alarm digital input is set.	ExtAlarmSel (30.32)	Setting: selects the digital input for External Alarm	NotUsed
	ExtAlarmOnSel (30.34)	Setting: selects when this alarm is active: always or only when running	Alarm
A127 - Analog Input Out of Range One of the analog input values is below the minimum limit.		Limit: lower voltage - 4mA or 2 Volts	Fixed
	AI1 Val (5.03) AI2 Val (5.04) AI3 Val (5.05) AI4 Val (5.06) AI5 Val (5.07) AI6 Val (5.08)	Actual: voltage at the respective analog input	
	AI Mon4mA (30.29)	Setting: selects the desired action when this condition occurs: fault and stop or alarm and continue at last speed or fixedspeed 1	Fault
	ConvModeAlx	Setting: selects the type and range for analog inputs 1- 6. This alarm is active if set to 2V-10V Uni. See: 13.03, 13.07, 13.11, 13.15, 13.23, 13.27	
A128 - Fieldbus Communications Loss Fieldbus Communications have been interrupted for a period longer than a time limit after the first data set from the overriding control has been received.	FBTimeOut (30.35)	Limit: time	100 ms
	CommModule (98.02)	Identifies what type of communication module is in use	NotUsed
	CommandSel (10.01)	Setting: selects where the motor-on commands (on, run, and stop) will come from: digital inputs, fieldbus, etc.	Local I/O
	ComLossCtrl (30.28)	Setting: selects the desired action when this condition occurs: fault and stop or alarm and continue at last speed or fixedspeed 1	Fault - Ramp Stop
A129 - Parameters Restored The parameters found in flash were invalid at power-up (checksum fault). All parameters were restored from the parameter backup.			

Table 10-2 Alarm Description, Related Signals & Parameters Continued

Alarm Description	Related Signals & Parameters		
The drive will display an alarm if this condition is true	Parameter/Signal	Description	Default
<p>A130 - Local Command Loss</p> <p>Communications have been interrupted with the control panel, Drive Window, or Drive Window Light while in Local Control Mode.</p>	LocalLossCtrl (30.27)	Setting: selects the desired action when this condition occurs: fault and stop or alarm and continue at last speed or fixedspeed 1	Fault - Ramp Stop
<p>A131 - Parameter Added</p> <p>A new firmware program with a different amount of parameters was downloaded. The new parameters are set to their default value.</p>	Diagnosis (9.11)	Actual: signal that provides additional details regarding this alarm	
<p>A132 - Parameter Setting Conflict</p> <p>The settings of some parameters are in conflict with each other.</p>	Diagnosis (9.11)	Actual: signal that provides additional details regarding this alarm	
<p>A133 - Retained Data Invalid</p> <p>The retained data was invalid at power-up; the backup data was used. Backup data reflects the status during the previous power-up. Retained data includes: fault logger data, Data1 (19.01) thru Data4 (19.04), I/O options (see group 98), parameters defined by means of DCS800 ControlBuilder when the RETAIN box is checked.</p>			
<p>A134 - Parameter Compatibility</p> <p>When downloading parameter sets or during power-up the firmware attempts to write the parameters. If setting of a parameter is not possible or not compatible, the parameter is set to default.</p>	Diagnosis (9.11)	Actual: signal that provides additional details regarding this alarm	
<p>A135 - Parameter Upload or download Failed</p> <p>The checksum verification failed following a parameter upload or download. Please try again.</p>			
<p>A136 - Adaptive Program Task Time Not Set</p> <p>The task time for Adaptive Programming is not set when the user attempted to start it.</p>	TimeLevSel (83.04)	Setting: selects the time period (1/scan-rate) for the Adaptive Program	Off
<p>A137 - Speed Not Zero</p> <p>Drive was restarted before the motor decelerated below the zero speed limit.</p>	M1ZeroSpeedLim (20.03) M2ZeroSpeedLim (49.04) MotSpeed (1.04)	Limit: lower speed Actual: motor speed	
<p>A138 - Off2 (Coast Stop) Fieldbus</p> <p>Bit 1 from the main control word is not set, causing a start inhibit condition.</p>	MainCtrlWord (7.01)	Setting bit 1 will clear this alarm	
<p>A139 - Off3 (Emergency Stop) Fieldbus</p> <p>Bit 2 from the main control word is not set, causing an estop condition.</p>	MainCtrlWord (7.01)	Setting bit 2 will clear this alarm	
<p>A140 - Illegal Fieldbus Settings</p> <p>The fieldbus parameters in group 51 (fieldbus) are not set according to the fieldbus adapter or the device has not been selected.</p>	Group 51	Fieldbus	
<p>A141 - SDCS-COM8 Firmware Version Conflict</p> <p>Invalid combination of drive (SDCS-CON-4) firmware and SDCS-COM-8 firmware. Drive firmware 3.7 is compatible with SDCS-COM-8 firmware 1.80 or higher. See firmware release notes for complete compatibility list. Typically requires upgrading to a newer SDCS-COM-8 board.</p>	FirmwareVer (4.01) Com8SwVersion (4.11)	Actual: drive firmware version Actual: SDCS-COM-8 firmware version	

Table 10-2 Alarm Description, Related Signals & Parameters Continued

Alarm Description	Related Signals & Parameters		
The drive will display an alarm if this condition is true	Parameter/Signal	Description	Default
<p>A142 - Memory Card Missing</p> <p>A ControlBuilder application has been loaded in the drive but the memory card belonging to that application has not been found.</p>	ParApplSave (16.06)	Setting: if memory card was intentionally removed, setting this to DisableAppl will disable this alarm	
<p>A143 - Memory Card Failure</p> <p>The data found in the memory card was invalid (checksum fault).</p>	ParApplSave (16.06)	Setting: to run without the memory card and disable the ControlBuilder application, set this to DisableAppl to disable this alarm	

Chapter 11

Signals and Parameters

The DCS800-EP utilizes various parameters to determine its operation. Many of these signals/parameters will not need adjusting for most applications, but are provided to allow for a user to customize the operation of the control if desired.

The following tables provide a description of the most frequently used signals/parameters along with their scaling and unit / factory default value and adjustment range.

NOTE: Parameters with (E) are in the extended set and are only defined in the DCS800 Firmware Manual.

SIGNALS

Group	Description
1	Physical actual values
2	Speed controller signals
3	Reference actual values
4	Information
5	Analog I/O
6	Drive logic signals
7	Control words
8	Status / limit words
9	Fault / alarm words

PARAMETERS

Group	Description
10	Start / stop select
11	Speed reference inputs
12	Constant speed
13	Analog inputs
14	Digital outputs
15	Analog outputs
16	System control inputs
19	Data storage
20	Limits
21	Start / stop
22	Speed ramp
23	Speed reference
24	Speed control
25	Torque reference
26	Torque reference handling
30	Fault functions
31	Motor 1 temperature
34	DCS800 Control Panel display
40	PID control
42	Brake control
43	Current control
44	Field excitation
45	Field converter settings
47	12-pulse operation
49	Shared motion
50	Speed measurement
51	Fieldbus
52	Modbus
60...69	Application program parameters
70	DACS control
71	Drivebus
83	Adaptive Program control
84	Adaptive Program
85	User constants
86	Adaptive Program outputs
88	Internal
90	Receiving data sets addresses 1
91	Receiving data sets addresses 2
92	Transmit data sets addresses 1
93	Transmit data sets addresses 2
94	DCSLink control
97	Measurement
98	Option modules
99	Start-up data

11.1 DCS800-EP Signal Definitions

Table 11-1 DCS800-EP Signal Definitions

Block Title	Signal (Number) Selection (Value)	Descriptions
GROUP 1 - Physical Actual Values	MotSpeedFilt (1.01)	Scaling: Unit: RPM Filtered Motor Speed - Filtered actual motor speed: - Choose motor speed feedback with M1SpeedFbSel (50.03) - Filter time is 1 sec plus SpeedFiltTime (50.06) (E)
	SpeedActEMF (1.02)	Scaling: Unit: RPM Speed Actual EMF - Actual speed calculated from motor EMF voltage
	SpeedActEnc (1.03)	Scaling: Unit: RPM Speed Actual Encoder 1 - Actual speed measured with pulse encoder 1, terminals X5:1 - X5:10
	MotSpeed (1.04)	Scaling: Unit: RPM Motor Speed - Actual speed calculated or measured from what has been selected as the feedback source with parameter M1SpeedFdSel (50.03). It can be filtered with SpeedFiltTime (50.06) (E).
	SpeedActTach (1.05)	Scaling: Unit: RPM Speed Actual Tach - Actual speed measured from the analog tachometer, terminals X3:1 - X3:4
	MotCur (1.06)	Scaling: M1NomCur (99.03) Unit: Pct Motor Current - Actual motor current
	MotTorqFilt (1.07)	Scaling: MotNomTorque (4.23) Unit: Pct Filtered Motor Torque - Filtered motor torque: - Filter time is 20 msec
	MotTorq (1.08)	Scaling: MotNomTorque (4.23) Unit: Pct Motor Torque - Motor torque
	CurRipple (1.09)	Scaling: MotNomTorque (4.23) Unit: Pct Current Ripple - Current ripple monitor output
	CurRippleFilt (1.10)	Scaling: MotNomTorque (4.23) Unit: Pct Filtered Current Ripple - Filtered current ripple monitor output: - filter time is 200 msec
	MainsVoltActRel (1.11)	Scaling: NomMainsVolt (99.10) Unit: Pct Relative Actual Mains Voltage - Actual mains voltage
	MainsVoltAct (1.12)	Scaling: Unit: Volts Actual Mains Voltage - Actual mains voltage: - Filter time is set at 10msec
	ArmVoltActRel (1.13)	Scaling: M1NomVolt (99.02) Unit: Pct Relative Actual Armature Voltage - Actual armature voltage
	ArmVoltAct (1.14)	Scaling: Unit: Volts Actual Armature Voltage - Actual armature voltage - Filter time is 10 msec
	ConvCurActRel (1.15)	Scaling: ConvNomCur (4.05) Unit: Pct Relative Actual Converter Current - Actual converter DC current

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions
GROUP 1 - Physical Actual Values (Continued)	ConvCurAct (1.16)	Scaling: Unit: Amps Actual Converter Current - Actual converter DC current - Filter time is 10msec
	EMFVoltActRel (1.17)	Scaling: M1NomVolt (99.02) Unit: Pct Relative Actual EMF - Actual EMF
	Mot1TempMeas (1.22)	Scaling: Unit: °C or Ω Motor 1 Measured Temperature - Temperature of motor 1 measured by the temperature sensor, used for motor overtemperature protection. Units depend on type of sensor selected by M1TempSel (31.05), degrees Celsius for PT100 or Ohms for PTC.
	BridgeTemp (1.24)	Scaling: Unit: °C Actual Bridge Temperature - Actual temperature of the converter thyristor bridge.
	Mot1FldCurRel (1.29)	Scaling: M1NomFldCur (99.11) Unit: Pct Motor 1 Relative Actual Field Current - Actual field current of motor 1
	Mot1FldCur (1.30)	Scaling: Unit: Amps Motor 1 Actual Field Current - Actual field current of motor 1 - Filter time is 500msec
	MainsFreqAct (1.38)	Scaling: Unit: Hz Internal Mains Frequency - Calculated and internally controlled mains frequency. This is the output of the PLL controller.
	SpeedActEnc2 (1.42)	Scaling: Unit: RPM Speed Actual Encoder 2 - Actual speed measured with pulse encoder 2 from an optional speed measurement module. NOTE: This could be resolver speed.
	GROUP 2 - Speed Controller Signals	SpeedRef2 (2.01)
SpeedRef3 (2.02)		Scaling: Unit: RPM Speed Reference 3 - Speed reference after Speed Reference 2 and after ramp generator and jog input.
SpeedErrNeg (2.03)		Scaling: Unit: RPM Speed Error Negative - Difference between speed actual and speed reference
TorqAccCompRef (2.07)		Scaling: MotNomTorque (4.23) Unit: Pct Torque Reference for Acceleration Compensation - The amount of torque needed to accelerate the load.
TorqRef1 (2.08)		Scaling: MotNomTorque (4.23) Unit: Pct Torque Reference 1 - Torque reference after being limited by parameters within the speed controller.
TorqRef2 (2.09)		Scaling: MotNomTorque (4.23) Unit: Pct Torque Reference 2 - Torque reference after Torque Reference 1 as output by the speed controller.

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions
GROUP 2 - Speed Controller Signals (Continued)	TorqRef3 (2.10)	Scaling: MotNomTorque (4.23) Unit: Pct Torque Reference 3 - Torque reference after Torque Reference 2, limited by TorqMaxTref (20.09) (E) and TorqMinTref (20.10) (E) and after the torque selector.
	TorqRef4 (2.11)	Scaling: MotNomTorque (4.23) Unit: Pct Torque Reference 4 - Torque reference after Torque Reference 3 and after being combined with LoadComp (26.02) (E).
	TorqRefUsed (2.13)	Scaling: MotNomTorque (4.23) Unit: Pct Used Torque Reference - Final torque reference after Torque Reference 4 after gear backlash compensation and torque limiter during regeneration.
	TorqCorr (2.14)	Scaling: MotNomTorque (4.23) Unit: Pct Torque Correction - Torque correction (by user's analog input) as determined by TorqCorrect (26.15) (E).
	dv_dt (2.16)	Scaling: Unit: RPM/s dv/dt - acceleration/deceleration (speed reference change) at the output of the speed reference ramp.
	SpeedRefUsed (2.17)	Scaling: Unit: RPM Used Speed Reference - Final speed reference actually being used as selected with Ref1Mux (11.02) and Ref1Sel (11.03) or Ref2Mux (11.12) (E) and Ref2Sel (11.06) (E).
	SpeedRef4 (2.18)	Scaling: Unit: RPM Speed Reference 4 - Speed reference equal to Speed Reference 3 summed with SpeedCorr (23.04) (E) and limited by M1SpeedMax (20.02) and M1SpeedMin(20.01). It is the final output of the speed reference chain.
	TorqMaxAll (2.19)	Scaling: MotNomTorque (4.23) Unit: Pct Torque Maximum All - Positive torque limit calculated from the smallest maximum torque limit, field weakening, and armature current limits, including TorqUsedMax (2.22), FluxRefFldWeak (3.24) (E) and M1CurLimBrdg1 (20.12).
	TorqMinAll (2.20)	Scaling: MotNomTorque (4.23) Unit: Pct Torque Minimum All - Negative torque limit calculated from the largest minimum torque limit, field weakening, and armature current limits, including TorqUsedMax (2.22), FluxRefFldWeak (3.24) (E) and M1CurLimBrdg2 (20.13).
	TorqUsedMax (2.22)	Scaling: MotNomTorque (4.23) Unit: Pct Used Maximum Torque - Positive torque limit selected with TorqUsedMaxSel (20.18) connected to torque limiter after TorqRef4 (2.11).
	TorqUsedMin (2.23)	Scaling: MotNomTorque (4.23) Unit: Pct Used Minimum Torque - Negative torque limit selected with TorqUsedMinSel (20.19) connected to torque limiter after TorqRef4 (2.11).
	TorqRefExt (2.24)	Scaling: MotNomTorque (4.23) Unit: Pct External Torque Reference - External torque reference value after torque reference A selector: TorqRefA (25.01) (E) and TorqRefA Sel (25.10) (E).
	TorqLimAct (2.26)	Scaling: Unit: Actual Used Torque Limit - Shows which parameter is actually limiting the drive's torque output.

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions
GROUP 2 - Speed Controller Signals (Continued)	SpeedScaleAct (2.29)	Scaling: Unit: RPM Actual Used Speed Scaling - The value of this parameter equals 20,000 internal speed units. Typically, 20,000 units equals the largest absolute value of the two parameters M1SpeedMin (20.01) and M1SpeedMax (20.02). However, this can vary if scaled manually using M1SpeedScale (50.01) or if Motor2 is selected as indicated in MotSel (8.09) (E).
	SpeedRefExt1 (2.30)	Scaling: Unit: RPM External Speed Reference 1 - External speed reference 1 after reference 1 multiplexer Ref1Mux (11.02).
	SpeedRefExt2 (2.31)	Scaling: Unit: RPM External Speed Reference 2 - External speed reference 2 after reference 2 multiplexer Ref2Mux (11.12) (E) which is then added to SpeedRefExt1 (2.30).
	SpeedRampOut (2.32)	Scaling: Unit: RPM Speed Ramp Output - Speed Reference after SpeedRefExt1 (2.30) and SpeedRefExt2 (2.31) and after the accel/decel/shape ramp.
GROUP 3 - Reference Actual Values	CurRef (3.11)	Scaling: M1NomCur (99.03) Unit: Pct Current Reference - Current reference after being modified by the field weakening controller.
	CurRefUsed (3.12)	Scaling: M1NomCur (99.03) Unit: Pct Used Current Reference - Current reference after CurRef (3.11) and after being limited by M1CurLimBrdg1 (20.12) and M2CurLimBrdg2 (20.13) but it can be further limited based on speed using MaxCurLimSpeed (43.17) (E) to (43.22) (E).
	ArmAlpha (3.13)	Scaling: Unit: Deg Armature bridge firing angle (alpha) - The firing angle of the armature bride(s).
	CurActPeak (3.23)	Scaling: M1NomCur (99.03) Unit: Pct Actual Armature Peak Current - Actual instantaneous armature peak current.
	VoltRef1 (3.25)	Scaling: M1NomCur (99.02) Unit: Pct EMF Voltage Reference 1 - EMF voltage reference for the field current controller as selected by EMFRefSel (44.23) (E).
GROUP 4 - Information	FirmwareVer (4.01)	Scaling: Unit: Firmware Version - Factory Firmware version number. If a minus sign precedes the number, the firmware is for a demo unit.
	FirmwareType (4.02)	Scaling: Unit: Firmware Type - Only type 80 (Standard Firmware) exists.
	ApplicName (4.03)	Scaling: Unit: 0 NoMemCard 1 Inactive 2 NoApplic Application Program Name - If a SDCS-MEM-8 memory card is plugged in and a name has been programmed with ControlBuilder, the name will be displayed here, "winder" for example. If no name is programmed, one of the above will be displayed.

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions
GROUP 4 - Information (Continued)	ConvNomVolt (4.04)	Scaling: Unit: Volts Converter Nominal AC Voltage - The nominal AC voltage of the drive based on the drive's TypeCode (97.01) (E). It can also be manually set with S ConvScaleVolt (97.03) (E).
	ConvNomCur (4.05)	Scaling: Unit: Amps Converter Nominal DC Current - The nominal DC current of the drive based on the drive's TypeCode (97.01) (E). It can also be manually set with S ConvScaleCur (97.02) (E).
	Mot1FexType (4.06)	Scaling: Unit: Motor 1 Field Exciter Type - The type of field power supply (exciter) used for motor 1 as selected with M1usedFexType (99.12).
	Mot1FexSwVer (4.08)	Scaling: Unit: Motor 1 field Exciter Software Version - Version of the loaded firmware in the external field power supply (exciter). If onboard is selected, 0 is displayed. (Updated on power-up only.)
	ApplicVer (4.12)	Scaling: Unit: Application Program Version - If a SDCS-MEM-8 memory card is plugged in and a version number has been programmed with ControlBuilder, the version number of that program is displayed here.
	DriveLibVer (4.13)	Scaling: Unit: Drive Library Version - The version of the factory-loaded function block library.
	ConvType (4.14)	Scaling: Unit: Converter Type - The frame size (D1 - D7) of the drive based on the drive's TypeCode (97.01) (E). "ManualSet" is displayed if the nominal voltage and current are set manually with S ConvScaleVolt (97.03) (E) and S ConvScaleCur (97.02) (E).
	QuadrantType (4.15)	Scaling: Unit: Quadrant Type - Displays whether the regenerative bridge (bridge 2) is released for use based on the drive's TypeCode (97.01) (E). Bridge 2 can also be manually released or blocked with S BlockBrdg2 (97.07) (E).
	ConvOvrCur (4.16)	Scaling: Unit: Amps Converter Overcurrent (DC) level - Current level at which the drive will trip on ArmOvrCur (F502) fault. (Updated on power-up only.)
	MaxBridgeTemp (4.17)	Scaling: Unit: °C Maximum Bridge Temperature - Bridge temperature at which the drive will trip on ConvOverTemp (F504) fault based on the drive's TypeCode (97.01) (E). It can also be manually set with S MaxBrdgTemp (97.04) (E). ConvOverTemp (A104) alarm is displayed when actual converter temperature is approximately 5 deg. C below the maximum.
DCSLinkStat1 (4.18)	Scaling: Unit: DCSLink Status 1 (field exciter) - Status of the DCSLink for the field power supply (exciter) nodes 1 through 16, displayed in 16 bit hexadecimal (0000 to FFFF). Node 1 is the least significant bit; node 16 is the most significant bit. For example, 0010 indicates node 5 is active and okay and 0018 indicates nodes 4 and 5 are active and okay.	

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions
GROUP 4 - Information (Continued)	DCSLinkStat2 (4.19)	Scaling: Unit: DCSLink Status 2 (field exciter) - Status of the DCSLink for the field power supply (exciter) nodes 17 through 32. See 4.18 for additional information.
	CPU Load (4.21)	Scaling: Unit: Pct Processor Load - The load of the processor which should never reach 100%.
	ApplLoad (4.22)	Scaling: Unit: Pct Application Load - The load of the application which should never reach 100%.
	MotTorqNom (4.23)	Scaling: Unit: Nm Motor Nominal Torque - Calculated nominal torque based on values entered for nominal current, nominal voltage and base speed.
GROUP 5 - Analog I/O	AITacho Val (5.01)	Scaling: $11\text{ V} = 125\% * \text{M1OvrSpeed}$ (30.16) Unit: Volts Analog Input Tacho Value - Actual voltage of the analog tachometer input. Scaling depends on the terminal to which the tachometer is wired and on jumper settings.
	AI1 Val (5.03)	Scaling: Unit: Volts Analog Input 1 Value - Actual voltage of analog input 1. Scaling depends on the type of hardware being used and on jumper settings.
	AI2 Val (5.04)	Scaling: Unit: Volts Analog Input 2 Value - Actual voltage of analog input 2. Scaling depends on the type of hardware being used and on jumper settings.
	AO1 Val (5.11)	Scaling: Unit: Volts Analog Output 1 Value - Actual voltage of analog output 1.
	AO2 Val (5.12)	Scaling: Unit: Volts Analog Output 2 Value - Actual voltage of analog output 2.
	GROUP 6 - Drive Logic Signals	SystemTime (6.01)
CurCtrlStat1 (6.03)		Scaling: Unit: 6.03.00 FANS ON command 6.03.01 Loss of one mains phase 6.03.02 Unused 6.03.03 Motor heating function active 6.03.04 Field direction: ON = reverse; OFF = forward 6.03.05 FIELD ON command 6.03.06 Dynamic braking active 6.03.07 MAIN CONTACTOR ON command 6.03.08 EUROPEAN DYNAMIC BRAKING CONTACTOR ON command 6.03.09 ON = Drive is generating; OFF = Drive is motoring 6.03.10 US DYNAMIC BRAKING CONTACTOR ON command 6.03.11 Firing Pulses: On = active; OFF = blocked

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions
GROUP 6 - Drive Logic Signals (Continued)	CurCtrlStat1 (6.03) (Continued)	Scaling: Unit: 6.03.12 ON = continuous current; OFF = discontinuous current 6.03.13 ON = zero current detected; OFF = current not zero 6.03.14 TRIP DC BREAKER command (continuous signal) 6.03.15 TRIP DC BREAKER command (1 s pulse) Current Controller Status Word 1 - The current controller status word displayed in 16-bit hexadecimal (0000 to FFFF). Definition of the individual 16 bits is shown above.
	CurCtrlStat2 (6.04)	Scaling: Unit: 6.04.00 Fault F502 - Armature overcurrent 6.04.01 Fault F513 - Mains overvoltage 6.04.02 Fault F512 - Mains low voltage 6.04.03 Waiting for reduction of EMF to match the mains voltage 6.04.04 Fault F533 - 12-pulse reversal time, or Fault F534 - 12-pulse current difference, or Fault F557 - reversal time is present 6.04.05 If OperModeSel (43.01) = 12P: BLOCK PARTNER command; If OperModeSel (43.01) = FieldExciter: Overvoltage protection is active 6.04.06 Fault F529 - Motor 1 Field power supply (exciter) is not okay 6.04.07 Fault F537 - Motor 1 Field power supply (exciter) lost ready-for-operation message while operating 6.04.08 Fault F529 - Motor 2 Field power supply (exciter) is not okay 6.04.09 Fault F537 - Motor 2 Field power supply (exciter) lost ready-for-operation message while operating 6.04.10 Waiting for zero current 6.04.11 Field reversal is active; armature current controller is blocked 6.04.12 Unused 6.04.13 Current controller not released because DevLimPLL (97.13) (E) has been reached 6.04.14 Fault F514 - Mains not synchronized 6.04.15 Current controller not released. This bit is set in case a relevant fault or level 3 alarm is present. Current Controller Status Word 2 - The current controller status word displayed in 16-bit hexadecimal (0000 to FFFF). For any bit, "on" indicates that the current controller is blocked, meaning CurRefUsed (3.12) is forced to zero and ArmAlpha (3.13) is forced to ArmAlphaMax (20.14). Definition of the individual 16 bits is shown above.
	Mot1FexStatus (6.12)	Scaling: Unit: M1 Field Power Supply (Exciter) Status - Displays a message indicating the fault status of field power supply (exciter) for motor 1. OK indicates no field faults and communications OK.

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions	
GROUP 7 - Control Words	MainCtrlWord (7.01)	Scaling: Unit:	
	7.01.00 On (not Off1)	ON = READY RUN command; OFF = OFF1 command	
	7.01.01 Not Off2	ON = NOT OFF2 (coast stop) command; OFF = OFF2 (coast stop)	
	7.01.02 Not Off3	ON = NOT OFF3 (E-stop); OFF = OFF3 (E-stop)	
	7.01.03 Run	ON = RUN command; OFF = NOT RUN, back to READY RUN command	
	7.01.04 RampOutZero	ON = no action OFF = force speed ramp output to zero	
	7.01.05 RampHold	ON = no action; OFF = freeze (hold) the speed ramp	
	7.01.06 RampInZero	ON = no action; OFF = force speed ramp input to zero	
	7.01.07 Reset	ON = reset faults (on rising edge); OFF = no action	
	7.01.08 Inching1	ON = JOG1 command, speed = FixedSpeed1 (23.01) (E); OFF = no action	
	7.01.09 Inching2	ON = JOG2 command, speed = FixedSpeed2 (23.02) (E); OFF = no action NOTE: Inching2 overrides Inching1	
	7.01.10 RemoteCmd	ON = Overriding controller enable command, required for all motion; OFF = Overriding controller is disabled, no motion is possible	
	7.01.11 Aux. control	Reserved for use by Adaptive Program, application program (ControlBuilder) or overriding control (fieldbus)	
	7.01.12 Aux. control	Reserved for use by Adaptive Program, application program (ControlBuilder) or overriding control (fieldbus)	
	7.01.13 Aux. control	Reserved for use by Adaptive Program, application program (ControlBuilder) or overriding control (fieldbus)	
	7.01.14 Aux. control	Reserved for use by Adaptive Program, application program (ControlBuilder) or overriding control (fieldbus)	
	7.01.15 Aux. control	Reserved for use by Adaptive Program, application program (ControlBuilder) or overriding control (fieldbus)	
		Main Control Word (MCW) - The main control word can be used to control motor on/off and other functions. It can be written to by Adaptive Programming, application program (ControlBuilder) and overriding control (fieldbus). Definition of the individual 16 bits is shown above.	
		AuxCtrlWord (7.02)	Scaling: Unit:
	7.02.00 RestartDataLog	ON = Clear and restart the Data Logger; NOTE: The data logger contains six channels with 1024 samples per channel	
	7.02.01 TrigDataLog	ON = trigger the data logger	
	7.02.02 RampBypass	ON = Command to bypass the speed ramp, with the ramp output forced to the value of ramp input	
	7.02.03 BalRampOut	ON = Command to force the speed ramp output to BalRampRef (22.08) (E)	
	7.02.04 LineSpeedRef4	ON = Do not limit SpeedRef4 (2.18); OFF = SpeedRef4 (2.18) is limited as usual	
	7.02.05 DynBrakingOn	ON = Force dynamic braking regardless of the state of Off1Mode (21.02), StopMode (21.03), or E StopMode (21.04)	
	7.02.06 HoldSpeedCtrl	ON = Freeze (hold) the I-part of the speed controller	
	7.02.07 WindowCtrl	ON = Release window control; OFF = Block window control	
	7.02.08 BalSpeedCtrl	ON = Command to force the speed controller output to BalRampRef (22.08) (E)	

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions
GROUP 7 - Control Words (Continued)	AuxCtrlWord (7.02) (Continued)	Scaling: Unit:
	7.02.09 SyncCommand	ON = Force the position of pulse encoder 1, 2 or both* to PosCountInitLo (50.08) (E) and PosCountInitHi (50.09) (E) *Encoder selection is made with SyncCommand (10.04) (E) and SyncCommand2 (10.05) (E)
	7.02.10 SyncDisable	ON = Block all commands to synchronize the position of the pulse encoder(s)
	7.02.11 ResetSynRdy	ON = Reset the SynRdy status bit (AuxStatWord (8.02.05))
	7.02.12 Aux. control	Reserved for use by Adaptive Program, application program (ControlBuilder) or overriding control (fieldbus)
	7.02.13 Aux. control	Reserved for use by Adaptive Program, application program (ControlBuilder) or overriding control (fieldbus)
	7.02.14 Aux. control	Reserved for use by Adaptive Program, application program (ControlBuilder) or overriding control (fieldbus)
	7.02.15 Aux. control	Reserved for use by Adaptive Program, application program (ControlBuilder) or overriding control (fieldbus)
		Auxiliary Control Word 1 (ACW) - Auxiliary control word is used to enable less common control functions. It can be written to by Adaptive Programming, application program (ControlBuilder) and overriding control (fieldbus). Definition of the individual 16 bits is shown above. NOTE: Unless otherwise stated, OFF = no action.
	AuxCtrlWord2 (7.03)	Scaling: Unit:
	7.03.00 Reserved	Reserved for future use
	7.03.01 Reserved	Reserved for future use
	7.03.02 Reserved	Reserved for future use
	7.03.03 Reserved	Reserved for future use
	7.03.04 DisableBridge1	ON = command to block bride 1
7.03.05 DisableBridge2	ON = command to block bride 2	
7.03.06 SupprArmCurDev	ON = Command to block Alarm 114, Armature Current Deviation. This is typically done for non-motoric applications.	
7.03.07 ForceAlphaMax	ON = Command to force single firing pulses and set the firing angle to ArmAlphaMax (20.14) (E) which will extinguish the current as quickly as possible	
7.03.08 DriveDirection	ON = Reverse drive direction, but only if in RdyRun state, by changing the sign of MotSpeed (1.04) and CurRef (3.11). RdyRun state means the motor is not being commanded.	
7.03.09 Reserved	Reserved for future use	
7.03.10 DirectSpeedRef	ON = Command to force the speed ramp output to DirectSpeedRef (23.15) (E)	
7.03.11 TorqProvOK	ON = It has been independently proven that the selected motor is producing torque	
7.03.12 ForceBrake	ON = Command to set (close) the selected motor brake; OFF = the selected motor brake is controlled by the internal brake logic in group 42	
7.03.13 ResetTorqMem	ON = Reset torque memory, valid only if M1StrtTorRefSel (42.07) (E) = Memory	

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions
GROUP 7 - Control Words (Continued)	AuxCtrlWord2 (7.03) Continued)	Scaling: Unit:
	7.03.14 Reserved	Reserved for future use
	7.03.15 ResetPIDCtrl	ON = Reset and hold PID controller; OFF = Release PID controller See group 40 in DCS800 Firmware Manual
		Auxiliary Control Word 2 (ACW2) - Auxiliary control word 2 is used to enable less common control functions. It can be written to by Adaptive Programming, application program (ControlBuilder) and overriding control (fieldbus). Definition of the individual 16 bits is shown above. NOTE: Unless otherwise stated, OFF = no action.
	AuxCtrlWord2 (7.03)	Scaling: Unit:
	7.03.00 Reserved	Reserved for future use
	7.03.01 Reserved	Reserved for future use
	7.03.02 Reserved	Reserved for future use
	7.03.03 Reserved	Reserved for future use
	7.03.04 DisableBridge1	ON = command to block bride 1
	7.03.05 DisableBridge2	ON = command to block bride 2
	7.03.06 SupprArmCurDev	ON = Command to block Alarm 114, Armature Current Deviation. This is typically done for non-motoric applications.
	7.03.07 ForceAlphaMax	ON = Command to force single firing pulses and set the firing angle to ArmAlphaMax (20.14) (E) which will extinguish the current as quickly as possible
	7.03.08 DriveDirection	ON = Reverse drive direction, but only if in RdyRun state, by changing the sign of MotSpeed (1.04) and CurRef (3.11). RdyRun state means the motor is not being commanded.
	7.03.09 Reserved	Reserved for future use
	7.03.10 DirectSpeedRef	ON = Command to force the speed ramp output to DirectSpeedRef (23.15) (E)
	7.03.11 TorqProvOK	ON = It has been independently proven that the selected motor is producing torque
	7.03.12 ForceBrake	ON = Command to set (close) the selected motor brake; OFF = the selected motor brake is controlled by the internal brake logic in group 42
	7.03.13 ResetTorqMem	ON = Reset torque memory, valid only if M1StrtTorRefSel (42.07) (E) = Memory
	7.03.14 Reserved	Reserved for future use
7.03.15 ResetPIDCtrl	ON = Reset and hold PID controller; OFF = Release PID controller See group 40 in DCS800 Firmware Manual Auxiliary Control Word 2 (ACW2) - Auxiliary control word 2 is used to enable less common control functions. It can be written to by Adaptive Programming, application program (ControlBuilder) and overriding control (fieldbus). Definition of the individual 16 bits is shown above. NOTE: Unless otherwise stated, OFF = no action.	
	UsedMCW (7.04)	Scaling: Unit:
		Used Main Control Word (UMCW) - The main control word actually being used as selected with the local/remote selection on the control panel and the setting of CommandSel (10.01) and HandAuto (10.07). NOTE: This value is read only. MCW (7.01) should be used for control from Adaptive Programming, application program (ControlBuilder) and overriding control (fieldbus).

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions	
GROUP 7 - Control Words (Continued)	DO CtrlWord (7.05)	Scaling: Unit:	
	7.05.00 - 7.05.07 Digital outputs 1 through 8	Programmed with parameters in group 14	
	7.05.08 Digital outputs 9	This bit is written directly to DO1 on the RDIO-01 extension board defined by DIO extModule1 (98.03) (E)	
	7.05.09 Digital outputs 10	This bit is written directly to DO2 on the RDIO-01 extension board defined by DIO extModule1 (98.03) (E)	
	7.05.10 Digital outputs 11	This bit is written directly to DO1 on the RDIO-01 extension board defined by DIO extModule2 (98.04) (E)	
	7.05.11 Digital outputs 12	This bit is written directly to DO2 on the RDIO-01 extension board defined by DIO extModule2 (98.04) (E)	
	7.05.12 - 7.05.15 Reserved	Reserved for future use	
		Digital Output Control Word (DODW) - The digital output control word is used to control digital outputs from Adaptive Programming, application program (ControlBuilder) and overriding control (fieldbus). DO1 through DO8 are programmed using the parameters in group 14. DO9 through D012 are digital outputs on the RDIO-01 extension boards. These outputs can only be programmed by writing directly to this control word with Adaptive Programming, application program (ControlBuilder) and overriding control (fieldbus).	
	GROUP 8 - Status / Limit Words	MainStatWord (8.01)	Scaling: Unit:
		8.01.00 RdyOn	ON = Ready to switch on
8.01.01 RdyRun		ON = Ready to generate torque	
8.01.02 RdyRef		ON = Operation released, the drive is in the running state	
8.01.03 Tripped		ON = A fault is present	
8.01.04 Off2NStatus		ON = Off2 (coast stop) is NOT active; the drive is NOT inhibited OFF = Off2 (coast stop) is active	
8.01.05 Off3NStatus		ON = Off3 (Estop) is NOT active; the drive is NOT inhibited OFF = Off3 (Estop) is active	
8.01.06 OnInhibited		ON = OnInhibited state is active after a fault, Off2 stop, or Off3 stop	
8.01.07 Alarm		ON = An alarm is present	
8.01.08 AtSetPoint		The motor speed is within tolerance of the reference speed after the ramp. This bit may blink during accel and decel since the reference speed changes with the ramp.	
8.01.09 Remote		ON = remote control OFF = local control	
8.01.10 AboveLimit		Actual speed is greater than the speed defined in SpeedLev (50.10) (E)	
8.01.11 - 8.01-15 Reserved		Reserved for future use	
		Main Status Word (MSW) - The main status word identifies the current state of the drive and is typically used by Adaptive Programming, application program (ControlBuilder) and overriding control (fieldbus) to monitor the drive status.	

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions
GROUP 8 - Status / Limit Words (Continued)	AuxStatWord (8.02)	Scaling: Unit:
	8.02.00 DataLogReady	ON = The content of the data logger is readable
	8.02.01 OutOfWindow	ON = Actual speed is out of window defined by WinWidthPos (23.08) (E) and WinWidthNeg (23.09) (E)
	8.02.02 E-StopCoast	ON = Estop function has failed. See EstopDecMin (21.05) (E), EstopDecMax (21.06) (E) and DecMonDly (21.07) (E).
	8.02.03 User1	ON = Macro User1 is active. See ApplMacro (99.08).
	8.02.04 User2	ON = Macro User2 is active. See ApplMacro (99.08).
	8.02.05 SyncRdy	ON = Synchronization of pulse encoder 1, 2 or both* is complete. Enabled only if PosSyncMode (50.15) (E) = Single. *Encoder selection is made with SyncCommand (10.04) (E) and SyncCommand2 (10.05) (E)
	8.02.06 Fex1Ack	ON = Motor 1 field supply (field exciter) acknowledged
	8.02.07 Fex2Ack	ON = Motor 2 field supply (field exciter) acknowledged
	8.02.08 BrakeCmd	ON = Command to release the selected motor brake. See group 42.
	8.02.09 Limiting	ON = The drive is being limited in torque, speed, or current. See LimWord (8.03) (E).
	8.02.10 TorqCtrl	ON = The drive is torque controlled
	8.02.11 ZeroSpeed	ON = Actual motor speed is lower than the zero speed limit defined by M1ZeroSpeedLim (20.03) or M2ZeroSpeedLim (49.04) (E)
	8.02.12 EMFSpeed	ON = M1SpeedFbSel (50.03) is set to EMF
	8.02.13 FaultOrAlarm	ON = A fault or an alarm is present
	8.02.14 DriveDirectionNeg	ON = Drive is being commanded in the reverse direction by AuxCtrlWord2 (7.03.08) (DriveDirection)
8.02.15 AutoReclosing	ON = Auto reclosing logic is active	
	Auxiliary Status Word (ASW) - The auxiliary status word identifies less commonly used states of the drive and is typically used by Adaptive Programming, application program (ControlBuilder) and overriding control (fieldbus) to monitor the drive status.	

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions
GROUP 8 - Status / Limit Words (Continued)	DI StatWord (8.05)	Scaling: Unit:
	8.05.00 - 8.05.07 Digital inputs 1 through 8	The state of digital inputs 1 through 8
	8.05.08 Digital input 9	The state of DI1 on the RDIO-01 extension board defined by DIO extModule1 (98.03) (E)
	8.05.09 Digital input 10	The state of DI2 on the RDIO-01 extension board defined by DIO extModule1 (98.03) (E)
	8.05.10 Digital input 11	The state of DI3 on the RDIO-01 extension board defined by DIO extModule1 (98.03) (E)
	8.05.11 Digital input 12	The state of DI1 on the RDIO-01 extension board defined by DIO extModule2 (98.04) (E)
	8.05.12 Digital input 13	The state of DI2 on the RDIO-01 extension board defined by DIO extModule2 (98.04) (E)
	8.05.13 Digital input 14	The state of DI3 on the RDIO-01 extension board defined by DIO extModule2 (98.04) (E)
	8.05.14 Reserved	Reserved for future use
	8.05.15 Reserved	Reserved for future use
		Digital Input Status Word (DISW) - The digital input status word shows the state of each of the digital inputs before they may have been inverted.
	DO StatWord (8.06)	Scaling: Unit:
	8.06.00 - 8.06.07 Digital outputs 1 through 8	The state of digital outputs 1 through 8
	8.06.08 Digital output 9	The state of digital output DO1 on the RDIO-01 extension board defined by DIO extModule1 (98.03) (E)
	8.06.09 Digital output 10	The state of digital output DO2 on the RDIO-01 extension board defined by DIO extModule1 (98.03) (E)
	8.06.10 Digital output 11	The state of digital output DO1 on the RDIO-01 extension board defined by DIO extModule2 (98.04) (E)
	8.06.11 Digital output 12	The state of digital output DO2 on the RDIO-01 extension board defined by DIO extModule2 (98.04) (E)
		Digital Output Status Word (DOSW) - The digital output status word shows the state of each of the digital outputs after they may have been inverted.
	DriveStat (8.08)	Scaling: Unit:
		Drive Status - The state of the drive shown in text. Possible settings include OnInhibited, ChangeToOff, Off, RdyOn, RdyRun, Running, Stopping, Off3, Off3, and Tripped.
MacroSel (8.10)	Scaling: Unit:	
	Selected Macro - Shows which macro was last loaded using ApplMacro (99.08) and ApplRestore (99.07). Note that individual settings may have been overwritten by the user since the macro was loaded.	

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions
GROUP 9 - Fault / Alarm Words	FaultWord1 (9.01)	Scaling: Unit:
	9.01.00 F501	Auxiliary undervoltage
	9.01.01 F502	Armature overcurrent
	9.01.02 F503	Armature overvoltage
	9.01.03 F504	Converter overtemperature
	9.01.04 F505	Residual current detection
	9.01.05 F506	Motor measured overtemperature
	9.01.06 F507	Motor 1 calculated overtemperature
	9.01.07 F508	I/O board not found or is faulty
	9.01.08 F509	Motor 2 measured overtemperature
	9.01.09 F510	Motor 2 calculated overtemperature
	9.01.10 F511	Converter fan current
	9.01.11 F512	Mains low (under) voltage
	9.01.12 F513	Mains overvoltage
	9.01.13 F514	Mains not in synch
	9.01.14 F515	Motor 1 field exciter overcurrent
	9.01.15 F516	Motor 1 field exciter communication loss
Fault Word 1 - Fault Word 1 shows the state of the above faults.		

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions
GROUP 9 - Fault / Alarm Words (Continued)	FaultWord2 (9.02)	Scaling: Unit:
	9.02.00 F517	Armature current ripple
	9.02.01 F518	Motor 2 field supply (field exciter) overcurrent
	9.02.02 F519	Motor 2 field supply (field exciter) communication loss
	9.02.03 F520	Reserved
	9.02.04 F521	Selected motor field supply (field exciter) acknowledge
	9.02.05 F522	Selected motor speed feedback
	9.02.06 F523	External fan acknowledge missing
	9.02.07 F524	Main contactor acknowledge missing
	9.02.08 F525	Type code mismatch
	9.02.09 F526	External fault via digital input
	9.02.10 F527	Converter fan acknowledge missing
	9.02.11 F528	Fieldbus communication loss
	9.02.12 F529	Motor 1 field supply (field exciter) not okay
	9.02.13 F530	Motor 2 field supply (field exciter) not okay
	9.02.14 F531	Selected motor is stalled
9.02.15 F532	Selected motor overspeed	
Fault Word 2 - Fault Word 2 shows the state of the above faults.		

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions
GROUP 9 - Fault / Alarm Words (Continued)	FaultWord3 (9.03)	Scaling: Unit:
	9.03.00 F533	12-pulse reversal timeout
	9.03.01 F534	12-pulse current difference
	9.03.02 F535	12-pulse communication loss
	9.03.03 F536	12-pulse slave failure (appears in master)
	9.03.04 F537	Motor 1 field exciter lost read-for-operation message while working
	9.03.05 F538	Motor 2 field exciter lost read-for-operation message while working
	9.03.06 F539	Fast current rise
	9.03.07 F540	SDCS-COM-8x is faulty
	9.03.08 F541	Motor 1 field exciter low (under) voltage
	9.03.09 F542	Motor 2 field exciter low (under) voltage
	9.03.10 F543	SDCS-COM-8x communication loss
	9.03.11 F544	Peer to peer or master-follower communication loss
	9.03.12 F545	Application load failure, see Diagnosis (9.11)
	9.03.13 F546	Local command loss
	9.03.14 F547	Hardware failure, see Diagnosis (9.11)
9.03.15 F548	Firmware failure, see Diagnosis (9.11)	
		Fault Word 3 - Fault Word 3 shows the state of the above faults.

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions
GROUP 9 - Fault / Alarm Words (Continued)	FaultWord4 (9.04)	Scaling: Unit:
	9.04.00 F549	Parameter compatibility - the parameter causing the fault can be seen in Diagnosis (9.11)
	9.04.01 F550	Reading the actual parameter set from either the parameter flash or memory card failed (checksum fault)
	9.04.02 F551	Analog input range error
	9.04.03 F552	Selected motor mechanical brake error
	9.04.04 F553	Selected motor tachometer or pulse encoder polarity error
	9.04.05 F554	Overflow of analog input tachometer input
	9.04.06 F555	Reserved for PID controller
	9.04.07 F556	Selected motor has a torque proving error
	9.04.08 F557	Reversal time exceeds limit
	9.04.09 F558	Reserved
	9.04.10 F559	Reserved
	9.04.11 F560	Adaptive program fault 1
	9.04.12 F561	Adaptive program fault 2
	9.04.13 F562	Adaptive program fault 3
	9.04.14 F563	Adaptive program fault 4
	9.04.15 F564	Adaptive program fault 5
	Fault Word 4 - Fault Word 4 shows the state of the above faults.	

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions
GROUP 9 - Fault / Alarm Words (Continued)	AlarmWord1 (9.06)	Scaling: Unit:
	9.06.00 A101	Off2 (Coast Stop) is active via digital input
	9.06.01 A102	Off3 (E-stop) is active via digital input
	9.06.02 A103	Selected motor has DC-breaker acknowledge missing
	9.06.03 A104	Converter overtemperature: converter is within 5 deg C of shutdown temperature
	9.06.04 A105	Selected motor dynamic braking is occurring; acknowledge signal is present
	9.06.05 A106	Motor 1 measured overtemperature
	9.06.06 A107	Motor 1 calculated overload (thermal model)
	9.06.07 A108	Reserved
	9.06.08 A109	Motor 2 measured overtemperature
	9.06.09 A110	Motor 2 calculated overload (thermal model)
	9.06.10 A111	Mains low (under) voltage
	9.06.11 A112	Drive-to-drive or master-follower communication loss
	9.06.12 A113	SDCS-COM-8 communication loss
	9.06.13 A114	Armature current deviation
	9.06.14 A115	Overflow of Analog input tachometer input or notification to redo tachometer fine tuning because M1OverSpeed (30.16) or M2OverSpeed (49.21) (E) has been changed by the user
	9.06.15 A116	Selected motor mechanical brake error
		Alarm Word 1 - Alarm Word 1 shows the state of the above alarms.

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions
GROUP 9 - Fault / Alarm Words (Continued)	AlarmWord2 (9.07)	Scaling: Unit:
	9.07.00 A117	Armature current ripple
	9.07.01 A118	Found new application on memory card and needs to be activated
	9.07.02 A119	Application on drive and memory card are different. New application needs to be activated.
	9.07.03 A120	Overvoltage protection active
	9.07.04 A121	Autotuning failure. See Diagnosis (9.11).
	9.07.05 A122	Selected motor mechanical brake error
	9.07.06 A123	One or more fault message is masked
	9.07.07 A124	Speed scaling is out of range
	9.07.08 A125	Selected motor tach or encoder speed feedback comparison error (compared to EMF feedback)
	9.07.09 A126	External alarm via digital input
	9.07.10 A127	Analog input range error
	9.07.11 A128	Fieldbus communication loss
	9.07.12 A129	The parameters found in flash were found to be invalid at power-up (checksum error). The parameters were restored from the parameter backup.
	9.07.13 A130	Local command loss (typically due to disconnection of the control panel)
	9.07.14 A131	A new firmware with a different amount of parameters was downloaded. The new parameters are set to their default values. The parameters causing the alarm can be identified in Diagnosis (9.11).
9.07.15 A132	Parameter setting conflict. The parameter causing the alarm can be identified in Diagnosis (9.11).	
		Alarm Word 2 - Alarm Word 2 shows the state of the above alarms.

Table 11-1 DCS800-EP Signal Definitions Continued

Block Title	Signal (Number) Selection (Value)	Descriptions	
GROUP 9 - Fault / Alarm Words (Continued)	AlarmWord3 (9.08)	Scaling: Unit:	
	9.08.00 A133	The retained data (fault logger, data1 (19.01) to data4 (19.04), etc.) is invalid. The parameters were restored from the parameter backup.	
	9.08.01 A134	Parameter compatibility error. The parameter causing the alarm can be identified in Diagnosis (9.11).	
	9.08.02 A135	The checksum verification failed during upload or download of parameters. Please try again.	
	9.08.03 A136	Adaptive program task time not set in TimeLevSel (83.04) (E)	
	9.08.04 A137	Restart of drive is not possible because the actual speed is not below the zero speed limit M1ZeroSpeedLim (20.03) or M2ZeroSpeedLim(83.04) (E)	
	9.08.05 A138	Off2 (coast stop) is active via fieldbus	
	9.08.06 A139	Off3 (E-stop) is active via fieldbus	
	9.08.07 A140	The fieldbus parameters in group 51 do not match the fieldbus adapter or the device has not been selected	
	9.08.08 A141	Invalid combination of SDCS-CON-4 firmware and SDCS-COM-8 firmware	
	9.08.09 A142	Memory card missing. To disable, set ParApplSave (16.06) to disableAppl	
	9.08.10 A143	Checksum failure or wrong memory card	
	9.08.11 A301	Adaptive program alarm 1	
	9.08.12 A302	Adaptive program alarm 2	
	9.08.13 A303	Adaptive program alarm 3	
	9.08.14 A304	Adaptive program alarm 4	
	9.08.15 A305	Adaptive program alarm 5	
		Alarm Word 3 - Alarm Word 3 shows the state of the above alarms.	
		Diagnosis (9.11)	Scaling: Unit: Diagnosis - This shows a diagnostic code when selected alarms or faults are present. "Fault reset" clears this code. See DCS800 Firmware Manual for the complete list of diagnostic codes.
		LastFault (9.12)	Scaling: Unit: Last Fault - Displays the most recent fault.
	2ndLastFault (9.13)	Scaling: Unit: Second Last Fault - Displays the second most recent fault.	
	3rdLastFault (9.14)	Scaling: Unit: Third Last Fault - Displays the third most recent fault.	

11.2 DCS800-EP Parameter Definitions

Table 11-2 DCS800-EP Parameter Definitions

Block Title	Parameter (Number) Selection (Value)	Descriptions
GROUP 10 - START/STOP SELECT	CommandSel (10.01)	Preset Value: 0 (LOCAL I/O) Range: 0 - 4
	Local I/O (0)	Drive is controlled by Local inputs and outputs on terminal block X6 and X7, default
	MainCtrlWord (1)	Drive is controlled by MainCtrlWord (7.01) typically from fieldbus.
	Key (2)	Automatically switches over from MainCtrlWord to Local I/O if FieldbusComm (F528) fault occurs.
	12PLink (3)	Drive is controlled from 12-pulse master.
	FexLink (4)	Drive is controlled from field exciter master.
		Command Select - Selects where the motor-on commands (on, run, and stop) will come from. Whatever is selected will get written to UsedMCW (7.04). NOTE: Local control mode has higher priority than the selection made with CommandSel (10.01). NOTE: Digital inputs for Off2 (10.08), E Stop (10.09) and Reset (10.03) are always active (assuming they have been assigned) even when this parameter is set to something other than Local I/O.
	Direction (10.02)	Preset Value: 0 (Not Used) Range: 0 - 20
	Not Used (0)	Default
	DI1 (1)	1 = Reverse, 0 = Forward
	DI2 (2)	1 = Reverse, 0 = Forward
	DI3 (3)	1 = Reverse, 0 = Forward
	DI4 (4)	1 = Reverse, 0 = Forward
	DI5 (5)	1 = Reverse, 0 = Forward
	DI6 (6)	1 = Reverse, 0 = Forward
	DI7 (7)	1 = Reverse, 0 = Forward
	DI8 (8)	1 = Reverse, 0 = Forward
	DI9 (9)	1 = Reverse, 0 = Forward, only available with digital extension board
	DI10 (10)	1 = Reverse, 0 = Forward, only available with digital extension board
	DI11 (11)	1 = Reverse, 0 = Forward, only available with digital extension board
	MCW BIT11 (12)	1 = Reverse, 0 = Forward, MainCtrlWord (7.01) bit 11
	MCW BIT12 (13)	1 = Reverse, 0 = Forward, MainCtrlWord (7.01) bit 12
	MCW BIT13 (14)	1 = Reverse, 0 = Forward, MainCtrlWord (7.01) bit 13
	MCW BIT14 (15)	1 = Reverse, 0 = Forward, MainCtrlWord (7.01) bit 14
	MCW BIT15 (16)	1 = Reverse, 0 = Forward, MainCtrlWord (7.01) bit 15
	ACW Bit12 (17)	1 = Reverse, 0 = Forward, AuxCtrlWord (7.02) bit 12
	ACW Bit13 (18)	1 = Reverse, 0 = Forward, AuxCtrlWord (7.02) bit 13
	ACW Bit14 (19)	1 = Reverse, 0 = Forward, AuxCtrlWord (7.02) bit 14
	ACW Bit15 (20)	1 = Reverse, 0 = Forward, AuxCtrlWord (7.02) bit 15
		Direction for Rotation Command - Selects the binary signal that controls direction of rotation, either a digital input or a reserved bit in the MCW (7.01) or ACW (7.02).

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions
GROUP 10 - START/STOP SELECT (Continued)	Reset (10.03)	Preset Value: 6 (DI6) Range: 0 - 20
	Not Used (0)	
	DI1 (1)	Reset by rising edge (0→1)
	DI2 (2)	Reset by rising edge (0→1)
	DI3 (3)	Reset by rising edge (0→1)
	DI4 (4)	Reset by rising edge (0→1)
	DI5 (5)	Reset by rising edge (0→1)
	DI6 (6)	Reset by rising edge (0→1), default
	DI7 (7)	Reset by rising edge (0→1)
	DI8 (8)	Reset by rising edge (0→1)
	DI9 (9)	Reset by rising edge (0→1), only available with digital extension board
	DI10 (10)	Reset by rising edge (0→1), only available with digital extension board
	DI11 (11)	Reset by rising edge (0→1), only available with digital extension board
	MCW BIT11 (12)	Reset by rising edge (0→1), MainCtrlWord (7.01) bit 11
	MCW BIT12 (13)	Reset by rising edge (0→1), MainCtrlWord (7.01) bit 12
	MCW BIT13 (14)	Reset by rising edge (0→1), MainCtrlWord (7.01) bit 13
	MCW BIT14 (15)	Reset by rising edge (0→1), MainCtrlWord (7.01) bit 14
	MCW BIT15 (16)	Reset by rising edge (0→1), MainCtrlWord (7.01) bit 15
	ACW Bit12 (17)	Reset by rising edge (0→1), AuxCtrlWord (7.02) bit 12
	ACW Bit13 (18)	Reset by rising edge (0→1), AuxCtrlWord (7.02) bit 13
	ACW Bit14 (19)	Reset by rising edge (0→1), AuxCtrlWord (7.02) bit 14
	ACW Bit15 (20)	Reset by rising edge (0→1), AuxCtrlWord (7.02) bit 15
		Fault Reset Command - Selects the signal that controls fault reset, either a digital input or a reserved bit in the MCW (7.01) or ACW (7.02).
MotFanAck (10.06)	Not Used (0)	No Reaction
	DI1 (1)	1= acknowledge OK, 0 = no acknowledge
	DI2 (2)	1= acknowledge OK, 0 = no acknowledge, default
	DI3 (3)	1= acknowledge OK, 0 = no acknowledge
	DI4 (4)	1= acknowledge OK, 0 = no acknowledge
	DI5 (5)	1= acknowledge OK, 0 = no acknowledge
	DI6 (6)	1= acknowledge OK, 0 = no acknowledge
	DI7 (7)	1= acknowledge OK, 0 = no acknowledge
	DI8 (8)	1= acknowledge OK, 0 = no acknowledge
	DI9 (9)	1= acknowledge OK, 0 = no acknowledge, only available with digital extension board
	DI10 (10)	1= acknowledge OK, 0 = no acknowledge, only available with digital extension board
	DI11 (11)	1= acknowledge OK, 0 = no acknowledge, only available with digital extension board
		Motor Fan Acknowledge - Selects the digital input used to acknowledge that the motor blower is on. The drive trips with F523 ExtFanAck [FaultWord2 (9.02) bit 6] if a digital input for an external fan is selected and the acknowledge is missing for 10 seconds.

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions	
GROUP 10 - START/STOP SELECT (Continued)	HandAuto (10.07)	Preset Value: 0 (Not Used) Range: 0 - 20	
	Not Used (0)	Default	
	DI1 (1)	1 = Auto, 0 = Hand	
	DI2 (2)	1 = Auto, 0 = Hand	
	DI3 (3)	1 = Auto, 0 = Hand	
	DI4 (4)	1 = Auto, 0 = Hand	
	DI5 (5)	1 = Auto, 0 = Hand	
	DI6 (6)	1 = Auto, 0 = Hand	
	DI7 (7)	1 = Auto, 0 = Hand	
	DI8 (8)	1 = Auto, 0 = Hand	
	DI9 (9)	1 = Auto, 0 = Hand, only available with digital extension board	
	DI10 (10)	1 = Auto, 0 = Hand, only available with digital extension board	
	DI11 (11)	1 = Auto, 0 = Hand, only available with digital extension board	
	MCW BIT11 (12)	1 = Auto, 0 = Hand, MainCtrlWord (7.01) bit 11	
	MCW BIT12 (13)	1 = Auto, 0 = Hand, MainCtrlWord (7.01) bit 12	
	MCW BIT13 (14)	1 = Auto, 0 = Hand, MainCtrlWord (7.01) bit 13	
	MCW BIT14 (15)	1 = Auto, 0 = Hand, MainCtrlWord (7.01) bit 14	
	MCW BIT15 (16)	1 = Auto, 0 = Hand, MainCtrlWord (7.01) bit 15	
	ACW Bit12 (17)	1 = Auto, 0 = Hand, AuxCtrlWord (7.02) bit 12	
	ACW Bit13 (18)	1 = Auto, 0 = Hand, AuxCtrlWord (7.02) bit 13	
	ACW Bit14 (19)	1 = Auto, 0 = Hand, AuxCtrlWord (7.02) bit 14	
	ACW Bit15 (20)	1 = Auto, 0 = Hand, AuxCtrlWord (7.02) bit 15	
		Hand (Manual) / Automatic - Selects the binary signal that controls whether the drive is in hand (Local I/O) or automatic (MainCtrlWord) control. This overrides the selection made in CommandSel (10.01). The signal can be a digital input or a reserved bit in the MCW (7.01) or ACW (7.02).	
	Off2 (10.08)		Preset Value: 4 (DI4) Range: 0 - 20
	Not Used (0)		
	DI1 (1)	1= no Off2, 0 = Off2 active	
	DI2 (2)	1= no Off2, 0 = Off2 active	
	DI3 (3)	1= no Off2, 0 = Off2 active	
	DI4 (4)	1= no Off2, 0 = Off2 active, default	
	DI5 (5)	1= no Off2, 0 = Off2 active	
	DI6 (6)	1= no Off2, 0 = Off2 active	
DI7 (7)	1= no Off2, 0 = Off2 active		
DI8 (8)	1= no Off2, 0 = Off2 active		
DI9 (9)	1= no Off2, 0 = Off2 active, only available with digital extension board		
DI10 (10)	1= no Off2, 0 = Off2 active, only available with digital extension board		
DI11 (11)	1= no Off2, 0 = Off2 active, only available with digital extension board		
MCW BIT11 (12)	1= no Off2, 0 = Off2 active, MainCtrlWord (7.01) bit 11		
MCW BIT12 (13)	1= no Off2, 0 = Off2 active, MainCtrlWord (7.01) bit 12		
MCW BIT13 (14)	1= no Off2, 0 = Off2 active, MainCtrlWord (7.01) bit 13		
MCW BIT14 (15)	1= no Off2, 0 = Off2 active, MainCtrlWord (7.01) bit 14		
MCW BIT15 (16)	1= no Off2, 0 = Off2 active, MainCtrlWord (7.01) bit 15		
ACW Bit12 (17)	1= no Off2, 0 = Off2 active, AuxCtrlWord (7.02) bit 12		
ACW Bit13 (18)	1= no Off2, 0 = Off2 active, AuxCtrlWord (7.02) bit 13		
ACW Bit14 (19)	1= no Off2, 0 = Off2 active, AuxCtrlWord (7.02) bit 14		
ACW Bit15 (20)	1= no Off2, 0 = Off2 active, AuxCtrlWord (7.02) bit 15		
	Off2 Coast Stop - Selects the binary signal that controls the coast stop command, either a digital input or a reserved bit in the MCW (7.01) or ACW (7.02).		

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions	
GROUP 10 - START/STOP SELECT (Continued)	Off3 (10.09)	Preset Value: 5 (DI5) Range: 0 - 20	
	Not Used (0)		
	DI1 (1)	1= no E Stop, 0 = E Stop active	
	DI2 (2)	1= no E Stop, 0 = E Stop active	
	DI3 (3)	1= no E Stop, 0 = E Stop active	
	DI4 (4)	1= no E Stop, 0 = E Stop active	
	DI5 (5)	1= no E Stop, 0 = E Stop active, default	
	DI6 (6)	1= no E Stop, 0 = E Stop active	
	DI7 (7)	1= no E Stop, 0 = E Stop active	
	DI8 (8)	1= no E Stop, 0 = E Stop active	
	DI9 (9)	1= no E Stop, 0 = E Stop active, only available with digital extension board	
	DI10 (10)	1= no E Stop, 0 = E Stop active, only available with digital extension board	
	DI11 (11)	1= no E Stop, 0 = E Stop active, only available with digital extension board	
	MCW BIT11 (12)	1= no E Stop, 0 = E Stop active, MainCtrlWord (7.01) bit 11	
	MCW BIT12 (13)	1= no E Stop, 0 = E Stop active, MainCtrlWord (7.01) bit 12	
	MCW BIT13 (14)	1= no E Stop, 0 = E Stop active, MainCtrlWord (7.01) bit 13	
	MCW BIT14 (15)	1= no E Stop, 0 = E Stop active, MainCtrlWord (7.01) bit 14	
	MCW BIT15 (16)	1= no E Stop, 0 = E Stop active, MainCtrlWord (7.01) bit 15	
	ACW Bit12 (17)	1= no E Stop, 0 = E Stop active, AuxCtrlWord (7.02) bit 12	
	ACW Bit13 (18)	1= no E Stop, 0 = E Stop active, AuxCtrlWord (7.02) bit 13	
	ACW Bit14 (19)	1= no E Stop, 0 = E Stop active, AuxCtrlWord (7.02) bit 14	
	ACW Bit15 (20)	1= no E Stop, 0 = E Stop active, AuxCtrlWord (7.02) bit 15	
		Off3 (E-stop) - Selects the binary signal that controls the emergency stop command, either a digital input or a reserved bit in the MCW (7.01) or ACW (7.02).	
		ParChange (10.10)	Preset Value: 0 (Not Used) Range: 0 - 20
		Not Used (0)	Default
		DI1 (1)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0)
		DI2 (2)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0)
		DI3 (3)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0)
		DI4 (4)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0)
		DI5 (5)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0)
		DI6 (6)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0)
		DI7 (7)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0)
		DI8 (8)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0)
	DI9 (9)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0), only available with digital extension board	
	DI10 (10)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0), only available with digital extension board	
	DI11 (11)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0), only available with digital extension board	
	MCW BIT11 (12)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0), MainCtrlWord (7.01) bit 11	

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions
GROUP 10 - START/STOP SELECT (Continued)	ParChange (10.10) (Continued)	
	MCW BIT12 (13)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0), MainCtrlWord (7.01) bit 12
	MCW BIT13 (14)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0), MainCtrlWord (7.01) bit 13
	MCW BIT14 (15)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0), MainCtrlWord (7.01) bit 14
	MCW BIT15 (16)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0), MainCtrlWord (7.01) bit 15
	ACW Bit12 (17)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0), AuxCtrlWord (7.02) bit 12
	ACW Bit13 (18)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0), AuxCtrlWord (7.02) bit 13
	ACW Bit14 (19)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0), AuxCtrlWord (7.02) bit 14
	ACW Bit15 (20)	switch to Motor2/User2 by rising edge (0→1), switch to Motor1/User1 by falling edge (1→0), AuxCtrlWord (7.02) bit 15
		Parameter Change - Selects the binary signal that releases either Motor1/User1 or Motor2/User2. The choice to release Motor 1/2 (shared motion) or macros User 1/2 is defined by means of MacroChangeMode (16.05). The signal can be a digital input or a reserved bit in the MCW (7.01) or ACW (7.02).
	OnOff1 (10.15)	Preset Value: 7 (DI7) Range: 0 - 21
	Not Used (0)	
	DI1 (1)	On by rising edge (0→1), 0 = Off1
	DI2 (2)	On by rising edge (0→1), 0 = Off1
	DI3 (3)	On by rising edge (0→1), 0 = Off1
	DI4 (4)	On by rising edge (0→1), 0 = Off1
	DI5 (5)	On by rising edge (0→1), 0 = Off1
	DI6 (6)	On by rising edge (0→1), 0 = Off1
	DI7 (7)	On by rising edge (0→1), 0 = Off1 , default
	DI8 (8)	On by rising edge (0→1), 0 = Off1
	DI9 (9)	On by rising edge (0→1), 0 = Off1 , only available with digital extension board
DI10 (10)	On by rising edge (0→1), 0 = Off1 , only available with digital extension board	
DI11 (11)	On by rising edge (0→1), 0 = Off1 , only available with digital extension board	
MCW BIT11 (12)	On by rising edge (0→1), 0 = Off1 , MainCtrlWord (7.01) bit 11	
MCW BIT12 (13)	On by rising edge (0→1), 0 = Off1 , MainCtrlWord (7.01) bit 12	
MCW BIT13 (14)	On by rising edge (0→1), 0 = Off1 , MainCtrlWord (7.01) bit 13	
MCW BIT14 (15)	On by rising edge (0→1), 0 = Off1 , MainCtrlWord (7.01) bit 14	
MCW BIT15 (16)	On by rising edge (0→1), 0 = Off1 , MainCtrlWord (7.01) bit 15	
ACW Bit12 (17)	On by rising edge (0→1), 0 = Off1 , AuxCtrlWord (7.02) bit 12	
ACW Bit13 (18)	On by rising edge (0→1), 0 = Off1 , AuxCtrlWord (7.02) bit 13	
ACW Bit14 (19)	On by rising edge (0→1), 0 = Off1 , AuxCtrlWord (7.02) bit 14	
ACW Bit15 (20)	On by rising edge (0→1), 0 = Off1 , AuxCtrlWord (7.02) bit 15	
D17D18 (21)	On and Start by rising edge (0→1) of DI7, Stop and Off1 by falling edge (1→0) of DI8. Following settings apply: OnOff1 (10.15) = StartStop (10.16) = DI7DI8. OnOff1 (Motor On) - Selects the binary signal which turns the motor on. In 2-wire mode, StartStop is also required before motion is released. In 3-wire mode, the rising edge of this signal turns the motor on and releases motion. FOR 2-WIRE CONTROL: The signal can be a digital input or a reserved bit in the MCW (7.01) or ACW (7.02). FOR 3-WIRE CONTROL: The signal must be Digital Input 7. 3-wire control is selected by setting both this parameter and StartStop (10.16) = DI7DI8.	

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions
GROUP 10 - START/STOP SELECT (Continued)	StartStop (10.16)	Preset Value: 8 (DI8) Range: 0 - 21
	Not Used (0)	
	DI1 (1)	Start by rising edge (0→1), 0 = Stop
	DI2 (2)	Start by rising edge (0→1), 0 = Stop
	DI3 (3)	Start by rising edge (0→1), 0 = Stop
	DI4 (4)	Start by rising edge (0→1), 0 = Stop
	DI5 (5)	Start by rising edge (0→1), 0 = Stop
	DI6 (6)	Start by rising edge (0→1), 0 = Stop
	DI7 (7)	Start by rising edge (0→1), 0 = Stop
	DI8 (8)	Start by rising edge (0→1), 0 = Stop , default
	DI9 (9)	Start by rising edge (0→1), 0 = Stop , only available with digital extension board
	DI10 (10)	Start by rising edge (0→1), 0 = Stop , only available with digital extension board
	DI11 (11)	Start by rising edge (0→1), 0 = Stop , only available with digital extension board
	MCW BIT11 (12)	Start by rising edge (0→1), 0 = Stop , MainCtrlWord (7.01) bit 11
	MCW BIT12 (13)	Start by rising edge (0→1), 0 = Stop , MainCtrlWord (7.01) bit 12
	MCW BIT13 (14)	Start by rising edge (0→1), 0 = Stop , MainCtrlWord (7.01) bit 13
	MCW BIT14 (15)	Start by rising edge (0→1), 0 = Stop , MainCtrlWord (7.01) bit 14
	MCW BIT15 (16)	Start by rising edge (0→1), 0 = Stop , MainCtrlWord (7.01) bit 15
	ACW Bit12 (17)	Start by rising edge (0→1), 0 = Stop , AuxCtrlWord (7.02) bit 12
	ACW Bit13 (18)	Start by rising edge (0→1), 0 = Stop , AuxCtrlWord (7.02) bit 13
	ACW Bit14 (19)	Start by rising edge (0→1), 0 = Stop , AuxCtrlWord (7.02) bit 14
	ACW Bit15 (20)	Start by rising edge (0→1), 0 = Stop , AuxCtrlWord (7.02) bit 15
	D17D18 (21)	On and Start by rising edge (0→1) of DI7, Stop and Off1 by falling edge (1→0) of DI8. Following settings apply: OnOff1 (10.15) = StartStop (10.16) = DI7DI8. StartStop (Run) - In 2-wire mode, selects the binary signal which releases motion. In 3-wire mode, the falling edge of this signal decelerates the motor and turns it off. FOR 2-WIRE CONTROL: The signal can be a digital input or a reserved bit in the MCW (7.01) or ACW (7.02). FOR 3-WIRE CONTROL: The signal must be Digital Input 8. 3-wire control is selected by setting both this parameter and OnOff1 (10.15) = DI7DI8.
	Jog1 (10.17) Jog2 (10.18)	Preset Value: 0 (Not Used) Range: 0 - 20
	Not Used (0)	Default
	DI1 (1)	1= Jog# active, 0 = no Jog#
	DI2 (2)	1= Jog# active, 0 = no Jog#
	DI3 (3)	1= Jog# active, 0 = no Jog#
	DI4 (4)	1= Jog# active, 0 = no Jog#
	DI5 (5)	1= Jog# active, 0 = no Jog#
	DI6 (6)	1= Jog# active, 0 = no Jog#
	DI7 (7)	1= Jog# active, 0 = no Jog#
	DI8 (8)	1= Jog# active, 0 = no Jog#
DI9 (9)	1= Jog# active, 0 = no Jog#, only available with digital extension board	
DI10 (10)	1= Jog# active, 0 = no Jog#, only available with digital extension board	
DI11 (11)	1= Jog# active, 0 = no Jog#, only available with digital extension board	
MCW BIT11 (12)	1= Jog# active, 0 = no Jog#, MainCtrlWord (7.01) bit 11	
MCW BIT12 (13)	1= Jog# active, 0 = no Jog#, MainCtrlWord (7.01) bit 12	
MCW BIT13 (14)	1= Jog# active, 0 = no Jog#, MainCtrlWord (7.01) bit 13	
MCW BIT14 (15)	1= Jog# active, 0 = no Jog#, MainCtrlWord (7.01) bit 14	
MCW BIT15 (16)	1= Jog# active, 0 = no Jog#, MainCtrlWord (7.01) bit 15	
ACW Bit12 (17)	1= Jog# active, 0 = no Jog#, AuxCtrlWord (7.02) bit 12	

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions
GROUP 10 - START/STOP SELECT (Continued)	Jog1 (10.17) (Continued)	
	Jog2 (10.18) (Continued)	
	ACW Bit13 (18)	1= Jog# active, 0 = no Jog#, AuxCtrlWord (7.02) bit 13
	ACW Bit14 (19)	1= Jog# active, 0 = no Jog#, AuxCtrlWord (7.02) bit 14
	ACW Bit15 (20)	1= Jog# active, 0 = no Jog#, AuxCtrlWord (7.02) bit 15
	ConvFanAck (10.20)	Jog 1 or 2 - Selects the binary signal for Jog # command and sets speed reference at FixedSpeed1 (23.02) or FixedSpeed2 (23.03). The signal can be a digital input or a reserved bit in the MCW (7.01) or ACW (7.02). For Jog1 only, selections also include "Dix+DIR" where Dix = DI1 through DI11. "Dix+DIR" allows the direction input, selected with Direction (10.02), to influence jog direction. In 3-wire mode (Jog1 only), it also allows this input to turn the motor on and release motion (at FixedSpeed1). NOTE: Jog2 (10.18) overrides Jog1 (10.17) NOTE: Acceleration and deceleration time for jogging is selected by JogAccTime (22.12) and JogDecTime (22.13).
	Preset Value: 1 (DI1)	Range: 0 - 11
	Not Used (0)	No Reaction
	DI1 (1)	1= acknowledge OK, 0 = no acknowledge, default
	DI2 (2)	1= acknowledge OK, 0 = no acknowledge
	DI3 (3)	1= acknowledge OK, 0 = no acknowledge
	DI4 (4)	1= acknowledge OK, 0 = no acknowledge
	DI5 (5)	1= acknowledge OK, 0 = no acknowledge
	DI6 (6)	1= acknowledge OK, 0 = no acknowledge
	DI7 (7)	1= acknowledge OK, 0 = no acknowledge
	DI8 (8)	1= acknowledge OK, 0 = no acknowledge
	DI9 (9)	1= acknowledge OK, 0 = no acknowledge, only available with digital extension board
	DI10 (10)	1= acknowledge OK, 0 = no acknowledge, only available with digital extension board
	DI11 (11)	1= acknowledge OK, 0 = no acknowledge, only available with digital extension board
		Converter Fan Acknowledge - Selects which digital input is used to acknowledge that the drive (converter) fan is on.
	MainContAck (10.21)	Preset Value: (3) DI3 Range: 0 - 11
	Not Used (0)	No Reaction
	DI1 (1)	1= acknowledge OK, 0 = no acknowledge
	DI2 (2)	1= acknowledge OK, 0 = no acknowledge
	DI3 (3)	1= acknowledge OK, 0 = no acknowledge, default
	DI4 (4)	1= acknowledge OK, 0 = no acknowledge
	DI5 (5)	1= acknowledge OK, 0 = no acknowledge
	DI6 (6)	1= acknowledge OK, 0 = no acknowledge
	DI7 (7)	1= acknowledge OK, 0 = no acknowledge
	DI8 (8)	1= acknowledge OK, 0 = no acknowledge
	DI9 (9)	1= acknowledge OK, 0 = no acknowledge, only available with digital extension board
	DI10 (10)	1= acknowledge OK, 0 = no acknowledge, only available with digital extension board
	DI11 (11)	1= acknowledge OK, 0 = no acknowledge, only available with digital extension board
		Main Contactor Acknowledge - Selects which digital input is used to acknowledge that the main contactor is on. The main contactor is typically an AC input contactor but could also be a DC output contactor.

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions
GROUP 10 - START/STOP SELECT (Continued)	DynBrakeAck (10.22)	Preset Value: 0 (Not Used) Range: 0 - 11
	Not Used (0)	No Reaction, default
	DI1 (1)	1= acknowledge OK, 0 = no acknowledge
	DI2 (2)	1= acknowledge OK, 0 = no acknowledge
	DI3 (3)	1= acknowledge OK, 0 = no acknowledge
	DI4 (4)	1= acknowledge OK, 0 = no acknowledge
	DI5 (5)	1= acknowledge OK, 0 = no acknowledge
	DI6 (6)	1= acknowledge OK, 0 = no acknowledge
	DI7 (7)	1= acknowledge OK, 0 = no acknowledge
	DI8 (8)	1= acknowledge OK, 0 = no acknowledge
	DI9 (9)	1= acknowledge OK, 0 = no acknowledge, only available with digital extension board
	DI10 (10)	1= acknowledge OK, 0 = no acknowledge, only available with digital extension board
	DI11 (11)	1= acknowledge OK, 0 = no acknowledge, only available with digital extension board
		Dynamic Braking Acknowledge - Selects which digital input is used to acknowledge that the dynamic braking contactor is on. NOTE: DO NOT USE THIS SIGNAL FOR US STYLE OF DC OUTPUT CONTACTOR. USE (10.21) OR (10.23) INSTEAD.
	DcBreakAck (10.23)	Preset Value: 0 (Not Used) Range: 0 - 11
	Not Used (0)	No Reaction, default
	DI1 (1)	1= acknowledge OK, 0 = no acknowledge
	DI2 (2)	1= acknowledge OK, 0 = no acknowledge
	DI3 (3)	1= acknowledge OK, 0 = no acknowledge
	DI4 (4)	1= acknowledge OK, 0 = no acknowledge
	DI5 (5)	1= acknowledge OK, 0 = no acknowledge
DI6 (6)	1= acknowledge OK, 0 = no acknowledge	
DI7 (7)	1= acknowledge OK, 0 = no acknowledge	
DI8 (8)	1= acknowledge OK, 0 = no acknowledge	
DI9 (9)	1= acknowledge OK, 0 = no acknowledge, only available with digital extension board	
DI10 (10)	1= acknowledge OK, 0 = no acknowledge, only available with digital extension board	
DI11 (11)	1= acknowledge OK, 0 = no acknowledge, only available with digital extension board	
	DC Breaker Acknowledge - Selects which digital input is used to acknowledge that the DC breaker or the DC output contactor is on.	
DI1Invert (10.25)	Preset Value: 0 (Direct)	
DI2Invert (10.26)	Preset Value: 0 (Direct)	
DI3Invert (10.27)	Preset Value: 0 (Direct)	
DI4Invert (10.28)	Preset Value: 0 (Direct)	
DI5Invert (10.29)	Preset Value: 0 (Direct)	
DI6Invert (10.30)	Preset Value: 0 (Direct)	
DI7Invert (10.31)	Preset Value: 0 (Direct)	
DI8Invert (10.32)	Preset Value: 0 (Direct)	
DI9Invert (10.33)	Preset Value: 0 (Direct)	
DI10Invert (10.34)	Preset Value: 0 (Direct)	
DI11Invert (10.35)	Preset Value: 0 (Direct) Range: 0 - 1	
Direct (0)	Direct, default	
Inverted (1)	Inverted	
	Invert Digital Input 1 to 11 - Selects whether this digital input should be inverted.	

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions	
GROUP 11 - SPEED REFERENCE INPUTS	Ref1Mux (11.02)	Preset Value: 1 (Close) Range: 0 - 21	
	Open (0)	switch for speed ref. 1 is fixed open	
	Close (1)	switch for speed ref 1 is fixed closed, default	
	DI1 (2)	1= switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0	
	DI2 (3)	1= switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0	
	DI3 (4)	1= switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0	
	DI4 (5)	1= switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0	
	DI5 (6)	1= switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0	
	DI6 (7)	1= switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0	
	DI7 (8)	1= switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0	
	DI8 (9)	1= switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0	
	DI9 (10)	1= switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0; only available with digital extension board	
	DI10 (11)	1= switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0; only available with digital extension board	
	DI11 (12)	1= switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0; only available with digital extension board	
	MCW BIT11 (13)	1= switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0; MainCtrlWord (7.01) bit 11	
	MCW BIT12 (14)	1= switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0; MainCtrlWord (7.01) bit 12	
	MCW BIT13 (15)	1= switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0; MainCtrlWord (7.01) bit 13	
	MCW BIT14 (16)	1= switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0; MainCtrlWord (7.01) bit 14	
	MCW BIT15 (17)	1= switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0; MainCtrlWord (7.01) bit 15	
	ACW Bit12 (18)	1 = switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0; AuxCtrlWord (7.02) bit 12	
	ACW Bit13 (19)	1 = switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0; AuxCtrlWord (7.02) bit 13	
	ACW Bit14 (20)	1 = switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0; AuxCtrlWord (7.02) bit 14	
	ACW Bit15 (21)	1 = switch is closed, speed ref 1 is active; 0 = switch is open, speed ref = 0; AuxCtrlWord (7.02) bit 15	
			Selects the binary signal that controls the reference speed. If set to OPEN (0), speed reference is always zero. If set to CLOSE (1, default) then speed reference is always dictated by Ref1Sel (11.03). If set to any other setting (2-21) and the selected DI or bit is ON, then speed reference is dictated by Ref1Sel (11.03). If the DI or bit is OFF, then speed reference is zero.
		Ref1Sel (11.03)	Preset Value: SpeedRef2301 Range: 0 - 18
		SpeedRef2301 (0)	Selects SpeedRef (23.01) as the speed reference source which is typically written to by Adaptive Programming, application program (ControlBuilder) or overriding control (fieldbus), default
		AuxSpeedRef2313 (1)	Selects AuxSpeedRef (23.13) as the speed reference source which, when needed, is typically written to by Adaptive Programming, application program (ControlBuilder) or overriding control (fieldbus).
	AI1 through AI6 (2 through 7)	Selects analog input 1 through 6 as the speed reference source.	
	FixedSpeed1 (8)	Selects FixedSpeed1 (23.02) as the speed reference source which is also the Jog1 speed.	
	FixedSpeed2 (9)	Selects FixedSpeed2 (23.03) as the speed reference source which is also the Jog2 speed.	
	MotPot (10)	Selects the reference speed as MotPot which increases when MotPotUp (11.13) is set, decreases when MotPotDown (11.14) is set and is limited by MotPotMin (11.15).	
	Others (11 through 18)	See Firmware Manual	
		Speed Reference 1 Select - Selects the source of the reference speed when Ref1Mux (11.02) is CLOSE or the DI or bit selected with Ref1Mux (11.02) is ON.	

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions	
GROUP 11 - SPEED REFERENCE INPUTS (Continued)	MotPotUp (11.13)	Preset Value: 0 (Not Used) Range: 0 - 20	
	Not Used (0)	Default	
	DI1 (1)	1= increase speed, 0 = hold speed	
	DI2 (2)	1= increase speed, 0 = hold speed	
	DI3 (3)	1= increase speed, 0 = hold speed	
	DI4 (4)	1= increase speed, 0 = hold speed	
	DI5 (5)	1= increase speed, 0 = hold speed	
	DI6 (6)	1= increase speed, 0 = hold speed	
	DI7 (7)	1= increase speed, 0 = hold speed	
	DI8 (8)	1= increase speed, 0 = hold speed	
	DI9 (9)	1= increase speed, 0 = hold speed, only available with digital extension board	
	DI10 (10)	1= increase speed, 0 = hold speed, only available with digital extension board	
	DI11 (11)	1= increase speed, 0 = hold speed, only available with digital extension board	
	MCW BIT11 (12)	1= increase speed, 0 = hold speed, MainCtrlWord (7.01) bit 11	
	MCW BIT12 (13)	1= increase speed, 0 = hold speed, MainCtrlWord (7.01) bit 12	
	MCW BIT13 (14)	1= increase speed, 0 = hold speed, MainCtrlWord (7.01) bit 13	
	MCW BIT14 (15)	1= increase speed, 0 = hold speed, MainCtrlWord (7.01) bit 14	
	MCW BIT15 (16)	1= increase speed, 0 = hold speed, MainCtrlWord (7.01) bit 15	
	ACW Bit12 (17)	1= increase speed, 0 = hold speed, AuxCtrlWord (7.02) bit 12	
	ACW Bit13 (18)	1= increase speed, 0 = hold speed, AuxCtrlWord (7.02) bit 13	
	ACW Bit14 (19)	1= increase speed, 0 = hold speed, AuxCtrlWord (7.02) bit 14	
	ACW Bit15 (20)	1= increase speed, 0 = hold speed, AuxCtrlWord (7.02) bit 15	
		Motor Pot Up - Selects the signal that will increase the MotPot speed.	
		MotPotDown (11.14)	Preset Value: 0 (Not Used) Range: 0 - 20
		NotUsed (0)	Default
		DI1 (1)	1= decrease speed, 0 = hold speed
		DI2 (2)	1= decrease speed, 0 = hold speed
		DI3 (3)	1= decrease speed, 0 = hold speed
		DI4 (4)	1= decrease speed, 0 = hold speed
		DI5 (5)	1= decrease speed, 0 = hold speed
		DI6 (6)	1= decrease speed, 0 = hold speed
		DI7 (7)	1= decrease speed, 0 = hold speed
		DI8 (8)	1= decrease speed, 0 = hold speed
		DI9 (9)	1= decrease speed, 0 = hold speed, only available with digital extension board
	DI10 (10)	1= decrease speed, 0 = hold speed, only available with digital extension board	
	DI11 (11)	1= decrease speed, 0 = hold speed, only available with digital extension board	
	MCW BIT11 (12)	1= decrease speed, 0 = hold speed, MainCtrlWord (7.01) bit 11	
	MCW BIT12 (13)	1= decrease speed, 0 = hold speed, MainCtrlWord (7.01) bit 12	
	MCW BIT13 (14)	1= decrease speed, 0 = hold speed, MainCtrlWord (7.01) bit 13	
	MCW BIT14 (15)	1= decrease speed, 0 = hold speed, MainCtrlWord (7.01) bit 14	
	MCW BIT15 (16)	1= decrease speed, 0 = hold speed, MainCtrlWord (7.01) bit 15	
	ACW Bit12 (17)	1= decrease speed, 0 = hold speed, AuxCtrlWord (7.02) bit 12	
	ACW Bit13 (18)	1= decrease speed, 0 = hold speed, AuxCtrlWord (7.02) bit 13	
	ACW Bit14 (19)	1= decrease speed, 0 = hold speed, AuxCtrlWord (7.02) bit 14	
	ACW Bit15 (20)	1= decrease speed, 0 = hold speed, AuxCtrlWord (7.02) bit 15	
	Motor Pot Down - Selects the signal that will decrease the MotPot speed.		

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions	
GROUP 11 - SPEED REFERENCE INPUTS (Continued)	MotPotMin (11.15)	Preset Value: 0 (Not Used) Range: 0 - 20	
	NotUsed (0)	Default	
	DI1 (1)	1= released, 0 = blocked	
	DI2 (2)	1= released, 0 = blocked	
	DI3 (3)	1= released, 0 = blocked	
	DI4 (4)	1= released, 0 = blocked	
	DI5 (5)	1= released, 0 = blocked	
	DI6 (6)	1= released, 0 = blocked	
	DI7 (7)	1= released, 0 = blocked	
	DI8 (8)	1= released, 0 = blocked	
	DI9 (9)	1= released, 0 = blocked, only available with digital extension board	
	DI10 (10)	1= released, 0 = blocked, only available with digital extension board	
	DI11 (11)	1= released, 0 = blocked, only available with digital extension board	
	MCW BIT11 (12)	1= released, 0 = blocked, MainCtrlWord (7.01) bit 11	
	MCW BIT12 (13)	1= released, 0 = blocked, MainCtrlWord (7.01) bit 12	
	MCW BIT13 (14)	1= released, 0 = blocked, MainCtrlWord (7.01) bit 13	
	MCW BIT14 (15)	1= released, 0 = blocked, MainCtrlWord (7.01) bit 14	
	MCW BIT15 (16)	1= released, 0 = blocked, MainCtrlWord (7.01) bit 15	
	ACW Bit12 (17)	1= released, 0 = blocked, AuxCtrlWord (7.02) bit 12	
	ACW Bit13 (18)	1= released, 0 = blocked, AuxCtrlWord (7.02) bit 13	
ACW Bit14 (19)	1= released, 0 = blocked, AuxCtrlWord (7.02) bit 14		
ACW Bit15 (20)	1= released, 0 = blocked, AuxCtrlWord (7.02) bit 15		
		Motor Pot Minimum - Selects the signal that will release the MotPot minimum speed. When ON, minimum speed is released; when OFF, it is enforced. Minimum speed is determined by FixedSpeed1 (23.02).	
GROUP 13 - ANALOG INPUTS	AI1HighVal (13.01)	Preset Value: 10000 mVolts	
	AI2HighVal (13.05)	Preset Value: 10000 mVolts	
	AI3HighVal (13.09)	Preset Value: 10000 mVolts	
	AI4HighVal (13.13)	Preset Value: 10000 mVolts	
	AI5HighVal (13.21)	Preset Value: 10000 mVolts	
	AI6HighVal (13.25)	Preset Value: 10000 mVolts	
			Range: -10000 - 10000
			Analog Input 1 through 6 High Value - Selects the value that equates to the maximum input voltage, typically 10 Volts. For example, if the parameter that is being written to is scaled such that 10000 is the maximum value, set this parameter to 10000. If the maximum value represents 200% of rated (speed or torque), set this parameter to 5000.
	AI1LowVal (13.02)	Preset Value: -10000 mVolts	
	AI1LowVal (13.06)	Preset Value: -10000 mVolts	
	AI1LowVal (13.10)	Preset Value: -10000 mVolts	
	AI1LowVal (13.14)	Preset Value: -10000 mVolts	
AI1LowVal (13.22)	Preset Value: -10000 mVolts		
AI1LowVal (13.26)	Preset Value: -10000 mVolts		
		Range: -10000 - 10000	
		Analog Input 1 through 6 Low Value - Selects the value that equates to the minimum input voltage, typically -10 Volts. This only applies if the analog input is bidirectional. For example, if the parameter that is being written to is scaled such that -10000 is the minimum value, set this parameter to -10000. If the minimum value represents -200% of rated (speed or torque), set this parameter to -5000.	

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions
GROUP 13 - ANALOG INPUTS (Continued)	ConvModeAI1 (13.03)	Preset Value: +/- 10V Bi
	ConvModeAI2 (13.07)	Preset Value: +/- 10V Bi
	ConvModeAI3 (13.11)	Preset Value: +/- 10V Bi
	ConvModeAI4 (13.15)	Preset Value: +/- 10V Bi
	ConvModeAI5 (13.23)	Preset Value: +/- 10V Bi
	ConvModeAI6 (13.27)	Preset Value: +/- 10V Bi
		Range: 0 - 4
	+/-10V Bi (0)	-10V to 10V / -20mA to +20mA bipolar input, default
	0V - 10V Uni (1)	0V to 10V / 0mA to 20mA unipolar input
	2V - 10V Uni (2)	2V to 10V / 4mA to 20 mA unipolar input
5V Offset (3)	5V / 10mA offset in the range 0V to 10V / 0mA to 20mA for testing or indication of bipolar signals (e.g. torque, speed, etc.)	
6V Offset (4)	6V / 12mA offset in the range 2V to 10V / 4mA to 20mA for testing or indication of bipolar signals (e.g. torque, speed, etc.)	
	Conversion Mode Analog Input 1 through 6 - Selects the desired type of analog input. NOTE: For AI2 and AI3, the selection between voltage and current type input is done by setting jumper S2 or S3 on the drive's main control board near terminal block X3. Position 1-2 for voltage, 3-4 for current. NOTE: AI3 - AI4 on the drive is only a voltage type input. On IOB-3, it can be a voltage or current type, depending on the setting of jumper S3 on IOB-3. AI5 - AI6 is on the RAIO-01 analog expansion board. It can be a voltage or current type, depending on the setting of jumpers on RAIO-01.	
FilterAI1 (13.04)	Preset Value: 0 mSec	
FilterAI2 (13.08)	Preset Value: 0 mSec	
FilterAI3 (13.12)	Preset Value: 0 mSec	
FilterAI4 (13.16)	Preset Value: 0 mSec	
	Range: 0 - 10000 mSec	
	Filter Time Analog Input 1 through 4 - Selects the filter time for the analog input. Increasing the filter time will cause the signal to become more steady but somewhat less responsive.	
GROUP 14 - DIGITAL OUTPUTS	DO1Index (14.01)	Preset Value: 603
	DO2Index (14.03)	Preset Value: 603
	DO3Index (14.05)	Preset Value: 603
	DO4Index (14.07)	Preset Value: 0
	DO5Index (14.09)	Preset Value: 0
	DO6Index (14.11)	Preset Value: 0
	DO7Index (14.13)	Preset Value: 0
	DO8Index (14.15)	Preset Value: 603
		Range: -9999 - 9999
		Digital Output 1 through 8 Index - Selects the status word that is used to control this digital output. The format is -xxyy where - = invert digital output; xx = group; yy = index. Common status word selections include CurCtrlStat1 (6.03), CurCtrlStat2 (6.04), MainStatWord (8.01) and AuxStatWord (8.02)
	DO1BitNo (14.02)	Preset Value: 0
	DO2BitNo (14.04)	Preset Value: 5
	DO3BitNo (14.06)	Preset Value: 0
	DO4BitNo (14.08)	Preset Value: 0
	DO5BitNo (14.10)	Preset Value: 0
	DO6BitNo (14.12)	Preset Value: 0
	DO7BitNo (14.14)	Preset Value: 0
DO8BitNo (14.16)	Preset Value: 7	
	Range: 0 - 15	
	Digital Output 1 through 8 Bit Number - Selects the bit in the status word selected with the previous parameter DO#Index that is used to control this digital output.	
GROUP 15 - ANALOG OUTPUTS	IndexAO1 (15.01)	Preset Value: 0
	IndexAO2 (15.06)	Preset Value: 0
		Range: -9999 - 9999
	Index - Analog Output 1 through 2 - Selects the source word that is used to control this analog output. The format is -xxyy where - = invert analog output; xx = group; yy = index. Common source words can be found in group 1, MotSpeedFilt (1.01) for example (entered as 101).	

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions
GROUP 15 - ANALOG OUTPUTS (Continued)	CtrlWordAO1 (15.02) CtrlWordAO2 (15.07)	Preset Value: 0 Preset Value: 0 Range: -32768 - 32767 Control Word - Analog Output 1 through 2 - If the previous parameter is set to zero, this parameter can be written to as the source for this analog output using Adaptive Programming, application program (ControlBuilder) or overriding control (fieldbus).
	ConvModeAO1 (15.03) ConvModeAO2 (15.08)	Preset Value: +/-10V Bi Preset Value: +/-10V Bi Range: +/- 10V Bi - 0V-10V Abs
	+/-10V Bi (0)	-10V to +10V bipolar output, default
	0V - 10V Uni (1)	0V to 10V unipolar output
	2V - 10V Uni (2)	2V to 10V unipolar output
5V Offset (3)	5V offset in the range 0V to 10V for testing or indication of bipolar signals (e.g. torque, speed, etc.)	
6V Offset (4)	6V offset in the range 2V to 10V for testing or indication of bipolar signals (e.g. torque, speed, etc.)	
0V - 10V Abs (5)	absolute 0V to 10V unipolar output (negative values are shown positive)	
		Conversion Mode Analog Output 1 through 2 - Selects the type of analog output.
	FilterAO1 (15.04) FilterAO2 (15.09)	Preset Value: 0 mSec Preset Value: 0 mSec Range: 0 - 1000 Filter Time - Analog Output 1 through 2 - Selects the filter time for this analog output. Increasing the filter time will cause the signal to be more steady but somewhat less responsive.
	ScaleA01 (15.05) ScaleA02 (15.10)	Preset Value: 10000 mV Preset Value: 10000 mV Range: 0 - 10000 Scaling - Analog Output 1 through 2 - Set this value to the analog output voltage that should represent 100%. In most cases, the value of the source word is 100 (percent) when at the nominal value (nominal speed or torque for example). The value, sometimes, can exceed 100 pct. If the analog output should register 10 Volts at 250 pct, set this parameter to 4000 millivolts (= 10V/2.5).
GROUP 16 - SYSTEM CONTROL INPUTS	LocLock (16.04)	Preset Value: 0 (False) Range: 0 - 1 False (0) Local control is allowed. True (1) Local control is blocked. Local Lock - Local control can be disabled by setting LocLock (16.04) to True. If LocLock (16.04) is released in local control, it becomes valid after the next changeover to remote control. No pass code is required to change LocLock (16.04).
	USI Sel (16.09)	Preset Value: 0 (Compact) Range: 0 - 1 Compact (0) Short parameter set (as documented in this manual) Extended (1) Complete parameter set (as documented in the DCS800 Firmware Manual). Changes what set of parameters can be viewed and accessed through the control panel, Drive Window Light or Drive Windows. NOTE: In this chapter, parameters shown with (E) are from the extended set. All others are from the compact set.
GROUP 20 - LIMITS	M1SpeedMin (20.01)	Preset Value: -1500 RPM Range: -10000 - 10000 Motor 1 Minimum Speed - Selects the minimum speed reference of the motor. For bidirectional operation, this value is negative. For unidirectional operation, this value is zero.
	M1SpeedMax (20.02)	Preset Value: 1500 RPM Range: -10000 - 10000 Motor 1 Maximum Speed - Selects the maximum speed reference of the motor. This cannot exceed 5 times base speed of the motor.

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions
GROUP 20 - LIMITS (Continued)	M1ZeroSpeedLim (20.03)	<p>Preset Value: 75 RPM Range: 0 - 1000</p> <p>Motor 1 Zero Speed Limit - When the RUN command is removed, the drive considers the motor to be stopped when the actual speed falls below this level, at which time the armature current will be zeroed and the brake will be set. If no brake, the motor will coast to a stop. Unless flying start (21.10) is enabled, the motor cannot be restarted unless the speed is below this value. NOTE: TOO LOW OF A SETTING WILL PREVENT THE DRIVE FROM RESTARTING; ALARM SPEEDNOTZERO (A137) WILL BE DISPLAYED.</p>
	TorqMax (20.05)	<p>Preset Value: 100% Range: 0 - 325%</p> <p>Maximum Torque - When TorqUsedMaxSel (20.18) = TorqMax2005, This parameter selects the maximum torque limit in percent of MotNomTorque (4.23). However other torque limits, current limits or field weakening will take precedence if set lower. TorqMaxAll (2.19) displays the actual limit.</p>
	TorqMin (20.06)	<p>Preset Value: -100% Range: 0 - -325%</p> <p>Minimum Torque - When TorqUsedMinSel (20.19) = TorqMin2006, This parameter selects the minimum torque limit in percent of MotNomTorque (4.23). However other torque limits, current limits or field weakening will take precedence if set higher. TorqMinAll (2.20) displays the actual limit.</p>
	M1CurLimBrdg1 (20.12)	<p>Preset Value: 100% Range: 0 - 325</p> <p>Motor 1 Current Limit of Bridge 1 - Selects the current limit of bridge 1 in percent of M1NomCur (99.03). However other torque limits, current limits or field weakening will take precedence if set lower. Setting this parameter to zero will disable bridge 1.</p>
	M1CurLimBrdg2 (20.13)	<p>Preset Value: -100% Range: 0 - -325</p> <p>Motor 1 Current Limit of Bridge 2 - Selects the current limit of bridge 2 in percent of M1NomCur (99.03). However other torque limits, current limits or field weakening will take precedence if set higher. Setting this parameter to zero will disable bridge 2. NOTE: For non-regenerative (2 Quadrant) drives, the firmware disables this bridge by setting this to zero. Do not attempt to override this.</p>
	TorqUsedMaxSel (20.18)	<p>Preset Value: 0 (TorqMax2005) Range: 0 - 6</p>
	TorqMax2005 (0)	Default
	AI1 (1)	Analog input 1
	AI2 (2)	Analog input 2
	AI3 (3)	Analog input 3
AI4 (4)	Analog input 4	
AI5 (5)	Analog input 5	
AI6 (6)	Analog input 6	
		Maximum Used Torque Selector - Selects what signal or parameter will be used as the maximum torque limit. TorqUsedMax (2.22) displays the actual limit.
TorqUsedMinSel (20.19)	<p>Preset Value: TorqMin2006 Range: 0 - 7</p>	
TorqMax2006 (0)	Default	
AI1 (1)	Analog input 1	
AI2 (2)	Analog input 2	
AI3 (3)	Analog input 3	
AI4 (4)	Analog input 4	
AI5 (5)	Analog input 5	
AI6 (6)	Analog input 6	
Negate2018 (7)	negated output of TorqUsedMaxSel (20.18) is used	
		Minimum Used Torque Selector - Selects what signal or parameter will be used as the minimum torque limit. TorqUsedMin (2.23) displays the actual limit.

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions
GROUP 21 - START/STOP	Off1Mode (21.02)	Preset Value: 0 (RampStop) Range: 0 - 3
	RampStop (0)	Decelerates using DecTime1 (22.02) or DecTime2 (22.10).
	TorqueLimit (1)	Decelerates as fast as possible using the active torque limit.
	CoastStop (2)	Armature current is immediately set to zero allowing the motor to coast to a stop.
	DynBraking (3)	Dynamic braking resistors are switched into the circuit to stop the motor.
		Off 1 Mode - Selects the type of stop used when the digital input defined by OnOff1 (10.15) is cleared, or, if controlled by fieldbus, when MCW (7.01.00) (On) is cleared.
	StopMode (21.03)	Preset Value: 0 (RampStop) Range: 0 - 3
	RampStop (0)	The input of the drives ramp is set to zero. Thus the drive stops according to DecTime1 (22.02) or DecTime2 (22.10).
	TorqueLimit (1)	The output of the drives ramp is set to zero. Thus the drive stops at the active torque limit.
	CoastStop (2)	The firing pulses are immediately set to 150 degrees to decrease the armature current. When the armature current is zero the firing pulses are blocked.
	DynBraking (3)	Dynamic braking resistors are switched into the circuit to stop the motor.
		Stop Mode - Selects the type of stop used when the digital input defined by StartStop (10.16) is cleared, or, if controlled by fieldbus, when MCW (7.01.03) (Run) is cleared.
	E STOPMODE (21.04)	Preset Value: 2 (CoastStop) Range: 0 - 3
	RampStop (0)	The input of the drives ramp is set to zero. Thus the drive stops according to E StopRamp (22.04). When reaching M1ZeroSpeedLim (20.03) the firing pulses are set to 150 degrees to decrease the armature current. When the armature current is zero the firing pulses are blocked, the contactors are opened, field exciter and fans are stopped.
	TorqueLimit (1)	The output of the drives ramp is set to zero. Thus the drive stops at the active torque limit. When reaching M1ZeroSpeedLim (20.03) the firing pulses are set to 150 degrees to decrease the armature current. When the armature current is zero the firing pulses are blocked, the contactors are opened, field exciter and fans are stopped.
	CoastStop (2)	The firing pulses are immediately set to 150 degrees to decrease the armature current. When the armature current is zero the firing pulses are blocked, the contactors are opened, field exciter and fans are stopped, default.
	DynBraking (3)	Dynamic braking resistors are switched into the circuit to stop the motor.
		Emergency Stop Mode - Selects the type of stop used when the digital input defined by EStop (10.09) is cleared, or, if controlled by fieldbus, when MCW (7.01.02) (NotOff3) is cleared.
	FLDHEATSEL (21.18)	Preset Value: 0 (Not Used) Range: 0 - 6
	Not Used (0)	Disabled.
On (1)	Selects the digital input defined by OnOff1 (10.15) or, if controlled by fieldbus, MCW (7.01.00) (On), to enable the field or reduce it to the field heating level.	
OnRun (2)	Selects the digital input defined by StartStop (10.16) or, if controlled by fieldbus, MCW (7.01.03) (Run), to enable the field or reduce it to the field heating level.	
ACW bit 12 (3)		
ACW bit 13 (4)	Selects auxiliary control word bits controlled by Adaptive Programming, application program (ControlBuilder) or overriding control (fieldbus) to enable the field or reduce it to the field heating level.	
ACW bit 14 (5)		
ACW bit 15 (6)	Field Heat Selector - Enables and selects the type of field heating for the motor.	

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions
GROUP 22 - SPEED RAMP	AccTime1 (22.01)	Preset Value: 20 Sec Range: 0 - 300 Acceleration Time 1 - The time the motor will accelerate from zero speed to maximum speed*. *The maximum speed of the drive is displayed in SpeedScaleAct (2.29).
	DecTime1 (22.02)	Preset Value: 20 Sec Range: 0 - 300 Deceleration Time 1 - The time the motor will decelerate from maximum speed* to zero speed. *The maximum speed of the drive is displayed in SpeedScaleAct (2.29).
	E StopRamp (22.04)	Preset Value: 20 Sec Range: 0 - 3000 Emergency Stop Ramp - The time the motor will decelerate from maximum speed* to zero speed in response to an emergency stop, if E StopMode (21.04) = RAMPSTOP, or in response to a trip level 4 fault, if FaultStopMode (30.30) = RAMPSTOP. *The maximum speed of the drive is displayed in SpeedScaleAct (2.29).
	JogAccTime (E) (22.12)	Preset Value: 20 Sec Range: 0 - 300 Jog Acceleration Time - The time the motor will accelerate from zero speed to maximum speed* when the inputs defined by Jog1 (10.17) or Jog2 (10.18) is set or, if controlled by fieldbus, when MCW (7.01.08) (Inching1) or MCW (7.01.09) (Inching2) is set. *The maximum speed of the drive is displayed in SpeedScaleAct (2.29).
	JogDecTime (E) (22.13)	Preset Value: 20 Sec Range: 0 - 300 Jog Deceleration Time - The time the motor will decelerate from maximum speed* to zero speed when the inputs defined by Jog1 (10.17) or Jog2 (10.18) is cleared or, if controlled by fieldbus, when MCW (7.01.08) (Inching1) or MCW (7.01.09) (Inching2) is cleared. *The maximum speed of the drive is displayed in SpeedScaleAct (2.29).
GROUP 23 - SPEED REFERENCE	SpeedRef (E) (23.01)	Preset Value: 0 RPM Range: -10000 - 10000 Speed Reference - By default, the speed reference used when the drive is put into RUN mode. For example, if set to 500, the motor will be commanded at 500 rpm. The speed reference selection can be changed with Ref1Sel (11.03).
	FixedSpeed1 (E) (23.02)	Preset Value: 0 RPM Range: -10000 - 10000 Fixed Speed 1 (Jog Speed 1) - The speed reference used when the drive is put into JOG1 mode when the input defined by Jog1 (10.17) is set or, if controlled by fieldbus, when MCW (7.01.08) (Inching1) is set. Also used as the motor pot minimum speed when Ref1Sel (11.03) is set to MotPot.
	FixedSpeed2 (E) (23.03)	Preset Value: 0 RPM Range: -10000 - 10000 The speed reference used when the drive is put into JOG2 mode when the input defined by Jog2 (10.18) is set or, if controlled by fieldbus, when MCW (7.01.09) (Inching2) is set.
GROUP 24 - SPEED CONTROL	KpS (24.03)	Preset Value: 5 Range: 0 - 325 P Part of Speed Controller - Proportional gain of the speed controller. This value is automatically calculated during the speed controller auto-tuning process. Higher values improve responsiveness.
	TiS (24.09)	Preset Value: 2500 mSec Range: 0 - 64000 I Part of the Speed Controller - Integral gain of the speed controller. This value is automatically calculated during the speed controller auto-tuning process. Lower values improve responsiveness.

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions
GROUP 26 - TORQUE REFERENCE HANDLING	TorqSel (E) (26.01) Zero (0) Speed (1) Torque (2) (3 through 6)	Preset Value: 1 (Speed) Range: 0 - 6
		zero control, torque reference = 0
		speed control, default
		torque control
		Min, Max, Add, Limit: See DCS800 Firmware Manual Torque Selector - Selects whether the reference signal is a torque command, a speed command or other. If the drive is in torque control, AuxStatWord (8.02) bit 10 is set.
GROUP 30 - FAULT FUNCTIONS	StallTime (30.01)	Preset Value: 0 Sec Range: 0 - 200
		Stall Time - If the measured speed is less than the stall speed and the torque is greater than the stall torque for a time greater than the stall time, then fault F531 will be generated.
	StallSpeed (30.02)	Preset Value: 5 RPM Range: 0 - 1000
		Stall Time - If the measured speed is less than the stall speed and the torque is greater than the stall torque for a time greater than the stall time, then fault F531 will be generated.
	StallTorq (30.03)	Preset Value: 75% Range: 0 - 325
		Stall Time - If the measured speed is less than the stall speed and the torque is greater than the stall torque for a time greater than the stall time, then fault F531 will be generated.
	ArmOvrVoltLev (30.08)	Preset Value: 120% Range: 20 - 500
		Armature Overvoltage Level - In percent of M1NomVolt (99.02), if the armature voltage exceeds the overvoltage level, fault F503 will be generated. It is recommended to set this at least 20% above M1NomVolt (99.02).
	ArmOvrCurLev (30.09)	Preset Value: 250% Range: 20 - 400
		Armature Overcurrent Level - In percent of M1NomCur (99.03), if the armature current exceeds this level, fault F502 will be generated. It is recommended to set this at least 25% above M1NomCur (99.03). ConvOvrCur (4.16) displays the trip level in Amps.
M1OvrSpeed (30.16)	Preset Value: 1800 RPM Range: 0 - 10000	
	Motor 1 Over Speed Limit - If the measured speed exceeds this level, fault F532 will be generated. It is recommended to set this at least 20% higher than the maximum motor speed, M1SpeedMin (20.01) or M1SpeedMin (20.02).	
UNetMin1 (30.22)	Preset Value: 80% Range: 0 - 150	
	Mains Undervoltage Alarm Level - As a percent of NomMainsVolt (99.10), if the mains voltage falls below this level, alarm A111 will be generated. This value must be greater than UNetMin2 (30.23).	
UNetMin2 (30.23)	Preset Value: 60% Range: 0 - 150	
	Mains Undervoltage Limit - As a percent of NomMainsVolt (99.10), if the mains voltage falls below this level, fault F512 will be generated. This value must be less than UNetMin1 (30.22).	
PowrDownTime (30.24)	Preset Value: 60% Range: 0 - 150	
	Power Down Time - If the mains voltage falls below the alarm level defined by UNetMin1 (30.22) for longer than the time specified by this parameter, fault F512 will be generated.	

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions	
GROUP 30 - FAULT FUNCTIONS (Continued)	FaultStopMode (30.30)	Preset Value: 0 (RampStomp) Range: 0 - 3	
	RampStop (0)	Decelerates using E StopRamp (22.04).	
	TorqueLimit (1)	Decelerates as fast as possible using the active torque limit.	
	CoastStop (2)	Armature current is immediately set to zero allowing the motor to coast to a stop.	
	DynBraking (3)	Dynamic braking resistors are switched into the circuit to stop the motor. Fault Stop Mode - Selects the desired reaction to a trip level 4 fault.	
	ExtFaultSel (30.31)	Preset Value: 0 (Not Used) Range: 0 - 20	
	NotUsed (0)	No Reaction, default	
	DI1 (1)	1 = fault, 0 = no fault	
	DI2 (2)	1 = fault, 0 = no fault	
	DI3 (3)	1 = fault, 0 = no fault	
	DI4 (4)	1 = fault, 0 = no fault	
	DI5 (5)	1 = fault, 0 = no fault	
	DI6 (6)	1 = fault, 0 = no fault	
	DI7 (7)	1 = fault, 0 = no fault	
	DI8 (8)	1 = fault, 0 = no fault	
	DI9 (9)	1 = fault, 0 = no fault, Only available with digital extension board	
	DI10 (10)	1 = fault, 0 = no fault, Only available with digital extension board	
	DI11 (11)	1 = fault, 0 = no fault, Only available with digital extension board	
	MCW BIT11 (12)	1 = fault, 0 = no fault, MainCtrlWord (7.01) bit 11	
	MCW BIT12 (13)	1 = fault, 0 = no fault, MainCtrlWord (7.01) bit 12	
	MCW BIT13 (14)	1 = fault, 0 = no fault, MainCtrlWord (7.01) bit 13	
	MCW BIT14 (15)	1 = fault, 0 = no fault, MainCtrlWord (7.01) bit 14	
	MCW BIT15 (16)	1 = fault, 0 = no fault, MainCtrlWord (7.01) bit 15	
	ACW Bit12 (17)	1 = fault, 0 = no fault, AuxCtrlWord (7.02) bit 12	
	ACW Bit13 (18)	1 = fault, 0 = no fault, AuxCtrlWord (7.02) bit 13	
	ACW Bit14 (19)	1 = fault, 0 = no fault, AuxCtrlWord (7.02) bit 14	
	ACW Bit15 (20)	1 = fault, 0 = no fault, AuxCtrlWord (7.02) bit 15	
		External Fault Selector - Selects the signal that is used to generate fault F525 ExternalDI, either a digital input or a reserved bit in the MCW (7.01) or ACW (7.02)	
		ExtAlarmSel (30.32)	Preset Value: 0 (Not Used) Range: 0 - 20
		NotUsed (0)	No Reaction, default
		DI1 (1)	1 = fault, 0 = no fault
		DI2 (2)	1 = fault, 0 = no fault
		DI3 (3)	1 = fault, 0 = no fault
		DI4 (4)	1 = fault, 0 = no fault
		DI5 (5)	1 = fault, 0 = no fault
DI6 (6)		1 = fault, 0 = no fault	
DI7 (7)		1 = fault, 0 = no fault	
DI8 (8)		1 = fault, 0 = no fault	
DI9 (9)		1 = fault, 0 = no fault, Only available with digital extension board	
DI10 (10)		1 = fault, 0 = no fault, Only available with digital extension board	
DI11 (11)		1 = fault, 0 = no fault, Only available with digital extension board	
MCW BIT11 (12)		1 = fault, 0 = no fault, MainCtrlWord (7.01) bit 11	
MCW BIT12 (13)		1 = fault, 0 = no fault, MainCtrlWord (7.01) bit 12	
MCW BIT13 (14)		1 = fault, 0 = no fault, MainCtrlWord (7.01) bit 13	
MCW BIT14 (15)		1 = fault, 0 = no fault, MainCtrlWord (7.01) bit 14	

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions
GROUP 30 - FAULT FUNCTIONS (Continued)	ExtAlarmSel (30.32) (Continued)	Preset Value: 0 (Not Used) Range: 0 - 20
	MCW BIT15 (16)	1 = fault, 0 = no fault, MainCtrlWord (7.01) bit 15
	ACW Bit12 (17)	1 = fault, 0 = no fault, AuxCtrlWord (7.02) bit 12
	ACW Bit13 (18)	1 = fault, 0 = no fault, AuxCtrlWord (7.02) bit 13
	ACW Bit14 (19)	1 = fault, 0 = no fault, AuxCtrlWord (7.02) bit 14
	ACW Bit15 (20)	1 = fault, 0 = no fault, AuxCtrlWord (7.02) bit 15
		External Alarm Selector - Selects the signal that is used to generate alarm A126 ExternalDI, either a digital input or a reserved bit in the MCW (7.01) or ACW (7.02)
	FB TimeOut (30.35)	Preset Value: 100 mSec Range: 0 - 64000
		Fieldbus Time Out - Time period before a fieldbus communication loss fault is generated. By default, FieldBusCom (F528) fault is generated but this can be changed using ComLossCtrl (30.28) (E).
	GROUP 31 - MOTOR TEMP- ERATURE	M1TempSel (31.05)
NotUsed (0)		Motor 1 temperature measurement is blocked, default
1PT100 AI2 (1)		One PT100 connected to AI2 on SDCS-IOB-3
2PT100 AI2 (2)		Two PT100 connected to AI2 on SDCS-IOB-3
3PT100 AI2 (3)		Three PT100 connected to AI2 on SDCS-IOB-3
4PT100 AI2/3 (4)		Four PT100, 3 connected to AI2 and 1 connected to AI3 on SDCS-IOB-3
5PT100 AI2/3 (5)		Five PT100, 3 connected to AI2 and 2 connected to AI3 on SDCS-IOB-3
6PT100 AI2/3 (6)		Six PT100, 3 connected to AI2 and 3 connected to AI3 on SDCS-IOB-3
1PT100 AI7 (7)		One PT100 connected to AI7 on second RAIO
2PT100 AI7 (8)		Two PT100 connected to AI7 on second RAIO
3PT100 AI7 (9)		Three PT100 connected to AI7 on second RAIO
4PT100 AI7/8 (10)		Four PT100, 3 connected to AI7 and 1 connected to AI8 on second RAIO
5PT100 AI7/8 (11)		Five PT100, 3 connected to AI7 and 2 connected to AI8 on second RAIO
6PT100 AI7/8 (12)		Six PT100, 3 connected to AI7 and 3 connected to AI8 on second RAIO
1PTC AI2 (13)		One PTC connected to AI2 on SDCS-IOB-3
2PTC AI2/3 (14)		Two PTC, 1 connected to AI2 and 1 connected to AI3 on SDCS-IOB-3
1PTC AI2/Con (15)		One PTC connected to AI2 on SDCS-CON-4
		Motor 1 Temperature Selector - Selects motor 1 measured temperature input. The result is displayed in Mot1TempMeas (1.22). For complete description, see DCS800 Firmware Manual.
M1AlarmLimTemp (31.06)		Preset Value: 0°C/Ω /- Range: -10 - 4000
		Motor 1 Alarm Limit Temperature - If the measured motor temperature exceeds this level, alarm A106 will be generated.
M1OverTemp (31.07)		Preset Value: 0°C/Ω /- Range: -10 - 4000
		Motor 1 Fault Limit Temperature - If the measured motor temperature exceeds this level, fault F506 will be generated.
M1KlixonSel (31.08)		Preset Value: 0 (Not Used) Range: 0 - 11
NotUsed (0)	No reaction, default	
DI1 (1)	0 = fault, 1 = no fault	
DI2 (2)	0 = fault, 1 = no fault	
DI3 (3)	0 = fault, 1 = no fault	
DI4 (4)	0 = fault, 1 = no fault	
DI5 (5)	0 = fault, 1 = no fault	
DI6 (6)	0 = fault, 1 = no fault	
DI7 (7)	0 = fault, 1 = no fault	
DI8 (8)	0 = fault, 1 = no fault	
DI9 (9)	0 = fault, 1 = no fault. Only available with digital extension board	

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions
GROUP 31 - MOTOR TEMP- ERATURE (Continued)	M1KlixonSel (31.08) (Continued)	Preset Value: 0 (Not Used) Range: 0 - 11
	D110 (10)	0 = fault, 1 = no fault. Only available with digital extension board
	D111 (11)	0 = fault, 1 = no fault. Only available with digital extension board
		Motor 1 Klixon Selector - Instead of using an analog sensor, a digital thermost switch can be used. This parameter selects which digital input is used for this purpose.
GROUP 34 - DCS800-EP CONTROL PANEL DISPLAY	DispParam1Sel (34.01) DispParam2Sel (34.08) DispParam3Sel (34.15)	Preset Value: 101 Preset Value: 114 Preset Value: 116 Range: 0 - 9999
		Display Parameter # Select - Selects the signal to be displayed on rows 1, 2, and 3 of the control panel in the format xxyy where xx is the parameter group and yy is the index. Ex.: 101 is MotSpeedFilt (1.01).
GROUP 43 - CURRENT CONTROL	CurSel (43.02)	Preset Value: 0 (CurRef311) Range: 0 - 12
	CurRef311 (0)	CurRef (3.11), the output of the torque controller, default
	CurRefExt (1)	CurRefExt (43.03), which would typically be written to by Adaptive Programming, application program (ControlBuilder) or overriding control (fieldbus).
	AI1 through AI6 (2 through 7)	Analog input 1 - 6
	FldCurRef (8)	FldCurRefM1 (3.30), which would typically be selected if this drive is being used as a field power supply in combination with a DCS800-EP armature converter.
	Others (9 through 12)	See DCS800 Firmware Manual
		Current Reference Selector - Selects the source signal for the current controller. The current controller is normally fed by the torque controller but in some rare cases, the current reference can come from an external source.
	M1KpArmCur* (43.06)	Preset Value: 0.1 Range: 0 - 100
		P Part of Armature Current Controller - Proportional gain of the armature current controller. *Automatically calculated during the armature current controller auto-tuning process.
	M1TiArmCur* (43.07)	Preset Value: 50 mSec Range: 0 - 10000
	I Part of the Armature Current Controller - Integral gain of the armature current controller. *Automatically calculated during the armature current controller auto-tuning process.	
M1DiscontCurLim* (43.08)	Preset Value: 100% Range: 0 - 325	
	Discontinuous Current Limit - The threshold between continuous and discontinuous current as a percentage of M1NomCur (99.03). See chapter Armature Current Controller, Manual Tuning In the DCS800 Firmware Manual for further explanation of discontinuous current limit. *Automatically calculated during the armature current controller auto-tuning process.	
M1ArmL* (43.09)	Preset Value: 0 mH Range: 0 - 640	
	Motor Armature Inductance - IMPORTANT: DO NOT CHANGE THIS PARAMETER UNLESS MANUALLY TUNING THE ARMATURE CONTROLLER. *Automatically calculated during the armature current controller auto-tuning process.	
m1ArmR* (43.10)	Preset Value: 0 mΩ Range: 0 - 65500	
	Motor Armature Resistance - IMPORTANT: DO NOT CHANGE THIS PARAMETER UNLESS MANUALLY TUNING THE ARMATURE CONTROLLER. *Automatically calculated during the armature current controller auto-tuning process.	

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions	
GROUP 44 - FIELD EXCITATION	FldCtrlMode (44.01)	Preset Value: 0 (Fix) Range: 0 - 7	
		Fix (0) Constant field (no field weakening).	
		EMF (1) Field weakening is enabled.	
		Fix/Rev (2) Constant field (no field weakening) but field reversal is enabled.	
		EMF/Rev (3) Field weakening is enabled and field reversal is enabled.	
		Fix/Opti (4) Constant field (no field weakening) but opti-torque is enabled.	
		EMF/Opti (5) Field weakening is enabled and opti-torque is enabled.	
		Fix/Rev/Opti (6) Constant field (no field weakening) but both field reversal and opti-torque are enabled.	
EMF/Rev/Opti (7) Field weakening, field reversal and opti-torque are all enabled.			
		Field Control Mode - Selects the field control mode.	
	M1KpFex** (44.02)	Preset Value: 0.2 Range: 0 - 325 P Part of Field Current Controller - Proportional gain of the field current controller. **Automatically calculated during the field current controller auto-tuning process.	
	M1TiFex** (44.03)	Preset Value: 200 mSec Range: 0 - 64000 I Part of the Field Current Controller - Integral gain of the field current controller. **Automatically calculated during the field current controller auto-tuning process.	
GROUP 50 - SPEED MEASURE- MENT	M1SpeedScale (50.01)	Preset Value: 0 RPM Range: 0 - 6500 Motor 1 Speed Scaling - Typically the drive uses M1SpeedMin (20.01) and M1SpeedMax (20.02) for speed scaling. This, however can be overridden if this parameter is greater than or equal to 10. If that is the case, then this parameter selects the maximum speed of the drive in RPM. (Internally, 20,000 speed units equals this value.)	
		M1SpeedfbSel (50.03)	Preset Value: 0 (EMF) Range: 0 - 5
			EMF (0) Speed is calculated with motor EMF voltage feedback with flux compensation (transducerless). NOTE: Field weakening is not possible if this parameter is set to EMF.
			Encoder (1) Measured with pulse encoder 1 connected to terminals 1 - 9 on terminal block X5.
			Tacho (2) Measured with tachometer connected to terminals 1 - 4 on block X3.
			External (3) MotSpeed (1.04) is updated with Adaptive Programming, application program (ControlBuilder) or overriding control (fieldbus).
Encoder2 (4) Measured with pulse encoder 2 connected to an external interface adapter.			
EMF Volt (5) Speed is calculated with motor EMF voltage feedback without flux compensation.			
		Motor 1 Speed Feedback Selector - Selects speed measurement for motor 1.	
	M1EncPulseNo (50.04)	Preset Value: 1024 PPR Range: 20 - 10000 Motor 1 Encoder 1 Pulse Number - Number of pulses per revolution (ppr) of encoder 1.	
	M1TachoAdjust (50.12)	Preset Value: 0 RPM Range: -10000 - 10000 Motor 1 Tachometer Adjust - During the "Tach Fine Tuning" auto tuning procedure, this parameter is to be set to the actual speed of the motor as measured by an independent device, such as a hand-held tachometer, in RPM. At other times, changes to this parameter have no effect.	
GROUP 50 - SPEED MEASURE- MENT (Continued)	M1TachoVolt1000 (50.13)	Preset Value: 60 Volts Range: 0 - 270 Motor 1 Tachometer Voltage at 1000 rpm - To be set to the actual tachometer voltage at 1000 rpm. This can be done automatically using the "speed feedback assistant" during auto tuning. If set to 0, auto tuning measures this and changes it to -1 when measured successfully. Otherwise, if set manually to a value greater than 0, the entered value is used.	
	Enc2PulseNo (50.19)	Preset Value: 1024 PPR Range: 20 - 10000	

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions
		Encoder 2 Pulse Number - Encoder Operation: Number of pulses per revolution (ppr) of encoder 2. Resolver Operation: If a resolver is connected to an extension module (RRIA-01 or FEN-21), this parameter defines the number of pole pairs as follows: Enc2PulseNo (50.19) = 1024 * number of pole pairs.
GROUP 51 - Fieldbus	Fieldbus1 (51.01) Fieldbus2 (51.02) Fieldbus3 (51.03) Fieldbus4 (51.04) Fieldbus5 (51.05) Fieldbus6 (51.06) Fieldbus7 (51.07) Fieldbus8 (51.08) Fieldbus9 (51.09) Fieldbus10 (51.10) Fieldbus11 (51.11) Fieldbus12 (51.12) Fieldbus13 (51.13) Fieldbus14 (51.14) Fieldbus15 (51.15) Fieldbus16 (51.16) Fieldbus17 (51.17) Fieldbus18 (51.18) Fieldbus19 (51.19) Fieldbus20 (51.20) Fieldbus21 (51.21) Fieldbus22 (51.22) Fieldbus23 (51.23) Fieldbus24 (51.24) Fieldbus25 (51.25) Fieldbus26 (51.26) Fieldbus18 (51.28) Fieldbus19 (51.29) Fieldbus20 (51.30) Fieldbus21 (51.31) Fieldbus22 (51.32) Fieldbus23 (51.33) Fieldbus24 (51.34) Fieldbus25 (51.35) Fieldbus26 (51.36)	Preset Value: 0 Range: 0 - 32767 Fieldbus Parameter # - Defines the communication parameters for fieldbus adapters (F-type, R-type, and N-type). Names and the number of the used parameters depend on the selected fieldbus adapter. See fieldbus adapter manual and DCS800 Firmware Manual for more information. IMPORTANT: If a fieldbus parameter is changed, its new value only takes effect after setting FBA PAR REFRESH (51.27) = RESET or at the next power up of the fieldbus adapter.
	FBA PAR REFRESH (51.27) Done (0) Reset (1)	Preset Value: 0 (Done) Range: 0 -1 Default. Refresh the parameters of the fieldbus adapter Fieldbus Parameter Refresh - If a fieldbus parameter is changed, the new value only takes affect after this parameter is set to REFRESH (or at the next power up of the fieldbus adapter). NOTE: This service is only available for R-type fieldbus adapters.

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions
GROUP 99 - START UP DATA	Language (99.01)	Preset Value: English Range: 0 - 14
	English (0)	Default
	English AM (1)	Not implemented yet.
	Deutsch (2)	
	Italiano (3)	
	Espanol (4)	
	Portugues (5)	Not implemented yet.
	Nederlands (6)	Not implemented yet.
	Francais (7)	
	Dansk (8)	Not implemented yet.
	Suomi (9)	Not implemented yet.
	Svenska (10)	Not implemented yet.
	Po-Russki (11)	Not implemented yet.
	Polski (12)	
	Turkish (13)	Not implemented yet.
Cesky (14)	Not implemented yet.	
		Language - Language used for the control panel, DriveWindow and DriveWindow Light.
	M1NomVolt (99.02)	Preset Value: 350 Volts DC Range: 5 - 2000
	M1NomCur (99.03)	Preset Value: 0 Amps DC Range: 0 - 30000
	M1BaseSpeed (99.04)	Preset Value: 1500 RPM Range: 10 - 6500
	ServiceMode (99.06)	Preset Value: 0 (NormalMode) Range: 0 - 17
	NormalMode (0)	Normal operating mode. OperModeSel (43.01) selects mode.
	ArmCurAuto (1)	Autotuning - armature current controller.
	FieldCurAuto (2)	Autotuning - field current controller.
	EMF FluxAuto (3)	Autotuning - EMF controller and flux linearization.
	SpdCtrlAuto (4)	Autotuning - Speed controller.
	SpdFbAssist (5)	Autotuning - Speed feedback assistant.
	ArmCurMan (6)	Manual tuning - armature current controller.
	FieldCurMan (7)	Manual tuning - field current controller.
	Thy Diagnosis (8)	Thyristor diagnostics - See TestFire (97.28) in DCS800 Firmware Manual.
	FldRevAssist (9)	Test field reversal.
	SetTypeCode (10)	Allows user to change the following parameters which are otherwise locked: 97.01 TypeCode 97.02 S ConvScaleCur 97.03 S ConvScaleVolt 45.20 S M1FldScale 45.21 S M2FldScale
	SpdCtrlMan (11)	Manual tuning - speed controller.
	EMF Man (12)	Manual tuning - EMF controller.
	Simulation (13)	Reserved.
	TachFineTune (14)	Autotuning - Tachometer fine tuning. See M1TachoAdjust (50.12).
	LD FB Config (15)	Reserved for future use (load fieldbus configuration file).
DeleteAppl (16)	Allows the user to delete the application program using ParApplSave (16.06).	
FindDiscCur (17)	Find discontinuous current limit.	
		Service Mode - Normally set to NormalMode, allows the drive to temporarily run a special operation such as autotuning, manual tuning or thyristor testing. Except when set to NormalMode, all user reference signals are blocked.

Table 11-2 DCS800-EP Parameter Definitions Continued

Block Title	Parameter (Number) Selection (Value)	Descriptions
GROUP 99 - START UP DATA (Continued)	ApplRestore (99.07)	Preset Value: 0 (Done) Range: 0 - 1
	Done (0) Yes (1)	No action or macro change completed; Default. Macro selected with ApplMacro (99.08) will be loaded into the drive. Application Restore - Setting to YES starts the loading/storing of the macro selected with ApplMacro (99.08). Automatically changes to DONE when complete.
	ApplMacro (99.08)	Preset Value: 0 (Not Used) Range:
	Not Used (0)	Default.
	Factory (1)	Load macro factory (default parameter set) into RAM and flash - User1 and User2 will not be influenced.
	User1Load (2)	Load macro User1 into RAM and flash.
	User1Save (3)	Save actual parameter set from RAM into macro User1.
	User2Load (4)	Load macro User2 into RAM and flash.
	User2Save (5)	Save actual parameter set from RAM into macro User2.
	Standard (6)	Load macro standard into RAM and flash.
	Man/Const (7)	Load macro manual / constant speed into RAM and flash.
	Hand/Auto (8)	Load macro hand (manual) / automatic into RAM and flash.
	Hand/MotPot (9)	Load macro hand (manual) / motor potentiometer into RAM and flash.
	reserved (10)	reserved
	MotPot (11)	Load macro motor potentiometer into RAM and flash.
	TorqCtrl (12)	Load macro torque control into RAM and flash.
	TorqLimit (13)	Load macro torque limit into RAM and flash.
	DemoStandard (14)	Load macro demo standard into RAM and flash. (Demo firmware only)
	2WreDCcontUS (15)	Load macro 2 wire with US style DC-contactor into RAM and flash.
	3WreDCcontUS (16)	Load macro 3 wire with US style DC-contactor into RAM and flash.
	3WreStandard (17)	Load macro 3 wire standard into RAM and flash. Application Macro - Selects which macro will be loaded/stored into RAM and flash when ApplRestore (99.07) is set to YES. See DCS800-EP Quick Guide for macro definition. MacroSel (8.10) displays which macro was last loaded.
	NomMainsVolt (99.10)	Preset Value: 400 Volts AC (for -05 drives) Range: 0 - (97.01)/(97.03)
		Nominal Mains Voltage - The voltage of the AC power at terminals U1, V1, W1.
	M1NomFldCur (99.11)	Preset Value: 0.3 Amps DC Range: 0.3 - 655
		Motor 1 Nominal Field Current - Nominal field current rating of the DC motor as typically shown on the motor nameplate.
	M1UsedFexType (99.12)	Preset Value: 1 (OnBoard) Range: 0 - 22
	Not Used (0)	Disables field power supply (exciter).
	OnBoard (1)	Internal field power supply (exciter) for D1 - D4 drives.
	FEX-425-INT (2)	Internal field power supply (exciter) for D5 drives.
	Various external field exciters (3 through 10)	Selects the type of external field power supply (exciter). Set to the type code shown on the device's nameplate. NOTE: If actual type code begins with DCF503B, choose the same setting that begins with DCF803. If it begins with DCF504B, choose the same setting that begins with DCF804.
	Others (15 through 22)	See DCS800 Firmware Manual
		Motor 1 Used Field Exciter Type - Selects the type of field power supply (exciter) used for motor 1.

Chapter A

Parameter Tables

A.1 Read Only Parameters

Block Title	Signal (Number) Selection (Value)	Descriptions	User Settings
GROUP 1 - Physical Actual Values	MotSpeedFilt (1.01)	Scaling: Unit: RPM	
	SpeedActEMF (1.02)	Scaling: Unit: RPM	
	SpeedActEnc (1.03)	Scaling: Unit: RPM	
	MotSpeed (1.04)	Scaling: Unit: RPM	
	SpeedActTach (1.05)	Scaling: Unit: RPM	
	MotCur (1.06)	Scaling: M1NomCur (99.03) Unit: Pct	
	MotTorqFilt (1.07)	Scaling: MotNomTorque (4.23) Unit: Pct	
	MotTorq (1.08)	Scaling: MotNomTorque (4.23) Unit: Pct	
	CurRipple (1.09)	Scaling: MotNomTorque (4.23) Unit: Pct	
	CurRippleFilt (1.10)	Scaling: MotNomTorque (4.23) Unit: Pct	
	MainsVoltActRel (1.11)	Scaling: NomMainsVolt (99.10) Unit: Pct	
	MainsVoltAct (1.12)	Scaling: Unit: Volts	
	ArmVoltActRel (1.13)	Scaling: M1NomVolt (99.02) Unit: Pct	
	ArmVoltAct (1.14)	Scaling: Unit: Volts	
	ConvCurActRel (1.15)	Scaling: ConvNomCur (4.05) Unit: Pct	
	ConvCurAct (1.16)	Scaling: Unit: Amps	
	EMFVoltActRel (1.17)	Scaling: M1NomVolt (99.02) Unit: Pct	
	Mot1TempMeas (1.22)	Scaling: Unit: °C or Ω	
	BridgeTemp (1.24)	Scaling: Unit: °C	
	Mot1FldCurRel (1.29)	Scaling: M1NomFldCur (99.11) Unit: Pct	
Mot1FldCur (1.30)	Scaling: Unit: Amps		
MainsFreqAct (1.38)	Scaling: Unit: Hz		
SpeedActEnc2 (1.42)	Scaling: Unit: RPM		
GROUP 2 - Speed Controller Signals	SpeedRef2 (2.01)	Scaling: Unit: RPM	
	SpeedRef3 (2.02)	Scaling: Unit: RPM	
	SpeedErrNeg (2.03)	Scaling: Unit: RPM	
	TorqAccCompRef (2.07)	Scaling: MotNomTorque (4.23) Unit: Pct	
	TorqRef1 (2.08)	Scaling: MotNomTorque (4.23) Unit: Pct	

Block Title	Signal (Number) Selection (Value)	Descriptions	User Settings
GROUP 2 - Speed Controller Signals (Continued)	TorqRef2 (2.09)	Scaling: MotNomTorque (4.23) Unit: Pct	
	TorqRef3 (2.10)	Scaling: MotNomTorque (4.23) Unit: Pct	
	TorqRef4 (2.11)	Scaling: MotNomTorque (4.23) Unit: Pct	
	TorqRefUsed (2.13)	Scaling: MotNomTorque (4.23) Unit: Pct	
	TorqCorr (2.14)	Scaling: MotNomTorque (4.23) Unit: Pct	
	dv_dt (2.16)	Scaling: Unit: RPM/s	
	SpeedRefUsed (2.17)	Scaling: Unit: RPM	
	SpeedRef4 (2.18)	Scaling: Unit: RPM	
	TorqMaxAll (2.19)	Scaling: MotNomTorque (4.23) Unit: Pct	
	TorqMinAll (2.20)	Scaling: MotNomTorque (4.23) Unit: Pct	
	TorqUsedMax (2.22)	Scaling: MotNomTorque (4.23) Unit: Pct	
	TorqUsedMin (2.23)	Scaling: MotNomTorque (4.23) Unit: Pct	
	TorqRefExt (2.24)	Scaling: MotNomTorque (4.23) Unit: Pct	
	TorqLimAct (2.26)	Scaling: Unit:	
	SpeedScaleAct (2.29)	Scaling: Unit: RPM	
GROUP 3 - Reference Actual Values	CurRef (3.11)	Scaling: M1NomCur (99.03) Unit: Pct	
	CurRefUsed (3.12)	Scaling: M1NomCur (99.03) Unit: Pct	
	ArmAlpha (3.13)	Scaling: Unit: Deg	
	CurActPeak (3.23)	Scaling: M1NomCur (99.03) Unit: Pct	
	VoltRef1 (3.25)	Scaling: M1NomCur (99.02) Unit: Pct	
GROUP 4 - Information	FirmwareVer (4.01)	Scaling: Unit:	
	FirmwareType (4.02)	Scaling: Unit:	
	ApplicName (4.03)	Scaling: Unit:	
	ConvNomVolt (4.04)	Scaling: Unit: Volts	
	ConvNomCur (4.05)	Scaling: Unit: Amps	
	Mot1FexType (4.06)	Scaling: Unit:	

Block Title	Signal (Number) Selection (Value)	Descriptions	User Settings
GROUP 4 - Information (Continued)	Mot1FexSwVer (4.08)	Scaling: Unit:	
	ApplicVer (4.12)	Scaling: Unit:	
	DriveLibVer (4.13)	Scaling: Unit:	
	ConvType (4.14)	Scaling: Unit:	
	QuadrantType (4.15)	Scaling: Unit:	
	ConvOvrCur (4.16)	Scaling: Unit: Amps	
	MaxBridgeTemp (4.17)	Scaling: Unit: °C	
	DCSLinkStat1 (4.18)	Scaling: Unit:	
	DCSLinkStat2 (4.19)	Scaling: Unit:	
	CPU Load (4.21)	Scaling: Unit: Pct	
	ApplLoad (4.22)	Scaling: Unit: Pct	
	MotTorqNom (4.23)	Scaling: Unit: Nm	
GROUP 5 - Analog I/O	AI1Tacho Val (5.01)	Scaling: 11 V = 125% * M1OvrSpeed (30.16) Unit: Volts	
	AI1 Val (5.03)	Scaling: Unit: Volts	
	AI2 Val (5.04)	Scaling: Unit: Volts	
	AO1 Val (5.11)	Scaling: Unit: Volts	
	AO2 Val (5.12)	Scaling: Unit: Volts	
GROUP 6 - Drive Logic Signals	SystemTime (6.01)	Scaling: Unit: Min	
	CurCtrlStat1 (6.03)	Scaling: Unit:	
	CurCtrlStat2 (6.04)	Scaling: Unit:	
	Mot1FexStatus (6.12)	Scaling: Unit:	
GROUP 7 - Control Words	MainCtrlWord (7.01)	Scaling: Unit:	
	AuxCtrlWord (7.02)	Scaling: Unit:	
	AuxCtrlWord2 (7.03)	Scaling: Unit:	
	AuxCtrlWord2 (7.03)	Scaling: Unit:	
	UsedMCW (7.04)	Scaling: Unit:	
	UsedMCW (7.04)	Scaling: Unit:	

Block Title	Signal (Number) Selection (Value)	Descriptions	User Settings
GROUP 8 - Status / Limit Words	MainStatWord (8.01)	Scaling: Unit:	
	AuxStatWord (8.02)	Scaling: Unit:	
	AuxStatWord (8.02)	Scaling: Unit:	
	DI StatWord (8.05)	Scaling: Unit:	
	DO StatWord (8.06)	Scaling: Unit:	
	DriveStat (8.08)	Scaling: Unit:	
	MacroSel (8.10)	Scaling: Unit:	
GROUP 9 - Fault / Alarm Words	FaultWord1 (9.01)	Scaling: Unit:	
	FaultWord2 (9.02)	Scaling: Unit:	
	FaultWord3 (9.03)	Scaling: Unit:	
	AlarmWord1 (9.06)	Scaling: Unit:	
	AlarmWord2 (9.07)	Scaling: Unit:	
	AlarmWord3 (9.08)	Scaling: Unit:	
	Diagnosis (9.11)	Scaling: Unit:	
	LastFault (9.12)	Scaling: Unit:	
	2ndLastFault (9.13)	Scaling: Unit:	
	3rdLastFault (9.14)	Scaling: Unit:	

A.2 Group 60 Parameters

Block Title	Parameter (Number) Selection (Value)	Descriptions	User Settings
GROUP 10 - START/STOP SELECT	CommandSel (10.01)	Preset Value: 0 (LOCAL I/O) Range: 0 - 4	
	Direction (10.02)	Preset Value: 0 (Not Used) Range: 0 - 20	
	Reset (10.03)	Preset Value: 6 (DI6) Range: 0 - 20	
	MotFanAck (10.06)	Preset Value: 2 (DI2) Range: 0 - 11	
	HandAuto (10.07)	Preset Value: 0 (Not Used) Range: 0 - 20	
	Off2 (10.08)	Preset Value: 4 (DI4) Range: 0 - 20	
	Off3 (10.09)	Preset Value: 5 (DI5) Range: 0 - 20	
	ParChange (10.10)	Preset Value: 0 (Not Used) Range: 0 - 20	
	OnOff1 (10.15)	Preset Value: 7 (DI7) Range: 0 - 21	
	StartStop (10.16)	Preset Value: 8 (DI8) Range: 0 - 21	
	Jog1 (10.17) Jog2 (10.18)	Preset Value: 0 (Not Used) Range: 0 - 20	
	ConvFanAck (10.20)	Preset Value: 1 (DI1) Range: 0 - 11	
	MainContAck (10.21)	Preset Value: (3) DI3 Range: 0 - 11	
	DynBrakeAck (10.22)	Preset Value: 0 (Not Used) Range: 0 - 11	
	DcBreakAck (10.23)	Preset Value: 0 (Not Used) Range: 0 - 11	
	DI1Invert (10.25) DI2Invert (10.26) DI3Invert (10.27) DI4Invert (10.28) DI5Invert (10.29) DI6Invert (10.30) DI7Invert (10.31) DI8Invert (10.32) DI9Invert (10.33) DI10Invert (10.34) DI11Invert (10.35)	Preset Value: 0 (Direct) Preset Value: 0 (Direct) Preset Value: 0 (Direct) Preset Value: 0 (Direct) Preset Value: 0 (Direct) Preset Value: 0 (Direct) Preset Value: 0 (Direct) Preset Value: 0 (Direct) Preset Value: 0 (Direct) Preset Value: 0 (Direct) Preset Value: 0 (Direct) Range: 0 - 1	
	GROUP 11 - SPEED REFERENCE INPUTS	Ref1Mux (11.02)	Preset Value: 1 (Close) Range: 0 - 21
Ref1Sel (11.03)		Preset Value: SpeedRef2301 Range: 0 - 18	
MotPotUp (11.13)		Preset Value: 0 (Not Used) Range: 0 - 20	
MotPotDown (11.14)		Preset Value: 0 (Not Used) Range: 0 - 20	
MotPotMin (11.15)		Preset Value: 0 (Not Used) Range: 0 - 20	

Block Title	Parameter (Number) Selection (Value)	Descriptions	User Settings	
GROUP 13 - ANALOG INPUTS	AI1HighVal (13.01) AI2HighVal (13.05) AI3HighVal (13.09) AI4HighVal (13.13) AI5HighVal (13.21) AI6HighVal (13.25)	Preset Value: 10000 mVolts Preset Value: 10000 mVolts Preset Value: 10000 mVolts Preset Value: 10000 mVolts Preset Value: 10000 mVolts Preset Value: 10000 mVolts Range: -10000 - 10000		
	AI1LowVal (13.02) AI1LowVal (13.06) AI1LowVal (13.10) AI1LowVal (13.14) AI1LowVal (13.22) AI1LowVal (13.26)	Preset Value: -10000 mVolts Preset Value: -10000 mVolts Preset Value: -10000 mVolts Preset Value: -10000 mVolts Preset Value: -10000 mVolts Preset Value: -10000 mVolts Range: -10000 - 10000		
	ConvModeAI1 (13.03) ConvModeAI2 (13.07) ConvModeAI3 (13.11) ConvModeAI4 (13.15) ConvModeAI5 (13.23) ConvModeAI6 (13.27)	Preset Value: +/- 10V Bi Preset Value: +/- 10V Bi Preset Value: +/- 10V Bi Preset Value: +/- 10V Bi Preset Value: +/- 10V Bi Preset Value: +/- 10V Bi Range: 0 - 4		
	FilterAI1 (13.04) FilterAI2 (13.08) FilterAI3 (13.12) FilterAI4 (13.16)	Preset Value: 0 mSec Preset Value: 0 mSec Preset Value: 0 mSec Preset Value: 0 mSec Range: 0 - 10000 mSec		
GROUP 15 - ANALOG OUTPUTS	DO1Index (14.01) DO2Index (14.03) DO3Index (14.05) DO4Index (14.07) DO5Index (14.09) DO6Index (14.11) DO7Index (14.13) DO8Index (14.15)	Preset Value: 603 Preset Value: 603 Preset Value: 603 Preset Value: 0 Preset Value: 0 Preset Value: 0 Preset Value: 0 Preset Value: 0 Preset Value: 603 Range: -9999 - 9999		
	DO1BitNo (14.02) DO2BitNo (14.04) DO3BitNo (14.06) DO4BitNo (14.08) DO5BitNo (14.10) DO6BitNo (14.12) DO7BitNo (14.14) DO8BitNo (14.16)	Preset Value: 0 Preset Value: 5 Preset Value: 0 Preset Value: 0 Preset Value: 0 Preset Value: 0 Preset Value: 0 Preset Value: 7 Range: 0 - 15		
	IndexAO1 (15.01) IndexAO2 (15.06)	Preset Value: 0 Preset Value: 0 Range: -9999 - 9999		
	CtrlWordAO1 (15.02) CtrlWordAO2 (15.07)	Preset Value: 0 Preset Value: 0 Range: -32768 - 32767		
	ConvModeAO1 (15.03) ConvModeAO2 (15.08)	Preset Value: +/-10V Bi Preset Value: +/-10V Bi Range: +/- 10V Bi - 0V-10V Abs		
	FilterAO1 (15.04) FilterAO2 (15.09)	Preset Value: 0 mSec Preset Value: 0 mSec Range: 0 - 1000		
	ScaleAO1 (15.05) ScaleAO2 (15.10)	Preset Value: 10000 mV Preset Value: 10000 mV Range: 0 - 10000		
	GROUP 16 - SYSTEM CONTROL INPUTS	LocLock (16.04)	Preset Value: 0 (False) Range: 0 - 1	
		USI Sel (16.09)	Preset Value: 0 (Compact) Range: 0 - 1	

Block Title	Parameter (Number) Selection (Value)	Descriptions	User Settings
GROUP 20 - LIMITS	M1SpeedMin (20.01)	Preset Value: -1500 RPM Range: -10000 - 10000	
	M1SpeedMax (20.02)	Preset Value: 1500 RPM Range: -10000 - 10000	
	M1ZeroSpeedLim (20.03)	Preset Value: 75 RPM Range: 0 - 1000	
	TorqMax (20.05)	Preset Value: 100% Range: 0 - 325%	
	TorqMin (20.06)	Preset Value: -100% Range: 0 - -325%	
	M1CurLimBrdg1 (20.12)	Preset Value: 100% Range: 0 - 325	
	M1CurLimBrdg2 (20.13)	Preset Value: -100% Range: 0 - -325	
	TorqUsedMaxSel (20.18)	Preset Value: 0 (TorqMax2005) Range: 0 - 6	
	TorqUsedMinSel (20.19)	Preset Value: TorqMin2006 Range: 0 - 7	
GROUP 21 - START/STOP	Off1Mode (21.02)	Preset Value: 0 (RampStop) Range: 0 - 3	
	StopMode (21.03)	Preset Value: 0 (RampStop) Range: 0 - 3	
	E STOPMODE (21.04)	Preset Value: 2 (CoastStop) Range: 0 - 3	
	FLDHEATSEL (21.18)	Preset Value: 0 (Not Used) Range: 0 - 6	
GROUP 22 - SPEED RAMP	AccTime1 (22.01)	Preset Value: 20 Sec Range: 0 - 300	
	DecTime1 (22.02)	Preset Value: 20 Sec Range: 0 - 300	
	E StopRamp (22.04)	Preset Value: 20 Sec Range: 0 - 3000	
	JogAccTime (E) (22.12)	Preset Value: 20 Sec Range: 0 - 300	
	JogDecTime (E) (22.13)	Preset Value: 20 Sec Range: 0 - 300	
GROUP 23 - SPEED REFERENCE	SpeedRef (E) (23.01)	Preset Value: 0 RPM Range: -10000 - 10000	
	FixedSpeed1 (E) (23.02)	Preset Value: 0 RPM Range: -10000 - 10000	
	FixedSpeed2 (E) (23.03)	Preset Value: 0 RPM Range: -10000 - 10000	
GROUP 24 - SPEED CONTROL	KpS (24.03)	Preset Value: 5 Range: 0 - 325	
	TiS (24.09)	Preset Value: 2500 mSec Range: 0 - 64000	
GROUP 26 - TORQUE REFERENCE HANDLING	TorqSel (E) (26.01)	Preset Value: 1 (Speed) Range: 0 - 6	
GROUP 30 - FAULT FUNCTIONS	StallTime (30.01)	Preset Value: 0 Sec Range: 0 - 200	
	StallSpeed (30.02)	Preset Value: 5 RPM Range: 0 - 1000	
	StallTorq (30.03)	Preset Value: 75% Range: 0 - 325	
	ArmOvrVoltLev (30.08)	Preset Value: 120% Range: 20 - 500	

Block Title	Parameter (Number) Selection (Value)	Descriptions	User Settings
GROUP 30 - FAULT FUNCTIONS (Continued)	ArmOvrCurLev (30.09)	Preset Value: 250% Range: 20 - 400	
	M1OvrSpeed (30.16)	Preset Value: 1800 RPM Range: 0 - 10000	
	UNetMin1 (30.22)	Preset Value: 80% Range: 0 - 150	
	UNetMin2 (30.23)	Preset Value: 60% Range: 0 - 150	
	PowrDownTime (30.24)	Preset Value: 60% Range: 0 - 150	
	FaultStopMode (30.30)	Preset Value: 0 (RampStomp) Range: 0 - 3	
	ExtFaultSel (30.31)	Preset Value: 0 (Not Used) Range: 0 - 20	
	ExtAlarmSel (30.32)	Preset Value: 0 (Not Used) Range: 0 - 20	
	FB TimeOut (30.35)	Preset Value: 100 mSec Range: 0 - 64000	
GROUP 31 - MOTOR TEMP- ERATURE	M1TempSel (31.05)	Preset Value: 0 (Not Used) Range: 0 - 15	
	M1AlarmLimTemp (31.06)	Preset Value: 0°C/Ω /- Range: -10 - 4000	
	M1OverTemp (31.07)	Preset Value: 0°C/Ω /- Range: -10 - 4000	
	M1KlixonSel (31.08)	Preset Value: 0 (Not Used) Range: 0 - 11	
GROUP 34 - DCS800-EP CONTROL PANEL DISPLAY	DispParam1Sel (34.01)	Preset Value: 101	
	DispParam2Sel (34.08)	Preset Value: 114	
	DispParam3Sel (34.15)	Preset Value: 116 Range: 0 - 9999	
GROUP 43 - CURRENT CONTROL	CurSel (43.02)	Preset Value: 0 (CurRef311) Range: 0 - 12	
	M1KpArmCur* (43.06)	Preset Value: 0.1 Range: 0 - 100	
	M1TiArmCur* (43.07)	Preset Value: 50 mSec Range: 0 - 10000	
	M1DiscontCurLim* (43.08)	Preset Value: 100% Range: 0 - 325	
	M1Arml* (43.09)	Preset Value: 0 mH Range: 0 - 640	
	m1ArmR* (43.10)	Preset Value: 0 mΩ Range: 0 - 65500	
GROUP 44 - FIELD EXCITATION	FldCtrlMode (44.01)	Preset Value: 0 (Fix) Range: 0 - 7	
	M1KpFex** (44.02)	Preset Value: 0.2 Range: 0 - 325	
	M1TiFex** (44.03)	Preset Value: 200 mSec Range: 0 - 64000	
GROUP 50 - SPEED MEASURE- MENT	M1SpeedScale (50.01)	Preset Value: 0 RPM Range: 0 - 6500	
	M1SpeedfbSel (50.03)	Preset Value: 0 (EMF) Range: 0 - 5	
	M1EncPulseNo (50.04)	Preset Value: 1024 PPR Range: 20 - 10000	
	M1TachoAdjust (50.12)	Preset Value: 0 RPM Range: -10000 - 10000	
	M1TachoVolt1000 (50.13)	Preset Value: 60 Volts Range: 0 - 270	
	Enc2PulseNo (50.19)	Preset Value: 1024 PPR Range: 20 - 10000	

Block Title	Parameter (Number) Selection (Value)	Descriptions	User Settings
GROUP 51 - Fieldbus	Fieldbus1 (51.01)	Preset Value: 0	
	Fieldbus2 (51.02)	Preset Value: 0	
	Fieldbus3 (51.03)	Preset Value: 0	
	Fieldbus4 (51.04)	Preset Value: 0	
	Fieldbus5 (51.05)	Preset Value: 0	
	Fieldbus6 (51.06)	Preset Value: 0	
	Fieldbus7 (51.07)	Preset Value: 0	
	Fieldbus8 (51.08)	Preset Value: 0	
	Fieldbus9 (51.09)	Preset Value: 0	
	Fieldbus10 (51.10)	Preset Value: 0	
	Fieldbus11 (51.11)	Preset Value: 0	
	Fieldbus12 (51.12)	Preset Value: 0	
	Fieldbus13 (51.13)	Preset Value: 0	
	Fieldbus14 (51.14)	Preset Value: 0	
	Fieldbus15 (51.15)	Preset Value: 0	
	Fieldbus16 (51.16)	Preset Value: 0	
	Fieldbus17 (51.17)	Preset Value: 0	
	Fieldbus18 (51.18)	Preset Value: 0	
	Fieldbus19 (51.19)	Preset Value: 0	
	Fieldbus20 (51.20)	Preset Value: 0	
	Fieldbus21 (51.21)	Preset Value: 0	
	Fieldbus22 (51.22)	Preset Value: 0	
	Fieldbus23 (51.23)	Preset Value: 0	
	Fieldbus24 (51.24)	Preset Value: 0	
	Fieldbus25 (51.25)	Preset Value: 0	
	Fieldbus26 (51.26)	Preset Value: 0	
	Fieldbus18 (51.28)	Preset Value: 0	
	Fieldbus19 (51.29)	Preset Value: 0	
	Fieldbus20 (51.30)	Preset Value: 0	
	Fieldbus21 (51.31)	Preset Value: 0	
	Fieldbus22 (51.32)	Preset Value: 0	
	Fieldbus23 (51.33)	Preset Value: 0	
	Fieldbus24 (51.34)	Preset Value: 0	
	Fieldbus25 (51.35)	Preset Value: 0	
	Fieldbus26 (51.36)	Preset Value: 0 Range: 0 - 32767	
GROUP 99 - START UP DATA	Language (99.01)	Preset Value: English Range: 0 - 14	
	M1NomVolt (99.02)	Preset Value: 350 Volts DC Range: 5 - 2000	
	M1NomCur (99.03)	Preset Value: 0 Amps DC Range: 0 - 30000	
	M1BaseSpeed (99.04)	Preset Value: 1500 RPM Range: 10 - 6500	
	ServiceMode (99.06)	Preset Value: 0 (NormalMode) Range: 0 - 17	
	ApplRestore (99.07)	Preset Value: 0 (Done) Range: 0 - 1	
	ApplMacro (99.08)	Preset Value: 0 (Not Used) Range:	
	NomMainsVolt (99.10)	Preset Value: 400 Volts AC (for -05 drives) Range: 0 - (97.01)/(97.03)	
	M1NomFldCur (99.11)	Preset Value: 0.3 Amps DC Range: 0.3 - 655	
	M1UsedFexType (99.12)	Preset Value: 1 (OnBoard) Range: 0 - 22	

Chapter B

Technical Information

B.1 Technical Specifications

Table B-1 Technical Data

Specification	Permitted Value
Electrical	
Input Voltage, 3-phase	230/460VAC
Input Voltage Deviation	±10% continuous, ±15% short time
Note: Special consideration must be given to voltage deviation in regeneration mode	
Rated Frequency	50/60Hz, ±2%
Environmental	
Cabinet internal ambient temperature	0 to 40°C (32 to 104°F)
Change of ambient temperature	<0.5°C (0.9°F)
Relative Humidity	5% to 95%, non-condensing
Site altitude	<1000m (3,280 Ft) above sea level at 100% current >1000m (3,280 Ft) above sea level at reduced current
Storage Temperature	-40 to +55°C (-40 to +131°F)
Transportation Temperature	-40 to +70°C (-40 to +158°F)
Protection Class	UL Type Open / IP00

Reference DCS800 Hardware Manual Technical Data

B.1.1 Digital Inputs Technical Data

The digital inputs range:

- 0 - 7.3V -> 0 Status
- 7.5 - 50V -> 1 Status

B.1.2 Analog Inputs Technical Data

Input range of AI1 and AI2 set by parameter:

- ±10V, 0V to 10V, 2V to 10V, 5V offset, 6V offset.
- ±20mA, 0mA to 20mA, 4mA to 20mA, 10mA offset, 12mA offset.

Input range of AI3 and AI4 set by parameter:

- ±10V, 0V to 10V, 2V to 10V, 5V offset, 6V offset.

Resolution:

- 15 bits + sign.

Scan time for AI1 and AI2:

- 3.3ms / 2.77ms (synchronized with mains frequency).

Scan time for AI3 and AI4:

- 5ms.

Additional function:

- Motor temperature measurement for a PTC or PT100 uses AI2 or AI3 on SDCS-I0B3 or AI7 or AI8 on RAIO-01 option modules. For a thermal switch, use IOB-21, IOB-22 or RDIO-01 option module (provides Isolation) with any digital input selected with M1KlixonSel (motor 1 klixon selector) (31.08). See section Motor Protection in 3ADW000193R0701 DCS800 Firmware Manual.

B.1.3 Analog Outputs Technical Data

SDCS-CON-4

Output range AO1 and AO2 set by parameter:
- $\pm 10V$, 0V to 10V, 2V to 10V, 5V offset, 6V offset.

Output range fixed AO I-act:
- 8V equals the minimum of 325% M1NomCur (99.03) or 230% ConvNomCur (4.05).
- see also IactScaling (4.26).
- for more details see DCS800 Hardware Manual.

Resolution:
- 11 bits + sign.

Cycle time for AO1 and AO2:
- 5ms.

Cycle time fixed AO I-act:
- directly taken from hardware.

Additional functions:
- the gain of the fixed AO I-act can be adjusted by means of R110 on the SDCS-IOB-3.

All 3 standard AO's can be replaced with SDCS-IOB-3 and extended by means of one or two RAIO-01 analog I/O extension modules. Thus the maximum number of AO's is 7.

The hardware source is selected by:
- AIO ExtModule (98.06) for AO3 and AO4.
- AIO MotTempMeas (98.12) for AO5 and AO6.
- IO BoardConfig (98.15).

Note: The maximum amount of analog I/O extension modules is two.

B.1.4 Digital Outputs Technical Data

Ratings of the Relay Driver Digital Outputs 1 through 7 on the SDCS-CON-4 control board.
- DO1 to DO7 maximum 50mA / 22VDC at no load.
- Cycle time for DO1 to DO7 - 5ms.

B.1.5 Relay Output Technical Data

Output contact rating of the DO8 relay:
- DO8 - 3A / 24VDC, maximum 0.3A / 115VDC / 230VDC, maximum 3A / 230VAC maximum
- Cycle time for DO8 - 5ms.

B.1.6 Overload

150% of rated current for 60 seconds followed by 15 minutes at rated current or below. **NOTE:** Cannot be rerated for high continuous current since all system components are sized based on these ratings.

B.1.7 Input Reactance

1.5% impedance when optional line reactor is included, (available up to 150HP). **NOTE:** All drives require line reactor or dedicated isolation transformer with input impedance of 1.5% minimum; 4 to 10% maximum depending on system configuration. See "Line Reactors" in DCS800 Hardware Manual for detailed information.

B.1.8 Fuse Protection

AC input line fuses (3).

DC output armature fuses, regen only (2).

See Table B-2, Recommended Fuses.

Table B-2 Recommended Fuses

Panel Drive Non-Regenerative Regenerative	Frame	Fuse				
		AC in (module) F1, F2, F3	Control Xfmr primary F4, F5 (2 Req'd)	Control Xfmr secondary F6	DC Out (motor) F7, F8 (2 Req'd)	AC in (Blower motor starter) F9, F10, F11
Manufacturer		Bussmann	Bussmann	Bussmann	Bussmann	Bussmann
DCS800-EP1-0020-05	A	FWH-50B	For 480VAC input voltage: FNQR-1-1/8 For 230VAC input voltage: FNQR-2	FNM-2-8/10	FWH-50B	See Table B-6
DCS800-EP2-0025-05				FNM-2-8/10	FWH-80B	
DCS800-EP1-0045-05	A	FWH-80B		FNM-2-8/10	FWH-80B	
DCS800-EP2-0050-05				FNM-2-8/10	FWH-80B	
DCS800-EP1-0065-05	A	FWH-80B		FNM-2-8/10	FWH-125B	
DCS800-EP2-0075-05				FNM-2-8/10	FWH-125B	
DCS800-EP1-0090-05	A	FWH-125B		FNM-2-8/10	FWH-200B	
DCS800-EP2-0100-05				FNM-2-8/10	FWH-200B	
DCS800-EP1-0125-05	B	FWH-200B		FNM-2-8/10	FWH-250A	
DCS800-EP2-0140-05				FNM-2-8/10	FWH-250A	
-	B	FWH-200B	FNM-2-8/10	FWH-300A		
-			FNM-2-8/10	FWH-300A		
DCS800-EP2-0200-05	B	FWH-250A	FNM-2-8/10	170M6011		
DCS800-EP1-0230-05			FNM-2-8/10	170M6011		
DCS800-EP2-0260-05	B	FWH-300A	FNM-2-8/10	170M6013		
DCS800-EP1-0315-05			FNM-2-8/10	170M6013		
DCS800-EP2-0350-05	C	170M6011	FNQR-3	170M6013		
DCS800-EP1-0405-05			FNQR-3	170M6013		
DCS800-EP2-0450-05	C	170M6011	FNQR-3	170M6015		
DCS800-EP1-0470-05			FNQR-3	170M6015		
DCS800-EP2-0520-05	C	170M6013	FNQR-3	170M6016		
DCS800-EP1-0610-05			FNQR-3	170M6016		
DCS800-EP2-0680-05	D	170M6013	FNQR-3			
DCS800-EP1-0740-05			FNQR-3			
DCS800-EP2-0820-05	D	170M6015	FNQR-3			
DCS800-EP1-0900-05			FNQR-3			
DCS800-EP2-1000-05	D	170M6016	FNQR-3			
-			FNQR-3			
DCS800-EP2-1010-05	D	170M6016	FNQR-3	FNM-8	170M6016	

Table B-3 Fuse Tightening Torque for AC in (F1-F3) and DC Out (F7-F8) Fuses

HP at 460V	Frame Size	Tightening Torque lb-ft (Nm)	Bolt Size
10 - 60	A	5 (7)	1/4"-20
75 - 150	B	16 (22)	3/8"-16
200 - 300	C	15 (20)	M10
400 - 600	D	15 (20)	M10

B.2 Control Transformer

230/460VAC primary; 120VAC secondary

Table B-4

Non-Regenerative (2Q)	Regenerative (4Q)	460V Motor HP	Capacity (VA)	Capacity @ 115V (Amps)	Drive Load (Amps)	Blower Starter Load (Amps)	-Available-	
							no Starter (Amps)	with Starter (Amps)
DCS800-EP1-0020-05	DCS800-EP2-0025-05	10	250	2.17	1.46	0.03	0.71	0.68
DCS800-EP1-0045-05	DCS800-EP2-0050-05	20			1.49		0.68	0.65
DCS800-EP1-0065-05	DCS800-EP2-0075-05	30			1.49		0.68	0.65
DCS800-EP1-0090-05	DCS800-EP2-0100-05	40			1.55		0.63	0.60
DCS800-EP1-0125-05	DCS800-EP2-0140-05	60			1.55		0.63	0.60
DCS800-EP1-0180-05	-	75			1.62		0.56	0.53
-	DCS800-EP2-0200-05	100			1.74		0.44	0.41
DCS800-EP1-0230-05	DCS800-EP2-0260-05	125	1.74	0.44	0.41			
DCS800-EP1-0315-05	DCS800-EP2-0350-05	150	1.74	0.44	0.41			
DCS800-EP1-0405-05	DCS800-EP2-0450-05	200	350	3.04	2.30	0.11	0.75	0.64
DCS800-EP1-0470-05	DCS800-EP2-0520-05	250			2.30		0.75	0.64
DCS800-EP1-0610-05	DCS800-EP2-0680-05	300			1.85		1.19	1.08
DCS800-EP1-0740-05	DCS800-EP2-0820-05	400	750	6.52	1.85	0.11	4.67	4.56
DCS800-EP1-0900-05	DCS800-EP2-1000-05	500			2.59		3.93	3.82
-	DCS800-EP2-1010-05	600			2.59		3.93	3.82

NOTE: Reference instruction manual DCS800-EP Installation and Start-Up for conversion to 230VAC. Specify Plus Code +S235.

B.3 AC Contactor

AC line contactor with (1) aux. N.O. contact for customer use: 6 Amps @ 24 - 127VAC or 24VDC

B.4 Blower Motor Starter Thermal Overload Relay (Plus Code +M6xx)

I_{nom} : Factory set to minimum rating. Must be field adjusted to actual blower motor nominal current.

RESET: Factory set to MANUAL

RESET/STOP: Factory set to "R" (RESET)

B.5 Accessories

Table B-5 Line Reactors

External Line Reactors								
Non-Regenerative (2Q)	Regenerative (4Q)	HP	Line Reactor for Configuration A			Line Reactor for Configuration B		
			Manufactured by TCI					
			1.5% impedance	Watts Loss	Weight (Lbs.)	5% impedance	Watts Loss	Weight (Lbs.)
DCS800-EP1-0020-05	DCS800-EP2-0025-05	10	KLR16BTB	20	7	KLR16CTB	58	12
DCS800-EP1-0045-05	DCS800-EP2-0050-05	20	KLR35BTB	55	8	KLR35CTB	97	22
DCS800-EP1-0065-05	DCS800-EP2-0075-05	30	KLR45BTB	59	8	KLR45CTB	118	24
DCS800-EP1-0090-05	DCS800-EP2-0100-05	40	KLR55BTB	70	11	KLR55CTB	150	32
DCS800-EP1-0125-05	DCS800-EP2-0140-05	60	KLR110BCB	95	26	KLR110CCB	191	50
DCS800-EP1-0180-05	-	75	KLR110BCB	95	26	KLR110CCB	191	50
-	DCS800-EP2-0200-05	100	KLR160BCB	127	47	KLR160CCB	254	84
DCS800-EP1-0230-05	DCS800-EP2-0260-05	125	KLR200BCB	135	53	KLR200CCB	337	110
DCS800-EP1-0315-05	DCS800-EP2-0350-05	150	KLR200BCB	135	53	KLR200CCB	337	110
DCS800-EP1-0405-05	DCS800-EP2-0450-05	200	KLR300BCB	216	54	KLR300CCB	443	122
DCS800-EP1-0470-05	DCS800-EP2-0520-05	250	KLR360BCB	221	65	KLR360CCB	406	156
DCS800-EP1-0610-05	DCS800-EP2-0680-05	300	KLR420BCB	275	85	KLR420CCB	500	160
DCS800-EP1-0740-05	DCS800-EP2-0820-05	400	KLR600BCB	338	96	KLR600CCB	650	275
DCS800-EP1-0900-05	DCS800-EP2-1000-05	500	KLR750BCB	372	147	KLR750CCB	732	295
-	DCS800-EP2-1010-05	600	KLR850BCB	389	150	KLR850CCB	850	300

B.5.1 Blower Motor Starter

Table B-6

Plus Code	Blower HP 460VAC	Blower HP 230VAC	Blower Amps 460V/230V	Fuses F9, F10, F11	Contactor	Overload
				Bussmann		
+M635	1/2	-	1.1	LP-CC-2	Mini contactor 120VAC coil B7-30-10-84	T16-1.3
+M636	3/4	-	1.6	LP-CC-3.2		T16-1.7
+M637	1	1/2	2.1/2.2	LP-CC-4		T16-2.3
+M638	1.5	-	3.0	LP-CC-6		T16-3.1
+M639	2	3/4	3.4/3.2	LP-CC-6		T16-4.2
+M640	3	1	4.8/4.2	LP-CC-10		T16-5.7
+M641	-	1-1/2	6	LP-CC-10		T16-7.6
+M641	-	2	6.8	LP-CC-10		T16-7.6
+M641	5	-	7.6	LP-CC-15		T16-7.6
+M611	3/4	-	1.6	LPJ-3-2/10-SP		ABB contactor 120V coil A26-30-10-84
+M612	1	-	2.1	LPJ-4SP	TA25DU2.1-20	
+M613	1.5	-	3.0	LPJ-6SP	TA25DU3.1-20	
+M614	2	3/4	3.4/3.2	LPJ-6SP	TA25DU4.0-20	
+M615	3	1	4.8/4.2	LPJ-8SP	TA25DU5.0-20	
+M616	-	1-1/2	6	LPJ-10SP	TA25DU6.5-20	
+M617	5	2	7.6/6.8	LPJ-15SP	TA25DU8.5-20	
+M618	7.5	3	11/9.6	LPJ-20SP	TA25DU11-20	
+M619	10	-	14	LPJ-20SP	TA25DU14-20	
+M620	-	5	15.2	LPJ-25SP	TA25DU19-20	
+M621	15	7.5	21/22	LPJ-30SP	TA25DU25-20	
+M622	20	10	27/28	LPJ-40SP	TA25DU32-20	
+M623	25 - 30	15	34 - 40/42	LPJ-60SP	A40-30-10-84	

B.5.2 Other Replacement Parts

Table B-7

Panel Drive Non-Regenerative Regenerative	Frame	Fuse AC Input Contactor K1 (1)	Control Transformer T1 (1)	Circuit Breaker 1MCB (1)	Line Reactor (1)
Manufacturer		ABB	Micron	ABB	TCI
DCS800-EP1-0020-05	A	A16-30-10-84	1B250BTZ13JFK	T2H025E5W	KLR16BTB
DCS800-EP2-0025-05		A26-30-10-84	1B250BTZ13JFK	T2H060E5W	KLR35BTB
DCS800-EP1-0045-05	A	A40-30-10-84	1B250BTZ13JFK	T2H060E5W	KLR45BTB
DCS800-EP2-0050-05		A50-30-11-84	1B250BTZ13JFK	T2H100E5W	KLR55BCB
DCS800-EP1-0065-05	A	A75-30-11-84	1B250BTZ13JFK	T2HQ100BW	KLR110BCB
DCS800-EP2-0075-05		A95-30-11-84	1B250BTZ13JFK	T4H150E5W	KLR110BCB
DCS800-EP1-0090-05	B	A145-30-11-84	1B250BTZ13JFK	T4H250E5W	KLR160BCB
DCS800-EP2-0100-05		A145-30-11-84	1B250BTZ13JFK	T4H250E5W	KLR200BCB
DCS800-EP1-0125-05	B	A145-30-11-84	1B250BTZ13JFK	T4H250E5W	KLR200BCB
DCS800-EP2-0140-05		A260-30-11-84	B350BTZ13JFK	T5H400E5W	KLR300BCB
DCS800-EP1-0180-05	C	A300-30-11-84	B350BTZ13JFK	T5H600E5W	KLR360BCB
-		A300-30-11-84	B350BTZ13JFK	T5H600E5W	KLR420BCB
DCS800-EP2-0200-05	D	AF460-30-11-70	B750BTZ13JFK	T6H800E5W	KLR600BCB
DCS800-EP1-0230-05		AF580-30-11-70	B750BTZ13JFK	T7H1200E5W	KLR750BCB
DCS800-EP2-0260-05	D	AF750-30-11-70	B750BTZ13JFK	T7H1200E5W	KLR850BCB
DCS800-EP1-0315-05		-	-	-	-
DCS800-EP2-0350-05	D	AF750-30-11-70	B750BTZ13JFK	T7H1200E5W	KLR850BCB
DCS800-EP1-0405-05		-	-	-	-
DCS800-EP2-0450-05	D	AF750-30-11-70	B750BTZ13JFK	T7H1200E5W	KLR850BCB
DCS800-EP1-0470-05		-	-	-	-
DCS800-EP2-0520-05	D	AF750-30-11-70	B750BTZ13JFK	T7H1200E5W	KLR850BCB
DCS800-EP1-0610-05		-	-	-	-
DCS800-EP2-0680-05	D	AF750-30-11-70	B750BTZ13JFK	T7H1200E5W	KLR850BCB
DCS800-EP1-0740-05		-	-	-	-
DCS800-EP2-0820-05	D	AF750-30-11-70	B750BTZ13JFK	T7H1200E5W	KLR850BCB
DCS800-EP1-0900-05		-	-	-	-
DCS800-EP2-1000-05	D	AF750-30-11-70	B750BTZ13JFK	T7H1200E5W	KLR850BCB
-		-	-	-	-
DCS800-EP2-1010-05	-	-	-	-	-

B.6 Dimensions and Weights

B.6.1 Dimensional and Weight Data

Table B-8 Drive Dimensions and Weights as Built

DCS800-EP Panel Drive						
HP at 460VAC	Weight - no reactor lb. (kg.)	Weight - with reactor lb. (kg.)	Frame Size	Height in. (mm)	Width in. (mm)	Depth in. (mm)
10	54 (25)	61 (28)	A	18.79 (477)	12.15 (309)	14.40 (366)
20	57 (26)	65 (30)				
30	59 (27)	67 (30)				
40	62 (28)	73 (33)				
60	62 (28)	88 (40)				
75	95 (43)	128 (58)	B	19.29 (490)	20.00 (508)	13.82* (351)
100	103 (47)	157 (71)				
125	103 (47)	163 (74)				
150	130 (59)	185 (84)				
200	231 (105)	n/a	C	35.32 (897)	23.58 (599)	16.17 (411)
250	231 (105)	n/a				
300	260 (118)	n/a				
400	355 (161)	n/a	D	45.66 (1160)	26.68 (678)	16.65 (499) / 19.65 (499)**
500	355 (161)	n/a				
600	355 (161)	n/a				

* 19.32 inch depth when internal reactor option is included

** Depth without circuit breaker option / depth with circuit breaker option

Table B-9 Drive Dimensions and Weights as Shipped

DCS800-EP Panel Drive						
HP at 460VAC	Weight - no reactor lb. (kg.)	Weight - with reactor lb. (kg.)	Frame Size	Height in. (mm)	Width in. (mm)	Depth in. (mm)
10	63 (29)	32 (15)	A	28 (711)	31 (787)	31 (787)
20	66 (30)	34 (15)				
30	68 (31)	35 (16)				
40	71 (32)	37 (17)				
60	71 (32)	44 (20)				
75	104 (47)	62 (28)	B	28 (711)	31 (787)	31 (787)
100	112 (51)	75 (34)				
125	112 (51)	78 (35)				
150	139 (63)	88 (40)				
200	247 (112)	n/a	C	28 (711)	55 (1397)	31 (787)
250	247 (112)	n/a				
300	276 (125)	n/a				
400	371 (169)	n/a	D	28 (711)	55 (1397)	31 (787)
500	371 (169)	n/a				
600	371 (169)	n/a				

B.6.2 Requirements for Installation

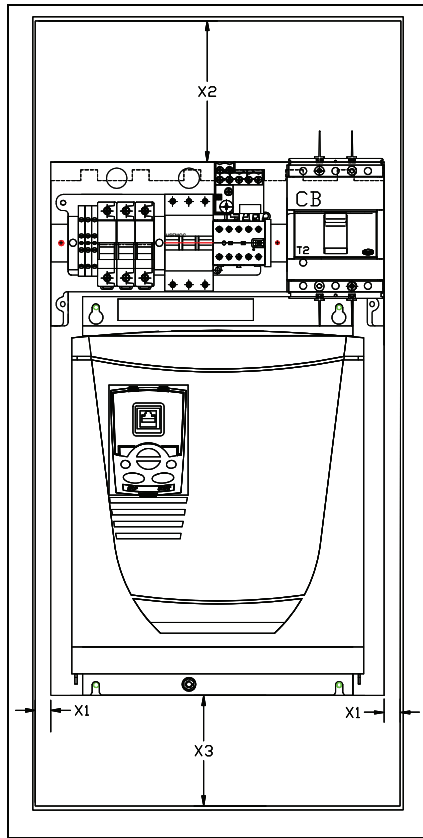
The drive must be installed in an upright position within a cabinet or other enclosure. The cabinet size, heat dissipation capability and clearances must conform to the requirements below. Refer to Dimensional Drawings for frame details. See Cabinet Cooling and Air Flow for the allowed ambient conditions of the drive.

Minimum Clearances

When installing the panel in a cabinet, minimum clearances from the panel to the cabinet walls, top and bottom must be maintained. This space is required for proper cabling, cooling air flow, service and maintenance. If one drive is mounted directly above another, see DCS800 Hardware Manual "Mechanical Installation" for additional information.

See Dimensional Drawings.

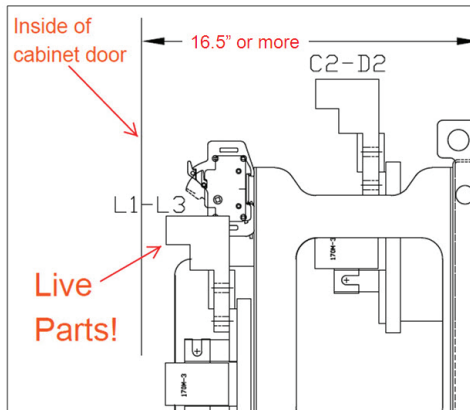
Figure B-1



Frame D side view

Frame	X1 (side)	X2 (top)	X3 (bottom)
A	0.5 in. (13 mm)	5.0 in. (127 mm)	4.0 in. (102 mm)
B	0.5 in. (13 mm)	10.0 in. (254 mm)	5.0 in. (127 mm)
C	0.5 in. (13 mm)	10.0 in. (254 mm)	5.0 in. (127 mm)
D	2.0 in. (51 mm)	12.0 in. (305 mm)	5.0 in. (127 mm)

Frame D Depth: Frame D drives without circuit breaker have live lugs at the highest point on the drive. Sixteen inches of cabinet depth is required plus a minimum of 1/2" air gap between lugs and cabinet door or as required by applicable codes. **REMEMBER:** door may flex inward!



Local Sales Offices

UNITED STATES

ARIZONA

PHOENIX

4211 S 43RD PLACE
PHOENIX, AZ 85040
PHONE: 602-470-0407
FAX: 602-470-0464

ARKANSAS

CLARKSVILLE

706 WEST MAIN STREET
CLARKSVILLE, AR 72830
PHONE: 479-754-9108
FAX: 479-754-9205

CALIFORNIA

LOS ANGELES

6480 FLOTILLA STREET
COMMERCE, CA 90040
PHONE: 323-724-6771
FAX: 323-721-5859

HAYWARD

21056 FORBES STREET
HAYWARD, CA 94545
PHONE: 510-785-9900
FAX: 510-785-9910

COLORADO

DENVER

3855 FOREST STREET
DENVER, CO 80207
PHONE: 303-623-0127
FAX: 303-595-3772

CONNECTICUT

WALLINGFORD

65 SOUTH TURNPIKE ROAD
WALLINGFORD, CT 06492
PHONE: 203-269-1354
FAX: 203-269-5485

FLORIDA

TAMPA/PUERTO RICO/ VIRGIN ISLANDS

3906 EAST 11TH AVENUE
TAMPA, FL 33605
PHONE: 813-248-5078
FAX: 813-241-9514

GEORGIA

ATLANTA

62 TECHNOLOGY DRIVE
ALPHARETTA, GA 30005
PHONE: 770-772-7000
FAX: 770-772-7200

ILLINOIS

CHICAGO

340 REMINGTON BLVD.
BOLINGBROOK, IL 60440
PHONE: 630-296-1400
FAX: 630-226-9420

INDIANA

INDIANAPOLIS

5525 W. MINNESOTA

STREET

INDIANAPOLIS, IN 46241
PHONE: 317-246-5100
FAX: 317-246-5110

IOWA

DES MOINES

1943 HULL AVENUE
DES MOINES, IA 50313
PHONE: 515-263-6929
FAX: 515-263-6515

MARYLAND

BALTIMORE

7071A DORSEY RUN RD
ELKRIDGE, MD 21075
PHONE: 410-579-2135
FAX: 410-579-2677

MASSACHUSETTS

BOSTON

6 PULLMAN STREET
WORCESTER, MA 01606
PHONE: 508-854-0708
FAX: 508-854-0291

MICHIGAN

DETROIT

5993 PROGRESS DRIVE
STERLING HEIGHTS, MI 48312
PHONE: 586-978-9800
FAX: 586-978-9969

MINNESOTA

MINNEAPOLIS

13098 GEORGE WEBER DR,
SUITE 400
ROGERS, MN 55374
PHONE: 763-428-3633
FAX: 763-428-4551

MISSOURI

ST LOUIS

13678 LAKEFRONT DRIVE
EARTH CITY, MO 63045
PHONE: 314-373-3032
FAX: 314-373-3038

KANSAS CITY

1501 BEDFORD AVENUE
NORTH KANSAS CITY, MO 64116
PHONE: 816-587-0272
FAX: 816-587-3735

NEW YORK

AUBURN

ONE ELLIS DRIVE
AUBURN, NY 13021
PHONE: 315-255-3403
FAX: 315-253-9923

NORTH CAROLINA

GREENSBORO

1220 ROTHERWOOD ROAD
GREENSBORO, NC 27406
PHONE: 336-272-6104
FAX: 336-273-6628

OHIO

CINCINNATI

2929 CRESCENTVILLE ROAD
WEST CHESTER, OH 45069
PHONE: 513-771-2600
FAX: 513-772-2219

CLEVELAND

8929 FREEWAY DRIVE
MACEDONIA, OH 44056
PHONE: 330-468-4777
FAX: 330-468-4778

OKLAHOMA

TULSA

5555 E. 71ST ST., SUITE 9100
TULSA, OK 74136
PHONE: 918-366-9320
FAX: 918-366-9338

OREGON

PORTLAND

12651 SE CAPPS ROAD
CLACKAMAS, OR 97015
PHONE: 503-691-9010
FAX: 503-691-9012

PENNSYLVANIA

PHILADELPHIA

103 CENTRAL AVENUE
SUITE 400B
MOUNT LAUREL, NJ 08054
PHONE: 856-840-8011
FAX: 856-840-0811

PITTSBURGH

159 PROMINENCE DRIVE
NEW KENSINGTON, PA 15068
PHONE: 724-889-0092
FAX: 724-889-0094

TENNESSEE

MEMPHIS

4000 WINCHESTER ROAD
MEMPHIS, TN 38118
PHONE: 901-365-2020
FAX: 901-365-3914

TEXAS

DALLAS

2920 114TH STREET SUITE 100
GRAND PRAIRIE, TX 75050
PHONE: 214-634-7271
FAX: 214-634-8874

HOUSTON

10355 W. LITTLE YORK ROAD
SUITE 300
HOUSTON, TX 77041
PHONE: 281-977-6500
FAX: 281-977-6510

UTAH

SALT LAKE CITY

2230 SOUTH MAIN STREET
SALT LAKE CITY, UT 84115
PHONE: 801-832-0127
FAX: 801-832-8911

WISCONSIN

MILWAUKEE

1960 SOUTH CALHOUN ROAD
NEW BERLIN, WI 53151
PHONE: 262-784-5940
FAX: 262-784-1215

INTERNATIONAL SALES

FORT SMITH, AR

P.O. BOX 2400
FORT SMITH, AR 72902
PHONE: 479-646-4711
FAX: 479-648-5895

CANADA

EDMONTON, ALBERTA

4053-92 STREET
EDMONTON, ALBERTA T6E 6R8
PHONE: 780-434-4900
FAX: 780-438-2600

TORONTO

OAKVILLE, ONTARIO

2910 BRIGHTON ROAD
OAKVILLE, ONTARIO, CANADA
L6H 5S3
PHONE: 905-829-3301
FAX: 905-829-3302

MONTREAL, QUEBEC

5155 J-ARMAND BOMBARDIER
SAINT-HUBERT, QUÉBEC
CANADA J3Z 1G4
PHONE: 514-933-2711
FAX: 514-933-8639

VANCOUVER,

BRITISH COLUMBIA

1538 KEBET WAY
PORT COQUITLAM,
BRITISH COLUMBIA V3C 5M5
PHONE 604-421-2822
FAX: 604-421-3113

WINNIPEG, MANITOBA

54 PRINCESS STREET
WINNIPEG, MANITOBA R3B 1K2
PHONE: 204-942-5205
FAX: 204-956-4251

MEXICO

LEON, GUANAJUATO

KM. 2.0 BLVD. AEROPUERTO
LEON, GUANAJUATO, CP37545
MEXICO
FAX: +52 477 761 2010



3AJUA0000148993 / REVB
EFFECTIVE: 06/23/2014

ABB Inc

Discrete Automation & Motion
Drives and Controls
16250 W. Glendale Drive
New Berlin, WI 53151

Phone: 800-752-0696

Web: www.abb.us/drives