

**DCS800**

**TYRAK L upgrade and installation manual  
950 A ... 3000 A**



# DCS800 Drive Manuals

	Public. number	Language									
		E	D	I	ES	F	CN	RU	PL	PT	
<b>DCS800 Quick Guide</b>	3ADW000191	x	x	x	x	x					
<b>DCS800 Tools &amp; Documentation CD</b>	3ADW000211	x									
<b>DCS800 Converter module</b>											
Flyer DCS800	3ADW000190	x	x		x	x				x	
Technical Catalog DCS800	3ADW000192	x	x	x	x	x	x	x	x	x	
Hardware Manual DCS800	3ADW000194	x	x	x	x	x	x	x	x		
Hardware Manual DCS800 update DCF503B/DCF504B	3ADW000194Z0301	x									
Firmware Manual DCS800	3ADW000193	x	x	p	x	x	x	x	x		
Installation according to EMC	3ADW000032	x									
Technical Guide	3ADW000163	x									
Service Manual DCS800	3ADW000195	x	x								
12-Pulse Manual	3ADW000196	x									
CMA-2 Board	3ADW000136	x									
Flyer Hard - Parallel	3ADW000213	x									
<b>Drive Tools</b>											
DriveWindow 2.x - User's Manual	3BFE64560981	x									
DriveOPC 2.x - User's Manual	3BFE00073846	x									
Optical DDCS Communication Link	3AFE63988235	x									
DDCS Branching Units - User's Manual	3BFE64285513	x									
<b>DCS800 Applications</b>											
PLC Programming with CoDeSys	CoDeSys_V23	x	x			x					
61131 DCS800 target +tool description - Application Program	3ADW000199	x									
<b>DCS800 Crane Drive</b>											
DCS800 Crane Drive Manual suppl.	3AST004143	x									
DCS800 Crane Drive Product note	PDC5 EN	x									
<b>DCS800 Winder ITC</b>											
DCS800 Winder Product note	PDC2 EN	x									
DCS800 Winder description ITC	3ADW000308	x									
Winder Questionnaire	3ADW000253z	x									
<b>DCS800-E Panel Solution</b>											
Flyer DCS800-E Panel solution	3ADW000210	x									
Hardware Manual DCS800-E	3ADW000224	x									
<b>DCS800-A Enclosed Converters</b>											
Flyer DCS800-A	3ADW000213	x									
Technical Catalogue DCS800-A	3ADW000198	x									
Installation of DCS800-A	3ADW000091	x	x								
<b>DCS800-R Rebuild System</b>											
Flyer DCS800-R	3ADW000007	x	x								
DCS800-R Rebuild Kits	3ADW000197	x									
DCS800-R Optical Rebuild Kits	3ADW000415	x									
DCS800-R DCS500/DCS600 Upgrade Kits	3ADW000256	x									
<b>Extension Modules</b>											
RAIO-01 Analogue IO Extension	3AFE64484567	x									
RDIO-01 Digital IO Extension	3AFE64485733	x									
RRIA-01 Resolver Interface Module	3AFE68570760	x									
RTAC-01 Pulse Encoder Interface	3AFE64486853	x									
RTAC-03 TTL Pulse Encoder Interface	3AFE68650500	x									
AIMA R-slot extension	3AFE64661442	x									
<b>Door mounting kits</b>											
Door mounting DCS Control Panel (IP54, click in)	3AUA0000076085	x									
Door mounting DCS Control Panel (fix mounting)	3AFE68294673	x									
Door mounting DCS Control Panel (IP66, fix mounting)	3AFE68829593	x									
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Drive specific serial communication											
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Fieldbus Adapter with DC Drives RPBA- (PROFIBUS)	3AFE64504215	x									
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Fieldbus Adapter with DC Drives RDNA- (DeviceNet)	3AFE64504223	x									
Fieldbus Adapter with DC Drives RMBA (MODBUS)	3AFE64498851	x									
Fieldbus Adapter with DC Drives RETA (Ethernet)	3AFE64539736	x									
x -> existing      p -> planned											
Status 04.2012											

# Safety instructions

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## What this chapter contains

This chapter contains the safety instructions you must follow when installing, operating and servicing the drive. If ignored, physical injury or death may follow, or damage may occur to the drive, the motor or driven equipment. Read the safety instructions before you work on the unit.

## To which products this chapter applies

The information is valid for the whole range of the product DCS800, the converter modules DCS800-S0x size D1 to D7, field exciter units DCF80x, etc. like the Rebuild Kit DCS800-R00-9xxx.

## Usage of warnings and notes

There are two types of safety instructions throughout this manual: warnings and notes. Warnings caution you about conditions which can result in serious injury or death and/or damage to the equipment, and advise on how to avoid the danger. Notes draw attention to a particular condition or fact, or give information on a subject. The warning symbols are used as follows:



**Dangerous voltage warning** warns of high voltage which can cause physical injury or death and/or damage to the equipment.



**General danger warning** warns about conditions, other than those caused by electricity, which can result in physical injury or death and/or damage to the equipment.



**Electrostatic sensitive devices warning** warns of electrostatic discharge which can damage the equipment.

## Installation and maintenance work

These warnings are intended for all who work on the drive, motor cable or motor. Ignoring the instructions can cause physical injury or death and/or damage to the equipment.

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### WARNING!

- **Only qualified electricians are allowed to install and maintain the drive!**
- Never work on the drive, motor cable or motor when main power is applied.  
Always ensure by measuring with a multimeter (impedance at least 1 Mohm) that:
  1. Voltage between drive input phases U1, V1 and W1 and the frame is close to 0 V.
  2. Voltage between terminals C+ and D- and the frame is close to 0 V.
- Do not work on the control cables when power is applied to the drive or to the external control circuits. Externally supplied control circuits may cause dangerous voltages inside the drive even when the main power on the drive is switched off.
- Do not make any insulation resistance or voltage withstand tests on the drive or drive modules.
- Isolate the motor cables from the drive when testing the insulation resistance or voltage withstand of the cables or the motor.
- When reconnecting the motor cable, always check that the C+ and D- cables are connected with the proper terminal.

### Note:

- The motor cable terminals on the drive are at a dangerously high voltage when the main power is on, regardless of whether the motor is running or not.
  - Depending on the external wiring, dangerous voltages (115 V, 220 V or 230 V) may be present on the relay outputs of the drive system (e.g. SDCS-IOB-2 and RDIO).
  - DCS800 with enclosure extension: Before working on the drive, isolate the whole drive system from the supply.
-

## Grounding

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

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### WARNING!

- 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 and marked 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 (e.g. conductive sleeves) of screened cable entries at the cabinet lead-through plate.
- Do not install a drive equipped with an EMC filter to an ungrounded power system or a high resistance-grounded (over 30 ohms) power system.

### Note:

- Power cable shields are suitable as equipment grounding conductors only when adequately sized to meet safety regulations.
  - As the normal leakage current of the drive is higher than 3.5 mA AC or 10 mA DC (stated by EN 50178, 5.2.11.1), a fixed protective earth connection is required.
-

## Printed circuit boards and fiber optic cables

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These instructions are intended for all who handle the circuit boards and fiber optic cables. Ignoring the following instructions can cause damage to the equipment.

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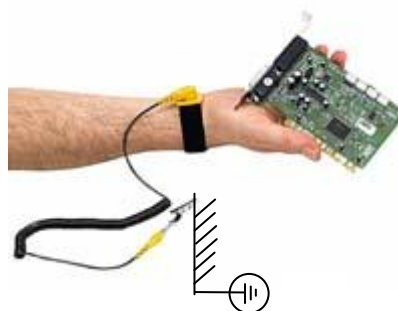


**WARNING!** The printed circuit boards contain components sensitive to electrostatic discharge. Wear a grounding wrist band when handling the boards. Do not touch the boards unnecessarily.

Use grounding strip:



ABB order no.: 3ADV050035P0001



**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 35 mm (1.38 in.).

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## Mechanical installation

These notes are intended for all who install the drive. Handle the unit carefully to avoid damage and injury.

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### WARNING!



- DCS800 sizes D4 ... D7: The drive is heavy. Do not lift it alone. Do not lift the unit by the front cover. Place units D4 and D5 only on its back.  
DCS800 sizes D5 ... D7: The drive is heavy. Lift the drive by the lifting lugs only. Do not tilt the unit. The unit will overturn from a tilt of about 6 degrees.
  - 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.
  - Ensure sufficient cooling.
  - Do not fasten the drive by riveting or welding.
-

## Operation

These warnings are intended for all who plan the operation of the drive or operate the drive. Ignoring the instructions can cause physical injury or death and/or damage to the equipment.




### WARNING!

- Before adjusting the drive and putting it into service, make sure that the motor and all 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.
- Do not control the motor with the disconnecting device (disconnecting mains); instead, use the control panel keys  and , or commands via the I/O board of the drive.
- Mains connection  
You can use a disconnect switch (with fuses) to disconnect the electrical components of the drive from the mains for installation and maintenance work. The type of disconnect switch used must be 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 disconnect must be locked in its "OPEN" position during any installation and maintenance work.
- 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 drive will neither cause an emergency stop of the motor, 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 the drive via signals "RUN", "drive OFF" or "Emergency Stop" respectively "control panel" or "PC tool".
- Intended use  
The operating instructions cannot take into consideration every possible case of 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.



**Note:**

- When the control location is not set to Local (L not shown in the status row of the display), the stop key on the control panel will not stop the drive. To stop the drive using the control panel, press the LOC/REM key and then the stop key .
-



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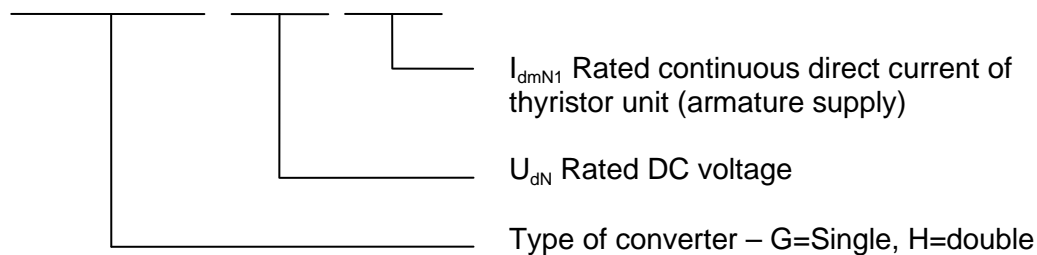
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# Introduction

## Type designation TYRAK L

Modules and enclosed converters have the same type designation. Single converters are designated YGMP and double converters YHMP.

Y(G,H)MP 470 - 400



### Voltage data and current data

Mains frequency (f)	Rated DC voltage $U_{dN}$ (V)		Converter current rating $I_{dmN1}$ (A)
	Single quadrant	Double quadrant	
50	270	240	40
	470	420	70
	510	460	120
	540	485	180
	620	550	270
	815	725	350
60	285	250	400
	540	485	530
	565	510	650
	590	530	800
	620	550	950
	705	635	1100
			1250
			1400
			1600
			1800
			2500
			3000

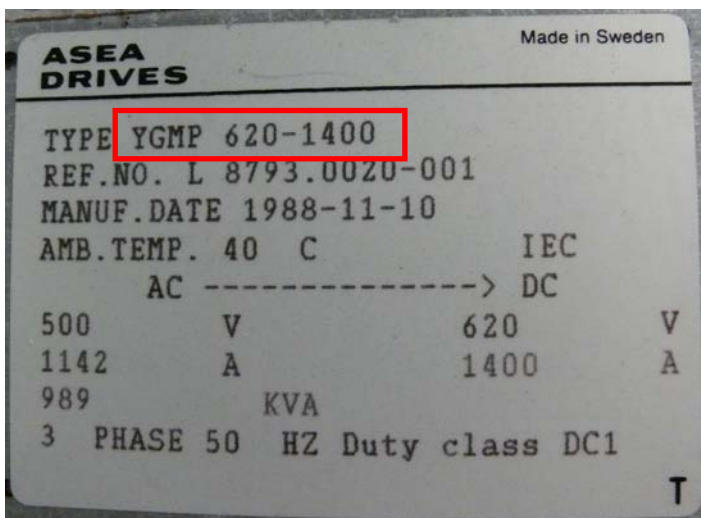
## TYRAK L programming

TYRAK L is a digital drive and can contain additional functionalities and features by block programming.

**Attention:** Please check before if the TYRAK L operates with standard firmware or if it is equipped with an application program.

Additional features can be adapted by means of the DCS800 Application Program (AP) or IEC 61131 CoDeSys. Investigation and programming must be done BEFORE the upgrade.

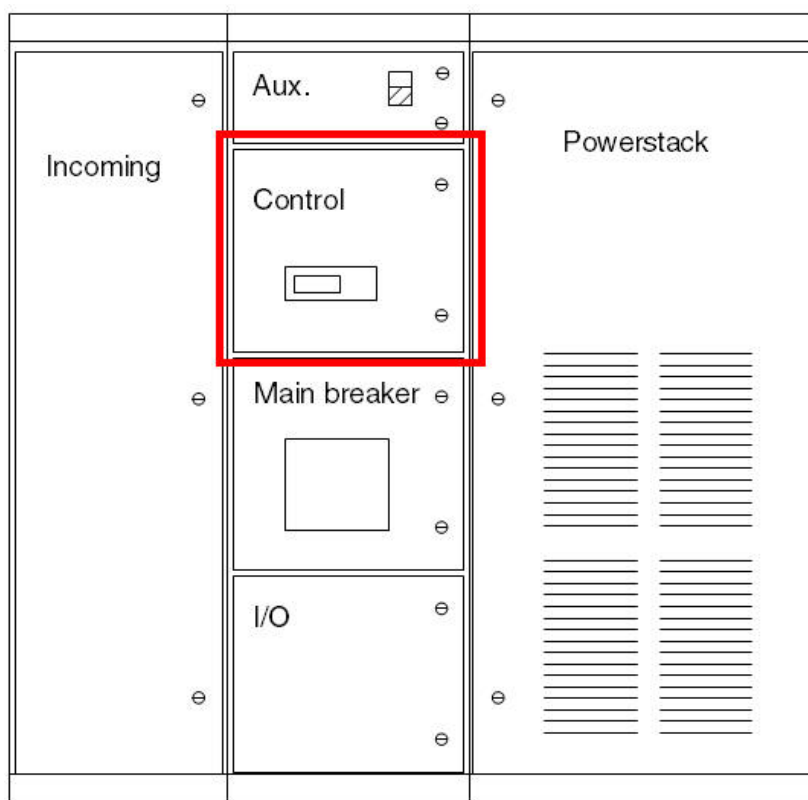
## How to identify your TYRAK L



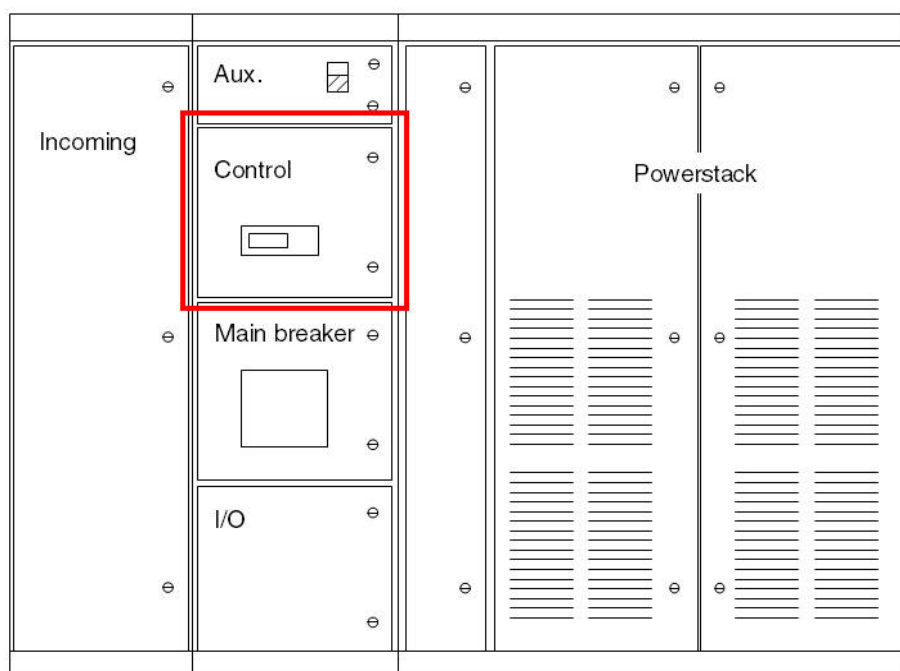
Nameplate TYRAK L

See type designation on the nameplate of the drive. The nameplate should be found in the control compartment of the cubicle.

The TYRAK L was manufactured in 4 different cabinet sizes. The DCS800 Rebuilt Kit for TYRAK L can only be used for the two larger sizes over 950A. The reason is that the DCS800 Rebuilt Kit for TYRAK L is mounted in the cubicles door, which is only used for the larger sizes. See the line ups below.

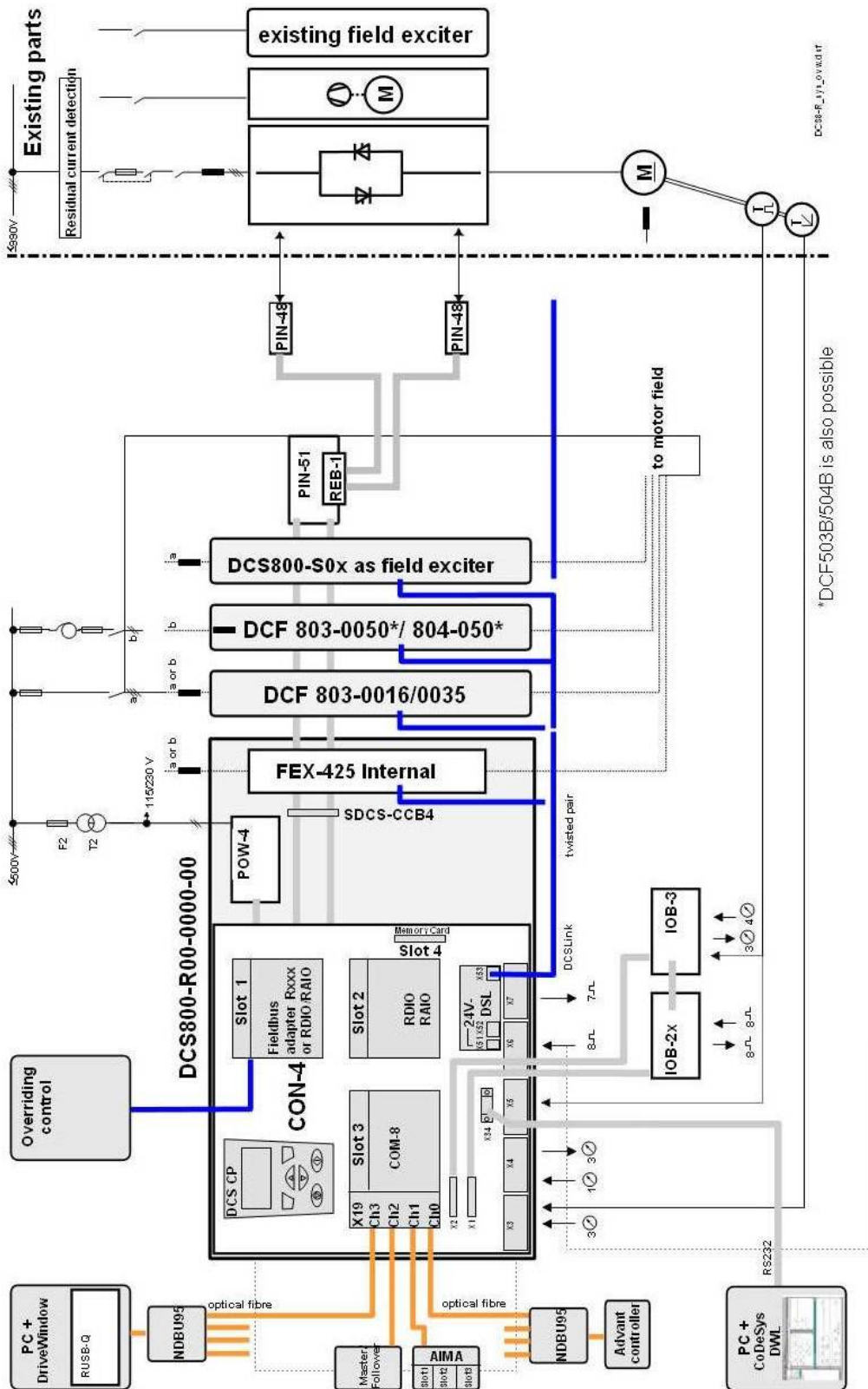


Cabinet size from 950A to 1400A



Cabinet size bigger 1600A

## DCS800 Rebuild Kit for TYRAK L





## Type coding and accessories

There is only one mechanical construction for the two different versions of the Kit. The Rebuild Kit is based on the standard DCS800-R kit, only the mechanics are especially designed for the TYRAK L. To order the kit, use the ordering code shown in the table below. Some additional mechanical parts are available. They will be described later in this manual. Engineering help is given within the DCS800 documentation and the Selection, Installation and Start-Up Manual for Rebuild Kits DCS800 Drives (3ADW000197R0101). The manual you are currently reading focuses on items related to the installation of the DCS800 Rebuild Kit for TYRAK L and the other mechanical parts which are available additionally.

DCS800 Rebuilt Kit TYRAK L(2Q)	3ADT220164R0001
DCS800 Rebuilt Kit TYRAK L(4Q)	3ADT220164R0002

The kit includes:



**TYRAK L control cubicle door with mounted DCS800-R**

- Electronic housing (DCS800-R00-0000-00) includes the SDCS-CON-4, SDCS-POW-4, SDCS-DSL-4 and DCS Control Panel
- SDCS-PIN-51 + SDCS-REB-1
- 1 or 2 SDCS-PIN-48
- Cable set DCR801/2 EXTERN 2/4-Q standard
- TYRAK L control cubicle door (where the unit is mounted in)

Additional mechanical parts	
3ADT783049R0001	PIN48-Mounting Kit 4Q
3ADT783049R0002	PIN48/51 Mounting Kit standard
3ADT783049R0003	DCF803-0016 Mounting Kit
3ADT783049R0004	NDBU Mounting Kit
3ADT783050R0002	DCF803-0035 Mounting Kit
3ADT783050R0003	T90/A92 Mounting Kit
3ADT783051R0001	Field Supply Mounting Kit
3ADT783052R0001	TYRAK L Bracket

# Technical Data

This chapter contains the technical specifications of the drive, e.g. the ratings, sizes and technical requirements, provisions for fulfilling the requirements for CE and other markings and warranty policy.

Reference:	Hardware extension	RAIO Analog I/O Extension	publ.no.: 3AFE64484567
	Hardware extension	RDIO Digital I/O Extension	publ.no.: 3AFE64485733
	DCS800 1131 Programming target		publ.no.: 3ADW000199
	Branching units NDBU-95		publ.no.: 3ADW000100

## Environmental Conditions

### System connection

Voltage, 3-phase: 230 to ≤ 1000 V acc. to IEC 60038

Voltage deviation: ±10% continuous; ±15% short-time \*

Rated frequency: 50 Hz or 60 Hz

Static frequency deviation: 50 Hz ±2 %; 60 Hz ±2 %

Dynamic: frequency range: 50 Hz: ±5 Hz; 60 Hz: ± 5 Hz  
df/dt: 17 % / s

\* = 0.5 to 30 cycles.

**Please note:** Special consideration must be taken for voltage deviation in regenerative mode.

### Degree of protection

Converter Module and options (line chokes, fuse holder,

field supply unit, etc.): IP 00 / NEMA TYPE OPEN

Enclosed converters: IP 20/21/31/41

### Paint finish

Converter module: light grey RAL 9002

Enclosed converter: light grey RAL 7035

### Environmental limit values

Permissible cooling air temperature.

- at converter module air inlet: 0 to +55°C  
with rated DC current: 0 to +40°C  
w. different DC curr. acc. Fig. below: +30 to +55°C

- Options: 0 to +40°C  
Relative humidity (at 5...+40°C): 5 to 95%, no condensation  
Relative humidity (at 0...+5°C): 5 to 50%, no condensation  
Change of the ambient temp.: < 0.5°C / minute

Storage temperature: -40 to +55°C

Transport temperature: -40 to +70°C

Pollution degree (IEC 60664-1, IEC 60439-1): 2

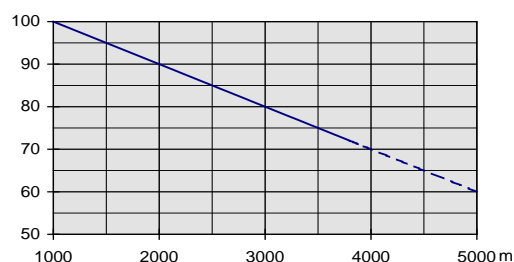
Vibration class 3M3 - D1...D4  
3M1 - D5...D7

Site elevation

<1000 m above M.S.L.: 100%, without current reduction  
>1000 m above M.S.L.: with curr. reduct., see Fig. below

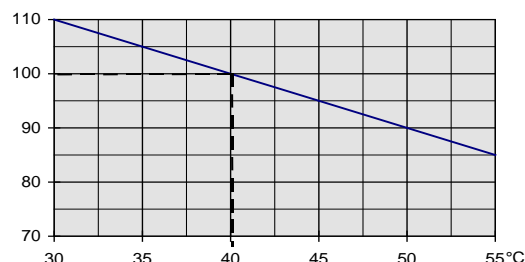
Size	Sound pressure level LP (1 m distance)		Vibration	Shock	Transport in original package	Short circuit withstand rating The DCS800 is suitable for use in a circuit capable of delivering not more than:
	as module	enclosed conv.	as module			
D1	55 dBA	54 dBA	1.5 mm, 2...9 Hz 0.5 g, 9...200 Hz	7 g / 22 ms	1.2 m	65 kA rms symmetrical amps at maximum 600 VAC
D2	55 dBA	55 dBA			1.0 m	
D3	60 dBA	73 dBA				
D4	66...70 dBA, depending on fan	77 dBA				
D5	73 dBA	78 dBA	0.3 mm, 2...9 Hz 0.1 g, 9...200 Hz	4 g / 22 ms	0.25 m	100 kA rms symmetrical amps at maximum 600 VAC
D6	75 dBA	73 dBA			Shock monitor	
D7	82 dBA	80 dBA				

Effect of the site elevation above sea level on the converter's load capacity



Current reduction to (%)

Effect of the ambient temperature on the converter module load capacity



Current reduction to (%) for converter modules

## Regulatory Compliance

The converter module and enclosed converter components are designed for use in industrial environments. In EEA countries, the components fulfill the requirements of the EU directives, see table below.

European Union Directive	Manufacturer's Assurance	Harmonized Standards	
		Converter module	Enclosed converter
<b>Machinery Directive</b>			
98/37/EEC 93/68/EEC	Declaration of Incorporation	EN 60204-1 [IEC 60204-1]	EN 60204-1 [IEC 60204-1]
<b>Low Voltage Directive</b>			
73/23/EEC 93/68/EEC	Declaration of Conformity	EN 61800-1 [IEC 61800-1] EN 60204-1 [IEC 60204-1]	EN 60204-1 [IEC 60204-1] EN 60204-1 [IEC 60204-1]
<b>EMC Directive</b>			
89/336/EEC 93/68/EEC	Declaration of Conformity (Provided that all installation instructions concerning cable selection, cabling and EMC filters or dedicated transformer are followed.)	EN 61800-3 ① [IEC 61800-3]	EN 61800-3 ① [IEC 61800-3]
		① in accordance with 3ADW 000 032	① in accordance with 3ADW 000 032/ 3ADW 000 091

## North American Standards

In North America the system components fulfill the requirements of the table below.

Rated supply voltage	Standards	
	Converter module	Enclosed converter
to 600 V	<ul style="list-style-type: none"> <li>see UL Listing <a href="http://www.ul.com">www.ul.com</a> / certificate no. E196914</li> </ul> Approval: $cUL_{us}$ The spacings in the modules were evaluated to table 36.1 of UL 508 C. Spacings also comply with table 6 and table 40 of C22.2 No. 14-05.	UL types: on request
>600 V to 990 V	EN / IEC xxxxx see table above. Available for converter modules including field exciter units.	EN / IEC types: on request (for details see table above)

## Reference to Master-Field-Bus Communication

Upgrade Serial communication from Master-Field-Bus to DCS800 DDCS (SDCS-COM-8) optical interface see additional information in Appendix A.

**Attention:** Re-programming of the MP200 is required!!

## Hardware

This chapter contains information about all the components being exclusively used at the DCS800 Rebuild Kit for TYRAK L and the additional mechanical parts. Components which are used for DCS800-S0x converter modules are just mentioned within this chapter, but not described in detail. Any other components which may come or may have been ordered together with the Kit are described in detail either within the DCS800 Hardware Manual (3ADW000194) or within their dedicated documentation.

### Basic components of the DCS800 Rebuild Kit for TYRAK L

The Kit exists either as 2-Q or 4-Q version depending on the existing TYRAK L.

Delivery includes:

- TYRAK L Control cubicle door
- DCS800-R kit
- Sub assembly SDCS-PIN-51-COAT measurement board
- Sub assembly SDCS-PIN-41A-COAT pulse transformer board
- SDCS-REB-1-COAT interface board
- Cable set DCR801/2 EXTERN 2/4Q standard



Pre-assembled cubicle door

### Pre-assembled part

The parts are preassembled and consist of:

- TYRAK L Control cubicle door without hinges, lock and E-stop button (with pre mounted DCS800-R kit). Hinges, lock and E-stop button have to be re-used from the dismantled door.
- Electronic housing (DCS800-R00-0000-00) includes
  - o Control board SDCS-CON-4
  - o Electronic power supply SDCS-POW-4 including flat cable to SDCS-CON-4. This board needs to be feed by a single-phase AC line voltage, either 115 V or 230 V.
  - o Drive-to-drive interface via SDCS-DSL-4

## Loose parts

The kit is available as a 2-Q or 4-Q version. The DCS800 Control Panel, SDCS-PIN-51 and SDCS-REB-1 board will be part of the delivery in both cases.

DCS800 Control panel CP

SDCS-PIN-51:

- The measuring board is mounted on a card holder. For the interconnections 5 leads for the AC and DC voltage measurement (single core; 6.3 mm Faston on one end), 2 leads for the current measurement (twisted pair; system plug on one end) and a pluggable resistor for X22 will come with the kit.

SDCS-REB-1:

- Interface board

DCS800 Rebuilt Kit TYRAK L (2-Q) 3ADT220164R0001	1 x SDCS-PIN-48	Mounted on a card holder
	Cable set DCR801 extern 2-Q standard	1 x shielded flat cable 20-pol, 3 m (SDCS-PIN-51/SDCS-REB-1 to SDCS-Pin-48) 2 x shielded flat cable 16-pol, 5 m (SDCS-CON-4 to SDCS-PIN-51) 6 x firing leads (twisted pair, system plug on one end)
DCS800 Rebuilt Kit TYRAK L (4-Q) 3ADT220164R0002	2 x SDCS-PIN-48	
	Cable set DCR802 extern 4-Q standard	2 x shielded flat cable 20-pol, 3 m (SDCS-PIN-51/SDCS-REB-1 to SDCS-PIN-48) 2 x shielded flat cable 16-pol, 5 m (SDCS-CON-4 to SDCS-PIN-51) 12 x firing leads (twisted pair, system plug on one end)

## Additional mechanical parts

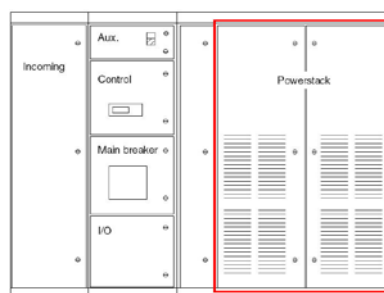
The additional mechanical parts are developed to facilitate the mounting of the needed devices in the existing installation and to shorten the down time. They are not needed for any kind of functionality.

### 3ADT783049R0001 PIN48-Mounting Kit 4Q

This is developed for all 4-Q TYRAK L upgrades larger than 1600 A. Because of the configuration of the thyristors in a 4-Q thyristor stack it is difficult to place the SDCS-PIN-48. The length of the firing pulse cables is limited to 1 m. The kit provides the possibility to mount the two needed SDCS-PIN-48 directly in the middle of the power stack cubicle, so that the firing pulse cables are as short as needed.



Power stack section 4Q



Kit includes:

1	DIN rail 0.55m	2 pieces	Suitable for the TYRAK L cubicle frame
2	Mounting plate	2 pieces	For SDCS-PIN-48
3	Mounting bracket	8 pieces	To mount the DIN rail
4	Acrylic glass cover	2 pieces	SDCS-PIN-48 cover due to safety
	Accessory package	1 piece	Screws, ...

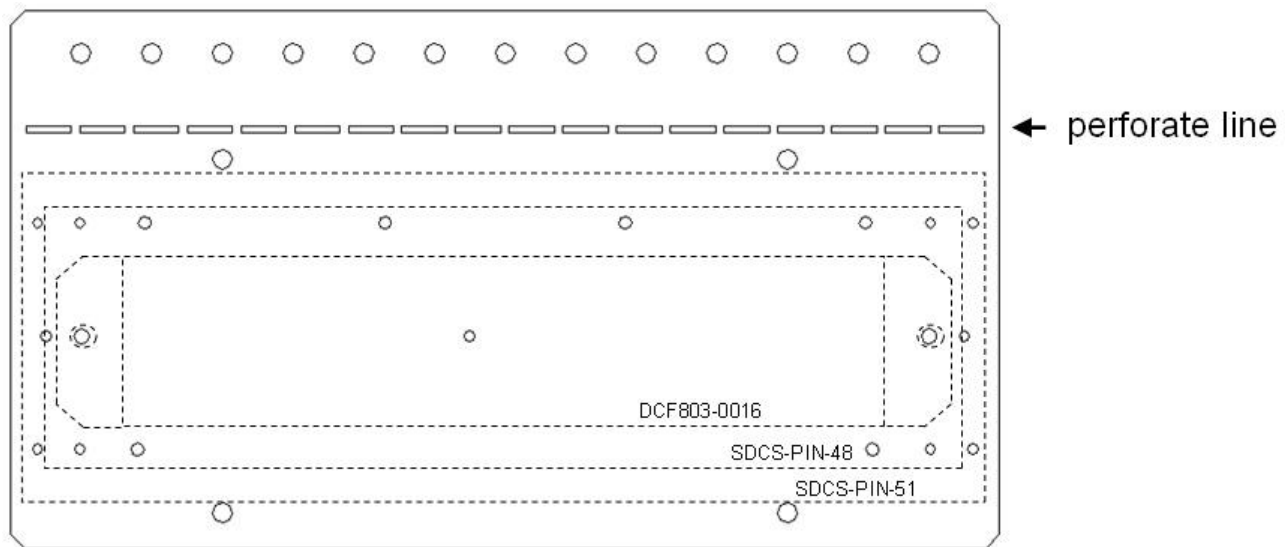
### 3ADT783049R0002 PIN48/51 Mounting Kit standard

### 3ADT783049R0003 DCF803-0016 Mounting Kit

### 3ADT783049R0004 NDBU Mounting Kit

All three kits are based on the same mounting plate but have different accessory packages to mount the appropriate device (see the picture below). The NDBU-95 can be mounted on a top hat rail. The NDBU-95 Mounting kit includes the mounting plate, top hat rail and needed fixing elements.

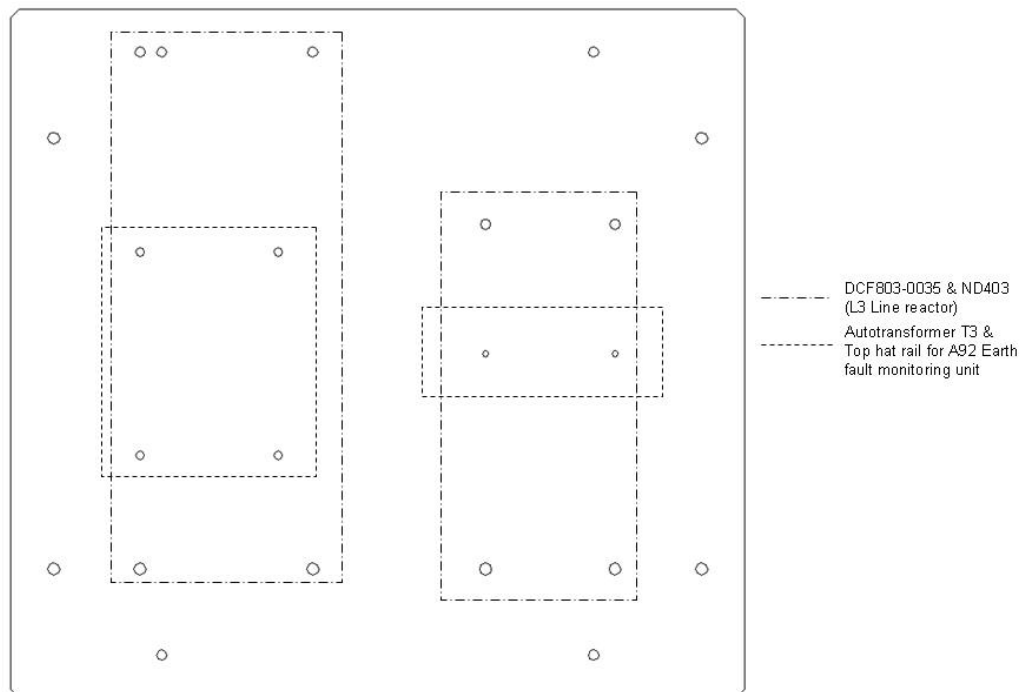
The advantage of this mounting plate is that it can be fixed to any DIN rail inside the cubicle like shown in the picture below and at an angle of 90°. It's only needed to bend at the perforate line.



Mounting plate PIN48/51, DCF-0016

### 3ADT783050R0002 DCF803-0035 Mounting Kit 3ADT783050R0003 T90/A92 Mounting Kit

Both kits are based on the same mounting plate but have different accessory packages to mount the appropriate device (see the picture below). The A92 Earth fault monitoring unit can be mounted on a top hat rail. The T90/A92 Mounting Kit includes the mounting plate, top hat rail and needed fixing elements.



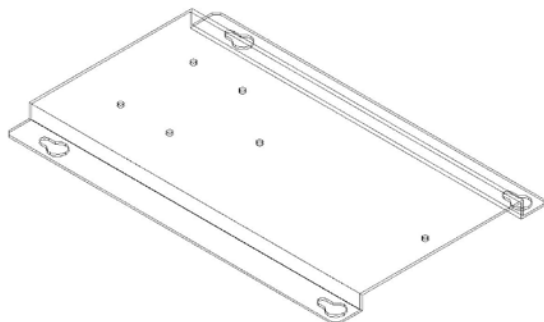
Mounting plate DCF803-0035, Earth fault monitor unit

## Hardware



### **3ADT783051R0001      Field Supply Mounting Kit**

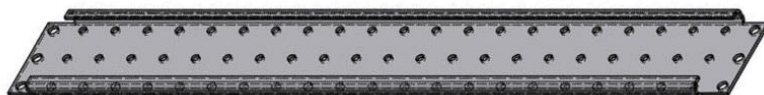
This mounting plate is developed to fit on the drilling holes of the old removed field exciter. Additionally it can be used to mount the field exciter fuses and the field contactor. The kit includes the mounting plate, top hat rail and fixing elements.



**Mounting plate Field supply**

### **3ADT783052R0001      TYRAK L Bracket**

This is an original TYRAK cubicle bracket, which fits to the standard TYRAK L cubicle side frame. Without this bracket you are restricted to the existing construction and it can be difficult to find enough space and fixing possibilities.



**Standard TYRAK L DIN Rail**

## Installation

The information given within this chapter helps to find locations for all components of the kit and shows how to mount them. A few examples are shown.

All of the pictures are only taken to demonstrate the mechanical installation and does not aim to be complete.

### General hints

To ensure proper and accurate grounding it is essential to use the provided contact washer properly.



**Proper grounding**

For all offered mounting panels the fastening accessories are included in the delivery. When using other screws, accurate grounding between DIN rail and mounting panel is not guaranteed.

### DCS800 Rebuilt Kit for TYRAK L

The DCS800 Rebuilt Kit for TYRAK L will be delivered pre-assembled in a TYRAK L control cubicle door, independent if it is a 2-Q or 4-Q module. It is only needed to attach the hinges, the lock and the E-stop button and to wire the interconnections between the SDCS-CON-4 and the SDCS-PIN-51. After removing the old control cubicle door, detach the hinges, the lock and the E-stop button. The preparation of the new cubicle door can be started.



**All needed parts from the old cubicle door**

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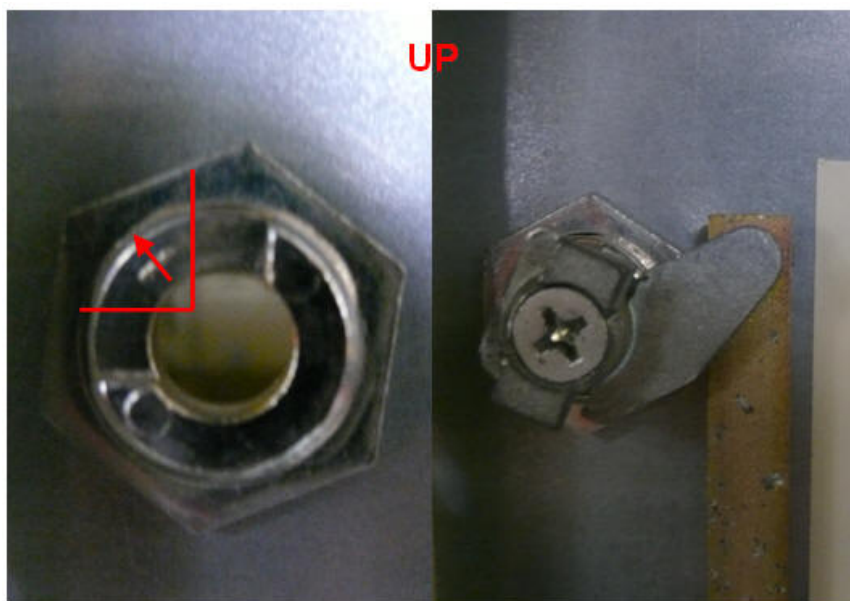
### Installation

The lower hinge includes the grounding for the cubicle door. It needs to be mounted like shown in the picture below.



Lower hinge with grounding cable

To mount the lock, the lock casing needs to be mounted first, with the recess left side. After that the lock can be fastened.



Lock casing control cubicle

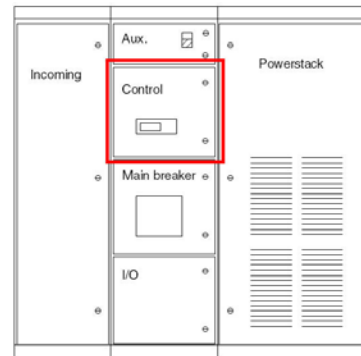
After mounting of the E-stop button the door can be attached to the cubicle like the old one.



Lower hinge



Upper hinge



Because the flat cables between the SDCS-CON-4 and SDCS-PIN-51 are longer than 3 m they must be screened. The metal clamps for the screening are added as loose parts. The pictures below show how to do it.



Screening the flat cables

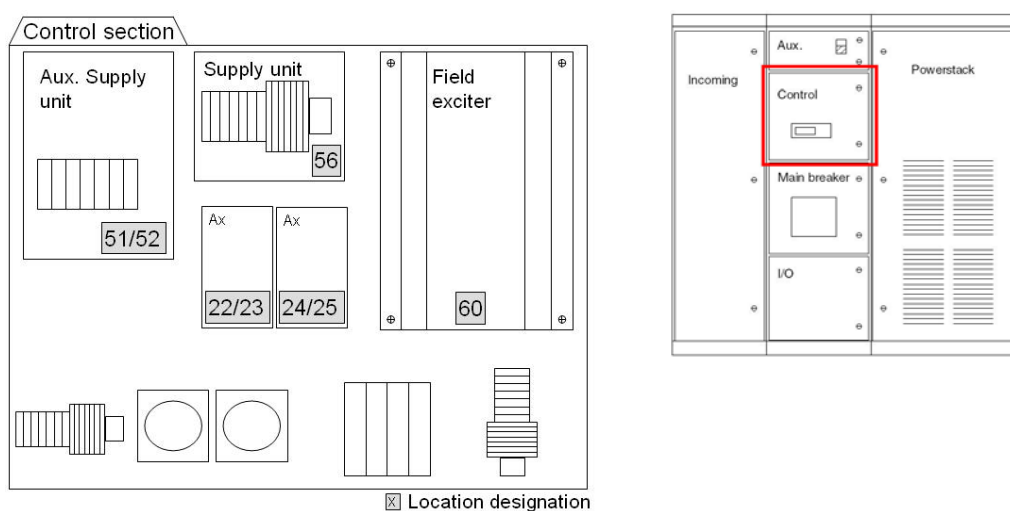


## Field exciter

The information in this chapter shows suggestions how and where to install the different available field exciters.

### TYRAK L field exciter

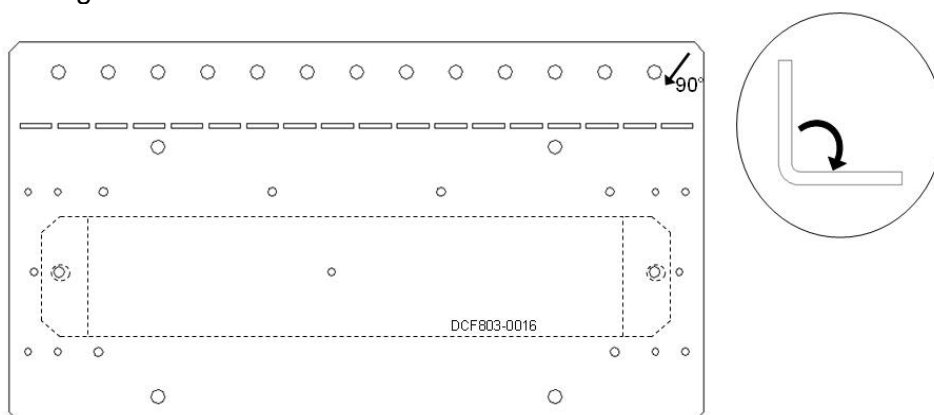
The TYRAK L field exciter is placed in the control section of the TYRAK L cubicle, location designation 60. It is mandatory to replace it.



Overview Control section

### DCF803-0016

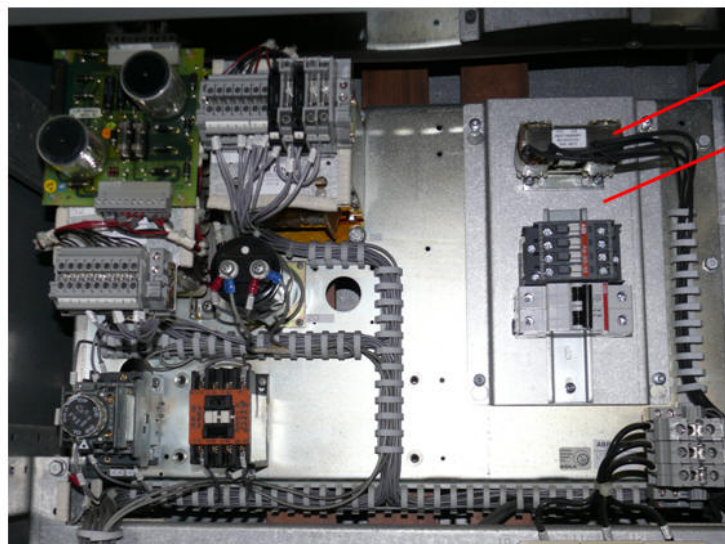
The 16 A field exciter DCF803-0016 is easy to install using the DCF803-0016 Mounting Kit. This mounting plate is small and can be installed nearly anywhere inside the cubicle. It fits to each DIN rail inside the TYRAK L cubicle and can be mounted like shown on the drawing below and also with an angle of 90°.



DCF803-0016 Mounting Kit

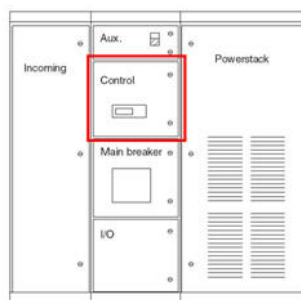


When using the DCF803-0016 it is recommended to use the Field Supply Mounting Kit (3ADT783051R0001). The mounting plate provides drilling holes for the needed line choke ND30 and a top hat rail for the field contactor and the field fuses. The mounting plate has the same dimensions like the old TYRAK L field exciter and fits onto its location.



ND30

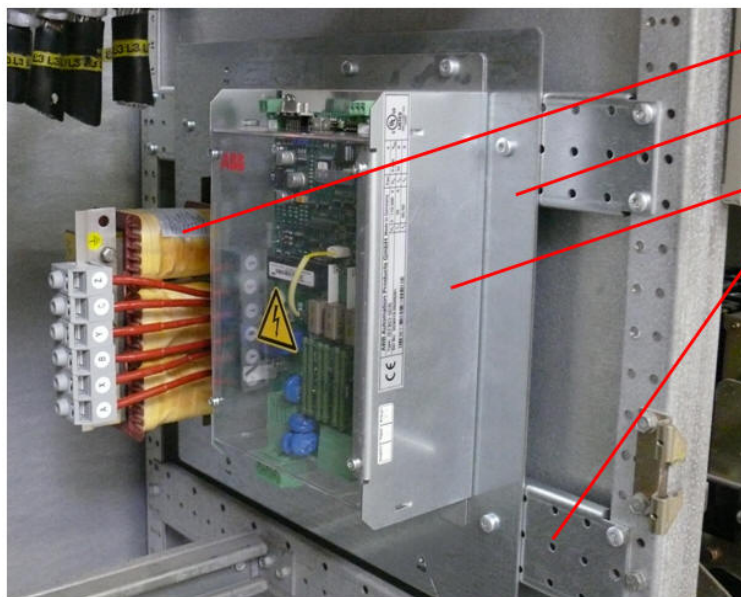
3ADT783051R0001  
Field Supply Mounting Kit



Field supply in Control section, location designation 60

### DCF803-0035

When using the 35 A field exciter DCF803-0035 it is recommended to use the DCF803-0035 Mounting Kit (3ADT783050R0002). This mounting plate provides an installation location for the field exciter and the line choke ND402. As the mounting plate is very large it can be beneficial to use also a TYRAK L Bracket (3ADT783052R0001). Depending on the cubicles, it can be very difficult to find an installation location which provides enough space and also a possibility to fix the mounting plate.

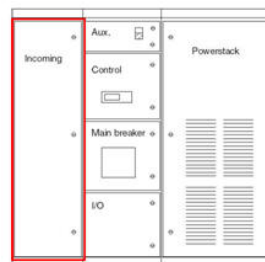


ND402

DCF803-0035 Mounting  
Kit (3ADT783050R0002)

DCF803-0035

TYRAK L Bracket  
3ADT783052R0001



DCF803-0035 Mounting Kit in Incoming

## DCF50x-0050B

The 50 A field exciter DCF503/504-0050B can be fixed directly to a cubicle bracket. Inside the standard TYRAK L cubicles the only section to mount the field exciter directly to the existing DIN rails is between the second and third DIN rail from the bottom. If there is not enough space, it is easy to use one or two of the TYRAK L Brackets (3ADT783052R0001). Together with the bracket a suitable mounting place can be found nearly anywhere inside the cubicle.

The line choke is already included in the field exciter, therefore only the field contactor and the field fuses need to be installed separately. See below some customized solutions.

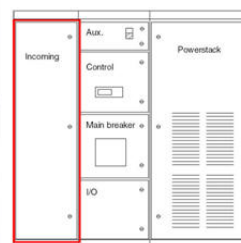


DCF503-0050B mounted to existing DIN rail in AC-Incoming



Field exciter with auxiliaries in AC-Incoming

TYRAK L Bracket  
3ADT783052R0001



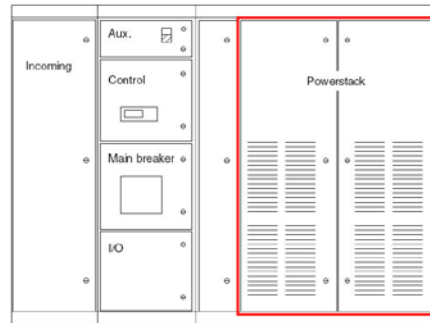
## Measurement and firing board

The cable from the main board SDCS-CON-4 to the measurement board SDCS-PIN-51 is 5 m long, thus the board can be installed nearly anywhere inside the cabinet. It is recommended to place the SDCS-PIN-51 next to the SDCS-PIN-48. The length of the cable between these boards is 3 m. For longer distances it is mandatory to use a SDCS-REB-2 between SDCS-PIN-51 and SDCS-PIN-48 (Selection, Installation and Start-Up Manual for Rebuild Kits DCS800 Drives - 3ADW000197R0101). For a TYRAK L Upgrade it shouldn't be necessary to extend the distance between SDCS-PIN-51 and SDCS-PIN-48.

More critical is the distance between SDCS-PIN-48 and the thyristors. It is mandatory to keep it as short as possible but principally shorter than 1 m. For the TYRAK L drives from 950 A to 1400 A and all 2-Q drives it is easy to find an installation location with the recommended distance. For the 4-Q drives larger than 1600 A the PIN48-Mounting Kit 4Q (3ADT783049R0001) was developed. It provides all needed material to install both SDCS-PIN-48 directly in the middle of the power stack, in a way, that all firing cables are shorter than 1 m.



Installed PIN-48 Mounting Kit4Q (Power stack)



The boards are installed directly behind the cubicle doors. Thus the protective cover of the middle section has to be detached and rectangular hole has to be cut (280 mm x 110 mm) for the SDCS-PIN-48.

Preparation of the PIN48-Mounting Kit 4Q :

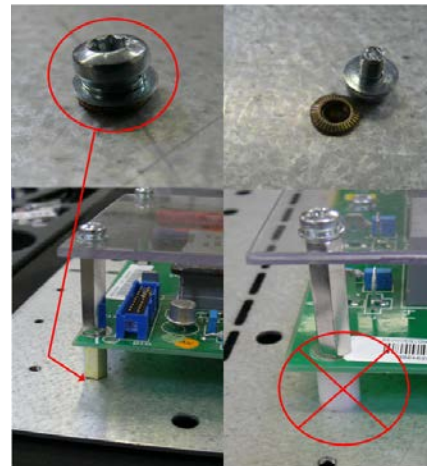
1. Preparation of the DIN Rails: Fix mounting angles to all four edges
2. Detach the SDCS-PIN-48 from its card holder
3. Fasten the SDCS-PIN-48 on the delivered mounting plate. Take special care to ground the board properly (see picture below)
4. Unscrew the 4 screws on top of the SDCS-PIN-48 which are located at the corners and exchange them to the delivered distance bolts M4x30
5. Connect the firing cables and the flat cables to SDCS-PIN-51
6. Fasten the delivered protective cover to the distance bolts
7. Fasten the mounting plate to the prepared DIN rails
8. Fasten the prepared kit to the cubicle frame like shown in the picture below



Preparation of the DIN Rail



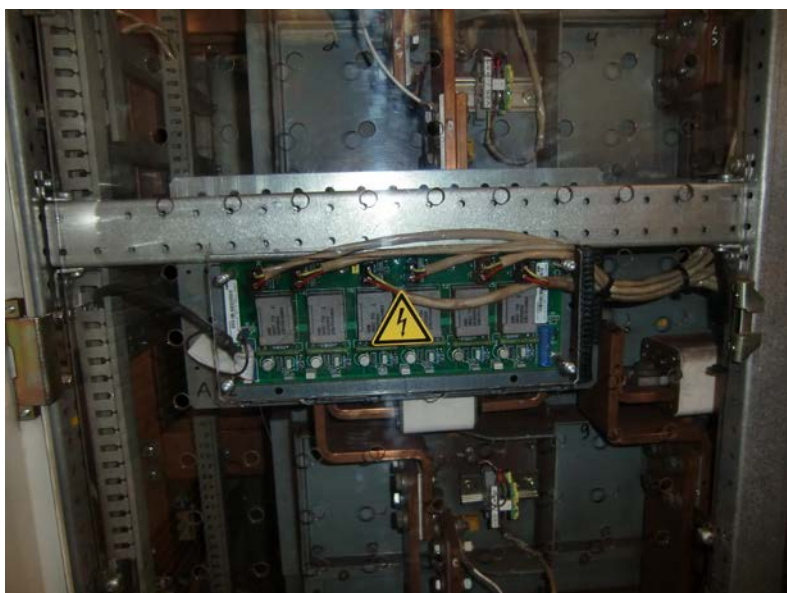
Preparation of the SDCS-PIN-48



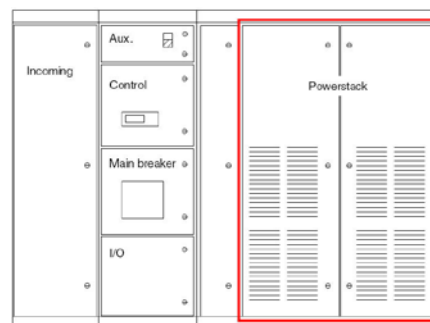
Proper Grounding

## Installation





**PIN48-Mounting Kit 4Q**



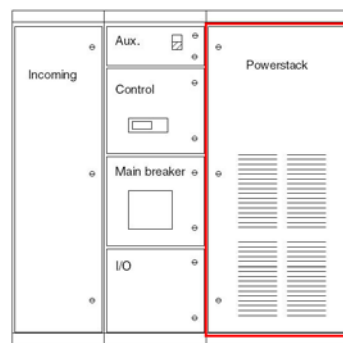
For the SDCS-PIN-51 and also for the SDCS-PIN-48 in 2-Q drives or drives smaller than 1600 A use the PIN48/51 Mounting Kit standard (3ADT783049R0002). This kit provides a mounting plate and all the needed material to fasten the boards. It is the same mounting plate used for the DCF803-0016. It allows an installation of the boards, nearly everywhere inside the cubicle. Mount the board together with its card holder (take special care to grounding).



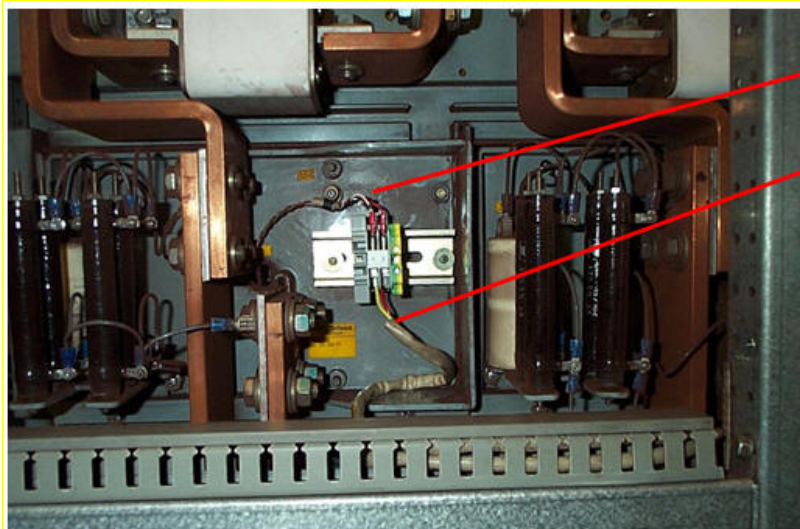
**PIN48/51 Mounting Kit standard in Power stack**



**PIN48/51 Mounting Kit standard in front of power stack**



To connect the firing pulse cables it is recommended to remove the original pulse transformer unit. Cut the old firing pulse cables and fasten them to the new ones. To connect the new firing pulse cables directly to the thyristor is very difficult and for the drives larger than 1400 A it is nearly impossible. See an example in the picture below.



Original trigger pulse cables

New trigger pulse cables

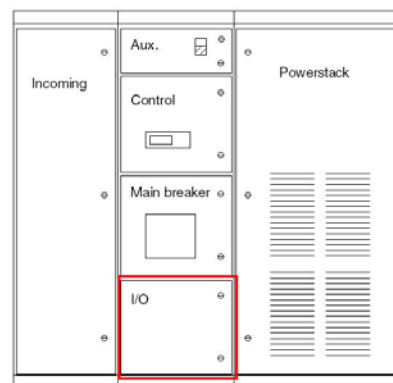
Example Connection firing pulse cables

## I/O interfaces

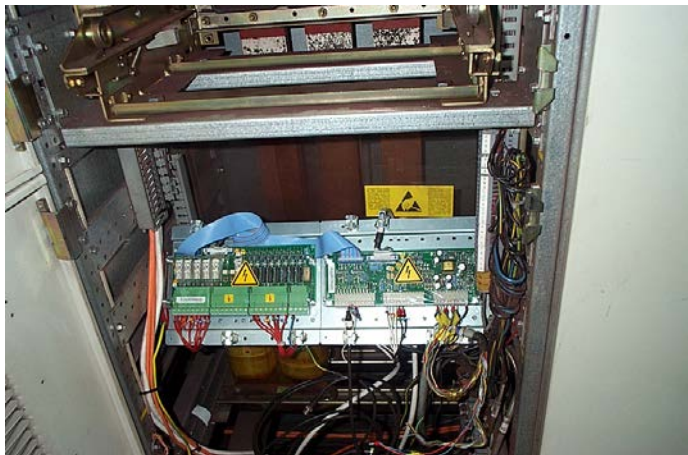
For the I/O boards SDCS-IOB-2x and SDCS-IOB-3 a card holder is already existing (3ADT783046R0001). The TYRAK L cabinet has a special I/O section. The picture below shows this section after removing all the TYRAK L I/O-boards and all other boards and devices which have been installed there.



TYRAK L I/O section




The new card holder can be fastened to the aluminum rail but additional holes need to be drilled in the aluminum rail and the card holder. To ensure that metal cuttings do not cause problems remove the aluminum rail for the drilling. See an example in the picture below.



Customized I/O section

## Appendix A: Exchange from MP200 + TYRAK

 Automation Products Ladenburg	Exchange from MP200 + TYRAK to MP200 + DCS 800	Hardware Hint <b>HW DCS800</b> <b>0019 E</b>
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### Types concerned

DCS 800 / DCA 800  
DCR 800

### Summary

Original installations with Drives and MP200 are equipped with MASTER FIELDBUS serial communication. Very often customers want to upgrade old TYRAK drives due to spare part problems and want to keep the MP200 controller.  
Some actions have to be taken to change over from Masterfieldbus communication to DDCS serial communication.  
In some cases it is required to have old drives and new drives side by side in one installation.

### Basic conditions

Before start in such a project a few requirements must be fulfilled.

1. MP200 spares must be in good conditions and available for long time
2. MP200 Applications source must be available and a PC to reprogram the serial interface.
3. TYRAK must not be equipped with individual and unique application software, because the DCS800 can't be programmed by the service department.  
If the drive is equipped with such an application software and documentation is available, please contact ABB metals.

### Interface hardware PE1354

To change Masterfieldbus to DDCS Protocol and Hardware the interface board PE1354 is available.  
The unit has an one DDCS output channel to connect an optical cable direct to one drive or a branching unit NDBU95 to connect up to DCS800 drives.

In every case the MP200 program needs to be adapted to the "bit location" expected by the new drives. It may be necessary, depending on the MP200 hardware and/or program version, to get additional software function blocks enabling the data exchange to the new drives. This question can only be answered by a MP200 specialist.

The upgrade requires a specialist to commission the new MP200 serial communication and a DCS800 commissioning engineer.



Automation Products  
Ladenburg

**Exchange from**  
**MP200 + TYRAK**  
**to**  
**MP200 + DCS 800**

Hardware Hint  
**HW DCS800**  
**0019 E**

### Package

If the basic conditions are fulfilled a service package to upgrade a drive control interface is available from ABB service.

The package contains:

- Updating serial communication hardware and cabling DDCS protocol
- Commission MP200 communication drivers
- Commissioning DCS800 including setting serial communication

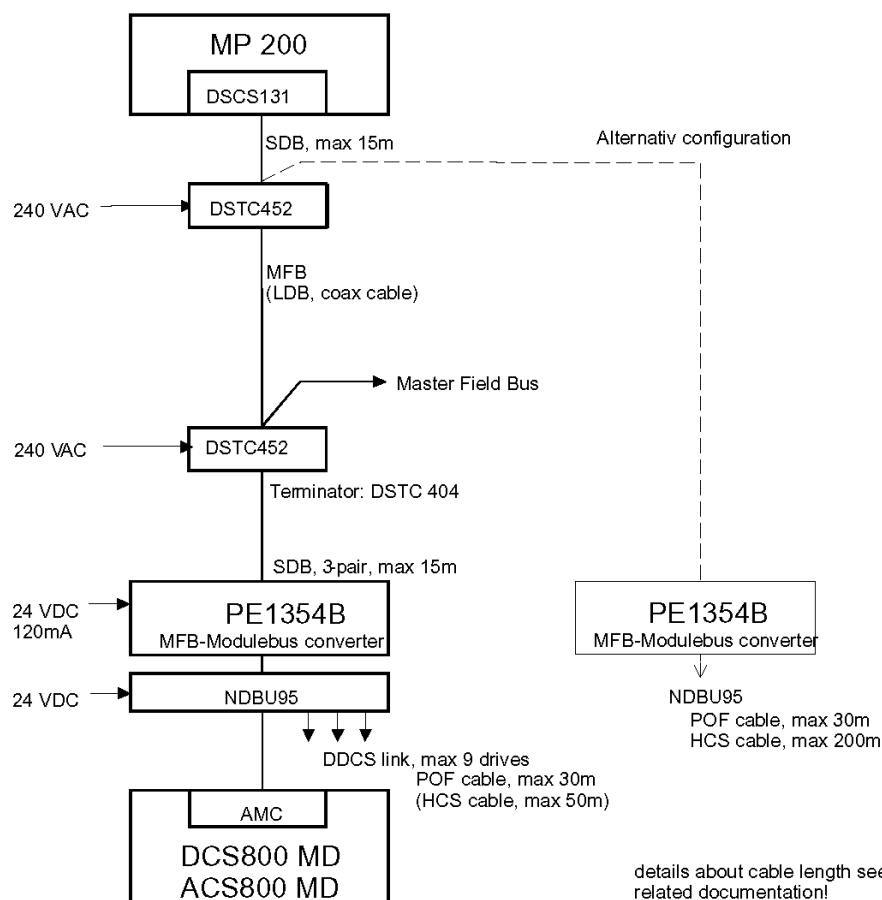
### Contact

Please contact

Mr. Christian Schubert  
email christian.schubert@de.abb.com  
Phone +49 2056 12 5930

### New hardware

Lay out new serial communication hardware









# DCS family



## DCS550-S modules

The compact drive for machinery application

20 ... 1,000 A<sub>DC</sub>  
 0 ... 610 V<sub>DC</sub>  
 230 ... 525 V<sub>AC</sub>  
 IP00

- Compact
- Robust design
- Adaptive and winder program
- High field exciter current



## DCS800-S modules

The versatile drive for process industry

20 ... 5,200 A<sub>DC</sub>  
 0 ... 1,160 V<sub>DC</sub>  
 230 ... 1,000 V<sub>AC</sub>  
 IP00

- Compact
- Highest power ability
- Simple operation
- Comfortable assistants, e.g. for commissioning or fault tracing
- Scalable to all applications
- Free programmable by means of integrated IEC61131-PLC



## DCS800-A enclosed converters

Complete drive solutions

20 ... 20,000 A<sub>DC</sub>  
 0 ... 1,500 V<sub>DC</sub>  
 230 ... 1,200 V<sub>AC</sub>  
 IP21 – IP54

- Individually adaptable to customer requirements
- User-defined accessories like external PLC or automation systems can be included
- High power solutions in 6- and 12-pulse up to 20,000 A, 1,500 V
- In accordance to usual standards
- Individually factory load tested
- Detailed documentation



## DCS800-E series

Pre-assembled drive-kits

20 ... 2,000 A<sub>DC</sub>  
 0 ... 700 V<sub>DC</sub>  
 230 ... 600 V<sub>AC</sub>  
 IP00

- DCS800 module with all necessary accessories mounted and fully cabled on a panel
- Very fast installation and commissioning
- Squeezes shut-down-times in revamp projects to a minimum
- Fits into Rittal cabinets
- Compact version up to 450 A and Vario version up to 2,000 A



## DCS800-R Rebuild Kit

Digital control-kit for existing powerstacks

20 ... 20,000 A<sub>DC</sub>  
 0 ... 1,160 V<sub>DC</sub>  
 230 ... 1,200 V<sub>AC</sub>  
 IP00

- Proven long life components are re-used, such as power stacks, (main) contactors, cabinets and cabling / busbars, cooling systems
- Use of up-to-date communication facilities
- Increase of production and quality
- Very cost-effective solution
- Open Rebuild Kits for nearly all existing DC drives
- tailor-made solutions for...
  - BBC PxD      ■ BBC SZxD
  - ASEA TYRAK    ■ other manufacturers



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