DCT880

Release note
Firmware version: DCTF1x3.00.3.0
Cyber security included

	Released	Beta
Electronic Unit DCS880/DCT880 3ADT220166R0002 (includes SDCS-CON-H01)	X	
Electronic Unit DCS880/DCT880 3ADT220166R0012 (includes SDCS-CON-H01L)	X	

This firmware version, bootloader version and unit logic version:

- Firmware version 3.00.3.0 (see 07.05 Firmware version) for:
  - SDCS-CON-H01 on electronic unit DCS880/DCT880 (3ADT220166R0002).
  - SDCS-CON-H01**L** on electronic unit DCS880/DCT880 (3ADT220166R0012).
- Bootloader version 2.80.0.0 (see 07.10 Bootloader version) for cyber security.

This firmware replaces:

All releases of 3.00.2.0 and lower.

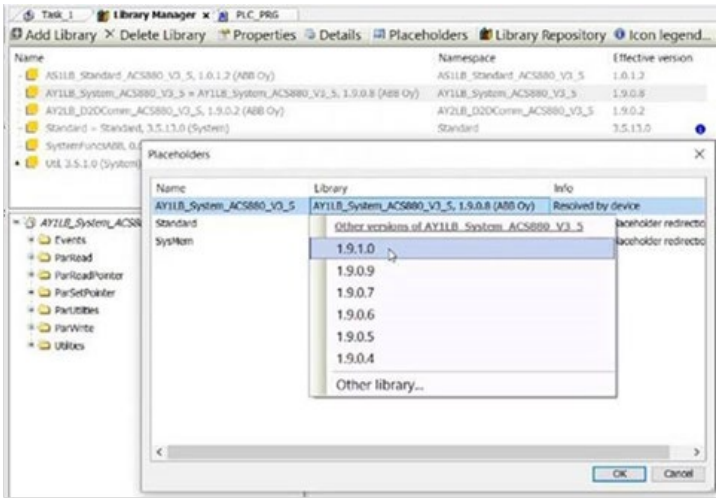
This firmware is released for following hardware:

DCT880-W0x (modules T1 ... T8):

- Voltage classes 04 (400 V), 05 (525 V), 07 (690 V) and 08 (800 V).
- 3rd CT for W02 units.
- XECT (X65) for external current measurement via CTs.
- XEXVM (X60) for external voltage measurement. E.g., for synchronization using the primary side of a transformer.

Memory unit:

- Standard.
- Drive application programming with Drive Application Builder 1.0.0.319 or higher (drive application programming in the Automation Builder is not supported anymore).
  Following settings for **new projects** are mandatory:
  - Update the drive interface to the actual firmware version (here 3.00.3.0).
  - Update the standard library (AY1LB_System_ACS880_V3_5) to the value shown in 07.08 Control Builder system library version (here 1.09.1.0):



Control panel:

- ACS-AP-I with panel firmware 5.80 or higher.
- ACS-AP-W (Bluetooth) with panel firmware 5.80 or higher.
  Attention: Only usable with limited function due to the Drivetune app.

Daisy chain adapter for panel bus:

- DPI-H01 kit.

Door mounting kits:

- DPMP-01 and DPMP-02.

Fieldbus adapter modules:

- FPBA-01, PROFIBUS DP, DPV0/DPV1.
- FCAN-01, CANopen®.
- FDNA-01, DeviceNet™ (beta).
- FENA-21, 2 port EtherNet/IP™, Modbus TCP, PROFINET IO.
- FECA-01, EtherCAT®.

- FSCA-01, Modbus RTU.
- FEPL-02, PowerLink (beta).
- FPNO-21, PROFINET IO (beta).
- FMBT-21, Modbus TCP (beta).
- FEIP-21, 2 port EtherNet/IP™ (beta).

Attention:

- The only supported fieldbus profile is profile transparent.
- No emergency-stop.
- Unit rpm is not valid.

I/O Extension modules:

- FIO-01, 4 DIO, 2 RO.
- FIO-11, 3 AI (mA/V), 1 AO (mA), 2 DIO.
- FAIO-01, 2 AI (mA/V), 2 AO (mA).
- FDIO-01, 3 DI, 2 RO.

I/O extension adapter:

- FEA-03, 2 F-type option extension slots.

DDCS communication option modules:

- FDCO-01, optical DDCS (10 Mbd/10 Mbd).

Remote monitoring:

- NETA-21 (beta).

This firmware is released for following firmware functions:

Languages:

- English, French, Swedish and German.

Control modes (99.10/99.25/99.40):

- Burst mode: Logic ON/OFF.
- Burst mode: Full wave fix cycle.s
- Burst mode: Full wave variable cycle.
- Burst mode: Halfwave.
- Phase angle: Voltage control open loop.
- Phase angle: Voltage² control open loop.
- Phase angle: Voltage control closed loop.
- Phase angle: Voltage² control closed loop.
- Phase angle: Current control closed loop.
- Phase angle: Current² control closed loop.
- Phase angle: Power control closed loop.
- Phase angle: external reference.

Load configurations (99.05):

- 3ph star (3S).
- 3ph star + N (4S).
- 3ph delta (3D).
- 3ph open delta UW(6D).
- 3ph open delta UV(6D).
- 3ph transformer (3D/3S).
- 3ph transformer UW (6D).
- 3ph transformer UV (6D).
- 3 x 1ph load.
- 3 x 1ph transformer load.
- Supply configuration 99.04.
- 3ph UVW.
- 3ph UW eco.
- 3 x 1ph + N.
- 1ph + N.
- Multitap 1ph.

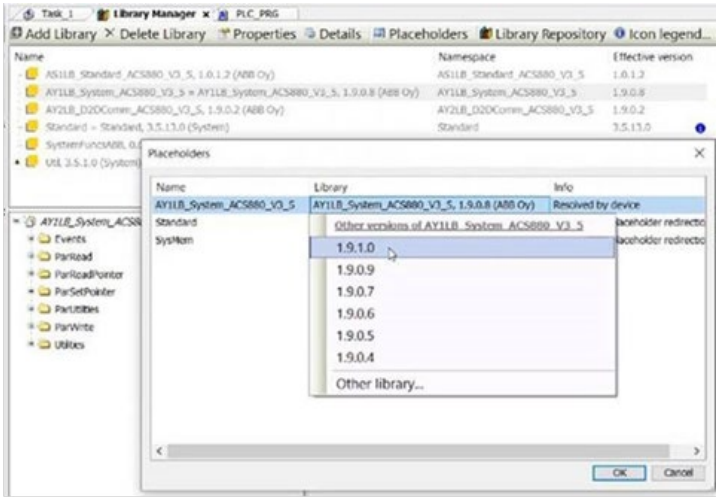
– Multitap 3ph.

Functions:
– PID-control (groups 41/42/43).
– Unit faults (group 28).
– Thyristor diagnosis.
– Power optimizer (groups 65/66/67).
– Load supervision (groups 31/32/33).
– DDCS Communication, for e.g., AC800 M and device-to-device communication (groups 60 … 62) via FDCO or XD2D.
  Note:
  Device-to-device communication is only released between DCT880 units.

Control panel:
– QR Code.

Drive Composer pro:
– Adaptive programming (AP).

Memory unit:
– Standard.
– Drive application programming with Drive Application Builder 1.0.0.319 or higher (drive application programming in the Automation Builder is not supported anymore).
  Following settings for **new projects** are mandatory:
  – Update the drive interface to the actual firmware version (here 2.01.2.0).
  – Update the standard library (AY1LB_System_ACS880_V3_5) to the value shown in 07.08 Control Builder system library version (here 1.09.1.0):

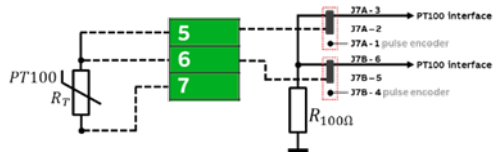


This firmware is released for beta tests of following hardware:

Fieldbus adapter modules:
– FDNA-01, DeviceNet™.
– FEPL-02, PowerLink.
– FPNO-21, PROFINET IO.
– FMBT-21, Modbus TCP.
– FEIP-21, 2 port EtherNet/IP™.

Remote monitoring:
– NETA-21.

External components:
– 1 x PT100 temperature measurement via AI & AO, with limited accuracy.
– 1 x PT100 3-wire temperature measurement via XENC with high accuracy and SDCS-CON-H01 Rev.: e (see hardware change notice).



– Frame size T8.

This firmware is released for beta tests of following firmware functions:

– 99.04 Supply configuration = 2ph Scott.
– 99.05 Load configuration = Scott transformer.
– Second mode switching (groups 30/31/32).
– 99.25 Leg 2 control mode = Follow leg 1 alternating.
– 99.40 Leg 3 control mode = Follow leg 1 alternating.

This firmware is not released for:

– Modbus RTU (XD2D).
– **S**afe **T**orque **O**ff (STO).
– XSTO.

Changed signals and parameters:

Release	**3.00.3.0**			**3.00.2.0**			
Reason	Index	Name	Comments	Reason	Index	Name	Comments

Reason for changes: **1** = New feature; **2** = Solved problems; **3** = Cleanup

Solved problems:

In firmware 3.00.3.0

– Bug fix related to fan on command and fan acknowledgement parameters 19.38 and 19.39 on frame size T6.

In Power optimizer:

– Please see power optimizer release notes.

History of solved problems:

In firmware 3.00.2.0

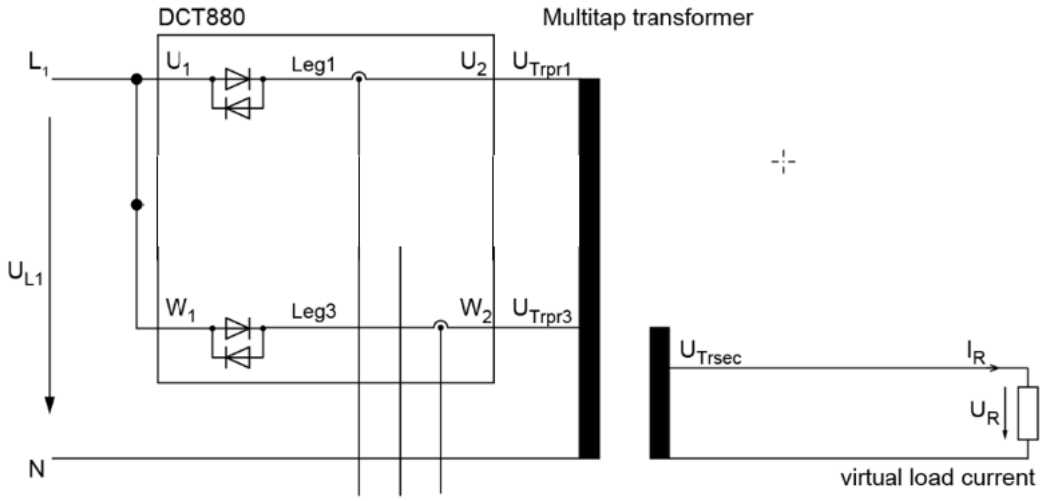
– Bug fix related to datalogger.
– The maximum Unit power part temperature is related to the Unit type code setting [95.16].
– Bug fix related to average power calculation of the actual power values in parameter group [1].

In firmware 3.00.1.0

– Maximum value of 99.01 Supply Voltage for units of Rated AC voltage type 04 was increased from 400 V_{AC} to 415 V_{AC}.

In firmware 3.00.0.0

– Group 33 Generic timer counter has been deleted, since it is not released for DCT880.
– 35.130 FPTC configuration word has been deleted, since the FPTC-0x is not released for DCT880.
– When using a W02 unit together with multitap, the firing angle limits, 32.40 Leg 3 Alpha Min and 32.41 Leg 3 Alpha Max do not work.



Now the firing limits work.

In firmware 2.01.2.0

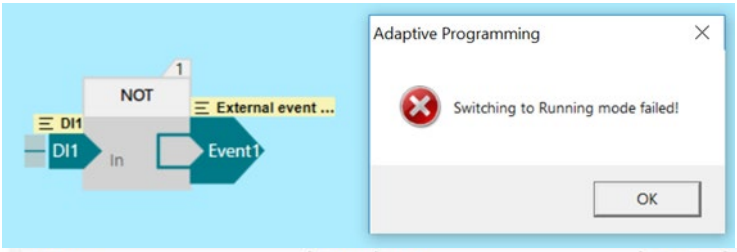
- Resistor calculation (36.01; 36.02; 37.01; 38.01) corrected for load configuration ->3ph delta 3D.
- Boot problem after type code change.

In firmware 2.01.1.0

- Power Optimizer: Now no mains synchronization ticks are not incremented for a unit at undervoltage or with synchronization fault (this leads to the intended loss of master function).
- Power Optimizer: Sync events suppressed when unit is Off (enable command 19.01/19.03/19.05 = 0).
- Cosmetic changes to parameter texts according to manual.
- Modified FPGA (Power Fail signal filtering) allows to correctly determine if the grid 24 V aux. supply (XAUX) is available.

In firmware 2.01.0.0

- 05.50 Power part temperature changes in 4° steps.
- Problems with the Local reference when switching from remote mode to local mode using the control panel. The local reference from the panel is not taken.
- AP-event block does not work:



Drive	Icon	Time	Fault	Description	AUX code
DCT880 AC-Controller {1...		07.05.2013 04:38:02.942	64A6	Adaptive program	00010027

- During boot of units size T6 and T8 always fault 5525 Type coding fault appears:

95. HW configuration			
16	Set: Unit type code	W02-0020-04	NoUnit
17	Set: Unit legs	Automatic	NoUnit
18	Set: Unit output current sc...	2500	A

Drive	Icon	Time	Fault	Description	AUX code
DCT880 AC-Controller {1...		07.05.2013 04:46:30.501	5525	Type coding fault	00000010

- Average power signals do not work properly when the power optimizer is used:

Index	Name	Value	Offline value	Unit	Min	Max	Default
{1}{1}Par.1.89	Leg 1 Power Full Wave Fix Cycle actual relative	8,92		%	0,00	325,00	0,00
{1}{1}Par.1.90	Leg 2 Power Full Wave Fix Cycle actual relative	10,97		%	0,00	325,00	0,00
{1}{1}Par.1.91	Leg 3 Power Full Wave Fix Cycle actual relative	7,73		%	0,00	325,00	0,00
{1}{1}Par.1.85	Leg 1 Power Full Wave Fix Cycle actual	0,2		kW	0,0	5000,0	0,0
{1}{1}Par.1.86	Leg 2 Power Full Wave Fix Cycle actual	0,3		kW	0,0	5000,0	0,0
{1}{1}Par.1.87	Leg 3 Power Full Wave Fix Cycle actual	0,2		kW	0,0	5000,0	0,0
{1}{1}Par.1.88	3ph Power Full Wave Fix Cycle actual	0,6		kW	0,0	5000,0	0,0
{1}{1}Par.1.92	3ph Power Full Wave Fix Cycle actual relative	9,21		%	0,00	325,00	0,00

In firmware 1.08.0.0
- Problem causing FB14 Memory unit, firmware load failed. For more information see document 3AXD10000682494 (ACS880 FW HINT22 - FB14 fault).
- 24V AUX under voltage detection improved (firing angle was locked without indication).
- Multitap control (RESET) = zero angle spike leg 2.

In firmware 1.07.0.0
- Fixed problems in power optimizer.

In firmware 1.06.1.0
- 23.07 function 1: switching to second mode not available in three phase configuration.

In firmware 1.06.0.0
- none.

In firmware 1.05.3.0
- 99.70: 2 Internal, phase V calculated, does not cause immediate trip anymore.
- Possible to use 99.12: First angle for W02 economy configuration and transformer coupled loads.
- Scaling of analog output 1 (AO1) is now 10.000 equals 100 % (20 mA/10 V).

In firmware 1.05.0.0
- Independent control for Leg 2/Leg 3.
- PID Groups (41/42/43).
- Fieldbus interface (group 6).

New features in firmware 3.00.3.0

Hardware:
None.

Firmware:
None.

New features in Power optimizer
- Please see power optimizer release notes.

Differences between firmware 3.00.3.0 and 3.00.2.0:
- Solved problems.

Known firmware or tools problems, bugs, and information:

In firmware 3.00.3.0
- None.

In Drive Application Builder 1.0.0.319
- Extended interface for I/O extension modules (FIAO-01, FDIO-01, FIO-01, FIO-11) is missing and cannot be mapped. The signals and parameters in groups 14 ... 16 must be controlled by ParRead and ParWrite blocks.

Known documentation problems, bugs, and information:
- None.

Compatibility of firmware, hardware, and documentation:

Firmware	DCTF1x 1.07.0.0	DCTF1x 1.08.0.0	DCTF1x 2.01.0.0	DCTF1x 2.01.1.0	DCTF1x 2.01.2.0	DCTF1x 3.00.0.0	DCTF1x 3.00.1.0	DCTF1x 3.00.2.0	DCTF1x 3.00.3.0
DCT880 Manual 3ADW000431 Rev.	X e	X e	X f	X f	X f	X f	X g	X g	X h
SDCS-CON-H Rev. C	X	X	X	X	X	X	X	X	X
SDCS-CON-H Rev. E	X	X	X	X	X	X	X	X	X
Electronic Unit DCS880/DCT880 3ADT220166R0002 (includes SDCS CON H01)	X	X	X	X	X	X	X	X	X
Electronic Unit DCS880/DCT880 3ADT220166R0012 (includes SDCS CON H01L)	-	-	-	-	-	X	X	X	X
SDCS-PIN-H11-A Rev. A	X	X	X	X	X	X	X	X	X
SDCS-PIN-H11 Rev. B	X	X	X	X	X	X	X	X	X
ACS-AP-I panel 1.51 (panel firmware) and higher	X 5.80	X 5.80	X 5.80	X 5.80	X 5.80	X 5.80	X 5.80	X 5.80	X 5.80
ACS-AP-I panel (panel hardware) and higher	X D	X D	X D	X D	X D	X D	X D	X D	X D
Drive Composer entry 1.1.02 and higher	X	X	X	X	X	X	X	X	X
Drive Composer pro 1.6.2 and higher	X	X	X	X	X	X	X	X	X
Drive Application Builder 1.0.0.319	X	X	X	X	X	X	X	X	X
DCT880 Power Optimizer version	1.06.0.0	1.06.0.0	1.07.0.0	1.07.1.0	1.07.2.0	1.07.2.0	1.07.2.0	1.07.3.0	1.08.0.0
DCT880 Power Optimizer Control Manual 3ADW000441 Rev.	X a	X a	X a	X c	X c	X c	X c	X c	X c
DCT880 Multitap Control Manual 3ADW000440Rev.	X a	X a	X b	X b	X b	X b	X b	X b	X b

X: compatible

-: not compatible

Appendix:

– None.

DCS family

DCS550-S modules
The compact drive for machinery application

20 ... 1,000 A_{DC}
0 ... 610 V_{DC}
230 ... 525 V_{AC}
IP00

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

DCS880 modules
For safe productivity

20 ... 5,200 A_{DC}
0 ... 1,500 V_{DC}
230 ... 1,200 V_{AC}
IP00

- Safe torque off (STO) built in as standard
- Compact and robust
- Single drives, 20 A_{DC} to 5,200 A_{DC}, up to 1,500 V_{DC}
- IEC 61131 programmable
- Intuitive control panel and PC tool with USB connection and start up assistant
- Wide range of options to serve any DC motor application

DCS880-A enclosed converters
Complete drive solutions

20 ... 20,000 A_{DC}
0 ... 1,500 V_{DC}
230 ... 1,200 V_{AC}
IP21 – IP54

- Suitable for motoric and non motoric applications (e.g. electrolysis & hydrogen production)
- 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_{DC}, 1,500 V_{DC}
- In accordance to usual standards
- Individually factory load tested
- Detailed documentation

DCT880 modules
Thyristor power controller

20 ... 4,200 A_{AC}
110 ... 990 V_{AC}
IP00

- Precise power control in industrial heating applications
- Two or three phase devices
- Power optimizer for peak load reduction
- Built on ABB's all-compatible drives architecture
- Intuitive control panel and PC tool with USB connection and start up assistant
- Application control programs and drive application programming with IEC 61131 programming

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