MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

ABB

SDCS-PIN-H11 3ADT318600R1501

THYRISTOR POWER INTERFACE BOARD

Used with the applicable DCT880 SDCS-PIN-H11 configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: ABB DCT880 Manual 3ADW000431R0901, SDCS-PIN-H11 pp.71 to 75

Power interface board SDCS-PIN-H11 (T1 ... T5 and T6 special design)

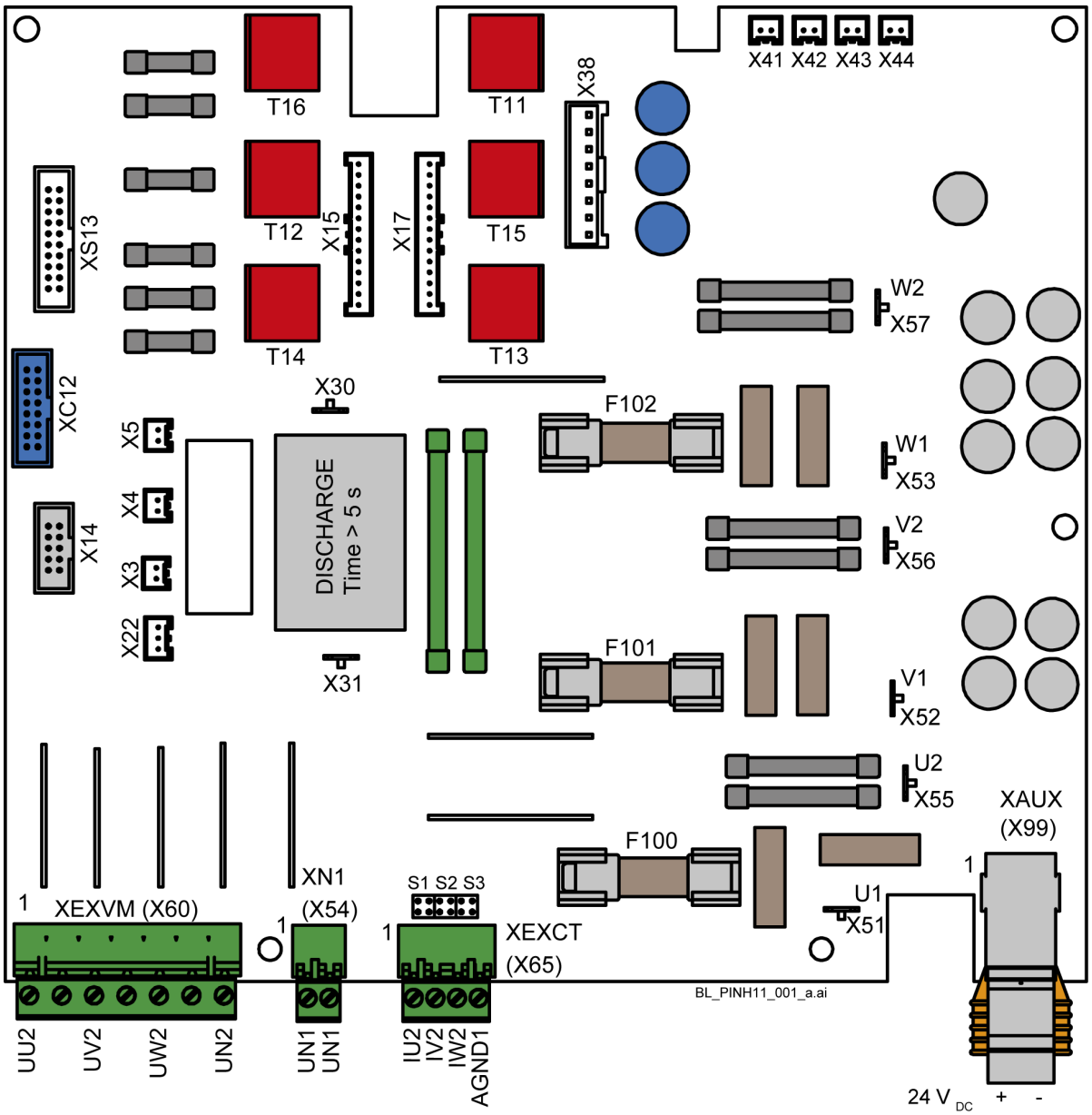
The power interface terminals are common for all units size T1 … T5 and T6 special design.

Recommended wire size - Tightening torques

Power interface cables:

Wire sizes:	Tightening torques:
0.5 … 2.5 mm^2 (24 … 12 AWG)	0.5 Nm (5 lbf in) for both stranded and solid wiring

Power interface circuit terminal location



Fuses F100 … F102:

KTK 25 = 25 A.

Functions

The thyristor power controller provides an adjusted setting for current-, voltage measurement and burden resistors.

The SDCS-PIN-H11 provides:

- The power supply for all small voltages of the whole thyristor power controller and the connected options (XAUX).
- An internal +24 V_{DC} power supply for the cooling fans of unit sizes T1 … T3 (X41 … X44).
- An internal high ohmic measurement of the mains voltages (X51 … X53).
- An interface for external high ohmic measurement of the output voltages (terminal block XEXVM/X60).
- An interface for internal current transformers measuring the output current (X3 … X5).
- An interface for external current transformers measuring the output current (terminal block XEXCT/X65).
- An interface for the heatsink temperature measurement with a PTC resistor (X22).
- A snubber circuit for thyristor protection together with the snubber resistor mounted on the heatsink (X30 and X31).
- The fuses protect the electronic against problems with the mains- or the output voltage (F100 … F102).
- The control of the thyristor power controller (firing pulses).
- The firing pulse transformers for the power part with 2 or 3 thyristor modules are located on the electronic board (T11 … T16).

Power interface circuit terminal layout

XAUX	Auxiliary voltage input (X99)	
1	+24VI	24 V_{DC}, 2.5 A *
2	GNDS	Common ground (connected to frame)
XN1	Mains voltage neutral (X54)	
1	UN1	Neutral of mains (N1) not directly connected to ground (PE) or to XEXVM:7.
2	UN1	XN1:1 and XN1:2 are internally connected
XEXVM	External voltage measurement (X60)	
1	UU2	External voltage measurement for U2
2	-	Not used
3	UV2	External voltage measurement for V2
4	-	Not used
5	UW2	External voltage measurement for W2
6	-	Not used
7	UN2	Neutral of load (N2) not directly connected to ground (PE) or to XEXVM:7.
XEXCT	External current measurement (X65)	
1	IU2	External current measurement (CT) for U2
2	IV2	External current measurement (CT) for V2
3	IW2	External current measurement (CT) for W2
4	AGND1	Common ground (connected to frame)
S1	S1	Activates external current measurement (CT) for U2
S2	S2	Activates external current measurement (CT) for V2
S3	S3	Activates external current measurement (CT) for W2

* Exception: DCT880-W0x-0420 ≥ 3 A

SA 880 006 DCT c.ai

XAUX: Auxiliary voltage input (X99 for T1 ... T5 and T6 special design)

+24VI	Auxiliary voltage	+24 V_{DC}, 2.5 A. Exception: DCT880-W0b-0420 ≥ 3 A. Please be advised, that each DCT880 should have its own 24 V_{DC} power supply.
	Tolerance	±10 %.
	Inrush current	The inrush is not limited by the board. The inrush depends on the connected power supply. Thus, each DCT880 should have its own 24 V_{DC} power supply.
	Power consumption	72 W.
	Auxiliary voltage buffering	40 ms.
	Power fail	< 20.5 V_{DC}; recovery at 20.8 V_{DC} (0.3 V hysteresis).
	Power fail delay time	10 ms.
	Additional information	Auxiliary power supply for the control unit. Maximum wire size 2.5 mm^2.

XN1: Mains voltage neutral (X54)

UN1	Neutral of mains. XN1:1 and XN1:2 are internally connected. Maximum wire size 2.5 mm^2. Cable insulation must withstand 525 V_{AC}.

External measurement of output voltage and output current (CTs)

Voltage and current measurement are used to supervise the load. This includes among other things:

- Monitoring the load.
- Resistance calculation of the load.
- Aging of the load.
- Fault detection e.g., overload.
- Detection of circulating currents in the transformer e.g., in multitap configurations.

The decision to use external voltage and current measurement depends on the type of load. The load types can be divided into loads with and loads without transformers.

1. Loads without transformers do not need external measurement devices. The output current of each leg is measured by means of internal CTs. The output voltage is calculated using the measured mains voltage, the firing angle alpha, the measured output current, and the known load configuration.
2. Loads with transformers need external measurement devices in case accurate load monitoring on the secondary side of the transformer is desired.

Note: For power calculation, external measurement devices are not needed since the power on the primary side and secondary of a transformer is the same. Except of course for power loss calculation of the transformer itself.

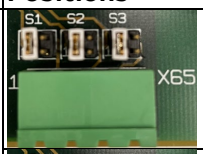
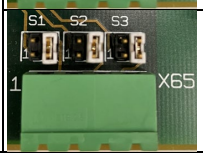
XEXVM: External voltage measurement (X60)

UU2	External voltage measurement for phase U2. Maximum wire size 2.5 mm^2. Cable insulation must withstand 525 V_{AC}.
UV2	External voltage measurement for phase V2. Maximum wire size 2.5 mm^2. Cable insulation must withstand 525 V_{AC}.
UW2	External voltage measurement for phase W2. Maximum wire size 2.5 mm^2. Cable insulation must withstand 525 V_{AC}.
UN2	Neutral of load (N2). Maximum wire size 2.5 mm^2. Cable insulation must withstand 525 V_{AC}.
	Activation, see 99.60 Voltage Measurement Configuration.

XEXCT: External current measurement (X65)

IU2	External current measurement (CT) for phase U2. Maximum wire size 2.5 mm^2. External interface board SDCS-CMI-H02 is required.
IV2	External current measurement (CT) for phase V2. Maximum wire size 2.5 mm^2. External interface board SDCS-CMI-H02 is required.
IW2	External current measurement (CT) for phase W2. Maximum wire size 2.5 mm^2. External interface board SDCS-CMI-H02 is required.
	Activation, see 99.70 Current Measurement Configuration.

Jumpers, external current measurement

Jumper	Description	Positions	
S1 (U2). S2 (V2). S3 (W2).	Activates external current measurement (CT) for phase U2. Activates external current measurement (CT) for phase V2. Activates external current measurement (CT) for phase W2.		Internal current measurement (CT) active, default. See also 99.70 Current Measurement Configuration.
			External current measurement (CT) active via XEXCT (X65). See also 99.70 Current Measurement Configuration.