DCS880

Hardware manual
DCS880 Drives (20 ... 5200 A)

Power Interface board SDCS-PIN-H01 (H1 ... H5)

The SDCS-PIN-H01 is designed for DCS880 converter modules sizes H1 ... H5 (20 A ... 1190 A).
It has 4 different functions:

1. The power supply for all internal voltages of the whole drive and the connected options (H1 ... H5).

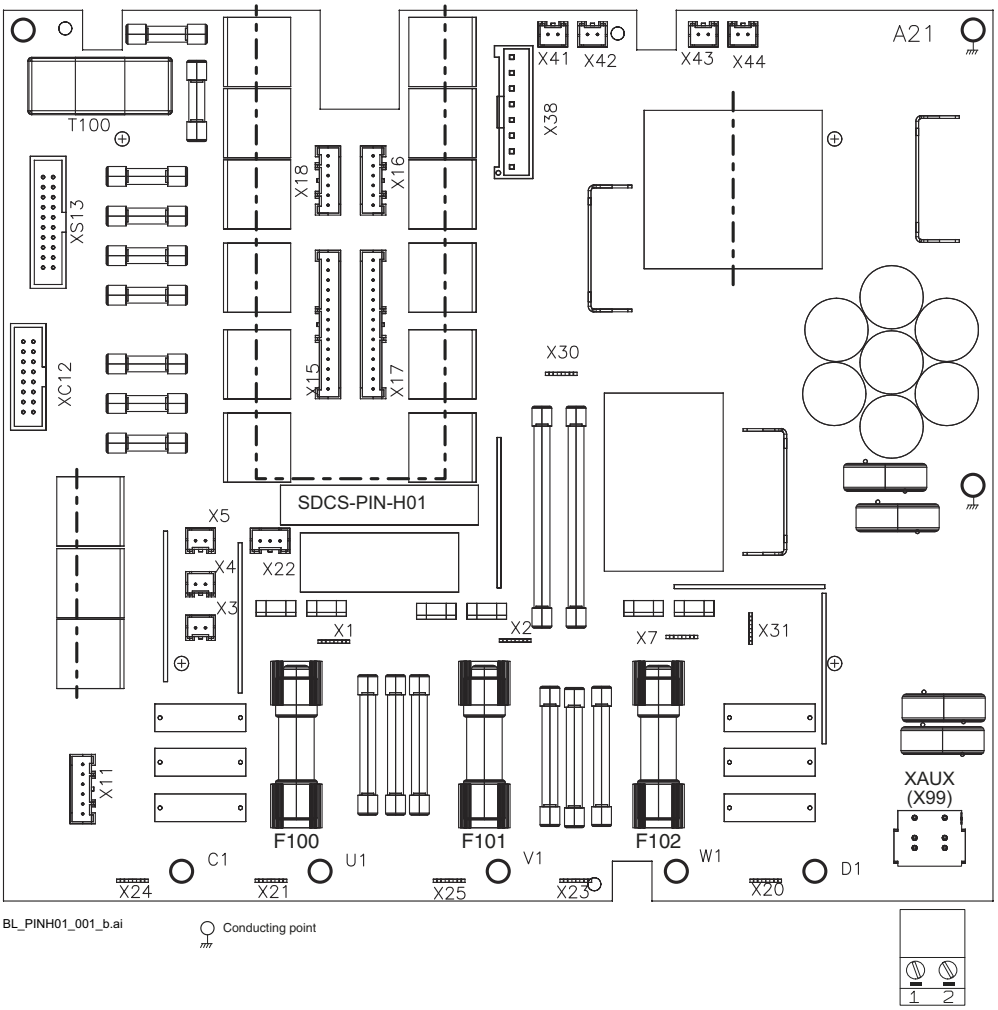
2. Control of armature bridge including high ohmic measurement of DC- and AC voltage and an interface for the current transformer measuring the armature current (H1 ... H5).

3. Control of the OnBoard field exciter and field current measurement (H1 ... H4).

4. An automatic adaptation of the auxiliary voltage of either 230 V_{AC} or 115 V_{AC} (H1 ... H5).

The board is connected to ground at points (⏚) inside the module.
The board is used for mains supply voltages from 100 V up to 500 V (IEC) / 525 V (UL) and 600 V.
The DCS880 provides an automatic adjustment for current and voltage measurement, burden resistor settings and 2-Q or 4-Q operation by means of setting parameters in the firmware.

Layout SDCS-PIN-H01



Field circuit interfaces SDCS-BAB-F01 and SDCS-BAB-F02 (H1 ... H4)

The OnBoard field exciter is located internally. The firing pulses are synchronized using the mains circuit L1, L2, L3 and the SDCS-CON-H01. The pulses are amplified on the SDCS-PIN-H01.
The hardware structure is a three phase half controlled bridge supplied directly from the mains U1, V1, W1 via fuses F100, F101, F102.

If the OnBoard field exciter is not needed it can be deselected in the firmware.

The field circuit interface consists of:

– Firing the three phase half controlled field bridge.
– Measuring the field current on the DC side. The scaling is automatically selected using the rated motor field current.
– The snubber circuit is shared with the armature bridge.
– Fuses F100, F101, F102 are used for cable and motor field winding protection.
– Size H3 and H4 converters for 600 V are always delivered without OnBoard field exciter.
– Size H5 converters do not use the field circuit interface on the SDCS-PIN-H01

Ratings OnBoard field exciter

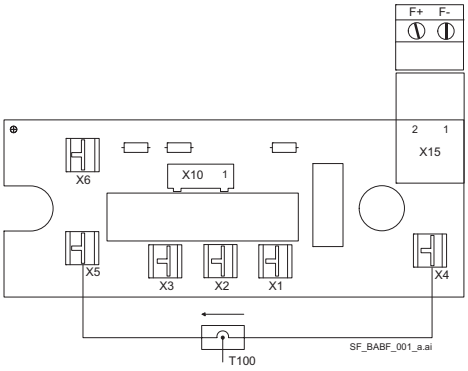
AC voltage range	110 ... 500 V (IEC) / 525 V (UL)
AC insulation voltage	600 V
Frequency	50 Hz / 60 Hz
AC input current	< Field current

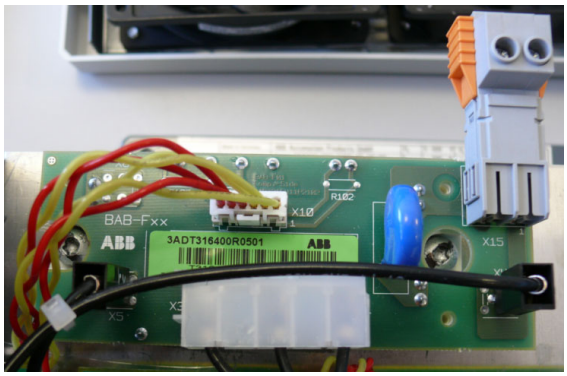
Cables

Size	**H1**	**H1**	**H2**	**H3**	**H4**
DC output current	6 A / 12 A	12 A	18 A	25 A	30 A
max. cross sectional area	6 mm² AWG 10	6 mm² AWG 10	6 mm² AWG 10	6 mm² AWG 10	6 mm² AWG 10
min. cross sectional area	1 mm² AWG 16	2.5 mm² AWG 13	4 mm² AWG 11	6 mm² AWG 10	6 mm² AWG 10

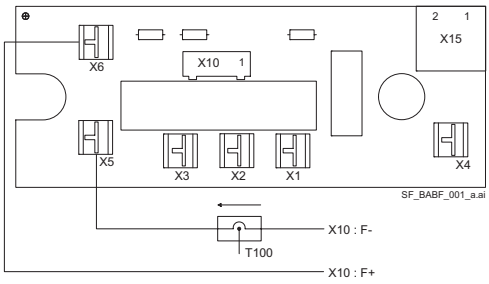
Layout

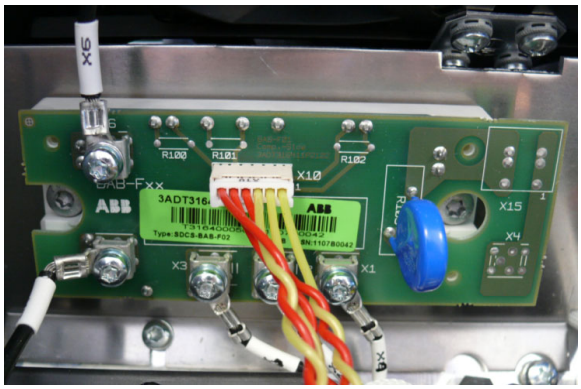
SDCS-BAB-F01 for module sizes H1 and H2:





SDCS-BAB-F02 for module sizes H3 and H4:





Location

The SDCS-BAB-F0x is located between the power part and the control board SDCS-CON-H01.

Functions

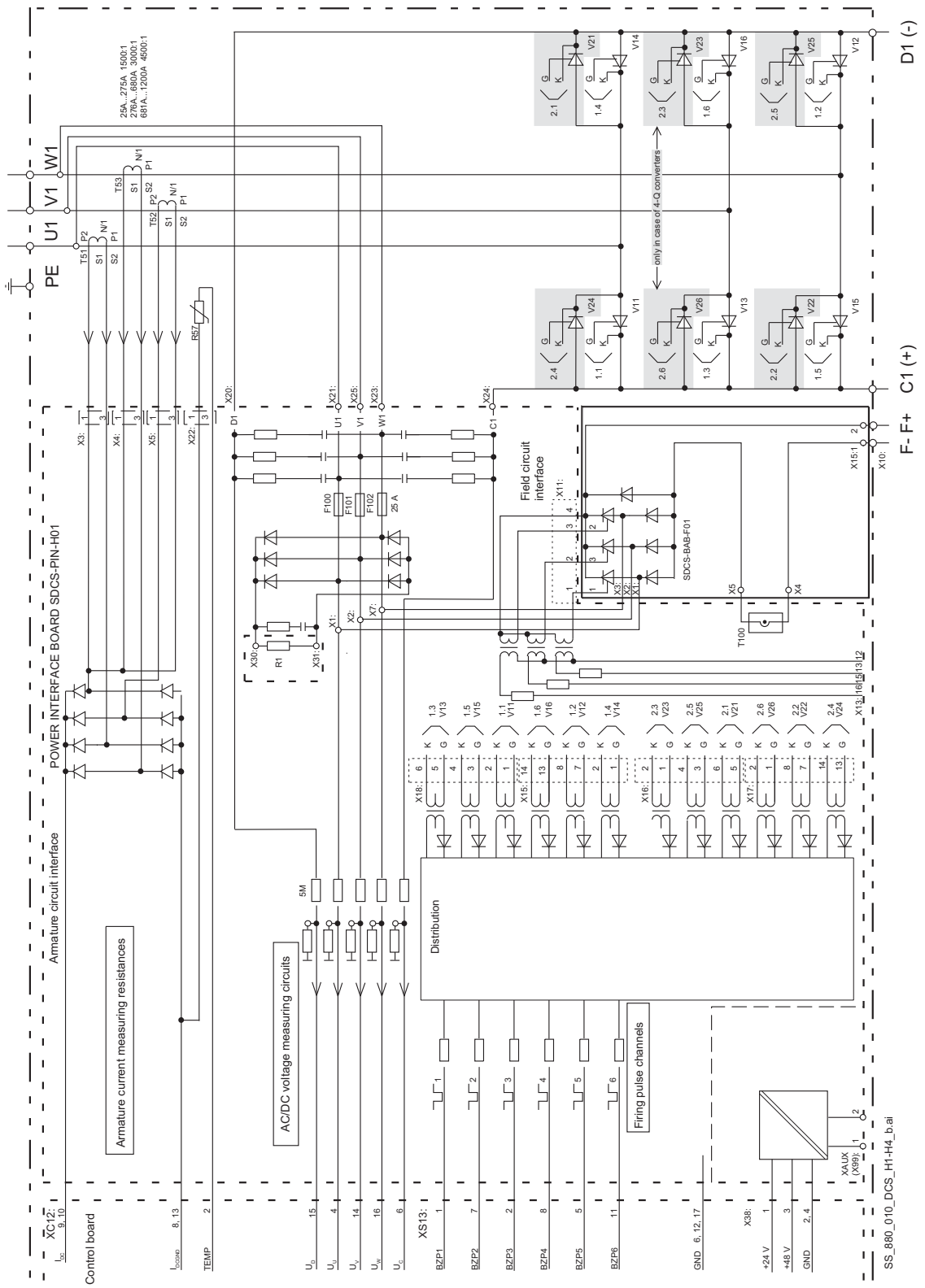
The SDCS-BAB-F0x is a three-phase half-controlled field exciter. The field exciter is directly supplied from the armature mains. Its firing pulses and snubbers are located on the SDCS-PIN-H01. For connection details see next pages.

Size	Converter type	Used type	Used fuses	T100 threads	I_F [A]
H1	DCS880-S01-0020 ... DCS880-S02-0025	SDCS-BAB-F01	F100 ... F102 on SDCS-PIN-H01 KTK 25 = 25 A	4 ①	0.3 ... 6
H1	DCS880-S01-0045 ... DCS880-S02-0100	SDCS-BAB-F01	F100 ... F102 on SDCS-PIN-H01 KTK 25 = 25 A	3 ①	1 ... 12
H2	DCS880-S01-0135 ... DCS880-S02-0300	SDCS-BAB-F01	F100 ... F102 on SDCS-PIN-H01 KTK 25 = 25 A	2 ①	1 ... 18
H3	DCS880-S01-0315 ... DCS880-S02-0520	SDCS-BAB-F02	F100 ... F102 on SDCS-PIN-H01 KTK 25 = 25 A	1 ①	2 ... 25
H4	DCS880-S01-0610 ... DCS880-S02-1000	SDCS-BAB-F02	F401 ... F403 in drive KTK 30 = 30 A	1 ①	2 ... 30

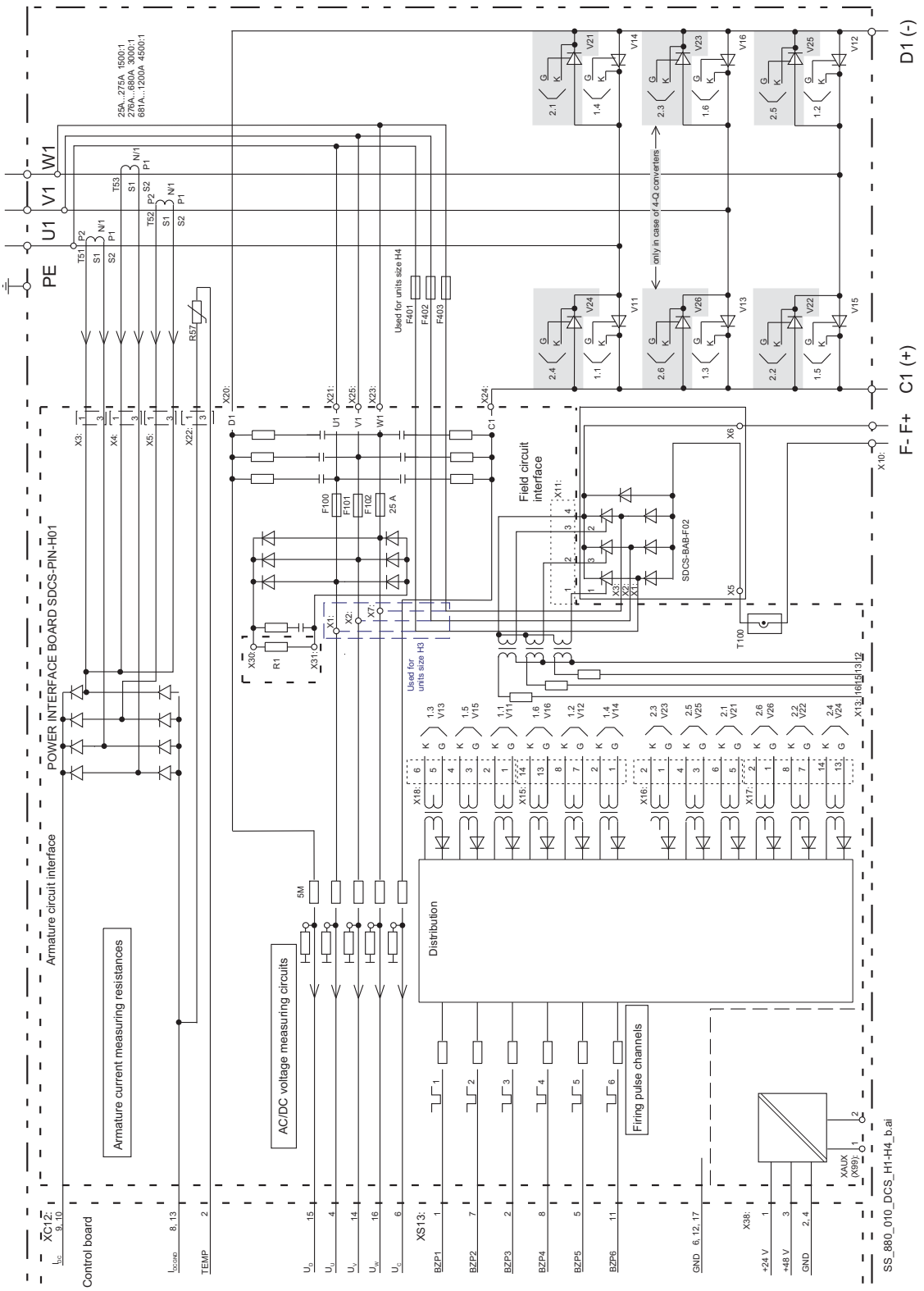
① Number of threads through the hole in the T100 (e.g. 3 threads equal 2 loops).

Circuit diagram

Typical armature circuit diagram for module sizes H1 and H2 using SDCS-PIN-H01 and SDCS-BAB-F01:



Typical armature circuit diagram for module sizes H3 and H4 using SDCS-PIN-H01 and SDCS-BAB-F02:



Typical armature circuit diagram for module size H5 using SDCS-PIN-H01: