

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

ABB

SDCS-PIN-4B-COATED 3ADT316300R1510

SDCS-PIN-4B POWER INTERFACE BOARD

Used with the applicable DCS800 configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: ABB DCS800 Hardware Manual 3ADW000194R0801, pp.88 to 91; spare identity checked against DCS800 Service Manual

Interface board SDCS-PIN-4 / SDCS-PIN-4b

General

The SDCS-PIN-4 / SDCS-PIN-4b is designed for DCS800 converter modules sizes D1 to D4+ (20 A - 1190 A).

It has three different functions:

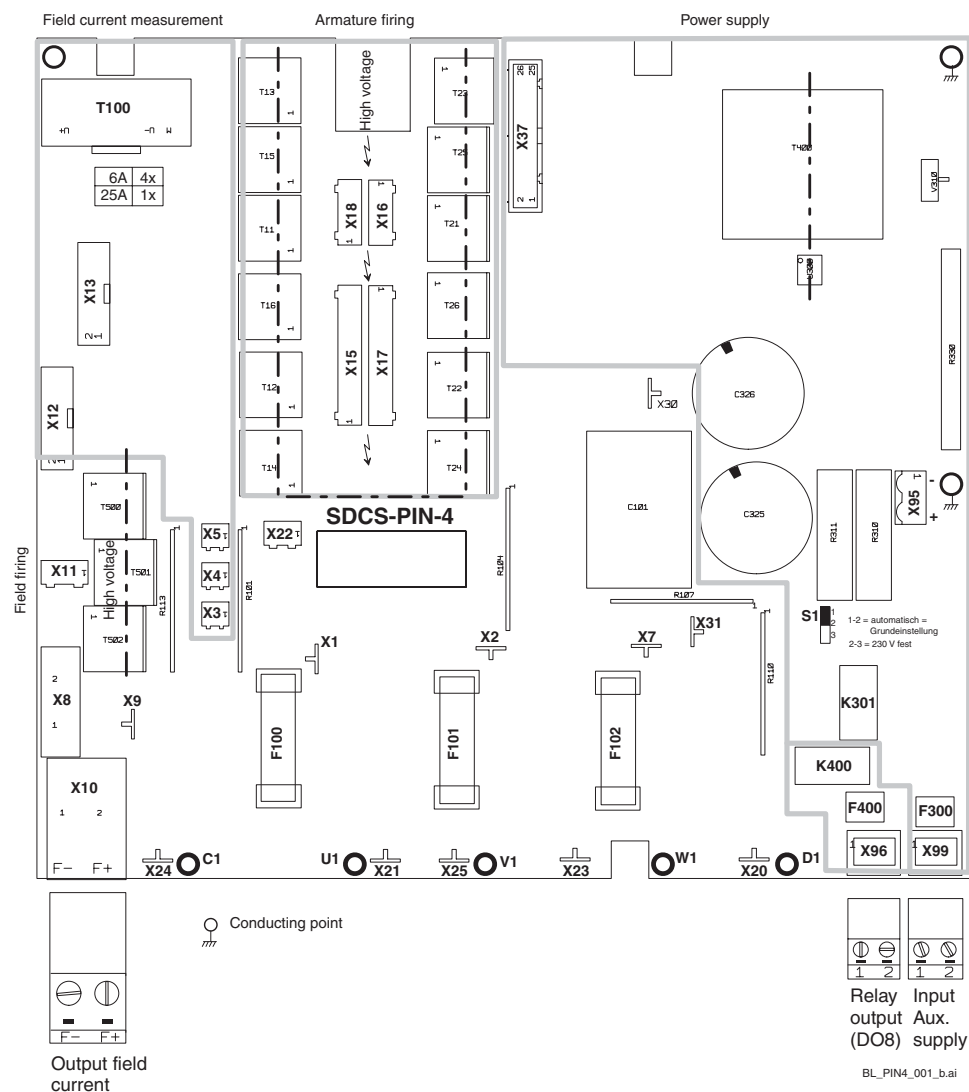
1. The power supply for all small voltages of the whole drive and the connected options (D1 - D4+).
2. Control of armature bridge including high ohmic measurement of DC- and AC voltage and an interface for the current transformer measuring the armature current (D1 - D4+).
3. Control of the OnBoard field exciter and field current measurement (D1 - D4).

The board is connected to ground at points () inside the module.

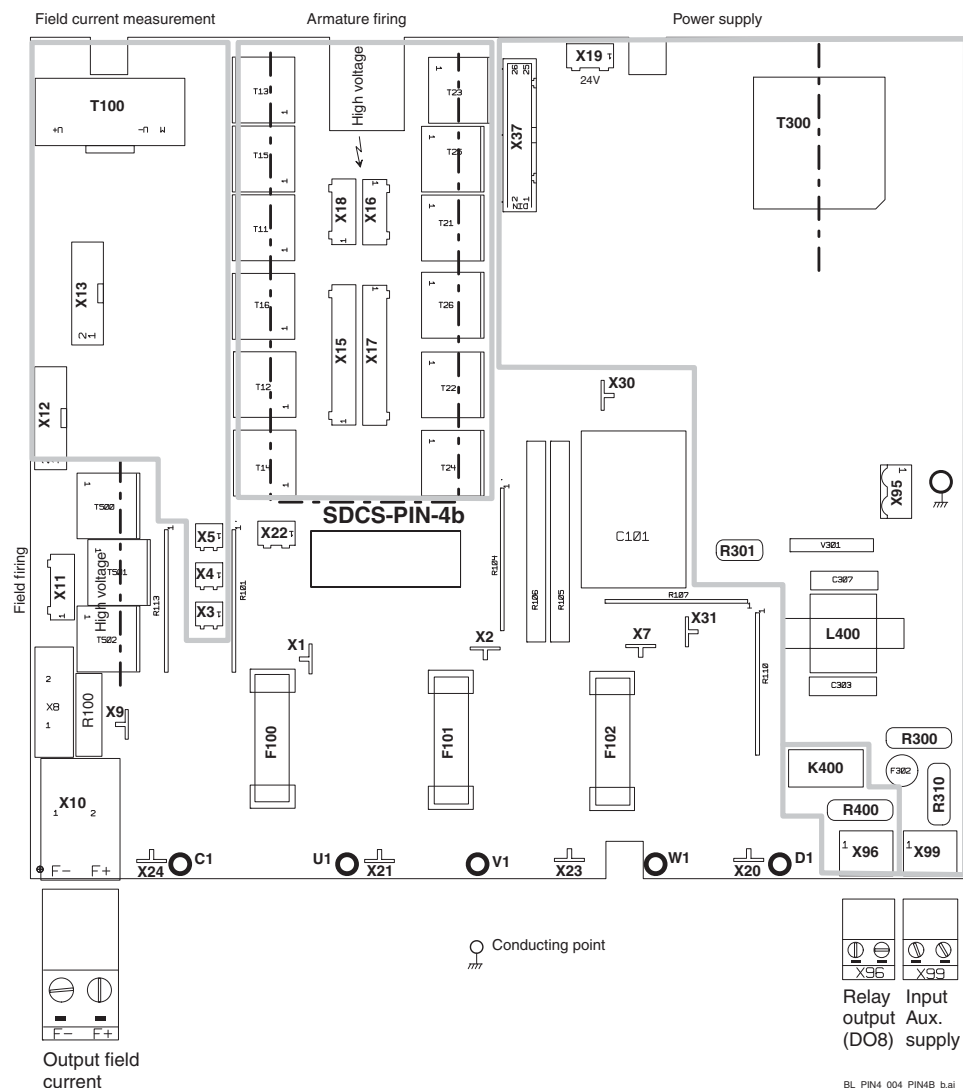
The board is used for mains supply voltages from 230 V up to 525 V and 600 V.

The DCS800 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-4



Layout SDCS-PIN-4b



Layout SDCS-PIN-4b

Power supply

SDCS-PIN-4:

The SDCS-PIN-4 automatically adapts the auxiliary voltage of either 230 V_{AC} or 115 V_{AC} and switches relay K301 in case of jumper setting S1 = 1-2.

In case of varying 230 V_{AC} input voltage (e.g. diesel generator network) the operation must be fixed to 230 V_{AC} by setting jumper S1 = 2-3.

SDCS-PIN-4b:

The SDCS-PIN-4b automatically adapts the auxiliary voltage of either 230 V_{AC} or 115 V_{AC}.

Technical data

Auxiliary incoming power X99

Auxiliary voltage	115 V _{AC}	230 V _{AC}	230 V _{DC} (SDCS-PIN-4b only)
Tolerance	-15 % / +10 %	-15 % / +10 %	-15 % / +10 %
Frequency	45 Hz - 65 Hz	45 Hz - 65 Hz	-
Power consumption	120 VA	120 VA	-
Power loss	≤ 60 W	≤ 60 W	≤ 60 W
Inrush current	20 A / 20 ms	10 A / 20 ms	10 A / 20 ms
Recommended fusing	6 AT	6 AT	6 AT
Mains buffering	min. 30 ms	min. 30 ms (SDCS-PIN-4) min. 300 ms (SDCS-PIN-4b)	min. 150 ms
Powerfail	< 95 V _{AC}	< 185 V _{AC} (SDCS-PIN-4) < 95 V _{AC} (SDCS-PIN-4b)	< 140 V _{DC}

Jumper S1 (SDCS-PIN-4 only)

1-2: Automatic detection of auxiliary voltage (default). Either 115 V_{AC} or 230 V_{AC}.

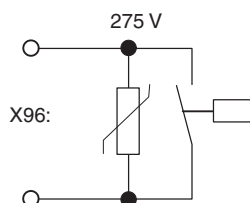
2-3: Auxiliary voltage is fixed to 230 V_{AC}.

Relay output X96 (DO8)

Isolated by relay (normally open contact)

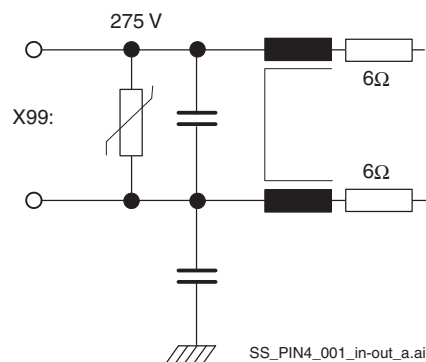
Contact ratings: **AC**: 250 V~ / ≤ 3 A~

DC: 24 V- / ≤ 3 A- or
115 / 230 V- / ≤ 0.3 A-



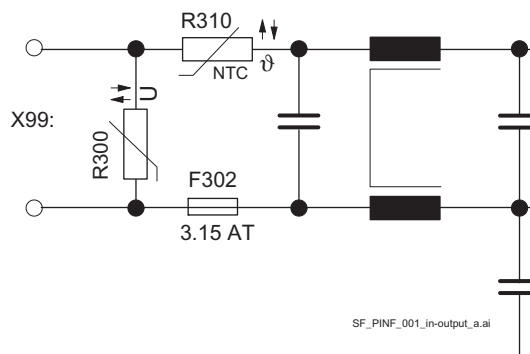
Input circuit X99

SDCS-PIN-4:



SDCS-PIN-4b:

X99 features a hardware filter and a voltage limitation.



Armature circuit interface

The function for the armature circuit interface consist of:

- Firing the armature bridge of 6 or 12 thyristors.
- High ohmic measurement of DC and AC voltages.
- Residual measurement current of armature circuit to ground
= 5 mA at 500 V supply ($\approx 1 \text{ M}\Omega$).
- Interface for the current transformers for current measurement.
- Snubber circuit for the thyristor protection together with R1 on the heatsink.
- Interface for heatsink temperature measurement with a PTC.
- Fuses for overvoltage protection and field circuit.

Field circuit interface (D1 - D4)

The OnBoard field exciter is located internally. The firing pulses are synchronized using the mains circuit L1, L2, L3 and the SDCS-CON-4. The pulses are amplified on the SDCS-PIN-4 / SDCS-PIN-4b. 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 D3 and D4 converters for 600 V are always delivered without OnBoard field exciter.
- Size D4+ converters do not use the field circuit interface on the SDCS-PIN-4 / SDCS-PIN-4b.

Ratings OnBoard field exciter

AC voltage range	110 - 525 V
AC insulation voltage	600 V
Frequency	50 Hz / 60 Hz
AC input current	< Field current
Minimum field current	300 mA

Cables

Size	D1	D2	D3	D4
DC output current	6 A	15 A	20 A	25 A
max. cross sectional area	6 mm ² AWG 10	6 mm ² AWG 10	6 mm ² AWG 10	6 mm ² AWG 10
min. cross sectional area	1 mm ² AWG 16	2.5 mm ² AWG 13	4 mm ² AWG 11	6 mm ² AWG 10
Fuse type	KTK - 25			