Interface Board SDCS-PIN-4

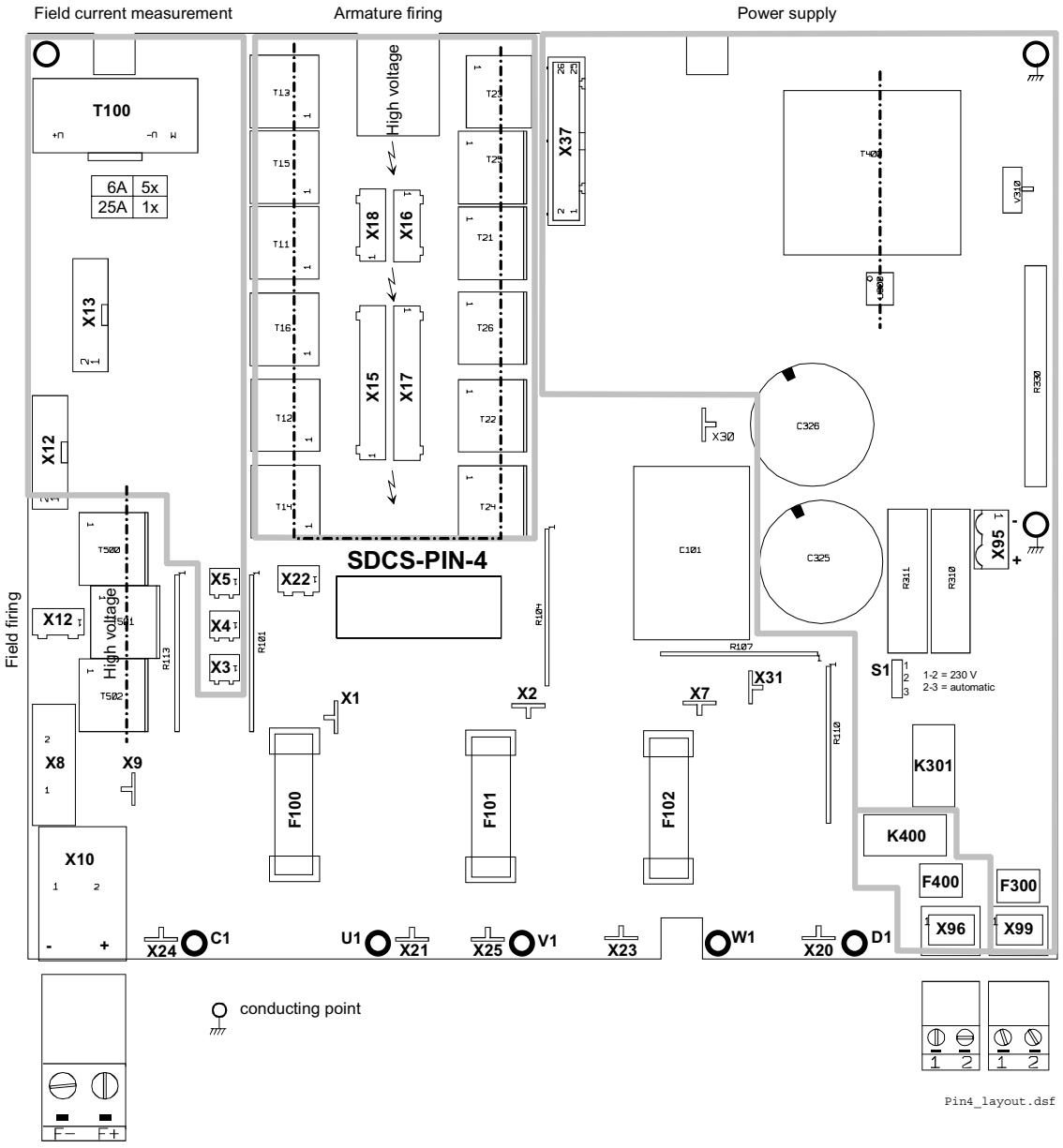
General

The SDCS PIN4 board is designed for DCS800 Converter modules sizes D1 up to size D4 (20 A...1000 A) the board has three different functions:

1. Power supply of CON-4 board and the connected options
2. Control of armature bridge and measurement
3. Control of on-board field exciter and field current measurement

The board is mounted conducting ground at points (⏚) inside the module.
The board is used for supply voltages from 230 V up to 525 V, 600 V.
The converter identification is made by TYPECODE 97.01 (and not by hardware)!

The converter identification manages the burden resistor setting and 2-Q or 4-Q bridges operation.



Different functional areas on SDCS-PIN-4

Power supply

The power supply (X99:) operates on fly back configuration. The internal DC link voltage is 310 V.

The power supply automatically adapts the supply input voltage between 230 V and 115 V and switches relays K301.

In case of oscillating 230 V input voltage (e.g. generator network) the operation must be clamped to 230 V by Jumper S1= 2-3 230 V operation

Technical data

AC Supply voltage

Supply voltage	115 V AC	230 V AC
Tolerence	-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
Inrush current	20 A / 20 ms	10 A / 20 ms
Mains buffering	min 30 ms	min 30 ms
Powerfail	85 V	170 V

Backup supply

The terminal X95 are used to add additional capacitance to the existing ones to increase the mains buffering time. More detailed data is available on request via your ABB representative.

S1

2-3 -> 230 V operation fix

1-2 -> automatic detection of input voltage range (default)

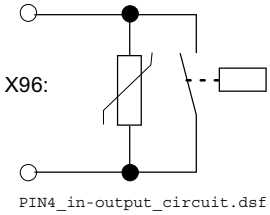
X96: Output DO8

Isolated relay (NO contact)

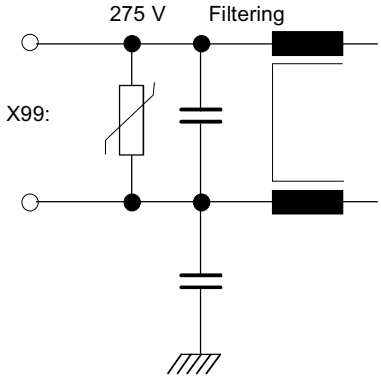
Contact rating:AC: 230 V~/ <3 A~

DC: 24 V-/ <3 A-

or 115/230 V-/ <0.3 A-)



Input circuit PIN-4



Armature circuit interface

The function for armature circuit interface consist of:

- Firing the armature bridge of 6 or 12 thyristors.
- High ohmic measurement of DC and AC voltage.
- Interface for AC current transformer for current measurement.
- Snubber circuit for the thyristor protection together with resistor R1 on heatsink.
- Interface for heatsink temperature measurement with a PTC resistor.
- Fuses for overvoltage protection and field circuit.

The same board can be used for 3 phase field exciters without modification.

The current measurement is adjusted by TYPECODE parameter 97.01 and automatic adjusted by rated motor current.

Field circuit interface

The On board fieldexciter is located internally. The firing pulses are synchronized from mains circuit L1,L2,L3 and SDCS-CON-4 board. The pulses are amplified on PIN4 board. The hardware structure is a three phase half controlled bridge supplied direct from mains circuit U1, V1 , W1 via fuses F100, F101, F102.

If the On board field exciter is not needed it can be switched OFF by firmware.

The function of field circuit interface consists of:

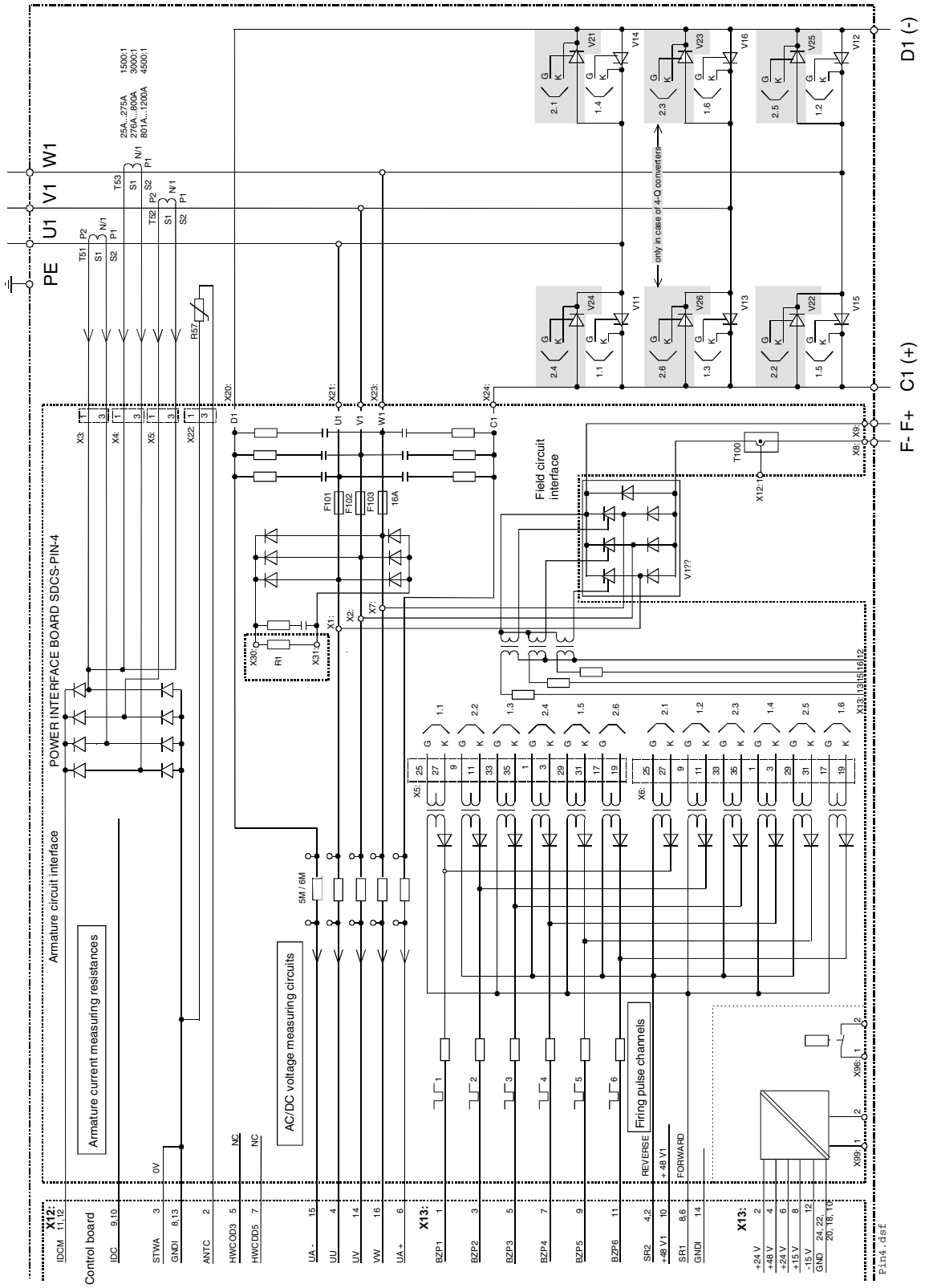
- Firing the field bridge three phase half controlled bridge.
- Measurement of DC field current, the scaling is automatically selected via rated motor field current.
- Snubber circuit are shared with armature bridge.
- Fuses F101, F102, F103 for cable and motor field protection.

Ratings

AC voltage range	110...500 V (525 V)
AC insulation voltage	500 V
Frequency	50 Hz / 60Hz
AC input current	< field current
Minimum Current	?300 mA

Size	D1	D2	D3	D4
DC output current	6A	15A	20A	25A
max. cross sectional area	16 mm² AWG 6	16 mm² AWG 6	16 mm² AWG 6	16 mm² AWG 6
min. cross sectional area	1 mm² AWG 16	2.5 mm² AWG 12	4 mm² AWG 10	6 mm² AWG 8
Fuse type	KTK - 25			

Typical armature circuit thyristor converter diagram with SDCS-PIN-4 board



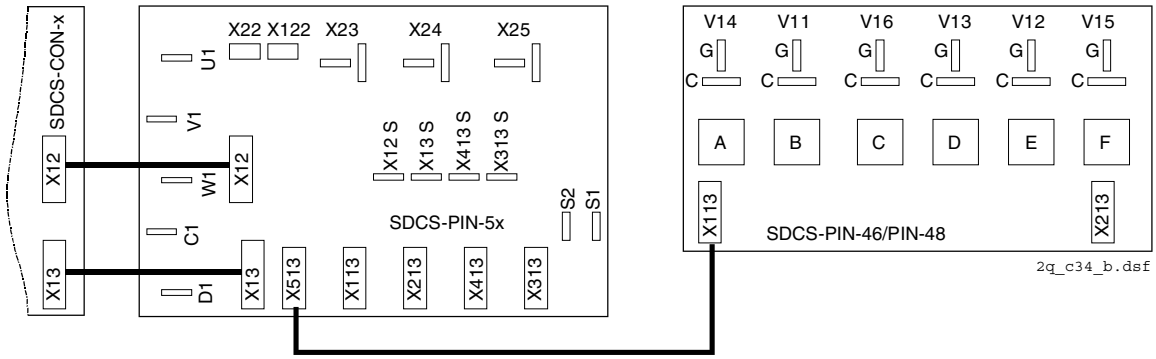
Power Interface SDCS-PIN-46/SDCS-PIN-48/SDCS-PIN-5x

The Power Interface of DCS converter modules model D5/D6/D7 from 900 A up to 5200 A consists of two boards - the Measuring board SDCS-PIN-51 and the Pulse transformer board SCDS-PIN-41.

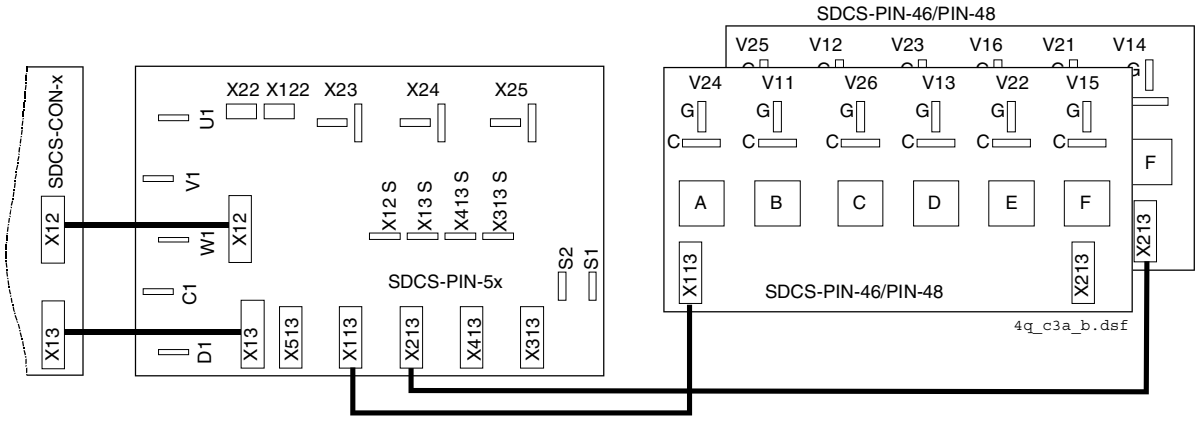
The following figures show the different connections between the SDCS-PIN-41 and SDCS-PIN-51 board depending on the application 2- or 4-quadrant and the construction type.

Converters delivered from middle 2005 will be equipped with SDCS-PIN-48, which is a full replacement for converters already in use.

2-Quadrant application, no parallel thyristors - Construction type D5/D6/D7

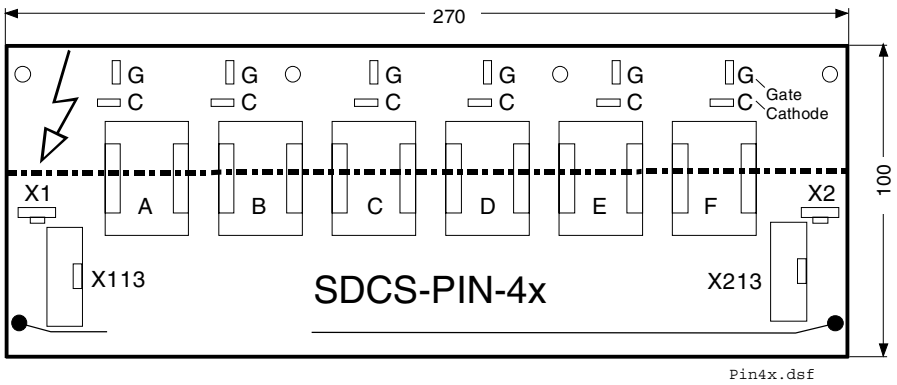


4-Quadrant application, no parallel thyristors - Construction type D5/D6/D7



Pulse transformer board SDCS-PIN-46/PIN-48

Layout of the SDCS-PIN-46/PIN-48 pulse transformer board



The board consists of six pulse transformers with amplifiers.