

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

ABB DRIVES

SDCS-PIN-51 3ADT220090R0006

CURRENT AND VOLTAGE MEASURING BOARD

Applicable product family: ABB DCS800 DC drives

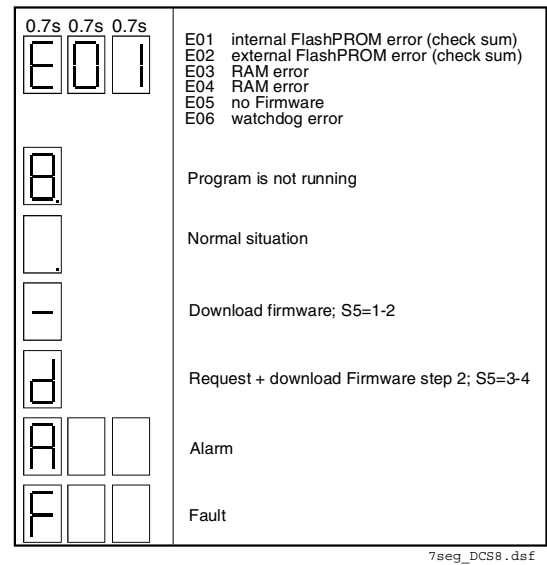
OFFICIAL SOURCE

sdcs.pdf

The following pages are selected from the supplied manufacturer document and retain their original page content.

Seven segment display

A seven segment display is located on the control board SDCS-CON-4 and it shows the state of drive.



Terminal description

X37: Connector is used for supply of SDCS-CON-4 from SDCS-POW-1, SDCS-POW-4, SDCS-PIN-4 supply voltage can be measured to ground.

X37:3= 48V

X37:5=24V

X37:7=15V

X37:11=-15V

X37:13=5V encoder

X37:23=5V CPU

Supply voltage monitoring

5V CPU is monitored by 4.75 V and forces CPU to reset. In parallel the CPU monitors Powerfail signal from power supply (SDCS-PIN-4 or SDCS-POW-1).

X12: and **X13:** connector are used for measurement voltage, current and temperature and firing thyristors of SDCS-PIN-51/PIN-41, SDCS-PIN-4.

see chapter *Technical data*

X17: and **X300:** are routine test connectors.

X1: and **X2:** are used to connect SDCS-IOB-2 and SDCS-IOB-3 board.

see chapter *Technical data*

X33: is used to connect DCS800 Panel. It can be connected direct via 40 mm jack or via CAT 1:1 cable (RJ45).

X34: is used for download firmware and for DWL and IEC1131 programming connection.

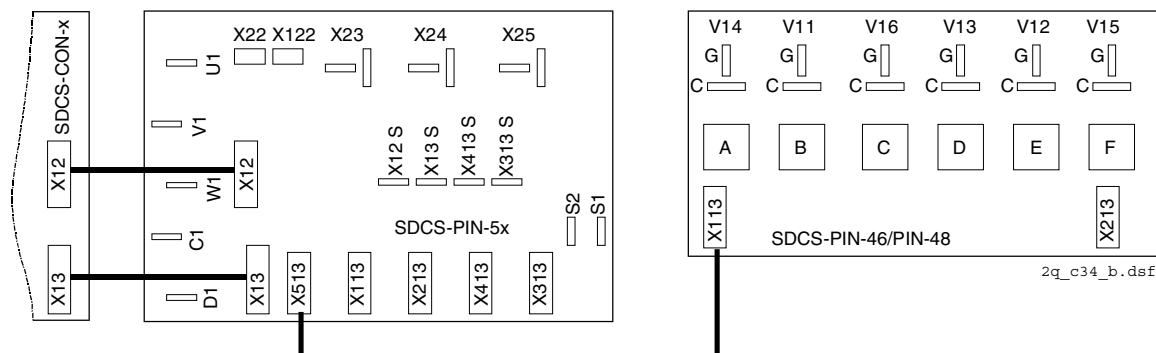
Power Interface SDCS-PIN-46/SDCS-PIN-48/SDCS-PIN-5x

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 SDCS-PIN-41.

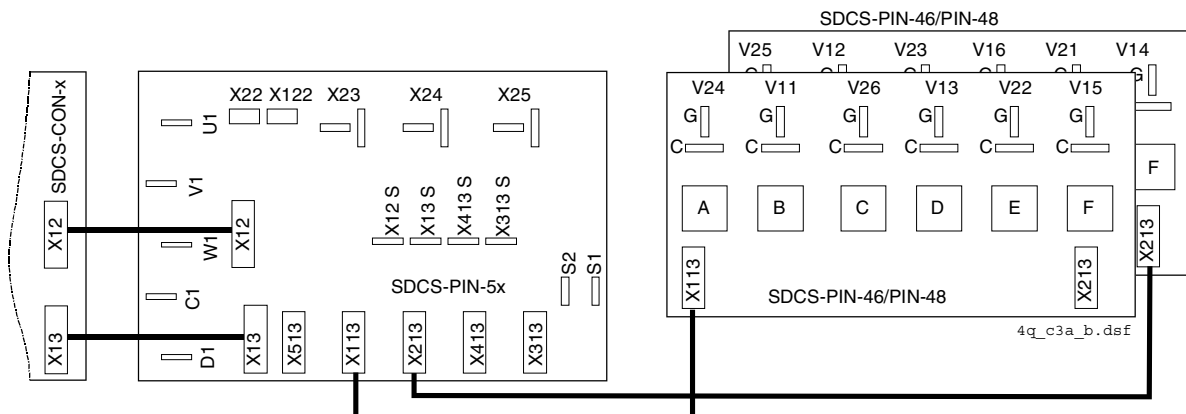
The following figures show the different connections between the SDCS-PIN-41 and SDCS-PIN-51 board depending on the application 2- or 4-quadrant and the construction type.

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

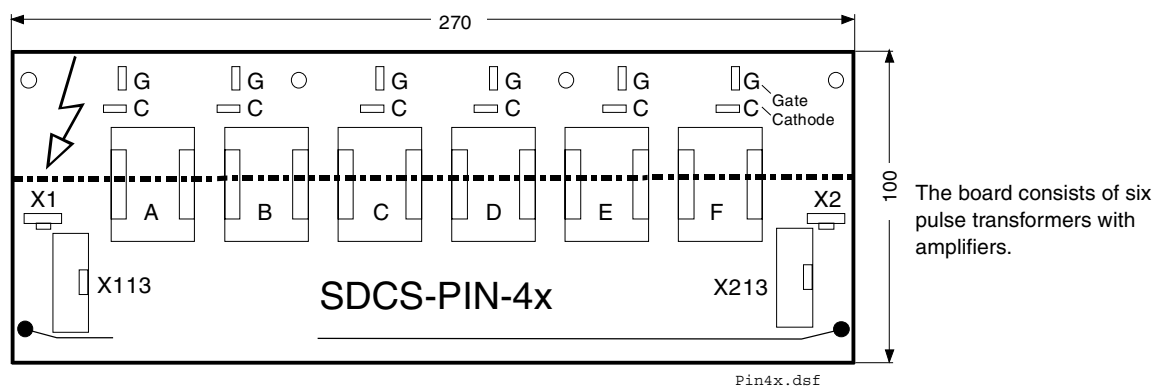


4-Quadrant application, no parallel thyristors - Construction type D5/D6/D7



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

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



Measuring board SDCS-PIN-51

This board is always used together with SDCS-PIN-41 board. On this board there are the circuits located needed for current, voltage and temperature measuring and for hardware coding.

The current is measured by current transformers at the main AC inputs, rectified by a diode bridge and scaled with burden resistors. The nominal current is adjusted by cutting out resistors (R1 ... R21) from the board according to the current coding table. The resistors R22 ... R26 are used for the current equal to zero detection. These resistors must be cut off too, according to the current coding table.

Voltages (U1, V1, W1 and C1(+)) and D1(-)) are measured by using high ohm resistor chains. Scaling of AC and DC voltage is done by activating 1 M Ω resistors (= cutting out short circuit wires, which are represented by low ohmic resistors).

The voltage measurement uses 5 resistor:

U1:W1 to W5

V1:W6 to W11

W1:W12 to W16

C1(+):W17 to W21

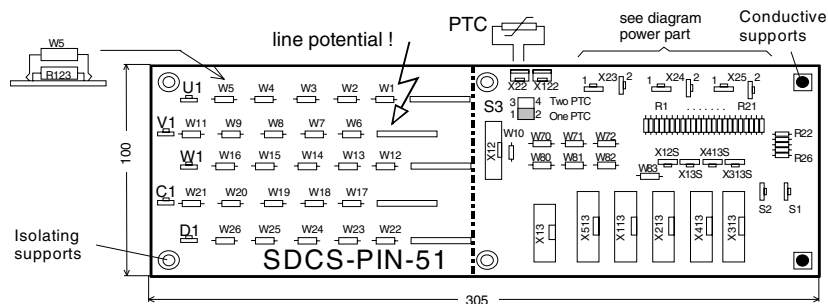
D1(-):W22 to W26

If there is a need for voltage adaptation, all 5 chains must be handled in the same way.

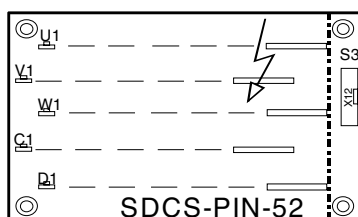
Note! Actual voltage signals U1, V1, W1, C1(+) and D1(-) of the main circuit are not galvanically isolated from the control board. Because of that a current of less than 1 mA will flow to earth.

When galvanically isolated measurement is needed, please contact your ABB representative..

Layout of the SDCS-PIN-51 board



Layout of the SDCS-PIN-52



In the past some converters for line voltages lower/equal 500 V had been equipped with SDCS-PIN-52 boards. The SDCS-PIN-51 board serves as a spare part for those converters.

Settings of the SDCS-PIN-51 board if a DCS converter is equipped with it by ABB

Current coding

Construction type		D5				D6				D7					
Current transf. ratio		2500:1				2500:1				4000:1					
Rated current [A DC]		900	1200	1500	2000	1900	2050	2500	3000	2050	2600	3300	4000	4800	5200
R1-R4	18														
R5	18														
R6	18														
R7	18														
R8	18														
R9	18														
R10	18														
R11	18														
R12	18														
R13	18														
R14	18														
R15	18														
R16	18														
R17	33														
R18	68														
R19	120														
R20	270														
R21	560														
R22	47														
R23	47														
R24	47														
R25	47														
R26	100														

code_tab_PIN1_PIN20_PIN51_d.dsif

Voltage coding

Construction type	D5			D6 / D7				D7	D7
Conv. nom. voltage [V]	Y=4 (400V)	Y=6 (600V)	Y=7 (690V)	Y=4 (400V)	Y=6 (600V)	Y=7 (690V)	Y=8 (790V)	Y=9 (990V)	Y=1 (>1000V)
① U1 [V AC]	Y=5 (500V)			Y=5 (500V)					
Value f. conv. nom. volt at SET(TINGS) block	0 = HW type coding			500	600	690	800	1000	
Measuring board SDCS	PIN-51	PIN-51	PIN-51	PIN-51	PIN-51	PIN-51	PIN-51	PIN-51	see chapter Galvanic isolation
W1, 6, 12, 17, 22									
W2, 7, 13, 18, 23									
W3, 8, 14, 19, 24									
W4, 9, 15, 20, 25									
W5, 11, 16, 21, 26									

① the converters can be used at lower line voltage then specified by the y-value without hardware modifications, if the nominal line voltage applied to the converter is not lower than 45% for y=5...9 and not lower than 55% for y=4.

Temp. sensor coding

R 57 as a temp. sensor for D5, D6, D7

S3 4 3
2 1

2 Q - 4 Q coding

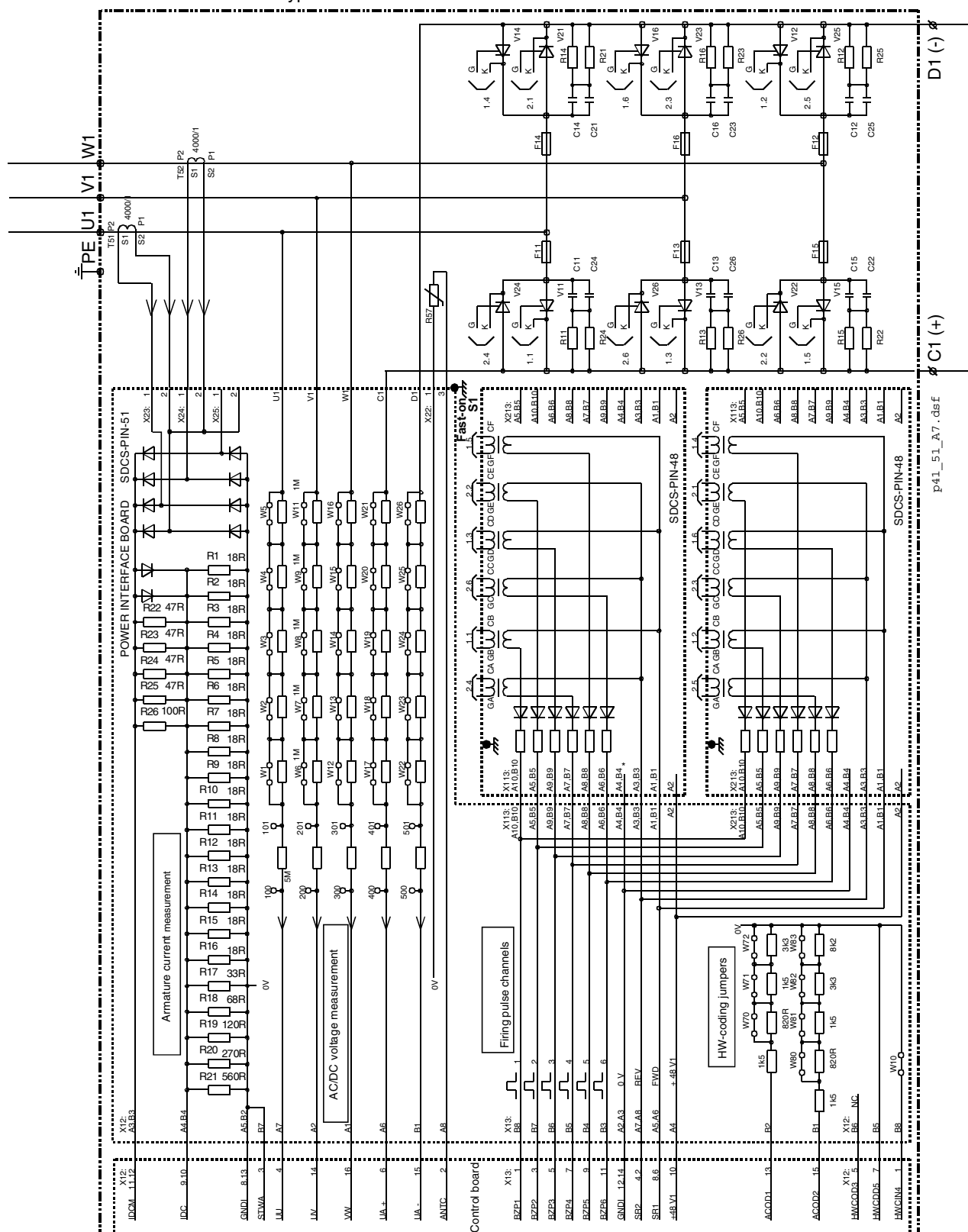
	2-Q	4-Q
W10		

Board used as a spare part:

- default: all jumpers Wxx, Rxx are in condition
- ensure the correct converter type related settings

indicates a removed jumper

Typical armature circuit thyristor converter diagram with SDCS-PIN-48 and SDCS-PIN-51 boards for a 4-Quadrant D7 type converter



Typical armature circuit thyristor converter diagram with SDCS-PIN-48 and SDCS-PIN-51 boards for a 4-Q D7 type converter with galvanic isolation

