

3.1 Control Board SDCS-CON-2

The control board is based on the 80186EM micro-processor and the ASIC circuit DC94L01.

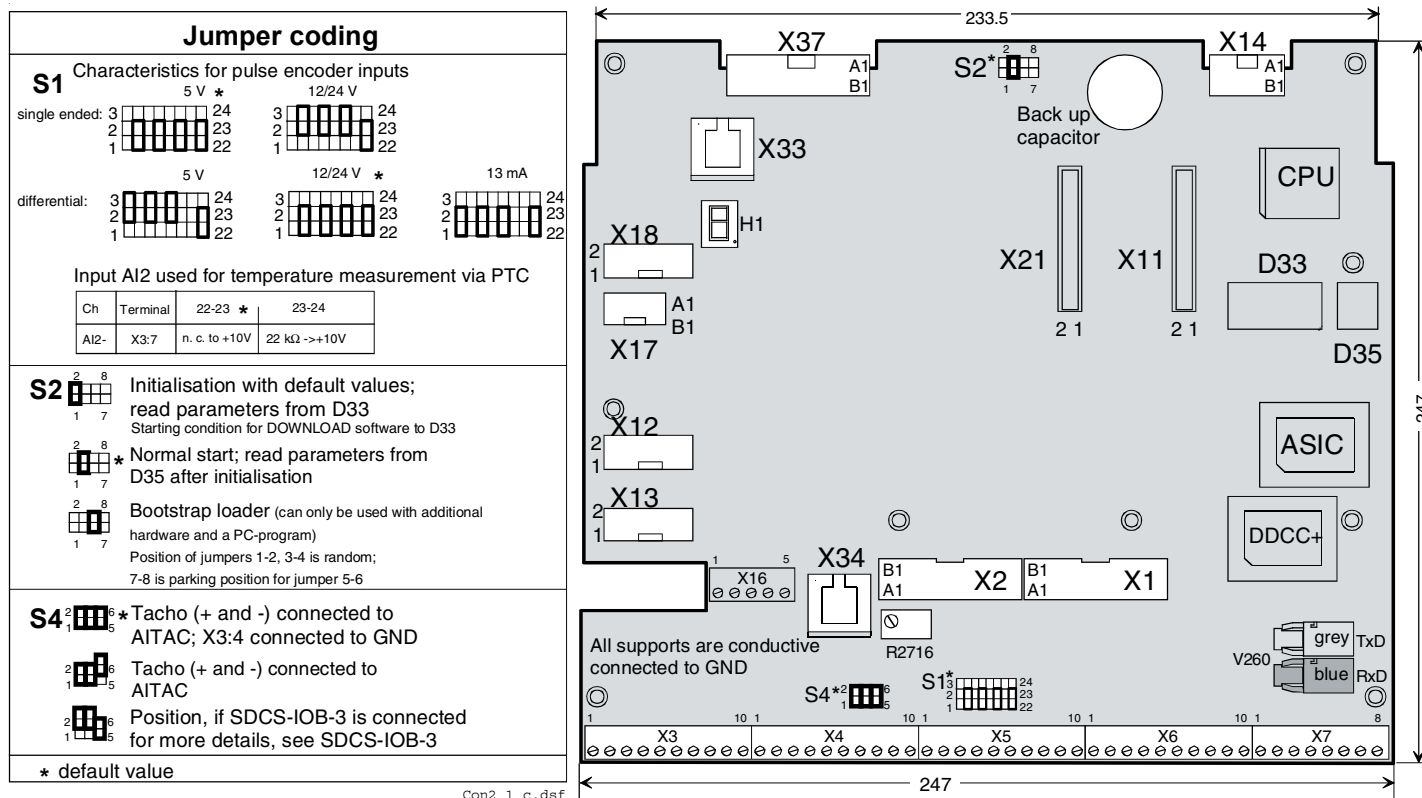


Fig. 3.1/1 Layout of the control board SDCS-CON-2

Memory circuits and the back-up

The program including system and parameter values is stored at Flash PROM D33. Different programs can be downloaded directly to these PROMs. Application functionality and parameter values are saved in the Flash PROM D35. Fault and Alarm messages -the time of their appearance and some other values like the operating hours and so on- are stored in static RAM circuits. They have a back up capacitor of 1 F, which lasts minimum 8 hours, typically several days. It takes about 30 minutes to charge the backup capacitor.

ASIC function

ASIC = Application Specific Integrated Circuit
Most of the measurements and control functions for the DCS500 are done in the ASIC:

- communication with control panel (RS 485)
- communication with field exciters (RS 485)
- measurement
- watchdog function
- A/D and D/A-conversion control
- thyristor firing pulse generation

Watchdog function

The control board has an internal watchdog. The watchdog controls the running of the control board program. If the watchdog trips, it has the following effects:

- Writing to FPR0M is disabled.
- Thyristor firing control is reset and disabled.

- Digital outputs are forced low.
- Programmable analogue outputs are reset to zero, 0V.

Seven segment display

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

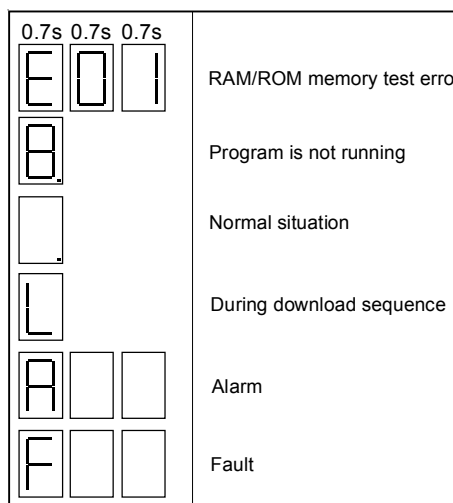


Fig. 3.1/2 Seven segment display of the SDCS-CON-2

Auxiliary power distribution

The electronic power supply board SDCS-POW-1 (see separate chapter) generates different levels of voltages. Some of them are transferred via the CON-2 board directly to the boards, where they are used, others are manipulated and then transferred.

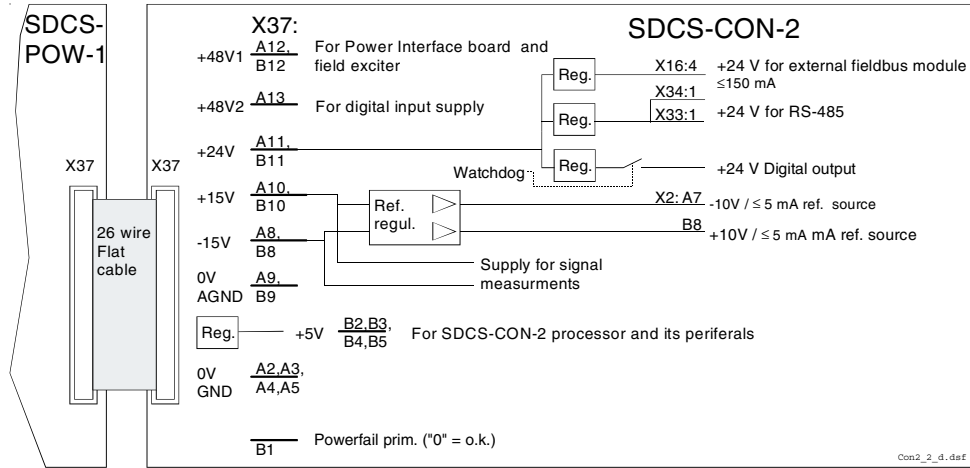


Fig. 3.1/3 Auxiliary power distribution on the board SDCS-CON-2

Supply voltage monitoring

The control board monitors the following voltage levels:

Supply voltage	+5 V	+15 V	-15 V	+24 V	+48 V1	+48 V2
Undervoltage tripping level	+4.55 V	+12.4 V	-12.0 V	+19 V	+38 V	+38 V
Test terminals X37:	B4 / B5	B10	B8	B11	B12	-----

The electronic power supply system with the different voltage levels is monitored in two ways. There is a signal powerfail primary, which monitors the input power supply voltage of the POW-1 board and a signal powerfail secondary, which monitors the low voltage levels. If one voltage level drops below the

threshold a trip signal is generated.

In addition to that there is a monitoring function for the 5 V level. If +5 V drops under the tripping level, it causes a master reset by hardware. All I/O registers are forced to 0 and the firing pulses are suppressed.

RS485 serial communication channels

The control board has two RS485 channels. The first channel is used for field exciter control of DCF 501B/502B, DCF 503A/504A or DCF 601/602 (terminals X16:1...3) and the second for the control panel (CDP) at terminals X33 or X34. The terminals X33 and X34 are wired up in parallel internally.

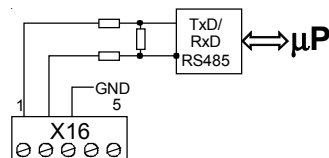


Fig. 3.1/4 Connection for field supply units DCF xxx to the RS485 Communication Interface of the SDCS-CON-2 board.

DDCS Channel integrated

The control board SDCS-CON-2 has an integrated DDCS (Digital Drive Control System) channel with a transfer rate up to 4 Mbits/s. This channel (V260) can be used for fieldbus modules with the DCS 500B converters or for the 12_PULE LINK with DCS 600 converters. The terminals X16:4 and 5 are provided for power supply of the modules (+24 V / ≤150 mA).

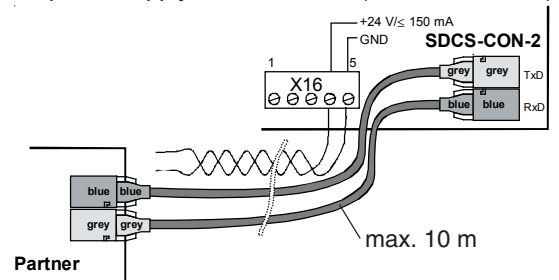


Fig. 3.1/5 Connection of the DDCS channel with power supply to the control board SDCS-CON-2

Digital and analogue I/O connection of the SDCS-CON-2

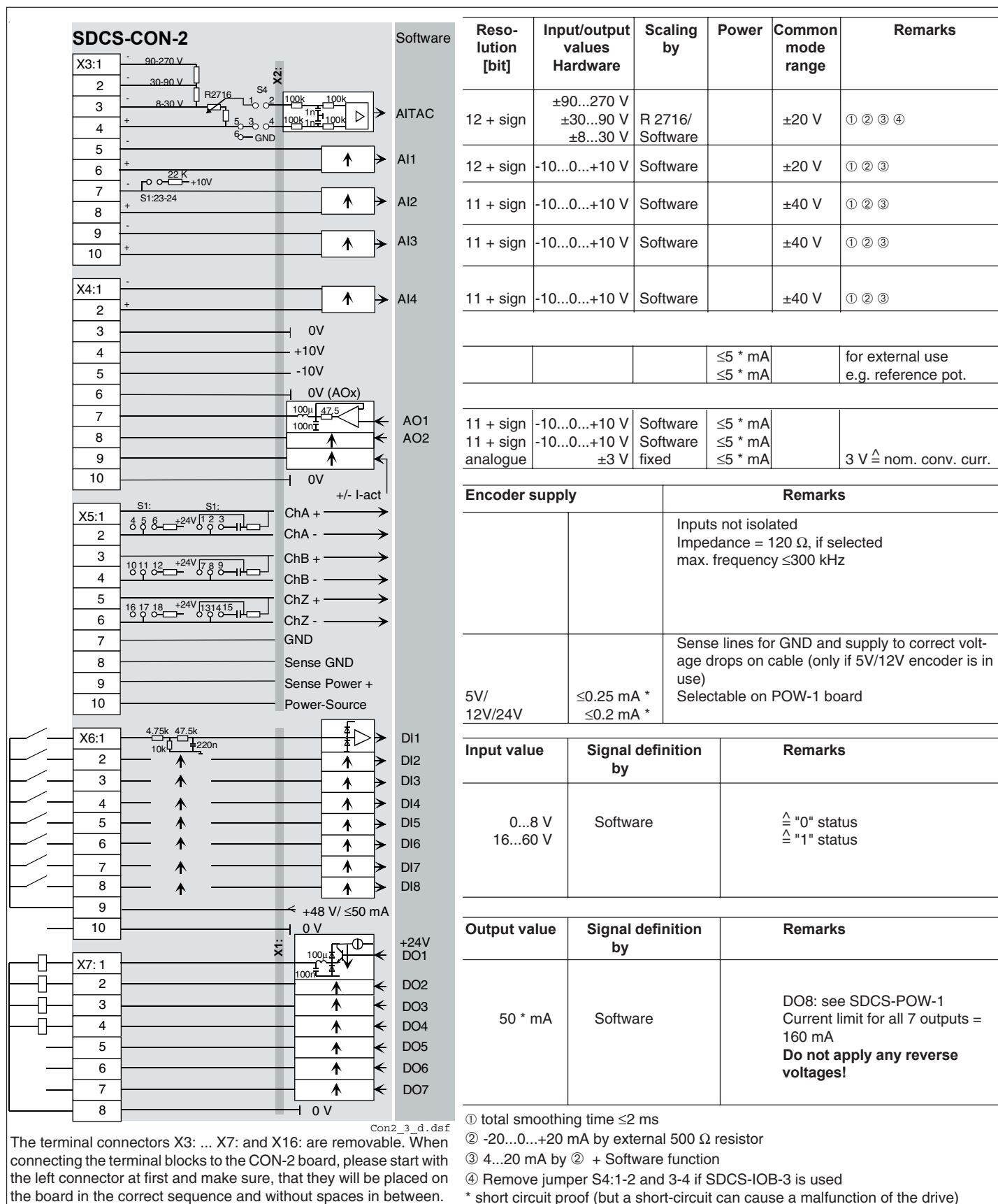


Fig. 3.1/6 Terminal connection of the SDCS-CON-2 board