

Type code

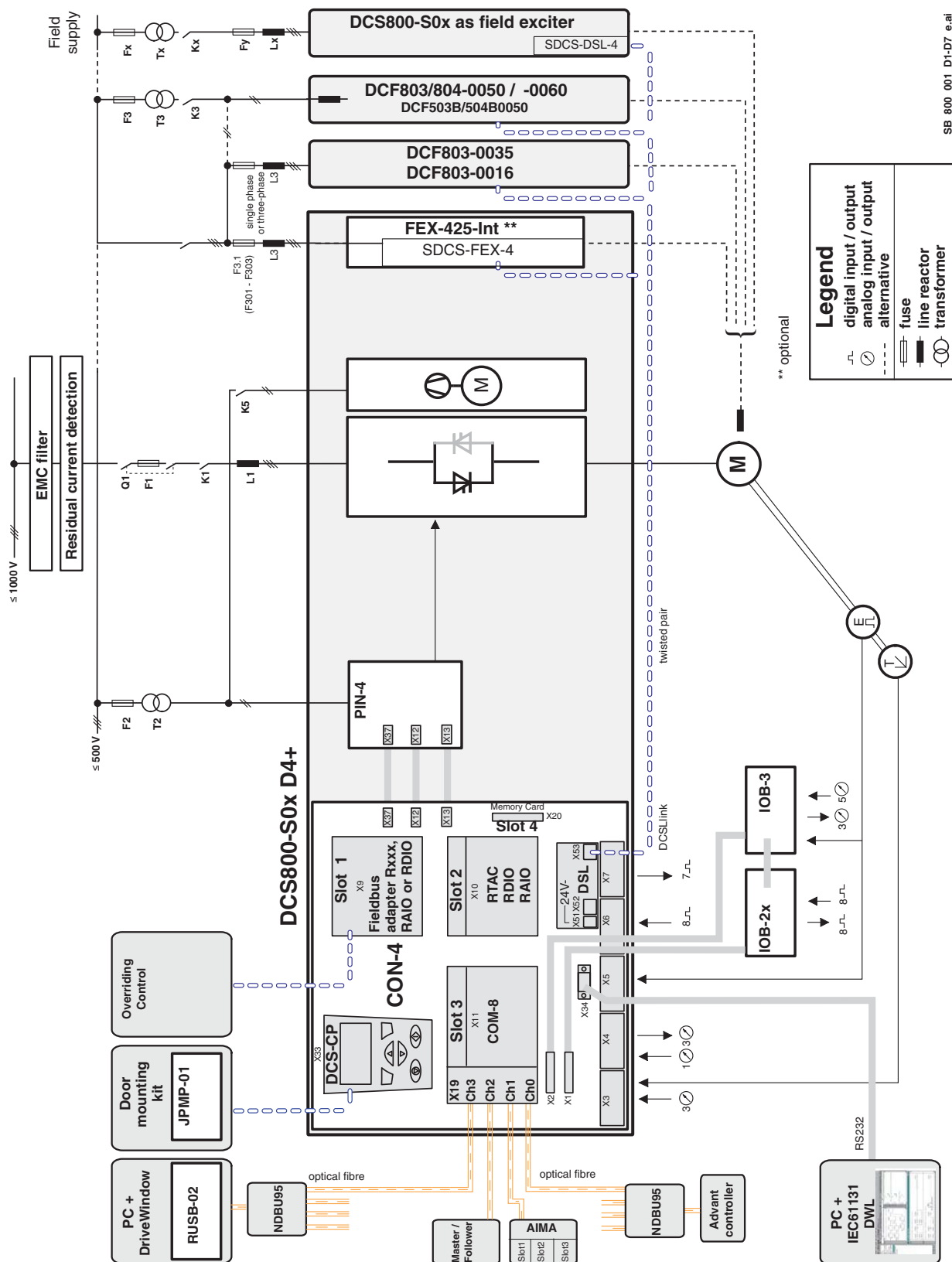
The type code contains information on the specification and configuration of the drive. The first digits from left show the basic configuration (e.g. DCS800-S01-2000). The optional selections are given thereafter on the name plate by plus code. The main selections are described below. Not all selections are available for all types.

The drive's basic type code: DCS800-AAX-YYYY-ZZ-B + plus code			
Product family	DCS800		
Type:	AA	= S0 = R0 = E0 = A0	Standard converter module Rebuild kit Panel solution Enclosed converter
Bridge type:	X	= 1 = 2	Single bridge (2-Q) 2 anti-parallel bridges (4-Q)
Module type:	YYYY	=	Rated DC current
Rated AC voltage:	ZZ	= 04 = 05 = 06 = 07 = 08 = 10 = 12	230 V _{AC} - 400 V _{AC} 230 V _{AC} - 525 V _{AC} 270 V _{AC} - 600 V _{AC} 315 V _{AC} - 690 V _{AC} 360 V _{AC} - 800 V _{AC} 450 V _{AC} - 990 V _{AC} 540 V _{AC} - 1200 V _{AC}
Power connection:	-	= = L = R	Standard D1 - D6 Left side D7 Right side D7
Revision code:	B	= = a = b	Standard Second thyristor type D5, D6 ErP compliant cooling fan D5, D6, D7 and second thyristor type
Field exciter configuration:		+0S163 +S164	D1 - D4 without OnBoard field exciter D4+ and D5 with internal field exciter, supply external (D4+ and D5: 25 A, Rebuild kit: 16 A / 25 A)
Fan voltage:		Standard +S171	Size D4 Fan voltage: 230 V / 1-ph Fan voltage: 115 V / 1-ph
Current measurement:		+S175	SDCS-CMA-2 (D5 - D7)
Voltage measurement:		+S186 +S185 +S180 +S181 +S182 +S183 +S189 +P905 +P906	120 V SDCS-SUB-4 (D1 - D4+) SDCS-PIN-51 configured to 120 V (D5 - D7) SDCS-PIN-51 configured to 600 V (D5 - D7), 12-pulse serial / serial sequential SDCS-PIN-51 configured to 690 V (D5 - D7), 12-pulse serial / serial sequential SDCS-PIN-51 configured to 800 V (D6, D7), 12-pulse serial / serial sequential SDCS-PIN-51 configured to 990 V (D6, D7), 12-pulse serial / serial sequential SDCS-PIN-51 configured to galvanic isolation (D6, D7) Electronic boards are located in the D7 module Electronic boards are in an external control unit (outside the D7 module)
SDCS-DSL-4:		+S199 +0S199	With SDCS-DSL-4 Without SDCS-DSL-4
DCS Control Panel:		+0J404 +J409	Without DCS Control Panel Door mounting kit, including 3 m cable
Fieldbus:		+K454 +K451 +K457 +K466 +K458	Profibus RPBA-01 DeviceNet RDNA-01 CANopen RCAN-01 Ethernet/IP, Modbus/TCP RETA-01 Modbus (RTU) RMBA-01
I/O and DDCS:		+L500 +L501 +L508 +L509	Analog Extension RAIO-01 Digital Extension RDIO-01 DDCS communication board (10 Mbaud CH0) SDCS-COM-81 DDCS communication board (5 Mbaud CH0) SDCS-COM-82

The technical data and specifications are valid as of going to press. ABB reserves the right to make subsequent alterations.

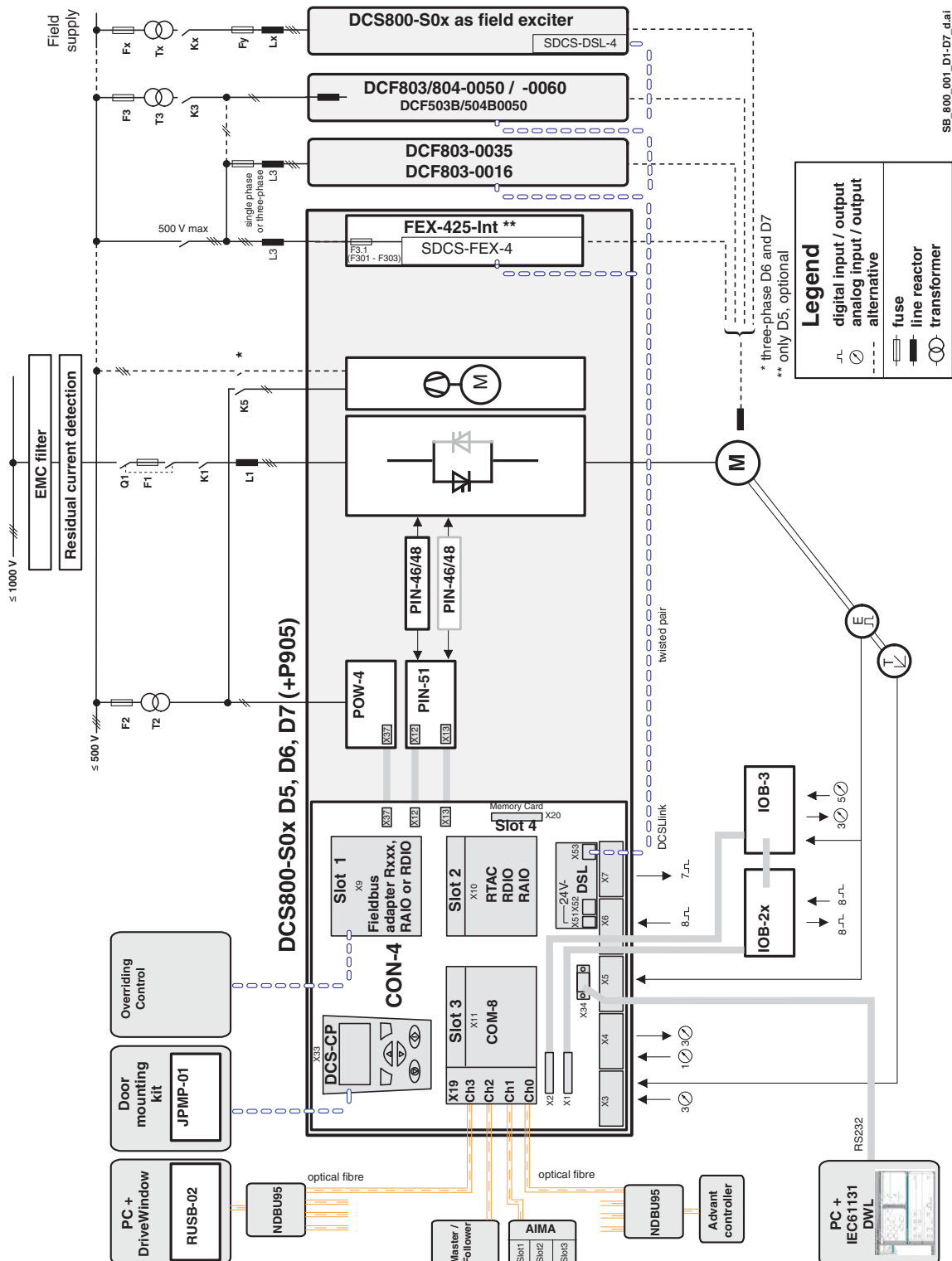
Armature converter DCS800-S0x D4+

D4+ units optional with internal field exciter



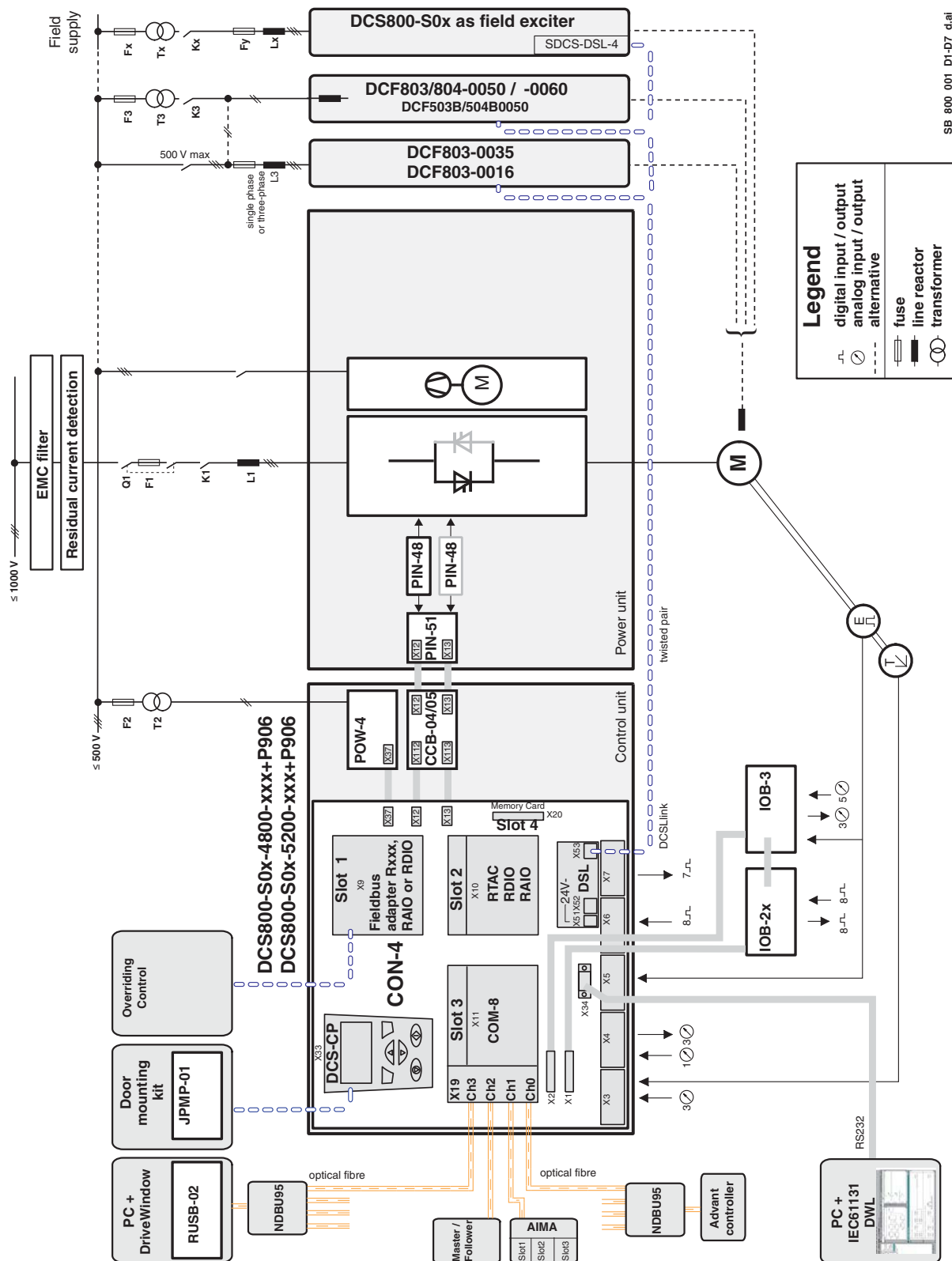
SB_800_001_D1-D7_e.ai

Armature converter DCS800-S0x D5, D6 and D7 (+P905)



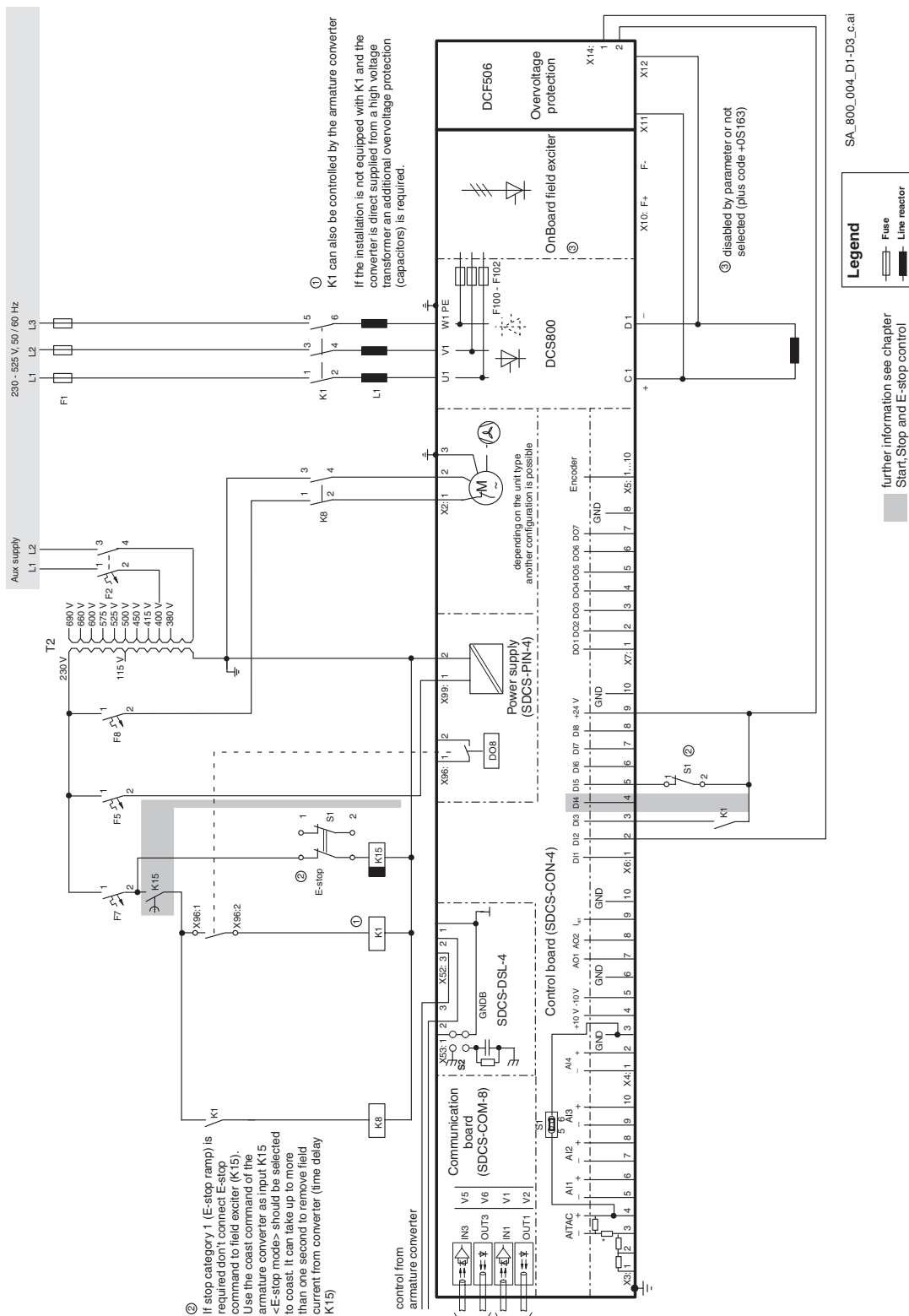
SB_800_001_D1-D7_d.ai

Armature converter DCS800-S0x D7 (+P906)



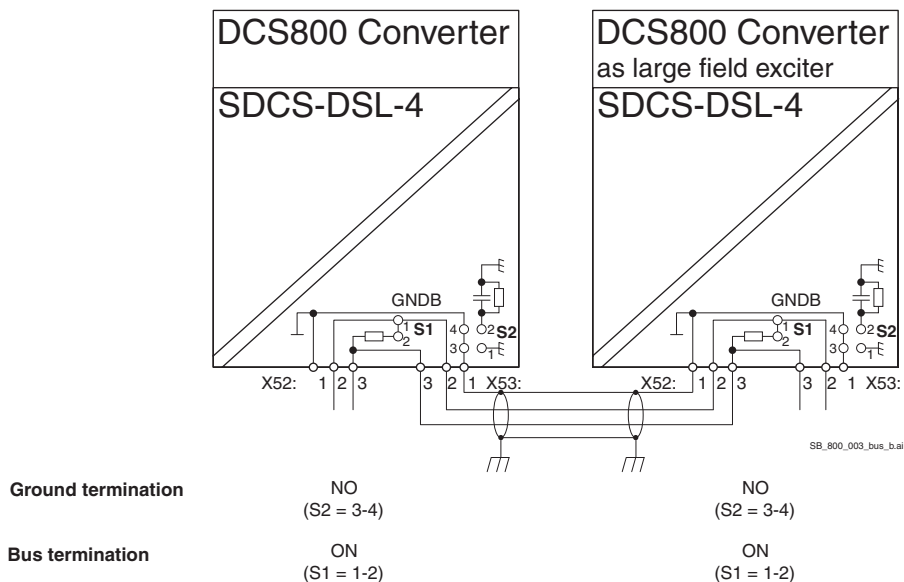
Converters size D1 - D3 as large field exciter

Wiring the drive according to this diagram offers the highest degree of monitoring functions done by the drive.

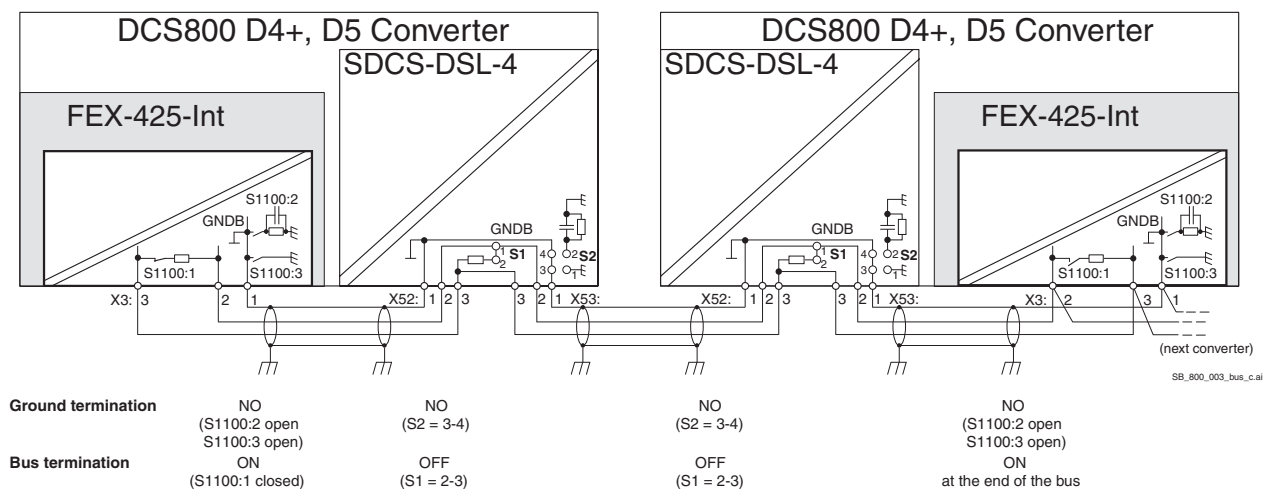


The bus ground (GNDB) is isolated.

Example of two DCS800 converters, one as armature converter, the other as large field exciter.

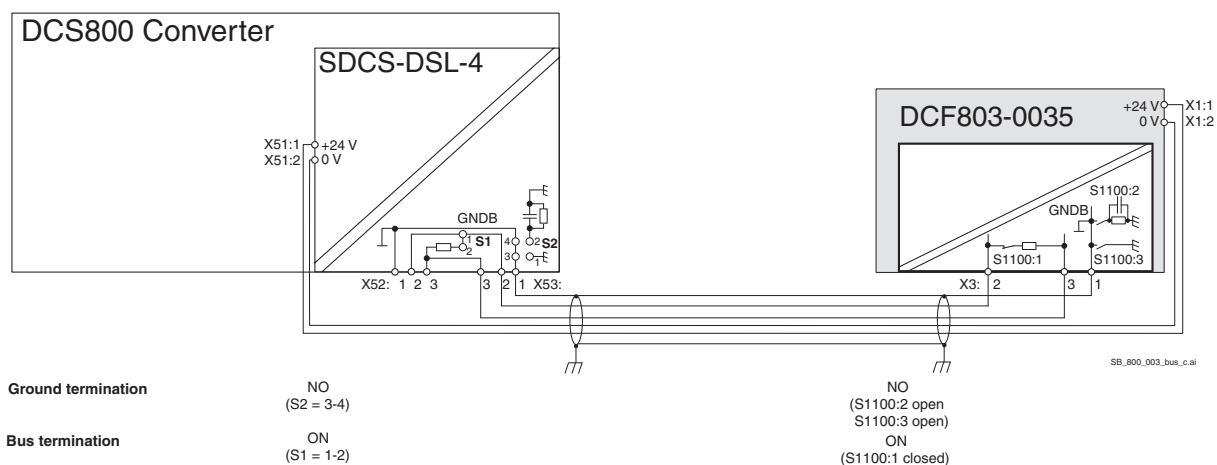


Example of two DCS800 D4+, D5 converters with FEX-425-Int internal field supply.



The connection of isolated GNDB between two or more serial communication interfaces is optional. It is recommended to connect GNDB if the supply voltage is above 690 V and the cabling is made from cubicle to cubicle.

Example of one DCS800 converter plus external field supply.



Cable length

The cable length influences the maximum baudrate.

Baudrate	max. cable length	
50 k	500 m	
125 k	500 m	
250 k	250 m	
500 k	100 m	default and recommended setting
800 k	50 m	
888 k	35 m	
1000 k	25 m	

The bus is designed for a total cable length up to 100 meters. Larger distances on request.

Current ratings - IEC non regenerative

See the current ratings including several standard duty cycles for the DCS800 with 50 Hz and 60 Hz supplies below. The current ratings are based on an ambient temperature of maximum 40°C and an elevation of maximum 1000 m above mean sea level:

Unit type	I _{DC I}	I _{DC II}		I _{DC III}		I _{DC IV}		Size	Internal field current
2-Q converters	contin- ous	100 % 15 min	150 % 60 s	100 % 15 min	150 % 120 s	100 % 15 min	200 % 10 s		
400 V / 500 V / 525 V	[A]	[A]		[A]		[A]			
DCS800-S01-0020-04/05**	20	18	27	18	27	18	36	D1	6 A
DCS800-S01-0045-04/05**	45	40	60	37	56	38	76		
DCS800-S01-0065-04/05**	65	54	81	52	78	55	110		
DCS800-S01-0090-04/05**	90	78	117	72	108	66	132		
DCS800-S01-0125-04/05	125	104	156	100	150	94	188		
DCS800-S01-0180-04/05**	180	148	222	144	216	124	248	D2	15 A
DCS800-S01-0230-04/05	230	200	300	188	282	178	356		
DCS800-S01-0315-04/05**	315	264	396	250	375	230	460	D3	20 A
DCS800-S01-0405-04/05**	405	320	480	310	465	308	616		
DCS800-S01-0470-04/05	470	359	539	347	521	321	642		
DCS800-S01-0610-04/05**	610	490	735	482	723	454	908	D4	25 A
DCS800-S01-0740-04/05	740	596	894	578	867	538	1076		
DCS800-S01-0900-04/05	900	700	1050	670	1005	620	1240		
DCS800-S01-1190-04/05	1190 ①	860	1290	835	1253	745	1490	D4+	25 A * +S164
DCS800-S01-1200-04/05	1200	888	1332	872	1308	764	1528	D5	
DCS800-S01-1500-04/05	1500	1200	1800	1156	1734	1104	2208		
DCS800-S01-2000-04/05	2000	1479	2219	1421	2132	1361	2722		
DCS800-S01-2050-05	2050	1550	2325	1480	2220	1450	2900	D6	-
DCS800-S01-2500-04/05	2500	1980	2970	1880	2820	1920	3840		
DCS800-S01-3000-04/05	3000	2350	3525	2220	3330	2280	4560		
DCS800-S01-3300-04/05	3300	2416	3624	2300	3450	2277	4554	D7	-
DCS800-S01-4000-04/05	4000	2977	4466	2855	4283	2795	5590		
DCS800-S01-5200-04/05	5200	3800	5700	3669	5504	3733	7466		
600 V / 690 V									
DCS800-S01-0290-06	290	240	360	225	337	205	410	D3	-
DCS800-S01-0590-06	590	470	705	472	708	434	868	D4	-
DCS800-S01-0900-06/07	900	684	1026	670	1005	594	1188	D5	25 A * +S164
DCS800-S01-1500-06/07	1500	1200	1800	1104	1656	1104	2208		
DCS800-S01-2000-06/07	2000	1479	2219	1421	2132	1361	2722		
DCS800-S01-2050-06/07	2050	1520	2280	1450	2175	1430	2860	D6	-
DCS800-S01-2500-06/07	2500	1940	2910	1840	2760	1880	3760		
DCS800-S01-3000-06/07	3000	2530	3795	2410	3615	2430	4860		
DCS800-S01-3300-06/07	3300	2416	3624	2300	3450	2277	4554	D7	-
DCS800-S01-4000-06/07	4000	3036	4554	2900	4350	2950	5900		
DCS800-S01-4800-06/07	4800	3734	5601	3608	5412	3700	7400		
800 V									
DCS800-S01-1900-08	1900	1500	2250	1430	2145	1400	2800	D6	-
DCS800-S01-2500-08	2500	1920	2880	1820	2730	1860	3720		
DCS800-S01-3000-08	3000	2500	3750	2400	3600	2400	4800		
DCS800-S01-3300-08	3300	2655	3983	2540	3810	2485	4970	D7	-
DCS800-S01-4000-08	4000	3036	4554	2889	4334	2933	5866		
DCS800-S01-4800-08	4800	3734	5601	3608	5412	3673	7346		
990 V									
DCS800-S01-2050-10	2050	1577	2366	1500	2250	1471	2942	D7	-
DCS800-S01-2600-10	2600	2000	3000	1900	2850	1922	3844		
DCS800-S01-3300-10	3300	2551	3827	2428	3642	2458	4916		
DCS800-S01-4000-10	4000	2975	4463	2878	4317	2918	5836		
1190 V		Data on request							

* as option

** The 525 V version can be used as large field exciter. Do not forget the SDCS-DSL-4 (+S199).

A 10 % current de-rating is strongly recommended.

Note:

AC current $I_{AC} = 0.82 \cdot I_{DC}$

① 1190 A_{DC} for 35°C and 1140 A_{DC} for 40°C ambient temperature

Current ratings - IEC regenerative

Unit type	I _{DC I}	I _{DC II}		I _{DC III}		I _{DC IV}		Size	Internal field current
4-Q converters	continuous	100 % 15 min	150 % 60 s	100 % 15 min	150 % 120 s	100 % 15 min	200 % 10 s		
400 V / 525 V	[A]	[A]		[A]		[A]			
DCS800-S02-0025-04/05**	25	23	35	22	33	21	42	D1	6 A
DCS800-S02-0050-04/05**	50	45	68	43	65	38	76		
DCS800-S02-0075-04/05**	75	66	99	64	96	57	114		
DCS800-S02-0100-04/05**	100	78	117	75	113	67	134		
DCS800-S02-0140-04/05	140	110	165	105	158	99	198		
DCS800-S02-0200-04/05**	200	152	228	148	222	126	252	D2	15 A
DCS800-S02-0260-04/05	260	214	321	206	309	184	368		
DCS800-S02-0350-04/05**	350	286	429	276	414	265	530	D3	20 A
DCS800-S02-0450-04/05**	450	360	540	346	519	315	630		
DCS800-S02-0520-04/05	520	398	597	385	578	356	712		
DCS800-S02-0680-04/05**	680	544	816	538	807	492	984	D4	25 A
DCS800-S02-0820-04/05	820	664	996	648	972	598	1196		
DCS800-S02-1000-04/05	1000	766	1149	736	1104	675	1350		
DCS800-S02-1190-04/05	1190 ^①	860	1290	835	1253	745	1490	D4+	25 A * +S164
DCS800-S02-1200-04/05	1200	888	1332	872	1308	764	1528	D5	
DCS800-S02-1500-04/05	1500	1200	1800	1156	1734	1104	2208		
DCS800-S02-2000-04/05	2000	1479	2219	1421	2132	1361	2722		
DCS800-S02-2050-05	2050	1550	2325	1480	2220	1450	2900	D6	-
DCS800-S02-2500-04/05	2500	2000	3000	1930	2895	1790	3580		
DCS800-S02-3000-04/05	3000	2330	3495	2250	3375	2080	4160		
DCS800-S02-3300-04/05	3300	2416	3624	2300	3450	2277	4554	D7	-
DCS800-S02-4000-04/05	4000	2977	4466	2855	4283	2795	5590		
DCS800-S02-5200-04/05	5200	3800	5700	3669	5504	3733	7466		
600 V / 690 V									
DCS800-S02-0320-06	320	256	384	246	369	235	470	D3	-
DCS800-S02-0650-06	650	514	771	508	762	462	924	D4	-
DCS800-S02-0900-06/07	900	684	1026	670	1005	594	1188	D5	25 A * +S164
DCS800-S02-1500-06/07	1500	1200	1800	1104	1656	1104	2208		
DCS800-S02-2050-06/07	2050	1520	2280	1450	2175	1430	2860	D6	-
DCS800-S02-2500-06/07	2500	1940	2910	1870	2805	1740	3480		
DCS800-S02-3000-06/07	3000	2270	3405	2190	3285	2030	4060		
DCS800-S02-3300-06/07	3300	2416	3624	2300	3450	2277	4554	D7	-
DCS800-S02-4000-06/07	4000	3036	4554	2900	4350	2950	5900		
DCS800-S02-4800-06/07	4800	3734	5601	3608	5412	3700	7400		
800 V									
DCS800-S02-1900-08	1900	1500	2250	1430	2145	1400	2800	D6	-
DCS800-S02-2500-08	2500	1910	2865	1850	2775	1710	3420		
DCS800-S02-3000-08	3000	2250	3375	2160	3240	2000	4000		
DCS800-S02-3300-08	3300	2655	3983	2540	3810	2485	4970	D7	-
DCS800-S02-4000-08	4000	3036	4554	2889	4334	2933	5866		
DCS800-S02-4800-08	4800	3734	5601	3608	5412	3673	7346		
990 V									
DCS800-S02-2050-10	2050	1577	2366	1500	2250	1471	2942	D7	-
DCS800-S02-2600-10	2600	2000	3000	1900	2850	1922	3844		
DCS800-S02-3300-10	3300	2551	3827	2428	3642	2458	4916		
DCS800-S02-4000-10	4000	2975	4463	2878	4317	2918	5836		
1190 V	Data on request								

* as option ** The 525 V version can be used as large field exciter. Do not forget the SDCS-DSL-4 (+S199).
A 10 % current de-rating is strongly recommended.

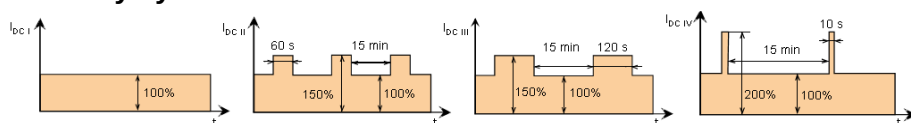
Note: AC current $I_{AC} = 0.82 \cdot I_{DC}$

Note 1: The ratings apply at ambient temperature of 40°C (104°F). For lower temperatures the D5, D6, D7 ratings are higher (except I_{max}).

Note 2: Use DriveSize for detailed dimensioning in case the ambient temperature is below 40°C (104°F) or the drive is loaded cyclically.

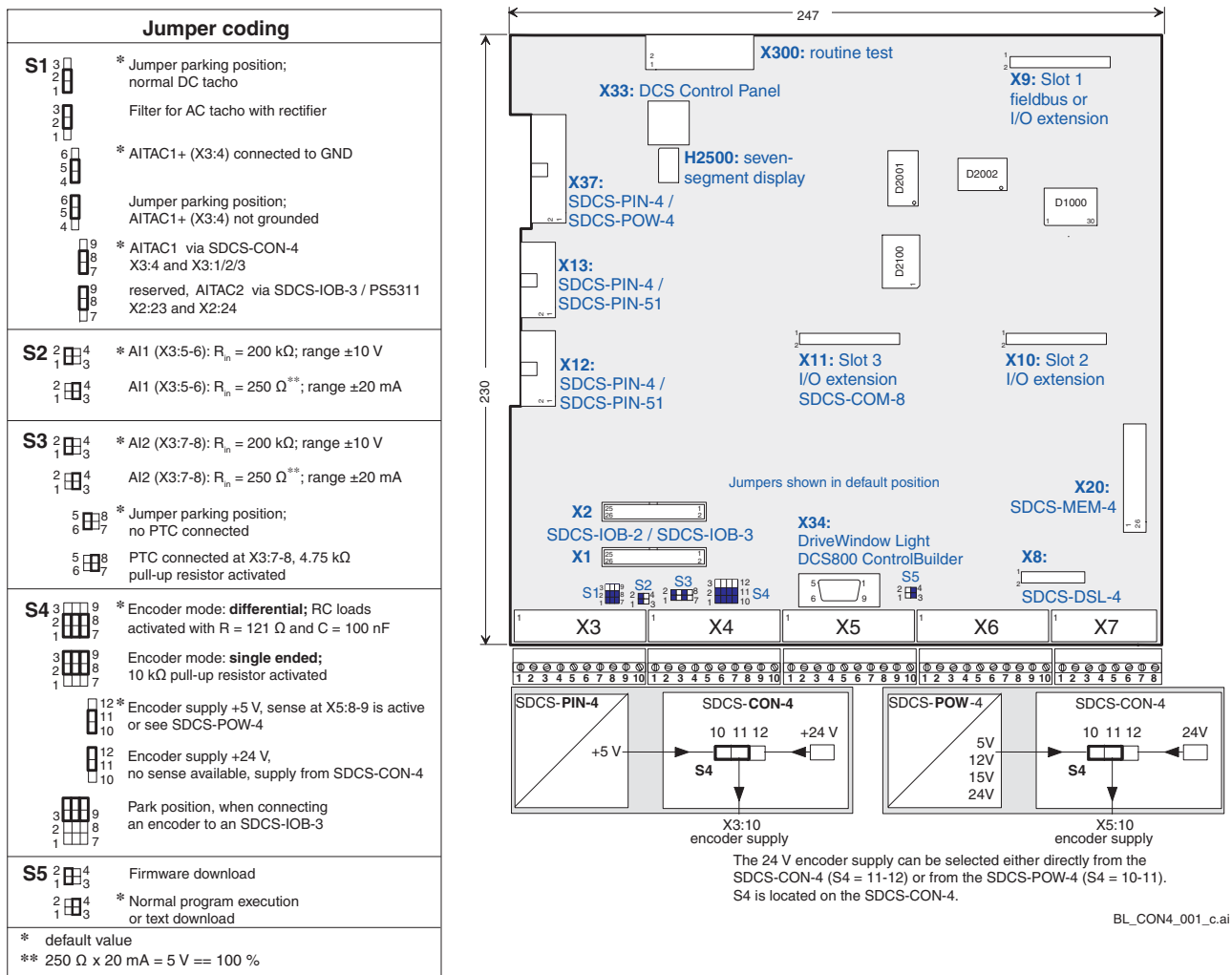
① 1190 A_{DC} for 35°C and 1140 A_{DC} for 40°C ambient temperature

Standard duty cycles



Control Board SDCS-CON-4

Layout of the control board SDCS-CON-4

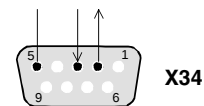


The RS232 interface is normally used to set parameters in the drive via DWL.

The default settings of this interface are:

Signal level:	RS232 (+12V / -12V)
Data format:	UART
Message format:	Modbus-Protocol
Transmission method:	half-duplex
Baudrate:	DriveWindow Light: variable, 38.4 kBaud default DCS800 Control Builder download: 38.4 kBaud FDT firmware download: self-adapting
Number of Data bits:	8
Number of Stop bits:	1
Parity-Bit:	Odd

X34:	Description
1	Not connected
2	TxD
3	RxD
4	Not connected
5	SGND Signal ground
6 - 9	Not connected



X34

X8: Is needed for the SDCS-DSL-4 which provides the serial communication interface for field exciters, 12-pulse communication, master-follower and drive-to-drive communication.

X9:, X10: and X11: Slots 1 to 3 are used for extension IO modules and serial communication interface adapters.

For detailed description see chapter [DCS800 Manuals](#).

X20: Slot 4 is used for the SDCS-MEM-8 (Memory Card), see description DCS800 ControlBuilder.

Prepared function of:

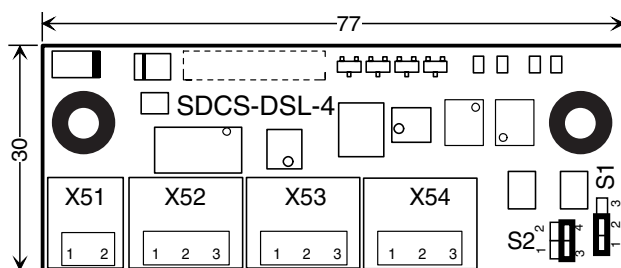
	Slot 1 X9:	Slot 2 X10:	Slot 3 X11:	Slot 4 X20:
RDIO / RAIO / RTAC / RRIA	x	x	x	
R-type fieldbus adapters	x			
SDCS-COM-8			x	
Second fieldbus adapter RMBA		x	x	
SDCS-MEM-8 (Memory Card)				x

Drive-to-drive board SDCS-DSL-4

The SDCS-DSL-4 provides a communication between drives. The communication hardware and protocol is based on CAN bus.

This communication will be used for drive-to-drive communication (e.g. master-follower), 12-pulse operation and communication to field exciters.

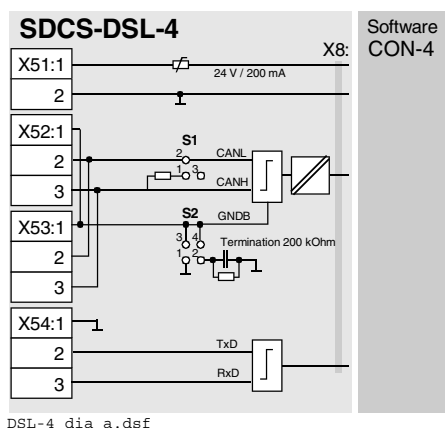
The communication hardware is equipped with an isolated power supply and an isolated transmitter. The bus termination can be set by jumper S1. See also chapter [DCSLink communication](#).



Jumper coding	
S1 Bus termination	
	120 Ohm
	* no termination, park position
S2 Ground termination	
	0 Ohm (direct) ground termination
	200 kOhm R-C ground termination
	* no termination, park position
* Default value	

- X51 supplies 24 V_{DC}
- X52 and X53 are connected in parallel and provide two connectors for the DCSLink
- X54 is not used

BL_DSL4_001_+Tab_a.dsf



DSL-4_dia_a.dsf

Supply		Remarks
24 V	≤ 200 mA	24 V grounded supply for DCF803-0016, FEX-425-Int and DCF803-0035 field exciters; short circuit protected 250 mA

DSL communication		Remarks
Bus termination		
S1	1-2	120 Ohm
	2-3	no termination; park position
Ground termination		
S2	2-4	200 kOhm R-C ground termination
	1-3	0 Ohm ground termination
	3-4	no termination; park position
RS 485 communication		Remarks
		no isolation

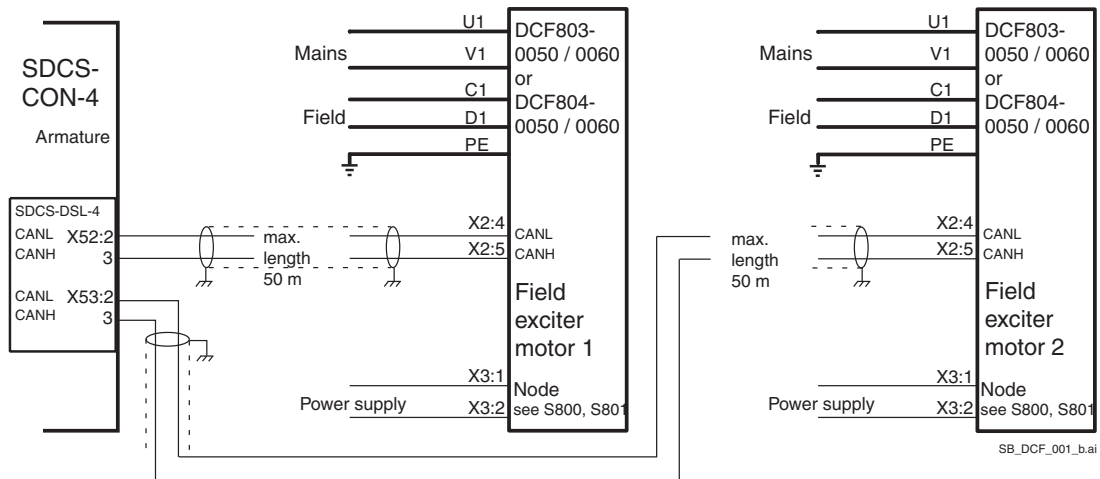
Connection example

The DCSLink communication is activated by **S1100:8 = ON**

The bus setting is made using S1100. The node numbers are set using S800 and S801.

Procedure to change the node number:

- Switch off the electronics supply voltage
- Set the appropriate switch according to chapter [DCSLink communication](#)
- Switch on the electronics supply voltage



Note:

As standard maximum 2 field exciters can be controlled by one DCS800.