

**⚠** This safety alert symbol indicates a potential personal safety hazard. Failure to comply with instructions bearing this symbol could pose a very serious risk to personnel.

**➔** This symbol indicates an important instruction.

## TECHNICAL SHEET

The present technical sheet is supplied with the expansion modules of the DSC family. The system must consist of just one Master M1 and a number of electronic expansions that can range from 1 to a maximum of 14, not more than 4 of which of the same type. There is no limit to the number of relays that can be installed.

**⚠** The DSC is built to achieve the following safety levels: SIL 3, SILCL 3, PL e, Cat. 4, Type 4 in accordance with the applicable standards. However, the definitive SIL and PL of the application will depend on the number of safety components, their parameters and the connections that are made, as per the risk analysis.

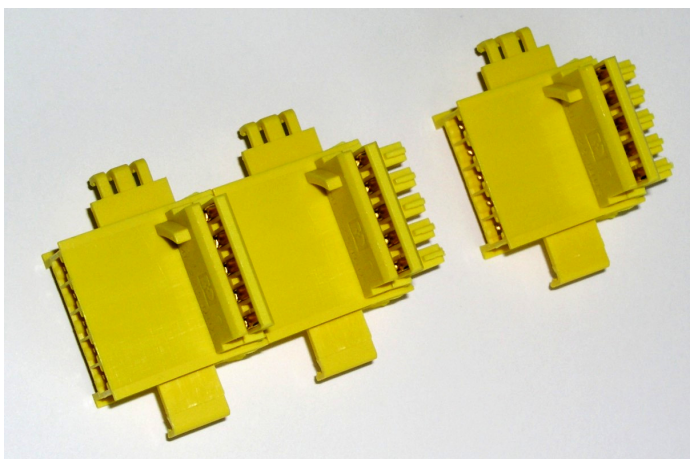
### Mechanical fastening

**⚠** Do not apply power supply before carry out the following operations.

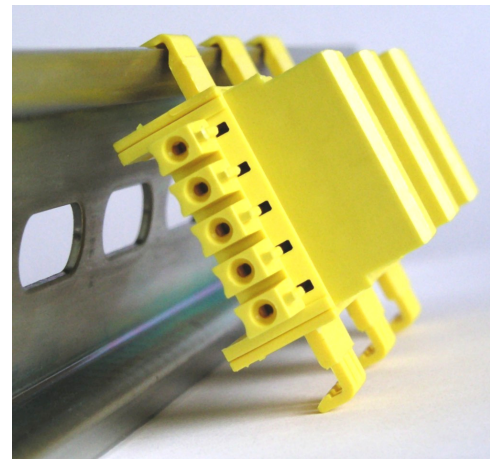
Fix the DSC system units to a 35mm DIN rail as follows:

- Connect the same number of "MSC" 5-pole rear panel connectors as the number of units to be installed.
- Fix the train of connectors thus obtained to the DIN rail (hooking them at the top first).
- Fasten the units to the rail, arranging the contacts on the base of the unit on the respective connector. Press the unit gently until you feel it snap into place.
- To remove a unit, use a screwdriver to pull down the hook on the back of the unit; then lift the unit upwards and pull.

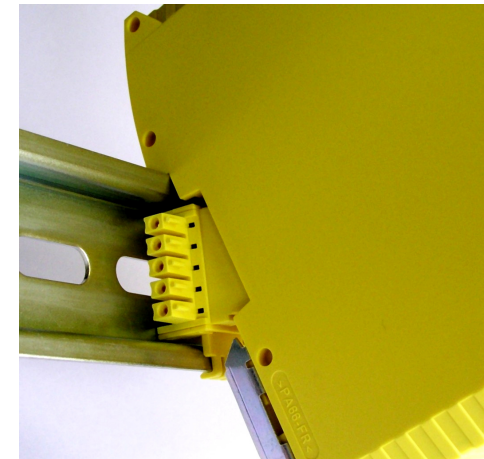
1



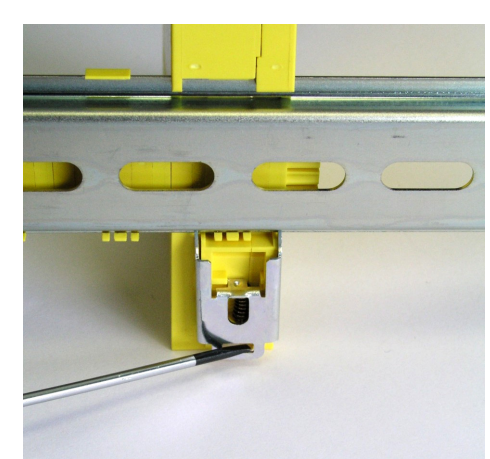
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3



4



### Electrical connections

The DSC system units are provided with terminal strips for the electrical connections. Each unit can have 8, 16 or 24 terminals.

- Check on the manual on the CDROM attached to the M1 module, connections on the terminal blocks.
- Each unit also has a rear panel plug-in connector MSC (for communication with the master and with the other expansion units).
- The MR2 and MR4 are connected via terminal strip only because haven't a rear panel plug-in connector MSC.
- Cables used for connections of longer than 50m (max 100m) must have a cross-section of at least 1mm<sup>2</sup>.
- We recommend the use of separate power supplies for the safety module and for other electrical power equipment (electric motors, inverters, frequency converters) or other sources of disturbance.

- ⚠ Install safety units in an enclosure with a protection class of at least IP54.
- ⚠ The supply voltage to the units must be 24Vdc ±20%.
- ⚠ The external power supply must be compliant with EN 60204-1.
- ⚠ Do not use the DSC to supply external devices.
- ⚠ The same power supply connection (24VDC and 0VDC) must be used for all system components.

Master M1			
TERMINAL	SIGNAL	TYPE	DESCRIPTION
1	24VDC	-	24VDC power supply
2	MASTER_ENABLE1	Input	Master Enable 1
3	MASTER_ENABLE2	Input	Master Enable 2
4	GND	-	0VDC power supply
5	OSSD1_A	Output	Static output 1
6	OSSD1_B	Output	
7	RESTART_FBK1	Input	Feedback/Restart 1
8	OUT_STATUS1	Output	Programmable digital output
9	OSSD2_A	Output	Static output 2
10	OSSD2_B	Output	
11	RESTART_FBK2	Input	Feedback/Restart 2
12	OUT_STATUS2	Output	Programmable digital output
13	OUT_TEST1	Output	Short circuit detection output
14	OUT_TEST2	Output	Short circuit detection output
15	OUT_TEST3	Output	Short circuit detection output
16	OUT_TEST4	Output	Short circuit detection output
17	INPUT1	Input	Digital input 1
18	INPUT2	Input	Digital input 2
19	INPUT3	Input	Digital input 3
20	INPUT4	Input	Digital input 4
21	INPUT5	Input	Digital input 5
22	INPUT6	Input	Digital input 6
23	INPUT7	Input	Digital input 7
24	INPUT8	Input	Digital input 8

MI8			
TERMINAL	SIGNAL	TYPE	DESCRIPTION
1	24VDC	-	24VDC power supply
2	NODE_SELO	Input	Node selection (Table 2)
3	NODE_SEL1	Input	
4	GND	-	0VDC power supply
5	INPUT1	Input	Digital input 1
6	INPUT2	Input	Digital input 2
7	INPUT3	Input	Digital input 3
8	INPUT4	Input	Digital input 4
9	OUT_TEST1	Output	Short circuit detection output
10	OUT_TEST2	Output	Short circuit detection output
11	OUT_TEST3	Output	Short circuit detection output
12	OUT_TEST4	Output	Short circuit detection output
13	INPUT5	Input	Digital input 5
14	INPUT6	Input	Digital input 6
15	INPUT7	Input	Digital input 7
16	INPUT8	Input	Digital input 8

MI12T8			
TERMINAL	SIGNAL	TYPE	DESCRIPTION
1	24VDC	-	24VDC power supply
2	NODE_SELO	Input	Node selection (Table 2)
3	NODE_SEL1	Input	
4	GND	-	0VDC power supply
5	INPUT1	Input	Digital input 1
6	INPUT2	Input	Digital input 2
7	INPUT3	Input	Digital input 3
8	INPUT4	Input	Digital input 4
9	OUT_TEST1	Output	Short circuit detection output
10	OUT_TEST2	Output	Short circuit detection output
11	OUT_TEST3	Output	Short circuit detection output
12	OUT_TEST4	Output	Short circuit detection output
13	INPUT5	Input	Digital input 5
14	INPUT6	Input	Digital input 6
15	INPUT7	Input	Digital input 7
16	INPUT8	Input	Digital input 8
17	OUT_TEST5	Output	Short circuit detection output
18	OUT_TEST6	Output	Short circuit detection output
19	OUT_TEST7	Output	Short circuit detection output
20	OUT_TEST8	Output	Short circuit detection output
21	INPUT9	Input	Digital input 9
22	INPUT10	Input	Digital input 10
23	INPUT11	Input	Digital input 11
24	INPUT12	Input	Digital input 12

NODE SELECTION (see note at the bottom of page 3)		
	NODE_SEL1 / (Terminal 3)	NODE_SELO / (Terminal 2)
NODE 0	0 (or not connected)	0 (or not connected)
NODE 1	0 (or not connected)	24VDC
NODE 2	24VDC	0 (or not connected)
NODE 3	24VDC	24VDC

MI16			
TERMINAL	SIGNAL	TYPE	DESCRIPTION
1	24VDC	-	24VDC power supply
2	NODE_SELO	Input	Node selection (Table 2)
3	NODE_SEL1	Input	
4	GND	-	0VDC power supply
5	INPUT1	Input	Digital input 1
6	INPUT2	Input	Digital input 2
7	INPUT3	Input	Digital input 3
8	INPUT4	Input	Digital input 4
9	OUT_TEST1	Output	Short circuit detection output
10	OUT_TEST2	Output	Short circuit detection output
11	OUT_TEST3	Output	Short circuit detection output
12	OUT_TEST4	Output	Short circuit detection output
13	INPUT5	Input	Digital input 5
14	INPUT6	Input	Digital input 6
15	INPUT7	Input	Digital input 7
16	INPUT8	Input	Digital input 8
17	INPUT9	Input	Digital input 9
18	INPUT10	Input	Digital input 10
19	INPUT11	Input	Digital input 11
20	INPUT12	Input	Digital input 12
21	INPUT13	Input	Digital input 13
22	INPUT14	Input	Digital input 14
23	INPUT15	Input	Digital input 15
24	INPUT16	Input	Digital input 16

MO2			
TERMINAL	SIGNAL	TYPE	DESCRIPTION
1	24VDC	-	24VDC power supply
2	NODE_SELO	Input	Node selection (Table 2)
3	NODE_SEL1	Input	
4	GND	-	0VDC power supply
5	OSSD1_A	Output	Static output 1
6	OSSD1_B	Output	
7	RESTART_FBK1	Input	Feedback/Restart 1
8	OUT_STATUS1	Output	Condition of outputs 1A/1B
9	OSSD2_A	Output	Static output 2
10	OSSD2_B	Output	
11	RESTART_FBK2	Input	Feedback/Restart 2
12	OUT_STATUS2	Output	Condition of outputs 2A/2B
13	24VDC	-	24VDC power supply
14	n.c.	-	-
15	GND	-	0VDC power supply
16	n.c.	-	-

MR2			
TERMINAL	SIGNAL	TYPE	DESCRIPTION
1	24VDC	-	24VDC power supply
4	GND	-	0VDC power supply
5	OSSD1_A	Input	Control ZONE 1
6	OSSD1_B	Input	
7	FBK1_K2_1	Output	Feedback K1K2 ZONE 1
9	A_NC1	Output	NC contact ZONE 1
10	B_NC1	Output	
13	A_NO11	Output	NO1 contact ZONE 1
14	B_NO11	Output	
15	A_NO12	Output	NO2 contact ZONE 1
16	B_NO12	Output	

MI802			
TERMINAL	SIGNAL	TYPE	DESCRIPTION
1	24VDC	-	24VDC power supply
2	NODE_SELO	Input	Node selection (Table 2)
3	NODE_SEL1	Input	
4	GND	-	0VDC power supply
5	OSSD1_A	Output	Static output 1
6	OSSD1_B	Output	
7	RESTART_FBK1	Input	Feedback/Restart 1
8	OUT_STATUS1	Output	Programmable digital output
9	OSSD2_A	Output	Static output 2
10	OSSD2_B	Output	
11	RESTART_FBK2	Input	Feedback/Restart 2
12	OUT_STATUS2	Output	Programmable digital output
13	OUT_TEST1	Output	Short circuit detection output
14	OUT_TEST2	Output	Short circuit detection output
15	OUT_TEST3	Output	Short circuit detection output
16	OUT_TEST4	Output	Short circuit detection output
17	INPUT1	Input	Digital input 1
18	INPUT2	Input	Digital input 2
19	INPUT3	Input	Digital input 3
20	INPUT4	Input	Digital input 4
21	INPUT5	Input	Digital input 5
22	INPUT6	Input	Digital input 6
23	INPUT7	Input	Digital input 7
24	INPUT8	Input	Digital input 8

MO4			
TERMINAL	SIGNAL	TYPE	DESCRIPTION
1	24VDC	-	24VDC power supply
2	NODE_SELO	Input	Node selection (Table 2)
3	NODE_SEL1	Input	
4	GND	-	0VDC power supply
5	OSSD1_A	Output	Static output 1
6	OSSD1_B	Output	
7	RESTART_FBK1	Input	Feedback/Restart 1
8	OUT_STATUS1	Output	Programmable digital output
9	OSSD2_A	Output	Static output 2
10	OSSD2_B	Output	
11	RESTART_FBK2	Input	Feedback/Restart 2
12	OUT_STATUS2	Output	Programmable digital output
13	24VDC	-	24VDC power supply
14	24VDC	-	24VDC power supply
15	GND	-	0VDC power supply
16	GND	-	0VDC power supply
17	OSSD4_A	Output	Static output 4
18	OSSD4_B	Output	
19	RESTART_FBK4	Input	Feedback/Restart 4
20	OUT_STATUS4	Output	Programmable digital output
21	OSSD3_A	Output	Static output 3
22	OSSD3_B	Output	
23	RESTART_FBK3	Input	Feedback/Restart 3
24	OUT_STATUS3	Output	Programmable digital output

MR4			
TERMINAL	SIGNAL	TYPE	DESCRIPTION
1	24VDC	-	24VDC power supply
4	GND	-	0VDC power supply
5	OSSD1_A	Input	Control ZONE 1
6	OSSD1_B	Input	
7	FBK1_K2_1	Output	Feedback K1K2 ZONE 1
9	A_NC1	Output	NC contact ZONE 1
10	B_NC1	Output	
13	A_NO11	Output	NO1 contact ZONE 1
14	B_NO11	Output	
15	A_NO12	Output	NO2 contact ZONE 1
16	B_NO12	Output	
11	A_NC2	Output	NC contact ZONE 2
12	B_NC2	Output	
17	OSSD2_A	Input	Control ZONE 2
18	OSSD2_B	Input	
19	FBK_K1_K2_2	Output	Feedback K1K2 ZONE 2
21	A_NO21	Output	NO1 contact ZONE 2
22	B_NO21	Output	
23	A_NO22	Output	NO2 contact ZONE 2
24	B_NO22	Output	

NOTE 1: The NODE\_SELO and NODE\_SEL1 inputs (on the SLAVE units) are used to attribute a physical address to the slave units (up to 4 units of the same type can be used). The same physical address cannot be assigned to two units of the same type.

In order to ensure the correct operation of the expansion modules, careful and full compliance with all the rules, instructions and warnings stated in the DSC manual included in the MSD CD are essential. Duelco A/S declines all responsibility for events arising from non-compliance with all or part of the aforesaid instructions.