5.2 Input/output module EB11

Order No. 6DD1641-0AC0

Features

- 32 binary inputs and outputs
- 2 40-pin connectors
- 2*8 binary inputs and outputs per connector
- binary outputs with thermal overload protection
- 2 LED keys to reset after an overload condition
- L-bus connection

Overload protection

An overloaded binary output due to an excessively high current (thermal overload, e. g. short-circuit) is electronically shutdown. The output is switched into an open-circuit condition. The LED key of the associated connector lights-up.
The associated output is operational again after a recovery time (during which time it cools-down). To realize this, the associated electronics must be **reset**; this can be done in 2 ways:

- Using the **background program** of the CPU module, on which the associated binary output function block is configured.
  For a normal CPU utilization, this reset takes several seconds after cooling-down.
  Resetting can take somewhat longer for extremely high CPU loading levels.
- By depressing the illuminated **LED key**.
  Key assignment:
  - connector X5: Key S1
  - connector X6: Key S2

5.2.1 Supplementary components

Interface modules with terminals

All of the cables for the input / output signals are not directly connected to the module, but via interface modules. The interface modules are used as mechanical connecting element (**screw/plug-in terminals**) and also to electrically adapt the plant/system signals and convert them (optional).

Interface module	Function
SB10	Direct connection (1:1 connection) of 8 binary inputs/outputs, LED, no signal conversion
SB60	8 binary **inputs**, converted from 230V to 24V (module signal level), LED, electrically isolated (floating)
SB61	8 binary **inputs**, converted from 48V to 24V, LED, electrically isolated (floating)
SB70	8 binary **outputs**, converted from 24V to 230V (changeover relay), LED, electrically isolated (floating)
SB71	8 binary **outputs**, converted from 25V to 48V (transistor)
SU11	20 signals are directly connected, no signal conversion
SU12	10 signals are directly connected, no signal conversion

Table 5-4 Interface modules which can be connected to the module

Cables

The module is connected to the interface modules using the matching plug-in cables. A plug-in cable has several cable ends to connect several interface modules:

- SC13 to connect 4 interface modules (SBxx, SU12)
- SC55 to connect 2 SU11

Depending on the required function (signal conversion, LED display), different interface modules can be connected at the binary inputs and outputs. If interface modules with signal conversion are used, the SC13 cable must be selected:

Cable **SC55** max. **2** interface modules, type	**SC13** cable max. **4** interface modules, type
SU11 (20 screw terminals, no signal conversion)	SB10 SB60 SB61 SB70 SB71 SU12

Table 5-5 Cable and interface modules which can be connected to EB11, connectors X5, X6

5.2.2 Connector- and terminal assignment

5.2.2.1 Terminal assignment for SC55

SU11 terminal assignment at SC55, end A

EB11 X5, X6	Significance	SU11 at SC55, cable end A	Connector designation when configuring
1	Binary output 1	1	
2	Binary output 2	2	
3	Binary output 3	3	
4	Binary output 4	4	
5	Binary output 5	5	X5A
6	Binary output 6	6	X6A
7	Binary output 7	7	
8	Binary output 8	8	
9	External 24 V	9	
10	External ground	10	
11	Binary output 9	11	
12	Binary output 10	12	
13	Binary output 11	13	
14	Binary output 12	14	
15	Binary output 13	15	X5B
16	Binary output 14	16	X6B
17	Binary output 15	17	
18	Binary output 16	18	
19	External 24 V	19	
20	External ground	20	

*Table 5-6 SU11 terminal assignment for SC55, cable **end A***

SU11 terminal assignment at SC55, end B

EB11 X5, X6	Significance	SU11 at SC55, cable end B	Connector designation when configuring
1	Binary input 1	1	
2	Binary input 2	2	
3	Binary input 3	3	
4	Binary input 4	4	X5C
5	Binary input 5	5	X6C
6	Binary input 6	6	
7	Binary input 7	7	
8	Binary input 8	8	
9	External 24 V	9	
10	External ground	10	
11	Binary input 9	11	
12	Binary input 10	12	
13	Binary input 11	13	
14	Binary input 12	14	
15	Binary input 13	15	X5D
16	Binary input 14	16	X6D
17	Binary input 15	17	
18	Binary input 16	18	
19	External 24 V	19	
20	External ground	20	

*Table 5-7 SU11 terminal assignment for SC55, cable **end B***

5.2.2.2 Terminal assignment for SC13

At the particular cable ends, only certain signal types are available, where only the correct interface modules can be used:

Terminal assignment, interface module

Interface module	Screw terminal *(x=1...8)*	Significance
SB10		**1:1 screw terminal**
	x	Signal
	5x	Reference potential (ground or P24)
SB60		**Binary inputs 115/230 V**
	x1	Ground
	x2	Binary input 115 V
	x4	Binary input 230 V
SB61		**Binary inputs 24/48 V**
	x	Binary input 24 V
	1x	Binary input 48 V
	5x	Reference
SB70		**Binary outputs (relay)**
	x1	Common (center contact)
	x2	NC contact
	x4	NO contact
SB71		**Binary outputs (transistor)**
	x	Signal
	5x	Ground

Table 5-8 Terminal assignment, interface module

Terminal assignment at SC13, end A

EB11 X5,X6	Significance	SU12	SB10	SB60	SB61	SB70	SB71
1	Binary output 1	1	1/51			12/11/14	1/51
2	Binary output 2	2	2/52			22/21/24	2/52
3	Binary output 3	3	3/53			32/31/34	3/53
4	Binary output 4	4	4/54			42/41/44	4/54
5	Binary output 5	5	5/55			52/51/54	5/55
6	Binary output 6	6	6/56			62/61/64	6/56
7	Binary output 7	7	7/57			72/71/74	7/57
8	Binary output 8	8	8/58			81/82/84	8/58
9	External 24 V	9	1P			1P	1P
10	External ground	10	1M			1M	1M

*Table 5-9 Terminal assignment, interface modules at SC13, cable **end A***

Terminal assignment at SC13, end B

EB11 X5,X6	Significance	SU12	SB10	SB60	SB61	SB70	SB71
1	Binary output 1	1	1/51			12/11/14	1/51
2	Binary output 2	2	2/52			22/21/24	2/52
3	Binary output 3	3	3/53			32/31/34	3/53
4	Binary output 4	4	4/54			42/41/44	4/54
5	Binary output 5	5	5/55			52/51/54	5/55
6	Binary output 6	6	6/56			62/61/64	6/56
7	Binary output 7	7	7/57			72/71/74	7/57
8	Binary output 8	8	8/58			81/82/84	8/58
9	External 24 V	9	1P			1P	1P
10	External ground	10	1M			1M	1M

*Table 5-10 Terminal assignment, interface modules at SC13, cable **end B***

Terminal assignment at SC13, end C

EB11 X5,X6	Significance	SU12	SB10	SB60	SB61	SB70	SB71
21	Binary input 1	1	1/51	14,12/11	1,11/51		
22	Binary input 2	2	2/52	24,22/21	2,12/52		
23	Binary input 3	3	3/53	34,32/31	3,13/53		
24	Binary input 4	4	4/54	44,42/41	4,14/54		
25	Binary input 5	5	5/55	54,52/51	5,15/55		
26	Binary input 6	6	6/56	64,62/61	6,16/56		
27	Binary input 7	7	7/57	74,72/71	7,17/57		
28	Binary input 8	8	8/58	84,82/81	8,18/58		
29	External 24 V	9	1P	1P	1P		
30	External ground	10	1M	1M	1M		

*Table 5-11 Terminal assignment, interface modules at SC13, cable **end C***

Terminal assignment at SC13, end D

EB11 X5,X6	Significance	SU12	SB10	SB60	SB61	SB70	SB71
31	Binary input 9	1	1/51	14,12/11	1,11/51		
32	Binary input 10	2	2/52	24,22/21	2,12/52		
33	Binary input 11	3	3/53	34,32/31	3,13/53		
34	Binary input 12	4	4/54	44,42/41	4,14/54		
35	Binary input 13	5	5/55	54,52/51	5,15/55		
36	Binary input 14	6	6/56	64,62/61	6,16/56		
37	Binary input 15	7	7/57	74,72/71	7,17/57		
38	Binary input 16	8	8/58	84,82/81	8,18/58		
39	External 24 V	9	1P	1P	1P		
40	External ground	10	1M	1M	1M		

*Table 5-12 Terminal assignment, interface modules at SC13, cable **end D***

5.2.3 Application information and noise immunity

- operation **without fan** is possible
- noise-immune operation is only possible if the module is tightly screwed into the subrack

Other information Further information on EMC and ambient conditions, refer to Section "General technical data"

5.2.4 Technical data

General data

No. of slots occupied	1
Dimensions W x H x D [mm]	20.14 x 233.4 x 220
Weight	Approx. 0.6 kg

Power supply

Rated voltage	min.	max.	**Typ. current drain**
+5 V	+4.75 V	+5.25 V	420 mA
-15 V	-15.6 V	-14.4 V	20 mA (only as reference)
+24V	+20 V	+30 V	0,2 A (from an external power supply) + current drain of the connected SB70, SB71 interface modules + current drain from the binary outputs which are directly connected at the binary outputs of the connected components (when using SB10, SU11, SU12)

Binary inputs

No.		2 x 16
Input voltage		+24 V rated value
	for 0 signal	-1 V to +6 V; or open-circuit binary inputs
	for 1 signal	+13 V to +33 V
Input current for an 1 signal		5 mA typ.
Delay time		200 µs

Binary outputs

No.		2 x 16
Power supply voltage		
	rated value	+24 V DC
	ripple	3.6 V DC
	permissible range	+20 to +30 V, including ripple
	briefly	+35 V for < 0.5 s
Output current for a 1 signal		
	rated value	50 mA
	permissible range	0.2 mA to 50 mA
Short-circuit protection		Thermal / electronic
Limiting inductive switch-off voltage		To the supply +1 V
Residual current		20 µA for a 0 signal
Signal level		
	for 0 signal	Max. 3 V
	for 1 signal	Min. supply - 2.5 V
Delay time		15 µs

5.2.5 Connecting diagram

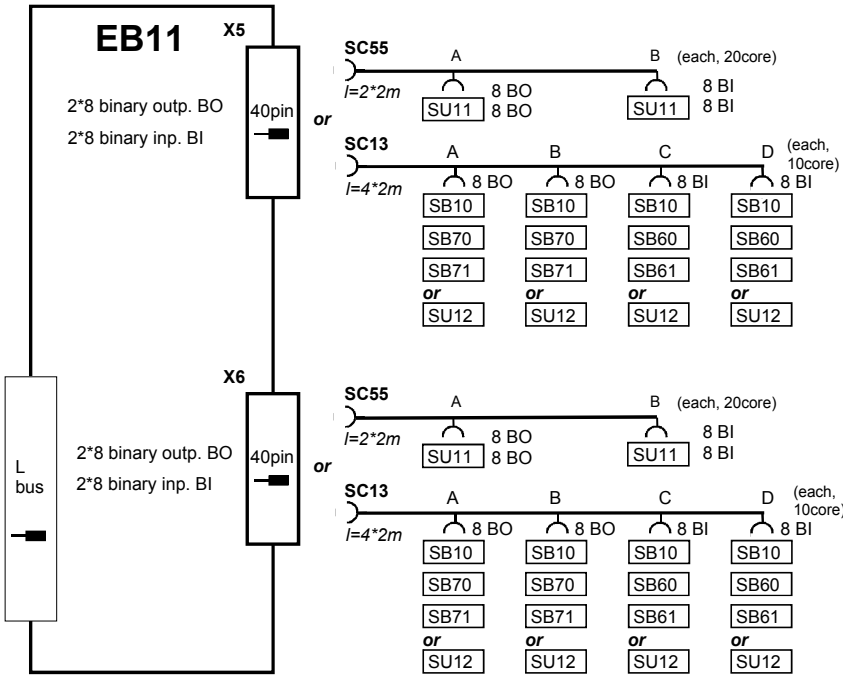

Fig. 5-2 Connecting cables and interface modules

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