90 100: Fuse Module

4 fuses with fuse monitoring and LED indicators

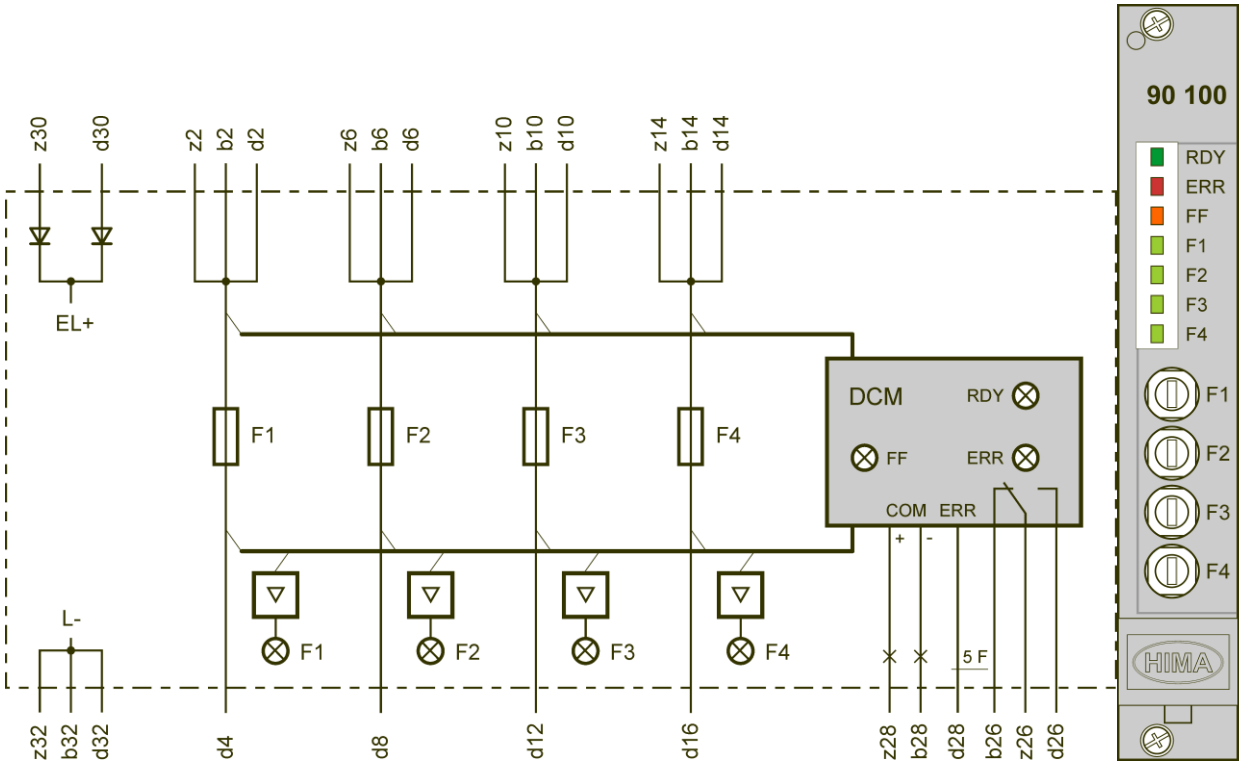

Figure 1: Block Diagram

The module has four fused current paths. Only the fuses of the current paths connected to the supply voltage are monitored.

The power supply is connected to the pins z2, b2, d2 (z6, b6, d6; z10, b10, d10; z14, b14, d14). Normal operation is indicated for each current path through a continuously lit LED (F1, F2, F3 or F4) on the front plate. If a current path is not connected, the associated LED is off and the fuse is not monitored.

If a fuse is blown, the associated LED starts blinking and FF is continuously lit.

The indicators and signals are described in the function table.

Fuses	≤ 4 A time-lag (T) Delivery condition: 4 A time-lag (T)
Operating data EL+	24 VDC / 30 mA
Space requirement	3 RU, 4 HP

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Function Table

Input	Fuse	LEDs F1…F4	LED FF	LEDs F1…F4	Input	Signal d28
L+	OK	●	⊗	⊗		0
L+	Faulty	⊗ ⇔ ●	●	⊗		1
0		⊗	⊗	⊗		0
Internal fault				●		1
⊗ LED off ● LED on						

Table 1: Function Table

All the module functions are monitored by a microcontroller.

If an internal malfunction occurs, the ERR LED is lit, output d28 is on 1-signal and relay contact z26-d26 opens. This is also the case if the time diverges by ± 30 % or more from the setpoint.

Output z28-b28 is intended for connecting to the communication module, e.g., for transferring data to a distributed control system (DCS).

RDY (Ready) indicates the applied voltage (≥ 20 V).

Communication via Modbus

Reading of Variables

Type BOOL: Function code 1
Type WORD: Function code 3
Events: Function codes 65, 66, 67

Relative address	Data type	Value	Description	Relative event no.
0	WORD	91 H	Module type 90 100	
1	BOOL	0	None	
2	BOOL	1	Module removed	
3	BOOL	1	Communication with module not ok	
4	BOOL	1	Module in slot, communication ok	
5	BOOL	1	Operating voltage too low, no RDY	
6	BOOL	1	Module fault, ERR	
7	BOOL	1	Fuse fault, FF	
8	BOOL	0	None	
9	BOOL	1	Voltage at z2-b2-d2	0
10	BOOL	1	Voltage at z6-b6-d6	1
11	BOOL	1	Voltage at z10-b10-d10	2
12	BOOL	1	Voltage at z14-b14-d14	3
13…40	BOOL	0	None	
41	BOOL	1	Voltage at d4	24
42	BOOL	1	Voltage at d8	25
43	BOOL	1	Voltage at d12	26
44	BOOL	1	Voltage at d16	27
45…48	BOOL	0	None	

Table 2: Module Status via Modbus

Value: 0 always has the opposite meaning
H: Hexadecimal value
Absolute address: A = p * 256 + relative address
Absolute event no.: E = (p - 1) * 32 + relative event no.
p = Slot no. in the subrack

Reading of All Variables

Function code 3, 84 WORDS

Starting with address 2000 H, 3000 H or 4000 H

	WORD 0 (16-bit)		WORD 1 (16-bit)		WORD 2 (16-bit)		WORD 3 (16-bit)	
Relative address	0	8…1	24…17	16…9	40…33	32…25		48…41
Data	Module type	Module status	None	None	None	None	None	Outputs

For error-free data transfer, all 84 WORDS must be read. This ensures that the variables of all the modules within a subrack are transferred. 0 is transferred for unused module slots.

Communication via PROFIBUS DP

Reading of Variables

Relative addresses of WORD and BYTE type

WORD	Bit	BYTE	Bit	Value	Description
0	0…7	0	0…7	91 H	Module type 90 100
	8	1	0	0	None
	9		1	1	Module removed
	10		2	1	Communication with module not ok
	11		3	1	Module in slot, communication ok
	12		4	1	Operating voltage too low, no RDY
	13		5	1	Module fault, ERR
	14		6	1	Fuse fault, FF
	15		7	0	None
1	0	2	0	1	Voltage at z2-b2-d2
	1		1	1	Voltage at z6-b6-d6
	2		2	1	Voltage at z10-b10-d10
	3		3	1	Voltage at z14-b14-d14
	4…7		4…7	0	None
	8…15	3	0…7	0	None
2		4…5		0	None
3	0	6	0	1	Voltage at d4
	1		1	1	Voltage at d8
	2		2	1	Voltage at d12
	3		3	1	Voltage at d16
	4…7		4…7	0	None
	8…15	7	0…7	0	None

Table 3: Module Status via PROFIBUS DP

Value: 0 always has the opposite meaning
H: Hexadecimal value

Absolute address WORD: W = 4 * (p - 1) + relative address

Absolute address BYTE: B = 8 * (p - 1) + relative address
p = Slot no. in the subrack