F 8650X

F 8650X: Central module

Use in the PES H51q-MS, -HS, -HRS,
Safety-related, applicable up to SIL 3 according to IEC 61508
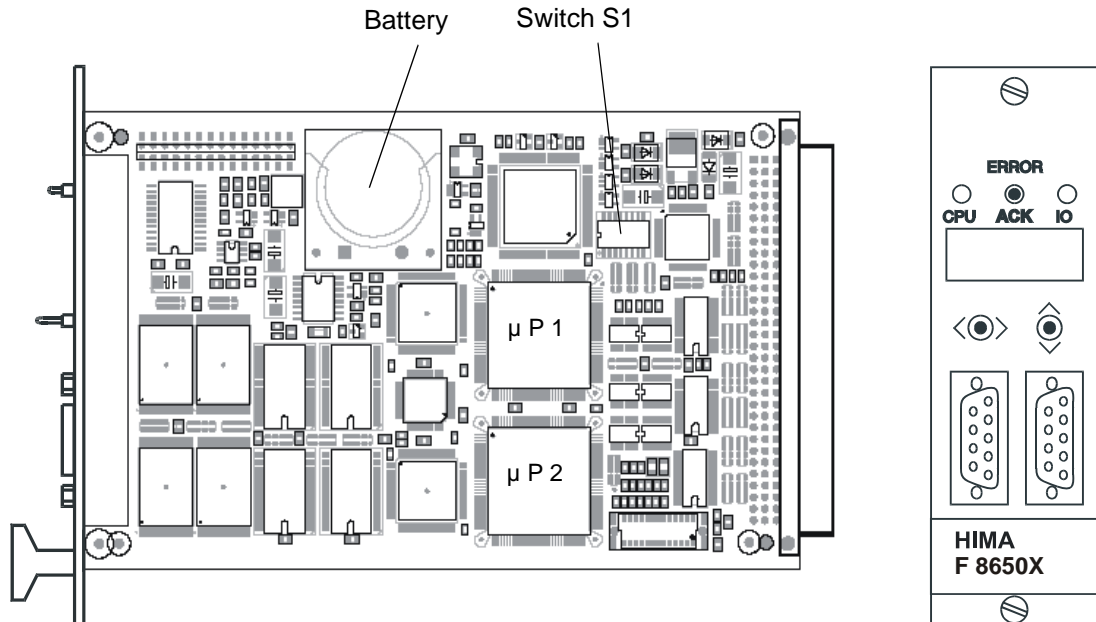

Figure 1: View

Central module with two clock-synchronized microprocessors

Microprocessors	INTEL 386EX, 32 bits
Clock frequency	25 MHz
Memory per microprocessor	
Operating System	Flash-EPROM 1 MB
User program	Flash-EPROM 1 MB *
Data	SRAM 1 MB *
	* Degree of utilization depending on operating system version
Interfaces	Two serial interfaces RS 485 with electric isolation
Diagnostic display	Four digit matrix display with selectable information
Shutdown on fault	Safety-related watchdog with output 24 V, loadable up to 500 mA, short-circuit proof
Construction	Two European standard PCBs, one PCB for the diagnostic display
Space requirement	8 SU
Operating data	5 V / 2 A

Setting of the bus station no. via switches S1-1/2/3/4/5/6/7:

Position switch no.   6 7
On
Off

Switch no.

Station no.	1 2 3 4 5		Station no.	1 2 3 4 5		Station no.	1 2 3 4 5		Station no.	1 2 3 4 5
0	On Off	not admissible	8	On Off		16	On Off		24	On Off
1	On Off		9	On Off		17	On Off		25	On Off
2	On Off		10	On Off		18	On Off		26	On Off
3	On Off		11	On Off		19	On Off		27	On Off
4	On Off		12	On Off		20	On Off		28	On Off
5	On Off		13	On Off		21	On Off		29	On Off
6	On Off		14	On Off		22	On Off		30	On Off
7	On Off		15	On Off		23	On Off		31	On Off

Position switch no.   6 7
On
Off

Switch no.

Station no.	1 2 3 4 5	Station no.	1 2 3 4 5	Station no.	1 2 3 4 5	Station no.	1 2 3 4 5
32	On Off	40	On Off	48	On Off	56	On Off
33	On Off	41	On Off	49	On Off	57	On Off
34	On Off	42	On Off	50	On Off	58	On Off
35	On Off	43	On Off	51	On Off	59	On Off
36	On Off	44	On Off	52	On Off	60	On Off
37	On Off	45	On Off	53	On Off	61	On Off
38	On Off	46	On Off	54	On Off	62	On Off
39	On Off	47	On Off	55	On Off	63	On Off

Position switch no.   6 7
On
Off

Switch no.

Station no.	1 2 3 4 5	Station no.	1 2 3 4 5	Station no.	1 2 3 4 5	Station no.	1 2 3 4 5
64	On Off	72	On Off	80	On Off	88	On Off
65	On Off	73	On Off	81	On Off	89	On Off
66	On Off	74	On Off	82	On Off	90	On Off
67	On Off	75	On Off	83	On Off	91	On Off
68	On Off	76	On Off	84	On Off	92	On Off
69	On Off	77	On Off	85	On Off	93	On Off
70	On Off	78	On Off	86	On Off	94	On Off
71	On Off	79	On Off	87	On Off	95	On Off

Position switch no.   6 7
On
Off

Switch no.

Station no.	1 2 3 4 5
96	On Off
97	On Off
98	On Off
99	On Off

Legend:

Positions white switch:

On Off ■ Bit is set
White switch in position OFF

On ■ Off Bit is not set
White switch in position ON

Setting of the transmission rate with switch S1-8:

1 2 3 4 5 6 7 8
On
Off   S1-8 ON = 9600 bps

1 2 3 4 5 6 7 8
On
Off   S1-8 OFF = 57600 bps

Pin	RS 485	Signal	Meaning
1	-	-	not used
2	-	RP	5 V, decoupled by diodes
3	A/A'	RxD/TxD-A	Receive/Transmit Data A
4	-	CNTR-A	Control signal A
5	C/C'	DGND	Data Ground
6	-	VP	5 V, positive pole of power supply
7	-	-	not used
8	B/B'	RxD/TxD-B	Receive/Transmit Data B
9	-	CNTR-B	Control signal B

Table 1: Pin assignment of the interface RS 485, 9-pole

For the serial interface only the bus station no. 1-31 can be set.
Within an Ethernet network the bus station no. can be set from 1 to 99. Therefore the switches S1-6/7 must be set in addition to the switches S1-1/2/3/4/5.
The number of the communication partners within a network is still limited to 64.
This enhanced setting of the bus station no. is only possible from operating system BS41q/51q V7.0-8 (05.31) of the central module.

Applications with the communication module F 8627X:
– connection of the central module to a PADT (ELOP II TCP)
– connection to other communication partners within an Ethernet network (safe**ethernet**, Modbus TCP)
The communication runs from the central module via the backplane bus to the communication module F 8627X and from the Ethernet ports of the F 8627X into the Ethernet network and vice versa.

Special features of the central module:
– Self-education: from operating system BS41q/51q V7.0-8 (05.31)
– ELOP II TCP: from operating system BS41q/51q V7.0-8 (05.31)

Further informations about the bus station no., ELOP II TCP, loading of operating systems and application programs (self-education) et al. corresponding to the central module you will find in the data sheet of the F8627X as well as the operating system manual of H41q/H51q and the safety manual of H41q/H51q.

Before removing a central module its fixing screws must be completely loosened and freely movable. Remove the module from the bus board by pushing the ejection lever (front label) top down and quickly removing in an upward motion to ensure that faulty signals are not triggered within the system!
To attach the module, place it on the terminal block and press it inwards as far as it will go. This action should be performed quickly to ensure that faulty signals are not triggered within the system!
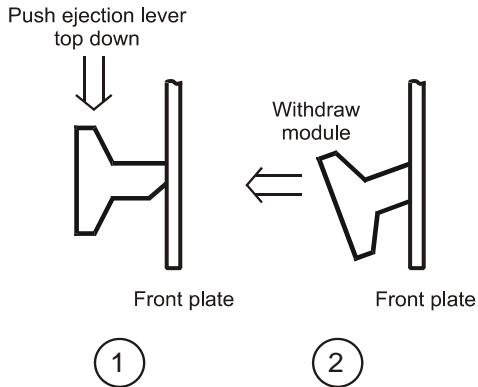
Function of the ejection lever with front label

Figure 2: Function of the ejection lever

Diagnostic display of the central module
– Four digit alphanumerical display,
– two LEDs for the general display of errors (CPU for the central modules, IO for the testable input/output modules),
– two toggle switches to request detailed error information,
– push-button ACK resets the error indication;
  in failure stop ACK behaves like restarting the system.
For further information on the diagnostic display and lists of error codes, refer to the documentation "Functions of the operational system BS 41q/51q" (also on ELOP II CD).

Notes for start-up and maintenance
– Lifetime of the buffer battery (*without* voltage feeding):
  1000 days at T_A = 25 °C
    200 days at T_A = 60 °C
– It is recommended to change the buffer battery (CPU in operation) at the latest after 6 years, or with display BATI within three months
  (Lithium battery, e.g. type CR 2477N, HIMA part no. 44 0000018)
– Check the bus station no. and transmission rate at switch S1 for correct settings
– **Important:** When upgrading an F 8650 to an F 8650X module the fan concept has also to be changed!