

# System Facts

## HIMatrix systems

- SIL 3, PL e, Cat. 4
- Fast, flexible, compact
- Extremely cost-effective
- Distributed applications
- Applications with just a few I/O points

## Engineering tools

HIMatrix systems can be engineered using ELOP II Factory or SILworX, which include:

- Function Block Diagrams
- Sequential Function Charts
- Certified Function Blocks

## List of certificates

- IEC 61508, Part1-7:2000 (SIL 3)
- IEC 61511:2004
- ANSI/ISA-84.00.01-2004
- EN ISO 13849-1:2006 (PL e)
- EN 62061:2005
- EN 50156-1:2004
- EN 12067-2:2004
- EN 298:2003
- EN 230:2005
- EN 61131-2:2003
- EN 61000-6-2:2001
- EN 61000-6-4:2001
- EN 54-2:1997/A1:2007
- EN 954-1:1996 (Cat. 4)
- NFPA 85:2007, NFPA 86:2007
- NFPA 72:2007
- EN 60079-15:2003 ATEX (Zone 2, T4)
- ANSI/ISA-S 71.04 Class G3
- UL (UL 508)
- cUL (CSA-C22.2 No. 142)
- FM CLASS 1 DIV2 (FM 3600, 3611, 3810)
- Marine: Lloyd's Register (F30, F31, F35)



## HIMatrix® systems

### Uniquely fast, uniquely flexible

Developed for applications requiring a few I/O points to several hundred I/O points, HIMatrix features cost-effectiveness and big-system performance. Ideal for networked and time-critical applications, the HIMatrix series of safety-related controllers and remote I/O modules delivers excellent system performance, compactness and easy assembly.



SAFETY  
NONSTOP

## List of modules

The extensive hardware range and safety-related networking of the systems via safe**ethernet** guarantee high levels of flexibility and optimum adaptation to the application requirements.

HIMatrix systems	Inputs analog / digital	Outputs analog / digital	Ethernet-switchports	Line monitoring*	Special features
<b>Compact PES</b>					
F35	8 / 24	- / 8	4	-	Plus 2 counters 100 kHz, approved for use in Ex-Zone 2
F31 02	- / 20	- / 8	4	yes	Without fieldbus interface
F30	- / 20	- / 8	4	yes	-
F20	- / 8*	- / 8*	2	yes	8 channels which can be parameterised individually as I/Os
<b>Remote-I/Os</b>					
F1 DI 16 01	- / 16	- / -	2	yes	-
F2 DO 16 01	- / -	- / 16	2	-	8 outputs 2 A, 8 outputs 0.5 A
F2 DO 16 02	- / -	- / 16	2	-	Relay outputs up to a contact potential of 60 V
F2 DO 8 01	- / -	- / 8	2	-	Relay outputs up to a contact potential of 230 V
F2 DO 4 01	- / -	- / 4	2	-	Load of up to 5 A
F3 DIO 8/8 01	- / 8	- / 8	2	yes	Additional 2 L-switching outputs
F3 DIO 16/8 01	- / 16	- / 8	2	yes	2-pin outputs
F3 DIO 20/8 02	- / 20	- / 8	2	yes	-
F3 AIO 8/4 01	8 / -	4** / -	2	-	Supply for proximity switches (NAMUR) and 24 V
<b>Modular PES</b>					
F60	- / -	- / -	4	-	6 slots for any type of I/O module
<b>I/O-modules for modular PES</b>					
AI 8 01	8 / -	- / -	-	-	-
DI 32 01	- / 32	- / -	-	yes	Cross-circuiting in connection with DIO 24/16
DI 24 01	- / 24	- / -	-	-	110 V input voltage
MI 24 01	24 / 24	- / -	-	-	Current inputs 4-20 mA, alternatively proximity switches (NAMUR)
DIO 24/16 01	- / 24	- / 16	-	yes	-
CIO 2/4 01	- / -	- / 4	-	-	2 counters up to 1 MHz
AO 8 01	- / -	8 / -	-	yes	-
DO 8 01	- / -	- / 8	-	-	Relay outputs up to a contact potential of 230 V

Specifications are subject to change.

\* configurable \*\* non-safe

## Operating conditions and CE-Mark

- IEC/EN 61131-2:2006 Programmable Controllers Part 2, Equipment requirement and tests
- IEC/EN 61000-6-2:2001 EMC, Generic Standards, Immunity for Industrial Environments
- IEC/EN 61000-6-4:2001 EMC, Generic emission standard, residential, commercial, and light industry
- EMC Directive
- Low Voltage Directive
- Machinery Directive
- ATEX Directive

Additional local certificates available

## Operating principles

- De-energize to trip
- Energize to trip for F35, F60 and F3 AIO 8/4 01

## Typical applications

### Process safety:

- Pipelines
- Distributed pharmaceuticals applications
- BMS solutions for single and multiple burner systems
- Decentralised Fire & Gas systems
- Turbine monitoring
- Wellhead control
- Subsea applications

### Building automation:

- Fire alarms
- Smoke detection
- Smoke removal
- Escape-passage signalling

### Machine safety:

- Stamping and pressing
- Painting plants
- Assembly plants
- Robot cells
- Conveyer systems
- Amusement rides
- Lifts
- Locks and polders
- Cable cars
- Cranes
- Packaging machines
- Elevators and lifting tables

## Communication options

- SIL 3 via safe**ethernet**
- OPC DA
- Modbus TCP Master & Slave
- EtherNet/IP
- Send & Receive TCP
- PROFIBUS DP Master & Slave
- Modbus RTU Master & Slave
- INTERBUS Master
- ComUserTask (CUT), user-programmable port
- SNTP
- Integrated Ethernet Switch 100 MB