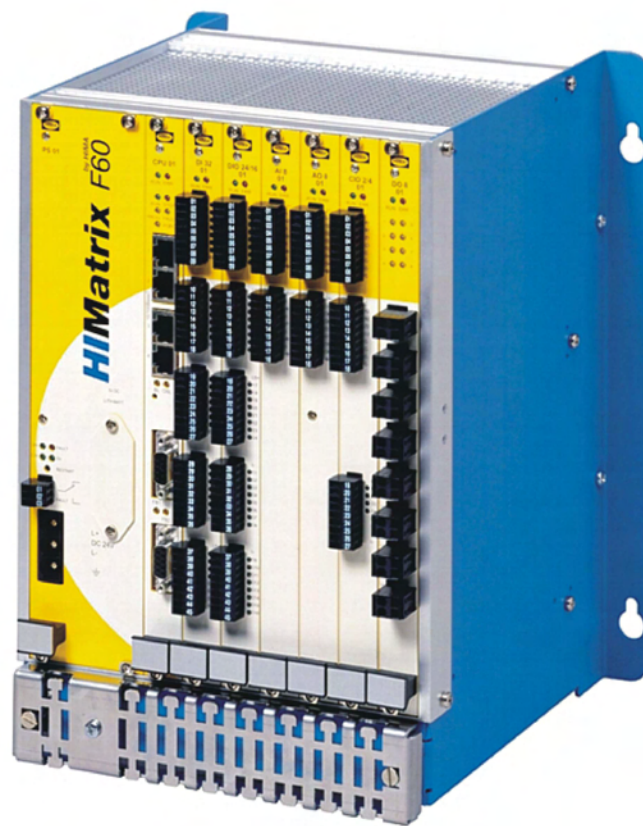


# HIMatrix

Safety-Related Controller

MI 24 01 Manual



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Industrial Automation

If the module is in STOP, no monitoring for overload is performed, even if *Transmitter Used [BOOL]* -> is set to TRUE.

The current limiting voltage outputs can be switched between 8.2 VDC and 26 VDC. The switching value must be set individually for each output. An operating voltage must be selected even if it is not used, otherwise the module enters the error state with invalid configuration. The outputs cannot be forced and may only be defined during the parameter setting.

The voltage limits of the outputs are safely monitored. If the error limits are exceeded, an error bit is set.

For supplying a channel, the voltage output assigned to the input must be used (e.g., S1+ with AI1+).

### 3.5 Product Data

General	
Number of inputs	24, configurable as: <ul style="list-style-type: none"> <li>▪ Analog current inputs 0/4...20 mA</li> <li>▪ Digital signal inputs for proximity switches, e.g., in accordance with EN 60947-5-6, safety proximity switches or contacts wired with resistors</li> </ul>
Operating voltage	24 VDC, -15 %...+20 %, $w_{SS} \leq 15\%$ , provided by a power supply unit with safe isolation in accordance with IEC 61131-2 requirements.
Operating data	3.3 VDC / 0.3 A 24 VDC / 1.5 A
Max. permanent overload	50 mA / 10 V
max. overload duration (short-circuit S+ → AI+)	60 ms
Data format	Integer
Ambient temperature	0 °C...+60 °C
Storage temperature	-40 °C...+85 °C
Space requirement	6 RU, 4 HP
Weight	580 g

Table 8: Product Data

Analog Inputs	
Inputs	24 (unipolar, non-galvanically isolated)
Nominal range	0...20 mA
Operating range	-1...25 mA
Input resistance	200 $\Omega$
Digital resolution	12-bit
Measurement accuracy at 25 °C, max.	$\pm 0.2$ % of final value
Measurement accuracy on full temperature range, max.	$\pm 0.5$ % of final value
Temperature coefficient, max.	$\pm 0.0086$ %/K of final value
Safety-related accuracy, max	$\pm 1$ % of final value
Measured value refresh	once per F60 cycle
Sampling time	approx. 45 $\mu$ s per channel

Table 9: Specifications for the Analog inputs

Analog inputs, default values	
Open-circuit and short-circuit monitoring	Freely configurable values, e.g., LB <sup>1)</sup> 3.6 mA (360 digits)    Parameter <i>Limit Value LOW [INT]</i> -> LS <sup>2)</sup> 21 mA (2100 digits)    Parameter <i>Limit Value HIGH [INT]</i> -> (in accordance with NE 43)
<sup>1)</sup> LB = open-circuit <sup>2)</sup> LS = Short-circuit	

Table 10: Default Values for the Analog Inputs

Digital Inputs	
Inputs	24 unipolar ground I-, non-galvanically isolated from one another, analog measurement processing
Nominal range	0...20 mA, freely configurable switching threshold
Nominal input resistance	674 $\Omega$
Nominal short-circuit current with proximity switch supply	12.2 mA
Delay time L $\rightarrow$ H H $\rightarrow$ L	2 x cycle time F60

Table 11: Specifications for Digital Inputs

Digital inputs, default values	
Proximity switch in accordance with EN 60947-5-6: Switching threshold L → H Switching threshold H → L Open-circuit Short-circuit	The values must be configured and verified for the proximity switch in use: 1.7 mA (170 digits), parameter <i>Hysteresis HIGH [INT]</i> -> 1.5 mA (150 digits), parameter <i>Hysteresis LOW [INT]</i> -> 0.125 mA (13 digits), parameter <i>Limit Value LOW [INT]</i> -> 8.5 mA (850 digits), parameter <i>Limit Value HIGH [INT]</i> ->
Safety proximity switches in accordance with EN 60947-5-6 Switching threshold L → H Switching threshold H → L Open-circuit Short-circuit	The values must be configured and verified for the proximity switch in use: 1.9 mA (190 digits), parameter <i>Hysteresis HIGH [INT]</i> -> 1.7 mA (170 digits), parameter <i>Hysteresis LOW [INT]</i> -> 0.125 mA (13 digits), parameter <i>Limit Value LOW [INT]</i> -> 5.5 mA (550 digits), parameter <i>Limit Value HIGH [INT]</i> ->
Contacts wired with resistors (1 k/10 k): Switching threshold L → H Switching threshold H → L Open-circuit Short-circuit	The values must be configured and verified for the contact in use: 1.7 mA (170 digits), parameter <i>Hysteresis HIGH [INT]</i> -> 1.5 mA (150 digits), parameter <i>Hysteresis LOW [INT]</i> -> 0.125 mA (13 digits), parameter <i>Limit Value LOW [INT]</i> -> 8.5 mA (850 digits), parameter <i>Limit Value HIGH [INT]</i> ->

Table 12: Default Values for the Digital Inputs

Supply outputs	
Nominal voltages	8.2 VDC / 26 VDC, switchable for each group
Tolerance	± 5 %
Safely monitored limits Range 8.2 V	7.6 V...8.8 V, (tolerance range: 7.3...9.1 V)
Range 26 V	24.3 V...27.7 V, (tolerance range: 24.0...28.0 V)
Current limiting	> 200 mA (0 V each group) the output is switched off

Table 13: Specifications for the Supply Outputs