

HIMatrix

Safety-Related Controller

F35 Manual



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Industrial Automation

Digital inputs	
Number of inputs	24 (non-galvanically isolated)
Type of input	Current sinking logic, 24 V, type 1 in accordance with IEC 61131-2
High level -> voltage	15 V (default value 13 V + 2 V, safety range can be configured up to 30 VDC)
Current input	approx. 3.5 mA at 24 VDC, approx. 4.5 mA at 30 VDC
Low level -> voltage	max. 5 V DC (default value 7 V - 2 V, safety distance can be freely configured up to max. high level of -4 V and min. 2 V)
Current input	max. 1.5 mA (1 mA at 5 V)
Input resistance	< 7 k Ω
Overvoltage protection	- 10 V, +35 V
Max. wire length	300 m
Supply	3 x 20 V / 100 mA, short-circuit-proof
Measurement accuracy at 25 °C, max.	± 0.2 % of final value
Measurement accuracy on full temperature range, max.	± 1 % of final value
Temperature coefficient, max.	± 0.023 %/K of final value

Table 26: Specifications for the Digital Inputs

Analog inputs	
Number of inputs	8 (unipolar, non-galvanically isolated)
External shunt adapter for current measurement	Z 7301 (250 Ω) Z 7302 (500 Ω)
Nominal range	0...+10 VDC, 0...+20 mA with shunt 500 Ω
Operating range	-0.1...+11.5 VDC, -0.4...+23 mA with 500 Ω shunt
Input resistance	1 M Ω
Input line	max. 300 m, shielded, twisted pairs of wires
Internal resistance of the signal source	≤ 500 Ω
Digital resolution	12 bit
Measurement accuracy at 25 °C, max.	± 0.1 % of final value
Measurement accuracy on full temperature range, max.	± 0.5 % of final value
Temperature coefficient, max.	$\pm 0,011$ %/K of full scale
Safety-related accuracy, max.	± 2 % of final value
Measured value refresh	once per cycle of the controller
Sampling time	approx. 45 μ s
Transmitter supplies	8 x 24...28 V / ≤ 46 mA, short-circuit-proof

Table 27: Specifications for the Analog Inputs

Digital outputs	
Number of outputs	8 (non-galvanically isolated, common ground L-)
Output voltage	L+ minus 2 V
Output current	Channels 1...3 and 5...7: 0.5 A at 60 °C Channels 4 and 8: 1 A at 60 °C (2 A at 50 °C)
Minimum load	2 mA for each channel
Internal voltage drop	max. 2 W at 2 A
Leakage current (with low level)	max. 1 mA at 2 V
Behavior with overload	The affected output is switched off and cyclically switched on again
Total output current	max. 7 A, upon overload, all outputs are switched off and cyclically switched on again

Table 28: Specifications for the Digital Outputs

Counter	
Number of counters	2 (non-galvanically isolated)
Inputs	3 on each (A, B, Z)
Input voltages High level (5 V) High level (24 V) Low level (5 V) Low level (24 V)	5 V and 24 V 4...6 V 13...33 V 0...0.5 V -3...5 V
Input currents	1.4 mA at 5 V 6.5 mA at 24 V
Input impedance	3.7 kΩ
Input line	max. 500 m, shielded, twisted pairs of wires
Counter resolution	24 bit
Min. pulse length	5 μs
Max. input frequency	100 kHz (at 5 V and 24 V input voltage)
Triggered	on negative edge
Edge steepness	1 V/μs
Pulse duty factor	1 : 1 (for 100 kHz)

Table 29: Specifications for the Counters

3.5.1 Product Data HIMatrix F35 011 (-20 °C)

The HIMatrix F35 011 model variant is intended for use at the extended temperature range of -20...+60 °C. The electronic components are coated with a protective lacquer.

HIMatrix F35 011 (-20 °C)	
Operating temperature	-20...+60 °C
Weight	1.2 kg

Table 30: Product Data F35 011 (-20 °C)