

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)

3.5.2 Product Data HIMatrix F35 012 (Subsea / -20 °C)

The HIMatrix F35 012 model variant is intended for subsea-use according to ISO 13628 Part 6: Subsea production control systems. The electronic components are coated with a protective lacquer. The enclosure of the controller is made of V2A stainless steel. The controller is intend for mounting on a mounting plate. The enclosure is equipped with a massive aluminum plate, see Figure 8. Figure 9 specifies the centre hole distances.

HIMatrix F35 012 (subsea / -20 °C)	
Enclosure material	V2A Stainless steel V2A
Operating temperature	-20...+60 °C
ISO 13628-6: 2006	Shock and vibration tests according to Level Q1 and Q2. Random vibration test, ESS (Environmental stress screening)
Max. dimensions (without connectors and aluminum plate)	Width: 257 mm (with enclosure screws) Height: 114 mm (with fixing bolt) Depth: 97 mm (with earthing rail)
Dimensions: Aluminum plate (W x H x D)	(200 x 136 x 6) mm
Weight	1.7 kg

Table 31: Product Data F35 012 (Subsea / -20 °C)

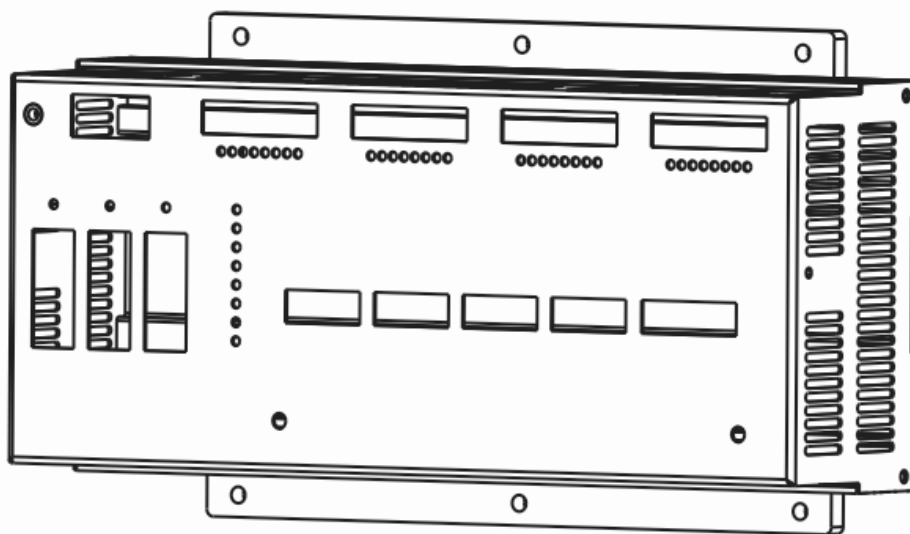


Figure 8: HIMatrix F35 Subsea / -20° with Aluminum Plate

4.1.4.1 Shunt Adapter

The shunt adapter is a plug-in module for the analog inputs of the safety-related HIMatrix F35 controller.

Four variants are available:

Model	Equipment	Part no.
Z 7301	250 Ω shunt	98 2220059
Z 7302	500 Ω shunt	98 2220067
Z 7306	<ul style="list-style-type: none"> ▪ 250 Ω shunt ▪ Overvoltage protection ▪ HART series resistor (current limiting) 	98 2220115
Z 7308	<ul style="list-style-type: none"> ▪ Voltage divider ▪ Overvoltage protection 	98 2220137

Table 37: Shunt Adapter

Refer to the corresponding manuals for further information on the shunt adapters.

4.1.5 Mounting the F35 in Zone 2

(EC Directive 94/9/EC, ATEX)

The controller is suitable for mounting in zone 2. Refer to the corresponding declaration of conformity available on the HIMA website.

When mounting the device, observe the special conditions specified in the following section.

Special Conditions X

1. Mount the HIMatrix F35 controller in an enclosure that meets the EN 60079-15 requirements and achieves a type of protection at least IP54, in accordance with EN 60529. Provide the enclosure with the following label:

Work is only permitted in the de-energized state

Exception:

If a potentially explosive atmosphere has been precluded, work can also be performed when the controller is under voltage.

2. The enclosure in use must be able to safely dissipate the generated heat. Depending on the output load and supply voltage, the HIMatrix F35 has a power dissipation ranging between 15 W and 29 W.
3. Protect the HIMatrix F35 with a 10 A time-lag fuse.
The F35 must be supplied with 24 VDC from a power supply unit with safe isolation. Use power supply units of type PELV or SELV only.
4. Applicable standards:

VDE 0170/0171 Part 16,	DIN EN 60079-15: 2004-5
VDE 0165 Part 1,	DIN EN 60079-14: 1998-08

Pay particular attention to the following sections:

DIN EN 60079-15:

Chapter 5	Design
Chapter 6	Terminals and cabling
Chapter 7	Air and creeping distances
Chapter 14	Connectors

DIN EN 60079-14:

Chapter 5.2.3	Equipment for use in zone 2
Chapter 9.3	Cabling for zones 1 and 2
Chapter 12.2	Equipment for zones 1 and 2

The controller is additionally equipped with the label represented below:

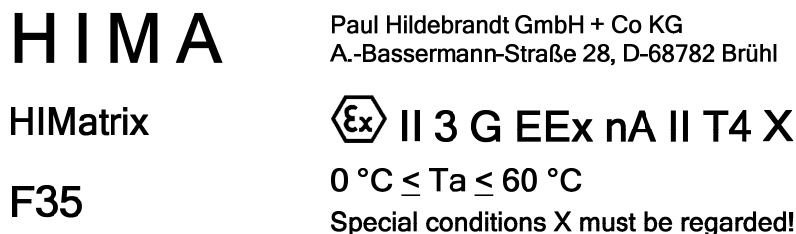


Figure 10: Label for Ex Conditions