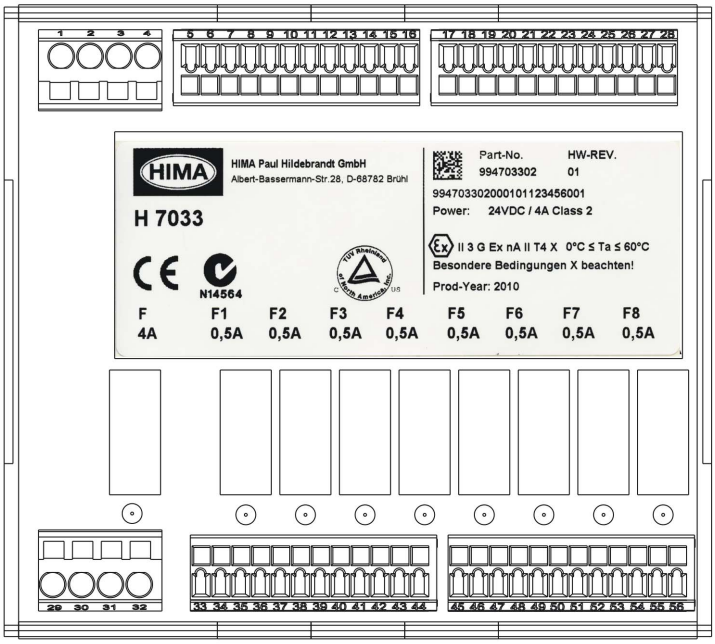
Industrial Automation

HIMatrix System

Manual

H 7033

Three-Wire Transmitter Supply



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For further information, refer to the CD-ROM and our website at: www.hima.com.

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1 HIMatrix Three-Wire Transmitter Supply H 7033

HIMA Part no.: 99 4703302

1.1 Introduction

H 7033 is a series connection unit for the modular MI 24 01 module of the HIMatrix F60 and supplies the connected three-wire transmitters with external supply voltage.

H 7033 has the following characteristics:

- It protects the MI 24 01 inputs.
- 8 external transmitter supplies for three-wire transmitters S1...S8.
- Low pass filter.
- It can be used with transmitter supply voltage monitoring.
- It can be used up to SIL 3.
- DIN rail mounting.

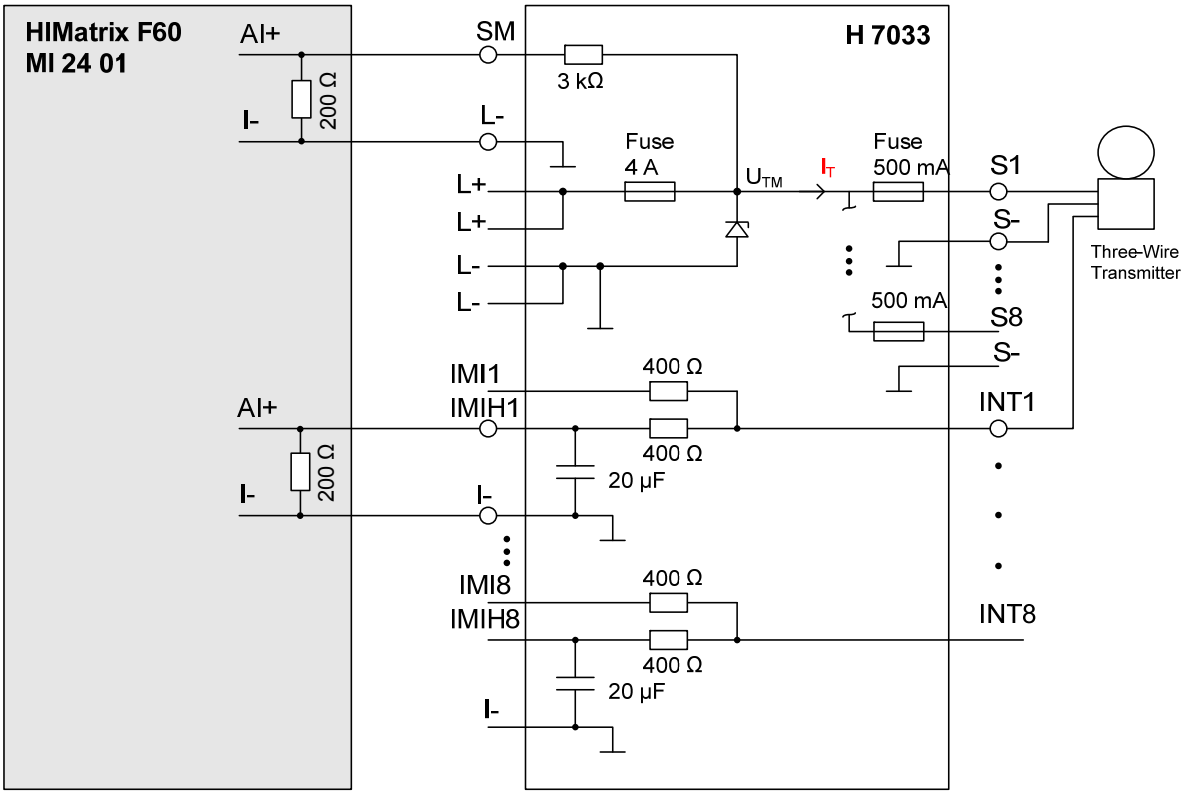

Figure 1: Block Diagram H 7033

1.1.1 Terminal Description for H 7033

Designation	Function (analog inputs)	Cross-section
L+, L-	Power supply H 7033	2.5 mm²
S1...S8	Transmitter supply three-wire transmitter	1.5 mm²
S-	Transmitter ground	1.5 mm²
INT1...INT8	Analog transmitter input	1.5 mm²
SM	Monitoring of transmitter supply voltage (U_{TM}), connection on the MI 24 01 analog input	2.5 mm²
L-	Ground Connection on the MI 24 01 ground	2.5 mm²
IMI1...IMI8	Series connection unit analog output Connection on the analog MI 24 01 input	1.5 mm²
IMIH1...IMIH8	Series connection unit analog output, filtered signal Connection on the analog MI 24 01 input	1.5 mm²
I-	Ground Connection on the MI 24 01 ground	1.5 mm²

Table 1: Terminal Description for Three-Wire Transmitter Supply

1.1.2 PIN Assignment for Three-Wire Transmitter Supply

PIN	Signal	PIN	Signal
1	SM	29	L+
2	SM	30	L+
3	L-	31	L-
4	L-	32	L-
5	IMI1	33	S1
6	IMIH1	34	INT1
7	I-	35	S-
8	IMI2	36	S2
9	IMIH2	37	INT2
10	I-	38	S-
11	IMI3	39	S3
12	IMIH3	40	INT3
13	I-	41	S-
14	IMI4	42	S4
15	IMIH4	43	INT4
16	I-	44	S-
17	IMI5	45	S5
18	IMIH5	46	INT5
19	I-	47	S-
20	IMI6	48	S6
21	IMIH6	49	INT6
22	I-	50	S-
23	IMI7	51	S7
24	IMIH7	52	INT7
25	I-	53	S-
26	IMI8	54	S8
27	IMIH8	55	INT8
28	I-	56	S-

Table 2: PIN Assignment for Three-Wire Transmitter Supply

1.2 Operation

To operate the H 7033, set the following parameters:

- In ELOP II Factory/SILworX, set transmitter supply of the module MI 24 01 MI[xx].Transmitter Used to "FALSE".
- Set the power supply (L+) H 7033 to the following value:
  $L+ = U_{Tmin} + I_T \times R_{wire} + 4\ V$, U_{Tmin} = minimum transmitter supply voltage
- Use the IMIH terminal if the filtered input signal of the three-wire transmitter should be used.

1.2.1 Monitoring of the Transmitter Supply Voltage U_{TM}

To monitor the transmitter supply voltage U_{TM}, connect the analog input of the MI 24 01 module to the SM and L- terminals. The transmitter supply voltage U_{TM} is monitored via the current I_{MI24}, see the following formulas:

$$I_{MI24} = U_{TM} / 3200\ \Omega$$

$$U_{TM} = U_{Tmin} + I_T \times R_{wire} + U_{Fuse\ 500\ mA} + Tolerance$$

Example:

$U_{Tmin} = 24V$, $I_T = 200\ mA$, $R_{wire} = 5\ \Omega$, $U_{Fuse\ 500\ mA} = 0.4\ V$, $Tolerance = 0.9\ V$

$$I_{MI24} = (24\ V + 1\ V + 0.4\ V + 0.9\ V) / 3200\ \Omega$$

$$I_{MI24} = 8.22\ mA$$

The input current of MI 24 01 must not fall below 8.22 mA.

The module MI 24 01 checks the transmitter supply voltage U_{TM}. If U_{TM} is less than the minimum transmitter operating voltage U_{Tmin}, the signals from the connected transmitter may no longer be classified as safe.

1.3 Specifications H 7033

Three-Wire Transmitter Supply	
Supply voltage (L+) regulated	24...30 VDC, PELV, SELV Class 2
Current consumption	max. 4 A
Transmitter supply (three-wire transmitter)	
Transmitter supply U_T	Voltage between S and INT
Current (transmitter supply)	max. 500 mA
Transmitter supply voltage monitoring.	Observe the minimum transmitter supply voltage U_{Tmin} of the connected transmitter!
Monitoring of the transmitter supply voltage (SM)	
Monitored transmitter supply voltage U_{TM}	$U_{TM} = U_{Tmin} + I_T \times R_{wire} + U_{Fuse\ 500\ mA}$ + Tolerance
Fuse	
G-fuse cartridge 500 mA	Part no. 57 0174059
Filter	
Time constant τ	τ = 8 ms
Filter impedance	400 Ω
Mounting H 7033	
Mounting	On DIN rail 35 mm
Mounting position	Horizontally or vertically, no mounting distance required
Special mounting conditions for USA/Canada	Mount in Type 3 control cabinet or in Type 3 assembly housing
General	
Type of protection	IP20
Weight	approx. 220 g
Operating temperature	0...+60 °C
Storage temperature	-40...+85 °C
Dimensions (H x W x D)	approx. 112 x 125 x 40 mm

Table 3: Specifications

1.4 Mounting the H7033 in Zone 2

(EC Directive 94/9/EC, ATEX)

If the special conditions X are observed, the H 7033 device may be installed in Zone 2.
The corresponding EC declaration of conformity is available on the HIMA website.

Special Conditions X

Mount the device in an enclousure (cabinet) that meets the EN / IEC 60079-15 requirements and achieves a type of protection of at least IP54 (category 1) in accordance to EN / IEC 60529.
This enclosure (control cabinet) must be labelled as follows:

WARNUNG – NICHT UNTER SPANNUNG ÖFFNEN

WARNING – DO NOT OPEN WHEN ENERGIZED

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

The enclosure (control cabinet) in use must be able to safely dissipate the generated heat.
The H 7033 device has a power dissipation of 9 **W**.

Since the device is equipped with exchangeable fuses, an additional warning must be placed on the front plate of the enclosure (control cabinet). The warning should have following text:

WARNUNG –	**SICHERUNGEN NICHT UNTER SPANNUNG HERAUSNEHMEN ODER WECHSELN**
WARNING –	**DO NOT REMOVE OR REPLACE FUSES WHEN ENERGIZED**

The EC Directives and the following standards must be observed when installing and operating the device:

DIN EN 60079-15 (VDE 0170/0171 Part 16)
DIN EN 60079-0 (VDE0170-1)
DIN EN 60079-11 (VDE0170-7)
DIN EN 60079-14 (VDE 0165 Part 1)

The H 7033 device is labelled with the following special product marking:

Ⓔx II 3 G Ex nA II T4 X 0°C ≤ Ta ≤ 60°C
Special conditions X must be regarded!

HIMA
...the safe decision.

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