MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

6ES7134-6TD00-0CA1

AI 4xI 2-Wire HART Module

SIEMENS

Selected Official Content

Analog Input Module AI 4xI 2-wire 4…20mA HART Manual
Document: A5E35098013-AB
Included Siemens source pages: 5, 13, 15, 16, 24, 49, 50

REFERENCE SCOPE

This Amikon reference package adds a branded cover to selected official Siemens pages.
The appended manufacturer pages retain their original layout, colors, diagrams and pagination.
Use the current controlled Siemens documentation and site procedure for installation work.

Official product record

https://sieportal.siemens.com/en-ww/products-services/detail/6ES7134-6TD00-0CA1

Official Siemens manual

https://cache.industry.siemens.com/dl/files/608/109750608/att_930566/v1/103904479371_en-US.pdf

Preface

Validity of the documentation

This manual describes the analog input module AI 4xI 2-wire 4…20mA HART, article number 6ES7134-6TD00-0CA1.

It supplements the system manual ET 200SP distributed I/O system (http://support.automation.siemens.com/WW/view/en/58649293). Functions that generally relate to the system are described in this manual.

The information provided in this manual and in the system/function manuals supports you in commissioning the system.

Conventions

Please also observe notes marked as follows:

Note

A note contains important information on the product described in the documentation, on the handling of the product and on the section of the documentation to which particular attention should be paid.

Security information

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Product overview

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2.1 Properties

Article number

6ES7134-6TD00-0CA1

View of the module

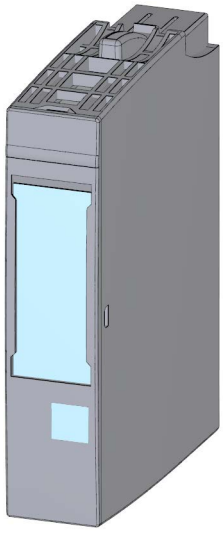

Figure 2-1 View of the AI 4xI 2-wire 4…20mA HART module

Properties

The module has the following technical properties:

- Analog input module with 4 inputs
- Measurement type current for 2-wire HART transducer
- Input range 4 mA to 20 mA
- Resolution 16 bits including sign
- Configurable diagnostics per channel

The module supports the following functions:

- HART communication (Rev. 5 to Rev. 7)
- Firmware update
- I&M identification data

Wiring up

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3.1 Connection and block diagram

The AI 4xI 2-wire 4…20mA HART analog module can be used with all A0 or A1-type BaseUnits.

You connect the transducers to the BaseUnit of the analog module. The infeed of the supply voltage at the light BaseUnit of the associated potential group supplies the module and the transducers connected to the encoder supply voltages.

A new potential group always begins with a light BaseUnit.

BaseUnit

The BaseUnit is not included in the product package of the module and must be ordered separately.

An overview of the BaseUnits that you can use with the analog module can be found in Product information for documentation of the ET 200SP Distributed I/O System (http://support.automation.siemens.com/WW/view/en/73021864)

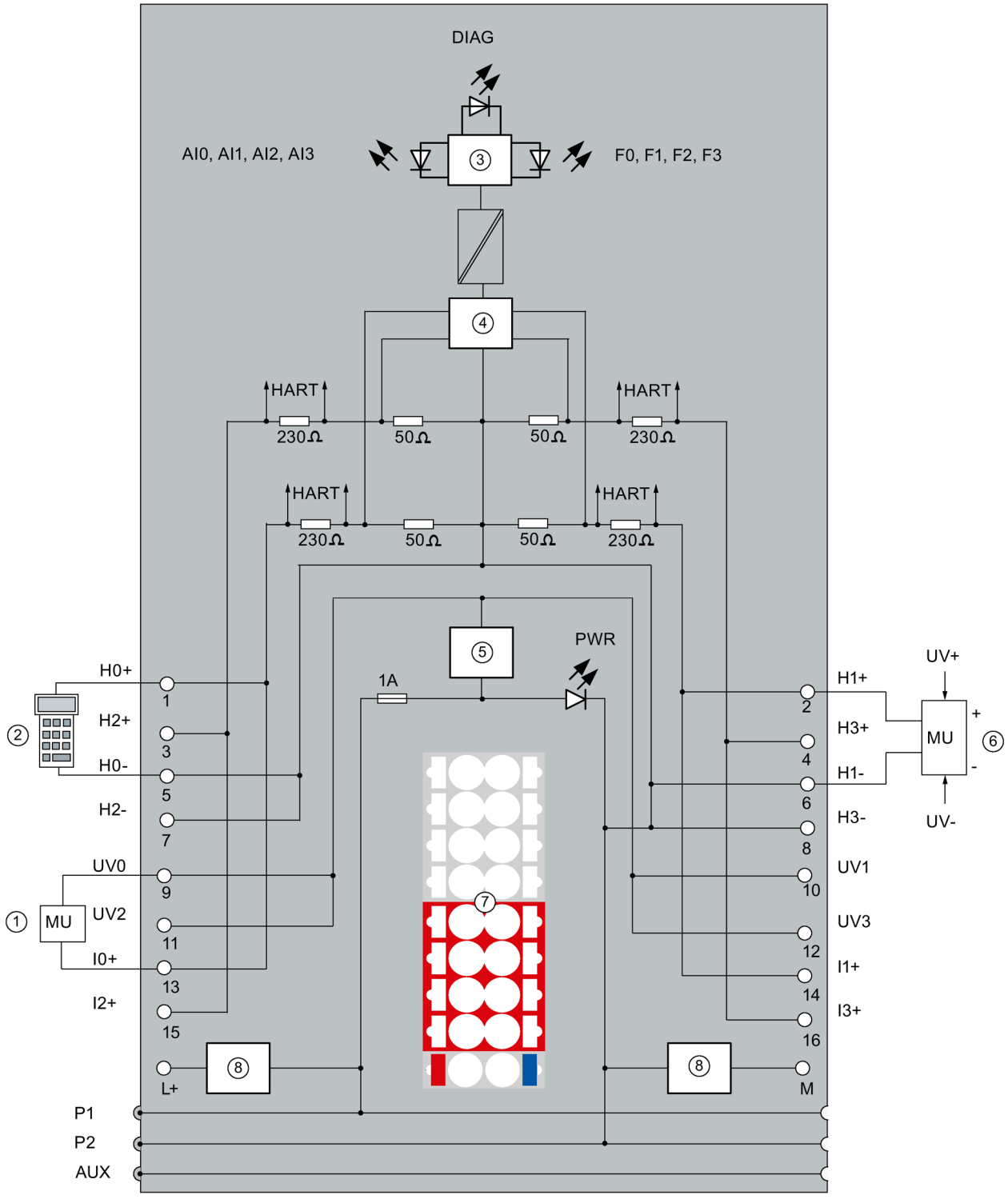
Information regarding selection of the suitable BaseUnit can be found in system manual ET 200SP distributed I/O system (http://support.automation.siemens.com/WW/view/en/58649293) and in the manual ET 200SP BaseUnits (http://support.automation.siemens.com/WW/view/en/59753521).

Information regarding wiring of the BaseUnit, creating the cable shield, etc., can be found in system manual ET 200SP distributed I/O system (http://support.automation.siemens.com/WW/view/en/58649293) in the section "Connecting".

Note

The first BaseUnit of a station must be a light BaseUnit. Also keep this in mind during the configuration.

General terminal assignment



① Connection of a 2-wire transducer, at channel 0 in this case

4.2 Use of HART

System environment for the use of HART

To use an intelligent field device with HART functionality, you require the following system environment:

- Current loop 4 - 20 mA

  Connection of the transducers to the AI 4xI 2-wire 4…20mA HART analog module

- HART configuration tool "Client":
  You can assign the HART parameters using an external hand-held operating device (HART Handheld) or a HART configuration tool (PDM). Both assume the function of a "client":

  The configuration tool goes through the AI 4xI 2-wire 4…20mA HART analog module whereas the HART Handheld is connected directly in parallel with the field device. See terminal assignment "HART test connections (terminals 1 to 8)" in the section 3.1 "Terminal assignment".

  PDM (Process Device Manager) is available as a stand-alone unit or integrated in *STEP 7 HW Config*.

- HART system connection:
  The AI 4xI 2-wire 4…20mA HART analog module assumes the function of a "master" by forwarding the commands received from the HART configuration tool or as programmed commands from an S7 user program, for example, to the intelligent field device and sending back the replies. Data records that are transferred via the ET 200SP I/O bus serve as the interface of the AI 4xI 2-wire 4…20mA HART analog module. The data records must be created and interpreted by the client. .

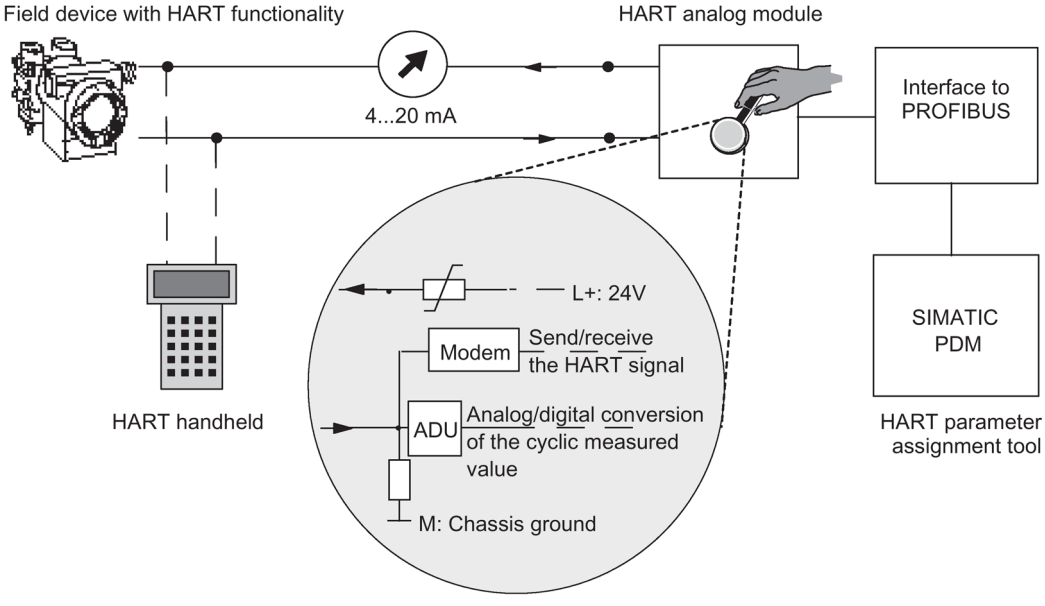


Figure 4-2 System environment for the use of HART

Technical specifications

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8.1 Technical specifications of the AI 4xI 2-wire 4…20mA HART

Technical specifications of the AI 4xI 2-wire 4…20mA HART

6ES7134-6TD00-0CA1	
Product type designation	AI 4xI 2-wire 4…20mA HART
General information	
Usable BaseUnits	BU type A0, A1
HART support	Rev. 5 to Rev. 7
Product functions	
I&M data	Yes, I&M0 to I&M3
Firmware update capability	Yes
Engineering with	
STEP 7 TIA Portal can be configured/integrated as of version	V13 + SP1
STEP 7 can be configured/integrated as of version	V5.5 + SP4 + HSP0263
PROFIBUS as of GSD version/GSD revision	GSD V3.0
PROFINET as of GSD version/GSD revision	GSDML V2.31
CiR Configuration in RUN	
Configuration in RUN possible	Yes
Installation type/mounting	
Rack mounting possible	Yes
Front installation possible	Yes
Rail mounting possible	Yes
Wall/direct mounting possible	No
Supply voltage	
Rated value (DC)	24 V / 110 mA
Valid range low limit (DC)	19.2 V
Valid range high limit (DC)	28.8 V
Input current	
Current consumption, max.	25 mA; without encoder supply
Encoder supply	
24 V encoder supply	Yes
Short-circuit protection	Yes
Output current per channel (4 channels), max.	20 mA; max. 50 mA per channel for a duration < 10 s
Load resistance of the encoder	> 750 Ω for L+ = 24 V
Power loss	

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Power loss, typ.	0.65 W; without encoder
Address space per module	
Without value status and without HART variables	8 bytes
With value status and without HART variables	9 bytes
Without value status, with HART variables	28 bytes
With value status, with HART variables	29 bytes
Analog inputs	
Number of analog inputs	4
Maximum permitted input current for current input (destruction limit)	50 mA
Input ranges (rated values), currents	
Current 4 mA to 20 mA	Yes, 15 bits + sign
Input resistance (4 to 20 mA)	280 Ω; + approx. 0.35 V diode forward voltage
Cable length	
Cable length shielded, max.	800 m
Analog value formation	
Measuring principle	Integrating (sigma-delta)
Integration and conversion time / resolution per channel	
Resolution with overrange (bits including sign), max.	16 bits
Interference suppression for interference frequency f1 in Hz	10 / 50 / 60, channel-by-channel
Basic conversion time	depending on the interference voltage suppression: at 60Hz: 18.75 ms at 50Hz: 22.5 ms at 10Hz: 112.5 ms
Measured value smoothing	
Configurable	Yes (none, weak, medium, strong), channel-by-channel
Errors/accuracies	
Linearity error (in relation to input range), (+/-)	± 0.01 %
Temperature error (in relation to input range), (+/-)	± 0.005 %
Crosstalk between inputs, min.	60 dB
Repeat accuracy in settled state at 25 °C (in relation to input range), (+/-)	± 0.05 %
Operational limit in the entire temperature range	
Current in relation to input range, (+/-)	± 0.5 %
Basic error limit (operational limit at 25 °C)	
Current in relation to input range, (+/-)	± 0.3 %
Influence of a HART signal modulated on the input signal in relation to input range	
Error with integration time 16.6 ms	± 0.05%
Error with integration time 20 ms	± 0.04%
Error with integration time 100 ms	± 0.02%