



Figure similar

SIMATIC ET 200SP HA, ET 200SP, analog ex-i HART input module, Ex-AI 2x1 2-Wire HART, suitable for BaseUnit type X1, channel diagnostics, 16bit, +/-0.3%

General information	
Product type designation	Ex-AI 2x1 2-wire HART
Firmware version	V1.0
<ul style="list-style-type: none"> <li>FW update possible</li> </ul>	Yes
usable BaseUnits	BU type X1
Product function	
<ul style="list-style-type: none"> <li>I&amp;M data</li> </ul>	Yes; I&M0 to I&M3
<ul style="list-style-type: none"> <li>Isochronous mode</li> </ul>	No
Engineering with	
<ul style="list-style-type: none"> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul>	STEP 7 V16 or higher with HSP
<ul style="list-style-type: none"> <li>STEP 7 configurable/integrated from version</li> </ul>	STEP 7 V5.6 SP2 or higher
<ul style="list-style-type: none"> <li>PCS 7 configurable/integrated from version</li> </ul>	V9.1
Operating mode	
<ul style="list-style-type: none"> <li>MSI</li> </ul>	Yes
Redundancy	
<ul style="list-style-type: none"> <li>Redundancy capability</li> </ul>	No
CiR - Configuration in RUN	
Reparameterization possible in RUN	Yes
Input current	
Current consumption (rated value)	74 mA
Current consumption, max.	92 mA; Peak load (all channels in short-circuit)
Encoder supply	
24 V encoder supply	
<ul style="list-style-type: none"> <li>24 V</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Short-circuit protection</li> </ul>	Yes; Electronic disconnection in case of short-circuit, current limitation from 27 mA
<ul style="list-style-type: none"> <li>Output current per channel, max.</li> </ul>	28 mA
Power loss	
Power loss, typ.	1.2 W
Address area	
Address space per module	
<ul style="list-style-type: none"> <li>Address space per module, max.</li> </ul>	4 byte; + 0/1 byte for QI information
<ul style="list-style-type: none"> <li>Address space per module with HART, max.</li> </ul>	24 byte; + 0/1 byte for QI information
<ul style="list-style-type: none"> <li>Address space per module with MultiHART, max.</li> </ul>	11 byte; + 0/1 byte for QI information
Hardware configuration	
Automatic encoding	
<ul style="list-style-type: none"> <li>Mechanical coding element</li> </ul>	Yes
Selection of BaseUnit for connection variants	
<ul style="list-style-type: none"> <li>2-wire connection</li> </ul>	BU type X1

Analog inputs	
Number of analog inputs	2; Differential inputs
<ul style="list-style-type: none"> <li>• For current measurement</li> </ul>	2
Cycle time (all channels), min.	3 ms
Input ranges (rated values), currents	
<ul style="list-style-type: none"> <li>• 0 to 20 mA</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• 4 mA to 20 mA</li> </ul>	Yes; 15 bit + sign
— Input resistance (4 mA to 20 mA)	400 Ω; At 20 mA input current
Cable length	
<ul style="list-style-type: none"> <li>• shielded, max.</li> </ul>	500 m; Ex characteristic values must be observed
<ul style="list-style-type: none"> <li>• unshielded, max.</li> </ul>	300 m; Ex characteristic values must be observed
Analog value generation for the inputs	
Measurement principle	integrating (Sigma-Delta)
Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> <li>• Resolution with overrange (bit including sign), max.</li> </ul>	16 bit
<ul style="list-style-type: none"> <li>• Integration time, parameterizable</li> </ul>	Yes; channel by channel
<ul style="list-style-type: none"> <li>• Interference voltage suppression for interference frequency <math>f_1</math> in Hz</li> </ul>	10 / 50 / 60 Hz
Smoothing of measured values	
<ul style="list-style-type: none"> <li>• Number of smoothing levels</li> </ul>	4; None; 4/8/16 times
<ul style="list-style-type: none"> <li>• parameterizable</li> </ul>	Yes
Encoder	
Connection of signal encoders	
<ul style="list-style-type: none"> <li>• for current measurement as 2-wire transducer</li> </ul>	Yes
— Burden of 2-wire transmitter, max.	750 Ω; At 20 mA input current
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.01 %
Temperature error (relative to input range), (+/-)	0.005 %/K
Crosstalk between the inputs, min.	60 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.05 %
Operational error limit in overall temperature range	
<ul style="list-style-type: none"> <li>• Current, relative to input range, (+/-)</li> </ul>	0.3 %
Basic error limit (operational limit at 25 °C)	
<ul style="list-style-type: none"> <li>• Current, relative to input range, (+/-)</li> </ul>	0.2 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$ , $f_1 =$ interference frequency	
<ul style="list-style-type: none"> <li>• Series mode interference (peak value of interference &lt; rated value of input range), min.</li> </ul>	60 dB
Protocols	
HART protocol	Yes
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
<ul style="list-style-type: none"> <li>• Diagnostic alarm</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Limit value alarm</li> </ul>	Yes
Diagnoses	
<ul style="list-style-type: none"> <li>• Monitoring the supply voltage</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Wire-break</li> </ul>	Yes; channel by channel
<ul style="list-style-type: none"> <li>• Short-circuit</li> </ul>	Yes; channel by channel
<ul style="list-style-type: none"> <li>• Group error</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Overflow/underflow</li> </ul>	Yes; channel by channel
Diagnostics indication LED	
<ul style="list-style-type: none"> <li>• MAINT LED</li> </ul>	Yes; Yellow LED
<ul style="list-style-type: none"> <li>• Monitoring of the supply voltage (PWR-LED)</li> </ul>	Yes; green PWR LED
<ul style="list-style-type: none"> <li>• Channel status display</li> </ul>	Yes; green LED
<ul style="list-style-type: none"> <li>• for channel diagnostics</li> </ul>	Yes; red LED
<ul style="list-style-type: none"> <li>• for module diagnostics</li> </ul>	Yes; green/red DIAG LED
Ex(i) characteristics	
maximum values for connecting terminals for gas group IIC	
<ul style="list-style-type: none"> <li>• <math>U_0</math> (no-load voltage), max.</li> </ul>	26 V
<ul style="list-style-type: none"> <li>• <math>I_0</math> (short-circuit current), max.</li> </ul>	93 mA

• Po (power output), max.	605 mW
• Co (permissible external capacity), max.	99 nF
• Lo (permissible external inductivity), max.	4 mH
• Ui (intrinsically safe input voltage), max.	10 V
• Um (voltage at non-intrinsically safe connecting terminals), max.	60 V

#### Potential separation

##### Potential separation channels

• between the channels	No
• between the channels and backplane bus	Yes
• between the channels and the power supply of the electronics	Yes; Electrical isolation between the channels and input voltage PME

#### Isolation

Isolation tested with	further information on insulation can be found in the "ET 200SP HA / ET 200SP modules for devices in hazardous areas" System Manual
insulation of the field circuits to local ground acc. to IEC/EN 60079-11 tested with	707 V DC (type test)

#### Ambient conditions

##### Ambient temperature during operation

• horizontal installation, min.	-40 °C
• horizontal installation, max.	70 °C
• vertical installation, min.	-40 °C
• vertical installation, max.	60 °C

##### Altitude during operation relating to sea level

• Installation altitude above sea level, max.	2 000 m
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#### Dimensions

Width	20 mm
Height	73 mm
Depth	58 mm

#### Weights

Weight, approx.	55 g
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last modified: 10/20/2022 