



SIMATIC ET 200SP HA, ET 200SP, analog Ex-i HART output module, Ex-AQ 2xI HART, suitable for BaseUnit type X1, channel diagnostics, 16-bit, +/-0.3%

General information	
Product type designation	Ex-AQ 2xI 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>MSO</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
Calibration possible in RUN	No
Input current	
Current consumption (rated value)	65 mA
Current consumption, max.	70 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
Analog outputs	
Number of analog outputs	2
Cycle time (all channels), min.	3 ms
Output ranges, current	
<ul style="list-style-type: none"> <li>0 to 20 mA</li> </ul>	Yes; 15 bit
<ul style="list-style-type: none"> <li>4 mA to 20 mA</li> </ul>	Yes; 16 bit incl. sign
Connection of actuators	
<ul style="list-style-type: none"> <li>for current output two-wire connection</li> </ul>	Yes

<b>Load impedance (in rated range of output)</b>	
<ul style="list-style-type: none"> <li>with current outputs, max.</li> <li>with current outputs, inductive load, max.</li> </ul>	500 Ω Ex characteristic values must be observed
<b>Cable length</b>	
<ul style="list-style-type: none"> <li>shielded, max.</li> <li>unshielded, max.</li> </ul>	500 m; Ex characteristic values must be observed 300 m; Ex characteristic values must be observed
<b>Analog value generation for the outputs</b>	
<b>Settling time</b>	
<ul style="list-style-type: none"> <li>for resistive load</li> </ul>	1 ms; 500 ohms
<b>Errors/accuracies</b>	
Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-)	0.02 %
Linearity error (relative to output range), (+/-)	0.01 %
Temperature error (relative to output range), (+/-)	0.005 %/K
Crosstalk between the outputs, min.	-70 dB
Repeat accuracy in steady state at 25 °C (relative to output range), (+/-)	0.02 %
<b>Operational error limit in overall temperature range</b>	
<ul style="list-style-type: none"> <li>Current, relative to output range, (+/-)</li> </ul>	0.5 %; 0 ... 60 °C: 0.3%
<b>Basic error limit (operational limit at 25 °C)</b>	
<ul style="list-style-type: none"> <li>Current, relative to output range, (+/-)</li> </ul>	0.2 %
<b>Protocols</b>	
HART protocol	Yes
<b>Interrupts/diagnostics/status information</b>	
Diagnostics function	Yes
Substitute values connectable	Yes
<b>Alarms</b>	
<ul style="list-style-type: none"> <li>Diagnostic alarm</li> </ul>	Yes
<b>Diagnoses</b>	
<ul style="list-style-type: none"> <li>Monitoring the supply voltage</li> <li>Wire-break</li> <li>Short-circuit</li> <li>Group error</li> <li>Overflow/underflow</li> </ul>	Yes; Module-wise Yes; From output value > 240 μA Yes; < 20 ohms as of 1 mA output value Yes Yes; channel by channel
<b>Diagnostics indication LED</b>	
<ul style="list-style-type: none"> <li>MAINT LED</li> <li>Monitoring of the supply voltage (PWR-LED)</li> <li>Channel status display</li> <li>for channel diagnostics</li> <li>for module diagnostics</li> </ul>	Yes; Yellow LED Yes; green PWR LED Yes; green LED Yes; red LED Yes; green/red DIAG LED
<b>Ex(i) characteristics</b>	
maximum values for connecting terminals for gas group IIC	
<ul style="list-style-type: none"> <li>U<sub>o</sub> (no-load voltage), max.</li> <li>I<sub>o</sub> (short-circuit current), max.</li> <li>P<sub>o</sub> (power output), max.</li> <li>C<sub>o</sub> (permissible external capacity), max.</li> <li>L<sub>o</sub> (permissible external inductivity), max.</li> <li>U<sub>i</sub> (intrinsically safe input voltage), max.</li> <li>U<sub>m</sub> (voltage at non-intrinsically safe connecting terminals), max.</li> </ul>	22 V 91 mA 501 mW 151 nF 4.1 mH 10 V 60 V
<b>Potential separation</b>	
<b>Potential separation channels</b>	
<ul style="list-style-type: none"> <li>between the channels</li> <li>between the channels and backplane bus</li> <li>between the channels and the power supply of the electronics</li> </ul>	No Yes Yes; Electrical isolation between the channels and input voltage PME
<b>Isolation</b>	
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)
<b>Ambient conditions</b>	

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
Dimensions	
Width	20 mm
Height	73 mm
Depth	58 mm
Weights	
Weight, approx.	55 g

**last modified:** 8/11/2023 