




SIMATIC ET 200SP, Analog output module, AQ 2x U/I High Feature suitable for BU type A0, A1, Color code CC00, channel diagnostics, 16 bit, +/-0.1%

| General information  |  |
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| Product type designation   | AQ 2xU/I HF                            |
| HW functional status   | from FS04                              |
| usable BaseUnits   | BU type A0, A1                         |
| Color code for module-specific color identification plate  | CC00                                   |
| 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>                                       | Yes                                    |
| Engineering with   |  |
| <ul style="list-style-type: none"> <li>STEP 7 TIA Portal configurable/integrated from version</li> </ul> | V13 / V13                              |
| <ul style="list-style-type: none"> <li>STEP 7 configurable/integrated from version</li> </ul>            | V5.5 SP3 / -                           |
| <ul style="list-style-type: none"> <li>PCS 7 configurable/integrated from version</li> </ul>             | V8.1 SP1                               |
| <ul style="list-style-type: none"> <li>PROFIBUS from GSD version/GSD revision</li> </ul>                 | GSD Revision 5                         |
| <ul style="list-style-type: none"> <li>PROFINET from GSD version/GSD revision</li> </ul>                 | GSDML V2.3                             |
| Operating mode   |  |
| <ul style="list-style-type: none"> <li>Oversampling</li> </ul>   | No                                     |
| <ul style="list-style-type: none"> <li>MSO</li> </ul>  | No                                     |
| CiR - Configuration in RUN   |  |
| Reparameterization possible in RUN   | Yes                                    |
| Calibration possible in RUN  | Yes                                    |
| Supply voltage   |  |
| Rated value (DC)   | 24 V                                   |
| permissible range, lower limit (DC)  | 19.2 V                                 |
| permissible range, upper limit (DC)  | 28.8 V                                 |
| Reverse polarity protection  | Yes                                    |
| Input current  |  |
| Current consumption (rated value)  | 45 mA; without load                    |
| Current consumption, max.  | 90 mA; 2 channels current output 20 mA |
| Power loss   |  |
| Power loss, typ.   | 0.9 W                                  |
| Address area   |  |
| Address space per module   |  |
| <ul style="list-style-type: none"> <li>Address space per module, max.</li> </ul>                         | 4 byte; + 1 byte for QI information    |
| Hardware configuration   |  |
| Automatic encoding   |  |
| <ul style="list-style-type: none"> <li>Mechanical coding element</li> </ul>                              | Yes                                    |
| <ul style="list-style-type: none"> <li>Type of mechanical coding element</li> </ul>                      | Type A                                 |
| Analog outputs   |  |

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|--|---|
| Number of analog outputs   | 2   |
| Voltage output, short-circuit protection                                   | Yes   |
| Voltage output, short-circuit current, max.                                | 45 mA   |
| Cycle time (all channels), min.  | 750 $\mu$ s   |
| <b>Output ranges, voltage</b>  |   |
| • 0 to 10 V  | Yes; 15 bit   |
| • 1 V to 5 V   | Yes; 13 bit   |
| • -5 V to +5 V   | Yes; 15 bit incl. sign                                  |
| • -10 V to +10 V   | Yes; 16 bit incl. sign                                  |
| <b>Output ranges, current</b>  |   |
| • 0 to 20 mA   | Yes; 15 bit   |
| • -20 mA to +20 mA   | Yes; 16 bit incl. sign                                  |
| • 4 mA to 20 mA  | Yes; 14 bit   |
| <b>Connection of actuators</b>   |   |
| • for voltage output two-wire connection                                   | Yes   |
| • for voltage output four-wire connection                                  | Yes   |
| • for current output two-wire connection                                   | Yes   |
| <b>Load impedance (in rated range of output)</b>                           |   |
| • with voltage outputs, min.   | 2 k $\Omega$  |
| • with voltage outputs, capacitive load, max.                              | 1 $\mu$ F   |
| • with current outputs, max.   | 500 $\Omega$  |
| • with current outputs, inductive load, max.                               | 1 mH  |
| <b>Destruction limits against externally applied voltages and currents</b> |   |
| • Voltages at the outputs  | 30 V  |
| <b>Cable length</b>  |   |
| • shielded, max.   | 1 000 m; 200 m for voltage output                       |
| <b>Analog value generation for the outputs</b>                             |   |
| <b>Integration and conversion time/resolution per channel</b>              |   |
| • Resolution with overrange (bit including sign), max.                     | 16 bit  |
| <b>Settling time</b>   |   |
| • for resistive load   | 0.05 ms   |
| • for capacitive load  | 0.05 ms; Max. 47 nF and 20 m cable length               |
| • for inductive load   | 0.05 ms   |
| <b>Errors/accuracies</b>   |   |
| Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-)     | 0.02 %  |
| Linearity error (relative to output range), (+/-)                          | 0.03 %  |
| Temperature error (relative to output range), (+/-)                        | 0.003 %/K   |
| Crosstalk between the outputs, max.  | -50 dB  |
| Repeat accuracy in steady state at 25 °C (relative to output range), (+/-) | 0.03 %  |
| <b>Operational error limit in overall temperature range</b>                |   |
| • Voltage, relative to output range, (+/-)                                 | 0.2 %   |
| • Current, relative to output range, (+/-)                                 | 0.2 %   |
| <b>Basic error limit (operational limit at 25 °C)</b>                      |   |
| • Voltage, relative to output range, (+/-)                                 | 0.1 %   |
| • Current, relative to output range, (+/-)                                 | 0.1 %   |
| <b>Isochronous mode</b>  |   |
| Execution and activation time (TCO), min.                                  | 500 $\mu$ s   |
| Bus cycle time (TDP), min.   | 750 $\mu$ s   |
| Jitter, max.   | 5 $\mu$ s   |
| <b>Interrupts/diagnostics/status information</b>                           |   |
| Diagnostics function   | Yes   |
| Substitute values connectable  | Yes   |
| <b>Alarms</b>  |   |
| • Diagnostic alarm   | Yes   |
| <b>Diagnoses</b>   |   |
| • Monitoring the supply voltage  | Yes   |
| • Wire-break   | Yes; channel-by-channel, only for output type "current" |
| • Short-circuit  | Yes; channel-by-channel, only for output type "voltage" |

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| <ul style="list-style-type: none"> <li>• Group error</li> <li>• Overflow/underflow</li> </ul>  | <p>Yes</p> <p>Yes</p>  |
| <b>Diagnostics indication LED</b>  |  |
| <ul style="list-style-type: none"> <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>    | <p>Yes; green PWR LED</p> <p>Yes; green LED</p> <p>Yes; red LED</p> <p>Yes; green/red DIAG LED</p> |
| <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>       | <p>No</p> <p>Yes</p> <p>Yes</p>  |
| <b>Isolation</b>   |  |
| Isolation tested with  | 707 V DC (type test)   |
| <b>Ambient conditions</b>  |  |
| <b>Ambient temperature during operation</b>  |  |
| <ul style="list-style-type: none"> <li>• horizontal installation, min.</li> <li>• horizontal installation, max.</li> <li>• vertical installation, min.</li> <li>• vertical installation, max.</li> </ul> | <p>-30 °C; &lt; 0 °C as of FS04</p> <p>60 °C</p> <p>-30 °C; &lt; 0 °C as of FS04</p> <p>50 °C</p>  |
| <b>Altitude during operation relating to sea level</b>   |  |
| <ul style="list-style-type: none"> <li>• Installation altitude above sea level, max.</li> </ul>  | 5 000 m; Restrictions for installation altitudes > 2 000 m, see manual                             |
| <b>Dimensions</b>  |  |
| Width  | 15 mm  |
| Height   | 73 mm  |
| Depth  | 58 mm  |
| <b>Weights</b>   |  |
| Weight, approx.  | 31 g   |
| <b>last modified:</b>  | 1/16/2021       |