



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                                                                                      |                                        |
|----------------------------------------------------------------------------------------------------------|----------------------------------------|
| 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                                    |

|                                                                            |                                           |
|----------------------------------------------------------------------------|-------------------------------------------|
| • Type of mechanical coding element                                        | Type A                                    |
| <b>Analog outputs</b>                                                      |                                           |
| 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 µs                                    |
| <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 kΩ                                      |
| • with voltage outputs, capacitive load, max.                              | 1 µF                                      |
| • with current outputs, max.                                               | 500 Ω                                     |
| • 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 µs                                    |
| Bus cycle time (TDP), min.                                                 | 750 µs                                    |
| Jitter, max.                                                               | 5 µs                                      |
| <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"                |
| • Group error                                                  | Yes                                                                    |
| • Overflow/underflow                                           | Yes                                                                    |
| <b>Diagnostics indication LED</b>                              |                                                                        |
| • Monitoring of the supply voltage (PWR-LED)                   | Yes; green PWR LED                                                     |
| • Channel status display                                       | Yes; green LED                                                         |
| • for channel diagnostics                                      | Yes; red LED                                                           |
| • for module diagnostics                                       | Yes; green/red DIAG LED                                                |
| <b>Potential separation</b>                                    |                                                                        |
| <b>Potential separation channels</b>                           |                                                                        |
| • between the channels                                         | No                                                                     |
| • between the channels and backplane bus                       | Yes                                                                    |
| • between the channels and the power supply of the electronics | Yes                                                                    |
| <b>Isolation</b>                                               |                                                                        |
| Isolation tested with                                          | 707 V DC (type test)                                                   |
| <b>Ambient conditions</b>                                      |                                                                        |
| <b>Ambient temperature during operation</b>                    |                                                                        |
| • horizontal installation, min.                                | -30 °C; < 0 °C as of FS04                                              |
| • horizontal installation, max.                                | 60 °C                                                                  |
| • vertical installation, min.                                  | -30 °C; < 0 °C as of FS04                                              |
| • vertical installation, max.                                  | 50 °C                                                                  |
| <b>Altitude during operation relating to sea level</b>         |                                                                        |
| • Installation altitude above sea level, max.                  | 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                                                                   |

**last modified:**

1/16/2021 