Data sheet

SIPLUS ET 200SP, Analog output module, AQ 4XU/I Standard, - 40...+70°C start up -25°C with conformal coating based on 6ES7135-6HD00-0BA1 . suitable for BU type A0, A1, Color code CC00, Module diagnostics, 16 bit, +/-0.3%



Figure similar

| General information | |
|---|-------------------|
| Product type designation | AQ 4xU/I ST |
| usable BaseUnits | BU type A0, A1 |
| Color code for module-specific color identification | CC00 |
| plate | |
| Product function | |
| ● I&M data | Yes; I&M0 to I&M3 |
| Output range scalable | No |
| Operating mode | |
| Oversampling | No |
| • MSO | No |
| CiR – Configuration in RUN | |
| Reparameterization possible in RUN | Yes |
| Calibration possible in RUN | No |
| Supply voltage | |
| Rated value (DC) | 24 V |
| permissible range, lower limit (DC) | 19.2 V |

| Reverse polarity protection Power loss Power loss, typ. Address area Address space per module • Address space per module, max. 8 byte; + 1 byte for QI information Analog outputs Voltage output, short-circuit current, max. 4; > +80 °C max. 2x ±10 V permissible Voltage output, short-circuit current, max. 45 mA Cycle time (all channels), min. 5 ms Analog output with oversampling No Output ranges, voltage • 0 to 10 V • 1 V to 5 V • 1 V to 5 V • 10 V to +10 V • 10 V to +10 V • 10 V to +10 V • 10 to 20 mA • 20 mA • 4 mA to 20 mA • 4 mA to 20 mA • 6 ro voltage output two-wire connection • for voltage output, short-circoit • for voltage output, short-circoit • of ro voltage output with oversampling Load impedance (in rated range of output) • with voltage outputs, max. • with current outputs, max. • Voltages at the outputs 30 V | normicaible range upper limit (DC) | 28.8 V |
|---|---|---------------------------------------|
| Current consumption, max. 150 mA Power loss Power loss, typ. 1.5 W Address space Produle • Address space per module • Address space per module, max. 8 byte; + 1 byte for Qt information Analog outputs Number of analog outputs 4; > +60 °C max. 2x ±10 V permissible Voltage output, short-circuit current, max. 45 mA Cycle time (all channels), min. 5 ms Analog output with oversampling No Output ranges, voltage • 0 to 10 V Yes; 15 bit • 1 V to 5 V Yes; 13 bit incl. sign • -10 V to +10 V Yes; 16 bit incl. sign Output ranges, current • 0 to 20 mA Yes; 16 bit incl. sign • -20 mA to +20 mA Yes; 16 bit incl. sign • 4 mA to 20 mA Yes; 16 bit incl. sign • for voltage output two-wire connection Yes • for current output two-wire connection Yes • for current output two-wire connection Yes Load impedance (in rated range of output) • with voltage outputs, min. 2 kΩ • with current outputs, max. 500 Ω • with current outputs, max. • with current outputs, max. • with current outputs, max. • with current outputs, inductive load, max. 1 mH Destruction limits against externally applied voltages and currents • Voltages at the outputs | permissible range, upper limit (DC) | |
| Current consumption, max. 150 mA Power loss, typ. 1.5 W Address area Address space per module, max. 8 byte; + 1 byte for Ql information Analog outputs Number of analog outputs 4; > +60 °C max. 2x ±10 V permissible Voltage output, short-circuit current, max. 45 mA Cycle time (all channels), min. 5 ms Analog output with oversampling No Output ranges, voltage • 10 to 10 V Yes; 15 bit • 10 V to +5 V Yes; 13 bit • 5 V to +5 V Yes; 15 bit incl. sign • 10 V to +10 V Yes; 15 bit incl. sign • 10 V to +10 V Yes; 15 bit • 20 mA Yes; 15 bit • 20 mA Yes; 15 bit • 20 mA to +20 mA Yes; 15 bit • for voltage output two-wire connection Yes • for voltage output two-wire connection Yes • for current output, two-wire connection Yes • for voltage output, two-wire connection Yes • with voltage outputs, max. <td>Reverse polarity protection</td> <td>Yes</td> | Reverse polarity protection | Yes |
| Power loss, typ. 1.5 W Address space per module • Address space per module, max. 8 byte; + 1 byte for QI information Analog outputs Number of analog outputs 4; > +60 °C max. 2x ±10 V permissible Voltage output, short-circuit current, max. 45 mA Cycle time (all channels), min. 5 ms Analog output with oversampling No Output ranges, voltage • 0 to 10 V Yes; 15 bit Yes; 13 bit Yes; 15 Voltage output voltage voltage • 10 V to +10 V Yes; 15 bit incl. sign • -10 V to +10 V Yes; 15 bit incl. sign • 20 mA Yes; 15 bit incl. sign • 20 mA to +20 mA Yes; 16 bit incl. sign • 4 mA to 20 mA Yes; 16 bit incl. sign • for voltage output two-wire connection Yes • for voltage output two-wire connection Yes Load impedance (in rated range of output) • with voltage outputs, min. 2 kΩ • with ourrent outputs, max. 500 Ω • with current outputs, max. 500 Ω • with current outputs, inductive load, max. 1 mH Destruction limits against externally applied voltages and currents • Voltages at the outputs | Input current | |
| Power loss, typ. 1.5 W Address area Address space per module, max. 8 byte; + 1 byte for QI information Analog outputs Voltage output, short-circuit current, max. 45 mA Cycle time (all channels), min. 5 ms Analog output with oversampling No Output ranges, voltage Ves; 15 bit • 0 to 10 V Yes; 15 bit • 1 V to 5 V Yes; 15 bit incl. sign • -5 V to +5 V Yes; 15 bit incl. sign • 10 to 20 mA Yes; 16 bit incl. sign • 20 mA to +20 mA Yes; 16 bit incl. sign • 20 mA to +20 mA Yes; 16 bit incl. sign • 20 mA to +20 mA Yes; 16 bit incl. sign • 4 m to 20 mA Yes; 16 bit incl. sign • 4 or voltage output two-wire connection Yes • for voltage output two-wire connection Yes • for current output two-wire connection Yes • for current output two-wire connection Yes • with voltage outputs, capacitive load, max. 1 μF • with current outputs, inductive load, max | Current consumption, max. | 150 mA |
| Power loss, typ. 1.5 W Address area Address space per module, max. 8 byte; + 1 byte for QI information Analog outputs Voltage output, short-circuit current, max. 45 mA Cycle time (all channels), min. 5 ms Analog output with oversampling No Output ranges, voltage Ves; 15 bit • 0 to 10 V Yes; 15 bit • 1 V to 5 V Yes; 15 bit incl. sign • -5 V to +5 V Yes; 15 bit incl. sign • 10 to 20 mA Yes; 16 bit incl. sign • 20 mA to +20 mA Yes; 16 bit incl. sign • 20 mA to +20 mA Yes; 16 bit incl. sign • 20 mA to +20 mA Yes; 16 bit incl. sign • 4 m to 20 mA Yes; 16 bit incl. sign • 4 or voltage output two-wire connection Yes • for voltage output two-wire connection Yes • for current output two-wire connection Yes • for current output two-wire connection Yes • with voltage outputs, capacitive load, max. 1 μF • with current outputs, inductive load, max | Power loss | |
| Address space per module • Address space per module, max. 8 byte; + 1 byte for QI information Analog outputs Number of analog outputs 4; > +60 °C max. 2x ±10 V permissible Voltage output, short-circuit current, max. 45 mA Cycle time (all channels), min. 5 ms Analog output with oversampling No Output ranges, voltage • 0 to 10 V Yes; 15 bit 10 Yes; 15 bit 1 | | 1.5 W |
| Address space per module • Address space per module, max. 8 byte; + 1 byte for QI information Analog outputs Number of analog outputs 4; > +60 °C max. 2x ±10 V permissible Voltage output, short-circuit current, max. 45 mA Cycle time (all channels), min. 5 ms Analog output with oversampling No Output ranges, voltage • 0 to 10 V Yes; 15 bit 10 Yes; 15 bit 1 | A.11 | |
| Analog outputs Number of analog outputs 4; > +60 °C max. 2x ±10 V permissible Voltage output, short-circuit current, max. 45 mA Cycle time (all channels), min. 5 ms Analog output with oversampling No Output ranges, voltage • 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; 15 bit incl. sign Output ranges, current • 0 to 20 mA Yes; 15 bit • -20 mA to +20 mA Yes; 16 bit incl. sign • for voltage output two-wire connection Yes • for voltage output two-wire connection Yes • for voltage output four-wire connection Yes Load impedance (in rated range of output) • with voltage outputs, min. 2 kΩ • with current outputs, max. with current outputs, inductive load, max. • with current outputs, inductive load, max. • Voltages at the outputs | | |
| Number of analog outputs Voltage output, short-circuit current, max. 45 mA Cycle time (all channels), min. Analog output with oversampling No Output ranges, voltage • 0 to 10 V • 1 V to 5 V • 1 V to 5 V • -10 V to +10 V Output ranges, current • 0 to 20 mA • -20 mA to +20 mA • 4 mA to 20 mA Connection of actuators • for voltage output two-wire connection • for current output two-wire connection • for current output two-wire connection • with voltage outputs, min. • with voltage outputs, max. • with current outputs, inductive load, max. • Voltages at the outputs • S max. 2x ±10 V permissible 45 mA • A mA • A mA • S ms No • Ves; 15 bit • Yes; 15 bit incl. sign • Yes; 15 bit incl. sign • Yes; 16 bit incl. sign • Yes; 14 bit Connection of actuators • Yes; 14 bit Connection of actuators • for voltage output two-wire connection • Yes • S • Load impedance (in rated range of output) • with voltage outputs, capacitive load, max. 1 μF • with current outputs, inductive load, max. • with current outputs, inductive load, max. • Woltages at the outputs • Voltages at the outputs | | 8 byte: + 1 byte for OI information |
| Number of analog outputs 4; > +60 °C max. 2x ±10 V permissible Voltage output, short-circuit current, max. 45 mA Cycle time (all channels), min. 5 ms Analog output with oversampling No Output ranges, voltage • 0 to 10 V • 1 V to 5 V Yes; 15 bit • 1 V to 5 V Yes; 15 bit incl. sign • -10 V to +10 V Yes; 16 bit incl. sign Output ranges, current • 0 to 20 mA • -20 mA to +20 mA Yes; 15 bit • -20 mA to 20 mA Yes; 16 bit incl. sign • 4 mA to 20 mA Yes; 16 bit incl. sign • for voltage output two-wire connection Yes; 14 bit Connection of actuators Yes • for voltage output four-wire connection Yes • for voltage output two-wire connection Yes • for current output two-wire connection Yes • for current output two-wire connection Yes • for voltage output, go autput, go au | Address space per module, max. | o byte, . I byte for an information |
| Voltage output, short-circuit current, max. 45 mA Cycle time (all channels), min. 5 ms Analog output with oversampling No Output ranges, voltage Ves; 15 bit • 0 to 10 V Yes; 15 bit • 1 V to 5 V Yes; 15 bit incl. sign • -10 V to +10 V Yes; 16 bit incl. sign • 10 to 20 mA Yes; 15 bit • -20 mA to +20 mA Yes; 16 bit incl. sign • 4 mA to 20 mA Yes; 16 bit incl. sign • for voltage output wo-wire connection Yes; 14 bit Connection of actuators • for voltage output four-wire connection Yes • for voltage output four-wire connection Yes • for current output two-wire connection Yes Load impedance (in rated range of output) • with voltage outputs, min. 2 kΩ • with voltage outputs, capacitive load, max. 1 μF • with current outputs, inductive load, max. 1 mH Destruction limits against externally applied voltages and currents • Voltages at the outputs 30 V | Analog outputs | |
| $ \begin{array}{llllllllllllllllllllllllllllllllllll$ | Number of analog outputs | 4; > +60 °C max. 2x ±10 V permissible |
| Analog output with oversampling No Output ranges, voltage | Voltage output, short-circuit current, max. | 45 mA |
| Output ranges, voltage • 0 to 10 V • 1 V to 5 V • 1 V to 5 V • -5 V to +5 V • -10 V to +10 V Output ranges, current • 0 to 20 mA • -20 mA to +20 mA • 4 mA to 20 mA • for voltage output two-wire connection • for current output two-wire connection • for current output two-wire connection • for woltage output, min. • with voltage outputs, min. • with voltage outputs, capacitive load, max. • with current outputs, max. • with current outputs, inductive load, max. • with current outputs, inductive load, max. • with current outputs, inductive load, max. • Voltages at the outputs • Voltages at the outputs • Ves; 15 bit Yes; 15 bit Yes; 16 bit incl. sign Yes; 14 bit Connection of actuators • Yes • S • G • For voltage output two-wire connection Yes • S • S • S • S • S • S • S • | Cycle time (all channels), min. | 5 ms |
| | Analog output with oversampling | No |
| | Output ranges, voltage | |
| | • 0 to 10 V | Yes; 15 bit |
| • -10 V to +10 V Output ranges, current • 0 to 20 mA • -20 mA to +20 mA • 4 mA to 20 mA • 6 for voltage output two-wire connection • for voltage output four-wire connection • for current output two-wire connection • for current output two-wire connection • with voltage outputs, min. • with voltage outputs, capacitive load, max. • with current outputs, max. • with current outputs, inductive load, max. • with current outputs, inductive load, max. • Woltages at the outputs 30 V | • 1 V to 5 V | Yes; 13 bit |
| Output ranges, current • 0 to 20 mA • 0 to 20 mA • 20 mA to +20 mA • 4 mA to 20 mA • 4 mA to 20 mA Yes; 16 bit incl. sign • 4 mA to 20 mA Yes; 14 bit Connection of actuators • for voltage output two-wire connection • for voltage output four-wire connection • for current output two-wire connection • for current output two-wire connection • with voltage outputs, min. • with voltage outputs, min. • with voltage outputs, capacitive load, max. • with current outputs, max. • with current outputs, inductive load, max. • with current outputs, inductive load, max. • with current outputs, inductive load, max. • Woltages at the outputs • Voltages at the outputs 30 V | • -5 V to +5 V | Yes; 15 bit incl. sign |
| 0 to 20 mA Yes; 15 bit Yes; 16 bit incl. sign 4 mA to 20 mA Yes; 14 bit Connection of actuators for voltage output two-wire connection for voltage output four-wire connection for current output two-wire connection Yes for current output two-wire connection Yes Load impedance (in rated range of output) with voltage outputs, min. with voltage outputs, capacitive load, max. with current outputs, max. with current outputs, inductive load, max. 1 mH Destruction limits against externally applied voltages and currents Voltages at the outputs | • -10 V to +10 V | Yes; 16 bit incl. sign |
| -20 mA to +20 mA 4 mA to 20 mA Yes; 16 bit incl. sign Yes; 14 bit Connection of actuators for voltage output two-wire connection for voltage output four-wire connection Yes for current output two-wire connection Yes for current output two-wire connection with voltage outputs, min. with voltage outputs, capacitive load, max. with current outputs, max. with current outputs, inductive load, max. with current outputs, inductive load, max. mH Destruction limits against externally applied voltages and currents Voltages at the outputs | Output ranges, current | |
| 4 mA to 20 mA Connection of actuators for voltage output two-wire connection for voltage output four-wire connection for current output two-wire connection for current output two-wire connection Yes Load impedance (in rated range of output) with voltage outputs, min. with voltage outputs, capacitive load, max. with current outputs, max. with current outputs, inductive load, max. with current outputs, inductive load, max. 1 mH Destruction limits against externally applied voltages and currents Voltages at the outputs | • 0 to 20 mA | Yes; 15 bit |
| Connection of actuators • for voltage output two-wire connection Yes • for voltage output four-wire connection Yes • for current output two-wire connection Yes Load impedance (in rated range of output) • with voltage outputs, min. $2 \text{ k}\Omega$ • with voltage outputs, capacitive load, max. 1 µF • with current outputs, max. 500Ω • with current outputs, inductive load, max. 1 mH Destruction limits against externally applied voltages and currents • Voltages at the outputs $1 \text{ me} \Omega$ | • -20 mA to +20 mA | Yes; 16 bit incl. sign |
| for voltage output two-wire connection for voltage output four-wire connection for current output two-wire connection Yes Load impedance (in rated range of output) with voltage outputs, min. with voltage outputs, capacitive load, max. with current outputs, max. with current outputs, inductive load, max. with current outputs, inductive load, max. 1 mH Destruction limits against externally applied voltages and currents Voltages at the outputs 30 V | • 4 mA to 20 mA | Yes; 14 bit |
| for voltage output four-wire connection for current output two-wire connection Yes Load impedance (in rated range of output) with voltage outputs, min. with voltage outputs, capacitive load, max. with current outputs, max. with current outputs, inductive load, max. I mH Destruction limits against externally applied voltages and currents Voltages at the outputs | Connection of actuators | |
| • for current output two-wire connection Yes Load impedance (in rated range of output) • with voltage outputs, min. $2 \text{ k}\Omega$ • with voltage outputs, capacitive load, max. 1 µF • with current outputs, max. 500Ω • with current outputs, inductive load, max. 1 mH Destruction limits against externally applied voltages and currents • Voltages at the outputs 30 V | for voltage output two-wire connection | Yes |
| Load impedance (in rated range of output) • with voltage outputs, min. • with voltage outputs, capacitive load, max. • with current outputs, max. • with current outputs, inductive load, max. 1 μ F • with current outputs, inductive load, max. 1 μ H Destruction limits against externally applied voltages and currents • Voltages at the outputs 30 ν | for voltage output four-wire connection | Yes |
| | • for current output two-wire connection | Yes |
| • with voltage outputs, capacitive load, max. 1 μ F • with current outputs, max. 500 Ω • with current outputs, inductive load, max. 1 mH Destruction limits against externally applied voltages and currents • Voltages at the outputs 30 V | Load impedance (in rated range of output) | |
| with current outputs, max. with current outputs, inductive load, max. 1 mH Destruction limits against externally applied voltages and currents Voltages at the outputs 30 V | with voltage outputs, min. | 2 kΩ |
| with current outputs, max. with current outputs, inductive load, max. Destruction limits against externally applied voltages and currents Voltages at the outputs 30 V | with voltage outputs, capacitive load, max. | 1 μF |
| with current outputs, inductive load, max. Destruction limits against externally applied voltages and currents Voltages at the outputs 30 V | | 500 Ω |
| Destruction limits against externally applied voltages and currents • Voltages at the outputs 30 V | · | 1 mH |
| Voltages at the outputs | · · · · · · · · · · · · · · · · · · · | id currents |
| | | |
| Capic ichiqui | Cable length | |
| • shielded, max. 1 000 m; 200 m for voltage output | | 1 000 m; 200 m for voltage output |
| Analog value generation for the outputs | Analog value generation for the outputs | |
| Integration and conversion time/resolution per channel | | |
| Resolution with overrange (bit including sign), | | 16 bit |
| max. | | |

| Settling time | |
|--|-------------------------|
| • for resistive load | 0.1 ms |
| • for capacitive load | 1 ms |
| • for inductive load | 0.5 ms |
| F | |
| Errors/accuracies Linearity error (relative to output range), (+/-) | 0.03 % |
| Temperature error (relative to output range), (+/-) | 0.03 % 0.005 %/K |
| Crosstalk between the outputs, min. | -50 dB |
| Repeat accuracy in steady state at 25 °C (relative to | 0.05 % |
| output range), (+/-) | 0.03 /6 |
| Operational error limit in overall temperature range | |
| Voltage, relative to output range, (+/-) | 1 % |
| • Current, relative to output range, (+/-) | 1 % |
| Basic error limit (operational limit at 25 °C) | |
| Voltage, relative to output range, (+/-) | 0.3 % |
| • Current, relative to output range, (+/-) | 0.3 % |
| 5.,(., | |
| Isochronous mode | |
| Isochronous operation (application synchronized up | No |
| to terminal) | |
| Interrupts/diagnostics/status information | |
| Diagnostics function | Yes |
| Substitute values connectable | Yes |
| Alarms | |
| Diagnostic alarm | Yes |
| Diagnostic messages | |
| Monitoring the supply voltage | Yes |
| Wire-break | Yes |
| Short-circuit | Yes |
| Group error | Yes |
| Diagnostics indication LED | |
| Monitoring of the supply voltage (PWR-LED) | Yes; Green PWR LED |
| Channel status display | Yes; Green LED |
| for channel diagnostics | No |
| • for module diagnostics | Yes; green/red DIAG LED |
| Potential separation | |
| Potential separation channels | |
| between the channels | No |
| between the channels and backplane bus | Yes |
| · | Yes |
| between the channels and the power supply of the electronics | 163 |
| and distance | |
| Permissible potential difference | |

| between different circuits | 75 V DC/60 V AC |
|--|---|
| laciation | |
| Isolation Isolation tested with | 707 V DC (type test) |
| Isolation tosted with | 107 V De (type test) |
| Ambient conditions | |
| Ambient temperature during operation | |
| horizontal installation, min. | -40 °C; = Tmin (incl. condensation/frost) |
| horizontal installation, max. | 70 °C; = Tmax; > +60 °C max. 2x ±10 V permissible |
| vertical installation, min. | -40 °C; = Tmin |
| vertical installation, max. | 50 °C; = Tmax |
| Altitude during operation relating to sea level | |
| Installation altitude above sea level, max. | 5 000 m |
| Ambient air temperature-barometric pressure- altitude | Tmin Tmax at 1 140 hPa 795 hPa (-1 000 m +2 000 m) // Tmin (Tmax - 10 K) at 795 hPa 658 hPa (+2 000 m +3 500 m) // Tmin (Tmax -20 K) at 658 hPa 540 hPa (+3 500 m +5 000 m) |
| Relative humidity | |
| With condensation, tested in accordance with IEC 60068-2-38, max. | 100 %; RH incl. condensation / frost (no commissioning in bedewed state), horizontal installation |
| Resistance | |
| Coolants and lubricants | |
| Resistant to commercially available coolants and lubricants | Yes; Incl. diesel and oil droplets in the air |
| Use in stationary industrial systems | |
| to biologically active substances according to EN 60721-3-3 | Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request |
| to chemically active substances according to EN 60721-3-3 | Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| to mechanically active substances according to EN 60721-3-3 | Yes; Class 3S4 incl. sand, dust, * |
| Use on ships/at sea | |
| to biologically active substances according to EN 60721-3-6 | Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request |
| to chemically active substances according to EN 60721-3-6 | Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); * |
| to mechanically active substances according to EN 60721-3-6 | Yes; Class 6S3 incl. sand, dust; * |
| Remark | |
| Note regarding classification of environmental conditions acc. to EN 60721 | * The supplied plug covers must remain in place over the unused interfaces during operation! |
| Conformal coating | |
| Coatings for printed circuit board assemblies acc. to EN 61086 | Yes; Class 2 for high availability |
| Protection against fouling acc. to EN 60664-3 | Yes; Type 1 protection |

 Military testing according to MIL-I-46058C, Amendment 7

 Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A Yes; Discoloration of coating possible during service life

Yes; Conformal coating, Class A

| Dimensions | | |
|-----------------|-------|--|
| Width | 15 mm | |
| Height Depth | 73 mm | |
| Depth | 58 mm | |
| Weights | | |
| Weight, approx. | 31 g | |

last modified: 06/06/2019