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## Data sheet 6ES7650-8BK60-1AA0

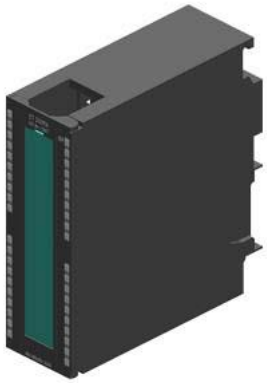


Figure similar

ET 200PA SMART, analog output isolated, 8 AQ U/I, diagnostics, resolution 11/12 bit, 40-pole, IM 650-8PH required; conformal coating ISA-S71.04 severity level G1; G2; G3

| | |
|---|---|
| **General information** | |
| Product function | |
| ● Isochronous mode | No |
| **Supply voltage** | |
| Load voltage L+ | |
| ● Rated value (DC) | 24 V |
| ● Reverse polarity protection | Yes |
| **Input current** | |
| from load voltage L+ (without load), max. | 340 mA |
| from backplane bus 5 V DC, max. | 100 mA |
| **Power loss** | |
| Power loss, typ. | 6 W |
| **Analog outputs** | |
| Number of analog outputs | 8 |
| Voltage output, short-circuit protection | Yes |
| Voltage output, short-circuit current, max. | 25 mA |
| Current output, no-load voltage, max. | 18 V |
| Output ranges, voltage | |
| ● 0 to 10 V | Yes |
| ● 1 V to 5 V | Yes |
| ● -10 V to +10 V | Yes |
| Output ranges, current | |
| ● 0 to 20 mA | Yes |
| ● -20 mA to +20 mA | Yes |
| ● 4 mA to 20 mA | Yes |
| Connection of actuators | |
| ● 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. | 1 kΩ |
| ● with voltage outputs, capacitive load, max. | 1 µF |
| ● with current outputs, max. | 500 Ω |
| ● with current outputs, inductive load, max. | 10 mH |
| Destruction limits against externally applied voltages and currents | |
| ● Voltages at the outputs towards MANA | 18 V; continuous; 75 V for max. 1 s (mark to space ratio 1:20) |
| ● Current, max. | 50 mA; DC |
| Cable length | |
| ● shielded, max. | 200 m |


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| | |
|---|---|
| **Analog value generation for the outputs** | |
| Integration and conversion time/resolution per channel | |
| ● Resolution with overrange (bit including sign), max. | 12 bit; ±10 V, ±20 mA, 4 mA to 20 mA, 1 V to 5 V: 11 bit + sign; 0 V to 10 V, 0 mA to 20 mA: 12 bit |
| ● Conversion time (per channel) | 0.8 ms |
| Settling time | |
| ● for resistive load | 0.2 ms |
| ● for capacitive load | 3.3 ms |
| ● for inductive load | 0.5 ms |
| **Errors/accuracies** | |
| Output ripple (relative to output range, bandwidth 0 to 50 kHz), (+/-) | 0.05 % |
| Linearity error (relative to output range), (+/-) | 0.05 % |
| Temperature error (relative to output range), (+/-) | 0.002 %/K |
| Crosstalk between the outputs, min. | 40 dB |
| Repeat accuracy in steady state at 25 °C (relative to output range), (+/-) | 0.05 % |
| Operational error limit in overall temperature range | |
| ● Voltage, relative to output range, (+/-) | 0.5 % |
| ● Current, relative to output range, (+/-) | 0.6 % |
| Basic error limit (operational limit at 25 °C) | |
| ● Voltage, relative to output range, (+/-) | 0.4 % |
| ● Current, relative to output range, (+/-) | 0.5 % |
| **Interrupts/diagnostics/status information** | |
| Diagnostics function | Yes; Parameterizable |
| Substitute values connectable | Yes; channel by channel, parameterizable |
| Alarms | |
| ● Diagnostic alarm | Yes; Parameterizable |
| Diagnoses | |
| ● Diagnostic information readable | Yes; possible |
| Diagnostics indication LED | |
| ● Group error SF (red) | Yes |
| **Potential separation** | |
| Potential separation analog outputs | |
| ● between the channels | No |
| ● between the channels and backplane bus | Yes |
| ● Between the channels and load voltage L+ | Yes |
| ● between the channels and the power supply of the electronics | Yes |
| **Permissible potential difference** | |
| between MANA and M internally (UISO) | 75 V DC/60 V AC |
| between S- and MANA (UCM) | 3 V DC |
| **Isolation** | |
| Isolation tested with | 500 V DC |
| **Connection method** | |
| required front connector | 40-pin |
| **Dimensions** | |
| Width | 40 mm |
| Height | 125 mm |
| Depth | 120 mm |
| **Weights** | |
| Weight, approx. | 272 g |
| **Classifications** | |

| | Version | Classification |
|---|---|---|
| eClass | 16 | 27-24-26-01 |
| eClass | 14 | 27-24-26-01 |
| eClass | 12 | 27-24-26-01 |
| eClass | 9.1 | 27-24-26-01 |


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| | | |
|---|---|---|
| eClass | 9 | 27-24-26-01 |
| eClass | 8 | 27-24-26-01 |
| eClass | 7.1 | 27-24-26-01 |
| eClass | 6 | 27-24-26-01 |
| ETIM | 10 | EC001596 |
| ETIM | 9 | EC001596 |
| ETIM | 8 | EC001596 |
| ETIM | 7 | EC001596 |
| IDEA | 4 | 3562 |
| UNSPSC | 15 | 32-15-17-05 |

## Approvals / Certificates

| General Product Approval | | | For use in hazardous locations | | |
|---|---|---|---|---|---|
| EG-Konf. | China RoHS | Manufacturer Declaration | ATEX | IECEx | CCC |

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