

## Data sheet

## 6ES7650-8AT60-0AA0

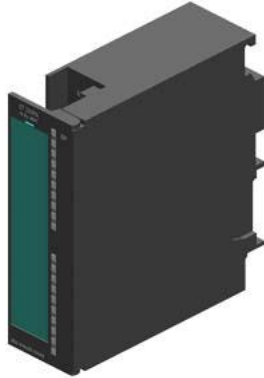


Figure similar

ET 200PA SMART HART analog input 8 AI, 0/4 - 20 mA HART 1 x 20-pole HART auxiliary variables, redundancy IM 650-8PH required

| General information   |  |
|---|--|
| Product function  |  |
| • Isochronous mode  | No                                       |
| Supply voltage  |  |
| Rated value (DC)  | 24 V                                     |
| Load voltage L+   |  |
| • Rated value (DC)  | 24 V                                     |
| • Reverse polarity protection   | Yes                                      |
| Input current   |  |
| from load voltage L+ (without load), max.                             | 20 mA                                    |
| from backplane bus 5 V DC, max.                                       | 120 mA                                   |
| Output voltage  |  |
| Power supply to the transmitters                                      |  |
| • present   | Yes                                      |
| • Rated value (DC)  | 24 V                                     |
| • short-circuit proof   | Yes                                      |
| • Supply current, max.  | 60 mA; per channel                       |
| Power loss  |  |
| Power loss, typ.  | 1.5 W                                    |
| Analog inputs   |  |
| Number of analog inputs   | 8  |
| permissible input voltage for voltage input (destruction limit), max. | 30 V; 12 V continuous, 30 V for max. 1 s |
| permissible input current for current input (destruction limit), max. | 40 mA                                    |
| Input ranges (rated values), currents                                 |  |
| • 0 to 20 mA  | Yes                                      |
| — Input resistance (0 to 20 mA)                                       | 140 Ω                                    |
| • -20 mA to +20 mA  | Yes                                      |
| — Input resistance (-20 mA to +20 mA)                                 | 140 Ω                                    |
| • 4 mA to 20 mA   | Yes                                      |
| — Input resistance (4 mA to 20 mA)                                    | 140 Ω                                    |
| Cable length  |  |
| • shielded, max.  | 800 m                                    |
| Analog value generation for the inputs                                |  |
| Measurement principle   | Sigma Delta                              |
| Integration and conversion time/resolution per channel                |  |
| • Resolution with overrange (bit including sign), max.                | 16 bit                                   |

|   |  |                |                       |
|---|--|----------------|-----------------------|
| <ul style="list-style-type: none"> <li>Integration time, parameterizable</li> </ul>   | Yes  |                |                       |
| <ul style="list-style-type: none"> <li>Integration time (ms)</li> </ul>   | 20 ms at 50 Hz; 16.6 ms at 60 Hz; 100 ms at 100 Hz |                |                       |
| <ul style="list-style-type: none"> <li>Basic conversion time, including integration time (ms)</li> </ul>                                      | 55 ms @ 60 Hz, 65 ms @ 50 Hz, 305 ms @ 100 Hz      |                |                       |
| <ul style="list-style-type: none"> <li>Interference voltage suppression for interference frequency <math>f_1</math> in Hz</li> </ul>          | 10 / 50 / 60 Hz                                    |                |                       |
| <b>Smoothing of measured values</b>   |  |                |                       |
| <ul style="list-style-type: none"> <li>parameterizable</li> </ul>   | Yes  |                |                       |
| <ul style="list-style-type: none"> <li>Step: None</li> </ul>  | Yes  |                |                       |
| <ul style="list-style-type: none"> <li>Step: low</li> </ul>   | Yes  |                |                       |
| <ul style="list-style-type: none"> <li>Step: Medium</li> </ul>  | Yes  |                |                       |
| <ul style="list-style-type: none"> <li>Step: High</li> </ul>  | Yes  |                |                       |
| <b>Encoder</b>  |  |                |                       |
| <b>Connection of signal encoders</b>  |  |                |                       |
| <ul style="list-style-type: none"> <li>for current measurement as 2-wire transducer</li> </ul>  | Yes  |                |                       |
| <ul style="list-style-type: none"> <li>for current measurement as 4-wire transducer</li> </ul>  | Yes  |                |                       |
| <b>Errors/accuracies</b>  |  |                |                       |
| Linearity error (relative to input range), (+/-)  | 0.01 %   |                |                       |
| Temperature error (relative to input range), (+/-)  | 0.001 %/K  |                |                       |
| Crosstalk between the inputs, min.  | 70 dB  |                |                       |
| Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)   | 0.1 %  |                |                       |
| <b>Operational error limit in overall temperature range</b>   |  |                |                       |
| <ul style="list-style-type: none"> <li>Current, relative to input range, (+/-)</li> </ul>   | 0.15 %   |                |                       |
| <b>Basic error limit (operational limit at 25 °C)</b>   |  |                |                       |
| <ul style="list-style-type: none"> <li>Current, relative to input range, (+/-)</li> </ul>   | 0.1 %  |                |                       |
| <b>Interference voltage suppression for <math>f = n \times (f_1 \pm 1 \%)</math>, <math>f_1 =</math> interference frequency</b>               |  |                |                       |
| <ul style="list-style-type: none"> <li>Series mode interference (peak value of interference &lt; rated value of input range), min.</li> </ul> | 40 dB  |                |                       |
| <ul style="list-style-type: none"> <li>Common mode interference, min.</li> </ul>  | 100 dB   |                |                       |
| <b>Interrupts/diagnostics/status information</b>  |  |                |                       |
| Diagnostics function  | Yes  |                |                       |
| <b>Alarms</b>   |  |                |                       |
| <ul style="list-style-type: none"> <li>Diagnostic alarm</li> </ul>  | Yes  |                |                       |
| <ul style="list-style-type: none"> <li>Hardware interrupt</li> </ul>  | No   |                |                       |
| <b>Diagnoses</b>  |  |                |                       |
| <ul style="list-style-type: none"> <li>Diagnostic information readable</li> </ul>   | Yes  |                |                       |
| <ul style="list-style-type: none"> <li>Overrange</li> </ul>   | Yes  |                |                       |
| <ul style="list-style-type: none"> <li>Wire-break in signal transmitter cable</li> </ul>  | Yes  |                |                       |
| <ul style="list-style-type: none"> <li>Group error</li> </ul>   | Yes  |                |                       |
| <b>Diagnostics indication LED</b>   |  |                |                       |
| <ul style="list-style-type: none"> <li>Group error SF (red)</li> </ul>  | Yes  |                |                       |
| <ul style="list-style-type: none"> <li>Channel fault indicator F (red)</li> </ul>   | No   |                |                       |
| <b>Potential separation</b>   |  |                |                       |
| <b>Potential separation analog inputs</b>   |  |                |                       |
| <ul style="list-style-type: none"> <li>between the channels</li> </ul>  | No   |                |                       |
| <ul style="list-style-type: none"> <li>between the channels and backplane bus</li> </ul>  | Yes  |                |                       |
| <b>Isolation</b>  |  |                |                       |
| Isolation tested with   | 500 V DC   |                |                       |
| <b>Connection method</b>  |  |                |                       |
| required front connector  | 20-pin   |                |                       |
| <b>Dimensions</b>   |  |                |                       |
| Width   | 40 mm  |                |                       |
| Height  | 125 mm   |                |                       |
| Depth   | 117 mm   |                |                       |
| <b>Weights</b>  |  |                |                       |
| Weight, approx.   | 220 g  |                |                       |
| <b>Classifications</b>  |  |                |                       |
|   |  | <b>Version</b> | <b>Classification</b> |
|   | eClass   | 14             | 27-24-26-01           |

|        |     |             |
|--------|-----|-------------|
| eClass | 12  | 27-24-26-01 |
| eClass | 9.1 | 27-24-26-01 |
| 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 |
|--------------------------|--------------------------------|



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