



Figure similar

SIMATIC S7-300, Analog input SM 331, isolated, 8 AI; +/-5/10V, 1-5 V, +/-20 mA, 0/4 to 20 mA, 16 bit (55ms), Single rooting (50 V COM.), 1x 40-pole

| Input current                                                         |                 |
|-----------------------------------------------------------------------|-----------------|
| from backplane bus 5 V DC, max.                                       | 130 mA          |
| Power loss                                                            |                 |
| Power loss, typ.                                                      | 0.6 W           |
| Analog inputs                                                         |                 |
| Number of analog inputs                                               | 8               |
| permissible input voltage for voltage input (destruction limit), max. | 50 V; Permanent |
| permissible input current for current input (destruction limit), max. | 32 mA           |
| Input ranges                                                          |                 |
| • Voltage                                                             | Yes             |
| • Current                                                             | Yes             |
| • Thermocouple                                                        | No              |
| • Resistance thermometer                                              | No              |
| • Resistance                                                          | No              |
| Input ranges (rated values), voltages                                 |                 |
| • 0 to +10 V                                                          | No              |
| • 1 V to 5 V                                                          | Yes             |
| — Input resistance (1 V to 5 V)                                       | 2 MΩ            |
| • 1 V to 10 V                                                         | No              |
| • -1 V to +1 V                                                        | No              |
| • -10 V to +10 V                                                      | Yes             |
| — Input resistance (-10 V to +10 V)                                   | 2 MΩ            |
| • -2.5 V to +2.5 V                                                    | No              |
| • -250 mV to +250 mV                                                  | No              |
| • -5 V to +5 V                                                        | Yes             |
| — Input resistance (-5 V to +5 V)                                     | 2 MΩ            |
| • -50 mV to +50 mV                                                    | No              |
| • -500 mV to +500 mV                                                  | No              |
| • -80 mV to +80 mV                                                    | No              |
| Input ranges (rated values), currents                                 |                 |
| • 0 to 20 mA                                                          | Yes             |
| — Input resistance (0 to 20 mA)                                       | 250 Ω           |
| • -10 mA to +10 mA                                                    | No              |
| • -20 mA to +20 mA                                                    | Yes             |
| — Input resistance (-20 mA to +20 mA)                                 | 250 Ω           |
| • -3.2 mA to +3.2 mA                                                  | No              |
| • 4 mA to 20 mA                                                       | Yes             |
| — Input resistance (4 mA to 20 mA)                                    | 250 Ω           |

|                                                                        |                                                                                                     |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Input ranges (rated values), thermocouples                             |                                                                                                     |
| • Type B                                                               | No                                                                                                  |
| • Type C                                                               | No                                                                                                  |
| • Type E                                                               | No                                                                                                  |
| • Type J                                                               | No                                                                                                  |
| • Type K                                                               | No                                                                                                  |
| • Type L                                                               | No                                                                                                  |
| • Type N                                                               | No                                                                                                  |
| • Type R                                                               | No                                                                                                  |
| • Type S                                                               | No                                                                                                  |
| • Type T                                                               | No                                                                                                  |
| • Type U                                                               | No                                                                                                  |
| • Type TXK/TXK(L) to GOST                                              | No                                                                                                  |
| Input ranges (rated values), resistance thermometer                    |                                                                                                     |
| • Cu 10                                                                | No                                                                                                  |
| • Ni 100                                                               | No                                                                                                  |
| • Ni 1000                                                              | No                                                                                                  |
| • LG-Ni 1000                                                           | No                                                                                                  |
| • Ni 120                                                               | No                                                                                                  |
| • Ni 200                                                               | No                                                                                                  |
| • Ni 500                                                               | No                                                                                                  |
| • Pt 100                                                               | No                                                                                                  |
| • Pt 1000                                                              | No                                                                                                  |
| • Pt 200                                                               | No                                                                                                  |
| • Pt 500                                                               | No                                                                                                  |
| Input ranges (rated values), resistors                                 |                                                                                                     |
| • 0 to 150 ohms                                                        | No                                                                                                  |
| • 0 to 300 ohms                                                        | No                                                                                                  |
| • 0 to 600 ohms                                                        | No                                                                                                  |
| • 0 to 6000 ohms                                                       | No                                                                                                  |
| Cable length                                                           |                                                                                                     |
| • shielded, max.                                                       | 200 m                                                                                               |
| Analog value generation for the inputs                                 |                                                                                                     |
| Integration and conversion time/resolution per channel                 |                                                                                                     |
| • Resolution with overrange (bit including sign), max.                 | 16 bit; Unipolar: 15/15/15/15 bit; bipolar: 15 bit + sign/15 bit + sign/15 bit + sign/15 bit + sign |
| • Integration time, parameterizable                                    | Yes; 10/ 16.67/ 20/ 100 ms                                                                          |
| • Interference voltage suppression for interference frequency f1 in Hz | 400 / 60 / 50 / 10 Hz                                                                               |
| Encoder                                                                |                                                                                                     |
| Connection of signal encoders                                          |                                                                                                     |
| • for voltage measurement                                              | Yes                                                                                                 |
| • for current measurement as 2-wire transducer                         | Yes; with external transmitter; possible with separate supply for transmitter                       |
| • for current measurement as 4-wire transducer                         | Yes                                                                                                 |
| Errors/accuracies                                                      |                                                                                                     |
| Operational error limit in overall temperature range                   |                                                                                                     |
| • Voltage, relative to input range, (+/-)                              | 0.1 %; At Ucm = 0 V or $\pm 0.7$ % at Ucm = 50 V                                                    |
| • Current, relative to input range, (+/-)                              | 0.3 %; At Ucm = 0 V or $\pm 0.9$ % at Ucm = 50 V                                                    |
| Basic error limit (operational limit at 25 °C)                         |                                                                                                     |
| • Voltage, relative to input range, (+/-)                              | 0.05 %                                                                                              |
| • Current, relative to input range, (+/-)                              | 0.05 %                                                                                              |
| Interrupts/diagnostics/status information                              |                                                                                                     |
| Diagnostics function                                                   | Yes; Parameterizable                                                                                |
| Alarms                                                                 |                                                                                                     |
| • Diagnostic alarm                                                     | Yes; Parameterizable                                                                                |
| • Limit value alarm                                                    | Yes; Parameterizable, channels 0 and 2                                                              |
| Diagnoses                                                              |                                                                                                     |
| • Diagnostic information readable                                      | Yes                                                                                                 |
| Diagnostics indication LED                                             |                                                                                                     |
| • Group error SF (red)                                                 | Yes                                                                                                 |
| Potential separation                                                   |                                                                                                     |

|                                          |                                                                                             |
|------------------------------------------|---------------------------------------------------------------------------------------------|
| Potential separation analog inputs       |                                                                                             |
| • between the channels                   | No                                                                                          |
| • between the channels, in groups of     | 2                                                                                           |
| • between the channels and backplane bus | Yes                                                                                         |
| Isolation                                |                                                                                             |
| Isolation tested with                    | 500 V DC                                                                                    |
| connection method                        |                                                                                             |
| required front connector                 | 40-pin                                                                                      |
| Dimensions                               |                                                                                             |
| Width                                    | 40 mm                                                                                       |
| Height                                   | 125 mm                                                                                      |
| Depth                                    | 117 mm                                                                                      |
| Weights                                  |                                                                                             |
| Weight, approx.                          | 272 g                                                                                       |
| last modified:                           | 3/12/2024  |