



Figure similar

SIMATIC S7-400, control module FM 455 C, 16 channels, continuous, 8/16 AI + 16 DI+ 16 AO

| Supply voltage                                                        |                                                                                 |
|-----------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Load voltage L+                                                       |                                                                                 |
| • Rated value (DC)                                                    | 24 V                                                                            |
| • permissible range, lower limit (DC)                                 | 20.4 V                                                                          |
| • permissible range, upper limit (DC)                                 | 28.8 V                                                                          |
| Input current                                                         |                                                                                 |
| from load voltage L+ (without load), max.                             | 440 mA; typ. 370 mA                                                             |
| Power loss                                                            |                                                                                 |
| Power loss, typ.                                                      | 12 W                                                                            |
| Power loss, max.                                                      | 17.3 W                                                                          |
| Digital inputs                                                        |                                                                                 |
| Number of digital inputs                                              | 16                                                                              |
| Input characteristic curve in accordance with IEC 61131, type 2       | Yes                                                                             |
| Input voltage                                                         |                                                                                 |
| • Rated value (DC)                                                    | 24 V                                                                            |
| • for signal "0"                                                      | -3 to +5V                                                                       |
| • for signal "1"                                                      | 13 to 30V                                                                       |
| Input current                                                         |                                                                                 |
| • for signal "1", typ.                                                | 7 mA                                                                            |
| Cable length                                                          |                                                                                 |
| • shielded, max.                                                      | 1 000 m                                                                         |
| • unshielded, max.                                                    | 600 m                                                                           |
| Analog inputs                                                         |                                                                                 |
| Number of analog inputs                                               | 16; With thermocouples or 2-wire connection; 8 with Pt 100 or 4-wire connection |
| permissible input voltage for voltage input (destruction limit), max. | 20 V                                                                            |
| permissible input current for current input (destruction limit), max. | 40 mA                                                                           |
| Input ranges                                                          |                                                                                 |
| • Voltage                                                             | Yes                                                                             |
| • Current                                                             | Yes                                                                             |
| • Thermocouple                                                        | Yes                                                                             |
| • Resistance thermometer                                              | Yes                                                                             |
| Input ranges (rated values), voltages                                 |                                                                                 |
| • 0 to +10 V                                                          | Yes                                                                             |
| — Input resistance (0 to 10 V)                                        | 100 kΩ                                                                          |
| • -1.75 V to +11.75 V                                                 | Yes                                                                             |
| — Input resistance (-1.75 V to +11.75 V)                              | 100 kΩ                                                                          |
| • -80 mV to +80 mV                                                    | Yes                                                                             |

|                                                               |                                           |
|---------------------------------------------------------------|-------------------------------------------|
| — Input resistance (-80 mV to +80 mV)                         | 10 MΩ                                     |
| <b>Input ranges (rated values), currents</b>                  |                                           |
| • 0 to 20 mA                                                  | Yes                                       |
| — Input resistance (0 to 20 mA)                               | 50 Ω                                      |
| • 0 to 23.5 mA                                                | Yes                                       |
| — Input resistance (0 to 23.5 mA)                             | 50 Ω                                      |
| • -3.5 mA to +23.5 mA                                         | Yes                                       |
| — Input resistance (-3.5 mA to +23.5 mA)                      | 50 Ω                                      |
| • 4 mA to 20 mA                                               | Yes                                       |
| — Input resistance (4 mA to 20 mA)                            | 50 Ω                                      |
| <b>Input ranges (rated values), thermocouples</b>             |                                           |
| • Type B                                                      | Yes                                       |
| — Input resistance (Type B)                                   | 10 MΩ                                     |
| • Type J                                                      | Yes                                       |
| — Input resistance (type J)                                   | 10 MΩ                                     |
| • Type K                                                      | Yes                                       |
| — Input resistance (Type K)                                   | 10 MΩ                                     |
| • Type R                                                      | Yes                                       |
| — Input resistance (Type R)                                   | 10 MΩ                                     |
| • Type S                                                      | Yes                                       |
| — Input resistance (Type S)                                   | 10 MΩ                                     |
| <b>Input ranges (rated values), resistance thermometer</b>    |                                           |
| • Pt 100                                                      | Yes                                       |
| — Input resistance (Pt 100)                                   | 10 MΩ                                     |
| <b>Thermocouple (TC)</b>                                      |                                           |
| <b>Temperature compensation</b>                               |                                           |
| — internal temperature compensation                           | Yes; Parameterizable                      |
| — external temperature compensation with Pt100                | Yes; Parameterizable                      |
| <b>Characteristic linearization</b>                           |                                           |
| • parameterizable                                             | Yes                                       |
| — for thermocouples                                           | Type B, J, K, R, S                        |
| — for resistance thermometer                                  | Pt100 (standard)                          |
| <b>Cable length</b>                                           |                                           |
| • shielded, max.                                              | 200 m; 50 m at 80 mV and thermocouples    |
| <b>Analog outputs</b>                                         |                                           |
| Number of analog outputs                                      | 16                                        |
| Voltage output, short-circuit protection                      | Yes                                       |
| Voltage output, short-circuit current, max.                   | 25 mA                                     |
| Current output, no-load voltage, max.                         | 18 V                                      |
| <b>Output ranges, voltage</b>                                 |                                           |
| • 0 to 10 V                                                   | Yes                                       |
| • -10 V to +10 V                                              | Yes                                       |
| <b>Output ranges, current</b>                                 |                                           |
| • 0 to 20 mA                                                  | Yes                                       |
| • -20 mA to +20 mA                                            | Yes                                       |
| • 4 mA to 20 mA                                               | Yes                                       |
| <b>Connection of actuators</b>                                |                                           |
| • for voltage output two-wire connection                      | Yes                                       |
| • for current output two-wire connection                      | Yes                                       |
| <b>Load impedance (in rated range of output)</b>              |                                           |
| • 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.                  | 1 mH                                      |
| <b>Cable length</b>                                           |                                           |
| • shielded, max.                                              | 200 m; 50 m at 80 mV and thermocouples    |
| <b>Analog value generation for the inputs</b>                 |                                           |
| <b>Integration and conversion time/resolution per channel</b> |                                           |
| • Resolution with overrange (bit including sign), max.        | 14 bit; 12 bit or 14 bit, parameterizable |
| <b>Analog value generation for the outputs</b>                |                                           |

|                                                             |                                                                                 |
|-------------------------------------------------------------|---------------------------------------------------------------------------------|
| <b>Settling time</b>                                        |                                                                                 |
| • for resistive load                                        | 0.1 ms                                                                          |
| • for capacitive load                                       | 3.3 ms                                                                          |
| • for inductive load                                        | 0.5 ms                                                                          |
| <b>Encoder</b>                                              |                                                                                 |
| <b>Connection of signal encoders</b>                        |                                                                                 |
| • for voltage measurement                                   | Yes                                                                             |
| • for current measurement as 4-wire transducer              | Yes                                                                             |
| <b>Connectable encoders</b>                                 |                                                                                 |
| • 2-wire sensor                                             | Yes                                                                             |
| — permissible quiescent current (2-wire sensor), max.       | 1.5 mA                                                                          |
| <b>Errors/accuracies</b>                                    |                                                                                 |
| <b>Operational error limit in overall temperature range</b> |                                                                                 |
| • Voltage, relative to input range, (+/-)                   | ±0.6 to ±1%                                                                     |
| • Current, relative to input range, (+/-)                   | ±0.6 to ±1%                                                                     |
| • Resistance thermometer, relative to input range, (+/-)    | ±0.6 to ±1%                                                                     |
| • Voltage, relative to output range, (+/-)                  | 0.5 %                                                                           |
| • Current, relative to output range, (+/-)                  | 0.6 %                                                                           |
| <b>Basic error limit (operational limit at 25 °C)</b>       |                                                                                 |
| • Voltage, relative to input range, (+/-)                   | ±0.4 to ±0.6 %                                                                  |
| • Current, relative to input range, (+/-)                   | ±0.4 to ±0.6 %                                                                  |
| • Resistance thermometer, relative to input range, (+/-)    | ±0.4 to ±0.6 %                                                                  |
| • Voltage, relative to output range, (+/-)                  | 0.4 %                                                                           |
| • Current, relative to output range, (+/-)                  | 0.5 %                                                                           |
| <b>Interrupts/diagnostics/status information</b>            |                                                                                 |
| Substitute values connectable                               | Yes; Parameterizable                                                            |
| <b>Integrated Functions</b>                                 |                                                                                 |
| <b>Control technology</b>                                   |                                                                                 |
| • Number of closed-loop controllers                         | 16; With thermocouples or 2-wire connection; 8 with Pt 100 or 4-wire connection |
| <b>Potential separation</b>                                 |                                                                                 |
| <b>Potential separation controller</b>                      |                                                                                 |
| • between the channels                                      | No                                                                              |
| • between the channels and backplane bus                    | Yes; Optocoupler                                                                |
| <b>Isolation</b>                                            |                                                                                 |
| Isolation tested with                                       | 500 V DC                                                                        |
| <b>connection method</b>                                    |                                                                                 |
| required front connector                                    | 2x 48-pin                                                                       |
| <b>Dimensions</b>                                           |                                                                                 |
| Width                                                       | 50 mm                                                                           |
| Height                                                      | 290 mm                                                                          |
| Depth                                                       | 210 mm                                                                          |
| <b>Weights</b>                                              |                                                                                 |
| Weight, approx.                                             | 1 400 g                                                                         |
| <b>Classifications</b>                                      |                                                                                 |

|        | Version | Classification |
|--------|---------|----------------|
| eClass | 14      | 27-24-22-05    |
| eClass | 12      | 27-24-22-05    |
| eClass | 9.1     | 27-24-22-05    |
| eClass | 9       | 27-24-22-05    |
| eClass | 8       | 27-24-22-05    |
| eClass | 7.1     | 27-24-22-05    |
| eClass | 6       | 27-24-22-05    |
| ETIM   | 9       | EC001422       |
| ETIM   | 8       | EC001422       |
| ETIM   | 7       | EC001422       |
| IDEA   | 4       | 3567           |
| UNSPSC | 15      | 32-15-17-05    |

Approvals / Certificates

General Product Approval



[Miscellaneous](#)



[Metrological Approval](#)

[KC](#)

|                          |     |                                |
|--------------------------|-----|--------------------------------|
| General Product Approval | EMV | For use in hazardous locations |
|--------------------------|-----|--------------------------------|



[FM](#)

|                                |                   |
|--------------------------------|-------------------|
| For use in hazardous locations | Marine / Shipping |
|--------------------------------|-------------------|



[Type Examination Certificate](#)



Marine / Shipping



[NK / Nippon Kaiji Kyokai](#)



Marine / Shipping

[CCS \(China Classification Society\)](#)

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