




SIMATIC S7-400, analog input SM 431, non-isolated 16 AI, resolution 13 bit, +/-10 V, +/-20 mA, 4 - 20 mA 20 ms conversion time

Figure similar

| Supply voltage | |
|---|--|
| Load voltage L+ | |
| <ul style="list-style-type: none"> Rated value (DC) Reverse polarity protection | 24 V; Only required for supplying 2-wire transmitters Yes |
| Input current | |
| from load voltage L+ (without load), max. | 400 mA; for 16 connected, fully controlled 2-wire transmitters |
| from backplane bus 5 V DC, max. | 100 mA |
| Power loss | |
| Power loss, typ. | 2 W |
| Analog inputs | |
| Number of analog inputs | 16 |
| <ul style="list-style-type: none"> For voltage/current measurement | 16 |
| permissible input voltage for voltage input (destruction limit), max. | 20 V; 20 V DC permanent, 75 V DC for max. 1 s (duty factor 1:20) |
| permissible input current for current input (destruction limit), max. | 40 mA |
| Constant measurement current for resistance-type transmitter, typ. | 1.67 mA |
| Input ranges | |
| <ul style="list-style-type: none"> Voltage Current Thermocouple Resistance thermometer Resistance | Yes Yes No No No |
| Input ranges (rated values), voltages | |
| <ul style="list-style-type: none"> 1 V to 5 V <ul style="list-style-type: none"> Input resistance (1 V to 5 V) -1 V to +1 V <ul style="list-style-type: none"> Input resistance (-1 V to +1 V) -10 V to +10 V <ul style="list-style-type: none"> Input resistance (-10 V to +10 V) | Yes 100 kΩ Yes 10 MΩ Yes 100 kΩ |
| Input ranges (rated values), currents | |
| <ul style="list-style-type: none"> -20 mA to +20 mA <ul style="list-style-type: none"> Input resistance (-20 mA to +20 mA) 4 mA to 20 mA <ul style="list-style-type: none"> Input resistance (4 mA to 20 mA) | Yes 50 Ω Yes 50 Ω |
| Cable length | |
| <ul style="list-style-type: none"> shielded, max. | 200 m |
| Analog value generation for the inputs | |

| Integration and conversion time/resolution per channel | |
|--|---|
| • Resolution with overrange (bit including sign), max. | 13 bit |
| • Integration time, parameterizable | Yes |
| • Basic conversion time (ms) | 55 / 65 ms |
| • Integration time (ms) | 50 / 60 ms |
| • Interference voltage suppression for interference frequency f1 in Hz | 50 / 60 Hz |
| Encoder | |
| Connection of signal encoders | |
| • for voltage measurement | Yes; possible |
| • for current measurement as 4-wire transducer | Yes |
| Errors/accuracies | |
| Operational error limit in overall temperature range | |
| • Voltage, relative to input range, (+/-) | 0.65 %; 1.0 % at 1 to 5 V; 0.65 % at ±1 V, ±10 V |
| • Current, relative to input range, (+/-) | 0.65 % |
| Basic error limit (operational limit at 25 °C) | |
| • Voltage, relative to input range, (+/-) | 0.25 %; 0.5% at 1 to 5 V; 0.25% at ±1 V, ±10 V |
| • Current, relative to input range, (+/-) | 0.25 %; at ±20 mA, 4 to 20 mA |
| Interrupts/diagnostics/status information | |
| Diagnostics function | No |
| Potential separation | |
| Potential separation analog inputs | |
| • Potential separation analog inputs | No |
| • between the channels | No |
| • between the channels and backplane bus | No |
| • Between the channels and load voltage L+ | No |
| Isolation | |
| Isolation tested with | 500 V AC/707 V DC, type test |
| Dimensions | |
| Width | 25 mm |
| Height | 290 mm |
| Depth | 210 mm |
| Weights | |
| Weight, approx. | 500 g |
| last modified: | 1/16/2021  |