

# SIEMENS

## Product data sheet

**6ES7431-7KF10-0AB0**


SIMATIC S7-400, ANALOG INPUT SM 431,  
8AI;  
16 BIT RESOLUTION,  
RESIST./PT100/Ni100 OPTIC. ISOLATED,  
DIAGNOSTIC, ALARM, 20 MS MODULE UPDATE

| Input current                                                         |                                                                      |
|-----------------------------------------------------------------------|----------------------------------------------------------------------|
| from load voltage L+ (without load), max.                             | 400 mA                                                               |
| from backplane bus 5 V DC, max.                                       | 650 mA                                                               |
| Power losses                                                          |                                                                      |
| Power loss, typ.                                                      | 3.3 W                                                                |
| Analog inputs                                                         |                                                                      |
| Number of analog inputs                                               | 8                                                                    |
| Number of analog inputs for resistance measurement                    | 8                                                                    |
| permissible input voltage for voltage input (destruction limit), max. | 35 V ; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20) |
| Input ranges                                                          |                                                                      |
| Resistance thermometer                                                | Yes                                                                  |
| Resistance                                                            | Yes                                                                  |
| Input ranges (rated values), resistance thermometers                  |                                                                      |
| Ni 100                                                                | Yes                                                                  |

|                                                                                 |                                                                                                |
|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| Input resistance (Ni 100)                                                       | > 10,000 ohms                                                                                  |
| Ni 1000                                                                         | Yes ; Different characteristics selectable: Europe/U.S.                                        |
| Input resistance (Ni 1000)                                                      | > 10,000 ohms                                                                                  |
| Pt 100                                                                          | Yes                                                                                            |
| Input resistance (Pt 100)                                                       | > 10,000 ohms                                                                                  |
| Pt 1000                                                                         | Yes                                                                                            |
| Input resistance (Pt 1000)                                                      | > 10,000 ohms                                                                                  |
| Pt 200                                                                          | Yes                                                                                            |
| Input resistance (Pt 200)                                                       | > 10,000 ohms                                                                                  |
| Pt 500                                                                          | Yes                                                                                            |
| Input resistance (Pt 500)                                                       | > 10,000 ohms                                                                                  |
| Resistance thermometer (RTD)                                                    |                                                                                                |
| Characteristic linearization                                                    |                                                                                                |
| for resistance thermometer                                                      | Pt100, Pt200, Pt500, Pt1000, Ni100, Ni1000; different characteristics selectable (Europe/U.S.) |
| Characteristic linearization                                                    |                                                                                                |
| Parameterizable                                                                 | Yes                                                                                            |
| Cable length                                                                    |                                                                                                |
| Cable length, shielded, max.                                                    | 200 m ; 50 m with thermocouples and input ranges +/- 80 mV                                     |
| Analog value creation                                                           |                                                                                                |
| Integrations and conversion time/ resolution per channel                        |                                                                                                |
| Resolution with overrange (bit including sign), max.                            | 16 bit                                                                                         |
| Integration time, parameterizable                                               | Yes                                                                                            |
| Basic conversion time, ms                                                       | 8 / 23 / 25 ms                                                                                 |
| Integration time, ms                                                            | 20 ms at 50 Hz (entire module incl. wire break)                                                |
| Basic conversion time, including integration time, ms                           |                                                                                                |
| additional conversion time for wire break monitoring                            | 110 ms / 4 ms                                                                                  |
| additional conversion time for wire break monitoring and resistance measurement | none                                                                                           |
| Interference voltage suppression for interference frequency f1 in Hz            | none/ 60 / 50 Hz                                                                               |

|                                                        |                         |
|--------------------------------------------------------|-------------------------|
| Encoder                                                |                         |
| Connection of signal encoders                          |                         |
| for resistance measurement with 3-conductor connection | Yes                     |
| for resistance measurement with 4-conductor connection | Yes                     |
| Errors/accuracies                                      |                         |
| Operational limit in overall temperature range         |                         |
| Resistance-type thermometer, relative to input area    | +/-1 °C                 |
| Basic error limit (operational limit at 25 °C)         |                         |
| Resistance-type thermometer, relative to input area    | +/-0.2 °C               |
| Interrupts/diagnostics/status information              |                         |
| Alarms                                                 |                         |
| Diagnostic alarm                                       | Yes ; Parameterizable   |
| Limit value alarm                                      | Yes                     |
| Diagnostic messages                                    |                         |
| Diagnostics                                            | Yes                     |
| Galvanic isolation                                     |                         |
| Galvanic isolation analog inputs                       |                         |
| Galvanic isolation analog inputs                       | Yes ; internal/external |
| between the channels                                   | No                      |
| Permissible potential difference                       |                         |
| between the inputs (UCM)                               | none                    |
| Isolation                                              |                         |
| Isolation checked with                                 | 1500 V DC               |
| Dimensions                                             |                         |
| Width                                                  | 25 mm                   |
| Height                                                 | 290 mm                  |
| Depth                                                  | 210 mm                  |
| Required slots                                         | 1                       |
| Weight                                                 |                         |
| Weight, approx.                                        | 650 g                   |

Status

Jul 17, 2012