# S-DIAS Analog Mixed Module
# AM 441

with 4 analog outputs
4 analog inputs or potentiometer inputs
1 reference output

The S-DIAS AM 441 analog mixed module has four ±10 V analog outputs with a resolution of 12 bits and four ±10 V analog inputs or 0-100 % potentiometer inputs with a 16-bit resolution. For the potentiometer inputs a 10 V reference is provided that can be loaded with a maximum of 16.7 mA.

## Analog Input Specifications ±10 V or Potentiometer Inputs 0-100 %

| | | |
|---|---|---|
| Number of channels | 4 | |
| Measurement range | -10 ... +10 V | 0-100 % |
| Measurement value | -10.000 ... +10.000 or<br>-30,000 ... +30,000 (at full range) | 0 ... 10,000 or<br>0 ... 30,000 (at full range) |
| Input type | differential input | potential input |
| Resolution | 16-bit (ca. 0.3 mV/LSB) | |
| Conversion time for all channels | depending on the selected timing<br>Speed mode: 200 µs<br>Time offset mode: corresponds to the S-DIAS cyclic time | |
| Common mode range | ±12 V | |
| Input resistance | > 10 MΩ | |
| Cable break monitor | yes | |
| Input filter hardware | typically 1 kHz, low pass 3rd order system | |
| Input filter software | configurable, low pass 1st order system | |
| Measurement precision | ±0.3 % of maximum measurement value | ±0.35 % of maximum measurement value |

## Reference Output Specifications

| | |
|---|---|
| Number of channels | 1 |
| Reference voltage | +10 V |
| Allowable output current | maximum 10.0 mA (< HW-Version 3.5)<br>maximum 16.7 mA (≥ HW-Version 3.5) |
| Allowable load per potentiometer input | ≤ 2.50 mA (< HW-Version 3.5)<br>≤ 4.17 mA (≥ HW-Version 3.5)<br>≥ 4.0 kΩ (< HW-Version 3.5)<br>≥ 2.4 kΩ (≥ HW-Version 3.5) |
| Allowable capacitive load | maximum 100 nF |
| Short-circuit protection | yes |
| Accuracy | ±0.5 % |

## Analog Output Specifications

| | |
|---|---|
| Number of channels | 4 |
| Output range | -10 V ... +10 V |
| Output value | -10,000 ... +10,000 |
| Resolution | 12-bit (ca. 5 mV/LSB) |
| Refresh time for all channels | ≥ 500 µs (corresponds to the S-DIAS cyclic time) |
| Output voltage capacity | > 5 kOhm |
| Allowable capacitive load | maximum 100 nF |
| Short-circuit protection | yes |
| Settling time | 50 µs (63 % of the end value)<br>100 µs (86 % of the end value)<br>250 µs (99 % of the end value) |
| Output precision | 0.5 % of maximum output value |

## Electrical Requirements

| | | | |
|---|---|---|---|
| | Voltage supply from S-DIAS bus | +5 V | |
| | Current consumption on the S-DIAS bus (+5 V supply) | typically 50 mA | maximum 55 mA |
| | Voltage supply from S-DIAS bus | +24 V | |
| | Current consumption on the S-DIAS bus (+24 V power supply) | typically 40 mA (without load on reference output and analog outputs)<br><br>typically 60 mA (reference output loaded with 4x 4 kΩ and maximum load on the analog outputs)<br><br>typically 70 mA (reference output loaded with 4x 2k4 kΩ and maximum load on the analog outputs) | typically 50 mA (without load on reference output and analog outputs)<br><br>maximum 80 mA (reference output loaded with 4x 4 kΩ and maximum load on the analog outputs)<br><br>maximum 95 mA (reference output loaded with 4x 2k4 kΩ and maximum load on the analog outputs) |
| | Short-circuit condition | typically an additional 30 mA per channel on a +24 V supply | |

## Article Number and Miscellaneous

| | | |
|---|---|---|
| | Article number | 20-017-441 |
| | Dimensions | 12.5 x 104.2 x 72 mm (W x H x D) |
| | Standard | UL 508 (E247993) |
| | Approvals | UL, cUL, CE |

## Environmental Conditions

| | | | |
|---|---|---|---|
| | Storage temperature | -20 ... +85 °C | |
| | Environmental temperature | 0 ... +60 °C | |
| | Humidity | 0-95 %, non-condensing | |
| | Operating conditions | pollution degree 2<br>altitude up to 2000 m | |
| | EMC resistance | in accordance with EN 61000-6-2 (industrial area) | |
| | EMC noise generation | in accordance with EN 61000-6-4 (industrial area) | |
| | Vibration resistance | EN 60068-2-6 | 3.5 mm from 5-8.4 Hz<br>1 g from 8.4-150 Hz |
| | Shock resistance | EN 60068-2-27 | 15 g |
| | Protection type | EN 60529 | IP20 |

# Notes