

Data sheet

SM 234 (234-1BD60)

Technical data

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| Order no. | 234-1BD60 |
| Type | SM 234 |
| General information | |
| Note | - |
| Features | 4 inputs/2 outputs Configurable Voltage, current Resistance, resistance thermometer |
| Current consumption/power loss | |
| Current consumption from backplane bus | 100 mA |
| Power loss | 2.9 W |
| Technical data analog inputs | |
| Number of inputs | 4 |
| Cable length, shielded | 200 m |
| Rated load voltage | DC 24 V |
| Reverse polarity protection of rated load voltage | yes |
| Current consumption from load voltage L+ (without load) | 70 mA |
| Voltage inputs | yes |
| Min. input resistance (voltage range) | 120 kOhm |
| Input voltage ranges | +1 V ... +5 V 0 V ... +10 V -10 V ... +10 V -400 mV ... +400 mV -4 V ... +4 V |
| Operational limit of voltage ranges | +/-0.3% ... +/-0.7% |
| Operational limit of voltage ranges with SFU | - |
| Basic error limit voltage ranges | +/-0.2% ... +/-0.5% |
| Basic error limit voltage ranges with SFU | - |
| Destruction limit voltage | max. 15V |
| Current inputs | yes |
| Max. input resistance (current range) | 90 Ohm |
| Input current ranges | +4 mA ... +20 mA 0 mA ... +20 mA -20 mA ... +20 mA |
| Operational limit of current ranges | +/-0.3% ... +/-0.8% |
| Operational limit of current ranges with SFU | - |
| Basic error limit current ranges | +/-0.2% ... +/-0.5% |
| Radical error limit current ranges with SFU | - |
| Destruction limit current inputs (electrical current) | max. 50mA |
| Destruction limit current inputs (voltage) | max. 15V |
| Resistance inputs | yes |
| Resistance ranges | 0 ... 600 Ohm 0 ... 3000 Ohm |
| Operational limit of resistor ranges | +/-0.4% |
| Operational limit of resistor ranges with SFU | - |

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| Basic error limit | +/-0.2% |
| Basic error limit with SFU | - |
| Destruction limit resistance inputs | max. 15V |
| Resistance thermometer inputs | yes |
| Resistance thermometer ranges | Pt100 Pt1000 Ni100 Ni1000 |
| Operational limit of resistance thermometer ranges | +/-0.4% ... +/-1.0% |
| Operational limit of resistance thermometer ranges with SFU | - |
| Basic error limit thermoresistor ranges | +/-0.2% ... +/-0.5% |
| Basic error limit thermoresistor ranges with SFU | - |
| Destruction limit resistance thermometer inputs | max. 15V |
| Thermocouple inputs | - |
| Thermocouple ranges | - |
| Operational limit of thermocouple ranges | - |
| Operational limit of thermocouple ranges with SFU | - |
| Basic error limit thermoelement ranges | - |
| Basic error limit thermoelement ranges with SFU | - |
| Destruction limit thermocouple inputs | - |
| Programmable temperature compensation | - |
| External temperature compensation | - |
| Internal temperature compensation | - |
| Internal temperature compensation | - |
| Technical unit of temperature measurement | °C |
| Resolution in bit | 16 |
| Measurement principle | Sigma-Delta |
| Basic conversion time | 7 ms - 272 ms |
| Noise suppression for frequency | 50 Hz and 60 Hz |
| Initial data size | 4 Byte |

Technical data analog outputs

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|---|---|
| Number of outputs | 2 |
| Cable length, shielded | 200 m |
| Rated load voltage | DC 24 V |
| Reverse polarity protection of rated load voltage | yes |
| Current consumption from load voltage L+ (without load) | 70 mA |
| Voltage output short-circuit protection | yes |
| Voltage outputs | yes |
| Min. load resistance (voltage range) | 1 kOhm |
| Max. capacitive load (current range) | 1 µF |
| Max. inductive load (current range) | 30 mA |
| Output voltage ranges | -10 V ... +10 V +1 V ... +5 V 0 V ... +10 V |
| Operational limit of voltage ranges | +/-0.4% ... +/-0.8% |
| Basic error limit voltage ranges | +/-0.2% ... +/-0.4% |
| Destruction limit against external applied voltage | max. 15V |
| Current outputs | yes |
| Max. in load resistance (current range) | 500 Ohm |
| Max. inductive load (current range) | 10 mH |

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| Typ. open circuit voltage current output | 13 V |
| Output current ranges | -20 mA ... +20 mA +4 mA ... +20 mA 0 mA ... +20 mA |
| Operational limit of current ranges | +/-0.3% ... +/-0.8% |
| Basic error limit current ranges | +/-0.2% ... +/-0.5% |
| Destruction limit against external applied voltage | max. 15V |
| Settling time for ohmic load | 0.3 ms |
| Settling time for capacitive load | 1 ms |
| Settling time for inductive load | 0.5 ms |
| Resolution in bit | 12 |
| Conversion time | 1.5 ms/channel |
| Substitute value can be applied | yes |
| Output data size | 4 Byte |

Status information, alarms, diagnostics

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| Status display | none |
| Interrupts | yes |
| Process alarm | no |
| Diagnostic interrupt | yes, parameterizable |
| Diagnostic functions | yes |
| Diagnostics information read-out | possible |
| Supply voltage display | none |
| Group error display | red SF LED |
| Channel error display | none |

Isolation

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| Between channels | - |
| Between channels of groups to | - |
| Between channels and backplane bus | yes |
| Between channels and power supply | yes |
| Max. potential difference between circuits | - |
| Max. potential difference between inputs (Ucm) | DC 4 V |
| Max. potential difference between Mana and Mintern (Uiso) | - |
| Max. potential difference between inputs and Mana (Ucm) | - |
| Max. potential difference between inputs and Mintern (Uiso) | DC 75 V/ AC 50 V |
| Max. potential difference between Mintern and outputs | - |
| Insulation tested with | DC 500 V |

Datasizes

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| Input bytes | 8 |
| Output bytes | 4 |
| Parameter bytes | 18 |
| Diagnostic bytes | 12 |

Housing

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| Material | PPE / PA 6.6 |
| Mounting | Profile rail 35 mm |

Mechanical data

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| Dimensions (WxHxD) | 25.4 mm x 76 mm x 88 mm |
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| Weight | 100 g |
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Environmental conditions

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| Operating temperature | 0 °C to 60 °C |
| Storage temperature | -25 °C to 70 °C |

Certifications

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| UL certification | yes |
| KC certification | - |