

› Telecontroller em4 Alert

EM4B26-3GS

Base 26 I/O 3G alert

- › Alert System, Data Logger, Cellular Modem and nano-PLC with Remote monitoring & control via text messaging
- › Automatic alerts via text message and e-mail minimize the downtime of machines and systems
- › Simple monitoring and Control via text message
- › Receive data reports via text message or datalogs via email or FTP in .CSV (Excel) file
- › Adapt your application along the way of its lifecycle thanks to the remote application program update feature via FTP



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| Accessories & Kit selection | |
|--|-------------|
| Description Accessories | Part number |
| USB interface | 88 980 110 |
| USB cable 3m B type | 88 980 170 |
| Antenna 3m standard inside | 88 980 160 |
| Antenna 3m inside/outside flat | 88 980 161 |
| Antenna 10m outside | 88 980 162 |
| Description Kit | Part number |
| Starter Kit em4 Alert 3G, Telecontroller with embedded nano-PLC performance, standard 3m antenna, USB interface & cable, USB key with soft | 88 981 126 |

| Specific characteristics | |
|--|--|
| Part number | 88 981 123 |
| Finish | Glossy black |
| On front panel color | Black RAL 9011 |
| On terminal block color | Blue RAL 5017 |
| Protection rating (in accordance with IEC/EN 60529) | IP 40 on front panel IP 20 on terminal block |
| Weight | Without packing: 345 g With packing: 395 g |
| Dimensions | Without packing: 124.6 x 90 x 60.6 mm / 4.91 x 3.54 x 2.38 inch With packing: 148 x 103 x 65 mm / 5.83 x 4.06 x 2.56 inch |
| R&TTE Directive | 1999/5/EC |
| Standards of North American type approval | US-Federal Communications Commission (FCC) |
| Frequency range GSM 850 (Uplink) | 824 - 849 MHz (FCC: 824.2 - 848.8 MHz) |
| Frequency range GSM 850 (Downlink) | 869 - 894 MHz |
| Frequency range E-GSM 900 (Uplink) | 880 - 915 MHz |
| Frequency range E-GSM 900 (Downlink) | 925 - 960 MHz |
| Frequency range DCS 1800 (Uplink) | 1710 - 1785 MHz |
| Frequency range DCS 1800 (Downlink) | 1805 - 1880 MHz |
| Frequency range PCS 1900 (Uplink) | 1850 - 1910 MHz (FCC: 1850.2 - 1909.8 MHz) |
| Frequency range PCS 1900 (Downlink) | 1930 - 1990 MHz |
| Frequency range UMTS 800 band VI (Uplink) | 830 - 840 MHz |
| Frequency range UMTS 800 band VI (Downlink) | 875 - 885 MHz |
| Frequency range UMTS 850 band V (Uplink) | 824 - 849 MHz |
| Frequency range UMTS 850 band V (Downlink) | 869 - 894 MHz |
| Frequency range UMTS 900 band VIII (Uplink) | 880 - 915 MHz |
| Frequency range UMTS 900 band VIII (Downlink) | 925 - 960 MHz |

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| Frequency range UMTS 1700 band IV (Uplink) | 1710 - 1755 MHz |
| Frequency range UMTS 1700 band IV (Downlink) | 2110 - 2155 MHz |
| Frequency range UMTS 1900 band II (Uplink) | 1850 - 1910 MHz |
| Frequency range UMTS 1900 band II (Downlink) | 1930 - 1990 MHz |
| Frequency range UMTS 2100 band I (Uplink) | 1920 - 1980 MHz |
| Frequency range UMTS 2100 band I (Downlink) | 2110 - 2170 MHz |
| Protocols | FTP, SMTP, SSL/TLS STARTTLS (SMTP connection) |
| SIM card | Not included |
| Antenna: impedance | 50 ohms |
| Antenna: input power | > 2 W |
| Antenna: connector | RP SMA: SMA female reverse polarity |
| Antenna: V.S.W.R | < 2: 1 recommended < 3: 1 acceptable |
| Antenna: return loss | S11 < - 10 dB recommended S11 < - 6 dB acceptable |

General characteristics

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| Products certification | CE, cULus Listed |
| Conformity with the low voltage directive (in accordance with 2014/35/EU) | IEC/EN 61131-2 (Open equipment) |
| Conformity with the RED Directive (in accordance with 2014/53/EU) | EN 60950: Safety Requirements EN 301489-1: EMC Requirements EN 301489-24: EMC Requirements EN 300328: Radio Requirements |
| Earthing | None |
| Overvoltage category | 3 in accordance with IEC/EN 60664-1 |
| Pollution | Degree: 2 in accordance with IEC/EN 61131-2 |
| Maximum utilization altitude | Operation: 2000 m Transport: 3000 m |
| Mechanical resistance | Immunity to vibrations IEC/EN 60068-2-6, Fc test Immunity to shock IEC/EN 60068-2-27, Ea test |
| Resistance to electrostatic discharge | Immunity to ESD IEC/EN 61000-4-2, level 3 |
| Resistance to HF interference (Immunity) | Immunity to radiated electrostatic fields IEC/EN 61000-4-3, level 3 Immunity to fast transients (burst immunity) IEC/EN 61000-4-4, level 3 Immunity to shock waves IEC/EN 61000-4-5 Radio frequency in common mode IEC/EN 61000-4-6, level 3 |
| Conducted and radiated emissions (in accordance with EN 55022/11 group 1) | Class B |
| Operation temperature | -20 (-4 °F) → +60 °C (140 °F) (+40 °C (104 °F) in a non-ventilated enclosure) |
| Storage temperature | -40 (-40 °F) → +80 °C (176 °F) |
| Relative humidity | 95% max. (no condensation or dripping water) |
| Screw terminals connection capacity | Flexible wire with ferrule: 1 conductor: 0.2 to 2.5 mm ² (AWG 24-14) Flexible wire with ferrule: 2 conductors: 0.2 to 0.75 mm ² (AWG 24-18) Rigid wire: 1 conductor: 0.2 to 2.5 mm ² (AWG 24-14) Rigid wire: 2 conductors: 0.2 to 0.75 mm ² (AWG 24-18) Tightening torque: 0.5 N.m (4.5 lb-in) (tighten using screwdriver diam. 3.5 mm) Stripping length: 6 mm |
| Material | Lexan, UL94V0 |
| Environnement | Reach, RoHS, Halogen free 1272/2008/CE |

Processing characteristics

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|--------------------|---|
| LCD display | Display with 4 lines of 18 characters, white characters on a black background, reverse display function |
| Programming method | FBD (Function Block Diagram), including SFC (Sequential Function Chart) (Grafcet) |

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|---|--|
| Program size | Function blocks: typically 1000 blocks Macro blocks: 127 max. (255 blocks per macro) |
| Program memory | Flash |
| Removable memory | N.A |
| Data memory | 2 k octets |
| Back-up time (in the event of power failure) | Program and settings in the controller: 10 years Data memory: 10 years |
| Data back-up | Data backup in the flash memory is guaranteed if the product is powered on more than 10 seconds |
| Cycle time | From 2 ms* to 90 ms, default value: 10 ms *: Depending on configuration |
| Clock data retention | 10 years (lithium battery) at 25 °C (77 °F) |
| Clock drift | Drift < 12 min/year (at 25 °C (77 °F)) 6 s / month (at 25 °C (77 °F) with user-definable correction of drift). Synchronizable by network |
| Timer block accuracy | 0.5 % ± 2 cycle time |
| Start up time on power up | < 3 s base alone, < 1.5 s base + 2 expansions + 1 accessory (RS485) |
| Self test | Test firmware integrity (checksum memory) Stability of the internal power supply Check the conformity of the em4 device configuration with the configuration in the application program. |

Supply

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| Nominal voltage | 24 V ₋₋₋ (-15% / +20%) |
| Operating limits | 20.4 - 28.8 V ₋₋₋ |
| Immunity from micro power cuts | ≤ 1 ms (repetition 20 times) |
| Max. absorbed power | 5W @ 24 V ₋₋₋ , 6.5 W @ 28.8 V ₋₋₋ , - 0.3 W backlight OFF 1.5W @ 24 V ₋₋₋ (I/O + backlight) = 0 |
| Protection against polarity inversions | Yes |
| Power monitoring | Yes and value available through the application "FB Status", 1/10V, 5%. |

Inputs

Digital and high speed digital inputs 24 V₋₋₋ - 4 inputs from I1 to I4

Input used as digital input

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|---|---|
| Input voltage | 24 V ₋₋₋ (-15% / +20%) |
| Input current | 1.8 mA @ 20.4 V 2.1 mA @ 24 V 2.5 mA @ 28.8 V |
| Input impedance | 11.6 kΩ |
| Logic 1 voltage threshold | ≥ 15 V ₋₋₋ |
| Making current at logic state 1 | ≥ 1.3 mA |
| Logic 0 voltage threshold | ≤ 10 V ₋₋₋ |
| Release current at logic state 0 | ≤ 0.8 mA |
| Response time | 1 to 2 cycle times |
| Sensor type | Contact or 3-wire PNP |
| Conforming to IEC/EN 61131-2 | Type 1 |
| Input type | Resistive |
| Isolation between power supply and inputs | None |
| Isolation between inputs | None |
| Protection against polarity inversions | Yes |
| Status indicator | On LCD screen |
| Cable length | ≤ 100 m |

| Input used as high speed digital input | |
|--|---|
| Maximum counting frequency | 3 channels encoder (I1, I2, I3): 20 kHz* 2 independent counters (I1, I2) (I3, I4) (Cumul, IND, DIR): 2 channels: 40 kHz*, 4 channels: 20 kHz*, 2 independent counters (I1, I2) (I3, I4) (PH, PH2): 2/4 channels: 20 kHz* 4 independent counters (I1, I2, I3, I4) (Up/Down): 1 channel: 60 kHz*, 2 channels: 40 kHz*, > 2 channels: 20 kHz* * with a time cycle ≤ 10 ms and a ton / toff = 50% \pm 5%, level 0 < 2V and level 1 > 20.4V |
| Other functions | 4 chronometers (I1, I2, I3, I4) 4 tachometers (I1, I2, I3, I4) |
| Cable length | ≤ 3 m with shielded twisted cable |
| Digital 24 V _{DC} and analog inputs 12 bits / 28.8 V - potentiometer - 8 inputs from I5 to IC | |
| Input used as digital input | |
| Input voltage | 24 V _{DC} (-15% / +20%) |
| Input current | 1.8 mA @ 20.4 V 2.1 mA @ 24 V 2.5 mA @ 28.8 V |
| Input impedance | 11.6 k Ω |
| Logic 1 voltage threshold | ≥ 11 V _{DC} |
| Making current at logic state 1 | ≥ 1 mA |
| Logic 0 voltage threshold | ≤ 9 V _{DC} |
| Release current at logic state 0 | ≤ 0.7 mA |
| Response time | 1 to 2 cycle times |
| Sensor type | Contact or 3-wire PNP |
| Conforming to IEC/EN 61131-2 | Type 1 |
| Input type | Resistive |
| Isolation between power supply and inputs | None |
| Isolation between inputs | None |
| Protection against polarity inversions | Yes |
| Status indicator | On LCD screen |
| Cable length | ≤ 100 m |
| Input used as analog input | |
| Measuring range | 0 \rightarrow 10 V, 0 \rightarrow V power supply or Voltmeter |
| Input impedance | 11.6 k Ω |
| Maximum value without destruction | 28.8 V _{DC} max |
| Input type | Common mode |
| Resolution | 12 bit at maximum input voltage (10 bit at 10V) |
| Value of LSB | 7.03 mV |
| Conversion time | Controller cycle time |
| Maximum error in 0-10V mode | ± 1.1 % of full scale at 25 °C (77 °F) ± 1.6 % of full scale at 55 °C (131 °F) |
| Maximum error in 0-V power supply mode | ± 2 % of full scale at 25 °C (77 °F) ± 3 % of full scale at 55 °C (131 °F) |
| Repeat accuracy at 55 °C (131 °F) | ± 0.5 % |
| Voltmeter | from 0 to 30.5 V, 5% |
| Isolation between analogue channel and power supply | None |
| Protection against polarity inversions | Yes |
| Potentiometer control | 2.2 k Ω / 0.5 W (recommended), 10 K Ω max. |
| Cable length | ≤ 10 m with shielded twisted cable (sensor not isolated) |

| Digital 24 V_{DC} and analog inputs 12 bits / 10 V & 11 bits / 0-20 mA - 4 inputs from ID to IG | |
|--|--|
| Input used as digital input (power off state) | |
| Input voltage | 24 V _{DC} (-15% / +20%) |
| Input current | 1.5 mA @ 20.4 V 1.7 mA @ 24 V 2.1 mA @ 28.8 V |
| Input impedance | 13.9 kΩ |
| Logic 1 voltage threshold | ≥ 11 V _{DC} |
| Making current at logic state 1 | ≥ 0.8 mA |
| Logic 0 voltage threshold | ≤ 8 V _{DC} |
| Release current at logic state 0 | ≤ 0.5 mA |
| Response time | 1 to 2 cycle times |
| Sensor type | Contact or 3-wire PNP |
| Conforming to IEC/EN 61131-2 | Type 1 |
| Input type | Resistive |
| Isolation between power supply and inputs | None |
| Isolation between inputs | None |
| Protection against polarity inversions | No |
| Status indicator | On LCD screen |
| Cable length | ≤ 100 m |
| Input used as 0-10 V analog input | |
| Measuring range | 0 → 10 V |
| Input impedance | 13.9 kΩ |
| Maximum value without destruction | 28.8 V _{DC} max |
| Input type | Common mode |
| Resolution | 12 bit / 10V |
| Value of LSB | 2.45 mV |
| Conversion time | Controller cycle time |
| Maximum error at 25 °C (77 °F) | ± 0.8 % of full scale |
| Maximum error at 55 °C (131 °F) | ± 1.2 % of full scale |
| Repeat accuracy at 55 °C (131 °F) | ± 0.5 % |
| Isolation between analogue channel and power supply | None |
| Protection against polarity inversions | Yes for voltage ≤ 10 V |
| Potentiometer control | 2.2 kΩ / 0.5 W (recommended), 10 KΩ max. |
| Cable length | ≤ 10 m with shielded twisted cable (sensor not isolated) |
| Input used as 0-20 mA analog input | |
| Measuring range | 0 → 20 mA (4 → 20 mA by the application) |
| Input impedance | 245 Ω |
| Maximum value without destruction | 30 mA max |
| Input type | Common mode |
| Resolution | 11 bit (normalized at 0 - 2000) / 20 mA |
| Value of LSB | 10 μA |
| Conversion time | Controller cycle time |
| Maximum error at 25 °C (77 °F) | ± 1.2 % of full scale |
| Maximum error at 55 °C (131 °F) | ± 1.7 % of full scale |
| Repeat accuracy at 55 °C (131 °F) | ± 0.5 % |
| Isolation between analogue channel and power supply | None |
| Protection against polarity inversions | Yes |
| Overvoltage protection | Yes If the input voltage is > 7 V, this one is automatically switched on 0-10V configuration. |

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|---|--|----------------|---------------|--------------|
| Cable length | ≤ 30 m with shielded twisted cable (sensor not isolated) | | | |
| Outputs | | | | |
| Digital / PWM solid state output - 2 solid state outputs from O1 to O2 | | | | |
| Output used as digital output | | | | |
| Breaking voltage | 10 → 28.8 V _{DC} | | | |
| Nominal voltage | 12 / 24 V _{DC} | | | |
| Nominal current | 0.5 A on resistive load @ 25 °C (77 °F) | | | |
| Max. breaking current | 0.625 A | | | |
| Non repetitive overload current | 1 A | | | |
| Maximum breaking current in the common | 1 A | | | |
| Voltage drop | < 1 V for I = 0.5 A | | | |
| Response time | Make = 1 cycle time + 30 μs typical Release = 1 cycle time + 40 μs typical | | | |
| Built-in protections | Against overloads and short-circuits: Yes Against over voltages (*): Yes Against inversions of power supply: Yes (* In the absence of a volt-free contact between the output of the logic controller and the load | | | |
| Min. load | 1 mA | | | |
| Galvanic isolation | No | | | |
| Cable length | ≤ 10 m | | | |
| Truth table of the default | | Command | Output | Fault |
| | Normal condition | 0 | 0 | No |
| | | 1 | 1 | No |
| | Overheating | 0 | 0 | No |
| | | 1 | 0 | Yes |
| | Underpowered | 0 | 0 | X |
| | | 1 | 0 | X |
| | Short circuit (current limit) | 0 | 0 | No |
| | | 1 | 0 | Yes |
| Output used as PWM output | | | | |
| PWM frequency | 14.11 Hz; 56.45 Hz; 112.90 Hz; 225.80 Hz; 451.59 Hz; 1758.24 Hz | | | |
| PWM cyclic ratio | 0 → 100 % 100 steps | | | |
| PWM Max. error | ≤ 2 % (from 10 % → 90 %) | | | |
| Status indicator | On LCD screen | | | |
| Cable length | ≤ 10 m with shielded twisted cable | | | |
| Distance between the power source and the static outputs | ≤ 30 m | | | |
| 6 A relay output - 2 outputs from O3 to O4 | | | | |
| Breaking voltage | 250 V _~ max | | | |
| Breaking current | 6 A Derating: UL: ≥ 45 °C (113 °F): 4A max | | | |
| Maximum breaking current in the common | IEC @ 25 °C (77 °F): 12 A IEC @ 60 °C (140 °F) or UL: 10 A | | | |
| Mechanical life | 5 000 000 operations (cycles) | | | |
| Electrical durability for 50 000 operating cycles | 24 V _{DC} : tau = 0 ms: 6 A, tau = 7 ms: 3 A, tau = 15 ms: 1.8 A Usage category DC-12: 24 V, 6 A Usage category DC-14: 24 V, 1.8 A 250 V _~ cos phi = 1: 6 A, cos phi = 0.7: 5 A, cos phi = 0.4: 2.5 A Usage category AC-12: 250 V, 6 A Usage category AC-13: 250 V, 5 A Usage category AC-15: 250 V, 2 A | | | |
| Minimum switching capacity | 100 mA (at minimum voltage of 12V) | | | |
| Maximum operating rate | Off load: 10 Hz At operating current: 0.1 Hz | | | |

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| Voltage for withstanding shocks | In accordance with IEC/EN 60947-1 and IEC/EN 60664-1: 4 kV |
| Response time | Make = 1 cycle time + 8 ms typical Release = 1 cycle time + 4 ms typical |
| Built-in protections | Against short-circuits: None Against over voltages and overload: None |
| Status indicator | On LCD screen |
| Cable length | ≤ 30 m |

8 A relay output - 6 outputs from O5 to OA

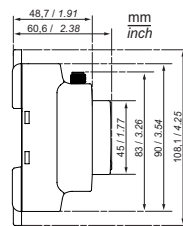
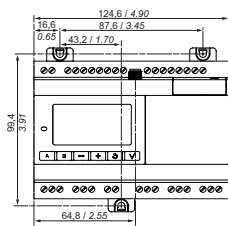
| | |
|---|--|
| Breaking voltage | 250 V~ max |
| Breaking current | 8 A Derating: CEI ≥ 55 °C (131 °F) or UL: ≥ 45 °C (113 °F): 6A max |
| Maximum breaking current in the common | IEC @ 25 °C (77 °F): C3, C6: 8A; C4, C5: 16 A IEC @ 60 °C (140 °F) or UL: C3, C6: 8 A; C4, C5: 10 A |
| Mechanical life | 20 000 000 operations (cycles) |
| Electrical durability for 50 000 operating cycles | 24 V~ tau = 0 ms: 8 A, tau = 7 ms: 3 A, tau = 15 ms: 1.5 A Usage category DC-12: 24 V, 8 A Usage category DC-14: 24 V, 1.5 A 250 V~ cos phi = 1: 8 A, cos phi = 0.7: 4.75 A, cos phi = 0.4: 3 A Usage category AC-12: 250 V, 8 A Usage category AC-13: 250 V, 4.3 A Usage category AC-15: 250 V, 1.5 A |
| Minimum switching capacity | 100 mA (at minimum voltage of 12V) |
| Maximum operating rate | Off load: 10 Hz At operating current: 0.1 Hz |

| | |
|---------------------------------|--|
| Voltage for withstanding shocks | In accordance with IEC/EN 60947-1 and IEC/EN 60664-1: 4 kV |
| Response time | Make = 1 cycle time + 10 ms typical Release = 1 cycle time + 5 ms typical |
| Built-in protections | Against short-circuits: None Against over voltages and overload: None |
| Status indicator | On LCD screen |
| Cable length | ≤ 30 m |

Schemes

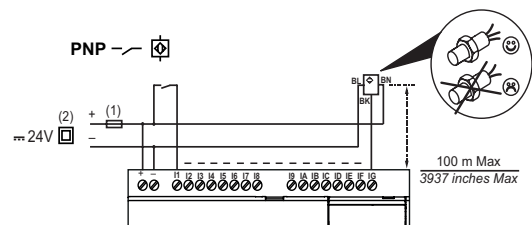
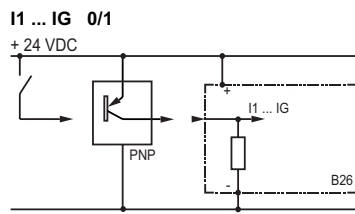
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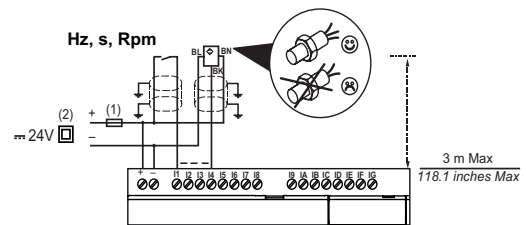
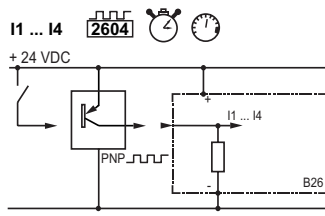
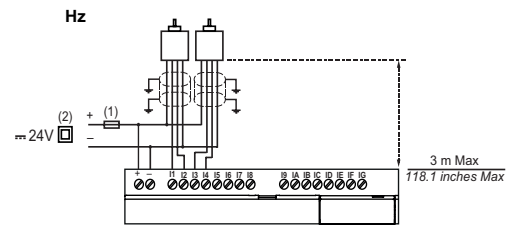
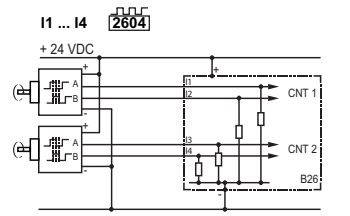
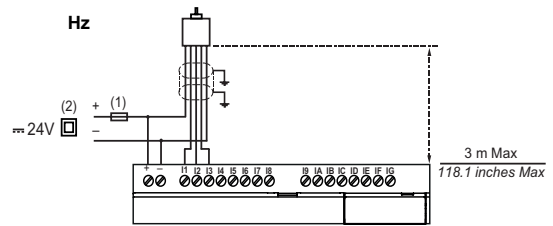
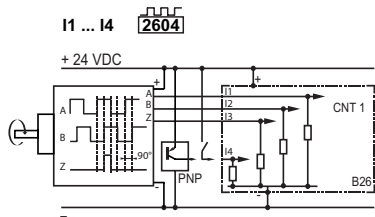
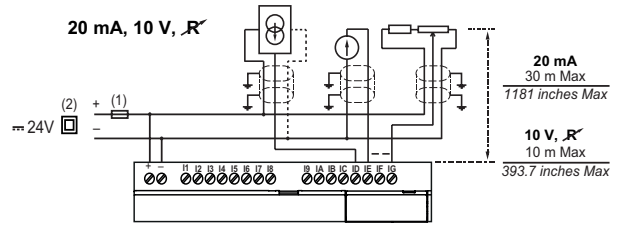
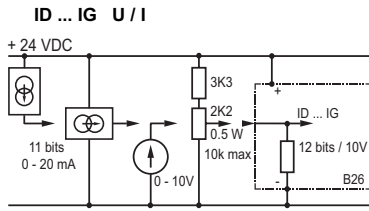
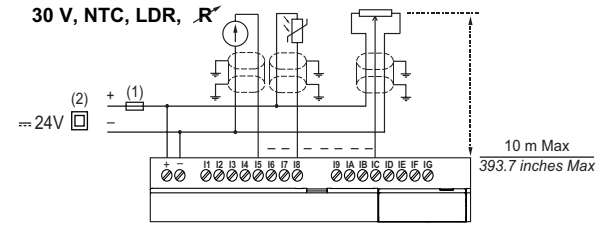
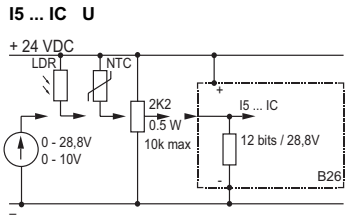
B26 2GS Glossy



Connections

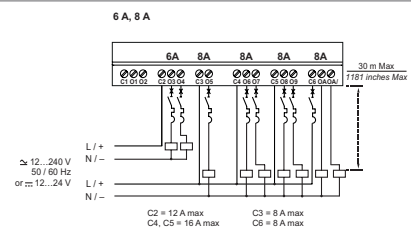
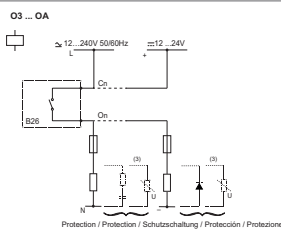
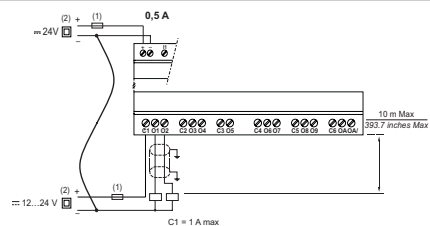
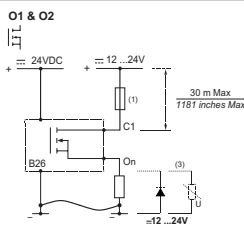
INPUTS





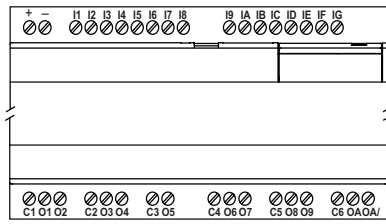
- (1) 1 A (UL248) quick-blowing fuse, circuit-breaker or circuit protector (US)
- (2) Isolating source

OUTPUTS



- (3) Inductive load

I/O installations



Warning:

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