› 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**
Atenna 3m inside/outside flat	**88 980 161**
Antenna 10m outside	**88 980 162**
Description Kit	**Part number**
Starter Kit em4 Alert 3G, Tellecontroler 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

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 recommanded < 3: 1 acceptable
Antenna: return loss	S11 < - 10 dB recommanded S11 < - 6 dB acceptable
General characteristics	
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 mm2 (AWG 24-14) Flexible wire with ferrule: 2 conductors: 0.2 to 0.75 mm2 (AWG 24-18) Rigid wire: 1 conductor: 0.2 to 2.5 mm2 (AWG 24-14) Rigid wire: 2 conductors: 0.2 to 0.75 mm2 (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	
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)

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	
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	
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% ± 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⎓ and analog inputs 12 bits / 28.8 V - potentiometer - 8 inputs from I5 to IC	
Input used as digital input	
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	≥ 11 V⎓
Making current at logic state 1	≥ 1 mA
Logic 0 voltage threshold	≤ 9 V⎓
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 → 10 V, 0 → V power supply or Voltmeter
Input impedance	11.6 kΩ
Maximum value without destruction	28.8 V⎓ 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 kΩ / 0.5 W (recommended), 10 KΩ max.
Cable length	≤ 10 m with shielded twisted cable (sensor not isolated)

Digital 24 V⎓ 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⎓ (-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⎓
Making current at logic state 1	≥ 0.8 mA
Logic 0 voltage threshold	≤ 8 V⎓
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⎓ 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.

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⎓
Nominal voltage	12 / 24 V⎓
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

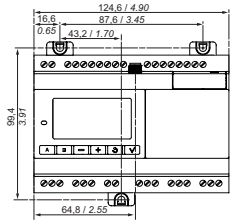
Output used as PWM output	
PWM frequency	14.11 Hz; 56.45 Hz; 112.90 Hz; 225.80 Hz; 451.59 Hz; 1758.24 Hz
PWM cyclic ratio	0 → 100 % 100 steps
PWM Max. error	≤ 2 % (from 10 % → 90 %)
Status indicator	On LCD screen
Cable length	≤ 10 m with shielded twisted cable
Distance between the power source and the 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⎓ 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

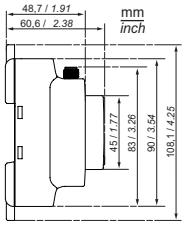
Voltage for withstanding shocks	In accordance with IEC/EN 60947-1 and IEC/EN 60664-1: 4 kV
Response time	Make = 1 cycle time + 8 ms typical Release = 1 cycle time + 4 ms typical
Built-in protections	Against short-circuits: None Against over voltages and overload: None
Status indicator	On LCD screen
Cable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

Dimensions

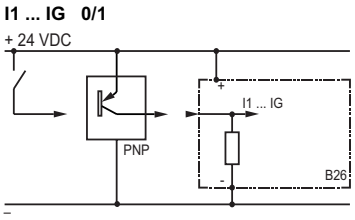
B26 2GS Glossy

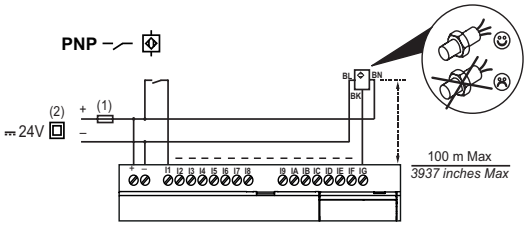




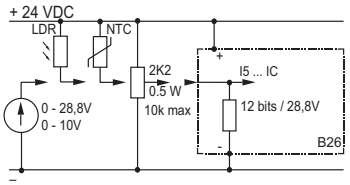
Connections

INPUTS

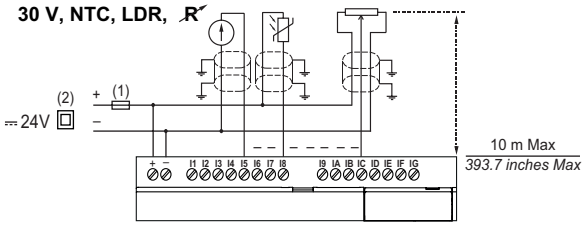




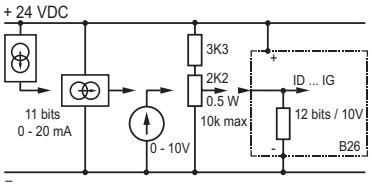
I5 ... IC U



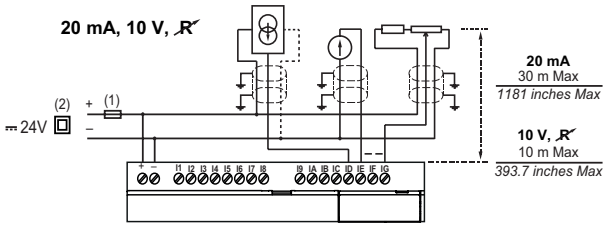
30 V, NTC, LDR,



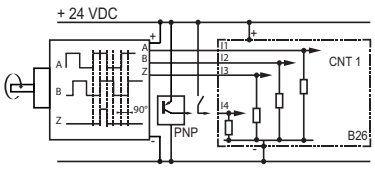
ID ... IG U / I



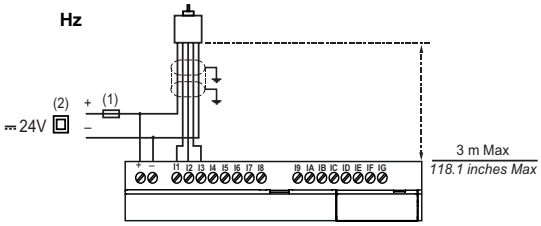
20 mA, 10 V,



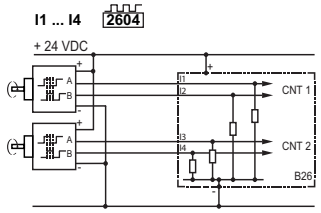
I1 ... I4 2604



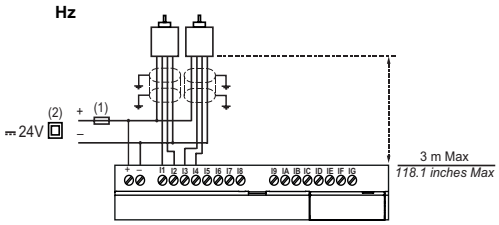
Hz



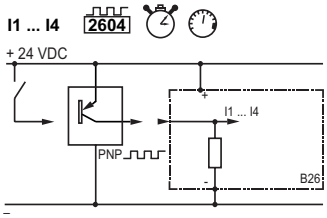
I1 ... I4 2604



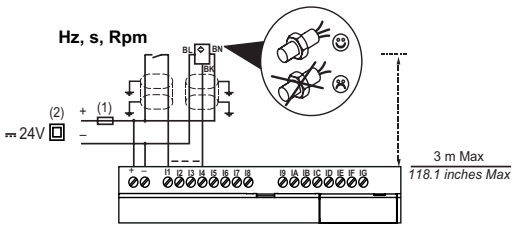
Hz



I1 ... I4 2604



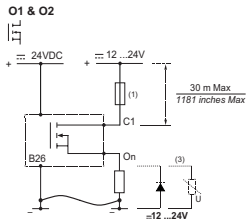
Hz, s, Rpm



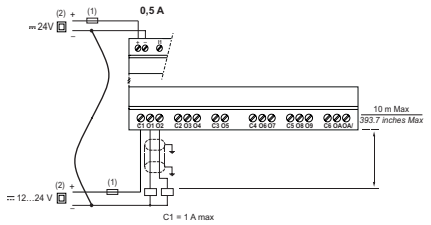
(1)	1 A (UL248) quick-blowing fuse, circuit-breaker or circuit protector (US)
(2)	Isolating source

OUTPUTS

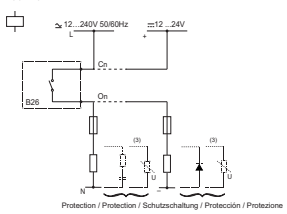
O1 & O2



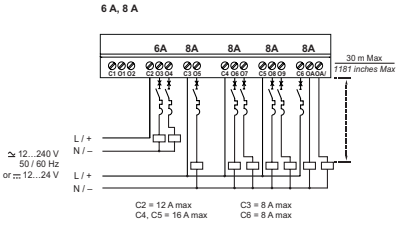
0,5 A



O3 ... OA



6 A, 8 A



(3)	Inductive load

I/O installations