

Multi-Point Gas Detection and Control System



DESCRIPTION

Wall mounted, microprocessor-based, multi-point, analog electronic control system for various gas, temperature and humidity detection, control and alarm.

APPLICATION

To control and alarm upon the presence of any toxic, combustible and refrigerant gases. Any combination of the AT-11/3300 series or other 4-20 mA transmitters can be connected to the control unit. The controller can interface via binary outputs, a 4-20 mA signal, and an optional BACnet coupler with any compatible electronic analog control, DDC/PLC control or automation system.

FEATURES

- Continuous monitoring
- Twenty-four (24) analog inputs, 4-20 mA
- Four (4) digital inputs
- Twenty (20) relay outputs:
 - Five-stage control
 - Fail-safe assignable
- Twelve (12) analog outputs, 4-20 mA
 - Selectable for low, high or averaging
- One (1) 24 VDC supply output
- Built-in horn
- Accepts combination of toxic or combustible gases, refrigerants, temperature or humidity sensor inputs
- Liquid Crystal Display (LCD)
- Optional BACnet coupler upwards communication to BAS
- LED status indicators
- Keypad user interface
- Simple menu-driven programming
- RFI/EMI protected
- Modular technology
- Overload & short-circuit protected
- Resettable breaker
- NEMA 4X enclosure
- Easy maintenance

SPECIFICATIONS

Electric		Digital inputs	Four (4), each can be individually assigned to any relay (R1...R20). Remote audio/visual alarm reset or override function
Power supply	120 VAC (90...230 VAC), 50/60 Hz resettable breaker, 24 VAC on request	- application	
Power consumption	70 VA, max.	Relay outputs (R1-R20) w/ status LEDs	Twenty (20) SPDT, 8A 24 VAC/VDC-250 VAC contact resistance 100 mΩ, max.
RF/EMI protected	4.0 W @ 3 ft. (1 m) radiated	- each stage level (S1-S5)	Assignable to any relay
Type of Control		- sensor fail-safe	Assignable to any stage level
General	Five-stage (S1 to S5) control, assignable up to twenty (20) binary/relay output, i.e. Low-med-high-fault/fail-horn*, or low1-low2-med1-med2-high, or any other combinations (* = horn/audible alarm built-in and factory pre-configured to relay output "R20")	Time delay switching	Selectable for make and brake of each sensor point (SP1 to SP24) 0-9,999 seconds
Analog inputs	Twenty-four (24) 4-20 mA	VDC output supply	24 VDC, 0.5 A fused
Analog reading	Current and mean (average) value	Analog output	Twelve (12) independent 4-20 mA signal, 500 Ω max. load, selectable as low, high or averaging of sensor inputs
Stage level / setpoint	Field adjustable over full range, five (5) per analog input, assignable to current or mean (average) value	Audible alarm	85 db (10 ft), enabled or disabled, selectable; assignable to stage level S1, S2, S3, S4 or S5
- hysteresis/ switching differential	Selectable for each sensor point	Alarm acknowledgement	Menu-driven and system reset function for latched relays

PolyGard MGC2-24



City of Los Angeles Approved



NRTL Tested & Certified
Conforms to STD
UL 1017

System performance tested in conjunction with PolyGard Carbon Monoxide & Combustible Gas Transmitters to STD **UL 2075**

BACnet Upwards Communication
Option



SPECIFICATION

User Interface

Keypad type	Refer to "illustration keypad user interface"
Touch buttons	Six (6)
Status LED's	Yellow: Fault (fail) Red: Alarm
Digital display	Liquid Crystal Display (LCD), two lines, 16 characters per line, 1 digit resolution, backlit
- unit display	Menu selectable, per sensor; ppm, %v/v, %LEL, °F or % RH

BACnet Interface, optional*

	Read status information via BACnet coupler and BACnet-Profile, BACnet-Services and BACnet BIBBs
Input scaling	Coupler option "B"
0-250 ppm CO	Coupler option "P"
0-100%	
Communication	TCP/IP 10/100 Mbits/sec
Connector	Ethernet RJ45
Interface	BACnet-Profile
Description	BACnet-Services "Who-is (execute)" "I-am (initiate)" "ReadProperty" "WriteProperty"
Object types	Version B1.2, B2.2

Environmental

Permissible ambient	
- working temperature	23°F to 104°F (-5°C to 40°C)
- storage temperature	-4°F to 104°F (-20°C to 40°C)
- humidity	15 to 95% RH, non condensing
- working pressure	Atmospheric ± 10%

Physical

Enclosure (panel)	
- material	Polycarbonate, impact resistance EN 50102/IK08, flammability rating UL 94-5V
- conformity	UL Type 1, UL508/UL 50 standards
- color	Light gray, smoked gray for cover
- protection	NEMA 4X (IP65)
- installation	Wall (surface) mounted
Dimensions (H x W x D)	
- base	22.8 x 12.0 x 5.7 in. (580 x 306 x 145 mm)
Cable entry	10 holes for 1/2 in. conduit, covered
Wire connection	Terminal blocks, Push-on connect and screw type for lead wire
Wire size	
- input	Min. 22 AWG (0.34 mm ²) Max. 16 AWG (1.50 mm ²)
- output	Min. 24 AWG (0.25 mm ²) Max. 14 AWG (2.50 mm ²)
Weight	15.5 lbs. (7.1 kg)

Approvals / Listings

- unit rating	NRTL Performance Tested & Certified Conforms to STD ANSI/UL 2017 City of Los Angeles CE VDI 2053, C-No. 418791 EMV-Compliance 89/336/EWG UL Listed, E75645
- enclosure (panel)	Two years material and workmanship

Warranty

ORDERING INFORMATION

MGC 2 - 24 - 2000 US

Option	
00	No options
01	Key Lock w/2 keys
B0	BACnet Upwards Communication Coupler "C5-BAC-98" for AT Transmitters (0-250 ppm CO)
P0	BACnet Upwards Communication Coupler "C5-BAC-98-1" for AT Transmitters (0-100%)

Standard control system, ordering part number:

MGC2 - 24 - 2000 US,
configuration includes:

Digital, programmable controller with menu-driven key-pad user interface, LCD & LEDs, 120 VAC (90...250 VAC) 50/60 Hz, NEMA 4X enclosure

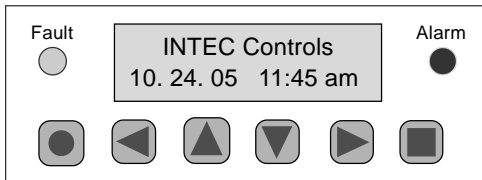
Inputs: (24) 4-20 mA
(4) Digital

Outputs: (20) Relays, SPDT, 8A
(12) 4-20 mA
(1) 24 VDC, 0.5A

(*) BACnet Interface: NRTL Certification to UL STD 61010-1 – "Pending"

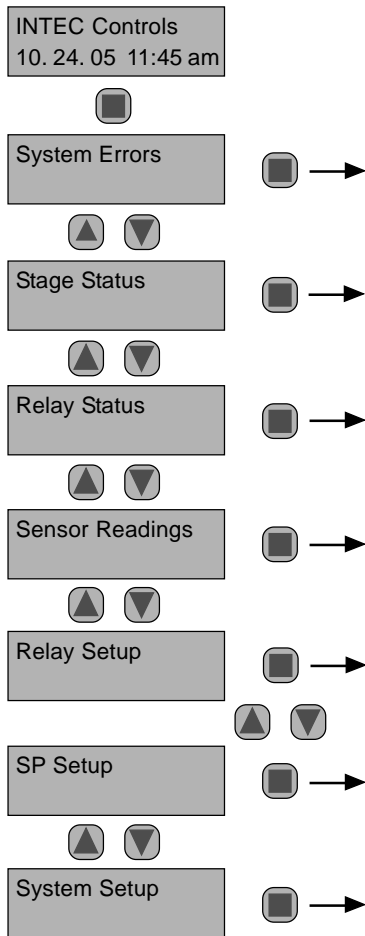
USER INTERFACE & CONTROLLER

Keypad User Interface



- Fault "Yellow LED" Flashes at system / sensor failed
- Alarm "Red LED" Flashes when any stage level setpoint is exceeded; steady when any relay output is in manual override operation
- Scroll down & up in Main menu and Sub menus; increases or decreases a value
- Navigates through menus on the same level; moves cursor when inputting data
- Exits programming and saves settings or return to previous level or menu
- Enter Sub menus or stores data; horn silence (if assigned)

Main Page & Main Menu



System Operation

All Programming is made via the keypad user interface in combination with the display screen. Security is provided via two password levels. The lower level password allows to override or to reset system status functions. The upper level password allows all programming and override functions.

Main Page Display

After powered on, displays INTEC and part number and changes to sensor reading display unless a system error occurs; then the error is displayed.

Main Menu

Displays headings of "System Errors", "Stage Status", "Relay Status", "Sensor Readings", "Relay Setup", "SP (Sensor Point) Setup", and "System Setup".

Sub Menu "System Errors"

Displays errors, reset corrected errors, and historical error summary.

Sub Menu "Stage Status"

Displays status of each "SP" sensor point, stage level/ setpoint exceeded.

Sub Menu "Relay Status"

Displays status and manual control of each output relay.

Sub Menu "Sensor Readings"

The current and mean/average values are displayed for each "SP" sensor point with sensing type and engineering unit (ppm, %v/v, %LEL, F, %RH).

Sub Menu "Relay Setup"

Enter and /or change parameters of each relay.

- Assign de-energized or energized normal operation
- Select steady or flashing function
- Select horn function
- Select latching or non-latching mode
- Select digital input usage, and assign to any output relay

Sub Menu "SP Setup"

Enter and/or change parameters of each sensor point.

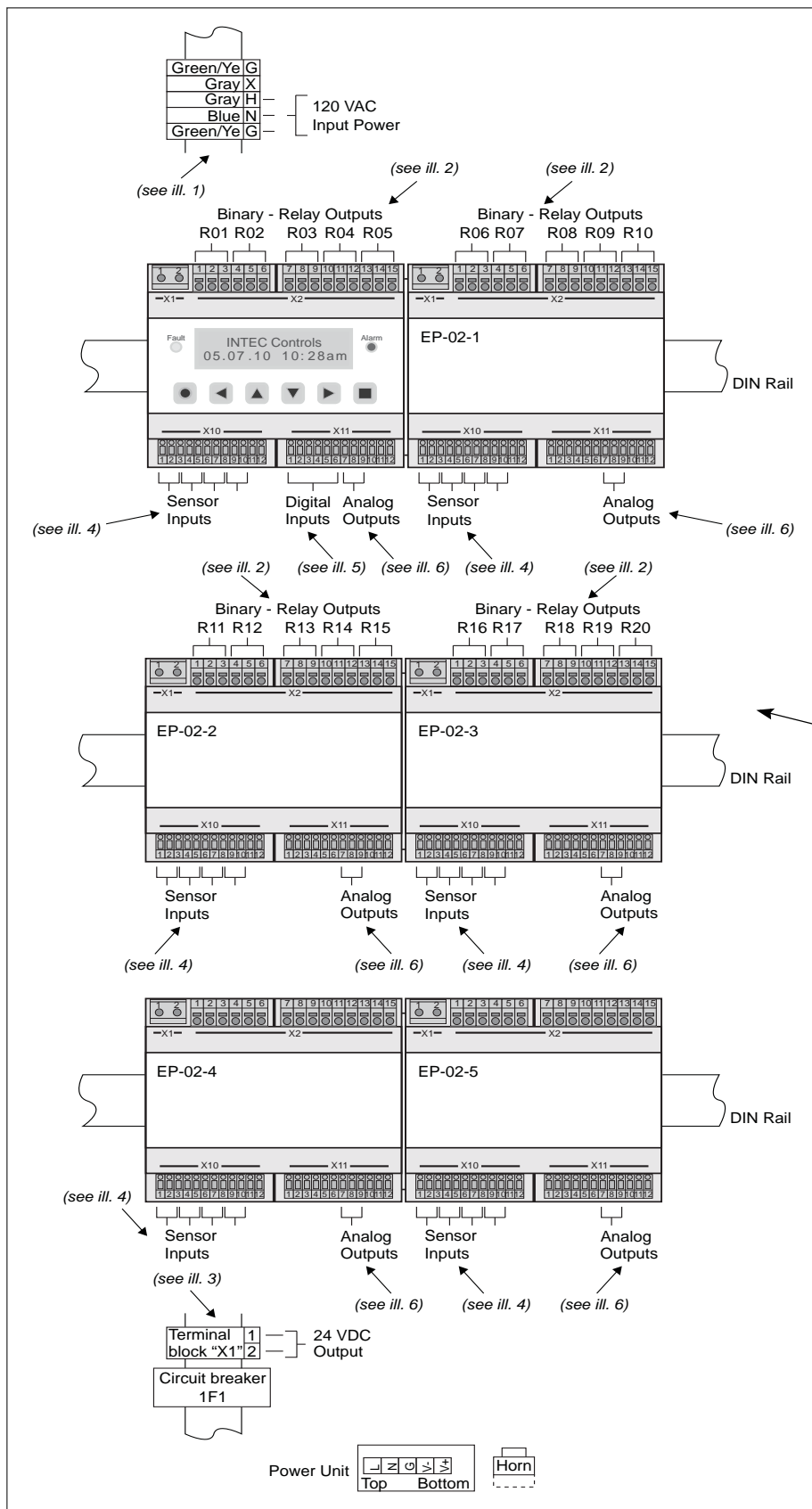
- Activate sensor point
- Select sensor point type (gas, temperature, humidity)
- Select measuring range
- Select sensor signal
- Select stage/setpoint 1 to 5
- Select hysteresis
- Set delay ON/OFF time
- Select current or mean/average value
- Assign sensor point fault to stage level setpoint
- Assign setpoint 1 to 5 to any output relay
- Assign to analog Output

Sub Menu "System Setup"

Enter and/or change system parameters.

- Select service mode
- Set next maintenance date
- Select service phone number
- Select averaging function, time and overlay, of any SP
- Set date, time and time format
- Change customer password
- Select analog output function
- Set failure relay
- Select power ON time
- Select appropriate hardware configuration

FIELD WIRING CONFIGURATION



Recommended

- **Twisted, shielded wire for analog inputs** (Shield to be terminated and connected only at the sensor/transmitter location)
- **Grounded housing**

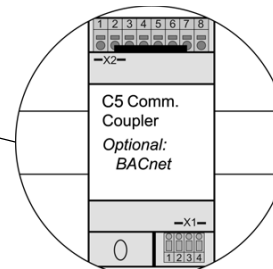
Caution:

The non-metallic enclosure does not provide grounding between conduit connections. Use grounding bushings and jumper wires.

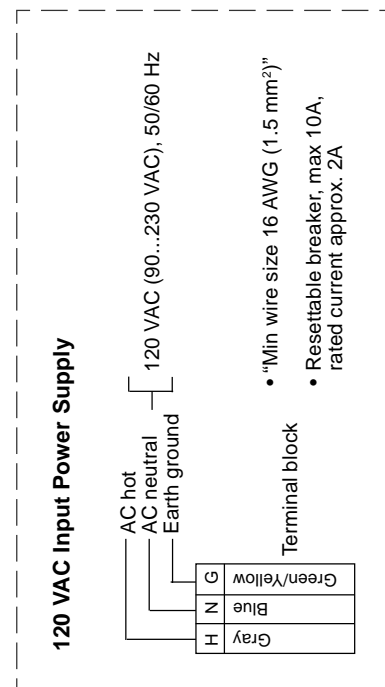
The enclosure is to be mounted using the mounting holes located in the base external to the equipment cavity, or the equivalent.

The conduit hubs must be connected to the conduit before connected to the enclosure.

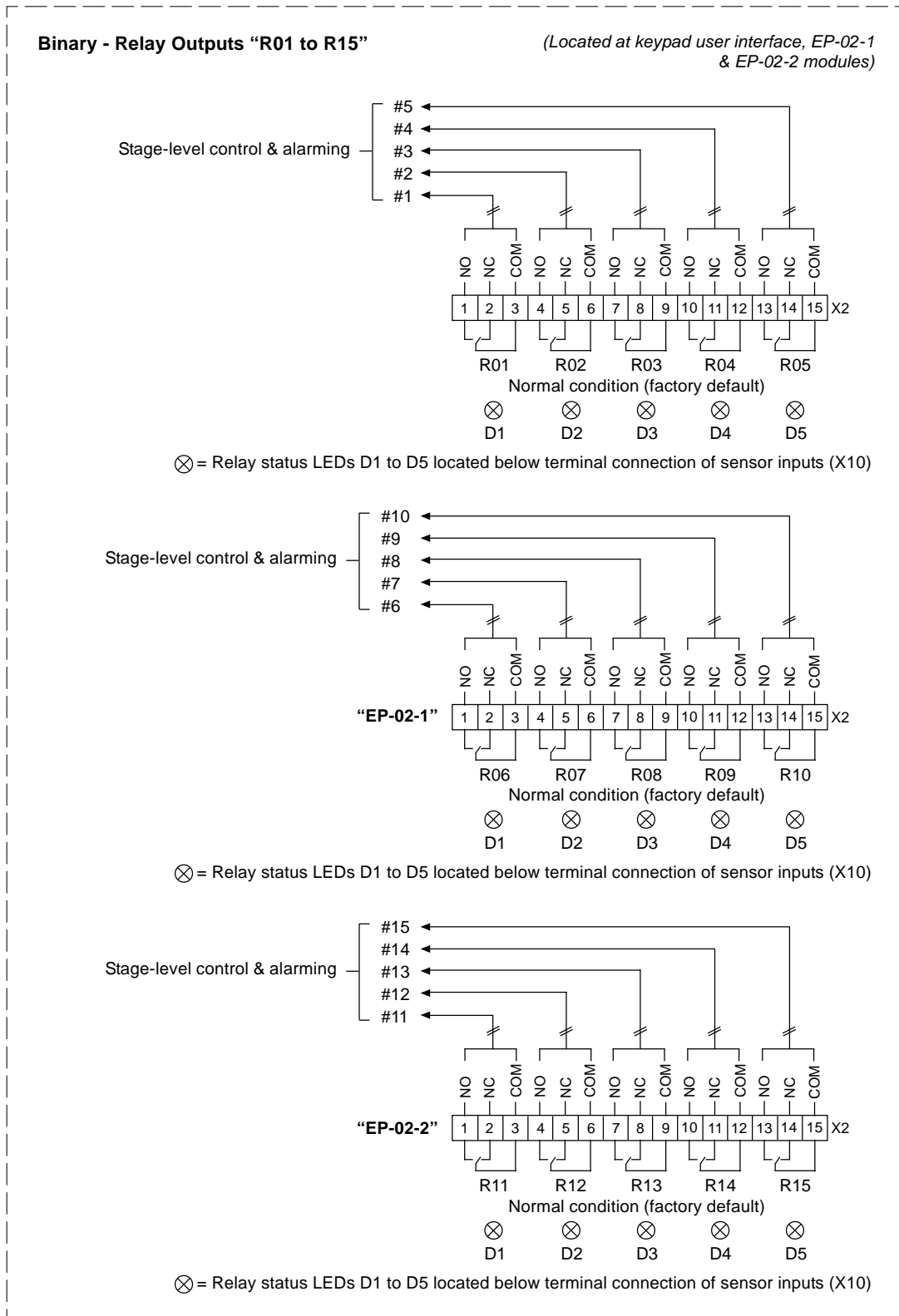
When connecting conduit to the enclosure use only UL listed or UL recognized conduit hubs that have the same environmental type rating as the MGC2-24 enclosure.



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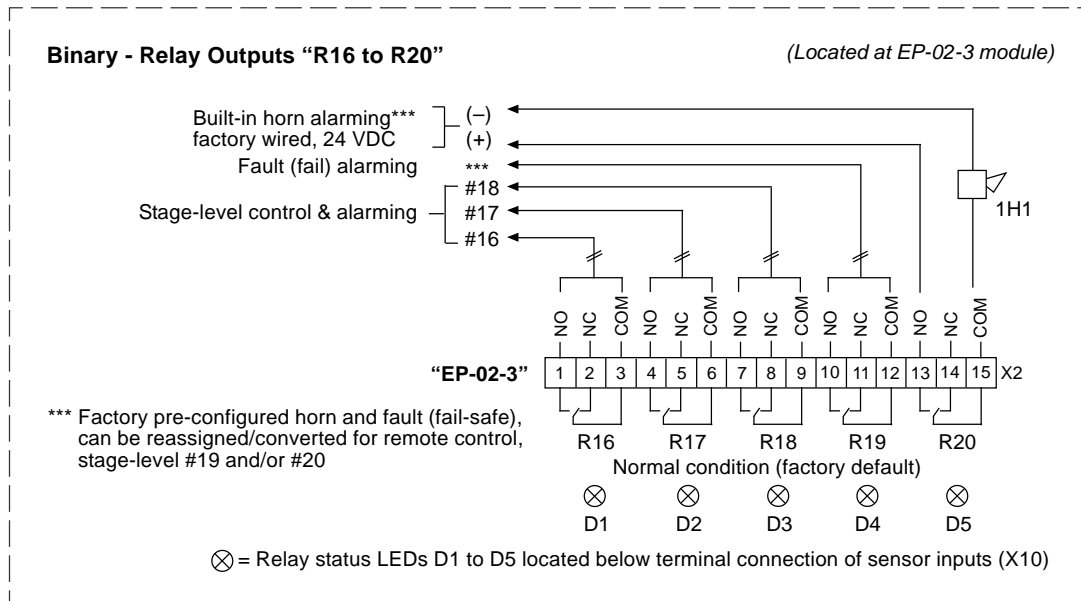


FIELD WIRING CONFIGURATION (cont...)

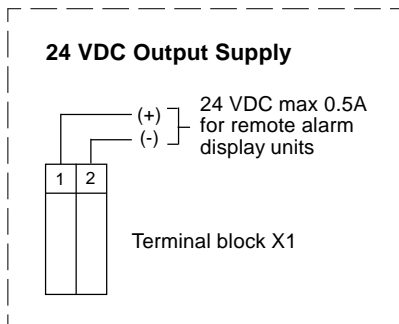


iii. 2

FIELD WIRING CONFIGURATION (cont...)



ill. 2

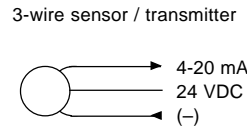
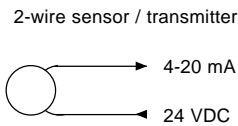
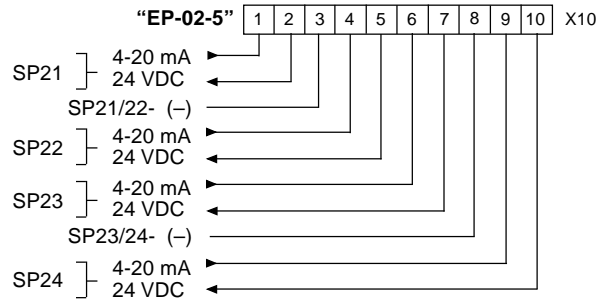
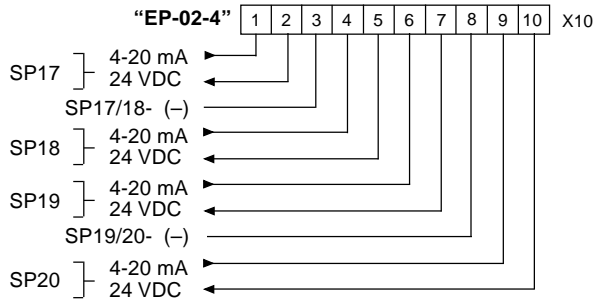
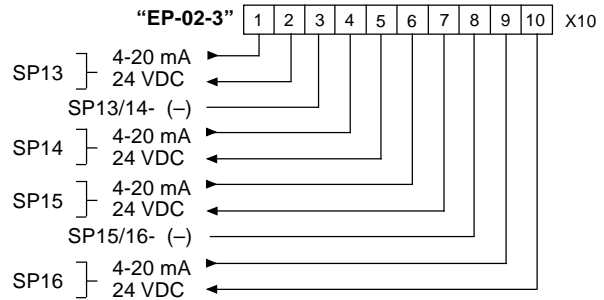
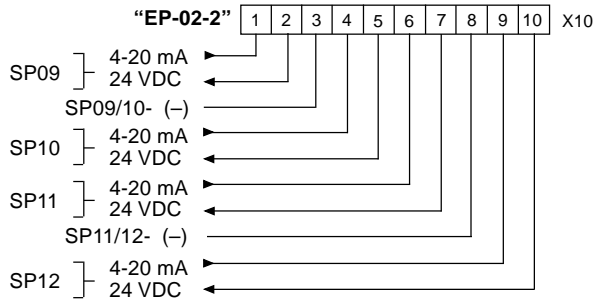
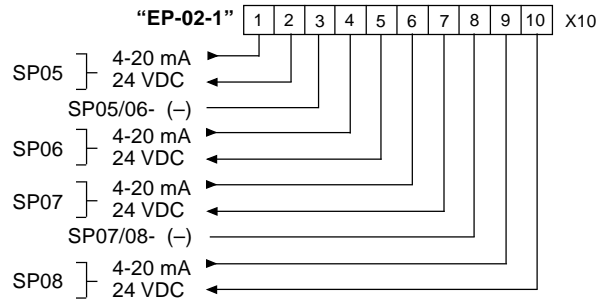
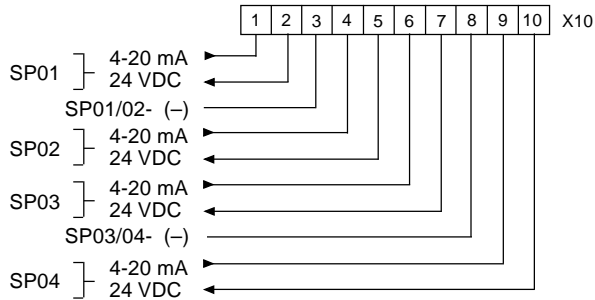


ill. 3

FIELD WIRING CONFIGURATION (cont...)

Sensor Inputs "SP01 to SP24"

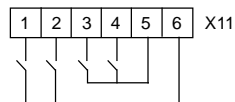
(Located at keypad user interface, EP-02-1, EP-02-2, EP-02-3, EP-02-4 & EP-02-5 modules)



ill. 4

Digital Inputs "DI01 to DI04"

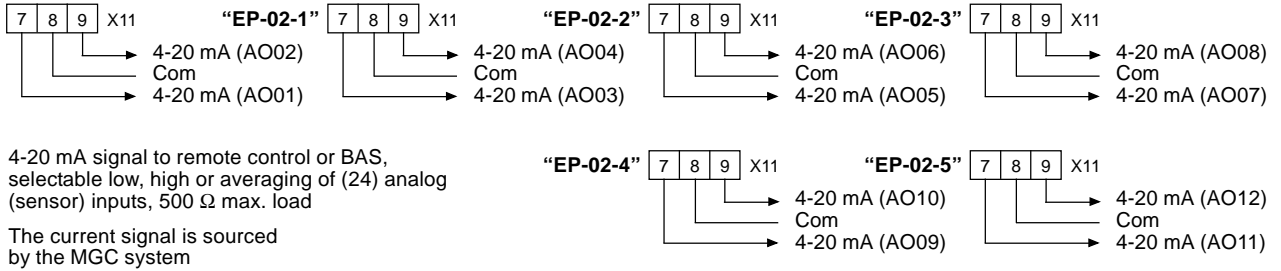
(Located at keypad user interface module)



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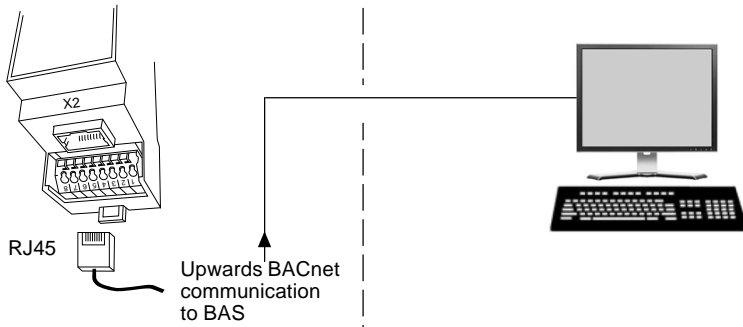
FIELD WIRING CONFIGURATION (cont...)

Analog Outputs “AO01 to AO12” (Located at keypad user interface, EP-02-1, EP-02-2, EP-02-3, EP-02-4 & EP-02-5 modules)



ill. 6

C5 BACnet Communication Coupler, optional



ill. 7