Multi-Point Gas Detection and Control System

INTEC
C O N T R O L S
A **Wilson Mohr** Company

**PolyGard
LGC2-04**

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*
- *Four (4) analog inputs, 4-20 mA*
- *Four (4) digital inputs*
- *Five (5) relay outputs:*
  - *Five-stage control*
  - *Fail-safe assignable*
- *Two (2) analog outputs, 4-20 mA*
  - *Selectable for low, high or averaging*
- *Built-in horn*
- *Accepts combination of toxic or combustible gases, refrigerants, temperature or humidity remote sensor inputs*

- *Optional BACnet coupler upwards communication to BAS*
- *Liquid Crystal Display (LCD)*
- *LED status indicators*
- *Keypad user interface*
- *Simple menu-driven programming*
- *RFI/EMI protected*
- *Modular technology*
- *Overload & short-circuit protected*
- *NEMA 4X enclosure*
- *Easy maintenance*

CE

City of Los Angeles Approved

NRTL Tested & Certified
Conforms to STD
UL 2017

UL 2075 certified PolyGard Carbon Monoxide & Combustible Gas Transmitters are recommended for maximum system performance and reliability

Upwards Communication Options
BACnet

BACnet®

SPECIFICATIONS

Electric

Power supply	24 VDC, -15%/+20%, 50/60 Hz, auto-resettable fuse
Power consumption	13 VA (0.5 A), w/max sensor connections for AT Series; other types of transmitters may require external power source
RF/EMI protected	4.0 W @ 3 ft. (1 m) radiated

Type of Control

General	Five-stage (S1 to S5) control, assignable up to five (5) 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 "R05")
Analog inputs	Four (4) 4-20 mA
Analog reading	Current and mean (average) value
Stage level / setpoint	Field adjustable over full range, five (5) per analog input, assignable to current or mean (average) value

- hysteresis/ switching differential	Selectable for each sensor point
Digital inputs	Four (4), each can be individually assigned to any relay (R1...R5).
- application	Remote audio/visual alarm reset or override function
Relay outputs (R1-R5) w/ status LEDs	Five (5) SPDT, 8A 24 VAC/VDC-250 VAC contact resistance 100 mΩ, max.
- each stage level (S1-S5)	Assignable to any relay
- sensor fail-safe	Assignable to any stage level
Time delay switching	Selectable for make and brake of each sensor point (SP1 to SP4) 0-9,999 seconds
Analog output	Two (2) independent 4-20 mA signal, 500 Ω max. load, selectable as low, high or averaging of sensor inputs
Audible alarm	85 db (10 ft), enabled or dis-selectable; assignable to stage level S1, S2, S3, S4 or S5
Alarm acknowledgment	Menu-driven and system reset function for latched relays

SPECIFICATION

User Interface

Keypad type	Refer to section "User Interface & Controller"
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, %LEL, Vol%, °F, %RH, %, ppk, °C

BACnet Interface, optional*

Read sensor's status information via BACnet coupler and BACnet-Profile, BACnet-Services and BACnet BIBBs

Input scaling	
0-250 ppm CO	Coupler option "B"
0-100%	Coupler option "P"
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 standards
- color	Light gray, smoked gray for cover
- protection	NEMA 4X (IP 65)
- installation	Wall (surface) mounted
Dimensions (H x W x D)	
- base	7.9 x 7.5 x 4.1 in. (200 x 190 x 105 mm)
Cable entry	5 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	4.5 lbs. (2.0 kg)

Approvals / Listings

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

ORDERING INFORMATION

LGC 2 - 04 - 0500 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:
LGC2 - 04 - 0500 US,
configuration includes:

Digital, programmable controller with menu-driven key-pad user interface, LCD & LEDs, 24 VDC, 50/60 Hz NEMA 4X enclosure
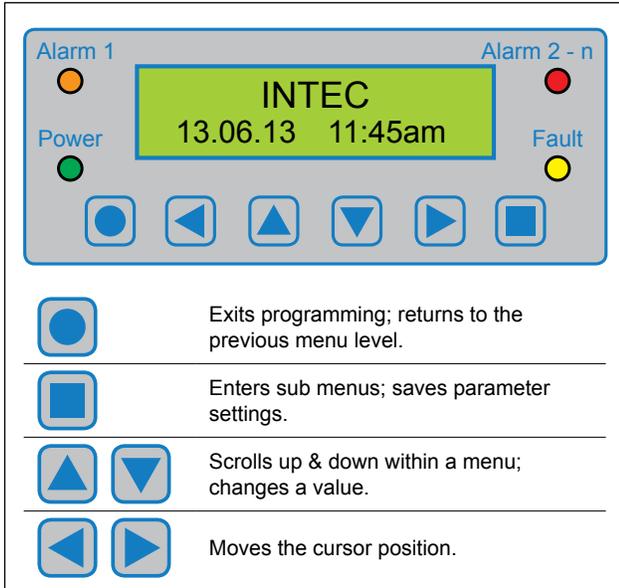
Inputs:	(4)	4-20 mA
	(4)	Digital
Outputs:	(5)	Relays, SPDT, 8 A
	(2)	4-20 mA

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

IN*TEC*

C O N T R O L S

A **Wilson Mohr** Company

USER INTERFACE & CONTROLLER

Keypad User Interface

Alarm 1

🟠

INTEC
13.06.13   11:45am

Alarm 2 - n

🔴

Power

🟢

Fault

🟡

⚫ ◀ 🔺 🔻 ▶ ⬛

⚫	Exits programming; returns to the previous menu level.
⬛	Enters sub menus; saves parameter settings.
🔺 🔻	Scrolls up & down within a menu; changes a value.
◀ ▶	Moves the cursor position.

Main Page & Main Menu

INTEC
13.06.13 11:45am
⬛

System Errors
⬛ 🔺 🔻

Stage Status
⬛ 🔺 🔻

Relay Status
⬛ 🔺 🔻

Sensor Readings
⬛ 🔺 🔻

Relay Setup
⬛ 🔺 🔻

SP Setup
⬛ 🔺 🔻

Data Logger
⬛ 🔺 🔻

System Setup
⬛
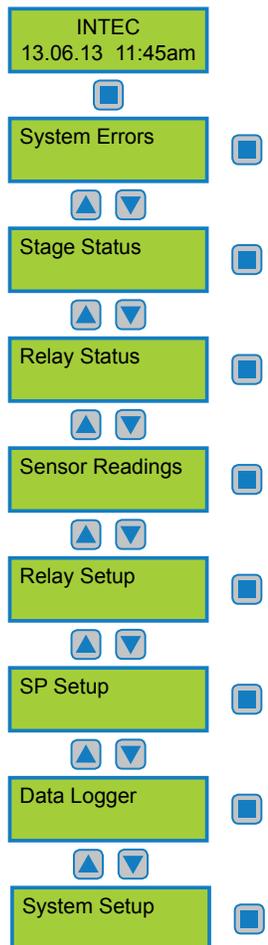
System Operation
All programming is made via the keypad user interface in combination with the display screen. Security is provided via two password levels. The lower level password (1234) allows to override or to reset system status functions. The upper level password (9001) allows all programming and override functions.

Main Page Display
After powered on, displays IN*TEC* and Date/Time 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", "Data Logger" 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 or average values are displayed for each "SP" sensor point with sensing type and engineering unit (ppm, %LEL, Vol%, °F, %RH, %, ppk, °C).

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 latching or non-latching mode
- Select horn re-annunciation interval
- Select digital input usage, and assign to any output relay
- Set ON/OFF time delay

Sub Menu "SP Setup"
Enter and/or change parameters of each sensor point.
- Activate/deactivate sensor point
- Lock/unlock sensor point
- Alarm on rising or falling value
- Select sensor point type (gas, temperature, humidity)
- Select full scale measuring range
- Select sensor signal
- Select stage/setpoint 1 to 5
- Select hysteresis
- Set delay ON/OFF time
- Select current or average mode
- Assign sensor point fault to stage level activation
- Assign setpoint 1 to 5 to any output relay
- Assign to analog output

Sub Menu "Data Logger"
- Set data logger ON/OFF
- Set sensor data logging ON/OFF
- Set sensor data logging interval
- Set alarm ("stage status") logging ON/OFF
- Set system error logging ON/OFF

Sub Menu "System Setup"
Enter and/or change system parameters.
- Select service mode ON/OFF
- 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 (alarm suppression)
- Select appropriate hardware configuration
- Assign relay multiplication

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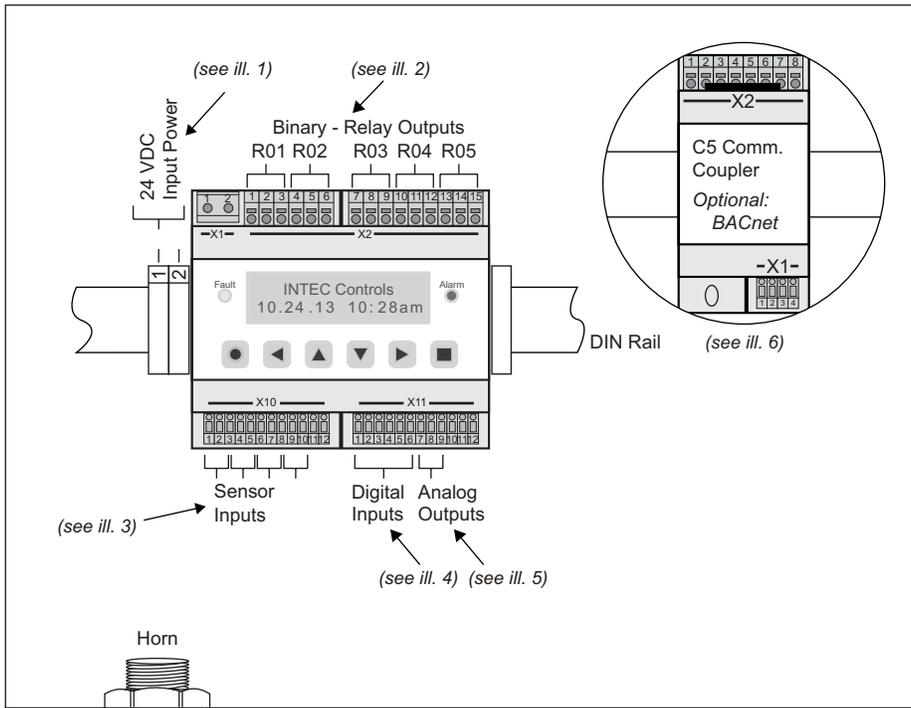
Recommended
- **Twisted, shielded wire for analog inputs**
  (Shield to be terminated and connected only
  at the sensor/transmitter location)
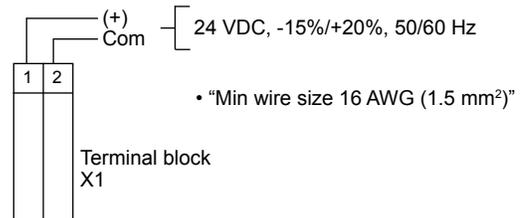- **Grounded housing**

<u>Caution:</u>
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.

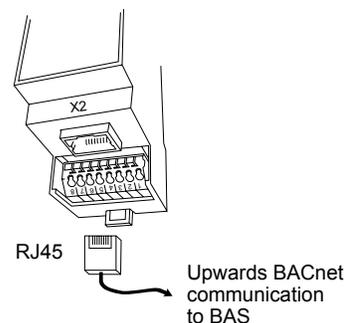When connecting conduit to the enclosure use only
UL Listed or UL Recognized conduit hubs that have
the same environmental type rating as the LGC2
enclosure.

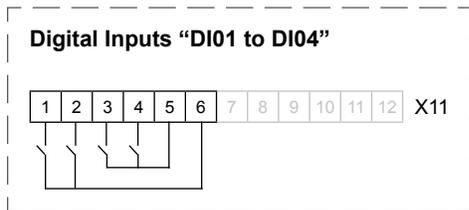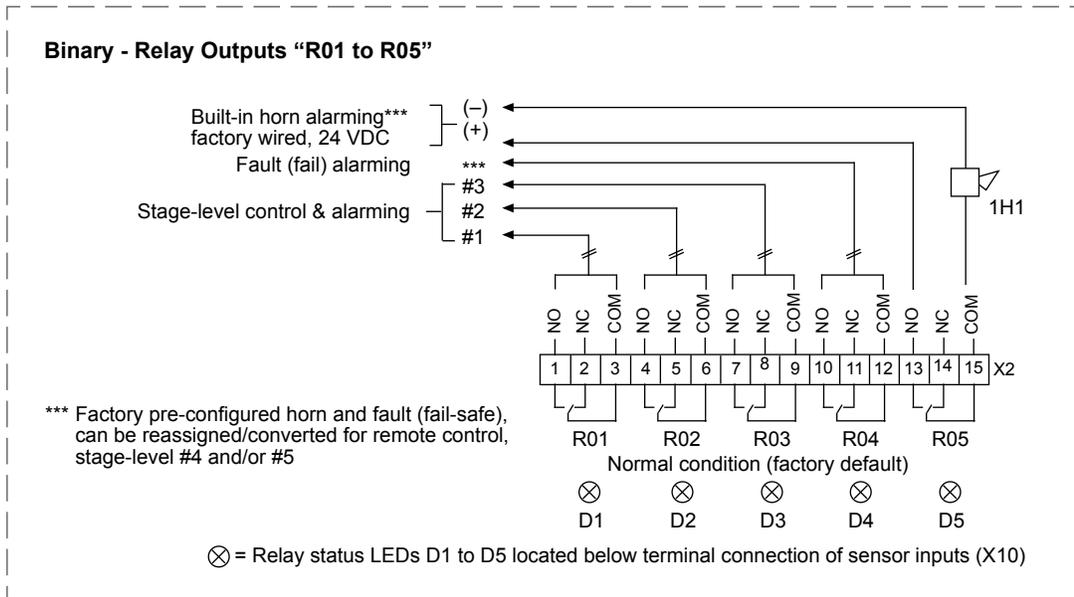**24 VDC Input Power Supply**

(+)
Com — 24 VDC, -15%/+20%, 50/60 Hz

1 2

- "Min wire size 16 AWG (1.5 mm^2)"

Terminal block
X1

ill. 1

C5 BACnet Communication Coupler, optional

ill. 6

X2

RJ45

Upwards BACnet
communication
to BAS

FIELD WIRING CONFIGURATION (cont...)

Binary - Relay Outputs "R01 to R05"

Built-in horn alarming*** factory wired, 24 VDC — (−) (+)

Fault (fail) alarming — ***

Stage-level control & alarming — #3 #2 #1

1H1

NO NC COM NO NC COM NO NC COM NO NC COM NO NC COM

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | X2 |

R01   R02   R03   R04   R05

*** Factory pre-configured horn and fault (fail-safe), can be reassigned/converted for remote control, stage-level #4 and/or #5

Normal condition (factory default)

⊗ D1   ⊗ D2   ⊗ D3   ⊗ D4   ⊗ D5

⊗ = Relay status LEDs D1 to D5 located below terminal connection of sensor inputs (X10)

ill. 2

Digital Inputs "DI01 to DI04"

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | X11 |

ill. 4

ill. 3

Analog Outputs "AO01 to AO02"

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | X11 |

4-20 mA (AO02)
Com
4-20 mA (AO01)

4-20 mA signal
to remote control or BAS,
selectable low, high or
averaging of (4) analog (sensor)
inputs, 500 Ω max. load

The current signal is sourced
by the LGC2 system

ill. 5

Sensor Inputs "SP01 to SP04"

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | X10 |

SP01 ⊣ 4-20 mA ▶
     ⊣ 24 VDC ◀

SP01/02- (−)

SP02 ⊣ 4-20 mA ▶
     ⊣ 24 VDC ◀

SP03 ⊣ 4-20 mA ▶
     ⊣ 24 VDC ◀

SP03/04- (−)

SP04 ⊣ 4-20 mA ▶
     ⊣ 24 VDC ◀

2-wire sensor / transmitter

4-20 mA
24 VDC

3-wire sensor / transmitter

4-20 mA
24 VDC
(−)

ill. 6, see previous page

Note: Sensor inputs other than AT Series
Transmitters with a power consumption
of greater than 55 mA requires a
separate DC power supply.