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 (20) analog inputs, 4-20 mA
- Four (4) digital inputs
- Twenty (20) relay outputs:
  - Five-stage control
  - Fail-safe assignable
- Ten (10) 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

<table>
<thead>
<tr>
<th>Electric</th>
<th>Digital inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>Four (4), each can be individually assigned to any relay (R1...R20).</td>
</tr>
<tr>
<td>120 VAC (90...230 VAC), 50/60 Hz resetable breaker, 24 VAC on request</td>
<td>Remote audio/visual alarm reset or override function</td>
</tr>
<tr>
<td>Power consumption 60 VA, max.</td>
<td>Relay outputs (R1-R20)</td>
</tr>
<tr>
<td>RF/EMI protected 4.0 W @ 3 ft. (1 m) radiated</td>
<td>Twenty (20) SPDT, 8A</td>
</tr>
<tr>
<td>Type of Control General</td>
<td>VDC output supply</td>
</tr>
<tr>
<td>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”)</td>
<td>24 VDC, 0.5 A fused</td>
</tr>
<tr>
<td>Analog inputs Twenty (20) 4-20 mA</td>
<td>Ten (10) independent 4-20 mA signal, 500 Ω max. load, selectable as low, high or averaging of sensor inputs</td>
</tr>
<tr>
<td>Analog reading Current and mean (average) value</td>
<td>Audible alarm 85 db (10 ft), enabled or disabled, selectable; assignable to stage level S1, S2, S3, S4 or S5</td>
</tr>
<tr>
<td>Stage level / setpoint Field adjustable over full range, five (5) per analog input, assignable to current or mean (average) value</td>
<td>Alarm acknowledgement Menu-driven and system reset function for latched relays</td>
</tr>
<tr>
<td>- hysteresis/switching differential Selectable for each sensor point</td>
<td></td>
</tr>
</tbody>
</table>
**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**

- **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,
  - **conformity**: UL Type 1, UL508/UL 50 standards
  - **color**: Light gray, smoked gray for cover
  - **- protection**: NEMA 4X (IP65)
  - **- installation**: Wall (surface) mount
  - **Dimensions (H x W x D)**: 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 mm²)
    - **Max. 16 AWG (1.50 mm²)**
    - **- output**: Min. 24 AWG (0.25 mm²)
    - **Max. 14 AWG (2.50 mm²)**
  - **Weight**: 14.5 lbs. (6.6 kg)

**Approvals / Listings**

- **- unit rating**: Conforms to STD ANSI/UL 2017
- **- enclosure (panel)**: UL Listed, E75645

**Warranty**

- **Two years material and workmanship**

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**ORDERING INFORMATION**

**MGC 2 - 20 - 2000 US**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>No options</td>
</tr>
<tr>
<td>01</td>
<td>Key Lock w/2 keys</td>
</tr>
<tr>
<td>B0</td>
<td>BACnet Upwards Communication Coupler “C5-BAC-98” for AT Transmitters (0-250 ppm CO) BACnet Upwards Communication Coupler “C5-BAC-98-1” for AT Transmitters (0-100%)</td>
</tr>
<tr>
<td>P0</td>
<td></td>
</tr>
</tbody>
</table>

Standard control system, ordering part number:

**MGC 2 - 20 - 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**: (20) 4-20 mA
(4) Digital

**Outputs**: (20) Relays, SPDT, 8A
(10) 4-20 mA
(1) 24 VDC, 0.5A

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

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

Customer Services (858) 578-7887 & (888) GO INTEC Fax (858) 578-4633 & (888) FX INTEC INTEC Controls, 12700 Stowe Dr. Suite 110, Poway, CA 92064 www.inteccontrols.com Specification subject to change without notice. Page 3 of 8 Printed in USA 111209
**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 MGC2-20 enclosure.

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**120 VAC Input Power Supply**
- Min wire size 16 AWG (1.5 mm²)
- Receptacle breaker, max 10A.
- Rated current approx. 2A.
- Terminal block

**AC hot**

**AC neutral**

**Earth ground**

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Binary - Relay Outputs “R01 to R15”

(Location at keypad user interface, EP-02-1 & EP-02-2 modules)

Stage-level control & alarming

iox 1 2 3 4 5
D1 D2 D3 D4 D5

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

Stage-level control & alarming

“EP-02-1”

R01 R02 R03 R04 R05
Normal condition (factory default)

Stage-level control & alarming

“EP-02-2”

R11 R12 R13 R14 R15
Normal condition (factory default)

@ = Relay status LEDs D1 to D5 located below terminal connection of sensor inputs (X10)
FIELD WIRING CONFIGURATION (cont...)

**Binary - Relay Outputs “R16 to R20”**

(Located at EP-02-3 module)

- Built-in horn alarming***
  - Factory wired, 24 VDC
  - Fault (fail) alarming
- Stage-level control & alarming

*** Factory pre-configured horn and fault (fail-safe), can be reassigned/converted for remote control, stage-level #19 and/or #20

- Normal condition (factory default)

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

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**24 VDC Output Supply**

- 24 VDC max 0.5A for remote alarm display units

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FIELD WIRING CONFIGURATION (cont...)

Sensor Inputs “SP01 to SP20”


Digital Inputs “DI01 to DI04”

(Located at keypad user interface module)
FIELD WIRING CONFIGURATION (cont...)

Analog Outputs “AO01 to AO10” (Located at keypad user interface, EP-02-1, EP-02-2, EP-02-3 & EP-02-4 modules)

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

The current signal is sourced by the MGC system

C5 BACnet Communication Coupler, optional

Upwards BACnet communication to BAS