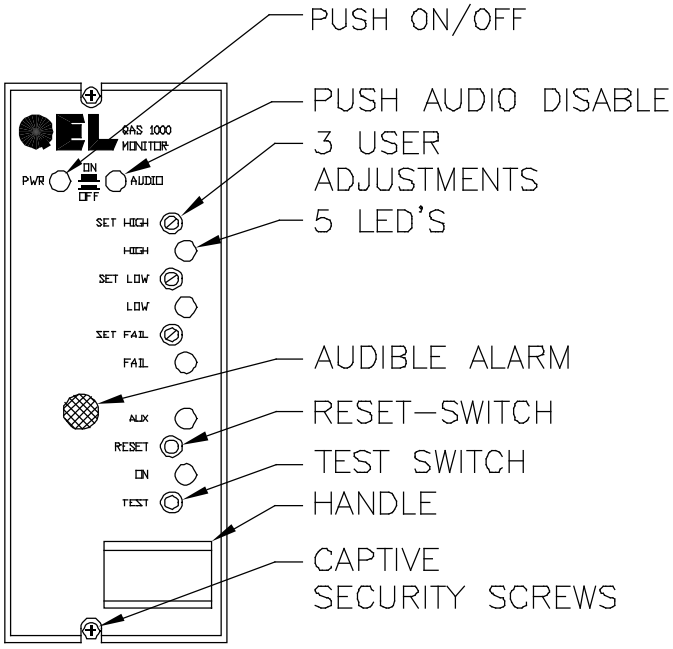
QAS-11000 SERIES
PLUG-IN CONTROLLERS



INSTALLATION, OPERATION AND MAINTENANCE MANUAL

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Rev. D

GENERAL SPECIFICATIONS:

S/N _____

Gas Label _____

Span Set _____

High Alarm Set _____

Lo Alarm Set _____

Aux/Fail Set _____

SENSOR: Accepts a 4-20mA Transmitter/Sensor

Onboard Switch Setting:

	A			B	
	OFF	ON		OFF	ON
1		X	1		X
2	X		2		X
3		X	3		X
4		X	4	X	
5	X		5	X	
6		X	6	X	
7	X		7	X	
8	X		8	X	
9		X	9	X	
10	X		10	X	

TIME DELAYS:

HIGH RELAY Immediate

LOW RELAY Immediate

AUX / FAIL RELAY Immediate

RELAYS:

HIGH RELAY Not Energized

LOW RELAY Not Energized

AUX / FAIL RELAY Energized

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1. SPECIFICATIONS:

Power Supply:	120 VAC, +10% - 15%, 50 TO 60 Hz 5VA per module	
Relays:	Three DPDT dry contacts: Lo, Hi, Fail/Aux 240 VAC/30 VDC 5 Amp Resistive, 3.7 Amp Inductive Field configurable latching, or non-latching Field configurable energized, or not energized Field configurable time delays	
Audio Alarm:	85 dB at 1 foot	
Panel Indicators:	Power ON	Green LED
	High Set point	Red LED
	Low Set point	Yellow LED
	Aux Set point	Red LED
	Sensor Fail indication	Red LED
Sensor:	Accepts a 4-20mA Transmitter/Sensor	
Calibration:	Recommended once per year.	
Expected Sensor Life:	See transmitter/sensor manual.	
Environment:	Temperature -30 C to 40 C Humidity 0 to 90 % non-condensing	
Recommended mounting height:	Carbon Monoxide	4 to 6 feet above floor
	Propane	1 foot above floor
	Ammonia	9” to 18” below ceiling
	Freon	1 foot above floor
	Other	Consult Factory or transmitter/sensor manual

Do not mount near fans or doors where high velocity drafts occur, or where clean air enters area.

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2. THEORY OF OPERATION:

The QAS-11000 series is a modular multi point controller, based on a 100 mm by 160 mm eurocard with a two inch wide front panel. Eight controllers will fit in one standard 19" x 5.25" rack. Wall mount enclosures are available for 2, 4 or up to 8 controllers.
The QAS-11000 series supports 2-wire and 3-wire 4-20mA remote transmitters at 25 to 30 VDC, and controls three relays (DPDT) that may be used to actuate fans, alarms, etc. An internal audio alarm will sound if the sensor fails, if a high, or aux. alarm state exists (field configurable).

3. INSTALLATION:

CO: Automobile-parking garages: Mount 4-6 feet above the floor.

Bus and truck barns: Mount where vehicles exhaust upwards, it is often useful to mount the units on the ceiling.

C3H8: Propane is heavier than air. Mount close to the floor and take note of any low points where gas may pool or collect.

NH3: Mount at ceiling height. For high ceilings, two sensors are recommended, the second about 6 feet above the floor.

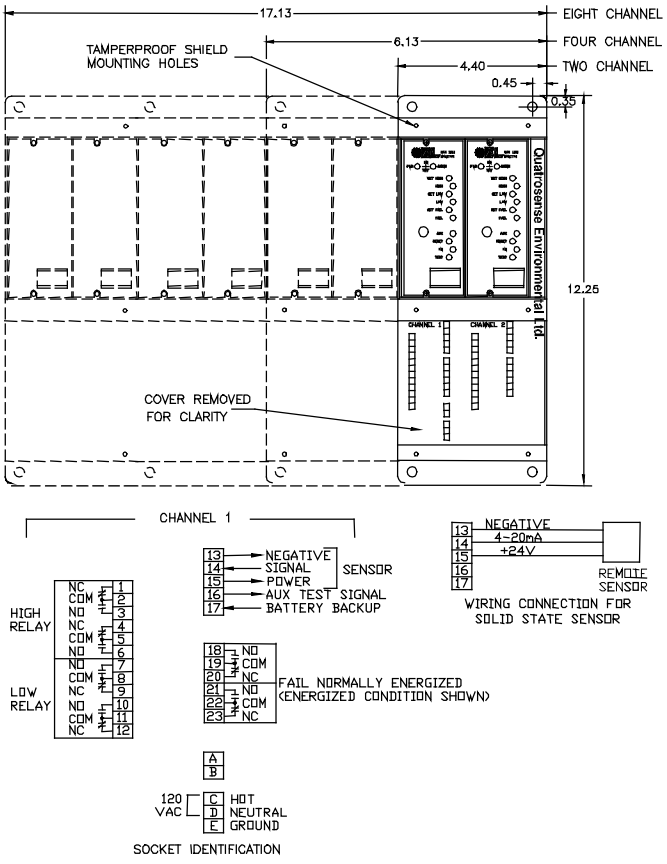
Freon: Freon gases are heavier than air. Mount near the floor and take note of any low points where gas may pool or collect:

Other Transmitter/sensors, consult appropriate manual.

Always try to mount the unit with sensor point downwards.

Do not mount near fans, doors, or other places where high velocity occurs or where clean air enters.

Most users will find it useful to have a time delay on fan starting off 5 to 10 minutes to prevent ‘nuisance’ alarms.



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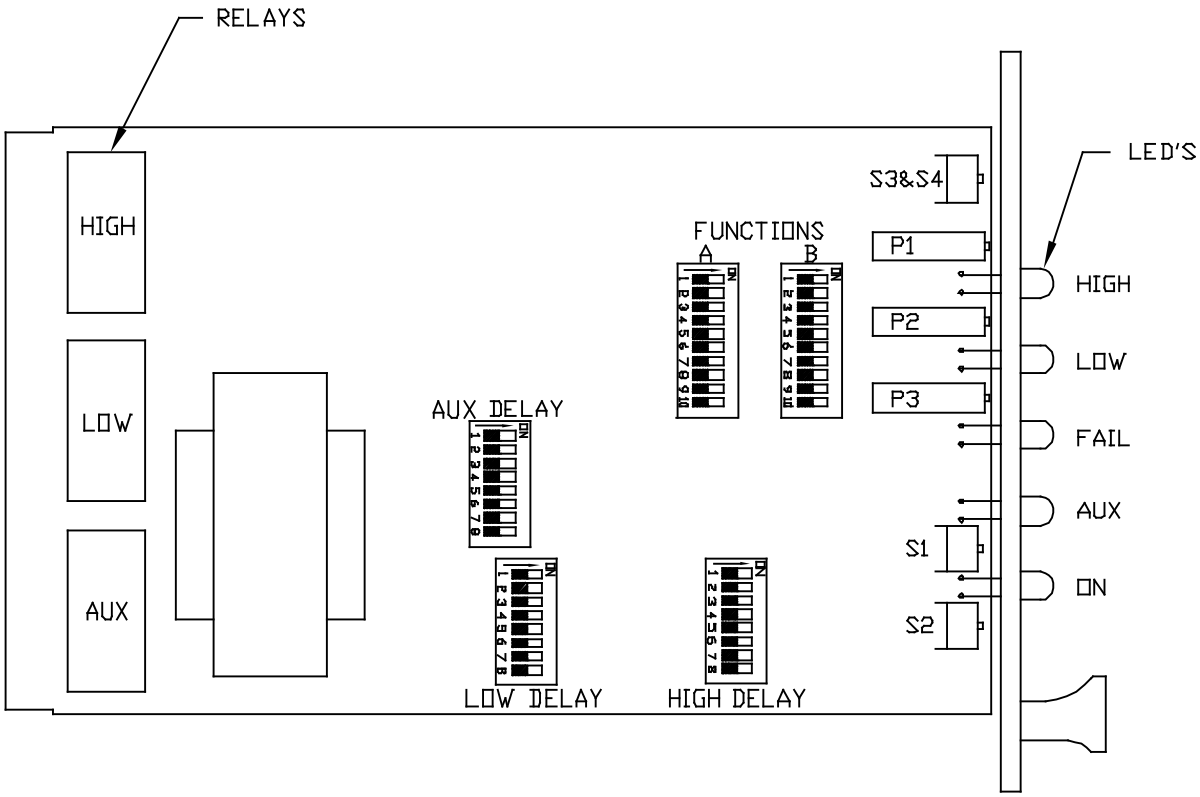
FUNCTION CONTROL SWITCHES:

The QAS-11000 series has switches on the circuit board for controlling a number of functions: relay action, time delays, buzzer enable, relay actuation in case of sensor failure. Turn off power and pull the card module from the enclosure to set these switches.

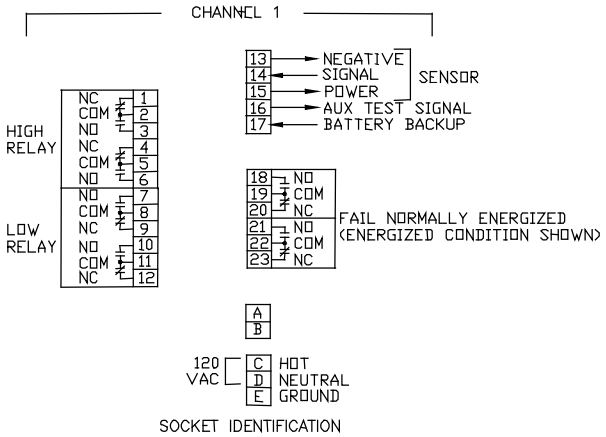
Function Switch A	Function Switch B	Low and High Relay Delay Switches	Aux/Fail Relay Delay Switches
1) Low Relay On = Not normally energized Off = Normally energized	1) Buzzer On = Sounds w/Aux. Setpoint	1) 34 seconds	1) 136 seconds
2) Low Relay On = Latching Off = Non-latching	2) Buzzer On = Sounds w/High Relay	2) 68 seconds	2) 273 seconds
3) Low Relay On = Instant actuation Off = Delayed actuation	3) Buzzer On = Sounds w/Aux. Relay	3) 136 seconds	3) 546 seconds
4) High Relay On = Not normally energized Off = Normally energized	4) Buzzer On = Latching	4) 273 seconds	4) 1092 seconds
5) High Relay On = Latching Off = Non-latching	5) Aux. Setpoint On = Ordinary setpoint Off = Fail or deficiency	5) 546 seconds	5) 2184 seconds
6) High Relay On = Instant actuation Off = Delayed actuation	6) Buzzer On = Sounds after High Delay. 2B must Be off	6) 1092 seconds	6) 4368 seconds
7) Aux. Relay On = Not normally energized Off = Normally energized	7) High Relay On = Latches after Delay	7) 2184 seconds	7) 8737 seconds
8) Aux. Relay On = Latching Off = Non-latching	8) Aux. Setpoint On = Activates High Relay	8) 4368 seconds	8) 17475 seconds
9) Aux. Setpoint On = Instant actuation	9) Aux. Setpoint On = Activates Low Relay		
10) Aux. Setpoint On = Delayed actuation	10) Aux. Relay On = High setpoint activates Aux. relay in delay mode		

Note: The LED's will always turn on immediately, regardless of switch settings.



RELAY WIRING:

The relays are double pole, double throw, meaning that each relay is two relays in one. Each "side" having one normally open contact, and one normally closed contact arranged about a common center pin.



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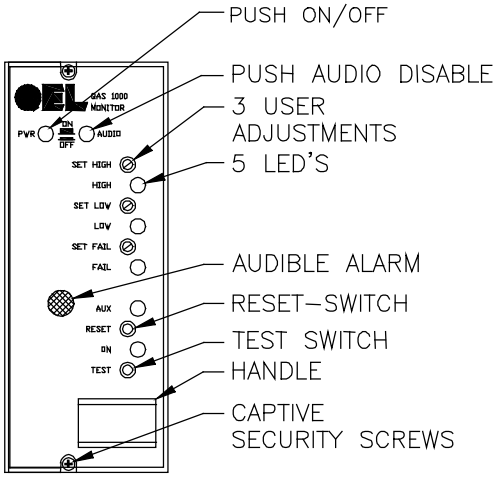
4. TURN-ON AND TROUBLE SHOOTING:

Upon unit power up, there is a characteristic turn-on cycle. As the sensor comes up to operating temperature and stabilizes, the signal may rise to high alarm before settling again to zero. This takes two or three minutes. (If relay time delays are turned on, this phase should pass without activating the relays). If the unit has been off for more than three days, it is best to wait three days before calibration to ensure that it has stabilized fully. If the unit has been off for only an hour or two wait at least an hour before calibrating.

TEST SWITCH:

Pressing the test switch on the front panel will simulate a high alarm condition. This tests the LED and relay actuation. If time delay switches are active, then the relays will activate after their proper delays.



SENSOR FAIL DETECTION:

The fail circuit detects when the sensor fails or connecting wiring is broken.

The audio alarm will sound during fail, providing that the appropriate switches are on. The low and high relays may be selected to engage during a fail condition providing the appropriate switches are on.

5. CALIBRATION PROCEDURE:

To adjust the setpoints, supply a signal at which you wish to alarm at, and adjust the panel potentiometer until the LED just turns ON. You may do this either by using a signal generator, or by applying a desired gas concentration at the transmitter/sensor.

A voltage reading is supplied on the panel terminal blocks for each channel. Measure between Auxiliary Setpoint Signal (Terminal 16) and Neg. (Terminal 13.). FAIL is set at 0.15 Volts at the factory.

6. WARRANTY STATEMENT:

The information contained in this manual is based upon data considered accurate; however, no warranty is expressed or implied regarding the accuracy of this data. All QEL equipment is warranted against defects in material and workmanship for a period of two years from date of shipment with the following exceptions:

Electrochemical Sensors (Toxic)	Six Months
Catalytic Sensors (Combustible)	One Year

During the warranty period we will repair or replace, at our discretion, any components or complete units that prove, in our opinion, to be defective. We are not liable for consequential or incidental damage to auxiliary interfaced equipment.

A returned material authorization number should be obtained from the factory prior to returning any goods. All return shipments must be shipped freight prepaid and a copy of the maintenance records should accompany the unit concerned.

Warranty should be considered F.O.B. the factory. Labour and travel time are chargeable for any field site visits required for warranty work.

LIMITED LIABILITY

All QEL systems shall be installed by a qualified technician/electrician and maintained in strict accordance with data provided for individual systems in the form of installation/maintenance manuals. QEL assumes no responsibility for improper installation, maintenance, etc., and stresses the importance of reading all manuals. QEL shall not be responsible for any liability arising from auxiliary interfaced equipment nor any damage resulting from the installation or operation of this equipment.

QEL's total liability is contained as above with no other liability expressed or implied, as the purchaser is entirely responsible for installation and maintenance of systems.

This warranty is in lieu of all other warranties, expressed or implied, and no representative or person is authorized to represent or assume for QEL any liability in connection with the sales of our products other than that set forth herein.

NOTE: Due to on-going product development, QEL reserves the right to change specifications without notice and will assume no responsibility for any costs as a result of modifications.

For further information or assistance, contact:

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