

## The IAC24

The **IAC24** auto-calibration unit mounts directly to the Yokogawa **ZR202G** oxygen detector. The connections are made via 1/4" reference air and calibration gas ports located on the detector and the 1/4" fittings on the **IAC24**. The **IAC24** uses solenoid manifolds that automate the calibration process; the solenoid are powered by the **ZR202G** analyzer. The analyzer activates the solenoid allowing the calibration and reference gas to flow to the detector; since the manifold has a fixed orifice no flow adjustment is needed.

### General Specifications:

Input pressure:	7 psig +/- 2 psig
Output Flow:	
	Ref: 0.8 SLPM
	Cal: 0.6 SLPM
Input Flow:	Min: 3.5 SLPM
Dimensions:	4.5" x 3.5" x 1.9" (w 115mm x h 89mm x t 49mm)
Electrical requirements:	24 V DC
Connections:	2 x 1/4" swage type pneumatics fitting
	3 pin quick connect fitting
Ambient Temp:	158°F (70°C)

### 1.1 LOCATION

The following guidelines should be used when selecting a location for the calibration unit:

- 1) Easily accessible for maintenance and inspections
- 2) Ambient temperature does not exceed 158°F (70°C)
- 3) Humidity is moderate and no corrosive gases are present
- 4) Instrument air is available

### 1.2 Calibration/Reference Gas

**Zero:** Never use pure nitrogen. Typically, 1% instrument grade O<sub>2</sub> balanced in nitrogen is used for zero gas; however, an O<sub>2</sub> mixture between 0.4% and 8% is acceptable. A compressed gas cylinder containing certified gas mixtures fitted with a dual stage regulator should be used.

**Span:** A clean, dry air source, such as instrument air, is recommended. Install an in-line filter before the calibration unit to remove any moisture or dirt. A regulator must be attached to the instrument air source to provide the appropriate working pressure for the calibration unit.

**Reference:** Reference air is from the same source as the span gas. The reference air flows to the backside of the zirconia cell and is used at all times. The calibration unit is plumbed to provide a continuous flow rate of reference air, as well as calibration gas flow during calibration.

### 1.3 PIPING

Parts list:

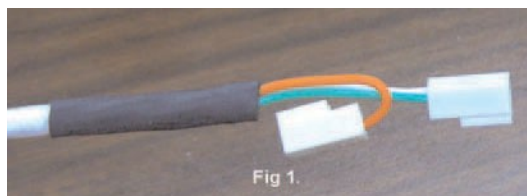
2 M1132RR ss male connection fittings 1

IAC24/202/EA calibration unit

1 Instruction sheet

### 1.4 Mounting the IAC24

1) Take the cable (M1234UJ-A) and bend the orange wire and connector as shown in Fig 1.



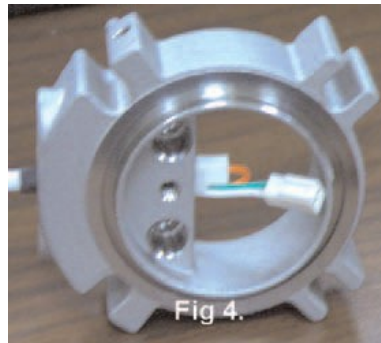
1) Feed the connector through part # M1234TU-A as shown in Fig 2.



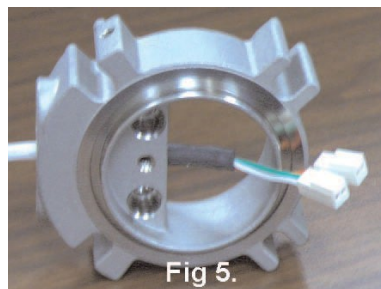
2) Push the wires of the orange connector inside the slot and continue to feed the wires through the hole as in Fig 3.



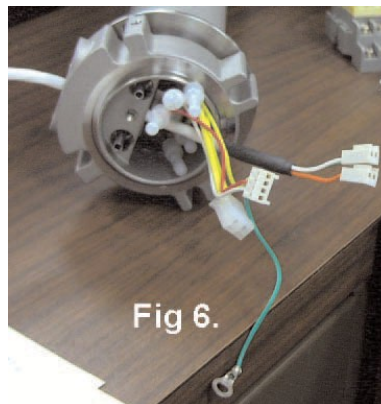
4) Push both connectors all the way through the hole as shown in Fig 4.



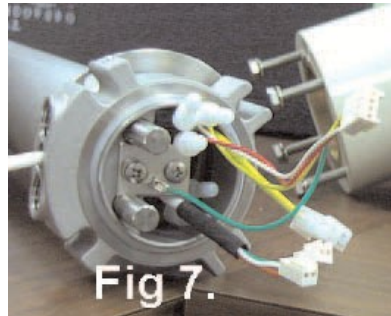
5) After pulling the connectors through the hole, straighten out the orange wire as in Fig 5



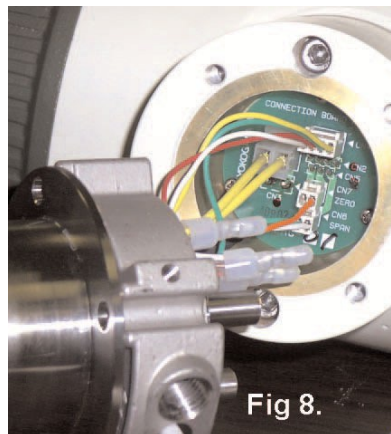
6) Place all the other connectors through part # M1234TU-A and pull the cable to make it the same length as the other two pin connector cable (2 yellow heater wires) as in Fig 6.  
Now place the 2 small o-rings (B1013ER) onto the calibration and reference gas tubes.



- 7) Place the caps (K9470AS) with o-rings (B1013ER) over the gas tubes and into the connector (M1234TU-A). Now install the plate (K9470AL), screw (Y9430LU) and o-ring (Y9101XB). Also when screwing Y9408LU into the connector, place it through the ground ring (green wire) crimp (refer to Fig 7). Also, place the white o-ring into position.



- 8) Carefully connect the polarized plugs in the following order:
- Green and White 2 pin plug into CN6 (Span).
  - Orange wire two 2 plug into CN7 (Zero).
  - The 4-pin plug into CN4 (T/C and Cell connections).
  - The larger 2-pin plug into CN1 (Heater connections).

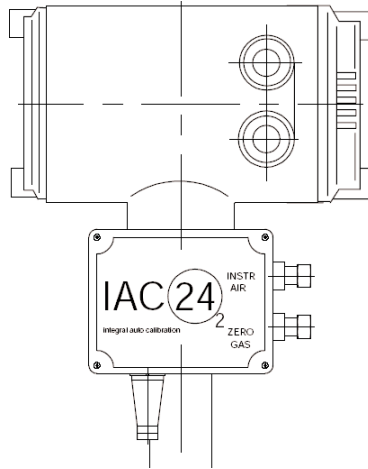


- 9) Carefully position the wires between the head M1234QH-A and the connector M1234TU- A and bolt together using the four long bolts Y9640NU. Reassembled unit should resemble fig 9.



## 1.5 Mounting the IAC24

- 1) Wrap the threads of the M1132RR with Teflon tape and thread into the ZR202G calibration and reference ports.
- 2) Push the male connectors into the IAC24 device (IAC24/ZR202G assembly should resemble Fig. 10). Tighten the fittings on the IAC24 to seal the IAC24 onto the male connections.
- 3) Connect the 1/4" tube to the IAC24. Instrument air must be 21% air.
- 4) Set the inlet gas pressure



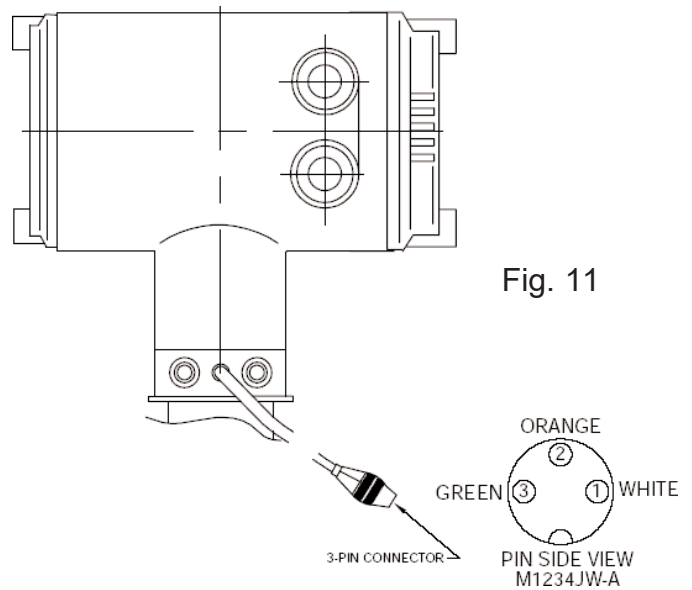
**Important Note:** All threaded fittings should have Teflon tape (or suitable alternate) to prevent leakage.

## 1.6 Wiring

**CAUTION:** The IAC24 requires 24VDC operation which is supplied by the ZR202G. It will be damaged if 120VAC is used for power.

ISOLATE THE POWER TO ALL ELECTRICAL EQUIPMENT BEFORE WIRING THE IAC24 AUTOCALIBRATION SYSTEM. ELECTRICAL SHOCK MAY OCCUR IF THE POWER IS NOT ISOLATED.

The IAC24 requires a special electrical connector. This is purchased separately as an integral part of the cable. This cable has the connections for the 24VDC auto-calibration accessory.



## 7. Testing the ZR202G and IAC24

After reassembling the **ZR202G**, the detector should be tested to assure that the assembly functions properly. Power on the **ZR202G** and allow it to heat up to normal operating temperature (750°C). Once operating temperature is achieved flow calibration gas thru the **IAC24**. Follow the procedure located in section 7.9.1 of the instruction

manual to test the contacts of the **IAC24**. If the modification of the **ZR202G** was successful, you should see the value of the calibration gas change on the display of the detector. If the value does not change, repeat the modification procedure to correct errors.

## 8. Calibration

The **IAC24** does not require flow rate adjustment. Set the inlet pressure to 7 psig +/- 2 psig then follow the calibration setup and execution procedures defined section 9 of the **ZR202G** instruction manual.

## 9. Spare Parts

M1132RR 1/4 NPT SS TUBE ADAPTER  
M1234JW-A 3-pin Anphenol connector