Critical Environment Technologies

"ATW" *Series* ***Second Generation***

Two-wire Analog Transmitters

for

Electrochemical Sensors

INSTALLATION / OPERATION MANUAL

REV: B SEPT-09-2005

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1.0 INTRODUCTION

The ATW "second generation" series transmitters are rugged, user-friendly, configurable two-wire, loop powered, analog transmitter gas detectors for use in non-hazardous (non-explosion rated) environments for commercial HVAC and light industrial use. They can be configured for either electrochemical toxic gas sensors or electrochemical Oxygen sensors.

A standard transmitter provides a green LED indicating light for power, fault and other indications, analog output signal and other enclosure options.

A selection of electrochemical sensors, or Oxygen sensor are available for use with this gas detector. The sensors utilized in this device are accurate enough to measure to Occupational Health & Safety hazardous levels for toxic gases and Oxygen levels.

Note: The ATW analog transmitters operate by diffusion. If a sample draw system is desired, consult a CETCI authorized distributor or the factory for details.

2.0 GENERAL SPECIFICATIONS

Physical:	Standard pvc enclosure:
	a) Dimensions: 6.5" (165 mm) wide X 4.43" (113 mm) high X 2.54" (65 mm) deep
	b) Weight: 16 ounces
	Optional water / dust tight enclosure:
	a) Dimensions: 4.92" (125 mm) wide X 4.92" (125 mm) high X 2.92" (75 mm) deep
	b) Weight: 16 ounces
Construction:	Standard enclosure: Rugged PVC with hinged, secured door and Lexan door label. Door has 1/2" overlap making it drip-proof
	Water/Dust tight enclosure: Rugged polycarbonate with hinged, secured door and Lexan door label
Power:	12VDC to 28VDC
Current draw:	2.5 to 24 mA
Indicators:	a) Green outer LED= power on b) Red inner LED = open loop indication
Options:	a) Water/dust tight enclosure b) Splash guard (water tight controller and transmitter enclosure only)

2.1 SENSOR SPECIFCATIONS

GAS	CROSS SENSITIVITY
Ammonia 0-500 ppm	300 ppm CO=8, 15 ppm H2S=30, 5 ppm SO2=-0.5, 35 ppm NO=6, 5 ppm NO2=-1, 10% volume CO2=-15, 1 ppm CL2=-1, 200 ppm H2=4, 5 ppm HCl=-3
Ammonia 0-1500 ppm	20 ppm SO2=-7, 20 ppm H2S=7, 20 ppm NO=-1, 20 ppm NO2=-20, 20 ppm Cl2=-55,
Chlorine	50 ppm NO = 0.5, 10 ppm NO2 = 100, 400, H2 = 0.1, 20 ppm H2S = -100, 400 ppm CO = 0.1, 20 ppm NH3 = 0.1, 400 ppm C2H4 = 0.1
Carbon Monoxide	Conforms to UL2034 performance specification
Ethylene Oxide	Ethanol=55%, Toluene=20%, MEK=10%, CO=40%
Hydrogen	300 ppm CO=<3, 15 ppm H2S=<3, 35 ppm NO=10, 10 ppm HCN=3, 100 ppmEthylene=80
Hydrogen Sulphide	20 ppm SO2 = <18 , 50 ppm NO = <6, 10 ppm NO2 = <-30, 10 ppm Cl2=<-25, 400 ppm H2=<1, 400 ppm C2H4=<0.8, 400 ppm CO=<4, 400 ppm NH3=<0.1
Nitrogen Dioxide	50 ppm NO=<0.5, 20 ppm SO2=<-2, 10 PPM Cl2=100, 400 ppm H2=<0.1, 20 ppm H2S=-100, 400 ppm CO=<0.1, 400 ppm C2H4=<0.1, 20 ppm NH3=<0.1
Nitric Oxide	10 ppm NO2=<5, 20 ppm SO2=<4, 10 ppm Cl2=<5, 400 ppm H2=<0.1, 20 ppm H2S=<60, 400 ppm CO=<0.1, 20 ppm NH3=<0.1,
Oxygen	5% volume CO2=0.1, 0% to 95% rh @ 40 deg.C =<0.7
Ozone	15 PPM H2S=2, 5 PPM NO2=3.5, 1 PPM Cl2=0.5 to 1
Sulphur Dioxide	50 ppm NO=<-3, 10 ppm NO2=<-100, 10 ppm Cl2=<-70, 400 ppm H2=<0.1, 400 ppm CO=<1, 400 ppm C2H4=<40, 20 ppm NH3=<0.1

2.1 SENSOR SPECIFICATIONS, CONT'D…..

SENSOR GAS TYPE	STD. RANGE	LIFE SPAN APPROX.	RESO-LUTION	OPER. TEMP.	OPER. RH	RE-SPONSE TIME	STABILI-ZATION TIME
AMMONIA (NH3)	0-500 ppm	2 years	1-2 ppm	-40 TO +50 deg. C (temp drift occurs)	15-90% Non-condens-ing	T_{90} <90 seconds	2-6 hours
AMMONIA (NH3)	0-1500 ppm	2 years	1-4 ppm	-10 to +40 deg. C.	15-90% Non-condens-ing	T_{90} <60 seconds	2-6 hours
CHLORINE (Cl2)	0-5.0 ppm	2-3 years	0.1 ppm	-20 to +50 Deg. C.	15-90% Non-condens-ing	T_{90} <60 seconds from 0 to 10 ppm	1-2 hours
CARBON MONOXIDE (CO)	0-200 ppm	5-8 years	1 ppm, 3 ppm without regular cal.	-20 to +40 Deg. C.	10-95% Non-condens-ing	T_{90} <2 minutes	1 hour minimum
ETHYLENE OXIDE (ETO)	0-20 ppm	2 years	0.1 ppm	-20 TO +50 deg. C.	15-90% Non-condens-ing	T_{90} <90 seconds	2 hours
HYDROGEN (H2)	0-2000 ppm	2-3 years	1 ppm	-20 TO +50 deg. C.	15-90% Non-condens-ing	T_{90} <30 seconds	2 hours
HYDROGEN SULPHIDE (H2S)	0-50 ppm	3 years	0.5 ppm	-30 TO +50 deg. C.	15-90% Non-condens-ing	T_{90} <35 seconds from 0 to 20 ppm	1 hour minimum
NITROGEN DIOXIDE (NO2)	0-5.0 ppm	3 years	0.1 ppm	-30 TO +50 deg. C.	15-90% Non-condens-ing	T_{90} <60 seconds from 0 to 10 ppm	1-2 hours
NITRIC OXIDE (NO)	0-100 ppm	3 years	1 ppm	-30 TO +50 deg. C.	15-90% Non-condens-ing	T_{90} <20 seconds from 0 to 50 ppm	1-2 hours
OXYGEN (O2)	0-25.0% Volume	2 years	0.1% Vol.	-30 TO +50 deg. C.	5-95% Non-condens-ing	T_{90} <15 seconds from 20.9% to 0%	1 hour minimum
OZONE (O3)	0-2.00 ppm	2 years	0.1 ppm	-20 TO +50 deg. C.	15-90% Non-condens-ing	T_{90} <150 seconds	2-3 hours
SULPHUR DIOXIDE (SO2)	0-20 ppm	2 years	1 ppm	-30 TO +50 deg. C.	15-90% Non-condens-ing	T_{90} <30 seconds from 0 to 20 ppm	2 hours

3.0 PVC ENCLOSURE PHOTO

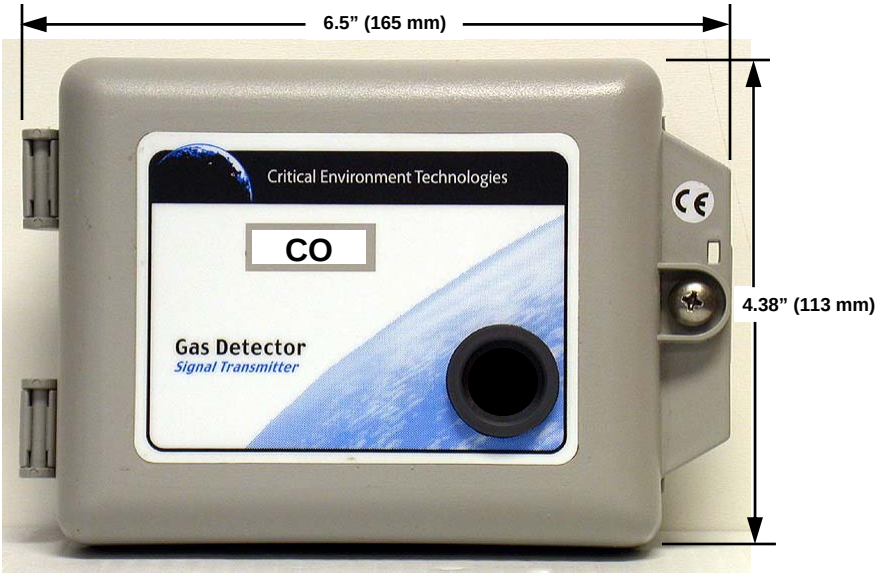
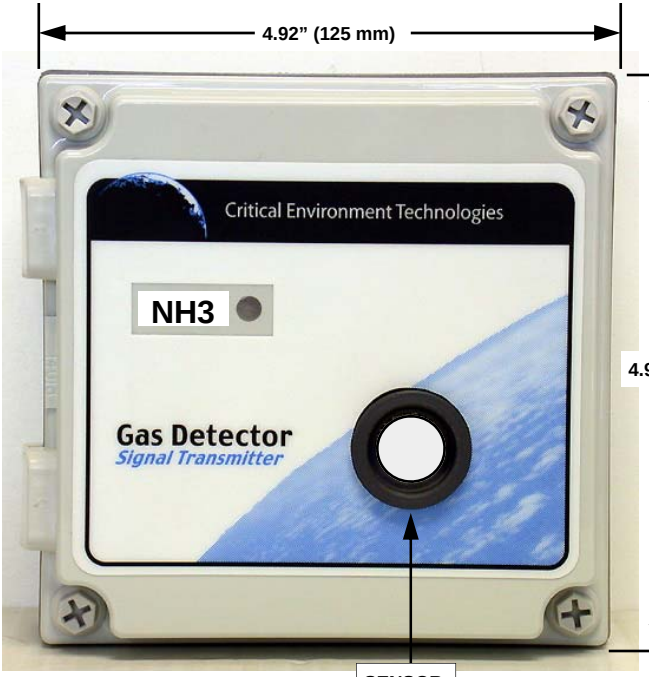
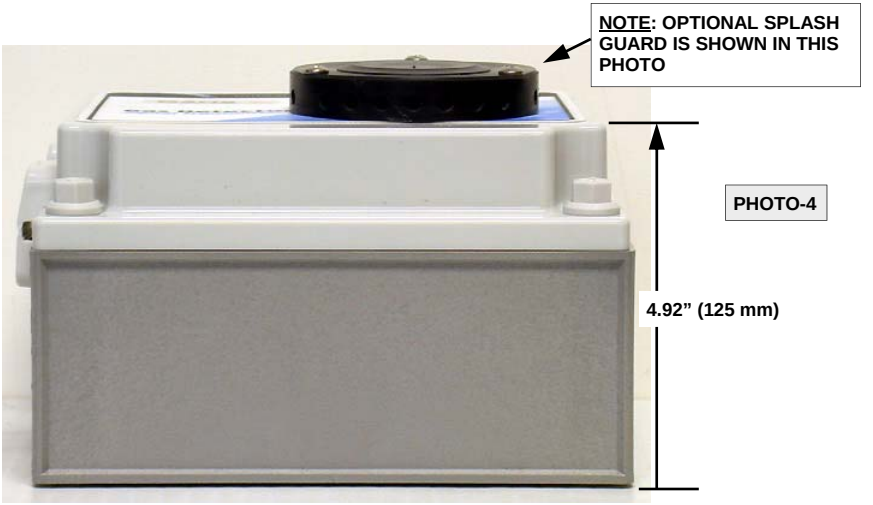


PHOTO-1

PHOTO-2

3.1 POLYCARBONATE ENCLOSURE PHOTO





4.0 INSTALLATION

The ATW should be installed on a flat vertical surface with the sensor pointing outwards in a clean, dry environment. If the ATW is to be installed in a potentially wet environment, the optional water tight enclosure should have been selected. This reference refers to the standard, general purpose pvc enclosure. Four 3/16" (4.8mm) diameter mounting holes are provided in the enclosure base for securing the ATW to the wall. Do not block the front of the enclosure as this is where the sensor is situated and where it monitors the air for the target gas. It monitors by diffusion.

Three conduit entry points are provided for the pvc enclosure. All are in the enclosure base. One in the rear of the base. One along the top edge and one along the bottom edge. Reference photos on following pages. No conduit entry points are provided for the water tight enclosure. The reason is the installer may not want one where we would place it and this would result in unnecessary openings into this enclosure.

The water tight enclosure **must** be installed with the mounting screws passing through the same openings that accommodate the four door securing screws. This ensures the mounting screws are outside of the door gasket and confirms a water tight installation.

Note-1: When mounting either enclosure, allow enough room to enable the end user to open the door at least 120 degrees to access the internal adjustments.

Note-2: Use caution when drilling holes in the water tight enclosure for conduit entry so as not to damage the circuit board inside. Use liquid tight conduit hubs wherever conduit enters the water tight enclosure. Failure to do so creates a leak path. Water running down the conduit enters the interior of the enclosure and could corrode the circuit board. ***This is not covered under warranty.***

The door of the pvc enclosure can be easily removed to facilitate installation of the base. Simply grasp the lid with one hand, being careful not to make contact with any of the internal components (circuit board), grasp the base with your other hand. Tug on the door, pulling it towards you. The section of the hinges located on the base should "snap" apart from the part of the hinges located on the door.

After installation, simply locate the lid hinges over the installed base hinges and push away from you The hinges should easily "snap" back into place.

The pvc enclosure has one screw securing the door to the base for electrical safety and provides an opening to allow the user to apply a padlock if they desire the controller to be locked. See photo reference on preceding pages.

The pvc enclosure, by design of the substantially overlapping door, is drip-proof. It is not water tight or dust tight. An optional water / dust tight enclosure is available.

4.1 MAXIMUM LOAD RESISTOR

INPUT VOLTAGE (VDC)	MAXIMUM LOAD RESISTOR
12	50R
16	260R
24	600R

4.2 PVC ENCLOSURE INTERIOR AND MOUNTING HOLES

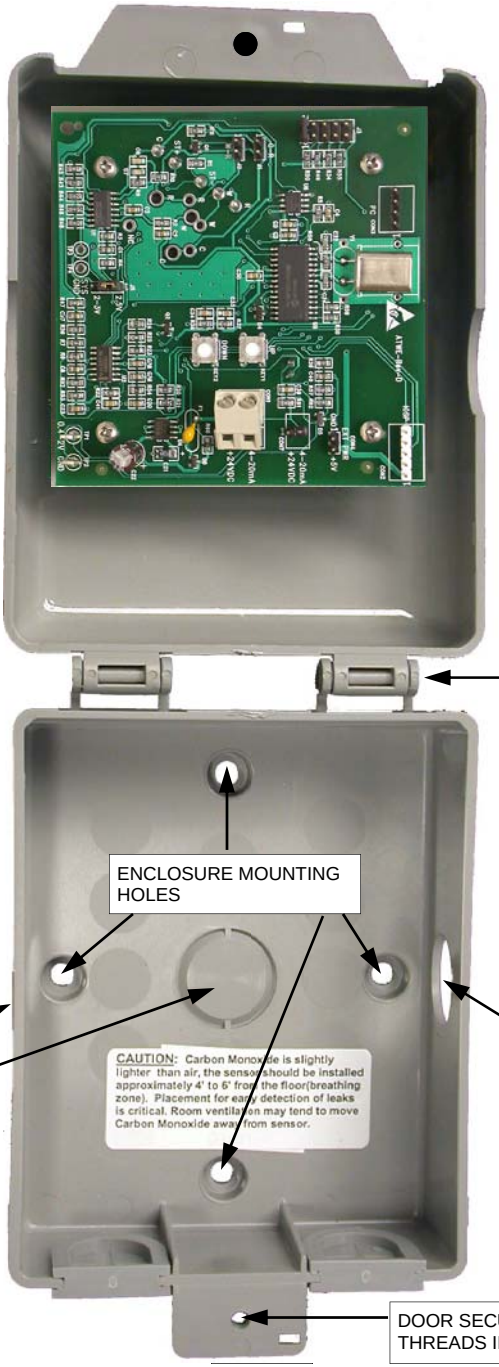


PHOTO-5

MOLDED IN HINGES ALLOW "SNAP OFF" REMOVAL OF ENCLOSURE DOOR

ENCLOSURE MOUNTING HOLES

CONDUIT ENTRY

CONDUIT ENTRY

DOOR SECURING SCREW THREADS INTO THIS HOLE

4.3 WATER TIGHT ENCLOSURE INTERIOR AND MOUNTING HOLES

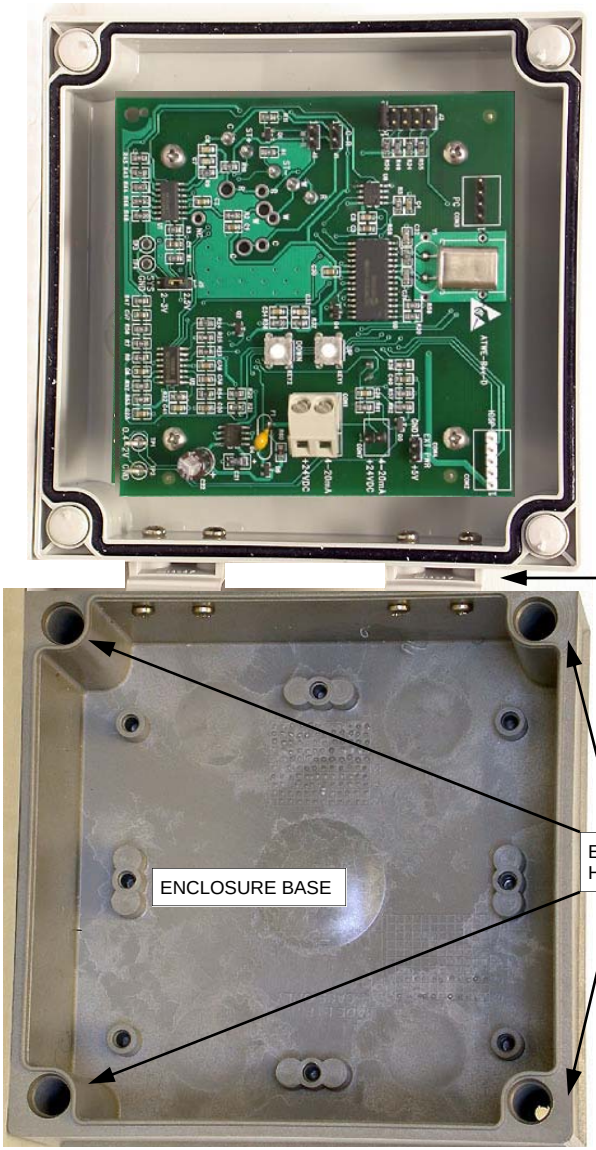


PHOTO-6

POLYCARBONATE HINGES

ENCLOSURE MOUNTING HOLES

ENCLOSURE BASE

WARNING: DO NOT DRILL HOLES IN THE BACK OF THE BASE OF THE ENCLOSURE FOR THE PURPOSE OF MOUNTING THE SENSOR/ TRANSMITTER. LEAK PATHS CAN OCCUR. CORROSION DAMAGE WILL NOT BE COVERED UNDER WARRANTY.

4.4 MOUNTING HEIGHTS

SENSOR GAS TYPE	SUGGESTED MOUNTING HEIGHT
AMMONIA (NH3)	ON OR NEAR THE CEILING
AMMONIA (NH3)	ON OR NEAR THE CEILING
CHLORINE (Cl2)	6” FROM THE FLOOR
CARBON MONOXIDE (CO)	4’ TO 6’ FROM THE FLOOR
ETHYLENE OXIDE (ETO)	6” FROM THE FLOOR
HYDROGEN (H2)	ON OR NEAR THE CEILING
HYDROGEN SULPHIDE (H2S)	2’ - 6’ FROM THE FLOOR
NITROGEN DIOXIDE (NO2)	4’ TO 6’ FROM THE FLOOR
NITRIC OXIDE (NO)	4’ TO 6’ FROM THE FLOOR
OXYGEN (O2)	4’ TO 6’ FROM THE FLOOR
OZONE (O3)	6” FROM THE FLOOR
SULPHUR DIOXIDE (SO2)	6” FROM THE FLOOR

NOTE: Suggested mounting heights are based on general applications. Some applications may require mounting the sensor in different locations or at different heights. All installations are application dependent. In all cases, the sensor should be pointing forward and unobstructed to allow the air and gas to properly diffuse into the sensor opening.

Some toxic gases such as Ammonia (NH3) are lighter than air, therefore the sensor/ transmitter should be installed on or near the ceiling. Some toxic gases such as Carbon Monixide are only slightly lighter than air, therefore the sensor/transmitter should be installed at approximately 4’ to 6’ from the floor. For toxic gases that are heavier than air, the sensor/transmitter should be installed with the sensor opening at 6” from the floor. Oxygen sensors should be installed at approximately 4’ to 6’ from the floor.

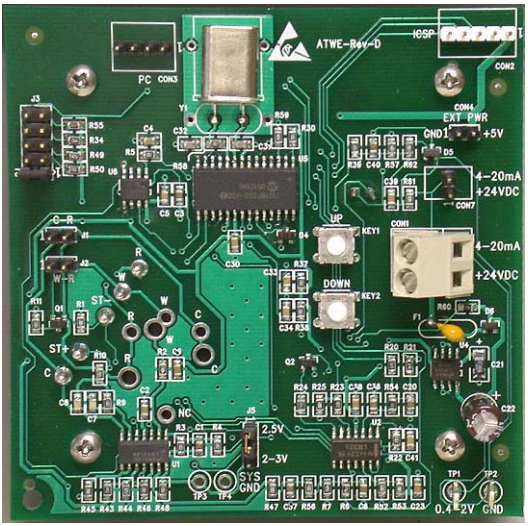
5.0 WIRING THE TRANSMITTER

The ATW is a two-wire, **loop powered** transmitter and therefore operates exclusively on 24VDC power.

Note-3: ***DO NOT USE SOLID-CORE WIRE AT THE WIRING TERMINAL STRIP***. The rigidity of solid-core wire can pull a soldered terminal strip completely off a circuit board.

The ATW series analog transmitter is a low voltage powered device. Any application of operating voltages higher than indicated in the specification may result in damage. Double check wiring connections prior to powering the transmitter. Damage from incorrect wiring connections or from too much voltage applied are **not** covered under warranty.

PHOTO-7



SIGNAL
24VDC POSITIVE

6.0 TRANSMITTER OPERATION

After installation, double check wiring prior to applying power to the ATW transmitter. Remember, these are low voltage devices. After power up, the outer LED will "flash" green indicating the system is in a warm-up period. During the warm up period, the signal output from the ATW is fixed at 4.0 mA, the exception being the Oxygen sensor which outputs approximately 17.4 mA (equivalent to ambient O2 levels). After the warm up times out, the signal output will indicate current gas readings if any. Warm up period is usually two-minutes for all sensors except Ammonia which is five-minutes.

Detecting Gas

Upon detection of the presence of target gas, the signal output increases to a value equal to the amount of gas being detected by the sensor. As the detected gas level subsides, the output signal will decrease again.

Failure

In the event of a failure, the outer LED will flash green 4 times every 3 seconds and the output signal will drop below 3.0 mA. A failure can consist of a sensor that has failed the self-test or a failed or damaged component on the circuit board or a wiring related problem.

Other Warnings

Notification of calibration: All sensors require calibration to maintain accuracy and best performance. This is a visual warning and has been factory set at either 6 or 12 months. At 6 or 12 months, the outer green LED will flash on for 2-seconds then off for 4-seconds to indicate to the user that the sensor is due for re-calibration. The end user can disable this feature for one month by depressing both the "up" and "down" push buttons simultaneously. After one month, the visual reminder will reactivate and once again, the user has the option of disabling this function again for 1 month or having the instrument calibrated. If the system is recalibrated, the system timer is automatically reset for another 6 or 12 months (or whatever the factory default setting was at the time of ordering). During the short calibration warning state, normal operation continues.

Self-Test: The ATW circuit and firmware have been designed to perform an automatic self-test of the HVAC Carbon Monoxide sensor once per month. If the results of the test do not meet the programmed tolerances, the circuit activates a fail condition. The whole process lasts about 10 minutes, and the green LED will be on for 0.5-seconds then off for 1-second throughout the self-test.

Sensors

Electrochemical: These sensors are quite gas specific and but will respond to some other gases. Refer to the sensor table on page-7 for more details on cross sensitive gases. The ATW circuit provides temperature compensation to reduce drift in environments where the temperature changes regularly or widely. All sensors require a warm up and stabilization time after installation. Do not perform any calibration functions until the sensors have been operating for at least 24 hours. Oxygen: sensors are gas specific and typically will not respond to anything but Oxygen and Nitrogen (zeroing gas).

SYSTEM OPERATION	LED INDICATION	4-20 mA OUTPUT
Un-initialized State	ON for 4-seconds, OFF for 4- seconds	Depends
Failure State	Four pulses every 3-seconds	Less than 3mA
Warm-up State	ON for 0.5-second, OFF for 0.5 second	4mA (except O2-A2 sensor)
Calibration State (Normal)	Two pulses every 2.5- seconds	Depends
Calibration State (Over tolerance)	Three pulses every 3- seconds	Depends
Self-test State	One pulse every 1-second	Depends
Calibration Notification State	ON for 2-seconds, OFF for 4- seconds	Normal

7.0 COMPONENT IDENTIFIER

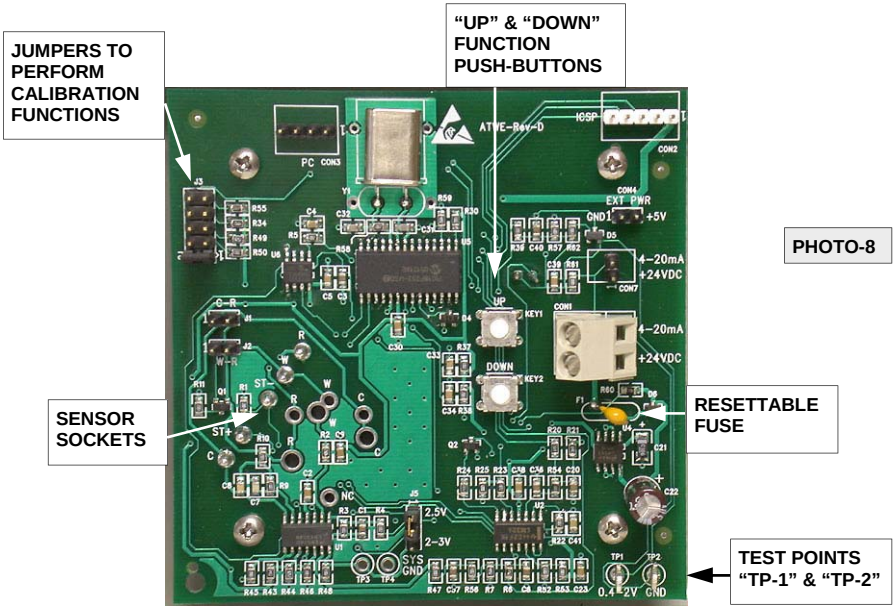
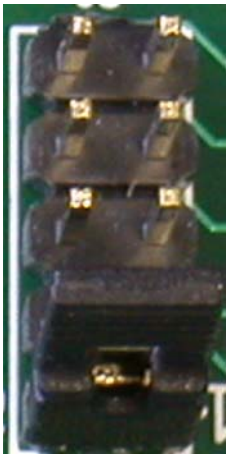


PHOTO-8

8.0 JUMPER SETTINGS PHOTO



J5	SPARE UNUSED POSITION
J4	CALIBRATING SPAN VALUE
J3	CALIBRATING NULL VALUE
J2	SETTING SPAN GAS VALUE
J1	RESTING POSITION

PHOTO-9

9.0 CALIBRATING SENSORS

Calibration Frequency: a) Parking garage detectors: Once every 12 months
b) OHS applications: Once every 6 months
(OHS: Occupational Health & Safety)

Gas Testing Frequency: For the purposes of safety in OHS applications, sensors should be gas tested (bump tested) once every month to confirm response. A manual test using span gas is recommended for all sensors. The ATW firmware performs an self-test every month on all CO sensors.

Note: A calibration label should be applied after every calibration to confirm work performed and the date it was confirmed. If a controller is involved, the alarm set points should be indicated on a label on the front door of the enclosure so anyone working in the environment will be aware.

Required Equipment:

- Digital multi-meter
- Calibration kit
- Calibration gases

Users can order the calibration kit, calibration accessories and/or gases from any CETCI authorized distributor or they can supply their own gas and equipment as long as the gas meets the minimum specifications indicated on the next page.

9.1 CALIBRATION SPECIFICATIONS

Gas: Cylinder calibration span gases should be at least +/- 10% accuracy and have a current date stamp. Gas generators should have a current dated cell installed. Service personnel should flow zero emissions air or Oxygen before attempting to null adjust toxic gas sensors. Nitrogen (N2) can be substituted for zero air for most sensors. Oxygen sensors require application of 100% Nitrogen for the purpose of null adjustments.

Regulators & Flow: Calibration gases should be flowed at 0.5 to 1.0 LPM. Fixed flow regulators provide more accuracy. Zero air and span gases should be flowed over the sensor for at least 3 minutes. All cylinder regulators supplied by CETCI use a fixed flow orifice.

The proper calibration adapter should be utilized to allow the gas to properly diffuse around the sensor. They are available from CETCI (P/N AST-7000-CAP).

Calibration frequency: For best performance and to ensure the sensor meets the indicated specifications, all electrochemical sensors should be calibrated every six months. The sensors may not perform to the listed specifications if they are not maintained regularly.

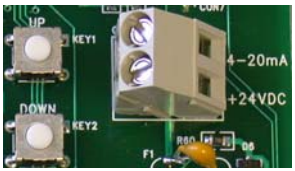
9.2 CALIBRATION PROCEDURE

The calibration procedure within the second generation ATW transmitter is push-button automated (there are no potentiometers to adjust). To achieve calibration the user must first tell the ATW what concentration of span gas they are going to flow over the sensor. Within the transmitter, calibration is a voltage setting. The range of 0.4 - 2.0 VDC is equal to the full measurement range of the sensor. **Eg**. A Carbon Monoxide sensor has a standard measurement range of 0 - 200 ppm. Therefore 2.0 VDC = 200 ppm. Prior to attempting to calibrate, determine or calculate the voltage value required. Use the following formula to calculate the voltage required.

$$\frac{\text{CALIBRATION SPAN GAS VALUE}}{\text{SENSOR MEARUEMENT RANGE}} \times \text{SIGNAL OUTPUT RANGE} + 0.4 = \text{EXPECTED SIGNAL}$$

EXAMPLE: $\frac{\text{100 ppm}}{\text{200 ppm}}$ **X 1.6 VDC + 0.4 VDC = 1.2 VDC**

FUNCTION PUSH-BUTTONS ⟶



9.3 SETTING SPAN GAS VALUE

1) Move the jumper to **J2** position. The system is now waiting for the user to set the desired value.

2) Attach digital multi-meter leads to test points TP-1 and TP-1 (digital photo #8 page-17).

3) Using the "UP" or "DOWN" push-buttons, achieve the calculated voltage reading on the multi-meter.

4) Move the jumper back to it's resting position (J1). At this time the new value is saved and the outer LED changes back to green.

9.4 CALIBRATING THE NULL (ZERO) VALUE

1) Attach regulator to cylinder of zero air.

2) Insert the calibration adapter into the sensor opening in the front of the enclosure door. Use a slight twisting motion as you gently push the calibration adapter into the sensor opening. If the calibration adapter is hard to insert, moisten the o'ring slightly then try re-inserting it. If the transmitter has been fitted with an optional splash guard, remove the plastic plug from the centre of the splash guard to gain access to the sensor opening. To remove the plastic plug, push inward at the centre of the plug until the edges lift slightly then slip a small flat blade screwdriver under and pop the plug off.

3) Open regulator valve fully and allow zero air to flow over sensor.

9.4 CALIBRATING THE NULL (ZERO) VALUE, CONT'D…..

4) Move the jumper to **J3** position. The firmware waits 30-seconds then starts the null calibration procedure which lasts 60-seconds. If the sensor response is within the preset tolerance, the green LED flashes 2-times per 2.5 seconds until the procedure is finished. If the response is not within the tolerance, the green LED flashes 3-times every 3-seconds. To force a null adjustment, push both "UP" and "DOWN" push-buttons together. The meter will show "0.4" then climb to a higher value VDC then slowly descend back to "0.4" indicating the ATW has null adjusted the circuit. Once the count down is finished, the outer LED changes to steady green indicating the procedure is complete.

6) Before removing the zero air, move the jumper back to it's resting position (J1) and the new value is saved.

9.5 CALIBRATING THE SPAN VALUE

1) Attach regulator to cylinder of span gas.

2) Insert the calibration adapter into the sensor opening in the front of the enclosure door. Use a slight twisting motion as you gently push the calibration adapter into the sensor opening. If the calibration adapter is hard to insert, moisten the o'ring slightly seal then try re-inserting it.

3) Open regulator valve fully and allow span gas to flow over sensor.

4) Move the jumper to **J4** position. The firmware waits 30-seconds then starts the span calibration procedure which lasts 150-seconds. If the sensor response is within the preset tolerance, the green LED flashes 2-times per 2.5 seconds until the procedure is finished. If the response is not within the tolerance, the green LED flashes 3-times every 3-seconds. To force a span adjustment, push both "UP" and "DOWN" push-buttons together. The meter will climb to a voltage value equal to the span gas utilized. Once the count down is finished, the outer LED changes to steady green indicating the procedure is complete.

6) Before removing the span gas, move the jumper back to it's resting position (J1) and the new value is saved.

10.0 CALIBRATING THE ANALOG OUTPUT

*The following procedures are **not** required to be performed as a part of normal maintenance. They are usually performed on new circuit boards before they leave our factory or if someone doubts the accuracy of the 4-20 mA output signal. Device Master terminal software program, a special interface cable and technician training are all required to perform these calibrations.*

Note: Device Master terminal software program can be purchased from CETCI but only after a technician from your company has been trained and certified in the use of it. After the initial purchase, CETCI provides free up dates.

10.0 CALIBRATING THE ANALOG OUTPUT, CONT'D…..

*To achieve these calibrations, the AST second generation circuit must first be **"un-initialized"** using the Device Master program. Remove the jumper from it's resting position (J1). After performing the uninitializing procedure, proceed with the following steps:*

4 mA OUTPUT SIGNAL CALIBRATION:

1) Connect a digital volt-meter to test points TP-1 and TP-2.

2) Put the jumper onto "J1" position and the ATW is now waiting for 4 mA calibration procedure to take place.

3) Use the "UP" and "DOWN" push-buttons to adjust the meter reading to "0.4" VDC.

**20 mA OUTPUT SIGNAL CALIBRATION: ***Ensure the output selection jumper is set to the 4-20 mA position (see photo #9 on page 17 for position).

1) Connect a digital VOLT meter to test points TP-1 and TP-2.

2) Put the jumper onto "J2" position and the ATW is now waiting for 20 mA calibration procedure to take place.

3) Use the "UP" and "DOWN" push-buttons to adjust the meter reading to "2.0 VDC.

4) Remove the jumper and move it back to J1 and the value is saved.

11.0 OPTIONS FOR AST SECOND GENERATION TRANMISTTER

Option-1: Rugged, water/dust tight polycarbonate enclosures (installer must install correctly as per our instructions and use proper liquid tight conduit hubs). Photo number 10 below shows a transmitter installed in the water tight enclosure.

Option-2: Molded splash guard for transmitters utilizing either type of sensor. *Available only with water tight enclosure option.* If the application for a water tight enclosure is for a wet environment with the potential for wash down or a pressurized hose to be directed at the sensor, a splash guard is absolutely mandatory. Electrochemical sensors are very sensitive to excessive pressure and can easily be damaged by directing pressurized air or water at them. The splash guard is made of molded plastic and attaches to the outside of the enclosure door directly over the sensor opening with three stainless steel screws. Photo number 11 on the following page shows an installed splash guard.

11.0 OPTIONS FOR AST SECOND GENERATION TRANMISTTER, CONT'D…..

WATER TIGHT ENCLOSURE

WATER TIGHT POLYCARBONATE ENCLOSURE SHOWN WITH SPLASH GUARD OPTION ATTACHED

PHOTO-10

SPLASH GUARDS

PHOTO-11

SPLASH GUARD. ATTACHES TO THE FRONT OF WATER TIGHT ENCLOSURE. SEE PHOTO

12.0 ACCESSORIES

CALIBRATION KIT

Calibration kits and gases are available from the CETCI factory. Many gases are carried in inventory but not all. Check with any CETCI authorized distributor for availability of specific gas types.

PHOTO-12

METAL PROTECTIVE GUARDS

ATW series analog transmitters are all supplied in very rugged, non-metallic enclosures. However, in some applications more protection may be desired. CETCI can provide protective guards made from 16 gauge galvanized metal with a pattern of square perforations to permit air and gas to diffuse easily to the sensor.

PHOTO-13