

**Critical Environment Technologies
Canada Inc.**

www.critical-environment.com

**Installation Manual for
AST-IS3**

**Infrared CO2 sensor - transmitter with
Industrial enclosure (duct mount)**



MANUAL REVISION-A, February 23, 2015

**#145, 7391 VANTAGE WAY
DELTA, BC CANADA V4G 1M3
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IMPORTANT NOTE

Read and understand this manual prior to using this instrument. Carefully read the warranty policy, service policy, notices, disclaimers and revisions on the following pages.

This product must be installed by a qualified electrician or trained technician and according to instructions indicated in this manual. This instrument should be inspected and calibrated regularly by a qualified and trained technician. For more information, refer to sections *10 Maintenance* and *8 Calibration* of this manual.

This instrument has not been designed to be intrinsically safe. For your safety, **do not** use it in classified hazardous areas (explosion-rated environments).

INSTRUMENT SERIAL NUMBER:

PURCHASE DATE:

PURCHASED FROM:

WARRANTY POLICY

- Disconnect power before servicing

Critical Environment Technologies Canada Inc. (CETCI), also referred to as the manufacturer, warrants this instrument, (excluding sensors, battery packs, batteries, pumps and filters) to be free from defects in materials and workmanship for a period of **two years from the date of purchase from our facility**. The sensors have a warranty period of **one year on a pro-rated basis from the date of purchase from our facility**. If the product should become defective within this warranty period, we will repair or replace it at our discretion.

The warranty status may be affected if the instrument has not been used and maintained per the instructions in this manual or has been abused, damaged, or modified in any way. This instrument is only to be used for purposes stated herein. The manufacturer is not liable for auxiliary interfaced equipment or consequential damage.

Due to ongoing research, development, and product testing, the manufacturer reserves the right to change specifications without notice. The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of this data.

All goods must be shipped to the manufacturer by prepaid freight. All returned goods must be pre-authorized by obtaining a Returned Merchandise Authorization (RMA) number. Contact the manufacturer for a number and procedures required for product transport.

SERVICE POLICY

CETCI maintains an instrument service facility at the factory. Some CETCI distributors / agents may also have repair facilities; however, CETCI assumes no liability for service performed by anyone other than CETCI personnel.

Repairs are warranted for 90 days after date of shipment (sensors have individual warranties).

Should your instrument require non-warranty repair, you may contact the distributor from whom it was purchased or you may contact CETCI directly.

Prior to shipping equipment to CETCI, contact our office for an RMA #. All returned goods must be accompanied with an RMA number.

If CETCI is to do the repair work, you may send the instrument, prepaid, to:

Attention: Service Department
Critical Environment Technologies Canada Inc.
Unit 145, 7391 Vantage Way
Delta, BC, V4G 1M3

Always include your Returned Merchandise Authorization (RMA) number, address, telephone number, contact name, shipping / billing information, and a description of the defect as you perceive it. You will be contacted with a cost estimate for expected repairs, prior to the performance of any service work.

For liability reasons, CETCI has a policy of performing all needed repairs to restore the instrument to full operating condition.

Pack the equipment well (in its original packing if possible), as we cannot be held responsible for any damage incurred during shipping to our facility.

COPYRIGHTS

This manual is subject to copyright protection; all rights are reserved. Under

international and domestic copyright laws, this manual may not be copied or translated, in whole or in part, in any manner or format, without the written permission of CETCI.

DISCLAIMER

Under no circumstances will CETCI be liable for any claims, losses or damages resulting from or arising out of the repair or modification of this equipment by a party other than CETCI service technicians, or by operation or use of the equipment other than in accordance with the printed instructions contained within this manual or if the equipment has been improperly maintained or subjected to neglect or accident. Any of the forgoing will void the warranty.

Under most local electrical codes, low voltage wires cannot be run within the same conduit as line voltage wires. It is CETCI policy that all wiring of our products meet this requirement.

It is CETCI policy that all wiring be within properly grounded (earth or safety) conduit.

REVISIONS

This manual was written and published by CETCI. The manufacturer makes no warranty or representation, expressed or implied including any warranty of merchantability or fitness for purpose, with respect to this manual.

All information contained in this manual is believed to be true and accurate at the time of printing. However, as part of its continuing efforts to improve its products and their documentation, the manufacturer reserves the right to make changes at any time without notice. Revised copies of this manual can be obtained by contacting CETCI or visiting www.critical-environment.com.

Should you detect any error or omission in this manual, please contact CETCI at the following address:

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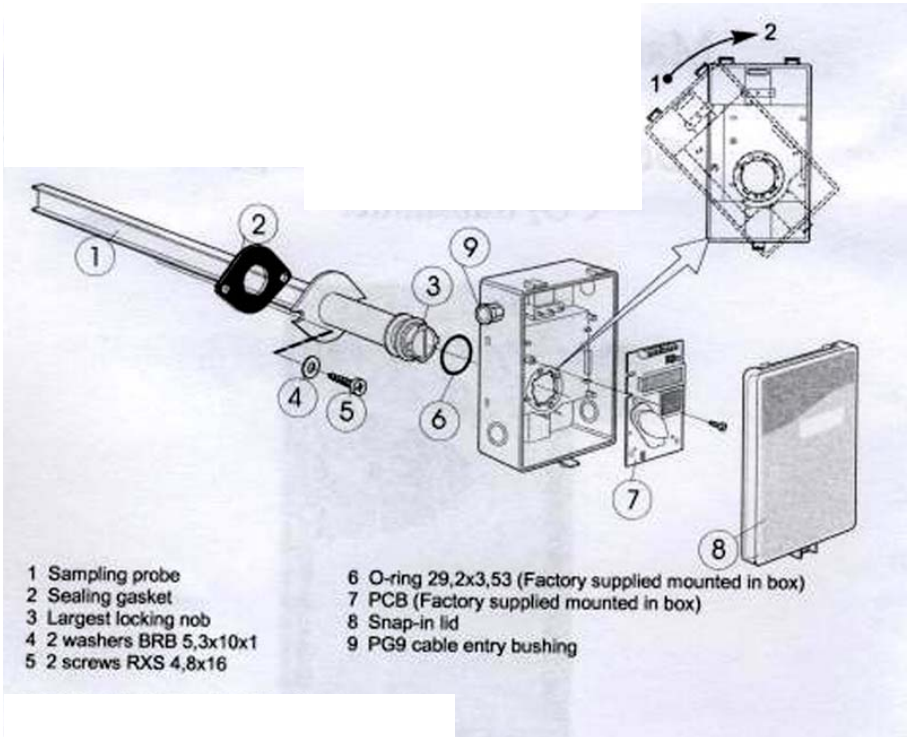
Website: www.critical-environment.com

In no event will CETCI, its officers or employees be liable for any direct, special, incidental or consequential damages resulting from any defect in any manual, even if advised of the possibility of such damages.

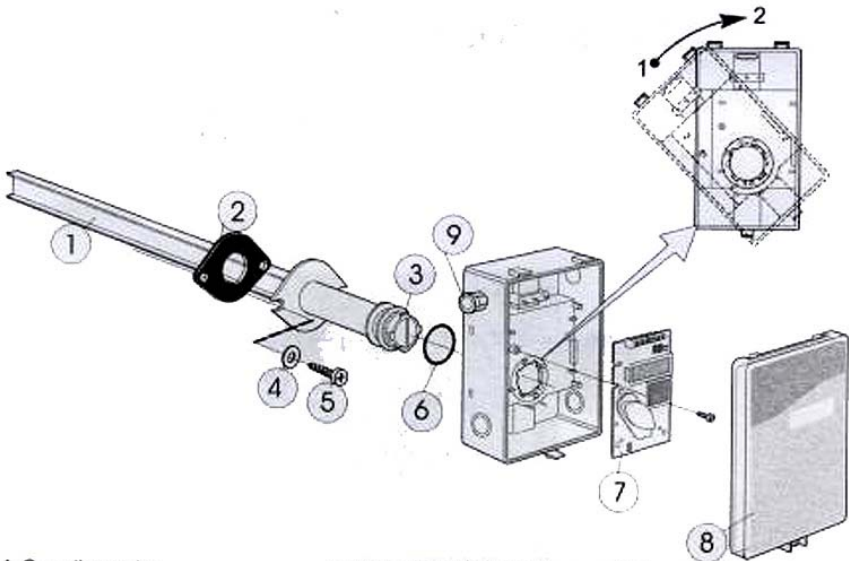
AST-IS3 (no display)

The AST-IS3 is an infrared Carbon Dioxide (CO₂) sensor/transmitter mounted in an industrial duct style, water tight enclosure. The enclosure cover has a built-in rubber gasket and all other connections must be tight and sealed to prevent water intrusion. Improper installation resulting in damage is not covered under warranty.

ITEM LOCATORS



INSTALLING AST-IS3 INTO A DUCT



- 1 Sampling probe
- 2 Sealing gasket
- 3 Largest locking nob
- 4 2 washers BRB 5,3x10x1
- 5 2 screws RXS 4,8x16

- 6 O-ring 29,2x3,53 (Factory supplied mounted in box)
- 7 PCB (Factory supplied mounted in box)
- 8 Snap-in lid
- 9 PG9 cable entry bushing

Since there may be substantial pressure differences in duct mounting applications, it is essential to avoid ambient air from suction into the duct mounting box. For correct function it is indispensable that the sealing of the box cover, cable entry bushings, cable feed through and the duct entrance are absolutely air tight. The duct entrance may need extra sealing paste in order to prevent leakage. The PCB must be handled carefully (by the edges) and protected from electrostatic discharge.

1) Electrical cable entry: The box has a factory mounted cable entry bushing in dimension PG9. Never feed more than one cable through each cable entry bushing or else gas might leak through.

2) Mounting the probe: Drill a hole (10) with 25mm (1") diameter for the sampling probe and two holes with 4mm diameter for the screws (5) into the air duct and mount the probe (1) with the gasket (2). The sampling probe should be mounted with the largest locking knob on top. The unit can be mounted with the air coming from the left or right.



3) Attaching the sensor box: The sensor enclosure is attached to the probe by a snap-in bayonet fitting. Orient the enclosure onto the sampling probe so that the box is on the same side as the largest locking knob (3). When the probe is fitted into the notches of the box, then turn the enclosure clockwise until stop (see Figure-1). Position 1 indicates open where the box can be removed from the sampling probe. In position 2 the box is locked to the probe.

ELECTRICAL CONNECTIONS

The power supply has to be connected to and . Is considered as system ground. The same ground reference has to be used for the AST-IS3 unit and for the DDC/signal receiver.



NOTE: The same ground reference has to be used for the AST-IS3 and for the control system.

TERMINAL	FUNCTION	ELECTRICAL DATA	REMARKS - STANDARD SETTINGS	REMARKS - SETTINGS OF THIS SENSOR
 + 	Power (+) Power ground (-)	24VAC/DC+ (+20%), 2W 24VAC/DC-	System voltage reference	
Out (1)	Analog output - 1 (+)	0-10 VDC	0-2000 ppm CO2	
Out (2)	Analog output - 2	2.0 - 10.0 VDC 4.0 - 20.0 mA 0.9 - 1.6 VDC or 1.5 - 2.5 mA 0 VDC or 0 mA	0-2000 ppm CO2 Status = Error Status = NOT READY	

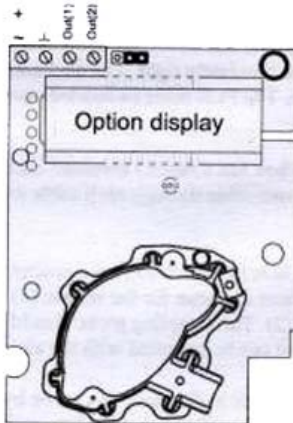
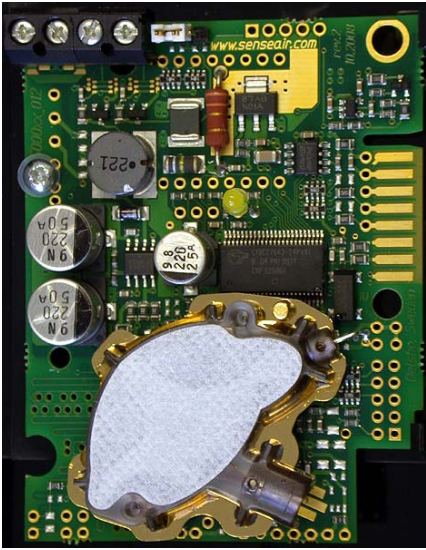


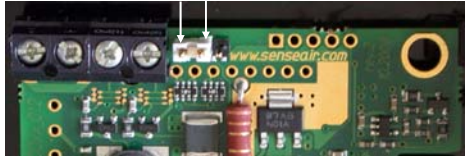
Figure 2 PCB with jumper to configure OUT2 for current output 4-20mA or voltage output 2-10VDC

WIRING TERMINALS & SIGNAL OUTPUT JUMPER SETTINGS

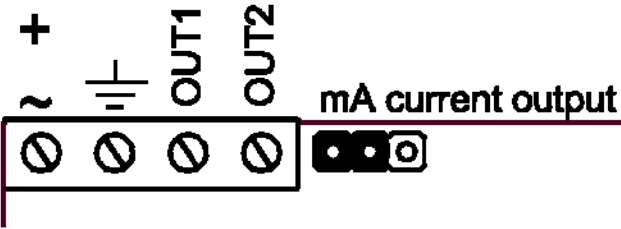


- + **L** POWER 24VAC / DC+
- ⊥ POWER GROUND (-)
- OUT-1 ANALOG OUT 0-10VDC(+)
- OUT-2 ANALOG OUT 4-20 mA(+)
- CURRENT OUTPUT JUMPER SET
- VOLTAGE OUTPUT JUMPER SET

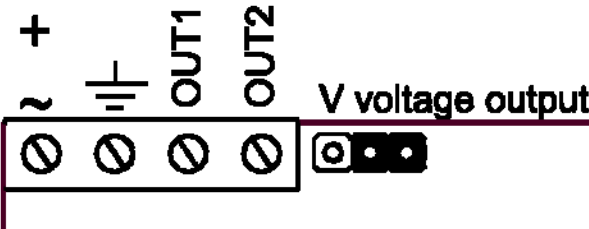
NOTE: JUMPER IN THIS PHOTO IS SET FOR VOLTAGE OUTPUT. FOR CURRENT OUTPUT, COVER THE TWO PINS CLOSEST TO THE TERMINAL STRIP.
 <<<<<<



The drawings below indicate the jumper locations and positions for attaining current or voltage output



Drawing of PCB jumper area with the jumper set to current output (left position)



Drawing of PCB jumper area with the jumper set to voltage output (right position)

DIMENSIONS

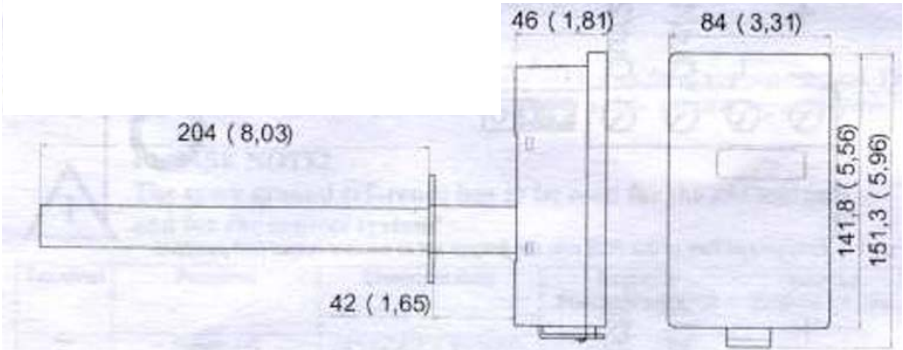


Figure 5. The dimensions of the sensor in mm and (inches)

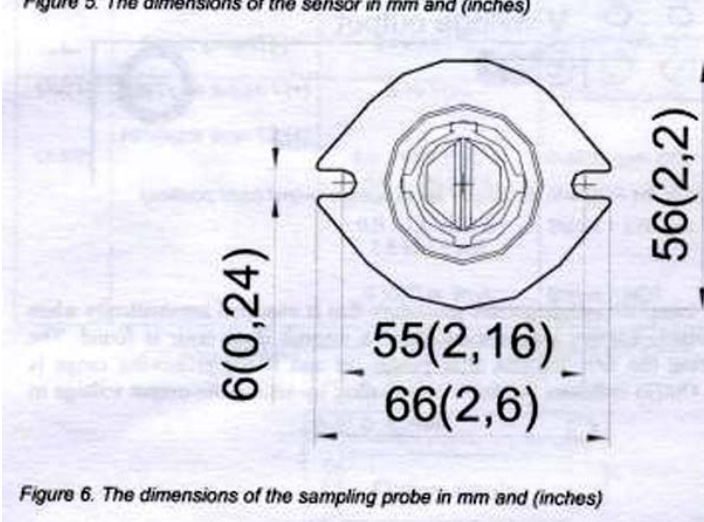


Figure 6. The dimensions of the sampling probe in mm and (inches)

Warranty

Critical Environment Technologies Canada Inc. (CETCI) warrants that for a period of twenty-four (24) months following receipt by purchaser the product supplied by CETCI will be, under normal use and care, free from defects in workmanship or material and to be in material conformity with the published specifications. Units returned to CETCI for warranty repairs shall be shipped to CETCI at buyer's expense, according to CETCI instruction. CETCI reserves the right to repair or replace the unit(s) at our discretion.

This warranty does not extend to any unit that has been subject to misuse, neglect or accident; that has been damaged by causes external to the unit; that has been used in violation of CETCI's instructions; that has been affixed to any non-standard accessory attachment; or that has been modified, disassembled, or reassembled by anyone other than CETCI.

The manufacturer and reseller are not responsible for any consequential loss or damages which may occur by reason of purchase and use of this product. This warranty is, in any event, strictly limited to replacement or repair of the product.

This product is in accordance with EMC 2004/108/EC, 92/31/EEG including amendments by the CE-marking Directive 93/68/EEC.

This product fulfills the following demands:
EN 61000-4-2 Level 2, EN 61000-4-3 Level 2, EN 61000-4-4 Level 4, EN 61000-4-6,
EN 61000-4-8 Level 4, EN 55022 Class B



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