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ENGINEERING & MANUFACTURING
QUALITY SYSTEMS

Technical Manual

Honeywell



Sensepoint XCD RFD (Remote Flammable Detector) Technical Manual

1 Safety

Ensure that this Operating Manual is read and understood BEFORE installing / operating / maintaining the equipment. Pay particular attention to Warnings and Cautions. All document Warnings are listed here and repeated where appropriate at the start of the relevant chapter(s) of this Operating Manual. Cautions appear in the sections/sub-sections of the document where they apply

WARNINGS

Sensepoint XCD RFD is designed for installation and use in Class I, Division 1, Groups B,C & D Hazardous Areas in the Americas.

Installation must be in accordance with the recognized standards of the appropriate authority in the country concerned.

Access to the interior of the detector, when carrying out any work, must only be conducted by trained personnel.

Before carrying out any work ensure local regulations and site procedures are followed. Appropriate standards must be followed to maintain the overall certification of the detector.

If using an anti-seize compound, the threads should be thinly coated with an approved silicone free compound e.g. petroleum jelly

To reduce the risk of ignition of hazardous atmosphere, de-classify the area or disconnect the equipment from the supply circuit before opening the detector enclosure. Keep assembly tightly closed during operation.

Never attempt to open a junction box/enclosure or replace/refit the sensor in potentially hazardous atmospheres while power is still applied to the transmitter.

The detector must be earthed/grounded for electrical safety and to limit the effects of radio frequency interference. Earth/ground points are provided inside and outside the unit. The internal grounding shall be used as the primary equipment ground. The external terminal is only a supplemental bonding connection where local authorities permit or require such a connection.

Ensure that all screens/instrument earth/clean earth wiring is earthed/grounded at a single point (either at the controller or detector - BUT NOT BOTH) to prevent false readings or alarms that may occur due to potential earth/ground loops.

Take care when handling sensors as they may contain corrosive solutions.
Do not tamper with or in any way disassemble the sensor.
Do not expose to temperatures outside the recommended ranges.
Do not expose sensors under storage conditions to organic solvents or flammable liquids.

This equipment is designed and constructed as to prevent ignition sources arising, even in the event of frequent disturbances or equipment operating faults. Note: The control card must have a suitably rated fuse.

The sensor head must be fitted with the supplied weather protection, and mounted so that the sinter is pointing downward to provide ingress protection IPX6.

The weather protection is a potential electrostatic charging hazard. The manufacturer's instructions should be observed.

The Sensepoint sensor is a possible Electrostatic risk - Do not rub or clean with solvents. Clean with a damp cloth. High velocity airflows and dusty environments can cause hazardous electrostatic charges.

Refer to the Sensepoint XCD RFD Control Drawing 3001EC091 shown in section 17.

2 Information

This manual is for use with the Sensepoint XCD RFD range transmitters only.

The Start-up/Surge/In rush current is dependant on the type of power supply used. The typical start-up current for Sensepoint XCD RFD is less than 800mA. Measure the start-up current using the specific power supply before installation to ensure suitability for your application.

Honeywell Analytics can take no responsibility for installation and/or use of its equipment if not done so in accordance with the appropriate issue and/or amendment of the Technical Manual.

The reader of this Operating Manual should ensure that it is appropriate in all details for the exact equipment to be installed and/or operated. If in doubt, contact Honeywell Analytics for advice.

The following types of notices are used throughout this Operating Manual:

WARNING

Identifies a hazardous or unsafe practice which could result in severe injury or death to personnel.

Caution: Identifies a hazardous or unsafe practice which could result in minor injury to personnel, or product or property damage.

Note: Identifies useful/additional information.

Every effort has been made to ensure the accuracy of this document; however, Honeywell Analytics can assume no responsibility for any errors or omissions in this document or their consequences.

Honeywell Analytics would greatly appreciate being informed of any errors or omissions that may be found in the content of this document.

For information not covered in this document, or if there is a requirement to send comments/corrections about this document, please contact Honeywell Analytics using the contact details given on the back page.

Honeywell Analytics reserve the right to change or revise the information supplied in this document without notice and without obligation to notify any person or organization of such revision or change. If information is required that does not appear in this document, contact the local distributor/agent or Honeywell Analytics.

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4 Introduction

The Sensepoint XCD RFD transmitter allows the user to either directly or remotely mount a flammable gas sensor from the Sensepoint XCD. See sensor information in section 4.2. The remote sensor can be located up to 30 meters (100 feet) from the transmitter. The transmitter features a display and three programmable relays for controlling external equipment e.g. alarms, sirens, valves or switches. The transmitter provides an industry standard 3-wire, 4-20mA source or sink output for connection to a dedicated gas detection control system or PLC.

The construction of Sensepoint XCD RFD allows it to be used in hazardous area locations; it may also be used in other areas not classified as hazardous. Sensepoint XCD RFD is suitable for use in Class I Division 1 areas.

Calibration and maintenance is carried out using a Magnetic Wand, this allows a single user to undertake routine maintenance without needing to access internal components.

Sensepoint XCD RFD comprises of the main parts as shown below.

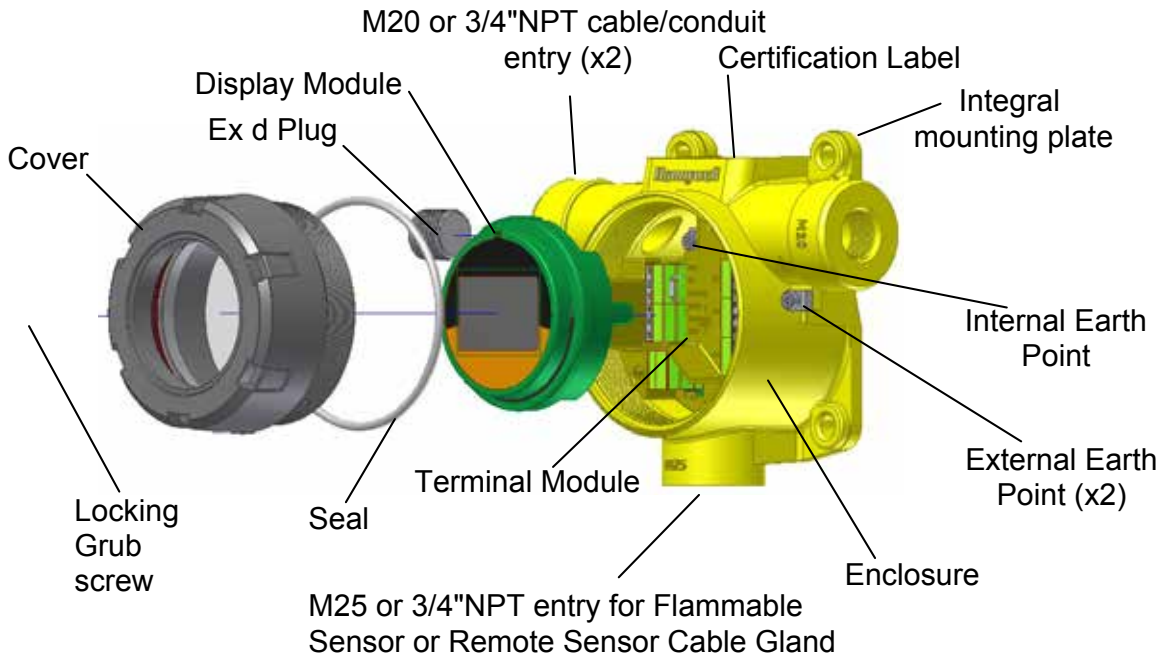


Diagram 1. – Exploded View

4.1 Transmitter

The transmitter enclosure has three threaded entries. The two cable entries either side of the upper part of the transmitter housing are for connecting the power source, signal output and relay contacts to associated signalling equipment. The bottom entry allows local (direct) mounting of the appropriate sensor. These three entries are ¾" NPT for the Americas.

A local LCD provides gas type, concentration, alarm and operating status. The display provides numerical, bar graph and icon information.

Diagnostic information may also be displayed when the transmitter is interrogated using a magnet. The transmitter cover has a glass window which allows use of the Magnetic Wand to activate the three user interface magnetic switches that are located on the front of the display module. The magnet also enables a non intrusive, one-man calibration and configuration facility for the Sensepoint XCD RFD.

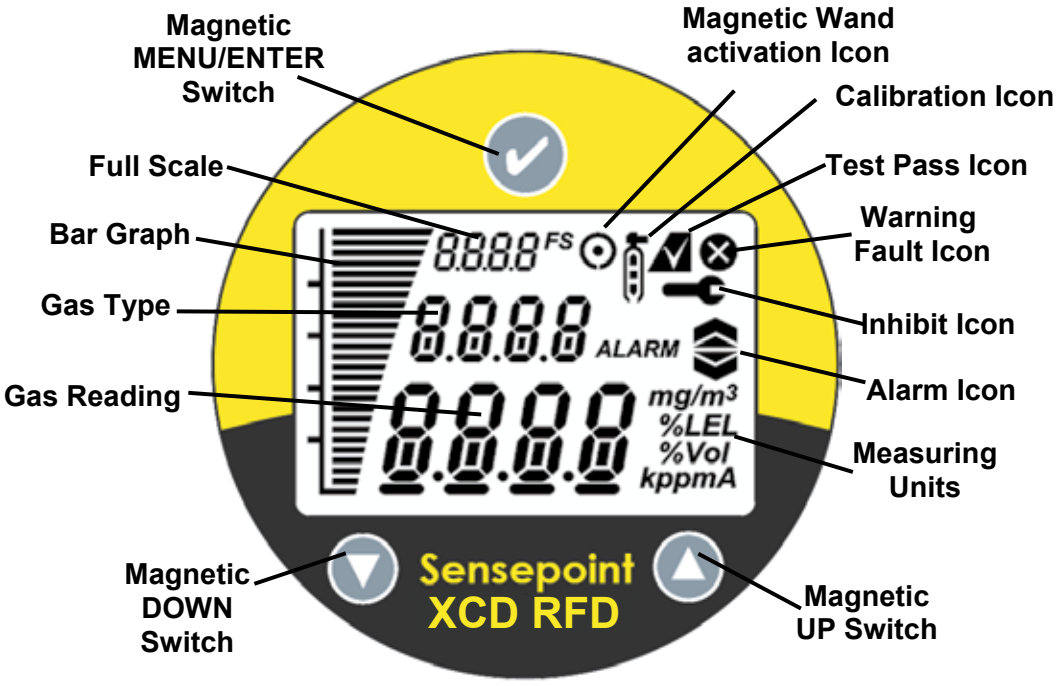


Diagram 2: Sensepoint XCD RFD Display and Magnetic Switches

4.2 Flammable Gas sensors

The Sensepoint XCD/RFD Transmitter is designed to work with the following flammable gas sensor types described in below sections 4.2.1, 4.2.2 and 4.2.3. Sensepoint XCD sensors use electro-catalytic technologies. The Sensepoint XCD RFD is cCSAus approved for use in North America.

Please refer to chapter 15 'Ordering information' for more detail information.

4.2.1 705 LEL Flammable gas sensors (cCSAus Approved)

Standard LEL version
The standard LEL sensor is available for use in temperatures up to 80°C (remote mounting only) and detects gas concentrations up to 100% LEL of a target gas with a resolution in the region of 1% LEL, depending on the gas being detected. The sensor is available with ¾"NPT thread only. The standard 705 is both CSA and UL approved.

High Temperature LEL version
The high temperature version(UL approved) is available for use in temperatures up to 150°C (remote mounting only) and detects gas concentrations up to 100% LEL of a target gas with a resolution in the region of 1% LEL, depending on the gas being detected. The sensor is available with ¾"NPT thread only. The 705 HT is UL approved only.

Details for connecting these sensors with the Sensepoint XCD RFD transmitter are provided in sections 5 and 6. For more sensor specific details, refer to the Technical Handbook Part No. 2106M0502 or their individual manual (705 Combustible Gas Sensor Operating Instructions Part No: 00705M5002)

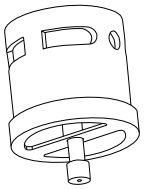


705 Standard LEL version 705 High Temperature LEL version

705 LEL flammable sensors

4.3 Accessories

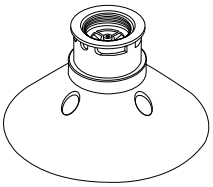
A range of accessories are available to allow use of Sensepoint XCD RFD in a wide variety of applications. These include Pipe mounting bracket, Sunshade deluge cover, Sensor collecting cone, Sensor flow Housing and Remote sensor mounting junction boxes.



For Sensepoint / 705
(P/N: 02000-A-1640/1635)

Standard Weather Protection

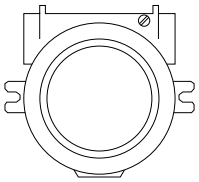
The Standard Weather Protection is designed to protect the sensor from changes in environmental conditions. This is recommended to be fitted to a Sensepoint XCD sensor and Sensepint / 705 sensors.



For Sensepoint / 705
(P/N: 02000-A-1642)

Collecting Cone

The Collecting Cone is an optional accessory that may be fitted to the Weather Protection of XCD and Sensepoint / 705 sensors. The collecting cone is designed for use with gases that are lighter than air.



For UL/CSA Junction Box
(P/N: 2430-0021)

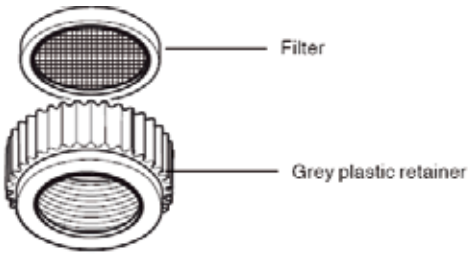
Remote Sensor Mounting

UL/CSA aluminum junction box, (P/N: 2430-0021) is used for remote sensor mounting. Make the connection from the junction box to the transmitter using suitable cable and cable glands.



Calibration Gas Flow Housing

The Calibration Gas Flow Housing (P/N: 02000-A-1645) may be used for either calibration of the Sensepoint / 705 sensor or if the Sensepoint / 705 sensor is to be used as part of a Aspirated Sampling System.



Sensepoint Filter and Filter Housing

Sensepoint Stainless steel filter (P/N: 00780-F-0018) and Filter Housing (P/N: 00780-C-0038) is an optional accessory can be used to offer additional protection to the Sinter in dry, and dusty applications.

4.4 Options

4.4.1 Modbus®

One of the most common field buses in the industry, the optional Modbus® interface allows the XCD to connect to a bus of devices and transmit data to PLCs or controllers (see Appendix A). Connections to the XCD are made through a pluggable terminal block on the Modbus® interface circuit board. Modbus® RTU protocol uses ASCII/Hex protocols for communication. And allows all transmitter/sensor front panel functions to be transmitted using this industrial fieldbus.
Modbus® protocol is a Master-Slaves protocol. Only one master (at the same time) is connected to the bus and one or up to 32 slave nodes are also connected to the same serial bus. Modbus® communication is always initiated by the master. The slave nodes will never transmit data without receiving a request from the master node. The slave nodes will never communicate with each other. The master node initiates only one Modbus® transaction at the same time.
The MODBUS may only be used for data collection or record keeping with regard to combustible gas detection and not for performance verification.
Modbus option is available only for selected gases. Please refer to chapter 15 Ordering information.
To find out if a unit has the ModBus option fitted, look at the part number on the product label. Units fitted with ModBus have the letter “M” at the end of the part number.

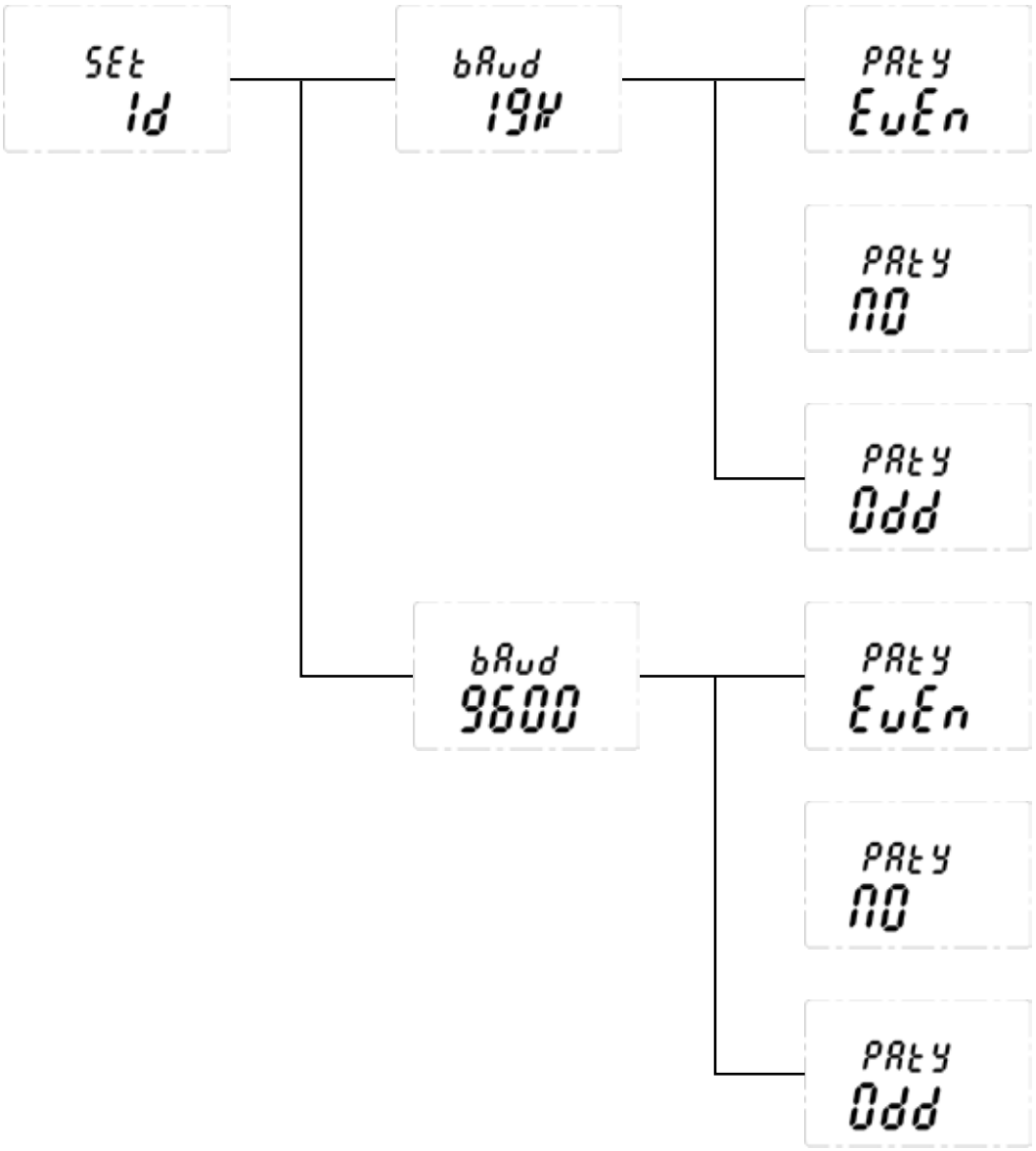
Note: MODBUS® is a registered trademark of Schneider Automation Inc.

(MODBUS ID SETTING)

Set id>>Set ModBus slave ID>>Set Baud rate>>Set Parity

1) Slave ID shall be set 1~247
2) Baud rate setting 9600 or 19200
3) Parity setting (No, Even, Odd)

From the Configuration Mode screen, select'✓'. To set the ModBus Slave ID, use the up-down '▲▼'switches to move to the desired position and use '✓'to select it. Again, using the'▲▼'switches, increment or decrement the value until the desired value appears, selects the value and moves to the next setting.



The communications baud rate and Parity Setting can also be set from this screen by using the'▲▼' switches to navigate to the baud rate display then selecting '✓'. Using the '▲▼'switches, highlight the proper baud rate or parity setting and select'✓'. Default is Slave ID 1, 19200bps and even parity.

Note: Set ID menu is available only for XCD equipped with Modbus option.

5 Installation

Refer to the Sensepoint XCD RFD Control Drawing 3001EC091 for CSA applications shown in section 17.

WARNINGS

Sensepoint XCD RFD is designed for installation and use in Class I, Division 1, Group B,C & D Hazardous Areas in the Americas.

Installation must be in accordance with the recognized standards of the appropriate authority in the country concerned.

Access to the interior of the detector, when carrying out any work, must only be conducted by trained personnel.

Before carrying out any work ensure local regulations and site procedures are followed. Appropriate standards must be followed to maintain the overall certification of the detector.

If using an anti-seize compound, the threads should be thinly coated with an approved silicone free compound e.g. petroleum jelly

To reduce the risk of ignition of hazardous atmosphere, de-classify the area or disconnect the equipment from the supply circuit before opening the detector enclosure. Keep assembly tightly closed during operation.

Never attempt to open a junction box/enclosure or replace/refit the sensor in potentially hazardous atmospheres while power is still applied to the transmitter.

The detector must be earthed/grounded for electrical safety and to limit the effects of radio frequency interference. Earth/ground points are provided inside and outside the unit. Ensure that all screens/instrument earth/clean earth wiring is earthed/grounded at a single point (either at the controller or detector - BUT NOT BOTH) to prevent false alarms due to earth/ground loops.

Take care when handling sensors as they may contain corrosive solutions.
Do not tamper with or in any way disassemble the sensor.
Do not expose to temperatures outside the recommended ranges.
Do not expose sensors under storage conditions to organic solvents or flammable liquids.

This equipment is designed and constructed as to prevent ignition sources arising, even in the event of frequent disturbances or equipment operating faults. Note: The control card must have a suitably rated fuse.

The sensor head must be fitted with the supplied weather protection, and mounted so that the sinter is pointing downward to provide ingress protection IPX6.

The weather protection is a potential electrostatic charging hazard. The manufacturer's instructions should be observed.

The Sensepoint sensor is a possible Electrostatic risk - Do not rub or clean with solvents. Clean with a damp cloth. High velocity airflows and dusty environments can cause hazardous electrostatic charges.

5.1 Mounting and location

Caution: The location of gas detectors should be made in accordance with any relevant local and national legislation, standards or codes of practice. Always replace sensors with a sensor of the same type.

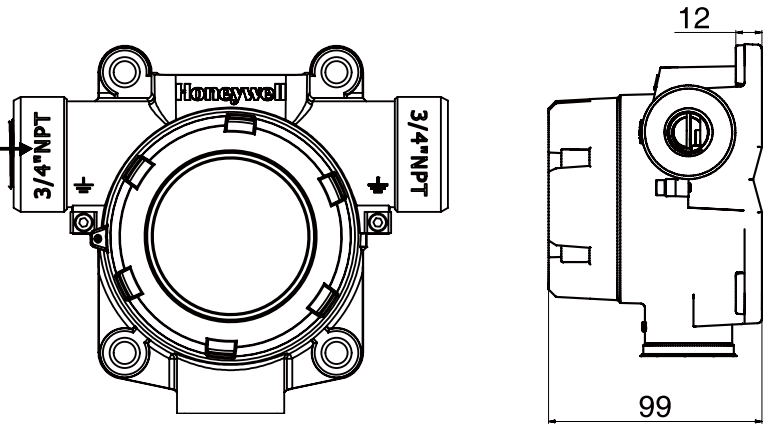
Gas detectors should be mounted where a potential hazard of gas is most likely to be present. The following points should be noted when locating gas sensors.

- When locating detectors consider the possible damage caused by natural events e.g. rain or flooding.
- Consider ease of access to the gas detector for functional testing and servicing.
- Consider how escaping gas may behave due to natural or forced air currents.

Note: The placement of gas detectors should be determined following the advice of experts having specialist knowledge of gas dispersion, experts having knowledge of the process plant system and equipment involved, safety and engineering personnel. The agreement reached on the location of detectors should be recorded.

5.2 Mounting the transmitter

The Sensepoint XCD RFD transmitter has an integral mounting plate consisting of four mounting holes on the transmitter body. The transmitter may be fixed directly to a surface mounting, or to a horizontal or vertical pipe/structure, 40.0-80.0mm (1.6 to 3.1 inches) in diameter/cross section. The Pipe Mounting Bracket accessory (optional accessory) may be used for this purpose.



¾”NPT entries for UL / CSA Versions

All dimensions are shown in mm.

Diagram 5: Outline and mounting dimensions

5.3 Installing the sensor

WARNINGS

If using an anti-seize compound, the threads should be thinly coated with an approved silicone free compound e.g. petroleum jelly
Take care when handling old sensors as they may contain corrosive solutions.

Take care when removing or replacing the Sensor Retainer as there may be sharp edges present on the adjoining threads.

The equipment is designed and constructed as to prevent ignition sources arising, even in the event of frequent disturbances or equipment operating faults.

The sensor head must be fitted with the supplied weather protection, and mounted so that the sinter is pointing downward to provide ingress protection IPX6.

The weather protection is a potential electrostatic charging hazard. The manufacturer's instructions should be observed.

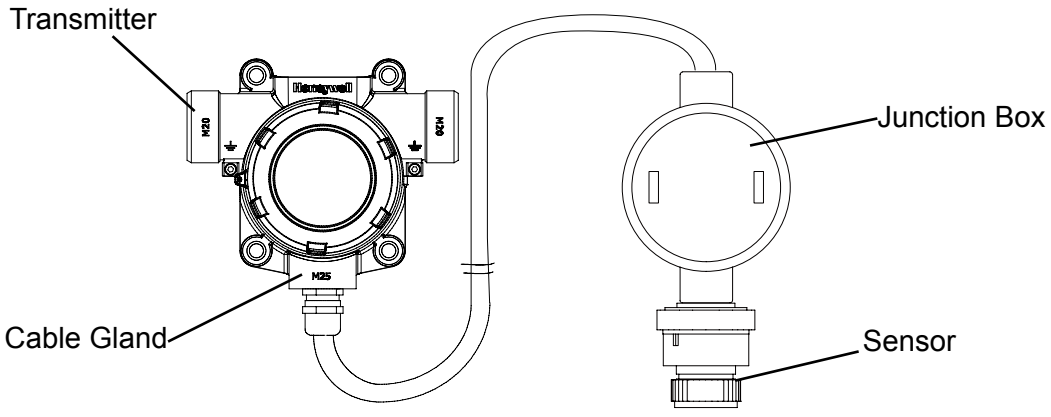
A remotely mounted sensor should be mounted using a suitable junction box . For further details regarding mounting sensors to suitable junction boxes refer to the relevant sensor manual.

1. Connect the remote sensor/junction box to the Sensepoint XCD RFD transmitter using suitable cable with wires of diameter 0.5 ~ 2.5mm2 (20AWG ~ 13AWG).
2. Connect the cable to the transmitter enclosure via the bottom entry.
3. Cable based installation in many countries including Europe must use appropriately certified cable glands and refer to the Sensepoint XCD RFD Control Drawing 3001EC091 shown in section 17 for conduit based installation in the Americas.

Note: The maximum cable length between the remotely mounted sensor and the Sensepoint XCD RFD transmitter is 30 meters (100 feet).

4. Terminate the wires from the sensor in the transmitter as shown in chapter 6.2.
5. Select sensor type at configuration menu after remote sensor mounting. Refer to the chapter 12.1 Sensor Replacement and the chapter 13.3.1 Sensor Selection.

Sensepoint XCD RFD with Sensepoint Remote Sensor



6 Electrical connections

WARNINGS

Sensepoint XCD RFD is designed for installation and use in Class I, Division 1, Group B,C & D Hazardous Areas in the Americas.

Installation must be in accordance with the recognized standards of the appropriate authority in the country concerned.

Access to the interior of the detector, when carrying out any work, must only be conducted by trained personnel.

Before carrying out any work ensure local regulations and site procedures are followed. Appropriate standards must be followed to maintain the overall certification of the detector.

If using an anti-seize compound, the threads should be thinly coated with an approved silicone free compound e.g. petroleum jelly

To reduce the risk of ignition of hazardous atmosphere, de-classify the area or disconnect the equipment from the supply circuit before opening the detector enclosure. Keep assembly tightly closed during operation.

Never attempt to open a junction box/enclosure or replace/refit the sensor in potentially hazardous atmospheres while power is still applied to the transmitter.

The detector must be earthed/grounded for electrical safety and to limit the effects of radio frequency interference. Earth/ground points are provided inside and outside the unit. Ensure that all screens/instrument earth/clean earth wiring is earthed/grounded at a single point (either at the controller or detector - BUT NOT BOTH) to prevent false alarms due to earth/ground loops.

Take care when handling sensors as they may contain corrosive solutions.
Do not tamper with or in any way disassemble the sensor.
Do not expose to temperatures outside the recommended ranges.
Do not expose sensors under storage conditions to organic solvents or flammable liquids.

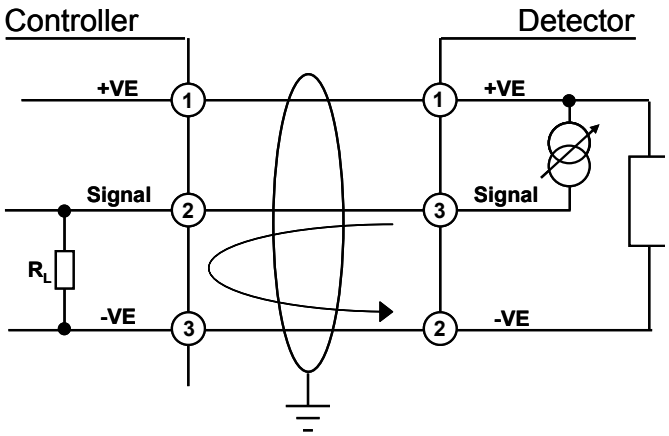
The Sensepoint sensor is a possible Electrostatic risk - Do not rub or clean with solvents. Clean with a damp cloth. High velocity airflows and dusty environments can cause hazardous electrostatic charges.

Refer to the Sensepoint XCD RFD Control Drawing 3001EC091 shown in section 17.

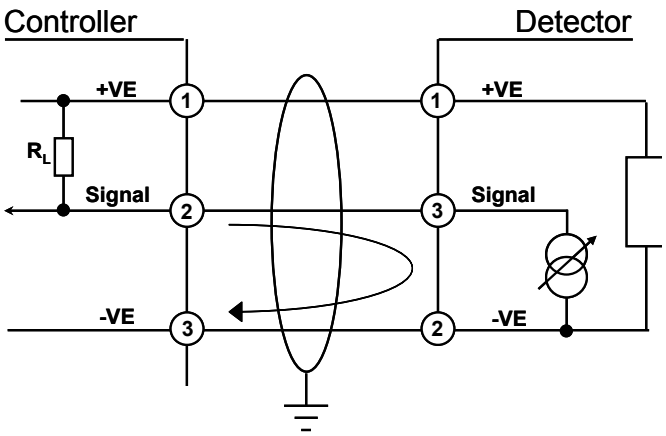
6.1 Transmitter Wiring

Caution: All electrical connections should be made in accordance with any relevant local or national legislation, standards or codes of practice.

The Sensepoint XCD RFD transmitter may be wired in either Current SOURCE or Current SINK configuration. These two options are offered to allow greater flexibility in the type of control system that it can be used with. SOURCE/SINK is selectable via the switch located on the back side of the display module; accessible by removing the display module during installation / commissioning (see section 9).



XCD Source 3 Wire 4-20mA (Source)



XCD Sink 3 Wire 4-20mA (Sink)

Note: Terminate cable screen at detector or controller, not both.

Caution: 250ohm load resistor (RL) is installed in the factory, in case of connection with controller, this resistor should be removed because controller has load resistor internally.

6.2 Terminal connections

Note: Ensure that none of the wires in the terminal area cause an obstruction when refitting the Display Module. Ensure that the socket on the Display Module is fully engaged in the Display Module Connector on the Terminal Module.

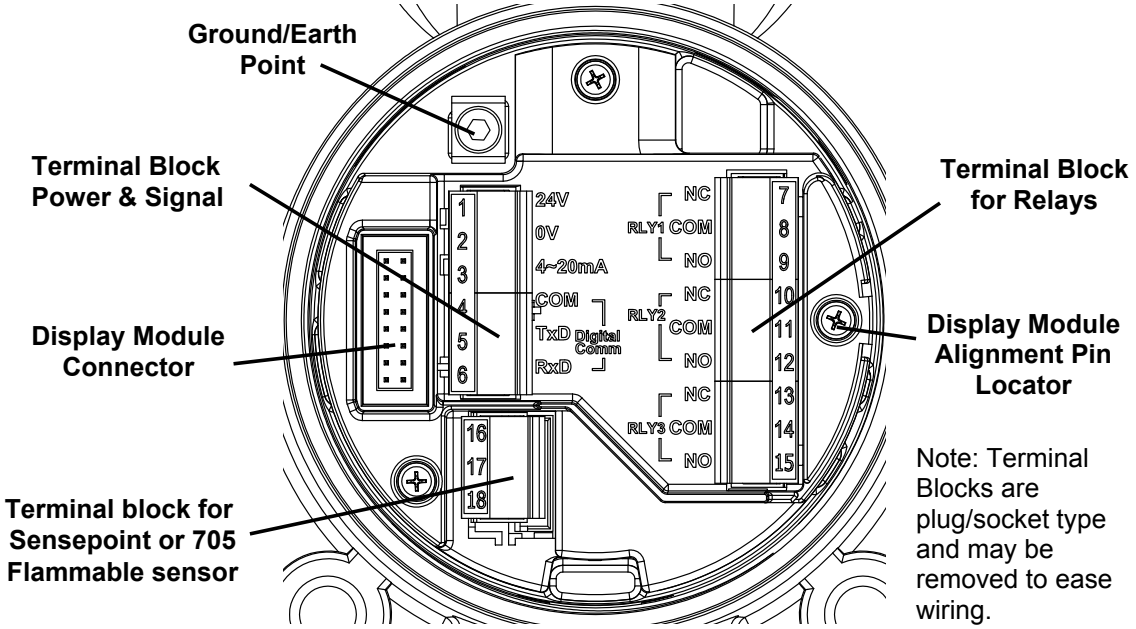


Diagram 6: Sensepoint XCD RFD Terminal module

Terminal Module Connections			
Terminal Number	**Marking**	**Connection**	**Description**
1	24V	+VE Supply(16-32VDC)	Controller Connections
2	0V	-VE Supply(0VDC)	
3	4~20mA	Current Output Signal	
4	COM	Common	MODBUS RTU. RS485 (Optional)
5	TxD	MODBUS A(+)	
6	RxD	MODBUS A(-)	
7	RLY1/NC	Normally Closed	Programmable Relay 1 (Default A1)
8	RLY1/COM	Common	
9	RLY1/NO	Normally Open	
10	RLY2/NC	Normally Closed	Programmable Relay 2 (Default A2)
11	RLY2/COM	Common	
12	RLY2/NO	Normally Open	
13	RLY3/NC	Normally Closed	Programmable Relay 3 (Default Fault)
14	RLY3/COM	Common	
15	RLY3/NO	Normally Open	
16	+VE	Sensitive (Sensor Brown Wire)	RFD Sensor Connection
17	-VE	Non-Sensitive (Sensor Blue Wire)	
18	01	Signal (Sensor White Wire)	

Table 1: Transmitter terminal connections

Note: The 705 HT sensor (UL Certified only) must be earthed either at the remote junction box or at the transmitter as appropriate. Avoid earth loops.

6.3 Power

The Sensepoint XCD transmitter requires a power supply from the controller of between 16Vdc and 32Vdc. Ensure that a minimum supply of 16Vdc is measured at the sensor, taking into account the voltage drop due to cable resistance.

The maximum loop resistance in the field cable is calculated as follows

$$R_{loop} = (V_{controller} - V_{detector\ min}) / I_{detector}$$

Example;

The controller is supplying a nominal 24Vdc **($V_{controller}$)**, the detector minimum allowable voltage is 16Vdc **($V_{detector\ min}$)**, therefore the maximum allowable voltage drop between the controller and detector is 8Vdc; this means a voltage drop of 4V in each core (+ve core and -ve core).

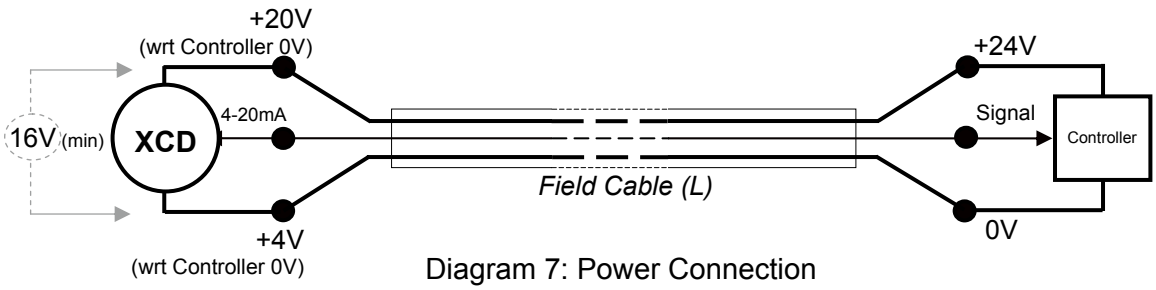


Diagram 7: Power Connection

Power consumption of the detector is 5.0W. The current required to drive the detector at the minimum voltage is (I = P / V), 5 / 16 = 312.5 mA (I detector).

So, the maximum fieldcable loop resistance (R loop) = 8 / 0.31 = 26 Ohms, or 13 Ohms per core, (allowing for component variations, losses, etc.).

The following tables show the maximum cable distances between the controller and transmitter assuming a voltage drop of 3V in each core and for different cable parameters. The tables are examples only and actual cable parameters and source power supply voltage for the application should be used to calculate the maximum cable distance allowed at the installation site.

Typical cable data		Maximum Cable length (L)	
Cable size (cross sectional area)	Cable resistance Ω/km (Ω/mi)	Meters	Feet
0.5mm2 (20AWG*)	36.8 (59.2)	353	1158
1.0mm2 (17AWG*)	19.5 (31.4)	666	2185
1.5mm2 (16AWG*)	12.7 (20.4)	1023	3356
2.0mm2 (14AWG*)	10.1 (16.3)	1287	4222
2.5mm2 (13AWG*)	8.0 (12.9)	1621	5318
*nearest equivalent			

Table 2: Maximum cable distances

6.4 Cabling

The use of industrial grade, suitably armoured field cable is recommended.

For example, screened 3 cores (plus screen 90% coverage), suitably mechanically protected copper cable with a suitable 3/4" explosion-proof gland with 0.5 to 2.5 mm2 (20 to 13 AWG) conductors. Ensure the cable gland is installed correctly and fully tightened. All unused cable entries must be sealed with a suitable certified sealing plug (one plug is supplied).

Remote Mounting Cable Details

Type	Cable Spec	Max Length
RFD Remote	AWM2464 AWG20~AWG13 Shield	30meters (98 feet)

Note: The Sensepoint HT sensor requires an earth core if the remote junction box does not have a suitable earth point.

6.5 Cable and Earth/Ground regimes

Effective Earth/Ground bonding is important to ensure good EMC and RFI immunity.

The following diagrams show examples of how to earth/ground bond the cable at enclosures. These bonding techniques provide good RFI/EMC performance. Earth/ground loops must be avoided to prevent the risk of false signal variation.

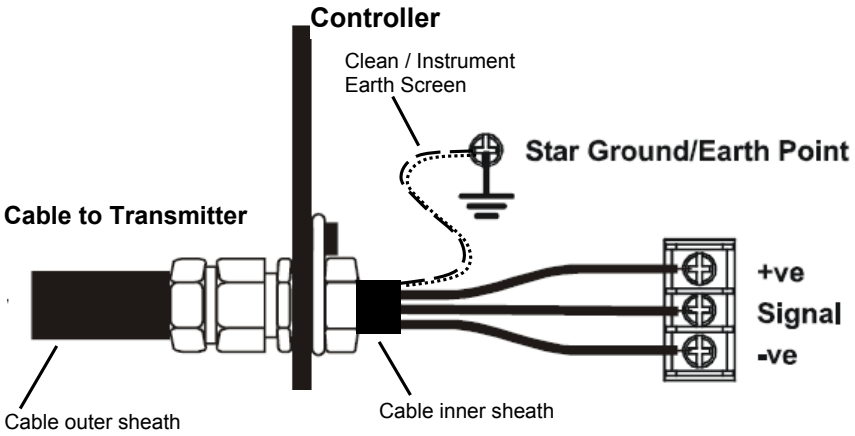


Diagram 8: Controller Grounding

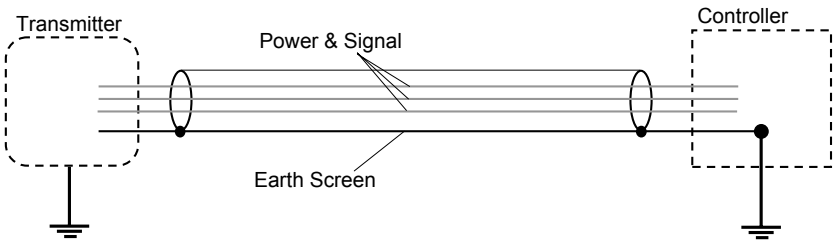


Diagram 9: System grounding

The Earth Screen of the field cable should be “tied to Earth” or connected to Ground at one point only. It is common practise to adopt a STAR EARTH connection regime where all instrumentation Screens are connected at one common point.
The Screen at the other end of the cable should be “parked” or terminated into a blank terminal.

The following diagrams show how to install the wire into the ground screw of the enclosure.

Loosen the bolt **Insert cable** **Fasten the bolt**



6.6 Ground Terminal Wiring

Internal Ground connection: Utilize the shield of the wiring cable recommended in the wiring instructions. For connection to this terminal. Twist the shield wire to avoid stray shield wires, Loosen the screw sufficiently and wrap the wire around the screw in a “U” shape. Raise the clamp and place the wire between the clamp and ground base, lower the clamp and tighten the screw to 6.9lb-in torque.

External Ground Connection: If required by local authority, Utilize a No 14 AWG copper, (Stranded or Solid), wire. Loosen the screw sufficiently to enable ‘wrapping the wire around the screw in a “U” shape. Raise the clamp and place the wire between the clamp and ground base, lower the clamp and tighten the screw to10.4lb-in torque. A suitable Ring or Spade type insulated crimp terminal may also be used to accommodate the M4 size external earth screw.

7 Default configuration

The Sensepoint XCD RFD transmitter is supplied with the following default configuration.

Function	Value/Setting	Meaning
Sensor Type	Automatic for Sensepoint XCD RFD sensors. Must be set for Sensepoint and 705 sensors.	XCD RFD recognizes the XCD RFD sensor cartridge according to the gas type within its own sensor family i.e. mV. For a Sensepoint and 705 sensor the user must set the sensor type.
Signal output	≥0.0<1.0 mA	Fault (refer to table 9 section 12.3 for details)
	2.0 mA or 4.0 mA	Inhibit (during configuration/user settings)
	4.0 mA to 20.0 mA	Normal gas measurement
	22.0 mA	Maximum over range
Alarm Relay 1*	Value is sensor dependant	Lower alarm level
	De-energized	Energizes on alarm
	Contact Normally Open (NO)	Closes on alarm
Alarm Relay 2*	Value is sensor dependant	Higher alarm level
	De-energized	Energizes on alarm
	Contact Normally Open (NO)	Closes on alarm
Fault Relay	<1mA	Detector Fault
	Energized	De-energizes on alarm
	Contact Normally Open (NO)	Closes on alarm
Inhibit	2.0 mA (default)	Signal output inhibited during menu use If any relay is set to inhibit relay, then inhibit relay will be activated.
Timeout	Disabled	No inhibit timeout. The detector waits for a button press before returning to the previous state/setting Timeout period can be set in 'Configure Inhibit' menu in Configuration Mode.
Password	0000 (Disabled)	0000 (Password disabled). If changed then password is activated.
Location (Tag Number)	0000	Optional feature to identify the location or User's "Tag" number of the XCD
Temperature	°C	Option to have °C or °F
ModBus	ID, baud rates and Parity bit	ID : 1 Baud rates : 19,200 Parity bit : EVEN

* Alarm relays automatically reset when reading falls within alarm thresholds. If relay configured to LATCH, then relays must be reset using the Magnetic Wand.

Table 3: Default configuration

Gas Name	Default Range	Lower Alarm	Lower Alarm Type	Higher Alarm	Higher Alarm Type
705 Flammable	100%LEL	20%LEL	Rising	40%LEL	Rising
705 HT Flammable	100%LEL	20%LEL	Rising	40%LEL	Rising

For details of how to change the configuration of the Sensepoint XCD please refer to section 13.

8 Normal Operation

Sensepoint XCD RFD is supplied configured and ready for use according to the “Default Settings” table shown above. However these setting may be tailored to a specific application requirement using the Sensepoint XCD RFD configuration menu system.

Access to the Sensepoint XCD RFD transmitter’s configuration menus system is via the Magnetic Activation Tool.

8.1 Display Screen

The Sensepoint XCD RFD display features an LCD with Numeric and bar-graph gas concentration data, alpha-numeric warning and status indication, a target for magnetic switch activation and the UP/DOWN/ESC/ENTER zones for remote configuration. The LCD is also backlit with hi-intensity multi-colour LED indicator to show NORMAL, ALARM and FAULT status.

During normal operation the instrument display shows a steady GREEN backlight.

During Low and High Gas Alarm it displays a flashing RED backlight

During Fault condition the instrument display shows a flashing YELLOW backlight.

The screen is visible through the window of the transmitter’s cover. The display shows the gas concentration (both graphically and numerically), range, units, alarm/
fault status, etc.

Note: The detector display may become sluggish in sub-zero temperatures and possibly unclear at temperatures below -40 °C, but the detector continues its gas monitoring function. The display is not damaged and recovers when the temperature increases.

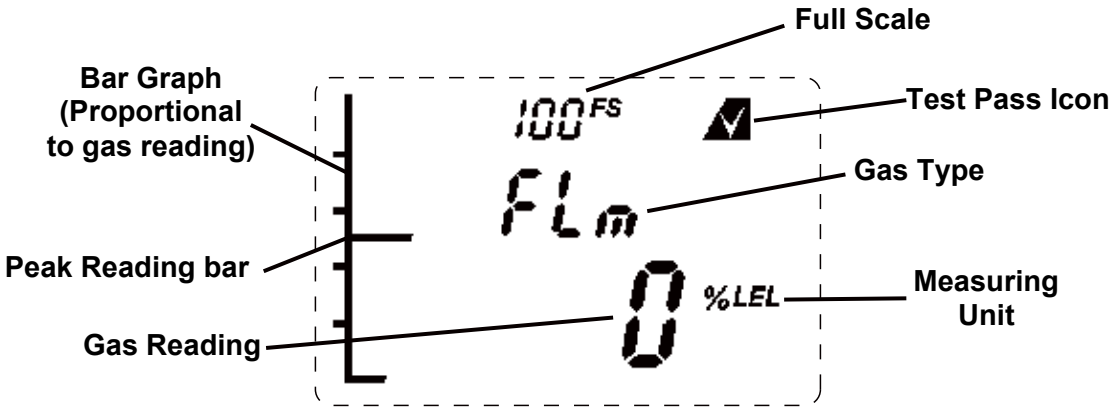


Diagram 10: Example of a Flammable Transmitter Display screen – Normal Operation

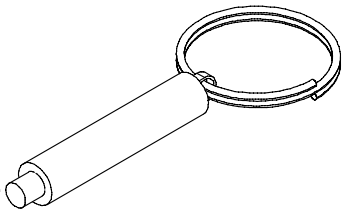
8.2 System Status

Display indications, current output and relay states for various operational conditions are shown in the following table. For further details of error messages and trouble shooting see section 12.3.

System Status						
Status	Display	Current Output	Relay			Back Light
			A1	A2	Fault	
Fault: Circuit or sensor error	F-XX fault number with fault icon blinking	0-1.0 mA			✓	Yellow, flashing
System Fault	N/A	0-0.15mA				
Note: In the event of processor failure the watchdog will automatically reset the system for recovery.						
Warning	W-XX warning number with fault icon blinking	Dependent on system status				Green Steady
Normal	0.0 Gas concentration	4-20 mA				Green Steady
Alarm 1	Gas concentration. 1st alarm icon blinking	4-20 mA	✓			Red, flashing
Alarm 2	Gas concentration. 2nd alarm icon blinking	4-20 mA	✓	✓		Red, flashing
Over-range	Full scale icon and reading blinking	22mA	✓	✓		Red, flashing
Inhibit	Inhibit icon dependent on Menu command. If any relay is set to inhibit relay, then inhibit relay will be activated.	2 or 4mA depending on configuration.				Green Steady

Table 4: System status

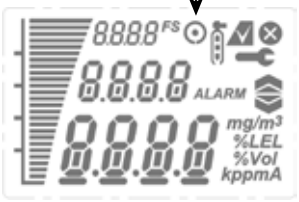
8.3 Magnetic Wand Activation



The magnetic wand is used as a tool to allow the user to communicate with the Sensepoint XCD RFD transmitter. Communication with the XCD RFD is achieved by positioning the Magnetic Wand at one of three different positions on the front glass window of the Sensepoint XCD RFD transmitter. Activation of the switches is verified by observing the Magnetic Wand Activation Icon on the LCD display

Hold the Magnetic Wand in position for up to 2 seconds =

Hold the Magnetic Wand in position for 3 seconds or more =



8.4 Operation Mode Structure

Sensepoint XCD RFD has 3 operating modes.

1. **Monitoring mode**, is the normal operating status while XCD RFD measures and displays gas concentration. The fault/warning status is periodically checked, relay contacts are activated according to the configuration.

2. **Configuration mode**, this mode allows parameters relating to the configuration of the Transmitter functions to be changed according to specific needs. This mode can be protected by a password mechanism to prevent unauthorised changes being made.

3. **Review mode**, allows the user to view the current configuration settings.

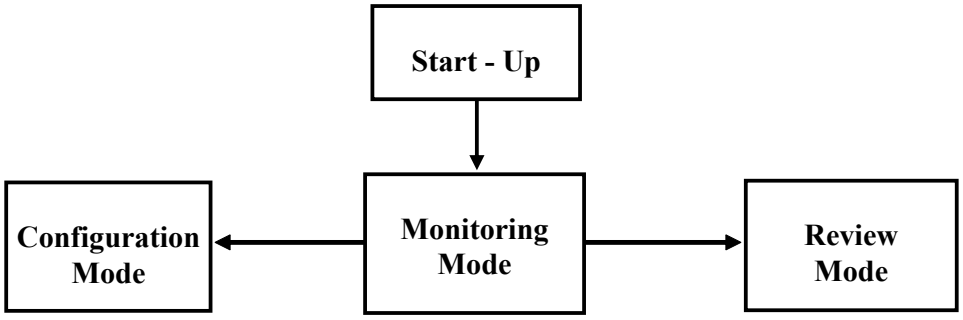


Diagram 11: Mode Structure

Further details of the information available and configuration options for the Sensepoint XCD RFD can be found in Section 13. of this manual.

9 First time switch on (Commissioning)

WARNING

The following procedure requires the Transmitter Cover to be removed while carrying out supply voltage checks. Therefore the appropriate permits to work should be sought in preparation.

Prior to carrying out any HOT WORK ensure local and site procedures are followed. Ensure that the associated control panel output actuation is inhibited so as to prevent false alarms.

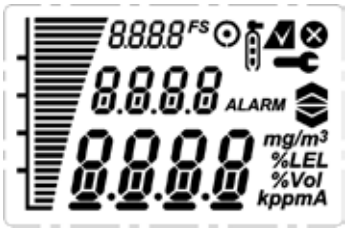
Caution: The following procedure should be followed carefully and only performed by suitably trained personnel

Note: Calibration is mandatory before the detector can be used for gas monitoring. Refer to Section 10.1 Calibration for the proper procedure.

1. Remove the transmitter housing cover and detach the display unit by lifting the semi-circular handle and pulling the assembly directly away from the termination module (without twisting it)
2. Configure the detector's analogue output signal configuration for Current SINK or Current SOURCE operation using the selector switch located on the back of the display module. The default setting is Current SOURCE.
3. Check that all electrical connections are terminated correctly as per section 6.
4. **Switch On** the external power supply to the transmitter at the safe area gas detection controller (or PLC).
5. Using a Digital Multi Meter (DMM), check the Supply Voltage at the terminals 1 (24V) and 2 (0V), this should be a minimum supply voltage of 16Vdc (Maximum supply voltage is 32V DC)
6. **Switch Off** the external power to the detector.
7. Refit the Display Module and Cover.

Note: Ensure that none of the wires in the terminal area cause an obstruction when refitting the Display Module. Ensure that the socket on the Display Module is fully engaged in the Display Module Connector on the Terminal Module.

8. **Switch On** external power to the detector.
9. All the display icons/text/numbers are displayed for 3 seconds.



10. A start up sequence will then be displayed, similar to the one shown in Diagram 15.

Note:
For a full description of each screen shown in Diagram 12, please refer to Section 13.3 "Review Mode" of this Manual.

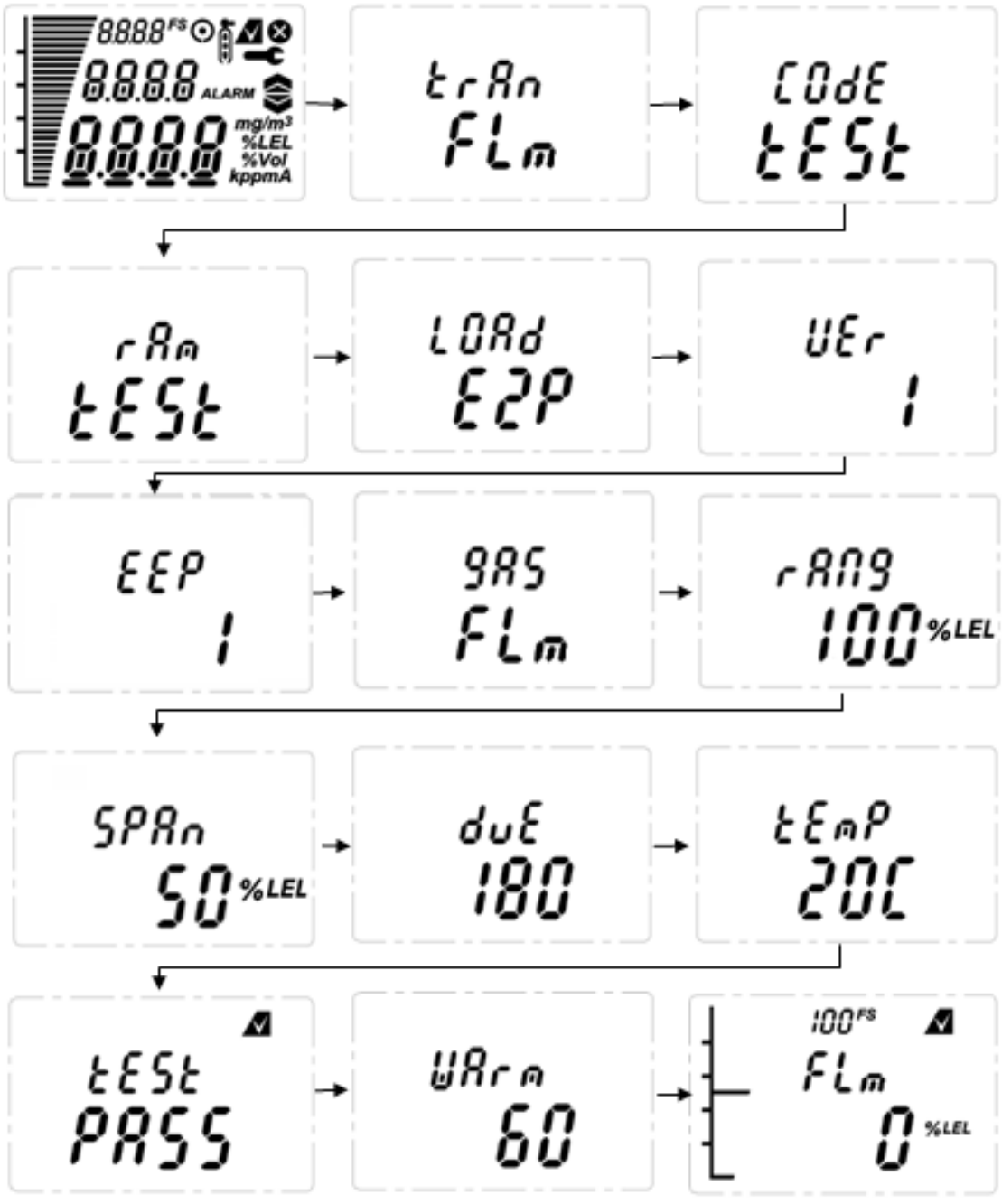


Diagram 12: Normal Start up procedure (For the Flammable sensor version)

11. The warm up countdown of 60 seconds (depending on the gas type) is then initiated.
12. Normal **Monitoring Mode** is then resumed.
13. Configure to desired gas.
14. Calibrate XCD-RFD.

10 Response Check and Calibration

It is recommended to periodically carry out a gas response check on the Sensepoint XCD RFD to ensure correct operation. This may be done in two ways;

1. A simple Response Check often referred to as a “BUMP TEST” is a test using calibration gas applied to the sensor via the nozzle of the Weather Protection or using the Sensepoint XCD RFD Gassing Cap.
If a BUMP TEST is done via the Weather Protection nozzle it may be necessary in windy conditions to increase the flow rate of the test gas by a further 1 LPM, OR, to shelter the weather protection from the wind.

2. A full gas calibration of the sensor as described in the following section, using ONLY the Sensepoint Calibration Gas Flow Housing (P/N: 02000-A-1645) for the 705 sensor.

10.1 Zeroing and span calibration

Caution: Before initial calibration allow the detector to stabilize for 30 minutes after applying power.
When in zeroing and span calibration mode the current output from the detector is inhibited (default 2mA) to avoid false alarms.
For Flammable gas calibration use a calibration gas concentration of 50%LEL +/-10% for Canada and US applications and between 25% and 95%LEL for other applications to ensure that the required accuracy can be attained.
HIGH OFF SCALE READINGS MAY INDICATE AN EXPLOSIVE CONCENTRATION.

To calibrate the detector, use an appropriate span gas cylinder, constant flow regulator AND the Sensepoint XCD Gassing Cap (see section 4.3). The flow rates used for calibration gas are as follows:

Gas Type	Flow rate (L / Min)
Flammable	1 to 1.5

A compressed air cylinder (20.9%Vol oxygen) should be used to perform the zero calibration if the area where the detector is located contains any residual amount of the target gas. If no residual gas is present then the background air can be used to perform the zero calibration. Contact your Honeywell Analytics representative for details of suitable calibration kits.

To calibrate the detector follow the procedure below.

(ZERO CALIBRATION)

1. If the ambient air is NOT considered reliable to use to set the ZERO, then remove the weather protection and fit the Gassing Cap accessory (see Section 4.3) onto the sensor and apply a clean source of zero gas or compressed air.

2. To access the calibration menu, hold the end of the magnet over the switch located at the top center of the detector display (✓) for at least 3 seconds and then remove.

3. The display will indicate the first configuration mode menu 'SEt CAL'.



4. Put the magnet over the '✓' switch again and move to enter the Calibration menu.

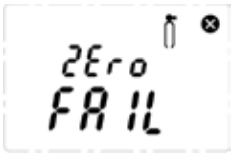
5. The display will show the current gas reading, and the '' icon flashes.



6. When the zero gas reading is stable use '✓' to confirm zero calibration.

7. If successful the display shows 'ZEro PASS' (if not successful, the display shows 'ZEro FAIL' and returns to configuration mode).





8. If using zero-air, turn it off. Zeroing is complete and saved.

9. The display shows 'SPAn' with 'YES' flashing.





10. If span calibration is required use '✓' proceed to the next step. If span calibration is not required, use '▲▼' to select 'No' and '✓' to return to configuration mode.

(SPAN CALIBRATION)

11. The display shows the current calibration span gas concentration while flashing the '' icon. Use '▲▼' to change the calibration span gas concentration, and '✓' when required span calibration level is set.



12. The display will show the current gas reading, and the '' icon flashes.

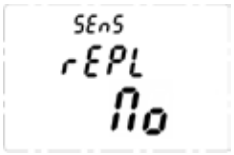
13. Connect the regulator to the span gas cylinder.

14. Apply the span gas to the sensor using the Sensepoint XCD Gassing Cap (see section 4.7 for description). The live gas reading is displayed. When the reading is stable, use '✓' to confirm span calibration.



15. If the sensor has been replaced the following display may be shown.





16. Use '▲▼' to select 'YES' if the sensor has been replaced or 'No' if it has not been replaced.

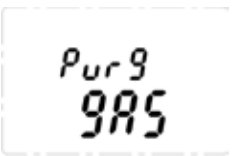
17. If the span calibration is successful the instrument will briefly display 'SPAn PASS' (if fails 'SPAN FAIL' displayed and returns to configuration mode).

Note: the calibration due warning counter is reset after a successful calibration. See section 12.3 for further details of setting a calibration due warning.





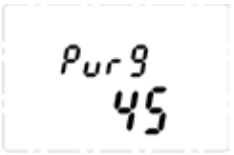
18. The display alternates between "Purg gAS" and the gas reading to indicate that the unit is expecting the span gas to be removed from the sensor.





19. Promptly switch off the calibration span gas and remove the Sensepoint XCD Gassing Cap from the sensor to allow the gas to disperse.

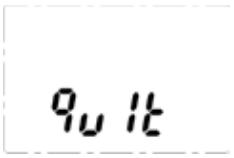
20. When the reading falls below 50% of the calibration gas level the display indicates a countdown .



21. When the countdown is finished, the calibration procedure is complete.

22. The instrument returns to the ‘Set CAL’ menu. Activate the ‘▲’ or ‘▼’ switch to select another menu or select ‘QuIT’ to return to normal monitoring mode.





Note: Remember to always replace the Weather Protection and other accessories.

11 General Maintenance

WARNINGS

Access to the interior of the transmitter, when carrying out any work, must only be conducted by trained personnel.

Before carrying out any work ensure local regulations and site procedures are followed. Appropriate standards must be followed to maintain the overall certification of the sensor and transmitter.

To reduce the risk of ignition of hazardous atmosphere, de-classify the area or disconnect the equipment from the supply circuit before opening the transmitter enclosure. Keep assembly tightly closed during operation.

Never attempt to open a junction box/enclosure or replace/refit the sensor in potentially hazardous atmospheres.

Take care when handling sensors as they may contain corrosive solutions.
Do not tamper with or in any way disassemble the sensor.
Do not expose to temperatures outside the recommended ranges.
Do not expose sensors under storage conditions to organic solvents or flammable liquids.

For remote Flammable sensors used with the XCD RFD Transmitter, please refer to the individual sensor manual for specific recommended calibration periods.

11.1 Operational Life

The equipment should be checked following exposure to known contaminants. Recalibrated if necessary.

The pellistors used in the Catalytic flammable gas sensor can suffer from a loss of sensitivity when in the presence of poisons or inhibitors, e.g. silicones, sulphides, chlorine, lead or halogenated hydrocarbons. The pellistors are poison resistant to maximize the operational life of the Catalytic flammable sensor. A typical operating life, subject to the presence of poisons/inhibitors is 36 months.

Refer to section 12 for sensor replacement procedures.

12 Servicing

WARNINGS

Take care when handling sensors as they may contain corrosive solutions. Do not tamper or in any way dis-assemble the sensor. Do not expose to temperatures outside the recommended range. Do not expose sensor to organic solvents or flammable liquids.

Caution: The following procedure should be followed carefully and only performed by suitably trained personnel.
A fault condition will be signalled by the detector if the sensor is removed with the unit under power.

12.1 Sensor replacement

The sensors that are used with the Sensepoint XCD RFD have no serviceable parts. When they have reached the end of their operational life, simply replace the sensor or the sensor cartridge.

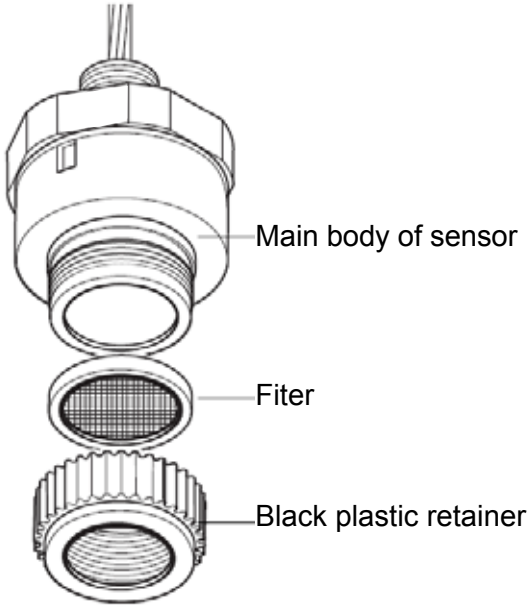


Diagram 13: Sensor Replacement

Only a qualified installation engineer should service the sensor. Ensure power is off before carrying out any maintenance procedures. The only maintenance required is sensor replacement and filter changing (if fitted to an accessory).

WARNING

Ensure that the same Gas Type and Range of Sensor is fitted in place of the old Sensor.

The sensor head must be fitted with the supplied weather protection, and mounted so that the sinter is pointing downward to provide ingress protection IPX6.

The weather protection is a potential electrostatic charging hazard. The manufacturer's instructions should be observed.

CAUTION

The 4-20mA analog output signal will remain INHIBITED at 2mA (default setting) while the XCD RFD remains in Configuration Mode. However, the ALARM and FAULT RELAYS remain Active.

Changing the configuration of the Sensor Type or the Gas Star Rating for catalytic sensors may result in temporary activation of the ALARM or FAULT RELAYS.
Should this occur, then recalibrating the sensor will return the XCD RFD to normal condition and reset the relays.

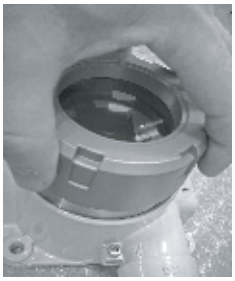
As a precaution, please take necessary action to manually inhibit any external actuator or alarm devices that are connected to the XCD RFD Alarm/Fault Relays to prevent unnecessary activation during commissioning or reconfiguration of the XCD RFD gas detector.

12.2 Replacing Modules within the Transmitter

Two replaceable module assemblies are located within the transmitter housing. The Display Module and the Terminal Module.

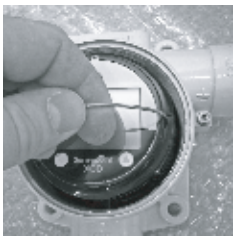
The Display Module is simply removed by unplugging it from the Terminal Module (this procedure is done during normal installation).

To replace the Terminal Module, use the following procedure:



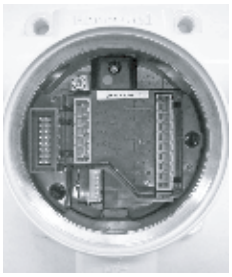
1. Unscrew and remove the Transmitter Cover

2. Lift the handle and un-plug and remove the Display Module.



3. Unplug the connection terminals and lift them clear of the Terminal Module.

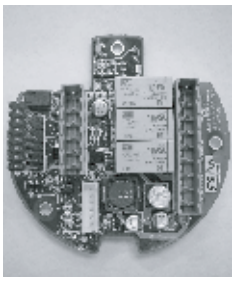
4. Unplug the connector for the XCD sensor.

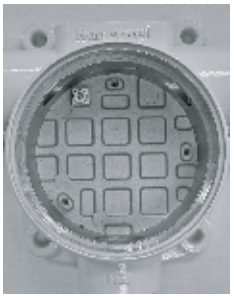


5. Loosen and remove the three “cross-headed” screws that secure the Terminal Module to the Transmitter housing.

6. Carefully lift the Terminal Module from the transmitter housing.

7. Fit the new Terminal Module using the above procedure in reverse order.





12.3 Faults and Warnings

The table below provides details of possible error.

Message	Description	Action
W-01	Calibration needed	The unit has not been calibrated for the configured calibration interval Calibration is necessary due to change of sensor/gas type
W-02	Transmitter Temperature limits exceeded	Use '✓' to clear when within limits
W-03	Alarm setting needs to be configured	Re-configure alarm settings such that upper alarm should not exceed user configured scale
W-04*	Over-range warning	Use '✓' to clear when within limits
W-05*	The sensor is switched off to prevent it from being deteriorated	Make sure that there is no flammable gas in the air and use '✓' to clear when within limits
F-01	Internal I2C failure	Cycle power to detector. Replace detector
F-02	Cell failure	For Flammable/IR, cycle power to detector. Replace sensor
F-03	Significant zero drift	Re zero/calibrate
F-04	Unexpected sensor fitted	Replace sensor
F-05	EEPROM is corrupted	Reset transmitter. If fault still appear, replace transmitter
F-06	Low supply voltage	Reset transmitter. If fault still appear, replace transmitter
F-07	SRS processor failure	Reset transmitter. If fault still appear, replace transmitter
F-08	RAM read/write fault	Reset transmitter. If fault still appear, replace transmitter
F-09	Info. memory corrupted	Reset transmitter. If fault still appear, replace transmitter
F-10	Code Memory corrupted	Reset transmitter. If fault still appear, replace transmitter
F-11	DAC output failure	Check load resistor or sink/source mode switch was configured properly
F-12	Heater failure	Reset transmitter. If fault still appear, replace transmitter
F-13	Supplied voltage failure	Check supply voltage. Replace detector

*Note : W-04 and W-05 are only for flammable catalytic bead sensors. For other gases, gas reading will blink on the LCD instead of the over-range warning.

Table 9: Fault and Warning List

13 Menu's and Advanced Configuration

13.1 Abort Function

In Review Mode or Configuration Mode the user can escape one step back from the current position using the Abort Function. To do this the user must activate the Enter switch for more than 3 seconds with the Magnetic Wand. Switching between each pair of modes or between menus and sub menus are shown in the following table.

From	To	Example
Review Mode	Monitoring Mode	Activate Enter switch for more than 3 seconds while in Review Mode
Configuration Mode	Monitoring Mode	Activate Enter switch for more than 3 seconds while navigating menus in the Configuration Mode
Configuration Mode sub menu	Configuration Mode main menu	Activate Enter switch for more than 3 seconds while in a sub menu

Table 10: Transmitter menu switching

13.2 Configuration Mode

The table below shows the functions available via the configuration menu that can be displayed on the transmitter and accessed using the Magnetic Wand.

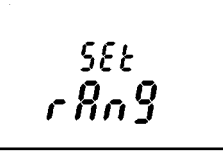
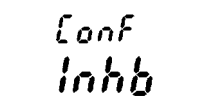
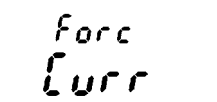
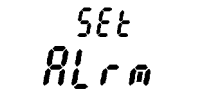
The instrument will show the main Menu when the "Enter" switch is activated with the Magnetic Wand and held for at least 3 seconds.

The Menu is password protected to prevent any unauthorized changes. The password is initially disabled and the default password is '0000'. If the default password is changed to other than '0000', then the password is enabled automatically and requested when entering Configuration Mode.

With the Menu showing, the following functions can be performed: calibration, bump test, sensor selection and configuration of parameters such as measuring range, calibration gas level, calibration interval, inhibit current, inhibit timeout, alarm setting, relay setting, password change, location setting, temperature unit reading, force analogue output and alarm function checks.

While in Configuration mode, the output current of the transmitter is inhibited to prevent false alarms.

Names, displays and descriptions for each menu item in Configuration Mode are shown in the following table.

Menu	Display	Description
Set Calibration		Execute zero/span calibration Set calibration gas level After zero, the option exists to proceed with span calibration, or return to the Menu.
Select Sensor		Select the type of sensor from the sensor list. This menu is only available for flammable / IR sensor.
Select Gas		Select the type of gas from the list. This menu is only available for flammable / IR sensor.
Set Range		Set measuring range
Configure Inhibit		Select inhibit current Set timeout option (5 minute increments)
Set Password		Enable/disable password Set password Default – no password (Select ‘0000’)
Set Calibration Interval		Set calibration interval, 30 to 365 days User configurable option to display warning
Bump Test		Execute a ‘bump’ test to check gas response of the sensor.
Force Current		Force analogue output to test functionality of GD control system during system commissioning.
Set Alarms		Set alarm 1, alarm 2 levels, functionality and operation (none/falling/rising)
Set Relays		Set relay 1,2,3 type (alarm 1, alarm 2, fault and inhibit) and action (energized/de-energized)

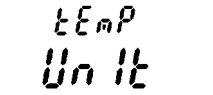
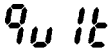
Relay Operation		Configure relay on delay time, relay off delay time and latch/non-latch
Set Location		Set location (or TAG number)
Set Temperature Unit		Change temperature display unit. °C (Celsius) or °F (Fahrenheit)
Check Alarm functions		Simulate alarm situation to check the alarm system without gas present at the sensor
Set ID		Change ModBus slave ID, baud and parity bit setting (ModBus version only)
Quit		Return to Monitoring mode

Table 11: Transmitter menu descriptions

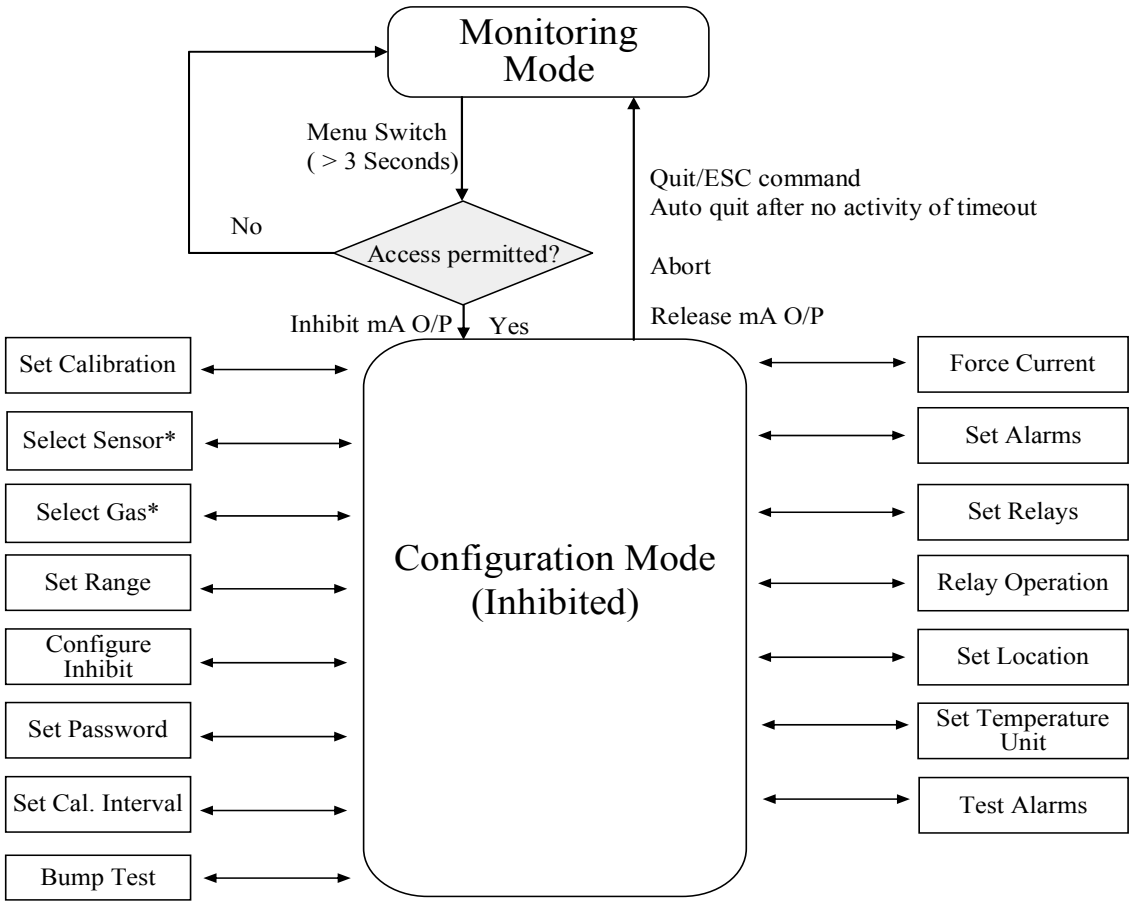


Diagram 14: Configuration Mode

13.2.1 Configuration mode operation table

Configuration mode allows the user to perform calibration and configure parameters such as full scale range, calibration gas level, calibration interval, inhibit current & timeout, alarm settings, relay settings, set a password, etc. To activate Configuration mode hold the magnet over the ENTER switch for at least 3 seconds and then remove. Configuration mode can be password protected to prevent unauthorized personnel from changing parameters. Initially the password is set to '0000' meaning it is disabled. While in Configuration mode, the output current of the detector is inhibited to prevent false alarms.
Use the table below to help navigate the menus and make configuration changes. The menus are shown in the left hand column. Use ▲▼ to select the required menu and '✓' to enter. Follow the information and instructions in the table from left to right from the required menu.

▲▼	OK	▲▼	OK	▲▼	OK	▲▼	OK	▲▼
SEt CAL[1]	✓	GAS NAME, ZERO CONCENTRATION AND FLASHING ' ' ICON DISPLAYED. APPLY ZERO GAS AND USE '✓' WHEN READING IS STABLE. 'ZEro PASS' DISPLAYED IF OK, 'ZEro FAIL' IF NOT.	⇨	'SPAN' DISPLAYED AND 'YES' FLASHING TO ASK IF YOU NOW WANT TO PERFORM SPAN CALIBRATION. USE '✓' TO PROCEED OR USE ▲▼ TO SELECT 'No' AND RETURN TO MENU MODE.	✓	'GAS' TARGET CONCENTRATION FLASHING AND ' ' ICON DISPLAYED. USE ▲▼ TO CHANGE GAS CONCENTRATION AND '✓' TO START SPAN CALIBRATION.	✓	GAS NAME, CURRENT CONCENTRATION AND FLASHING ' ' ICON DISPLAYED. APPLY SPAN GAS AND USE '✓' WHEN READING STABLE. IF OK 'PASS' & 'PurG' DISPLAYED (IF FAIL 'SPAN FAIL' DISPLAYED AND RETURNS TO MENU). REMOVE SPAN GAS. WHEN READING <50% OF SPAN POINT, COUNTDOWN BEGINS & UNIT RETURNS TO MENU MODE.
SEt rAn9	✓	BAR GRAPH INDICATING CURRENT RANGE, 'rAn9' DISPLAYED & CURRENT RANGE FLASHES. USE ▲▼ TO SELECT DIFFERENT RANGE	✓	IF RANGE IS CHANGED, 'CAL' DISPLAYED AND 'YES' FLASHING TO ASK IF YOU NOW WANT TO PERFORM CALIBRATION. USE '✓' TO PROCEED OR USE ▲▼ TO SELECT 'No'.	✓	IF RANGE IS CHANGED, 'ALrm' DISPLAYED AND 'YES' FLASHING TO ASK IF YOU NOW WANT TO MODIFY ALARM SETTINGS. USE '✓' TO PROCEED OR USE ▲▼ TO SELECT 'No' AND RETURN TO MENU MODE.	✓	UNIT RETURNS TO MENU MODE
ConF Inhb	✓	'Inhb' DISPLAYED WITH ICON FLASHING. CURRENT INHIBIT mA VALUE FLASHES. USE ▲▼ TO SELECT NEW VALUE	✓	'tImE' DISPLAYED WITH ICON. FLASHING CURRENT INHIBIT TIMEOUT PERIOD (MINUTES) FLASHES. USE ▲▼ TO SET NEW TIMEOUT. (IF SET TO 0 OUTPUT IS PERMANENTLY INHIBITED)	✓	UNIT RETURNS TO MENU MODE		
SEt PASS	✓	'PASS' DISPLAYED WITH FIRST DIGIT PLACE ICON OF THE PASSCODE FLASHING. USE ▲ TO SELECT 1ST DIGIT OF CURRENT PASSWORD. USE ▼ TO MOVE TO NEXT DIGIT AND SET REST OF PASSCODE.	✓	UNIT RETURNS TO MENU MODE				
CAL Int3[2]	✓	'Int' DISPLAYED WITH CURRENT CALIBRATION INTERVAL FLASHING. USE ▲▼ TO CHANGE INTERVAL.	✓	'duE' DISPLAYED AND 'No', 'LCd' OR 'ALL' FLASHING. USE ▲▼ TO SELECT REQUIRED CAL DUE WARNING OUTPUT.	✓	UNIT RETURNS TO MENU MODE		

bumP tESt	✓	PEAK READING DISPLAYED WITH OUTPUT INHIBITED '🔧' ICON AND PEAK STRING FLASHING. APPLY BUMP TEST GAS AND CHECK PEAK READING ON DISPLAY.	✓	CURRENT GAS CONCENTRATION DISPLAYED WITH OUTPUT INHIBITED '🔧' ICON FLASHING.	✓	UNIT RETURNS TO MENU MODE		
Forc Curr	✓	'Forc' DISPLAYED WITH '🔧' ICON. DEFAULT FORCE CURRENT '4.00' FLASHES. USE ▲▼ TO CHANGE TO REQUIRED mA LEVEL.	✓	UNIT TRANSMITS THE CURRENT IF YOU WANT TO EXIT FROM THIS MENU, USE ABORT FUNCTION				
SEt ALrm	✓	'AL1', ICON DISPLAYED AND CURRENT ALARM LEVEL 1 CONCENTRATION FLASHES. USE ▲▼ TO CHANGE TO REQUIRED CONCENTRATION LEVEL.	✓	'AL1' DISPLAYED WITH 'NonE', 'rISE' OR 'FALL' FLASHING. USE ▲▼ TO SELECT REQUIRED ALARM ACTION.	✓	'AL2', ICON DISPLAYED AND CURRENT ALARM LEVEL 2 CONCENTRATION FLASHES. USE ▲▼ TO CHANGE TO REQUIRED CONCENTRATION LEVEL.	✓	'AL2' DISPLAYED WITH 'NonE', 'rISE' OR 'FALL' FLASHING. USE ▲▼ TO SELECT REQUIRED ALARM ACTION AND USE '✓' TO RETURN TO MENU MODE.
Set rLY	✓	'rL1' DISPLAYED AND 'AL1', 'AL2', 'Inht' or 'FLt' FLASHES. USE ▲▼ TO CHANGE TO REQUIRED RELAY TARGET.	✓	'rL1' DISPLAYED AND 'dEEn' or 'Enr9' FLASHES. USE ▲▼ TO CHANGE TO REQUIRED RELAY ACTION.	✓	'Rl2' DISPLAYED AND 'AL1', 'AL2', 'Inht' or 'FLt' FLASHES. USE ▲▼ TO CHANGE TO REQUIRED RELAY TARGET.	✓	'rL2' DISPLAYED AND 'dEEn' or 'Encr9' FLASHES. USE ▲▼ TO CHANGE TO REQUIRED RELAY ACTION.
	✓	'rL3' DISPLAYED AND 'AL1', 'AL2', 'Inht' or 'FLt' FLASHES. USE ▲▼ TO CHANGE TO REQUIRED RELAY TARGET.	✓	'rL3' DISPLAYED AND 'dEEn' or 'Enr9' FLASHES. USE ▲▼ TO CHANGE TO REQUIRED RELAY ACTION.	✓	UNIT RETURNS TO MENU MODE		
rlY OPr	✓	'rLY', 'ON' DISPLAYED AND CURRENT RELAY-ON TIME FLASHES. USE ▲▼ TO CHANGE TO REQUIRED RELAY-ON DELAY.	✓	'rLY', 'OFF' DISPLAYED AND CURRENT RELAY-OFF TIME FLASHES. USE ▲▼ TO CHANGE TO REQUIRED RELAY-OFF DELAY.	✓	'Ltch' DISPLAYED AND 'YES' or 'No' FLASHES. USE ▲▼ TO CHANGE TO REQUIRED LATCH OPTION.	✓	UNIT RETURNS TO MENU MODE
Set Loc	✓	'Loc' DISPLAYED WITH FIRST 4 CHARACTERS OF THE LOCATION STRING. USE ▼ TO CHANGE THE 1ST CHARACTER OF CURRENT LOCATION STRING. USE ▲ TO MOVE TO NEXT CHARACTER AND SET REST OF STRING. MAXIMUM 12 CHARACTERS CAN BE SET.	✓	'Loc' DISPLAYED NEW LOCATION STRING. THE STRING MOVES RIGHT-TO-LEFT TO SHOW WHOLE CHARACTERS TWICE. THEN UNIT AUTOMATICALLY RETURNS TO MENU MODE.				
tEm PUnIt	✓	'tEmP' DISPLAYED WITH '°C' OR '°F' FLASHING. USE ▲▼ TO CHANGE TO REQUIRED TEMPERATURE UNIT.	✓	UNIT RETURNS TO MENU MODE				
tES tALrm	✓	'Forc' DISPLAYED and 'AL1' FLASHING TO SELECT TEST-REQURED ALARM. USE '✓' TO FORCE ALARM1.	✓	GAS NAME, CURRENT GAS CONCENTRATION DISPLAYED AND '🔧' ICON AND AL ICON FLASH.	✓	UNIT RETURNS TO MENU MODE		
9uIt	✓	QUITS MENU MODE AND RETURNS TO MONITORING MODE						
▲▼	OK	▲▼	OK	▲▼	OK	▲▼	OK	▲▼

[1] Refer to section 10.1 for detailed zero and span calibration procedures. Re-calibrate the detector if left un-powered for periods in excess of 24 hours.

[2] The calibration due warning counter is automatically reset after a successful calibration.

Table 12. Configuration Mode Operation

13.3 Sensor / Gas Selection

13.3.1 Sensor Selection

“Select Sensor” sets the identity of the type of mV sensor attached to the XCD RFD when it does not detect the sensor type automatically.
The available mV sensors:

Cb-6	705 100%LEL remote (UL and CSA Certified)
Cb-7	705 HT 100%LEL remote (UL certified)

Selecting ‘✓’ will move the operator to the Select Sensor screen. The first screen displays the currently configured sensor. To select a new mV sensor like remote type sensors use‘▲▼’ to move through the list, and then use ‘✓’ to make the selection or discard the selection and return to menu mode by using abort function. If type of sensor is changed, calibration prompt will appear to ask if you want to perform calibration.

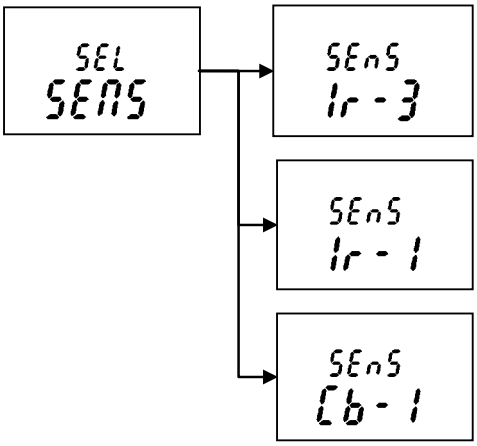


Diagram 15: Sensor Selection

13.3.2 Gas Selection

Use “SEL gAS” to set the target gas for sensors capable of detecting multiple gases. The available gases:

Sensor type	Gas type	Gas Name displayed
Cb-6	Str 1 to Str 8	FLM
Cb-7	Str 1 to Str 8	FLM

			705 Sensor		705HT Sensor	
	705	705HT	Calibration gas	Adjust to	Calibration gas	Adjust to
Hydrogen	*6	*6	50% Hydrogen/air	50%	50% Hydrogen/air	50%
Methane	*6	*7	50% Methane/air	50%	50% Methane/air	50%
Butane	*3	*4	50% Butane/air	50%	50% Butane/air	50%
Propane	*3	*5	50% Propane/air	50%	50% Propane/air	50%
Pentane	*2	*4	50% Pentane/air	50%	50% Pentane/air	50%
Ethylene	*4	*6	50% Ethylene/air	50%	50% Ethylene/air	50%

Gas selection is dependent on the type of sensor attached to the XCD RFD. Add provided chart with common gases. When Cb-6/Cb-7 sensor is attached to the XCD RFD, a user can select the gas from Str1 (1*) to Str8 (8*). For more information on star rating, please refer to section 19.2.

The current configuration of the XCD RFD is displayed and by using the '✓' switch to enter "SEL gAS" menu. To select a flammable gas, use '▲▼' to move through the list, and then use '✓' to make the selection or abort function to discard the selection and return to menu mode.

If type of gas is changed, calibration prompt will appear to ask if you want to perform calibration.

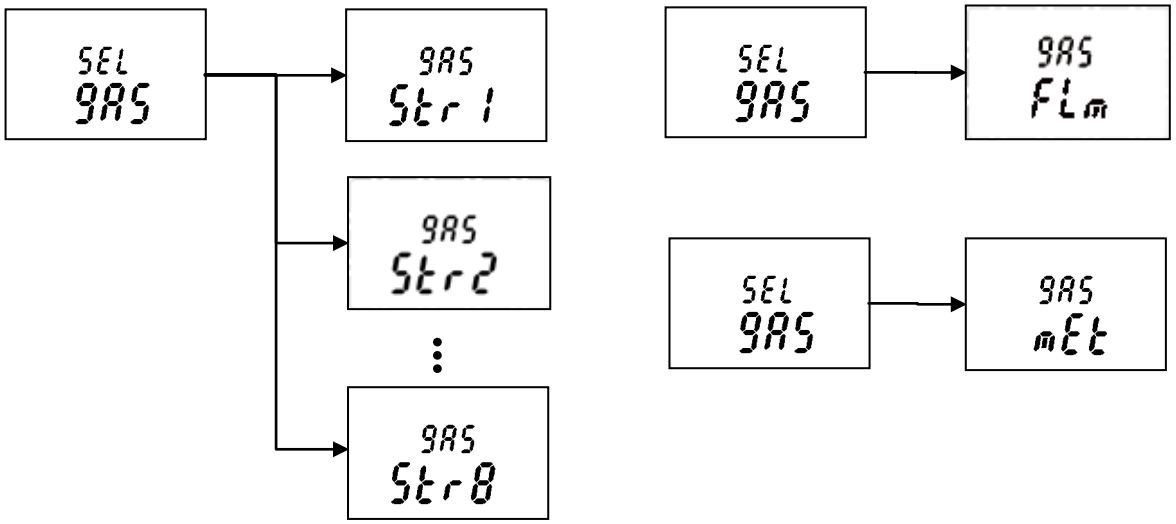


Diagram 16: Gas Selection

CAUTION

The 4-20mA analogue output signal will remain INHIBITED at 2mA (default setting) while the XCD RFD remains in Configuration Mode. However, the ALARM and FAULT RELAYS remain Active.

Changing the configuration of the Sensor Type or the Gas Star Rating for catalytic sensors may result in temporary activation of the ALARM or FAULT RELAYS.
Should this occur, recalibrating the sensor will return the XCD RFD to normal condition and reset the relays.

As a precaution, please take necessary action to manually inhibit any external actuator or alarm devices that are connected to the XCD RFD Alarm/Fault Relays to prevent unnecessary activation during commissioning or reconfiguration of the XCD RFD gas detector.

For CSA Certified applications, use CB-6 calibrated only to Methane.

13.4 Review Mode

The instrument will enter **Review mode** when the “Enter” switch is activated with the Magnetic Wand and held for around one second.

Names, displays and descriptions for each review item in Review Mode are shown in the following table.

Item name	Display	Description
Software version	UEr 1	S/W version of transmitter
SRS version	SrS 1	S/W version of SRS (watch dog)
EEP version	EEP 1	EEPROM parameter version
Gas	GAS FLm	Gas type
Measuring range	rANG 100 %LEL	A user selected measuring range
Calibration level	SPAn 50 %LEL	Calibration gas level
Calibration due	duE 180	Estimated time to next calibration
Alarm 1	100 FS AL 1 ALARM 20 %LEL	AL 1 rISE Alarm settings for Alarm 1
Alarm 2	100 FS AL 2 ALARM 40 %LEL	AL2 rISE Alarm settings for Alarm 2

Location		Location in which the transmitter is installed
Power		Power voltage*
Temperature		Internal Transmitter temperature*
Peak conc.		Maximum concentration detected up to now
Test Result		There is no fault detected.

Table 13: Transmitter menu descriptions

Note:
**Power voltage and internal transmitter temperature may be different from actual value due to measuring accuracy and internal heating components.*

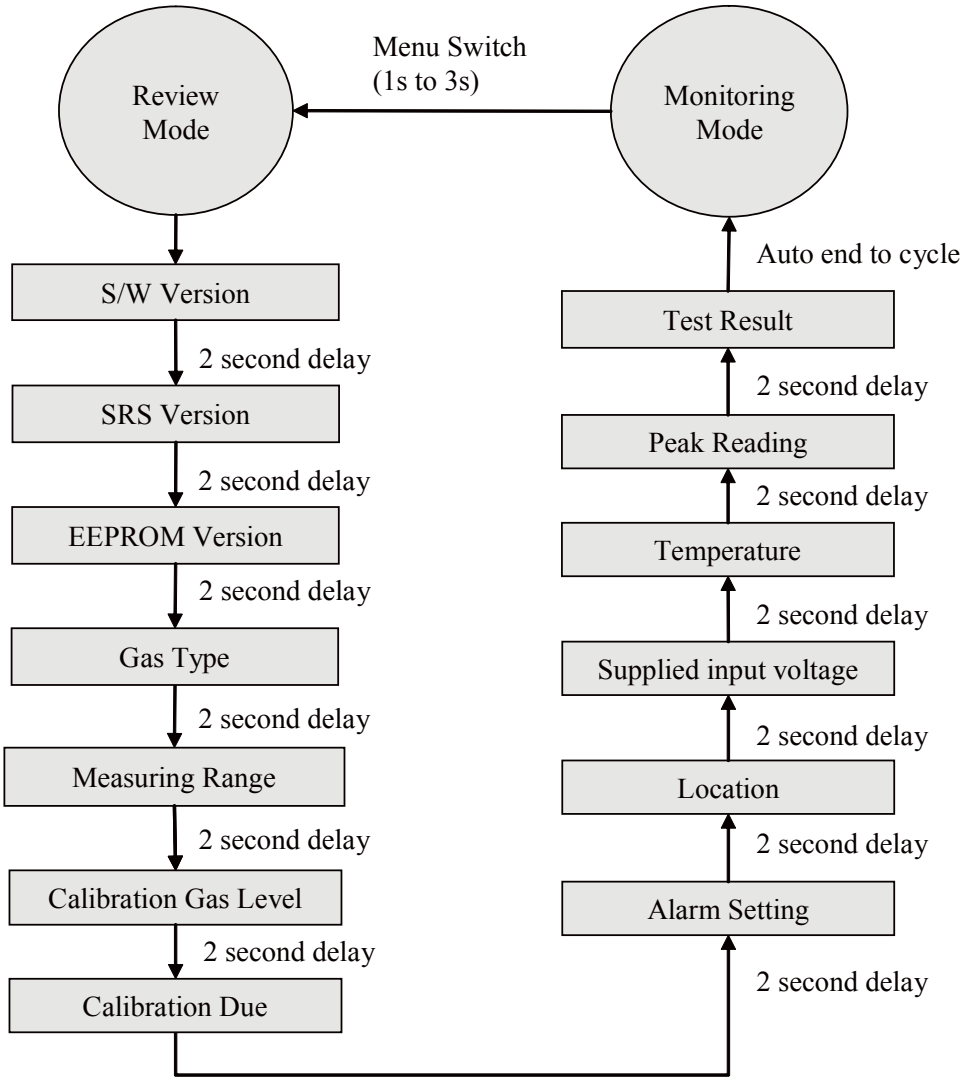


Diagram 17: Review Mode

14 General specification

Sensepoint XCD Transmitter	
Use	3-wire, 4-20mA, gas detector transmitter for use with remotely mounted flammable gas detectors.
Electrical	
	Input Voltage Range: 16 to 32Vdc (24Vdc nominal) Max Power Consumption: Max 5 Watts. at 24Vdc (see section 2 regarding maximum in rush current) Current output 4-20mA (Source or Sink) ≥0.0<1.0 mA Fault (refer to table 5 section 12.3 for further details). 4.0 mA to 20.0 mA Normal gas measurement 2.0 mA or 4.0 mA Inhibit (during configuration/user settings) 22.0 mA Maximum over range Terminals 15 x screw terminals suitable for wire diameter 0.5mm^2 to 2.5mm^2 (20AWG to 13AWG). Relays 3 x 5A@250VAC. Selectable normally open or normally closed (switch) and energized/de-energized (programmable). Communication RS485, Modbus RTU(Pending)
Construction	
Material	Epoxy painted aluminium alloy or 316 Stainless Steel
Weight	Aluminium alloy: 1.7kg, 316 Stainless Steel: 3.7kg
Mounting	Pole or wall mounting
Cable Entries	2 x 3/4"NPT (for cCSAus/UL Approval)
Sensor Entries	3/4"NPT (for cCSAus/UL Approval)
Detectable Gases & Performance (See notes below)	

Gas	Selectable Full Scale Range	Default Range	Steps	Selectable Cal Gas Range	Default Cal Point	Response Time (T60) Secs	Response Time (T90) Secs	Accuracy	Operating Temperature		Default Alarm Points	
									Min	Max	A1	A2
705 Standard Temperature Sensor				25 to 95% of selected full scale range								
Flammable 1 to 8*	20 to 100%LEL	100%LEL	10%LEL		50%LEL		<25	<+/- 1.5%LEL	-55°C / -67°F	80°C / 176°F	20%LEL ▲	40%LEL ▲
705 High Temperature Sensor												
Flammable 1 to 8*	20%LEL	20%LEL	n/a		10%LEL		<25	<+/- 1.5%LEL	-55°C / -67°F	150°C / 302°F	10%LEL ▲	15%LEL ▲
Flammable 1 to 8*	20 to 100%LEL	100%LEL	10%LEL		50%LEL	<6	<10	<+/- 1.5%LEL	-55°C / -67°F	150°C / 302°F	20%LEL ▲	40%LEL ▲

*Contact Honeywell Analytics for availability

▲- Rising Alarm ▼- Falling Alarm

			705 Sensor		705HT Sensor	
	705	705HT	Calibration gas	Adjust to	Calibration gas	Adjust to
Hydrogen	*6	*6	50% Hydrogen/air	50%	50% Hydrogen/air	50%
Methane	*6	*7	50% Methane/air	50%	50% Methane/air	50%
Butane	*3	*4	50% Butane/air	50%	50% Butane/air	50%
Propane	*3	*5	50% Propane/air	50%	50% Propane/air	50%
Pentane	*2	*4	50% Pentane/air	50%	50% Pentane/air	50%
Ethylene	*4	*6	50% Ethylene/air	50%	50% Ethylene/air	50%

NOTES

Performance figures are taken at 20~25℃;

1. measured using a sample humidity of 50%RH, applicable between 10 and 90% of full scale,
2. measured using test units calibrated at 50% of full scale,
3. measured at 1000cc/min for Methane CAT, 500cc/min for Methane IR with calibration cup (S3KCAL).

Response time (T90) may increase when operating in lower or higher temperature conditions or when gas is introduced with the Weather Protection accessory (SPXCDWP) fitted. Should it be exposed to other HC then non linear response is expected. For linearised operation other than Methane contact HA for alternate parts. This calibration enables 100% functional test prior to dispatch.

This calibration does not remove need for calibration & test as part of commissioning at site. For gases other than Methane the unit has to be calibrated at site using target gas.Data represents typical values, and system conditioning may be required to achieve stated result. Contact HA for details.

* Extended operating temperature range of -40°C to +65°C (-40°F to +149°F) for all sensor except for IR, with an accuracy of +/- 30% of applied gas from -20°C to -40°C (-4°F to -40°F) and +55°C to +65°C (+131°F to +149°F). Long term operation at this range may cause decline in sensor performance.

Contact Honeywell Analytics for any additional data or details.

Certification	
International North America	IEC Ex II 2 GD Ex d IIC Gb T6(Ta -40ºC to +65ºC) Ex tb IIIC T85ºC Db IP66 cCSAus Class I, Division 1, Groups B, C & D
Performance	C22.2-152, ISA 121301
CE	EN50270:2006 EN6100-6-4:2007
Environmental	
IP Rating	IP66 in accordance with EN60529:1992, NEMA 4X (Tested by third party laboratory)
Operating Temperature	-40ºC to +65ºC/ -40ºF to +149ºF, (IR: -20ºC to +50ºC/ -4ºF to +122ºF). *Note: The detector display may become illegible at temperatures below -20°C, but the detector continues its gas monitoring function. The display is not damaged and recovers when the temperature rises back above -20 °C.*
Operating Humidity	Continuous 20-90%RH (non condensing), Intermittent 10-99%RH (non condensing)
Operating Pressure	90-110kPa
Storage Conditions	-25°C to +65°C (-13°F to +149°F)

15 Ordering information

Part number	Description
Sensepoint XCD RFD transmitter (LM25)	
SPXCDULNRFD	cCSAus approved SP XCD RFD Transmitter with LM25, 3/4“NPT Entry, without MODBUS
SPXCDULNRFDM	cCSAus approved SP XCD RFD Transmitter with LM25, 3/4“NPT Entry, with MODBUS
Sensepoint XCD RFD transmitter (316SS)	
SPXCDUSNRFD	cCSAus approved SP XCD RFD Transmitter with 316SS, 3/4“NPT Entry, without MODBUS
SPXCDUSNRFDM	cCSAus approved SP XCD RFD Transmitter with 316SS, 3/4“NPT Entry, with MODBUS
Replacement Sensor	
00705-A-1733	Standard (UL/CSA) LEL Version, -55’C to +80’C, Aluminium, 3/4NPT Version, UL/CSA Certification
00705-A-1735	High Temperature (UL) LEL Version, -40’C to +150’C, Aluminium, 3/4NPT Version, UL Certification
Sensepoint XCD Accessories	
SPXCDSDP	Sunshade / Deluge Protection
Sensepoint / 705 Accessories	
2430-0021	UL/CSA Aluminum 3 wire Junction Box Assembly
02000-A-1642	Collecting Cone
00780-A-0035	Calibration Gas Flow Housing for 705 Sensors
00780-A-0076	Weather Protection Stainless Steel for high temps.
02000-A-1635	Weather Protection Housing for 705 Sensors
1283-1047	Duct Mount Adaptor Assembly (Requires PN# 1283-1084)
Sensepoint XCD Spares	
SPXCDDMR	Replacement display module for RFD (4~20mA), without MODBUS
SPXCDTMR	Replacement terminal module for RFD (4~20mA)
SPXCDDMRM	Replacement display module for RFD (4~20mA), with MODBUS
SPXCDNPTP	3/4“ NPT Plug
SPXCDMAG	Magnet
SPXCDAKS	Allen key for stopper
SPXCDHWES	Hex wrench for earth screw
SPXCDEBS	Earth Bracket and Screws
Sensepoint Spares	
00780-F-0018	Stainless steel filter, High temperature LEL Version, -40°C to +150°C
00780-C-0038	Filter Housing, High temperature LEL Version, -40°C to +150°C
Kits (All Kits include transmitter, sensor, and junction box)	
XCDRFDL	cCSAus approved SPXCD RFD Transmitter with LM25, 3/4“NPT Entry, aluminum, 705 sensor, and 3 wire junction box
XCDRFDLH	cCSAus approved SPXCD RFD Transmitter with LM25, 3/4“NPT Entry, aluminum, 705 High Temp sensor and 3 wire junction box
XCDRFDLM	cCSAus approved SPXCD RFD Transmitter with LM25, 3/4“NPT Entry, MODBUS, aluminum, 705 sensor, and 3 wire junction box

XCDRFDLMH	cCSAus approved SPXCD RFD Transmitter with LM25, 3/4“NPT Entry, MODBUS, aluminum, 705 High Temp sensor, and 3 wire junction box
XCDRFDS	cCSAus approved SPXCD RFD Transmitter with 3/4“NPT Entry, 316SS, with 705 sensor, and 3 wire junction box
XCDRFDSH	cCSAus approved SPXCD RFD Transmitter with 3/4“NPT Entry, 316SS, 705 High Temp sensor, and 3 wire junction box
XCDRFDSM	cCSAus approved SPXCD RFD Transmitter with 3/4“NPT Entry, MODBUS, 316SS, 705 sensor, and 3 wire junction box
XCDRFDSMH	cCSAus approved SPXCD RFD Transmitter with 3/4“NPT Entry, MODBUS, 316SS, 705 High Temp sensor, and 3 wire junction box

**Contact Honeywell Analytics for availability.

16 Warranty statement

All products are designed and manufactured to the latest internationally recognized standards by Honeywell Analytics under a Quality Management system that is certified to ISO 9001. As such Honeywell Analytics warrants its products against defective parts and workmanship and will repair or (at its option) replace any instruments which are or may become defective under proper use within 12 months from date of commissioning by an approved Honeywell Analytics representative
or 18 months from date of shipment from Honeywell Analytics, whichever is the sooner. This warranty does not cover disposable batteries or damage caused by accident, abuse, abnormal operating conditions or poisoning of sensor.

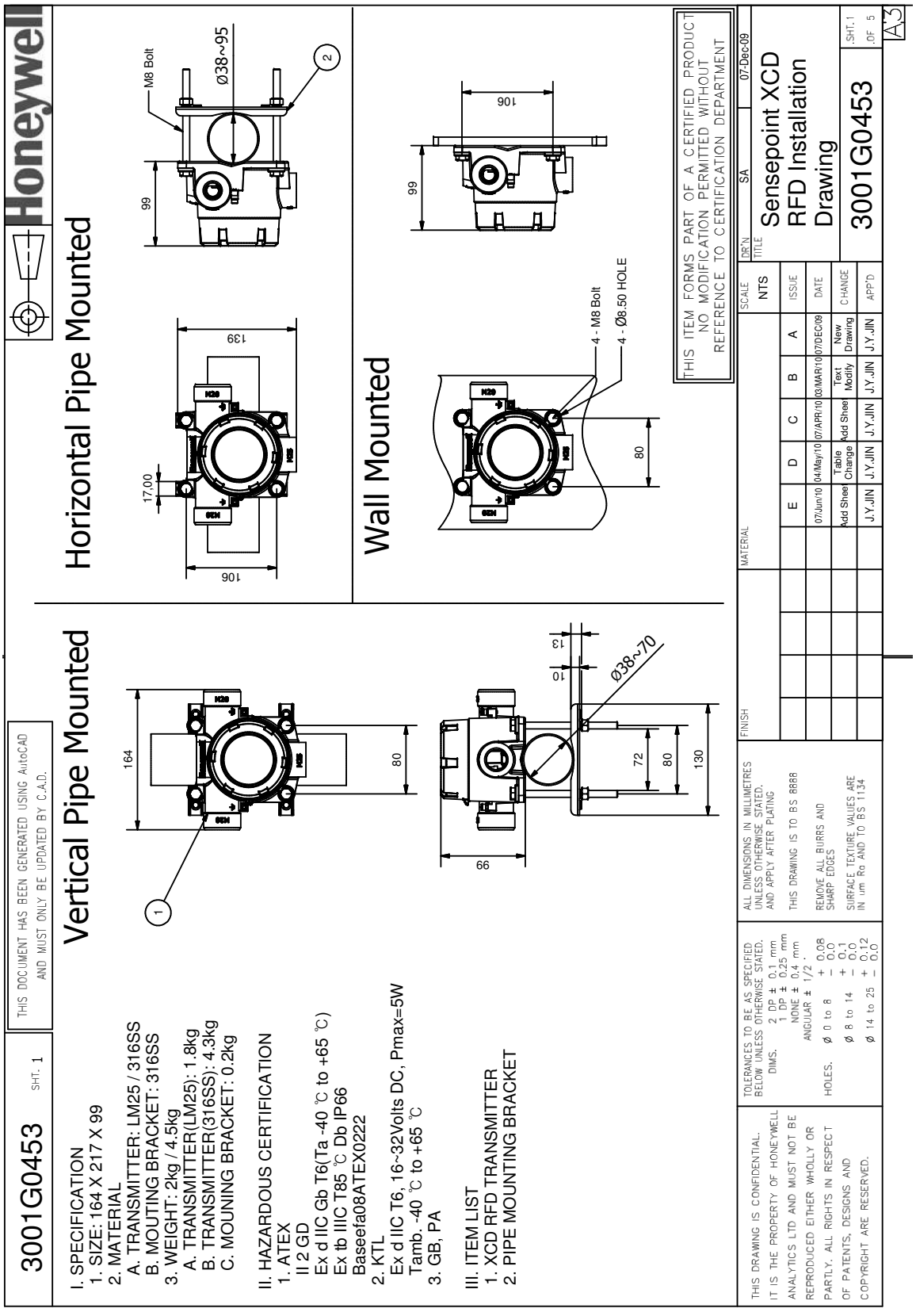
Defective goods must be returned to Honeywell Analytics premises accompanied by a detailed description of any issue. Where return of goods is not practicable Honeywell Analytics reserves the right to charge for any site attendance where any fault is not found with the equipment. Honeywell Analytics shall not be liable for any loss or damage whatsoever or howsoever occasioned which may be a direct or indirect result of the use or operation of the Contract Goods by the Buyer or any Party.

This warranty covers instrument and parts sold to the Buyer only by authorized distributors, dealers and representatives as appointed by Honeywell Analytics. The warranties set out in this clause are not pro rata, i.e. the initial warranty period is not extended by virtue of any works carried out there under.

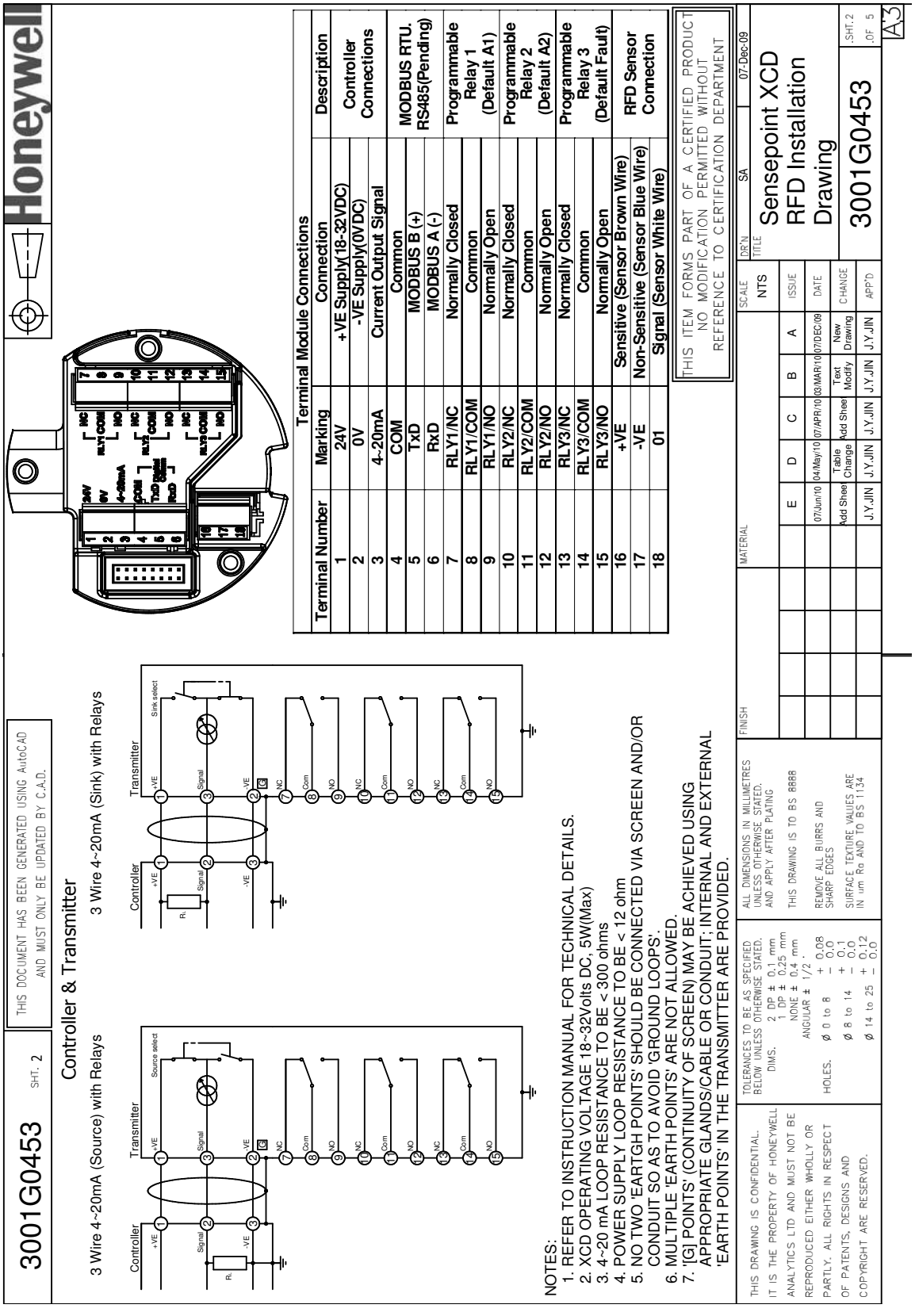
In no event will Honeywell Analytics be liable for any incidental damages, consequential damages, special damages, punitive damages, statutory damages, indirect damages, loss of profits, loss of revenues, or loss of use, even if informed of the possibility of such damages. Honeywell Analytic's liability for any claims arising out of or related to this product will in no case exceed the order value. To the extent permitted by applicable law, these limitations and exclusions will apply regardless of whether liability arises from breach of contract, warranty, tort (including but not limited to negligence), by operation of law, or otherwise.

17 Installation Drawing

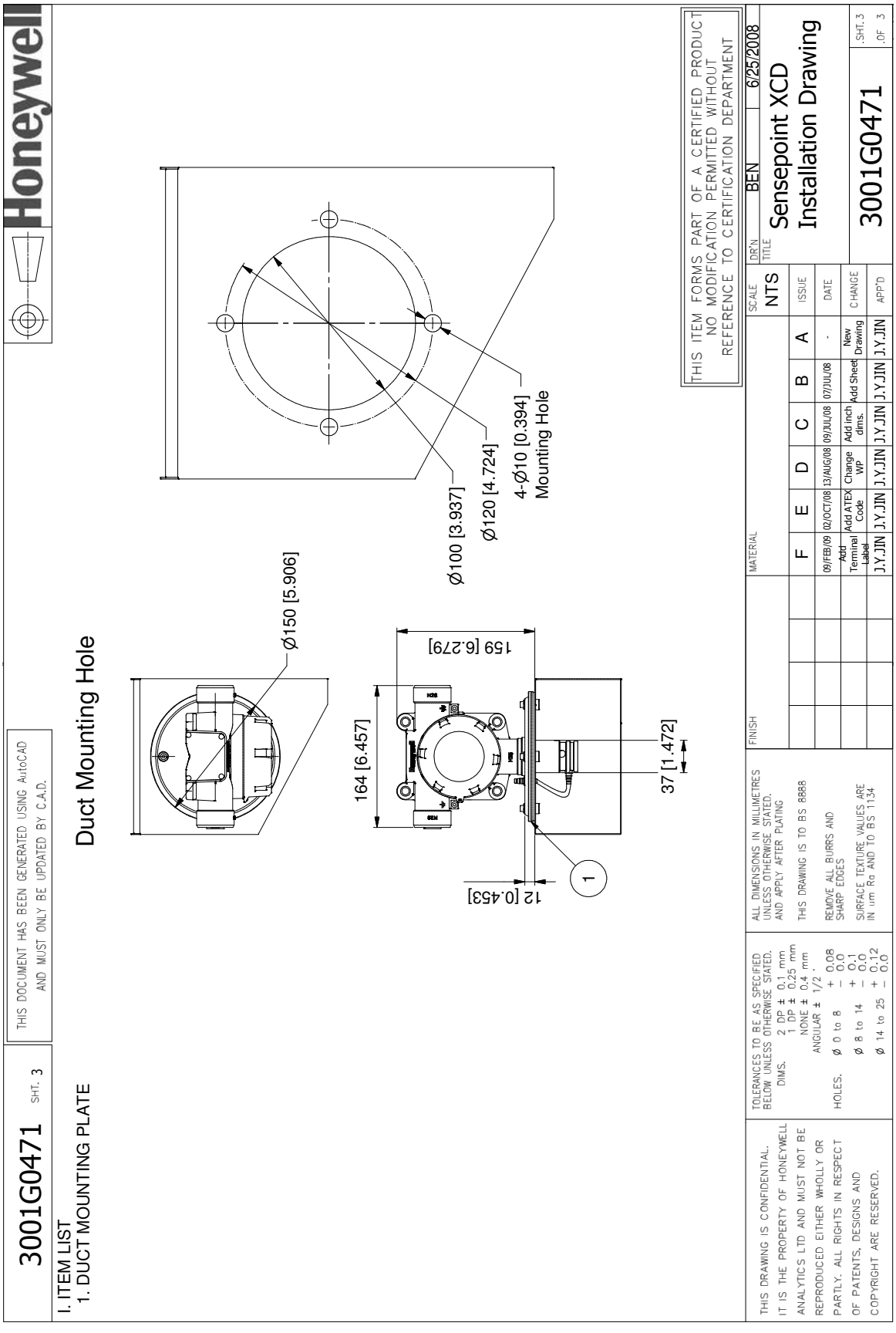
17.1 Mechanical Installation Drawing



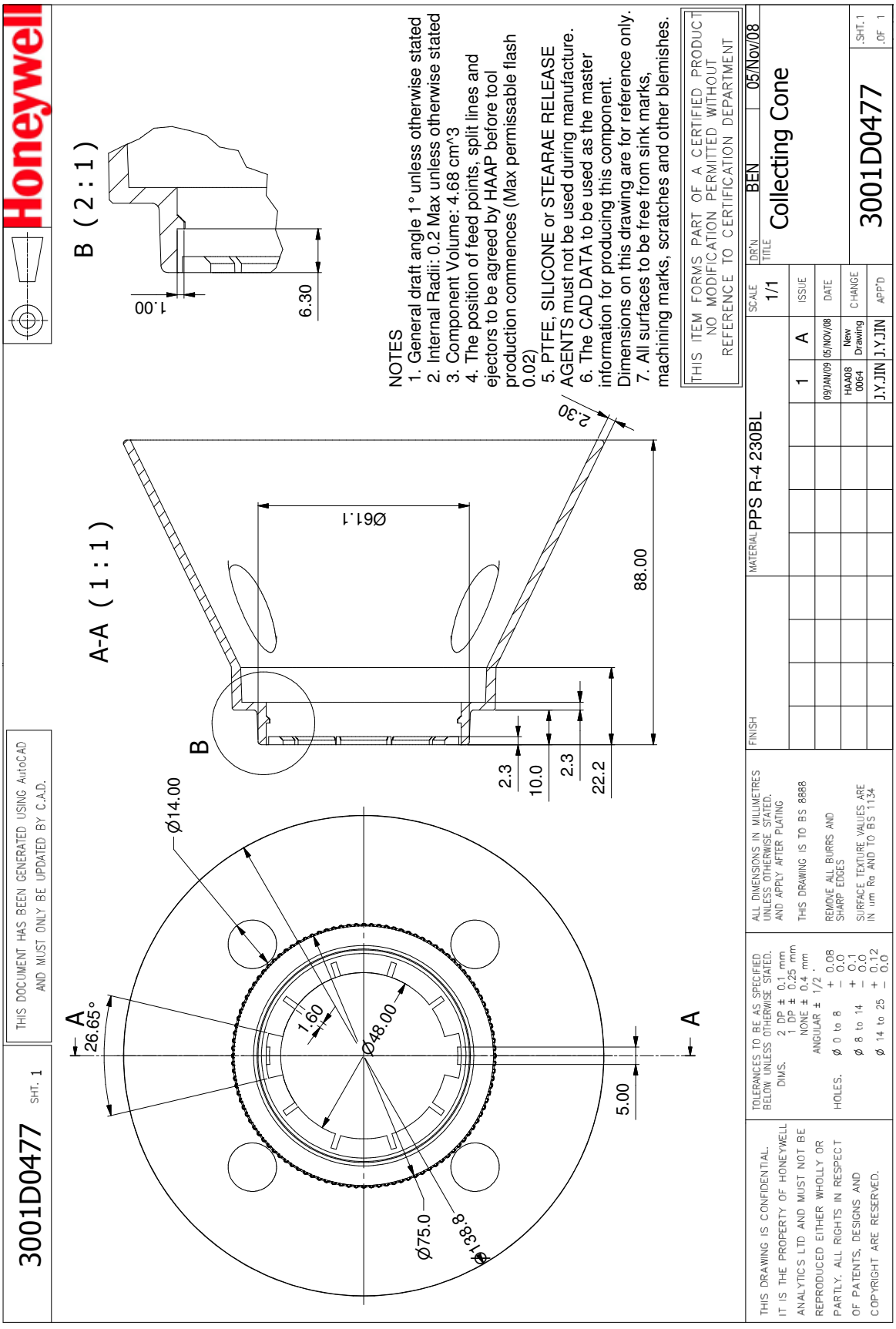
17.2 Electronic Connection Drawing



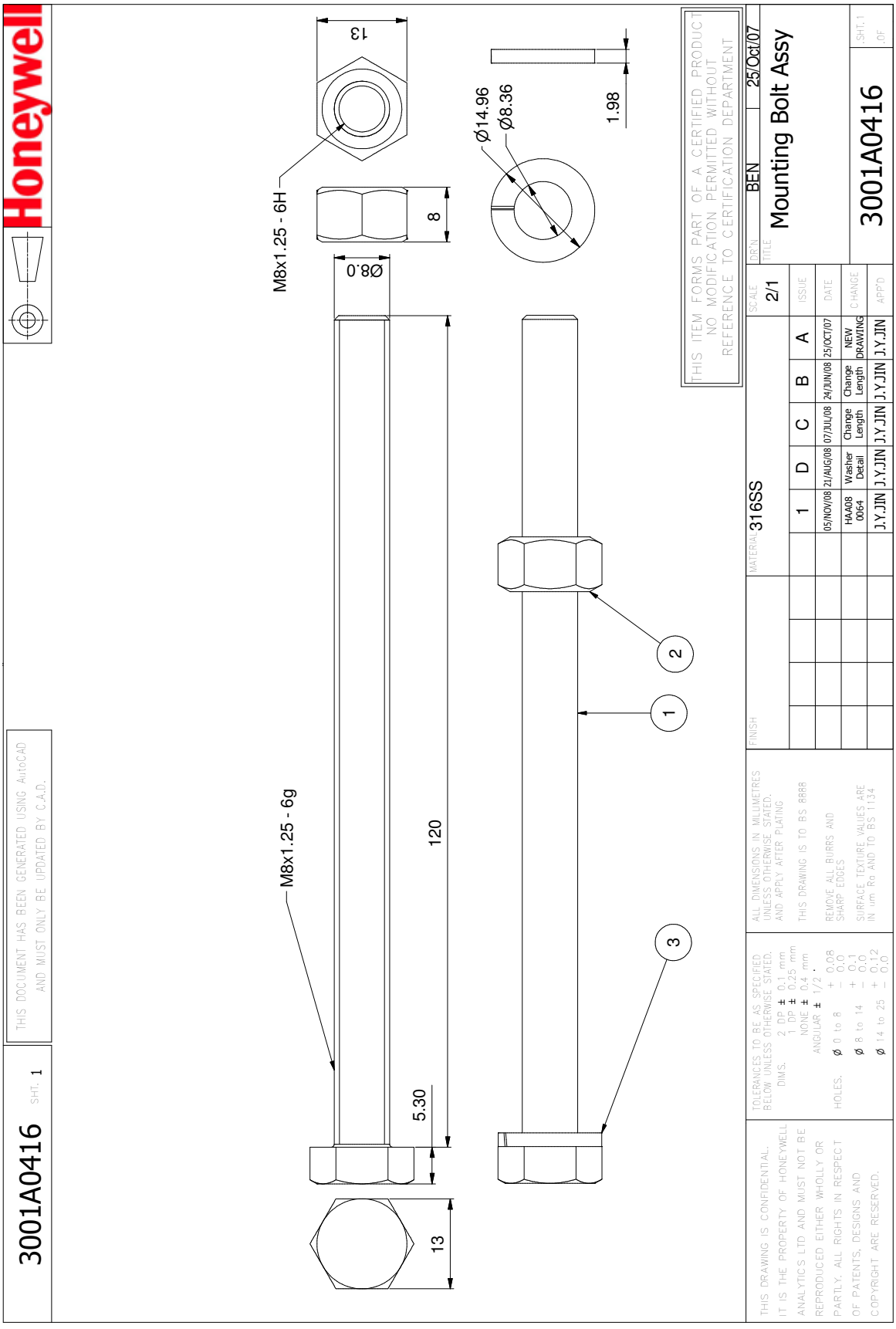
17.3 Duct Mounting Drawing



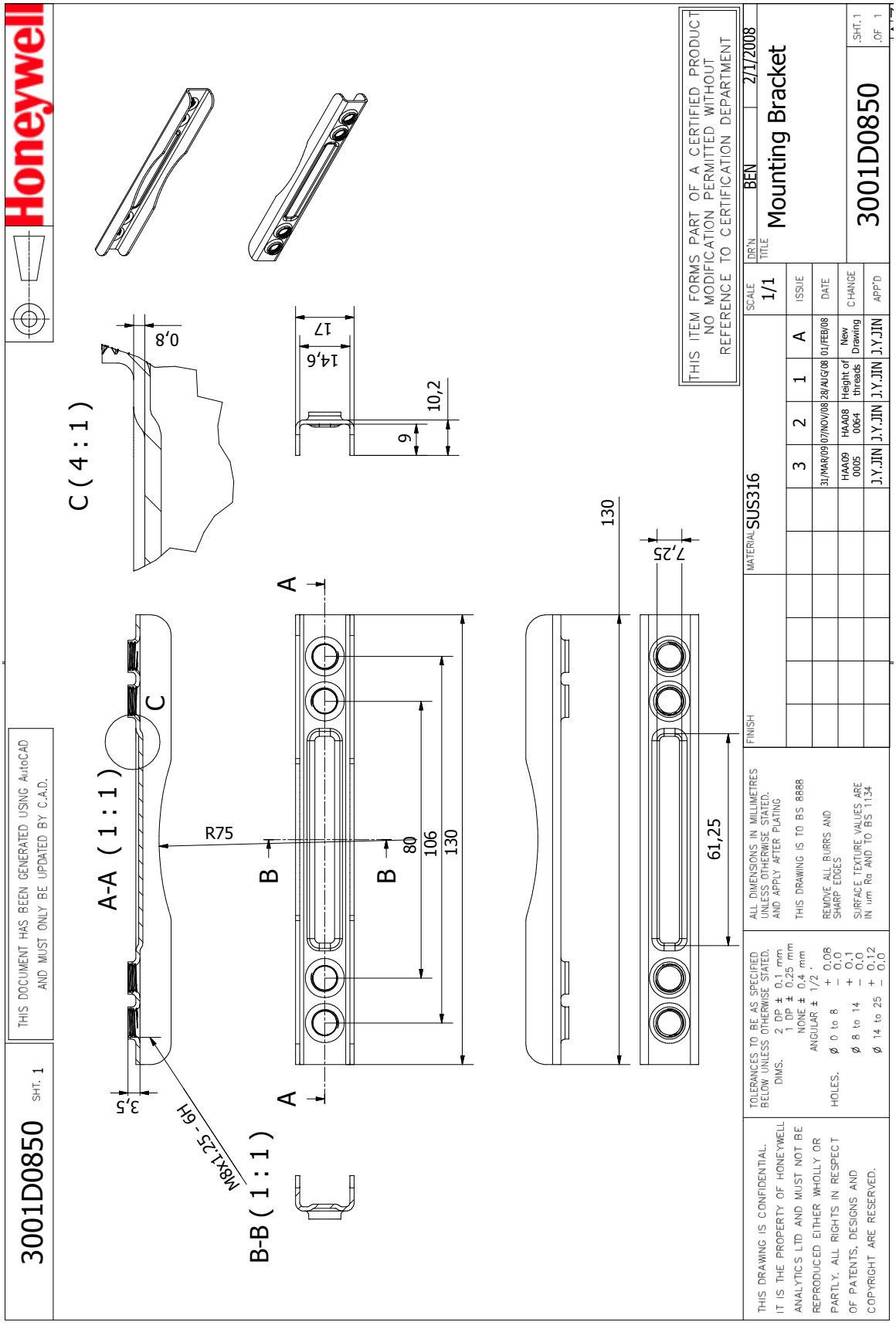
17.4 Collecting Cone Drawing



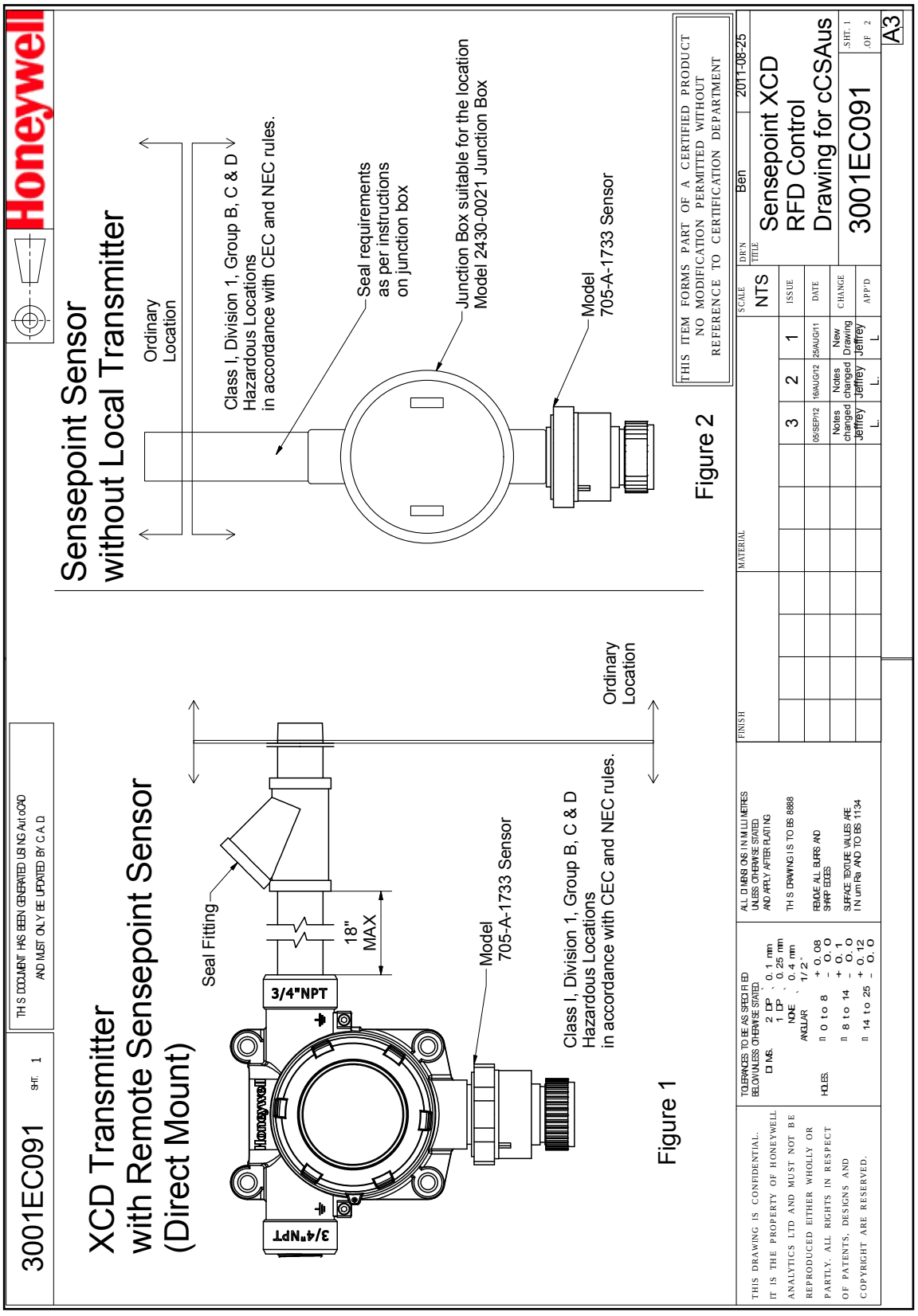
17.5 Mounting Bolt Assy Drawing



17.6 Mounting Bracket Drawing



17.7 Control Drawing



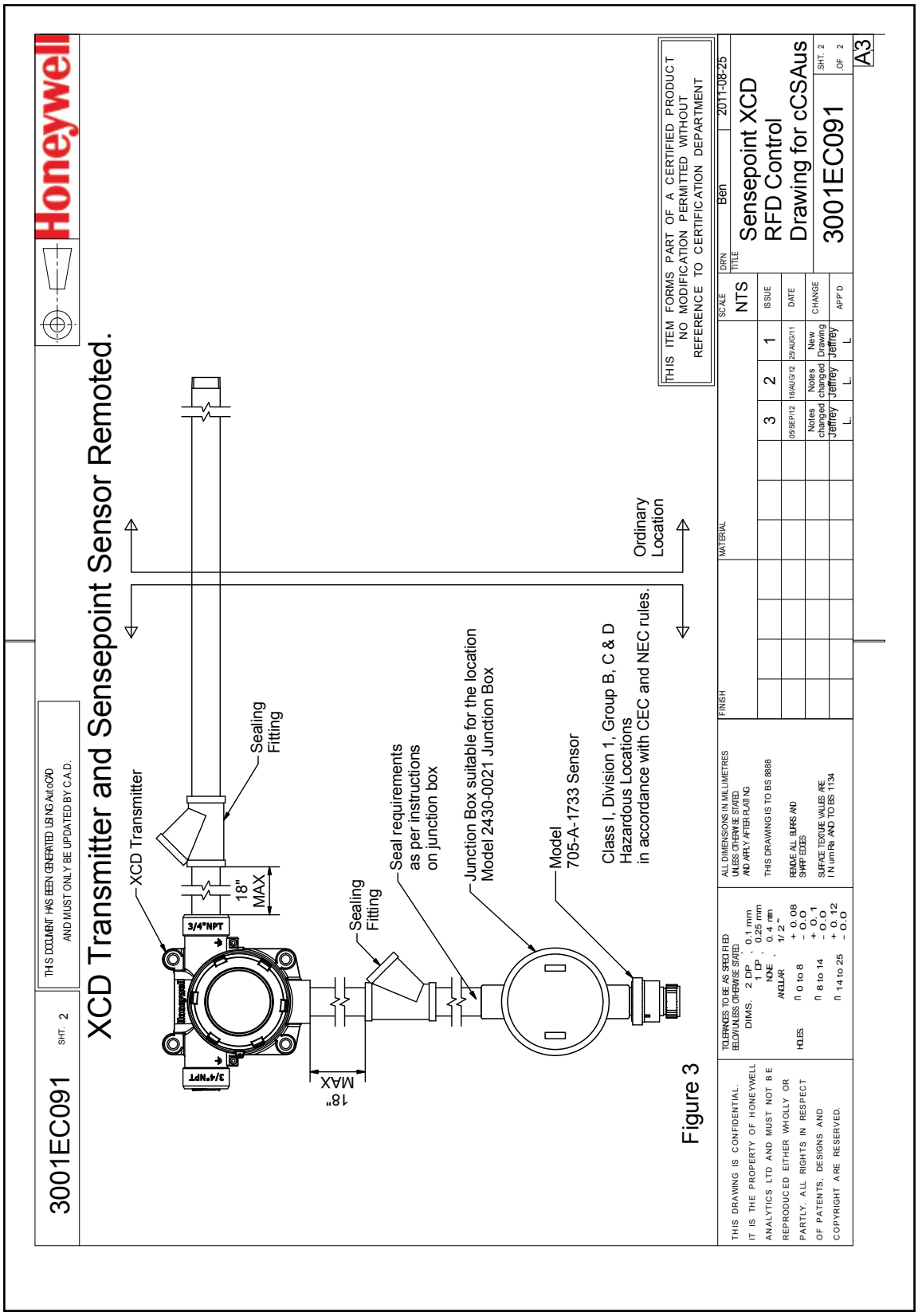

3001EC091
SHT. 2
THIS DOCUMENT HAS BEEN GENERATED USING AutoCAD AND MUST ONLY BE UPDATED BY C.A.D.
Honeywell
XCD Transmitter and Sensepoint Sensor Remoted.
XCD Transmitter
Sealing Fitting
18" MAX
Sealing Fitting
Seal requirements as per instructions on junction box
Junction Box suitable for the location Model 2430-0021 Junction Box
Model 705-A-1733 Sensor
Class I, Division 1, Group B, C & D Hazardous Locations in accordance with CEC and NEC rules.
Ordinary Location
3/4"NPT
18" MAX
THIS ITEM FORMS PART OF A CERTIFIED PRODUCT
NO MODIFICATION PERMITTED WITHOUT
REFERENCE TO CERTIFICATION DEPARTMENT
SCALE NTS
DRN Ben
2011-08-25
TITLE
Sensepoint XCD
RFD Control
Drawing for cCSAus
3001EC091
SHT. 2
OF 2
A3
MATERIAL
FINISH
ISSUE
DATE
CHANGE
APP'D
3 05SEP12 Notes changed Jeffrey L.
2 16AUG12 Notes changed Jeffrey L.
1 25AUG11 New Drawing Jeffrey L.
TOLERANCES TO BE AS SPECIFIED BELOW UNLESS OTHERWISE STATED.
DIMS. 2 DP ± 0.1 mm
1 DP ± 0.25 mm
NOE ± 0.4 mm
ANGULAR 1/2°
HOLES ⌀ 0 to 8 + 0.08 - 0.0
⌀ 8 to 14 + 0.1 - 0.0
⌀ 14 to 25 + 0.12 - 0.0
ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED AND APPLY AFTER PLATING
THIS DRAWING IS TO BS 8888
REMOVE ALL BURRS AND SHARP EDGES
SURFACE TEXTURE VALUES ARE IN um Ra AND TO BS 1134
THIS DRAWING IS CONFIDENTIAL. IT IS THE PROPERTY OF HONEYWELL ANALYTICS LTD AND MUST NOT BE REPRODUCED EITHER WHOLLY OR PARTLY. ALL RIGHTS IN RESPECT OF PATENTS, DESIGNS AND COPYRIGHT ARE RESERVED.

Figure 3

18 Certification

18.1 North America cCSAus

Supplement to Certificate of Compliance

Certificate: 2404330 **Master Contract:** 246287

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
2524595	September 28, 2012	Update to report 2404330 to add Model XCD/RFD as CL I, Div 1, Groups B, C and D .
2404330	July 22, 2011	Original Certification.

DQD 507 Rev. 2012-05-22 Page: 1

Certificate of Compliance

Certificate: 2404330 **Master Contract:** 246287

Project: 2524595 **Date Issued:** September 28, 2012

Issued to: **Honeywell Analytics Inc.**

405 Barclay Blvd
Lincolnshire, IL 60069
USA
Attention: John Stratman

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

Glenn Black

Issued by: Glenn Black

PRODUCTS

CLASS 4828 81 - SIGNAL APPLIANCES-Combustible Gas Detection Instruments - For Hazardous Location-Certified to U.S. Standards

CLASS 4828 01 - SIGNAL APPLIANCES - - Combustible Gas Detection Instruments-For Hazardous Locations

CLASS 4828 82 - SIGNAL APPLIANCES-Toxic Gas Detection Instruments - For Hazardous Locations. Certified to U.S. Standards

CLASS 4828 02 - SIGNAL APPLIANCES - Toxic Gas Detection Instruments - For Hazardous Locations

CLASS 4828 02

Ex d IIB+H2;

Class I, Div. 2, Groups B, C and D;

Sensepoint XCD/RTD Stationary Toxic gasses & Oxygen Gas Transmitter, Input rated 16 to 32 VDC, 3 watts max. Temperature code T4, Relay ratings 3X5A@250VAC, with or without RS-485 Module, Tamb -40 Deg. C to +65 Deg. C. For use with integral Sensepoint Toxic/oxygen sensor head p/n 2106B18xx or with remote junction box fitted with Sensepoint Toxic/oxygen sensor head p/n 2106B18xx when installed per control drawing 3001EC088.

DQD 507 Rev. 2012-05-22 Page: 1

Certificate:	2404330	**Master Contract:**	246287
Project:	2524595	**Date Issued:**	September 28, 2012

Note: XX may be 00 to 02, 05 to 07, 10 to 18, 20 to 22 and 30 depending on which gas cell is installed in the Sensepoint Toxic sensor head.

Ex d ia IIC;

Class I, Div. 2, Groups B, C and D;

Sensepoint Toxic sensor head p/n 2106B18xx(Toxic gasses & Oxygen), Input rated 32 VDC, 0.9 watts max. Temperature code T4 when installed per control drawing 3001EC088.

Note: XX may be 00 to 02, 05 to 07, 10 to 18, 20 to 22 and 30 depending on which gas cell is installed in the Sensepoint Toxic sensor head.

CLASS 4828 82

Class I, Zone 1, AEx d IIB+H2;

Sensepoint XCD/RTD Stationary Toxic gasses & Oxygen Gas Transmitter, Input rated 16 to 32 VDC, 3 watts max. Temperature code T4, Relay ratings 3X5A@250VAC, with or without RS-485 Module, Tamb -40 Deg. C to +65 Deg. C. For use with integral Sensepoint Toxic/oxygen sensor head p/n 2106B18xx or with remote junction box fitted with Sensepoint Toxic/oxygen sensor head p/n 2106B18xx when installed per control drawing 3001EC088.

Note: XX may be 00 to 02, 05 to 07, 10 to 18, 20 to 22 and 30 depending on which gas cell is installed in the Sensepoint Toxic sensor head.

Class I, Zone 1, AEx d ia IIC Gb;

Class I, Div. 2, Groups B, C and D;

Sensepoint Toxic sensor head p/n 2106B18xx(Toxic gasses & Oxygen), Input rated 32 VDC, 0.9 watts max. Temperature code T4 when installed per control drawing 3001EC088.

Note: XX may be 00 to 02, 05 to 07, 10 to 18, 20 to 22 and 30 depending on which gas cell is installed in the Sensepoint Toxic sensor head.

Certificate:	2404330	**Master Contract:**	246287
Project:	2524595	**Date Issued:**	September 28, 2012

CLASS 4828 01

CLASS 4828 81

Class I, Division 1, Groups B, C and D;

Sensepoint XCD/RFD Stationary Combustible Gas Transmitter, Input rated 16 to 32 VDC, 5 watts max. Temperature code T4, Relay ratings 3X5A@250VAC, with or without RS-485 Module, Tamb -40 Deg. C to +65 Deg. C. For use with integral Model 705 combustible sensor head p/n 705-A-1733 or with remote junction box p/n 2430-0021 fitted with Model 705 combustible sensor head p/n 705-A-1733 when installed per control drawing 3001EC091. The Model 705 combustible sensor head may be optionally fitted with the Standard Weather Protection p/n 002000-A-1640.

APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 0-M91 - General Requirements – Canadian Electrical Code, Part II

CAN/CSA-C22.2 No. 60079-0:07 - Electrical apparatus for explosive gas atmospheres - Part 0: General Requirements

ANSI/UL 60079-0:09 - Electrical Apparatus for Explosive Gas Atmospheres - Part 0: General Requirements

CAN/CSA-E60079-11:02 - Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic Safety "i" CAN/CSA-E60079-11:02

ANSI/UL 60079-11:09 - Electrical apparatus for Explosive Gas Atmospheres - Part 11: Intrinsic Safety “i”

CAN/CSA-C22.2 No. 60079-1:07 - Electrical apparatus for explosive gas atmospheres - Part 1: Flameproof enclosures "d".

ANSI/UL 60079-1:09 - Electrical Apparatus for Explosive Gas Atmospheres - Part 1: Flameproof Enclosures “d”

C22.2 No. 30-M1986 - Explosion-Proof Enclosures for Use in Class I Hazardous Locations

C22.2 No. 142-M1987 - Process Control Equipment

CSA Std C22.2 No. 152-M1984 - Combustible Gas Detection Instruments

C22.2 No. 213-M1987 - Non-Incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations

UL 508 17th Ed.- Industrial Control Equipment