

**OPERATING & INSTALLATION INSTRUCTIONS** 

INTRINSICALLY SAFE

SP **3XCS SERIES** C

PLEASE READ CAREFULLY BEFORE INSTALLING

Installation Bulletin P/N: 239461 Rev A

### INTRODUCTION

The 3XCS series product is a pressure transducer which provides linear electrical output proportional to applied pressure and is intended for use for pressure measurement. The 3XCS series is CSA certified Intrinsically Safe for use in: Class I, Division 1, Groups C and D Class I, Zone 0 Exia IIB T4 Ga; Class I, Zone 0 AExia IIB T4 Ga

Intrinsically-safe transducers with 2 or 3 pin outputs or a 3-wire screened cable 'conduit' version are available with pressure output only. See Pin out table CONNECTION INFORMATION section for details.

#### MODEL SPECIFICATION

#### 3XCSdaaaaabbcee

#### Where.

CODE	PRESSURE RANGE (Bar)	CODE	PRESSURE RANGE (psi
0004G	4 bar Gauge	075PG	75 psi Gauge
0006G	6 bar Gauge	100PG	100 psi Gauge
0010G	10 bar Gauge	150PG	150 psi Gauge
0016G	16 bar Gauge	200PG	200 psi Gauge
0025G	25 bar Gauge	300PG	300 psi Gauge
0040G	40 bar Gauge	500PG	500 psi Gauge
0060G	60 bar Gauge	10CPG	1000 psi Gauge
0100G	100 bar Sealed	15CPS	1500 psi Sealed
0160G	160 bar Sealed	20CPS	2000 psi Sealed
0250G	250 bar Sealed	35CPS	3500 psi Sealed
0400G	400 bar Sealed	50CPS	5000 psi Sealed
0600G	600 bar Sealed	10KPS	10000 psi Sealed
1000S	1000 bar Sealed	15KPS	15000 psi Sealed
1600S	1600 bar Sealed	20KPS	20000 psi Sealed
2200S	2200 bar Sealed	25KPS	25000 psi Sealed
		30KPS	30000 psi Sealed
		32KPS	32000 psi Sealed

CODE	DESCRIPTION (Union Type)
0H	1/2" NPT
02	1/4" – 18 NPT
0E	1/4" - 18 NPT Female
4C	1/4" – 18 NPTF Dryseal
0A	1/4" - 19 PT (JIS) or 1/4" - 19 BSPT
4B	1/4" Female (7/16UN with Schraeder Deflator)
08	1/8" - 27 NPT
4D	1/8" - 27 NPTF Dryseal
4N	3/8" - 24 UNF Union
04	7/16" - 20 (37FLARE.SAE J514 SIZE 4)
1J	7/16" - 20 UNF 2A SA1926/2 O'RING
1P	9/16" - 18UNF 22 A/F
4P	G1/2" A 27A/F
05	G1/4" A Integral Face Seal
01	G1/4" A Stud (BS 5380 Port)
0S	G1/8" A Stud (BS 5380 Port)
2T	M12x1.5 (6g) High Pressure (Washer Seal)
0L	M12x1.5P (6g) O'Ring to ISO 6149-2
1G	Schraeder 7-16" - 20 UN 2B Female
ZZ	Place Holder in Compliance with Schedule Drawing 1051-100-0SD

#### c = Connector Code

CODE	DESCRIPTION (Electrical Connection)
3	1/2" NPT MALE CONDUIT
6	AMP SUPERSEAL 1.5 SERIES
8	DEUTSCH DT04-4P
9	METRIPACK T (150 SERIES)
E	M12
G	EN175301-803 (DIN 43650 A)
R	INDUSTRY STANDARD FORM C
F	INTEGRATED CABLE
Z	Place Holder in Compliance with Schedule Drawing 1051-100-0SD

#### d = Output Code

CODE	DESCRIPTION (Output)	OUTPUT TYPE		
В	4-20mA	Current		
C	1-6V	Absolute		
F	0.1-5.1V	Absolute		
G	0.2-10.2V	Absolute		
Н	1-5V	Absolute		
N	0.5-4.5V Non Ratio-metric	Absolute		
Р	1-10V	Absolute		
R	0-5V	Absolute		
S	0-10V	Absolute		
Т	0.5-4.5V Ratio-metric	Ratio-Metric		
V	0.5-4V	Absolute		
Z	Place Holder in Compliance with Sc	hedule Drawing 1051-100-0SD		

#### ee = Cable Length

CODE	DESCRIPTION (Cable Length)
00	NOT FITTED
01	1 METRE
02	2 METRE
03	3 METRE
05	5 METRE
10	10 METRE
ZZ	Place Holder in Compliance with Schedule Drawing 1051-100-0SD

### HAZARDOUS PRODUCTS

Products which are supplied per this bulletin may be classified as Electrical, Electro-Mechanical and Electronic equipment.

These products are tested and supplied in accordance with our published specifications or individual special requirements that are agreed in writing at time of order. They are constructed so as not to affect adversely the safety of persons and property installed, maintained and used by qualified personnel, in the application for which they were designed and manufactured.

# ZENER BARRIER & ENTITY PARAMETERS

Zener Barrier Parameters: Ui = 30V d.c.Li = 100mAVoltage: Current: Pi = 0.7WPower:

Entity Parameters Signal Current: Effective Internal Capacitance: In = 4-20 mACi = 323nFEffective Internal Inductance:  $Li = 9\mu H$ 

Values to be added when supplied with Integrated Cable: Cable Capacitance: Ci = 300pF / m (maximum)Wire to Wire or Wire to Shield Cable Inductance:  $Li = 2 \mu H / m$  (maximum) Wire to Wire

### GENERAL

The equipment is designed and manufactured to:

a) Avoid physical injury or other harm which may be caused by direct or indirect contact

b) Ensure that excess surface temperature of accessible parts or radiation which would cause a danger

c) Eliminate non-electrical dangers which are revealed by experience.

d) Ensure that foreseeable conditions of overload will not give rise to dangerous situations.

Provided that

· Pressure range must be compatible with the maximum pressure being measured.

· Pressure media must be compatible with the transducer/transmitter wetted parts listed in these instruction

· Liquid must not be allowed to freeze in the pressure port.

. The gasket must be fitted under the electrical connector where applicable.

### Tools required for Installation Transducer Mounting:

Industry Standard form C Connector and DIN43650 A: Screwdriver

ELECTRICAL INSTALLATION Installation of this type must be carried out in accordance with the Approved Installation condition for Intrinsically Safe Pressure Transmitters. Voltage Applications: The following schematic is applicable for any voltage output - only pull-down configuration shown. External load  $(R_{L1})$  is optional and can be connected between Vout1 and EITHER supply rail. With "0V offsets", pull-up resistors cannot be used.

PPROVED ZENNER

Application Schematic (Example) HAZARDOUS AREA Class I, DMston 1, Groups C & D Class I, Zone D, Group IB

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	)
Pressure Transducer Entity Parameters:	0
Voltage (Vmax / UI) : 30 Vd.c.	
Current (Imax / II) : 100 mA	
Power (Pmax / Pi) : 0.7 W	
Entity Parameters:	
Internal Capacitance (CI): 323nF	
Internal Inductance (Li): 9 uH	

Absolute Output Mode: (Typica Parameter Min Ty Supply Voltage (Vdd)

1

Supply Head-Room

to Vout1 Output

### . barrier as a requirement under I.S.

#### protection on overpressure, supply dependent. Current loop will limit between 25-28mA for

Comments
input to the transducer
omer supply can be greater
ad used – see graph and

When storing or disposing of transducer, take precautions with remaining media - it may be hazardous

### STORAGE & DISPOSAL

Routine Inspection: Not required except for periodic inspection of the cable and connector to ensure

#### MAINTENANCE

rument returned without certification will be quarantined and no action will occur until

PLEASE NOTE: To comply with Health and Safety requirements, the instrument must be clean and safe ion handle and accompanied by a formal statement to that effect duly signed by an authorised

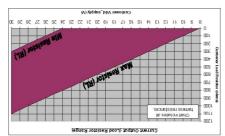
Repairs should only be carried out by the manufacturer or an approved repairer.

# SERVICING

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CUSTOMER CUSTOMER

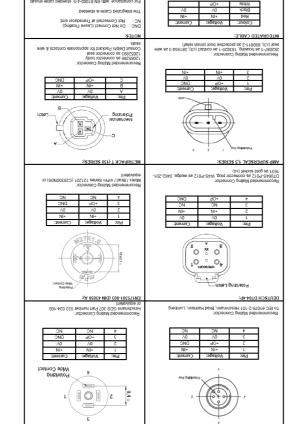
General Voltage Output Modes: (Additional Voltage Mode Specification)						
comments.	<b>vits</b>	xeM	qųT	niM	Parameter	
With no external loads	Чш	ç.č	ç.£		Draw Draw	
	σ	%01+	08	%0I-	Output Impedance	
Any external output load must not sink or source more than 2mA. Consult factory for further limitations	Чш	7			External Load (sink/source current)	



RL Load Limitations for Current Output Mode:

# SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR **WARNING** ed on all transducers.

**YTERAS SIRVISTOR** 



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regulations of the country or region to which the instrument is supplied. Dispose of transducer and packaging materials in accordance with local waste treatment disposal

or toxic. Refit thread protection cap during storage periods.

that these are neither damaged nor softened by incompatible liquid

cleared. It may ultimately be returned to you and subject to a transportation charge. ATTA THE officer of the Company.

### RETURN TO FACTORY

The transducer is not to be repaired by the user and must be replaced by an equivalent certified unit

Max Resistor (RL) = 50 \* (V dd - 8) : for Vdd >8V Min Resistor (RL) = 50 \* (Vdd - 24) : for Vdd > 24V

Comments	<b>viin</b> U	xeM	qųT	niM	Parameter
With no external loads	Ψш	٤.٢	\$°£		Operating Current Draw
	σ	%0I+	08	%01-	output Impedance
Any external output load must not sink or source more than 2mA. Consult factory	Αm	7			External Load

Comments

Various Optional failure diagnostics exist - consult factory: Ratiometric Output Mode: (Typical output ranges are 0.5-4.5V(r) and 0.25-4.7SV(r)). When the transmission of tran

<b>viin</b> U	xeM	qyT	niM	Parameter
Λ	٤.٢	ç	2.4.5	(bbV) sgatloV vlqqu8

V 2.2 2 2.4 (bbV) system V V	stinU	xeM	qvT	niM	Parameter
	Λ	ç.č	Ş	\$°t	$(bbV) \ {\tt sgattoV} \ vlqquS$

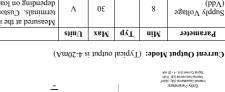
optional within limits specified below and includes

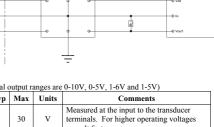
connection/natness resistances. Load can be placed in etimer supply line. The external loop load (R<sub>L</sub>)

CURRENT APPLICATIONS

Apprearion Senematic (Exa

Am 001 : (il \ xeml) themu W T.0 : (il9 \ xem9) tevo APPROVED ZENNER ABIRARIER Class I, Zone 0, Group IB AAAA SUOGAAAAH A39A SUOD9A2AH NON





al output ranges are 0-10V, 0-5V, 1-6V and 1-5V)						
ур	Max	Units	Comments			
	30	v	Measured at the input to the transducer terminals. For higher operating voltages consult factory			
		v	Example: 0-10V doable from 11V supply. This is only valid with no external leads			

Supply voltage to product must be limited by appropriate zener barrier as a requirement under I.S.

al output ranges are 0-10V, 0-5V, 1-6V and 1-5V)							
р	Max	Units	Comments				
	30	v	Measured at the input to the transducer terminals. For higher operating voltages consult factory				

al c	al output ranges are 0-10V, 0-5V, 1-6V and 1-5V)						
p	Max Units Con		Comments				
	30	v	Measured at the input to the transducer terminals. For higher operating voltages consult factory				
		V	Example: 0-10V doable from 11V supply.				

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Am 02 Pressure Output тату регом sol no gnibnəqəb  $(pp_{\Lambda})$ Supply Voltage

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protection					Current

# Cables: Where applicable, ensure cable selected is suitable to fit the electrical connector cable gland. On installation of cables and cable glands, ensure all seals are correctly fitted and that cable positioning does not impair ingress protection of seals. For transducers supplied with integrated cable, minimum bend radius is 75mm

**'O' Rings:** Transducers are not shipped with soft seals. Process connections which require a soft seal ('O' ring) are the responsibility of the installer. They must be suitable for both application temperature and relevant media.

NON HAZARDOUS AREA

CUSTOMER SUPPLY & MEASURE

# **INSTALLATION & START UP** Install and start up the transducer ONLY if it is in a faultless condition. Screw or unscrew the transducer using the hexagon flats ONLY and observing the prescribed torque, do NOT use the electrical connector case for screwing or unscrewing!

Wrench 22mm or 27mm depending on product