Penny+Giles
A Curtiss-Wright Company

The ICT820 Contactless In-Cylinder Linear Transducer combines the best f
associated with LVDTs and potentiometers into one rugged, contactless ar
reliable displacement transducer with the addition of a CAN SAE J1939 int

Signal conditioning is integrated into the transducer flange. Operating from 8 - 30Vd
supply, the electronics provide a CAN SAE J1939 output over the selected transducer
measurement range.

With a transducer body diameter of only 8mm the **ICT820** is ideal for installation int
hydraulic and pneumatic cylinder applications where space is at a premium. The **ICT**
ideal for use on small-bore actuators and offers a choice of internal or threaded exte
flange mounting configurations to suit tie-rod, welded and rear clevis-mounted cylinc
types in stroke ranges **from 25 to 1000mm**.

Two core configurations also provide the designer the following options:
SLEEVED CORE - cylinder rods can be simply machined to accommodate the sleeve
This also gives the option of retro-fitting existing servo-cylinders with an upgrade to
technology.

and simplified installation requiring minimal machining.

With no electrical sliding contacts, the **ICT820** has a working life which is almost
limitless.

Key Features

- **Measurement range 25-1000mm**
- **Small transducer body length to stroke ratio**
- **Working pressure to 670 Bar (10,000 psi)**
- **Temperature range -40 to +125°C**
- **Operates from 5Vdc or 8-30Vdc**
- **CAN SAE J1939 output**
- **Selectable Node ID, Baud and Frame Rate**
- **Flexible mounting styles**
- **Rugged stainless steel construction**

ICT820 CAN SAE J1939 OUTPUT IN-CYLINDER LINEAR TRANSDUCER

Innovation In Motion

METRIC **IF IN DOUBT ASK**	All specification data on this drawing has been tested and documented by Penny & Giles unless otherwise stated. The qualification and suitability of this product in any customer specific application is the responsibility of the customer unless otherwise agreed with Penny & Giles.				

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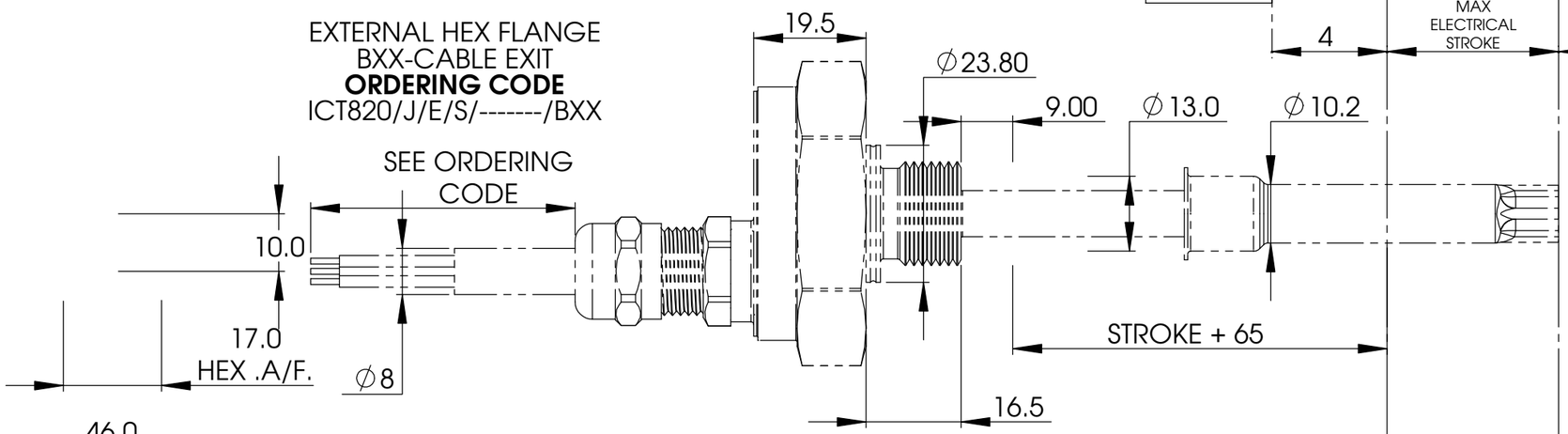
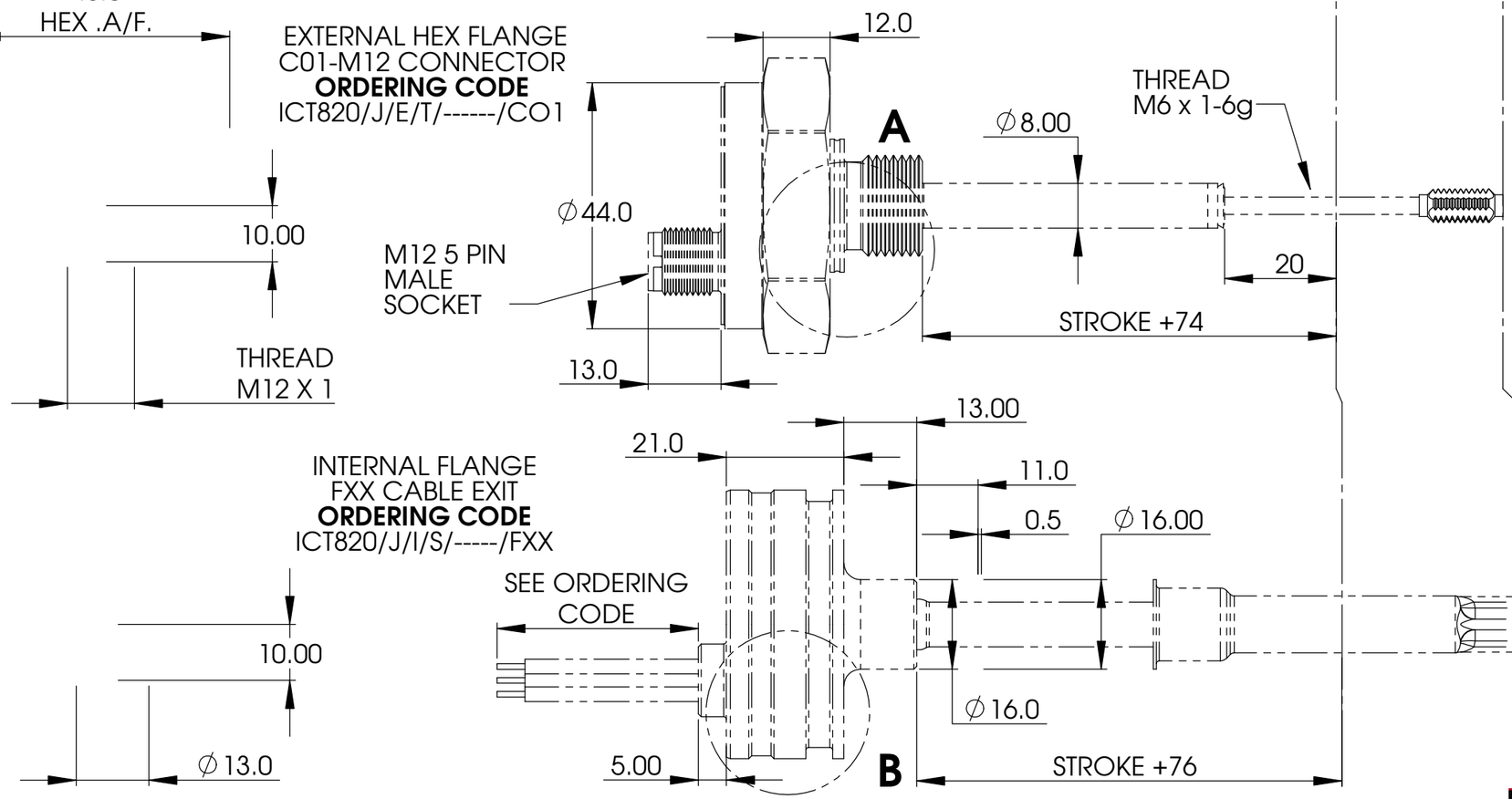
5	22/02/13	S.H.	10835/7	M.B.	M.B.

CUSTOMER SELECTABLE FLANGE, CONNECTION AND CORE MOUNTING OPTIONS

EXTERNAL HEX FLANGE
BXX-CABLE EXIT
ORDERING CODE
ICT820/J/E/S/-------/BXX

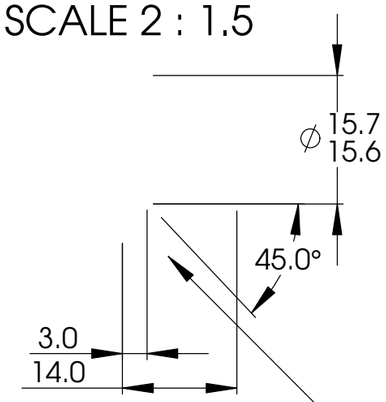


EXTERNAL HEX FLANGE
C01-M12 CONNECTOR
ORDERING CODE
ICT820/J/E/T/------/CO1



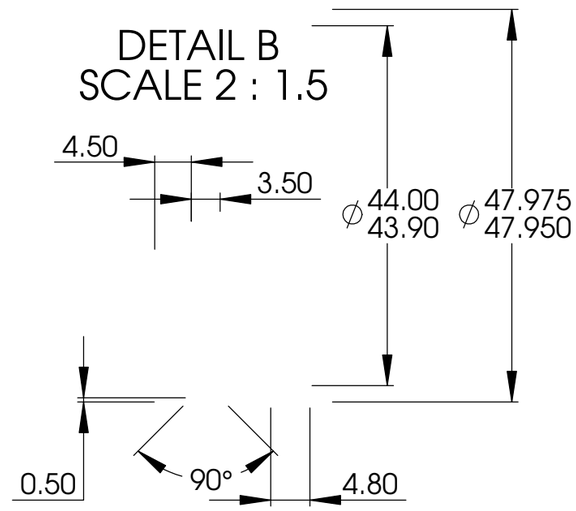
INTERNAL FLANGE
FXX CABLE EXIT
ORDERING CODE
ICT820/J/I/S/-----/FXX

DETAIL A
SCALE 2 : 1.5



(THE DETAILS IN THIS REGION CONFORM TO ISO6149/2 M18 X 1.5 FOR WHICH PORT CUTTERS ARE AVAILABLE)

DETAIL B
SCALE 2 : 1.5



FOR SUGGESTED INSTALLATION DIMENSIONS, REFER TO AI209399

SCALE 1:1 UNLESS STATED	IF CONTROL DIMENSIONS (Kc) ARE SPECIFIED THEY ARE TO BE SUBJECT TO 100% INSPECTION OR STATISTICAL PROCESS CONTROL.	D No ICT820	MATERIAL STAINLESS STEEL	TOLERANCES: IN-LINE WITH PENNY & GILES STANDARDS 55-301 SURFACE TEXTURE VALUES IN MICROMETRES (mm) TO BS1134:PT2. ALL MACHINED SURFACES TO BE 1.6 ALL SCREW THREADS TO BS3643 PT.2: EXTERNAL CLASS: 6g INTERNAL CLASS: 6H ANGULAR ± 1° — LINEAR (MACHINING): 0, mm +/- 0,5 mm; 0,0 mm +/- 0,2 mm; 0,00mm +/- 0,1mm; 0,000mm +/- 0,01mm — BREAK EDGE 0.05 - 0.15mm — FILLET RADS 0.1 - 0.3mm UNLESS OTHERWISE STATED	TITLE IN CYLINDER TRANSDUCER WITH CAN OUTPUT	A3
THIRD ANGLE PROJECTION TO BS 8888	MASS (g) / VOL. (mm^3) /	REF.	FINISH CLEAN		PART NUMBER: **ICT820**	SHT 1 OF 4 SHTS

METRIC
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FOR J1939 DATA REFER TO P&G DOC: ICT - J1939

SPECIFICATION DATA:

ELECTRICAL

SUPPLY VOLTAGE	8-30Vdc UNREGULATED 5Vdc +/-0.1Vdc REGULATED (OUTPUT WILL FOLLOW INPUT VARIATIONS)
SUPPLY CURRENT	<80mA
SHORT CIRCUIT PROTECTION	ALL CONNECTIONS TO ALL CONNECTIONS (EXCEPT N/C TO 10V MAX)
REVERSE POLARITY PROTECTION	YES
POWER ON TIME	<1S
RESOLUTION	13 BITS
OVER VOLTAGE PROTECTION	UP TO 40Vdc
NON LINEARITY	<±0.1%
TEMPERATURE COEFFICIENT	<±300ppm/°C

OUTPUT

DIRECTION	J1939 - FACTORY SET (SEE FIG 2)
OUTPUT NOISE	±1 BIT
INPUT / OUTPUT DELAY	MAX = SELECTED FRAME RATE
ACTUAL ELECTRICAL STROKE	=HIGH SIGNAL OUTPUT – LOW SIGNAL OUTPUT (SEE FIG 2)
TEMPERATURE OUTPUT	<± 3°C OVER TEMPERATURE RANGE
SENSOR FAULT DETECTION	OPEN CIRCUIT OR SHORT CIRCUIT OF COIL

ENVIROMENTAL

OPERATIONAL TEMPERATURE RANGE	-40°C TO +125°C (BXX CABLE -40°C TO +105°C)
STORAGE TEMPERATURE RANGE	-40°C TO + 85°C
LIFE	CONTACTLESS
VELOCITY MAX	2m/s IN HYDRAULIC APPLICATIONS (ISO VG32 MINERAL OIL)
VIBRATION	BS EN 60068-2-64 (9gn RMS)
SHOCK	2500g SURVIVAL
PRESSURE – WORKING	670 BAR
BURST	1000 BAR
PULSED	0 TO 470 BAR IN 1 SECOND (TESTED TO 100,000 CYCLES)
WORKING FLUIDS	COMPATIBLE WITH A WIDE RANGE OF HYDRAULIC FLUIDS – INCLUDING MINERAL, SYNTHETIC, FIRE RETARDANT AND ECO BASED FLUIDS.
EMC	DIRECTIVE 2004/108/EC
SEALING	FOR SEALING INFORMATION SEE SHEET 4
MTTFd	203 YEARS

NOTE: FOR OPTIMUM PERFORMANCE
SUPPLY GROUND NEEDS TO BE CONNECTED TO SENSOR CASE
OR SENSOR CASE CONNECTED TO SYSTEM GROUND

NOTE: END OF TRAVEL FLAGS: 1% & 99% - ERROR FLAG **(SHOWN IN**
3% & 97% - WARNING FLAG **FIGURE 1)**

ICT820/ -/ -/ -/ ----/ ----/ ----/ -/ --/ -/ ---

MODE.....
J - J1939

FLANGE.....
I - INTERNAL
E - EXTERNAL

CORE OPTION.....
S - SLEEVE
T - THREADED

MAX ELECTRICAL STROKE..
25 mm TO 1000 mm
(25 TO 200 IN 5 mm INCREMENTS
210 TO 1000 IN 10 mm INCREMENTS)

LOW SIGNAL OUTPUT POSITION FROM DATUM A.....
DEFAULT - 0000 mm (SEE FIGURE 2)

HIGH SIGNAL OUTPUT POSITION FROM DATUM A.....
DEFAULT - MAX ELECTRICAL STROKE (SEE FIGURE 2)

BAUD RATE.....
1 - 50 kbit/s
2 - 125 kbit/s
3 - 250 kbit/s
4 - 500 kbit/s
5 - 1 Mbit/s

NODE ID IN HEXIDECIMAL...
Between 01 and 7F

FRAME RATE.....
1 - 10mS
2 - 20mS
3 - 30mS
4 - 40mS
5 - 50mS
6 - 60mS
7 - 70mS
8 - 80mS
9 - 90mS
0 - 100mS

CONNECTIONS.....
SEE CONNECTOR + CABLE CONNECTIONS
C01 - M12 CONNECTOR
BXX - CABLE GLAND + CABLE LENGTH
FXX - FLYLEADS + LENGTH

SCALE / UNLESS STATED	IF CONTROL DIMENSIONS (Kc) ARE SPECIFIED THEY ARE TO BE SUBJECT TO 100% INSPECTION OR STATISTICAL PROCESS CONTROL.		D No ICT820 FIRST USED ON	MATERIAL /	TOLERANCES: IN-LINE WITH PENNY & GILES STANDARDS 55-301 SURFACE TEXTURE VALUES IN MICROMETRES (mm) TO BS1134:PT2. ALL MACHINED SURFACES TO BE 1.6 ALL SCREW THREADS TO BS3643 PT.2: EXTERNAL CLASS: 6g INTERNAL CLASS: 6H
THIRD ANGLE PROJECTION TO BS 8888	MASS (g) /	VOL. (mm^3) /	REF. /	FINISH /	ANGULAR ± 1° · LINEAR 0, mm +/- 0,5 mm; 0,0 mm +/- 0,2 mm; 0,00mm +/- 0,1mm; 0,000mm +/- 0,01mm · (MACHINING) · BREAK EDGE 0.05 - 0.15mm · FILLET RADS 0.1 - 0.3mm UNLESS OTHERWISE STATED

TITLE
IN CYLINDER TRANSDUCER
CAN OUTPUT

GS GLOBAL RESOURCES
Foremost in Machine Performance for Life
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926 Perkins Drive, Mukwonago, WI 53149

A3

PART NUMBER:
ICT820

SHT 2 OF 4 SHTS

SolidWorks

1	2	3	4	5	6

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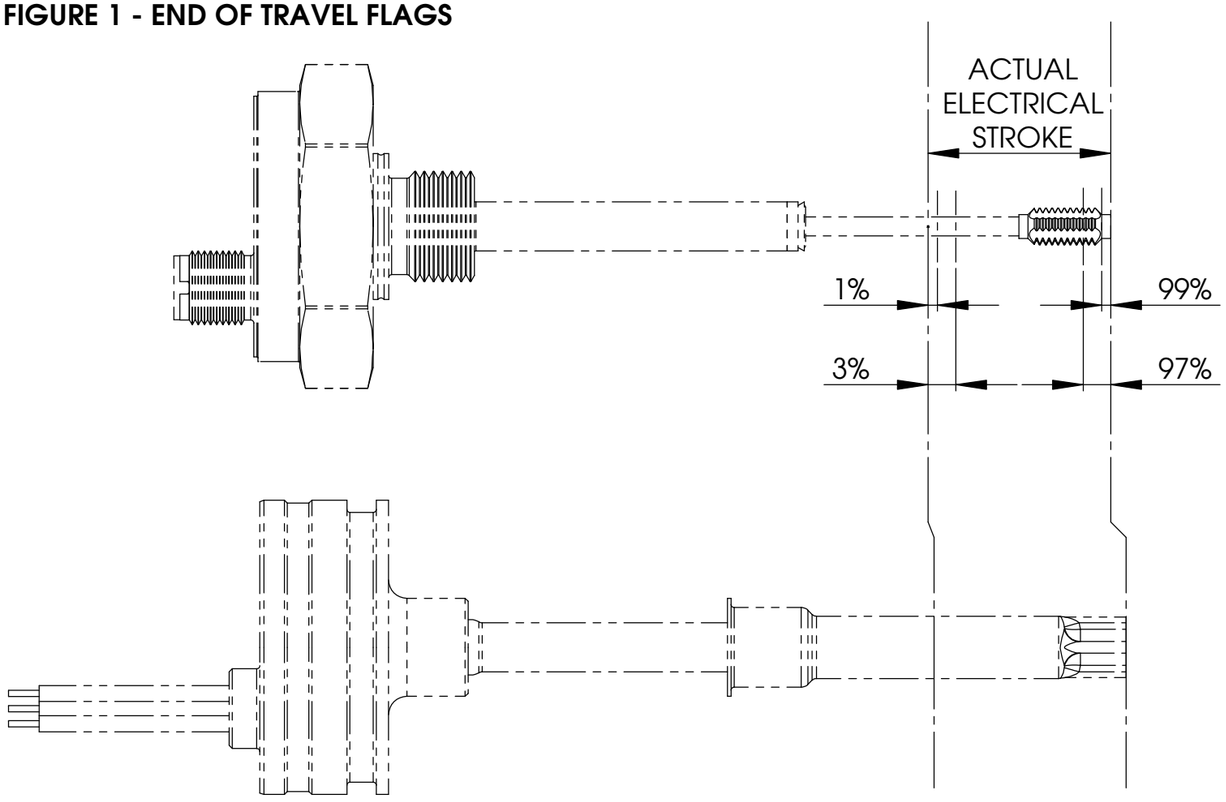
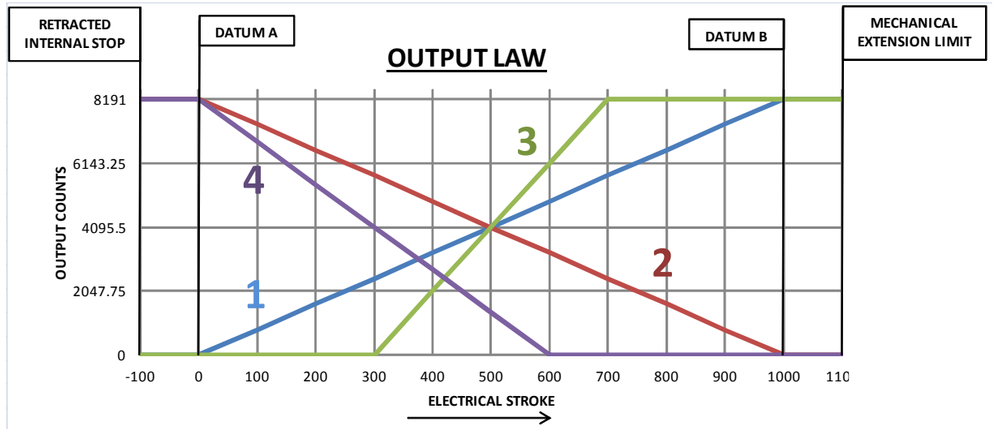
FIGURE 1 - END OF TRAVEL FLAGS



END OF TRAVEL FLAGS

LIMIT	MESSAGE
≤ 3%	LOW - WARNING
≥ 97%	HIGH - WARNING
≤ 1%	LOW - ERROR
≥ 99%	HIGH - ERROR

FIGURE 2



	LOW SIGNAL OUTPUT POSITION	HIGH SIGNAL OUTPUT POSITION	ACTUAL ELECTRICAL STROKE
1	0000	1000	1000
2	1000	0000	1000
3	0300	0700	0400
4	0600	0000	0600

SEE ORDERING CODE
OUTPUT LAW EXAMPLE
FOR MAX ELECTRICAL STROKE
1000 mm SENSOR

NOTE: NON STANDARD
OUTPUT LAWS AVAILABLE
I.E. SWITCH OUTPUTS

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SHT 3 OF 4 SHTS

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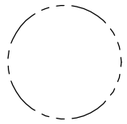
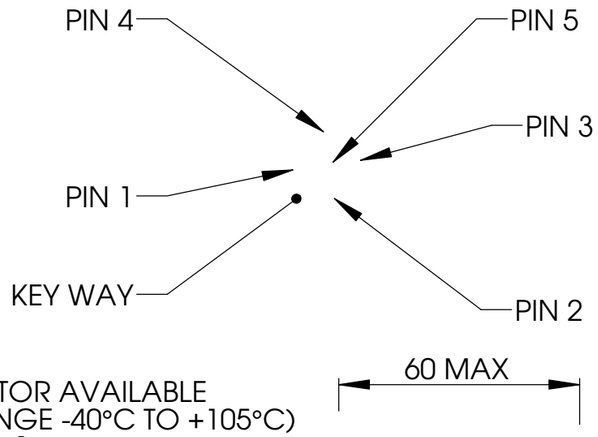
CONNECTOR AND CABLE CONNECTIONS

C01 - M12 CONNECTOR - IP67



D

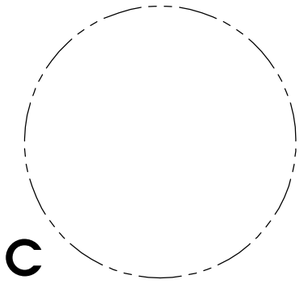
DETAIL D
SCALE 2 : 1



PIN 1	N/C
PIN 2	VSUPPLY
PIN 3	GROUND
PIN 5	CAN LOW
PIN 4	CAN HIGH

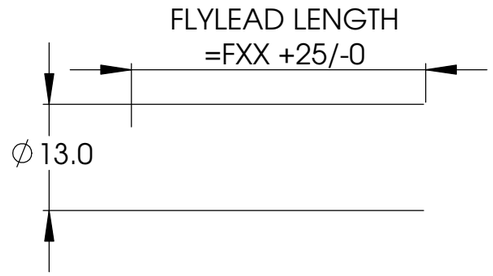
MATING CONNECTOR AVAILABLE
(TEMPERATURE RANGE -40°C TO +105°C)
SA210555/MK1 = 1 m
SA210555/MK5 = 5 m
SA210555/MK10 = 10 m

FXX - FLYLEADS - IP66



C

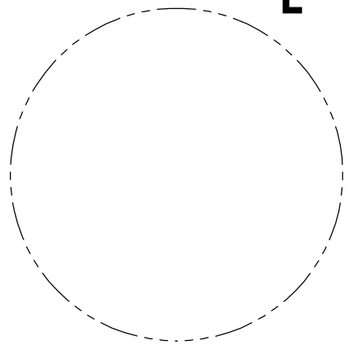
WIRE CONNECTIONS
BLUE WIRE: CAN LOW
BROWN WIRE: VSUPPLY
BLACK WIRE: N/C
RED WIRE: CAN HIGH
GREEN WIRE: GROUND



DETAIL C
SCALE 2 : 1

ORDERING CODES
FP2 = 200 mm FLYLEADS
FP5 = 500 mm FLYLEADS
F01 = 1 m FLYLEADS

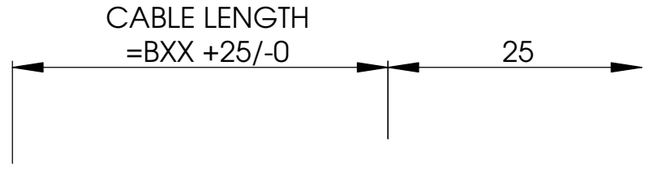
E



BXX - CABLE - IP69K

WIRE CONNECTIONS

BLUE WIRE: CAN LOW
RED WIRE: VSUPPLY
WHITE WIRE: CAN HIGH
BLACK WIRE: GROUND



ORDERING CODES
B01 = 01 m CABLE MIN
B06 = 06 m CABLE MAX
IN 1 m INCREMENTS

DETAIL E
SCALE 2 : 1.5

ICT820 MATERIALS USED

ALL VARIANTS:

STAINLESS STEEL 316 -
BODY (CASE)
SLEEVE
GUIDE TUBE

STAINLESS STEEL 303 -
FLANGE

ALLOY 52 -
CORE

HNBR-
'O'-RINGS

BXX OPTION:

NICKLE PLATED BRASS -
CABLE GLAND

FPM -
CABLE GLAND SEAL

PUR/PVC -
CABLE

C01 OPTION:

PA66
CONNECTOR INSERT

NBR
'O' RING

FXX OPTION:

SILICONE RUBBER -
CABLE
SEAL

SCALE 1:1.5 UNLESS STATED	IF CONTROL DIMENSIONS (Kc) ARE SPECIFIED THEY ARE TO BE SUBJECT TO 100% INSPECTION OR STATISTICAL PROCESS CONTROL.		D No ICT820 FIRST USED ON	MATERIAL /	TOLERANCES: IN-LINE WITH PENNY & GILES STANDARDS 55-301 SURFACE TEXTURE VALUES IN MICROMETRES (mm) TO BS1134:PT2. ALL MACHINED SURFACES TO BE 1.6 ALL SCREW THREADS TO BS3643 PT.2: EXTERNAL CLASS: 6g INTERNAL CLASS: 6H ANGULAR ± 1° / LINEAR 0, mm 0,0 mm 0,00mm 0,000mm / (MACHINING) +/- 0,5 mm +/- 0,2 mm +/- 0,1mm +/- 0,01mm BREAK EDGE 0.05 - 0.15mm FILLET RADS 0.1 - 0.3mm UNLESS OTHERWISE STATED
THIRD ANGLE PROJECTION TO BS 8888	MASS (g) /	VOL. (mm^3) /	REF. /	FINISH /	

TITLE
IN CYLINDER TRANSDUCER
CAN OUTPUT

PART NUMBER:
ICT820

A3

SHT 4 OF 4 SHTS

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