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Installation, Operation and Maintenance Manual

FCI Probe Part No. 023919-XXXXXXXXXXXX

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1. Description

FCI probe 023919 series are intended to be used with FS10, ST50, ST51 or ST75 based electronics/transmitter. When combined with approved electronics/transmitter, the system provides flow and/or temperature outputs as required. Refer to specific model operating manuals for details.

2. Application

The probes may be mounted remotely in accordance to local hazardous location approval standards or as an integral package with agency approved electronics/transmitter.

Probe configurations per drawing 023919.

3. Area Approvals - Installation

Reference: FM13ATEX0099x and IECEx FMG 13.0040X.

Probes with part number 023919-xxAxxxxxxx may be used with temperatures of -40° to +350°F (-40° to +176°C) in Hazardous Areas classified as:

FM, FMc	CL I, DIV 1, GRPS ABCD; T1...T6 Ta = -40°C to +65°C CL II/III, DIV 1 GRPS EFG; T1...T6 Ta = -40°C to +65°C; Type 4x, IP67
IECEX	Ex d IIC Gb T1...T6; Ta = 40°C to +65°C Ex tb IIIC Db T450°C...T85°C; IP67
ATEX	II 2 G Ex d IIC Gb T1...T6; Ta = 40°C to +65°C II 2 D Ex tb IIIC Db T450°C...T85°C; IP67
CE	

Probes with part number 023919-xxBxxxxxxx may be used with temperatures of -40° to +500°F (-40° to +260°C) in Hazardous Areas classified as:

FM, FMc	CL I, DIV 1, GRPS ABCD; T1...T6 Ta = -40°C to +65°C CL II/III, DIV 1 GRPS EFG; T1...T6 Ta = -40°C to +65°C; Type 4x, IP67
IECEX	Ex d IIC Gb T1...T6; Ta = 40°C to +65°C Ex tb IIIC Db T450°C...T85°C; IP67
ATEX	II 2 G Ex d IIC Gb T1...T6; Ta = 40°C to +65°C II 2 D Ex tb IIIC Db T450°C...T85°C; IP67
CE	

Installation according to drawing 022686. Cable gland and cables shall not exceed maximum surface temperature rating.

The ambient temperature range and applicable temperature class of the sensor probe is based on the maximum process temperature for the particular application as follows; Electronics T6 for -40°C ≤ Ta ≤ +65°C; T2 for -40°C ≤ Ta ≤ +65°C. Probe assembly design temperatures are part number dependent. Low temperature models have design temperatures to 177°C (or 90°C including cable pigtails). Medium temperature models have design temperatures to 260°C including cable pigtails.

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Process Temperature: Maximum process temperature range is -40°C to +260°C. Process temperature varies for flow element installed. The relationship between the temperature class, the maximum surface temperature, the ambient temperature and the process temperature is as follows:

Sensing Element:

T6/ T85°C for a process temperature range of -40°C to +39°C.

T5/ T100°C for a process temperature range of -40°C to +54°C.

T4/ T135°C for a process temperature range of -40°C to +89°C.

T3/ T200°C for a process temperature range of -40°C to +154°C.

T2/ T300°C for a process temperature range of -40°C to +177°C.

T1/ T450°C for a process temperature range of -40°C to +260°C.

The apparatus has flying lead conductors that exit the probe housing. A suitably certified Ex d or Ex e terminal box, cable gland or short rigid conduit is required to be connected to apparatus for completing to external supply circuit (reference drawing 022686).

Apparatus is provided with ¼ inch, ½ inch or ¾ inch NPT threaded connection.

Customer to supply wire rated 10°C minimum above maximum ambient temperature of installation location to a suitably certified Ex d or Ex e terminal box.

4. Maintenance

Probes do not require any scheduled maintenance. Resistance and continuity testing of probe may be performed as required. Periodic visual inspection of thermowell sensors for coating may be required in contaminating processes. If necessary, chemical cleaning using solvents compatible with Hastelloy C-22 and 316L stainless steel material is recommended.

5. Storage

Probes should be stored in protected sheath or installed into pipe or tube tee/spool to prevent mechanical damage to sensors.

6. Electrical parameters

As established by approved mating electronics/transmitter. Reference the installation, operation and maintenance manual of specific model for installation instructions not addressed here.

7. Warnings

WARNING: EXPLOSION HAZARD, DO NOT DISCONNECT EQUIPMENT WHEN FLAMMABLE OR COMBUSTIBLE ATMOSPHERE IS PRESENT.

ATTENTION: DANGER D'EXPLOSION, NE PAS D'ÉBRANCHER L'APPAREIL S'IL YA PRÉSENCE DE GAZ INFLAMMABLE OU COMBUSTIBLE.

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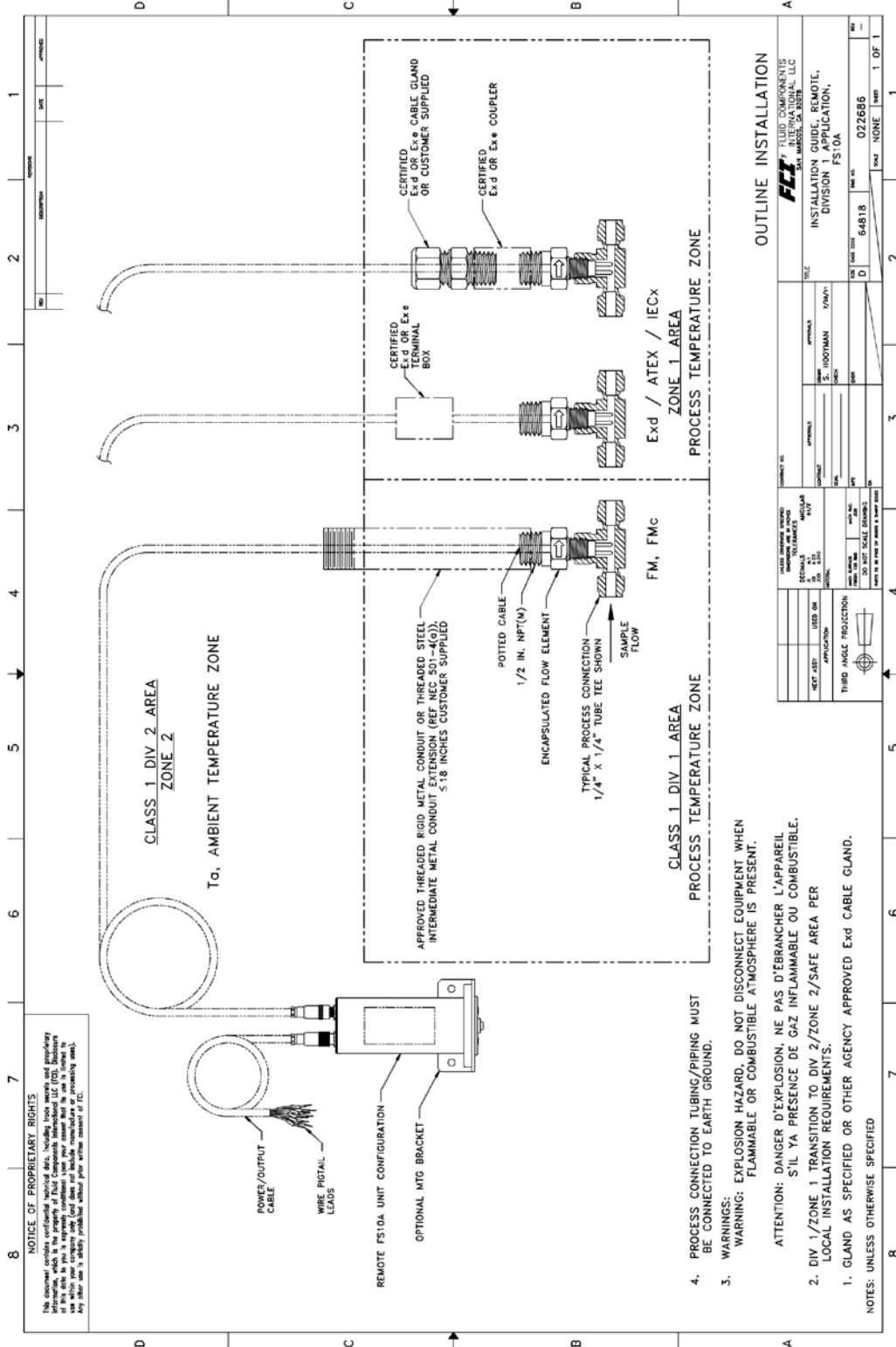
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4. PROCESS CONNECTION TUBING/PIPING MUST BE CONNECTED TO EARTH GROUND.

3. WARNINGS:
EXPLOSION HAZARD, DO NOT DISCONNECT EQUIPMENT WHEN FLAMMABLE OR COMBUSTIBLE ATMOSPHERE IS PRESENT.

ATTENTION: DANGER D'EXPLOSION, NE PAS D'EBRANCHER L'APPAREIL S'IL YA PRESENCE DE GAZ INFLAMMABLE OU COMBUSTIBLE.
2. DIV 1/ZONE 1 TRANSITION TO DIV 2/ZONE 2/SAFE AREA PER LOCAL INSTALLATION REQUIREMENTS.

1. GLAND AS SPECIFIED OR OTHER AGENCY APPROVED Exd CABLE GLAND, NOTES: UNLESS OTHERWISE SPECIFIED

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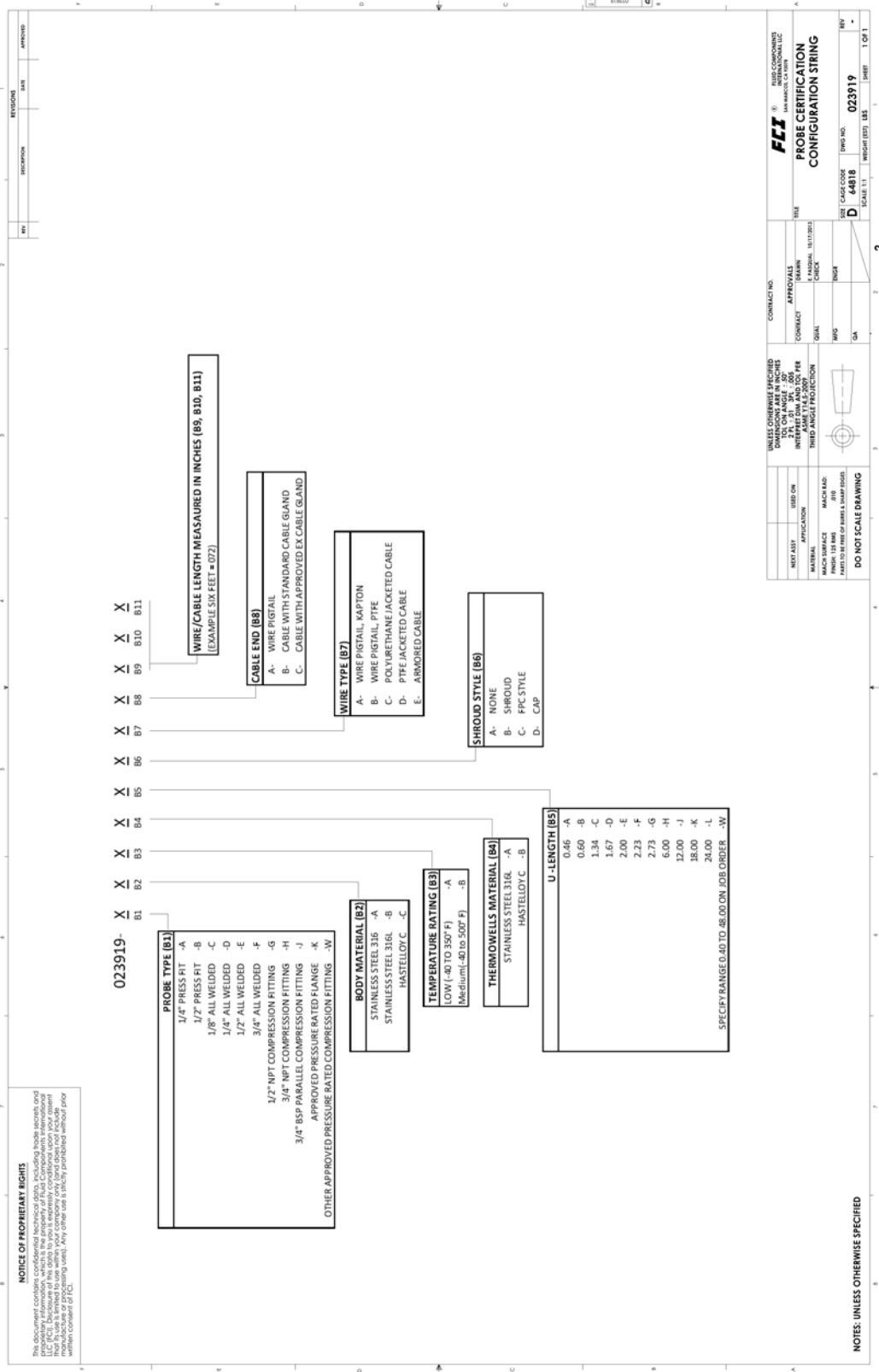
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NOTES: UNLESS OTHERWISE SPECIFIED

FCT FLUID COMPONENTS INTERNATIONAL LLC
 1755 LA COSTA MEADOWS DRIVE
 SAN MARCOS, CA 92078

PROBE CERTIFICATION CONFIGURATION STRING

CONTRACT NO. _____
 CONTRACT DATE _____
 CONTRACT VALUE \$ _____
 CONTRACT TYPE _____
 QUALITY CHECK _____
 INSPECTION _____
 TEST _____

DATE: 11/11/13
 DRAWN BY: _____
 CHECKED BY: _____
 APPROVED BY: _____

SCALE: 1:1
 SHEET: 1 OF 1

FIG. NO. _____
 DESCRIPTION _____
 DATE _____
 APPROVED _____

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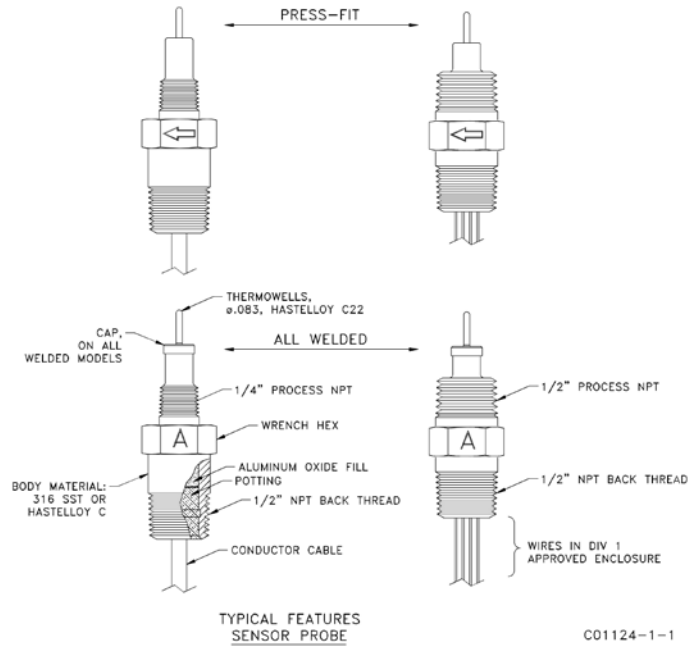


Figure A. - Typical Features

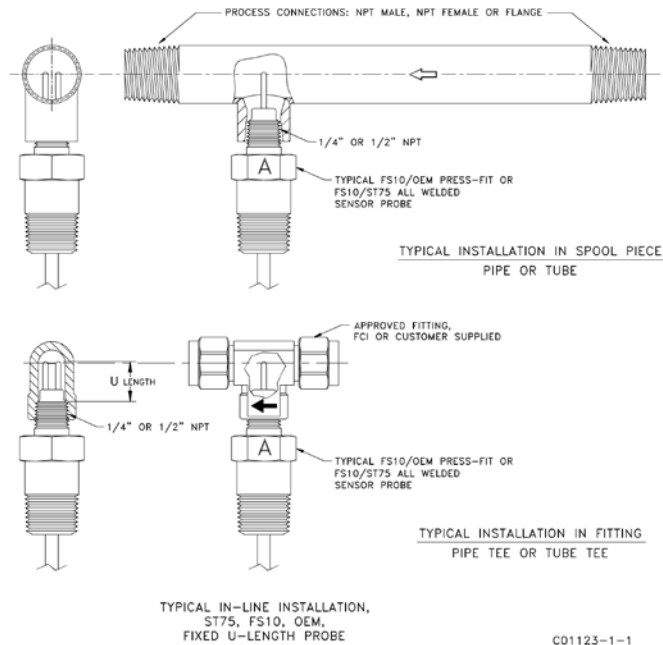


Figure B. - Typical In-Line Installation

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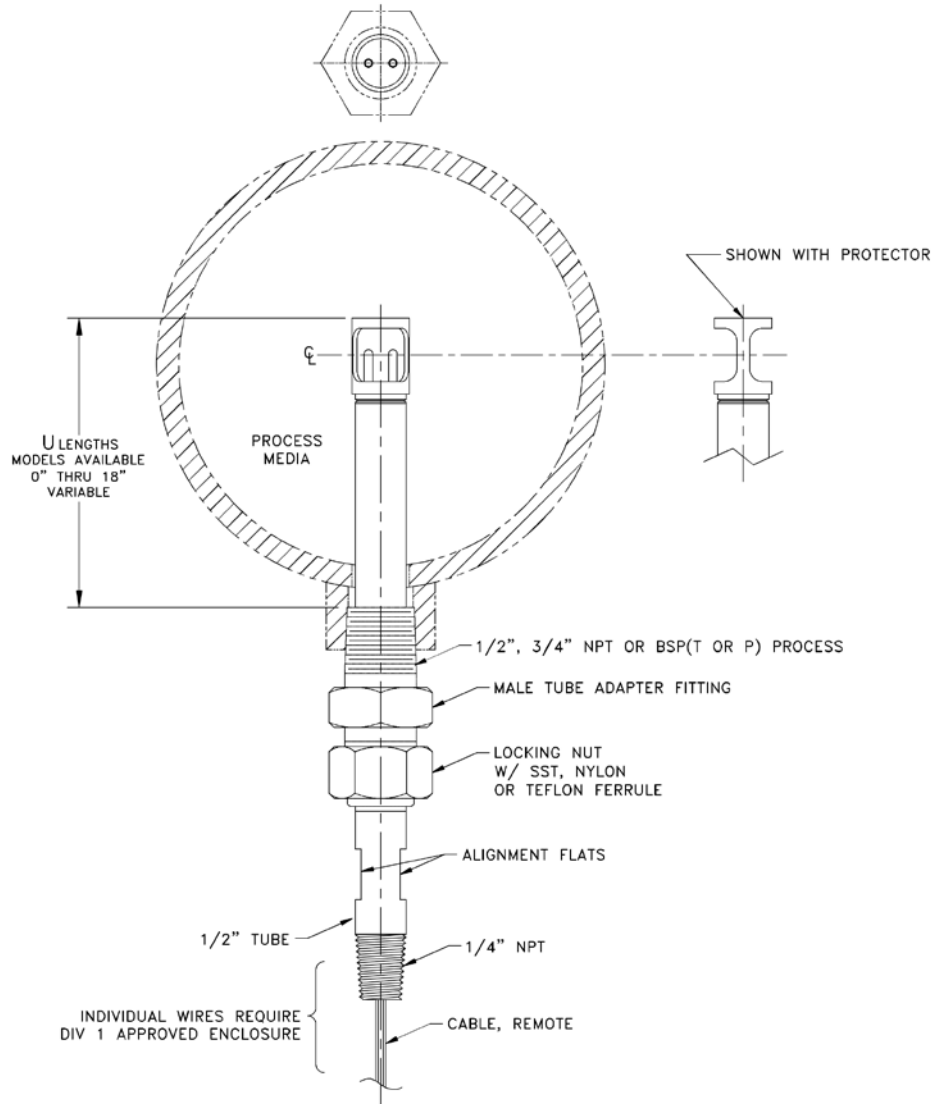
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TYPICAL INSTALLATION IN CUSTOMER LINE,
ST50/ST51,
VARIABLE U-LENGTH PROBE, 2" LINE AND LARGER

OPERATING TEMPERATURE:
 LOW TEMP PROCESS -40 TO 350°F [-40 TO 177°C]
 WITH AMBIENT -40 TO 194°F [-40 TO 90°C]
 OR -40 TO 350°F [-40 TO 177°C] WITH WIRE PIGTAILS
 MEDIUM TEMP -40 TO 500°F [-40 TO 260°C] PROCESS AND AMBIENT

C01122-1-1

Figure C. – Variable U-Length Probe, 2" Line and Larger

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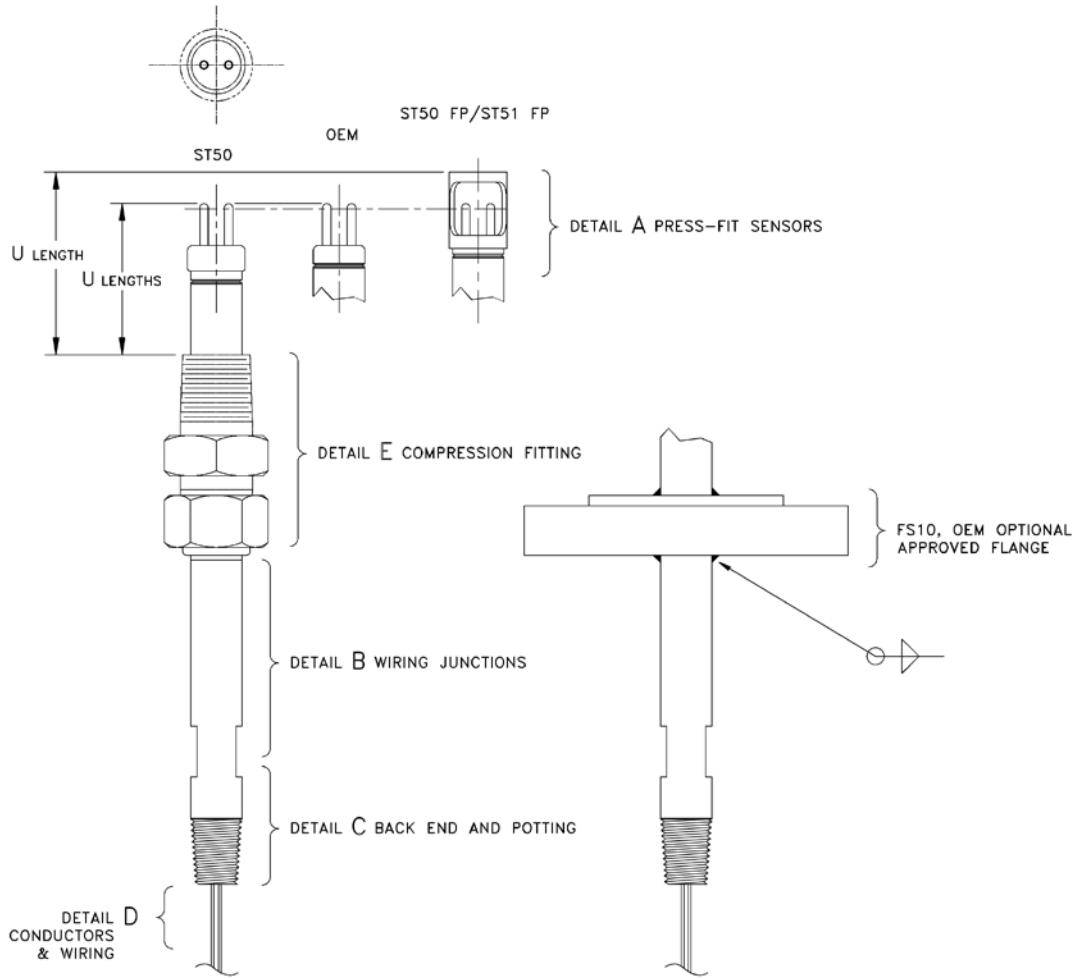
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ST50/ST51, FS10 AND OEM PRESS-FIT MODELS

U-LENGTHS MAY VARY FROM 0" TO 18".
TYPICAL SET LENGTHS ARE 1.5", 3", 6", 12" OR 18"

OPERATING TEMPERATURE:

LOW TEMP PROCESS -40 TO 350°F [-40 TO 177°C]
WITH AMBIENT -40 TO 194°F [-40 TO 90°C]
OR -40 TO 350°F [-40 TO 177°C] WITH WIRE PIGTAILS
MEDIUM TEMP -40 TO 500°F [-40 TO 260°C] PROCESS AND AMBIENT

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Figure D. – Press-Fit Probe

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8. Safety Instructions for the use the Enclosure 023919 in Hazardous Areas

Approval FM13ATEX0099X and IECEx FMG 13.0040X, II 2 G Ex d IIC Gb T1...T6 and II 2 D Ex tb IIC Db T450°C...T85°C, IP67, with maximum permissible temperature of 350°F (176°C) for 023919-xxAxxxxxxx and 500°F (260°C) for 023919-xxBxxxxxxx.

Dansk	Sikkerhedsforskrifter	Italiano	Normative di sicurezza
Deutsch	Sicherheitshinweise	Nederlands	Veiligheidsinstructies
English	Safety instructions	Português	Normas de segurança
Greek	Οδηγίες Ασφαλείας	Español	Instrucciones de seguridad
Suomi	Turvallisuusohjeet	Svenska	Säkerhetsanvisningar
Français	Consignes de sécurité		

DK Dansk- Sikkerhedsforskrifter

Disse sikkerhedsforskrifter gælder for Fluid Components, 023919 typeafprøvningsattest-nr. FM13ATEX0099X (attestens nummer på typeskiltet) er egnet til at blive benyttet i eksplosiv atmosfære kategori II 2 G, II 2D.

- 1) Ex-anlæg skal principielt opstilles af specialiseret personale.
- 2) 023919 kapsling skal jordforbindes.

D A Deutsch-Sicherheitshinweise

Diese Sicherheitshinweise gelten für die Fluid Components, 023919 gemäß der EG-Baumusterprüfbescheinigung Nr. FM13ATEX0099X (Bescheinigungsnummer auf dem Typschild) der Kategorie II 2 G, II 2 D.

- 1) Die Errichtung von Ex-Anlagen muss grundsätzlich durch Fachpersonal vorgenommen werden.
- 2) 023919 Gehäusue muß geerdet werden.

GB IRL English- Safety Instructions

These safety instructions are valid for the Fluid Components, 023919 to the EC type approval certificate no. FM13ATEX0099X (certificate number on the type label) for use in potentially explosive atmospheres in Category II 2 G, II 2 D.

- 1) The installation of Ex-instruments must be made by trained personnel.
- 2) 023919 probe must be grounded.

GR Greek- Οδηγίες Ασφαλείας

Αυτές οι οδηγίες ασφαλείας ισχύουν για τα Ροόμετρα της Fluid Components τύπου 023919 Πιστοποιητικό Έγκρισης Ευρωπαϊκής Ένωσης, με αριθμό πιστοποίησης FM13ATEX0099X (ο αριθμός πιστοποίησης βρίσκεται πάνω στην ετικέτα τύπου του οργάνου) για χρήση σε εκρηκτικές ατμόσφαιρες της κατηγορίας II 2 G, II 2 D.

- 1) Η εγκατάσταση των οργάνων με ανιεκρηκτική προστασία πρέπει να γίνει από εξειδικευμένο προσωπικό.
- 2) 023919 πρέπει να είναι γειωμένο.

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FIN Suomi- Turvallisuusohjeet

Nämä turvallisuusohjeet koskevat Fluid Components, 023919 EY-tyyppitarkastustodistuksen nro. FM13ATEX0099X mukaisesti (todistuksen numero näkyy tyyppikilvestä) käytettäessä räjähdysvaarallisissa tiloissa luokassa II 2 G, II 2 D.

- 1) Ex-laitteet on aina asennettava ammattihenkilökunnan toimesta.
- 2) 023919 on maadoitettava.

F B L - Consignes de sécurité

Ces consignes de sécurité sont valables pour le modèle 023919 de la société Fluid Components (FCI) conforme au certificat d'épreuves de type FM13ATEX0099X (numéro du certificat sur l'étiquette signalétique) conçu pour les applications dans lesquelles un matériel de la catégorie II 2 G, II 2 D est nécessaire.

- 1) Seul un personnel spécialisé et qualifié est autorisé à installer le matériel Ex.
- 2) Les 023919 doivent être reliés à la terre.

I Italiano- Normative di sicurezza

Queste normative di sicurezza si riferiscono ai Fluid Components, 023919 secondo il certificato CE di prova di omologazione n° FM13ATEX0099X (numero del certificato sulla targhetta d'identificazione) sono idonei all'impiego in atmosfere esplosive applicazioni che richiedono apparecchiature elettriche della Categoria II 2 G, II 2 D.

- 1) L'installazione di sistemi Ex deve essere eseguita esclusivamente da personale specializzato.
- 2) I 023919 devono essere collegati a terra.

NL B Nederlands- Veiligheidsinstructies

Deze veiligheidsinstructies gelden voor de Fluid Components, 023919 overeenkomstig de EG-typeverklaring nr. FM13ATEX0099X (nummer van de verklaring op het typeplaatje) voor gebruik in een explosieve atmosfeer volgens Categorie II 2 G, II 2 D.

- 1) Installatie van Ex-instrumenten dient altijd te geschieden door geschoold personeel.
- 2) De 023919 behuizing moet geaard worden.

P Português- Normas de segurança

Estas normas de segurança são válidas para os Fluid Components, 023919 conforme o certificado de teste de modelo N.º FM13ATEX0099X (número do certificado na plaqueta com os dados do equipamento) são apropriados para utilização em atmosferas explosivas categoria II 2 G, II 2 D

- 1) A instalação de equipamentos em zonas sujeitas a explosão deve, por princípio, ser executada por técnicos qualificados.
- 2) Os 023919 precisam ser ligados à terra.

E Español - Instrucciones de seguridad -

Estas indicaciones de seguridad son de aplicación para el modelo 023919 de Fluid Components, según la certificación CE de modelo N° KEMA ¿?? para aplicaciones en atmósferas potencialmente explosivas según la categoría II 2 G, II 2 D (el número de certificación se indica sobre la placa informativa del equipo).

- 1) La instalación de equipos Ex tiene que ser realizada por personal especializado.
- 2) Los 023919 tienen que ser conectados a tierra.

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S**Svenska- Säkerhetsanvisningar**

Säkerhetsanvisningarna gäller för Fluid Components, typ 023919 enligt EG-typkontrollintyg nr FM13ATEX0099X (intygsnumret återfinns på typskylten) är lämpad för användning i explosiv gasblandning i kategori II 2 G, II 2 D.

- 1) Installation av Ex- klassade instrument måste alltid utföras av fackpersonal.
- 2) 023919 måste jordas.

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1 EC-TYPE EXAMINATION CERTIFICATE**2 Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 94/9/EC****3 EC-Type Examination Certificate No: FM13ATEX0099X****4 Equipment or protective system: 023919 Flow and Temperature Probes (Type Reference and Name)****5 Name of Applicant: Fluid Components International****6 Address of Applicant: 1755 La Costa Meadows Dr San Marcos CA 92078 United States****7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.****8 FM Approvals Ltd, notified body number 1725 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.**

The examination and test results are recorded in confidential report number:

3048652 dated 21st April 2014**9 Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:**

EN 60079-0:2012, EN60079-1:2007, EN 60079-31: 2009, EN 60529+A1:1991+2000

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.**11 This EC-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.****12 The marking of the equipment or protective system shall include:**

II 2 G Ex d IIC T1...T6 Ta = -40°C to +65°C Gb IP67.

II 2 D Ex tb IIIC T450°C...T85°C Ta = -40°C to +65°C Db IP67.

Mick Gower
certMick Gower, on FM Approvals, co.
email:mick.gower@fmapprovals.com,
c:GB
2014.05.19 12:45:30 +0100**Mick Gower
Certification Manager, FM Approvals Ltd.**Issue date: 19th May 2014**THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE**FM Approvals Ltd, 1 Windsor Dials, Windsor, Berkshire, UK, SL4 1RS
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F ATEX 020 (May/12)

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SCHEDULE

to EC-Type Examination Certificate No. FM13ATEX0099X

13 Description of Equipment or Protective System:

The sensor elements consist of simple 1000 ohm or 500 ohm Platinum resistance temperature detectors (RTD) embedded in thermowells made from hastelloy or stainless steel and filled with ceramic and/or epoxy potting. The rest of the probe is filled with aluminum oxide sand and capped with Sauereisen No. 30 epoxy. The current to the 1000 ohm sensors is 9.8mA max at 18Vdc for the active RTD and 1mA max at 1.8Vdc for the reference RTD. The current to the 500 ohm sensors is 15mA max at 18Vdc for the active RTD and 1.5mA max at 1.8Vdc for the reference RTD. Wiring to the RTD sensor is made with 28 AWG NI clad alloy wires with Kapton or 28 AWG NI clad alloy wires with PTFE. All wires are rated for 500°F (260°C). Remote mounted cable consist of 8 conductor 24 AWG copper wire, foil shield drain wire and polyurethane jacket or 8 conductor 26 AWG NI clad alloy wire with braided shield, drain wire and PTFE insulation. The remote cable is rated for 194°F (90°C) or 500°F (260°C).

023919 – abcdefghi Flow and Temperature Probes.

a = Probe Type: A, B, C, D, E, F, G, H, J, K or W.

b = Body Material: A, B or C.

c = Temperature Rating: A or B.

d = Thermowell Materials: A or B.

e = U – Length: A, B, C, D, E, F, G, H, J, K, L or W.

f = Shroud Style: A, B, C or D.

g = Wire Type: A, B, C, D or E.

h = Cable End: A, B or C.

i = Wire/ Cable Length in Inches: www or none.

14 Specific Conditions for Safe Use:

1. The ambient temperature range and applicable temperature class of the sensor probe is based on the maximum process temperature for the particular application as follows; T1...T6 for Tambient of -40°C to +65 and Tprocess of -40°C to +260°C. Probe assembly design temperatures are part number dependent. Low temperature models have design temperatures from -40°C to +121°C. Medium temperature models have design temperatures from -40°C to +260°C.

2. Process Temperature: Maximum process temperature range is -40°C to +260°C. Process temperature varies for flow element installed. The relationship between the temperature class, the maximum surface temperature and the process temperature is as follows:

Sensing Element:

T6/ T85°C for a process temperature range of -40°C to +39°C.

T5/T100°C for a process temperature range of -40°C to +54°C.

T4/ T135°C for a process temperature range of -40°C to +89°C.

T3/ T200°C for a process temperature range of -40°C to +154°C.

T2/ T300°C for a process temperature range of -40°C to +177°C.

T1/ T450°C for a process temperature range of -40°C to +260°C.

3. The apparatus has flying lead conductors that exit the probe housing. A suitably certified Ex d or Ex e terminal box is required to be connected to apparatus for completing to external supply circuit).

4. Apparatus is provided with ½ inch or ¾ inch NPT threaded conduit connections.

5. Customer to supply wire rated 10°C minimum above maximum ambient temperature of installation location to a suitably certified Ex d or Ex e terminal box.

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGEFM Approvals Ltd. 1 Windsor Dials, Windsor, Berkshire, UK. SL4 1RS
T: +44 (0) 1753 750 000 F: +44 (0) 1753 868 700 E-mail: atex@fmapprovals.com www.fmapprovals.com

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to EC-Type Examination Certificate No. FM13ATEX0099X

15 Essential Health and Safety Requirements:

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.

16 Test and Assessment Procedure and Conditions:

This EC-Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer's claim for CE Marking, FM Approvals Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Ltd's ATEX Certification Scheme.

17 Schedule Drawings

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by the Notified Body

18 Certificate History

Details of the supplements to this certificate are described below:

Date	Description
19 th May 2014	Original Issue.

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

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F ATEX 020 (May/12)

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