General Specifications

Model SC25V
Combined pH electrode

General

Having a stable, reliable and accurate measurement is of vital importance for pH measurement and control. The SC25 pH sensor has been developed and designed to make sure that this sensor will deliver these results in every application.

The build-in temperature sensor is located close to the pH measuring glass. This will result in an increased accuracy of the temperature compensation and therefore also the pH measurement. The integrated large Titanium liquid earth will improve the stability measurement countering any stray or ground loop currents that can destroy the reference sensor.

Features

- External titanium Liquid Earth
- Pt1000 integration in pH compartment giving highly accurate
- temperature compensation
- Certified for hazardous area
- CIP and Steam cleaning possible
- Useable up to 130°C (L-Glass type)
- Measuring in applications from 10 µS/cm
- SC25V-*LP25 for chemically harsh applications and high temperatures
- SC25V-*GP25 for all General-Purpose applications
- Variopin connector meets IP67

1. General Specifications SC25V

1-1 Measuring elements

- pH glass electrode
- Silver Chloride reference
- Pt1000 temperature sensor

1-2 Wetted parts construction materials

Sensor body	: PEEK and AR-Glass
O-rings	: Vition (backed-up with EPDM)
Measuring sensor	: Glass (type G or L)
Reference junction	: PTFE
Liquid Earth	: Titanium

1-3 Functional Specifications (@25°C)

Isothermal point	: pH 7
Reference system	: Ag/AgCl with saturated KCl
Glass impedance	
• *GP25	nominal 200MΩ
• *LP25	nominal 700MΩ
Junction resistance	: < 5K Ω
Temperature element	: Pt1000 to IEC 751
Asymmetry potential	: 8 ± 15 mV
Linearity PH (Slope)	: > 96 % (of theoretical value)
Sensor length	: 120 mm and 225 mm

1-4 Dynamic specifications (at 25°C)

Response time pH step (7 to 4)	: < 15 sec for 90%
Response time temp step (10°C)	
Stabilization time (0.02 pH unit/10 sec.)	: < 2 minutes

1-5 Operating range

pH	: 0 - 14
Temperature	
• *GP25	: -10°C to 80°C (14°F to 176°F)
• *LP25	: 15°C to 130°C (59°F to 266°F)
Pressure	: 0 to 10 bar (0 to 142 PSIG)
Conductivity	: > 10 µS/cm

Note: The pH operating range at room temperature is 0-14 pH, but at high temperatures or range outside 2-12 pH the lifetime will be seriously shortened.

Note: The upper process temperature for the intrinsically safe version is limited by the ambient temperature (Tamb.) defined for each temperature class (T3, T4, T5 and T6)

1-6 Shipping Details

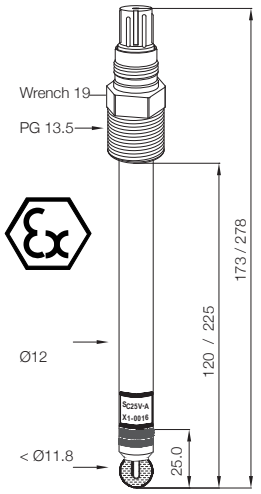
SC25V-…..-120

Package size (LxWxH)	: 300 x 100 x 75 mm
	: 11.8 x 3.9 x 3.0 inch
Package weight (max.)	: 0.26 kg (0.57 lbs)

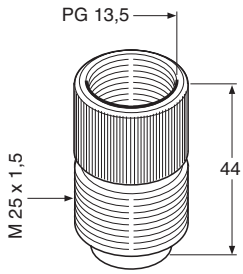
SC25V-…..-225

Package size (LxWxH)	: 435 x 60 x 60 mm
	: 17.2 x 2.4 x 2.4 inch
Package weight (max.)	: 0.28 kg (0.62 lbs)

SC25V -AGP25
-ALP25
-BGP25
-BLP25



K1520JN (PVC-C)
K1500DV (PVDF)
K1520JP (SS)



Unit: mm

Model Code	Suffix Code		Description
SC25V			Combined 12mm sensor: pH, Ref, LE, Temperature Equiped with Variopin connector
Sensor type	-AGP25		General purpose, Analog, IS for ATEX/IECEx/FM-US/FM-CAN
	-ALP25		High temp. chemical resist., Analog, IS for ATEX/IECEx/FM-US/FM-CAN
	-BGP25		General purpose, SENCOM ID-chip, IS for ATEX/IECEx/FM-US/FM-CAN
	-BLP25		High temp. chemical resistant, SENCOM ID-chip, IS for ATEX/IECEx/ FM-US/FM-CAN
Sensor length		- 120	120 mm
		- 225	225 mm

1-7 Enviromental conditions

Storage temperature	: -10 to +50 ºC (14 to 122 ºF)
Ingress Protection	: IP67 (conform IEC 60529)
Sterilizable	: Up to 135 °C (275 °F)
CIP cleaning possible	: YES

1-8 Mechanical Specifications

Process connection	: PG13.5

1-9 Regulatory compliance:

Item	Description
LVD	• ANSI/ISA 61010-1 • CAN/CSA C22.2 No. 61010-1
RoHS	EU Directive 2011/65/EU and Commission Delegated Directive (EU) 2015/863 amending Annex II, applying Annex IV as regards the application of the sensors, detectors and electrodes per • EN-IEC 63000
PED	EU Directive 2011/68/EU applying Article 4.3: Sound Engineering Practice.
WEEE	EU directive 2012/19/EU This sensor is intended to be sold and used only as a part of equipment which is excluded from the WEEE directive, such as large-scale stationary industrial tools, a large-scale fixed installation etc., and therefore it is in principle fully compliant with WEEE directive. The sensor should be disposed in accordance with applicable national legislations/regulations respectively.
Ingress Protection	IP67
Explosion proof	For details see Section Equipment ratings and Section Approvals and certification

1-10 Equipment ratings:

Item	Description	
Electrical parameters	• Max. input voltage • Max. input current • Max. input power • Max. internal capacitance • Max. internal inductance	• Ui = 18 VDC • Ii = 170 mA • Pi = 400 mW • Ci = 0.0 nF for connector types without ID-chip • = 0.4 nF for connector types with ID-chip • Li = 0.0 mH for connector types
Temperature class	• T6 • T5 • T4 • T3	• -40°C ≤ Ta ≤ +40°C • -40°C ≤ Ta ≤ +55°C • -40°C ≤ Ta ≤ +55°C • -40°C ≤ Ta ≤ +105°C
Specific conditions of use	Potentional electrostatic charging hazard: pH sensors containing accessible plastic parts and/or external conductive parts must be installed and used in such a way, that dangers of ignition due to hazardous electrostatic charges cannot occur, especially in the case that the process medium is non-conductive. Use a damp cloth for cleaning the equipment.	

1-11 Approvals and certifications:

Type	Approval or certification
ATEX (EU)	EU Directive 2014/34/EU, ATEX approval: DEKRA 11ATEX0014 X, 0344 II 1 G Ex ia IIC T3…T6 Ga Applied standards: EN IEC 60079-0 / EN 60079-11
IECEx	IECEx approval: IECEx DEK 11.0064X, Ex ia IIC T3…T6 Ga Applied standards: IEC 60079-0 / IEC 60079-11
FM (Canada/ United States)	FM approval Canada: FM20CA0062X, IS SI CL I, DIV 1, GP ABCD, T3…T6, CL I, ZN 0, Ex ia IIC, T3…T6 Ga Control Drawing: D&E 2020-023-A51 Applied standards: CAN/CSA-C22.2 No. 60079-0 / CAN/CSA-C22.2 No. 60079-11 / CAN/CSA-C22.2 No. 61010-1 FM approval United States: FM20US0123X, IS CL I, DIV 1, GP ABCD, T3…T6, CL I, ZN 0, AEx ia IIC, T3…T6 Ga Control Drawing: D&E 2020-023-A50 Applied standards: FM Class 3600 / FM Class 3610 / ANSI/ISA 60079-0 / ANSI/ISA 60079-11 / ANSI/ISA 61010-1

1-10 Approvals and certifications:

Type	Approval or certification
NEPSI (China)	NEPSI approval: GYJ21.2891X, Ex ia IIC T3…T6 Ga Applied standards: GB 3836.1 / GB 3836.4 / GB 3836.20
PESO (India)	PESO approval: PESO approval is based on ATEX approval DEKRA 11ATEX0014 X, iss. 2 – 29.11.2019 Equipment reference numbers: P512760/1 Applied standards: EN IEC 60079-0 / EN 60079-11
TS (Taiwan)	TS approval: TS Safety Label is based on IECEx approval IECEx DEK 11.0064X / Identification Number: TD04000C Applied standards: IEC 60079-0 / IEC 60079-11
EAC Ex (Russia)	EAC Ex certificate: RU C-NL.AA87.B.00754, 0Ex ia IIC T6…T3 Ga X Applied standards: GOST 31610.0 (IEC 60079-0) / GOST 31610.11 (IEC 60079-11) / GOST IEC 60079-14

1-11 Cables

For details concerning the cables please consult the respective General specifications
- Single and Dual Coax WU10 - GS12B06W02
- Extension cable WE10 - GS12B06W02

Specifications Combined pH electrodes with Temperature + Liquid earth

Type	Membrane	Resistance in MΩ/25ºC	pH-range	Temp. range (ºC)	Pressure range kPa	Reference liquid	Ref.	Diaph. system	Atex
SC25V-*GP25	Universal pH-glass	140 - 260	0 - 14	-10 - 80	0 - 1000	Oversaturated KCl	Ag / AgCl (wire)	PTFE	Yes
SC25V-*LP25	Chem. Res. pH-glass dome	650 - 900	0 - 14	+15 - 130	0 - 1000	Oversaturated KCl	Ag / AgCl (wire)	PTFE	Yes

2. Spare parts

2-1 Sealings

Prod. No.	Description
K1500BV	O-RINGS EPDM 11X3 (6 PCS.)
K1500BZ	O-RINGS VITON 11X3 (6 PCS.)
K1500GR	O-RINGS SILICON 11X3 (8PCS)
K1524AA	Set of O-ring 11x3 and slide ring Ryton
FP20-R12	Blind plug set for 1-hole

2-2 Adapters

Prod. No.	Description
K1523JA	Adapter Pg13.5 in F*40 PPO
K1523JC	Adapter Pg13.5 in F*40 SS
K1520JN	Adapter M25x1.5 - PG13.5 PVC
K1520JP	Adapter M25x1.5 - PG13.5 RVS
K1500DV	Adapter M25x1.5 - PG13.5 PVDF
K1523JB	Adapter PG13.5 to ¾”NPT PPO

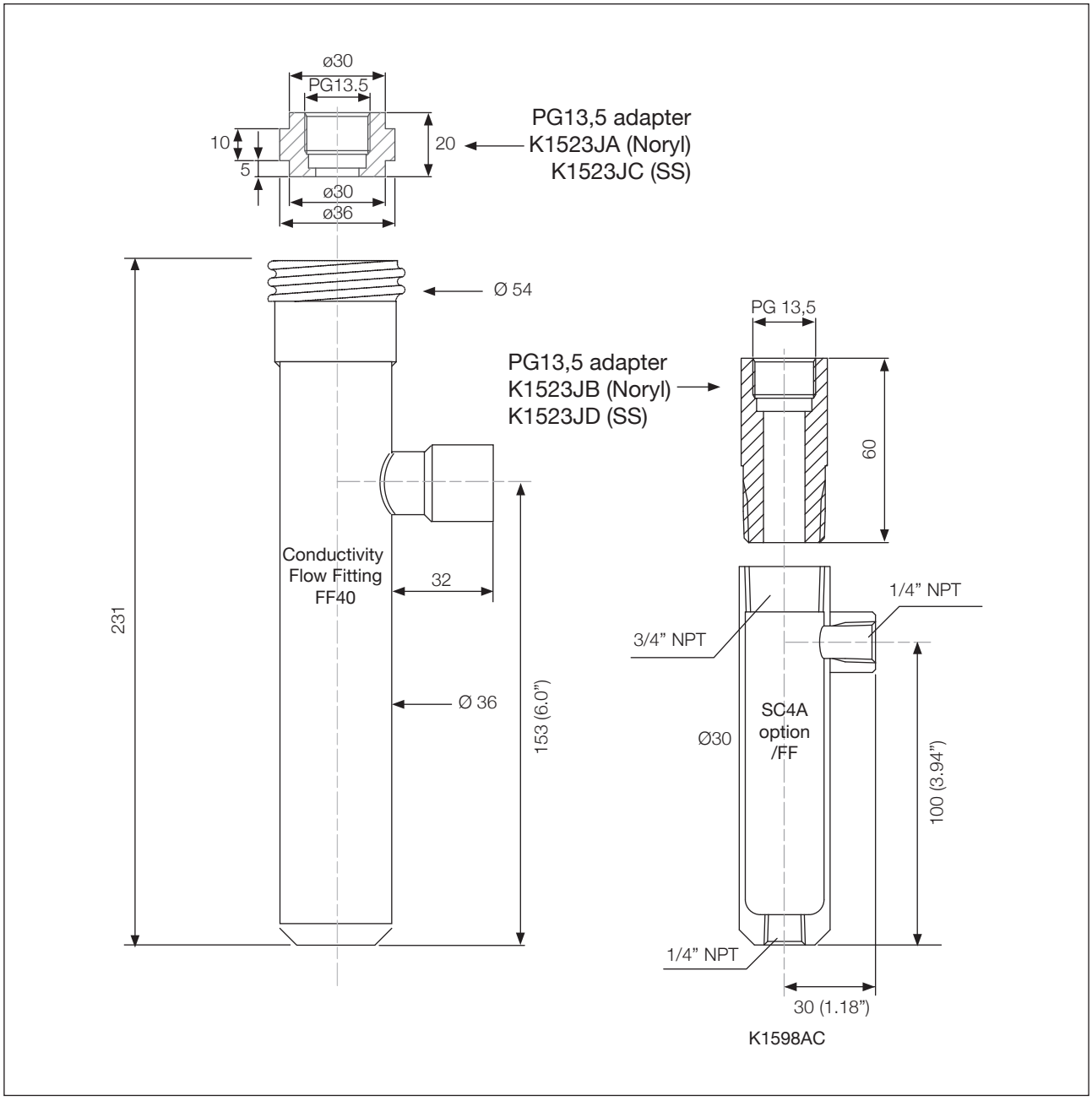
2-2 Adapters

Prod. No.	Description
K1523JD	Adapter PG13.5 to ¾"NPT SS
K1598AC	Flow fitting (3.1), for SC4A (In combination with K1523JB/JD)
K9148NA	Adapter for mounting Pg13.5-sensors in HA405-120-S3
K9148NB	Adapter for mounting Pg13.5-sensors in HA405-120-PP
K9148NC	Adapter for mounting Pg13.5-sensors in HA405-120-PV

2-3 Consumable parts

Prod. No.	Description
K1520BB	Three bottles with NIST buffer 2.68 pH
K1520BC	Three bottles with NIST buffer 4.01 pH
K1520BD	Three bottles with NIST buffer 6.86 pH
K1520BE	Three bottles with NIST buffer 9.18 pH

Addendum 1: Typical Installations



Adapter to fit sensors with a PG13.5 process connection in FF40/FS40 and FD40 fittings. Material: Polypropylene
K1523JA Noryl adapter PG13.5
K1523JC Stainless Steel adapter PG13.5

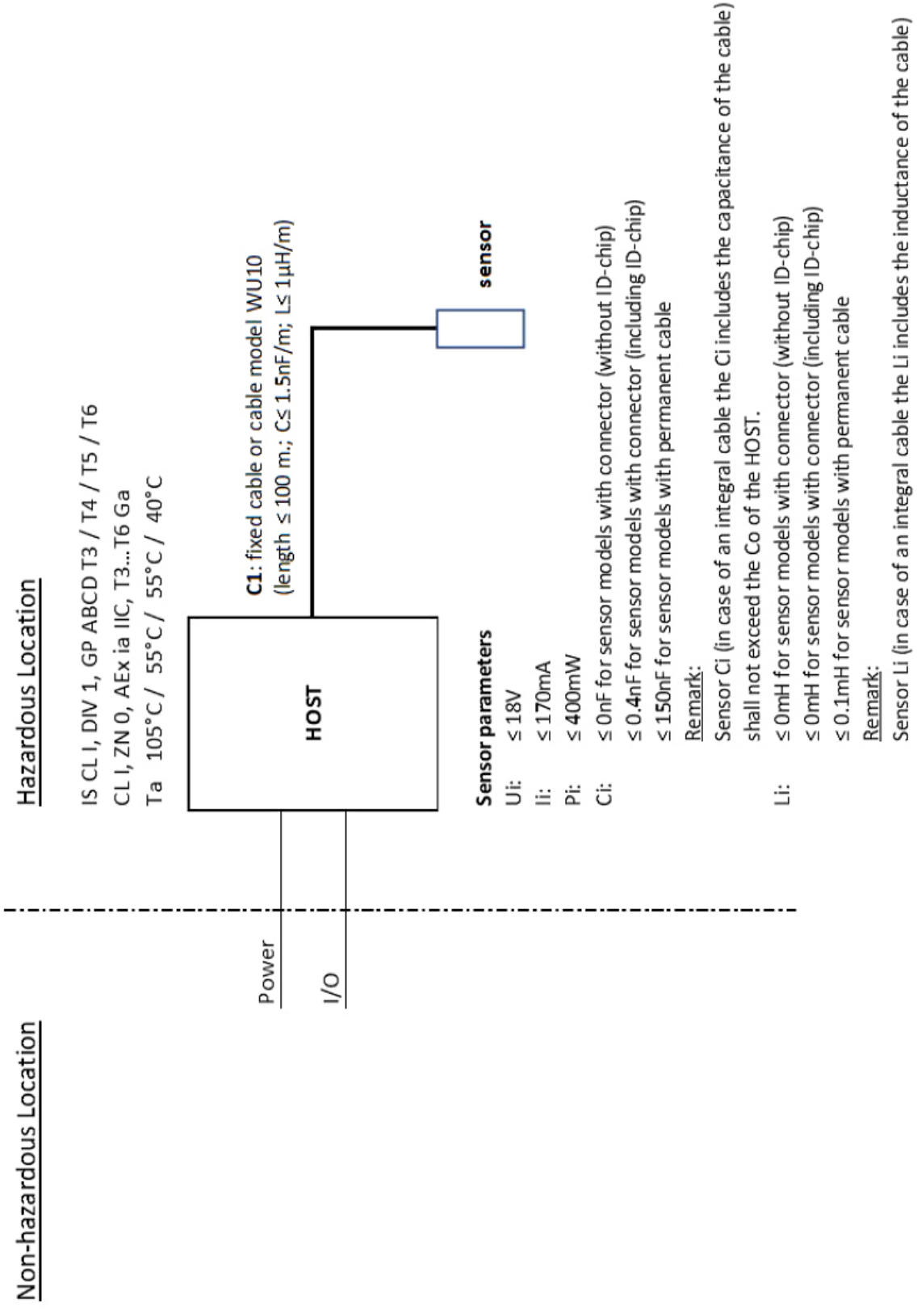
Stainless Steel Flow fitting option /FF K1598AC (incl. 3.1 B certificate) with Adapter K1523JB (Noryl) or K1523JD (SS) to fit sensors with PG13.5 process connection

Addendum 2: Available model codes

MS-code	SC25V-AGP25-120	**SC25V-BGP25-120**
	SC25V-ALP25-120	**SC25V-BLP25-120**
	SC25V-AGP25-225	**SC25V-BGP25-225**
	SC25V-ALP25-225	**SC25V-BLP25-225**

Addendum 3: Control Drawings

Control drawing: D&E 2020-023-A50 *(part 1)*



Remarks:

1. No revision to this drawing without prior approval of FM.

2. Installation must be in accordance with the National Electrical Code (ANSI/NFPA 70), ANSI/ISA-RP12.06.01, and relevant local codes.

3. The sensor shall be installed to a certified intrinsically safe HOST with the following maximum values: Uo= 18 V, Io = 170 mA, Po = 400mW.

4. The sensor does not provide isolation from earth. Installers shall take necessary measures to prevent the possibility of sparking resulting from differing earth potentials between the sensors and interconnecting equipment. This can be realized for example by selecting interconnecting equipment which provides input-to-output and input-to-earth isolation up to 500 V rms.

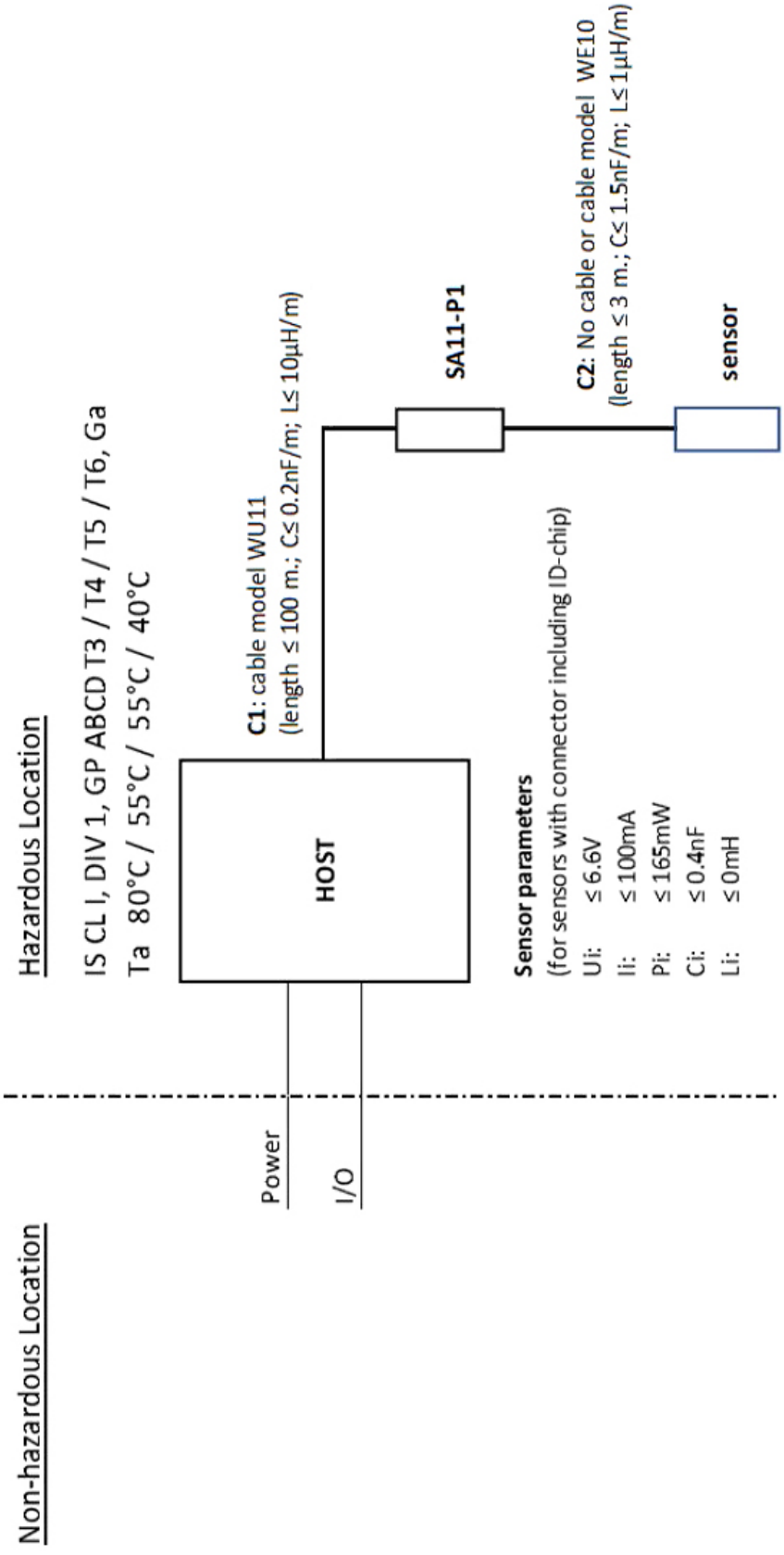
5. **Sensor Model code:**

Model	Suffix Codes	Option Codes
SC25V	- abcde - fgh	/ j

- abcde	Type + Region:	AGP25 Glass body/Straight Thread/Bulb shaped G-glass/without ID-chip/IS for ATEX/IECEx, FM-US, FM-CAN ALP25 Glass body/Straight Thread/Bulb shaped L-glass/without ID-chip/IS or ATEX/IECEx, FM-US, FM-CAN
- fgh	Sensor length:	Up to three alphanumeric characters (0 to 9)
/ j	Option code:	Up to ten alphanumeric characters (A to Z, 0 to 9 or hyphen)

6. **WARNING** - POTENTIONAL ELECTROSTATIC CHARGING HAZARD – (*See Instructions*)
pH sensors containing accessible plastic parts and/or external conductive parts, must be installed and used in such a way, that dangers of ignition due to hazardous electrostatic charges cannot occur, especially in the case that the process medium is non-conductive.

Control drawing: D&E 2020-023-A50 *(part 2)*



Remarks:

1. No revision to this drawing without prior approval of FM.

2. Installation must be in accordance with the National Electrical Code (ANSI/NFPA 70), ANSI/ISA-RP12.06.01, and relevant local codes.

3. The sensor shall be installed to a certified intrinsically safe Smart Adapter, model SA11-P1 with the following maximum values: Uo= 6.6 V, Io = 100 mA, Po = 165 mW..

4. The installers shall take necessary measures to prevent the possibility of sparking resulting from differing earth potentials between the sensors and interconnecting equipment. The sensor itself does not provide 500 V rms isolation from earth, the interconnecting equipment Model SA11-P1 Smart Adapter however provide this required isolation.

5. **Sensor Model code:**

Model	Suffix Codes	Option Codes
SC25V	- abcde - fgh	/ j

- abcde	Type + Region:	BGP25	Glass body/Straight Thread/Bulb shaped G-glass/with ID-chip/IS for ATEX/IECEx, FM-US, FM-CAN
		BLP25	Glass body/Straight Thread/Bulb shaped L-glass/with ID-chip/IS for ATEX/IECEx, FM-US, FM-CAN
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FM-Canada

Applying standards:	CAN/CSA-C22.2 No. 60079-0 CAN/CSA-C22.2 No. 60079-11
Certificate no.*:	FM20CA0062X IS CL I, DIV 1, GP ABCD, T3…T6 CL I, ZN 0, Ex ia IIC, T3…T6 Ga Control Drawing: D&E 2020-023-A51
Electrical data:	(*See Note*)
Specific conditions of use:	See Control Drawing D&E 2020-023-A51.

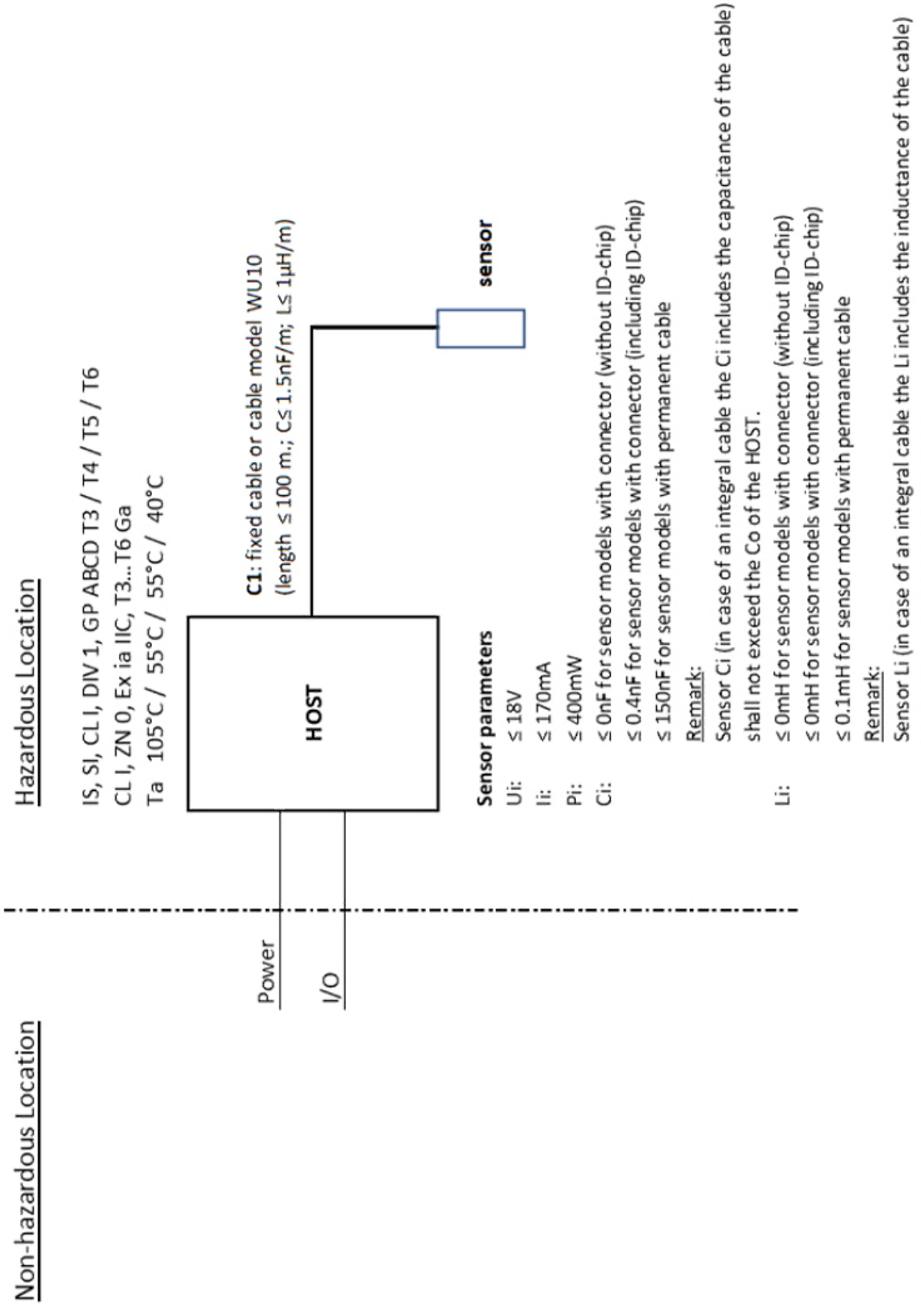
Note: Intrinsically safe, entity, for Class I, Division 1, Groups A, B, C and D; Class I, Zone 0, Ex ia IIC, Ga (entity) for hazardous (classified) locations when installed per control drawing D&E 2020-023-A51.
Sensor input parameters: Ui= 18 V; Ii= 170 mA; Pi= 0.4 W; Li= 0 mH Ci= 0.4 nF (Suffix SC25V-B…with ID chip): Ci= 0 nF (Suffix SC25V-A…without ID-chip)
Ambient temperature: -40 °C to +40 °C for temperature class T6, -40 °C to +55 °C for temperature class T4 and T5, -40 °C to +105 °C for temperature class T3.

When the sensor has been connected to non intrinsically safe equipment which exceeds the restrictions regarding the sensor input circuits, the sensor is not suitable anymore for intrinsically safe use.

* Certification is subject to change, due to new regulations or changes in the product itself. When a certificate is updated, a new revision under the same certificate number is created with a new date.

- **FM-Canada: FM20CA0062X** (effective from 03-2021)

Control drawing: D&E 2020-023-A51 *(part 1)*



Remarks:

1. No revision to this drawing without prior approval of FM.

2. Installation must be in accordance with the Canadian Electrical Code (CEC) CSA22.1, and relevant local codes.

3. The sensor shall be installed to a certified intrinsically safe HOST with the following maximum values:
   Uo= 18 V, Io = 170 mA, Po = 400mW.

4. The sensor does not provide isolation from earth. Installers shall take necessary measures to prevent the possibility of sparking resulting from differing earth potentials between the sensors and interconnecting equipment. This can be realized for example by selecting interconnecting equipment which provides input-to-output and input-to-earth isolation up to 500 V rms.

5. **Sensor Model code:**

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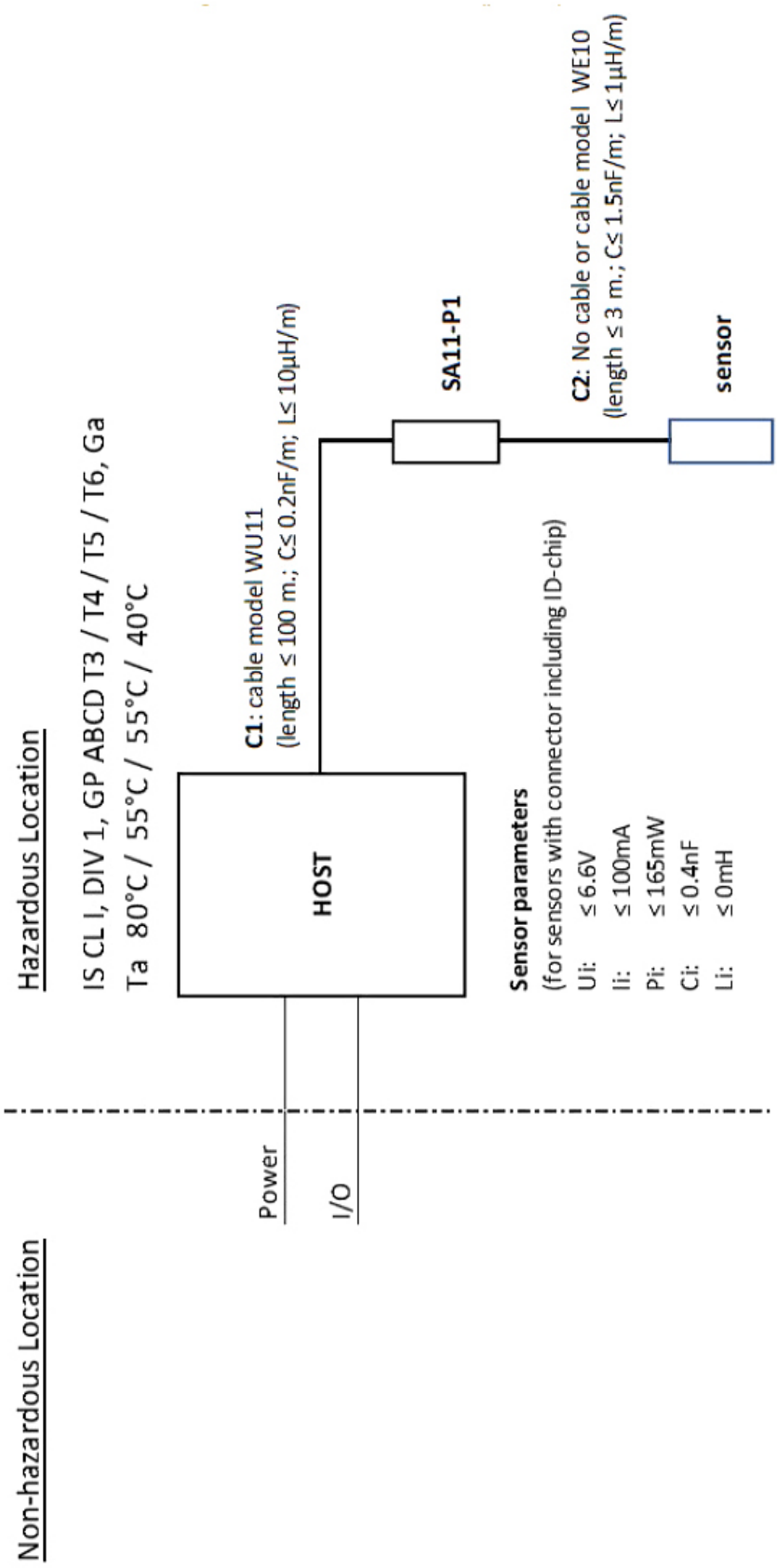
- fgh	Sensor length:	Up to three alphanumeric characters (0 to 9)
/ j	Option code:	Up to ten alphanumeric characters (A to Z, 0 to 9 or hyphen)

6. **WARNING** - POTENTIONAL ELECTROSTATIC CHARGING HAZARD – (*See Instructions*)
   pH sensors containing accessible plastic parts and/or external conductive parts, must be installed and used in such a way, that dangers of ignition due to hazardous electrostatic charges cannot occur, especially in the case that the process medium is non-conductive.

   AVERTISSEMENT - DANGER POTENTIEL DE CHARGES ÉLECTROSTATIQUES – *(Voir Les Instructions)*
   Les sondes de pH contenant des pièces en plastique accessibles et / ou des pièces conductrices externes doivent être installées et utilisées de manière à éviter tout risque d'inflammation dû à des charges électrostatiques dangereuses, en particulier dans le cas où le fluide de procédé n'est pas conducteur.

Control drawing: D&E 2020-023-A51 *(part 2)*



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2. Installation must be in accordance with the Canadian Electrical Code (CEC) CSA22.1, and relevant local codes.

3. The sensor shall be installed to a certified intrinsically safe Smart Adapter, model SA11-P1 with the following maximum values: Uo= 6.6 V, Io = 100 mA, Po = 165 mW..

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