

FM Approved NAMUR Proximity Sensors

NONHAZARDOUS LOCATION

HAZARDOUS (CLASSIFIED) LOCATION

Class I, Division 1, Group A, B, C or D

Class II, Division 1, Group E, F or G

Class III, Division 1

Class I, Zone 0, Group IIC, IIB or IIA



Associated apparatus with linear circuit Entity Parameters $\triangle 1$ compatible with the sensor Entity Parameters listed in Table 1.

+ Turck NAMUR sensor, model numbers listed below, with Entity Parameters $\triangle 1$ as listed in Table 1.

Approved Sensor Model Numbers

Bi 1.5-E G08 K - . Y1 X - H1141/S213

Sensor technology

BC = Capacitive
Bi = Inductive, Embeddable
BIM = Inductive, magnet operated
Ni = Inductive, Nonembeddable
Si = Inductive, slot sensor

Nominal Sensing distance, mm

Housing material (metal cylindrical sensors only)

blank = nickel plated brass
E = Stainless Steel

Mechanical Construction Model Code Per Table 1
(Paired with LED code)

blank = No LED
X = 1 LED
X2 = 2 LEDs

Housing modifier (cylindrical sensors only)

blank = Std. barrel length, no barb
E = Extended barrel length
K = Short barrel length
M = Medium barrel length
T = Barb fitting at cable entry

Number of NAMUR circuits

blank = 1 circuit
2 = 2 circuits

NAMUR sensor output code Y1, Y0, AY1 or AY0

Special Option Codes

See Table 2 for approved codes

Sensors with integral cable

or

Sensors with integral connectors

Cable length*

blank = 2 meter cable
xM = x meter cable

* Sensors with integral cable may include a molded connector indicated by the following additional codes:

picofast connector: PSG(V) 3 or
PSG(V) 3.21

eurofast connector: RS(V) 4.21T

minifast connector: RSM 20 or RSV 20

Wiring: 0 = non-standard (other than 1+/2-)
1 = standard (1+/2-)

Number of pins

Connector/sensor transition

1 = Straight
3 = Straight with adaptor
4 = Right angle with adaptor

Connector family

B1 = minifast, metal
B2 = minifast, plastic
H1 = eurofast
V1 = picofast

Drawing No.:

IS-1.118

TURCK

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Title:

Control Drawing for FM Approved
NAMUR Proximity Sensors

B	Restructure entity parameters	BVL	9/24/13
A	Release	BVL	4/23/12
Rev	Description	Drft	Date

Scale: None

Sheet 1 of 3

Table 1: Entity Parameters by Mechanical Construction Model Codes

Mechanical Construction Model Code	Class I, II, III, Div 1, Grp A, B, C, D, E, F, G T5 Class I, Zone 0, AEx ia IIC T5 $T_a = 70^{\circ}\text{C}$				
	Class I, Div 1, Grp A, B, C, D T4 Class I, Zone 0, AEx ia IIC T4 $T_a = 85^{\circ}\text{C}$ $\triangle 3$				
	C_i (nF)	L_i (uH)	$U_i / V_{\max}$ (V)	$I_i / I_{\max}$ (mA)	P (mW)
AKT, DS20, DSU26, DSU35, DSU35TC, G05, G12, G12SK, G14, G18, G18SK, G180, G182, G19, G28, G30, G30SK, H04, H6.5, H08, HS540, IKE, IKT, INT, ISM, K11, K20, K30, M12, M18, M30, P12, P12SK, P18, P18SK, P30, P30SK, PSM, PST, PT30, Q5.5, Q06, Q10, Q10S, Q11S, Q12, Q14, Q6.5, Q20, QF5.5, S12, S18, S30	150	$\triangle 2$ 150	20	60	200
G12__X, G12SK__X, G18__X, G18SK__X, G19__X, G30__X, G30SK__X, K20__X, M12__X, M18__X, M30__X, P30__X, S18__X, S30__X	150	150	20	40 (T5) 50 (T4)	200
CA25, CA40, CK40, CP40, CP80, G47, G47SR, K33, K34, K34SR, K40, K40SR, K90SR, Q25, Q30, Q80	250	350	20	60	200
K90__X	250	350	20	40	200
G08, GS880, H08, HS865, NST, PSM, PST, Q06, Q08, Q11, QST, DSC26, FST	150	150	20	60	130
K08, K09, K10	250	350	20	60	130
UNT	150	150	20	40	130

Notes:

- $\triangle 1$ The Entity concept allows interconnection of intrinsically safe apparatus and associated apparatus not specifically examined in such combination as a system when the conditions below are met:

$$\begin{aligned}
 V_{\max} &\geq V_{oc} & I_{\max} &\geq I_{sc} \\
 C_i + C_{cable} &\leq C_a & L_i + L_{cable} &\leq L_a \\
 U_i &\geq U_o & I_i &\geq I_o \\
 C_i + C_{cable} &\leq C_o & L_i + L_{cable} &\leq L_o \\
 P_i &\geq P_o
 \end{aligned}$$

- $\triangle 2$ L_i for capacitive sensors (BC.. ...-Y..) is negligibly small.

- $\triangle 3$ Standard T_a is $-25^{\circ}\text{C} - +70^{\circ}\text{C}$. Extended T_a is valid for models with special option codes as follows:

$$\begin{aligned}
 S80 &= T_a -25^{\circ}\text{C} - +80^{\circ}\text{C} \\
 S85 &= T_a -25^{\circ}\text{C} - +85^{\circ}\text{C} \\
 S97 &= T_a -40^{\circ}\text{C} - +70^{\circ}\text{C}
 \end{aligned}$$

- For dual sensors (Mechanical Construction Model Codes DS20, DSC26, DSU26, DSU35, DSU35TC) the Entity Parameters apply per sensor circuit.
- Wiring methods must be in accordance with the National Electrical Code, ANSI/NFPA 70, Article 504 (for Division installations) or Article 505 (for Zone applications), and ANSI/ISA RP12.06.01.
- Associated apparatus must not be connected to any device that uses or generates in excess of 250Vrms.
- If the electrical parameters of the cable are unknown, the following default values may be used:
Capacitance – 60pF/foot,
Inductance – 0.2uH/foot
- WARNING: Part of the enclosure is constructed of plastic. To prevent the risk of electrostatic sparking, the plastic surface should only be cleaned with a damp cloth.
- Sensors that are too small to fit the full intrinsic safety approval marking and also do not have an integral cord, will have an adhesive label included in their packaging. This label should be affixed to an adjacent surface such that it is visible after installation. Wrapped around the cord ultimately used to connect the sensor is suggested as a generally suitable location, though other smooth clean dry locations may also be suitable.

B	Restructure entity parameters	BVL	9/24/13	Drawing No.: IS-1.118	
Rev	Description	Drft	Date	Scale: None	Sheet 2 of 3

Table 3: Special Option Codes

Special Option Code	Description	Special Option Code	Description
F1	Alternate oscillator frequency	S328	Special calibration
F2	Alternate oscillator frequency	S346	Special calibration
F3	Alternate oscillator frequency	S557	Potted terminal chamber
F4	Alternate oscillator frequency	S561	Special pin-out
F5	Alternate oscillator frequency	S580	Special pin-out
S15	Special switch point calibration	S595	Bulk packaging
S56	Special housing length	S665	Special pin-out
S74	Magnetic field resistant/ T_a 100°C	S918	Special calibration
S80	T_a 80°C	S947	Special barrel length
S85	T_a 85°C	S1019	Special mounting bracket
S90	PUR cable	S1128	3-pin connector molded on integral cable
S97	T_a -40°C - +70°C	S1139	T_a -40 C - +70 C
S101	Hi-flex cable	S1589	Weld-Guard coating
S105	Shielded cable	S1631	Red LED
S139	Submersible (polyoxymethylene Housing)	S1674	Special strip length
S213	Special calibration	S1687	Special pin-out
S235	Special calibration	S1764	Weld-Guard coating, Viton cable sleeve
S250	Fixed calibration capacitive sensor	S1765	Weld-Guard coating, silicone cable sleeve
S326	Special calibration	S1775	"Wet=suit"(sensor potted in plastic encl.)