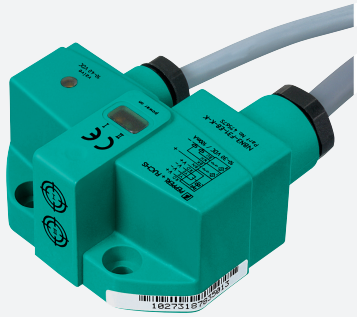
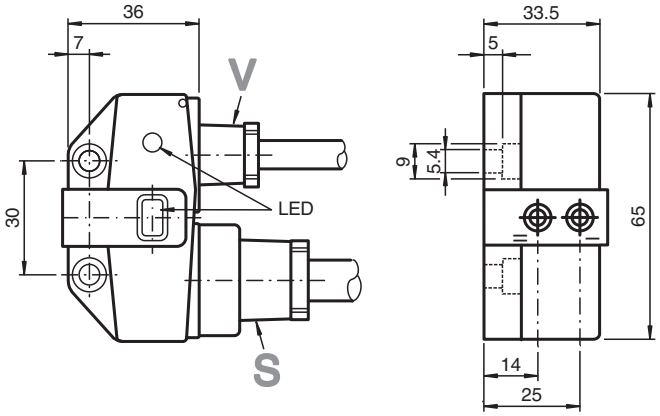


Inductive sensor

NCN3-F31-N4-K-K

- Direct mounting on standard actuators
- Fixed setting
- EC-Type Examination Certificate TÜV99 ATEX 1479X
- Usable up to SIL 2 acc. to IEC 61508

Dimensions



Technical Data

General specifications		
Switching function		2 x normally closed (NC)
Output type		NAMUR
Rated operating distance	s_n	3 mm
Installation		flush mountable
Assured operating distance	s_a	0 ... 2.4 mm
Actual operating distance	s_r	2.7 ... 3.3 mm typ.
Actuating element		Stainless steel 1.4305 / AISI 303 8.5 mm x 8.5 mm x 0.5 mm
Reduction factor r_{Al}		0.5
Reduction factor r_{Cu}		0.4
Reduction factor r_{304}		1
Reduction factor r_{St37}		1.3
Reduction factor r_{Brass}		0.6
Output type		2-wire
Nominal ratings		
Nominal voltage	U_o	8 V

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Switching frequency	f	0 ... 3 kHz
Hysteresis	H	typ. 5 %
Reverse polarity protection		reverse polarity protected
Short-circuit protection		yes
Suitable for 2:1 technology		yes , Reverse polarity protection diode not required
Current consumption		
Measuring plate not detected		≥ 3 mA
Measuring plate detected		≤ 1 mA
Time delay before availability	t_v	≤ 1.1 ms
Switching state indicator		LED, yellow
Valve status indicator		LED, yellow
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
$MTTF_d$		1470 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		0 %
Valve circuit		
Voltage		max. 32 V DC
Current		max. 240 mA
Short-circuit protection		no
Reverse polarity protection		yes, with reversed output LED is out of function, therfore more power for solenoid valve
Compliance with standards and directives		
Standard conformity		
NAMUR		EN 60947-5-6:2000 IEC 60947-5-6:1999
Electromagnetic compatibility		NE 21:2007
Standards		EN 60947-5-2:2007 EN 60947-5-2/A1:2012 IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012
Approvals and certificates		
EAC conformity		TR CU 012/2011
UL approval		cULus Listed, General Purpose
CSA approval		cCSAus Listed, General Purpose
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Ambient temperature		-25 ... 100 °C (-13 ... 212 °F) **Note:** Under the same product name but with a different part no., this product has a predecessor with a restricted temperature range (up to +70 °C). The temperature range specified here (up to +100°C) only applies to sensors with part no. 2239**.
Storage temperature		-40 ... 100 °C (-40 ... 212 °F)
Mechanical specifications		
Connection (system side)		PVC cable , 5 m
Core cross-section (system side)		0.75 mm²
Connection (valve side)		PVC cable , 0.5 m
Core cross-section (valve side)		0.75 mm²
Housing material		PBT
Sensing face		PBT
Degree of protection		IP67
Cable		
Bending radius		> 10 x cable diameter
Data for application in connection with hazardous areas		
Equipment protection level		Ga , Gb , Gc (ic) , Da , Mb
Equipment protection level Ga		

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Type of protection		intrinsic safety
CE marking		[*PD-Z02585A*]
Certificates		
Appropriate type		NCN3-F31-N4...
ATEX certificate		TÜV 99 ATEX 1479 X
ATEX marking		Ex II 1G Ex ia IIC T6...T1 Ga
Standards		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
IECEx certificate		IECEx TUN 17.0021X
IECEx marking		Ex ia IIC T6...T1 Ga
Standards		IEC 60079-0:2011 , IEC 60079-11:2011
Effective internal capacitance	C_i	max. 100 nF The value is applicable for one sensor circuit. A cable length of 10 m is considered.
Effective internal inductance	L_i	max. 100 µH The value is applicable for one sensor circuit. A cable length of 10 m is considered.
Maximum permissible ambient temperature	T_{amb}	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values.
for ATEX		at U_i = 15 V , I_i = 25 mA , P_i = 34 mW , T6 : 55 °C (131 °F) T5 : 70 °C (158 °F) T4 : 95 °C (203 °F) T3 : 95 °C (203 °F) T2 : 95 °C (203 °F) T1 : 95 °C (203 °F) at U_i = 15 V , I_i = 25 mA , P_i = 64 mW , T6 : 55 °C (131 °F) T5 : 70 °C (158 °F) T4 : 95 °C (203 °F) T3 : 95 °C (203 °F) T2 : 95 °C (203 °F) T1 : 95 °C (203 °F) at U_i = 15 V , I_i = 52 mA , P_i = 169 mW , T6 : 50 °C (122 °F) T5 : 60 °C (140 °F) T4 : 90 °C (194 °F) T3 : 90 °C (194 °F) T2 : 90 °C (194 °F) T1 : 90 °C (194 °F)
for IECEx		at U_i = 15 V , I_i = 25 mA , P_i = 34 mW , T6 : 75 °C (167 °F) T5 : 90 °C (194 °F) T4 : 100 °C (212 °F) T3 : 100 °C (212 °F) T2 : 100 °C (212 °F) T1 : 100 °C (212 °F) at U_i = 15 V , I_i = 25 mA , P_i = 64 mW , T6 : 75 °C (167 °F) T5 : 90 °C (194 °F) T4 : 100 °C (212 °F) T3 : 100 °C (212 °F) T2 : 100 °C (212 °F) T1 : 100 °C (212 °F) at U_i = 15 V , I_i = 52 mA , P_i = 169 mW , T6 : 65 °C (149 °F) T5 : 80 °C (176 °F) T4 : 90 °C (194 °F) T3 : 90 °C (194 °F) T2 : 90 °C (194 °F) T1 : 90 °C (194 °F)
Maximum values of the valve circuit		The value applies to each valve circuit. A cable length of 10 m is considered.
Voltage	U_i	max. 32 V
Current	I_i	max. 240 mA
Internal capacitance	C_i	max. 10 nF
Internal inductance	L_i	max. 20 µH
Equipment protection level Gb		
Type of protection		intrinsic safety
CE marking		[*PD-Z02585A*]
Certificates		

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Appropriate type		NCN3-F31-N4...
ATEX certificate		TÜV 99 ATEX 1479 X
ATEX marking		⟨Ex⟩ II 1G Ex ia IIC T6…T1 Ga
Standards		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
IECEx certificate		IECEx TUN 17.0021X
IECEx marking		Ex ia IIC T6...T1 Ga
Standards		IEC 60079-0:2011 , IEC 60079-11:2011
Effective internal capacitance	C_i	max. 100 nF The value is applicable for one sensor circuit. A cable length of 10 m is considered.
Effective internal inductance	L_i	max. 100 µH The value is applicable for one sensor circuit. A cable length of 10 m is considered.
Maximum permissible ambient temperature	T_{amb}	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. at U_i = 15 V , I_i = 25 mA , P_i = 34 mW , T6 : 75 °C (167 °F) T5 : 90 °C (194 °F) T4 : 100 °C (212 °F) T3 : 100 °C (212 °F) T2 : 100 °C (212 °F) T1 : 100 °C (212 °F) at U_i = 15 V , I_i = 25 mA , P_i = 64 mW , T6 : 75 °C (167 °F) T5 : 90 °C (194 °F) T4 : 100 °C (212 °F) T3 : 100 °C (212 °F) T2 : 100 °C (212 °F) T1 : 100 °C (212 °F) at U_i = 15 V , I_i = 52 mA , P_i = 169 mW , T6 : 65 °C (149 °F) T5 : 80 °C (176 °F) T4 : 90 °C (194 °F) T3 : 90 °C (194 °F) T2 : 90 °C (194 °F) T1 : 90 °C (194 °F)
Maximum values of the valve circuit		The value applies to each valve circuit. A cable length of 10 m is considered.
Voltage	U_i	max. 32 V
Current	I_i	max. 240 mA
Internal capacitance	C_i	max. 10 nF
Internal inductance	L_i	max. 20 µH
Equipment protection level Gc (ic)		
Type of protection		intrinsic safety
CE marking		[*PD-Z02586A*]
Certificates		
ATEX certificate		PF13CERT2895 X
ATEX marking		⟨Ex⟩ II 3G Ex ic IIC T6…T1 Gc
Standards		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
Effective internal capacitance	C_i	max. 100 nF The value is applicable for one sensor circuit. A cable length of 10 m is considered.
Effective internal inductance	L_i	max. 100 µH The value is applicable for one sensor circuit. A cable length of 10 m is considered.

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Maximum permissible ambient temperature	T_{amb}	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. at U_i = 20 V , I_i = 25 mA , P_i = 34 mW , T6 : 75 °C (167 °F) T5 : 90 °C (194 °F) T4 : 100 °C (212 °F) T3 : 100 °C (212 °F) T2 : 100 °C (212 °F) T1 : 100 °C (212 °F) at U_i = 20 V , I_i = 25 mA , P_i = 64 mW , T6 : 75 °C (167 °F) T5 : 90 °C (194 °F) T4 : 100 °C (212 °F) T3 : 100 °C (212 °F) T2 : 100 °C (212 °F) T1 : 100 °C (212 °F) at U_i = 20 V , I_i = 52 mA , P_i = 169 mW , T6 : 65 °C (149 °F) T5 : 80 °C (176 °F) T4 : 90 °C (194 °F) T3 : 90 °C (194 °F) T2 : 90 °C (194 °F) T1 : 90 °C (194 °F)
Maximum values of the valve circuit		The value applies to each valve circuit. A cable length of 10 m is considered.
Voltage	U_i	max. 32 V
Current	I_i	max. 240 mA
Internal capacitance	C_i	max. 10 nF
Internal inductance	L_i	max. 20 µH
Equipment protection level Da		
Type of protection		intrinsic safety
CE marking		[*PD-Z02585A*]
Certificates		
Appropriate type		NCN3-F31-N4-K...
ATEX certificate		TÜV 99 ATEX 1479 X
ATEX marking		Ⓔx II 1D Ex ia IIIC T135°C Da
Standards		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
IECEx certificate		IECEx TUN 17.0021X
IECEx marking		Ex ia IIIC T135°C Da
Standards		IEC 60079-0:2011 , IEC 60079-11:2011
Effective internal capacitance	C_i	max. 100 nF A cable length of 10 m is considered.
Effective internal inductance	L_i	max. 100 µH A cable length of 10 m is considered.
Maximum permissible ambient temperature	T_{amb}	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. at U_i = 15 V , I_i = 25 mA , P_i = 34 mW : 100 °C (212 °F) at U_i = 15 V , I_i = 25 mA , P_i = 64 mW : 100 °C (212 °F) at U_i = 15 V , I_i = 52 mA , P_i = 169 mW : 90 °C (194 °F)
Maximum values of the valve circuit		The value applies to each valve circuit. A cable length of 10 m is considered.
Voltage	U_i	max. 32 V
Current	I_i	max. 240 mA
Internal capacitance	C_i	max. 10 nF
Internal inductance	L_i	max. 20 µH
Equipment protection level Mb		
Type of protection		intrinsic safety
CE marking		[*PD-Z02585A*]
Certificates		
Appropriate type		NCN3-F31-N4...
IECEx certificate		IECEx TUN 17.0021X
IECEx marking		Ex ia I Mb
Standards		IEC 60079-0:2011 , IEC 60079-11:2011

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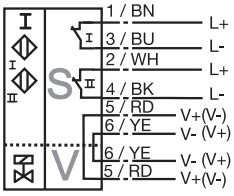
Effective internal capacitance	C_i	max. 100 nF The value is applicable for one sensor circuit. A cable length of 10 m is considered.
Effective internal inductance	L_i	max. 100 µH The value is applicable for one sensor circuit. A cable length of 10 m is considered.
Maximum permissible ambient temperature	T_{amb}	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. at U_i = 15 V , I_i = 25 mA , P_i = 34 mW : 100 °C (212 °F) at U_i = 15 V , I_i = 25 mA , P_i = 64 mW : 100 °C (212 °F) at U_i = 15 V , I_i = 52 mA , P_i = 169 mW : 90 °C (194 °F)
Maximum values of the valve circuit		The value applies to each valve circuit. A cable length of 10 m is considered.
Voltage	U_i	max. 32 V
Current	I_i	max. 240 mA
Internal capacitance	C_i	max. 10 nF
Internal inductance	L_i	max. 20 µH
General information		
Use in the hazardous area		see instruction manuals

Connection

N4-K-K



Matching system components

	**BT115A**	Activator for F31 series
	**BT115X**	Activator for F31 series

Accessories

	**BT65B**	Activator for F31 series
	**BT115B**	Activator for F31 series
	**BT65A**	Activator for F31 series
	**BT65X**	Activator for F31 series

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