



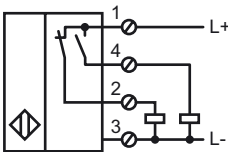
Model Number

NCB50-FP-A2-P1-3G-3D

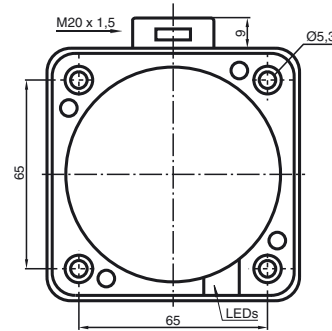
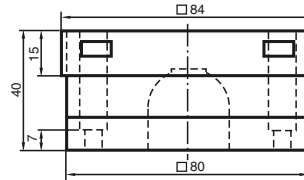
Features

- 50 mm embeddable
- 4-wire DC

Connection



Dimensions



Technical Data

General specifications

Switching element function	PNP	NO/NC
Rated operating distance	s_n	50 mm
Installation		embeddable
Output polarity		DC
Assured operating distance	s_a	0 ... 40.5 mm
Reduction factor r_{Al}		0.38
Reduction factor r_{Cu}		0.35
Reduction factor r_{303}		0.83

Nominal ratings

Operating voltage	U_B	10 ... 60 V DC
Switching frequency	f	0 ... 80 Hz
Hysteresis	H	typ. 3 %
Reverse polarity protected		reverse polarity protected
Voltage drop	U_d	≤ 3 V
Operating current	I_L	0 ... 200 mA
Off-state current	I_r	0 ... 0.5 mA
No-load supply current	I_0	≤ 20 mA
Operating voltage display		LED, green
Indication of the switching state		LED, yellow

Ambient conditions

Ambient temperature		-25 ... 70 °C (-13 ... 158 °F)
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Mechanical specifications

Connection type	screw terminals
Core cross-section	up to 2.5 mm ²
Housing material	PBT
Sensing face	PBT
Protection degree	IP67

General information

Use in the hazardous area	see instruction manuals
Category	3G; 3D

Compliance with standards and directives

Standard conformity	
Standards	EN 60947-5-2:2007 IEC 60947-5-2:2007

Approvals and certificates

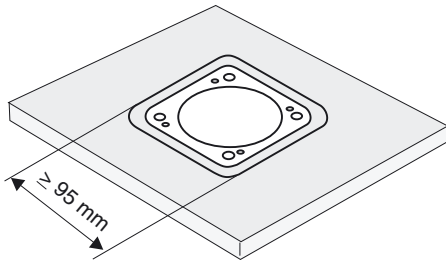
UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose
CCC approval	Certified by China Compulsory Certification (CCC)

Release date: 2011-07-25 15:50 Date of issue: 2011-07-25 129866_eng.xml

Installation hint



These sensors are especially designed for embeddable mounting in conveyor floors. Due to its precise location in metal base plates the sensor is afforded a high degree of mechanical protection. No clearance is required between the sensor and the base plate, avoiding the need for protective guarding to prevent possible foot injury.

The large sensing range ensures positive detection, and thus provides consistent control and monitoring of the conveyor.





Warning!
Once the metal screening has been removed, the sensor can no longer be embeddable mounted.



ATEX 3G (nA)

Instruction	Manual electrical apparatus for hazardous areas
Device category 3G (nA)	for use in hazardous areas with gas, vapour and mist
Directive conformity	94/9/EG
Standard conformity	EN 60079-0:2006, EN 60079-15:2005
CE symbol	Ignition protection category "n" Use is restricted to the following stated conditions 
Ex-identification	 II 3G Ex nA IIC T6 X
General	The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual. The data stated in the data sheet are restricted by this operating instruction! The special conditions must be observed!
Installation, Commissioning	Laws and/or regulations and standards governing the use or intended usage goal must be observed.
Maintenance	No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible.
Special conditions	
Maximum operating current I_L	The maximum permissible load current must be restricted to the values given in the following list. High load currents and load short-circuits are not permitted.
Maximum operating voltage U_{Bmax}	The maximum permissible operating voltage U_B max is restricted to the values in the following list. Tolerances are not permissible.
Maximum permissible ambient temperature T_{Umax}	dependant of the load current I_L and the max. operating voltage U_{Bmax} . Information can be taken from the following list.
at $U_{Bmax}=60$ V, $I_L=200$ mA	44 °C (111.2 °F)
at $U_{Bmax}=60$ V, $I_L=100$ mA	45 °C (113 °F)
at $U_{Bmax}=60$ V, $I_L=25$ mA	47 °C (116.6 °F)
at $U_{Bmax}=30$ V, $I_L=200$ mA	50 °C (122 °F)
at $U_{Bmax}=30$ V, $I_L=100$ mA	53 °C (127.4 °F)
at $U_{Bmax}=30$ V, $I_L=50$ mA	56 °C (132.8 °F)
Plug connector	The plug connector must not be disconnected under voltage. The proximity switch is marked as follows: "DO NOT DISCONNECT UNDER VOLTAGE!" When the plug connector is disconnected the ingress of dirt into the inner areas (i.e. the areas, which are not accessible in the plugged-in condition) must be prevented.
Protection from mechanical danger	The sensor must not be exposed to ANY FORM of mechanical danger.
Protection from UV light	The sensor and the connection cable must be protected from damaging UV-radiation. This can be achieved when the sensor is used in internal areas.
Electrostatic charging	When used in group IIC non-permissible electrostatic charges should be avoided on the plastic housing parts. Electrostatic charges must be avoided on the mechanical housing components. Dangerous electrostatic charges on the mechanical housing components can be avoided by incorporating these in the equipotential bonding. The apparatus is provided with an outer lacquered metallic screen, which must be protected from electrostatic charging.
Connections for external wire	Terminal connection: Minimum conductor cross-section: 0.5 mm ² , maximum conductor cross-section: 2.5 mm ² . The ends of the conductor must be provided with cable sleeves.
Lead insertion	The cable entry must be such, that no tension load or twist is applied to the cable The protection category must be in accordance with EN 60529 and as stated in the data sheet. The cable entry must be designed so that there are no sharp edges to damage the cable and impair the level of protection of the sensor. The cable entry must be in accordance with the relevant European standard for industrial cable and lead entries. In addition, in the case of flexible leads, the points of entry of the cable must be rounded off over an angle of at least 75°, with a radius (R), which is at least one quarter of the maximum permissible cable diameter for the entry, but not greater than 3 mm.

ATEX 3D

Note	This instruction is only valid for products according to EN 50281-1-1, valid until 30-September-2008 Note the ex-marking on the sensor or on the enclosed adhesive label
Instruction	Manual electrical apparatus for hazardous areas
Device category 3D	for use in hazardous areas with non-conducting combustible dust
Directive conformity	94/9/EG
Standard conformity	EN 50281-1-1 Protection via housing Use is restricted to the following stated conditions
CE symbol	
Ex-identification	 II 3D IP67 T 95 °C (203 °F) X
General	The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual. The data stated in the data sheet are restricted by this operating instruction! The special conditions must be adhered to! Laws and/or regulations and standards governing the use or intended usage goal must be observed.
Installation, Commissioning	No changes can be made to apparatus, which are operated in hazardous areas.
Maintenance	Repairs to these apparatus are not possible.
Special conditions	
Maximum operating current I_L	The maximum permissible load current must be restricted to the values given in the following list. High load currents and load short-circuits are not permitted.
Maximum operating voltage U_{Bmax}	The maximum permissible operating voltage U_{Bmax} must be restricted to the values given in the following list. Tolerances are not permitted.
Maximum heating (Temperature rise)	dependant of the load current I_L and the max. operating voltage U_{Bmax} . Information can be taken from the following list. The maximum surface temperature at maximum ambient temperature is given in the Ex identification of the apparatus.
at $U_{Bmax}=60\text{ V}$, $I_L=200\text{ mA}$	25 K
at $U_{Bmax}=60\text{ V}$, $I_L=100\text{ mA}$	24 K
at $U_{Bmax}=60\text{ V}$, $I_L=25\text{ mA}$	22 K
at $U_{Bmax}=30\text{ V}$, $I_L=200\text{ mA}$	19 K
at $U_{Bmax}=30\text{ V}$, $I_L=100\text{ mA}$	16 K
at $U_{Bmax}=30\text{ V}$, $I_L=50\text{ mA}$	14 K
Plug connector	The plug connector must not be disconnected under voltage. The proximity switch is marked as follows: "DO NOT DISCONNECT UNDER VOLTAGE!" When the plug connector is disconnected the ingress of dirt into the inner areas (i.e. the areas, which are not accessible in the plugged-in condition) must be prevented.
Protection from mechanical danger	The sensor must not be mechanically damaged.
Electrostatic charging	Sliding contact discharges must be avoided. The apparatus is provided with an outer lacquered metallic screen, which must be protected from electrostatic charging.
Connections for external wire	Terminal connection: Minimum conductor cross-section: 0.5 mm^2 , maximum conductor cross-section: 2.5 mm^2 . The ends of the conductor must be provided with cable sleeves.
Lead insertion	The cable entry must be such, that no tension load or twist is applied to the cable The protection category must be in accordance with EN 60529 and as stated in the data sheet. The cable entry must be designed so that there are no sharp edges to damage the cable and impair the level of protection of the sensor. The cable entry must be in accordance with the relevant European standard for industrial cable and lead entries.. In addition, in the case of flexible leads, the points of entry of the cable must be rounded off over an angle of at least 75° , with a radius (R), which is at least one quarter of the maximum permissible cable diameter for the entry, but not greater than 3 mm.

ATEX 3D (tD)

Note	This instruction is only valid for products according to EN 61241-0:2006 and EN 61241-1:2004 Note the ex-marking on the sensor or on the enclosed adhesive label
Instruction	Manual electrical apparatus for hazardous areas
Device category 3D	for use in hazardous areas with combustible dust
Directive conformity	94/9/EG
Standard conformity	EN 61241-0:2006, EN 61241-1:2004 Protection via housing "tD" Use is restricted to the following stated conditions
CE symbol	
Ex-identification	 II 3D Ex tD A22 IP67 T80°C X
General	The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual. The maximum surface temperature has been determined in accordance with method A without a dust layer on the equipment. The data stated in the data sheet are restricted by this operating instruction! The special conditions must be adhered to!
Installation, Commissioning	Laws and/or regulations and standards governing the use or intended usage goal must be observed.
Maintenance	No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible.
Special conditions	
Maximum operating current I_L	The maximum permissible load current must be restricted to the values given in the following list. High load currents and load short-circuits are not permitted.
Maximum operating voltage U_{Bmax}	The maximum permissible operating voltage U_{Bmax} must be restricted to the values given in the following list. Tolerances are not permitted.
Maximum permissible ambient temperature T_{Umax}	dependant of the load current I_L and the max. operating voltage U_{Bmax} . Information can be taken from the following list.
at $U_{Bmax}=60$ V, $I_L=200$ mA	44 °C (111.2 °F)
at $U_{Bmax}=60$ V, $I_L=100$ mA	45 °C (113 °F)
at $U_{Bmax}=60$ V, $I_L=25$ mA	47 °C (116.6 °F)
at $U_{Bmax}=30$ V, $I_L=200$ mA	50 °C (122 °F)
at $U_{Bmax}=30$ V, $I_L=100$ mA	53 °C (127.4 °F)
at $U_{Bmax}=30$ V, $I_L=50$ mA	56 °C (132.8 °F)
Plug connector	The plug connector must not be withdrawn under voltage. The proximity switch is identified as follows: "WARNING - DO NOT SEPARATE WHEN ENERGIZED". With the plug connector disconnected, soiling of the internal area must be prevented. (i.e. the area that is inaccessible when the connector is inserted)
Protection from mechanical danger	The sensor must not be exposed to ANY FORM of mechanical danger.
Protection from UV light	The sensor and the connection cable must be protected from damaging UV-radiation. This can be achieved when the sensor is used in internal areas.
Electrostatic charging	Sliding contact discharges must be avoided. The apparatus is provided with an outer lacquered metallic screen, which must be protected from electrostatic charging.
Connections for external wire	Terminal connection: Minimum conductor cross-section: 0.5 mm ² , maximum conductor cross-section: 2.5 mm ² . The ends of the conductor must be provided with cable sleeves.
Lead insertion	The cable entry must be such, that no tension load or twist is applied to the cable The protection category must be in accordance with EN 60529 and as stated in the data sheet. The requirements of EN 61241-0 relating to the cable and lead entries are to be complied with. The special characteristics of the ignition protection class "tD, method A" of the proximity switch must not be disregarded.