



Model Number

NCN3-F31-B3B-V1-K-3G-3D

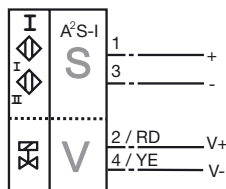
Valve positioner and valve control module

Features

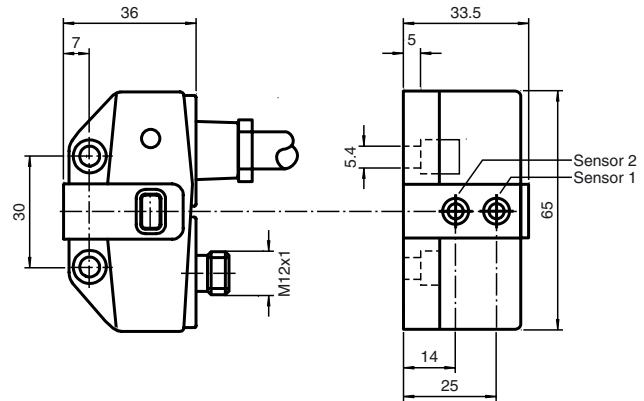
- **A/B slave with extended addressing possibility for up to 62 slaves**
- **Direct mounting on standard actuators**
- **Nominal sensing range 3 mm by V2A target**
- **Mode of operation, programmable**
- **Lead breakage and short-circuit monitoring of the valve**
- **Protection degree IP67**
- **Communication monitoring, turn-off**

Connection

B3B-V1-K



Dimensions



Drawing without actuator

Technical Data

General specifications

Switching element function	programmable
Rated operating distance	s_n 3 mm
Installation	flush mountable
Output polarity	AS-Interface
Assured operating distance	s_a 0 ... 2.43 mm
Reduction factor r_{Al}	0.5
Reduction factor r_{Cu}	0.45
Reduction factor r_{V2A}	1
Reduction factor r_{St37}	1.2

Nominal ratings

Switching frequency	f 0 ... 100 Hz
No-load supply current	I_0 ≤ 35 mA

Indicators/operating means

LED PWR	AS-Interface voltage; LED green
LED IN	switching state (input); LED yellow
LED OUT	binary LED yellow/red yellow: switching state red: lead breakage/short-circuit

Electrical specifications

Rated operational voltage	U_e 26.5 ... 31.6 V from AS-Interface
Rated operational current	I_e 100 mA

Ambient conditions

Ambient temperature	-25 ... 70 °C (248 ... 343 K)
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Mechanical specifications

Connection (system side)	connector M12 x 1, 4-pin
Connection (valve side)	0.5 m, PVC cable
Core cross-section (valve side)	0.75 mm ²
Protection degree	IP67
Material	
Housing	PBT
Note	valve voltage limited to 26,4 V max.; valve power 2,5 W max.

General information

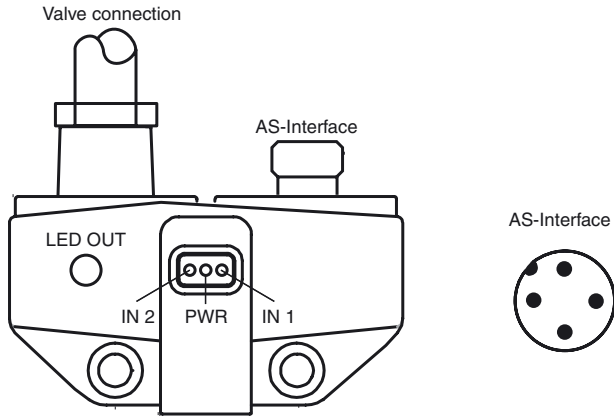
Use in the hazardous area	see instruction manuals
Category	3G; 3D

Compliance with standards and directives

Standard conformity	
Standards	EN 60947-5-2:2007 IEC 60947-5-2:2007 EN 50295:1999-10

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Installation hint



Programming Instructions

Address 00 preset, alterable via Busmaster or programming units
 IO-code D
 ID-code A
 ID1-code 7
 ID2-code E

Data bit

Bit	Function
D0	valve status (0=valve OFF, 1=valve ON)
D1	valve fault ¹⁾ (0=lead breakage/short circuit; 1=no fault)
D2	switch output sensor 1 ²⁾ (0=damped; 1=undamped)
D3	switch output sensor 2 ²⁾ (0=damped; 1=undamped)

Parameter bit

Bit	Function
P0	Watchdog (0=inactive; 1=active) ³⁾
P1	switching element function sensor II ⁴⁾ 0=NO; 1= NC)
P2	switching element function sensor I ⁴⁾ 0=NO; 1= NC)
P3	not used

- 1) Verification only with actuated valve (D0=1)
- 2) Applies to NC function (P2/P3=1; preset), with NO function (P2/P3=0) reversed characteristics
- 3) Watchdog active: valve voltage drops with the occurrence of an AS-I communication fault
- 4) Default setting: NC

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ATEX 3G (nA)

Instruction

Manual electrical apparatus for hazardous areas**Device category 3G (nA)**

Directive conformity

Standard conformity

CE symbol

Ex-identification

General

Installation, Commissioning

Maintenance

Special conditions

Maximum operating current I_L Maximum operating voltage U_{Bmax} 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 $U_{Bmax}=31.6$ V, $I_L=100$ mAat $U_{Bmax}=31.6$ V, $I_L=20$ mA

Plug connector

Protection from mechanical danger

Protection from UV light

Protection of the connection cable

for use in hazardous areas with gas, vapour and mist

94/9/EG

EN 60079-0:2006, EN 60079-15:2005

Ignition protection category "n"

Use is restricted to the following stated conditions

CE

Ex II 3G Ex nA IIC T6 X

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!

Laws and/or regulations and standards governing the use or intended usage goal must be observed.

No changes can be made to apparatus, which are operated in hazardous areas.

Repairs to these apparatus are not possible.

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.

The maximum permissible operating voltage U_{Bmax} is restricted to the values in the following list. Tolerances are not permissible.

32 °C

43 °C



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)

The sensor must not be exposed to **ANY FORM** of mechanical danger.

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.

The connection cable must be prevented from being subjected to tension and torsional loading.

ATEX 3D (tD)

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	dependant of the load current I_L and the max. operating voltage U_{Bmax} . Information can be taken from the following list.
at $U_{Bmax}=31.6\text{ V}$, $I_L=100\text{ mA}$	32 °C
at $U_{Bmax}=31.6\text{ V}$, $I_L=20\text{ mA}$	43 °C
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) The plug connection can only be separated using a tool. This is achieved by using the locking protection V1-Clip (Mounting accessory from Pepperl + Fuchs).
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.
Protection of the connection cable	The connection cable must be prevented from being subjected to tension and torsional loading.

The NCN3-F31-B3B-V1-K is an inductive dual sensor used to indicate the valve positioning of actuators. The dual sensor is mounted directly on the actuator using two screws. Additional adjustment is not necessary.

A cable connection on the sensor is used directly for the valve controls. The NCN3-F31-B3B-V1-K is connected via a M12x1 screw fixing to the bus line. This makes it possible to transmit both the switch signal for the valve and the messages of the sensors via AS-Interface. They are both powered directly through the bus cable. Moreover, the valve is monitored for lead breakage and short circuit. The D1 data bit monitors the fault signal.

The sensors can be programmed as normally closed and normally open contacts (parameter bit P1 and P2). If there are no communications on the bus cable, the valve is automatically de-energised. This communication monitoring can be turned off via the parameter bit P0.

The current switching states are displayed by means of yellow LEDs.