OPERATORS

intrinsically safe
II 1G Ex **ia** IIC T6 Ga,
II 2D Ex **tb** IIIC T85°C Db IP66 / IP67
aluminium or stainless steel enclosure

Series

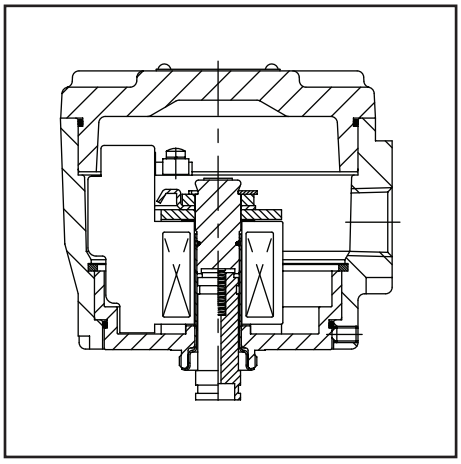
NFIS
WSNFIS

FEATURES

- *Explosion proof operator, intended for use in potentially explosive atmospheres, according to Directive ATEX 2014/34/EU*
- *EC type examination certificate (LCIE 12 ATEX 3031X) and IECEx certificate (IECEx LCI 12.0012X) are in compliance with the International and European Standards IEC and EN: 60079-0, 60079-11, 60079-31*
- *This highly efficient solenoid operates at very low power level (0.5W)*
- *The continous duty class H moulded coil contains moulded in solid state components for switch-off peak voltage suppression, independent polarity connection and electronic enhancement (booster)*
- *Ingress protection degree IP66 & IP67 according to IEC 60529*

CONSTRUCTION

Solenoid enclosure	NFIS	Chromated aluminium, epoxy coated
	WSNFIS	Stainless steel (AISI 316L SS)
Bonnet	NFIS	Steel (zinc plated)
	WSNFIS	Stainless steel (AISI 316L SS)
Core, tube, springs & plugnut	all	Stainless steel
Nameplate	all	Stainless steel
	all	Stainless steel
Coil connection	all	Embedded screws terminals
Fasteners & screws	all	Stainless steel



ELECTRICAL CHARACTERISTICS

Standard voltages
DC (=) : 24V nominal

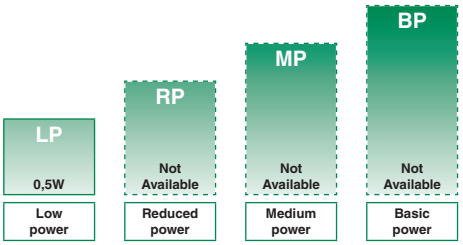
NOTE: Refer to page 3 for more detailed electrical characteristics information.

SAFETY CODE

NFIS[(1)]**:**
II 1G Ex ia IIC T6 Ga (gas)
II 2D Ex tb IIIC T85°C Db IP66/67 (dust)
WSNFIS:
II 1G Ex ia IIC T6 Ga (gas)
II 2D Ex tb IIIC T85°C Db IP66/67 (dust)

⚠ [(1)] **Shall be protected against any impact or friction, see installation conditions given in the I&M sheets**

prefix option	safety parameters				
	U_i = (DC)	I_i	P_i	L_i	C_i
	(V)	(mA)	(W)	(mH)	(µF)
Low power (LP)					
NFIS	< 32	500	1,5	0	0
WSNFIS	< 32	500	1,5	0	0



POWER LEVELS - cold electrical holding values (watt)

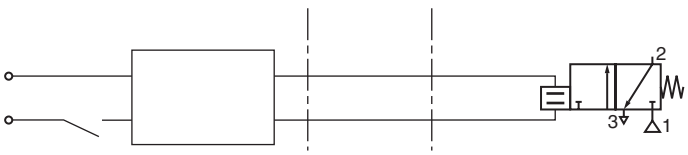
TEMPERATURE CLASSIFICATION TABLES

The minimum allowable ambient temperature is -40°C for the operator.
Select the requested "T" classification from the temperature classification table respecting the maximum ambient temperature and cold (20°C) electrical holding power values.

DC (=) Solenoids

power level (watt)	insulation class	maximum ambient [(1)] temp. "T" classification		
		T6 (G) 85°C (D)	T5 (G) 100°C (D)	T4 (G) 135°C (D)
Low power (LP)				
0,5	H	60°C	-	-

Example of use with a Zener barrier installed in a non-hazardous zone:
safe area (RS interface) **cable** **explosive area**



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PREFIX TABLE

prefix							description	power level			
1	2	3	4	5	6	7		LP	RP	MP	BP
N W	F S	N E T	F T	I I	S S		I.S. with Aluminium IP67 enclosure (EN/IEC 60079-11+26, 61241-11)*	❍	-	-	-
							I.S. with 316 SS IP67 enclosure (EN/IEC 60079-11+26, 61241-11)*	❍	-	-	-
							Threaded conduit/hole (M20 x 1,5)	❍	-	-	-
							Threaded conduit (1/2" NPT)	❍	-	-	-
						X	Other special constructions	❍	-	-	-

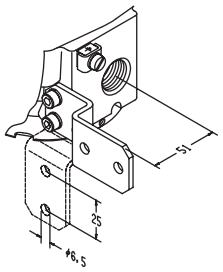
❍ Available feature in DC only
- Not available
* ATEX solenoids are also approved according to EN 13463-1 (non electrical valves)

ORDERING EXAMPLES VALVES:

NFIS 8 327B301 24V / DC
WSNFIS G 327B302 24V / DC

prefix
pipe thread
basic number
voltage

MOUNTING BRACKET



Bracket kit no.: C139824 contains: Stainless steel 316 SS screws and bracket

PRODUCT SELECTION GUIDE

(The selection can only be made in conjunction with the appropriate valve catalogue sheet)

STEP 1
Select basic valve catalogue number, including pipe thread indentification letter from one of the specification tables on the separate catalogue pages.
Example: 8327B302 MB

STEP 2
Select voltage. Refer to standard voltages on page 1.
Example: 24V DC

STEP 3
Select solenoid prefix (combination). Refer to the prefix table on this page and respect the indicated power level, cold electrical holding values and "T" classification mentioned on page 1.
NOTE: Make sure that the ambient temperature does not exceed the allowable valve temperature characteristics.

Example:
WSNFIS
60°C ambient
Low Power (LP) 0.5W
II 1G Ex ia IIC T6 Ga
II 2D Ex tb IIIC T85°C Db IP66/67

STEP 4
Final catalogue / ordering number.
Example:
WSNFIS 8327B302 MB 24V DC

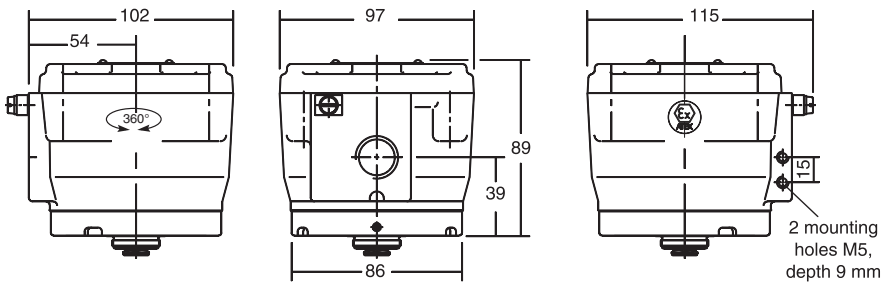
ADDITIONAL OPTIONS

- Brass nickel plated or stainless steel cable gland
- Conduit hub, 1/2"NPT, M20x1,5, 3/4"NPT or M25x1,5 in aluminium or stainless steel

INSTALLATION

- Multi language installation/maintenance instructions are included with each valve
- The solenoid operator can be mounted in any position without affecting operation
- Application of the operator, located within hazardous areas, is not permitted without the addition of an approved and classified device (such as barriers) located between the safe and hazardous area
- The operator can be rotated 360° to select the most favourable position for cable entry
- Solenoid enclosure has a cable gland with integral strain relief for cables with an o.d. from 7 to 12 mm and is provided with an internal and external connection facility for an earthing or bonding conductor

DIMENSIONS (mm), WEIGHT (kg)



prefix	weight
NFIS	1,4 kg
WSNFIS	2,7 kg

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RECOMMENDED INTERFACES

Located in safe areas, these interfaces allow to feed the intrinsically safe solenoid valves located in explosive areas.
This equipment must be ordered from its respective manufacturers, specifying that they are intended to feed intrinsically safe solenoid operators:
NFIS [1] : II1G Ex ia IIC T6 Ga, II 2D Ex tb IIIC T85°C Db IP66/67
WSNFIS : II1G Ex ia IIC T6 Ga, II 2D Ex tb IIIC T85°C Db IP66/67

BARRIERS / INTERFACES		
manufacturer	**module type**	**1G/2G T6 IIC**
Bartec	17-1834	x
MTL	MTL7728+	x
	MTL7787+	x
	MTL5521	x
	MTL5523	x
	MTL5524	x
	MTL5525	x
Pepperl + Fuchs	KCD2-SLD-Ex1.1245	x
	KFD2-SL2-Ex1	x
	KFD2-SL2-Ex2	x
	KFD2-SL2-Ex1.B	x
	KFD2-SL2-Ex2.B	x
	KFD2-SL2-Ex1.LK	x
	KFD0-SD2-Ex1.1045	x
	KFD0-SD2-Ex2.1045	x
	KFC0-SD2-Ex1.1245	x
	KFC0-SD2-Ex2.1245	x
Turck	DO40Ex	x
	MK72-S19-EX0/24VDC	x

In accordance with the zone classification and the national legislation of each country, apply the certification procedures for the connection of IS-rated products with associated equipment. All information subject to change without notice. All responsibility for the use of products from other suppliers and the possible modifications of their characteristics is disclaimed.

⚠ [1] **Shall be protected against any impact or friction, see installation conditions given in the I&M sheets**

ELECTRICAL CHARACTERISTICS

Standard voltages

DC (=) : 24V nominal
A minimum current of 32 mA is necessary for optimal performance. The minimum series resistance required is 200 Ohms.The nominal value of the resistance of the R_{coil} is 32 Ohms (at 20°C).

Intrinsically Safe Coil Calculations

The following application information will allow the calculation of the loop current for the ASCO intrinsically safe solenoid.

Definitions:

V_{supply} = The supply voltage to the barrier.
$T_{ambient}$ = The ambient temperature in degrees C.
$R_{barrier}$ = The maximum barrier end to end resistance.
R_{loop} = The maximum resistance in lead wire
R_{coil} = The resistance of the solenoid coil at $T_{ambient}$

$$R_{coil} = 32\ \Omega \frac{(T_{amb} + 234)}{254}$$

I_{loop} = Loop current in the circuit:

$$I_{loop} = \frac{(V_{supply} - 3.2)}{(54 + R_{coil} + R_{loop} + R_{barrier})}$$

This current must always be greater than or equal to 32mA for proper operation of the solenoid valve.

ELECTRONIC ENHANCED "IS" SOLENOID

Normal operating voltage	24 Volts, DC +/-10%
Maximum allowable "off" state current to the valve must be	< 1 mA
Maximum capacitor charge time	2 seconds
Minimum time between cycles	2 seconds
Minimum drop current to reset electronic coil	2 mA

Important: A minimum series resistance of 200 Ohms is required in wiring if a safety barrier is not used

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