



**Model Number**

**NBB20-U1-E2-C-V1**

**Features**

- **Sensor head bidirectional and rotatable**
- **20 mm flush**
- **4 LEDs indicator for 360° visibility**
- **For use in direct- and alternating-field welding systems**

**Accessories**

**MHW 01**

Modular mounting bracket

**V1-M20-80**

Receptacles, M12/M20; plastic version

**V1-G**

Female connector, M12, 4-pin, field attachable

**V1-W**

Female connector, M12, 4-pin, field attachable

**Technical Data**

**General specifications**

Switching function	Normally open (NO)
Output type	PNP
Rated operating distance	$s_n$ 20 mm
Installation	flush
Output polarity	DC
Assured operating distance	$s_a$ 0 ... 16.2 mm
Actual operating distance	$s_r$ 18 ... 22 mm typ. 20 mm
Reduction factor $r_{Al}$	0.33
Reduction factor $r_{Cu}$	0.31
Reduction factor $r_{304}$	0.74
Reduction factor $r_{Brass}$	0.41
Output type	3-wire

**Nominal ratings**

Operating voltage	$U_B$ 10 ... 30 V DC
Switching frequency	$f$ 0 ... 5 Hz
Hysteresis	$H$ typ. 5 %
Reverse polarity protection	reverse polarity protected
Short-circuit protection	pulsing
Voltage drop	$U_d$ ≤ 3 V
Design data	
Operating current	$I_L$ 0 ... 200 mA
Off-state current	$I_r$ 0 ... 0.5 mA
No-load supply current	$I_0$ ≤ 20 mA
Time delay before availability	$t_v$ 300 ms
Constant magnetic field	$B$ 150 mT
Alternating magnetic field	$B$ 150 mT
Operating voltage indicator	LED, green
Switching state indicator	LED, yellow

**Functional safety related parameters**

MTTF <sub>d</sub>	1420 a
Mission Time (T <sub>M</sub> )	20 a
Diagnostic Coverage (DC)	0 %

**Ambient conditions**

Ambient temperature	-25 ... 85 °C (-13 ... 185 °F)
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**Mechanical specifications**

Connection type	Connector plug M12 x 1, 4-pin
Housing material	PA/metal with epoxy powder coating
Sensing face	PA
Housing base	plastic
Degree of protection	IP68 / IP69K
Mass	225 g
Note	Tightening torque: 1.8 Nm (housing)

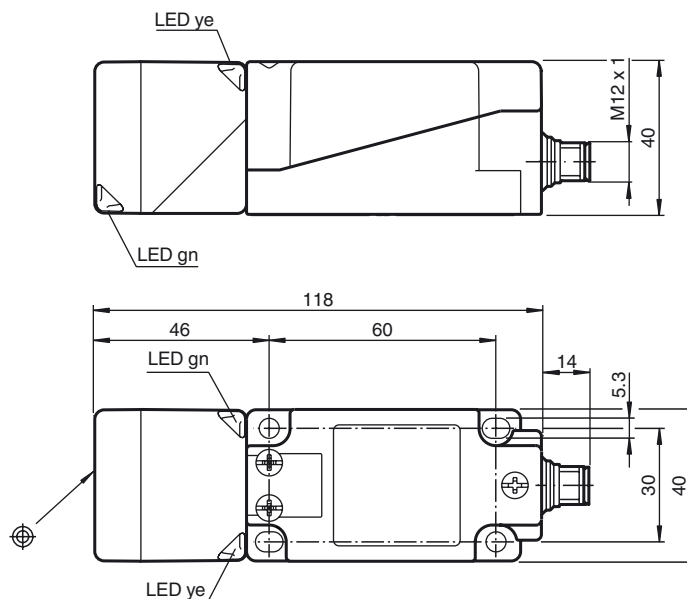
**Compliance with standards and directives**

Standard conformity	
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**

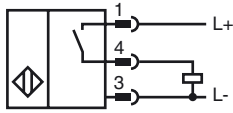
UL approval	cULus Listed, General Purpose
CCC approval	CCC approval / marking not required for products rated ≤36 V

**Dimensions**

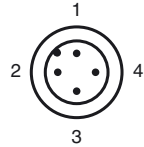


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**Electrical Connection**



**Pinout**



Wire colors in accordance with EN 60947-5-2

1		BN	(brown)
2		WH	(white)
3		BU	(blue)
4		BK	(black)