

1) Output function/Error, 2) Operating voltage, 3) Sn, light/dark, 4) Optical axis receiver, 5) Optical axis emitter, 6) rotatable 270°



IND. CONT. EQ
 77HA
 for use in the secondary of
 a class 2 source of supply



Basic features

Approval/Conformity	CE Ecolab cULus WEEE
Basic standard	IEC 60947-5-2
Principle of operation	Photoelectric sensor
Series	23K
Style	Square Connection can be rotated

Display/Operation

Adjuster	button
Display	Output function- LED yellow LED green: Power Teach - LED yellow+green, alt. Setting NO/NC - LED green, flashing Error - LED yellow, flashing
Setting	Light-on/dark-on Rated switching distance (Sn)

Electrical connection

Connection	Connector, M12x1-Male, 4-pin
Polarity reversal protected	yes
Protection against device mix-ups	yes
Short-circuit protection	yes

Electrical data

Input function	Key disable on/off Same function as button
No-load current I_{o max.} at U_e	30 mA
Operating voltage U_b	10...30 VDC
Rated insulation voltage U_i	75 V DC
Rated operating current I_e	100 mA
Rated operating voltage U_{e DC}	24 V
Ready delay t_{v max.}	300 ms
Residual current I_{r max.}	50 µA
Ripple max. (% of U_e)	10 %
Switching frequency	600 Hz
Turn-off delay t_{off max.}	0.83 ms
Turn-on delay t_{on max.}	0.83 ms
Utilization category	DC -13
Voltage drop U_{d max.} at I_e	2 V

Environmental conditions

Ambient temperature	-20...60 °C
EN 60068-2-27, Shock	Half-sinus, 30 gn, 11 ms, 3x6
EN 60068-2-6, Vibration	10...55 Hz, amplitude 0.5 mm, 3x30 min
IP rating per DIN 40050	IPx9K
Protection degree	IP6x

Functional safety

MTTF (40 °C)	380 a
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Material

Housing material	PC ABS
Material sensing surface	PMMA

Remarks

Teach-in also possible when object is in motion.
 Reference object (target): gray card, 200 x 200, 90 % remission, axial approach.
 For additional information, refer to user's guide.
 Order accessories separately.
 Do not press key using a pointed tool.
 The sensor is functional again after the overload has been eliminated.
 For more information about MTTF and B10d see MTTF / B10d Certificate

Indication of the MTTF- / B10d value does not represent a binding composition and/or life expectancy assurance; these are simply experiential values with no warranty implications. These declared values also do not extend the expiration period for defect claims or affect it in any way.

Mechanical data

Dimension	23 x 51 x 52.4 mm
Mounting	Screw M4
Tightening torque max.	1.5 Nm

Optical features

Ambient light max.	5000 Lux
Average power P_{o max.}	1 mW
Beam characteristic	Collimated
Laser class per IEC 60825-1	1
Light spot size	2.2 x 2.2 mm at 800 mm
Light type	Laser red light
Principle of optical operation	Diffuse sensor, energetic
Pulse duration t_{max.}	3.0 µs
Pulse frequency	125 kHz
Pulse power P_{p max.}	4.8 mW
Switching function, optical	Light/dark switching
Wave length	650 nm

Output/Interface

Switching output	PNP normally open/normally closed (NO/NC)
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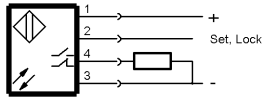
Range/Distance

Hysteresis H max. (% of S_r)	15.0 %
Range	5...1200 mm
Rated operating distance S_n	1.2 m Adjustable

Connector Drawings



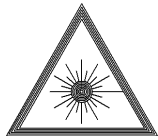
Wiring Diagrams



Opto Symbols



Warning Symbols



LASER CLASS 1 per IEC 60825-1