

1) Output function/Error, 2) Operating voltage, 3) Sn, 4) Bar display for switching distance, 5) Optical axis receiver, 6) Optical axis emitter, 7) 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 EAC WEEE
Basic standard	IEC 60947-5-2
Principle of operation	Photoelectric sensor
Series	23K
Style	Square Connection can be rotated

Display/Operation

Adjuster	Adjusting screw
Display	Output function- LED yellow LED green: Power Error - LED yellow, flashing Switching distance - bar display
Setting	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

Border range energetic	1200 mm
Input function	Light-on/dark-on
No-load current I_o max. at U_e	30 mA
Operating voltage U_b	10...30 VDC
Protection class	II
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	1000 Hz
Turn-off delay t_{off} max.	0.5 ms
Turn-on delay t_{on} max.	0.5 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)	377 a
---------------------	-------

Material

Housing material	PC ABS
Material sensing surface	PMMA

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 Po max.	390 µW
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, triangulation
Pulse duration t max.	0.7 µs
Pulse frequency	8 kHz
Pulse power Pp max.	4.2 mW
Special optical feature	Background suppression
Switching function, optical	Light/dark switching
Wave length	655 nm

Output/Interface

Switching output	NPN normally open/normally closed (NO/NC)
-------------------------	---

Range/Distance

Distance deviation 18 % max. (% of Sr)	30 %
Hysteresis H max. (% of Sr)	5.0 %
Range	5...800 mm
Rated operating distance Sn	800 mm Adjustable

Remarks

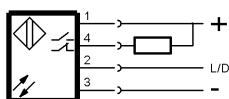
Reference object (target): gray card, 200 x 200, 90 % remission, axial approach.
 The sensor is functional again after the overload has been eliminated.
 Order accessories separately.
 For additional information, refer to user's guide.
 For more information about MTTF and B10d see MTTF / B10d Certificate

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.

Connector Drawings



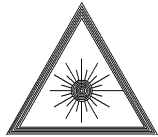
Wiring Diagrams



Opto Symbols



Warning Symbols



LASER CLASS 1 per IEC 60825-1