

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°



ECOLAB®



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
No-load current I_0 max. at U_e	30 mA
Operating voltage U_b	12...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 μ A
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) 360 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. 1 mW
Beam characteristic Collimated
Laser class per IEC 60825-1 1
Light spot size 2.5 x 3.5 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. 140.0 mW
Special optical feature Background suppression
Switching function, optical Light-on
dark-on
Wave length 655 nm

Output/Interface

Switching output PNP normally open (NO)
PNP NC Pins 4-2

Range/Distance

Distance deviation 18 % max. (% of Sr) 20 %
Hysteresis H max. (% of Sr) 8.0 %
Range 5...800 mm
Rated operating distance Sn 800 mm Adjustable

Remarks

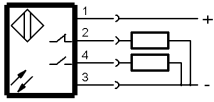
The sensor is functional again after the overload has been eliminated.
Reference object (target): gray card, 200 x 200, 90 % remission, axial approach.
For additional information, refer to user's guide.
Order accessories separately.
For more information about MTTF and B10d see MTTF / B10d Certificate

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



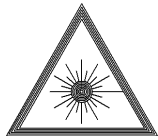
Wiring Diagrams



Opto Symbols



Warning Symbols



LASER CLASS 1 per IEC 60825-1