



Series D11 Expert with automatic sensitivity adjustment



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- **Sensor for plastic fibre-optics**
- **Automatic sensitivity adjustment with external switch or PLC**
- **High excess gain, but also reliable detection of low sensing contrast**
- **Switching frequency 5 KHz**
- **Visible red light**
- **Switchable off-delay and light-/dark operation**
- **LEDs for excess gain and sensing contrast indication**
- **DIN-rail mounting**

By the simple push of a button the D11 Expert adapts itself to the specific sensing application. A microprocessor is used to optimize programming of the switch point and hysteresis. This makes the D11 Expert the ideal sensor for either low contrast applications or applications that require high excess gain.

The programming of the D11 Expert is very simple yet secure. The user accesses the program mode by holding the push button for 2 seconds, then presents the two sensing conditions. In each sensing condition the button is pressed once and the sensor automatically finds the optimum switching point. The first condition presented sets the condition in which the output will energise. Immediately after programming, the sensing contrast is displayed by the flashing of the three indicator LED's one to four times. This allows the user to assess, during installation, how reliable the sensor will be in actual operation. Three or four flashes (moderate to high contrast) is recommended for harsh industrial environments.

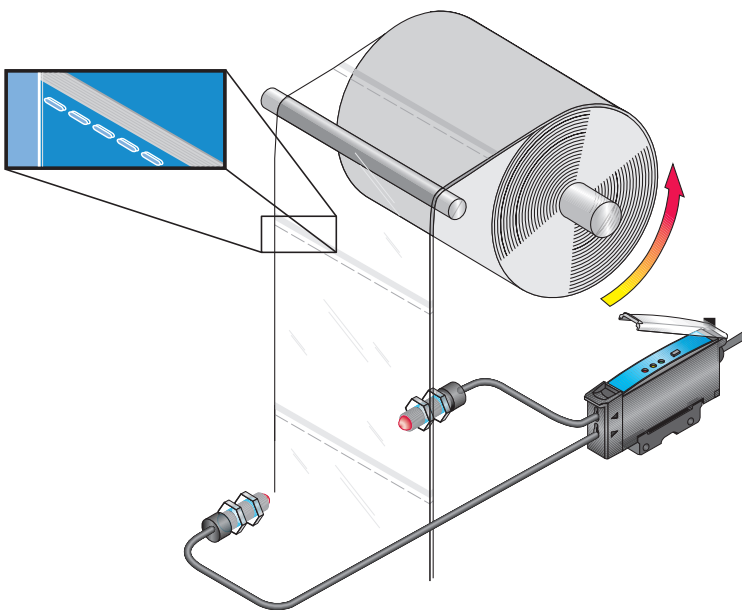
Low sensing contrast can often be improved by changing the distance between the sensor and the object being detected or by repositioning the sensor. Once taught, the sensor retains its program until reprogrammed, even if power is removed.

During operation, the red SIG (signal strength) LED provides an accurate display of the excess gain. The red LED flashes at a rate that is proportional to the received signal strength and provides an indication of the gradual decrease in excess gain due to contamination of the lens that is likely to occur.

A remote programming wire allows programming with an external switch or PLC. This allows a PLC to adapt the sensor automatically to the actual sensing conditions such as changing the object to be sensed.

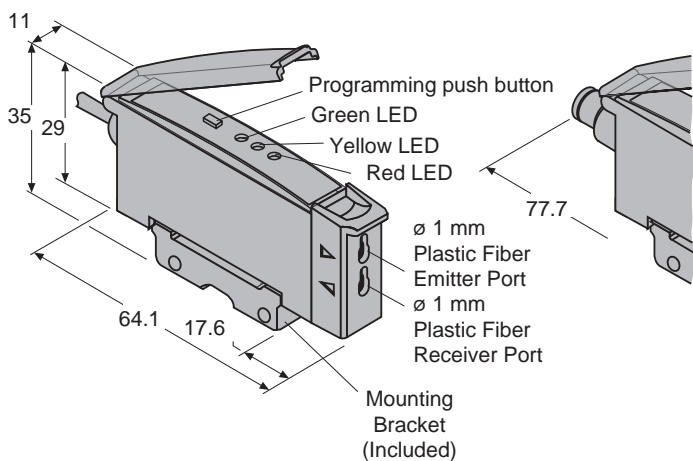
It is possible to disable/enable the programming button on the D11 Expert from the PLC. This avoids unauthorised changes of the sensor settings when the D11 Expert is controlled exclusively from a PLC or any other remote programming device.

In addition to setting the switching point, the programming button of the D11 Expert also allows you to toggle between: no delay and a 40 ms pulse stretcher.



Bag seal & perforation detection

Dimensions [mm]



Wave length

Red 680 nm

Adjustment

(with push-button or external) light/dark operate sensitivity (automatic) 40 ms off-delay

Supply

Supply voltage 10...30 VDC
Ripple V_{pp} 10 %
No load current \leq 45 mA

Protection

short-circuit (pulsed)
reverse polarity

Output

Continuous load current \leq 150 mA
Switching frequency 1 KHz

Material

Housing ABS
Cover acrylic
Protection class (DIN 40050) IP 54
Temperature range -10...+55 °C
Cable 2 m, PVC 4 x 0.34 mm²
Connector Picoprox®

Indicator LEDs

Green power-on
Green flashing programming mode
Yellow output load status
Red signal strength

Wiring



1) external programming cable

Accessories

Brackets

SMBD11 through-hole mounting (included)

Connectors

PKG4-2/S90 69 590 00 straight type
PKW4-2/S90 69 592 00 right-angled type

Photoelectric sensors

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		Max. range	Light source	Output	Connection	Type	Ident number
Detection mode with typical plastic fibre-optic ¹⁾							
Opposed	with PIT26U	50 mm	red	pnp	cable	D11-EP6-FP	30 442 74
	with PIT46U	180 mm					
Diffuse	with PIT26U	50 mm	red	pnp	connector	D11-EP6-FP-Q	30 442 76
	with PIT46U	180 mm					
Diffuse	with PBT26U	10 mm	red	npn	cable	D11-EN6-FP	30 442 71
	with PBT46U	50 mm					
	with PBT26U	10 mm	red	npn	connector	D11-EN6-FP-Q	30 442 73
	with PBT46U	50 mm					

Programming of the D11 Expert

From the **RUN MODE** the D11 Expert can be switched to:

- **TEACH MODE:** to optimize the sensitivity adjustment of the sensor (see programming sequence at right). After a TEACH sequence, the unit will automatically return to the RUN mode.
- **OUTPUT PULSE STRETCHER:** to enable or disable a 40 ms OFF delay (see programming sequence at right)

In addition, the D11 Expert provides two special features:

- disabling the push button on the D11 Expert sensor: this can be done by pulsing the remote input 4 consecutive times. To enable the use of the button again, pulse the remote input again 4 consecutive times.
- maximum sensitivity setting: the D11 Expert is factory programmed for maximum sensitivity. To recall the default setting, push and hold the push button for two or more seconds, then click the button 4 consecutive times. This will also enable light operate output and pulse stretcher „off“ settings.

Contrast indication

Number of flashes	Contrast
1	unacceptable
2	low
3	moderate
4	high

¹⁾ A wide range of glass- and plastic fibre-optics can be found in the Photoelectric Catalogue.

Output pulse stretcher

Push-button	Mode/function	Indicator LEDs
push and hold for ≥ 2 s	from RUN to output programming	G: flashing at 1 Hz Y: off R: pulsing (denotes signal strength)
double-click	show current status of pulse stretcher	G: off Y: off R: - double flash denotes pulse stretcher „off“ - on steadily denotes pulse stretcher „on“
single-click	toggles between pulse stretcher „on“ or „off“	
double-click	save configuration and return to RUN mode	standard RUN mode

Teach Mode Programming

Push-button	Mode/function	Indicator LEDs
push and hold for ≥ 2 s	from RUN to TEACH mode	G: flashing at 1 Hz Y: off R: pulsing (denotes signal strength)
single-click	TEACH „on“ condition detection of first sensing condition	G: flashing at 2 Hz Y: off R: pulsing (denotes signal strength)
single-click	TEACH „off“ condition detection of second sensing condition Returns automatically to RUN mode	G, Y and R LED's flash simultaneously 1 to 4 times to indicate the sensing contrast (see table)

Subject to changes without notice • Edition 11.98/1 P/N ED006K8A



IMPORTANT SAFETY WARNING ! These sensors do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can result in either an energised or de-energised output condition. These products should not be used as sensing devices for personnel safety.