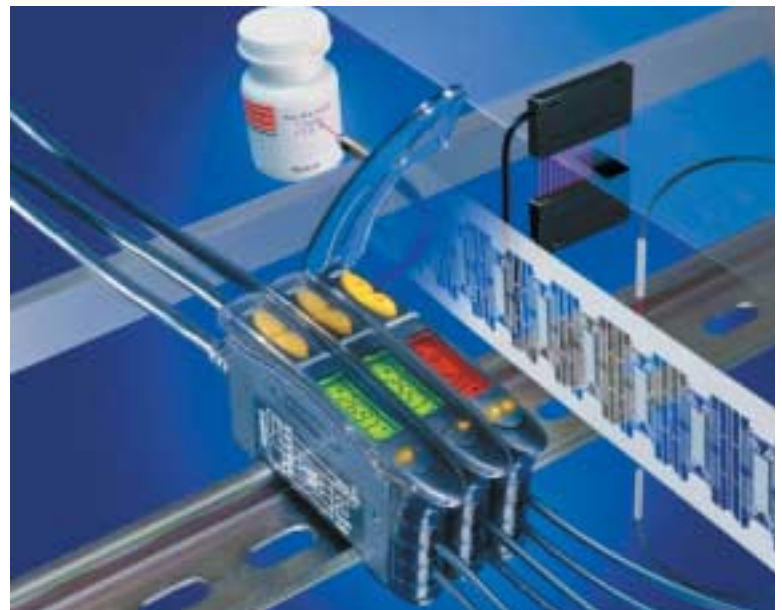


D10 Expert series Advanced plastic fibre sensor with two outputs

- 2 independently programmable outputs; choose between models with 2 digital outputs or 1 analogue and 1 digital output
- Easy-to-set *Expert*-style TEACH options, including static, dynamic and single-point programming plus manual adjust option for fine-tuning
- Easy-to-read 4-digit display for TEACH and signal strength readout, plus indicators for a continuous readout of operating status (user configurable)
- 16-bit microcontroller and 12-bit analog-to-digital converter for high-performance, low-contrast sensing
- Sleek, ultra-slim 10 mm housing, mounts to standard 35 mm DIN rail
- Four-mode power and speed settings
- Automatic cross-talk avoidance circuitry



The D10 *Expert* Sensor is a high-performance plastic fibre-optic sensor whose many configuration (TEACH mode) options make it suitable for demanding applications. Even with all its features, it is extremely easy to use. Advanced 16-bit microcontroller technology makes this possible. For better contrast capability, choose between models with a red or a green LED light source.

The D10 *Expert* provides high-performance sensing in low-contrast applications, with its *Expert* TEACH setup with static, dynamic and single-point programming plus manual fine adjustment, remote programming and lockout. Its slender, stylised housing has a large digital display visible beneath a clear cover for easy programming and status monitoring during operation. The sensor mounts directly to standard 35 mm DIN rail or via the supplied mounting bracket.

The sensor features two outputs with independent set-points: analogue models feature one current or one voltage output and one PNP or NPN output. Dual-digital units either have two PNP or two NPN outputs, depending on model.

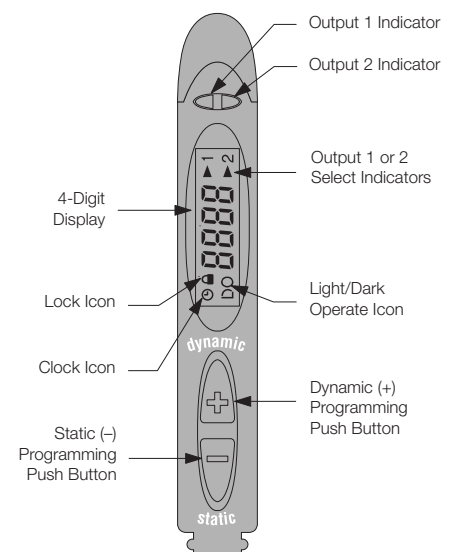
Built-in crosstalk avoidance protocol provides trouble-free operation for multiple sensors in one area.

Indicators

During RUN mode the 4-digit display shows the signal strength as a raw value or as a percentage of the threshold signal. The icons show if the TEACH buttons are disabled, if an OFF-delay is used and if the sensor is set for light or dark operate. In RUN mode, the LCD display is green and the output indicators show if the outputs are conducting.

In SETUP mode, the LCD display turns red. The user can advance through several options: light/dark operate, OFF-delay setting, display parameter and the power/speed combinations.

In TEACH mode, the LCD display is also red. Teaching the sensor can be done by presenting the ON and the OFF condition separately (static 2-point teach), by presenting ON and OFF conditions alternately "on the fly" (dynamic teach) or by presenting a single ON condition, resulting in an upper and a lower threshold (single-point teach).





D10 Expert series Advanced plastic fibre sensor with two outputs

Wave length

Visible red	680 nm
Visible green	525 nm

Supply

Supply voltage U_B	15...24 VDC (0...10 V models) 12...24 VDC (other models)
Ripple V_{pp}	$\leq 10\%$
No load current I_0	≤ 70 mA (0...10 V models) ≤ 65 mA (other models)
Delay upon power up t_v	150 ms

Protection

reverse polarity
transient voltages
short-circuit
continuous overload
false pulse on power-up

Outputs

	either 2 digital or 1 digital and 1 analogue output
Digital outputs	≤ 150 mA continuous load I_o
Current output	100 Ω maximum impedance
Voltage output	1 m Ω minimum impedance
Analogue response speed	1 ms
Digital response speed	programmable: 50 μ s, 200 μ s, 1 ms, 2,5 ms

Material

Housing	black ABS/polycarbonate alloy
Cover	clear polycarbonate
Protection class	IP50
(IEC 60529/EN 60529)	
Operating temperature range	-20...+55 $^{\circ}$ C
Storage temperature	-20...+80 $^{\circ}$ C
Cable	2 m, PVC 6 x 0,5 mm ²
Connector	<i>picocon</i>

Indicators

4-digit LCD display	program and run settings
Red or green LCD backlight	indicates mode of operation
2 amber LEDs	outputs conducting

Accessories

Brackets

SMBD10	30 623 76	through-hole mounting (included)
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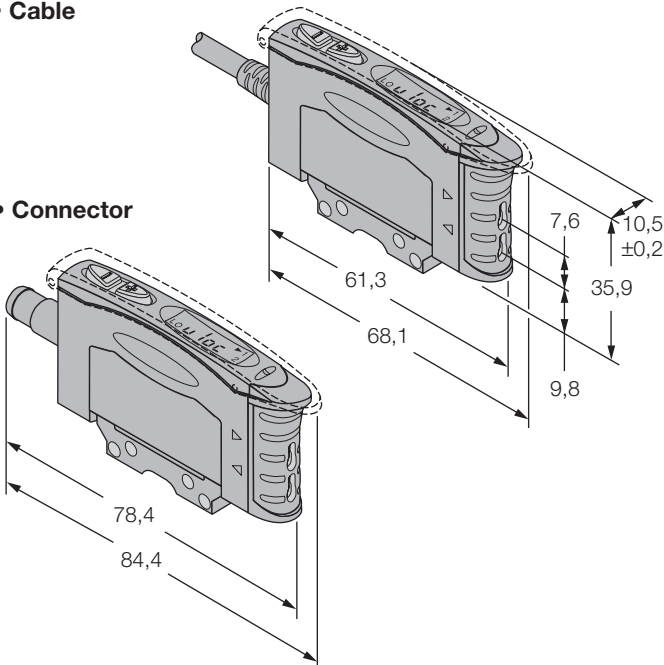
Connectors

ZKP6-2/P00	80 074 03	straight type
WKP6-2/P00	80 177 05	right-angled type

Dimensions [mm]

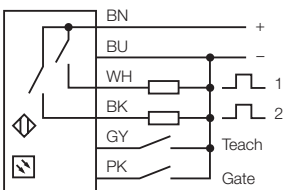
• Cable

• Connector

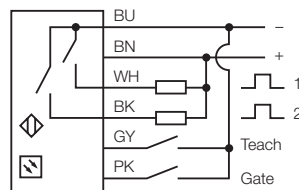


Wiring

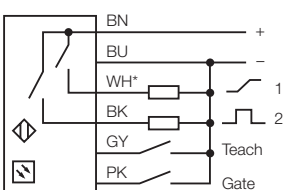
dual digital pnp



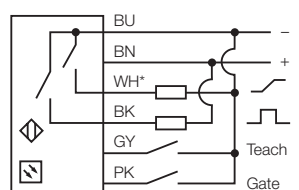
dual digital npn



analogue and pnp



analogue and npn



* 0...10 VDC or 4...20 mA



D10 Expert series

Advanced plastic fibre sensor with two outputs

Programming options

Light/dark operate selection	Toggle to select the condition for which each output will conduct: when the target is present or when the target is absent.					
OFF-delay timing selection	Programmable OFF-delay pulse stretcher: 0, 2, 5, 10, 15, 20, 30, 40, 60, 80, or 100 milliseconds Analogue output: OFF-delay acts as a smoothing function					
Display selection	Digital output: raw signal value or % excess signal Analogue output: raw signal value or analogue value (0...10 VDC or 4...20 mA)					
Power level/speed* selection	Super-High-Speed** SHS	High-Speed HS	High-Power HP	Super-High-Power SHP		
Digital response	50 µs	200 µs	1 ms	2,5 ms		
Repeatability	25 µs	50 µs	75 µs	100 µs		
maximum range	Colour	Fibre				
	680 mm red	PIT16U	20 mm	30 mm	55 mm	90 mm
		PIT26U	100 mm	150 mm	250 mm	400 mm
		PIT46U	300 mm	550 mm	1000 mm	1200 mm
		PIT66U	600 mm	1000 mm	1700 mm	2400 mm
		PBT16U	6 mm	10 mm	18 mm	30 mm
		PBT26U	30 mm	50 mm	100 mm	150 mm
		PBT46U	100 mm	175 mm	250 mm	300 mm
		PBT66U	175 mm	250 mm	400 mm	475 mm
	525 mm green	PIT16U	9 mm	9 mm	13 mm	16 mm
		PIT26U	40 mm	40 mm	55 mm	70 mm
		PIT46U	100 mm	100 mm	160 mm	180 mm
		PIT66U	180 mm	180 mm	280 mm	320 mm
		PBT16U	not recommended	not recommended	3 mm	3,5 mm
		PBT26U	12 mm	12 mm	20 mm	25 mm
PBT46U		30 mm	30 mm	42 mm	60 mm	
PBT66U	55 mm	55 mm	80 mm	100 mm		
Tracking feature	Sets output 2 to identical settings as output 1; output 2 settings can then be revised as desired.					
Factory default settings	<ul style="list-style-type: none"> • Light operate (lo) • No OFF-delay (t 0) • Raw signal value (1234) • Output 1 displayed • High Speed; 200 µs response • Maximum power setting • Analogue: full scale • Digital: switch-point positioned at middle of range 					

* after the power setting is changed, both outputs must be retaught

** in Super-High-Speed mode, only digital output 1 can be taught. Output 1 and output 2 become complementary.

Gate input

The D10's pink wire is configured as a gate input. When this wire is pulled low (i.e., to the sensor ground), it inhibits the digital outputs from switching, while all other D10 functions continue to be enabled. This feature is useful for controlling when the outputs are allowed to change states. Gate input function response time is 1 ms. While the gate is enabled, the analogue output holds the last value.

Programming procedures

Two push buttons, dynamic (+) and static (-), may be used to access and set programming parameters. For remote programming, connect a switch or digital input to the grey wire; length of the individual pulses is equal to the value T: $0,04 \text{ s} \leq T \leq 0,8 \text{ s}$. The push buttons can be disabled or enabled by four consecutive pulses on the teach line.

D10 Expert series

Advanced plastic fibre sensor with two outputs

	Light source	Output functions	Connection	Type	Ident number
	red	pnP, 4...20 mA	cable	D10IPFP	30 623 88
	red	pnP, 4...20 mA	connector	D10IPFPQ	30 623 89
	green	pnP, 4...20 mA	cable	D10IPFPG	30 645 70
	green	pnP, 4...20 mA	connector	D10IPFPGQ	30 645 71
	red	pnP, 0...10 VDC	cable	D10UPFP	30 639 95
	red	pnP, 0...10 VDC	connector	D10UPFPQ	30 639 96
	green	pnP, 0...10 VDC	cable	D10UPFPG	30 645 76
	green	pnP, 0...10 VDC	connector	D10UPFPGQ	30 645 77
	red	npN, 4...20 mA	cable	D10INFP	30 623 85
	red	npN, 4...20 mA	connector	D10INFPQ	30 623 86
	green	npN, 4...20 mA	cable	D10INFPG	30 645 67
	green	npN, 4...20 mA	connector	D10INFPGQ	30 645 68
	red	npN, 0...10 VDC	cable	D10UNFP	30 639 92
	red	npN, 0...10 VDC	connector	D10UNFPQ	30 639 93
	green	npN, 0...10 VDC	cable	D10UNFPG	30 645 73
	green	npN, 0...10 VDC	connector	D10UNFPGQ	30 645 74
	red	pnP	cable	D10DPFP	30 623 82
	red	pnP	connector	D10DPFPQ	30 623 83
	green	pnP	cable	D10DPFPG	30 645 64
	green	pnP	connector	D10DPFPGQ	30 645 65
	red	npN	cable	D10DNFP	30 623 79
	red	npN	connector	D10DNFPQ	30 623 80
	green	npN	cable	D10DNFPG	30 645 61
	green	npN	connector	D10DNFPGQ	30 645 62

	<p>Model: PBT16U Ident nr.: 30 428 22</p>		<p>Model: PIT16U Ident nr.: 30 399 83</p>
	<p>Model: PBT26U Ident nr.: 39 134 00</p>		<p>Model: PIT26U Ident nr.: 39 138 00</p>
	<p>Model: PBT46U Ident nr.: 39 080 00</p>		<p>Model: PIT46U Ident nr.: 39 250 00</p>
	<p>Model: PBT66U Ident nr.: 30 399 82</p>		<p>Model: PIT66U Ident nr.: 30 398 99</p>

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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.