Glass Fibre-optic Specifications

Construction:
Combination of optical glass fibre, stainless steel, PVC, brass, silicon rubber, Teflon™, moulded thermoplastics, and optical grade epoxy. Optical fibre is F2 core, EN1 clad, except where stated. Flexible steel interlock sheathing is 302 stainless, except where stated.

Sensing Range:
Refer to the range specifications shown on the glass fibre-optic drawing pages.

Bend Radius:
Inside bend radius must be 12 mm or greater for PVC covered fibre-optic assemblies, and 25 mm or greater for stainless steel armoured cable covered fibres.

Length:
Standard length for assemblies is 61 cm or 91 cm; see dimension drawings. Most models are available from the factory with shorter or longer cable lengths, up to 18 m maximum.

Operating Temperature:
- Fibre assemblies with stainless steel sheathing and metal end tips: -140 to +249° C.
- Fibre assemblies with PVC sheathing and/or plastic end tips: -40 to +105° C.
- Special order assemblies with stainless steel sheathing and metal end tips and model suffix "M600": -140 to +315° C.
- Special order assemblies with stainless steel sheathing and metal end tips and model suffix "M900": -140 to +480° C.

Numbering scheme for Banner glass fibres

FIBRE BUNDLE DIAMETER designator:
.44 = 0,7 mm
.5 = 0,8 mm
.75 = 1,2 mm
1 = 1,6 mm
1.5 = 2,3 mm
2 = 3,2 mm
2.5 = 4 mm

SHEATHING MATERIAL designator:
S = Stainless steel flexible conduit
P = PVC with galvanised monocoil reinforcing wire
L = Silicone rubber tubing (max. flexibility, min. fibre protection)
T = Teflon tubing (max. chemical resistance, min. flexibility)
HDP = High-density polyethylene (max. electrical isolation, min. flexibility)

I A T 2 3 S X X

ASSEMBLY STYLE designator:
B = Bifurcated: emitter and receiver to one sensing point
DB = Double Bifurcated: emitter and receiver to two sensing points
I = Individual: emitter or receiver to one sensing point

OVERALL LENGTH designator (length of the complete fibre-optic assembly in feet):
3 = 3 ft. = ±914 mm
6 = 6 ft. = ±1829 mm

MODIFICATIONS designator (suffix may be any length):
M600 suffix = available in 315° C
M900 suffix = available in 480° C

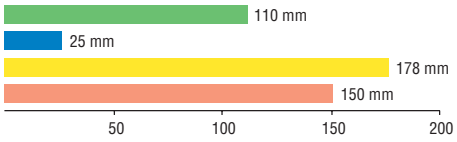
SENSING END TIP STYLE designator:
A = Angled tip (90°)
AM = Angled tip (90°), probe 1,5 mm ø
AMM = Angled tip (90°), probe 1,1 mm ø
AR = Angled tip (90°), rectangular bundle termination
AT = Angled (90°) and threaded tip
ATR = Angled (90°) and threaded tip, rectangular bundle
F = Ferruled tip, same as sensor end tip
FR = Ferruled tip, rectangular bundle termination
HA = Half-angled tip (45°)
HAR = Half-angled tip (45°), rectangular bundle
HAT = Half-angled (45°) and threaded brass tip
HATR = Half-angled and threaded tip, rectangular bundle
M = Miniature tip (ø 1,5 mm)
MAP = Miniature angled (90°) probe tip
MHAP = Miniature half-angled (45°) probe tip
MM = Micro-miniature probe tip (ø 1,1 mm)
MT = Threaded brass end tip
MTAP = Threaded brass, miniature angled (90°) tip
MTHAP = Threaded brass, miniature half-angled (45°) tip
MTP = Threaded brass, miniature probe (ø 1,5 mm)
P = Probe bendable tip (ø 2,3 mm)
R = Rectangular bundle termination
T = Threaded brass end tip
TA = Threaded angled (90°) end tip
TAR = Threaded, rectangular bundle
THA = Threaded, half-angled (45°) end tip
THAR = Threaded and half-angled (45°), rectangular bundle
TR = Threaded end tip, rectangular bundle termination

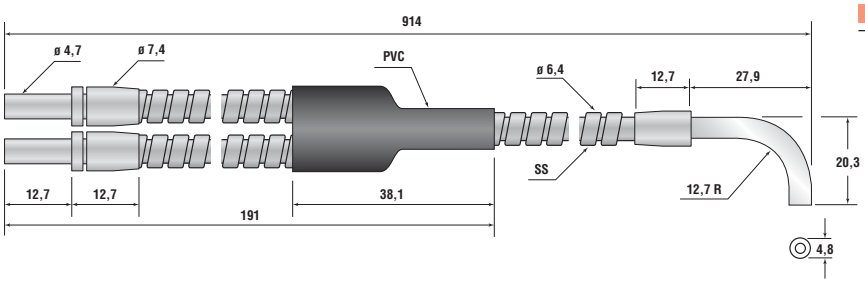


R55F ***SME312*** ***D12E*** ***D12***

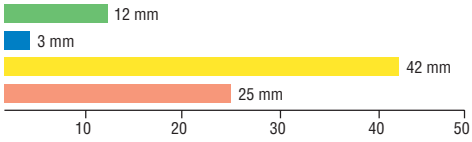
Dimensions (in mm) **Range (in mm)**

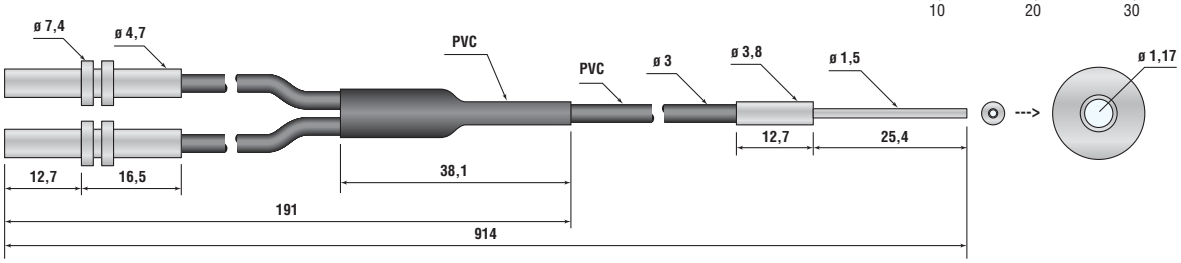
BA23S Bifurcated angled



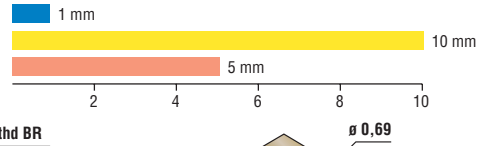


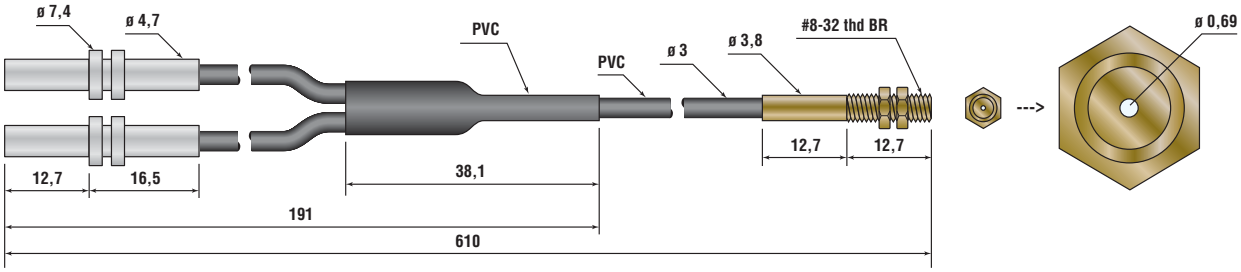
BMP.753P Bifurcated miniature probe, glass fibre, PVC sheathing



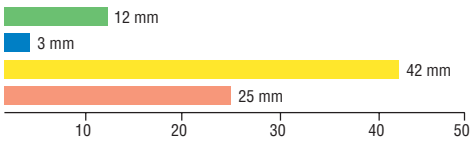


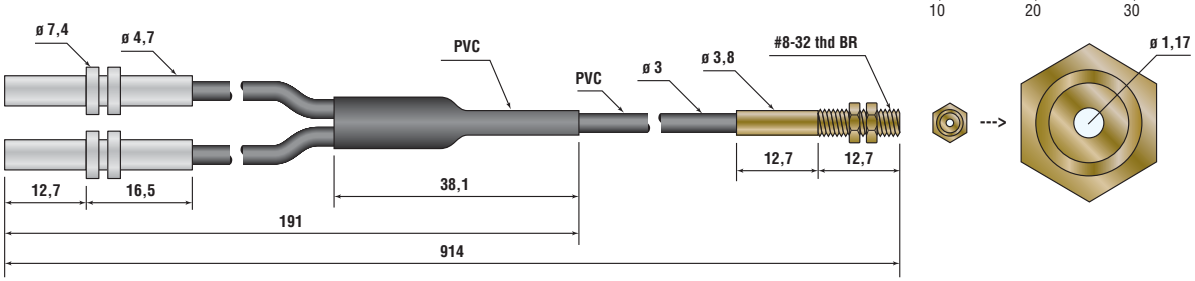
BMT.442P Bifurcated miniature threaded, glass fibre, PVC sheathing





BMT.753P Bifurcated miniature threaded, glass fibre, PVC sheathing



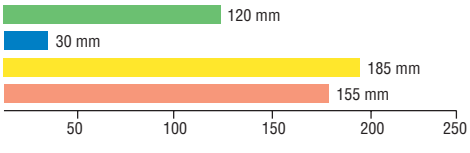


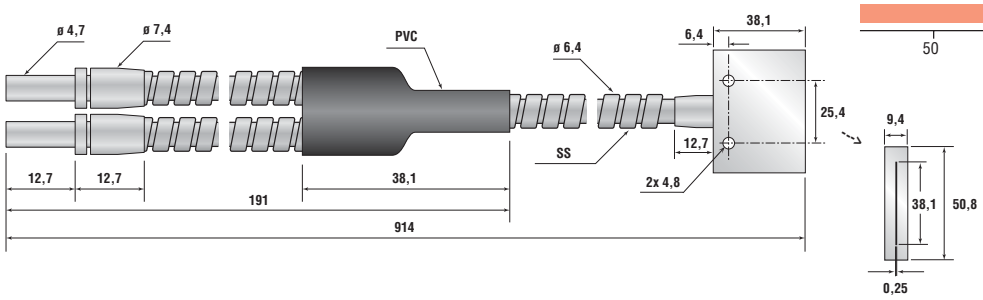


R55F ***SME312*** ***D12E*** ***D12***

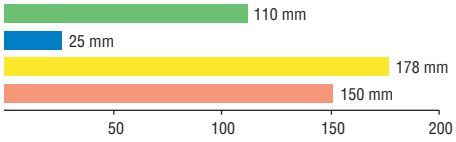
Dimensions (in mm)	Range (in mm)

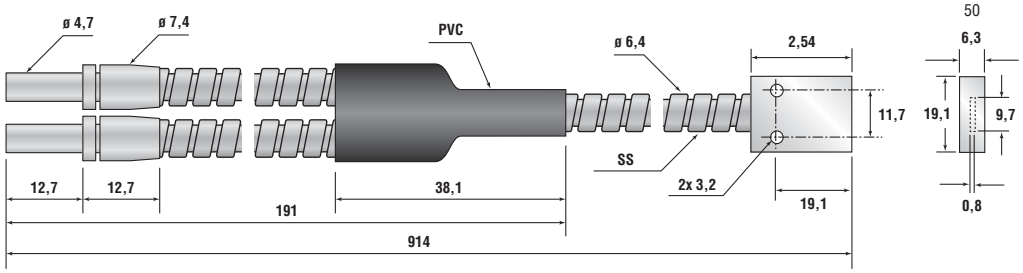
BR2.53S Bifurcated rectangular, 40 mm



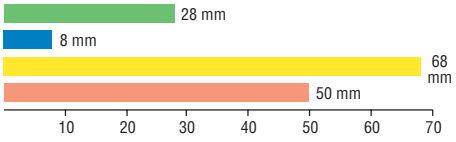


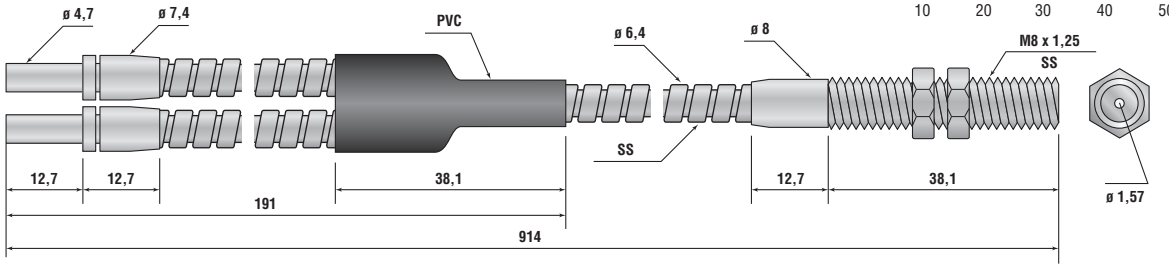
BR23S Bifurcated rectangular, 10 mm



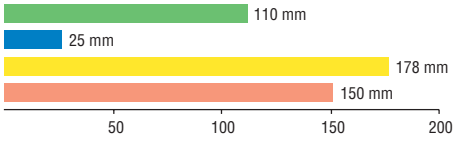


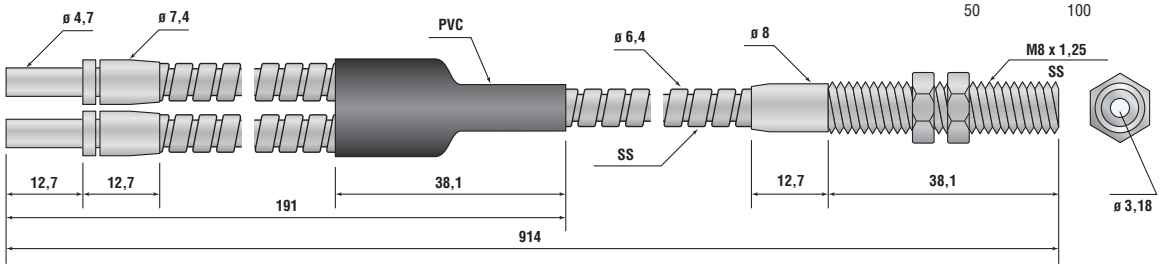
BT13SM8 Bifurcated threaded, glass fibre, SS sheathing





BT23SM8 Bifurcated threaded, glass fibre, SS sheathing



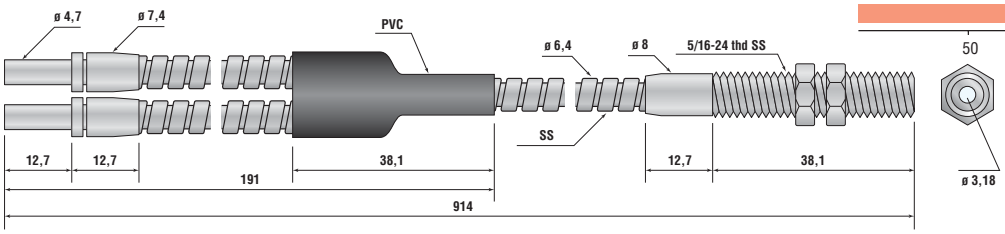


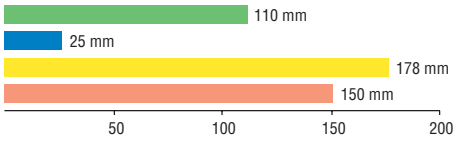


R55F *SME312* *D12E* *D12*

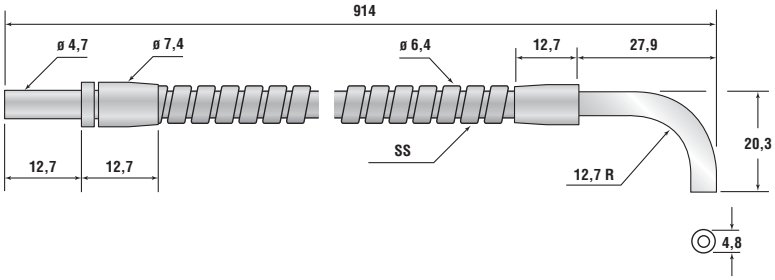
Dimensions (in mm) **Range (in mm)**

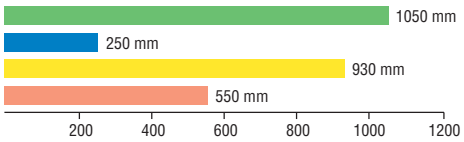
BT23SM900 Bifurcated threaded, glass fibre, SS sheathing, special high-temperature 480° C end tip construction



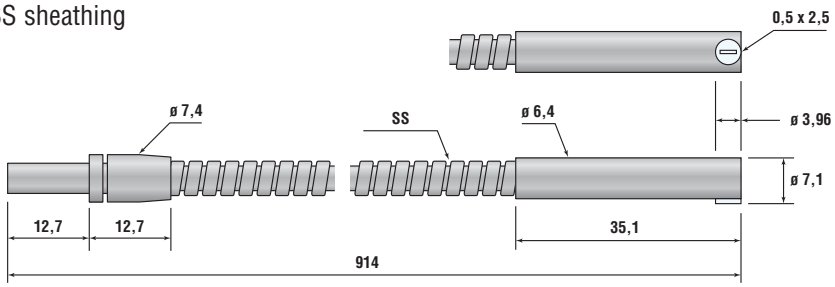


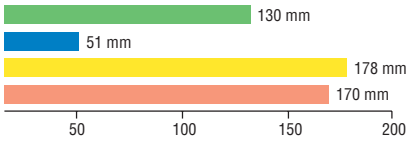
IA23S Individual angled



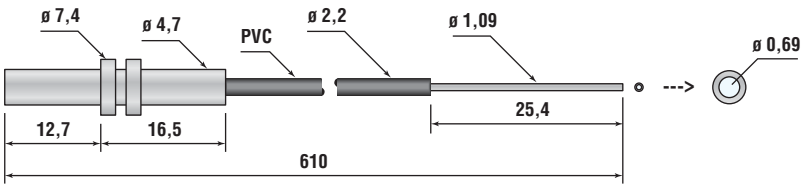


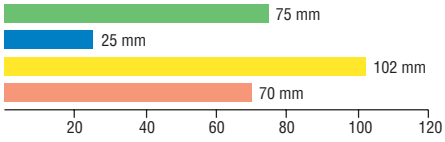
IAR.753SMTA Individual tight angle with rectangular bundle glass fibre, SS sheathing



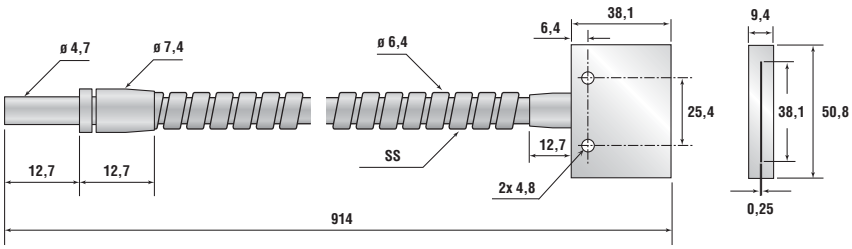


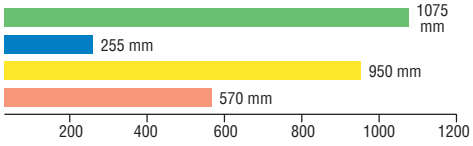
IMM.442P Individual miniature probe, glass fibre, SS sheathing





IR2.53S Individual rectangular, 40 mm



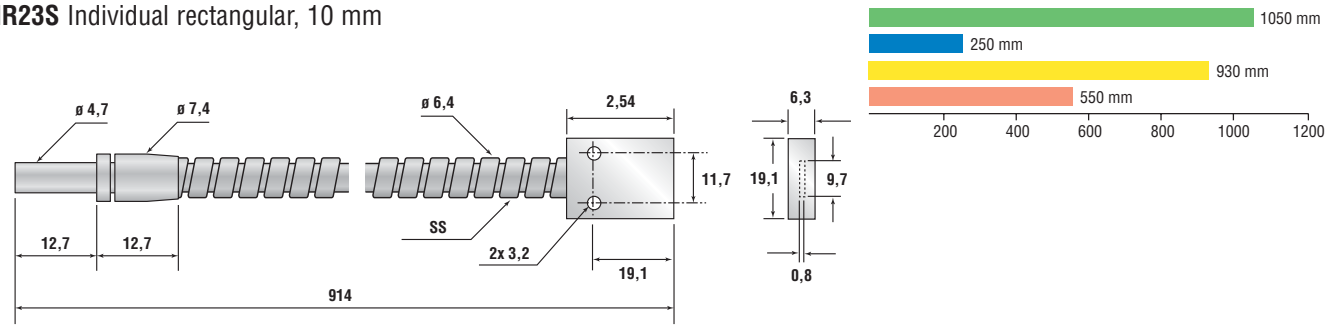




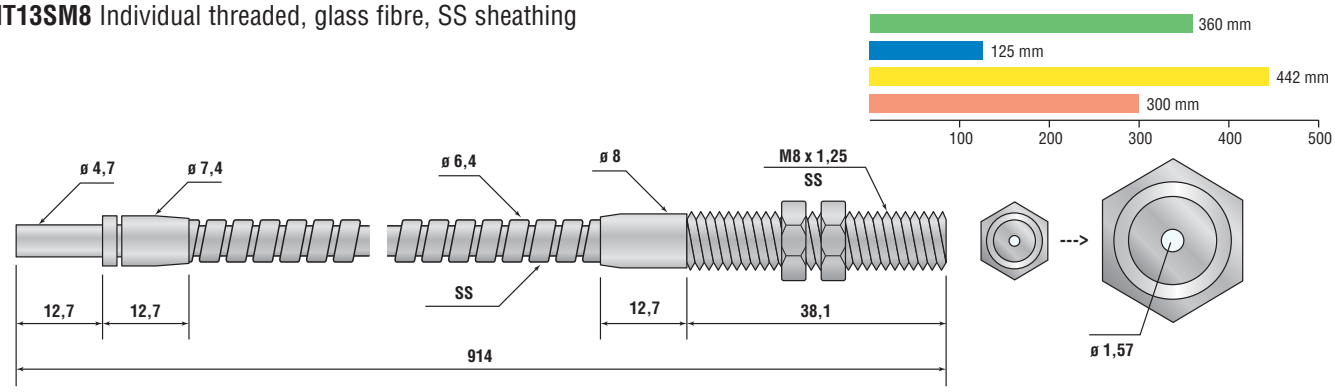
R55F ***SME312*** ***D12E*** ***D12***

Dimensions (in mm) **Range (in mm)**

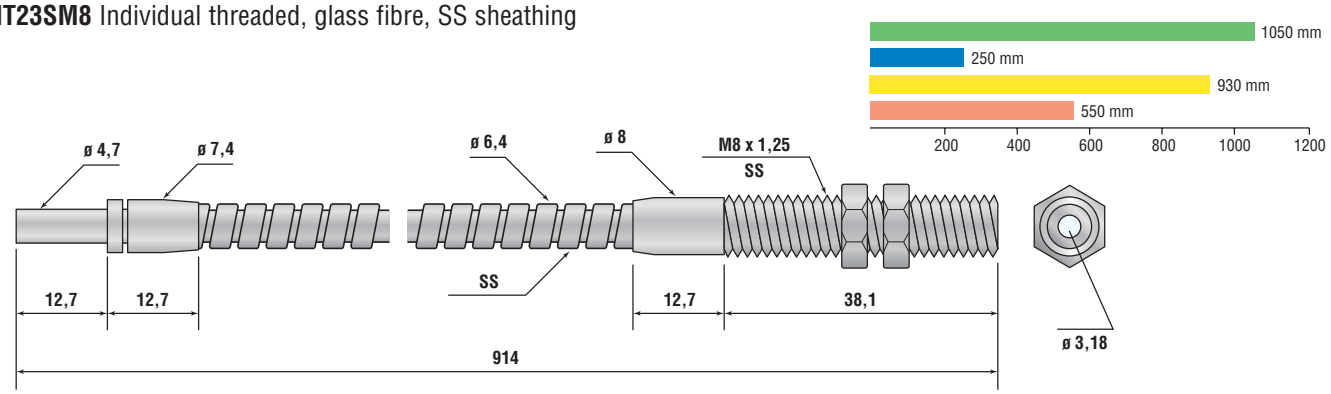
IR23S Individual rectangular, 10 mm



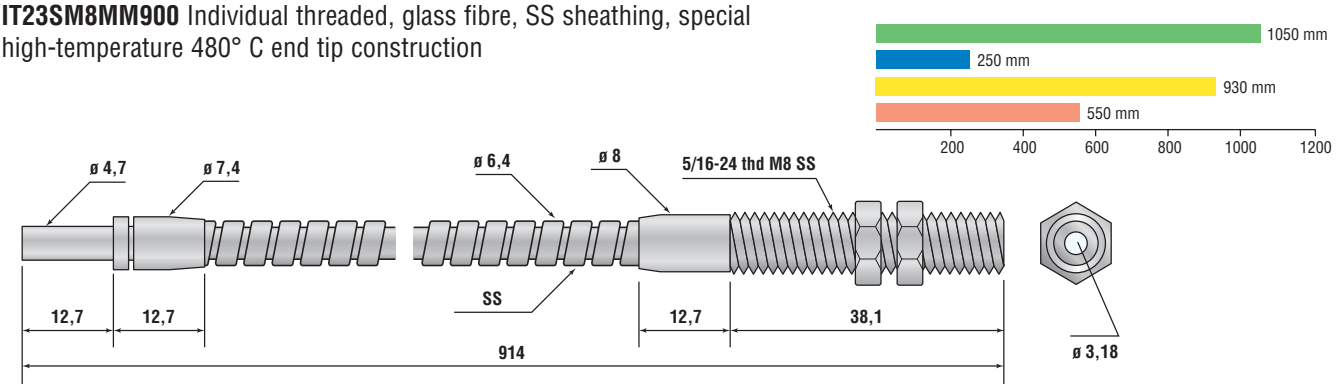
IT13SM8 Individual threaded, glass fibre, SS sheathing

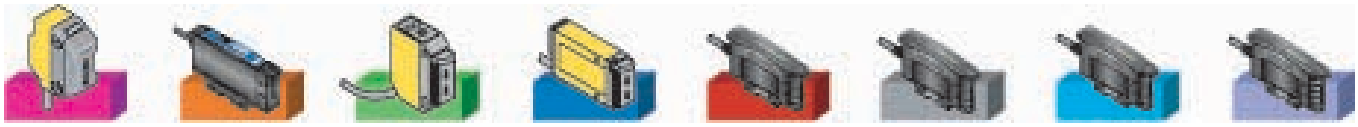


IT23SM8 Individual threaded, glass fibre, SS sheathing



IT23SM8MM900 Individual threaded, glass fibre, SS sheathing, special high-temperature 480° C end tip construction

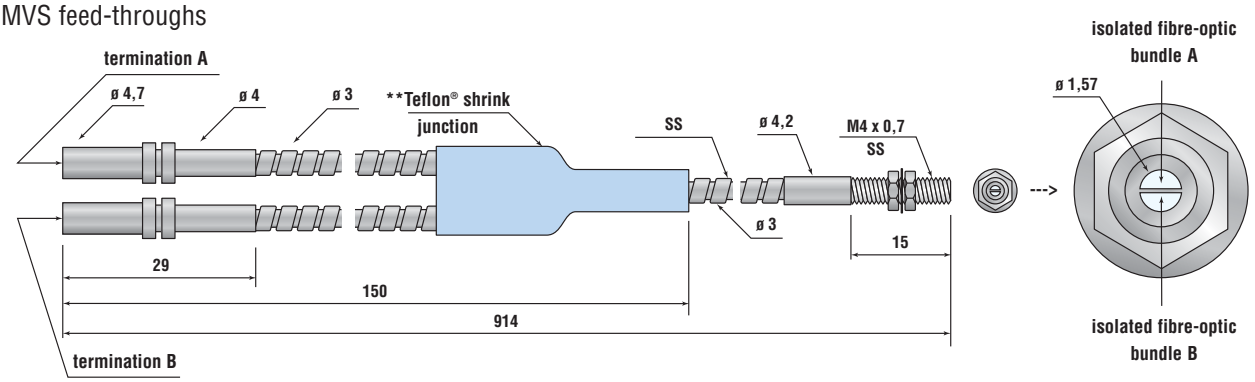




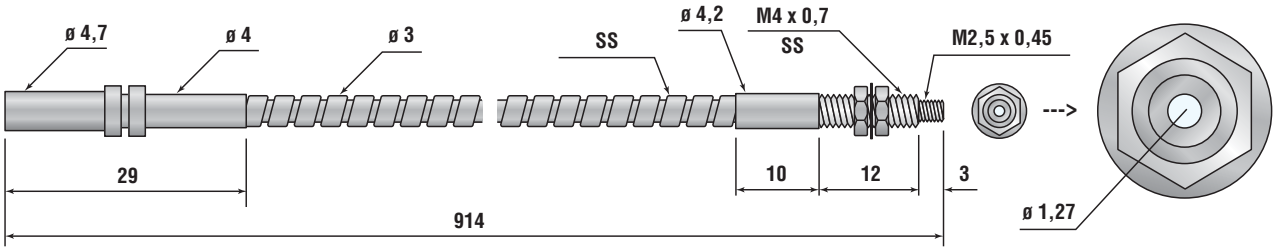
QS18 | D11(E) | Q23 | SME312 | D10SHP | D10HP | D10HS | D10SHS

Dimensions (in mm)

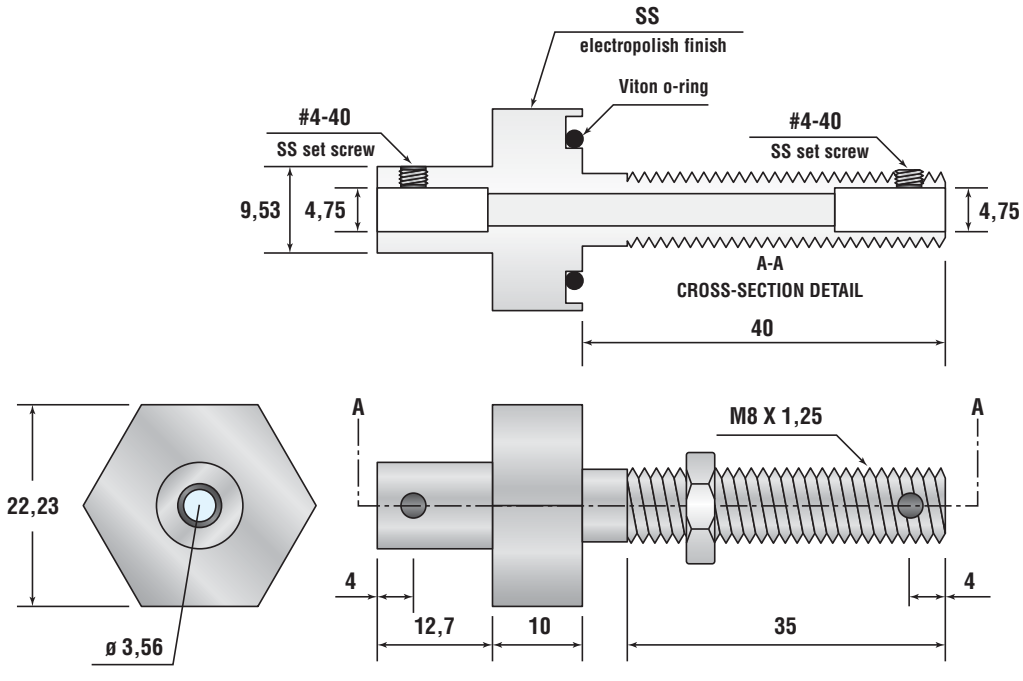
BMT13SMVF* Bifurcated miniature threaded, glass fibre, SS sheathing, special vacuum construction; may be used with VFT-M8MVS feed-throughs



IMT.753SMVF Individual miniature threaded, glass fibre, SS sheathing, special vacuum construction; may be used with VFT-M8MVS feed-throughs



VFT-M8MVS Individual vacuum feed-through, 8 mm threaded body; use with "MVF" glass fibres; seals to 1,3 x 10^{-9} mbar up to 120° C; use PIF66UM.52M.19D plastic fibre on the atmospheric side



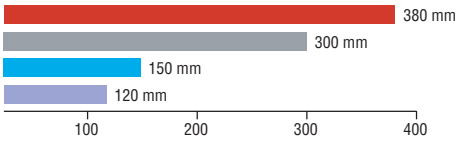
** Contact factory representative for range information ** Teflon® FEP is a registered trademark of Dupont Co.*

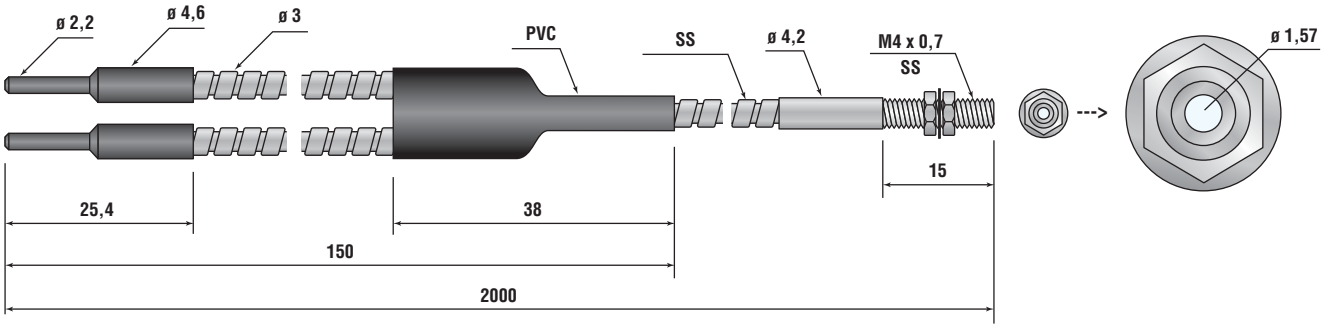


D10SHP ***D10HP*** ***D10HS*** ***D10SHS***

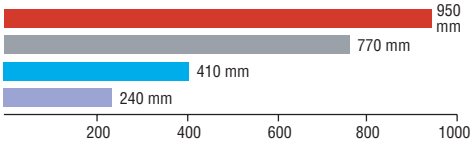
Dimensions (in mm) **Range (in mm)**

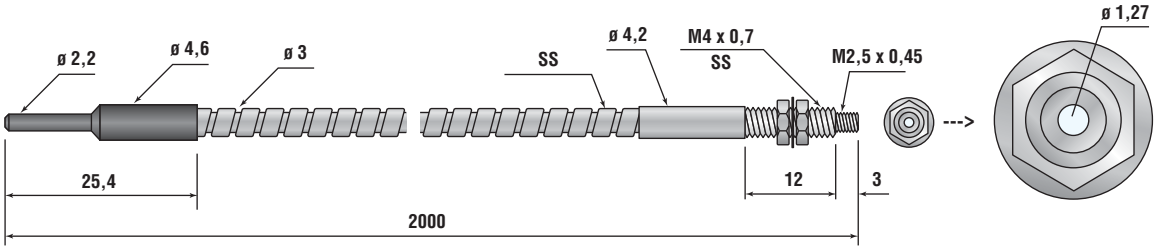
BMT16.6S-HT Bifurcated miniature threaded, glass fibre, SS sheathing, special high-temperature 315˚ C end tip construction; D10 sensors ONLY





IMT.756.6S-HT Individual miniature threaded, glass fibre, SS sheathing, special high-temperature 315° C end tip construction; D10 sensors ONLY





Glass Fibre-optic Lens Attachments

L9M8*

- Glass lens with anodised blue aluminum housing
- Used to extend the range of opposed mode glass fibre-optics systems (e.g. IT13SM8, IT23SM8)
- Used also with a bifurcated fibre (BT13SM8) for short-range retroreflective sensing
- The smaller fibre bundle 1,5 mm is desirable for retroreflective use
- Maximum temperature: 315° C

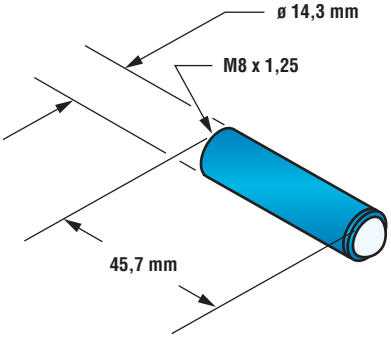
L10M8*

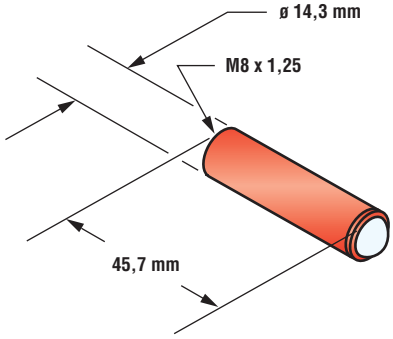
- Glass convergent lens with anodised red aluminum housing
- Used with bifurcated threaded glass fibres (e.g. BT13SM8, BT23SM8)
- The L10 lens focuses the light to a point as small as 0,8 mm when used with a 1,5 mm diameter fibre bundle
- Maximum temperature: 315° C
- Focal distance is 5 mm ±1 mm

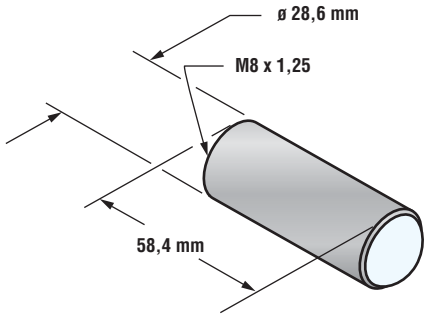
L16FSSM8*

- Glass lens with stainless steel housing
- Used for long-range opposed (e.g. IT13SM8, IT23SM8) or retroreflective sensing (e.g. BT23SM8)
- Maximum temperature: 480° C

** version with 5/16 inch - 24 threading available*



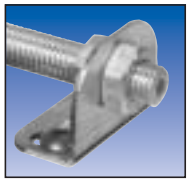


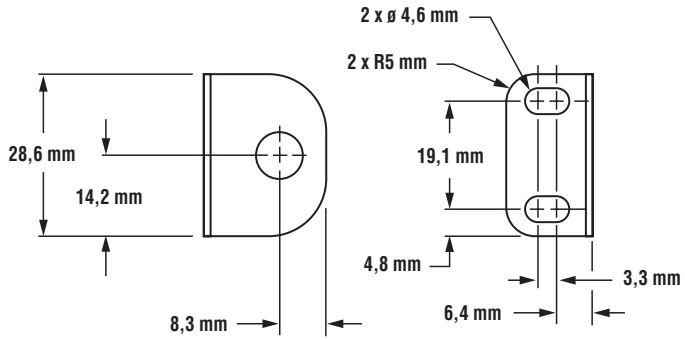


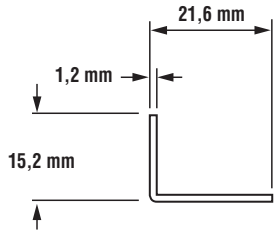
Fibre-optic Mounting Brackets

SMBF

- Right-angle bracket for glass fibre-optics with 5/16" x 24 threaded tip
- Stainless steel (1,2 mm)







D10 *Expert* Series Sensors



Advanced fibre-optic sensors for use with plastic fibres.

- Easy-to-set automatic *Expert*-style TEACH options* including static, dynamic, and single point programming plus manual adjustment for fine-tuning
- 16-bit micro-controller and 12-bit analogue-to-digital converter for high performance, low contrast sensing
- Easy-to-read 4-digit display for programming and signal strength readout, plus indicators for a continuous readout of operating status (user configurable)
- Four-mode power and speed selection with automatic cross-talk avoidance circuitry
- Selectable OFF-delay options
- Gate input wire can be used to selectively inhibit sensor outputs from switching
- Models available with visible red (680 nm) or visible green (525 nm) sensing beam
- Sleek, ultra-slim 10 mm housing, mounts to a standard 35 mm DIN rail

LED diagnostics.
Indicator LEDs keep you constantly informed of the output status of the D10 sensors. A separate, domed LED for each channel lights yellow when the output is conducting.

Two independently configurable outputs.
For the ultimate in versatility, the D10 *Expert* has two independent output channels, each with its own individually configurable set-point. This allows you to solve multiple applications with a single sensor.



Two discrete outputs, both are either NPN (sinking) or PNP (sourcing), depending on the model.



Analogue and discrete output models have one discrete output (either NPN or PNP), plus a 4-20 mA current analogue output or a 0-10V dc voltage analogue output, depending on the model.

Pre-wired or quick-disconnect wiring, 12 to 24V dc.**
The D10 has the wiring choices you need. Models are available with an integral, 2 m or 9 m pre-wired cable or quick-disconnect connection (8 mm) for plug-and-play convenience and interchangeability.

Four different response speeds.
The D10 sensor has four different response speeds. The maximum sensing distance depends upon the response speed settings. The icons shown on top of the pages with the range charts reflect the four different power settings.



D10SHP	D10HP	D10HS	D10SHS
Super **H**igh **P**ower	**H**igh **P**ower	**H**igh **S**peed	**S**uper **H**igh **S**peed
2,5 ms	1 ms	200 µs	50 µs

** U.S. Patent #5,808,296*
*** 15 to 24V dc for 0-10V dc analogue models*



D10 *Expert* Series Plastic Fibre-optic – Dual-Discrete Output Models

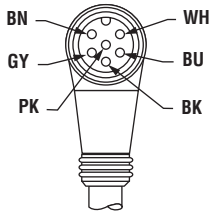
Light Source	Models	Cable	Supply Voltage	Output Type	Response Time
VISIBLE RED 680 nm	**D10DPFP D10DPFPQ**	2 m cable ø 8 mm QD, 6-pin	12 to 24V dc	PNP (sourcing)	Selectable: 50 µs, 200 µs, 1 ms, 2,5 ms
VISIBLE RED 680 nm	**D10DNFP D10DNFPQ**	2 m cable ø 8 mm QD, 6-pin	12 to 24V dc	NPN (sinking)	Selectable: 50 µs, 200 µs, 1 ms, 2,5 ms
VISIBLE GREEN 525 nm	**D10DPFPG D10DPFPGQ**	2 m cable ø 8 mm QD, 6-pin	12 to 24V dc	PNP (sourcing)	Selectable: 50 µs, 200 µs, 1 ms, 2,5 ms
VISIBLE GREEN 525 nm	**D10DNFPG D10DNFPGQ**	2 m cable ø 8 mm QD, 6-pin	12 to 24V dc	NPN (sinking)	Selectable: 50 µs, 200 µs, 1 ms, 2,5 ms



D10 *Expert* Series Plastic Fibre-optic – Analogue and Discrete Output Models

Light Source	Models	Cable	Supply Voltage	Discrete Output	Analogue Output	Response Time
VISIBLE RED 680 nm	**D10IPFP D10IPFPQ**	2 m cable ø 8 mm, 6-pin	12 to 24V dc	PNP (sourcing)	4-20 mA	50 µs or 200 µs or 1 ms or 2,5 ms
VISIBLE RED 680 nm	**D10INFP D10INFPQ**	2 m cable ø 8 mm, 6-pin	12 to 24V dc	NPN (sinking)	4-20 mA	50 µs or 200 µs or 1 ms or 2,5 ms
VISIBLE RED 680 nm	**D10UPFP D10UPFPQ**	2 m cable ø 8 mm, 6-pin	15 to 24V dc	PNP (sourcing)	0-10V	50 µs or 200 µs or 1 ms or 2,5 ms
VISIBLE RED 680 nm	**D10UNFP D10UNFPQ**	2 m cable ø 8 mm, 6-pin	15 to 24V dc	NPN (sinking)	0-10V	50 µs or 200 µs or 1 ms or 2,5 ms
VISIBLE GREEN 525 nm	**D10IPFPG D10IPFPGQ**	2 m cable ø 8 mm, 6-pin	12 to 24V dc	PNP (sourcing)	4-20 mA	50 µs or 200 µs or 1 ms or 2,5 ms
VISIBLE GREEN 525 nm	**D10INFPG D10INFPGQ**	2 m cable ø 8 mm, 6-pin	12 to 24V dc	NPN (sinking)	4-20 mA	50 µs or 200 µs or 1 ms or 2,5 ms
VISIBLE GREEN 525 nm	**D10UPFPG D10UPFPGQ**	2 m cable ø 8 mm, 6-pin	15 to 24V dc	PNP (sourcing)	0-10V	50 µs or 200 µs or 1 ms or 2,5 ms
VISIBLE GREEN 525 nm	**D10UNFPG D10UNFPGQ**	2 m cable ø 8 mm, 6-pin	15 to 24V dc	NPN (sinking)	0-10V	50 µs or 200 µs or 1 ms or 2,5 ms

Quick-Disconnect Cables (Selection)

Style	Model	Length	Connector	Pin-out
ø 8 mm, 6-pin	**PKG6Z-2**	2 m	Straight	Pin-out ø 8 mm, 6-pin (Connector on Cable Shown) 
ø 8 mm, 6-pin	**PKG6Z-9**	9 m	Straight	
ø 8 mm, 6-pin	**PKW6Z-2**	2 m	Right-Angle	
ø 8 mm, 6-pin	**PKW6Z-9**	9 m	Right-Angle	

D11 Series Sensors

D11 *Expert* Series – economical TEACH-mode fibre-optic sensors.
Available with red, green, blue and white LEDs, D11E fibre-optic sensors provide powerful, compact, DIN-rail-mountable options for sensing and registration control. They are low-cost, high-power, plastic fibre-optic sensors with fast 0,2 ms response time. D11 *Expert* models feature push-button programming to "teach" dark and light sensing conditions in low-contrast applications.

- Easy push-button TEACH-mode programming automatically adjusts sensitivity to optimal setting
- Designed for high performance, even in low-contrast sensing applications (sensitivity set to just above the "dark" condition)
- D11E2 Series sensors set the switching point midway between the "dark" and "light" conditions to ignore subtle changes, such as web flutter
- Fast, 200 microsecond (0,2 millisecond) output response; a 40 millisecond output pulse stretcher may be programmed, when required
- Choose models with NPN (sinking) or PNP (sourcing) output
- Output may be programmed for either light or dark operate
- Sealed one-button programming* assures security of settings
- LED status indications for Power ON, output state, received signal strength, sensing contrast, and diagnostic trouble shooting
- Choose models with integral 2 m cable or quick-disconnect connector (8 mm); 9 m cables are also available

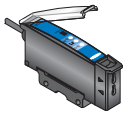




D11 Series–self-contained fibre-optic sensors.
D11 standard sensors feature a 15-turn sensitivity adjustment. LEDs indicate Power ON and Output ON, and flash to warn of problems including over-loaded output and marginal excess gain. They feature overload, shorted load and reverse polarity protection, and automatically reset when the problem is cleared.

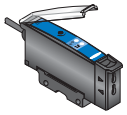
- Choice of NPN (sinking) or PNP (sourcing) complementary outputs – one normally open and one normally closed; 150 mA output load rating
- Normally closed output may be wired as a diagnostic alarm to alert personnel to marginal sensing conditions**
- 500 microsecond (0,5 millisecond) output response
- LED status indications for Power ON, Output Overload, Fibre Alignment, and Marginal Gain conditions**
- Choose models with integral 2 m cable or quick-disconnect connector (8 mm); 9 m cables are also available

** U.S. Patent #5808296*
*** U.S. Patent #5087838*

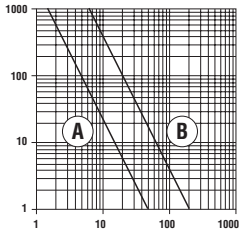
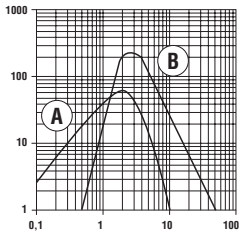


D11 *Expert* Series Plastic Fibre-optic Models (Visible Red* 680 nm)

Models	Switching Threshold	Cable	Supply Voltage	Output Type	Range Specs
D11EP6FP **D11EP6FPQ**	Just above dark condition	2 m cable ø 8 mm QD, 4-pin	10 to 30V dc	PNP (sourcing)	Range varies by sensing mode and fibre-optics used. • PIT46U fibres, opposed mode: 180 mm • PIT26U fibres, opposed mode: 50 mm • PBT46U fibres, diffuse mode: 50 mm • PBT26U fibres, diffuse mode: 10 mm Diffuse mode performance based on 90% reflectance white test card.
D11EN6FP **D11EN6FPQ**	Just above dark condition	2 m cable ø 8 mm QD, 4-pin	10 to 30V dc	NPN (sinking)	
D11E2P6FP **D11E2P6FPQ**	Midway between dark and light condition	2 m cable ø 8 mm QD, 4-pin	10 to 30V dc	PNP (sourcing)	
D11E2N6FP **D11E2N6FPQ**	Midway between dark and light condition	2 m cable ø 8 mm QD, 4-pin	10 to 30V dc	NPN (sinking)	

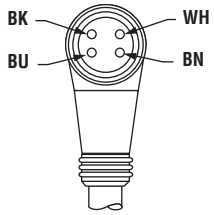


D11 Series Plastic Fibre-optic Models (Visible Red* 680 nm)

Models	Cable	Supply Voltage	Output Type	Excess Gain
D11SP6FP	2 m cable	10 to 30V dc	Complementary PNP (sourcing)	 Excess gain in relation to distance (in mm). A) PIT26U opposed B) PIT46U opposed
D11SP6FPQ	ø 8 mm QD, 4-pin	10 to 30V dc	Complementary PNP (sourcing)	
D11SN6FP	2 m cable	10 to 30V dc	Complementary NPN (sinking)	 Excess gain in relation to distance (in mm). Diffuse mode performance based on 90% reflectance white test card. A) PBT26U diffuse mode B) PBT46U diffuse mode
D11SN6FPQ	ø 8 mm QD, 4-pin	10 to 30V dc	Complementary NPN (sinking)	

** Contact your local Banner sales representative for versions with blue, green or white LEDs*

Quick-Disconnect Cables (Selection)

Style	Model	Length	Connector	Pin-out
ø 8 mm, 4-pin	**PKG4-2**	2 m	Straight	Pin-out ø 8 mm, 4-pin (Connector on Cable Shown) 
ø 8 mm, 4-pin	**PKG4-10**	9 m	Straight	
ø 8 mm, 4-pin	**PKW4-2**	2 m	Right-Angle	

Mini-Beam™ *Expert* Series Sensors

Millions of sensors in use.
The MINI-BEAM is the world's most popular miniature photoelectric sensor. With millions of units in use worldwide, it has become the benchmark for small photoelectrics. Fact is, there are more MINI-BEAMs solving more sensing applications in more plants worldwide than any other sensor. Because there is a MINI-BEAM to solve every application in your plant, it is also your best single-sensor choice to standardise all of your sensing applications.

Advanced "TEACHABLE" microprocessor.
The MINI-BEAM™ *Expert* features a highly advanced, "teachable" microprocessor. With the sensor in TEACH mode, it can "learn" the ON and OFF sensing conditions required, compute the most accurate setting for recognising the difference in received light signals, and self-program that setting.

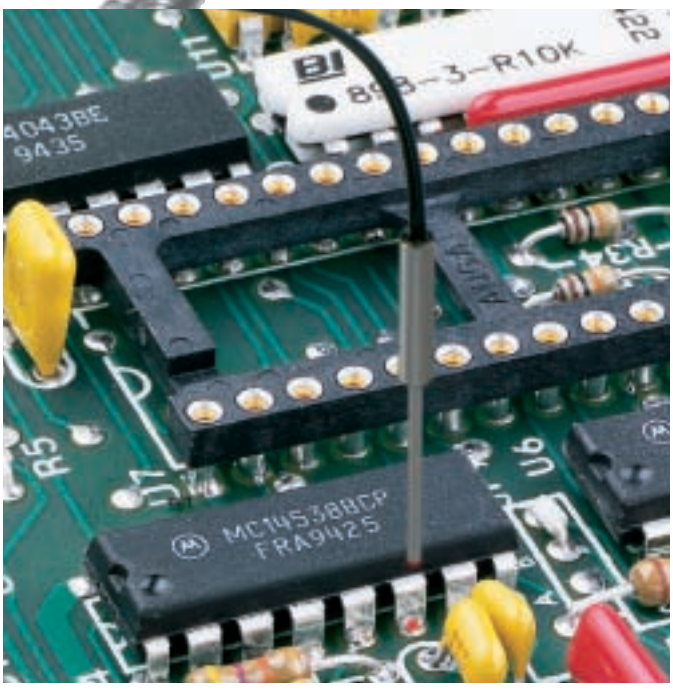
Simple, one-button operation.
The MINI-BEAM *Expert* "learns" each job with the push of a single button. Simply push it once with the sensor pointed at the ON condition, and once with it pointed at the OFF condition. Not only does it provide extremely accurate sensitivity settings, this single pushbutton is extremely easy to use, and it eliminates the potential for adjustment tampering on the production line.

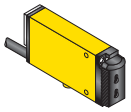


Pre-wired or quick-disconnect (QD) wiring, 10 to 30V dc.
The 10 to 30V dc sensors are available with an integral 2 m or 9 m cable, a 5-conductor PVC potted-in cable, or a 5-pin M12 x 1 quick-disconnect fitting.

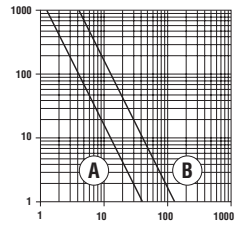
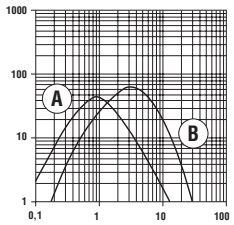
Rugged and sealed.
- Glass-filled polyester housing
- Epoxy-encapsulated electronics
- Sealed programming button
- Rated IEC IP67

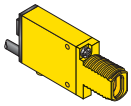




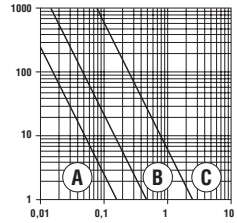
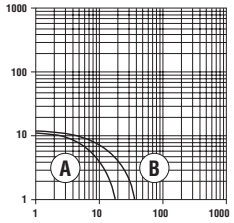
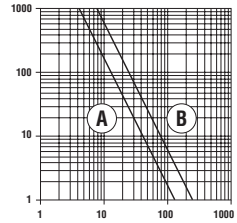
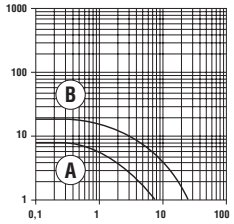


MINI-BEAM™ *Expert* Series Plastic Fibre-optic Models (Visible Red 650 nm)

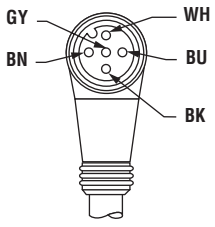
Models	Cable	Supply Voltage	Output Type	Excess Gain (in relation to distance in mm)
SME312FP	5-wire 2 m cable	10 to 30V dc	Bipolar NPN/PNP	 Opposed mode - individual fibres A) PIT26U fibre B) PIT46U fibre
SME312FPQD	M12 x 1, 5-pin	10 to 30V dc	Bipolar NPN/PNP	 Diffuse mode - bifurcated fibres (performance based on 90% reflectance white test card). A) PBT26U fibre, B) PBT46U fibre



MINI-BEAM™ *Expert* Series Glass Fibre-optic Models (Visible Red 650 nm and Infrared 880 nm)

Models	Cable	Supply Voltage	Output Type	Excess Gain (in relation to distance in mm)
SME312F	5-wire 2 m cable	10 to 30V dc	Bipolar NPN/PNP	 Opposed mode - individual fibres A) IT13S fibre, B) IT23S fibre, C) IT23S fibre with L9 lens
SME312FQD	M12 x 1, 5-pin	10 to 30V dc	Bipolar NPN/PNP	 Diffuse mode - bifurcated fibres (performance based on 90% reflectance white test card). A) BT13S fibre, B) BT23S fibre
SME312FV	5-wire 2 m cable	10 to 30V dc	Bipolar NPN/PNP	 Opposed mode - individual fibres A) IT13S fibre B) IT23S fibre
SME312FVQD	M12 x 1, 5-pin	10 to 30V dc	Bipolar NPN/PNP	 Diffuse mode - bifurcated fibres (performance based on 90% reflectance white test card). A) BT13S fibre, B) BT23S fibre

Quick-Disconnect Cables (Selection)

Style	Model	Length	Connector	Pin-out
M12 x 1, 5-pin	**MQDC1-506**	2 m	Straight	Pin-out M12 x 1, 5-pin (Connector on Cable Shown) 
M12 x 1, 5-pin	**MQDC1-515**	4,5 m	Straight	
M12 x 1, 5-pin	**MQDC1-530**	9 m	Straight	
M12 x 1, 5-pin	**MQDC1-506RA**	2 m	Right-Angle	
M12 x 1, 5-pin	**MQDC1-515RA**	4,5 m	Right-Angle	
M12 x 1, 5-pin	**MQDC1-530RA**	9 m	Right-Angle	

R55F Series Sensors

Microprocessor-based programming achieves unsurpassed resolution.
Advanced programming features enable the R55F to reliably detect 16 levels of greyscale at up to 10.000 actuations per second, resulting in outstanding colour contrast sensitivity for all of your applications.

Advanced TEACH programming for unmatched simplicity & performance.
The R55F's innovative TEACH function offers you two options for sensing threshold programming. Static TEACH is used to set sensing conditions individually, and Dynamic TEACH is an automated method of "teaching" a series of conditions, and automatically updating the signal threshold while the sensor is operating.

Dynamic TEACH programs the sensor "on-the-fly".
Dynamic TEACH enables the R55F to "learn" a series of conditions "on-the-fly," sample the sensing events, compute the optimum threshold between "light" and "dark" conditions, then self-program that setting and periodically update it to compensate for any changes in sensing conditions during operation.

Static TEACH computes each sensing condition individually.
In Static TEACH mode, you simply point the R55F at an "on" condition and push one button to "teach" or program that condition. Simply repeat the procedure for the "off" condition and the sensor computes the optimal setting. You can also manually override the microprocessor-selected settings by simply pushing the "plus" or "minus" buttons.

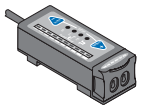




Precise indication of sensing contrast and switch point.
A highly visible, 10-segment green LED bar provides continuous signal strength and switch point indication to assist you during set-up and operation. Sensor provides visual indication of the sensing contrast level and application reliability.

LED diagnostics.
Easy-to-read diagnostic indicators keep you constantly aware of operating status. Green LEDs indicate "Light Operate," "Dark Operate," and selected output delay. A yellow LED indicates "Outputs Conducting".

Programmable sensor functions.
In SETUP mode, you can program the outputs for "Light Operate" or "Dark Operate" and select one of three output delay options.



R55F Series Plastic Fibre-optic Colour Mark Sensors

Light Source	Models	Cable	Supply Voltage	Output Type	Output Rating	Response	Repeatability
Red LED	**R55FP**	2 m cable	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
Red LED	**R55FPQ**	M12 x 1	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
Green LED	**R55FPG**	2 m cable	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
Green LED	**R55FPGQ**	M12 x 1	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
White LED	**R55FPW**	2 m cable	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
White LED	**R55FPWQ**	M12 x 1	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
Blue LED	**R55FPB**	2 m cable	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
Blue LED	**R55FPBQ**	M12 x 1	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs

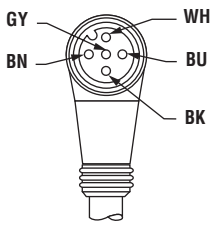


R55F Series Glass Fibre-optic Colour Mark Sensors

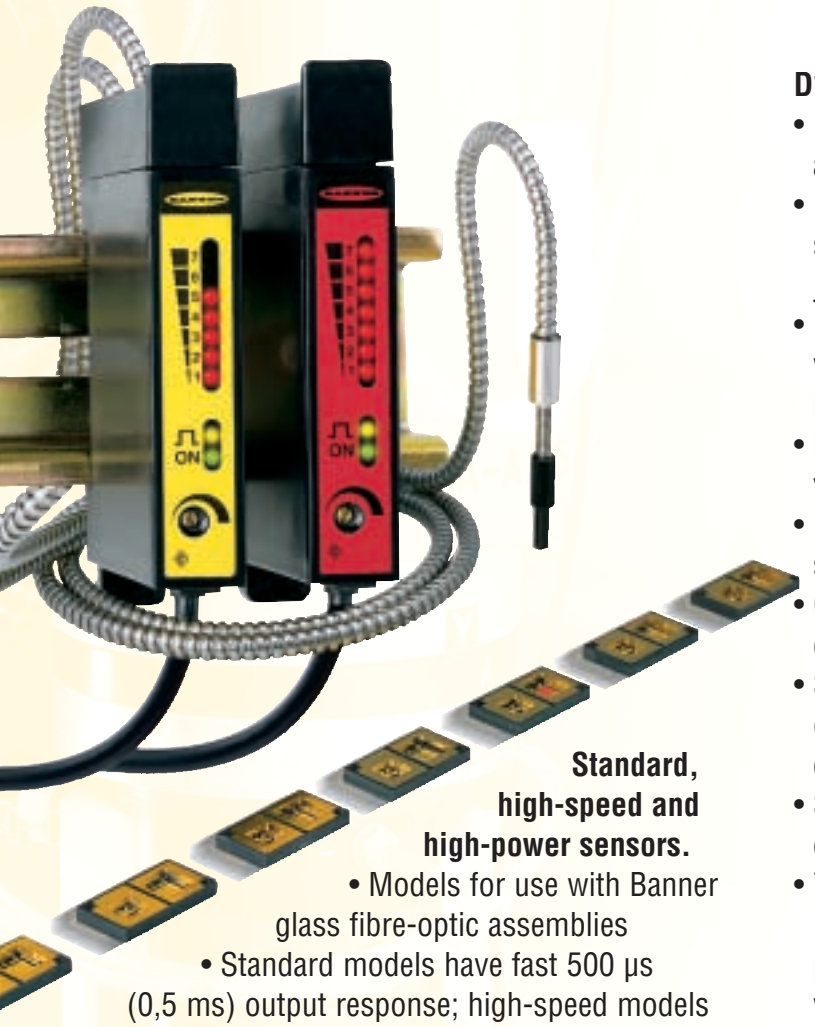
Light Source	Models	Cable	Supply Voltage	Output Type	Output Rating	Response	Repeatability
Red LED	**R55FV**	2 m cable	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
Red LED	**R55FVQ**	M12 x 1	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
Green LED	**R55FVG**	2 m cable	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
Green LED	**R55FVGQ**	M12 x 1	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
White LED	**R55FVW**	2 m cable	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
White LED	**R55FVWQ**	M12 x 1	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
Blue LED	**R55FVB**	2 m cable	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
Blue LED	**R55FVBQ**	M12 x 1	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs

Quick-Disconnect Cables (Selection)

Style	Model	Length	Connector	Pin-out
M12 x 1, 5-pin	**MQDC1-506**	2 m	Straight	Pin-out M12 x 1, 5-pin (Connector on Cable Shown)
M12 x 1, 5-pin	**MQDC1-515**	4,5 m	Straight	
M12 x 1, 5-pin	**MQDC1-530**	9 m	Straight	
M12 x 1, 5-pin	**MQDC1-506RA**	2 m	Right-Angle	
M12 x 1, 5-pin	**MQDC1-515RA**	4,5 m	Right-Angle	
M12 x 1, 5-pin	**MQDC1-530RA**	9 m	Right-Angle	



D12 Series Sensors



Standard, high-speed and high-power sensors.

- Models for use with Banner glass fibre-optic assemblies
- Standard models have fast 500 µs (0,5 ms) output response; high-speed models (model suffix "Y" or "Y1") have selectable 500 or 50 µs response
- Choice of either NPN (sinking) or PNP (sourcing) complementary outputs; 150 mA output load rating
- Normally closed output of standard models may be wired as a diagnostic alarm output to alert personnel of marginal sensing conditions*
- 7-segment LED bar-graph** indicates: received signal strength, output overload, and marginal signal strength (note: bar-graph is inoperative in the 50 µs mode of high speed models)
- Separate LED indicators for sensor power and output status
- "Y1" suffix high-speed models include a 20 ms output pulse stretcher
- Choose models with integral 2 m cable or 150 mm pigtail quick-disconnect (8 mm); 9 m cables are also available

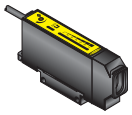
D12 *Expert* TEACH-mode fibre-optic sensors.

- Easy TEACH-mode programming automatically adjusts sensitivity to optimal setting*
- D12E sensors are designed for low-contrast sensing applications (switching threshold set to just above the "dark" condition)
- D12E2 sensors set their switching threshold mid-way between "dark" and "light" conditions to ignore subtle changes, such as web flutter
- Models for glass fibre-optics available in all versions
- Fast 200 µs sensing response; a 40 ms pulse stretcher may be programmed, when required
- Output may be programmed for either light- or dark-operate
- Secure one-button programming is easy to use; one button sets both TEACH and sensor configuration settings
- Separate input for remote sensor programming by external switch or a PLC
- 7-segment LED bar-graph** indicates relative received signal strength and sensing contrast, programming status and diagnostic trouble warnings
- Dedicated alarm output for signaling marginal sensing conditions

AC-coupled sensors.

- Highly sensitive to very small signal change; fast response
- Automatic gain control circuit continually adjusts emitter output to maintain system gain
- Ideal for low-contrast applications such as web flaw, thread break and falling part detection
- Bi-polar outputs: one NPN (sinking) and one PNP (sourcing)
- LED indicators for sensor power, output status and AGC lock condition
- Selectable light- or dark-operate; no false pulse on power-up
- Adjustable output pulse time

** U.S. Patent #5808296; ** U.S. Patent #4965548*

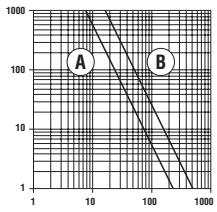


D12 Standard Series Glass Fibre-optic Models (500 µs Output Response – Visible Red 680 nm)

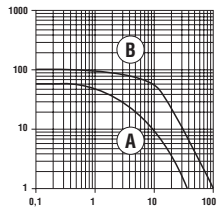
Models	Cable	Supply Voltage	Output Type
D12SP6FV **D12SP6FVQ**	2 m cable ø 8 mm QD, 4-pin	10 to 30V dc	Complementary PNP (sourcing)
D12SN6FV **D12SN6FVQ**	2 m cable ø 8 mm QD, 4-pin	10 to 30V dc	Complementary NPN (sinking)

Excess gain in relation to the distance (in mm).
Diffuse mode performance based on 90% reflectance white test card.

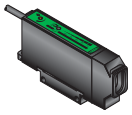
Excess Gain



A) IT13S fibre opposed mode
B) IT23S fibre opposed mode



A) BT13S fibre diffuse mode
B) BT23S fibre diffuse mode

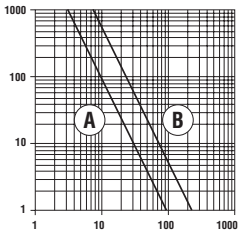


D12 High-Speed Series Glass Fibre-optic Models (50 µs or 500 µs Output Response – Visible Red 680 nm)

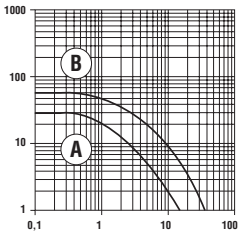
Models	Cable	Supply Voltage	Output Type
D12SP6FVY **D12SP6FVYQ**	2 m cable ø 8 mm, 4-pin	10 to 30V dc	Complementary PNP (sourcing)
D12SP6FVY1* **D12SP6FVY1Q***	2 m cable ø 8 mm, 4-pin	10 to 30V dc	Complementary PNP (sourcing)
D12SN6FVY **D12SN6FVYQ**	2 m cable ø 8 mm, 4-pin	10 to 30V dc	Complementary NPN (sinking)
D12SN6FVY1* **D12SN6FVY1Q***	2 m cable ø 8 mm, 4-pin	10 to 30V dc	Complementary NPN (sinking)

** Y1 models have 20 ms output pulse stretcher. Excess gain in relation to the distance (in mm).*
Diffuse mode performance based on 90% reflectance white test card.

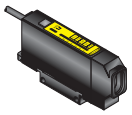
Excess Gain



A) IT13S fibre opposed mode
B) IT23S fibre opposed mode

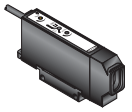


A) BT13S fibre diffuse mode
B) BT23S fibre diffuse mode



D12 *Expert* Series Glass Fibre-optic Models (Visible Red 680 nm)

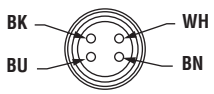
Models	Switching Threshold	Cable	Supply Voltage	Output Type	Maximum Range
D12EP6FV **D12EN6FV**	Just above the “dark” condition	2 m cable	10 to 30V dc	PNP (sourcing) NPN (sinking)	IT23S fibres, opposed: 930 mm IT13S fibres, opposed: 442 mm BT23S fibre, diffuse mode: 178 mm BT13S fibre, diffuse mode: 68 mm
D12E2P6FV **D12E2N6FV**	Midway between “dark” and “light”	2 m cable	10 to 30V dc	PNP (sourcing) NPN (sinking)	



D12 AC-Coupled Series Glass Fibre-optic Models (50 µs Output Response – Visible Red 680 nm)

Models	Cable	Supply Voltage	Output Type	Maximum Range
D12DAB6FV	2 m cable	10 to 30V dc	Bipolar NPN/PNP	IT23S fibres, opposed: 200 mm IT13S fibres, opposed: 75 mm BT23S fibre, diffuse mode: 60 mm BT13S fibre, diffuse mode: 25 mm
D12DAB6FVQ	ø 8 mm QD, 4-pin	10 to 30V dc	Bipolar NPN/PNP	

Quick-Disconnect Cables (Selection)

Style	Model	Length	Connector	Pin-out
ø 8 mm, 4-pin *(except for D12 Expert)*	**PKG4-2**	2 m	Straight	Pin-out ø 8 mm, 4-pin (Connector on Cable Shown) 

QS18FP Series Sensors

An affordable solution for use with low-cost plastic fibres.
The QS18 accommodates large core 0,75 mm; 1 mm and 1,5 mm and small core 0,25 mm and 0,5 mm polyethylene jacketed plastic fibres. Banner's unique locking mechanism holds fibres securely in place. QS18FP photoelectric sensors feature a universal mounting design that allows them to fit or retrofit virtually every mounting situation. A sealed potentiometer allows accurate setting, featuring a mechanical moulded stop to prevent over-adjustment damage.

360° visible indicator LEDs.
Green and amber LEDs protrude above the top of the sensor, giving you visibility from the top and from all sides. A flashing green LED indicates an output overload. A steady amber LED indicates normally open output conduction and flashes to indicate marginal sensing conditions (excess gain between 1 and 1,5 times) in the light condition.

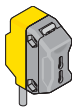


FI22FP Series Sensors

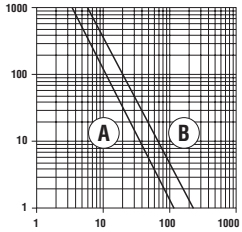
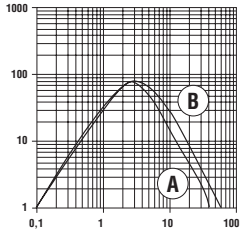
Easy-to-use, low-profile fibre-optic sensor.
The FI22FP is an easy-to-use, low-profile fibre-optic sensor for use with plastic or Banner's STEEL-SKIN™ fibres. It provides high-performance sensing in low-contrast applications and, because of its small size, can mount almost anywhere.

- Compact housing with easy-to-use 8-segment bar-graph display
- Bright LED's for easy programming and status monitoring
- Full functionality with *Expert* ™-style teach modes: static, dynamic or single-point
- FI22 housing is designed to withstand dirty environments and washdown applications (IP67)
- Integral cable or quick-disconnect (8 mm), custom snap-on bracket included

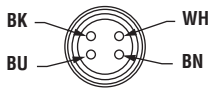




QS18FP Series Plastic Fibre-optic Models (Visible Red 660 nm)

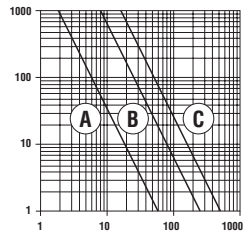
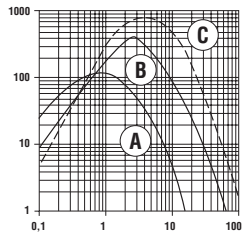
Models	Cable	Supply Voltage	Output Type	Excess Gain (in relation to distance in mm)
QS18VP6FP **QS18VP6FPQ**	2 m, 4-wire ø 8 mm QD, 4-pin, pigtail	10 to 30V dc	PNP	 A) PIT46U opposed mode B) PIT66U opposed mode  Diffuse mode performance based on 90% reflectance white test card. A) PBT46U diffuse mode B) PBT66U diffuse mode
QS18VN6FP **QS18VN6FPQ**	2 m, 4-wire ø 8 mm QD, 4-pin, pigtail	10 to 30V dc	NPN	

Quick-Disconnect Cables (Selection)

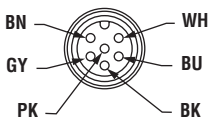
Style	Model	Length	Connector	Pin-out
ø 8 mm, 4-pin	**PKG4-2**	2 m	Straight	Pin-out ø 8 mm, 4-pin (Connector on Cable Shown)
ø 8 mm, 4-pin	**PKW4-2**	2 m	Right-Angle	



FI22FP Series Inline Plastic Fibre-optic Models (Visible Red 660 nm)

Models	Cable	Supply Voltage	Output Type	Excess Gain (in relation to distance in mm)
FI22FP	2 m cable, 5-wire	10 to 30V dc	Bipolar NPN/PNP	 A) PIT26U opposed mode B) PIT46U opposed mode C) PIT66U opposed mode  Diffuse mode performance based on 90% reflectance white test card. A) PBT26U diffuse mode, B) PBT46U diffuse mode, C) PBT66U diffuse mode
FI22FPQ	ø 8 mm QD, 6-pin, pigtail	10 to 30V dc	Bipolar NPN/PNP	

Quick-Disconnect Cables (Selection)

Style	Model	Length	Connector	Pin-out
ø 8 mm, 6-pin	**PKG6Z-2**	2 m	Straight	Pin-out ø 8 mm, 6-pin (Connector on Cable Shown)
ø 8 mm, 6-pin	**PKW6Z-2**	2 m	Right-Angle	

Worldwide Representation

EUROPE

Corporate Office Belgium:
Banner Engineering Belgium B.V.B.A.
Koning Albert 1 laan, 50
B-1780 Wemmel
Belgium
Tel: 32-2-456 07 80
Fax: 32-2-456 07 89
e-mail: mail@bannerengineering.be
http://www.bannerengineering.com

Austria
Intermadox GmbH
Josef-Moser-Gasse 1
A-1170 Vienna
Tel: 431-48 615870
Fax: 431-48 6158723
e-mail: imax.office@intermadox.at
http://www.intermadox.at

Belgium
Multiprox N.V.
Lion d'Orweg, 12
B-9300 Aalst
Tel: 32-53-766 566
Fax: 32-53-783 977
e-mail: mail@multiprox.be
http://www.multiprox.be

Bulgaria
Sensomat Ltd.
VH V, App 11
Dr. Ivan Penakov Str. 15
BG-9300 Dobrich
Tel: 359 58 272 45
Fax: 359 58 252 60
e-mail: info@sensomat.info

Czech Republic
Turck s.r.o.
Hradecká 1151
CZ-50003 Hradec Králové 3
Tel: 420-49-5210766
Fax: 420-49-5210767
e-mail: turck@turck.cz
http://www.turck.cz

Denmark
Hans Folsgaard AS
Ejby Industrivej 30
Dk-2600 Glostrup
Tel: 45-43-20 86 00
Fax: 45-43-96 88 55
e-mail: hf@hf.net
http://www.hf.net

Estonia
Osaühing "System Test"
Pirita tee 20
EE-10127 Tallinn
Estonia
Tel: 372-6 405 423
Fax: 372-6 405 422
e-mail: systemtest@systemtest.ee

Finland
Sarlin Oy Ab
P.O. Box 750
SF-00101 Helsinki 10
Tel: 358-9-50 44 41
Fax: 358-9-56 33 227
e-mail: sales.automation@sarlin.com
http://www.sarlin.com

France
Turck Banner S.A.S.
3, Rue de Courtalin
Magny - Le - Hongre
77703 Marne - La - Valleé Cedex 4
Tel: 33-1-60-43-60-70
Fax: 33-1-60-43-10-18
e-mail: info@turckbanner.fr
http://www.turckbanner.fr

Germany
Hans Turck GmbH & Co KG
Witzlebenstrasse 7
45472 Mülheim an der Ruhr
Tel: 49-208-49 520
Fax: 49-208-49 52 264
e-mail: turckmh@mail.turck-globe.de
http://www.turck.com

Greece
2KAPPA Ltd.
Sofokli Venizeloy 13
Menemeni, Lahanagora
GR-54628, Thessaloniki
Tel: 30-310-77 55 15
Fax: 30-310-77 55 14
e-mail: 2kappa@pel.forthnet.gr
http://www.2kappa.gr

Hungary
Turck Hungary Kft.
Könyves Kalman Krt. 76
H-1087 Budapest
Tel: 36-1-477-0740 or 36-1-313-8221
Fax: 36-1-477-0741
e-mail: turck@turck.hu
http://www.turck.hu

Iceland
K M Stáhl ehf.
Bíldshöfòa 16
110 Reykjavik
Tel: 354-56 78 939
Fax: 354-56 78-938
e-mail: kalli@kmstal.is

Ireland
Tektron
Tramore House
Tramore Road
Cork
Tel: 353-(021)-431 33 31
Fax: 353-(021)-431 33 71
e-mail: sales@tektron.ie
http://www.tektron.ie

Italy
Turck Banner s.r.l.
Via Adamello, 9
20010 Bareggio
Milano
Tel: 390-2-90 36 42 92 or 90 36 42 88
Fax: 390-2-90 36 48 38
e-mail: info@turckbanner.it
http://www.turckbanner.it

Latvia
LASMA Ltd.
Aizkraukles 21-111
LV-1006 Riga
Tel: 371-754 5217
Fax: 371-754 5217
e-mail: inga@lasma.lv

Lithuania
Hidroteka
Büro: Taikos 76-4
LT-3031 Kaunas
Post: P.O. Box 572
LT-3028 Kaunas
Tel: 370-37 352195
Fax: 370-37-351952
e-mail: hidroteka@post.sonexco.com

Luxembourg
Sogel SA 1
Dernier Sol BP 1941
L-1019
Tel: 352-40-05-05-331
Fax: 352-40-05-05-305
e-mail: sogel@sogel.lu

Netherlands
Turck B.V.
Ruiterlaan 7
NL-8019 BN Zwolle
Tel: 31-38-42 27 750
Fax: 31-38-42 27 451
e-mail: info@turck.nl
http://www.turck.nl

Norway
Danyko A.S.
P.O. Box 48
N-4891 Grimstad
Tel: 47-37-04 02 88
Fax: 47-37-04 14 26
e-mail: danyko@hf.net
http://www.danyko.no

Poland
Turck Sp.zo.o
ul Kepska 2
PL-45 129 Opole
Tel: 48-77 443 48 00
Fax: 48-77 443 48 01
e-mail: turck@turck.pl
http://www.turck.pl

Portugal
Salmon & Cia Lda.
Rua Cova da Moura, 2-6º
1399-033 Lisboa
Tel: 351-21-39 20 130
Fax: 351-21-39 20 189
e-mail: div8.salmon@mail.telepac.pt

Romania
Turck Office Romania
Calea Plevnei 139 B, sector 6
RO-77131 Bucharest
Tel: 40-21-314-8714
Fax: 40-21-222 9176
e-mail: thelen@turck.ro
http://www.turck.ro

Russia and CIS
Turck Office Minsk
ul. Engelsa, 30
BY-220030 Minsk
Republic of Belarus
Tel: 375-172 105957
Fax: 375-172 275313
e-mail: turck@infonet.by
http://www.turck.by

Turck Office Moskau
2-Oj Werchne-Michajlowskij proesd, 9
RU-117419 Moskau
Tel: 7-095-952-0820 / 105-0054
Fax: 7-095-955-7348
e-mail: turck@turck.ru

Slovakia
MARPEX s.r.o.
Centrum I - 57/132
SK-01841 Dubnica nad Váhom
Tel: 421-42 4426987
Fax: 421-42 4426986
e-mail: marpex@marpex.sk

Slovenia
Tipteh d.o.o
CESTA V GORICE 40
SLO-1111 Ljubljana
Tel: 386-1 200 51 50
Fax: 386-1 200 51 51
e-mail: info@tipteh.si

Spain
Turck Banner S.L.
Travessera de Gracia 300, 5º 3ª
08025 Barcelona
Tel: 34-667-98 35 41
Fax: 34-93-457 25 27
e-mail: info@turckbanner.es
http://www.turckbanner.es

Sweden

HF Sverige AB
Stockholm:
Kanalvägen 10C
SE-194 61 Upplands Väsby
Tel: 46-8-555-409-85
Fax: 46-8-590-717-81
e-mail: hf.sverige@hf.net
http://www.hf.net

Gothenburg:
Tel: 46-031-27-09-20
Fax: 46-031-27-09-29
e-mail: hf@hf.net
http://www.hf.net

Malmo:
Tel: 46-040-611-96-70
Fax: 46-040-611-96-85
e-mail: hf@hf.net
http://www.hf.net

Switzerland

Bachofen AG
Ackerstrasse 42
8610 Uster
Tel: 41-1944-11 11
Fax: 41-1944-12 33
e-mail: info@bachofen.ch
http://www.bachofen.ch

Turkey

General Teknik Elektronik
Tesisat San. ve Tic. Ltd. Sti.
Iskender Cad. No. 44
Artmak Han Kat 2
Sishane Karaköy Istanbul
Tel: 90-212-253 40 41
Fax: 90-212-253 18 47
e-mail: generalteknik@turk.net

United Kingdom

Turck Banner Limited
Stephenson Road
Leigh On Sea
Essex SS9 5LS
Tel: 44-1702-525186
Fax: 44-1702-420934
e-mail: info@turckbanner.co.uk
http://www.turckbanner.co.uk

NORTH AMERICA

Headquarters USA:

Banner Engineering Corp.
9714 10th Avenue North
Minneapolis, Minnesota 55441
Tel: 1-763-5443164
Fax: 1-763-5443213
e-mail: sensors@bannerengineering.com
http://www.bannerengineering.com

Canada

E. B. Horsman & Son Ltd.
13055 80th Avenue Surrey,
British Columbia V3W 3B1
Tel: 1-604-596-7111
Fax: 1-604-596-3139
http://www.ebhorsman.com

Rotalec (Le Groupe)
900 McCaffrey
Ville St-Laurent, Quebec H4T 2C7
Tel: 1-514-341-3685
Fax: 1-514-341-5205
e-mail: atlantic@rotalec.com
http://www.rotalec.com

Landel Controls LTD.
#250, 5701-17 Ave SE
Calgary, Alberta T2A 0W3
Tel: 1-403-254-8900
Fax: 1-403-254-8903
e-mail: email@landelcontrols.com
http://www.landelcontrols.com

Le Groupe Rotalec/Seltron Divison
114 Woodlawn Road
Unit 34B, Suite 608
Dartmouth, Nova Scotia B2W 2S7
Tel: 1-902-829-3666
Fax: 1-902-829-2525
e-mail: atlantic@rotalec.com
http://www.rotalec.com

Le Groupe Rotalec Atlantic/Seltron Divison
122 Driscoll Cresent
Moncton, New Brunswick E1E 3R8
Tel: 1-506-858-9884
Fax: 1-506-853-4185
e-mail: atlantic@rotalec.com
http://www.rotalec.com

R.G. Shelley Limited
41 Coldwater Road
Don Mills, Ontario M3B 1Y8
Tel: 1-416-447-6471
Fax: 1-416-447-9313
e-mail: info@shelley.com
http://www.shelley.com

LATIN AMERICA

Automation International Limited (AIL)
13006 Mula Lane
Stafford, Texas 77477 USA
Tel: 1-281-879-9505
Fax: 1-281-879-9510
e-mail: sales@automationintl.com
http://www.automationintl.com

Argentina

Aumeco SRL
Acassusso 4768
1605 Munro – Bs.As.
Tel: 54-11-4756-1251
Fax: 54-11-4762-6331
e-mail: aumeco@aumeco-srl.com.ar
http://www.aumeco-srl.com.ar

Brazil

Banner Brazil (Portuguese language):
http://www.bannerengineering.com.br

Sensor do Brasil
Rua Jordão Schiavetto, 436
Hortolândia – SP 1318-080
Tel: 55-19-3897-9400
Fax: 55-19-3897-9414
e-mail: sensor@sensordobrasil.com.br
http://www.sensordobrasil.com.br

MOVIMATIC
Rua Vigário Albernaz, 226
Ipiranga - São Paulo SP
04134-002
Tel.: 55-11-5062-5222
Fax: 55-11-5062-5222
e-mail: movimatic@movimatic.com.br
http://www.movimatic.com.br

SCHALT Sensores
R. Humberto I, 340 - Vila Mariana
04018-030 - São Paulo - S.P.
Tel: 55-11-5082-2500
Fax: 55-11-5082-4795
e-mail: schalt@schalt.com.br
http://www.schalt.com.br

ZTECH Sensores
Rua Terezinha Setti, 215 Cj. 01/09
São Bernardo do Campo - SP
09720-400
Tel: 55-11-4127-3344
Fax: 55-11-4339-2810
http://www.ztechsensores.com.br

Sensorpar Eletro Eletronica e Automação Ltda.
Av. Senador Salgado Filho n. 5229 SL 03
Curitiba – PR 89203-400
Tel: 55-41-284-6660
Fax: 55-41-284-6660
e-mail: sensorpar@terra.com.br

Sensorville
Rua Gothard Kaesemodel, 657
Joinville – SC 89203-400
Tel: 55-47-422-5111
Fax: 55-47-433-5298
e-mail: sensorville@sensorville.com.br
http://www.sensorville.com.br

Spheric Componentes Electrônicos
Rua Imperatriz Leopoldina, 355, Sala 03
Novo Hamburgo – RS 93310-060
Tel: 55-51-594-8036
Fax: 55-51-594-8036
e-mail: spheric@terra.com.br

Weber
Av. Silviano Brandão, 786
Bairro Floresta
Belo Horizonte – MG 31015-000
Tel: 55-31-3461-4222
Fax: 55-31-3481-7925
e-mail: weber@webercom.com.br

Sensor Rio
Av. Armando Lombardi, 205
Sala 207 – Barra de Tijuca
Rio de Janeiro – RJ 22621-200
Tel: 55-21-491-2966
Fax: 55-21-491-2967
e-mail: yuri@sensorrio.com.br
http://www.sensorrio.com.br

Elavic
Rua José Gomes de Moura, 657
Estância CEP: 50.781-100
Tel: 55-81-3455-4116
Fax: 55-81-3455-4116
e-mail: elavic@elavic.com.br
http://www.elavic.com.br

SGS
Av. Pres. Castelo Branco, 1448
Bairro Cachoeirinha
Manaus – AM 69065-011
Tel: 55-92-663-7662
Fax: 55-92-663-7662
e-mail: sgs.comp@argo.com.br

Chile

Electromática Ltda
Chacabuco 232
Concepción 4074942
Tel: 56-41-247162
Fax: 56-41-239362
e-mail: ventas@electromatica.cl
http://www.electromatica.cl

Electromática Ltda.
Sta. Magdalena 75, Ofic. 307
Santiago 4074942
Tel.: 56-2-3350587
Fax: 56-41-239362
e-mail: ventas@electromatica.cl
http://www.electromatica.cl

Seiman S.A.
1 Norte 1511
Viña del Mar
Tel.: 56-32-699-310
Fax: 56-32-699-318
e-mail: ventas@seiman.cl

Seiman S.A.
Suarez Mujica 282
Ñuñoa, Santiago
Tel.: 56-2-237-2865
Fax: 56-2-237-2830
e-mail: ventas@seiman.cl

Colombia

Hi Tech Medellín
Av. Bolivariana. Cra 66 B No. 39-22
Medellín (Antioquía)
Tel.: 57-4-265-5358 / 57-4-265-3240
Fax: 57-4-265-8216
e-mail: hi-tech@epm.net.co

Hi Tech Pereira
Cra 5 No. 16-27, Local 4
Pereira (Risaralda)
Tel.: 57-63-257-441
Fax: 57-63-352-455
e-mail: hi-tech@pereira.multi.net.co

Redes Eléctricas S.A.
Calle 17 A No. 25-60
Santa Fe de Bogotá
Tel.: 57-1-360-6299
Fax: 57-1-220-4600
e-mail: redie@unete.com.co

Redes Eléctricas S.A.
Carrera 43A No. 14-109 of. 210
Medellín
Tel: 574-266-9791
Fax: 574-266-6787
e-mail: redesel@epm.net.co

Costa Rica

Tec de Costa Rica S.A.
Avenida 3, Calle 30
210 mts del INA en Pasco Colón
San José 818-1150
Tel: 50-6-221-4466 / 50-6-223-5060
Fax: 50-6-223-5060
e-mail: teccsa@sol.racsa.co.cr

Dominican Republic

Wech Autocontroles, S.A.
Ave. Rómulo Betancourt 545
Plaza JM, Mirador Norte
Santo Domingo
Tel.: 809-531-0550
Fax: 809-531-9175
e-mail: hermaq@codetel.net.do

Ecuador

Krahuer S.A.
Av. Juan Tanca Marengo Km 3.5
Bodega #9
2 cuadras atrás de la Coca Cola
P.O. Box 09-01-9910
Guayaquil
Tel: 593-4-237-493
Fax: 593-4-241-907
e-mail: krahuer@interactive.net.ec

Guatemala

Enersys Co.
5 Calle 35-01, Zona 11
Utatlán II, Guatemala City
Tel: 502-599-4622
Fax: 502-594-6876
e-mail: enersys@guate.net

Mexico

AEEC
Trípoli 312 local A-1
Col. Portales
C.P. 03300 México D.F.
Tel: 52-5-605-6398
Fax: 52-5-605-6398
e-mail: jemaaeec@iserve.net.mx

Alianza en Control Industrial SA de CV
Francisco I. Madero No 156
Col. San Pedro Xalpa CP 02710
Atzcapotzalco México D.F.
Tel: 52-53-57-18-33 / 52-53-58-02-10
52-53-58-46-38 / 52-55-76-99-14
Fax: 52-53-58-15-36
e-mail: alian01@prodigy.net.mx

CALVEK
Carr. México-P. Negras Km. 426
78434 San Luis Potosí, S.L.P.
Tel: 52-4-818-5030
Fax: 52-4-822-3935
e-mail: Calvek@infosel.net.mx

Comarba, S. A. de C. V.
Fidencio Trejo No. 145 entre
Naciones Unidas Y R. Guerra. Col. Popular
H. Matamoros, Tamaulipas. 87460
Tel.: 52-8-814-5561 / 52-8-814-5925
Fax. 52-8-814-5562
e-mail: comarba@terra.com.mx

Controles Electromecánicos S.A. de C.V.
Viaducto Tlalpan No 4777 Col.
Buenaventura
México D.F., C.P. 14629
Tel: 52-55-73-78-19 / 52-55-73-92-85
Fax: 52-55-73-78-66
e-mail: controelec@infosel.net.mx

Control e Instrumentación Industrial S.A. de C.V.
Ave. Chapultepec1804, Fracc. Buenos Aires
Monterrey, N.L., 64800
Tel: 52-8358-0700 / 52-8358-3700
52-8359-5636 / 52-8359-5699
Fax: 52-8358-7700 / 1-800-849-8276
e-mail: ceiisa@microsoft.com
http://www.ceiisa.com

Ferretería Hernández
Calle 10 y Bravo #137. Centro
H. Matamoros, Tamaulipas. 87300
Tel.: 52-8-816-7020
Fax: 52-8-813-3830
e-mail: serona@prodigy.net.mx

Hobby Electrónica S.A. de C.V.
Retorno Corregidora 173-D
Col. Balaustradas, Santiago de Querétaro,
Qro. 76070
Tel: 52-4-213-8790
Fax: 52-4-223-4844
e-mail: ventas@hobbyelectronica.com
http://www.hobbyelectronica.com

IBSA de Mexico SA de CV
Costa Rica #1034 Sur
Col. Ex-Hipodromo
Ciudad Juarez, Chihuahua 32330
Tel: 52-1-613-5123
Fax: 52-1-613-5120
e-mail: vcirne@prodigy.net.mx

INASA: Ingenieria y Abastecimiento, S.A. de C. V.
Villagran 1423 Nte., A. Postal 526
Monterrey, N.L. 64440
Tel: 52-8375-2377 / 52-8372-7145
Fax: 52-8372-7145
e-mail: inasa@inasa.com.mx

Indicon
Calle 14 # 806
Col. Centro
Chihuahua, Chihuahua 31020
Tel: 52-1-415-1051
Fax: 52-1-415-1061
e-mail: indicon@prodigy.net.mx

Industrial Experts S.A. de C.V.
Av. Del Norte #60-B
Col. Maclovio Herrera
Tecate, BC 22680
Tel: 1-665-655-4661
e-mail: marcoh@indexp.net
http://www.industrial-experts.com

Ingeniería, Automatización, Control y Comunicación S.A. de C.V.
Boulevard Xonaca No 5020
Col. Satélite Magisterial
Puebla, Pue. C.P. 72320
Tel: 52-22-35-01-55 / 52-22-35-36-60
Fax: 52-22-35-01-55 / 52-22-35-36-60
e-mail: iaccpue@prodigy.net.mx

Interface Ingeniería S.A.
Blvd. Puerta del Sol 1204
Colinas de San Geronimo
Monterrey, N.L. 64630
Tel: 52-8315-1625 / 52-8315-0722
Fax: 52-8315-024
e-mail: interfaceing@infosel.net.mx

Kopar Central SA de CV
Av. Constituyentes 124, Suite 1
Col. El Jacal
Querétaro, Qro. C.P. 76187
Tel: 52-42-15-93-80 / 52-42-42-05-58
52-42-15-34-01
Fax: 52-42-15-93-80 / 52-42-42-05-58
52-42-15-34-01
e-mail: sluna@infosel.net.mx

LAC Automation Industrial
Blvd. Lazaro Cardenas #778-6
Jardines Del Lago
Mexicali, B.C.
Tel: 1-686-559-3509
Fax: 1-686-558-8383
e-mail: lac@telnor.net.mx

RICASA
Calle Hegel # 5213
Col. Satélite Magisterial
Puebla, Pue. 72320
Tel: 52-2-236-3959
Fax: 52-2-236-3948
e-mail: ricasa@datasys.com.mx

Rodela de la Laguna SA de CV
Blvd. Revolucion 1403 Ote.
Torreon, Coah 27000
Tel: 52-1-713-9292
Fax: 52-1-713-8226
e-mail: ventas@rodela.com

Rybalsa Laguna SA de CV
Av. Juarez 2198 Ote.
Torreon, Coah 27000
Tel: 52-1-722-2299
Fax: 52-1-717-4106
http://www.rybalsa.com.mx

Seguridad y Control
Av. Federalismo Sur # 765, Col. Moderna
Guadalajara, Jal. 44190
Tel: 52-3-614-5554 / -5544
Fax: 52-3-614-1253
e-mail: ventas@seguridadycontrol.com.mx

Sistema de Ventas Industrial SA de CV
Confluencia No 3, Acueducto de Guadalupe
C.P. 07270. México, D.F.
Tel: 52-53-91-96-24 / 52-53-91-98-97
52-53-91-17-60
Fax: Extención 20
e-mail: vic629@internet.com.mx

Tecnoaplicación Industrial
Calle Puerto # 73-B
Col. Olivo II
Tlalnepantla, Edo. de México 54070
Tel: 52-5-311-6544
Fax: 52-5-311-6544
e-mail: tecnoa@iwm.com.mx

TESLA
Encinos Ote. 13 Arcos del Alba
Cuatitlán Izcalli, Edo. de México
Tel: 52-5-871-3468
Fax: 52-5-873-2454
e-mail: tesla@att.net.mx

Peru

Saeg Peru S.A.
Ave. 6 de Agosto 1137- Lima 11
Jesús María, Lima
Tel: 51-1-332-0049
Fax: 51-1-332-0606
e-mail: peru@saeg.com

NPI Peru S.A.C.
Elias Aguirre 273
Oficina 301
Miraflores, Lima 18
Tel.: 51-1-444-3626
Fax: 51-1-445-9910
e-mail: npiperu@terra.com.pe

Puerto Rico

PREMSCO
Calle Jordan 704
Santurce, PR 00909
Tel: 1-787-268-4040
Fax: 1-787-268-4182
e-mail: sales@premsco.com
http://www.premsco.com

Uruguay

Fidemar
Minas 1634-CP 11.200
Montevideo
Tel: 59-82-402-1717
Fax: 59-82-402-1719
e-mail: alvaro@fidemar.com.uy

Venezuela

Cadeci C.A.
C.C. Ara. Nave G, Local 80-A-18
Prolongación Av. Michelena
Valencia, Carabobo
Tel.: 58-241-838-4915 / 58-241-834-5667
Fax: 58-241-832-2566
e-mail: cadeci@telcel.net.ve

Ame Trade CA.
Av. Michelena. C.C. Mycra
Local No. 6
Valencia
Tel: 58-241-832-4670
Fax: 58-241-832-3902
e-mail: valencia@ametrade.com

ASIA, AUSTRALIA, NEW ZEALAND

Corporate Offices:

Banner Engineering Japan
Shin-Yokohama Town Building 5F
3-19-11 Shin-Yokohama
Kohoku-ku, Yokohama 222-0033
Tel: +81-45-478-5060
Fax: +81-45-478-5063
e-mail: mail@bannerengineering.co.jp
http://www.bannerengineering.co.jp

Banner Engineering Shanghai Rep. Office
B17/F, Shanghai Industrial
Investment Building
No. 18 Caoxi (N) Road
Shanghai 200030
Tel: 86-21 6427 1933
Fax: 86-21 6427 1936
e-mail: mzhang@bannerengineering.com
http://www.bannerengineering.com.cn

Banner Engineering Taiwan Rep. Office
11 Floor, Section 4, #6 Shin Yi Rd.
Taipei 106
Tel: 886-2-5556 2488
Fax: 886-2-5556 2489
e-mail: jchang@baneng.com

Australia

Micro Max Pty Ltd (Headquarters)
5 Orange Grove Avenue
Unanderra NSW 2526
Tel: 61-24-271-13-00
Toll free within Australia: 1-800-634-766
Fax 61-24-271-80-91
e-mail: micromax@micromax.com.au
http://www.micromax.com.au

Australia Branch Offices:

Micro Max Pty Ltd
111 Arden St.
North Melbourne VIC 3051
Tel/Fax: Call headquarters

Micro Max Pty Ltd
112 Beaconsfield St.
Auburn NSW 2144
Tel/Fax: Call headquarters

Micro Max Pty Ltd
1/101 President St.
Carlisle WA 6101
Tel/Fax: Call headquarters

China

Banner Engineering International, Inc.
Shanghai Rep. Office
B17/F, Shanghai Industrial Investment
Building
No. 18 Caoxi (N) Road
Shanghai 200030
Tel: 86-21 6427 1933
Fax: 86-21 6427 1936
e-mail: mzhang@bannerengineering.com
http://www.bannerengineering.com.cn

Turck China (Headquarters)
Turck (Tianjin) Sensor Co. LTD
40 Yibin Road
Nankai District
Tianjin 300113
Tel: 86-22 2764 1588
Fax: 86-22 2761 4650
e-mail: turcktj@public.tpt.tj.cn

China Branch Offices:

E. 16/F, Office Building
B, Jing Gang City Plaza
No. 3A Shilipu, Chaoyang District
Beijing 100025
Tel: 86-10 6556 1646
Fax: 86-10 6556 1645
e-mail: turcktbb@public.fhnet.cn.net

RM 2203A, Universal Mansion
No. 168-172, Yuyuan Road
Shanghai 200040
Tel: 86-21 6249 1838
Fax: 86-21 6248 5189

Rm F, the 21st Floor
Yuehai Bldg,
No. 472 Huanshi Road East
Guangzhou 510075
Tel: 86-20 8776 9178
Fax: 86-20 8776 9187

D1 Place, 6 Fl, Huaguang Building
No. 333 Zhongshan Road
Wuxi 214001
Tel: 86-51 0273 9497

Rm 718, Hubei Instrument Corp.
No. 80, Zhongnan Road
Wuchang District
Wuhan 430071
Tel: 86-27 8732 1546
Fax: 86-27 8732 1546

Rm 203, Silk Building
Mozi Qiao, 2 Duan (South)
1 Huan Road
Chengdu 610041
Tel: 86-28 5238 065
Fax: 86-28 5234 993

Rm 1204, Huahong Building
No. 638 Ziqiang Road East
Xi'an 710015
Tel: 86-29 6239 559
Fax: 86-29 6239 559

No.128 Jiefang Road East
Tiedong District
Anshan 114002
Tel: 86-41 2882 5272
Fax: 86-41 2882 5272

Hong Kong

Honour Force Engineering Ltd.
Room 705, 7/F.
Wah Wai Industrial Building
53-61 Pak Tin Par St.
Tsuen Wan, NT
Tel: 852-24 09 19 97
Fax: 852-24 09 13 89
e-mail: honourfc@pacific.net.hk

India

Epsilon Controls
A-1 "Ashirwad", Ciba CHS
Amrut Nagar, Ghatkopar (west)
Mumbai 400 086
Tel: 91-22-500-4225/500-3590
Fax: 91-22-500-3590/513-5021
e-mail: manish.sanghvi@gems.vsnl.net.in

Hans Turck Gmbh & Co. Kg – Liaison Office – India
(Technical Support)
SD – 453, Pitam Pura
Delhi 110 088
Tel: 91-11-731-6963
Fax: 91-11-731-7945
e-mail: turckindia@vsnl.com
saraswatrk@vsnl.com

Kudamm Corporation
D-17, 2nd Floor, Kalkaji
New Delhi 110 019
Tel: 91-11-6229093
Fax: 91-11-6479097
e-mail: kudamm@vsnl.com
http://www.kudammcorp.com

Prudent Automation Pvt. Ltd.
Flat No. 4, Block-3, Shaila Plaza
Sikh Village
Secunderabad 500 009
Tel: 91-40-789-2267
Fax: 91-40-784-9987
e-mail: prudent@tatanova.com

Santron Systems India
66, Saini Mohalla
Rampura, Delhi 110 035
Tel: 91-11-7199429
Fax: 91-11-7862655
e-mail: santron@vsnl.net

Sierra Instrumentation & Controls
3, Sonali Complex
Near Parmarth Niketan & TMC
Panchpakhadi, Thane, (W) 400 602
Tel: 91-22-5423676
Fax: 91-22-5435277
e-mail: sierra@bom5.vsnl.net.in

Syscon Instruments Private Ltd.
Plot No. 66, Electronics City
Hosur Road, Bangalore 561 229
Tel: 91-080-8520772 or -8520773
Fax: 91-080-8520774 or -8520775
e-mail: syscon@bgl.vsnl.net.in
http://www.sysconinstruments.com

Indonesia

PT. Unitama Sentosa Gemilang
Komplek Perkantoran
Greenville Blok AX-31
Jakarta-Barat 11510
Tel: 62-21-569-64973 or 62-569-64975 or 62-565-7655
Fax: 62-21-565-7656
e-mail: ptusg@indosat.net.id

Japan

Banner Engineering Japan
Shin-Yokohama Town Building 5F
3-19-11 Shin-Yokohama
Kohoku-ku, Yokohama 222-0033
Japan
Tel: 81-45-478-5060
Fax: 81-45-478-5063
e-mail: mail@bannerengineering.co.jp
http://www.bannerengineering.co.jp

Japan Machinery Company
Nakajima Shoji Building 8F
8-5-6 Ginza
Minato-ku, Tokyo 100-8693
Tel: 81-3-3573-5261
Fax: 81-3-3573-7865
e-mail: sales@japanmachinery.com
http://www.japanmachinery.com

Koyo Electronics Industries Co., Ltd.
1-171 Tenjin-cho
Kodaira, Tokyo 187-0004
Tel: 81-42-341-3114
Fax: 81-42-344-0233
e-mail: sales@koyoele.co.jp
http://www.koyoele.co.jp

Morimura Brothers Inc.
Morimura Building
1-3-1 Toranomon
Minato-ku, Tokyo 105-8451
Tel: 81-3-3502-6449
Fax: 81-3-3593-3376
http://www.morimura.co.jp

Korea

Turck Korea
Sangwoo Building 4th Floor, 1576-1
Jeongwang - Dong, Shiheung - City
Kyunggi - Do
Tel: 82 31 498 8433
Fax: 82 31 498 8436
e-mail: sensor@sensor.co.kr
http://www.sensor.co.kr

Malaysia

UST Technology Pte. Ltd.
998 Toa Payoh North, #5 - 25
Singapore 318993
Tel: 65-6252-2273
Fax: 65-6253-8773
e-mail: ust@ust.com.sg
http://www.ust.com.sg

New Zealand

W. Arthur Fisher Ltd.
11 Te Apunga Place
Mt. Wellington, Auckland
Tel: 64-9-27 00 100
Fax: 64-9-27 00 900
e-mail: waf@waf.co.nz
http://www.waf.co.nz

Philippines

AG Bolinao Corporation
Unit 205 Fedman Suite
199 Salcedo St., Legaspi Village
Makati City, 1229
Tel: 632-8133988 or -8136703
Fax: 632-8175802
e-mail: bolinao@attglobal.com

Singapore

UST Technology Pte. Ltd.
998 Toa Payoh North, #5 - 25
Singapore 318993
Tel: 65-6252-2272
Fax: 65-6253-8773
e-mail: ust@ust.com.sg
http://www.ust.com.sg

Taiwan R.O.C.

Banner Engineering International, Inc.
Taipei Rep. Office
11 Floor, Section 4, #6 Shin Yi Rd.
Taipei 106
Tel: 886-2-5556 2488
Fax: 886-2-5556 2489
e-mail: jchang@baneng.com

E-Sensors & Automation (Taiwan) Corp.
6F-2, No. 109, Chien Kuo 1st Rd.
Kaohsiung
Tel: 886-7-72 20 371
Fax: 886-7-77 18 161
e-mail: e5direct@ms63.hinet.net

Lumax International Corporation, Ltd.
7th Fl., No. 52, Sec. 3
Nan-Kang Road, Taipei
Tel: 886-2-2788-3656
Fax: 886-2-2782-7369 or -7405
http://www.lumax.com.tw

Thailand

Compomax Company Limited
54/6-7-8 Soi Sangchan-Rubia
Sukhumvit 42
Bangkok 10110
Tel: 66-2-712-2911-22
Fax: 66-2-712-28 83
e-mail: compomax@samart.co.th

AFRICA AND THE MIDDLE EAST

Egypt

Egyptian Trading and Engineering Co.
3, Hassan Sadek St.
Ouroba - Heliopolis Cairo
Tel: 20-2-290 83 80
Fax: 20-2-290 39 96
e-mail: ete@brainy1.ie.eg.com

Saudi Arabia

M.H. Sherbiny for Commerce
P.O. Box 3082
Prince Meshal Street, 2nd Street
Alkhobar 31952
Tel: 966-3-89-44-298
Fax: 966-3-86-47-278
e-mail: sales@sherbinyforcommerce.com

Rep. of South Africa

RET Automation Controls Pty. LTD
130 Boeing Road East
Bedfordview, 2008
(shipping address)
P.O. Box 8378
Edenglen 1613 (mailing address)
Tel: 27-11-453 24 68
Fax: 27-11-453 24 06
e-mail: info@retauto.co.za
http://www.retauto.co.za

Pakistan

Lasani Techno Impex
SR 3/18, G/4 Serai Road
P.O.B. 13543
Karachi, 74000
Tel: 92-21-242 34 11
Fax: 92-21-241 78 41
e-mail: lasanipak@cyber.net.pk

Israel

Robkon Industrial Control & Automation Ltd.
12-A Elimelech St.
Ramat-gan, 52424
Tel: 972-3-673 28 21
Fax: 972-3-673 84 20
e-mail: robkonfr@inter.net.il

Product Index Sorted by Model Number

Model	ID	Page
BA23S	3900100	27
BMP.753P	3937700	27
BMT.442P	3021310	27
BMT.753P	3919200	27
BMT13SMVF	3065967	31
BMT16.6S-HT	3064397	32
BR2.53S	3915300	28
BR23S	3913100	28
BT13SM8	3923300	28
BT23SM8	3903300	28
BT23SM900	3923500	29
D10DNFP	3062379	35
D10DNFPG	3064561	35
D10DNFPGQ	3064562	35
D10DNFPQ	3062380	35
D10DPFP	3062382	35
D10DPFPG	3064564	35
D10DPFPGQ	3064565	35
D10DPFPQ	3062383	35
D10INFP	3062385	35
D10INFPG	3064567	35
D10INFPGQ	3064568	35
D10INFPQ	3062386	35
D10IPFP	3062388	35
D10IPFPG	3064570	35
D10IPFPGQ	3064571	35
D10IPFPQ	3062389	35
D10UNFP	3063992	35
D10UNFPG	3064573	35
D10UNFPGQ	3064574	35
D10UNFPQ	3063993	35
D10UPFP	3063995	35
D10UPFPG	3064576	35
D10UPFPGQ	3064577	35
D10UPFPQ	3063996	35
D11E2N6FP	3050832	37
D11E2N6FPQ	3050834	37
D11E2P6FP	3050833	37
D11E2P6FPQ	3050835	37
D11EN6FP	3044271	37
D11EN6FPQ	3044273	37
D11EP6FP	3044274	37
D11EP6FPQ	3044276	37
D11SN6FP	3043342	37
D11SN6FPQ	3043344	37
D11SP6FP	3043348	37
D11SP6FPQ	3043350	37
D12DAB6FV	3039545	43
D12DAB6FVQ	3039546	43
D12E2N6FV	3050840	43
D12E2P6FV	3050841	43
D12EN6FV	3041962	43
D12EP6FV	3041968	43
D12SN6FV	3582500	43
D12SN6FVQ	3582600	43
D12SN6FVY	3583300	43
D12SN6FVY1	3583700	43
D12SN6FVY1Q	3583800	43
D12SN6FVYQ	3583400	43
D12SP6FV	3582700	43
D12SP6FVQ	3582800	43
D12SP6FVY	3583500	43
D12SP6FVY1	3583900	43
D12SP6FVY1Q	3584000	43
D12SP6FVYQ	3583600	43
FI22FP	3056287	45
FI22FPQ	3056289	45
IA23S	3900300	29
IAR.753SMTA	3911000	29
IMM.442P	3927000	29
IMT.753SMVF	3065968	31
IMT.756.6S-HT	3064398	32
IR2.53S	3915500	29
IR23S	3925100	30
IT13SM8	3928700	30
IT23SM8	3903200	30
IT23SM8MM900	3021023	30
L08FP	3774900	23
L10M8	3774800	33
L16FSSM8	3775600	33
L2	3749600	23
L2RA	3749601	23
L4C20	3068629	22
L4C6	3041517	22
L9M8	3774700	33
LZ3C8	3068653	22
MQDC1-506	3051127	39, 41
MQDC1-506RA	3051128	39, 41
MQDC1-515	3047812	39, 41
MQDC1-515RA	3047813	39, 41
MQDC1-530	3047814	39, 41
MQDC1-530RA	3047815	39, 41
P12-C1	3051832	18
P22-C1	3056058	18
P32-C2	3061217	18
PBCF21X46U	3040414	5
PBCF46U	3042888	5
PBCT21X46U	3045071	5
PBCT26U	3045091	5
PBCT26UM3	3045090	5
PBCT26UM4M2.5	3056125	5
PBCT46U	3035214	6
PBE46UTMLLP	3048056	18
PBE46UTMLLPHT1	3051830	19
PBE46UTMNL	3048055	6
PBEFP26U	3039100	6
PBF26U	3028131	6
PBF46UM3MJ1.3	3056109	6
PBF66U	3039981	6
PBFM16U	3039115	7
PBFMP16UMP.2	3061220	7
PBP16U	3039992	7
PBPF26UMB	3039116	7
PBPMSB36U	3038711	7
PBPS26U	3035042	7
PBPS46U	3035040	8
PBPS46UMT	3048005	8
PBPS66U	3048015	8
PBR1X326U	3039987	8
PBRS26U	3061216	8
PBT16U	3042822	8
PBT26U	3913400	9
PBT26UHF	3061208	9
PBT26UHT1	3056119	9
PBT26UM6M.1	3065942	9
PBT43TMB5	3070768	21
PBT46TMB5	3070769	21
PBT46U	3908000	9
PBT46UC	3921600	9
PBT46UHF	3051784	10
PBT46UHT1	3042799	10
PBT66U	3039982	10
PBU430U	3937000	24
PBU460U	3937100	24
PDI46U-LLD	3061240	19
PDIS46UM12	3042880	19
PDISM46UM5MA	3051829	20
PDIT26T5	3065907	20
PDIT4100U	3056075	20
PFK20	3788900	23
PFK40	3772700	23
PFS44S6T	3048029	24
PFS53S6T	3048028	24
PFS69S6T	3048027	24
PIA16U	3026637	10
PIA26U	3921700	10
PIAT16U	3048022	10
PIAT26U	3028235	11
PIAT46U	3027336	11
PIAT46UM.4X.4MT	3045077	11
PIAT66U	3042885	11
PIE46UT	3048040	12
PIE66UTMNL	3048052	12
PIES46UT	3051758	12
PIF26U	3027367	12
PIF26UMLS	3039130	12
PIF46U	3913700	12
PIF46UHF	3051785	13
PIF66U	3039898	13
PIF66UM.52M.19D	3041542	13
PIFM1X46U	3038636	13
PIFM46U	3039113	13
PIL415U	3045059	23
PIL46U	3034080	13, 23
PIP46U	3915200	14

Model	ID	Page
PIPS26U	3035041	14
PIPS46U	3035039	14
PIPS66U	3048016	14
PIPSB46U	3038625	14
PIPSM26U	3038237	14
PIR1X166U	3039152	15
PIRS1X166U	3039155	15
PIRS1X166UM.4	3065919	15
PIRS1X166UMPM.75	3056068	15
PIRS1X166UMPMAL	3048066	16
PIT16U	3039983	16
PIT1X46U	3039138	16
PIT26U	3913800	16
PIT26UHF	3061210	16
PIT26UHT1	3056118	17
PIT43TMB5	3070766	21
PIT46TMB5	3070767	21
PIT46U	3925000	17
PIT46UC	3937300	17
PIT46UHF	3051783	17
PIT46UHT1	3042804	17
PIT66U	3039899	17
PIU230U	3026750	24
PIU260U	3922100	24
PIU430U	3026751	24
PIU460U	3937400	24
PIU630U	3039997	24
PIU660U	3039998	24
PKG4-2	3415900	37, 43, 45
PKG4-10	3064513	37
PKG6Z-2	3062985	35, 45
PKG6Z-9	3062986	35
PKW4-2	3552800	37, 45
PKW6Z-2	3062998	35, 45
PKW6Z-9	3062999	35
PLI-A10	3068639	22
QS18VN6FP	3066222	45
QS18VN6FPQ	3066223	45
QS18VP6FP	3066224	45
QS18VP6FPQ	3066225	45
R55FP	3058018	41
R55FPB	3058024	41
R55FPBQ	3058026	41
R55FPG	3058021	41
R55FPGQ	3058023	41
R55FPQ	3058020	41
R55FPW	3058027	41
R55FPWQ	3058029	41
R55FV	3058006	41
R55FVB	3058012	41
R55FVBQ	3058014	41
R55FVG	3058009	41
R55FVGQ	3058011	41
R55FVQ	3058008	41
R55FVW	3058015	41
R55FVWQ	3058017	41
SMBF	3053258	33
SMBFP3	3053264	25
SMBFP4	3053263	25
SMBFP4N	3053257	25
SMBFP6	3053262	25
SME312F	3053713	39
SME312FP	3053731	39
SME312FPQD	3053732	39
SME312FQD	3053714	39
SME312FV	3053728	39
SME312FVQD	3053729	39
TGR3/8MPFMQ	3023268	20
UPFA-1-100	3065888	24
UPFA-2-100	3065889	24
VFT-M8MVS	3024852	31

Table of Contents

Application Drawings 2
Plastic and Glass Fibres: Introduction....3
Plastic Fibres: Specifications....4
Plastic Fibres: Drawings and Charts....5
Glass Fibres: Specifications 26
Glass Fibres: Drawings and Charts 27
D10 *Expert* Series Sensors 34
D11 Series Sensors....36
Mini-Beam™ *Expert* Series Sensors....38
R55F Series Sensors....40
D12 Series Sensors....42
QS18FP and FI22FP Series Sensors 44
International Sales Representative List 46
Product Index, TOC, Abbreviations 50

Abbreviations

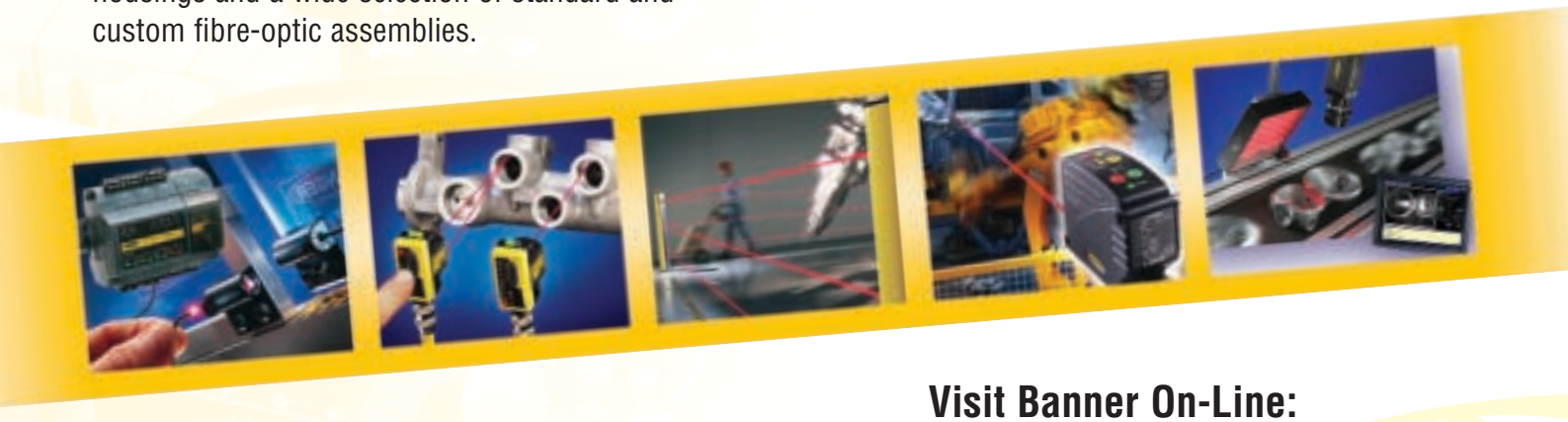
A . . . . . Acrylic
AL . . . . . Aluminium
NI Pltd BR . . . . . Nickel Plated Brass
P . . . . . Plastic
PE . . . . . Polyethylene
PP . . . . . Polypropylene
SS . . . . . Stainless Steel
thd BR . . . . . threaded Brass

XLPE . . . . . Cross-linked polyethylene
⌴ . . . . . Counterbore
→ ← . . . . . Inner
← → . . . . . Outer
. . . . . Bendable
. . . . . Do not bend

Banner: Industry's number-one supplier of sensors and machine safety products

With more than 15.000 different products, Banner offers you the industry's most complete and integrated line of photoelectric and ultrasonic sensors, machine safety products, measurement & inspection products, and vision sensors – a solution for every possible application.
The world's most complete line of photoelectric sensors includes models with self-contained or remote amplifiers, limit-switch style or miniature housings and a wide selection of standard and custom fibre-optic assemblies.

Advanced precision measurement sensors solve a wide variety of difficult sensing applications. This divers product line includes infrared, laser, ultrasonic and camera-based technologies with advanced features.
Banner has more safety solutions including safety light screens for every application. In addition, we offer a complete line of safety modules, two-hand controls and safety interlock switches.



All Catalogues on CD-ROM.



Get all Banner catalogues on an easy-to-use CD-ROM, covering more than 15.000 Banner photoelectric, measurement and inspection, and machine safety products. The CD includes selection charts, technical information and glossaries, as well as a selection of the international literature in different languages. Call, write or email and get your copy today!

Visit Banner On-Line:

www.bannerengineering.com



To visit the joint ventures web sites, surf to:

www.turckbanner.fr **www.turckbanner.es**
www.turckbanner.it **www.turckbanner.co.uk**



BANNER®
more sensors, more solutions

Banner Engineering Corp.
9714 10th Avenue North
Minneapolis, MN 55441 USA
Tel: 1-763-544.3164 – Fax: 1-763-544.3213
e-mail: sensors@bannerengineering.com

P/N 112105 • 03-03