

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)

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

I A T 2 3 S X X

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

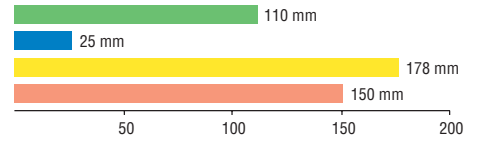
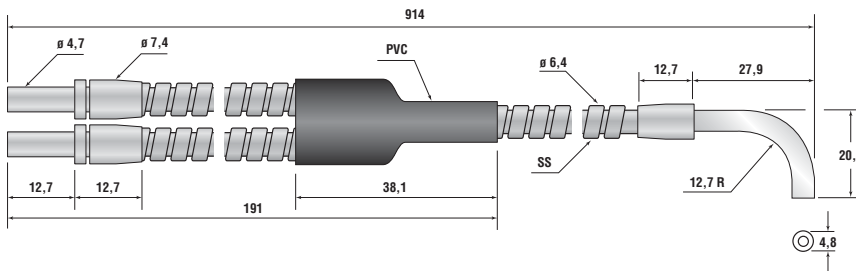
D12E

D12

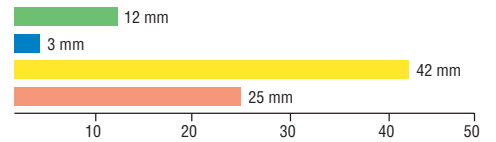
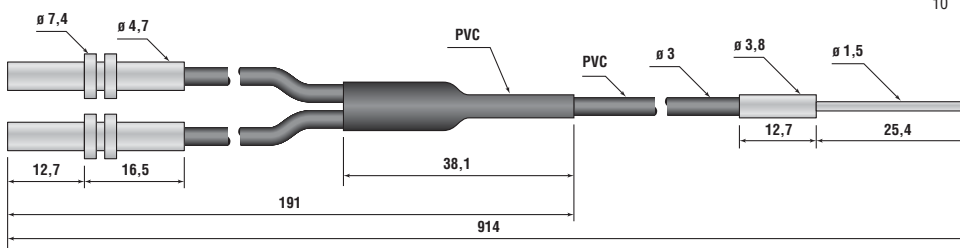
Dimensions (in mm)

Range (in mm)

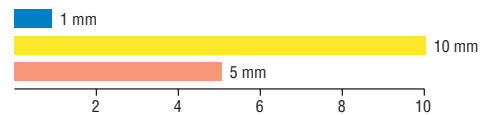
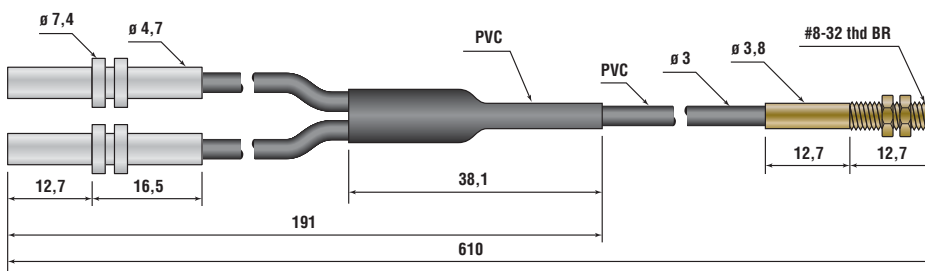
BA23S Bifurcated angled



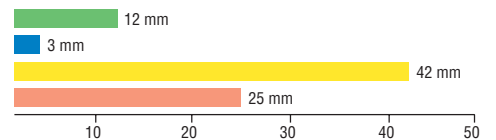
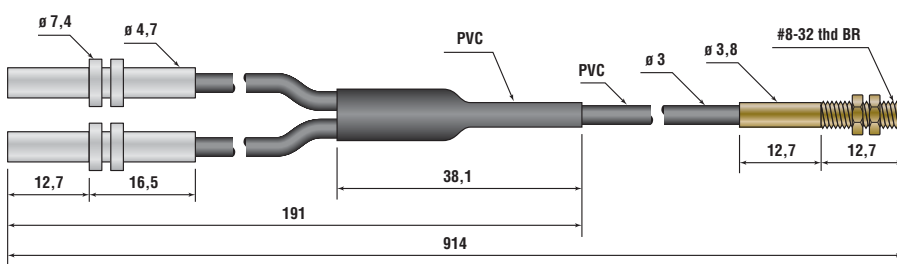
BMP.753P Bifurcated miniature probe, glass fibre, PVC sheathing



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



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





R55F

SME312

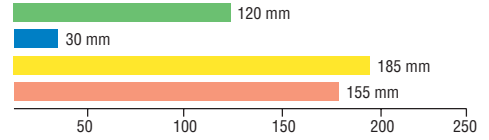
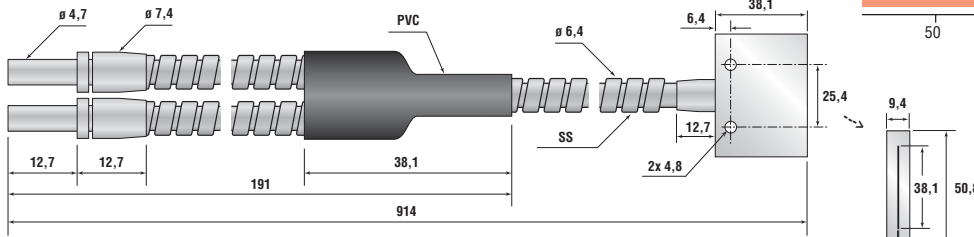
D12E

D12

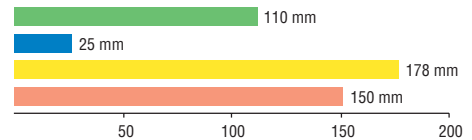
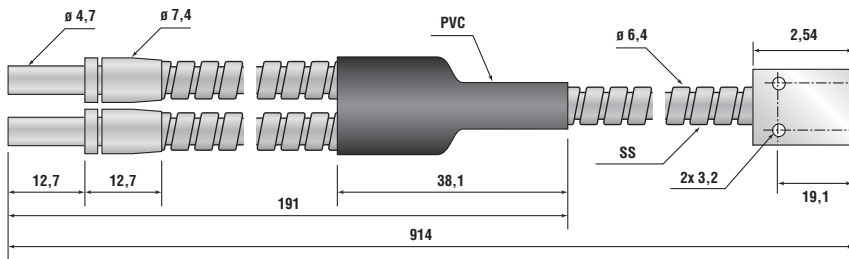
Dimensions (in mm)

Range (in mm)

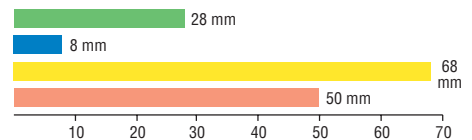
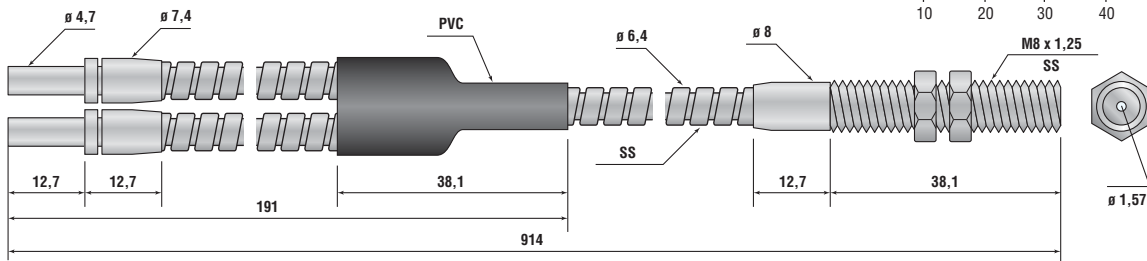
BR2.53S Bifurcated rectangular, 40 mm



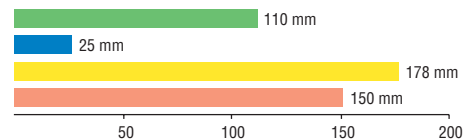
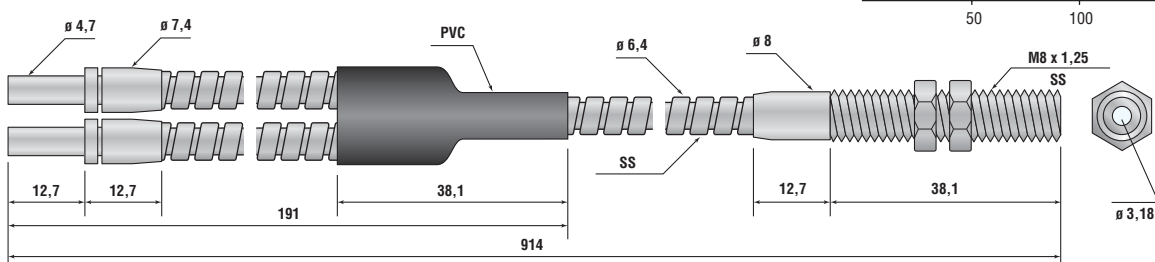
BR23S Bifurcated rectangular, 10 mm



BT13SM8 Bifurcated threaded, glass fibre, SS sheathing



BT23SM8 Bifurcated threaded, glass fibre, SS sheathing





R55F

SME312

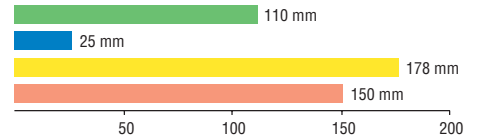
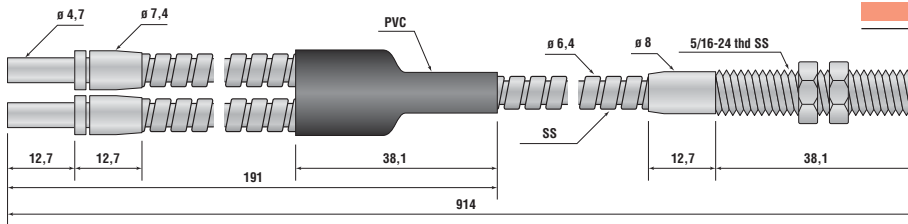
D12E

D12

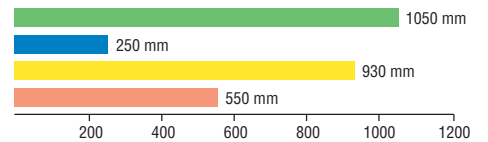
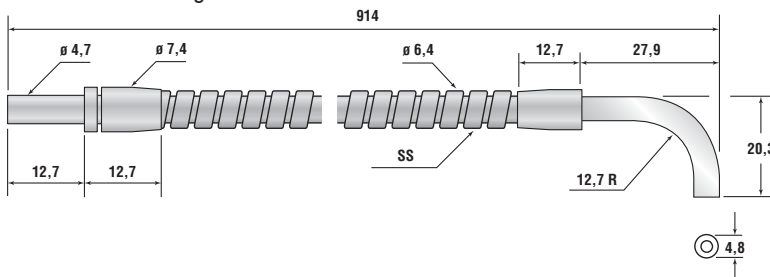
Dimensions (in mm)

Range (in mm)

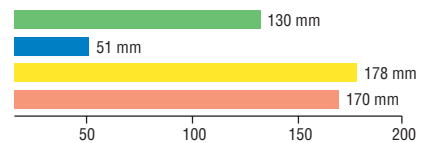
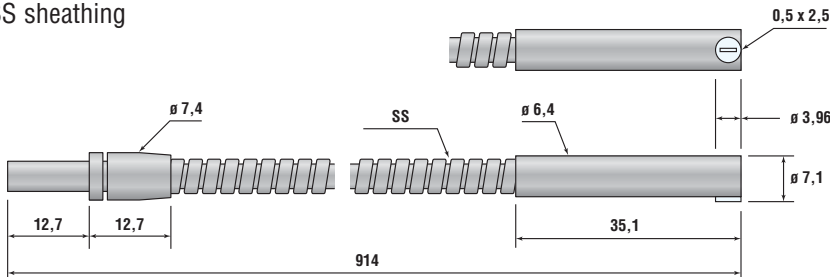
BT23SM900 Bifurcated threaded, glass fibre, SS sheathing, special high-temperature 480° C end tip construction



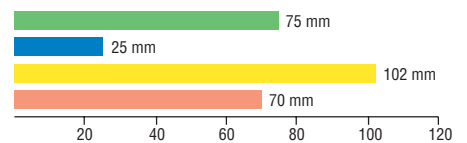
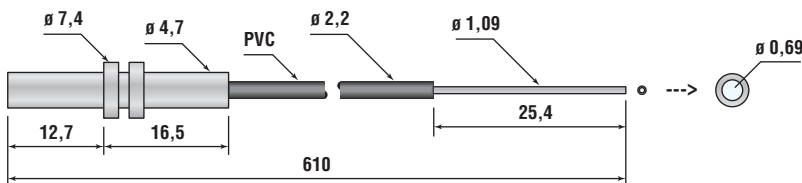
IA23S Individual angled



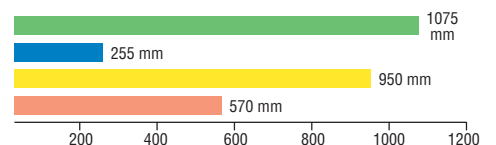
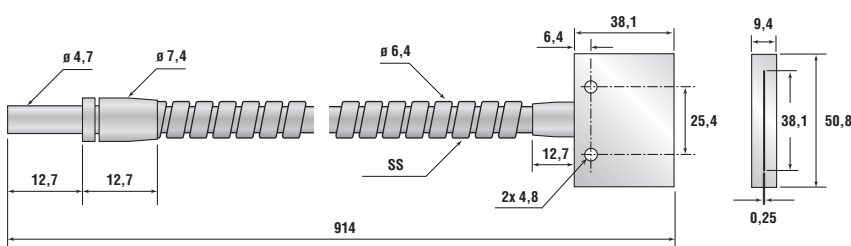
IAR.753SMTA Individual tight angle with rectangular bundle glass fibre, SS sheathing



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



IR2.53S Individual rectangular, 40 mm





R55F

SME312

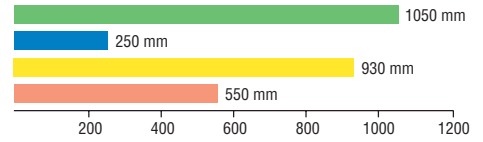
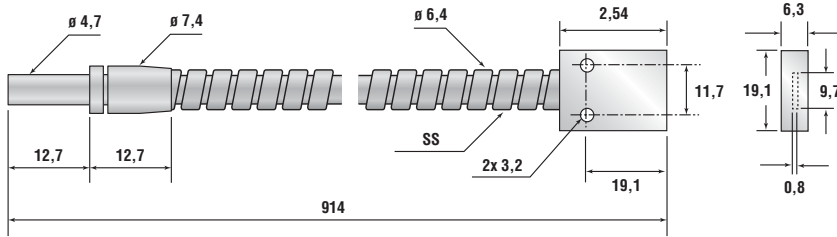
D12E

D12

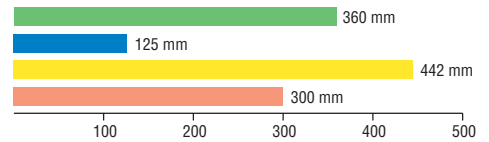
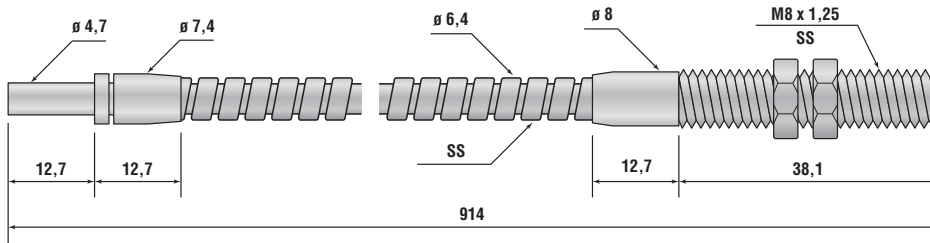
Dimensions (in mm)

Range (in mm)

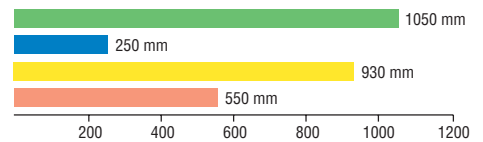
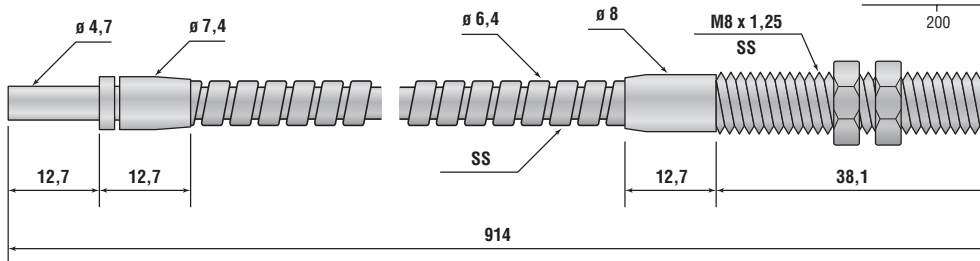
IR23S Individual rectangular, 10 mm



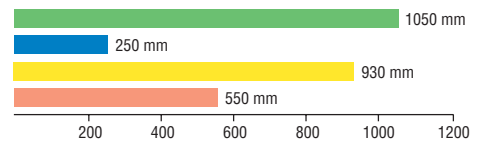
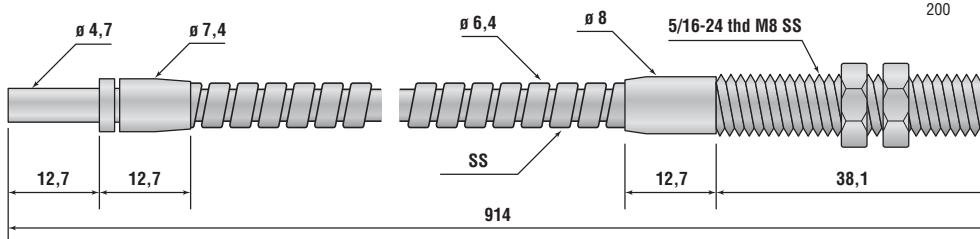
IT13SM8 Individual threaded, glass fibre, SS sheathing



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

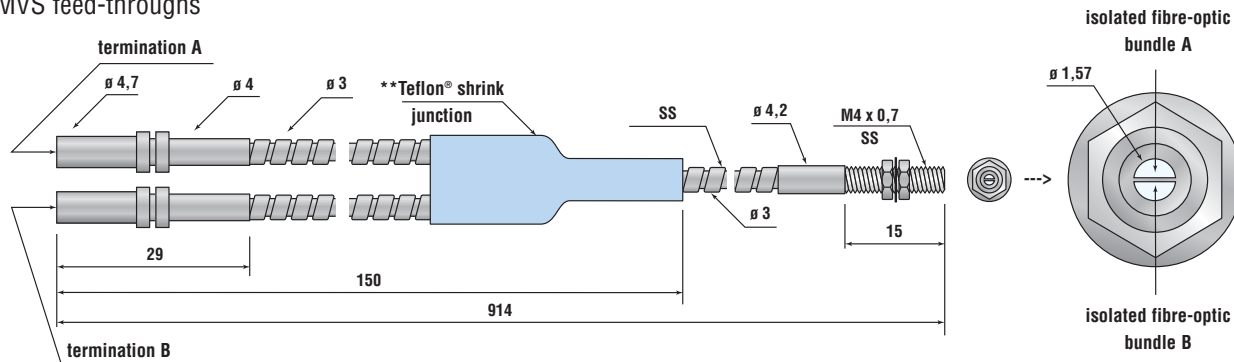
D10HP

D10HS

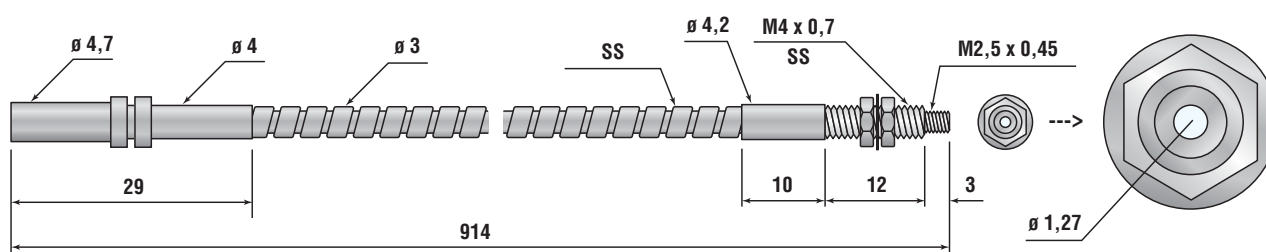
D10SHS

Dimensions (in mm)

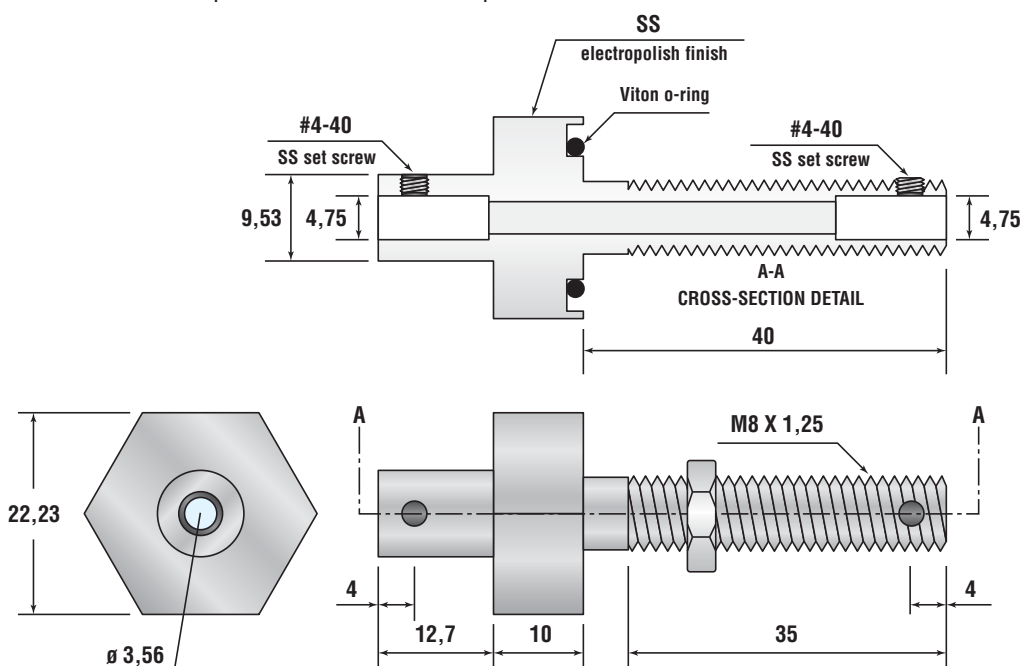
BMT13SMVF* Bifurcated miniature threaded, glass fibre, SS sheathing, special vacuum construction; may be used with VFT-M8MVS feed-throughs



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 $1,3 \times 10^{-9}$ 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

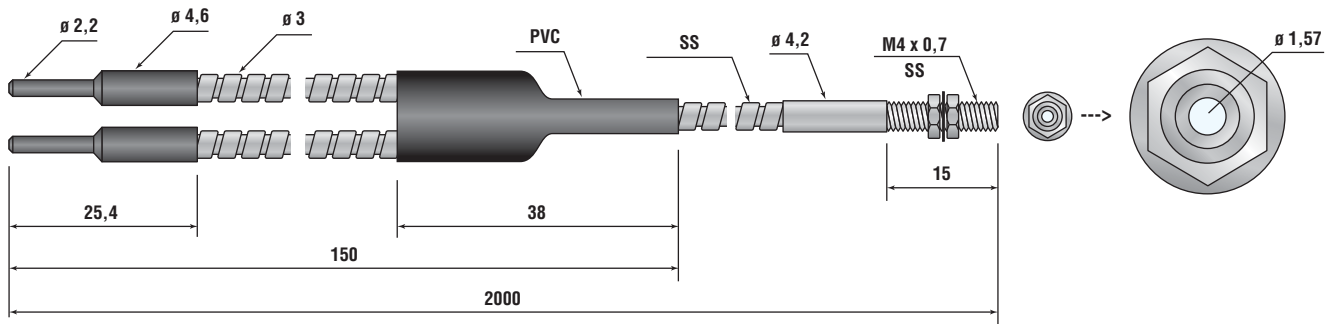
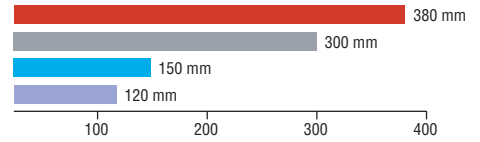
D10HS

D10SHS

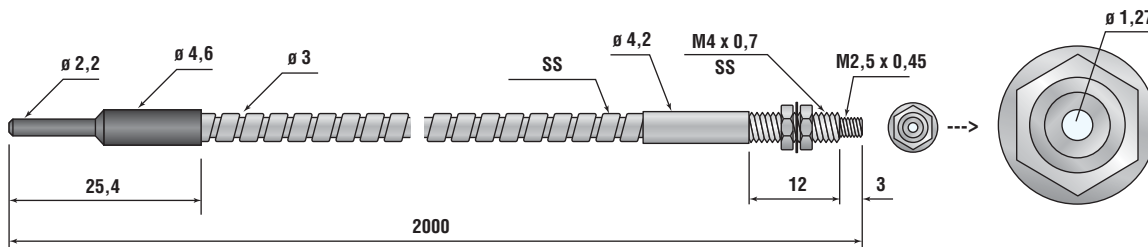
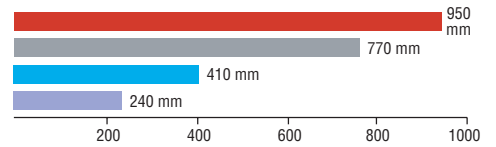
Dimensions (in mm)

Range (in mm)

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



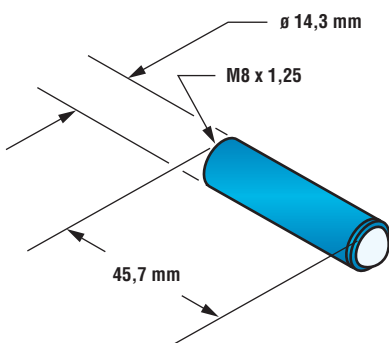
IMT.756.6S-HT Individual miniature threaded, glass fibre, SS sheathing, special high-temperature 315° C end tip construction; D10 sensors ONLY



Glass Fibre-optic Lens Attachments

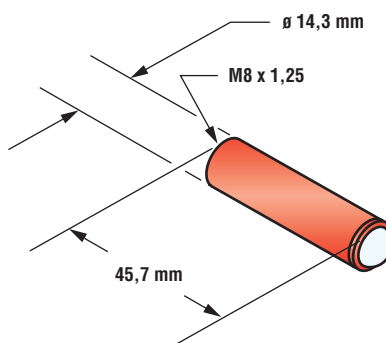
L9M8*

- 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*

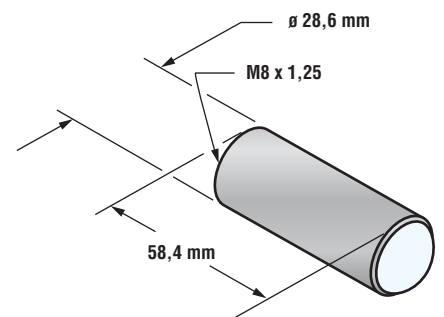
- Glass convergent lens with anodised red aluminum housing
- Used with bifurcated threaded glass fibres (e.g. BT13SM8, BT23SM8)
- The L10 lens focuses the light to a point as small as 0,8 mm when used with a 1,5 mm diameter fibre bundle
- Maximum temperature: 315° C
- Focal distance is 5 mm ±1 mm



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

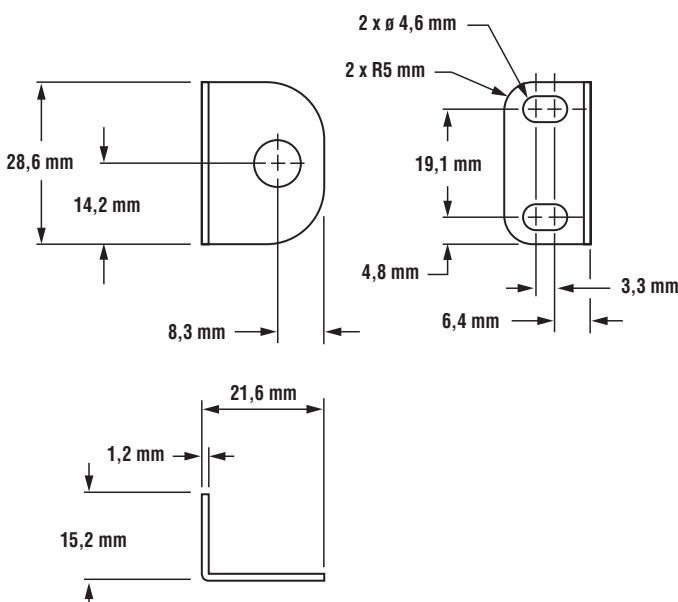
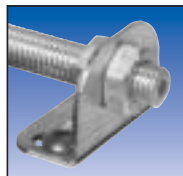
** version with 5/16 inch - 24 threading available*



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.

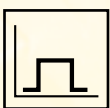
- Easy-to-set automatic *Expert*-style TEACH options* including static, dynamic, and single point programming plus manual adjustment for fine-tuning
- 16-bit micro-controller and 12-bit analogue-to-digital converter for high performance, low contrast sensing
- Easy-to-read 4-digit display for programming 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.

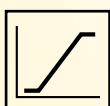
Indicator LEDs keep you constantly informed of the output status of the D10 sensors. A separate, domed LED for each channel lights yellow when the output is conducting.

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
Super High Power
2,5 ms



D10HP
High Power
1 ms



D10HS
High Speed
200 µs



D10SHS
Super High Speed
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 overloaded 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

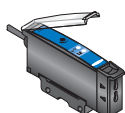
* U.S. Patent #5808296

** 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. <ul style="list-style-type: none"> • 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)	<p>Excess gain in relation to distance (in mm). A) PIT26U opposed B) PIT46U opposed</p>
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)	<p>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</p>
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.

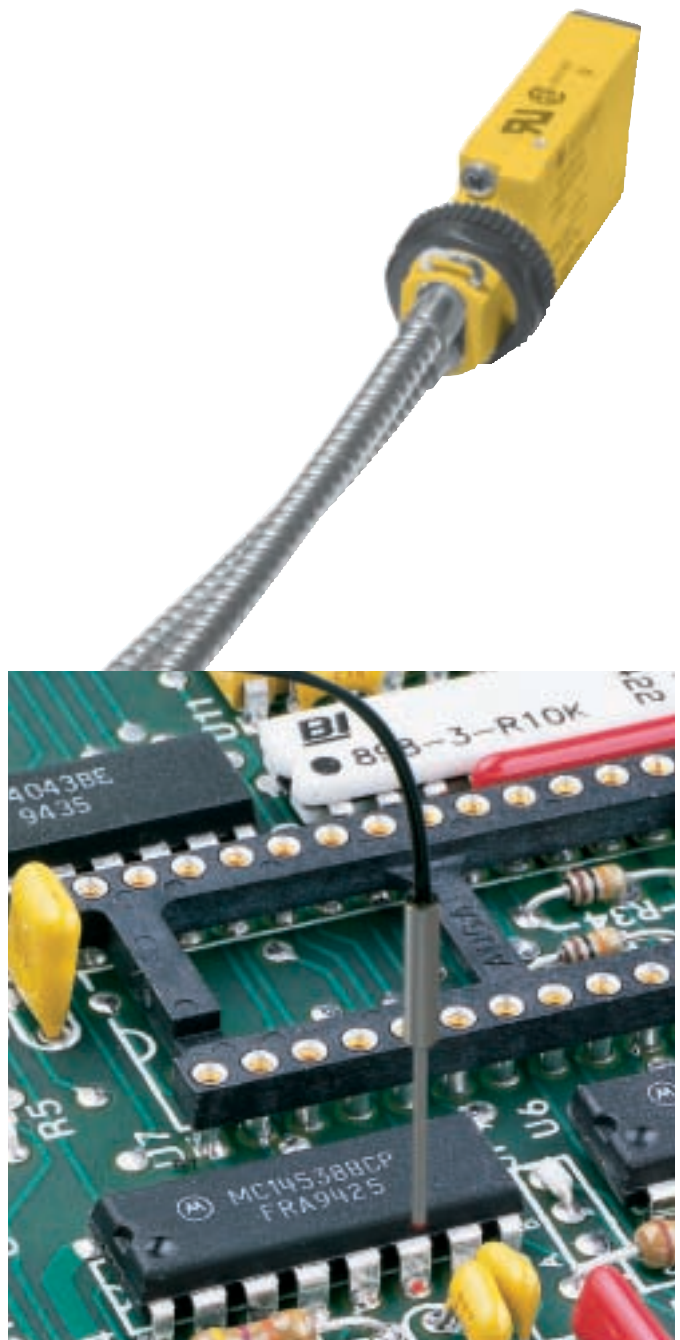
The MINI-BEAM Expert “learns” each job with the push of a single button. Simply push it once with the sensor pointed at the ON condition, and once with it pointed at the OFF condition. Not only does it provide extremely accurate sensitivity settings, this single pushbutton is extremely easy to use, and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

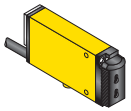
Pre-wired or quick-disconnect (QD) wiring, 10 to 30V dc.

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.

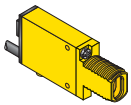
- Glass-filled polyester housing
- Epoxy-encapsulated electronics
- Sealed programming button
- Rated IEC IP67





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	<p>Opposed mode - individual fibres A) PIT26U fibre B) PIT46U fibre</p>
SME312FPQD	M12 x 1, 5-pin	10 to 30V dc	Bipolar NPN/PNP	
				<p>Diffuse mode - bifurcated fibres (performance based on 90% reflectance white test card). A) PBT26U fibre, B) PBT46U fibre</p>



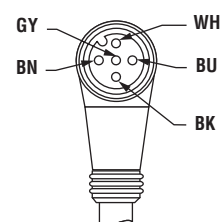
MINI-BEAM™ Expert Series Glass Fibre-optic Models (Visible Red 650 nm and Infrared 880 nm)

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	<p>Opposed mode - individual fibres A) IT13S fibre, B) IT23S fibre, C) IT23S fibre with L9 lens</p>
SME312FQD	M12 x 1, 5-pin	10 to 30V dc	Bipolar NPN/PNP	
				<p>Diffuse mode - bifurcated fibres (performance based on 90% reflectance white test card). A) BT13S fibre, B) BT23S fibre</p>
SME312FV	5-wire 2 m cable	10 to 30V dc	Bipolar NPN/PNP	<p>Opposed mode - individual fibres A) IT13S fibre B) IT23S fibre</p>
SME312FVQD	M12 x 1, 5-pin	10 to 30V dc	Bipolar NPN/PNP	
				<p>Diffuse mode - bifurcated fibres (performance based on 90% reflectance white test card). A) BT13S fibre, B) BT23S fibre</p>

Quick-Disconnect Cables (Selection)

Style	Model	Length	Connector
M12 x 1, 5-pin	MQDC1-506	2 m	Straight
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

Pin-out M12 x 1, 5-pin
(Connector on Cable Shown)



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

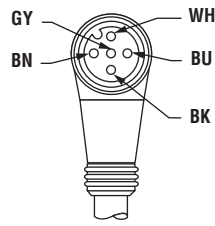
Light Source	Models	Cable	Supply Voltage	Output Type	Output Rating	Response	Repeatability
Red LED	R55FP	2 m cable	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
Red LED	R55FPQ	M12 x 1	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
Green LED	R55FPG	2 m cable	10 to 30V dc	Bipolar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

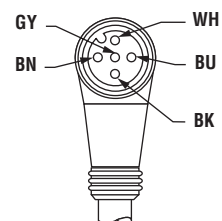


R55F Series Glass Fibre-optic Colour Mark Sensors

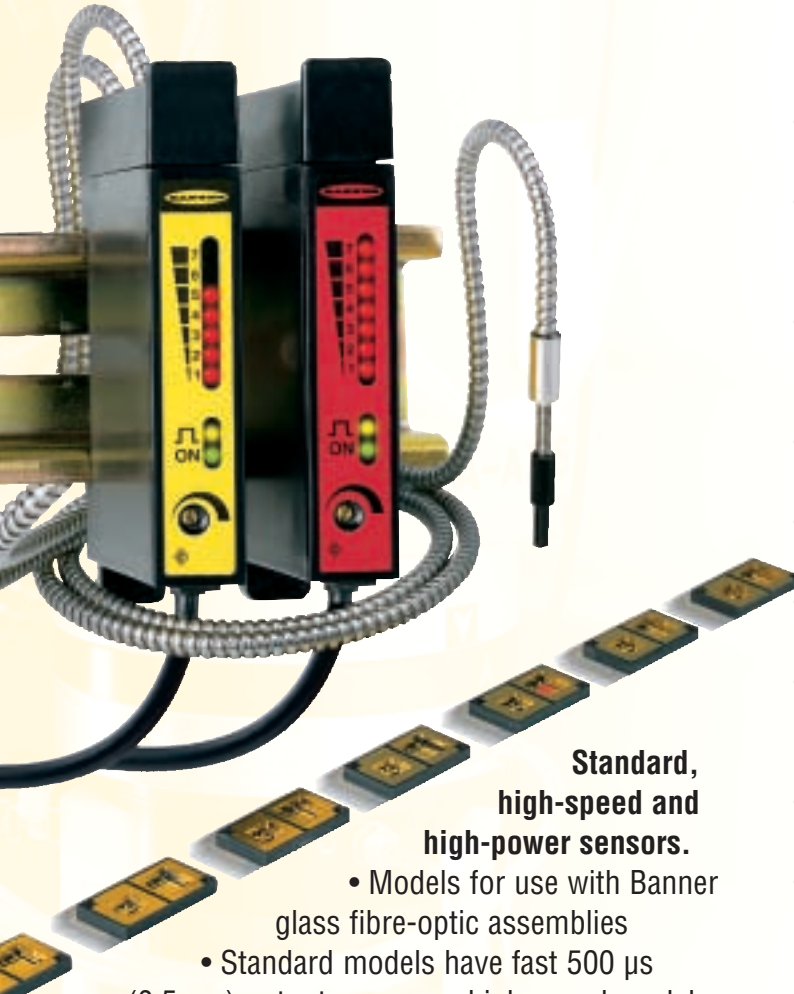
Light Source	Models	Cable	Supply Voltage	Output Type	Output Rating	Response	Repeatability
Red LED	R55FV	2 m cable	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
Red LED	R55FVQ	M12 x 1	10 to 30V dc	Bipolar NPN/PNP	150 mA max.	50 µs on/off	25 µs
Green LED	R55FVG	2 m cable	10 to 30V dc	Bipolar 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 μ s (0,5 ms) output response; high-speed models (model suffix “Y” or “Y1”) have selectable 500 or 50 μ s 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 μ s 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

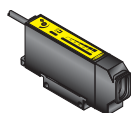
D12 Expert TEACH-mode fibre-optic sensors.

- 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 midway between “dark” and “light” conditions to ignore subtle changes, such as web flutter
- Models for glass fibre-optics available in all versions
- Fast 200 μ s 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

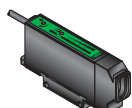


D12 Standard Series Glass Fibre-optic Models (500 µs Output Response – Visible Red 680 nm)

Models	Cable	Supply Voltage	Output Type	Excess Gain
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.*

A) IT13S fibre opposed mode A) BT13S fibre diffuse mode
B) IT23S fibre opposed mode B) BT23S fibre diffuse mode

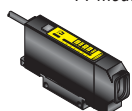


D12 High-Speed Series Glass Fibre-optic Models (50 µs or 500 µs Output Response – Visible Red 680 nm)

Models	Cable	Supply Voltage	Output Type	Excess Gain
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)	

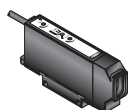
** Y1 models have 20 ms output pulse stretcher. Excess gain in relation to the distance (in mm).
Diffuse mode performance based on 90% reflectance white test card.*

A) IT13S fibre opposed mode A) BT13S fibre diffuse mode
B) IT23S fibre opposed 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
D12E2P6FV D12E2N6FV	Midway between “dark” and “light”	2 m cable	10 to 30V dc	PNP (sourcing) NPN (sinking)	BT23S fibre, diffuse mode: 178 mm BT13S fibre, diffuse mode: 68 mm



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
D12DAB6FVQ	ø 8 mm QD, 4-pin	10 to 30V dc	Bipolar NPN/PNP	BT23S fibre, diffuse mode: 60 mm BT13S fibre, diffuse mode: 25 mm

Quick-Disconnect Cables (Selection)

Style	Model	Length	Connector	Pin-out
ø 8 mm, 4-pin <i>(except for D12 Expert)</i>	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.



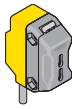
FI22FP Series Sensors

Easy-to-use, low-profile fibre-optic sensor.

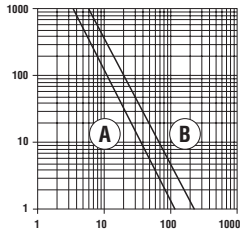
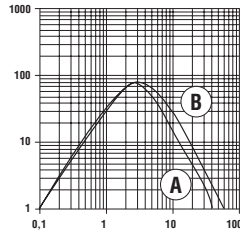
The FI22FP is an easy-to-use, low-profile fibre-optic sensor for use with plastic or Banner's STEEL-SKIN™ fibres. It provides high-performance sensing in low-contrast applications and, because of its small size, can mount almost anywhere.

- 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

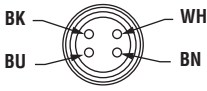




QS18FP Series Plastic Fibre-optic Models (Visible Red 660 nm)

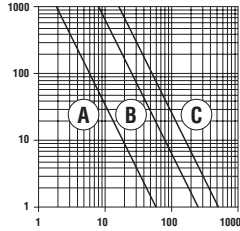
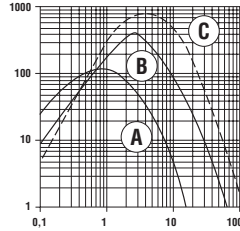
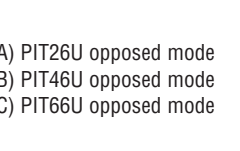
Models	Cable	Supply Voltage	Output Type	Excess Gain (in relation to distance in mm)
QS18VP6FP QS18VP6FPQ	2 m, 4-wire ø 8 mm QD, 4-pin, pigtail	10 to 30V dc	PNP	  <p>A) PIT46U opposed mode B) PIT66U opposed mode</p> <p>Diffuse mode performance based on 90% reflectance white test card. A) PBT46U diffuse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

Quick-Disconnect Cables (Selection)

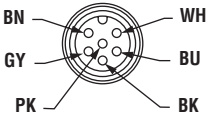
Style	Model	Length	Connector	Pin-out
ø 8 mm, 4-pin	PKG4-2	2 m	Straight	Pin-out ø 8 mm, 4-pin (Connector on Cable Shown) 
ø 8 mm, 4-pin	PKW4-2	2 m	Right-Angle	



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	   <p>A) PIT26U opposed mode B) PIT46U opposed mode C) PIT66U opposed mode</p> <p>Diffuse mode performance based on 90% reflectance white test card. A) PBT26U diffuse mode, B) PBT46U diffuse mode, C) PBT66U diffuse mode</p>
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**
Intermax GmbH
Josef-Moser-Gasse 1
A-1170 Vienna
Tel: 431-48 615870
Fax: 431-48 6158723
e-mail: imax.office@intermax.at
<http://www.intermax.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**
Osäihing "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 Courtaulin
Magny - Le - Hongre
77703 Marne - La - Vallée 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.
Bíldshöfða 16
110 Reykjavík
Tel: 354-56 78 939
Fax: 354-56 78-938
e-mail: kalli@kfstal.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: helen@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>

Malmö:
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 Crescent
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
Acassuso 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 Eletrônicos
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. Bolívariana. Cra 66 B No. 39-22
Medellín (Antioquia)
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.racsca.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**

Kraher 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: kraher@interactive.net.ec

 **Guatemala**

Energys Co.
5 Calle 35-01, Zona 11
Utatlán II, Guatemala City
Tel: 502-599-4622
Fax: 502-594-6876
e-mail: energys@quate.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: jemaeeec@iserve.net.mx

Alianza en Control Industrial SA de CV
 Francisco I. Madero No 156
 Col. San Pedro Xalpa CP 02710
 Atzacapotzalco 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. Balastradas, 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: vcirme@prodigy.net.mx

INASA: Ingeniería 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: Extensión 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@iwmm.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: turcktb@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, Huguang 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, Pittam Pura
Delhi 110 088
Tel: 91-11-731-6963
Fax: 91-11-731-7945
e-mail: turckindia@vsnl.com
saraswatr@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@sherbinforcommerce.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	Model	ID	Page	Model	ID	Page
BA23S	.3900100	.27	D12SN6FVY	.3583300	.43	PBFMP16UMP.2	.3061220	.7
BMP.753P	.3937700	.27	D12SN6FVY1	.3583700	.43	PBP16U	.3039992	.7
BMT.442P	.3021310	.27	D12SN6FVY1Q	.3583800	.43	PBPF26UMB	.3039116	.7
BMT.753P	.3919200	.27	D12SN6FVYQ	.3583400	.43	PBPMSB36U	.3038711	.7
BMT13SMVF	.3065967	.31	D12SP6FV	.3582700	.43	PBPS26U	.3035042	.7
BMT16.6S-HT	.3064397	.32	D12SP6FVQ	.3582800	.43	PBPS46U	.3035040	.8
BR2.53S	.3915300	.28	D12SP6FVY	.3583500	.43	PBPS46UMT	.3048005	.8
BR23S	.3913100	.28	D12SP6FVY1	.3583900	.43	PBPS66U	.3048015	.8
BT13SM8	.3923300	.28	D12SP6FVY1Q	.3584000	.43	PBR1X326U	.3039987	.8
BT23SM8	.3903300	.28	D12SP6FVYQ	.3583600	.43	PBR526U	.3061216	.8
BT23SM900	.3923500	.29	FI22FP	.3056287	.45	PBT16U	.3042822	.8
D10DNFP	.3062379	.35	FI22FPQ	.3056289	.45	PBT26U	.3913400	.9
D10DNFPG	.3064561	.35	IA23S	.3900300	.29	PBT26UHF	.3061208	.9
D10DNFPGQ	.3064562	.35	IAR.753SMTA	.3911000	.29	PBT26UHT1	.3056119	.9
D10DNFPQ	.3062380	.35	IMM.442P	.3927000	.29	PBT26UM6M.1	.3065942	.9
D10DPFP	.3062382	.35	IMT.753SMVF	.3065968	.31	PBT43TMB5	.3070768	.21
D10DPFPG	.3064564	.35	IMT.756.6S-HT	.3064398	.32	PBT46TMB5	.3070769	.21
D10DPFPGQ	.3064565	.35	IR2.53S	.3915500	.29	PBT46U	.3908000	.9
D10DPFPQ	.3062383	.35	IR23S	.3925100	.30	PBT46UC	.3921600	.9
D10INFP	.3062385	.35	IT13SM8	.3928700	.30	PBT46UHF	.3051784	.10
D10INFPG	.3064567	.35	IT23SM8	.3903200	.30	PBT46UHT1	.3042799	.10
D10INFPGQ	.3064568	.35	IT23SM8MM900	.3021023	.30	PBT66U	.3039982	.10
D10INFPQ	.3062386	.35	L08FP	.3774900	.23	PBU430U	.3937000	.24
D10IPFP	.3062388	.35	L10M8	.3774800	.33	PBU460U	.3937100	.24
D10IPFPG	.3064570	.35	L16FSSM8	.3775600	.33	PDI46U-LLD	.3061240	.19
D10IPFPGQ	.3064571	.35	L2	.3749600	.23	PDIS46UM12	.3042880	.19
D10IPFPQ	.3062389	.35	L2RA	.3749601	.23	PDISM46UM5MA	.3051829	.20
D10UNFP	.3063992	.35	L4C20	.3068629	.22	PDIT26T5	.3065907	.20
D10UNFPG	.3064573	.35	L4C6	.3041517	.22	PDIT4100U	.3056075	.20
D10UNFPGQ	.3064574	.35	L9M8	.3774700	.33	PFK20	.3788900	.23
D10UNFPQ	.3063993	.35	LZ3C8	.3068653	.22	PFK40	.3772700	.23
D10UPFP	.3063995	.35	MQDC1-506	.3051127	.39, 41	PFS44S6T	.3048029	.24
D10UPFPG	.3064576	.35	MQDC1-506RA	.3051128	.39, 41	PFS53S6T	.3048028	.24
D10UPFPGQ	.3064577	.35	MQDC1-515	.3047812	.39, 41	PFS69S6T	.3048027	.24
D10UPFPQ	.3063996	.35	MQDC1-515RA	.3047813	.39, 41	PIA16U	.3026637	.10
D11E2N6FP	.3050832	.37	MQDC1-530	.3047814	.39, 41	PIA26U	.3921700	.10
D11E2N6FPQ	.3050834	.37	MQDC1-530RA	.3047815	.39, 41	PIAT16U	.3048022	.10
D11E2P6FP	.3050833	.37	P12-C1	.3051832	.18	PIAT26U	.3028235	.11
D11E2P6FPQ	.3050835	.37	P22-C1	.3056058	.18	PIAT46U	.3027336	.11
D11EN6FP	.3044271	.37	P32-C2	.3061217	.18	PIAT46UM.4X.4MT	.3045077	.11
D11EN6FPQ	.3044273	.37	PBCF21X46U	.3040414	.5	PIAT66U	.3042885	.11
D11EP6FP	.3044274	.37	PBCF46U	.3042888	.5	PIE46UT	.3048040	.12
D11EP6FPQ	.3044276	.37	PBCT21X46U	.3045071	.5	PIE66UTMNL	.3048052	.12
D11SN6FP	.3043342	.37	PBCT26U	.3045091	.5	PIES46UT	.3051758	.12
D11SN6FPQ	.3043344	.37	PBCT26UM3	.3045090	.5	PIF26U	.3027367	.12
D11SP6FP	.3043348	.37	PBCT26UM4M2.5	.3056125	.5	PIF26UMLS	.3039130	.12
D11SP6FPQ	.3043350	.37	PBCT46U	.3035214	.6	PIF46U	.3913700	.12
D12DAB6FV	.3039545	.43	PBE46UTMLLP	.3048056	.18	PIF46UHF	.3051785	.13
D12DAB6FVQ	.3039546	.43	PBE46UTMLLPHT1	.3051830	.19	PIF66U	.3039898	.13
D12E2N6FV	.3050840	.43	PBE46UTMNL	.3048055	.6	PIF66UM.52M.19D	.3041542	.13
D12E2P6FV	.3050841	.43	PBEFP26U	.3039100	.6	PIFM1X46U	.3038636	.13
D12EN6FV	.3041962	.43	PBF26U	.3028131	.6	PIFM46U	.3039113	.13
D12EP6FV	.3041968	.43	PBF46UM3MJ1.3	.3056109	.6	PIL415U	.3045059	.23
D12SN6FV	.3582500	.43	PBF66U	.3039981	.6	PIL46U	.3034080	.13, 23
D12SN6FVQ	.3582600	.43	PBFM16U	.3039115	.7	PIP46U	.3915200	.14

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

Table of Contents

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

Abbreviations

A	Acrylic	XLPE	Cross-linked polyethylene
AL	Aluminium		Counterbore
NI Pltd BR	Nickel Plated Brass		Inner
P	Plastic		Outer
PE	Polyethylene		Bendable
PP	Polypropylene		Bendable
SS	Stainless Steel		Do not bend
thd BR	threaded Brass		

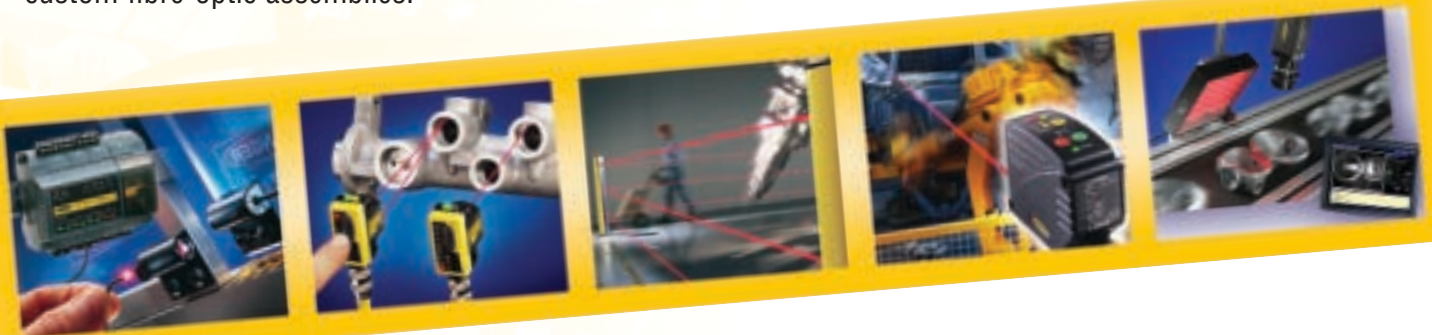
Banner: Industry's number-one supplier of sensors and machine safety products

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 diverse 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!



Call, write or email and get your copy today!



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

Visit Banner On-Line:

www.bannerengineering.com



To visit the joint ventures web sites, surf to:

www.turckbanner.fr
www.turckbanner.it

www.turckbanner.es
www.turckbanner.co.uk



X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [banner manufacturer](#):

Other Similar products are found below :

[Q45VR2FPQ](#) [BTA23S](#) [RS-11](#) [L16F](#) [2LM3](#) [2PBA](#) [LM8-1](#) [LMT](#) [SM312CV](#) [SM31RQD](#) [LS4ELQ](#) [FX1](#) [Q45BB6LLQ](#) [QM42VP6AFV150Q](#)
[D12SP6FP](#) [MBCC-412](#) [BA23S](#) [BT21S](#) [BTA13S](#) [LM4-2](#) [Q25SP6LPQ](#) [ES-FA-6G](#) [T183E](#) [SLSP30-600Q88](#) [SLSP30-1200Q88](#) [OPBA5](#)
[PBAT](#) [SBLV1](#) [SMA91EQD](#) [SMA91E](#) [SMA912LVQD](#) [SMA912DQD](#) [SM2A312CVQD](#) [SM2A912LVQD](#) [SM31RL](#) [TL70RAQ](#) [TL70RQ](#)
[K50LGRYPQ](#) [LEDRR70X70-78587](#) [BRT-THG-4X4-5](#) [T18-2VNDL-Q8](#) [SLLP14-1190P88](#) [SME312DQD](#) [SM312CUQD](#) [BR-2](#) [BR23P](#)
[SM2A312FPQD](#) [SM2A312LVQD](#) [SM31EQD](#) [D12EP6FP](#)