TL46



ULTRA HIGH SPEED HIGH PERFORMING CONTRAST SENSOR FOR COLORED REGISTRATION MARK DETECTION

- Ultra Fast model up to 70 kHz and very low 3us jitter (TL46-WH...OZ)
- Color mode enhanced model (TL46-WE)
- Position mouniting monitoring through IO-Link communication
- Mechanical vibration monitoring through IO-Link communication
- Wide-spectrum RGB or white LED emission
- 7 different models: basic, standard, enhanced, low jitter, color mode, basic IO-Link, ultra fast with IO-Link
- Automatic, manual and dynamic settings
- 10, 15, 20, 30, 50, 70 kHz switching frequencies
- Very low 3us jitter for fast and very precise detection (TL46-WH...OZ)
- NPN/PNP/PP and analog outputs
- IO-Link connectivity V1.1.2 with smart functions
- Standard mounting, M12 connector rotatable to 5 positions

APPLICATIONS

- Packaging and labeling machinery
- Beverage/Food/Cosmetic/Pharmaceutical industries
- Printing machinery
- Flexographic printing machinery
- Very high precision for cutting and sealing applications

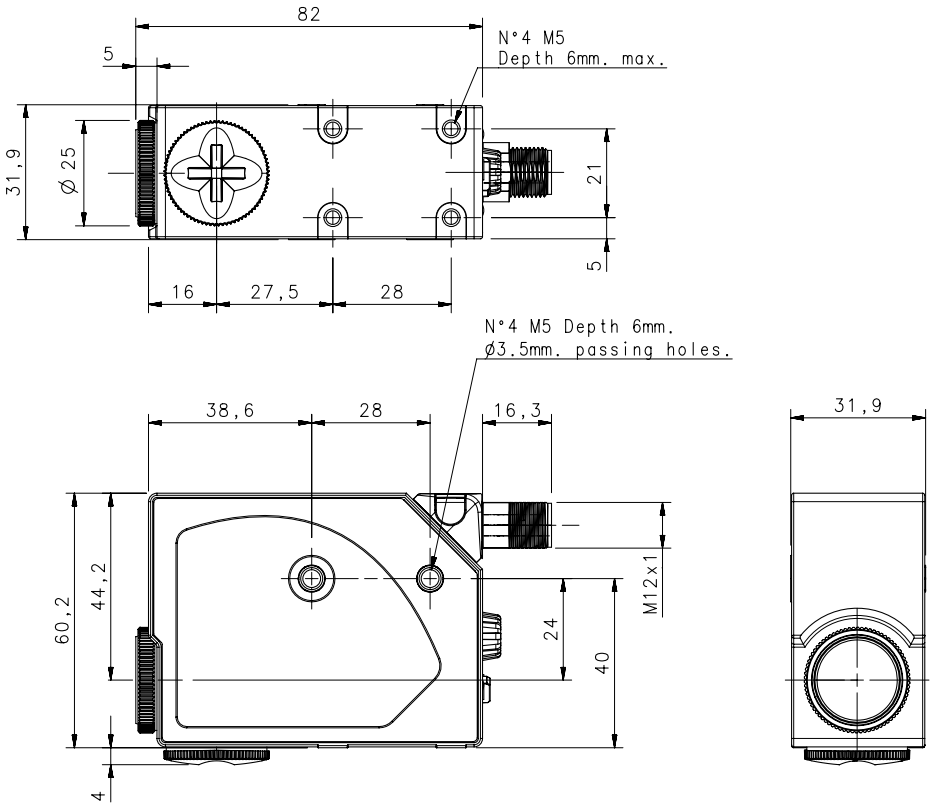
(**) ATEX II 3DG

TL46		
Contrast sensor		9 ±3 mm
		18 mm (Lens No.18 glass)
		22 mm (Lens No.22 glass)
		28 mm (Lens No.28 glass)
		40 mm (Lens No.40 glass)
Switching frequency		10 kHz (mod. TL46-WE color mode)
		15 kHz (mod. TL46-W)
		20 kHz (mod. TL46-A/WL)
		25 kHz (mod. TL46-W...PZ)
		30 kHZ (mod. TL46-WLF/WE contrast mode)
		50 kHZ (mod. TL46-WJ)
		70 kHz (mod. TL46-WH...PZ)
Jitter		50 µs (mod. TL46-WE color mode)
		33 µs (mod. TL46-W)
		25 µs (mod. TL46-A/WL)
		<20 µs (mod. TL46-W...PZ)
		16 µs (mod. TL46-WLF/WE contrast mode)
		<7 µs (mod. TL46-WJ
		<3 µs (mod. TL46-WH...PZ)
Light emission		RGB LED
		white LED
		Red LED
Setting		push buttons
		Trimmer (precise incremental encoder) mod. TL46-A
Power supply	VDC	10...30 V
	VAC	
	VAC/DC	
Output	PNP	•
	NPN	•
	NPN/PNP	•
	relay	
	Analogue out	0...5 V Analogue Output (TL46-A/W/WL only)
	IO-Link	IO-Link V1.1.2 Smart sensor profile double channel I/O (mod. TL46-WH...PZ, TL46-W...PZ)
Connection	cable	
	connector	•
	pig-tail	
Approximate dimensions (mm)		31 x 81 x 58
Housing material		Aluminium
Mechanical protection		IP67

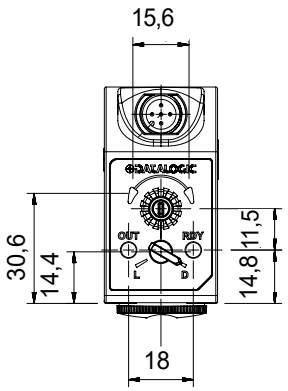
TECHNICAL DATA

Power supply	10 ... 30 VDC (limit values)
Ripple	2 VPP max.
Consumption (output current excluded)	40 mA max. at 24 VDC (mod. TL46-A) 50 mA max. at 24 VDC (mod. TL46-W/WJ) 85 mA max. at 24 VDC 24 VDC with bargraph ON in threshold adjustment mode, 55 mA max at 24 VDC with bargraph OFF in normal functioning mode (mod. TL46-WL) 35 mA max. at 24 VDC (mod. TL46-WLF/WE) 30mA (mod. TL46-WH...PZ, TL46-W...PZ)
Light emission	white LED 400-700 nm (mod. TL46-A-4xx); red LED 630 nm (mod. TL46-A-6xx) blue LED 465nm/green LED 520 nm/red LED 630 nm (mod. TL46-W/WL/WLF/WE/WJ/WH...PZ/W...PZ)
Detection Distance	9 ±3 mm 18 mm (Lens No.18 glass) 22 mm (Lens No.22 glass) 28 mm (Lens No.28 glass) 40 mm (Lens No.40 glass)
Minimum spot dimension	1.5 x 5 mm; 0.8 x 4 mm (TL46-WJ, TL46-WH...PZ, TL46-W...PZ)
Depth of field	± 3 mm
Response time	100 µs (mod. TL46-WE, TL46-WH...PZ color mode 33 µs (mod. TL46-W) 25 µs (mod. TL46-A/WL) 20 µs (mod. TL46-W...PZ) 16 µs (mod. TL46-WLF/WE contrast mode) 10 µs (mod. TL46-WJ) 6 µs (mod. TL46-WH...PZ)
Switching frequency	10 kHz (mod. TL46-WE, TL46WH...PZ color mode) 15 kHz (mod. TL46-W) 20 kHz (mod. TL46-A/WL) 30 kHz (mod. TL46-WLF/WE contrast mode) 50 kHz (mod. TL46-WJ) 70 kHz (mod. TL46-WH...PZ)
Jitter	50 µs (mod. TL46-WE, TL46-WH...OZ color mode) 33 µs (mod. TL46-W) 25 µs (mod. TL46-A/WL) 20 µs (mod. TL46-W...PZ) 16 µs (mod. TL46-WLF/WE contrast mode) <7 µs (mod. TL46-WJ) 3 µs (mod. TL46-WH...PZ)
Setting	SET push-buttons (mod. TL46-W/WL/WLF/WH...PZ/W...PZ) sensivity trimmer (mod. TL46-A)
Operating mode	DARK/LIGHT selection by switch (mod. TL46-A); automatic DARK/LIGHT selection (mod. TL46-W/WL/WJ) automatic DARK/LIGHT selection in the target/background detection, selectable via wire in the dynamic detection (mod. TL46-WLF/WE/WH)
Indicators	yellow OUTPUT LED green READY LED, orange DELAY LED and KEYLOCK (mod TL46-W/WJ/W...PZ) green READY LED, 4-digit display/DELAY LED/KEYLOCK LED mod. TL46-WLF/WE/WH...PZ orange ARROWS (mod. TL46-A), DELAY LED and KEYLOCK LED 5-segment bargraph (mod. TL46-WL)
Dark/light selection	Switch; Automatic; Automatic/manual; remote/dynamic
Delay	0...20ms selectable via delay input 0...100ms programmed
Auxiliary function	Keylock (not available on TL46-WE) Fine Hysteresis regulation (TL46-WL/WLF/WE)
Output	PNP (mod. TL46-WJ); PNP or NPN; PNP/NPN (mod. TL46-W/WL/WLF/WE by part number); PP/PNP/NPN (TL46-W/WH...PZ); analog output (mod. TL46-A/W/WL)
Output current	100mA
Saturaton Voltage	= <2V
Analogue Out	0,5...5,5V ±10%; 2V on white target 90%; 1...3V ±10%(white 90%) ; 5,5V max
Analogue out impedance	2,2 kΩ (short circuit protection)
Connection	M12 5-pole connector
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Electrical protection	class 2, double insulation
Protection device	Reverse polarity protection, overload and short circuit protection
Mechanical protection	IP67
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	aluminium
Lens material	PMMA (mod. TL46-A, TL46-W), glass (mod. TL46-W-815G/WL/WLF/WJ/WE)
Operating temperature	-10 ... 55 °C
Storage temperature	-20 ... 70 °C
Weight	170 g max.

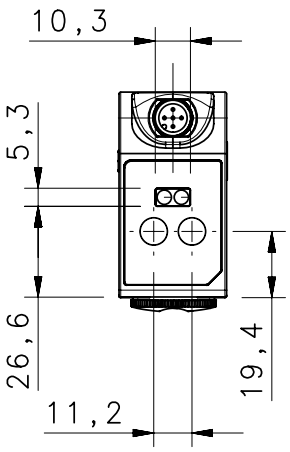
DIMENSIONS



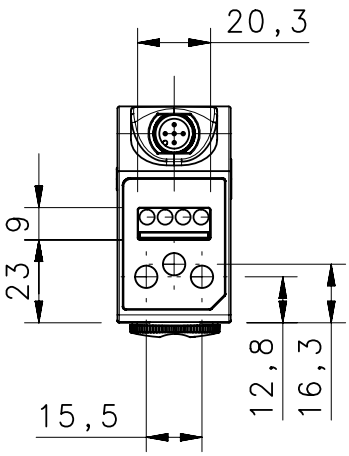
TL46-A



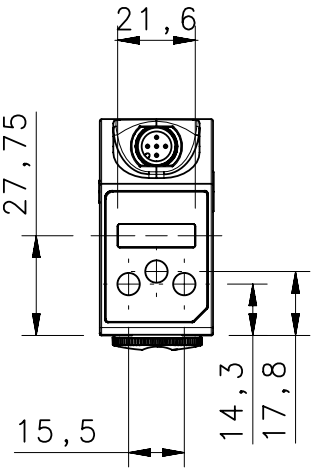
TL46-W/WJ/W...PZ



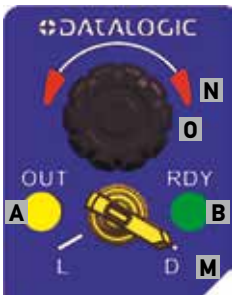
TL46-WL



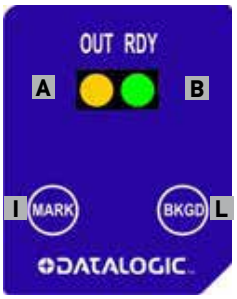
TL46-WLF/WE/WH...PZ



INDICATORS AND SETTINGS



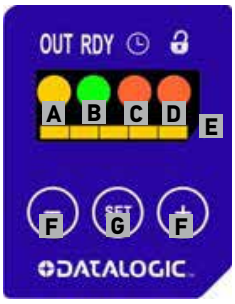
TL46-A
TRIMMER



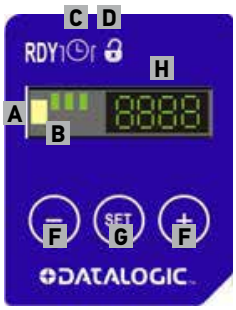
TL46-W
BASE

TL46-WJ
LOW JITTER

TL46-W...PZ
BASE IO-Link



TL46-WL
STANDARD



TL46-WLF
ENHANCED

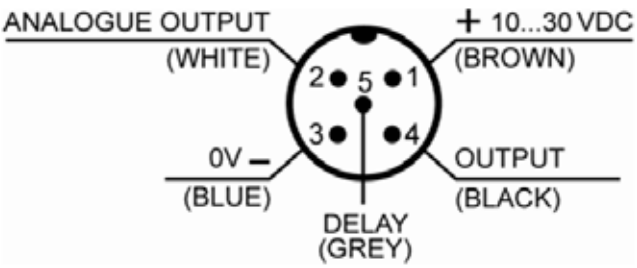
TL46-WE
COLOR
ENHANCED

TL46-WH...PZ
HIGH SPEED IO-Link

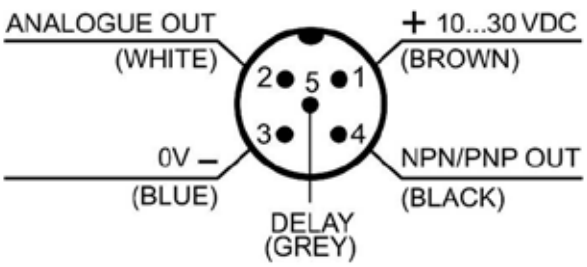
- A yellow OUTPUT LED
- B green READY LED
- C orange DELAY LED
- E orange KEYLOCK LED
- D Bargraph
- F +/- push-buttons
- G SET push-button
- H Display
- I MARK push-button
- L BKGD push-button
- M Light/Dark Switch
- N Orange Indicators Arrows
- O Sensitivity Adjustment Knob

CONNECTIONS

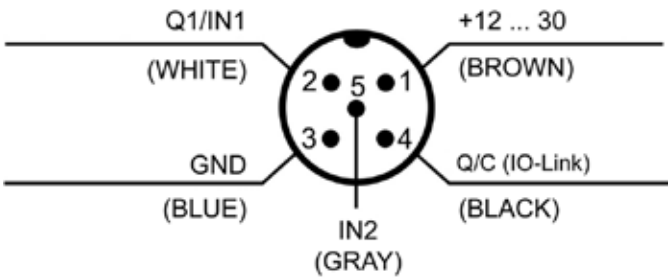
TL46-A



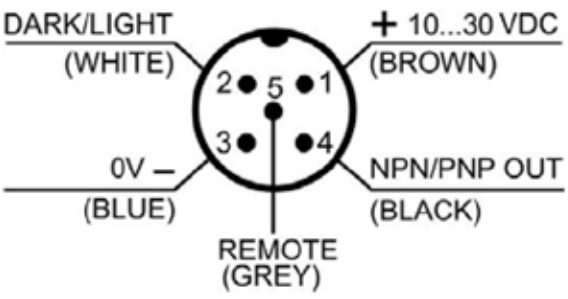
TL46-W/WL



TL46-W...PZ/WH...PZ

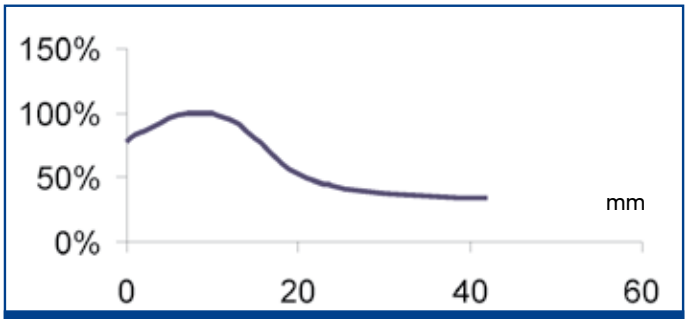


TL46-WLF/WE/WJ

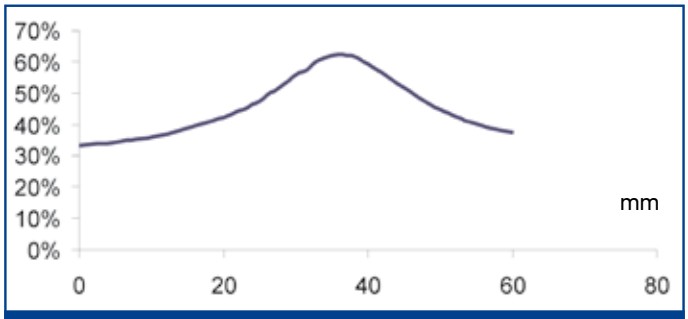


READING DIAGRAMS

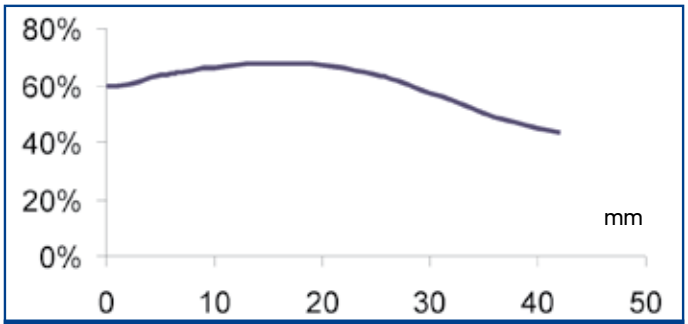
FOR ALL MODELS



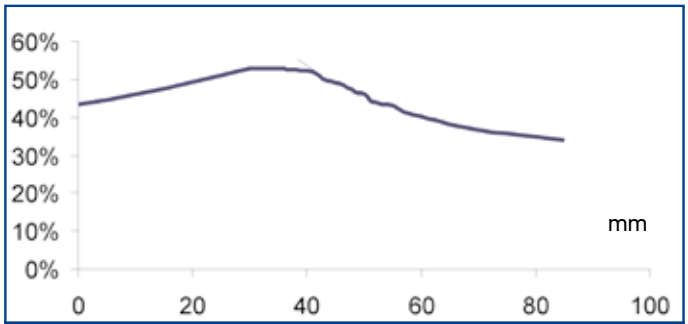
Standard 9 mm lens
(1.5 x 5 mm spot on focal point)



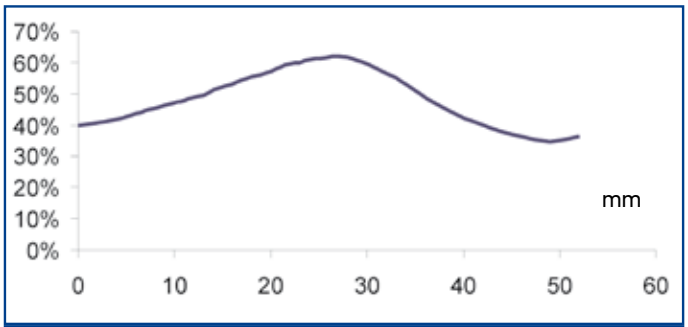
Accessory 28 mm lens
(2 x 9 mm spot on focal point)



Accessory 18 mm lens
(2 x 7 mm spot on focal point)



Accessory 40 mm lens
(2.5 x 11 mm spot on focal point)



Accessory 22 mm lens
(2 x 8 mm spot on focal point)

VERTICAL SPOT HORIZONTAL SPOT



Horizontal spot is present in the TL46 models with final '-L' suffix

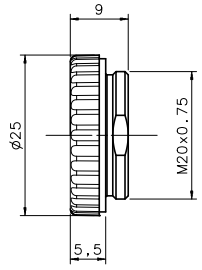
MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	SETTING & INDICATORS	OUTPUT	EMISSION	MODEL	ORDER No.
Contrast sensor	Trimmer 2 LEDs	PNP	WHITE vertical spot	TL46-A-415	954601070
		NPN	WHITE vertical spot	TL46-A-425	954601080
		PNP	RED vertical spot	TL46-A-615	954601090
		NPN	RED vertical spot	TL46-A-625	954601100
	Push-buttons 2 LEDs	PNP/NPN	R.G.B. vertical spot	TL46-W-815	954601000
			R.G.B. horizontal spot	TL46-W-815L	954601010
			R.G.B. vertical spot	TL46-W-815G*	954601060
		IO-Link PP/PNP/NPN	R.G.B. vertical spot	TL46-W-815-PZ	954600005
	Push buttons 4 LEDs bargraph	PNP/NPN	R.G.B. vertical spot	TL46-WL-815	954601020
			R.G.B. horizontal spot	TL46-WL-815L	954601030
	Push buttons 4 LEDs display	PNP/NPN	R.G.B. vertical spot	TL46-WLF-815	954601040
			R.G.B. horizontal spot	TL46-WLF-815L	954601050
Contrast low jitter sensor	Push buttons 4 LEDs display	PNP	R.G.B. vertical spot	TL46-WJ-815	954601110
			R.G.B. horizontal spot	TL46-WJ-815L	954601120
Color contrast sensor	Push buttons 4 LEDs display	PNP	R.G.B. vertical spot	TL46-WE-815	954601130
		NPN	R.G.B. vertical spot	TL46-WE-825	954601140
High Performance Contrast sensor	Push buttons 4 LEDs display	IO-Link PP/PNP/NPN	R.G.B. vertical spot	TL46-WH-815-PZ	954600004

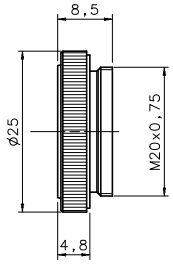
(*) Glass lens version of TL46-W model

ACCESSORIES

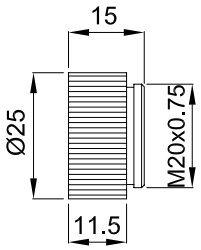
9 mm PMMA



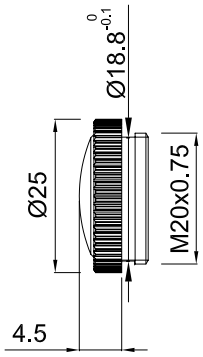
9 mm



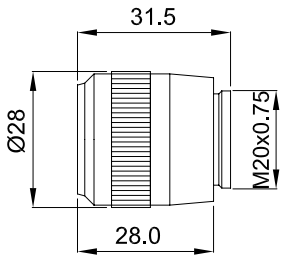
HI-RES LENS



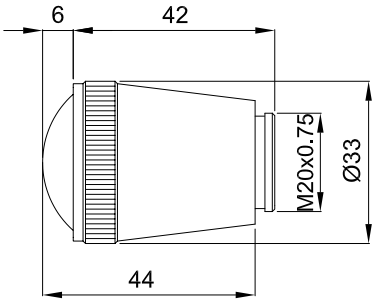
18 mm LENS



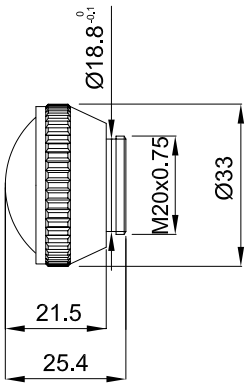
22 mm LENS



28 mm LENS



40 mm LENS



MODEL	DESCRIPTION	ORDER No.
Lens No.9	glass lens with 9 mm focus	95ACC2670
Lens No.9 PMMA	plastic lens with 9 mm focus	95ACC2540
Lens Hi-Res	additional focussing glass lens with 9 mm focus (*)	95ACC1050
Lens No.18	glass lens with 18 mm focus	95ACC2680
Lens No.22	glass lens with 22 mm focus	95ACC1100
Lens No.28	glass lens with 28 mm focus	890000194
Lens No.40	glass lens with 40 mm focus	95ACC2740

* focussing lens to screw between the sensor and the normal 9 mm lens

CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M12 Connector	5-pole, grey, P.V.C.	3 m	CS-A1-03-G-03	95ACC2110
		5 m	CS-A1-03-G-05	95ACC2120
		10 m	CS-A1-03-G-10	95ACC2140
	5-pole, U.L., black, P.V.C	3 m	CS-A1-03-U-03	95ASE1170
		5 m	CS-A1-03-U-05	95ASE1180
		10 m	CS-A1-03-U-10	95ASE1190
		15 m	CS-A1-03-U-15	95ASE1200
		25 m	CS-A1-03-U-25	95ASE1210
		50 m	CS-A1-03-U-50	95A252700

DATALOGIC PRODUCT OFFERING


Sensors


Hand Held scanners


Mobile Computers


Laser Marking Systems


Safety Laser Scanner


Vision Systems


Stationary Industrial Scanners


Safety Light Curtains

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