

Advanced, cost-effective barcode readers

The Code Reader™ line of advanced barcode readers have been designed to provide reliable data capture in a variety of settings, while maintaining an ergonomic, lightweight form factor. Code has developed the world's best image capture by using a powerful vision sensor and built-in lighting to reliably capture the barcode while not relying on external light sources.

In addition to leading-edge technical capabilities, all Code handheld barcode scanners feature housings made from specially engineered CodeShield™ plastics. These case materials are designed to provide superior, long-term protection against most commonly used chemicals and chemical disinfectants without damage to the housing.



The Code Reader™ 950 (CR950) is an aggressive barcode reader that rapidly decodes 1D and 2D barcodes. Its lightweight, ergonomic design makes it comfortable to use over long shifts, and unmatched durability makes it an investment that will last.



The Code Reader™ 1500 (CR1500) is a compact tethered barcode reader that features a high-performance scan engine, patented dual-field optical platform, and intuitive targeting that makes reading 1D, 2D, and postal bar codes extremely fast and reliable.



CR1100

The Code Reader™ 1100 (CR1100) is a compact, corded barcode reader that takes up limited workspace without compromising barcode reading performance. The patented dual-field optical platform of the CR1100 allows users to quickly scan both wide 1D barcodes and small dense 2D barcodes.



The Code Reader™ 5210 (CR5210) is designed for use in fast-paced environments and handles data from 1D, 2D and postal barcodes with speed and accuracy. The tabletop design allows for hands-free operation or optional trigger reading of large, heavy or bulky items.



CR2701 / CR2702

The Code Reader™ 2700 (CR2701/CR2702) is Code's fourth-generation (Bluetooth 5) barcode scanner, combining nearly 20 years of market experience with new features to improve workflow in any setting. Code has taken their unparalleled scanning performance and stepped it up a notch, tackling even more damaged or poorly-printed barcodes to keep your business moving.

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Barcode, RFID, Vision



CR950 Advanced Cost-Effective Barcode Scanner



The Code Reader™ 950 (CR950) is a versatile barcode reader that is easy to set up and use in a variety of different settings. It is available with either USB or RS-232 communication capabilities. The USB version can connect to the **C-more** HMI. AutomationDirect provides sample code which can be used to connect the reader to Click, BRX, and Productivity PLCs.

Features

- High-speed, omnidirectional reading of 1D and 2D barcode symbologies.
- Manual or automatic triggering. Stand (sold separately) is required for automatic triggering.
- · User feedback with LED and audible tone.
- All-inclusive kits include reader and cable.
- Reads barcodes on backlit screens such as those found on mobile devices.
- Optional stand (sold separately).

Code Handheld Barcode Reader – Selection Chart							
Part Number	Number Price Description Communication Corded/ Cordless Form Factor					Weight (lb [kg])	Dimensional Drawing
CR950-K301-C298	\$153.00	Code barcode scanner, 6ft [1.83 m] USB cable included.	USB	Corded	Handheld	0.25 [0.11]	PDF
CR950-K302-C298	\$177.00	Code barcode scanner, 6ft [1.83 m] RS-232 (DB9) cable and power supply included.	RS-232	Corded	Handheld	0.25 [0.11]	<u>PDF</u>

Code Handheld Barcode Scanners Typical Working Range (in [mm])						
Circ and Time of Daysonds (in [mm])	CR950-K	30x-C298				
Size and Type of Barcode (in [mm])	Min	Max				
3 mil Code 39	_	_				
7.5 mil Code 39	2 [50]	9.6 [245]				
10.5 mil GS1 DataBar	1.4 [35]	8.9 [225]				
5.8 mil PDF417	3.3 [85]	6.1 [155]				
6.7 mil PDF417	2.6 [65]	6.9 [175]				
13 mil UPC	1.6 [40]	14.6 [370]				
4.2 mil Data Matrix	-	_				
5 mil Data Matrix	3.0 [75]	3.5 [90]				
6.3 mil Data Matrix	2.8 [70]	5.3 [135]				
10 mil Data Matrix	2.0 [50]	8.1 [205]				
20.8 mil Data Matrix	1.2 [30]	15.7 [400]				

Note: Working ranges may vary depending on barcode quality and reading environment. The above numbers are a combination of both the wide and high density fields. All samples were high quality barcodes and were read along a physical center line at a 10 degree angle. Distances are measured from the front of the reader. Default automatic gain control settings were used with regular office lighting. Accuracy = +/- 10%. Test conditions may affect working ranges.

Code Handheld	Barcode Scanners Specifications
	CR950-K30x-C298
Power Requirements	5VDC (USB versions are powered from the host device) (RS232 versions utilize a 120VAC-to-5VDC power adapter)
Sensor	CMOS 1.2 megapixel monochrome
Operating Temperature	-20 to 50°C [-4 to 122°F]
Storage Temperature	-30 to 65°C [-22 to 150°F]
Humidity	5% to 95% non-condensing
Field Selection	Wide Field (used for long barcodes)
Field of View	51° horizontal by 39.4° vertical
Focal Point	Approximately 130mm [5.12 in]
Optical Resolution	1280 x 960
Pitch	± 65° (from front to back)
Skew	± 60° from plane parallel to symbol (side to side)
Rotational Tolerance	±180°
Symbol Contrast	15% minimum reflectance difference
Target Beam	Single, blue targeting bar
Ambient Light Immunity	Sunlight: Up to 9,000 ft candles
Shock	Withstands multiple drops of 6ft [1.8 m] to concrete
IP Rating	IP54
Agency Approval	CE

tBRV-2

www.automationdirect.com Barcode, RFID, Vision



CR1100 Advanced Cost-Effective Barcode Scanner



The Code Reader™ 1100 (CR1100) is a versatile barcode reader that is easy to set up and use in a variety of different settings. It is available with either USB or RS-232 communication capabilities. The USB version can connect to the *C-more* HMI. Automation Direct provides sample code which can be used to connect the reader to Click, BRX, and Productivity PLCs.

Features

- High-speed, omnidirectional reading of 1D and 2D barcode symbologies.
- · Manual or automatic triggering.
- Pre-threaded screw holes to allow for mounting.
- · User feedback with LED and audible tone.
- · Reads barcodes on mobile device screens.
- Efficient power consumption (lowest in its class).
- Optional stand (sold separately).

	Code Handheld Barcode Reader – Selection Chart						
I Part Nilmor Price I Decrintion ' Form Factor 3							Dimensional Drawing
CR1100-K201-C298	\$236.00	Code barcode scanner, 6ft [1.83 m] USB cable included.	USB	Corded	Handheld/ presentation	0.15 [0.07]	<u>PDF</u>
CR1100-K202-C298	\$260.00	Code barcode scanner, 6ft [1.83 m] RS-232 (DB9) cable and power supply included.	RS-232	Corded	Handheld/ presentation	0.15 [0.07]	<u>PDF</u>

Code Handheld Barcode Scanners Typical Working Range (in [mm]) CR1100-K20x-C298 Size and Type of Barcode (in [mm]) Min Max 3 mil Code 39 3.3 [84] 4.3 [109] 7.5 mil Code 39 1.9 [47] 7 [177] 10.5 mil GS1 DataBar 0.6 [16] 7.7 [196] 5.8 mil PDF417 _ 6.7 mil PDF417 13 mil UPC 1.3 [33] 11.3 [286] 4.2 mil Data Matrix 5 mil Data Matrix 1.9 [48] 4.8 [121] 6.3 mil Data Matrix 1.4 [35] 5.6 [142] 10 mil Data Matrix 0.6 [14] 7.2 [182] 20.8 mil Data Matrix 1.0 [25] 12.6 [319]

Note: Working ranges may vary depending on barcode quality and reading environment. The above numbers are a combination of both the wide and high density fields. All samples were high quality barcodes and were read along a physical center line at a 10 degree angle. Distances are measured from the front of the reader. Default automatic gain control settings were used with regular office lighting. Accuracy = +/- 10%. Test conditions may affect working ranges.

Code Handheld	Barcode Scanners Specifications
	CR1100-K20x-C298
Power Requirements	5VDC (USB versions are powered from the host device) (RS232 versions utilize a 120VAC-to-5VDC power adapter)
Sensor	CMOS 1.2 megapixel monochrome
Operating Temperature	-20 to 55°C [-4 to 131°F]
Storage Temperature	-30 to 65°C [-22 to 150°F]
Humidity	5% to 95% non-condensing
Field Selection	High Density (used for small/dense barcodes) and Wide Field (used for long barcodes)
Field of View	High Density: 30° horizontal by 20° vertical Wide Field 50° horizontal by 35.5° vertical
Focal Point	High Density: ∼100mm [3.94 in] Wide Field ∼115mm [4.53 in]
Optical Resolution	High Density: 960 x 640 Wide Field: 960 x 640
Pitch	± 65° (from front to back)
Skew	± 60° from plane parallel to symbol (side to side)
Rotational Tolerance	±180°
Symbol Contrast	15% minimum reflectance difference
Target Beam	Single, blue targeting bar
Ambient Light Immunity	Sunlight: Up to 9,000 ft candles
Shock	Withstands multiple drops of 6ft [1.8 m] to concrete
IP Rating	Not tested
Agency Approval	CE

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CR1500 Advanced Cost-Effective Barcode Scanner



The Code Reader™ 1500 (CR1500) is a dual-field barcode reader that is easy to set up and use in a variety of different settings. It is available with either USB or RS-232 communication capabilities. The USB version can connect to the **C-more** HMI. AutomationDirect provides sample code which can be used to connect the reader to Click, BRX, and Productivity PLCs.

Features

- Dual-field imager enhances readability and processing time.
- High-speed, omnidirectional reading of 1D and 2D barcode symbologies.
- Manual or automatic triggering. Stand (sold separately) is required for automatic triggering.
- User feedback with LED and audible tone.
- All-inclusive kits include reader and cable.
- Reads barcodes on backlit screens such as those found on mobile devices.
- Optional stand (sold separately).

Code Handheld Barcode Reader – Selection Chart							
1Part Nilmner Price liescrintion ' Form Factor 3							Dimensional Drawing
CR1500-K201-C298	\$242.00	Code barcode scanner, 6ft [1.83 m] USB cable included.	USB	Corded	Handheld	0.26 [116]	PDF
CR1500-K202-C298	\$258.00	Code barcode scanner, 8ft [2.44 m] RS-232 (DB9) cable and power supply included.	RS-232	Corded	Handheld	0.26 [116]	<u>PDF</u>

Code Handheld Barcode Scanners Typical Working Range (in [mm])						
Circ and Time of Daysonds (in Imm)	CR1500-K20x-C298					
Size and Type of Barcode (in [mm])	Min	Max				
3 mil Code 39	3.3 [84]	4.2 [107]				
7.5 mil Code 39	0.7 [18]	6.6 [167]				
10.5 mil GS1 DataBar	0.2 [5]	8.1 [205]				
5.8 mil PDF417	_	_				
6.7 mil PDF417	_	_				
13 mil UPC	0.5 [13]	10.4 [265]				
4.2 mil Data Matrix	_	_				
5 mil Data Matrix	1.1 [28]	3.9 [100]				
6.3 mil Data Matrix	0.7 [18]	5.3 [135]				
10 mil Data Matrix	0.2 [5]	6.5 [165]				
20.8 mil Data Matrix	0.5 [13]	12.9 [328]				

Barcode Scanners Specifications
CR1500-K20x-C298
5VDC (USB versions are powered from the host device) (RS232 versions utilize a 120VAC-to-5VDC power adapter)
CMOS 1.2 megapixel monochrome
-20 to 55°C [-4 to 131°F]
-30 to 65°C [-22 to 150°F]
5% to 95% non-condensing
High Density (used for small/dense barcodes) Wide Field (used for long barcodes)
High Density: 30° horizontal by 20° vertical Wide Field 50° horizontal by 35.5° vertical
High Density: ∼100mm [3.94 in] Wide Field ∼115mm [4.53 in]
High Density: 960 x 640 Wide Field: 960 x 640
± 65° (from front to back)
± 60° from plane parallel to symbol (side to side)
±180°
15% minimum reflectance difference
Single, blue targeting bar
Sunlight: Up to 9,000 ft candles [96,890 lux]
Withstands multiple drops of 6ft [1.8 m] to concrete
IP54
CE

tBRV-4

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CR5210 Advanced Cost-Effective Barcode Scanner



The Code Reader™ 5210 (CR5210) is a dual-field barcode reader that is easy to set up and use in a variety of different settings. It is available with either USB or RS-232 communication capabilities. The USB version can connect to the **C-more** HMI. AutomationDirect provides sample code which can be used to connect the reader to Click, BRX, and Productivity PLCs.

Features

- Dual-field imager enhances readability and processing time.
- High-speed, omnidirectional reading of 1D and 2D barcode symbologies.
- · Manual or automatic triggering.
- · User feedback with LED and audible tone.
- · All-inclusive kits include reader and cable.
- Reads barcodes on backlit screens such as those found on mobile devices.

Code Handheld Barcode Reader – Selection Chart							
Part Number	Price	Description	Communication Protocol	Corded/ Cordless	Form Factor	Weight (lb [g])	Dimensional Drawing
CR5210-C500-C298	\$312.00	Code barcode scanner, 6ft [1.83 m] USB cable included.	USB	Corded	Presentation	0.7 [318]	<u>PDF</u>
CR5210-C502-C298	\$346.00	Code barcode scanner, 6ft [1.83 m] RS-232 (DB9) cable and power supply included.	RS-232	Corded	Presentation	0.7 [318]	<u>PDF</u>

Code Handheld Barcode Scanners Typical Working Range (in [mm])						
Circ and Time of Devecto (in Imm!)	CR5210-0	50x-C298				
Size and Type of Barcode (in [mm])	Min	Max				
3 mil Code 39	-	-				
7.5 mil Code 39	0.4 [10]	5.9 [150]				
10.5 mil GS1 DataBar	0.4 [10]	6.7 [170]				
5.8 mil PDF417	0.6 [15]	4.0 [102]				
6.7 mil PDF417	0.4 [10]	4.8 [122]				
13 mil UPC	0.4 [10]	8.0 [203]				
4.2 mil Data Matrix	_	_				
5 mil Data Matrix	1.2 [31]	2.3 [59]				
6.3 mil Data Matrix	0.9 [23]	3.5 [89]				
10 mil Data Matrix	0.4 [10]	5.7 [146]				
20.8 mil Data Matrix	0.4 [10]	8.9 [225]				

Note: Working ranges may vary depending on barcode quality and reading environment. The above numbers are a combination of both the wide and high density fields. All samples were high quality barcodes and were read along a physical center line at a 10 degree angle. Distances are measured from the front of the reader. Default automatic gain control settings were used with regular office lighting. Accuracy = +/- 10%. Test conditions may affect working ranges.

Code Handheld I	Barcode Scanners Specifications
	CR5210-C50x-C298
Power Requirements	5VDC (USB versions are powered from the host device) (RS232 versions utilize a 120VAC-to-5VDC power adapter)
Sensor	CMOS 1.2 megapixel monochrome
Operating Temperature	-20 to 55°C [-4 to 131°F]
Storage Temperature	-30 to 65°C [-22 to 150°F]
Humidity	5% to 95% non-condensing
Field Selection	Single field
Field of View	51° horizontal by 39.4° vertical
Focal Point	~40mm [1.6 in]
Optical Resolution	1280 x 960
Pitch	± 65° (from front to back)
Skew	± 60° from plane parallel to symbol (side to side)
Rotational Tolerance	±180°
Symbol Contrast	15% minimum reflectance difference
Target Beam	Single, blue targeting bar
Ambient Light Immunity	Sunlight: Up to 9,000 ft candles [96,890 lux]
Shock	Withstands multiple drops of 6ft [1.8 m] to concrete
IP Rating	IP 52
Agency Approval	CE

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CR2702-200-C298



CR2700 Advanced Cordless Barcode Scanner



The Code Reader™ 2700 (CR2700) is a cordless, rechargeable, rugged barcode reader that is easy to set up and use in a variety of different settings. It features Bluetoothto-USB communication and can connect to the C-more HMI.

Features

- · Dual-field imager enhances readability and processing time.
- · High-speed, omnidirectional reading of 1D and 2D barcode symbologies.
- · Manual or automatic triggering.
- · User feedback with LED and audible
- · All-inclusive kits include reader and cable
- Reads barcodes on backlit screens such as those found on mobile devices.

		Code Handheld Barcode Reade	r – Selectio	n Chart			
Part Number	Price	Description	Communication Protocol	Corded/ Cordless	Form Factor	Weight (lb [g])	Dimensional Drawing
CR2701-200-C298	\$750.00	Code barcode scanner (Bluetooth) with removable battery and charging base, 3ft [0.91 m] USB cable included.	Bluetooth to USB	Cordless	Palm	0.29 [131]	PDF
CR2702-200-C298	\$792.00	Code barcode scanner (Bluetooth) with removable battery and charging base, 3ft [0.91 m] USB cable included.	Bluetooth to USB	Cordless	Handheld	0.39 [177]	<u>PDF</u>

Code Handheld Barcode Scanners Typical Working Range (in [mm]) CR270x-200-C298 Size and Type of Barcode (in [mm]) Min Max 3 mil Code 39 3.5 [90] 4.4 [112] 7.5 mil Code 39 0.9 [23] 6.8 [172] 10.5 mil GS1 DataBar 0.4 [10] 8.3 [210] 5.8 mil PDF417 6.7 mil PDF417 13 mil UPC 0.7 [18] 10.6 [270] 4.2 mil Data Matrix 5 mil Data Matrix 1.3 [33] 4.1 [105] 6.3 mil Data Matrix 0.9 [23] 5.5 [140] 10 mil Data Matrix 0.4 [10] 6.7 [170] 20.8 mil Data Matrix 0.7 [18] 13.1 [333]

Note: Working ranges may vary depending on barcode quality and reading environment. The above numbers are a combination of both the wide and high density fields. All samples were high quality barcodes and were read along a physical center line at a 10 degree angle. Distances are measured from the front of the reader. Default automatic gain control settings were used with regular office lighting. Accuracy = +/- 10%. Test conditions may affect working ranges.

Code Handheld Barc	ode Scanners Specifications
	CR270x-200-C298
Power Requirements	5VDC, 5W max Powered from the host device
Sensor	CMOS 1.2 megapixel monochrome
Operating Temperature	-20 to 55°C [-4 to 131°F]
Storage Temperature	-30 to 65°C [-22 to 150°F]
Humidity	5% to 95% non-condensing
Field Selection	High Density (used for small/dense barcodes) Wide Field (used for long barcodes)
Field of View	High Density: 30° horizontal by 20° vertical Wide Field 50° horizontal by 33.5° vertical
Focal Point	~100mm [3.94 in]
Optical Resolution	High Density: 960 x 640 Wide Field: 960 x 640
Pitch	± 65° (from front to back)
Skew	± 60° from plane parallel to symbol (side to side)
Rotational Tolerance	±180°
Symbol Contrast	15% minimum reflectance difference
Target Beam	Single, blue targeting bar
Ambient Light Immunity	Sunlight: Up to 9,000 ft candles [96,890 lux]
Shock	Withstands multiple drops of 6ft [1.8 m] to concrete
IP Rating	IP 65
Agency Approval	CE
Number of Scans Per Charge	50,000
Reader Communication	Bluetooth 5 Low Energy (Class II)

1-800-633-0405 For the latest prices, please check AutomationDirect.com. Code Handheld Barcode Scanners Code



	Code Handh	eld Barcode	Scanners Dec	ode Capabilit	у	
	Decode Capability	CR950	CR1100	CR1500	CR5210	CR270x
	BC412	√	✓	√	✓	√
	Codabar	√	√	√	√	√
	Code 11	√	√	√	√	√
	Code 32	√	√	√	√	√
	Code 39	√	√	√	√	√
	Code 39 Extended	_	√	_	_	_
	Code 93	√	√	√	√	√
	Code 128	√	√	√	✓	√
	GS1 Databar	√	√	√	√	√
	Hong Kong 2 of 5	√	√	√	√	√
1D	IATA 2 of 5	√	√	√	√	√
	Interleaved 2 of 5	√	√	√	√	√
	Matrix 2 of 5	√	√	√	√	√
	MSI Plessey	√	√	✓	√	✓
	NEC 2 of 5	√	√	√	√	√
	Pharmacode	_	√	√	√	√
	Straight 2 of 5	√	√	√	√	√
	Telepen	√	√	√	√	√
	Trioptic	√	√	√	√	√
	UK Plessey	✓	√	✓	√	√
	UPC/EAN/JAN	√	√	✓	✓	√
	Codablock F	_	√	√	√	√
	Code 49	_	√	✓	√	✓
	GS1 Composite (CC-A/CC-B/CC-C)	√	√	✓	√	√
Stacked 1D	GS1 DataBar Expanded Stack	√	√	_	_	_
	MicroPDF	√	√	√	√	√
	PDF417	√	√	✓	√	√
	Aztec Code	√ ·	✓	√	✓	✓ /
	Data Matrix	√	√	√	√	√
	Grid Matrix	_	√	√	√	√
	HanXin	_	√	✓	✓	✓
2D	Maxicode	_	✓	✓	✓	√
	Micro QR Code	√	√	✓	✓	√
	QR Code	√ ·	✓	√	√	√
	QR Model 1	_	✓	√ ·	✓	· ✓
	Australian Post	_	√	√	√	√
	Canada Post	_	√	√	√	√
_	Japan Post	_	✓	√ ·	✓	· ✓
	KIX Code	_	√	√	√	√
	Korea Poast	<u> </u>	√	√	√	√
Postal Codes	UK Royal Mail	_	√	√	√	✓
	UPU ID Tags	_	√	✓	√	√
	USPS Intelligent Mail		√	√	√	√
	USPS Planet	_	√	√	√	√
_	USPS Post-net	_	√	√	√	√

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	Code Handheld Barcode Reader Accessories								
Part Number	Price	Description	Weight (lb [kg])	Drawing					
CRA-C503-C298	\$38.50	8ft coiled RS232 cable with power supply	0.40 [0.18]	N/A					
CRA-A274-P1-C298	\$108.00	Quad bay battery charger	0.67 [0.30]	N/A					
CRA-B27DK-C298	\$75.00	Battery for CR270x	0.10 [0.05]	N/A					
CRA-C34-C298	\$15.00	3ft straight USB cable (USB-A to micro USB) 0.09 [0.04]							
CRA-C500-C298	\$14.50	6ft straight USB cable	0.15 [0.07]	N/A					
CRA-C501-C298	\$14.50	8ft coiled RS232 cable	0.35 [0.16]	N/A					
CRA-C502-C298	\$14.50	6ft straight RS232 cable	N/A						
CRA-C508-C298	\$14.50	8ft coiled USB cable	0.25 [0.11]	N/A					
CRA-C519-C298	\$14.50	6ft straight DB9-RJ12 RS232 cable 0.20 [0.09]		N/A					
CRA-US3-C298	\$26.00	Flexible stand for CR950, CR1100 in dark gray 0.85 [0.39]		<u>PDF</u>					
CRA-US9-C298	\$17.50	Rigid stand for CR950, CR1100 in dark gray	Rigid stand for CR950, CR1100 in dark gray 0.20 [0.09] <u>PDF</u>						
CR2AG-P1-C298	\$26.00	Power supply for RS232 readers	0.10 [0.05]	N/A					

RS232 Accessories











CRA-C501-C298

CRA-C502-C298

CR2AG-P1-C298

CRA-C519-C298

CRA-C503-C298

USB Cables











CRA-C500-C298

CRA-C508-C298

CRA-C34-C298

CRA-US3-C298

CRA-US9-C298







CRA-B27DK-C298

CRA-A274-P1-C298

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Compatibility						
Scanner	C-more EA9	C-more CM5	Productivity PLC	CLICK PLC	BRX PLC	
CR950-K301-C298	Yes, with powered USB hub	Yes	No	No	No	
CR950-K302-C298	No	No	Yes	Yes	Yes	
CR1100-K201-C298	Yes, with powered USB hub	Yes	No	No	No	
CR1100-K202-C298	No	No	Yes	Yes	Yes	
CR1500-K201-C298	Yes, with powered USB hub	Yes	No	No	No	
CR1500-K202-C298	0-K202-C298 No		Yes	Yes	Yes	
CR5210-C502-C298	No	No	Yes	Yes	Yes	
CR5210-C500-C298	Yes, with powered USB hub	Yes	No	No	No	
CR2701-200-C298	Yes**	Yes**	No	No	No	
CR2702-200-C298	Yes**	Yes**	No	No	No	

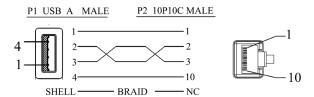
^{**} Please note that although the CR270x will work with the HMI, the HMI will not provide enough current to charge the scanner. However, the scanner battery can always be charged using an external charger such as the CRA-A274-P1-C298 quad bay battery charger.

System Assembly Options

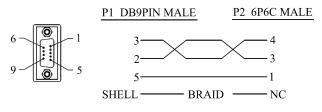


Connection Diagrams

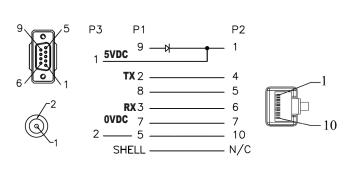
USB Connections (CRA-C500-C298, CRA-C508-C298)



DB9 to RJ12 (CRA-C519-C298)



RS232 Connections (CRA-C501-C298, CRA-C502-C298)





Barcode Scanners



Advanced, cost-effective barcode readers

The Datalogic PowerScan family of barcode readers represents the ultimate in industrial handheld scanners, designed and constructed to withstand the toughest environmental conditions. They are designed to enhance productivity and efficiency through best-in-class scanning performance and reduced total solution cost.



PM9600-SR910RBK10

Features

- Ultra-robust construction deigned to resist more than 50 drops of 8.2 ft [2.5 m].
- Center-of-gravity design for reduced fatigue of the operator's wrist
- Ergonomic shape
- USB and RS-232 multi-interface
- · Easy system integration
- Inductive charging eliminates physical problems with battery contacts and pins.
- Built-in white light illumination
- Image resolution of 1280x800 pixels
- Large field of view 38 degrees horizontal by 24 degrees vertical

Datalogic Rugged Barcode Handheld Scanners Kits						
Part Number	Price	Communication Type	Connection	Includes	Drawing	
PM9600-SR910RBK10	\$871.00	RF (910MHz)	USB	Scanner with removable battery, base station, USB cable, power brick and power cord	PDF	
PM9600-SR910RBK20	\$871.00	RF (910MHz)	RS-232	Scanner with removable battery, base station, RS-232 cable, power brick and power cord	<u>PDF</u>	
PBT9600-SRRBK20US	\$871.00	Bluetooth	RS-232	Scanner with removable battery, base station, RS-232 cable, power brick and power cord	<u>PDF</u>	
PBT9600-SRRBK10US	\$871.00	Bluetooth	USB	Scanner with removable battery, base station, USB cable, power brick and power cord	PDF	

Datalogic Rugged Barcode Handheld Scanners and Base Stations						
Part Number	Price	Item	Communication Type	Includes	Drawing	
<u>PBT9600-SRRB</u>	\$584.00	Barcode scanner	Bluetooth	Scanner with removable battery	PDF	
PM9600-SR910RB	\$584.00	Barcode scanner	RF (910MHz)	Scanner with removable battery	PDF	
BC9630-BT	\$381.00	Base station	Bluetooth	Base Station (USB and RS-232 compatible)	PDF	
BC9630-910	\$363.00	Base station	RF (910MHz)	Base Station (USB and RS-232 compatible)	PDF	



PBT9600-SRRB



BC9630-BT

Datalogic Rugged Handheld Barcode Scanners



	Datalogic Rugged Barcode Handheld Scanners Specifications
	Wireless Communications
	PowerScan PM9600
Radio Frequency	910MHz
Effective Radiated Power	<50mW
Configuration	Point-to-point / multipoint
Max Readers Per Radio Receiver	16
Radio Range (Open Air)	230m [754ft]
	PowerScan PBT9600 (Bluetooth Wireless Technology)
Radio Frequency	2.4 GHz
Profiles	SSP (Serial Port Profile) and HID (Human Interface Device)
Protocol	Bluetooth 5.0 Certified Class 1, Class 3
Radio Range (Open Air)	100m [328ft] Range distances are measured using the base station.
	Range with connection to other Bluetooth peripherals may vary.
Security	Data encryption, scanner authentication
	Decoding Capability
1D / Linear Codes	Auto discriminates all standard 1D codes including GS1 DataBar™ linear codes
2D Codes	Aztec Code; China Han Xin Code; Data Matrix; MaxiCode; Micro QR Code; QR Code; Dot Code
Postal Codes	Australian Post; British Post; China Post; IMP; Japanese Post, KIX Post; Planet Code, Postnet; Royal Mail Code (RMM4SCC)
Stacked Codes	EAN/JAN Composites; GS1 DataBar Composites; GS1 DataBar Expanded Stacked; GS1 DataBar Stacked; GS1 DataBar Stacked Omnidirectional; MacroPDF; MicroPDF417; PDF417; UPC A/E Composites
	Electrical Control of the Control of
Current	Operating 480mA @ 3.7 V Charging (typical) < 15W Cradle BC96xx only: 150mA @ 5V (operative)
Input Voltage	Host powered: 5VDC ±5% External power supply: 10-30 VDC ±5%
Battery	Battery type: Lithium-Ion, 3350mAh Charge time @ 12VDC: 2.5 hours to charge up to 95%, 3.2 hours to charge 100% Reads per charge: 80,000
	Environmental
Ambient Light	0-100,000 lux
Drop Resistance	Withstands 50 drops from 2.5 m [8.2 ft] @ 20°C [68°F] Withstands 50 drops from 2.0 m [6.6 ft] @ -20°C [-4°F]
Trigger Resistance	Withstands 10 million hits
ESD Protection (Air Discharge)	20kV
Humidity Non-Condensing)	0 to 95%
Particulate and Water Sealing	Handheld unit: IP67 and IP65 Cradle unit: IP40
Temperature	Operating: -20 to 50°C [-4 to 122°F] Storage/Transport: -40 to 70°C [-40 to 158°F] Charging: 0 to 40°C [32 to 104°F] Ideal: 0 to 35°C [32 to 95°F]
	Interfaces
Interfaces	RS-232 / USB / Ethernet and Industrial Protocols

www.automationdirect.com Barcode, RF

Datalogic Rugged Handheld Barcode Scanners



Datalogic Rugged Barcode Handheld Scanners Specifications (continued)						
Physical Characteristics						
Weight	Handheld portion: 425g [15.0 oz]					
	Reading Performance					
Imager Sensor	1280 x 800 pixels					
Light Source	Aiming: 630-680 nm VLD Illumination: White LED reading light					
Print Contrast Ratio (Minimum)	15%					
Reading Angle	Pitch: ±52° Roll (tilt): 360° Skew (yaw): ±52°					
Field of View	38° H, 24° V					
Reading Indicators	Beeper (adjustable tone and volume) Datalogic's 3GL™ (Three Green Lights) technology for good-read feedback Datalogic "Green Spot" Dual good-read LEDs Vibration					
Resolution (Maximum)	1D codes: 3 mil, 2D codes: 6 mil					
	Reading Ranges					
SR Models	Code 128 5 mils: 6.4 to 30.9 cm [2.5 to 12.2 in] 20 mils: 4 to 103.7 cm [1.6 to 40.8 in] 40 mils: 5.5 to 175 cm [2.2 to 68.9 in] EAN/UPC 13 mils: 4 to 67.5 cm [1.5 to 26.5 in] DataMatrix 10 mils: 6 to 30 cm [2.5 to 11.8 in]					
	Safety and Regulatory					
Laser Classification	Caution: Laser radiation Do not stare into beam CDRH Class II; IEC 60825 Class 2					
LED Classification	IEC 62471 LED Class: Exempt					
	Warranty					
Warranty	3-year factory warranty					

www.automationdirect.com Barcode,

Barcode Scanners Accessories

Communication Cables

Datalogic Rugged Barcode Handheld Scanners Accessories – Communication Cables							
Part Number	Price	Cable Type	Connection 1	Connection 2	Cable Length		
<u>CAB-549</u>	\$43.00	Coiled	RJ50	9-pin female D-sub	8ft [2.43 m]		
CAB-548	\$36.00	Straight	RJ50	9-pin female D-sub	5ft [1.52 m]		
<u>CAB-551</u>	\$36.00	Straight	RJ50	USB-A	6.5 ft [2m]		



Battery

Datalogic Rugged Barcode Handheld Scanners Accessories – Battery					
Part Number	Price	Item	Battery Power		
RBP-PM96	\$60.00	Replacement Battery	11.9 Wh		



RBP-PM96

Power Cables

Datalogic Rugged Barcode Handheld Scanners Accessories – Power Cables						
Part Number	Price	Item	Voltage	Voltage Type	Fits	
<u>8-0935</u>	\$24.00	US power cable	12VDC	AC/DC	PowerScan 960X Series base stations BC9630-BT and BC9630-910	
6003-0941	\$7.00	US power cable	110VAC	AC	Datalogic power supply 8-0935	



Mount

Datalogic Rugged Barcode Handheld Scanners Accessories – Vehicle Mount						
Part Number Price Item						
VMK-P096 \$118.00 Vehicle mount						





VMK-P096

VMK-P096 bracket, shown here with base station and scanner, mounted to a fork truck, lift truck or other machine column.

Datalogic Smart-VS Vision Sensor





The Smart-VS is a smart vision sensor. It can be set up as easily as a basic photoelectric sensor but provides enhanced functionality. This self-contained vision sensor provides an elegant solution for applications requiring presence and/or orientation object detection. The Smart-VS is built around a powerful multiprocessor platform featuring embedded artificial intelligence technology. The user can step through the simple teach procedure to obtain a GOOD or NO-GOOD (pass or fail) result.

Features

- · Machine learning assisted setting
- No vision tools programming experience required
- · No inspection threshold adjustment
- Fast and easy set-up
- Deterministic response time 50ms
- Reduced cost of ownership and maintenance
- TEACH button and comprehensive UI with 5 status LEDs
- · Electronic focus control
- 50-150 mm operating distance
- Bright and highly visible red LED pointer
- · Built-in white polarized light illuminator
- Green/red LED spot for GOOD/NO GOOD part
- Ethernet point-to-point communication available for configuration
- Easy and intuitive WEB server GUI for maintenance and job setting
- Easy photosensor-style output interface
- Cable exit connections can be rotated to accommodate a variety of installation configurations.

Applications

- Processing and packaging machinery
- Transport and handling lines
- · Assembly lines
- Food and beverage
- · Bottling lines
- Machines for the cosmetic and pharmaceutical sectors

Agency Approvals

• CE and CSA





Datalogic Smart-VS Smart Vision Sensor Selection Guide						
Part Number	Price	Operating Distance	Resolution	Illuminator	I/O	Drawing
959971320	\$967.00	50 to 150 mm [1.97 to 5.91 in]	320 x 240	Polarized white LED	2 inputs and 3 outputs	PDF

The Smart-VS System

The Smart-VS system teaches the sensor GOOD and NO GOOD object conditions. This allows the Smart-VS system to be used in an effective and reliable way for detecting the presence/absence of object features for side orientation of objects, referring to proper object attributes.

This makes the sensor setting independent of the type, material, or color of the object that needs to be detected.





Datalogic Smart-VS Vision Sensor

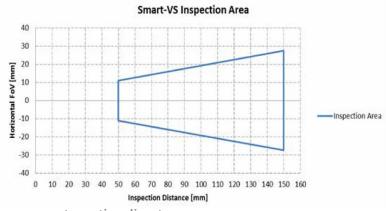


Datalogic Smart-VS Smart Vision Sensor Specifications				
Supply Voltage	10 to 30 VDC			
Communication Interface (Ethernet) ¹	10/100 Mbit/s			
Inputs	Opto-coupled and polarity insensitive			
Maximum Voltage	30VDC			
Maximum Input Current Consumption	0.4 to 0.14 A (4.2 W)			
Output Type	Push-pull, NPN or PNP. Short circuit protected. Default is push-pull.			
Outputs	3 outputs (DATA VALID, GOOD, NO GOOD)			
$V_{out}(I_{load} = 0mA) Maximum$	30VDC			
V _{out} (I _{load} = 100mA) Maximum	3VDC			
I _{load} Maximum	100mA			
Operating Distance	50 to 150 mm [1.97 to 5.91 in]			
View Angle	19°			
Field Of View Area @ 50 mm	22mm (H) x 16mm (V) [0.87 in (H) x 0.63 in (V)] (Refer to field of view diagram below)			
Field Of View Area @ 150 mm	55mm (H) x 41mm (V) [2.17 in (H) x 1.61 in (V)] (Refer to field of view diagram below)			
Response Time	50ms from input trigger			
Maximum Reference Images (GOOD+NO GOOD)	6 images			
Maximum Inspection Rate	20 per second			
Active Area Resolution	320x240 pixels			
Illuminator	White LED polarized			
Weight	173g [6.1 oz]			
Material	Aluminum with plastic PMMA protective window			
Operating Temperature ²	-10° to 50°C [14° to 122°F]			
Storage Temperature	-20° to 70°C [-4° to 158°F]			
Maximum Humidity	90% non-condensing			
Vibration Resistance	14mm [0.55 in] @ 2 to 10 Hz; 1.5 mm [0.06 in] @ 13 to 55 Hz; 2 g @ 70 to 500 Hz (2 hours on each axis)			
Shock Resistance	30g; 11ms; 3 shocks on each axis			
Protection Class ³	IP65 and IP67			
Agency Approvals	CE, CSA			

¹⁾ The embedded Ethernet interface is intended for configuration only through connection to the device IP. Point-to-point connection is recommended. The IP address is factory set to 192.168.3.100.

- 2) High ambient temperature applications should use metal mounting bracket for heat dissipation.
 3) When correctly connected (fully tightened) to IP67 cables with seals.

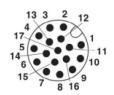
Field of View Diagram



Datalogic Smart-VS Vision Sensor



Connections



	M12 17-Pin Power and I/O Connector Pinout					
Pin	Name	Color*	Function			
1	Vdc	Brown	Power supply input voltage +			
2	GND	Blue	Power supply input voltage -			
Connector Case	Chassis	-	Connector case provides electrical connection to chassis			
6	I1A	Yellow	I1A Trigger Input A (polarity insensitive)			
5	I1B	Pink	I1B Trigger Input B (polarity insensitive)			
13	I2A	Green	I2A Remote Teach A (polarity insensitive)			
3	I2B	White	I2B Remote Teach B (polarity insensitive)			
9	01	Red	Data Valid (default is push-pull)			
8	O2	Gray	GOOD Output (default is push-pull)			
16	O3	Black	NO GOOD Output (default is push-pull)			

^{*} The wire colors refer to cables part numbers CAB-GD03 and CAB-GD05



M12 8-	Pin Standard Eth	ernet Network Connector Pinout
Pin	Name	Function
1	TX+	Transmit data (positive pin)
2	TX-	Transmit data (negative pin)
3	RX+	Receive data (positive pin)
4	RX-	Receive data (negative pin)
5	NC	Not connected
6	NC	Not connected
7	NC	Not connected
8	NC	Not connected

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Datalogic Smart-VS Vision Sensor Mounting Bracket



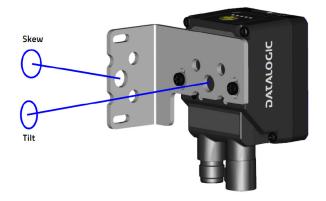
Datal	Datalogic Smart-VS Smart Vision Sensor Mounting Bracket Selection Guide				
Part Number Price Description Drawi		Drawing			
BK-22-000	\$40.00	Replacement mounting bracket, stainless steel	<u>PDF</u>		



BK-22-000

Mounting and Positioning the Smart-VS Vision Sensor

Smart-VS mounting brackets are fabricated with slots which allow for easy rotation. This permits precise setting of skew and tilt. When using Smart-VS mounting brackets, you have the ability to rotate the sensor on two axes, as shown in the accompanying diagrams.



Smart-VS Vision Sensor Mounting Options

The Smart-VS Vision Sensor can be attached to the mounting bracket in several ways. Cable exit connections can be rotated to accommodate a variety of installation configurations.



Side mounting with vertical cable exit



Top mounting with vertical cable exit (Horizontal cable exit is also possible)



Side mounting with horizontal cable exit

Datalogic X-Coded Ethernet Cables



Datalogic X-Coded Ethernet Cables Selection Guide				
Part Number	Price			
CAB-ETH-X-M01	\$101.00	Datalogic cable, Ethernet, PVC jacket, shielded, 1m [3.28 ft] cable length, M12 8-pin male X-coded to RJ45		
CAB-ETH-X-M03	\$111.00	Datalogic cable, Ethernet, PVC jacket, shielded, 3m [9.84 ft] cable length, M12 8-pin male X-coded to RJ45		
CAB-ETH-X-M05	\$134.00	Datalogic cable, Ethernet, PVC jacket, shielded, 5m [16.40 ft] cable length, M12 8-pin male X-coded to RJ45		

Note: Ethernet cable jacket color may vary.



CAB-ETH-X-M01

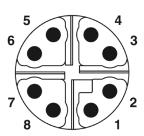




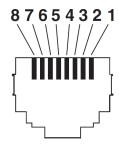
CAB-ETH-X-M03

CAB-ETH-X-M05

Diagrams



Pin assignment M12 male connector, 8-pin, X-coded, male side



Connector pin assignment plug RJ45

Datalogic 17-Pin M12 Cables ◆DATALOGIC

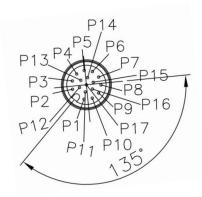


Datalogic 17-Pin M12 Cables Selection Guide			
Part Number	Price		
CAB-GD03	\$94.00	Datalogic cable, M12 axial female to pigtail, 17-pin, PVC, 9.8 ft [3m] cable length.	
CAB-GD05	\$125.00	Datalogic cable, M12 axial female to pigtail, 17-pin, PVC, 16.4 ft [5m] cable length.	





Diagrams



Wire Run List						
AWG	CONN 1	Color				
	1	Brown				
	2	Blue				
	3	White				
	4	Not connected				
	5	Pink				
	6	Yellow				
	7	Not connected				
	8	Gray				
26	9	Red				
	10	Not connected				
	11	Not connected				
	12	Not connected				
	13	Green				
	14	Not connected				
	15	Not connected				
	16	Black				
	17	Not connected				

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ifm Vision Assistant Overview

The ifm Vision Assistant software is a free and highly versatile configuration tool that will help you get the most from your ifm vision system.

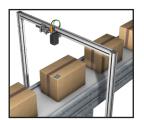
ifm Wizards simplify set-up

About 90% of applications that can be addressed with an ifm camera can be set up using the built-in wizards. These wizards walk the user through the necessary settings.

This step-by-step approach will minimize the learning curve for someone who is just getting into the vision world. For example, the wizard utilizes the system's autofocus capabilities to help determine exposure settings which optimize contrast.

For more advanced users, ifm's Vision Assistant software also has an advanced user-defined mode designed to allow seasoned vision experts to get the very most from these systems.

O2I Wizards



Logistics sorting Single- or multi-code setup (can also provide barcode quality metrics)



Date code verification
Using built-in OCR
(Object Character
Recognition)



User-defined modeAllows advanced users to
develop custom rulebased applications

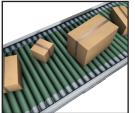
O3D Wizards



Robot pick and place
Detection of parts
returns robotic
coordinates



I the carton or case complete? Color is irrelevant



DimensioningLogistics – for sorting
based on size



Level of solid products Can determine percentage filled overall instead of just a single point

O2D Wizards



Detection of parts Searches for a specific shape to see if the shape is in the image



Presence of threadsSearches the image to see if a BLOB is present



Rough or precise measuring



Object width/quality *By analyzing a BLOB*

ifm Vision Assistant Overview



Added control

The software also controls things like focus, exposure time, gain, control of internal and external lighting and other settings. For example, ifm's O2D and O2I cameras have four built-in lights (two polarized and two non-polarized), and with the O2D RGBW cameras you can test red, green, blue, white and even polarized lighting strategies to find the best fit for your application.

As seen by human eyes under white light

Objects may appear differently depending on the color of the light with which they're illuminated.

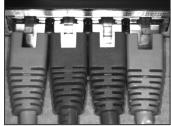
For example, here's how a set of differently colored plugs appears to human eyes when illuminated by white light.

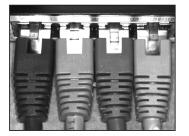


As seen by ifm Vision Assistant under white, red, green or blue light

The ifm Vision Assistant allows objects to be illuminated by white light as well as by monochromatic light. The choice of light color may aid in visualization of various elements of the object in question (for instance, a barcode printed on colored packaging).

By way of illustration, here is how the same objects shown above might appear to the ifm Vision Assistant when illuminated under white, red, green or blue light. Note how the relative contrast between colors changes with different types of illumination.







White light

Red light

Green light

Blue light

Simulation features

Additionally, Vision Assistant offers a simulator feature. To access the simulator, first open the software. Once on the home screen "Ctrl+M" will open the "manual connection" dialog box, where the user can select the type of device to test (for example "O2I5XX SimuLater"). This mode allows the user to explore the functions and tools that the software has to offer.

Please note that the simulator does not have the ability to upload an example image and build the rules from that image.

www.automationdirect.com Barcode, RFID, Vision †BRV-21

ifm efector Machine Mount 1D/2D Barcode Scanner





The ifm efector machine mount 1D/2D barcode scanner provides simple, capable, and reliable image-based barcode reading. The O2I barcode reader is fully selfcontained, including the imager, evaluation unit, illumination, and outputs. The evaluation algorithm provides 4x higher resolution for reliable reading results, 10x faster evaluation for high-speed applications, and 10x faster setup to optimize production availability.

Features

- Convenient autofocus
- Alignment laser
- Four built-in lights (two non-polarized and two polarized)
- Two configurable outputs
- · Onboard logic engine
- · Local device backup and cloning
- Optical Character Recognition (OCR)

Applications

- Barcode presence
- · Barcode placement
- Barcode quality
- Identification and verification of text (via OCR)

		ifm efector Mach	nine Mount	1D/2D Barcode	Scanner Selection	Guide	
Part Number	Price	Scanner Capability	Lens Type	Light Emission	Port Protocols	Lens Material	Dimensional Drawing
<u>O2I500</u>	\$1,436.00	1D and 2D	Standard	Visible red	TCP/IP and EtherNet/IP	Gorilla glass	<u>PDF</u>
<u>02I501</u>	\$1,436.00			Infrared			PDF
<u>O2I502</u>	\$1,436.00		1D and 2D Wide angle	Visible red			PDF
<u>O2I503</u>	\$1,436.00			Infrared			PDF

One-Button Teach Configuration

Simple applications for the O2I can be programmed by the single touch button located on the back of the O2I

Trigger and network settings are configured via a data matrix code generated by a smartphone app (iOS and Android).



Android QR Code

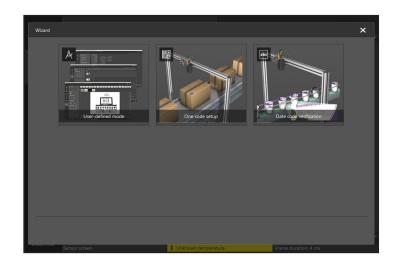


iOS QR Code



Full-Featured Vision Assistant Configuration

ifm's free Vision Assistant configuration software has easy-to-use wizards to read a single code or to do date code verification via Optical Character Recognition (OCR). The software also allows the user to define the parameters for each specific application. The camera also has built-in logic to simplify the integration of the camera into the system.



ifm efector Machine Mount 1D/2D Barcode Scanner



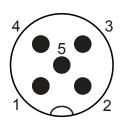
ifm efect	tor Mach	ine Mount 1D/2D B	arcode Scanners 1	Technical Specifica	tions
		Produc	ct Characteristics		
Image Resolution	(pixels)		1280	x 960	
Maximum Reading Rate	(Hz)		4	0	
		Ele	ectrical Data		
Operating Voltage	(V)		18-30	VDC	
Current Consumption	(mA)		<400 @	24VDC	
Reverse Polarity Protection			Ye		
Wavelength	(nm)		Red: 617 (O2l5 Infrared: 850 (O2l		
Image Sensor			CMOS image ser	nsor (black/white)	
			Inputs		
Trigger			External: 24V PNP/NPI TCF EtherI Contin	P/IP Net/IP	
Number of Digital Outputs			2 (config	nurable)	
Output Function			24V PN		
Maximum Current Load Per Output	(mA)		10	`	
rei Output		Mon	itoring Range		
		For Standard Lens (For Wide-Angle Lens	(O2l502 and O2l503)
		Operating Distance:	Field of View:	Operating Distance:	Field of View:
		85 [3.35]	28 x 21 [1.10 x 0.83]	35 [1.38]	25 x 19 [0.98 x 0.75]
Field of View	(mm [in])	300 [11.81]	92 x 69 [3.62 x 2.72]	300 [11.81]	184 x 138 [7.24 x 5.43]
		500 [19.69]	152 x 114 [5.98 x 4.49]	500 [19.69]	304 x 228 [11.97 x 8.98]
		1000 [39.37]	302 x 227 [11.89 x 8.94]	1000 [39.37]	604 x 453 [23.78 x 17.83]
Operating Distance	(mm)	>85 [>35	
Image Resolution	(pixels)		1280		,
Autofocus Type	(1 /		Mechanica	autofocus	
Readable Codes		Add-On 5; EAN13; EAN13 Add UPC 2D:GS1 DataBar Stacked; GS1	ial 2-of-5; Code 39; Code 93; Co -On 2; EAN13 Add-On 5; UPC-A; -E Add-On 5; GS1 DataBar Omr DataBar Stacked Omnidirections MSI Barcode; Datamatrix (ECC2 QR Code; GS	UPC-A Add-On 2; UPC-A Add-C ildirectional; GS1 DataBar Trunc al; GS1 DataBar Limited; GS1 Da 00); PDF-417; QR; Micro-QR; A	On 5; UPC-E; UPC-E Add-On 2; ated ataBar Expanded; GS1 DataBar
Maximum Inclination to the Image Plane	(°)		4	5	
		ı	nterfaces		
Communication Interface			Ethe	rnet	
Transmission Standard			10Base-T; 1	00Base-TX	
Transmission Rate			10 Mbps;	100 Mbps	
Protocol			TCP/IP; E	therNet/IP	
Factory Settings		IP address: 192.168.0.69 Subnet mask: 255.255.255.0 (Class C) Gateway IP address: 192.168.0.201			
		Opera	ting Conditions		
Ambient Temperature			-10 to 50°C [14 to 122°F]	
Storage Temperature		-40 to 70°C [-40 to 150°F]			
IP Rating			IP	65	
		Tes	ts/Approvals		
Notes on Laser Protection			Caution: Laser lig	ht, laser class: 1	
		Med	hanical Data		
Weight	(g [lb])		601 [1.32]	
Material		Housing: Diecas	zinc powder coated; Front lens:	Gorillaglas; LED window: PC; Po	ushbuttons: POM

www.automationdirect.com Barcode, RFID, Vision tBRV-23

ifm efector Machine Mount 1D/2D Barcode Scanner

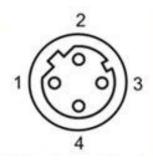


Electrical Connections – Supply



	M12 5-Pin Male Connector
1	+24VDC
2	Trigger input+
3	0V-
4	Switching output 1, configurable
5	Switching output 2, configurable/ trigger output with external illumination

Electrical Connections – Ethernet



M12 4-Pin Male (D-coded Ethernet)					
1	TxD+, transmit data +				
2	RxD+, receive data +				
3	TxD-, transmit data –				
4	RxD-, receive data –				

Accessories

O2I Accessories Selection Guide				
Part Number	art Number Price Description		Drawing	
E2D500	\$34.00	Right-angle bracket for 12mm rod	PDF	



E2D500



316L Stainless Steel Rod Selection Guide					
Part Number	Price Diameter (mm [in]) Length (mm [in]) Draw				
E21112	\$14.50	12 [0.5]	200 [7.9]	PDF	
<u>E21113</u>	\$16.50	12 [0.5]	300 [11.8]	PDF	

www.automationdirect.com Barcode, RFID, Vision tBRV-24

ifm efector Machine Vision 2D Camera





The ifm efector 2D machine vision sensor provides simple, capable and reliable image-based detection. Whether contour detection or BLOB analysis, the O2D family of vision sensors excels at solving most errorproofing and inspection applications throughout the manufacturing plant for a fraction of the cost of other vision systems and sensors.

Features

- Convenient autofocus
- Four built-in lights (two non-polarized and two polarized)
- Up to five configurable outputs
- Onboard logic engine
- IP65
- Anchor tracking
- Multi-image analysis at various exposure rates
- Contour and BLOB detection
- Imager resolution: 1.2MP

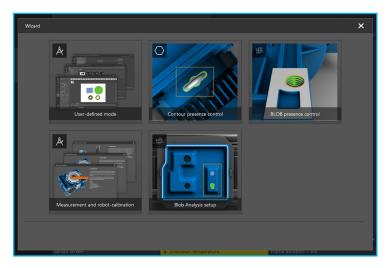
Applications

- Metal injection molding quality
- Bottle filling operation quality
- Packaging box quality
- · Filter quality
- Tapped hole detection

	ifm efector Machine Vision 2D Camera Selection Guide							
Part Number	Price	Lens Type	Light Emission	Port Protocols	Lens Material	Dimensional Drawing		
<u>O2D500</u>	\$1,436.00	0: 1 1	RGBW (red/green/blue/white)			<u>PDF</u>		
<u>O2D520</u>	\$1,436.00	Standard	Infrared			<u>PDF</u>		
O2D502	\$1,436.00	\\/:d= ===l=	RGBW (red/green/blue/white)	TCP/IP and EtherNet/IP	Gorilla glass	PDF		
O2D522	\$1,436.00	Wide angle	Infrared			PDF		

Full-Featured Vision Assistant Configuration

The free ifm Vision Assistant configuration software contains several tools to make integration more seamless. The tools in the library include pattern, form, object, location, measurement, diameter, and roundness, just to name a few. The powerful camera features a 35 frames-per-second target speed. Please note that camera speed is dependent on how much processing must be done by the camera.



Screenshot of ifm's Vision Assistant software. The software contains several wizards to assist in efficient integration of the camera into the automation system and PLC to quickly get you up and running.

ifm efector Machine Vision 2D Camera



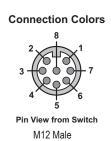
ifm efe	ifm efector Machine Vision 2D Camera Technical Specifications					
		Product Ch	aracteristics			
Image Resolution	(pixels)		1280	x 960		
Maximum Reading Rate	(Hz)		4	0		
		Electri	cal Data			
Operating Voltage	(V)		18-30	VDC		
Current Consumption	(mA)		<400 (24VDC; with swit	ched outputs: <900mA)		
Reverse Polarity Protection			Ye	es		
Wavelength	(nm)		625, 525,	and 423		
Image Sensor			CMOS image ser	nsor (black/white)		
		Inj	outs			
Trigger			External: 24V PNP/NPI TCF EtherI Contin	P/IP Net/IP		
		Out	tputs			
Output Function			PNP/NPN (c	onfigurable)		
Maximum Current Load Per Output	(mA)	100				
Monitoring Range						
		For Standard Lens (<u>O2D500</u> and <u>O2D520</u>)	For Wide Angle Lens	(<u>O2D502</u> and <u>O2D522</u>)	
Field of View	(mm [in])	Operating Distance:	Field of View:	Operating Distance:	Field of View:	
		85 [3.35]	28 x 21 [1.10 x 0.83]	35 [1.38]	25 x 19 [0.98 x 0.75]	
		300 [11.81]	92 x 69 [3.62 x 2.72]	300 [11.81]	184 x 138 [7.24 x 5.43]	
		500 [19.69]	152 x 114 [5.98 x 4.49]	500 [19.69]	304 x 228 [11.97 x 8.98]	
		1000 [39.37]	302 x 227 [11.89 x 8.94]	1000 [39.37]	604 x 453 [23.78 x 17.83]	
		1500 [59.06]	453 x 340 [17.83 x 13.39]	1500 [59.06]	904 x 678 [35.59 x 26.69]	
		2000 [78.74]	603 x 452 [23.74 x 17.80]	2000 [78.74]	1204 x 903 [47.40 x 35.55]	
		2500 [98.43]	753 x 564 [29.65 x 22.20]	2500 [98.43]	1504 x 1128 [59.21 x 44.41]	
Operating Distance	(mm [in])	>85	[3.35]	>35	[1.38]	
Image Resolution	(pixels)		1280	x 960		
Autofocus Type			Mechanica	autofocus		
		Inter	rfaces			
Communication Interface			Ethe			
Transmission Standard			10Base-T; 1			
Transmission Rate			10 Mbps;	100 Mbps		
Protocol			TCP/IP; E			
Factory Settings		IP address: 192.168.0.69 Subnet mask: 255.255.0 (Class C) Gateway IP address: 192.168.0.201				
		Operating	Conditions			
Ambient Temperature			-10 to 50°C [14 to 122°F]		
Storage Temperature		-40 to 70°C [-40 to 150°F]				
IP Rating			IP	65		
		Mechan	nical Data			
Weight	g [lb]		612.4	[1.35]		
Material		Housing: Diecast:	zinc powder coated; Front lens:	Gorillaglas; LED window: PC;	Pushbuttons: POM	

www.automationdirect.com

ifm efector Machine Vision 2D Camera



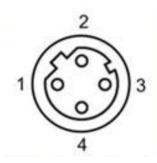
Electrical Connections – Supply



M12 8-Pin Male Connector					
Pin	292 Cable*	295 Cable*	Signal	Description	
1	White	Brown	+24V	Power supply	
2	Brown	White	Trigger	Trigger input	
3	Green	Blue	GND	Ground	
4	Yellow	Black	OUT5	Switching output 5	
5	Gray	Gray	OUT3	Switching output 3	
6	Pink	Pink	OUT4	Switching output 4	
7	Blue	Violet	OUT2/IN2	Switching input or output 2	
8	Red	Orange	OUT1/IN1	Switching input or output 1	

Notes

Electrical Connections – Ethernet



M1	M12 4-Pin Male (D-coded Ethernet)			
1	TxD+, transmit data +			
2	RxD+, receive data +			
3	3 TxD-, transmit data –			
4	RxD-, receive data –			

Accessories

O2D Accessories Selection Guide				
Part Number	Price	Description	Drawing	
E2D500	\$34.00	Right-angle bracket for 12mm rod	PDF	



E2D500



316L Stainless Steel Rod Selection Guide					
Part Number	Price	Price Diameter (mm [in]) Length (mm [in]) Draw			
E21112	\$14.50	12 [0.5]	200 [7.9]	<u>PDF</u>	
<u>E21113</u>	\$16.50	12 [0.5]	300 [11.8]	<u>PDF</u>	

^{*} AutomationDirect sells M12 8-pole cables with two different color patterns (7000-170x1-292xxxx and 7000-170x1-295xxxx).

ifm efector Machine Mount 3D Vision Sensor





O3D302

The ifm efector 3D Smart Sensor utilizes the revolutionary PMD Time of Flight Imager to quickly and accurately measure the distance of 23,232 points within the field of view. The imager measures the distance between the sensor and the nearest surface point by point using the time-of-flight principle. The sensor illuminates the scene with an internal infrared light source and calculates the distance by means of the light reflected from the surface.

Features

- Color and lighting independent
- Digital switching between 32 recipes
- Three configurable outputs
- Onboard logic engine
- IP6

Applications

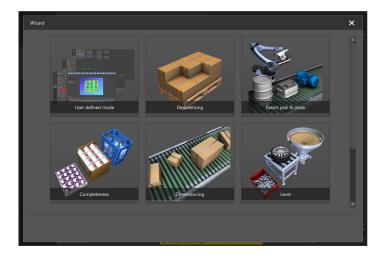
- Volume determination for storage and conveyor technology
- Non-contact dimensioning of rectangular objects such as cardboard packages or parcels
- Measurement of height, width and length to calculate strap length and volume
- Detection of size, orientation and positioning of the objects for automated storage space planning
- · Robot navigation

	ifm efector Machine Mount 3D Vision Sensor Selection Guide						
Part Number	Price	Scanner Capability	Lens Type	Light Emission	Port Protocols	Lens Material	Dimensional Drawing
O3D302	\$1,520.00	2D Time of Flight	Standard	Infrared	TCP/IP and EtherNet/IP	Gorilla glass	<u>PDF</u>
<u>O3D304</u>	\$1,520.00	3D – Time of Flight	Wide angle	Infrared			<u>PDF</u>

Note: For continuous use, a heat sink (E3D302) is strongly recommended.

Full-Featured Vision Assistant Configuration

The free ifm Vision Assistant configuration software contains several tools to make integration more seamless. The software also comes with several wizards including Robot Pick and Place, Completeness, Dimensioning, and Level.



Screenshot of ifm's Vision Assistant Software. The software contains several wizards to assist in quick integration of the 3D sensor.

Please note that there is a wizard called "Depalletising." However, due to the large number of factors which may impact the implementation of this wizard, at this time AutomationDirect does not support this application.

ifm efector Machine Mount 3D Vision Sensor



ifm efector	r Machine M	ount 3D Vision S	Sensor Technical	Specifications		
		Electrical Da				
Operating Voltage	(V)		20.4 to 28.8 VD0	C, to EN 61131-2		
Current Consumption	(mA)	<2400	peak current pulsed, typ. mea	an value 420; max mean va	lue 1600	
Power consumption	(W)		10 (typic	al value)		
		Inputs				
Trigger			External: 24V PNP/NPI TCF Etherl Contil	P/IP Net/IP		
		Outputs				
Maximum Current Load Per Output	(mA)		10	00		
Output		Digital outputs: 3 (configurable), 24 V PNP/NPN (IEC 61131-2) Analog outputs: 1 output (configurable as current or voltage output)				
Current Output	(mA)		4 -	20		
Max Load	(Ω)		50	· ·		
Min Load	(Ω)		23			
Voltage Output	(V)		0 -	10		
Min Load	(Ω)		10,	000		
Detection Range						
Operating Distance	(mm [in])	300 - 8000 [11.81 - 314.96], with reflectivity of 18% and object size of 200mm x 200mm [7.87 in x 7.87 in]				
Max Measuring Range		Typically up to 5000mm, but depending on setting and reflectivity can be up to 30m				
Resolution	(pixels)		176)			
Angle of Aperture	(°)	O3	D302: 60 x 45 nominal value D304 70 x51, nominal value			
		Interfaces				
Parameter Setting Interface		Ethernet TCP/IP: 10Base-T / 100Base-TX				
Process Interface		Ethernet TCP/IP: Ethernet/IP				
IP Address		192.168.0.69				
Subnet Mask		255.255.255.000 192.168.0.201				
Gateway IP Address		Environme		5.0.201		
Ambient Temperature		Environmen		1/ to 122°F1		
Storage Temperature		-10 to 50°C [14 to 122°F] -40 to 85°C [-40 to 185°F]				
IP Rating						
in realing		Other Technical				
Integrated Lighting			rared LED (850nm), invisible	radiation of light-emitting dig	odes	
		Other Data				
		For Standard	Lens (<u>O3D302</u>)	For Wide-Angle	e Lens (<u>O3D304</u>)	
		Measuring Range/ Distance (m [ft])	Length x Width (m [ft])	Measuring Range/ Distance (m [ft])	Length x Width (m [ft])	
		0.50 [1.64]	0.37 x 0.50 [1.21 x 1.64]	0.50 [1.64]	0.40 x 0.55 [1.31 x 1.80]	
Field of View Size With Lens Distortio	n Correction	1.00 [3.28]	0.75 x 1.00 [2.46 x 3.28]	1.00 [3.28]	0.80 x 1.10 [2.62 x 3.61]	
		2.00 [6.56]	1.50 x 2.00 [4.92 x 6.56]	2.00 [6.56]	1.60 x 2.20 [5.25 x 7.22]	
		3.00 [9.84]	2.25 x 3.00 [7.38 x 9.84]	3.00 [9.84]	2.40 x 3.30 [7.87 x 10.83]	
		4.00 [13.12]	3.00 x 4.00 [9.84 x 13.12]	4.00 [13.12]	3.20 x 4.40 [10.50 x 14.44]	
		5.00 [16.40]	3.75 x 5.00 [12.30 x 16.40]	5.00 [16.40]	4.00 x 5.00 [13.12 x 16.40]	

For application specific accuracy information, please refer to the datasheet

ifm efector Machine Mount 3D Vision Sensor



Electrical Connections – Supply

Connection Colors

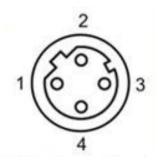


Pin View from Switch M12 Male

	M ⁻	12 8-PIN	MALE (CONNECTOR
Pin	292 Cable*	295 Cable*	Signal	Description
1	White	Brown	+24V	Power supply
2	Brown	White	Trigger	Trigger input
3	Green	Blue	GND	Ground
4	Yellow	Black	OUT	Switching Output 1 (digital or analog)
5	Gray	Gray	OUT3	Switching Output 3 Ready
6	Pink	Pink	OUT2	Switching Output 2 (digital)
7	Blue	Violet	IN1	Switching Input 1
8	Red	Orange	IN2	Switching Input 2

Notes

Electrical Connections – Ethernet



M12 4-Pin Male (D-coded Ethernet)			
1	TxD+, transmit data +		
2	RxD+, receive data +		
3	TxD-, transmit data –		
4	RxD-, receive data –		

Accessories

O3D Accessories Selection Guide							
Part Number	Part Number Price Description		Drawing				
E3D302	\$85.00	Heat sink	PDF				
E3D301	\$60.00	Right-angle bracket for 14mm rod	PDF				



E3D302





316L Stainless Steel Rod Selection Guide									
Part Number	Price	Diameter (mm [in])	Length (mm [in])	Drawing					
<u>E21228</u>	\$21.50	14mm [0.6]	200 [7.9]	<u>PDF</u>					
E21229	\$22.50	14mm [0.6]	300 [11.8]	PDF					
E21232	\$25.00	14mm [0.6]	400 [15.7]	<u>PDF</u>					

www.automationdirect.com Barcode, RFID, Vision tBRV-30

^{*} AutomationDirect sells M12 8-pole cables with two different color patterns (7000-170x1-292xxxx and 7000-170x1-295xxxx).

di-soric nVision-i Software

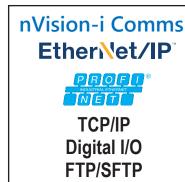


Overview

The nVision-i software from di-soric provides a free, easy-to-use camera programming environment that allows you to manage simple as well as more involved vision inspection tasks.

di-soric's nVision-i software gives you more power with less complexity.

This software's wide range of inspection and logic tools helps to make

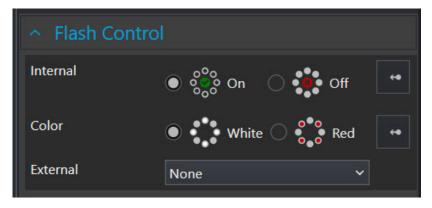


even challenging vision applications easier to handle. For example, you can identify an item's unique feature with one of the Locate tools, and your inspection tools will then track with your workpiece – even if it moves around in the camera's field of view.

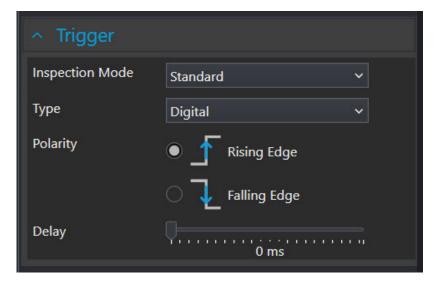
Missing hardware, scratches, holes, and many other features unique to your part can be detected and inspected for, counted, and/or measured with this suite of tools to ensure quality for whatever part you are inspecting.

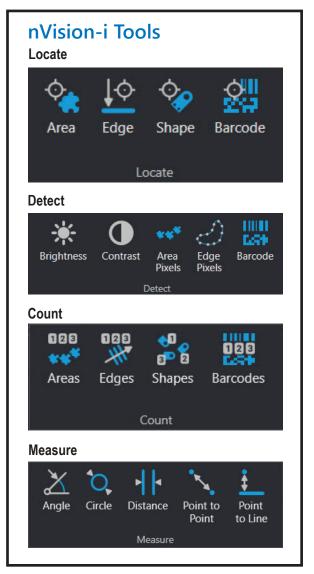
Setting Up Internal Lights and Trigger Methods

The di-soric nVision-i software makes it easy to use the camera's internal red or white light or to set up your own external light.

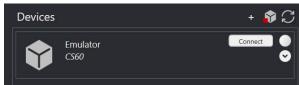


You could use a photoelectric, proximity, or other sensor to send a digital signal to trigger the camera, or you could use an Ethernet/IP, Profinet, or TCP/IP command.





Simulation Features: Using the Camera Emulator



The built-in emulator allows you to create and test a program on a set of images without being connected to a camera. An internet connection is required for the initial licensing of the emulator. Please refer to the Quickstart guide for specifics.

di-soric Machine Vision 2D Camera





The di-soric 2D machine vision camera, working in conjunction with di-soric's nVision-i software, is ideal for use in situations where the application requires increased flexibility or must handle more complex inspection tasks.

Integrated lights, interchangeable lenses, filters, and accessories give you the flexibility to create your own machine vision solution.

Features

- Image correction and calibration
- High-performance image processing tools
- Intuitive software interface
- Manually adjustable S-mount lens (8mm lens included)
- Integrated white or red LED illumination
- Configurable digital and network communications
- Onboard logic engine
- IP67 (with included lens cover installed)

Applications

- Defect identification
- Hole detection
- Orientation confirmation
- Presence/absence
- · Shape recognition
- · Count and measure
- 1D and 2D code reading
- Quality assurance for a wide range of applications

	di-soric Machine Vision 2D Camera Selection Guide												
				Inspe	ection	Tools							
Part Number	Price	Lens Mount	Localization	Detection	Counting	Measurement	Read code	Response Time	Resolution (pixels)	Sensor Size	Input	Output	Drawing
CS60-BM28-EP15/300	\$995.00	S-mount	✓	✓	✓			30fps	736x480	1/4 in	3 (NPN or PNP)	5 (NPN or PNP)	PDF
CS60-BM28-EP15/400	\$1,316.00	S-mount	✓	✓	✓	✓		30fps	736x480	1/4 in	3 (NPN or PNP)	5 (NPN or PNP)	PDF
CS60-BM28-EP15/300ID	\$1,316.00	S-mount	✓	✓	✓		✓	30fps	736x480	1/4 in	3 (NPN or PNP)	5 (NPN or PNP)	PDF
CS60-BM28-EP15/400ID	\$1,564.00	S-mount	✓	✓	✓	✓	✓	30fps	736x480	1/4 in	3 (NPN or PNP)	5 (NPN or PNP)	PDF
CS60-BM38-EP15/300	\$1,294.00	S-mount	✓	✓	✓			30fps	1440x1080	1/2.9 in	3 (NPN or PNP)	5 (NPN or PNP)	PDF
CS60-BM38-EP15/400	\$1,592.00	S-mount	✓	✓	✓	✓		30fps	1440x1080	1/2.9 in	3 (NPN or PNP)	5 (NPN or PNP)	PDF
CS60-BM38-EP15/300ID	\$1,592.00	S-mount	✓	✓	✓		✓	30fps	1440x1080	1/2.9 in	3 (NPN or PNP)	5 (NPN or PNP)	PDF
CS60-BM38-EP15/400ID	\$1,812.00	S-mount	✓	✓	✓	✓	✓	30fps	1440x1080	1/2.9 in	3 (NPN or PNP)	5 (NPN or PNP)	PDF

Electrical Connections – Supply

12-Pin A-Coded*							
	Pin	Color	Description				
	1	Brown	Input 0				
2 2	2	Blue	Input 1				
$11, \frac{3}{2}$	3	White	Output 2				
4 1 0	4	Green	Output 3				
1	5	Pink	Ready Output				
	6	Yellow	Common				
5\ 9	7	Black	+24VDC				
12	8	Gray	Ground				
6 8 12	9	Red	Not Connected				
7	10	Violet	Trigger In				
	11	Grey/Pink	Output 0				
	12	Red/Blue	Output 1				

^{*} This connection chart is for di-soric VKHM-Z cables

Electrical Connections – Ethernet

8-Pin X-Coded						
	Pin	Description				
7 8	1	LAN A+				
_/	2	LAN A-				
6	3	LAN B+				
	4	LAN B-				
5 2	5	LAN D+				
F	6	LAN D-				
1 2	7	LAN C-				
4 3	8	LAN C+				

di-soric Machine Vision 2D Camera



d	-soric Macl	ine Visio	n 2D Came	ra Techni	cal Specif	ications		
			Product Charact	eristics				
				Part N	umber			
	CS60-BM28- EP15/300	CS60-BM28- EP15/400	CS60-BM28- EP15/300ID	CS60-BM28- EP15/400ID	CS60-BM38- EP15/300	CS60-BM38- EP15/400	CS60-BM38- EP15/300ID	CS60-BM38- EP15/400ID
Image Resolution (pixe		736x480 [0.	3 megapixels]			-	.6 megapixels]	1
Image Sensor		-	rome (EV76C541)				chrome (IMX273)	,
Sensor Size		1/	′4 in			1/2	.9 in	
Internal Lighting				White (4500K)	or red (623nm)			
Shutter Type				Glo	bal			
Maximum Frame Rate (FF	S)			3	0			
			Electrical D	ata				
Operating Voltage (\)			18-30	VDC			
Current Consumption (m				1000mA	(24VDC)			
Reverse Polarity Protection				Ye	es			
			Inputs					
Trigger			Digital,	Continuous, Ethe	rNet/IP, Profinet,	TCP/IP		
Number of Digital Inputs				,	3			
Input Function				PNP/NPN (d	configurable)			
			Outputs					
Number of Digital Outputs				ļ	5			
Output Function				PNP	/NPN			
Max Current Load Per Output (m	A)			1(00			
			Monitoring R	ange				
Operating Distance				515 mm [1.9 to 20 2000mm [78.7 in]				
Focus Type			Manual	8mm lens (interd	hangeable S-mo	unt lens)		
Readable Codes	N	N/A 1D: Code 2 of 5, Codabar, Code 128, Code 39, Databar, UPC / EAN, Pharmacode 2D: Aztec Code, Data Matrix, Dotcode, QR, PDF 417 1D: Code 2 of 5, Codabar 128, Code 39, Databar 128, Databar 128, Databar 128, Databar 12					Databar, UPC / armacode le, Data Matrix,	
			Interface	s				
Interface Types				Network comms,	digital input/outpu	ıt		
Transmission Standard			10) Base-T; 100 Bas	e-TX; 1000 Base	e-T		
Transmission Rate				10 MBit/s; 100 M	Bit/s; 1000 MBit/s	3		
Protocol			TC	P/IP, FTP/SFTP,	Profinet, EtherNe	t/IP		
Factory Settings			IP address:	192.168.3.15 –	Subnet mask: 25	5.255.255.0		
		(Operating Con					
Ambient Temperature				0°C to 50°C [3				
Storage Temperature		-10°C to 60°C [14°F to 140°F] at 35% to 85% relative humidity						
IP Rating				IP67 (With lens	cover installed)			
			Mechanical					
Weight (g [b])	-		•	[0.58])			
Material			Hous	ing: Die-cast zinc Window/op	(black, powder-c tics: PMMA	oated)		
		1	ncluded Acce	ssories				
Included Accessories (with all models)		0-	S1-S-080-40 (8 S-	mount lens) and (CS60-WINDOW (protective lens co	over)	

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di-soric Machine Vision Lenses





O-S1-S-080-40

di-soric's range of S-mount lenses provides options when setting up your camera, allowing you to customize the system for your specific application. Use a short focal length lens to inspect a smaller portion of your workpiece up-close under high resolution. Use a longer focal length lens to view a wider field.

Use the table below to get an idea of which lens is right for your application

A Note on Aperture:

A smaller f-stop number indicates a larger aperture opening, letting in more light but creating a shallower depth-of-field. A larger f-stop number indicates a smaller aperture opening, letting in less light but yielding a deeper depth-of-field.

Depth-of-field refers to the distance range over which the portion of the object being viewed is still in focus.

di-soric S-Mount Lens Selection Guide								
Part Number	Price	Focal Length	Aperture	Lens Type	Lens Mount	Maximum Sensor Size	Drawing	
O-S1-S-036-40	\$42.50	3.6 mm	Fixed f/4.0	Wide angle	S-mount	1/2.5 in	<u>PDF</u>	
O-S1-S-036-80	\$42.50	3.6 mm	Fixed f/8.0	Wide angle	S-mount	1/2.5 in	<u>PDF</u>	
<u>O-S1-S-080-40</u> *	\$28.00	8mm	Fixed f/4.0	Standard	S-mount	1/3 in	PDF	
O-S1-S-080-80	\$28.00	8mm	Fixed f/8.0	Standard	S-mount	1/3 in	PDF	
O-S1-S-160-40	\$28.00	16mm	Fixed f/4.0	Standard	S-mount	1/3 in	PDF	
O-S1-S-160-80	\$28.00	16mm	Fixed f/8.0	Standard	S-mount	1/3 in	<u>PDF</u>	
O-S1-S-250-40	\$33.00	25mm	Fixed f/4.0	Standard	S-mount	1/2 in	<u>PDF</u>	
<u>O-S1-S-250-80</u>	\$33.00	25mm	Fixed f/8.0	Standard	S-mount	1/2 in	PDF	

^{*} Included with camera and also available separately

di-soric S-Mount Lens Monitoring Range (Field of View) With 0-S1-S-036-XX Lens							
	CS60-BM28 models CS60-BM38 models						
Operating Distance (mm [in])	Field of View (mm [in])						
70 [2.8]	35x22 [1.4x0.9]	92x69 [3.6x2.7]					
140 [5.5]	110x67 [4.3x2.6]	202x152 [8.0x6.0]					
200 [7.9]	165x102 [6.5x4.0]	271x203 [10.7x8.0]					
300 [11.8]	262x165 [10.3x6.5]	410x307 [16.1x12.1]					

With 0-S1-S-080-XX Lens						
	CS60-BM28 models	CS60-BM38 models				
Operating Distance (mm [in])	Field of View (mm [in])					
100 [3.9]	30x19 [1.2x0.8]	57x43 [2.2x1.7]				
200 [7.9]	71x46 [2.8x1.8]	120x89 [4.7x3.5]				
400 [15.7]	155x100 [6.1x3.9]	243x183 [9.6x7.2]				
515 [20.3]	200x130 [7.9x5.1]	306x229 [12.0x9.0]				

With 0-S1-S-160-XX Lens						
	CS60-BM28 models	CS60-BM38 models				
Operating Distance (mm [in])	Field of Vie	w (mm [in])				
100 [3.9]	17x11 [0.7x0.4]	26x20 [1.0x0.8]				
200 [7.9]	38x25 [1.5x1.0]	43x27 [1.7x1.1]				
400 [15.7]	79x52 [3.1x2.0]	119x89 [4.7x3.5]				
515 [20.3]	103x67 [4.1x2.6]	150x113 [5.9x4.4]				

With 0-\$1-\$-250-XX Lens						
	CS60-BM28 models	CS60-BM38 models				
Operating Distance (mm [in])	Field of Vie	w (mm [in])				
150 [5.9]	12x8 [0.5x0.3]	25x19 [1.0x0.3]				
300 [11.8]	28x21 [1.1x0.8]	55x41 [2.2x1.6]				
400 [15.7]	39x26 [1.5x1.0]	74x55 [2.9x2.2]				
500 [19.7]	52x38 [2.0x1.5]	94x71 [3.7x2.8]				

www.automationdirect.com Barcode, RFID, Vision tBRV-34

di-soric Machine Vision Lenses

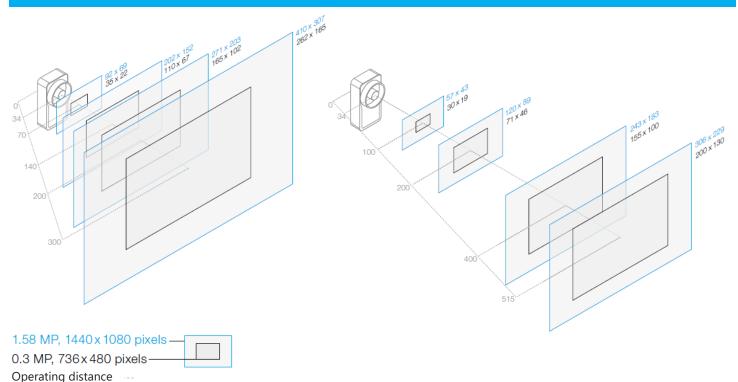


The following illustration shows the representation of fields of view with the available lenses at various working distances for the CS-60 with 736x480 pixels (0.3 MP) and 1440x1080 pixels (1.6 MP).

Operating distance: Back of camera body to work piece.

Field of view, 3.6mm lens¹

Field of view, 8mm lens

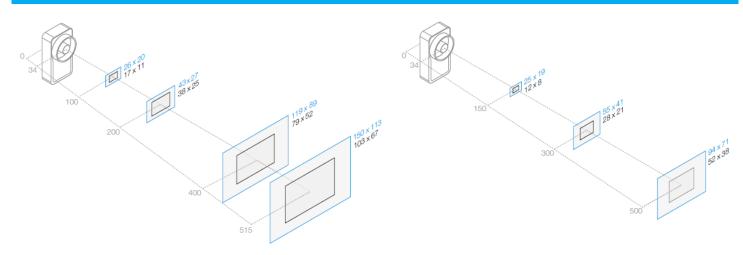


¹ At 3.6 mm, FOV limited at 1.58 MP if lens cover is used. No IP67 protection with complete FOV.

Field of view, 16mm lens

All specifications in mm

Field of view, 25mm lens



1.58 MP, 1440 x 1080 pixels

0.3 MP, 736 x 480 pixels

Operating distance

All specifications in mm

² Below 250 mm, the lens cover can no longer be used and thus no longer ensures IP67 protection.

di-soric Machine Vision Filter Accessories





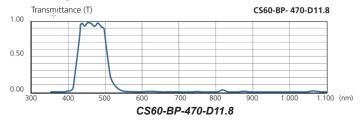
di-soric offers a variety of lens covers and filter accessories to allow you to further customize and optimize a machine vision solution to fit your specific application.

Bandpass Filters: These filters allow you to ensure repeatable lighting during inspection by blocking out unwanted light. They are designed to press-fit inside the lens protector.

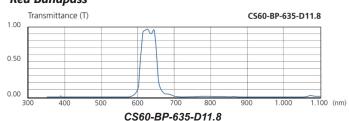
di-soric Bandpass Filter Selection Guide									
Part Number	Price	Description	Туре	Angle of Incidence	Mounting	Drawing			
CS60-BP-470-D11.8	\$313.00	Filter	Blue bandpass (470nm)	0 to 15 degrees	Press fit (inside lens protector)	PDF			
CS60-BP-635-D11.8	\$104.00	Filter	Red bandpass (635nm)	0 to 15 degrees	Press fit (inside lens protector)	PDF			
CS60-BP-850-D11.8	\$90.00	Filter	Infrared bandpass (850nm)	0 to 15 degrees	Press fit (inside lens protector)	PDF			

Filter Bandpass Graphs

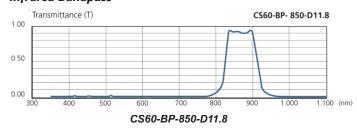
Blue Bandpass



Red Bandpass



Infrared Bandpass



These filters ensure that only the wavelengths of light that you are targeting pass through to the camera. For example, if using a red (635nm) light, choose a filter with a passband centered at 635nm. The bandpass filter will block light at wavelengths outside the passband's range so that only light in the red range comes through the lens to the camera.



0

CS60-WINDOW-POLAR





CS60-WINDOW-FOKUS

Polarizer: Use the polarizer lens protector/filter to reduce unwanted glare from shiny parts.

Diffuser: Use the diffuser lens protector/filter to spread even lighting across a larger portion your workpiece.

Focus Adjustment Aid: The focus adjustment aid allows you to change the focus of the camera without the risk of inadvertently touching and smudging the lens with your hands.

di-soric Lens Cover Selection Guide						
Part Number	Price	Description	Туре	Size (mm [in])	Mounting	Drawing
CS60-WINDOW-DIFFUS	\$113.00	Lens protector/filter	Diffuser	45x17 [1.77x0.67]	Press fit (friction fit with O-ring)	<u>PDF</u>
CS60-WINDOW-POLAR	\$190.00	Lens protector/filter	Polarizer	45x17 [1.77x0.67]	Press fit (friction fit with O-ring)	<u>PDF</u>
CS60-WINDOW *	\$71.00	Lens protector	-	45x17 [1.77x0.67]	Press fit (friction fit with O-ring)	<u>PDF</u>
CS60-WINDOW-FOKUS	\$105.00	Focus adjustment aid	-	45x17 [1.77x0.67]	Temporary (no O-ring)	PDF

di-soric Machine Vision Mounting Accessoriess







HS-KL-12-20-V



HS-VS-CS60-MP-KK-M3

di-soric's line of machine vision mounting accessories makes it easy for you solidly position your camera in just the right spot for the application at hand. These accessories are compatible with 12mm mounting rods.

di-soric Mounting Accessory Selection Guide								
Part Number	Price	Description	Orientation	Adjustment	Material	Mounting	Use With	Drawing
SH-G-CSR	\$40.00	Mounting plate	-	-	Aluminum	-	di-soric CS60 cameras and HS-KL-12-20-V mounting bracket	<u>PDF</u>
HS-KL-12-20-V	\$10.00	Mounting bracket	Right-angle	_	Stainless steel	12mm rod	SH-G-CSR mounting plate	<u>PDF</u>
HS-VS-CS60-MP-KK-M3	\$130.00	Mounting bracket	Ball joint	45 degrees vertical 360 degrees horizonta	Aluminum	-	di-soric CS60 cameras	<u>PDF</u>



316L Stainless Steel Rod Selection Guide						
Part Number	Price	Diameter (mm [in])	Length (mm [in])	Drawing		
<u>E21112</u>	\$14.50	12 [0.5]	200 [7.9]	PDF		
E21113	\$16.50	12 [0.5]	300 [11.8]	PDF		

di-soric Machine Vision Cables



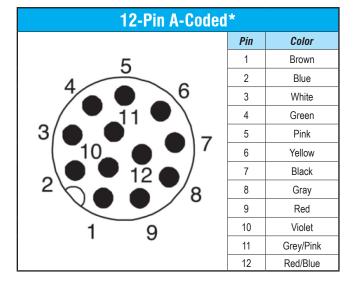


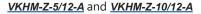
The <u>VKHM-Z-5/12-A</u> (with a length of 5m [16.4 ft]) and <u>VKHM-Z-10/12-A</u> (with a length of 10m [32.8 ft]) are combination I/O and power cables designed for use with di-soric machine vision cameras.

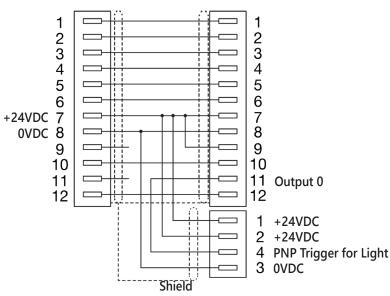
The <u>CS60-Y-1/12-A</u> is a specialized cable designed to allow the user to easily integrate an external light equipped with a 4-pin connector to sync the light with the camera trigger signal.

di-soric Cables Selection Guide							
Part Number	Price	Connection 1	Connection 2	Connection 3	Shielding	Cable Length	
<u>VKHM-Z-5/12-A</u>	\$93.00	12-pin M12 quick-disconnect	Pigtail	N/A	Shielded	16.4 ft [5m]	
<u>VKHM-Z-10/12-A</u>	\$100.00	12-pin M12 quick-disconnect	Pigtail	N/A	Shielded	32.8 ft [10m]	
CS60-Y-1/12-A	\$154.00	12-pin M12 quick-disconnect	12-pin M12 quick-disconnect	4-pin M12 quick-disconnect	Shielded	3.7 ft [1.1 m]	

Cable Pinouts







CS60-Y-1/12-A

www.automationdirect.com Barcode, RFID, Vision tBRV-38

Machine Vision Lighting Overview

Generic lighting products are designed to provide basic illumination. However, lights designed for use as part of machine vision systems are designed with high-quality LEDs to provide consistent and uniform light across the desired field of view. Here are some considerations that should be kept in mind when designing an optimized machine vision lighting system.

Goals for Machine Vision Lighting

Contrast

Maximizing contrast is the ultimate goal for any machine vision lighting system. If high contrast can be obtained, then detection is going to be a lot easier. In fact, maximizing contrast is the reason that most camera vision applications are monochrome. Contrast in monochrome images makes image processing easier.





To achieve the best contrast, the user must have a balance between homogeneity and brightness.

Homogeneity

Homogeneity can be thought of as uniformity. The light needs to illuminate the whole field of view uniformly. Hot spots or dark spots remove contrast from specific regions of the field of view and can adversely impact vision accuracy, while a homogenous (uniform) field of illumination can greatly enhance accuracy.





id of illumination can greatly enhance accuracy.

Brightness

Brightness, which is essential in creating contrast, is important in machine vision systems.







It is true that if you put more current through an LED, it will get brighter. But one of the worst things for an LED's lifespan is over-current. Even though more current means a brighter LED, that brightness comes at a cost, for the brighter the LED gets the more heat is generated and the more its lifespan is reduced. In other words, the lifespan of an LED is directly related to the current through the LED.

The manufacturers of our machine vision lights have taken great care in selecting the brightest and highest quality LEDs. They have also carefully engineered these lights to maximize light output and LED lifespan in order to deliver a product that will work consistently well for a long period of time. For instance, in order to achieve higher brightness, some of our lights can be strobed with higher current. In these lights, built-in microprocessors manage strobe duration to maximize brightness without adversely impacting life expectancy of the LEDs.

Dealing With Ambient Light

One of the hardest things to design out of a machine vision application is interference with your controlled lighting coming from unwanted ambient light in the location where the system will be used. Ambient light varies greatly from location to location, so designers must keep potential ambient light impacts in mind when designing machine vision lighting systems.

A common misconception is that ambient light comes only from overhead. However, the truth is that ambient light can come from several sources. Among the conditions which can impact ambient lighting are sunlight through a window, the reflection off of a reflective surface, or even a shadow.

There are situations in which building a shroud around the inspection area is the most appropriate way to deal with ambient light. In other situations, the best way to deal with it is to increase the brightness of the light source.

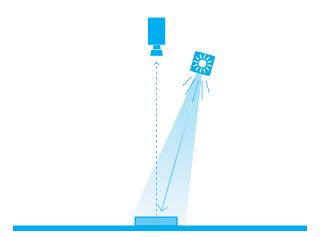
Another solution to deal with ambient light is to use a specific color (wavelength) of light along with a corresponding filter to only allow that color of light to pass through to the camera. For example, when using a red light (625nm), you can use a 625nm bandpass filter to block out unwanted ambient light of other wavelengths.

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Machine Vision Lighting Overview, continued

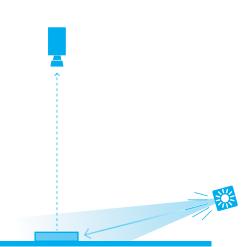
Lighting Principles

Effective machine vision lighting relies on several factors, including what is known as the "angle of incidence." Angle of incidence is defined as the angle at which the light strikes the object being illuminated. This angle is measured from an imaginary line between the camera and the light source, The examples below illustrate how different lighting angles can be used in various applications.



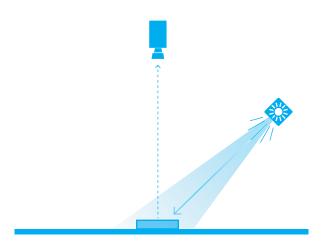
Bright field

- Usually, the angle of incidence is between 0 and 30 degrees.
- Bright field is the easiest type of lighting principle for humans to understand, because this is how we generally see the world. However, this type of lighting system may not be well suited for use where shiny parts are involved.
- Diffusers or polarizers might be needed to decrease the unintended direct reflections.



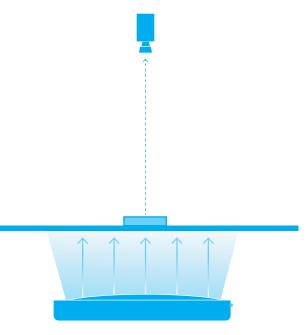
Dark field

- Usually, the angle of incidence is between 80 and 90 degrees
- This lighting configuration will generally bring high contrast to the edges. For parts that are not shiny, a narrow beam angle is usually best. For shiny parts, a diffused light source usually works best.
- Applications include edge detection and measurement.



Low angle

- Usually, the angle of incidence is between 30 and 80 degrees.
- The lighting source is placed between the dark field and the bright field so that the user can take advantage of both illumination methods.
- Good for engravings



Backlight

- The light source is placed behind the object.
- When using this method, it is important that the light is bigger than the field of view.
- Backlighting light sources should be highly diffused and offer high homogeneity.
- Backlighting makes it possible to see a silhouette.

Lumher Vision Lighting Bar Light (PD Series)





PD02PD5CY

Lumher's PD Series of machine vision bar LED lights provides high-powered and uniform illumination over the entire length of the bar light, ensuring uniform lighting conditions for machine vision systems.

Features

- IP65
- Integrated controller
- Continuous only or strobe-capable models available
- · Available in white, red or infrared
- Semi-diffused or ultra-diffused illumination options available

	Lumher PD Series Vision Lighting Bar Light Selection Guide						
Part Number	Price	Light Emission	LED Length (mm [in])	Diffuser	Mode of Operation	Drawings	
PD01PD5CY	\$226.00	White (5000K)	90 [3.54]	Semi-diffused (±30°)	Continuous only	PDF	
PD02PD5CY	\$257.00	White (5000K)	180 [7.09]	Semi-diffused (±30°)	Continuous only	PDF	
PD04PD5CY	\$321.00	White (5000K)	360 [14.17]	Semi-diffused (±30°)	Continuous only	PDF	
PD05PD5CY	\$353.00	White (5000K)	450 [17.72]	Semi-diffused (±30°)	Continuous only	PDF	
PD07PD5CY	\$419.00	White (5000K)	630 [24.80]	Semi-diffused (±30°)	Continuous only	PDF	
PD01ZD5CY	\$439.00	White (5000K)	90 [3.54]	Semi-diffused (±30°)	Strobe-capable	PDF	
PD02ZD5CY	\$346.00	White (5000K)	180 [7.09]	Semi-diffused (±30°)	Strobe-capable	PDF	
PD04ZD5CY	\$439.00	White (5000K)	360 [14.17]	Semi-diffused (±30°)	Strobe-capable	PDF	
PD05ZD5CY	\$566.00	White (5000K)	450 [17.72]	Semi-diffused (±30°)	Strobe-capable	PDF	
PD07ZD5CY	\$631.00	White (5000K)	630 [24.80]	Semi-diffused (±30°)	Strobe-capable	PDF	
PD01ZD5UY	\$439.00	White (5000K)	90 [3.54]	Ultra-diffused (±55°)	Strobe-capable	PDF	
PD02ZD5UY	\$470.00	White (5000K)	180 [7.09]	Ultra-diffused (±55°)	Strobe-capable	PDF	
PD04ZD5UY	\$534.00	White (5000K)	360 [14.17]	Ultra-diffused (±55°)	Strobe-capable	PDF	
PD05ZD5UY	\$566.00	White (5000K)	450 [17.72]	Ultra-diffused (±55°)	Strobe-capable	PDF	
PD07ZD5UY	\$631.00	White (5000K)	630 [24.80]	Ultra-diffused (±55°)	Strobe-capable	PDF	
PD04ZR5CY	\$575.00	Red (625nm)	360 [14.17]	Semi-diffused (±30°)	Strobe-capable	PDF	
PD05ZR5CY	\$617.00	Red (625nm)	450 [17.72]	Semi-diffused (±30°)	Strobe-capable	PDF	
PD01PF5CY	\$231.00	Infrared (850nm)	90 [3.54]	Semi-diffused (±30°)	Continuous only	PDF	
PD02PF5CY	\$268.00	Infrared (850nm)	180 [7.09]	Semi-diffused (±30°)	Continuous only	PDF	
PD04PF5CY	\$342.00	Infrared (850nm)	360 [14.17]	Semi-diffused (±30°)	Continuous only	PDF	
PD05PF5CY	\$378.00	Infrared (850nm)	450 [17.72]	Semi-diffused (±30°)	Continuous only	PDF	
PD07PF5CY	\$455.00	Infrared (850nm)	630 [24.80]	Semi-diffused (±30°)	Continuous only	PDF	

IP65















Lumher Vision Lighting Bar Light (PD Series)



Lumher PD	Lumher PD Series Vision Lighting Bar Light Specifications						
	Continuous Mode	Strobe Mode					
Strobe Input	-	PNP: More than 22V for ON; Less than 1V for OFF NPN: Less than 1V for ON; More than 23V for OFF					
Overdrive	No	Yes					
Strobe Conditions (ON time, duty cycle)	-	For first 10ms, 4X normal brightness; then normal brightness. To re-engage strobe, LEDs must be off for at least 50ms.					
Maximum Rising Time	3	JS					
Maximum Falling Time	3	JS					
Connection	M12 A-coded 4	-pole connector					
Consumption	White: 1.9 W per 90mm [3.54 in] Red: 1.9 W per 90mm [3.54 in] Infrared: 1.0 W per 90mm [3.54 in]	White: 7.6 W per 90mm [3.54 in] Red: 7.6 W per 90mm [3.54 in]					
Minimum Functioning Voltage	22.8 VDC						
Normal Functioning Voltage	24VD0	C ±5%					
Maximum Functioning Voltage	25.2	VDC					
Maximum Consumption Strobe Signal	-	1.5 mA					
Maximum Strobe Duty Cycle	-	16%					
Operating Temperature	-10°C to 40°C	[14°F to 104°F]					
Operating Maximum Humidity	80% without	condensation					
Weight	49g [0.11 lb] plus 48g [0.	11 lb] per 90mm [3.54 in]					
Materials	Body: Anodized aluminum Side cover: Anodized Aluminum Diffuser: Polycarbonate						
Storage Temperature	0°C to 60°C [32°F to 140°F]						
Lifespan of LEDs (ON time)	6.8 y	vears					
IP Protection	IP	65					

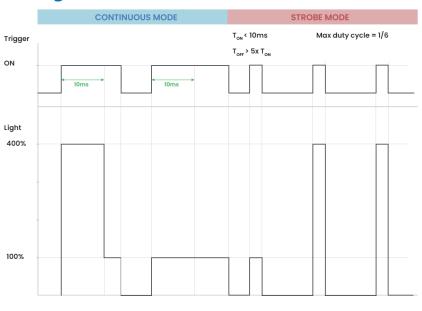
Connections

M12 A-Coded Connections					
Pin Number and Continuous-Only Wire Color Models		Strobe-Capable Models			
Pin 1 – Brown	+24VDC	+24VDC			
Pin 2 – White	Not Connected	Trigger NPN			
Pin 3 – Blue	0VDC	0VDC			
Pin 4 – Black	Not connected	Trigger PNP			

M12 A-Coded Male Connector



Timing Chart



Lumher Vision Lighting High-Power Bar Light (FD Series)





Lumher's FD Series has a larger dissipation surface and emits twice the light output of the PD series. The linear FD series is an excellent choice for demanding applications where maximum illumination is required

Features

- IP65
- Integrated controller
- Built-in current protection
- Continuous high-brightness mode

	Lumher FD Series Vision Lighting High-Power Bar Light Selection Guide						
Part Number	Price	Light Emission	LED Length (mm [in])	Diffuser	Mode of Operation	Drawings	
FD01PD5CY	\$248.00	White (5000K)	90 [3.54]	Semi-diffused (±30°)	Continuous only	PDF	
FD02PD5CY	\$285.00	White (5000K)	180 [7.09]	Semi-diffused (±30°)	Continuous only	<u>PDF</u>	
FD04PD5CY	\$357.00	White (5000K)	360 [14.17]	Semi-diffused (±30°)	Continuous only	PDF	
FD05PD5CY	\$394.00	White (5000K)	450 [17.72]	Semi-diffused (±30°)	Continuous only	PDF	
FD07PD5CY	\$469.00	White (5000K)	630 [24.80]	Semi-diffused (±30°)	Continuous only	PDF	



IP65











Lumher Vision Lighting High-Power Bar Light (FD Series)



Lumher FD Series Vision Lightir	ng High-Power Bar Light Specifications		
	Continuous Mode		
Strobe Input	-		
Overdrive	No		
Strobe Conditions (ON time, duty cycle)	-		
Maximum Rising Time	3µs		
Maximum Falling Time	3µs		
Connection	M12 A-coded 4-pole connector		
Consumption	White: 3.8 W per 90mm [3.54 in]		
Minimum Functioning Voltage	22.8 VDC		
Normal Functioning Voltage	24VDC ±5%		
Maximum Functioning Voltage	25.2 VDC		
Maximum Consumption Strobe Signal	-		
Maximum Strobe Duty Cycle	-		
Operating Temperature	-10°C to 40°C [14°F to 104°F]		
Operating Maximum Humidity	80% without condensation		
Weight	64g [0.14 lb] plus 192g [0.42 lb] per 90mm [3.54 in]		
Materials	Body: Anodized aluminum Side cover: Anodized Aluminum Diffuser: Polycarbonate		
Storage Temperature	0°C to 60°C [32°F to 140°F]		
Lifespan of LEDs (ON time)	6.8 years		
IP Protection	IP65		

Connections

M12 A-Coded Connections					
Pin Number and Wire Color Continuous-Only Models					
Pin 1 – Brown	+24VDC				
Pin 2 – White	Not Connected				
Pin 3 – Blue	0VDC				
Pin 4 – Black	Not connected				

M12 A-Coded Male Connector



Lumher Backlight Lighting (BD Series)





Lumher's BD (or backlight) Series combines mechanical design, robustness and homogeneity to achieve optimum results in your machine vision projects.

These backlights provide flicker-free illumination while preserving the luminous flux throughout the life of the product.

Optional mounting accessories allow these backlights to be installed at an angle of either 0° or 90°.

The product is made of anodized aluminium with IP65 watertightness and is available in two sizes.

Features

- Robust aluminum body
- IP65
- Integrated controller
- Continuous only or strobe-capable models available

Lumher BD Series Backlight Lighting Selection Guide						
Part Number	Price	Light Emission	Illumination Area (mm [in])	Diffuser	Mode of Operation	Drawings
BD1PD5CY	\$716.00	White (5000K)	100 x 100 [3.94 x 3.94]	Semi-diffused (±30°)	Continuous only	<u>PDF</u>
BD2PD5CY	\$992.00	White (5000K)	100 x 190 [3.94 x 7.48]	Semi-diffused (±30°)	Continuous only	<u>PDF</u>
BD1ZD5CY	\$924.00	White (5000K)	100 x 100 [3.94 x 3.94]	Semi-diffused (±30°)	Strobe-capable	PDF
BD2ZD5CY	\$1,200.00	White (5000K)	100 x 190 [3.94 x 7.48]	Semi-diffused (±30°)	Strobe-capable	<u>PDF</u>

















Lumher Backlight Lighting (BD Series)



Lumher BD Series Backlight Lighting Specifications						
	Continuous Mode	Strobe Mode				
Strobe Input	-	PNP: More than 22V for ON; Less than 1V for OFF NPN: Less than 1V for ON; More than 23V for OFF				
Overdrive	No	Yes				
Strobe Conditions (ON time, duty cycle)	-	For first 10ms, 4X normal brightness; then normal brightness. To re-engage strobe, LEDs must be off for at least 50ms.				
Maximum Rising Time	3)	JS.				
Maximum Falling Time	3)	JS.				
Connection	M12 A-coded 4	-pole connector				
Consumption	BD1 models: White: 7W BD2 models: White: 14W	BD1 models: White: 28W BD2 models: White: 56W				
Minimum Functioning Voltage	22.8 VDC					
Normal Functioning Voltage	24VD0	C ±5%				
Maximum Functioning Voltage	25.2	VDC				
Maximum Consumption Strobe Signal	_	1.5 mA				
Maximum Strobe Duty Cycle	_	16%				
Operating Temperature	-10°C to 40°C	[14°F to 104°F]				
Operating Maximum Humidity	80% without	condensation				
Weight	BD1 models: 500g [1.10 lb] BD2 models: 796g [1.75 lb]					
Materials	Body: Anodized aluminum Side cover: Anodized Aluminum Diffuser: Polycarbonate					
Storage Temperature	0°C to 60°C [32°F to 140°F]					
Lifespan of LEDs (ON time)	6.8 y	rears				
IP Protection	IP	65				

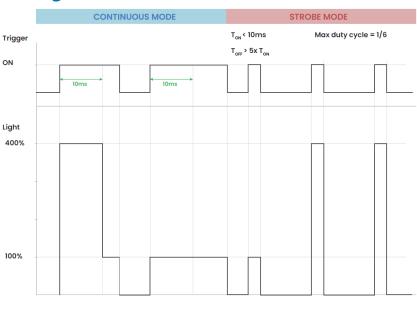
Connections

M12 A-Coded Connections					
Pin Number and Continuous-Only Strobe-Capable Wire Color Models Models					
Pin 1 – Brown	+24VDC	+24VDC			
Pin 2 – White	Not Connected	Trigger NPN			
Pin 3 – Blue	0VDC	0VDC			
Pin 4 – Black	Not connected	Trigger PNP			

M12 A-Coded Male Connector



Timing Chart



Lumher Ring Lighting (RD Series)







Lumher's RD Series of ring lights provides an exceptionally durable and robust solution when direct illumination is required. The RD Series lights are built in a one-piece anodized aluminum frame. Thanks to the compact and versatile form factors of the lights, the illumination they provide facilitates precise object detection, tracking, and inspection. This makes them ideal for applications requiring reliable and comprehensive visual analysis in industrial and automation environments.

This type of light fixture is widely used in robotics, where (because the robot is in motion) it is recommended that lighting devices have the smallest possible dimensions to avoid possible mechanical interference. Such lighting is also recommended for certain production lines, where limited space calls for the use of compact lighting.

Features

- Robust aluminum body
- IP65
- Integrated controller
- Available in compact or extended size
- Continuous only or strobe-capable models available
- Semi-diffused or ultra-diffused illumination options available

	Lumher RD Series Ring Lighting Selection Guide									
Part Number	Price	Price Light Emission Insi		Diffuser	Mode of Operation	Drawings				
RD1PD5CY	\$615.00	White (5000K)	59 [2.32] diameter	Semi-diffused (±30°)	Continuous only	PDF				
RD2PD5CY	\$884.00	White (5000K)	135 x 135 [5.31 x 5.31]	Semi-diffused (±30°)	Continuous only	PDF				
RD1ZD5CY	\$823.00	White (5000K)	59 [2.32] diameter	Semi-diffused (±30°)	Strobe-capable	<u>PDF</u>				
RD2ZD5CY	\$1,093.00	White (5000K)	135 x 135 [5.31 x 5.31]	Semi-diffused (±30°)	Strobe-capable	PDF				
RD1ZD5UY	\$823.00	White (5000K)	59 [2.32] diameter	Ultra-diffused (±55°)	Strobe-capable	<u>PDF</u>				
RD2ZD5UY	\$1,093.00	White (5000K)	135 x 135 [5.31 x 5.31]	Ultra-diffused (±55°)	Strobe-capable	PDF				
RD1PF5CY	\$635.00	Infrared (850nm)	59 [2.32] diameter	Semi-diffused (±30°)	Continuous only	<u>PDF</u>				
RD2PF5CY	\$925.00	Infrared (850nm)	135 x 135 [5.31 x 5.31]	Semi-diffused (±30°)	Continuous only	PDF				

24 V

IP65















Lumher Ring Lighting (RD Series)



Lumher RD Series Ring Lighting Specifications								
	Continuous Mode	Strobe Mode						
Strobe Input	-	PNP: More than 22V for ON; Less than 1V for OFF NPN: Less than 1V for ON; More than 23V for OFF						
Overdrive	No	Yes						
Strobe Conditions (ON time, duty cycle)	-	For first 10ms, 4X normal brightness; then normal brightness. To re-engage strobe, LEDs must be off for at least 50ms.						
Maximum Rising Time	3	us						
Maximum Falling Time	3	us						
Connection	M12 A-coded 4	-pole connector						
Consumption	RD1 models: White: 7.6 W RD2 models: White: 15.2 W RD1 models: Infrared: 4.0 W RD2 models: Infrared: 8.0 W	RD1 models: White: 30.4 W RD2 models: White: 60.8 W						
Minimum Functioning Voltage	22.8 VDC							
Normal Functioning Voltage	24VD(C ±5%						
Maximum Functioning Voltage	25.2	VDC						
Maximum Consumption Strobe Signal	_	1.5 mA						
Maximum Strobe Duty Cycle	_	16%						
Operating Temperature	-10°C to 40°C	[14°F to 104°F]						
Operating Maximum Humidity	80% without	condensation						
Weight	RD1: 0.615 kg [1.36 lb] RD2: 1.276 kg [2.81 lb]							
Materials	Body: Anodized aluminum Side cover: Anodized Aluminum Diffuser: Polycarbonate							
Storage Temperature	0°C to 60°C [32°F to 140°F]						
Lifespan of LEDs (ON time)	6.8 y	vears						
IP Protection	IP	65						

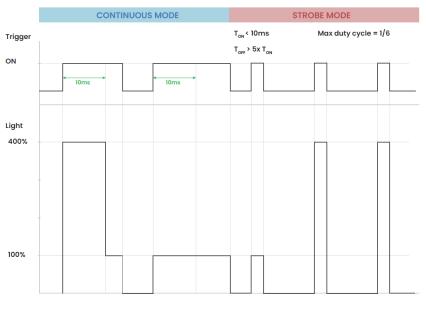
Connections

M12 A-Coded Connections								
Pin Number and Wire Color	Continuous-Only Models	Strobe-Capable Models						
Pin 1 – Brown	+24VDC	+24VDC						
Pin 2 – White	Not Connected	Trigger NPN						
Pin 3 – Blue	0VDC	0VDC						
Pin 4 – Black	Not connected	Trigger PNP						

M12 A-Coded Male Connector



Timing Chart



Lumher Spot Lighting (BS Series)





Lumher's BS Series provides an exceptionally durable and robust solution when focused or directional lighting is required. These lights are especially recommended for projects where the target surface is at a considerable distance from the camera. Fabricated from anodized aluminum, these lights provide IP65 protection.

Features

- Robust aluminum body
- IP65
- Integrated controller
- Continuous only or strobe-capable models available

Lumher BS Series Spot Lighting Selection Guide									
Part Number Price Light Emission Housing Size (mm [in]) Diffuser Mode of Ope						Drawings			
BS1PD5QY	\$773.00	White (5000K)	125 x 125 x 25 [4.92 x 4.92 x 0.98]	Spot (±3°)	Continuous only	PDF			
BS1ZD5QY	\$981.00	White (5000K)	125 x 125 x 25 [4.92 x 4.92 x 0.98]	Spot (±3°)	Strobe-capable	PDF			















Lumher Spot Lighting (BS Series)



Lumher BS Series Spot Lighting Specifications							
	Continuous Mode	Strobe Mode					
Strobe Input	-	PNP: More than 22V for ON; Less than 1V for OFF NPN: Less than 1V for ON; More than 23V for OFF					
Overdrive	No	Yes					
Strobe Conditions (ON time, duty cycle)	-	For first 50ms, 3X normal brightness; then normal brightness. To re-engage strobe, LEDs must be off for at least 150ms.					
Maximum Rising Time	3	μs					
Maximum Falling Time	31	μs					
Connection	M12 A-coded 4	-pole connector					
Consumption	11.5 W	48.0 W					
Minimum Functioning Voltage	22.8	VDC					
Normal Functioning Voltage	24VD(C ±5%					
Maximum Functioning Voltage	25.2	VDC					
Maximum Consumption Strobe Signal	-	1.5 mA					
Maximum Strobe Duty Cycle	-	25%					
Operating Temperature	-10°C to 40°C	[14°F to 104°F]					
Operating Maximum Humidity	80% without	condensation					
Weight	0.5 kg	[1.1 lb]					
Materials	Body: Anodized aluminum Side cover: Anodized Aluminum Diffuser: Polycarbonate						
Storage Temperature	0°C to 60°C [32°F to 140°F]						
Lifespan of LEDs (ON time)	6.8 y	years					
IP Protection	IP	65					

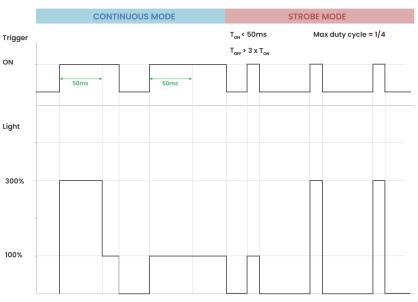
Connections

M12 A-Coded Connections							
Pin Number and Continuous-Only Strobe-Capable Wire Color Models Models							
Pin 1 – Brown	+24VDC	+24VDC					
Pin 2 – White	Not Connected	Trigger NPN					
Pin 3 – Blue	0VDC	0VDC					
Pin 4 – Black	Not connected	Trigger PNP					

M12 A-Coded Male Connector



Timing Chart

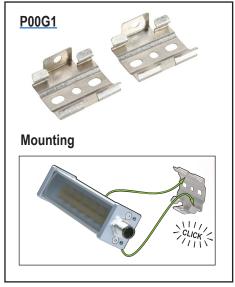


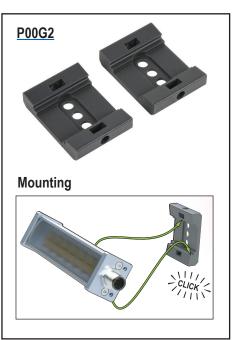
Lumher Mounting Accessories For PD-Series Lights

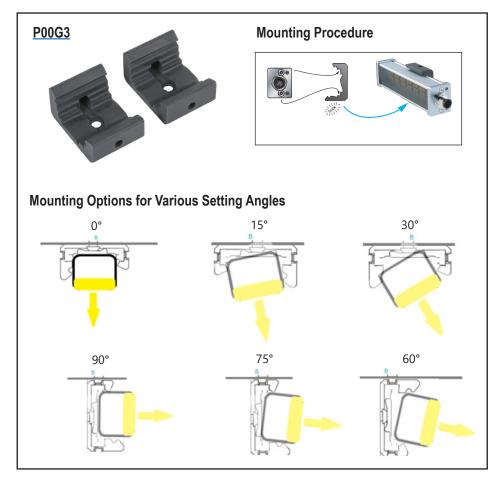


The PD series bar lights offer a wide variety of anchoring options. A number of different mounting bracket options are available, including stainless steel and plastic (ABS) models. These include fixed anchors with multiple installation positions as well as rotating anchors for greater flexibility.

Lumher PD Series Fixed Mounting Bracket Selection Guide										
Part Number	Price	Adjustment Type	Setting Angles	Material	Mounting	Drawings				
P00G1	\$16.50	Fixed	0° or 90°	Stainless steel	Customer-supplied screws	PDF				
P00G2	\$10.00	Fixed	0° or 90°	Plastic	Customer-supplied screws	PDF				
P00G3	\$10.00	Fixed	0°, 15°, 30°, 60°, 75°, or 90°	Plastic	Customer-supplied screws	PDF				
P00G4	\$25.00	Fixed	0°	Plastic	Magnetic	PDF				









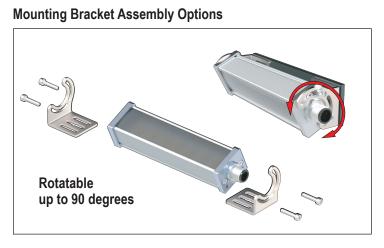
Lumher Mounting Accessories For PD-Series Lights

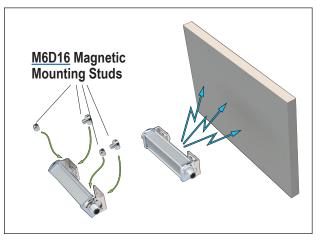


The PD series bar lights offer a wide variety of anchoring options. A number of different mounting bracket options are available, including stainless steel and plastic (ABS) models. These include fixed anchors with multiple installation positions as well as rotating anchors for greater flexibility.

	Lumher PD Series Adjustable Mounting Bracket Selection Guide										
Part Number	Price	Adjustment Type	Mounting Capacity	Relative Orientation of Lights	Material	Mounting (Lights)	Mounting (Brackets)	Drawings			
<u>P00R1</u>	\$16.50	Adjustable	Single	-	Stainless steel	Supplied	Customer-supplied screws or M6D16	<u>PDF</u>			
P00R2	\$32.50	Adjustable	Dual	Axial	Stainless steel		Customer-supplied screws	<u>PDF</u>			
<u>P00R3</u>	\$53.00	Adjustable	Dual	60°	Stainless steel	screws (included)	Customer-supplied screws	<u>PDF</u>			
<u>P00R4</u>	\$27.00	Adjustable	Dual	90°	Stainless steel		Customer-supplied screws or M6D16	PDF			







Lumher Magnetic Mounting Option Selection Guide								
Part Number	r Price Material		Description	Fits	Drawings			
<u>M6D16</u>	\$15.50	Stainless steel	Magnet with M6 stud and lock nut	<u>F00R1</u> <u>P00R1, P00R4</u>	<u>PDF</u>			



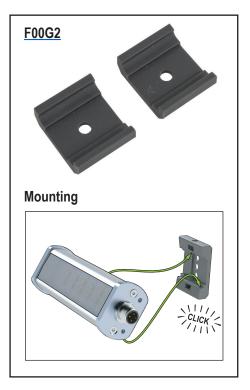
M6D16

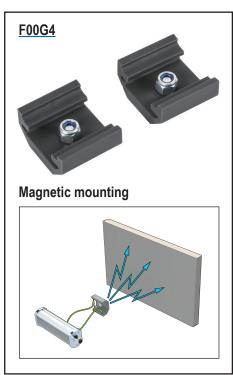
For FD-Series Lights



The FD series bar lights offer a wide variety of anchoring options. A number of different mounting bracket options are available, including stainless steel and plastic (ABS) models. These include fixed anchors with multiple installation positions as well as rotating anchors for greater flexibility.

	Contaval Lumher FD Series Mounting Bracket Selection Guide								
Part Number	Price	Adjustment	Setting Angles	Material	Mounting	Drawings			
F00G2	\$10.00	Fixed	0°	Plastic	For mounting lights: Clip into brackets For mounting brackets: Use customer-supplied screws or M6D16	<u>PDF</u>			
F00G4	\$25.00	Fixed	0°	Plastic	For mounting lights: Clip into brackets For mounting brackets: Magnetic	<u>PDF</u>			
<u>F00R1</u>	\$22.00	Adjustable	Up to 90°	Stainless steel	For mounting lights: Use supplied screws For mounting brackets: Use customer-supplied screws or M6D16	<u>PDF</u>			

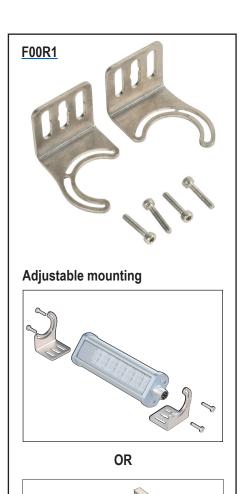




Lumher Magnetic Mounting Option Selection Guide									
Part Number	Price	Material	Description	Fits	Drawings				
<u>M6D16</u>	\$15.50	Stainless steel	Magnet with M6 stud and lock nut	<u>F00R1</u> <u>P00R1, P00R4</u>	<u>PDF</u>				



M6D16



www.automationdirect.com

M6D16 Magnetic **Mounting Studs**

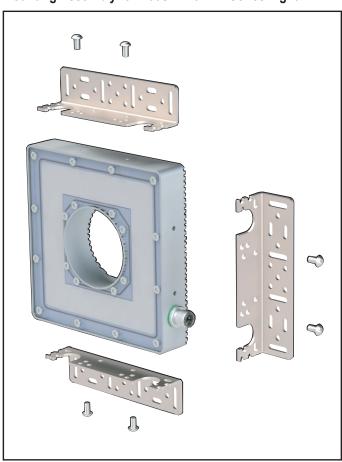
Lumher Mounting Accessories For RD, BS and BD Series Lights



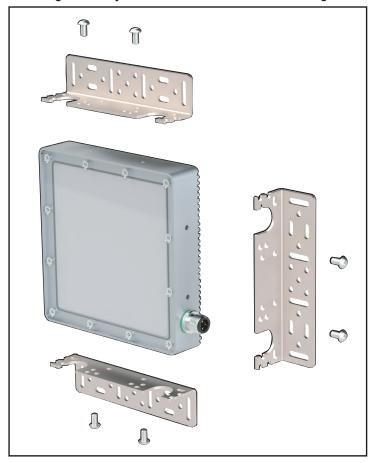
Lumher RD, BS and BD Series Mounting Bracket Selection Guide						
Part Number	Price	Material	Mounting	Drawings		
<u>B00S1</u>	\$16.50	Stainless steel	For mounting lights: Use supplied screws For mounting brackets: Use customer-supplied screws	PDF		



Mounting Assembly for B00S1 With RD Series Light



Mounting Assembly for B00S1 With BS or BD Series Light



www.automationdirect.com Barcode, RFID, Vision tBRV-54

WenglorTPL Vision Lighting **M-EBAR Lights**

WenglorTPL M-EBAR (Modular Essential Bar) Lights, which feature high-power LEDs, come in various sizes and are available with either white or infrared lights to help create the best contrast for image processing. These linear lights are extremely versatile and can be used to create different types of lighting (for example, bright field, dark field, or dome effect) suited to various automation and robotics applications. Designed with flexibility in mind, WenglorTPL bar lights simplify the product selection process and make for easy integration.

WenglorTPL's award-winning Modular Essential Bar Light illumination provides universal solutions for pick-and-place, logistics, packaging and traceability applications. These bar lights can be combined with WenglorTPL's Angle Changers to suit almost any machine vision application.

wenglor TPL

Features

- Illumination angle can be customized to suit almost any application with the addition of angle changers
- Ultra narrow lens delivers ±7° illumination
- · Robust aluminum body
- · Non-removable M4 nut included on back of bar
- Built-in overdrive protection safeguards against damage from overcurrent



OPT2401

WenglorTPL White M-EBAR Selection Guide							
Part Number	Price	Color of Light	Light Temperature	Length of Light	Overdrive	Mode of Operation	Drawings
<u>OPT2400</u>	\$412.00			125mm [4.92 in]			PDF
OPT2401	\$552.00	\	E000K	250mm [9.84 in]	V	Continuous	PDF
OPT2402	\$694.00	White	5800K	375mm [14.76 in]	Yes	or strobe	PDF
OPT2403	\$838.00			500mm [19.69 in]			PDF



OPT2406

WenglorTPL Infrared M-EBAR Selection Guide								
Part Number	Price	Color of Light	Wavelength	Length of Light	Overdrive	Mode of Operation	Drawings	
<u>OPT2404</u>	\$433.00			125mm [4.92 in]			<u>PDF</u>	
OPT2405	\$575.00	Infrared	950000	250mm [9.84 in]	Yes	Continuous or strobe	PDF	
OPT2406	\$712.00	inirared	850nm –	375mm [14.76 in]			PDF	
OPT2407	\$853.00			500mm [19.69 in]			PDF	

WenglorTPL Vision Bar Clamp Selection Guide					
Part Number	Price	Description	Material	Drawing	
OPT2432	\$88.00	Bar clamp	Aluminum	PDF	



OPT2432

Angle Changers

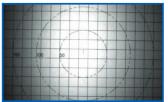
WenglorTPL bar lights can be used as-is in a wide range of applications. However, the addition of an angle changer accessory can greatly enhance the versatility of the overall lighting system by changing the angle of the illumination and thus allowing a single light to be used in multiple applications.

Angle changers are easy to install on the Wenglor bar lights and do not have any impact on the IP rating. Installation takes just seconds and is simply a matter of clipping them into the light's aluminum frame.

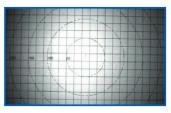


without angle changer

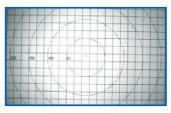
Result when using different angle changers



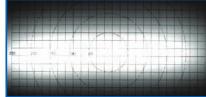
With Narrow Angle Changer



With Medium Angle Changer



With Wide Angle Changer



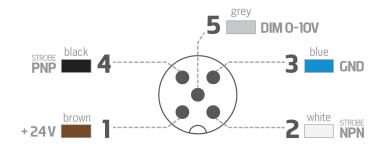
With Line Light Angle Changer

WenglorTPL Vision Lighting M-EBAR Lights

wenglor TPL

M-EBAR Genera	I Specification	ons			
	125mm [4.92 in]	250mm [9.84 in]	375mm [14.76 in]	500mm [19.69 in]	
Electi	ronics				
Functioning Mode		Continuou	is or strobe		
Strobe Input	PNP: From 5 to 24V for 100% ON. From 0 to 1V for 100% OFF NPN: Less than 1V for 100% ON. Above 2V for 100% OFF. Max 20V				
Overdrive	Yes				
Strobe Conditions (ON time, duty cycle)	l.		240% maximum curren supplied at 100% level.	t.	
Maximum Rising Time		15	iμs		
Maximum Falling Time		15	iμs		
Connection		M12 5-pol	e connector		
Consumption CW Mode	0.3 A	0.6 A	0.9 A	1.2 A	
Consumption Strobe Mode	1.2 A 2.4 A 3.6A		4.8 A		
Minimum Functioning Voltage	20V at the light input				
Normal Functioning Voltage	24V at the light input (±10%)				
Maximum Functioning Voltage	30V at the light input				
Maximum Consumption Strobe and Dimming Signal	10mA				
Maximum Strobe Duty Cycle			0%		
Dimming	Pin 5 (I	M12 5-pole connector):	0-10 V = 100-30% resp	ectively	
Operating Temperature			[14°F to 104°F]		
Operating Maximum Humidity			condensation		
Maximum Temperature Variation in 24 Hours		10°C [18°F]	over 24 hours		
Орг	tics				
Color			(5800k) (850nm)		
Mech	anics		, ,		
Weight	0.8 lb [380g]	1.4 lb [630g]	2.1 lb [950g]	2.6 lb [1.20 kg]	
Materials		Aluminum and fiber	glass-reinforced ABS		
Mounting	2 M4 nuts (non-removable) installed in T slot in rear of bar light 4 M4 nuts (non-removable) installed in T slot in rear of bar light				
Enviro	nment				
Storage Temperature	-20°C to 60°C / 80% humidity without condensation No thermal shock (maximum temperature variation 10C in 24 hours)				
IP Protection		IF	65		

Connections



	Strobe PNP				
1	+24V				
2 Not connected					
3	Ground				
4	PNP-signal				
5	Dim 0-10 V				

	Strobe NPN					
1	+24V					
2	NPN-signal					
3 Ground						
4	Not connected					
5	Dim 0-10 V					

Continuous Mode						
1	+24V		+24V			
2	Not connected		Ground			
3	Ground	OR	Ground			
4	+24V		Not connected			
5	Dim 0-10 V		Dim 0-10 V			

OPT2408

WenglorTPL Vision Lighting Angle Changers for M-EBAR



WenglorTPL Angle Changers are inserts for the modular essential bar light that make it easy for you to change illumination angles as needed to meet changing application demands.

OPT2410-4



OPT2409-2

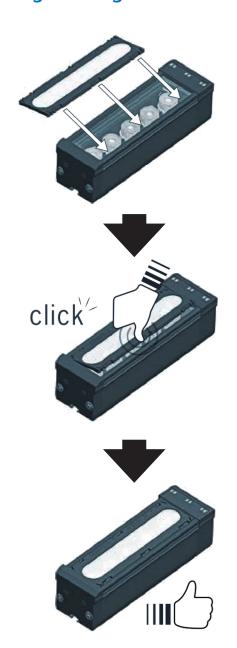
Features

- Quickly and easily change illumination angles as your project evolves.
- No need to dismantle the product to adjust the illumination angle. All you need to do is to swap Angle Changers.
- Angle Changers do not have an impact on the IP rating of the bar light.
- Allows for rapid feasibility testing.
- Quickly and easily identify the best illumination solution with different angle changer combinations.

Weng	JorTP	L M-EBAR Ang	le Changers S	election (Guide
Part Number	Price	Angle Type	Angle	Quantity in Package	Drawings
<u>OPT2408</u>	\$33.00			1	PDF
OPT2408-2	\$63.00	Narrow	±10°	2	PDF
OPT2408-4	\$119.00			4	PDF
OPT2409	\$33.00			1	PDF
OPT2409-2	\$63.00	Medium	±17°	2	PDF
<u>OPT2409-4</u>	\$119.00			4	PDF
<u>OPT2410</u>	\$33.00			1	PDF
<u>OPT2410-2</u>	\$63.00	Wide	±25°	2	PDF
<u>OPT2410-4</u>	\$119.00			4	PDF
<u>OPT2411</u>	\$33.00	Line light	±9° x ±16°	1	PDF
<u>OPT2412</u>	\$76.00	Polarized narrow	±10°	1	PDF
<u>OPT2413</u>	\$76.00	Polarized medium	±17°	1	PDF
<u>OPT2414</u>	\$76.00	Polarized wide	±25°	1	PDF
<u>OPT2415</u>	\$76.00	Polarized line light	±9° x ±16°	1	PDF
<u>OPT2416</u>	\$56.00	Polarized	None	1	PDF
<u>OPT2417</u>	\$22.50			1	PDF
<u>OPT2417-2</u>	\$42.50	Transparent	None	2	PDF
<u>OPT2417-4</u>	\$81.00			4	PDF

Number of Angle Changers Needed				
Length of Bar Light Quantity of Angle Changers Required				
125mm [4.92 in]	1			
250mm [9.84 in]	2			
375mm [14.76 in]	3			
500mm [19.69 in]	4			

Angle Changer Installation



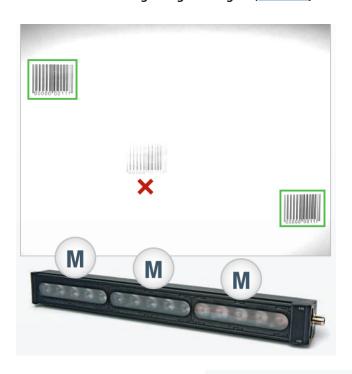
WenglorTPL Vision Lighting Angle Change Inserts For M-EBAR

wenglor TPL

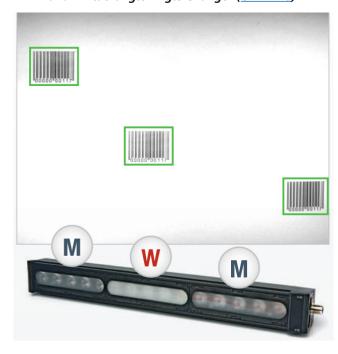
Application Example

Hot spots are often a problem in machine vision lighting, and WenglorTPL Angle Changers provide an excellent solution to help you deal with hot spots by utilizing different angle changers on the same bar light.

<u>OPT2402</u> light bar with 3 medium-angle Angle Changers (OPT2409)



<u>OPT2402</u> light bar with 2 medium-angle Angle Changers (<u>OPT2409</u>) and 1 wide-angle Angle Changer (<u>OPT2410</u>)



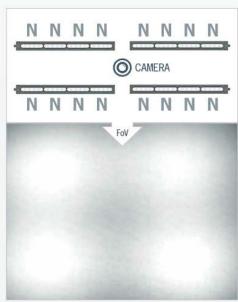
Example

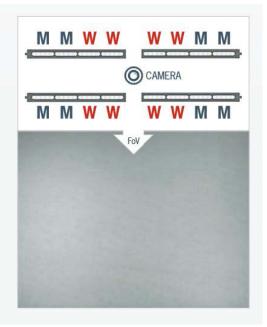
- 2000mm working distance
- 1300 x 900 field of view
- Four OPT2403 light bars with angle changers

Angle changers marked at each 125mm as Narrow, Medium or Wide by N, M, or W

Schematic views show a plan of the system from behind the camera







WenglorTPL Vision Lighting Modular Ring Light, Dome, wenglor TPL and Low-Angle Accessories

The WenglorTPL Modular Ring Light offers bi-color LED illumination. Models are available in two sets of colors (only one color can be used at a time) and in two different sizes. All have been designed with tough production environments in mind with IP65 as standard and overdrive embedded.

To further enhance the Modular Ring Light's versatility, users have the ability to select colors and quadrants via the simple controls on the device or via I/O from a connected PLC.

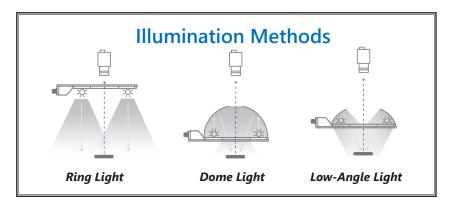


WenglorTPL Modular Ring Light Selection Guide								
Part Number	Price	Colors	Size* (mm [in])	Overdrive	Mode of Operation	Drawings		
OPT2424	\$818.00	Red / Cyan	80 [3.15]		Continuous or strobe	PDF		
OPT2425	\$818.00	White / Infared	80 [3.15]	V		PDF		
OPT2426	\$1,086.00	Red / Cyan	130 [5.12]	Yes		PDF		
OPT2427	\$1,086.00	White / Infared	130 [5.12]			<u>PDF</u>		

* Approximate diameter to inner ring of LEDs



OPT2427



Ring Light Accessories

WenglorTPL ring light accessories transform a ring light into a dome light or a low-angle light. These accessories attach to the appropriate sized modular ring light by use of built-in magnets. They are then secured using the provided screws.

For dome light applications, the aperture size for the dome light may need to be reduced to decrease the dark spot on the field of view. The WenglorTPL dome accessory comes with multiple aperture covers to maximize flexibility.

WenglorTPL Ring Light Accessory Selection Guide						
Part Number	Price	Item	Corresponding Ring Light Size* (mm [in])	Drawings		
OPT2428	\$98.00	Dome	80 [3.15]	PDF		
<u>OPT2429</u>	\$125.00	Dome	130 [5.12]	<u>PDF</u>		
OPT2430	\$98.00	Low-angle dome	80 [3.15]	<u>PDF</u>		
OPT2431	\$125.00	Low-angle dome	130 [5.12]	<u>PDF</u>		

^{*} Approximate diameter to inner ring of LEDs on corresponding ring light

WenglorTPL Mounting Bracket Selection Guide						
Part Number	Price	Description	Material	Drawings		
OPT2434	\$70.00	Mounting bracket	Aluminium	PDF		





OPT2428

OPT2430

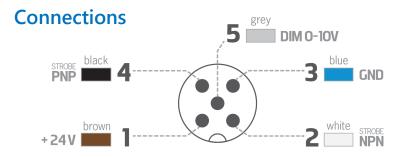


OPT2425

WenglorTPL Vision Lighting Modular Ring Light

wenglor TPL

Modular Ring Light General Specifications			
	80mm [3.15 in]	130mm [5.12 in]	
	Electronics		
Power Supply	24VDC	±10%	
Functioning Mode	Continuous, strobe, overdrive, di	mming, sector control, LED color	
Rising Time	10	μѕ	
Falling Time	10	μѕ	
Wiring	5-pin M12 male co Optional: 8-pin M12 male c		
Maximum Consumption, Red-Cyan	9W average / 51W peak 11W average, 82W peak		
Maximum Consumption, White-IR	10W average / 42W peak	13W average / 62W peak	
	Optics		
Color	Red (625nm) - Cyan (505nm) - V	Vhite (5000K) - Infrared (860nm)	
Number of LEDs	96	144	
	Mechanical		
Height	Lighting por Wiring portion, with		
Weight	360g [0.8 lb]	550g [1.2 lb]	
Material	Aluminum and ABS		
Mounting	2 x M5 screws (included with OPT2434 bracket)		
	Environment		
Operating Temperature	-10°C to 40°C / 80% humidity without condensation No thermal shock (maximum temperature variation 10C in 24 hours)		
Storage Temperature	-20°C to 60°C / 80% humidity without condensation No thermal shock (maximum temperature variation 10C in 24 hours)		
IP Protection	IPi	65	



Strobe PNP	
1	+24V
2	+24V*
3	Ground
4	PNP
5	Dim 0-10 V

	Strobe NPN	
1	+24V	
2	NPN	
3	Ground	
4	Ground	
5	Dim 0-10 V	

^{*} Using this connection increases EMC immunity. This connection is not required.

Continuous Mode				
1	+24V		+24V	
2		Ground		
3	Ground	OR Ground		
4	+24V			
5	Dim 0-10 V		Dim 0-10 V	

Optional Remote	Connection I/O
(8-pin M12)	grey 5
pink 6	yellow 4
7	3 green
white 1	2 brown
	8 red

NOTE: The colors used in this connection chart are for 292 series 8-pin cables.

F	Remote I/O
1	Overdrive
2	LED color selection
3	Ground
4	Sector 1 ON
5	Sector 2 ON
6	Sector 3 ON
7	Sector 4 ON
8	Deactivate Keyboard

WenglorTPL Vision Lighting High-Powered Back Light

wenglor TPL



The WenglorTPL Vision Back light is a high-powered solution for all backlighting applications and quality control tasks, including detection of presence/absence, analysing edge defects, liquid fill level measurement and silhouetting.

The WenglorTPL Vision Back Light has exceptionally narrow borders (only 4mm wide), making the useful illumination area of the light easy to integrate into your system. The unit's LEDs are mounted with highly efficient lenses, engineered to distribute the highest brightness and uniformity balance available for machine vision backlights.

The Back Light also features integrated current control, making it easy to wire, install and use.

	WenglorTPL Vision Back Lighting Selection Guide						
Part Number	Price	Color of Light	Light Temperature	Area of Light	Overdrive	Mode of Operation	Drawings
<u>OPT2418</u>	\$731.00	White		200 x 200mm [7.87 x 7.87 in]			<u>PDF</u>
<u>OPT2420</u>	\$1,227.00		5700K	300 x 300mm [11.81 x 11.81 in]	No	Continuous or strobe	PDF
<u>OPT2422</u>	\$1,779.00			400 x 400mm [15.75 x 15.75 in]			PDF

	WenglorTPL Vision Infrared Back Lighting Selection Guide						
Part Number	Price	Color of Light	Wavelength	Area of Light	Overdrive	Mode of Operation	Drawings
<u>OPT2419</u>	\$909.00	Infrared		200 x 200mm [7.87 x 7.87 in]			PDF
<u>OPT2421</u>	\$1,671.00		850nm	300 x 300mm [11.81 x 11.81 in]	No	Continuous or strobe	<u>PDF</u>
<u>OPT2423</u>	\$2,455.00			400 x 400mm [15.75 x 15.75 in]			<u>PDF</u>

W	WenglorTPL Vision Lighting Bracket Selection Guide				
Part Number	Price	Description	Material	Qty in Package	Drawing
<u>OPT2433</u>	\$89.00	Mounting bracket	Aluminium	4	<u>PDF</u>



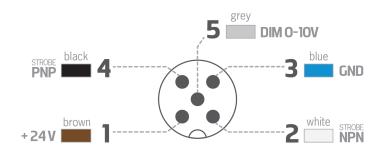
OPT2433

WenglorTPL Vision Lighting High-Powered Back Light

wenglor TPL

Back Light General Specifications				
Electronics Control of the Control o				
Power Supply	24VDC ±10%			
Functioning Mode	Continuous or strobe			
Strobe Input PNP: From 5 to 24V for 100% ON. From 0 to 1V for 100% OF NPN: Less than 1V for 100% ON. Above 2V for 100% OFF. Max				
Overdrive	No			
Strobe Conditions (ON time, duty cycle)	No restriction			
Dimming	Pin 5 (M12 5-pole connector): 0-10 V = 100-30% respectively			
Maximum Rising Time	15µs			
Maximum Falling Time	10μs			
Control	Conector M12 5 poles			
Consumption	White: 21.6 W (<u>OPT2418</u>), 48.6 W (<u>OPT2420</u>), 86.4 W (<u>OPT2422</u>) Infrared: 27.5 W (<u>OPT2419</u>), 61.9 W (<u>OPT2421</u>), 110 W (<u>OPT2423</u>)			
Minimum Functioning Voltage	20V at the light input			
Normal Functioning Voltage	24V at the light output (±10%)			
Maximum Functioning Voltage	30V at the light input			
Maximum Consumption Strobe Signal On Largest Product (400x400 mm)	250mA			
Maximum Consumption Dimming Signal On Largest Product (400x400 mm)	150mA			
Optics				
Color	White (5700K) Infrared (850nm)			
Mechanics				
Thickness	45mm			
Weight	23.2 kg/m² ±15%			
Materials	Aluminum and loaded ABS			
Diffuser	White PMMA			
Mounting	4 M4 nuts (supplied) to insert in the groove or 4 M4x20 screws (not supplied) applied to the corner slots			
Environment				
Operating Temperature	-10°C to 40°C / 80% humidity without condensation No thermal shock (maximum temperature variation 10C in 24 hours)			
Storage Temperature	-20°C to 60°C / 80% humidity without condensation No thermal shock (maximum temperature variation 10C in 24 hours)			
IP Protection	IP40			

Connections



	Strobe PNP		
1	+24V	1	
2	Not connected	2	
3	Ground	3	
4	PNP	4	
5	Dim 0-10 V	5	

ı	Strope NPN			
	1	+24V		
	2	NPN		
	3	Ground		
	4	Not connected		
	5	Dim 0-10 V		

Continuous Mode						
1	+24V		+24V			
2	Not connected		Ground			
3	Ground	OR	Ground			
4	+24V		Not connected			
5	Dim 0-10 V		Dim 0-10 V			

WenglorTPL Vision Lighting wenglor TPL Flat Dome Light



WenglorTPL Vision's Flat Dome Light is a high-power flat dome illumination solution for machine vision applications such as Pick and Place or Logistics. The LEDs are mounted with highly efficient lenses, engineered to distribute the highest brightness and uniformity balance available for machine vision applications.

The Flat Dome Light also also features integrated current control, making it easy to wire, install and use. The central opening allows for simple placement of cameras using lenses up to 65mm [2.56 in] in diameter.

WenglorTPL Vision White Illumination Flat Dome Light Selection Guide							
Part Number	Price	Color of Light Emmission	Temperature	Area of Light	Overdrive	Mode of Operation	Drawings
OPT2435	\$1,083.00	\\/bito	E7001/	200 x 200mm	No	Continuous	<u>PDF</u>
OPT2437	\$1,548.00	White	5700K	300 x 300mm	No	or strobe	PDF

WenglorTPL Vision Infrared Illumination Flat Dome Light Selection Guide							
Part Number	Price	Color of Light Emmission	Wavelength	Area of Light	Overdrive	Mode of Operation	Drawings
OPT2436	\$1,264.00	Informal	0F0nm	200 x 200 mm	No	Continuous	PDF
OPT2438	\$1,818.00	Infared	850nm	300x300 mm	No	or Strobe	PDF

Part Number	Price	Description	Material	QTY in Package	Drawings
<u>OPT2433</u>	\$89.00	Mounting Bracket	Aluminium	4	PDF



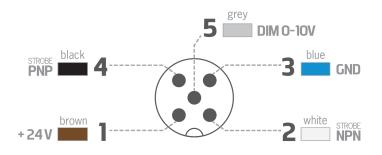
OPT2433

www.automationdirect.com

WenglorTPL Vision Lighting wenglor TPL Flat Dome Light

Flat Dome Light General Specifications				
Electronics				
Power Supply	24VDC ±10%			
Functioning Mode	Continuous or strobe			
Strobe Input	PNP: From 5 to 24V for 100% ON. From 0 to 1V for 100% OFF NPN: Less than 1V for 100% ON. Above 2V for 100% OFF. Max 20V			
Overdrive	No			
Strobe Conditions (ON time, duty cycle)	No restriction			
Dimming	Pin 5 (M12 5-pole connector): 0-10 V = 100-30% respectively			
Maximum Rising Time	15us			
Maximum Falling Time	10us			
Control	Conector M12 5 poles			
Consumption White: 21.6 W (OPT2435), 48.6 W (OPT2437) Infrared: 27.5 W (OPT2436), 61.9 W (OPT2438)				
Minimum Functioning Voltage	20V at the light input			
Normal Functioning Voltage	24V at the light output (±10%)			
Maximum Functioning Voltage	30V at the light input			
Maximum Consumption Strobe Signal On Largest Product (400x400 mm)	250mA			
Maximum Consumption Dimming Signal On Largest Product (400x400 mm)	150mA			
Optics				
Color	White (5700k) Infrared (850nm)			
Mechanics				
Thickness	45mm			
Internal Diameter	65mm			
Weight	23.8 kg/m² ±15%			
Materials	Aluminum and loaded ABS			
Diffuser	White PMMA			
Mounting	4 M4 nuts (supplied) to insert in the groove or 4 M4x20 screws (not supplied) applied to the corner slots			
Environment				
Operating Temperature	-10°C to 40°C / 80% humidity without condensation No thermal shock (maximum temperature variation 10°C in 24 hours)			
Storage Temperature	-20°C to 60°C / 80% humidity without condensation No thermal shock (maximum temperature variation 10°C in 24 hours)			
IP Protection	IP40			

Connections



	Strobe PNP						
1	+24V						
2	Not connected						
3	Ground						
4	PNP						
5	Dim 0-10 V						

	Strobe NPN
1	+24V
2	NPN
3	Ground
4	Not connected
5	Dim 0-10 V

	Continuous Mode							
1	+24V		+24V					
2	Not connected		Ground					
3	Ground	OR	Ground					
4	+24V		Not connected					
5	Dim 0-10 V		Dim 0-10 V					

Swivellink Mounting System Standard Series (Imperial/English Units)



Swivellink Mounts are a better way to mount vision cameras, lights, and sensors. Because of the flexibility and range of Swivellink's patented design, you can fine-tune each installation to just about any position required. Components are made from aluminum alloy for light weight and structural rigidity. Both Metric and Imperial/English versions are available; however, they are not interchangeable.

This page describes Swivellink's AFSB components, which are blue in color and are in Imperial/English units.

Consider the following when selecting your components:

- · Amount of weight the mount will be holding
- The overall length of the mount
- The area you have to work with

Carrying capacity varies with overall length and system configuration. The Standard Series can hold up 30lb [13.6 kg] at 1ft [0.3 m] with all screws torqued to 50 in•lb [5.65 N•m].



AFSB-1-15

Swivellink Bases (Imperial/English) Selection Guide*						
Part Number Price		Description	Weight (oz [g])	Drawing		
AFSB-1	\$32.00	Round ball base	5.28 [149.7]	<u>PDF</u>		
AFSB-1-15	\$47.50	Narrow ball base	5.28 [149.7]	<u>PDF</u>		

^{*} These bases fit SureFrame 10 and 15 Series T-slotted rail.





Swivellink Knuckle (Imperial/English) Selection Guide						
Part Number	Price	Description	Weight (oz [g])	Drawing		
AFSB-2	\$40.50	Knuckle	5.49 [155.6]	PDF		
AFSB-2-2XS	\$44.00	Standard to XS Series coupler	1.95 [55.3]	PDF		

Swivellink Tee (Imperial/English) Selection Guide							
Part Number	Price	Description	Length (in [mm])	Weight (oz [g])	Drawing		
AFSB-3T	\$28.50	Tee link	4 [101.6]	2.19 [62.1]	PDF		
AFSB-290	\$41.50	Tee knuckle	NA	5.15 [146.1]	PDF		





Swivellink Links (Imperial/English) Selection Guide							
Part Number	Price	Description	Length (in [mm])	Weight (oz [g])	Drawing		
AFSB-3-2	\$20.00		2 [50.8]	1.47 [41.7]	PDF		
AFSB-3-4	\$23.00		4 [101.6]	2.05 [58.1]	PDF		
AFSB-3-6	\$26.00	Ball link	6 [152.4]	2.62 [74.4]	PDF		
AFSB-3-8	\$31.00		8 [203.2]	3.20 [90.7]	PDF		
AFSB-3-12	\$37.00		12 [304.8]	3.78 [107.0]	PDF		

Swivellink Handle Kit (Imperial/English) Selection Guide						
Part Number	Price	Description	Weight (oz [g])	Drawing		
AFSB-CLAMP-HANDLE	\$21.50	Clamp handle kit	1.44 [40.8]	PDF		



AFSB-CLAMP-HANDLE

Swivellink Mounting System Standard Series (Metric Units)



Swivellink Mounts are a better way to mount vision cameras, lights, and sensors. Because of the flexibility and range of Swivellink's patented design, you can fine-tune each installation to just about any position required. Components are made from aluminum alloy for light weight and structural rigidity. Both Metric and Imperial/English versions are available; however, they are not interchangeable.

This page describes Swivellink's SLM components, which are gray in color and are in Metric units.

Consider the following when selecting your components:

- · Amount of weight the mount will be holding
- The overall length of the mount
- The area you have to work with

Carrying capacity varies with overall length and system configuration. The Standard Series can hold up 13.6 kg [30lb] at 0.3 m [1ft] with all screws torqued to 5.65 N•m [50 in•lb].



SLM-1-40

Swivellink Bases (Metric) Selection Guide*					
Part Number Price Des		Description	Weight (g [oz])	Drawing	
SLM-1	\$32.00	Round ball base	149.7 [5.28]	PDF	
SLM-1-40	\$47.50	Narrow ball base	149.7 [5.28]	<u>PDF</u>	







Swivellink Knuckle (Metric) Selection Guide						
Part Number	Price	Description	Weight (g [oz])	Drawing		
SLM-2	\$40.50	Knuckle	155.6 [5.49]	PDF		
<u>SLM-2-2XS</u>	\$44.00	Standard to XS Series coupler	55.3 [1.95]	PDF		

Swivellink Tee (Metric) Selection Guide						
Part Number	Price	Description	Length (mm [in])	Weight (g [oz])	Drawing	
SLM-3T	\$28.50	Tee link	100 [3.94]	62.1 [2.19]	PDF	
SLM-290	\$41.50	Tee knuckle	NA	146.1 [5.15]	<u>PDF</u>	





Swivellink Links (Metric) Selection Guide						
Part Number	Price	Description	Length (mm [in])	Weight (g [oz])	Drawing	
SLM-3-50	\$20.50		50 [1.97]	41.7 [1.47]	PDF	
SLM-3-100	\$29.50		100 [3.94]	58.1 [2.05]	PDF	
SLM-3-150	\$26.00	Ball link	150 [5.91]	74.4 [2.62]	PDF	
SLM-3-200	\$31.00		200 [7.87]	90.7 [3.20]	<u>PDF</u>	
SLM-3-300	\$44.00		300 [11.81]	107.0 [3.78]	PDF	

Swivellink Handle Kit (Metric) Selection Guide						
Part Number	Price	Description	Weight (g [oz])	Drawing		
SLM-CLAMP-HANDLE	\$21.50	Clamp handle kit	40.8 [1.44]	<u>PDF</u>		



SLM-CLAMP-HANDLE

Swivellink Mounting System Standard Series Accessories



Blank Mounting Plates



The AFSB-6 (Imperial/English) and SLM-6 (metric) mounting plates allow users to customize mounting holes for their specific application.

Swivellink Generic Mounting Accessories Blank Mounting Plate Selection Guide							
Part Number	Price	Description	Fits To	Weight (oz [g])	Drawing		
AFSB-6	\$29.50	Diant mounting plate	AFSB-1 and AFSB-1-15	6.11 [173.3]	PDF		
SLM-6	\$30.50	Blank mounting plate	SLM-1 and SLM-1-40	6.11 [173.3]	PDF		

Barrel Sensor Mounts

The barrel sensor mount accessories allow use with standard threaded barrel sensors of 18mm and 30mm diameter.

Swivellink Generic Mounting Accessories Knuckle Selection Guide								
Part Number	Price Description For Use Weight Drawing With (oz [g])							
AFSB-7	\$29.00	Mounting for 30mm barrel sensor	AFSB-2 and AFSB-290	5.84 [165.6]	PDF			
AFSB-8	\$30.50	Mounting for 18mm barrel sensor	AFSB-2 and AFSB-290	5.26 [149.2]	<u>PDF</u>			
SLM-7	\$36.50	Mounting for 30mm barrel sensor	SLM-2 and SLM-290	5.84 [165.6]	PDF			
SLM-8	\$37.00	Mounting for 18mm barrel sensor	SLM-2 and SLM-290	5.26 [149.2]	<u>PDF</u>			











Mounting Plates for Cognex, Dalsa and Keyence



AFSB-5



SLM-5

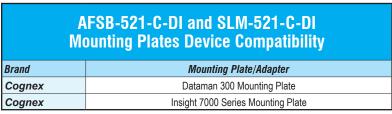
Swivellink Versatile Mounting Plates Selection Guide						
Part Number	Price	Туре	Fits to	Weight (oz [g])	Drawing	
AFSB-5	\$43.00	Varaatila maynting plata	AFSB-1 and AFSB-1-15	5.38 [152.4]	<u>PDF</u>	
<u>SLM-5</u>	\$46.00	Versatile mounting plate	SLM-1 and SLM-1-40	5.38 [152.4]	<u>PDF</u>	

Versati	AFSB-5 and SLM-5 le Mounting Plates Device Compatibility
Brand	Mounting Plate/Adapter
Cognex	Dataman 70 Mounting Plate
Cognex	Dataman 100 Mounting Plate
Cognex	Dataman 200 Mounting Plate
Cognex	Dataman 260 Mounting Plate
Cognex	Dataman 280 Mounting Plate
Cognex	Insight 5000 Series Mounting Plate
Cognex	Insight 9902L Series Mounting Plate
Cognex	Insight 9912 Series Mounting Plate
Dalsa	Boa Vision Mounting Plate
Keyence	IV-150 Vision Mounting Plate
Keyence	IV-2000 Vision Mounting Plate
Keyence	IV-500 Vision Mounting Plate

Note: Device compatibility was verified at time of launch.

Mounting Plates for Cognex

Swivellink Mounting Plates Selection Guide						
Part Number	Price	Туре	Fits to	Weight (oz [g])	Drawing	
AFSB-521-C-DI	\$46.00	Mounting plate	AFSB-1 and AFSB-1-15	5.30 [150.1]	PDF	
<u>SLM-521-C-DI</u>	\$46.00	Mounting plate	SLM-1 and SLM-1-40	5.30 [150.1]	<u>PDF</u>	



Note: Device compatibility was verified at time of launch.



AFSB-521-C-DI



SLM-521-C-DI



Mounting Plates for WenglorTPL and Keyence



AFSB-550-K-CVIV



Swivellink Mounting Plates Selection Guide						
Part Number	Price	Туре	Fits to	Weight (oz [g])	Drawing	
AFSB-550-K-CVIV	\$38.50	Mounting plate	AFSB-1 and AFSB-1-15	6.37 [180.5]	<u>PDF</u>	
SLM-550-K-CVIV	\$41.00	Mounting plate	SLM-1 and SLM-1-40	6.37 [180.5]	<u>PDF</u>	

AFSB-550-K-CVIV and SLM-550-K-CVIV Mounting Plates Device Compatibility				
Brand	Mounting Plate/Adapter			
WenglorTPL	OPT2400 through OPT2407			
Keyence	IV-150 Vision Mounting Plate			
Keyence	IV-2000 Vision Mounting Plate			
Keyence	IV-500 Vision Mounting Plate			
Keyence	IV-H2000MA Series Mounting Plate			
Keyence	IV-H500CA Vision Mounting Plate			
Keyence	IV-H500MA Vision Mounting Plate			

Note: Device compatibility was verified at time of launch.

SLM-550-K-CVIV

Mounting Plates for Smart Vision Lights (Brick Lights)

Swivellink Mounting Plates Selection Guide							
Part Number	Part Number Price Type Fits to Weight Drawing						
AFSB-620-S75	\$46.00	Mounting plate	AFSB-1 and AFSB-1-15	8.5 [240.9]	<u>PDF</u>		
SLM-620-S75	\$46.00	Mounting plate	SLM-1 and SLM-1-40	8.5 [240.9]	<u>PDF</u>		

AFSB-620-S75 and SLM-620-S75 Mounting Plates Device Compatibility					
Brand	Mounting Plate/Adapter				
Smart Vision Lights	ODS75 Brick Light Mounting Plate				
Smart Vision Lights	ODSB75 Brick Light Mounting Plate				
Smart Vision Lights	ODSW75 Brick Light Mounting Plate				
Smart Vision Lights	S75 Brick Light Mounting Plate				
Smart Vision Lights	SB75 Brick Light Mounting Plate				
Smart Vision Lights	SC75 Brick Light Mounting Plate				
Smart Vision Lights	SW75 Brick Light Mounting Plate				

Note: Device compatibility was verified at time of launch.



AFSB-620-S75



SLM-620-S75



Mounting Plates for Smart Vision Lights (Bar Lights)



AFSB-621-L300



Swivellink Mounting Plates Selection Guide						
Part Number Price Type Fits to Weight (oz [g])						
AFSB-621-L300	\$59.00	Mounting plate	AFSB-1 and AFSB-1-15	14.86 [421.4]	PDF	
SLM-621-L300	\$59.00	Mounting plate	SLM-1 and SLM-1-40	14.86 [421.4]	<u>PDF</u>	

AFSB-621-L300 and SLM-621-L300 Mounting Plates Device Compatibility				
Brand	Mounting Plate/Adapter			
Smart Vision Lights	L300 Bar Light Mounting Plate			
Smart Vision Lights LB300 Bar Light Mounting Plate				
Smart Vision Lights	LC300 Bar Light Mounting Plate			

Note: Device compatibility was verified at time of launch.

Mounting Plates for Cognex Insight

Swivellink Mounting Plates Selection Guide					
Part Number Price Type Fits to Weight (oz [g])					
AFSB-523-C-12000	\$46.00	Mounting plate	AFSB-1 and AFSB-1-15	3.57 [101.2]	<u>PDF</u>
SLM-523-C-I2000	\$46.00	Mounting plate	SLM-1 and SLM-1-40	3.57 [101.2]	PDF

AFSB-523-C-12000 and SLM-523-C-12000 Mounting Plates Device Compatibility				
Brand	Mounting Plate/Adapter			
Cognex	Insight 2000 Series Mounting Plate			
Cognex	Insight 8000 Series Mounting Plate			

Note: Device compatibility was verified at time of launch.



AFSB-523-C-12000



SLM-523-C-12000



Mounting Plates for Banner, Dalsa, IFM and Wenglor



Swivellink Mounting Plates Selection Guide					
Part Number Price Type Fits to Weight Drawin					
<u>SLM-540-IFM</u>	\$40.00	Mounting plate	SLM-1 and SLM-1-40	5.38 [152.4]	<u>PDF</u>

AFSB-621-L300 and SLM-621-L300 Mounting Plates Device Compatibility				
Brand	Mounting Plate/Adapter			
IFM	01D Barcode Reader			
IFM	02D Vision Camera			
IFM	03D 3-Dimensional Camera			
Banner	Q5X Mounting Plate			
Dalsa Boa 2 Vision Mounting Plate				
Wenglor	Weqube Vision Camera			

Note: Device compatibility was verified at time of launch.

Mounting Plates for VESA

Swivellink Mounting Plates Selection Guide						
Part Number	Part Number Price Type Fits to Weight (oz [g]) Drawing					
AFSB-9	\$60.00	V/CCA mounting plate	AFSB-1 and AFSB-1-15	11.86 [336.1]	PDF	
<u>SLM-9</u>	\$60.00	VESA mounting plate	SLM-1 and SLM-1-40	11.86 [336.1]	PDF	

Note: Carrying capacity varies with overall length and system configuration. The Standard Series can hold up 30lb [13.6 kg] at 1ft [0.3 m] with all screws torqued to 50 in lb [5.65 N·m].





SLM-9



Clamp-On Base



Swivellink Mounting Plates Selection Guide								
Part Number Price Type Fits to Range of Grip Weight (oz [g]) Drawing								
AFSB-CB	\$92.00	Clamp-on base	AFSB-1 and AFSB-1-15	0.5 to 1.25 in [12.7 to 31.8 mm]	11.65 [330.2]	<u>PDF</u>		
SLM-CB	\$118.00		<u>SLM-1</u> and <u>SLM-1-40</u>	0.63 to 1.38 in [16 to 35 mm]	11.65 [330.2]	<u>PDF</u>		



www.automationdirect.com Barcode, RFID, Vision tBRV-72

Swivellink Mounting System XS Series (Imperial/English Units)



Swivellink Mounts are a better way to mount vision cameras, lights, and sensors. Because of the flexibility and range of Swivellink's patented design, you can fine-tune each installation to just about any position required. Components are made from aluminum alloy for light weight and structural rigidity. Both Metric and Imperial/English versions are available; however, they are not interchangeable.

This page describes Swivellink's AFSB components, which are blue in color and are in Imperial/English units.

Consider the following when selecting your components:

- · Amount of weight the mount will be holding
- The overall length of the mount
- The area you have to work with

Carrying capacity varies with overall length and system configuration. The XS Series can hold up 3lb [1.36 kg] at 1ft [0.3m] with all screws torqued to 50 in•lb [5.65 N•m].



AFSB-1XS

Swivellink Bases (Imperial/English) Selection Guide							
Part Number	Price	Description	Weight (oz [g])	Drawing			
AFSB-1XS	\$15.00	Round ball base	0.67 [19.1]	<u>PDF</u>			

	Recommended Screw Sizes for Attaching to SureFrame (T-Slot Nuts Also Required)										
Part Number (Otre	10 Series		15 S	15 Series 30 Series		40 S	eries	45 Series		
	Qty	Screw	Part Number	Screw	Part Number	Screw	Part Number	Screw	Part Number	Screw	Part Number
AFSB-1XS	2	Socket head socket cap screw 10-32, 1/2 in	<u>162995</u>	Button head socket cap screw 10-32, 5/8 in	<u>161047</u>	Socket head cap screw M5-0.8, 12mm	<u>161091</u>	Socket head cap screw M5-0.8, 16mm	Not available from ADC	Socket head cap screw M5-0.8, 16mm	Not available from ADC



AFSB-2XS

Swivellink Knuckle (Imperial/English) Selection Guide							
Part Number	Price	Description	Weight (oz [g])	Drawing			
AFSB-2XS	\$31.00	Knuckle	1.46 [41.3]	PDF			
AFSB-2-2XS	\$44.00	Standard to XS Series	1.95 [55.3]				

Swivellink Tee (Imperial/English) Selection Guide								
Part Number	Price	Description	Length (in [mm])	Weight (oz [g])	Drawing			
AFSB-3XST	\$13.00	Tee link	3 [76.2]	0.77 [21.8]	<u>PDF</u>			
AFSB-2XS90	\$32.50	Tee knuckle	NA	1.71 [48.5]	PDF			









AFSB-3-2XS	

Swivellink Links (Imperial/English) Selection Guide									
Part Number	Price	Description	Length (in [mm])	Weight (oz [g])	Drawing				
AFSB-3-2XS	\$16.00	Dall link	2 [50.8]	0.54 [15.4]	PDF				
AFSB-3-4XS	\$23.00	Ball link	4 [101.6]	0.83 [23.6]	PDF				

Swivellink Handle Kit (Imperial/English) Selection Guide							
Part Number	Price	Description	Weight (oz [g])	Drawing			
AFSB-CLAMP-HANDLE	\$21.50	Clamp handle kit	1.44 [40.8]	PDF			



AFSB-CLAMP-HANDLE

Swivellink Mounting System XS Series (Metric Units)



Swivellink Mounts are a better way to mount vision cameras, lights, and sensors. Because of the flexibility and range of Swivellink's patented design, you can fine-tune each installation to just about any position required. Components are made from aluminum alloy for light weight and structural rigidity. Both Metric and Imperial/English versions are available; however, they are not interchangeable.

This page describes Swivellink's SLM components, which are gray in color and are in Metric units.

Consider the following when selecting your components:

- · Amount of weight the mount will be holding
- The overall length of the mount
- The area you have to work with

Carrying capacity varies with overall length and system configuration. The Standard Series can hold up 1.36 kg [3lb] at 0.3 m [1ft] with all screws torqued to 5.65 N•m [50 in•lb].



SLM-1XS

Swivellink Bases (Metric) Selection Guide						
Part Number	Price	Description	Weight (g [oz])	Drawing		
SLM-1XS	\$15.00	Round ball base	19.1 [0.67]	<u>PDF</u>		

	Recommended Screw Sizes for Attaching to SureFrame (T-Slot Nuts Also Required)											
	Part Number	04.	10 Series		15 S	eries	30 Series		40 S	eries	45 Series	
ľ	rai i Nuiiibei	Qty	Screw	Part Number	Screw	Part Number	Screw	Part Number	Screw	Part Number	Screw	Part Number
	SLM-1XS	2	Socket head socket cap screw 10-32, 1/2 in	<u>162995</u>	Button head socket cap screw 10-32, 5/8 in	<u>161047</u>	Socket head cap screw M5-0.8, 12mm	<u>161091</u>	Socket head cap screw M5-0.8, 16mm	Not available from ADC	Socket head cap screw M5-0.8, 16mm	Not available from ADC



SLM-2-2XS

Swivellink Knuckle (Metric) Selection Guide							
Part Number	Price	Description	Weight (g [oz])	Drawing			
SLM-2XS	\$31.00	Knuckle	41.3 [1.46]	PDF			
SLM-2-2XS	\$44.00	Standard to XS Series coupler	55.3 [1.95]	PDF			

Swivellink Links (Metric) Selection Guide

Description

Length

Swivellink Tee (Metric) Selection Guide								
Part Number	Price	Description	Length (mm [in])	Weight (g [oz])	Drawing			
SLM-3XST	\$13.00	Tee link	100 [3.94]	21.8 [0.77]	PDF			
SLM-2XS90	\$32.50	Tee knuckle	NA	36.3 [1.28]	PDF			

Part Number



Drawing

PDF

PDF



Weight

(g [oz]) 15.4 [0.54]

23.6 [0.83]





-1 M-3-50				(,,,,,,	
SLIV	SLM-3-50XS	\$16.50	Ball link	50 [1.97]	
	SLM-3-100XS	\$23.00	Dali iirik	100 [3.94]	
'					

Price

SLM-3-50XS

Swivellink Handle Kit (Metric) Selection Guide							
Part Number	Price	Description	Weight (g [oz])	Drawing			
SLM-CLAMP-HANDLE	\$21.50	Clamp handle kit	40.8 [1.44]	PDF			



SLM-CLAMP-HANDLE

Swivellink Mounting System XS Series Accessories



Blank Mounting Plates



The AFSB-6XS (Imperial/English) and SLM-6XS (metric) mounting plates allow users to customize mounting holes for their specific application.

	Swivellink Generic Mounting Accessories Blank Mounting Plate Selection Guide									
Part Number Price Description Fits To Weight (oz [g]) Dra										
AFSB-6XS	\$16.50	Diagla manufina alata	AFSB-1XS	2.99 [84.8]	PDF					
SLM-6XS	\$16.50	Blank mounting plate	SLM-1XS	2.99 [84.8]	PDF					



Barrel Sensor Mounts

The barrel sensor mount accessories allow use with standard threaded barrel sensors of 18mm and 30mm diameter.

	Swivellink Generic Mounting Accessories Knuckle Selection Guide										
Part Number	Price	Description	For Use With	Weight (oz [g])	Drawing						
AFSB-7XS	\$25.00	Mounting for 12mm barrel sensor	AFSB-2XS	0.8 [22.7]	PDF						
AFSB-8XS	\$20.50	Mounting for 8mm barrel sensor	and AFSB-2-2XS	0.94 [26.8]	PDF						
SLM-7XS	\$35.50	Mounting for 12mm barrel sensor	SLM-2XSand	0.8 [22.7]	<u>PDF</u>						
SLM-8XS	\$30.50	Mounting for 8mm barrel sensor	SLM-2-2XS	0.94 [26.8]	PDF						



Camera Stem Mounts

The camera stem mounts allow use with standard camera mounts. This link has a standard tripod mount (1/4 in - 20) screw on it.

Swivellink Generic Mounting Accessories Camera Stem Mounts Selection Guide									
Part Number	Price	Description	For Use With	Weight (oz [g])	Drawing				
AFSB-5XS	\$18.50	0	AFSB-2XS and AFSB-2-2XS	0.5 [14.1]	PDF				
SLM-5XS	\$26.50	Camera stem mount	SLM-2XS and SLM-2-2XS	0.5 [14.1]	<u>PDF</u>				



AFSB-5XS



SLM-5XS

Swivellink Mounting System Mounting Plates



Sensor Brackets

Choose sensor bracket holder based on size (Standard vs XS) and series (AFSB vs SLM). Then choose the sensor bracket based on the size of sensor barrel.

Swivellink Mounting Plates Selection Guide											
Part Number Price Type Fits to Weight (oz [g])											
		Sensor Bracket H	olders (Standard)								
AFSB-SBH	\$43.50	Sensor bracket holder for standard series knuckles	Fits to Standard Series knuckle (ie AFSB-2)	2.51 [71.2]	<u>PDF</u>						
AFSB-SBH-XS	\$38.50	Sensor bracket holder for XS series knuckles	Fits to XS Series knuckle (ie <u>AFSB-2XS</u>)	0.8 [22.7]	PDF						
		Sensor Brack	ets (Standard)								
AFSB-SB-8	\$9.50	Sensor bracket 8mm		1.63 [46.3]	<u>PDF</u>						
AFSB-SB-12	\$9.75	Sensor bracket 12mm	Fits to AFSB-SBH	1.57 [44.5]	<u>PDF</u>						
AFSB-SB-18	\$14.00	Sensor bracket 18mm	or AFSB-SBH-XS	1.41 [39.9]	<u>PDF</u>						
AFSB-SB-30	\$14.00	Sensor bracket 30mm		2.14 [60.8]	PDF						



AFSB-SBH



AFSB-SB-12



SLM-SBH



SLM-SB-30

Swivellink Mounting Plates Selection Guide											
Part Number	Price	Weight (oz [g])	Drawing								
		Sensor Bracket	Holders (Metric)								
SLM-SBH	\$31.00	Metric sensor bracket holder for standard series knuckles	Fits to Standard Series knuckle (ie <u>SLM-2</u>)	2.5 [70.8]	PDF						
SLM-SBH-XS	\$27.50	Metric sensor bracket holder for XS series knuckles			PDF						
		Sensor Brac	kets (Metric)								
SLM-SB-8	\$9.50	Metric sensor bracket 8mm		1.63 [46.3]	PDF						
SLM-SB-12	\$9.75	Metric sensor bracket 12mm	Fits to SLM-SBH	1.57 [44.5]	PDF						
SLM-SB-18	\$10.00	Metric sensor bracket 18mm	or <u>SLM-SBH-XS</u>	1.41 [39.9]	PDF						
SLM-SB-30	\$10.50	Metric sensor bracket 30mm		2.14 [60.8]	PDF						

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Swivellink Mounting System Assemblies



Mounting System Assemblies

Mounting system assemblies come with 2 bases, 2 knuckles and a link.

Standard Mounting System Assemblies Selection Guide											
Part Number	Part Number Price Measurement Type										
AFSB-1002	\$187.00		2in	PDF							
AFSB-1004	\$190.00	Imperial	4in	PDF							
AFSB-1006	\$193.00		6in	PDF							
<u>SLM-10050</u>	\$187.00	Matria	50mm	PDF							
<u>SLM-100100</u>	\$190.00	Metric	100mm	PDF							





AFSB-1004

SLM-100100





<u>AFSB-1004XS</u> <u>SLM-100100XS</u>

Extra Small Standard Mounting System Assemblies Selection Guide										
Part Number	Price	Measurement Type	Length of Link	Drawing						
AFSB-1002XS	\$130.00	lana a sia l	2in	PDF						
AFSB-1004XS	\$137.00	Imperial	4in	PDF						
<u>SLM-10050XS</u>	\$130.00	Matria	50mm	PDF						
SLM-100100XS	\$136.50	Metric	100mm	PDF						

Sensor Mounting Kit Assemblies

Sensor mounting kit assemblies come with 1 base, 1 knuckle, 1 sensor bracket holder, and 1 sensor bracket.

Sensor Mounting Kit Assemblies Selection Guide										
Part Number	Price	Measurement Type	Length of Link	Drawing						
AFSB-SBKIT-8	\$126.00		8mm	PDF						
AFSB-SBKIT-12	\$126.00	Immorial	12mm	PDF						
AFSB-SBKIT-18	\$130.00	Imperial	18mm	PDF						
AFSB-SBKIT-30	\$130.00		30mm	PDF						
SLM-SBKIT-8	\$113.00		8m	PDF						
SLM-SBKIT-12	\$113.00	Matria	12mm	PDF						
SLM-SBKIT-18	\$114.00	Metric	18mm	PDF						
SLM-SBKIT-30	\$114.00		30mm	PDF						



AFSB-SBKIT-12



SLM-SBKIT-30

Swivellink Mounting System (Imperial/English Units)



Swivellink Mounts are a better way to mount vision cameras, lights, and sensors. Because of the flexibility and range of Swivellink's patented design, you can fine-tune each installation to just about any position required. Components are made from aluminum alloy for light weight and structural rigidity. Both Metric and Imperial/English versions are available; however, they are not interchangeable.

This page describes Swivellink's AFSB components, which are blue in color and are in Imperial/English units.

Consider the following when selecting your components:

- Amount of weight the mount will be holding
- The overall length of the mount
- The area you have to work with

Carrying capacity varies with overall length and system configuration. The Standard series can hold up to 30lb [13.6 kg] at 1ft [0.3 m] with all screws torqued to 50 in lb [5.65 N·m].



Swivellink Bases (Imperial/English) Selection Guide								
Part Number	Price	Description	Weight (oz [g])	Drawing				
AFSB-1	\$32.00	Round ball base	5.28 [149.7]	<u>PDF</u>				
AFSB-1-15	\$47.50	Narrow ball base	5.28 [149.7]	<u>PDF</u>				



	Recommended Screw Sizes for Attaching to SureFrame (T-Slot Nuts Also Required)											
Part Number Qty 10 Series		eries	15 Series		30 Series		40 Series		45 Series			
rai i Nullibei	uiy	Screw	Part Number	Screw	Part Number	Screw	Part Number	Screw	Part Number	Screw	Part Number	
AFSB-1	4	Socket head	454040	Socket head	404007	Socket head	404004	Socket head	404005	Socket head	101000	
AFSB-1-15	2	cap screw 1/4-20, 1/2 in	<u>151040</u>	cap screw 1/4-20, 5/8 in	<u>161087</u>	cap screw M6-1.0, 14mm	<u>161094</u>	cap screw M6-1.0, 16mm	<u>161095</u>	cap screw M6-1.0, 18mm	<u>161096</u>	



Swivellink Knuckle (Imperial/English) Selection Guide								
Part Number	Price	Description	Weight (oz [g])	Drawing				
AFSB-2	\$40.50	Knuckle	5.49 [155.6]	<u>PDF</u>				
AFSB-2-2XS	\$44.00	Standard to XS Series coupler	1.95 [55.3]	<u>PDF</u>				

Sw	Swivellink Tee (Imperial/English) Selection Guide								
Part Number Price Desc.		Description	Length (in [mm])	Weight (oz [g])	Drawing				
AFSB-3T	\$28.50	Tee link	4 [101.6]	2.19 [62.1]	PDF				
AFSB-290	\$41.50	Tee knuckle	NA	5.15 [146.1]	<u>PDF</u>				





Swiv	ellink Lin	ks (Imper	ial/English)	Selection Gu	iide
Part Number	Price	Description	Length (in [mm])	Weight (oz [g])	Drawing
AFSB-3-2	\$20.00		2 [50.8]	1.47 [41.7]	<u>PDF</u>
AFSB-3-4	\$23.00		4 [101.6]	2.05 [58.1]	PDF
AFSB-3-6	\$26.00	Ball link	6 [152.4]	2.62 [74.4]	PDF
AFSB-3-8	\$31.00		8 [203.2]	3.20 [90.7]	PDF
AFSB-3-12	\$37.00		12 [304.8]	3.78 [107.0]	PDF

Swivellink Handle Kit (Imperial/English) Selection Guide							
Part Number	Price	Description	Weight (oz [g])	Drawing			
AFSB-CLAMP-HANDLE	\$21.50	Clamp handle kit	1.44 [40.8]	PDF			



Swivellink Mounting System Standard Series (Metric Units)



Swivellink Mounts are a better way to mount vision cameras, lights, and sensors. Because of the flexibility and range of Swivellink's patented design, you can fine-tune each installation to just about any position required. Components are made from aluminum alloy for light weight and structural rigidity. Both Metric and Imperial/English versions are available; however, they are not interchangeable.

This page describes Swivellink's SLM components, which are gray in color and are in Metric units.

Consider the following when selecting your components:

- Amount of weight the mount will be holding
- · The overall length of the mount
- · The area you have to work with

Carrying capacity varies with overall length and system configuration. The Standard series can hold up to 30lb [13.6 kg] at 1ft [0.3 m] with all screws torqued to 50 in lb [5.65 N·m].



Swivellink Bases (Metric) Selection Guide								
Part Number	Price	Weight (g [oz])	Drawing					
SLM-1	\$32.00	Round ball base	149.7 [5.28]	PDF				
SLM-1-40	\$47.50	Narrow ball base	149.7 [5.28]	PDF				



	Recommended Screw Sizes for Attaching to SureFrame (T-Slot Nuts Also Required)											
Part Number	Part Number Qty 10 Series		15 Series		30 Series		40 Series		45 Series			
Part Number Qty	uly	Screw	Part Number	Screw	Part Number	Screw	Part Number	Screw	Part Number	Screw	Part Number	
SLM-1	4	Button head socket cap		Button head socket cap		Socket head		Socket head		Socket head		
<u>SLM-1-40</u>	oorow '	<u>161047</u>	screw 10-32, 3/4 in	161048	cap screw 161096 M6-1.0, 18mm	cap screw M6-1.0, 20mm	<u>161063</u>	cap screw M6-1.0, 20mm	<u>161063</u>			



S	Swivellink Knuckle (Metric) Selection Guide									
Part Number Price Description		Weight (g [oz])	Drawing							
SLM-2	\$40.50	Knuckle	155.6 [5.49]	<u>PDF</u>						
SLM-2-2XS	\$44.00	Standard to XS Series coupler	55.3 [1.95]	PDF						

	Swivellink Tee (Metric) Selection Guide								
Part Number Price Descript			Length (mm [in])	Weight (g [oz])	Drawing				
SLM-3T	\$28.50	Tee link	100 [3.94]	62.1 [2.19]	PDF				
SLM-290	\$41.50	Tee knuckle	NA	146.1 [5.15]	<u>PDF</u>				





Swivellink Links (Metric) Selection Guide									
Part Number	Price	Description	Length (mm [in])	Weight (g [oz])	Drawing				
SLM-3-50	\$20.50		50 [1.97]	41.7 [1.47]	<u>PDF</u>				
SLM-3-100	\$29.50		100 [3.94]	58.1 [2.05]	PDF				
SLM-3-150	\$26.00	Ball link	150 [5.91]	74.4 [2.62]	PDF				
SLM-3-200	\$31.00		200 [7.87]	90.7 [3.20]	PDF				
SLM-3-300	\$44.00		300 [11.81]	107.0 [3.78]	PDF				

Swivellink Handle Kit (Metric) Selection Guide							
Part Number Price Description Weight (g [oz]) Drawing							
SLM-CLAMP-HANDLE	\$21.50	Clamp handle kit	40.8 [1.44]	<u>PDF</u>			



SLM-CLAMP-HANDLE

Swivellink Mounting System Standard Series Accessories



Blank Mounting Plates



The AFSB-6 (Imperial/English) and SLM-6 (metric) mounting plates allow users to customize mounting holes for their specific application.

	Swivellink Generic Mounting Accessories Blank Mounting Plate Selection Guide									
Part Number Price Description Fits To Weig					Drawing					
AFSB-6	\$29.50	Blank mounting plate	AFSB-1 and AFSB-1-15	6.11 [173.3]	PDF					
SLM-6	\$30.50	Blank mounting plate	SLM-1 and SLM-1-40	6.11 [173.3]	PDF					

Barrel Sensor Mounts

The barrel sensor mount accessories allow use with standard threaded barrel sensors of 18mm and 30mm diameter.

	Swivellink Generic Mounting Accessories Knuckle Selection Guide									
Part Number	Price	Description	For Use With	Weight (oz [g])	Drawing					
AFSB-7	\$29.00	Mounting for 30mm barrel sensor	AFSB-2 and AFSB-290	5.84 [165.6]	<u>PDF</u>					
AFSB-8	\$30.50	Mounting for 18mm barrel sensor	AFSB-2 and AFSB-290	5.26 [149.2]	<u>PDF</u>					
SLM-7	\$36.50	Mounting for 30mm barrel sensor	SLM-2 and SLM-290	5.84 [165.6]	<u>PDF</u>					
SLM-8	\$37.00	Mounting for 18mm barrel sensor	SLM-2 and SLM-290	5.26 [149.2]	<u>PDF</u>					









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Swivellink Mounting System Standard Series Mounting Plates



Mounting Plates for Cognex, Dalsa and Keyence



	Swivellink Versatile Mounting Plates Selection Guide										
Part Number	Price	Туре	Fits to	Weight (oz [g])	Drawing						
AFSB-5	\$43.00	Versatile mounting plate	AFSB-1 and AFSB-1-15	5.38 [152.4]	<u>PDF</u>						
<u>SLM-5</u>	\$46.00	Versatile mounting plate	SLM-1 and SLM-1-40	5.38 [152.4]	PDF						

AFSB-5



SLM-5

AFSB-5 and SLM-5 Versatile Mounting Plates Device Compatibility				
Brand	Mounting Plate/Adapter			
Cognex	Dataman 70 Mounting Plate			
Cognex	Dataman 100 Mounting Plate			
Cognex	Dataman 200 Mounting Plate			
Cognex	Dataman 260 Mounting Plate			
Cognex	Dataman 280 Mounting Plate			
Cognex	Insight 5000 Series Mounting Plate			
Cognex	Insight 9902L Series Mounting Plate			
Cognex	Insight 9912 Series Mounting Plate			
Dalsa	Boa Vision Mounting Plate			
Keyence	IV-150 Vision Mounting Plate			
Keyence	IV-2000 Vision Mounting Plate			
Keyence	IV-500 Vision Mounting Plate			

Note: Device compatibility was verified at time of launch.

Mounting Plates for Cognex

Swivellink Mounting Plates Selection Guide						
Part Number Price Type Fits to Weight Drawi						
AFSB-521-C-DI	\$46.00	Mounting plate	AFSB-1 and AFSB-1-15	5.30 [150.1]	PDF	
<u>SLM-521-C-DI</u>	\$46.00	Mounting plate	SLM-1 and SLM-1-40	5.30 [150.1]	PDF	



AFSB-521-C-DI and SLM-521-C-DI Mounting Plates Device Compatibility						
Brand	Brand Mounting Plate/Adapter					
Cognex	Dataman 300 Mounting Plate					
Cognex	·					

Note: Device compatibility was verified at time of launch.



AFSB-521-C-DI

SLM-521-C-DI

Swivellink Mounting System Standard Series Mounting Plates



Mounting Plates for WenglorTPL and Keyence



AFSB-550-K-CVIV



Swivellink Mounting Plates Selection Guide						
Part Number Price Type Fits to Weight (oz [g]) Drawing						
AFSB-550-K-CVIV	\$38.50	Mounting plate	AFSB-1 and AFSB-1-15	6.37 [180.5]	PDF	
SLM-550-K-CVIV	\$41.00	Mounting plate	SLM-1 and SLM-1-40	6.37 [180.5]	PDF	

AFSB-550-K-CVIV and SLM-550-K-CVIV Mounting Plates Device Compatibility				
Brand	Mounting Plate/Adapter			
WenglorTPL	OPT2400 through OPT2407			
Keyence	IV-150 Vision Mounting Plate			
Keyence	IV-2000 Vision Mounting Plate			
Keyence	IV-500 Vision Mounting Plate			
Keyence	IV-H2000MA Series Mounting Plate			
Keyence	IV-H500CA Vision Mounting Plate			
Keyence	IV-H500MA Vision Mounting Plate			

Note: Device compatibility was verified at time of launch.

SLM-550-K-CVIV

Mounting Plates for Smart Vision Lights (Brick Lights)

Swivellink Mounting Plates Selection Guide						
Part Number Price Type Fits to Weight (oz [g]) Drawing						
AFSB-620-S75	\$46.00	Mounting plate	AFSB-1 and AFSB-1-15	8.5 [240.9]	PDF	
<u>SLM-620-S75</u>	\$46.00	Mounting plate	<u>SLM-1</u> and <u>SLM-1-40</u>	8.5 [240.9]	PDF	



AFSB-620-S75 and SLM-620-S75 Mounting Plates Device Compatibility					
Brand	Mounting Plate/Adapter				
Smart Vision Lights	ODS75 Brick Light Mounting Plate				
Smart Vision Lights	ODSB75 Brick Light Mounting Plate				
Smart Vision Lights	ODSW75 Brick Light Mounting Plate				
Smart Vision Lights	S75 Brick Light Mounting Plate				
Smart Vision Lights	SB75 Brick Light Mounting Plate				
Smart Vision Lights	SC75 Brick Light Mounting Plate				
Smart Vision Lights	SW75 Brick Light Mounting Plate				

Note: Device compatibility was verified at time of launch.



AFSB-620-S75



SLM-620-S75

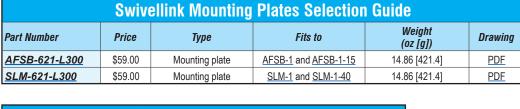
Swivellink Mounting System Standard Series Mounting Plates



Mounting Plates for Smart Vision Lights (Bar Lights)



AFSB-621-L300



AFSB-621-L300 and SLM-621-L300 Mounting Plates Device Compatibility					
Brand	Mounting Plate/Adapter				
Smart Vision Lights	L300 Bar Light Mounting Plate				
Smart Vision Lights LB300 Bar Light Mounting Plate					
Smart Vision Lights	Smart Vision Lights LC300 Bar Light Mounting Plate				

Note: Device compatibility was verified at time of launch.



SLM-621-L300

Mounting Plates for Cognex Insight

Swivellink Mounting Plates Selection Guide						
Part Number Price Type Fits to Weight (oz [g]) Drawi					Drawing	
AFSB-523-C-I2000	\$46.00	Mounting plate	AFSB-1 and AFSB-1-15	3.57 [101.2]	PDF	
SLM-523-C-I2000	\$46.00	Mounting plate	SLM-1 and SLM-1-40	3.57 [101.2]	<u>PDF</u>	

AFSB-523-C-12000

AFSB-523-C-I2000 and SLM-523-C-I2000 Mounting Plates Device Compatibility					
Brand Mounting Plate/Adapter					
Cognex Insight 2000 Series Mounting Plate					
Cognex	Insight 8000 Series Mounting Plate				

Note: Device compatibility was verified at time of launch.



SLM-523-C-12000

<u>1-800-633-0405</u>

Contrinex Read-Write Modules IO-Link Capable RFID (13.56 MHz)



RFID

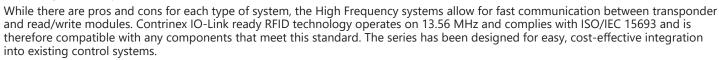
RFID (Radio Frequency IDentification) technology is useful in a wide range of automation and logistics applications.

This technology allows objects to be identified by means of electronic labels (also known as tags or transponders). Compared to more traditional approaches such as bar codes or laser marking, RFID technology offers a number of significant advantages. For example:

- A direct line of sight between the tag and the read/write module is not needed to read or write data.
- Information stored in the tag can be added, modified or replaced.
- Human error is reduced while increasing reliability, flexibility and traceability.

There are three standard frequencies of RFID:

- Low-Frequency (30 to 300 KHz most are 125 to 134.2 Khz). Various application-specific standards apply
- High-Frequency (13.56 MHz) (ISO/IEC 15693)
- Ultra High-Frequency (860 to 960 MHz) (ISO/IEC 18000-63)

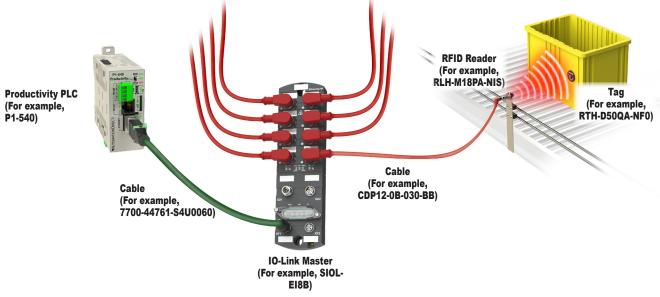


Simplicity of IO-Link

IO-Link is a standardized protocol (IEC 61131-9) that enables connection of intelligent devices, similar to the Contrinex RFID Read-Write Modules, to an automation system.

Communication takes place between an IO-Link master and one or more IO-Link devices. IO-Link is a point-to-point communication system and is not a fieldbus. A master module has one or more ports, and one device can be connected to each port.

The IO-Link master module serves as the interface between the IO-Link devices and the controller (PLC or Computer). The example below uses an IO-Link Master to communicate using EtherNet/IP.







Contrinex RHL Read/Write Units

Once the RLH unit is attached to the IO-Link master, the SIO functions of the device can be configured. Note that the SIO outputs will only be active if the IO-Link is not active. After the RLH unit is attached to the PLC using IO-Link, a lot more data will be available to the PLC.

- Read the identification of the Read-Write unit (for example: Manufacture, Firmware Version, Part Number, etc.)
- · How long the RFID tag has been present
- Tag history
- Diagnostics
- · Write to the tag
- Read the tag

And many more functions.



Contrinex Read-Write Modules IO-Link Capable RFID (13.56 MHz)









RLH-M30PA-NIS

Features

- IO-Link for greatly simplified RFID integration
- Available in M18 and M30 barrel sizes as well as 44mm cubic housing
- IO-Link compatible (V 1.1).
- IO-Link Class A device
- Simple I/O (SIO) mode available
- IP68/IP69K option available
- Complies with ISO/IEC 15693 (High Frequency) 13.56 MHz

Applications

- Track and trace
- Production automation
- · Process control
- · Automatic sorting systems
- Logistics and distribution
- Access control
- Machine tools
- Robotics
- · Packaging System
- · Automotive Industry
- Pharmaceutical

Agency Approvals

• CE, UL (E239373)







RLH-M18PA-NIS

Simple I/O (SIO) Mode

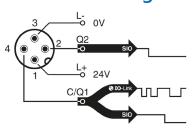
If the Read/Write unit has a simple task, then the device may be able to be used in Simple I/O Mode.

Out of the box, the read/write module is configured to simultaneously trigger both of its outputs upon tag detection. The two outputs can be individually reconfigured for data block comparison, tag IN-RANGE time over threshold, or tag is too far from reader (RSSI is below threshold) via an IO-Link master.

Full functionality is available when the module is used as an IO-Link device.

Contrinex HF RFID Read-Write Module Selection Guide						
Part Number	Price	Housing Size	IP Rating	Weight (g [oz])	Drawing	
RLH-C44PA-NIS	\$169.00	40 x 40 x 67 mm [1.57 x 1.57 x 2.64]	IP68/IP69K	105g [3.7 oz]	<u>PDF</u>	
RLH-M30PA-NIS	\$169.00	30mm [1.18 in] diameter 63.5 mm [2.5 in] length	IP67	87g [3.1 oz]	<u>PDF</u>	
RLH-M18PA-NIS	\$158.00	18mm [0.71 in] diameter 63.5 mm [2.5 in] length	IP67	37g [1.3 oz]	<u>PDF</u>	

Connection Diagram



Standard	Standard HF RFID Read-Write Module Specifications						
	RLH-C44PA-NIS	RLH-M30PA-NIS	RLH-M18PA-NIS				
Supply Voltage	11-32 VDC						
Maximum Current		≤ 50mA (with no load)					
Maximum Output Current	≤ 200mA (per output)						
Maximum Operating Temperature	-25° to 80°C [-13° to 176°F]						
Maximum Storage Temperature		-25° to 80°C [-13° to 176°F]					
Maximum Cable Length		20m [65.62 ft]					
Housing Material	PBTP (polybutylene terephthalate polymer) Chrome-plated brass Chrome-plated brass						
Sensing Face Material	PBTP (polybutylene terephthalate polymer)						
Tightening Force	0.6 N•m [0.4 lb•ft] (on M12 connector)	70 N•m [51.6 lb•ft]	25 N•m [18.4 lb•ft]				

Contrinex 13.56 MHz HF RFID Tags CONTRIN



Standard HF RFID Tags







RFID tags (also known as transponders) are electronic devices that store data. Each tag has fixed memory which stores a unique preset number (i.e., an identifier) as well as user memory which can be written to for storing data. Writeable data may include, for example, the object's history or the parameters of operations to which it will be subjected.

EEPROM Tag Features

- · Unlimited read cycles
- 100,000 write cycles
- · 4 bytes per block
- Fully complies with ISO/IEC 15693 (High Frequency) 13.56 MHz

FRAM Tag Features

- · Unlimited read cycles
- 10¹² write cycles
- · Larger amount of memory
- 8 bytes per block

Applications

- Track and trace
- Production automation
- · Process control
- Automatic sorting systems
- · Logistics and distribution
- Access control

Agency Approvals

• CF



	Standard HF RFID Tag Selection Guide											
Part Number	Price	Pack Size	Diameter (mm [in])	Memory Type	User Memory Size	IP Rating	Component Material	Operating Temperature	Storage Temperature	Tightening Torque	Weight (g [oz])	Drawing
RTH-D09RA-NF0-901	\$50.00	10	9 [0.35]	EEPROM	316 bytes	IP67	Epoxy + PPS	-20° to 85°C	-20° to 110°C	NA	0.25 g [0.01 oz]	PDF
RTH-D16RA-NF0-901	\$45.00	10	16 [0.63]	EEPROM	316 bytes	IP67	(Polynhanylana	[-4° to 230°F]	INA	0.75 g [0.03 oz]	PDF	
RTH-D20QA-NF0-901	\$80.00	10	20 [0.79]	EEPROM	316 bytes	IP68 IP69K				NA	1.3 g [0.05 oz]	PDF
RTH-D20QA-ND0	\$11.00	1	20 [0.79]	FRAM	2000 bytes	IP68 IP69K					1.3 g [0.05 oz]	PDF
RTH-D30QA-NF0-901	\$80.00	10	30 [1.18]	EEPROM	316 bytes	IP68 IP69K	PPA	-25° to 80°C	-40° to 90°C		3g [0.11 oz]	PDF
RTH-D30QA-ND0	\$17.50	1	30 [1.18]	FRAM	2000 bytes	IP68 IP69K	(Polyphthalamide)	vohthalamide) [-13° to [-40		1 N•m	3g [0.11 oz]	PDF
RTH-D50QA-NF0	\$9.50	1	50 [1.97]	EEPROM	316 bytes	IP68 IP69K				[0.74 lb•ft]	9.5 g [0.34 oz]	PDF
RTH-D50QA-ND0	\$19.50	1	50 [1.97]	FRAM	2000 bytes	IP68 IP69K					9.5 g [0.34 oz]	<u>PDF</u>

High-Temperature HF RFID Tag

High-temperature RFID tags feature 100% silicone-free construction and thermal cycling reliability of 1000 hours (or 1000 cycles). Passive tags from the high-temperature family are ideal for use in paintshops and other high-temperature environments. Tags are insensitive to dirt, and their housings have an IP68 and IP69K enclosure rating. They are also fully ISO/IEC 15693-compliant. Tags are made from PPS (polyphenylene sulfide).

High-Temperature HF RFID Tag Selection Guide										
Part Number	Price	Diameter (mm [in])	Memory Type	User Memory	IP Rating	Operating Temperature	Storage Temperature	Tightening Torque	Weight (g [oz])	Drawing
RTP-0263-020	\$20.00	26 [1.97]	EEPROM	160 bytes	IP68 IP69K	-25 to 180°C [-13 to 356°F]	-40 to 180°C [-40 to 356°F]	1 N•m [0.74 lb•ft]	3.3 g [0.12 oz]	<u>PDF</u>



RTP-0263-020

Contrinex 13.56 MHz HF RFID Tags CONTRINE

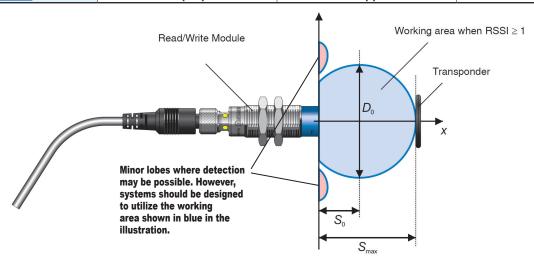


Working Distance Tables

Typical Working Distances When Using RLH-C44PA-NIS						
Tag (Transponder) Part Number	S _{max} (mm [in])	S _o (mm [in])	D _o (mm [in])			
Ø 9 <u>RTH-D09RA-NF0-901</u>	24 [0.94]	9 [0.35]	32 [1.26]			
Ø 16 <u>RTH-D16RA-NF0-901</u>	40 [1.57]	20 [0.79]	44 [1.73]			
Ø 20 <u>RTH-D20QA-NF0-901</u>	40 [1.57]	18 [0.71]	44 [1.73]			
Ø 20 <u>RTH-D20QA-ND0</u>	38 [1.50]	17 [0.67]	42 [1.65]			
Ø 26 <u>RTP-0263-020</u>	38 [1.50]	17 [0.67]	44 [1.73]			
Ø 30 <u>RTH-D30QA-NF0-901</u>	44 [1.73]	21 [0.83]	48 [1.89]			
Ø 30 <u>RTH-D30QA-ND0</u>	46 [1.81]	23 [0.91]	52 [2.05]			
Ø 50 <u>RTH-D50QA-NF0</u>	64 [2.52]	32 [1.26]	68 [2.68]			
Ø 50 <u>RTH-D50QA-ND0</u>	58 [2.28]	26 [1.02]	66 [2.60]			

Typical Working Distances When Using RLH-M30PA-NIS							
Tag (Transponder) Part Number	S _{max} (mm [in])	S _o (mm [in])	D _o (mm [in])				
Ø 9 <u>RTH-D09RA-NF0-901</u>	17 [0.67]	5.5 [0.22]	24 [0.94]				
Ø 16 <u>RTH-D16RA-NF0-901</u>	28 [1.10]	13 [0.51]	31 [1.22]				
Ø 20 <u>RTH-D20QA-NF0-901</u>	26 [1.02]	12 [0.47]	30 [1.18]				
Ø 20 <u>RTH-D20QA-ND0</u>	26 [1.02]	11.5 [0.45]	31 [1.22]				
Ø 26 <u>RTP-0263-020</u>	33 [1.30]	15 [0.59]	36 [1.42]				
Ø 30 <u>RTH-D30QA-NF0-901</u>	30 [1.18]	13 [0.51]	38 [1.50]				
Ø 30 <u>RTH-D30QA-ND0</u>	34 [1.34]	15 [0.59]	38 [1.50]				
Ø 50 <u>RTH-D50QA-NF0</u>	46 [1.81]	19 [0.75]	54 [2.13]				
Ø 50 <u>RTH-D50QA-ND0</u>	44 [1.73]	18 [0.71]	54 [2.13]				

Typical Working Distances When Using RLH-M18PA-NIS						
Tag (Transponder) Part Number	S _{max} (mm [in])	S _o (mm [in])	D _o (mm [in])			
Ø 9 <u>RTH-D09RA-NF0-901</u>	11 [0.43]	3.5 [0.14]	15 [0.59]			
Ø 16 <u>RTH-D16RA-NF0-901</u>	19 [0.75]	8.5 [0.33]	22 [0.87]			
Ø 20 <u>RTH-D20QA-NF0-901</u>	18 [0.71]	8 [0.31]	21 [0.83]			
Ø 20 <u>RTH-D20QA-ND0</u>	17 [0.67]	6 [0.24]	21 [0.83]			
Ø 26 <u>RTP-0263-020</u>	15 [0.59]	4 [0.16]	21 [0.83]			
Ø 30 <u>RTH-D30QA-NF0-901</u>	22 [0.87]	9 [0.35]	28 [1.10]			
Ø 30 <u>RTH-D30QA-ND0</u>	19 [0.75]	5 [0.20]	28 [1.10]			
Ø 50 <u>RTH-D50QA-NF0</u>	24 [0.94]	6 [0.24]	42 [1.65]			
Ø 50 <u>RTH-D50QA-ND0</u>	20 [0.79]	0 [0]	44 [1.73]			



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AutomationDirect Standalone HF (13.56 MHz) RFID Read/Write Unit

RFIC

RFID (Radio Frequency IDentification) technology is useful in a wide range of automation and logistics applications.

This technology allows objects to be identified by means of electronic labels (also known as tags or transponders). Compared to more traditional approaches such as bar codes or laser marking, RFID technology offers a number of significant advantages. For example:

- A direct line of sight between the tag and the read/write module is not needed to read or write data.
- Information stored in the tag can be added, modified or replaced.
- Human error is reduced while increasing reliability, flexibility and traceability.

There are three standard frequencies for RFID:

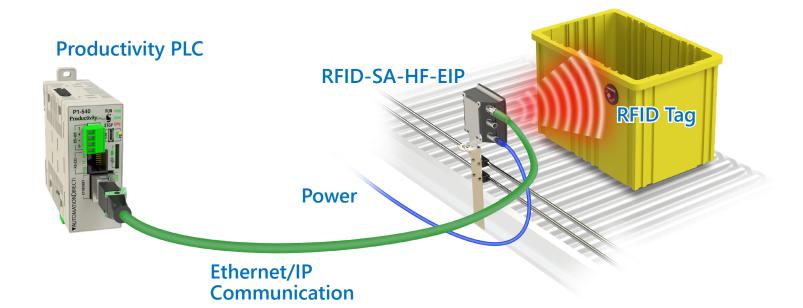
- Low-Frequency (30 to 300 KHz most are 125 to 134.2 Khz). Various application-specific standards apply
- High-Frequency (13.56 MHz) (ISO/IEC 15693)
- Ultra High-Frequency (international range 860 to 960 MHz, US range 902-928 MHz) (ISO/IEC 18000-63)

It is worth noting that NFC (Near Field Communication) also operates on the 13.56 MHz frequency. The NFC standard is detailed in ISO14443 and ISO18092. Some items that comply with NFC also comply with ISO15693. However, not all items that comply with 15693 also comply with NFC.

While there are pros and cons for each type of system, the High Frequency systems allow for fast communication between transponder and read/write modules. AutomationDirect RFID technology operates on 13.56 MHz and complies with ISO/IEC 15693 and is therefore compatible with any components that meet this standard. The series has been designed for easy, cost-effective integration into existing control systems.



RFID-SA-HF-EIP



AutomationDirect Standalone HF (13.56 MHz) RFID Read/Write Unit



RFID-SA-HF-EIP

Designed for simple integration into an existing network, the AutomationDirect Standalone HF Read/Write unit is optimized for high speed, high payload data transfer. The unit also contains an internal Ethernet switch for easy incorporation into a prewired network.

Features

- Compact standalone unit with antenna, evaluation unit and integrated communication fieldbus
- EtherNet/IP communications
- Two configurable digital I/O points
- Complies with ISO/IEC

Applications

- Track and trace
- · Production automation
- · Process control
- · Automatic sorting systems
- Logistics and distribution
- Access control
- Machine tools
- Robotics
- Packaging System
- Automotive Industry
- Pharmaceutical

AutomationDirect RFID Read/Write Unit Selection Guide					
Part Number Price IP Rating Communication Protocol Drawing					
RFID-SA-HF-EIP	\$647.00	IP 67	Ethernet/IP	<u>PDF</u>	

Mounting Bracket



AutomationDirect RFID Unit Mounting Bracket Selection Guide						
Part Number Price Material Weight Drawing						
RFID-SA-BA1	\$25.50	304 stainless steel	0.37 lb [168g]	<u>PDF</u>		

RFID-SA-BA1

Electrical Connections

Connection (M12 D-Coded Ethernet)				
Pin Signal				
1	TxD+, transmit data +			
2	RxD+, receive data +			
3	TxD-, transmit data –			
4	RxD-, receive data –			

Note: Unit provides	two M12 D coded	Ethernet connections.
Note. Utili provides	two wriz D-coded	Ethernet connections.





M12 5-Pin Connections

Color

Brown

White

Blue

Black

Gray

Pin

1

2

3

4

5

Signal

+24V

Digital Input/Output 2

0V

Digital Input/Output 1

Not Used

AutomationDirect Standalone HF (13.56 MHz) RFID Read/Write Unit

AutomationDirect RFID Read/Write Unit General Specifications							
	Electrical Data						
Operating Voltage	19.2 to 28.8 VDC						
Current Consumption	500mA						
Protection Class	III						
Operating Frequency	13.56 MHz						
RFID Standard	ISO 15693						
	Outputs						
Maximum Current Load Per Output	100mA						
	Monitoring Range						
Maximum Distance to ID Tag	220mm						
	Interfaces						
Communication Interface	Ethernet						
Protocol	Ethernet/IP						
	Default Settings, Ethernet – TCP/IP						
Protocol	TCP/IP						
Factory Settings	IP address: 192.168.0.79 Subnet mask: 255.255.255.0 Gateway IP address: 192.168.0.100						
Usage Type	Parameter setting: Data transmission						
	Operating Conditions						
Ambient Temperature	-20 to 60°C [-4 to 140°F]						
Storage Temperature	-25 to 80°C [-13 to 176°F]						
Protection	IP 67						
	Tests/Approvals						
EMC	EN 301489-3						
Shock Resistance	IEC 60028-2-27 50g (11ms) / single shock						
Vibration Resistance	EN 60068-2-6 2g (10 to 150 Hz)						
Radio Approval	EN 300 330 V2.1.1						
MTTF	130 years						
	Mechanical Data						
Weight	640.5 g [22.58 oz]						
Material	PBT/PC, stainless steel, aluminum						
	Displays/Operating Elements						
Voltage Supply	1xLED, green						
Signal Strength LED Display	4x LED, yellow						
Ethernet Status (per Ethernet Port)	2x LED, green/yellow						

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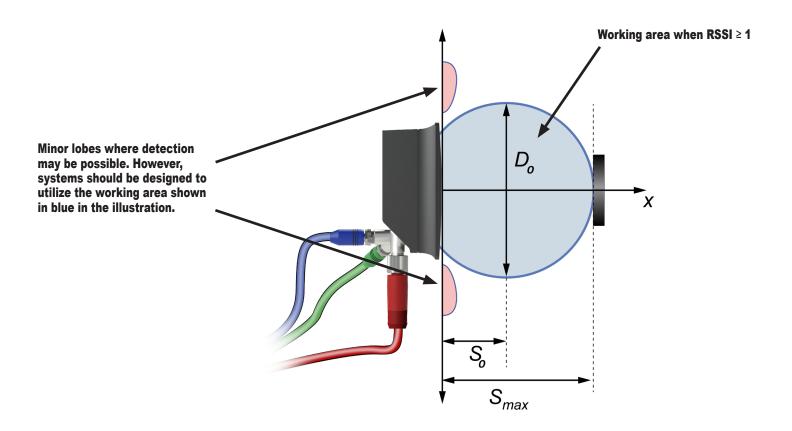
Barcode, RFID, Vision †BRV-90

Contrinex 13.56 MHz HF RFID Tags

Working Distance Tables

Typical Working Distances When Using RFID-SA-HF-EIP							
Tag (Transponder) Part Number	S _{max} (mm [in])	S _o (mm [in])	D _o (mm [in])				
Ø 9 <u>RTH-D09RA-NF0-901</u>		Not recommended*					
Ø 16 <u>RTH-D16RA-NF0-901</u>	50 [1.97]	20 [0.79]	100 [3.94]				
Ø 20 <u>RTH-D20QA-NF0-901</u>	80 [3.15]	30 [1.18]	130 [5.12]				
Ø 20 <u>RTH-D20QA-ND0</u>	75 [2.95]	30 [1.18]	130 [5.12]				
Ø 26 <u>RTP-0263-020</u>	90 [3.54]	40 [1.57]	135 [5.31]				
Ø 30 <u>RTH-D30QA-NF0-901</u>	100 [3.94]	50 [1.97]	140 [5.51]				
Ø 30 <u>RTH-D30QA-ND0</u>	95 [3.74]	50 [1.97]	140 [5.51]				
Ø 50 <u>RTH-D50QA-NF0</u>	170 [6.69]	65 [2.56]	150 [5.91]				
Ø 50 <u>RTH-D50QA-ND0</u>	165 [6.50]	65 [2.56]	150 [5.91]				

^{*} The size of this particular tag requires extremely short distances to work. For this reason this particular tag is not recommended for use with the RFID-SA-HF-EIP RFID unit.



www.automationdirect.com Barcode,