



ClearSight
10,000 and 9000



ClearSight RightSight



ClearSight 7000



Features

Four product families for application flexibility

- Programmable ClearSight 10,000 for harsh duty glass and PET bottle detection with diagnostic output
- Configurable ClearSight 9000 for harsh duty glass and PET bottle detection
- ClearSight RightSight and 7000 for general purpose plastic film and stretch-wrap product detection

General Specifications

	10,000	9000	7000	RightSight
Sensing Modes	Retroreflective; optimized for clear object			
Optics Style	Coaxial with circular polarization		Circular (42SMU-726x) or linear polarization (42SMU-725x)	Circular polarization
Sense Range	1.2m (4ft)	1.2m (4ft)	1.5m (4.9ft)	1.2m (4ft)
Field of View	1.5°	1.5°	3.0°	1.5°
Transmitting LED	Visible Red 660nm			
Sensitivity Adjustment	Teachable and Manual	Single turn	Four turn	Single turn
Supply Voltage	10-30V DC	10-40V DC 70-264V AC/DC 40-264V AC	11-28V DC	10.8-30V DC 21.6 - 264V AC/DC
Current Consumption	70mA maximum	30mA maximum	46mA maximum	35mA maximum
Output Type	NPN and PNP	NPN and PNP EM-Relay (AC) MOSFET (AC)	(2) NPN or PNP by catalog	NPN and PNP (DC) N-MOSFET (AC/DC)
Output Mode	Light/dark operated by switch		Light/dark operated by wire	Light/dark operated by catalog
Output Rating	250mA @ 30VDC	250mA @ 40V DC, 1A @ 264V AC, 300mA @ 264V AC	100mA @ 28V DC	100mA @ 30V (DC) 100mA @ 264V (AC/DC)
Response Time	250µs-4ms selectable	2ms (DC and MOSFET) 15ms (EM-relay)	1ms	0.5ms (DC) 1ms (AC/DC)
Diagnostic Output	NPN or PNP by catalog	None	None	None
Diagnostic Output Rating	20mA @ 30V DC	NA	NA	NA
Housing Material	Valox®			Mindel
Unit Protection	Reverse polarity, overvoltage, output short-circuit, false pulse on power-up	Reverse polarity, overvoltage, false pulse on power-up		Reverse polarity, overvoltage, output short-circuit, false pulse on power-up
Lens Material	Acrylic			
Cover Material	Radel	Radel	NA	Udel
LED Indicators	See table below			
Connection Types	5-pin micro QD, 5-pin mini QD, 2m cable	4-pin micro QD, 4-pin mini QD, 5-pin mini QD, 2m cable	4-pin micro QD, 2m cable	4-pin micro QD, 2m cable Pico QD
Supplied Accessories	#129-130 mounting kit, 92-90 reflector		92-90 reflector	92-90 reflector
Optional Accessories	Cordsets, mounting brackets—see <i>Sensors</i> catalog			
Environmental Rating	NEMA 4X, 6P, IP67 (IEC529); 1200psi (8270kPa) Washdown (except ClearSight 7000)			
Operating Temperature	-25°C to +60°C (-13°F to +140°F)	-34°C to +70°C (-29°F to +158°F)	-40°C to +65°C (-13°F to +150°F)	-25°C to +70°C (-13°F to +158°F)
Vibration	10-55Hz, 1mm amplitude, Meets or exceeds IEC 947-5-2			
Shock	30G with 1ms pulse duration, Meets or exceeds IEC 947-5-2			
Relative Humidity	5...95%			
Approvals	UL listed, CSA certified, CE marked for all applicable directives			

Allen-Bradley Spares

Operation

Reliable detection of clear materials is one of the more challenging photoelectric sensor applications. Low contrast, shape variations, and wet environments are all variables which affect proper sensor response. Shown to the right are some typical applications examples.

In the case of clear bottles (plastic or glass), a standard photoelectric sensor will often “see,” and output, on both the leading and trailing edge of the bottle. Differences in bottle shapes and quality, along with environmental conditions (water, dust) only serve to increase the challenge.

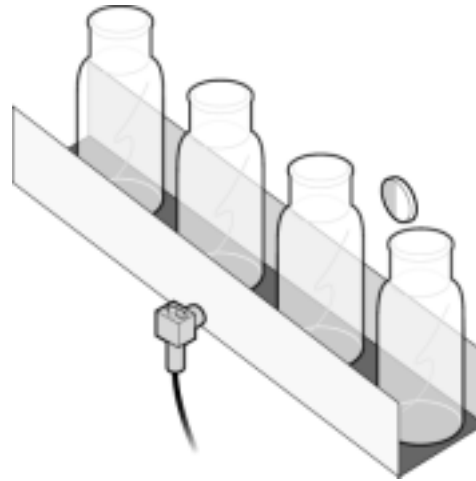
Clear films present the unique challenge of not providing sufficient contrast between the film and reflector. In a related application, even opaque objects which are wrapped in a clear film can cause the sensor to be false triggered due to the depolarization of light by the film. This problem can often be overcome by using a polarized retroreflective sensor and angling the sensor into the target.

The ClearSight family of photoelectric sensors are designed specifically for the detection of clear objects and are available in three basic families to fit your specific application requirements. For clear film and bottle applications, the ClearSight 10,000 is the superior solution. This microprocessor-based sensor contains a teach function which automatically sets sensitivity at the push of a button. In addition, the Control Watch feature of the sensor will automatically adjust this level to compensate for changing environmental conditions. The user may also field select the sensor response time (250µs–4ms), output delays (ON/OFF/ONE–SHOT), and light/dark operation.

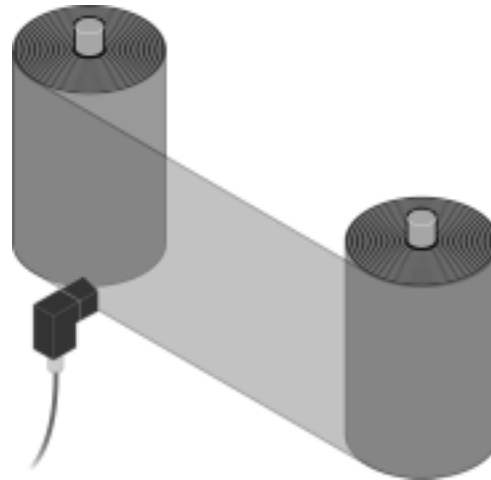
When the application is not as severe, ClearSight 9000 stands ready to meet the challenge. Like the ClearSight 10,000, this sensor contains a superior clear object optics system but with a manual sensitivity adjustment and switch configurable output timers (ON/OFF/ONE–SHOT).

For general purpose clear object detection, the ClearSight RightSight and ClearSight 7000 provide economical and reliable solutions. Both contain manual sensitivity adjustments to control the sensor response for various application requirements.

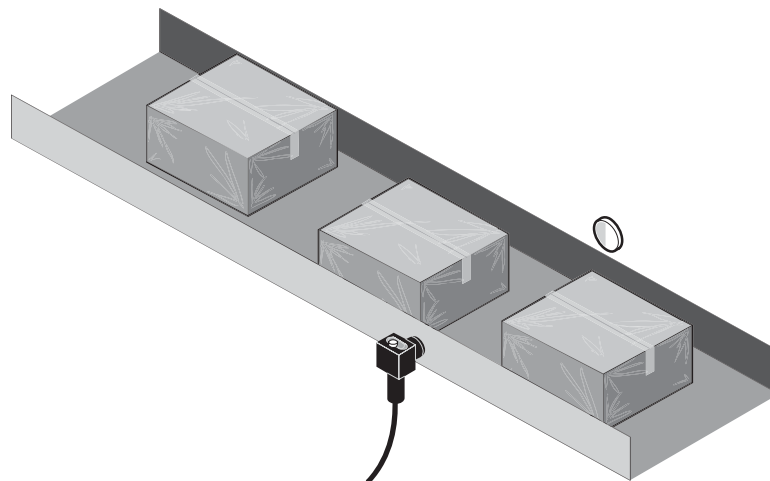
Bottle Application



Clear Film Application



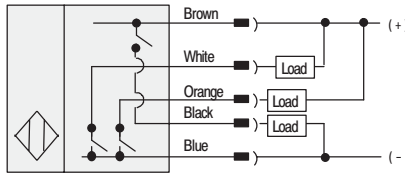
Shrink-Wrapped Product Application



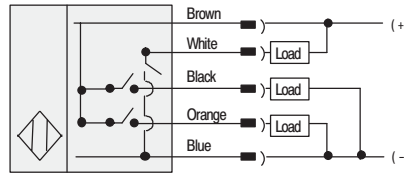
Wiring Diagrams

ClearSight 10,000

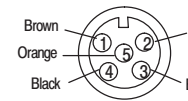
Sensors with NPN Diagnostic Output



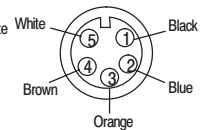
Sensors with PNP Diagnostic Output



Micro QD



Mini QD

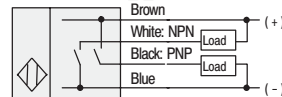


Note: Orange lead is diagnostic output.

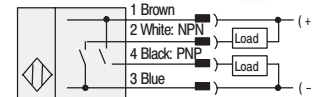
ClearSight 9000

All Models Except Transmitted Beam Source

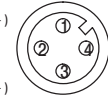
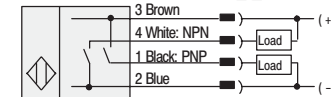
Cable Model: 9__0



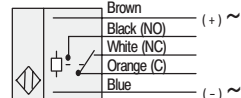
4-pin DC Micro QD Model: 9__0-QD



4-pin DC Mini QD Model: 9__0-QD1



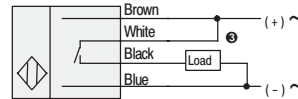
Cable Model: 9__2



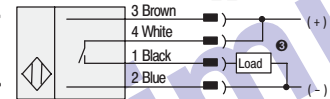
5-pin AC/DC Mini QD Model: 9__2-QD



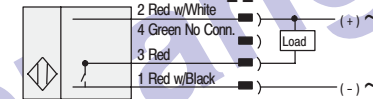
Cable Model: 9__3



AC/DC Mini QD Model: 9__3-QD



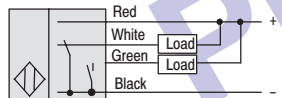
AC/DC Micro QD Model: 9__3-QD1



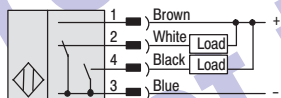
ClearSight 7000

10.8–30V DC Sensors

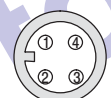
Models with NPN Outputs



Cable

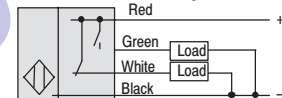


Quick-Disconnect

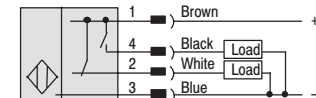


DC Micro

Models with PNP Outputs



Cable

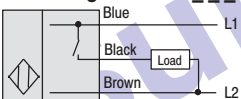


Quick-Disconnect

ClearSight RightSight

21.6–264V AC/DC Sensors

AC Wiring for 42EF-- C -- Models



Cable

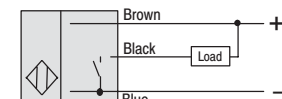


Quick-Disconnect



DC Micro

DC Wiring for 42EF-- C -- Models



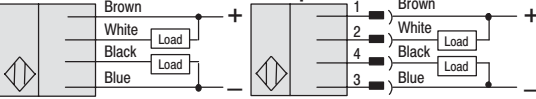
Cable



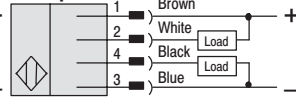
Quick-Disconnect

10.8–30V DC Sensors

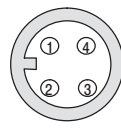
Models with Dual NPN and PNP Outputs



Cable



Quick-Disconnect



DC Micro

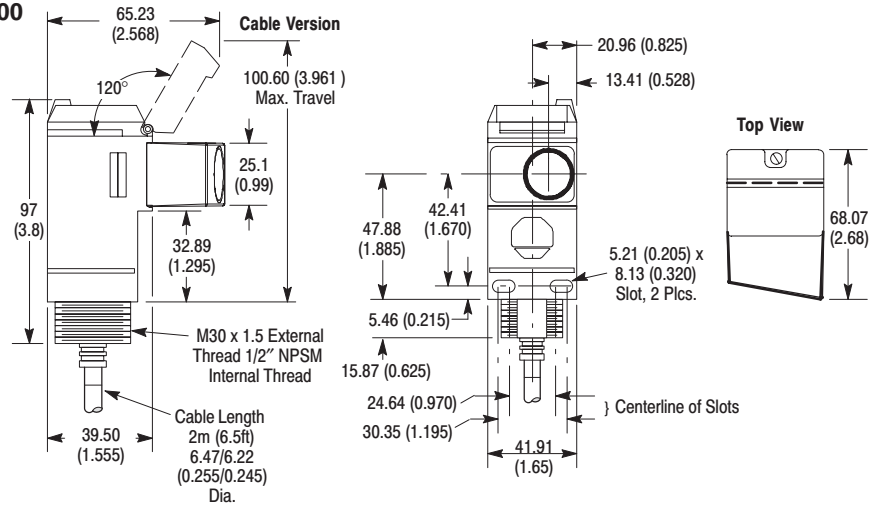


Pico

- ❶ For Allen-Bradley programmable controller compatible interface, refer to publication 42-2.0.
- ❷ Quick-disconnect wiring codes shown are valid for Allen-Bradley cables only.
- ❸ Load can be placed on either black or white wire to create sourcing or sinking respectively.
- ❹ All wire colors on quick-disconnect models refer to Allen-Bradley 889D cordsets.

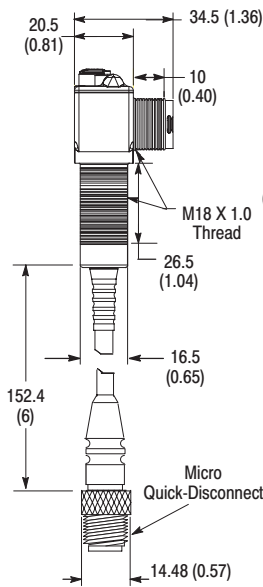
Dimensions—mm (inches)

ClearSight 10,000 and 9000

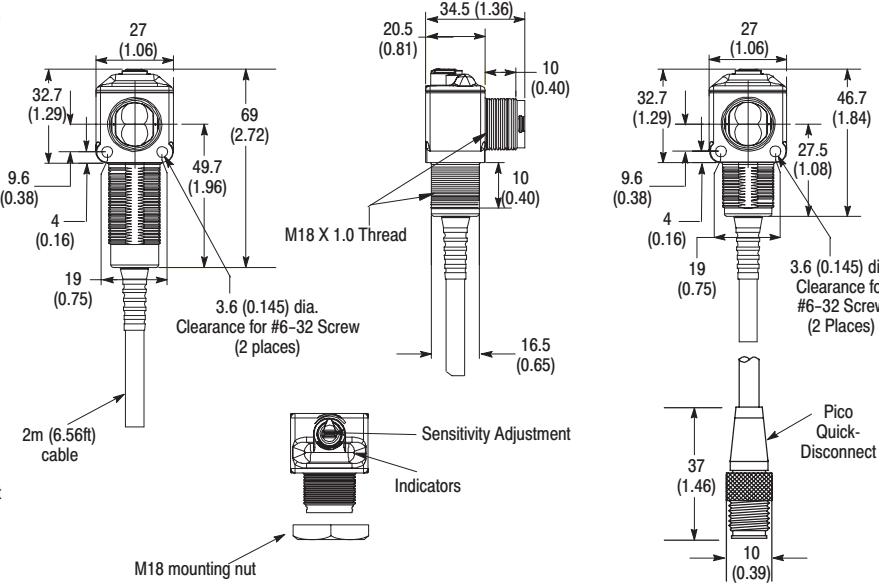


RightSight

AC/DC Models



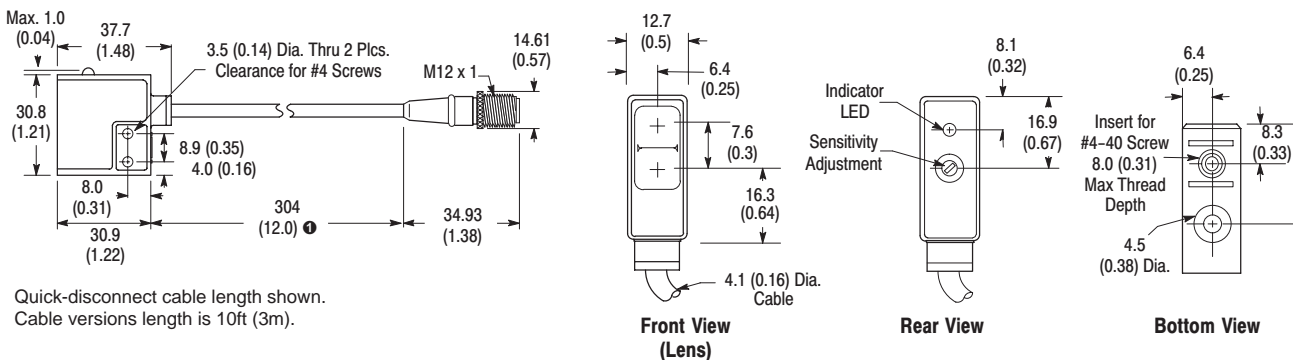
DC Models



Note: All sensors supplied with one M18 mounting nut (catalog number 75012-097-01).

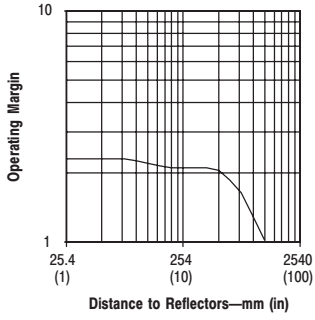
7000

All Models Except Visible Red Plastic Fiber Optic—mm (inches)

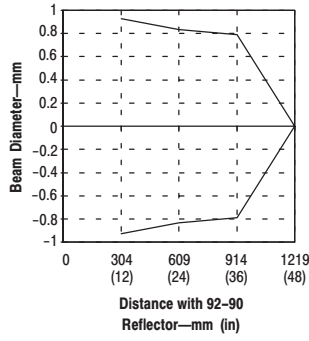


Quick-disconnect cable length shown. Cable versions length is 10ft (3m).

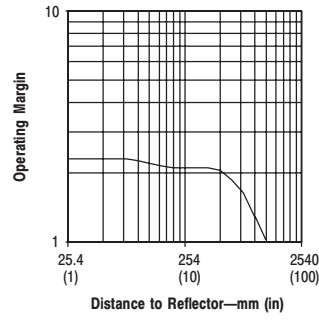
Typical Response Curve
10,000



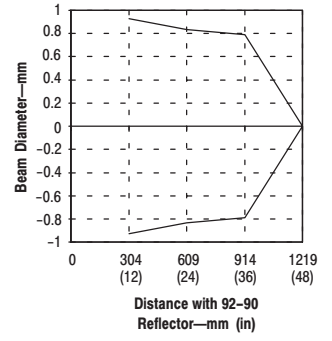
Beam Pattern



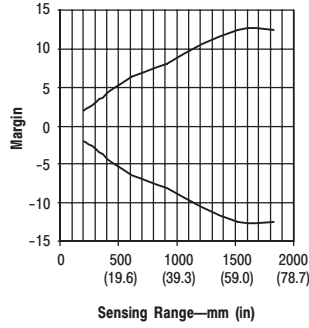
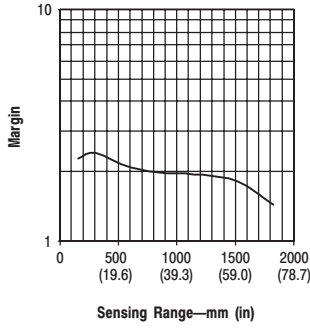
Typical Response Curve
9000



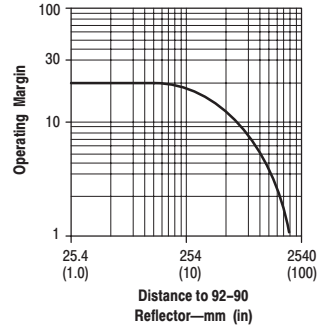
Beam Pattern



RightSight

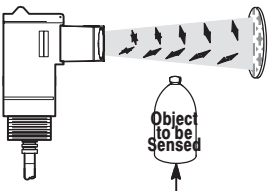
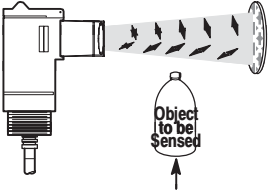
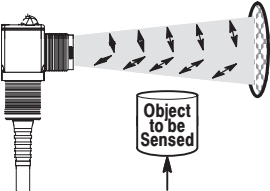
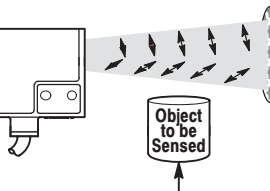


7000



Allen-Bradley Spares

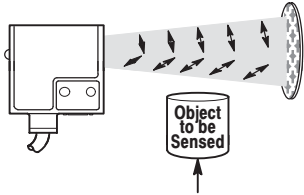
Product Selection

Sensing Mode	Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Connection Type	Catalog Number	
 <p>10,000 Object to be Sensed</p> <p>Field of View: 1.5° Emitter LED: Visible red 660nm</p>	10-30V DC 70mA	0m (0in) to 1.2m (48in)	Light/Dark Selectable	NPN & PNP 250mA at 30V DC 250µs to 4ms Selectable	2m 300V cable	42GTGC-10210-02	
					5-pin DC micro	42GTGC-10210-QD	
					5-pin mini	42GTGC-10210-Q1	
 <p>9000 Object to be Sensed</p> <p>Field of View: 1.5° Emitter LED: Visible red 660nm</p>	10-40V DC 30mA	2.54cm (2in) to 1.2m (4ft)	Light/Dark Selectable	NPN/PNP 250mA 2ms	2m 300V cable	42G⊗C-9200	
	70-264V AC/DC 50/60Hz 15mA				4-pin DC micro	42G⊗C-9200-QD	
					4-pin mini	42G⊗C-9200-QD1	
	45-264V DC/40-264V AC 50/60Hz 15mA				2m 300V cable	42G⊗C-9202	
					5-pin mini	42G⊗C-9202-QD	
					2m 300V cable	42G⊗C-9203	
4-pin mini		42G⊗C-9203-QD					
 <p>RightSight Object to be Sensed</p> <p>Field of View: 1.5° Emitter LED: Visible red 660nm</p>	21.6-264V AC/DC 15mA	25mm (1in) to 1.2m (3.9ft)	Dark Operate	N-MOSFET/100mA 8.3ms	2m 300V cable	42EF-C2SCA-A2	
	10.8-30V DC 35mA				4-pin AC micro	42EF-C2SCA-G4	
					Light Operate	NPN/PNP 100mA 0.5ms	2m 300V cable
	4-pin DC micro		42EF-C2KBA-F4				
	4-pin DC micro		42EF-C2KBA-Z15				
			4-pin pico	42EF-C2JBA-Z15			
Linear Polarized Sensors for Detection of Clear Films							
 <p>7000 Object to be Sensed</p> <p>Field of View: 3° Emitter LED: Visible red 660nm</p>	11-28V DC 46mA	50mm (2in) to 1.5m (4.9ft)	Comple- mentary N.O./N.C.	NPN 100mA 1ms	3m cable	42SMU-7250	
					4-pin DC micro	42SMU-7250-QD	
					PNP 100mA 1ms	3m cable	42SMU-7251
						4-pin DC micro	42SMU-7251-QD

⊗ R for standard (i.e. 42GRC-9200)
T for timing (i.e. 42GTC-9200)

Refer to page 7 for cordsets and accessories.

Product Selection (continued)

Sensing Mode	Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Connection Type	Catalog Number
Circular Polarized Sensors for Detection of Clear Objects (Bottles, Clear Packages)						
 <p>7000</p> <p>Field of View: 3° Emitter LED: Visible red 660nm</p>	11-28V DC 46mA	50mm (2in) to 1.5m (4.9ft)	Complement ary N.O./N.C.	NPN 100mA 1ms	3m cable	42SMU-7260
					4-pin DC micro	42SMU-7260-QD
				PNP 100mA 1ms	3m cable	42SMU-7261
					4-pin DC micro	42SMU-7261-QD

Cordsets and Accessories

Description	Catalog Number	Description	Catalog Number
2m (6.5ft), 4-pin DC Micro QD Cordset	889D-F4AC-2	2m (6.5ft), 4-pin Pico QD Cordset, Straight	889P-F4AB-2
2m (6.5ft) 5-pin DC Micro QD Cordset	889D-F5AC-2	Mounting Bracket Swivel/Tilt for ClearSight 7000	60-2619
2m (6.5ft), 4-pin AC Micro QD Cordset, Straight	889R-F4AEA-2	Mounting Bracket Swivel/Tilt for ClearSight RightSight	60-2649
1.8m (6ft) 4-pin, Mini QD Cordset	889N-F4AF-6F	Mounting Bracket Swivel/Tilt for ClearSight 9000 and 10,000	60-2681
1.8m (6ft) 5-pin Mini QD Cordset	889N-F5AF-6F	Reflector	92-90 (included)

Allen-Bradley Spares