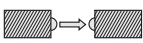
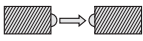





















FR Series Photoelectric Sensors


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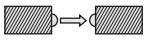



M8 DC PHOTOELECTRIC SENSORS

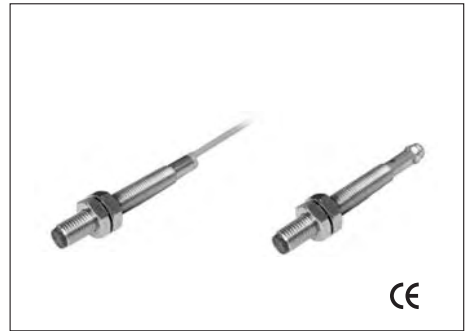
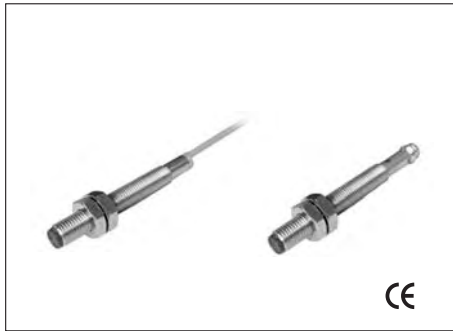
Type	M8	M8		
Sensing mode	Through-beam mode	Through-beam mode		
Sensing picture				
Switching distance(sn)	80mm	150mm		
Picture				
Nominal Voltage	10-30VDC	10-30VDC		
Residual Ripple	≤10%	≤10%		
Tolerance	±10%Sn	±10%Sn		
Hysteresis	10%	10%		
Emission	Red(660nm)	Infrared(880nm)		
Output	NPN or PNP	NPN or PNP		
Contact	Light on or Dark on	Light on or Dark on		
Max. Output Current	150mA	150mA		
No Load Current	30mA or less	30mA or less		
Voltage Drop(Sensor On)	≤2.5V	≤2.5V		
Sensitivity Adjustment	-	-		
Response Time	1mS	1mS		
Short Circuit Protection	Yes	Yes		
Electric Protections	Yes	Yes		
Temperature Limits	-25 ~ +55°C	-25 ~ +55°C		
Ambient humidity	35 to 85% RH	35 to 85% RH		
Light Immunity	>10.000Lux	>10.000Lux		
Protection Degree	IP67	IP67		
Housing Material	Stainless Steel or Nickel plated brass	Stainless Steel or Nickel plated brass		
Sensing object	φ 8mm or more	φ 8mm or more		
Wiring diagram(see page 21-16)				
Brass Housing	Emitter :	F1CTM080080DER2B2 A5 F1CTM080080DERPB4 A6	F1CTM080150DEI2B2 A5 F1CTM080150DEIPB4 A6	
	NPN Light on	F1CTM080080NLR3A2 A1 F1CTM080080NLRPA4 A2	F1CTM080150NLI3A2 A1 F1CTM080150NLI3A2 A1 F1CTM080150NDIP4 A2	
	NPN Dark on	F1CTM080080NDR3A2 A1 F1CTM080080NDRPA4 A2	F1CTM080150NDI3A2 A1 F1CTM080150NDIP4 A2	
	PNP Light on	F1CTM080080PLR3A2 A3 F1CTM080080PLRPA4 A4	F1CTM080150PLI3A2 A3 F1CTM080150PLIP4 A4	
	PNP Dark on	F1CTM080080PDR3A2 A3 F1CTM080080PDRPA4 A4	F1CTM080150PDI3A2 A3 F1CTM080150PDIP4 A4	
Stainless Steel Housing	Emitter :	F1CTU080080DER2B2 A5 F1CTU080080DERPB4 A6	F1CTU080150DEI2B2 A5 F1CTU080150DEIPB4 A6	
	NPN Light on	F1CTU080080NLR3A2 A1 F1CTU080080NLRPA4 A2	F1CTU080150NLI3A2 A1 F1CTU080150NLI3A2 A1 F1CTU080150NDIP4 A2	
	NPN Dark on	F1CTU080080NDR3A2 A1 F1CTU080080NDRPA4 A2	F1CTU080150NDI3A2 A1 F1CTU080150NDIP4 A2	
	PNP Light on	F1CTU080080PLR3A2 A3 F1CTU080080PLRPA4 A4	F1CTU080150PLI3A2 A3 F1CTU080150PLIP4 A4	
	PNP Dark on	F1CTU080080PDR3A2 A3 F1CTU080080PDRPA4 A4	F1CTU080150PDI3A2 A3 F1CTU080150PDIP4 A4	
Dimensions (unit: mm)				
Connect	2m PVC (φ3x0.15mm ²)	M8 Pico style	2m PVC (φ3x0.15mm ²)	M8 Pico style
Weight	Approx.60 g	Approx.35g	Approx.60 g	Approx.35g

M8 DC PHOTOELECTRIC SENSORS

M8
Through-beam mode

500mm

M8
Through-beam mode

1000mm

M8
Through-beam mode

3000mm



10-30VDC
≤10%
±10%Sn
10%
Infrared(880nm)
NPN or PNP
Light on or Dark on
150mA
30mA or less
≤2.5V
-
1mS
Yes
Yes
-25 ~ +55°C
35 to 85% RH
>10.000Lux
IP67
Stainless Steel or Nickel plated brass
φ8mm or more

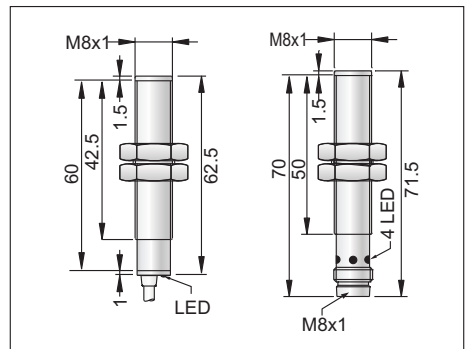
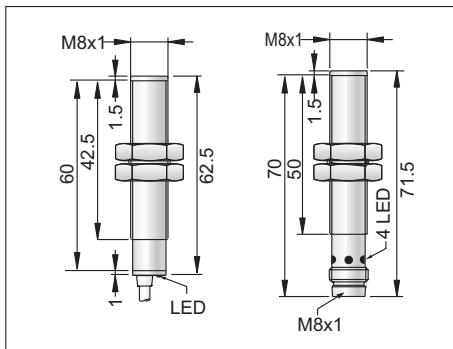
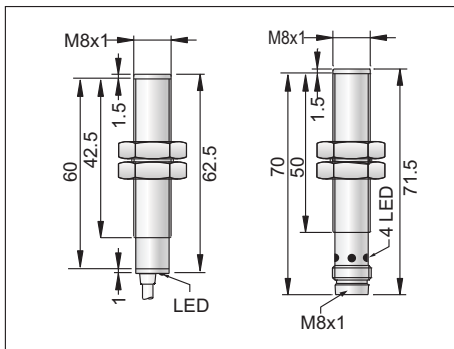
10-30VDC
≤10%
±10%Sn
10%
Infrared(880nm)
NPN or PNP
Light on or Dark on
150mA
30mA or less
≤2.5V
-
1mS
Yes
Yes
-25 ~ +55°C
35 to 85% RH
>10.000Lux
IP67
Stainless Steel or Nickel plated brass
φ8mm or more

10-30VDC
≤10%
±10%Sn
10%
Infrared(880nm)
NPN or PNP
Light on or Dark on
150mA
30mA or less
≤2.5V
-
1mS
Yes
Yes
-25 ~ +55°C
35 to 85% RH
>10.000Lux
IP67
Stainless Steel or Nickel plated brass
φ8mm or more

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F1CTM080500PLI3A2 A3	F1CTM080500PLIPA4 A4
F1CTM080500PDI3A2 A3	F1CTM080500PDIPA4 A4
F1CTU080500DEI2B2 A5	F1CTU080500DEIPB4 A6
F1CTU080500NLI3A2 A1	F1CTU080500NDIPA4 A2
F1CTU080500NDI3A2 A1	F1CTU080500NDIPA4 A2
F1CTU080500PLI3A2 A3	F1CTU080500PLIPA4 A4
F1CTU080500PDI3A2 A3	F1CTU080500PDIPA4 A4

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F1CTM081000NDI3A2 A1	F1CTM081000NDIPA4 A2
F1CTM081000PLI3A2 A3	F1CTM081000PLIPA4 A4
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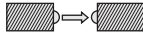
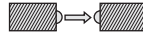


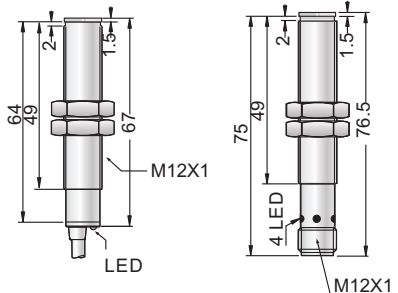
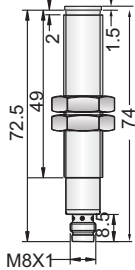


2m PVC (φ3x0.15mm ²)	M8 Pico style
Approx.60 g	Approx.35g


2m PVC (φ3x0.15mm ²)	M8 Pico style
Approx.60 g	Approx.35g

2m PVC (φ3x0.15mm ²)	M8 Pico style
Approx.60 g	Approx.35g

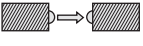
M12 DC PHOTOELECTRIC SENSORS

Type	M12		M12	
Sensing mode	Through-beam mode		Through-beam mode	
Sensing picture				
Switching distance(sn)	5.2m		5.2m	
Picture				
Nominal Voltage	10-30VDC		10-30VDC	
Residual Ripple	≤10%		≤10%	
Tolerance	±10%Sn		±10%Sn	
Hysteresis	10%		10%	
Emission	Infrared(880nm)		Infrared(880nm)	
Output	NPN or PNP		NPN or PNP	
Contact	Light on or Dark on		Light on or Dark on	
Max. Output Current	150mA		150mA	
No Load Current	30mA or less		30mA or less	
Voltage Drop(Sensor On)	≤2.5V		≤2.5V	
Response Time	1mS		1mS	
Short Circuit Protection	Yes		Yes	
Electric Protections	Yes		Yes	
Temperature Limits	-25 ~ +55°C		-25 ~ +55°C	
Ambient humidity	35 to 85% RH		35 to 85% RH	
Light Immunity	>10.000Lux		>10.000Lux	
Protection Degree	IP67		IP67	
Housing Material	PBT Plastic or Nickel plated brass		PBT Plastic or Nickel plated brass	
Sensing object	∅8mm or more		∅8mm or more	
Wiring diagram(see page 21-16)				
Brass Housing	Emitter:	F1CTM125200DEI2B2 A11	F1CTM125200DEIEB4 A13	F1CTM125200DEIPB4 A12
	NPN N.O.	F1CTM125200NLI3A2 A7	F1CTM125200NLIEA4 A10	F1CTM125200NLIPA4 A9
	NPN N.C.	F1CTM125200NDI3A2 A7	F1CTM125200NDIEA4 A10	F1CTM125200NDIPA4 A9
	PNP N.O.	F1CTM125200PLI3A2 A8	F1CTM125200PLIEA4 A10	F1CTM125200PLIPA4 A9
	PNP N.C.	F1CTM125200PDI3A2 A8	F1CTM125200PDIEA4 A10	F1CTM125200PDIPA4 A9
	NPN N.O.+N.C.			
	PNP N.O.+N.C.			
Plastic Housing	Emitter:	F1CTP125200DEI2B2 A11	F1CTP125200DEIEB4 A13	F1CTP125200DEIPB4 A12
	NPN N.O.	F1CTP125200NLI3A2 A7	F1CTP125200NLIEA4 A10	F1CTP125200NLIPA4 A9
	NPN N.C.	F1CTP125200NDI3A2 A7	F1CTP125200NDIEA4 A10	F1CTP125200NDIPA4 A9
	PNP N.O.	F1CTP125200PLI3A2 A8	F1CTP125200PLIEA4 A10	F1CTP125200PLIPA4 A9
	PNP N.C.	F1CTP125200PDI3A2 A8	F1CTP125200PDIEA4 A10	F1CTP125200PDIPA4 A9
	NPN N.O.+N.C.			
	PNP N.O.+N.C.			
Dimensions (unit: mm)				
Connect	2m PVC (∅3x0.15mm ²)	M12 Euro style	M8 Pico style	
Weight	Approx.67 g	Approx.40g	Approx.30 g	


M12 DC PHOTOELECTRIC SENSORS

M12
Through-beam mode

10m



M12
Through-beam mode

10m



M12
Diffuse mode

200mm



10-30VDC
≤10%
±10%Sn
10%
Infrared(880nm)
NPN or PNP
Light on or Dark on
150mA
30mA or less
≤2.5V
1mS
Yes
Yes
-25 ~ +55°C
35 to 85% RH
>10.000Lux
IP67
PBT Plastic or Nickel plated brass
φ8mm or more

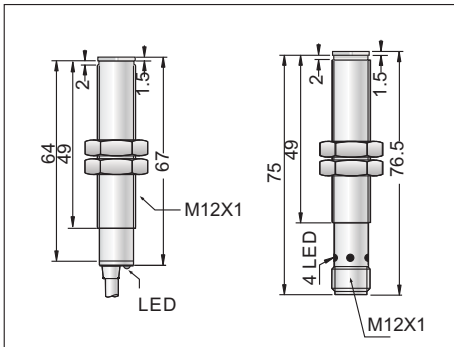
10-30VDC
≤10%
±10%Sn
10%
Infrared(880nm)
NPN or PNP
Light on or Dark on
150mA
30mA or less
≤2.5V
1mS
Yes
Yes
-25 ~ +55°C
35 to 85% RH
>10.000Lux
IP67
PBT Plastic or Nickel plated brass
φ8mm or more

10-30VDC
≤10%
±10%Sn
10%
Infrared(880nm)
NPN or PNP
Light on or Dark on
150mA
30mA or less
≤2.5V
1mS
Yes
Yes
-25 ~ +55°C
35 to 85% RH
>10.000Lux
IP67
PBT Plastic or Nickel plated brass
10X10cm white paper

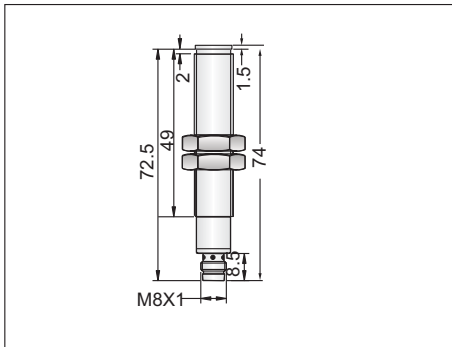
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F1CTM12010MPD13A2 A8	F1CTM12010MPDIEA4 A10
F1CTP12010MDEI2B2 A11	F1CTP12010MDEIEB4 A13
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F1CTP12010MPL13A2 A8	F1CTP12010MPLIEA4 A10
F1CTP12010MPD13A2 A8	F1CTP12010MPDIEA4 A10

F1CTM12010MDEIPB4 A12
F1CTM12010MNLIPA4 A9
F1CTM12010MNDIPA4 A9
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F1CTP12010MDEIPB4 A12
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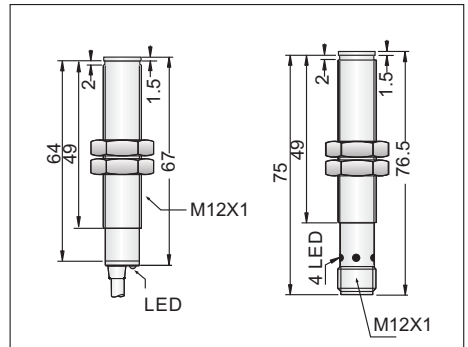
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F1CDP120200PSI4A2 A15	F1CDP120200PSIEA4 A17



2m PVC (φ3x0.15mm ²) Approx.67 g	M12 Euro style Approx.40g
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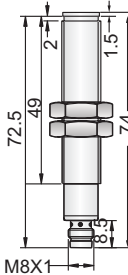
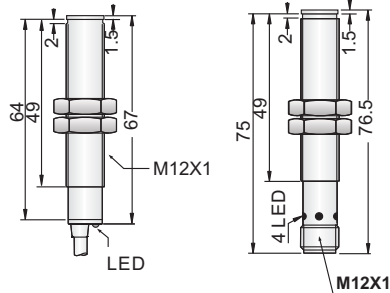


M8 Pico style Approx.30 g







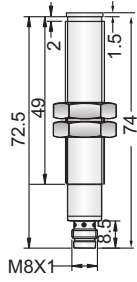
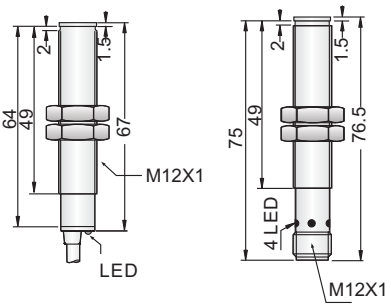
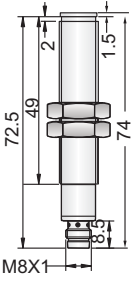


2m PVC (φ3x0.15mm ²) Approx.70g	M12 Euro style Approx.40g
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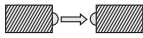



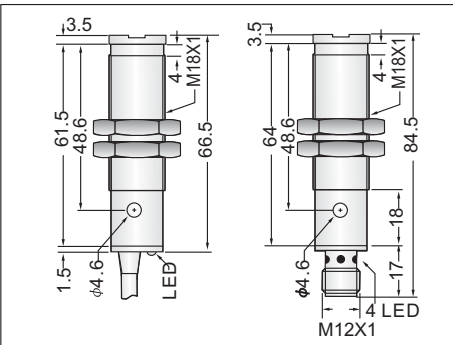
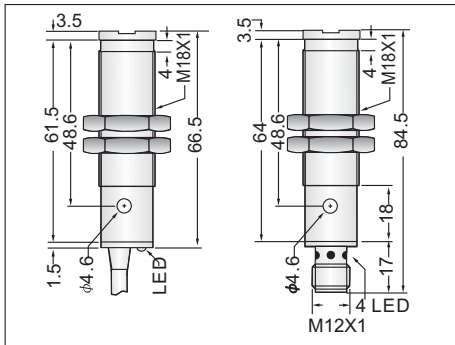
M12 DC PHOTOELECTRIC SENSORS

Type	M12	M12	
Sensing mode	Diffuse mode	Retro-reflective mode	
Sensing picture			
Switching distance(sn)	200mm	1.5m	
Picture	 CE	 CE	
Nominal Voltage	10-30VDC	10-30VDC	
Residual Ripple	≤10%	≤10%	
Tolerance	±10%Sn	±10%Sn	
Hysteresis	10%	10%	
Emission	Infrared(880nm)	Infrared(880nm)	
Output	NPN or PNP	NPN or PNP	
Contact	Light on & Dark on	Light on & Dark on	
Max. Output Current	150mA	150mA	
No Load Current	30mA or less	30mA or less	
Voltage Drop(Sensor On)	≤2.5V	≤2.5V	
Response Time	1mS	1mS	
Short Circuit Protection	Yes	Yes	
Electric Protections	Yes	Yes	
Temperature Limits	-25 ~ +55°C	-25 ~ +55°C	
Ambient humidity	35 to 85% RH	35 to 85% RH	
Light Immunity	>10.000Lux	>10.000Lux	
Protection Degree	IP67	IP67	
Housing Material	PBT Plastic or Nickel plated brass	PBT Plastic or Nickel plated brass	
Sensing object	10X10cm white paper	D51 Mirror	
Wiring diagram(see page 21-16)			
Brass Housing	Emitter:		
	NPN N.O.		
	NPN N.C.		
	PNP N.O.		
	PNP N.C.		
	NPN N.O.+N.C.	F1CDM120200NSIPA4 A16	F1CLM121500NSI4A2 A14 F1CLM121500NSIEA4 A17
Plastic Housing	Emitter:		
NPN N.O.			
NPN N.C.			
PNP N.O.			
PNP N.C.			
NPN N.O.+N.C.	F1CDP120200NSIPA4 A16	F1CLP121500NSI4A2 A14 F1CLP121500NSIEA4 A17	
PNP N.O.+N.C.	F1CDP120200PSIPA4 A16	F1CLP121500PSI4A2 A15 F1CLP121500PSIEA4 A17	
Dimensions (unit: mm)			
Connect	M8 Pico style	2m PVC (Φ3x0.15mm ²)	
Weight	Approx.30 g	M12 Euro style Approx.40g	







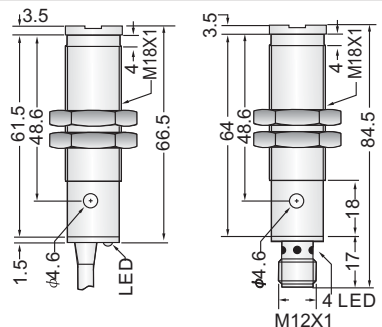
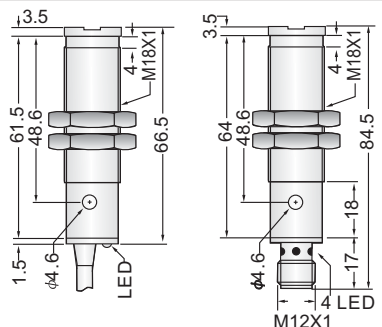
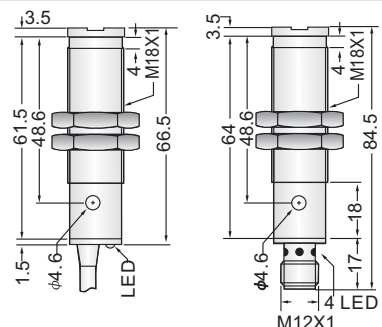
M12 DC PHOTOELECTRIC SENSORS

<p>M12 Retro-reflective mode</p>  <p>1.5m</p>	<p>M12 Retro-reflective mode (With Polarizing Filters)</p>  <p>500mm</p>	<p>M12 Retro-reflective mode (With Polarizing Filters)</p>  <p>500mm</p>
 CE	 CE	 CE
10-30VDC ≤10% ±10%Sn 10% Infrared(880nm) NPN or PNP Light on & Dark on 150mA 30mA or less ≤2.5V 1mS Yes Yes -25 ~ +55°C 35 to 85% RH >10.000Lux IP67 PBT Plastic or Nickel plated brass D51 Mirror	10-30VDC ≤10% ±10%Sn 10% Red(660nm) NPN or PNP Light on & Dark on 150mA 30mA or less ≤2.5V 1mS Yes Yes -25 ~ +55°C 35 to 85% RH >10.000Lux IP67 PBT Plastic or Nickel plated brass D51 Mirror	10-30VDC ≤10% ±10%Sn 10% Red(660nm) NPN or PNP Light on & Dark on 150mA 30mA or less ≤2.5V 1mS Yes Yes -25 ~ +55°C 35 to 85% RH >10.000Lux IP67 PBT Plastic or Nickel plated brass D51 Mirror
F1CLM121500NSIPA4 A16 F1CLM121500PSIPA4 A16	F1CLM120500NSR4A2/F A14 F1CLM120500NSREA4/F A17 F1CLM120500PSR4A2/F A15 F1CLM120500PSREA4/F A17	F1CLM120500NSRPA4/F A16 F1CLM120500PSRPA4/F A16
F1CLP121500NSIPA4 A16 F1CLP121500PSIPA4 A16	F1CLP120500NSR4A2/F A14 F1CLP120500NSREA4/F A17 F1CLP120500PSR4A2/F A15 F1CLP120500PSREA4/F A17	F1CLP120500NSRPA4/F A16 F1CLP120500PSRPA4/F A16
		
M8 Pico style Approx.30 g	2m PVC (Φ3x0.15mm ²) Approx.70g M12 Euro style Approx.40g	M8 Pico style Approx.30 g

M18 DC WITH LIGHT ON OR DARK ON PROGRAMMABLE OUTPUT

Type	M18	M18	
Sensing mode	Through-beam mode	Diffuse mode	
Sensing picture			
Switching distance(sn)	15mm	500mm	
Picture			
Nominal Voltage	10-30VDC	10-30VDC	
Residual Ripple	≤10%	≤10%	
Tolerance	±10%Sn	±10%Sn	
Hysteresis	10%	10%	
Emission	Infrared(880nm)	Infrared(880nm)	
Output	NPN or PNP	NPN or PNP (programmable)	
Contact	Light on or Dark on	Light on or Dark on (programmable)	
Max. Output Current	200mA	200mA	
No Load Current	30mA or less	30mA or less	
Voltage Drop(Sensor On)	≤2.5V	≤2.5V	
Sensitivity Adjustment	Trimmer 1 tum	Trimmer 1 tum	
Response Time	1mS	1mS	
Short Circuit Protection	Yes	Yes	
Electric Protections	Yes	Yes	
Temperature Limits	-25 ~ +55°C	-25 ~ +55 °C	
Ambient humidity	35 to 85% RH	35 to 85% RH	
Light Immunity	>10.000Lux	>10.000Lux	
Protection Degree	IP67	IP67	
Housing Material	PBT Plastic or Nickel plated brass	PBT Plastic or Nickel plated brass	
Sensing object	∅8mm or more	20x20cm white paper	
Wiring diagram(see page 21-16)			
Brass Housing	Emitter :	F1CTM18015MDEI3B2 A22 F1CTM18015MDEIEB4 A23	F1CDM180500NSI4A2 A18 F1CDM180500NSIEA4 A19
	NPN Light on or Dark on	F1CTM18015MNSI4A2 A18 F1CTM18015MNIEA4 A19	F1CDM180500PSI4A2 A20 F1CDM180500PSIEA4 A21
	PNP Light on or Dark on	F1CTM18015MPSI4A2 A20 F1CTM18015MPSIEA4 A21	
Plastic Housing	Emitter :	F1CTP18015MDEI3B2 A22 F1CTP18015MDEIEB4 A23	F1CDP180500NSI4A2 A18 F1CDP180500NSIEA4 A19
	NPN Light on or Dark on	F1CTP18015MNSI4A2 A18 F1CTP18015MNIEA4 A19	F1CDP180500PSI4A2 A20 F1CDP180500PSIEA4 A21
	PNP Light on or Dark on	F1CTP18015MPSI4A2 A20 F1CTP18015MPSIEA4 A21	
			
	2m PVC (∅4x0.25mm ²) Approx.112 g	M12 Euro style Approx.75 g	2m PVC (∅4x0.25mm ²) Approx.112 g
			M12 Euro style Approx.75 g







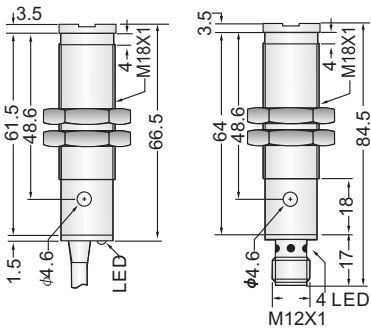

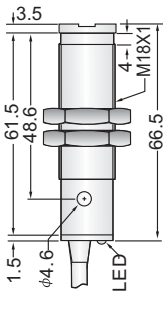
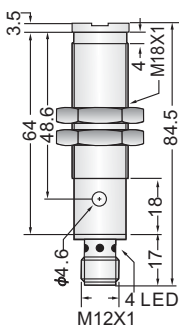
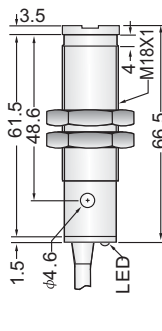
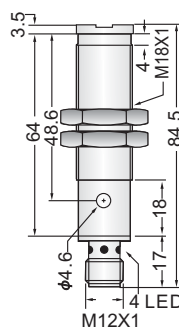
M18 DC WITH LIGHT ON OR DARK ON PROGRAMMABLE OUTPUT

M18 Diffuse mode		M18 Retro-reflective mode		M18 Retro-reflective mode (With Polarizing Filters)	
					
150mm		3m		1m	
					
CE		CE		CE	
10-30VDC	≤10%	±10%Sn	10%	Infrared(880nm)	NPN or PNP (programmable)
Light on or Dark on (programmable)	200mA	30mA or less	≤2.5V	Trimmer 1 tum	1mS
Yes	Yes	-25 ~ +55 °C	35 to 85% RH	>10.000Lux	IP67
PBT Plastic or Nickel plated brass		10x10cm white paper			
F1CDM180150NSI4A2 A18		F1CDM180150NSIEA4 A19		F1CLM183000NSI4A2 A18	
F1CDM180150PSI4A2 A20		F1CDM180150PSIEA4 A21		F1CLM183000PSI4A2 A20	
F1CDP180150NSI4A2 A18		F1CDP180150NSIEA4 A19		F1CLP183000NSI4A2 A18	
F1CDP180150PSI4A2 A20		F1CDP180150PSIEA4 A21		F1CLP183000PSI4A2 A20	
F1CLM181000NSI4A2/F A18		F1CLM181000NSIEA4/FA19		F1CLM181000PSI4A2/F A20	
F1CLM181000PSI4A2/F A20		F1CLM181000PSIEA4/FA21		F1CLP181000NSI4A2/F A18	
F1CLP181000PSI4A2/F A20		F1CLP181000PSIEA4/FA21		F1CLP181000NSIEA4/FA19	
F1CLP181000PSIEA4/FA21					
					
2m PVC (φ4x0.25mm ²) Approx.112 g	M12 Euro style Approx.75 g	2m PVC (φ4x0.25mm ²) Approx.112 g	M12 Euro style Approx.75 g	2m PVC (φ4x0.25mm ²) Approx.112 g	M12 Euro style Approx.75 g

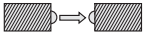



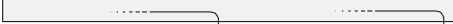
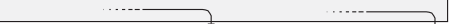
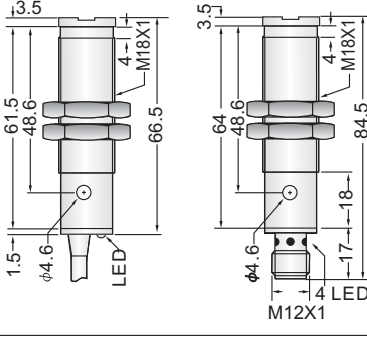
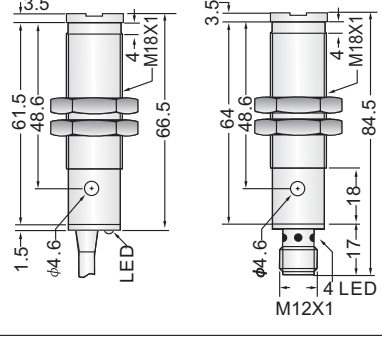
M18A DC WITH N.O.+N.C. PROGRAMMABLE OUTPUT

Type	M18		M18		
Sensing mode	Through-beam mode		Diffuse mode		
Sensing picture					
Switching distance(sn)	15mm		500mm		
Picture					
Nominal Voltage	10-30VDC		10-30VDC		
Residual Ripple	≤10%		≤10%		
Tolerance	±10%Sn		±10%Sn		
Hysteresis	10%		10%		
Emission	Infrared(880nm)		Infrared(880nm)		
Output	NPN or PNP (programmable)		NPN or PNP (programmable)		
Contact	N.O. & N.C. (programmable)		N.O. & N.C. (programmable)		
Max. Output Current	200mA		200mA		
No Load Current	30mA or less		30mA or less		
Voltage Drop(Sensor On)	≤2.5V		≤2.5V		
Sensitivity Adjustment	Trimmer 1 tum		Trimmer 1 tum		
Response Time	1mS		1mS		
Short Circuit Protection	Yes		Yes		
Electric Protections	Yes		Yes		
Temperature Limits	-25 ~ +55°C		-25 ~ +55 °C		
Ambient humidity	35 to 85% RH		35 to 85% RH		
Light Immunity	>10.000Lux		>10.000Lux		
Protection Degree	IP67		IP67		
Housing Material	PBT Plastic or Nickel plated brass		PBT Plastic or Nickel plated brass		
Sensing object	φ8mm or more		20x20cm white paper		
Wiring diagram(see page 21-16)					
Brass Housing	Emitter :	F1CTM18015MDEI3B2-A ^{A28}	F1CTM18015MDEIEB4-A ^{A29}	F1CDM180500NSI4A2-A ^{A24}	F1CDM180500NSIEA4-A ^{A25}
	NPN N.O.+N.C.	F1CTM18015MNSI4A2-A ^{A24}	F1CTM18015MNSIEA4-A ^{A25}	F1CDM180500PSI4A2-A ^{A26}	F1CDM180500PSIEA4-A ^{A27}
	PNP N.O.+N.C.	F1CTM18015MPSI4A2-A ^{A26}	F1CTM18015MPSIEA4-A ^{A27}		
Plastic Housing	Emitter :	F1CTP18015MDEI3B2-A ^{A28}	F1CTP18015MDEIEB4-A ^{A29}	F1CDP180500NSI4A2-A ^{A24}	F1CDP180500NSIEA4-A ^{A25}
	NPN N.O.+N.C.	F1CTP18015MNSI4A2-A ^{A24}	F1CTP18015MNSIEA4-A ^{A25}	F1CDP180500PSI4A2-A ^{A26}	F1CDP180500PSIEA4-A ^{A27}
	PNP N.O.+N.C.	F1CTP18015MPSI4A2-A ^{A26}	F1CTP18015MPSIEA4-A ^{A27}		
Dimensions (unit: mm)					
Connect	2m PVC (φ4x0.25mm ²)	M12 Euro style	2m PVC (φ4x0.25mm ²)	M12 Euro style	
Weight	Approx.112 g	Approx.75 g	Approx.112 g	Approx.75 g	







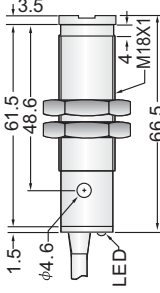
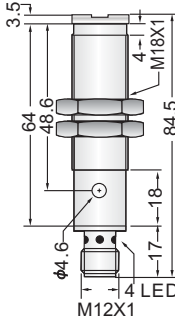
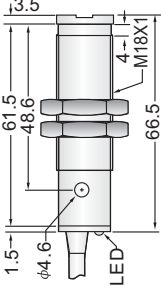
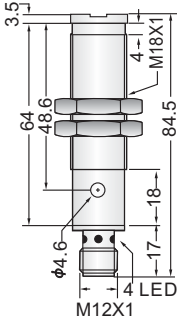
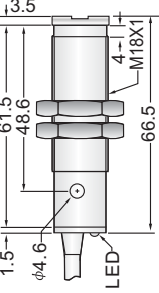
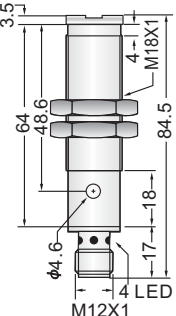
M18A DC WITH N.O.+N.C. PROGRAMMABLE OUTPUT

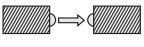





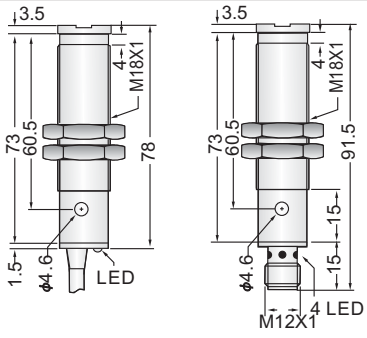
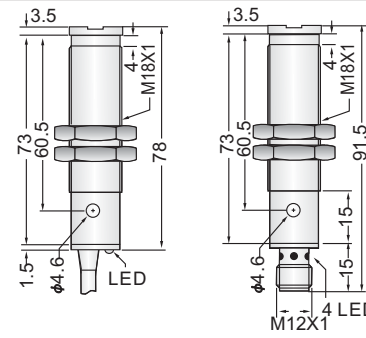
M18 Diffuse mode		M18 Retro-reflective mode		M18 Retro-reflective mode (With Polarizing Filters)	
					
150mm		3m		1m	
					
CE		CE		CE	
10-30VDC	10-30VDC	10-30VDC	10-30VDC	10-30VDC	10-30VDC
≤10%	≤10%	≤10%	≤10%	≤10%	≤10%
±10%Sn	±10%Sn	±10%Sn	±10%Sn	±10%Sn	±10%Sn
10%	10%	10%	10%	10%	10%
Infrared(880nm)	Infrared(880nm)	Infrared(880nm)	Infrared(880nm)	Red(660nm)	Red(660nm)
NPN or PNP (programmable)	NPN or PNP (programmable)	NPN or PNP (programmable)	NPN or PNP (programmable)	NPN or PNP (programmable)	NPN or PNP (programmable)
N.O. & N.C. (programmable)	N.O. & N.C. (programmable)	N.O. & N.C. (programmable)	N.O. & N.C. (programmable)	N.O. & N.C. (programmable)	N.O. & N.C. (programmable)
200mA	200mA	200mA	200mA	200mA	200mA
30mA or less	30mA or less	30mA or less	30mA or less	30mA or less	30mA or less
≤2.5V	≤2.5V	≤2.5V	≤2.5V	≤2.5V	≤2.5V
Trimmer 1 tum	Trimmer 1 tum	Trimmer 1 tum	Trimmer 1 tum	Trimmer 1 tum	Trimmer 1 tum
1mS	1mS	1mS	1mS	1mS	1mS
Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes
-25 ~ +55 °C	-25 ~ +55 °C	-25 ~ +55 °C	-25 ~ +55 °C	-25 ~ +55 °C	-25 ~ +55 °C
35 to 85% RH	35 to 85% RH	35 to 85% RH	35 to 85% RH	35 to 85% RH	35 to 85% RH
>10.000Lux	>10.000Lux	>10.000Lux	>10.000Lux	>10.000Lux	>10.000Lux
IP67	IP67	IP67	IP67	IP67	IP67
PBT Plastic or Nickel plated brass	PBT Plastic or Nickel plated brass	PBT Plastic or Nickel plated brass	PBT Plastic or Nickel plated brass	PBT Plastic or Nickel plated brass	PBT Plastic or Nickel plated brass
10x10cm white paper	D51 Mirror	D51 Mirror	D51 Mirror	D51 Mirror	D51 Mirror
F1CDM180150NSI4A2-A ^{A24}	F1CDM180150NSIEA4-A ^{A25}	F1CLM183000NSI4A2-A ^{A24}	F1CLM183000NSIEA4-A ^{A25}	F1CLM181000NSI4A2/F-A ^{A24}	F1CLM181000NSIEA4/F-A ^{A25}
F1CDM180150PSI4A2-A ^{A26}	F1CDM180150PSIEA4-A ^{A27}	F1CLM183000PSI4A2-A ^{A26}	F1CLM183000PSIEA4-A ^{A27}	F1CLM181000PSI4A2/F-A ^{A26}	F1CLM181000PSIEA4/F-A ^{A27}
F1CDP180150NSI4A2-A ^{A24}	F1CDP180150NSIEA4-A ^{A25}	F1CLP183000NSI4A2-A ^{A24}	F1CLP183000NSIEA4-A ^{A25}	F1CLP181000NSI4A2/F-A ^{A24}	F1CLP181000NSIEA4/F-A ^{A25}
F1CDP180150PSI4A2-A ^{A26}	F1CDP180150PSIEA4-A ^{A27}	F1CLP183000PSI4A2-A ^{A26}	F1CLP183000PSIEA4-A ^{A27}	F1CLP181000PSI4A2/F-A ^{A26}	F1CLP181000PSIEA4/F-A ^{A27}
					
2m PVC (φ4x0.25mm ²) Approx.112 g	M12 Euro style Approx.75 g	2m PVC (φ4x0.25mm ²) Approx.112 g	M12 Euro style Approx.75 g	2m PVC (φ4x0.25mm ²) Approx.112 g	M12 Euro style Approx.75 g


M18B DC WITH MULTIFUNCTIONAL OUTPUT (NPN,PNP,NO,NC all in a single sensor)


Type	M18		M18		
Sensing mode	Through-beam mode		Diffuse mode		
Sensing picture					
Switching distance(sn)	15mm		500mm		
Picture					
Nominal Voltage	10-30VDC		10-30VDC		
Residual Ripple	≤10%		≤10%		
Tolerance	±10%Sn		±10%Sn		
Hysteresis	10%		10%		
Emission	Infrared(880nm)		Infrared(880nm)		
Output	NPN or PNP (programmable)		NPN or PNP (programmable)		
Contact	N.O. or N.C. (programmable)		N.O. or N.C. (Programmable)		
Max. Output Current	200mA		200mA		
No Load Current	30mA or less		30mA or less		
Voltage Drop(Sensor On)	≤2.5V		≤2.5V		
Sensitivity Adjustment	Trimmer 1 tum		Trimmer 1 tum		
Response Time	1mS		1mS		
Short Circuit Protection	Yes		Yes		
Electric Protections	Yes		Yes		
Temperature Limits	-25 ~ +55°C		-25 ~ +55 °C		
Ambient humidity	35 to 85% RH		35 to 85% RH		
Light Immunity	>10.000Lux		>10.000Lux		
Protection Degree	IP67		IP67		
Housing Material	PBT Plastic or Nickel plated brass		PBT Plastic or Nickel plated brass		
Sensing object	φ8mm or more		20x20cm white paper		
Wiring diagram(see page 21-16)					
Brass Housing	Emitter :	F1CTM18015MDEI2A2-B A30	F1CTM18015MDEIEA4-B A31	F1CDM180500DSI4A2-B A29	F1CDM180500DSIEA4-B A31
	NPN or PNP, NO or NC OUTPUT	F1CTM18015MDSI4A2-B A29	F1CTM18015MDSIEA4-B A31		
Plastic Housing	Emitter :	F1CTP18015MDEI2A2-B A30	F1CTP18015MDEIEA4-B A31	F1CDP180500DSI4A2-B A29	F1CDP180500DSIEA4-B A31
	NPN or PNP, NO or NC OUTPUT	F1CTP18015MDSI4A2-B A29	F1CTP18015MDSIEA4-B A31		
Dimensions (unit: mm)					
Connect	2m PVC (φ4x0.25mm ²)	M12 Euro style	2m PVC (φ4x0.25mm ²)	M12 Euro style	
Weight	Approx.112 g	Approx.75 g	Approx.112 g	Approx.75 g	


M18B DC WITH MULTIFUNCTIONAL OUTPUT (NPN,PNP,NO,NC all in a single sensor)

M18 Diffuse mode		M18 Retro-reflective mode		M18 Retro-reflective mode (With Polarizing Filters)	
					
150mm		3m		1m	
					
CE		CE		CE	
10-30VDC	10-30VDC	10-30VDC	10-30VDC	10-30VDC	10-30VDC
≤10%	≤10%	≤10%	≤10%	≤10%	≤10%
±10%Sn	±10%Sn	±10%Sn	±10%Sn	±10%Sn	±10%Sn
10%	10%	10%	10%	10%	10%
Infrared(880nm)	Infrared(880nm)	Infrared(880nm)	Infrared(880nm)	Red(660nm)	Red(660nm)
NPN or PNP (programmable)	NPN or PNP (programmable)	NPN or PNP (programmable)	N.O. or N.C. (programmable)	NPN or PNP (programmable)	N.O. or N.C. (programmable)
N.O. or N.C. (programmable)	N.O. or N.C. (programmable)	N.O. or N.C. (programmable)	N.O. or N.C. (programmable)	N.O. or N.C. (programmable)	N.O. or N.C. (programmable)
200mA	200mA	200mA	200mA	200mA	200mA
30mA or less	30mA or less	30mA or less	30mA or less	30mA or less	30mA or less
≤2.5V	≤2.5V	≤2.5V	≤2.5V	≤2.5V	≤2.5V
Trimmer 1 tum	Trimmer 1 tum	Trimmer 1 tum	Trimmer 1 tum	Trimmer 1 tum	Trimmer 1 tum
1mS	1mS	1mS	1mS	1mS	1mS
Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes
-25 ~ +55 °C	-25 ~ +55 °C	-25 ~ +55 °C	-25 ~ +55 °C	-25 ~ +55 °C	-25 ~ +55 °C
35 to 85% RH	35 to 85% RH	35 to 85% RH	35 to 85% RH	35 to 85% RH	35 to 85% RH
>10.000Lux	>10.000Lux	>10.000Lux	>10.000Lux	>10.000Lux	>10.000Lux
IP67	IP67	IP67	IP67	IP67	IP67
PBT Plastic or Nickel plated brass	PBT Plastic or Nickel plated brass	PBT Plastic or Nickel plated brass	PBT Plastic or Nickel plated brass	PBT Plastic or Nickel plated brass	PBT Plastic or Nickel plated brass
10x10cm white paper	D51 Mirror	D51 Mirror	D51 Mirror	D51 Mirror	D51 Mirror
F1CDM180150DSI4A2-B A29	F1CDM180150DSIEA4-B A31	F1CLM183000DSI4A2-B A29	F1CLM183000DSIEA4-B A31	F1CLM181000DSR4A2-B A29	F1CLM181000DSREA4-B A31
F1CDP180150DSI4A2-B A29	F1CDP180150DSIEA4-B A31	F1CLP183000DSI4A2-B A29	F1CLP183000DSIEA4-B A31	F1CLP181000DSR4A2-B A29	F1CLP181000DSREA4-B A31
					
2m PVC (φ4x0.25mm ²) Approx.112 g	M12 Euro style Approx.75 g	2m PVC (φ4x0.25mm ²) Approx.112 g	M12 Euro style Approx.75 g	2m PVC (φ4x0.25mm ²) Approx.112 g	M12 Euro style Approx.75 g

Type	M18	M18		
	Through-beam mode	Diffuse mode		
				
Switching distance(sn)	15mm	500mm		
Picture				
Nominal Voltage	24-240VAC	24-240VAC		
Residual Ripple	≤10%	≤10%		
Tolerance	±10%Sn	±10%Sn		
Hysteresis	10%	10%		
Emission	Infrared(880nm)	Infrared(880nm)		
Output	AC non-contact(MOSFET Output)	AC non-contact(MOSFET Output)		
Contact	Light on or Dark on	Light on or Dark on		
Max. Output Current	200mA	200mA		
No Load Current	5mA or less	5mA or less		
Sensitivity Adjustment	Trimmer 1 turn	Trimmer 1 turn		
Response Time	15mS	15mS		
Temperature Limits	-25 ~ +55°C	-25 ~ +55°C		
Ambient humidity	35 to 85% RH	35 to 85% RH		
Light Immunity	>10.000Lux	>10.000Lux		
Protection Degree	IP67	IP67		
Housing Material	PBT Plastic or Nickel plated brass	PBT Plastic or Nickel plated brass		
Sensing object	φ 8mm or more	20X20cm White Paper		
Wiring diagram(see page 21-16)				
Brass Housing	Emitter :	F2CTM18015MAEI2B2 A34 F2CTM18015MAEIEB4 A35	F2CTM18015MALI3A2 A32 F2CTM18015MALIEA4 A33	F2CDM180500ALI3A2 A32 F2CDM180500ALIEA4 A33
	Light on	F2CTM18015MADI3A2 A32 F2CTM18015MADIEA4 A33		F2CDM180500ADI3A2 A32 F2CDM180500ADIEA4 A33
	Dark on			
Plastic Housing	Emitter :	F2CTP18015MAEI2B2 A34 F2CTP18015MAEIEB4 A35	F2CTP18015MALI3A2 A32 F2CTP18015MALIEA4 A33	F2CDP180500ALI3A2 A32 F2CDP180500ALIEA4 A33
	Light on	F2CTP18015MADI3A2 A32 F2CTP18015MADIEA4 A33		F2CDP180500ADI3A2 A32 F2CDP180500ADIEA4 A33
	Dark on			
Dimensions (unit: mm)				
Connect	2m PVC (φ4x0.25mm ²)	M12 Euro style	2m PVC (φ4x0.25mm ²)	M12 Euro style
Weight	Approx.112 g	Approx.75 g	Approx.112 g	Approx.75 g

M18
Diffuse mode

150mm

M18
Retro-reflective mode

3m

M18
Retro-reflective mode (With Polarizing Filters)

1m



24-240VAC
≤10%
±10%Sn
10%
Infrared(880nm)
AC non-contact(MOSFET Output)
Light on or Dark on
200mA
5mA or less
Trimmer 1 tum
15mS
-25 ~ +55°C
35 to 85% RH
>10.000Lux
IP67
PBT Plastic or Nickel plated brass
10X10cm White Paper

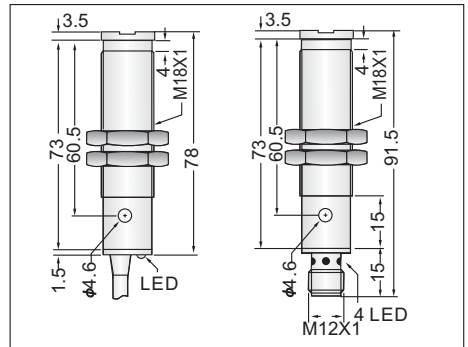
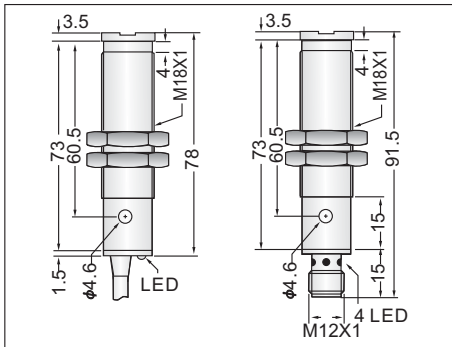
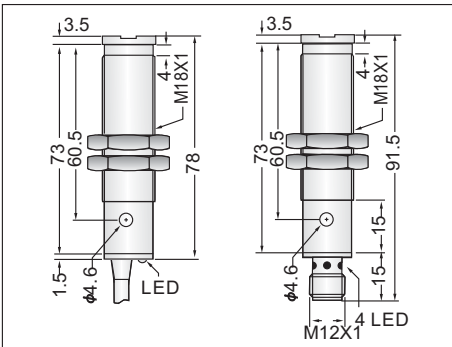
24-240VAC
≤10%
±10%Sn
10%
Infrared(880nm)
AC non-contact(MOSFET Output)
Light on or Dark on
200mA
5mA or less
Trimmer 1 tum
15mS
-25 ~ +55°C
35 to 85% RH
>10.000Lux
IP67
PBT Plastic or Nickel plated brass
D51 Mirror

24-240VAC
≤10%
±10%Sn
10%
Infrared(880nm)
AC non-contact(MOSFET Output)
Light on or Dark on
200mA
5mA or less
Trimmer 1 tum
15mS
-25 ~ +55°C
35 to 85% RH
>10.000Lux
IP67
PBT Plastic or Nickel plated brass
D51 Mirror

F2CDM180150ALI3A2 A32	F2CDM180150ALIEA4 A33
F2CDM180150ADI3A2 A32	F2CDM180150ADIEA4 A33
F2CDP180150ALI3A2 A32	F2CDP180150ALIEA4 A33
F2CDP180150ADI3A2 A32	F2CDP180150ADIEA4 A33

F2CLM183000ALI3A2 A32	F2CLM183000ALIEA4 A33
F2CLM183000ADI3A2 A32	F2CLM183000ADIEA4 A33
F2CLP183000ALI3A2 A32	F2CLP183000ALIEA4 A33
F2CLP183000ADI3A2 A32	F2CLP183000ADIEA4 A33

F2CLM181000ALR3A2/F A32	F2CLM181000ALREA4/F A33
F2CLM181000ADR3A2/F A32	F2CLM181000ADREA4/F A33
F2CLP181000ALR3A2/F A32	F2CLP181000ALREA4/F A33
F2CLP181000ADR3A2/F A32	F2CLP181000ADREA4/F A33



2m PVC (φ4x0.25mm ²) Approx.112 g	M12 Euro style Approx.75 g
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2m PVC (φ4x0.25mm ²) Approx.112 g	M12 Euro style Approx.75 g
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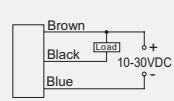
2m PVC (φ4x0.25mm ²) Approx.112 g	M12 Euro style Approx.75 g
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FR SERIES PHOTOELECTRIC SENSORS

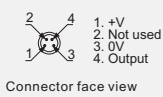
FR Series wiring diagrams

• M8 Receiver: NPN output (Through-beam)

A1 Cable output

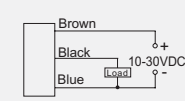


A2 Pico-style

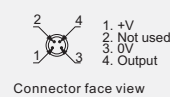


• M8 Receiver: PNP output(Through-beam)

A3 Cable output

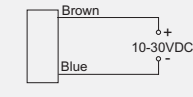


A4 Pico-style

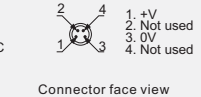


• M8 Emitter: Wiring diagram(Through-beam)

A5 Cable output

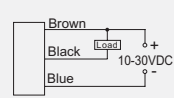


A6 Pico-style(M8)

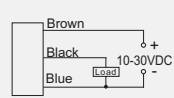


• M12 Receiver Cable Output

A7 NPN output

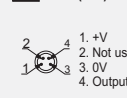


A8 PNP output

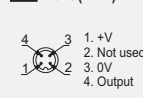


• M12 Receiver Connector Output

A9 Pico(M8)

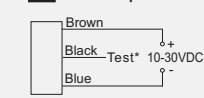


A10 Euro(M12)



• M12 Emitter Cable Output

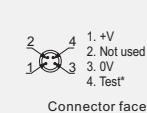
A11 Cable output



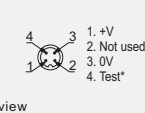
* Test(black wire)=0V, Emitter off

• M12 Emitter Connector Output

A12 Pico(M8)

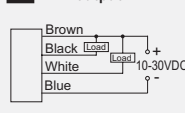


A13 Euro(M12)

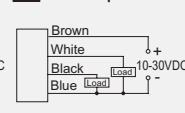


• M12 NPN Cable Output

A14 NPN output

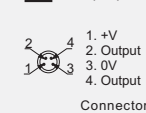


A15 PNP output

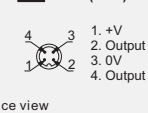


• M12 Connector Output

A16 Pico(M8)

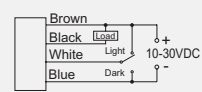


A17 Euro(M12)

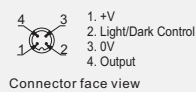


• M18 NPN output

A18 Cable output

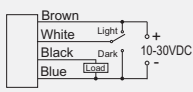


A19 Euro-style

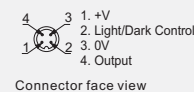


• M18 PNP output

A20 Cable output

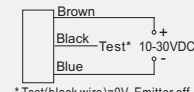


A21 Euro-style



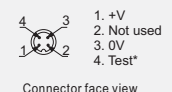
• M18 Emitter: (Through-beam)

A22 Cable output



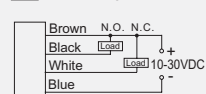
* Test(black wire)=0V, Emitter off

A23 Euro-style

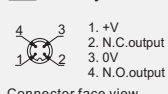


• M18A DC NPN N.O. &N.C. Output

A24 Cable output

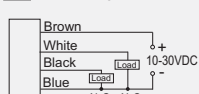


A25 Euro-style

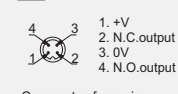


• M18A PNP output

A26 Cable output

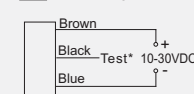


A27 Euro-style

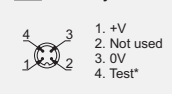


• M18A Emitter(Through-beam)

A28 Cable output

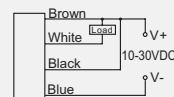


A29 Euro-style

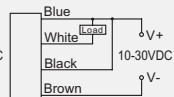


A29 M18B DC Cable

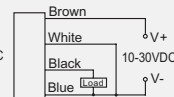
NPN-N.O.



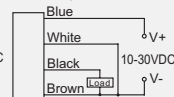
NPN-N.C.



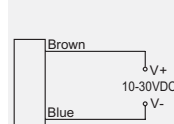
PNP-N.O.



PNP-N.C.

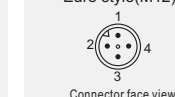


A30 M18B Emitter(DC)



A31 M18B Connection with connector (DC)

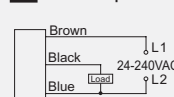
Euro style(M12)



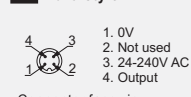
Output	Contact numbers			
	1	2	3	4
NPN N.O.	+	N.O.	-	+
NPN N.C.	-	N.C.	+	+
PNP N.O.	+	-	-	N.O.
PNP N.C.	-	-	+	N.C.
Emitter	+	-	-	-

• M18 AC Wiring diagram

A32 Cable output

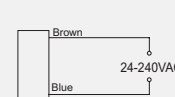


A33 Euro-style

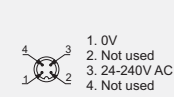


• M18AC Emitter Wiring diagram

A34 Cable output



A35 Euro-style

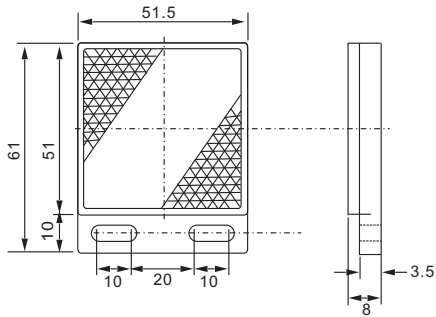


FR SERIES PHOTOELECTRIC SENSORS

FR Series Accessories

Accessories (unit:mm)

• Reflectors D51



• Reflectors D83

