



Sky-e

FR SERIES
Photoelectric Sensor



- Connector Type: M8, M12, M18
- Sensing Mode: Diffuse-Reflective
Retro-Reflective
Through-Beam
- Supply Voltage: 10-30VDC, 24-240VAC
- CE Approvals

FR SERIES



Through-beam mode:

	M8: Sn=80mm, 150mm M12: Sn= 5.2 m M18: Sn=15m
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Diffuse mode:

	M12: Sn=200mm M18: Sn= 500mm, 150mm
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Retro-reflective mode:

	M12: Sn=2m, 1m (With Polarizing Filters) M18: Sn=3m, 1m (With Polarizing Filters)
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SPECIFICATIONS (DC)

Type	Diffuse-reflective	Retro-reflective	Retro-reflective	Through-beam
			With polarizing filters	
Supply Voltage	10 to 30V DC, Ripple P-P 10% or less			
Current consumption	30mA or less			
Output	NPN output type: NPN open-collector transistor, Applied voltage: 10-30V DC, Maximum sink current: 200mA(M18),150mA(M8,M12), Voltage drop: 2.5V or less PNP output type: PNP open-collector transistor, Applied voltage: 10-30V DC, Maximum sink current:200mA(M18),150mA(M8,M12), Voltage drop: 2.5V or less			
Output operation	Selectable either Light-ON / Dark-ON by type number or by the control input wire(M18 Type only)			
Short-circuit protection	Yes			
Reverse polarity protection	Yes			
Overload current protection	Yes			
Response time	1ms			
Operation indicator	Red LED (light up when the output is activated)			
Pollution degree	3(Industrial environment)			
Protection	IP67(IEC)			
Ambient temperature	-25 to +55 °C			
Ambient humidity	35 to 85% RH			
EMC	IEC 60947-5-2, Parts7.2.6.1.2.3 or RFI>10V/m(in 30-1000MHZ), EFT>1KV, ESD>4KV(contact)			
Voltage Withstand Ability	IEC 60947-5-2, Part8.3.3.4 or 500VDC for one min, between all supply terminals connected together and enclosure			
Insulation Resistance	>20M Ω , With 500v dc megger between all supply terminals connected together and enclosure			
Vibration Resistance	IEC 60947-5-2, Part 7.4.2 or 10-55HZ, 1.0mm amplitude in x, y and z directions for 30 min			
Shock Resistance	IEC 60947-5-2, Part 7.4.1 or 30g 11ms in x, y and z directions for six time each			
Emitting element	Infrared LED(880nm)		Red LED(650nm)	Infrared LED(880nm)
Homes	PBT or Nickel Plated Brass			
Connect	Cable 2m long or Euro(m12), Pico(m8) connector			

SPECIFICATIONS (AC)

Type	Diffuse-reflective	Retro-reflective	Retro-reflective	Through-beam
			With polarizing filters	
Supply Voltage	24 to 240V AC \pm 10%			
Current consumption	5mA or less			
Output	AC non-contact (MOSFET output) , Applied voltage: 24 to 240V AC \pm 10%, Max. Load current: 200mA , Voltage drop: 10V AC or less			
Output operation	Selectable either Light-ON / Dark-ON by type number			
Overload current protection	Yes			
Response time	15ms			
Operation indicator	Red LED (light up when the output is activated)			
Pollution degree	3(Industrial environment)			
Protection	IP67(IEC)			
Ambient temperature	-25°C to +55°C			
Ambient humidity	IP67(IEC)			
Ambient temperature	-25 to +55 °C			
Ambient humidity	35 to 85% RH			
EMC	IEC 60947-5-2, Parts7.2.6.1.2.3 or RFI>10V/m(in 30-1000MHZ), EFT>1KV, ESD>4KV(contact)			
Voltage Withstand Ability	IEC 60947-5-2, Part8.3.3.4 or 500VAC for one min, between all supply terminals connected together and enclosure			
Insulation Resistance	>20M Ω , With 1500V AC megger between all supply terminals connected together and enclosure			
Vibration Resistance	IEC 60947-5-2, Part 7.4.2 or 10-55HZ, 1.0mm amplitude in x, y and z directions for 30 min			
Shock Resistance	IEC 60947-5-2, Part 7.4.1 or 30g 11ms in x, y and z directions for six time each			
Emitting element	Infrared LED(880nm)		Red LED(650nm)	Infrared LED(880nm)
Homes	PBT or Nickel Plated Brass			
Connect	Cable 2m Long or Micro(M12)			

M8 (DC)									
Stainless Steel Housing					Brass Housing				
Sensing distance:80mm Red LED(650nm)	Cable	Emitter	F1CTU080080DER2B2		Cable	Emitter	F1CTM080080DER2B2		
		NPN Light on	F1CTU080080NLR3A2			NPN Light on	F1CTM080080NLR3A2		
		NPN Dark on	F1CTU080080NDR3A2			NPN Dark on	F1CTM080080NDR3A2		
		PNP Light on	F1CTU080080PLR3A2			PNP Light on	F1CTM080080PLR3A2		
		PNP Dark on	F1CTU080080PDR3A2			PNP Dark on	F1CTM080080PDR3A2		
	M8 Pico	Emitter	F1CTU080080DERPB4		M8 Pico	Emitter	F1CTM080080DERPB4		
		NPN Light on	F1CTU080080NLRPA4			NPN Light on	F1CTM080080NLRPA4		
		NPN Dark on	F1CTU080080NDRPA4			NPN Dark on	F1CTM080080NDRPA4		
		PNP Light on	F1CTU080080PLRPA4			PNP Light on	F1CTM080080PLRPA4		
		PNP Dark on	F1CTU080080PDRPA4			PNP Dark on	F1CTM080080PDRPA4		
Sensing distance:150mm	Cable	Emitter	F1CTU080150DEI2B2		Cable	Emitter	F1CTM080150DEI2B2		
		NPN Light on	F1CTU080150NLI3A2			NPN Light on	F1CTM080150NLI3A2		
		NPN Dark on	F1CTU080150NDI3A2			NPN Dark on	F1CTM080150NDI3A2		
		PNP Light on	F1CTU080150PLI3A2			PNP Light on	F1CTM080150PLI3A2		
		PNP Dark on	F1CTU080150PDI3A2			PNP Dark on	F1CTM080150PDI3A2		
	M8 Pico	Emitter	F1CTU080150DEIPB4		M8 Pico	Emitter	F1CTM080150DEIPB4		
		NPN Light on	F1CTU080150NLIP4			NPN Light on	F1CTM080150NLIP4		
		NPN Dark on	F1CTU080150NDIP4			NPN Dark on	F1CTM080150NDIP4		
		PNP Light on	F1CTU080150PLIP4			PNP Light on	F1CTM080150PLIP4		
		PNP Dark on	F1CTU080150PDIP4			PNP Dark on	F1CTM080150PDIP4		
M12 (DC)									
Plastic Housing					Brass Housing				
Sensing distance:5.2m	Cable	Emitter	F1CTP125200DEI3B2		Cable	Emitter	F1CTM125200DEI3B2		
		NPN Light on	F1CTP125200NLI3A2			NPN Light on	F1CTM125200NLI3A2		
		NPN Dark on	F1CTP125200NDI3A2			NPN Dark on	F1CTM125200NDI3A2		
		PNP Light on	F1CTP125200PLI3A2			PNP Light on	F1CTM125200PLI3A2		
		PNP Dark on	F1CTP125200PDI3A2			PNP Dark on	F1CTM125200PDI3A2		
	M8 Pico	Emitter	F1CTP125200DEIPB4		M8 Pico	Emitter	F1CTM125200DEIPB4		
		NPN Light on	F1CTP125200NLIP4			NPN Light on	F1CTM125200NLIP4		
		NPN Dark on	F1CTP125200NDIP4			NPN Dark on	F1CTM125200NDIP4		
		PNP Light on	F1CTP125200PLIP4			PNP Light on	F1CTM125200PLIP4		
		PNP Dark on	F1CTP125200PDIP4			PNP Dark on	F1CTM125200PDIP4		
M12 Euro	Emitter	F1CTP125200DEIEB4		M12 Euro	Emitter	F1CTM125200DEIEB4			
	NPN Light on	F1CTP125200NLIEA4			NPN Light on	F1CTM125200NLIEA4			
	NPN Dark on	F1CTP125200NDIEA4			NPN Dark on	F1CTM125200NDIEA4			
	PNP Light on	F1CTP125200PLIEA4			PNP Light on	F1CTM125200PLIEA4			
	PNP Dark on	F1CTP125200PDIEA4			PNP Dark on	F1CTM125200PDIEA4			
Sensing distance:200mm	Cable	NPN Light/Dark	F1CDP120200NSI4A2		Cable	NPN Light/Dark	F1CDM120200NSI4A2		
		PNP Light/Dark	F1CDP120200PSI4A2			PNP Light/Dark	F1CDM120200PSI4A2		
		NPN Light/Dark	F1CDP120200NSIP4			NPN Light/Dark	F1CDM120200NSIP4		
		PNP Light/Dark	F1CDP120200PSIP4			PNP Light/Dark	F1CDM120200PSIP4		
		NPN Light/Dark	F1CDP120200NSIEA4			NPN Light/Dark	F1CDM120200NSIEA4		
	M12 Euro	NPN Light/Dark	F1CDP120200NSIEA4		M12 Euro	NPN Light/Dark	F1CDM120200NSIEA4		
		PNP Light/Dark	F1CDP120200PSIEA4			PNP Light/Dark	F1CDM120200PSIEA4		
		NPN Light/Dark	F1CLP122000NSR4A2			M12 Euro	NPN Light/Dark	F1CLM122000NSR4A2	
		PNP Light/Dark	F1CLP122000PSR4A2				PNP Light/Dark	F1CLM122000PSR4A2	
		NPN Light/Dark	F1CLP122000NSRPA4				NPN Light/Dark	F1CLM122000NSRPA4	
PNP Light/Dark	F1CLP122000PSRPA4		PNP Light/Dark	F1CLM122000PSRPA4					
NPN Light/Dark	F1CLP122000NSREA4		NPN Light/Dark	F1CLM122000NSREA4					
M12 Euro	NPN Light/Dark	F1CLP122000PSREA4		M12 Euro	NPN Light/Dark	F1CLM122000PSREA4			
	NPN Light/Dark	F1CLP121000NSR4A2/F			NPN Light/Dark	F1CLM121000NSR4A2/F			
	PNP Light/Dark	F1CLP121000PSR4A2/F			PNP Light/Dark	F1CLM121000PSR4A2/F			
	NPN Light/Dark	F1CLP121000NSRPA4/F			NPN Light/Dark	F1CLM121000NSRPA4/F			
	PNP Light/Dark	F1CLP121000PSRPA4/F			PNP Light/Dark	F1CLM121000PSRPA4/F			
M12 Euro	NPN Light/Dark	F1CLP121000NSREA4/F		M12 Euro	NPN Light/Dark	F1CLM121000NSREA4/F			
	PNP Light/Dark	F1CLP121000PSREA4/F			PNP Light/Dark	F1CLM121000PSREA4/F			
	NPN Light/Dark	F1CLP121000NSR4A2/F			M12 Euro	NPN Light/Dark	F1CLM121000NSR4A2/F		
	PNP Light/Dark	F1CLP121000PSR4A2/F				PNP Light/Dark	F1CLM121000PSR4A2/F		
	NPN Light/Dark	F1CLP121000NSRPA4/F				NPN Light/Dark	F1CLM121000NSRPA4/F		
PNP Light/Dark	F1CLP121000PSRPA4/F		PNP Light/Dark	F1CLM121000PSRPA4/F					
NPN Light/Dark	F1CLP121000NSREA4/F		NPN Light/Dark	F1CLM121000NSREA4/F					
PNP Light/Dark	F1CLP121000PSREA4/F		PNP Light/Dark	F1CLM121000PSREA4/F					
M18 (DC)									
Plastic Housing					Brass Housing				
Sensing distance:15m	Cable	Emitter	F1CTP18015MDEI3B2		Cable	Emitter	F1CTM18015MDEI3B2		
		NPN Light/dark	F1CTP18015MNSI4A2			NPN Light/dark	F1CTM18015MNSI4A2		
		PNP Light/dark	F1CTP18015MPSI4A2			PNP Light/dark	F1CTM18015MPSI4A2		
		Emitter	F1CTP18015MDEIEB4			M12 Euro	Emitter	F1CTM18015MDEIEB4	
		NPN Light/dark	F1CTP18015MNSIEA4				NPN Light/dark	F1CTM18015MNSIEA4	
	PNP Light/dark	F1CTP18015MPSIEA4		PNP Light/dark	F1CTM18015MPSIEA4				
	NPN Light/dark	F1CDP180500NSI4A2		M12 Euro	NPN Light/dark		F1CDM180500NSI4A2		
	PNP Light/dark	F1CDP180500PSI4A2			PNP Light/dark		F1CDM180500PSI4A2		
	NPN Light/dark	F1CDP180500NSIEA4			NPN Light/dark	F1CDM180500NSIEA4			
	PNP Light/dark	F1CDP180500PSIEA4			PNP Light/dark	F1CDM180500PSIEA4			
NPN Light/dark	F1CLP183000NSI4A2		M12 Euro		NPN Light/dark	F1CLM183000NSI4A2			
PNP Light/dark	F1CLP183000PSI4A2			PNP Light/dark	F1CLM183000PSI4A2				
NPN Light/dark	F1CLP183000NSIEA4			NPN Light/dark	F1CLM183000NSIEA4				
PNP Light/dark	F1CLP183000PSIEA4			PNP Light/dark	F1CLM183000PSIEA4				
NPN Light/dark	F1CLP181000NSR4A2/F			M12 Euro	NPN Light/dark	F1CLM181000NSR4A2/F			
PNP Light/dark	F1CLP181000PSR4A2/F		PNP Light/dark		F1CLM181000PSR4A2/F				
NPN Light/dark	F1CLP181000NSREA4/F		NPN Light/dark		F1CLM181000NSREA4/F				
PNP Light/dark	F1CLP181000PSREA4/F		PNP Light/dark		F1CLM181000PSREA4/F				
NPN Light/dark	F1CLP181000NSR4A2/F		NPN Light/dark		F1CLM181000NSR4A2/F				
PNP Light/dark	F1CLP181000PSR4A2/F		PNP Light/dark	F1CLM181000PSR4A2/F					
NPN Light/dark	F1CLP181000NSRPA4/F		NPN Light/dark	F1CLM181000NSRPA4/F					
PNP Light/dark	F1CLP181000PSRPA4/F		PNP Light/dark	F1CLM181000PSRPA4/F					
NPN Light/dark	F1CLP181000NSREA4/F		NPN Light/dark	F1CLM181000NSREA4/F					
PNP Light/dark	F1CLP181000PSREA4/F		PNP Light/dark	F1CLM181000PSREA4/F					
M18 (AC)									
Plastic Housing					Brass Housing				
Sensing distance:15m	Cable	Emitter	F2CTP18015MAEI2B2		Cable	Emitter	F2CTM18015MAEI2B2		
		Light On	F2CTP18015MALI3A2			Light On	F2CTM18015MALI3A2		
		Dark On	F2CTP18015MADI3A2			Dark On	F2CTM18015MADI3A2		
		Emitter	F2CTP18015MAEIEB4			M12 Micro	Emitter	F2CTM18015MAEIEB4	
		Light On	F2CTP18015MALIEA4				Light On	F2CTM18015MALIEA4	
	Dark On	F2CTP18015MADIEA4		Dark On	F2CTM18015MADIEA4				
	Light On	F2CDP180500ALI3A2		M12 Micro	Light On		F2CDM180500ALI3A2		
	Dark On	F2CDP180500ADI3A2			Dark On		F2CDM180500ADI3A2		
	Light On	F2CDP180500ALIEA4			Light On	F2CDM180500ALIEA4			
	Dark On	F2CDP180500ADIEA4			Dark On	F2CDM180500ADIEA4			
Light On	F2CLP180150ALI3A2		M12 Micro		Light On	F2CLM180150ALI3A2			
Dark On	F2CLP180150ADI3A2			Dark On	F2CLM180150ADI3A2				
Light On	F2CLP180150ALIEA4			Light On	F2CLM180150ALIEA4				
Dark On	F2CLP180150ADIEA4			Dark On	F2CLM180150ADIEA4				
Light On	F2CLP183000ALI3A2			M12 Micro	Light On	F2CLM183000ALI3A2			
Dark On	F2CLP183000ADI3A2		Dark On		F2CLM183000ADI3A2				
Light On	F2CLP183000ALIEA4		Light On		F2CLM183000ALIEA4				
Dark On	F2CLP183000ADIEA4		Dark On		F2CLM183000ADIEA4				
Light On	F2CLP181000ALR3A2/F		M12 Micro		Light On	F2CLM181000ALR3A2/F			
Dark On	F2CLP181000ADR3A2/F			Dark On	F2CLM181000ADR3A2/F				
Light On	F2CLP181000ALREA4/F			Light On	F2CLM181000ALREA4/F				
Dark On	F2CLP181000ADREA4/F			Dark On	F2CLM181000ADREA4/F				
Light On	F2CLP181000ALR3A2/F			Light On	F2CLM181000ALR3A2/F				
Dark On	F2CLP181000ADR3A2/F		Dark On	F2CLM181000ADR3A2/F					
Light On	F2CLP181000ALREA4/F		Light On	F2CLM181000ALREA4/F					
Dark On	F2CLP181000ADREA4/F		Dark On	F2CLM181000ADREA4/F					

TERMINAL CONNECTIONS

<p>M8 Receiver: NPN output wiring diagram(Through-beam)</p> <ul style="list-style-type: none"> Cable output Pico-style 	<p>M8 Receiver: PNP output wiring diagram(Through-beam)</p> <ul style="list-style-type: none"> Cable output Pico-style 	<p>M8 Emitter: Wiring diagram(Through-beam)</p> <ul style="list-style-type: none"> Cable output Pico-style(M8)
<p>M12 Receiver: NPN output wiring diagram(Through-beam)</p> <ul style="list-style-type: none"> Cable output Pico(M8) Euro(M12) 	<p>M12 Receiver: PNP output wiring diagram(Through-beam)</p> <ul style="list-style-type: none"> Cable output Pico(M8) Euro(M12) 	<p>M12 Emitter: Wiring diagram(Through-beam)</p> <ul style="list-style-type: none"> Cable output Pico(M8) Euro(M12) <p>* Test(black wire)=0V, Emitter off</p>
<p>M12 NPN output wiring diagram(Diffuse mode)</p> <ul style="list-style-type: none"> Cable output Pico(M8) Euro(M12) 	<p>M12 PNP output wiring diagram(Diffuse mode)</p> <ul style="list-style-type: none"> Cable output Pico(M8) Euro(M12) 	
<p>M18 NPN output wiring diagram</p> <ul style="list-style-type: none"> Cable output Euro-style 	<p>M18 PNP output wiring diagram</p> <ul style="list-style-type: none"> Cable output Euro-style 	<p>M18 Emitter: Wiring diagram(Through-beam)</p> <ul style="list-style-type: none"> Cable output Euro-style <p>* Test(black wire)=0V, Emitter off</p>
<p>M18 AC Receiver of through-beam, Retro-reflective</p> <ul style="list-style-type: none"> Cable output Euro-style 	<p>M18 AC Diffuse-reflective Sensor</p> <ul style="list-style-type: none"> Cable output Euro-style 	<p>M18 AC Emitter: Wiring diagram(Through-beam)</p> <ul style="list-style-type: none"> Cable output Euro-style

FR SERIES SENSORS DIMENSIONS(mm)

<p>M8 Sensor Dimensions</p> <ul style="list-style-type: none"> Cable version PICO-style quick connector 	<p>M12 Sensor(Brass Housing)</p> <ul style="list-style-type: none"> Cable version EURO-style quick connector PICO-style quick connector 	<p>M12 Sensor (Plastic Housing)</p> <ul style="list-style-type: none"> Cable version EURO-style quick connector PICO-style quick connector
<p>M18 Sensor Dimensions(DC)</p> <ul style="list-style-type: none"> Cable version EURO-style quick connector 		
<p>M18 Sensor Dimensions(AC)</p> <ul style="list-style-type: none"> Cable version EURO-style quick connector 		



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