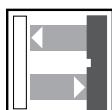




MP Series modular sensors enable users to customize a sensing solution for almost any application. For this reason, the components of this series are sold separately. Refer to pages 594-595 for instruction on how to assemble an MP Series sensor.

MP Series Modular Photoelectric Sensors

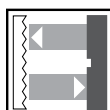
- Harsh Duty
- Modular design
 - Exchangeable rotatable heads
 - Limit switch and mini style plug-in bases
 - Screw terminal, preleaded, and connector version receptacles
- Withstands 1200 psi washdown, IP69K
- 6 A SPDT and 5 A DPDT relay models
- Multifunction timer/logic cards available
- DC, AC, AC/DC models



Diffuse Mode

Sensing Ranges: 300 mm, 450 mm, 760 mm, 900 mm, 1.3 m, 1.8 m, 3 m

Outputs: Dependent on base selected



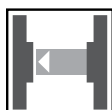
Retro-Reflective Mode

Features:

- Polarization filter to detect shiny objects

Sensing Ranges: 4.5 m, 6 m, 9 m

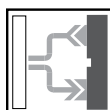
Outputs: Dependent on base selected



Thru-Beam Mode

Sensing Ranges: 36 m, 60 m

Outputs: Dependent on base selected



Fiber Optic Mode

Sensing Ranges: Dependent on fibers selected

Outputs: Dependent on base selected

See page 610-620 for MP Series sensing characteristics, wiring, dimensions and accessories.

2. SELECT A BASE

3. SELECT A RECEPTACLE

PLUG-IN BASES (pages 602-603)		Models
AC/DC	10.8-140 VDC/18-140 VAC 4-wire FET w/output indicator	MPS18HD ⚡
DC	10-30 VDC emitter base only	MPS30HD
	10-30 VDC NPN and PNP, 4-wire DC	MPS33HD ⚡
	10-30 VDC NPN N.O./N.C., 4-wire DC	MPS31HD ●
	10-30 VDC PNP, 3-wire DC	MPS32HD ●
AC	198-264 VAC 4-wire solid state AC relay 1 A max.	MPS12HD
	198-264 VAC emitter base only	MPS13HD
	92-132 VAC 4-wire bilateral FET (AC/DC) 100 mA max.	MPS17HD ●
	92-132 VAC 4-wire solid state AC relay 1 A max.	MPS11HD ⚡
	92-132 VAC emitter base only	MPS10HD ●

AC DPDT RELAY BASE (page 603)		Model
RELAY	DPDT, 92-132 VAC, 5 A, output indicator	MPSD11HD ⚡

SPDT RELAY BASES (page 604)		Models
DC	SPDT, 10-30 VDC, 6 A	MPV31HD ●
SPDT RELAY AC	SPDT, 103-132 VAC, 6 A	MPV11HD
	SPDT, 192-264 VAC, 6 A	MPV12HD
	SPDT, 20-260 VAC/VDC, 6 A	MPV14HD ●
	SPDT, 22-26 VAC, 6 A	MPV13HD

MINI STYLE BASES (pages 605-607)		Models
3-WIRE DC	10-30 VDC, 2 m preleaded cable, emitter base only	▲ MPT30HD
	10-30 VDC, NPN N.O., 2 m preleaded cable	▲ MPT31HD ●
	10-30 VDC, PNP N.O., 2 m preleaded cable	▲ MPT32HD
	10-30 VDC, NPN and PNP, N.O., 2 m preleaded cable	▲ MPT33HD ⚡
4-WIRE AC	92-132VAC, 2m preleaded cable, emitter base only	▲ MPT10HD
	92-132 VAC, 4-wire bilateral FET (AC/DC), 100 mA max., 2 m preleaded cable	▲ MPT17HD
	92-132 VAC, 4-wire solid state AC relay, 0.5 A max., 2 m preleaded cable	▲ MPT11HD
AC/DC	22-26 VAC/VDC, 4-wire bilateral FET, 100 mA max., 2 m preleaded cable	▲ MPT16HD ●
MICRO CONNECT. DC	10-30 VDC, NPN N.O., 4-pin micro connector	○ MPT41HD-CM
	10-30 VDC, PNP N.O., 4-pin micro connector	○ MPT42HD-CM ●
	10-30 VDC, NPN and PNP, N.O., 4-pin micro connector	○ MPT43HD-CM ⚡
	10-30 VDC, 4-pin micro connector, emitter base only	○ MPT40HD-CM
MINI CONNECT. DC	10-30 VDC, NPN and PNP, 4-pin mini connector	● MPT43HD ⚡
	10-30 VDC, NPN N.O., 4-pin mini connector	● MPT41HD
	10-30 VDC, PNP N.O., 4-pin mini connector	● MPT42HD ●
MINI CONNECT. AC	92-132 VAC, 3-pin mini connector, emitter base only	● MPT20HD
	92-132 VAC, 4-wire solid state AC relay, 0.5 A max., 5-pin mini connector	● MPT21HD ●
	92-132 VAC, 4-wire bilateral FET (AC/DC), 100 mA max., 5-pin mini connector	● MPT27HD ●
MINI AC/DC	10.8-140 VDC/18-140 VAC, 4-wire FET w/output ind., 5-pin mini connector	● MPT28HD
MINI RELAY AC	92-132 VAC, 6 A, SPDT relay, 2 m preleaded cable	▲ MPW11HD ●
	92-132 VAC, 6 A, SPDT relay, 5-pin mini connector	● MPW21HD

ANALOG PLUG-IN BASE (page 608)		Model
ANALOG	12-24 VDC analog output (0-5 VDC or 4-20 mA)	MPS35HD

2-WIRE PLUG-IN BASES (page 609)		Models
DC	10-30 VDC emitter base only	MPS30HD
	92-132 VAC emitter base only	MPS10HD ●
2-WIRE AC	198-264 VAC emitter base only	MPS13HD
	22-26 VAC/VDC emitter base only	MPS14HD
	22-260 VAC plug-in base	MP2S11HD ⚡

RECEPTACLE	Models
Standard 4-terminal, 1/2" NPT conduit thread	■ MPB20 ⚡
5-pin mini connector	● MPB22
4-pin micro connector	○ MPB27

DPDT RECEPTACLE	Models
8-terminal, 1/2" NPT conduit hole	■ MPB23 ●
8-terminal, 3/4" NPT conduit hole	■ MPB24

NO RECEPTACLE NEEDED

ELECTRICAL CONNECTION KEY

■	Terminal connectors
●	Mini connectors
○	Micro connectors
▲	Preleaded cable

NO RECEPTACLE NEEDED

RECEPTACLE	Models
Standard 4-terminal, 1/2" NPT conduit thread	■ MPB20 ⚡
5-pin mini connector	● MPB22

- ⚡ Stocked item
 - Typical delivery 4 weeks or less
- Consult factory for all other models



PLUG-IN BASE

Specifications

	DC	AC	AC/DC
MODEL NUMBER(S)	MPS30HD† MPS31HD MPS32HD MPS33HD —	MPS10HD† MPS11HD MPS12HD MPS13HD† MPS17HD	MPS18HD — — — —
OUTPUT	1 NPN (31HD) 1 PNP (32HD) 1 NPN and 1 PNP (33HD)	Solid state relay (11HD/12HD) Thyristor (17HD)	Thyristor
LOAD CURRENT	250 mA max. (31HD/32HD) 100 mA max. (33HD)	5 mA-1 A (11HD/12HD) 100 mA max. (17HD)	100 mA max.
LEAKAGE CURRENT	≤ 10 µA	≤ 200 µA (11HD) ≤ 240 µA (12HD) ≤ 10 µA (17HD)	≤ 10 µA
INRUSH CURRENT	—	30 A for 8 ms (11HD/12HD) 250 mA for 8 ms (17HD)	250 mA for 8 ms, (non-repetitive)
VOLTAGE DROP	≤ 1.0 VDC (31HD/32HD) ≤ 0.8 VDC (33HD)	≤ 1.4 VAC at rated load (11HD/12HD) ≤ 3 V at 60 mA (17HD)	≤ 5 VDC (DC operation)
RESPONSE TIME*	≤ 10 µs	≤ 10 ms (11HD/12HD) ≤ 2 ms (17HD)	≤ 2 ms
SHORT CIRCUIT AND OVERLOAD PROTECTION	No (30HD/31HD/32HD) Yes (33HD)	No	No
REVERSE POLARITY PROTECTION	Yes	No	No
SUPPLY VOLTAGE	10-30 VDC	92-132 VAC, 50/60 Hz (10HD/11H/17HD) 198-264 VAC, 50/60 Hz (12HD/13HD)	10.8-140 VDC 18-140 VAC, 50/60 Hz
CURRENT CONSUMPTION	≤ 25 mA	≤ 70 mA	≤ 50 mA
ELECTRICAL CONNECTION	Dependent on receptacle selection	Dependent on receptacle selection	Dependent on receptacle selection
ADDITIONAL DATA	<i>See page 603</i>		

*NOTE: Total response time is the sum of the sensor head and base response times.

†NOTE: Emitter base only.



PLUG-IN BASE

Plug-in Base Specifications

TEMPERATURE RANGE	<i>WORKING</i>	-22 °F to +158 °F
	<i>STORAGE</i>	-67 °F to +185 °F
SHOCK		50 G
VIBRATION		10 G, 10-500 Hz
HUMIDITY RANGE		95% RH (non-condensing)
HEAD/BASE SEAL		Santoprene
RECEPTACLE/BASE SEAL		Buna-N
PROTECTION (IEC)		IP69K when all components are properly assembled
HOUSING MATERIAL		Glass-filled Polysulfone
APPROVALS		CE UL SP

RECEPTACLE MODELS

MPB20	Standard 4-terminal, 1/2" NPT conduit thread
MPB22	5-pin mini connector
MPB27	4-pin micro connector



See pages
803-854 for
cordsets

DPDT RELAY BASE

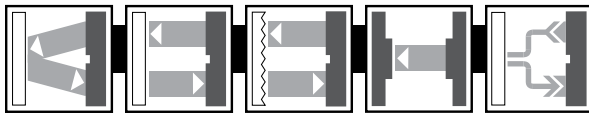
Specifications

		AC
MODEL NUMBER		MPSD11HD
SUPPLY VOLTAGE		92-132 VAC, 50/60 Hz
OUTPUT		DPDT relay
ELECTRICAL CONTACT RATING		250 VAC/5 A
POWER CONSUMPTION		≤ 6.6 VA
MECHANICAL LIFE OF RELAY		5 x 10 ⁷ operations
RESPONSE TIME*		≤ 10 ms
PROTECTION (IEC)		IP69K when all components are properly assembled
TEMPERATURE RANGE	<i>WORKING</i>	-22 °F to 158 °F
	<i>STORAGE</i>	-67 °F to 185 °F
SHOCK		10G
VIBRATION		6 G, 10-55 Hz @ double amplitude of 1 mm
HUMIDITY		95% RH (non-condensing)
HOUSING MATERIAL		Glass-filled Polysulfone
APPROVALS		CE UL SP
ELECTRICAL CONNECTION		dependent on receptacle selection

*NOTE: Total response time is the sum of the sensor head and base response times.



DPDT RECEPTACLE MODELS

MPB23	8-terminal, 1/2" NPT conduit thread
MPB24	8-terminal, PG 13.5 conduit thread






SPDT RELAY BASE

Specifications

	DC	AC
MODEL NUMBER(S)	MPV31HD	MPV11HD
	—	MPV12HD
	—	MPV13HD
	—	MPV14HD
OUTPUT	SPDT relay	SPDT relay
SUPPLY VOLTAGE	10-30 VDC	103-132 VAC, 50/60 Hz (11HD) 192-264 VAC, 50/60 Hz (12HD) 22-26 VAC, 50/60 Hz (13HD) 20-260 VAC/DC (14HD)
POWER CONSUMPTION	≤ 10 VA	≤ 10 VA (11HD) ≤ 18.5 VA (12HD) ≤ 2 VA (13HD) ≤ 4 VA (14HD)
ELECTRICAL CONTACT RATING	DC	28 V/6 A
	AC	300 V/6 A
ELECTRICAL CONNECTION	 5-terminal 1/2" conduit hole	 5-terminal 1/2" conduit hole




SPDT Relay Base Specifications

MECHANICAL LIFE OF RELAY	20 x 10 ⁶ operations	
RESPONSE TIME*	≤ 10 ms	
TEMPERATURE RANGE	WORKING	-22 °F to +158 °F
	STORAGE	-67 °F to +185 °F
PROTECTION (IEC)	IP69K when all components are properly assembled	
SHOCK	10 G	
VIBRATION	10 G, 10-100 Hz	
HUMIDITY RANGE	95% RH (non-condensing)	
BASE	Glass-filled polycarbonate	
COVER/BASE SEAL	Buna-N	
HEAD/BASE SEAL	Santoprene	
COVER	Die cast zinc	
APPROVALS	  	

*NOTE: Total response time is the sum of the sensor head and base response times.

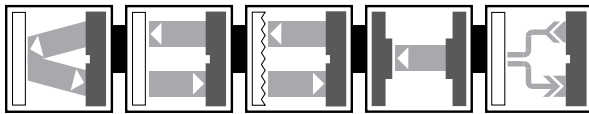


MINI STYLE BASE





Specifications	DC	AC	AC/DC
MODEL NUMBER(S)	MPT30HD† MPT31HD MPT32HD MPT33HD	MPT10HD† MPT11HD — MPT17HD	MPT16HD — — —
OUTPUT	1 NPN (31HD) 1 PNP (32HD) 1 NPN and 1 PNP (33HD)	Solid state relay (11HD) Thyristor (17HD)	Thyristor
LOAD CURRENT	250 mA max. (31HD/32HD) 100 mA max. (33HD)	5 mA-500 mA (11HD) 100 mA max. (17HD)	100 mA max.
LEAKAGE CURRENT	≤ 10 µA	≤ 400 µA (11HD) ≤ 10 µA (17HD)	≤ 10 µA
INRUSH CURRENT	—	12 A for 16 ms (11HD) 250 mA for 8 ms (17HD)	250 mA for 8 ms, (non-repetitive)
VOLTAGE DROP	≤ 1 VDC (32HD/31HD) ≤ 0.6 VDC (33HD)	≤ 1.2 VAC at rated (11HD) ≤ 3 V (17HD)	≤ 3 V (DC operation)
RESPONSE TIME*	≤ 10 µs	≤ 10 ms (11HD) ≤ 2 ms (17HD)	≤ 2 ms
SHORT CIRCUIT AND OVERLOAD PROTECTION	No (30HD/31HD/32HD) Yes (33HD)	No	No
REVERSE POLARITY PROTECTION	No	No	No
SUPPLY VOLTAGE	10-30 VDC	92-132 VAC, 50/60 Hz (10HD/11H/17HD) 198-264 VAC, 50/60 Hz (12HD/13HD) 24 VAC, 50/60 Hz (14HD)	24 VAC/VDC
CURRENT CONSUMPTION	≤ 25 mA	≤ 70 mA	≤ 70 mA
ELECTRICAL CONNECTION	 2-meter cable, PVC covered, 4-conductor, #18 AWG	 2-meter cable, PVC covered, 4-conductor, #18 AWG	 2-meter cable, PVC covered, 4-conductor, #18 AWG
ADDITIONAL DATA	See page 607		

*NOTE: Total response time is the sum of the sensor head and base response times.

†NOTE: Emitter base only.



MINI STYLE BASE

Specifications	DC	DC	AC	AC/DC
MODEL NUMBER(S)	—	MPT40HD-CM [†]	MPT20HD [†]	MPT28HD
	MPT41HD	MPT41HD-CM	MPT21HD	—
	MPT42HD	MPT42HD-CM	MPT27HD	—
	MPT43HD	MPT43HD-CM	—	—
OUTPUT	1 NPN (41HD) 1 PNP (42HD) 1 NPN and 1 PNP (43HD)	1 NPN (41HD) 1 PNP (42HD) 1 NPN and 1 PNP (43HD)	Solid state relay (21HD) Thyristor (27HD)	Thyristor
LOAD CURRENT	250 mA max. (41HD/42D) 100 mA max. (43HD)	250 mA max. (41HD/42D) 100 mA max. (43HD)	5 mA max. (21HD) 100 mA max. (27HD)	100 mA max.
LEAKAGE CURRENT	≤ 10 µA	≤ 10 µA	≤ 400 µA (21HD) ≤ 10 µA (27HD)	≤ 10 µA
INRUSH CURRENT	—	—	12 A for 16 ms (21HD/22HD) 250 mA for 8 ms (27HD)	250 mA for 8 ms (non-repetitive)
VOLTAGE DROP	≤ 1 VDC (42HD/41HD) ≤ 0.6 VDC (43HD)	≤ 1 VDC (42HD/41HD) ≤ 0.6 VDC (43HD)	≤ 1.2 VAC (21HD) ≤ 3 V (27HD)	≤ 5 V (DC operation)
RESPONSE TIME*	≤ 10 µs	≤ 10 µs	≤ 10 ms (21HD) ≤ 2 ms (27HD)	≤ 2 ms
SHORT CIRCUIT AND OVERLOAD PROTECTION	No (40HD/41HD/42HD) Yes (43HD)	No (40HD/41HD/42HD) Yes (43HD)	No	No
REVERSE POLARITY PROTECTION	Yes	Yes	No	No
SUPPLY VOLTAGE	10-30 VDC	10-30 VDC	92-132 VAC, 50/60 Hz	10.8-140 VDC 18-140 VAC, 50/60 Hz
CURRENT CONSUMPTION	≤ 25 mA	≤ 25 mA	≤ 70 mA	≤ 70 mA
ELECTRICAL CONNECTION	 Quick disconnect type V94	 Quick disconnect type V1	 Quick disconnect type V93 (20HD) type V95 (21HD/27HD)	 Quick disconnect type V95
ADDITIONAL DATA	<i>See page 607</i>			

*NOTE: Total response time is the sum of the sensor head and base response times.

[†]NOTE: Emitter base only.



MINI STYLE BASE

Mini Style Base Specifications

TEMPERATURE RANGE	<i>WORKING</i>	-22 °F to +158 °F
	<i>STORAGE</i>	-67 °F to +185 °F
SHOCK		50 G
VIBRATION		10 G, 10-500 Hz
HUMIDITY RANGE		95% RH (non-condensing)
BASE		Glass-filled polycarbonate
BASE SEAL		Santoprene
PROTECTION (IEC)		IP69K when all components are properly assembled
HOUSING MATERIAL		Glass-filled Polysulfone
APPROVALS		

MINI RELAY BASE

Specifications

		AC
MODEL NUMBER(S)		MPW11HD
		MPW21HD
SUPPLY VOLTAGE		92-132 VAC, 50/60 Hz
POWER CONSUMPTION		≤ 10 VA (including load)
OUTPUT		SPDT relay
ELECTRICAL CONTACT RATING	<i>DC</i>	30 V/6 A
	<i>AC</i>	125 V/6 A
MECHANICAL LIFE OF RELAY		50 x 10 ⁶ operations
RESPONSE TIME*		10 ms
PROTECTION (IEC)		IP69K when all components are properly assembled
TEMPERATURE RANGE	<i>WORKING</i>	-22 °F to 158° F
	<i>STORAGE</i>	-67 °F to 185 °F
SHOCK		20 G (no contact transfer) 100 G (no damage)
VIBRATION		10 G, 10-500 Hz
HUMIDITY		95% RH (non-condensing)
HOUSING MATERIAL		Glass-filled Polysulfone
APPROVALS		
ELECTRICAL CONNECTION	<i>MPW11HD</i>	2-meter cable, PVC covered, 4-conductor, #18 AWG
	<i>MPW21HD</i>	Quick disconnect type V95

*NOTE: Total response time is the sum of the sensor head and base response times.

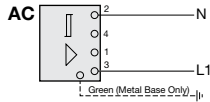
Wiring Diagrams

AC

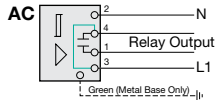


Terminal Connection

Model: MPS10HD

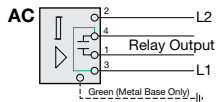


Model: MPS11HD



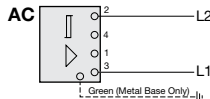
NOTE: Pins 3 and 4 must be jumpered (jumper wire not included)

Model: MPS12HD

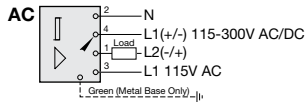


NOTE: Pins 3 and 4 must be jumpered (jumper wire not included)

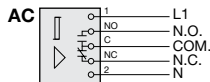
Model: MPS13HD



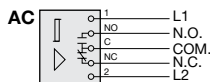
Model: MPS17HD



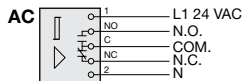
Model: MPV11HD



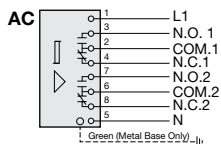
Model: MPV12HD



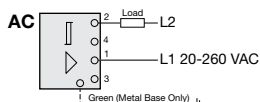
Model: MPV13HD



Model: MPSD11HD



Model: MP2S11HD

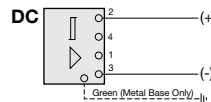


DC

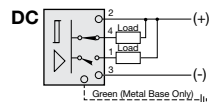


Terminal Connection

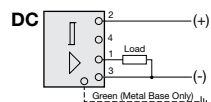
Model: MPS30HD



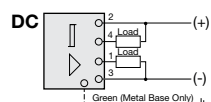
Model: MPS31HD



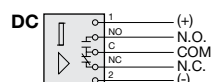
Model: MPS32HD



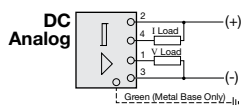
Model: MPS33HD



Model: MPV31HD



Model: MPS35HD

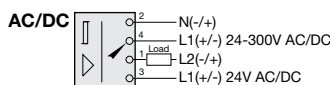


AC/DC

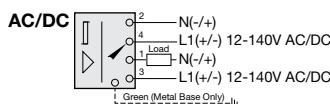


Terminal Connection

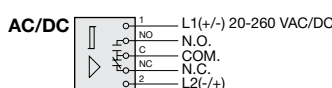
Model: MPS16HD



Model: MPS18HD



Model: MPV14HD

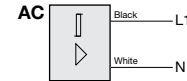


AC

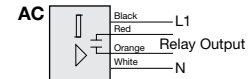


Cable Connection

Model: MPT10HD

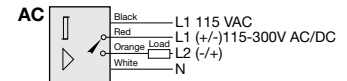


Model: MPT11HD

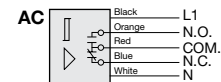


NOTE: Relay also requires AC power

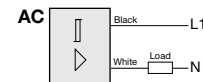
Model: MPT17HD



Model: MPW11HD



Model: MP2T11HD

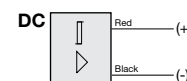


DC

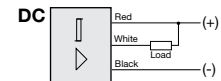


Cable Connection

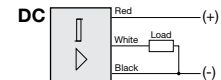
Model: MPT30HD



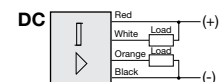
Model: MPT31HD



Model: MPT32HD



Model: MPT33HD



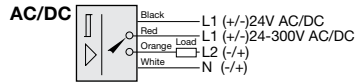
Wiring Diagrams

AC/DC



Cable Connection

Model: MPT16HD



AC

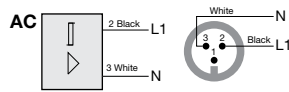


Mini Quick Disconnect

Note: Wiring diagrams show quick disconnect pin numbers.

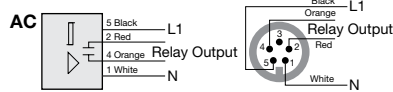
V93 Type

Model: MPT20HD

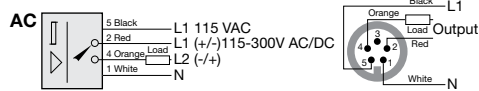


V95 Type

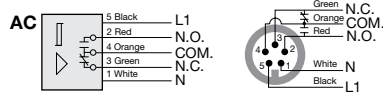
Model: MPT21HD



Model: MPT27HD



Model: MPW21HD



AC/DC

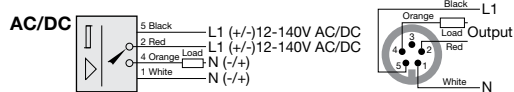


Mini Quick Disconnect

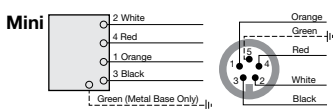
Note: Wiring diagrams show quick disconnect pin numbers.

V95 Type

Model: MPT28HD



Model: MPB22



DC

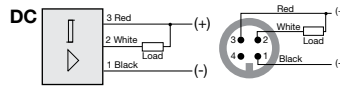


Mini Quick Disconnect

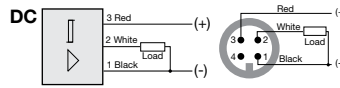
Note: Wiring diagrams show quick disconnect pin numbers.

V94 Type

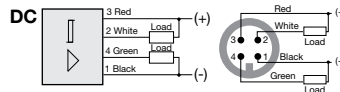
Model: MPT41HD



Model: MPT42HD



Model: MPT43HD



DC

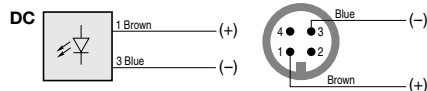


Micro Quick Disconnect

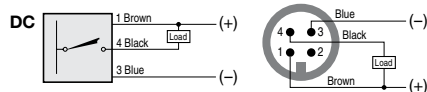
Note: Wiring diagrams show quick disconnect pin numbers.

V1 Type

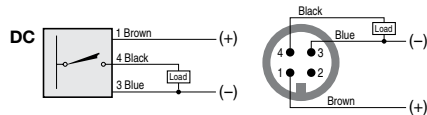
Model: MPT40HD-CM



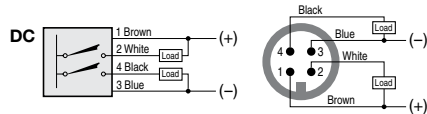
Model: MPT41HD-CM



Model: MPT42HD-CM



Model: MPT43HD-CM



Model: MPB27

