(D) Proximity Sensor

Line-up

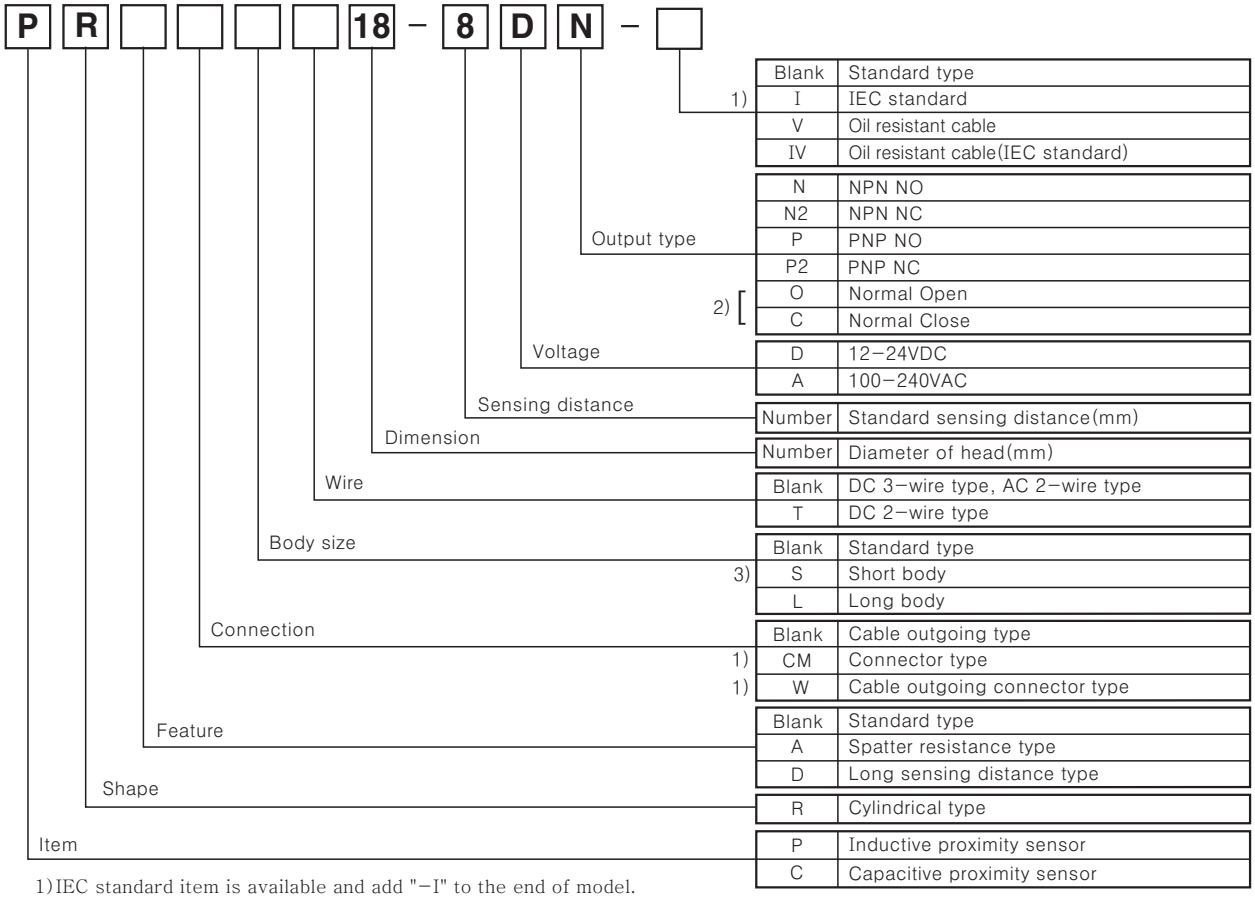
PRD/PRDWT Series

NEW

PRDCM Series

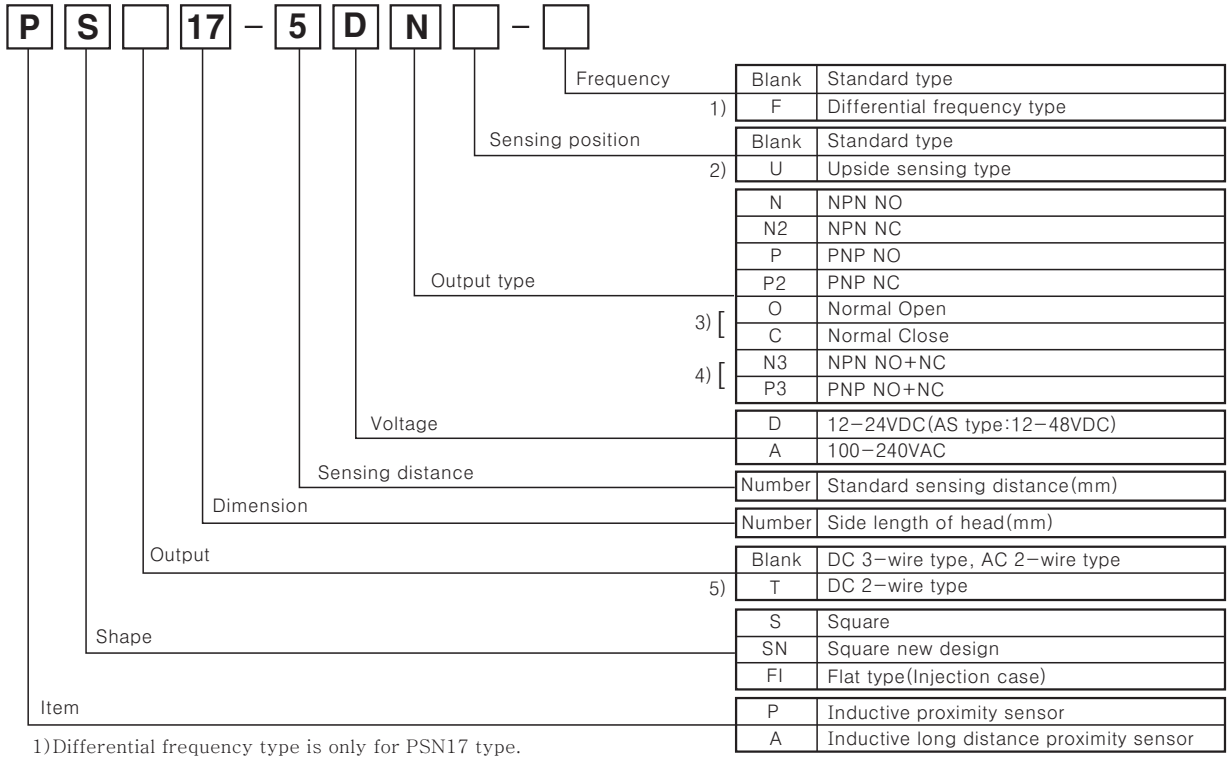
Ordering Information

▣Ordering information(Cylindrical type)



1)IEC standard item is available and add "-I" to the end of model.
2)Normal Open, Normal Close output are only for DC 2-wire and AC 2-wire type.
3)Short type is only for DC 3-wire of PR12 type.

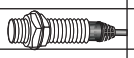
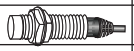
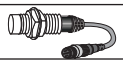
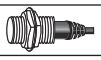
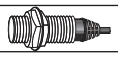
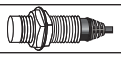
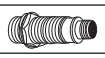
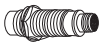
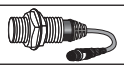
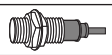
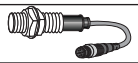
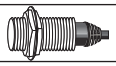
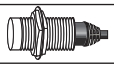
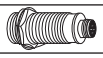
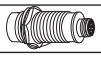
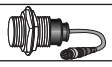
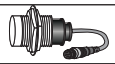
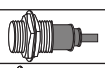
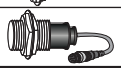
▣Ordering information(Rectangular type)



1)Differential frequency type is only for PSN17 type.
2)Upside sensing type is only for PS12, PSN17 type.
3)Normal Open, Normal Close output are only for DC 2-wire and AC 2-wire type.
4)N3, P3 output is only for AS80 type.
5)DC 2-wire type is only for PSN17 type.

▣Long distance cylindrical DC 2-wire type (Power:12-24VDC) Line-up

CE

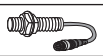
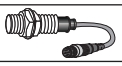
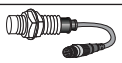
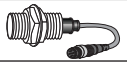
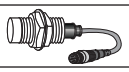
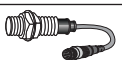
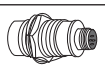
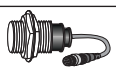
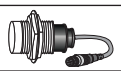
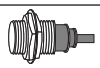
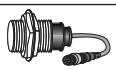
Appearance		Appearance Classification				Model	Sensing distance (mm)		Response frequency (Hz)
		Standard type		Long type					
		Shield	Non Shield	Shield	Non Shield		Shield	Non shield	
M12	Normal type					PRDT12-4DO PRDT12-4DC	4		450
						PRDT12-8DO PRDT12-8DC		8	400
						PRDLT12-4DO PRDLT12-4DC	4		450
						PRDLT12-8DO PRDLT12-8DC		8	400
	Cable outgoing connector type					PRDWT12-4DO PRDWT12-4DC	4		450
						PRDWT12-8DO PRDWT12-8DC		8	400
M18	Normal type					PRDT18-7DO PRDT18-7DC	7		250
						PRDT18-14DO PRDT18-14DC		14	200
						PRDLT18-7DO PRDLT18-7DC	7		250
						PRDLT18-14DO PRDLT18-14DC		14	200
	Connector type					PRDCMT18-7DO PRDCMT18-7DC	7		250
						PRDCMT18-14DO PRDCMT18-14DC		14	200
						PRDCMLT18-7DO PRDCMLT18-7DC	7		250
						PRDCMLT18-14DO PRDCMLT18-14DC		14	200
	Cable outgoing connector type					PRDWT18-7DO PRDWT18-7DC	7		250
						PRDWT18-14DO PRDWT18-14DC		14	200
	Spatter resistance type					PRDAT18-7DO PRDAT18-7DC	7		250
	Spatter resistance cable outgoing connector type					PRDAWT18-7DO PRDAWT18-7DC	7		250
M30	Normal type					PRDT30-15DO PRDT30-15DC	15		100
						PRDT30-25DO PRDT30-25DC		25	100
						PRDLT30-15DO PRDLT30-15DC	15		100
						PRDLT30-25DO PRDLT30-25DC		25	100
	Connector type					PRDCMT30-15DO PRDCMT30-15DC	15		100
						PRDCMT30-25DO PRDCMT30-25DC		25	100
						PRDCMLT30-15DO PRDCMLT30-15DC	15		100
						PRDCMLT30-25DO PRDCMLT30-25DC		25	100
	Cable outgoing connector type					PRDWT30-15DO PRDWT30-15DC	15		100
						PRDWT30-25DO PRDWT30-25DC		25	100
	Spatter resistance type					PRDAT30-15DO PRDAT30-15DC	15		100
	Spatter resistance cable outgoing connector type					PRDAWT30-15DO PRDAWT30-15DC	15		100

▶IEC standard connector type is available. Please add "-I" to the end of model for an order.

Product Overview

▣Cylindrical DC 2-wire type (Power:12-24VDC)

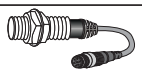
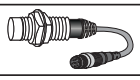
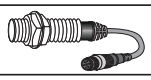
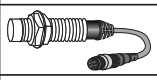
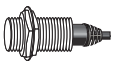
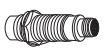
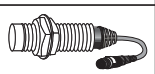
CE

Appearance		Appearance Classification				Model	Sensing distance (mm)		Response frequency (Hz)
		Standard type		Long type					
		Shield	Non Shield	Shield	Non Shield		Shield	Non shield	
M08	Normal type					PRT08-1.5DO PRT08-1.5DC	1.5		1500
						PRT08-2DO PRT08-2DC		2	1000
	Cable outgoing connector type					PRWT08-1.5DO PRWT08-1.5DC	1.5		1500
						PRWT08-2DO PRWT08-2DC		2	1000
M12	Normal type					PRT12-2DO PRT12-2DC	2		1500
						PRT12-4DO PRT12-4DC		4	500
	Connector type					PRCMT12-2DO PRCMT12-2DC	2		1500
						PRCMT12-4DO PRCMT12-4DC		4	500
	Cable outgoing connector type					PRWT12-2DO PRWT12-2DC	2		1500
						PRWT12-4DO PRWT12-4DC		4	500
	Spatter resistance type					PRAT12-2DO PRAT12-2DC	2		1500
	Spatter resistance cable outgoing connector type					PRAWT12-2DO PRAWT12-2DC	2		1500
M18	Normal type					PRT18-5DO PRT18-5DC	5		500
						PRT18-8DO PRT18-8DC		8	350
	Connector type					PRCMT18-5DO PRCMT18-5DC	5		500
						PRCMT18-8DO PRCMT18-8DC		8	350
	Cable outgoing connector type					PRWT18-5DO PRWT18-5DC	5		500
						PRWT18-8DO PRWT18-8DC		8	350
	Spatter resistance type					PRAT18-5DO PRAT18-5DC	5		500
	Spatter resistance cable outgoing connector type					PRAWT18-5DO PRAWT18-5DC	5		500
M30	Normal type					PRT30-10DO PRT30-10DC	10		400
						PRT30-15DO PRT30-15DC		15	200
	Connector type					PRCMT30-10DO PRCMT30-10DC	10		400
						PRCMT30-15DO PRCMT30-15DC		15	200
	Cable outgoing connector type					PRWT30-10DO PRWT30-10DC	10		400
						PRWT30-15DO PRWT30-15DC		15	200
	Spatter resistance type					PRAT30-10DO PRAT30-10DC	10		400
	Spatter resistance cable outgoing connector type					PRAWT30-10DO PRAWT30-10DC	10		400

▶IEC standard connector type is available. Please add "-I" to the end of model for an order.

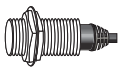
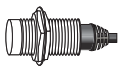
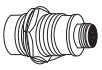
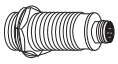
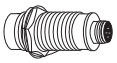
▣Long distance cylindrical DC 3-wire type (Power:12-24VDC) Line-up

CE

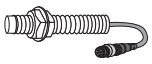
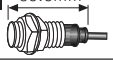
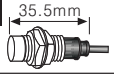
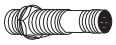
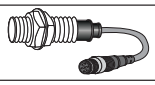
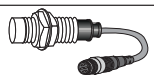
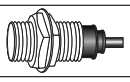
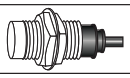
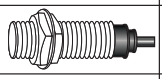
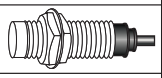
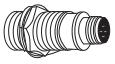
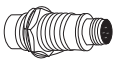
Appearance		Appearance Classification				Model	Sensing distance (mm)		Response frequency (Hz)
		Standard type		Long type					
		Shield	Non Shield	Shield	Non Shield		Shield	Non shield	
M12	Normal type					PRD12-4DN PRD12-4DP PRD12-4DN2 PRD12-4DP2	4		500
						PRD12-8DN PRD12-8DP PRD12-8DN2 PRD12-8DP2		8	400
						PRDL12-4DN PRDL12-4DP PRDL12-4DN2 PRDL12-4DP2	4		500
						PRDL12-8DN PRDL12-8DP PRDL12-8DN2 PRDL12-8DP2		8	400
	Connector type					PRDCM12-4DN PRDCM12-4DP PRDCM12-4DN2 PRDCM12-4DP2	4		500
						PRDCM12-8DN PRDCM12-8DP PRDCM12-8DN2 PRDCM12-8DP2		8	400
						PRDCML12-4DN PRDCML12-4DP PRDCML12-4DN2 PRDCML12-4DP2	4		500
						PRDCML12-8DN PRDCML12-8DP PRDCML12-8DN2 PRDCML12-8DP2		8	400
	Cable outgoing connector type					PRDW12-4DN PRDW12-4DP PRDW12-4DN2 PRDW12-4DP2	4		500
						PRDW12-8DN PRDW12-8DP PRDW12-8DN2 PRDW12-8DP2		8	400
						PRDWL12-4DN PRDWL12-4DP PRDWL12-4DN2 PRDWL12-4DP2	4		500
						PRDWL12-8DN PRDWL12-8DP PRDWL12-8DN2 PRDWL12-8DP2		8	400
M18	Normal type					PRD18-7DN PRD18-7DP PRD18-7DN2 PRD18-7DP2	7		300
						PRD18-14DN PRD18-14DP PRD18-14DN2 PRD18-14DP2		14	200
						PRDL18-7DN PRDL18-7DP PRDL18-7DN2 PRDL18-7DP2	7		300
						PRDL18-14DN PRDL18-14DP PRDL18-14DN2 PRDL18-14DP2		14	200
	Connector type					PRDCM18-7DN PRDCM18-7DP PRDCM18-7DN2 PRDCM18-7DP2	7		300
						PRDCM18-14DN PRDCM18-14DP PRDCM18-14DN2 PRDCM18-14DP2		14	200
						PRDCML18-7DN PRDCML18-7DP PRDCML18-7DN2 PRDCML18-7DP2	7		300
						PRDCML18-14DN PRDCML18-14DP PRDCML18-14DN2 PRDCML18-14DP2		14	200
	Cable outgoing connector type					PRDW18-7DN PRDW18-7DP PRDW18-7DN2 PRDW18-7DP2	7		300
						PRDW18-14DN PRDW18-14DP PRDW18-14DN2 PRDW18-14DP2		14	200
						PRDWL18-7DN PRDWL18-7DP PRDWL18-7DN2 PRDWL18-7DP2	7		300
						PRDWL18-14DN PRDWL18-14DP PRDWL18-14DN2 PRDWL18-14DP2		14	200

▣Long distance cylindrical DC 3-wire type (Power:12-24VDC) Line-up

CE

Appearance		Appearance Classification				Model	Sensing distance (mm)		Response frequency (Hz)
		Standard type		Long type					
		Shield	Non Shield	Shield	Non Shield		Shield	Non shield	
M30	Normal type					PRD30-15DN PRD30-15DP PRD30-15DN2 PRD30-15DP2	15		100
						PRD30-25DN PRD30-25DP PRD30-25DN2 PRD30-25DP2		25	100
						PRDL30-15DN PRDL30-15DP PRDL30-15DN2 PRDL30-15DP2	15		100
						PRDL30-25DN PRDL30-25DP PRDL30-25DN2 PRDL30-25DP2		25	100
	Connector type					PRDCM30-15DN PRDCM30-15DP PRDCM30-15DN2 PRDCM30-15DP2	15		100
						PRDCM30-25DN PRDCM30-25DP PRDCM30-25DN2 PRDCM30-25DP2		25	100
						PRDCML30-15DN PRDCML30-15DP PRDCML30-15DN2 PRDCML30-15DP2	15		100
						PRDCML30-25DN PRDCML30-25DP PRDCML30-25DN2 PRDCML30-25DP2		25	100
	Cable outgoing connector type					PRDW30-15DN PRDW30-15DP PRDW30-15DN2 PRDW30-15DP2	15		100
						PRDW30-25DN PRDW30-25DP PRDW30-25DN2 PRDW30-25DP2		25	100
						PRDWL30-15DN PRDWL30-15DP PRDWL30-15DN2 PRDWL30-15DP2	15		100
						PRDWL30-25DN PRDWL30-25DP PRDWL30-25DN2 PRDWL30-25DP2		25	100

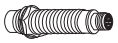
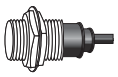
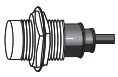
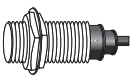
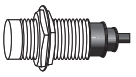
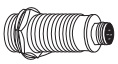
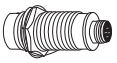
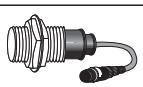
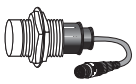
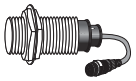
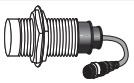
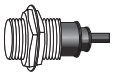
▣Cylindrical DC 3-wire type (Power:12-24VDC) CE

Appearance		Appearance Classification				Model	Sensing distance (mm)		Response frequency (Hz)
		Standard type		Long type					
		Shield	Non Shield	Shield	Non Shield		Shield	Non shield	
M08	Normal type					PR08-1.5DN PR08-1.5DP PR08-1.5DN2 ※ PR08-1.5DP2 ※	1.5		1500
						PR08-2DN PR08-2DP PR08-2DN2 ※ PR08-2DP2 ※		2	1000
						PRL08-1.5DN PRL08-1.5DP PRL08-1.5DN2 ※ PRL08-1.5DP2 ※	1.5		1500
						PRL08-2DN PRL08-2DP PRL08-2DN2 ※ PRL08-2DP2 ※		2	1000
	Cable outgoing connector type					PRW08-1.5DN PRW08-1.5DP PRW08-1.5DN2 ※ PRW08-1.5DP2 ※	1.5		1500
						PRW08-2DN PRW08-2DP PRW08-2DN2 ※ PRW08-2DP2 ※		2	1000
						PRWL08-1.5DN PRWL08-1.5DP PRWL08-1.5DN2 ※ PRWL08-1.5DP2 ※	1.5		1500
						PRWL08-2DN PRWL08-2DP PRWL08-2DN2 ※ PRWL08-2DP2 ※		2	1000
M12	Normal type	Short 35.5mm 				PRS12-2DN PRS12-2DP PRS12-2DN2 ※ PRS12-2DP2 ※	2		1500
			Short 35.5mm 			PRS12-4DN PRS12-4DP PRS12-4DN2 ※ PRS12-4DP2 ※		4	500
						PR12-2DN PR12-2DP PR12-2DN2 ※ PR12-2DP2 ※	2		1500
						PR12-4DN PR12-4DP PR12-4DN2 ※ PR12-4DP2 ※		4	500
						PRL12-4DN PRL12-4DP		4	500
	Connector type					PRCM12-2DN PRCM12-2DP PRCM12-2DN2 ※ PRCM12-2DP2 ※	2		1500
						PRCM12-4DN PRCM12-4DP PRCM12-4DN2 ※ PRCM12-4DP2 ※		4	500
	Cable outgoing connector type					PRW12-2DN PRW12-2DP PRW12-2DN2 ※ PRW12-2DP2 ※	2		1500
						PRW12-4DN PRW12-4DP PRW12-4DN2 ※ PRW12-4DP2 ※		4	500
	Spatter resistance type					PRA12-2DN PRA12-2DP PRA12-2DN2 ※ PRA12-2DP2 ※	2		1500
M18	Normal type					PR18-5DN PR18-5DP PR18-5DN2 ※ PR18-5DP2 ※	5		500
						PR18-8DN PR18-8DP PR18-8DN2 ※ PR18-8DP2 ※		8	350
						PRL18-5DN PRL18-5DP PRL18-5DN2 ※ PRL18-5DP2 ※	5		500
						PRL18-8DN PRL18-8DP PRL18-8DN2 ※ PRL18-8DP2 ※		8	350
	Connector type					PRCM18-5DN PRCM18-5DP PRCM18-5DN2 ※ PRCM18-5DP2 ※	5		500
						PRCM18-8DN PRCM18-8DP PRCM18-8DN2 ※ PRCM18-8DP2 ※		8	350

▶"※" mark can be customized.

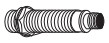
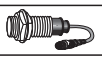
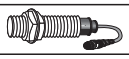
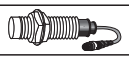
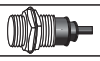
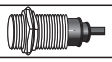
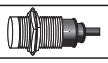
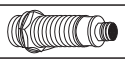
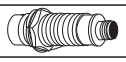
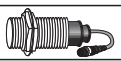
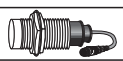
▣Cylindrical DC 3-wire type (Power:12-24VDC)

CE

Appearance		Appearance Classification				Model	Sensing distance (mm)		Response frequency (Hz)
		Standard type		Long type					
		Shield	Non Shield	Shield	Non Shield		Shield	Non shield	
M18	Connector type					PRCML18-5DN PRCML18-5DP PRCML18-5DN2 ※ PRCML18-5DP2 ※	5		500
						PRCML18-8DN PRCML18-8DP PRCML18-8DN2 ※ PRCML18-8DP2 ※		8	350
	Cable outgoing connector type					PRW18-5DN PRW18-5DP PRW18-5DN2 ※ PRW18-5DP2 ※	5		500
						PRW18-8DN PRW18-8DP PRW18-8DN2 ※ PRW18-8DP2 ※		8	350
						PRWL18-5DN PRWL18-5DP PRWL18-5DN2 ※ PRWL18-5DP2 ※	5		500
						PRWL18-8DN PRWL18-8DP PRWL18-8DN2 ※ PRWL18-8DP2 ※		8	350
	Spatter resistance type					PRA18-5DN PRA18-5DP PRA18-5DN2 ※ PRA18-5DP2 ※	5		500
M30	Normal type					PR30-10DN PR30-10DP PR30-10DN2 ※ PR30-10DP2 ※	10		400
						PR30-15DN PR30-15DP PR30-15DN2 ※ PR30-15DP2 ※		15	200
						PRL30-10DN PRL30-10DP PRL30-10DN2 ※ PRL30-10DP2 ※	10		400
						PRL30-15DN PRL30-15DP PRL30-15DN2 ※ PRL30-15DP2 ※		15	200
	Connector type					PRCM30-10DN PRCM30-10DP PRCM30-10DN2 ※ PRCM30-10DP2 ※	10		400
						PRCM30-15DN PRCM30-15DP PRCM30-15DN2 ※ PRCM30-15DP2 ※		15	200
						PRCML30-10DN PRCML30-10DP PRCML30-10DN2 ※ PRCML30-10DP2 ※	10		400
						PRCML30-15DN PRCML30-15DP PRCML30-15DN2 ※ PRCML30-15DP2 ※		15	200
	Cable outgoing connector type					PRW30-10DN PRW30-10DP PRW30-10DN2 ※ PRW30-10DP2 ※	10		400
						PRW30-15DN PRW30-15DP PRW30-15DN2 ※ PRW30-15DP2 ※		15	200
						PRWL30-10DN PRWL30-10DP PRWL30-10DN2 ※ PRWL30-10DP2 ※	10		400
						PRWL30-15DN PRWL30-15DP PRWL30-15DN2 ※ PRWL30-15DP2 ※		15	200
	Spatter resistance type					PRA30-10DN PRA30-10DP PRA30-10DN2 ※ PRA30-10DP2 ※	10		400

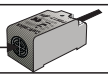
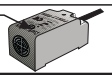
▶"※" mark can be customized.

▣Cylindrical AC 2-wire type(Power:100-240VAC) CE

Appearance		Appearance Classification				Model	Sensing distance (mm)		Response frequency (Hz)
		Standard type		Long type					
		Shield	Non shield	Shield	Non shield		Shield	Non shield	
M12	Normal type					PR12-2AO	2		20
						PR12-2AC			
						PR12-4AO		4	
						PR12-4AC			
	Connector type					PRCM12-2AO	2		
						PRCM12-2AC			
						PRCM12-4AO		4	
						PRCM12-4AC			
	Cable outgoing connector type					PRW12-2AO	2		
						PRW12-2AC			
						PRW12-4AO		4	
						PRW12-4AC			
	Spatter resistance type					PRA12-2AO	2		
						PRA12-2AC			
M18	Normal type					PR18-5AO	5		
						PR18-5AC			
						PR18-8AO		8	
						PR18-8AC			
						PRL18-5AO	5		
						PRL18-5AC			
						PRL18-8AO		8	
						PRL18-8AC			
	Connector type					PRCM18-5AO	5		
						PRCM18-5AC			
						PRCM18-8AO		8	
						PRCM18-8AC			
						PRCML18-5AO	5		
						PRCML18-5AC			
						PRCML18-8AO		8	
						PRCML18-8AC			
	Cable outgoing connector type					PRW18-5AO	5		
						PRW18-5AC			
						PRW18-8AO		8	
						PRW18-8AC			
						PRWL18-5AO	5		
						PRWL18-5AC			
						PRWL18-8AO		8	
						PRWL18-8AC			
	Spatter resistance type					PRA18-5AO	5		
						PRA18-5AC			
M30	Normal type					PR30-10AO	10		
						PR30-10AC			
						PR30-15AO		15	
						PR30-15AC			
						PRL30-10AO	10		
						PRL30-10AC			
						PRL30-15AO		15	
						PRL30-15AC			
	Connector type					PRCM30-10AO	10		
						PRCM30-10AC			
						PRCM30-15AO		15	
						PRCM30-15AC			
						PRCML30-10AO	10		
						PRCML30-10AC			
						PRCML30-15AO		15	
						PRCML30-15AC			
	Cable outgoing connector type					PRW30-10AO	10		
						PRW30-10AC			
						PRW30-15AO		15	
						PRW30-15AC			
						PRWL30-10AO	10		
						PRWL30-10AC			
						PRWL30-15AO		15	
						PRWL30-15AC			
	Spatter resistance type					PRA30-10AO	10		
						PRA30-10AC			

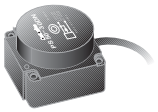
Product Overview

▣Square DC 2-wire type(Power:12-24VDC)

Appearance Classification				Model	Sensing distance (mm)	Response frequency (Hz)
Classification		Standard type(Front sensing)	Upside sensing			
17 Square	Normal type	(Front sensing type) 		PSNT17-5DO	5	500
				PSNT17-5DC		
			(Upside sensing type) 	PSNT17-5DOU ※		
				PSNT17-5DCU ※		

▶"※" mark can be customized.

▣Square DC 3-wire type(Power:12-24VDC) CE

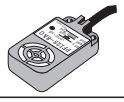
Appearance Classification				Model	Sensing distance (mm)	Response frequency (Hz)
		Standard type(Front sensing)	Upside sensing			
12 Square	Normal type	(Front sensing type) 		PS12-4DN	4	500
				PS12-4DP		
				PS12-4DN2		
			(Upside sensing type) 	PS12-4DNU		
				PS12-4DPU		
				PS12-4DN2U ※		
17 Square	Normal type	(Front sensing type) 		PSN17-5DN	5	700
				PSN17-5DP		
				PSN17-5DN2 ※		
				PSN17-5DP2 ※		
				PSN17-5DN-F		
				PSN17-8DN	8	200
				PSN17-8DP		
				PSN17-8DN2		
				PSN17-8DN-F		
				PSN17-8DP-F		
				PSN17-8DN2-F		
			(Upside sensing type) 	PSN 17-5DNU ※	5	700
				PSN17-5DPU ※		
				PSN17-5DN2U ※		
				PSN17-8DNU ※	8	200
				PSN17-8DPU ※		
				PSN17-8DN2U ※		
				PSN17-8DNU-F		
				PSN17-8DPU-F		
				PSN17-8DN2U-F		
25 Square	Normal type			PSN25-5DN	5	300
				PSN25-5DP		
				PSN25-5DN2 ※		
				PSN25-5DP2 ※		
	Flat type			PFI25-8DN	8	200
				PFI25-8DP		
				PFI25-8DN2 ※		
				PFI25-8DP2 ※		
30 Square	Normal type			PSN30-10DN	10	250
				PSN30-10DP		
				PSN30-10DN2 ※		
				PSN30-10DP2 ※		
				PSN30-15DN	15	200
				PSN30-15DP		
				PSN30-15DN2 ※		
				PSN30-15DP2 ※		
40 Square	Normal type			PSN40-20DN	20	100
				PSN40-20DP		
				PSN40-20DN2 ※		
				PSN40-20DP2 ※		
50 Square	Normal type			PS50-30DN	30	50
				PS50-30DP		
				PS50-30DN2 ※		
				PS50-30DP2 ※		

▶"※" mark can be customized.

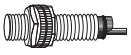
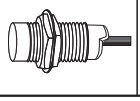
▣Rectangular DC 4-wire type(Power:12-48VDC)

Appearance Classification				Model	Sensing distance (mm)	Response frequency (Hz)
Classification		Standard type(Front sensing)	Upside sensing			
80 Square	Normal type		Long distance type 	AS80-50DN3	50	100
				AS80-50DP3		

▣Rectangular AC 2-wire type(Power:100-240VAC)

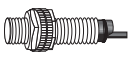
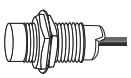
Appearance Classification				Model	Sensing distance (mm)	Response frequency (Hz)
Classification		Standard type(Front sensing)	Upside sensing			
25 Square	Normal type			PSN25-5AO	5	20
				PSN25-5AC		
	Flat type		Flat Type 	PFI25-8AO	8	
				PFI25-8AC		
30 Square	Normal type			PSN30-10AO	10	
				PSN30-10AC		
				PSN30-15AO	15	
				PSN30-15AC		
40 Square	Normal type			PSN40-20AO	20	
				PSN40-20AC		

▣Capacitive cylindrical DC 3-wire type(Power:12-24VDC)

Classification		Appearance Classification				Model	Sensing distance (mm)		Response frequency (Hz)
		Standard type		Long type					
		Shield	Non shield	Shield	Non shield		Shield	Non shield	
M18	Normal type					CR18-8DN	8		50
						CR18-8DP			
						CR18-8DN2 ※			
M30	Normal type					CR30-15DN		15	
						CR30-15DP			
						CR30-15DN2 ※			

▶"※" mark can be customized.

▣Capacitive cylindrical AC 2-wire type(Power:100-240VAC)

Classification		Appearance Classification				Model	Sensing distance (mm)		Response frequency (Hz)
		Standard type		Long type					
		Shield	Non shield	Shield	Non shield		Shield	Non shield	
M18	Normal type					CR18-8AO	8		20
						CR18-8AC			
M30	Normal type					CR30-15AO		15	
						CR30-15AC			

▣Transmission coupler

Classification		Appearance Classification				Model	Sensing distance (mm)		Response frequency (Hz)
		Standard type		Long type					
		Shield	Non shield	Shield	Non shield		Shield	Non shield	
M18	Normal					PET18-5	5		

※Transmittable Proximity sensor: PRT18-5D□, PRCMT18-5D□, PR18-5D□, PRCM18-5D□, PRL18-5D□, PRCML18-5D□

Long distance proximity sensor

Line-up

▣Features

- **Long sensing distance (1.5 to 2 times longer sensing distance guaranteed compared to existing models)**
- Improved the noise resistance with dedicated IC
- Integrated surge protection, reverse polarity protection, overload & short protection circuit
- Long life cycle and high reliability
- Red LED status indication
- Protection structure IP67(IEC standard)
- Replaceable for micro switches and limit switches
- Improved cable strain relief : More reliable flexural strength of sensor/cable connecting part

Please read "Caution for your safety" in operation manual before using.

▣Specifications

●DC 2-wire type

Model	PRDT12-4DO PRDT12-4DC PRDT12-4DO-V PRDT12-4DC-V PRDLT12-4DO PRDLT12-4DC PRDLT12-4DO-V PRDLT12-4DC-V PRDWT12-4DO PRDWT12-4DC PRDWT12-4DO-I PRDWT12-4DC-I PRDWT12-4DO-IV PRDWT12-4DC-IV	PRDT12-8DO PRDT12-8DC PRDT12-8DO-V PRDT12-8DC-V PRDLT12-8DO PRDLT12-8DC PRDLT12-8DO-V PRDLT12-8DC-V PRDWT12-8DO PRDWT12-8DC PRDWT12-8DO-I PRDWT12-8DC-I PRDWT12-8DO-IV PRDWT12-8DC-IV	PRDT18-7DO PRDT18-7DC PRDT18-7DO-V PRDT18-7DC-V PRDLT18-7DO PRDLT18-7DC PRDLT18-7DO-V PRDLT18-7DC-V PRDWT18-7DO PRDWT18-7DC PRDWT18-7DO-I PRDWT18-7DC-I PRDWT18-7DO-IV PRDWT18-7DC-IV PRDWLT18-7DO-IV PRDWLT18-7DC-IV	PRDT18-14DO PRDT18-14DC PRDT18-14DO-V PRDT18-14DC-V PRDLT18-14DO PRDLT18-14DC PRDLT18-14DO-V PRDLT18-14DC-V PRDWT18-14DO PRDWT18-14DC PRDWT18-14DO-I PRDWT18-14DC-I PRDWT18-14DO-IV PRDWT18-14DC-IV PRDWLT18-14DO-IV PRDWLT18-14DC-IV	PRDT30-15DO PRDT30-15DC PRDT30-15DO-V PRDT30-15DC-V PRDLT30-15DO PRDLT30-15DC PRDLT30-15DO-V PRDLT30-15DC-V PRDWT30-15DO PRDWT30-15DC PRDWT30-15DO-I PRDWT30-15DC-I PRDWT30-15DO-IV PRDWT30-15DC-IV	PRDT30-25DO PRDT30-25DC PRDT30-25DO-V PRDT30-25DC-V PRDLT30-25DO PRDLT30-25DC PRDLT30-25DO-V PRDLT30-25DC-V PRDWT30-25DO PRDWT30-25DC PRDWT30-25DO-I PRDWT30-25DC-I PRDWT30-25DO-IV PRDWT30-25DC-IV
Sensing distance	4mm ±10%	8mm ±10%	7mm ±10%	14mm ±10%	15mm ±10%	25mm ±10%
Hysteresis	Max. 10% of sensing distance					
Standard sensing target	12×12×1mm (Iron)	25×25×1mm (Iron)	20×20×1mm (Iron)	40×40×1mm (Iron)	45×45×1mm (Iron)	75×75×1mm (Iron)
Setting distance	0 to 2.8mm	0 to 5.6mm	0 to 4.9mm	0 to 9.8mm	0 to 10.5mm	0 to 17.5mm
Power supply (Operating voltage)	12-24VDC (10-30VDC)					
Leakage current	Max. 0.6mA					
Response frequency **(*1)**	450Hz	400Hz	250Hz	200Hz	100Hz	
Residual voltage	Max. 3.5V					
Affection by Temp.	Within ±10% max. of sensing distance at 20℃ in temperature range of -25 to 70℃					
Control output	2 to 100mA					
Insulation resistance	Min. 50MΩ (at 500VDC megger)					
Dielectric strength	1500VAC 50/60Hz for 1minute					
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours					
Shock	500m/s² (50G) X, Y, Z directions for 3 times					
Indicator	Output operationindicator(Red LED)					
Ambient temperature	-25 to 70℃ (non-freezing condition)					
Storage temperature	-30 to 80℃ (non-freezing condition)					
Ambient humidity	35 to 95%RH (at non-dew status)					
Protection circuit	Surge protection circuit, Reverse polarity proteciton circuit, Overload & Short protection circuit					
Material	Case/Nut: Nickel plated Brass, Washer: Nickel plated Iron, Sensing surface: Heat-resistant ABS, Standard cable(Black): Polyvinyl chloride(PVC), Oil resistant cable(Gray): Oil resistant Polyvinyl chlorde(PVC)					
Approval	CE					
Protection	IP67(IEC Standard)					
Unit weight	PRDT:Approx. 74g PRDLT:Approx. 94g PRDWT:Approx. 44g	PRDT:Approx. 72g PRDLT:Approx. 92g PRDWT:Approx. 42g	PRDT:Approx. 115g PRDLT:Approx. 145g PRDWT:Approx. 80g	PRDT:Approx. 110g PRDLT:Approx. 140g PRDWT:Approx. 75g	PRDT:Approx. 175g PRDLT:Approx. 215g PRDWT:Approx. 140g	PRDT:Approx. 180g PRDLT:Approx. 220g PRDWT:Approx. 145g

※**(*1)**The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

▣Specifications

●DC 3-wire type

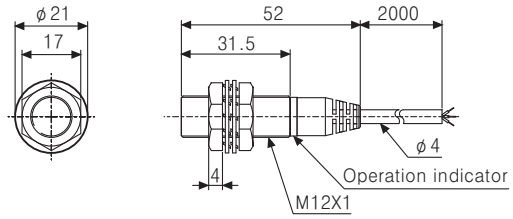
Model	PRD12-4DN PRD12-4DP PRD12-4DN2 PRD12-4DP2 PRDL12-4DN PRDL12-4DP PRDL12-4DN2 PRDL12-4DP2 PRDW12-4DN PRDW12-4DP PRDW12-4DN2 PRDW12-4DP2 PRDW12-4DN-V PRDW12-4DP-V PRDWL12-4DN PRDWL12-4DP PRDWL12-4DN2 PRDWL12-4DP2	PRD12-8DN PRD12-8DP PRD12-8DN2 PRD12-8DP2 PRDL12-8DN PRDL12-8DP PRDL12-8DN2 PRDL12-8DP2 PRDW12-8DN PRDW12-8DP PRDW12-8DN2 PRDW12-8DP2 PRDW12-8DN-V PRDW12-8DP-V PRDWL12-8DN PRDWL12-8DP PRDWL12-8DN2 PRDWL12-8DP2	PRD18-7DN PRD18-7DP PRD18-7DN2 PRD18-7DP2 PRDL18-7DN PRDL18-7DP PRDL18-7DN2 PRDL18-7DP2 PRDW18-7DN PRDW18-7DP PRDW18-7DN2 PRDW18-7DP2 PRDW18-7DN-V PRDW18-7DP-V PRDWL18-7DN PRDWL18-7DP PRDWL18-7DN2 PRDWL18-7DP2	PRD18-14DN PRD18-14DP PRD18-14DN2 PRD18-14DP2 PRDL18-14DN PRDL18-14DP PRDL18-14DN2 PRDL18-14DP2 PRDW18-14DN PRDW18-14DP PRDW18-14DN2 PRDW18-14DP2 PRDW18-14DN-V PRDW18-14DP-V PRDWL18-14DN PRDWL18-14DP PRDWL18-14DN2 PRDWL18-14DP2	PRD30-15DN PRD30-15DP PRD30-15DN2 PRD30-15DP2 PRDL30-15DN PRDL30-15DP PRDL30-15DN2 PRDL30-15DP2 PRDW30-15DN PRDW30-15DP PRDW30-15DN2 PRDW30-15DP2 PRDW30-15DN-V PRDW30-15DP-V PRDWL30-15DN PRDWL30-15DP PRDWL30-15DN2 PRDWL30-15DP2	PRD30-25DN PRD30-25DP PRD30-25DN2 PRD30-25DP2 PRDL30-25DN PRDL30-25DP PRDL30-25DN2 PRDL30-25DP2 PRDW30-25DN PRDW30-25DP PRDW30-25DN2 PRDW30-25DP2 PRDW30-25DN-V PRDW30-25DP-V PRDWL30-25DN PRDWL30-25DP PRDWL30-25DN2 PRDWL30-25DP2
Sensing distance	4mm ±10%	8mm ±10%	7mm ±10%	14mm ±10%	15mm ±10%	25mm ±10%
Hysteresis	Max. 10% of sensing distance					
Standard sensing target	12×12×1mm (Iron)	25×25×1mm (Iron)	20×20×1mm (Iron)	40×40×1mm (Iron)	45×45×1mm (Iron)	75×75×1mm (Iron)
Setting distance	0 to 2.8mm	0 to 5.6mm	0 to 4.9mm	0 to 9.8mm	0 to 10.5mm	0 to 17.5mm
Power supply (Operating voltage)	12-24VDC (10-30VDC)					
Current consumption	Max. 10mA					
Response frequency**(*1)**	500Hz	400Hz	300Hz	200Hz	100Hz	100Hz
Residual voltage	Max. 1.5V					
Affection by Temp.	Within ±10% max. of sensing distance at 20℃ in temperature range of -25 to 70℃					
Control output	200mA					
Insulation resistance	Min. 50MΩ (at 500VDC megger)					
Dielectric strength	1500VAC 50/60Hz for 1minute					
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours					
Shock	500m/s² (50G) X, Y, Z directions for 3 times					
Indicator	Output operation indicator(Red LED)					
Ambient temperature	-25 to 70℃ (non-freezing condition)					
Storage temperature	-30 to 80℃ (non-freezing condition)					
Ambient humidity	35 to 95%RH					
Protection circuit	Surge protection circuit, Reverse polarity proteciton circuit, Overload & Short protection circuit					
Protection	IP67 (IEC Standard)					
Material	Case/Nut: Nikel plated Brass, Washer: Nikel plated Iron, Sensing surface: Heat-resistant ABS, Standard cable(Black): Polyvinyl chloride(PVC), Oil resistant cable(Gray): Oil resistant Polyvinyl chlorde(PVC)					
Approval	CE					
Unit weight	PRD:Approx. 74g PRDL:Approx. 94g PRDW:Approx. 44g PRDWL:Approx. 64g	PRD:Approx. 72g PRDL:Approx. 92g PRDW:Approx. 42g PRDWL:Approx. 62g	PRD:Approx. 115g PRDL:Approx. 145g PRDW:Approx. 80g PRDWL:Approx. 110g	PRD:Approx. 110g PRDL:Approx. 140g PRDW:Approx. 75g PRDWL:Approx. 105g	PRD:Approx. 175g PRDL:Approx. 215g PRDW:Approx. 140g PRDWL:Approx. 180g	PRD:Approx. 180g PRDL:Approx. 220g PRDW:Approx. 145g PRDWL:Approx. 185g

※**(*1)** The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

▣Dimensions

(Unit:mm)

●PRD(T)12-4D□



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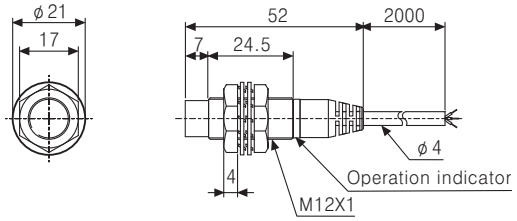
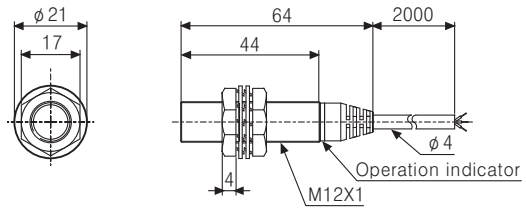


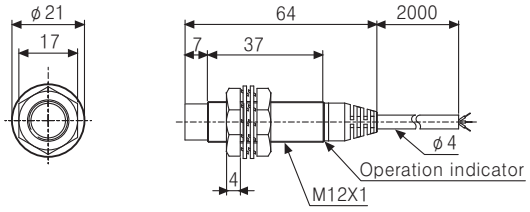
▣Dimensions

(Unit:mm)

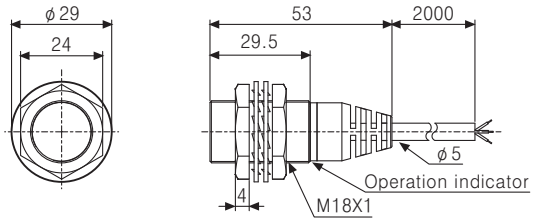
●PRDL(T)12-4D□



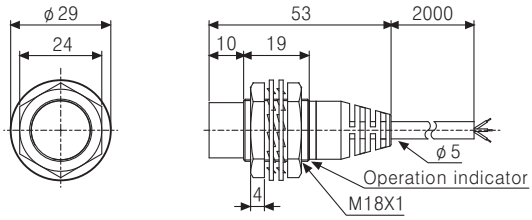
●PRDL(T)12-8D□



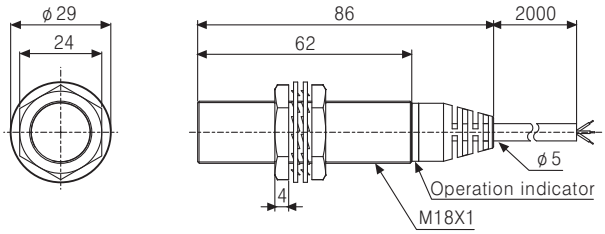
●PRD(T)18-7D□



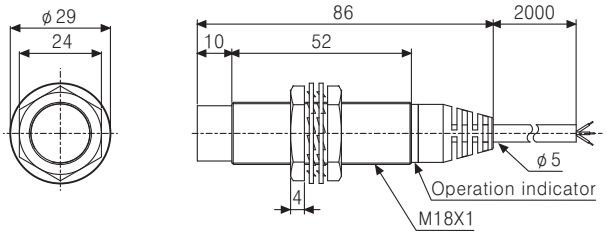
●PRD(T)18-14D□



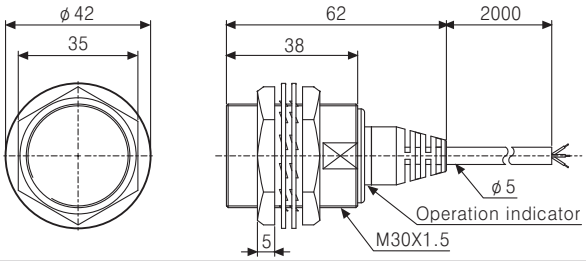
●PRDL(T)18-7D□



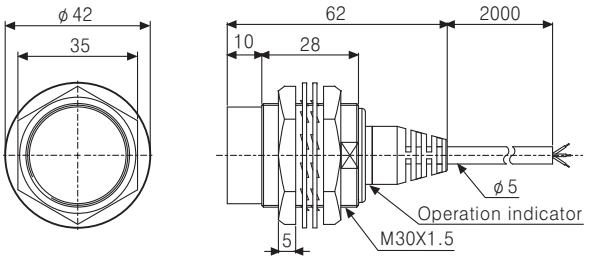
●PRDL(T)18-14D□



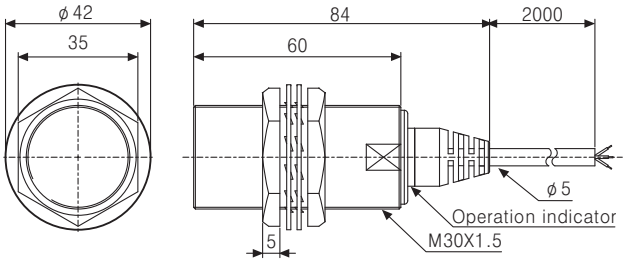
●PRD(T)30-15D□



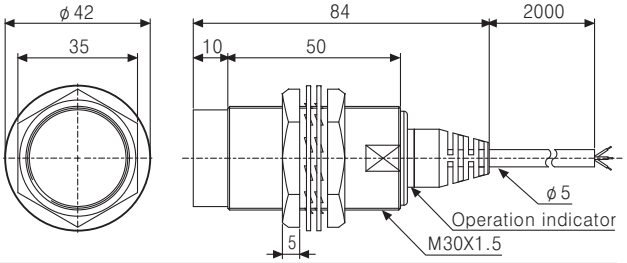
●PRD(T)30-25D□



●PRDL(T)30-15D□



●PRDL(T)30-25D□



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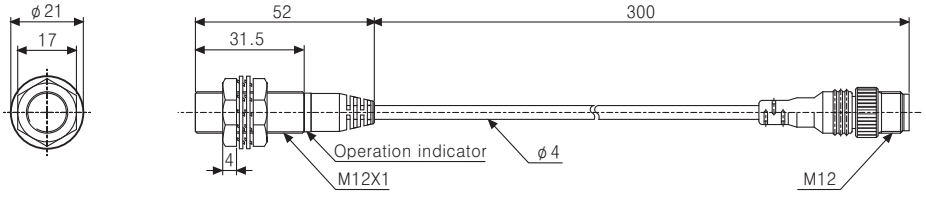
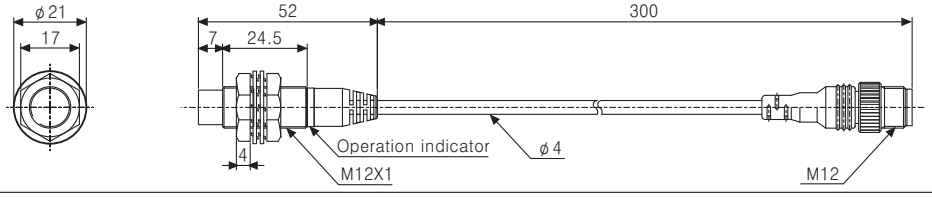


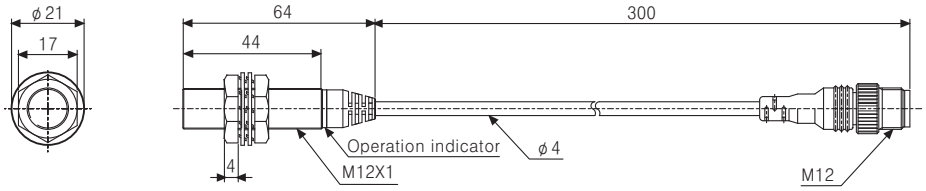
●PRDW(T)12-8D□



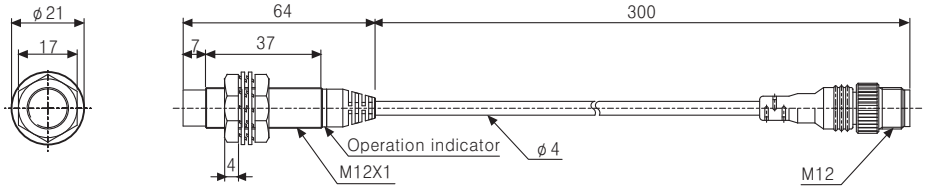
▣Dimensions

(Unit:mm)

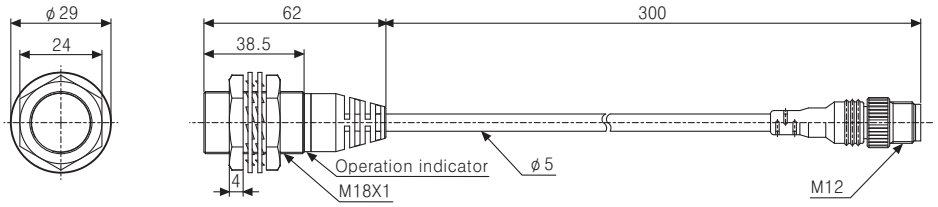
●PRDWL12-4D□



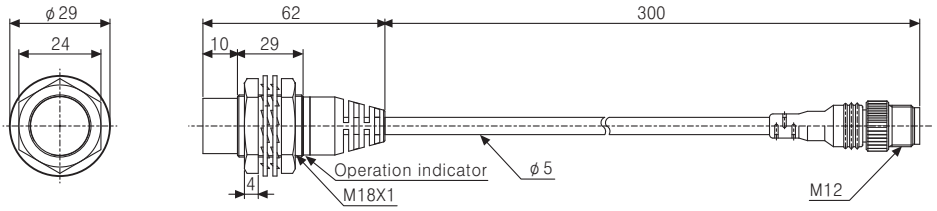
●PRDWL12-8D□



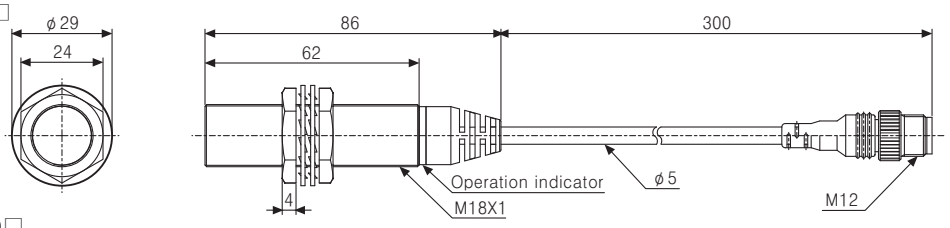
●PRDW(T)18-7D□



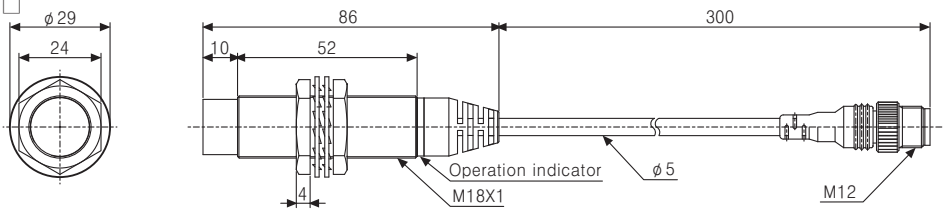
●PRDW(T)18-14D□



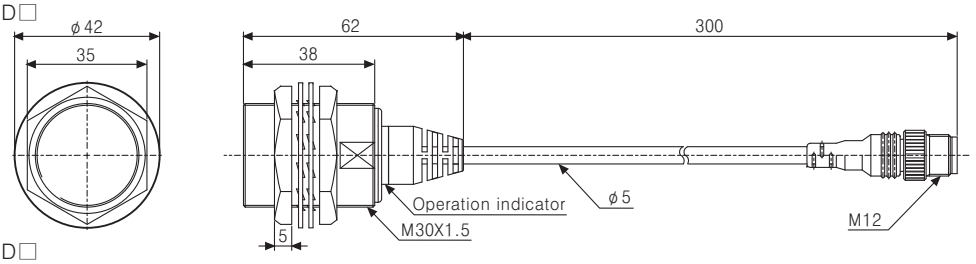
●PRDWL(T)18-7D□



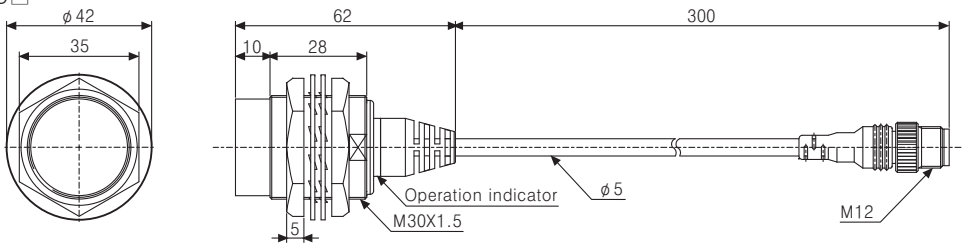
●PRDWL(T)18-14D□



●PRDW(T)30-15D□



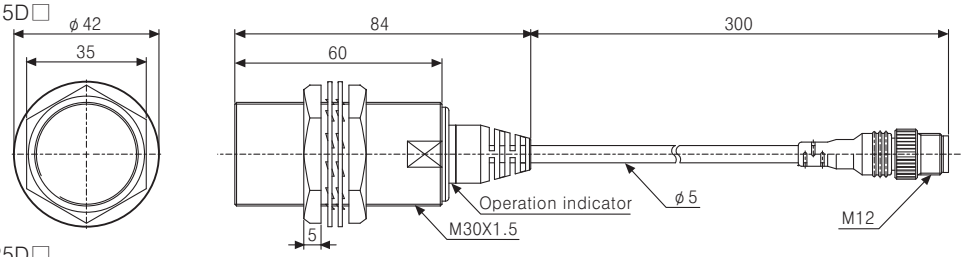
●PRDW(T)30-25D□



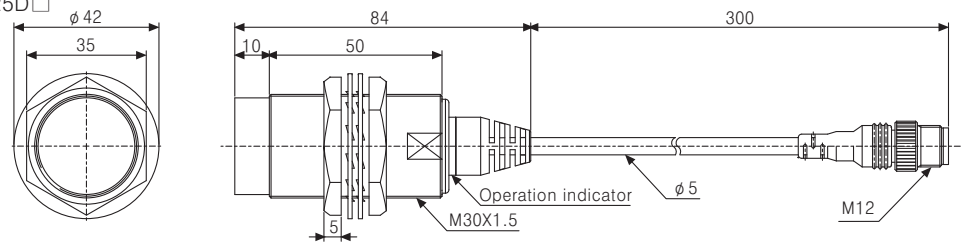
▣Dimensions

(Unit:mm)

●PRDWL(T)30−15D□

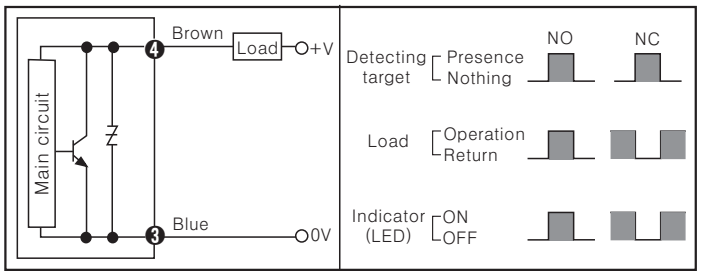


●PRDWL(T)30−25D□



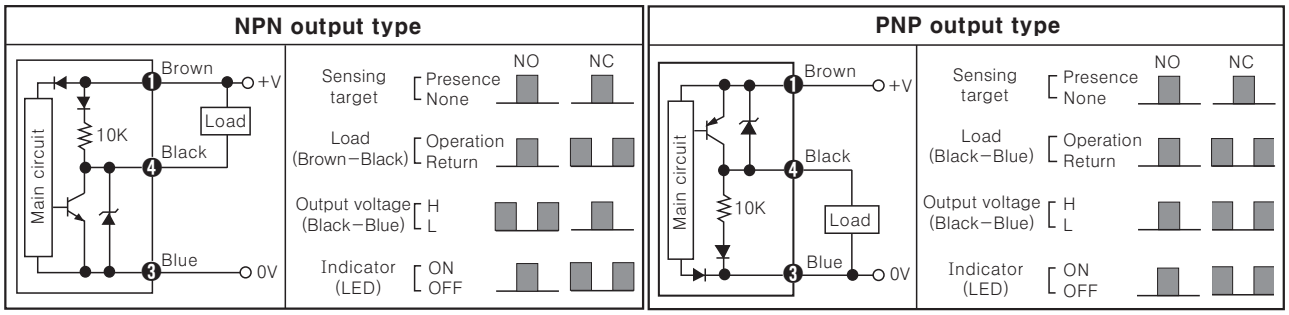
▣Control output diagram

◎DC 2-wire type



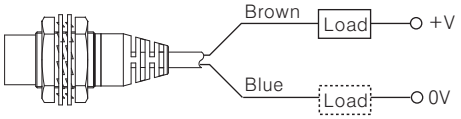
※The number in a circle is pin no. of connector.

◎DC 3-wire type



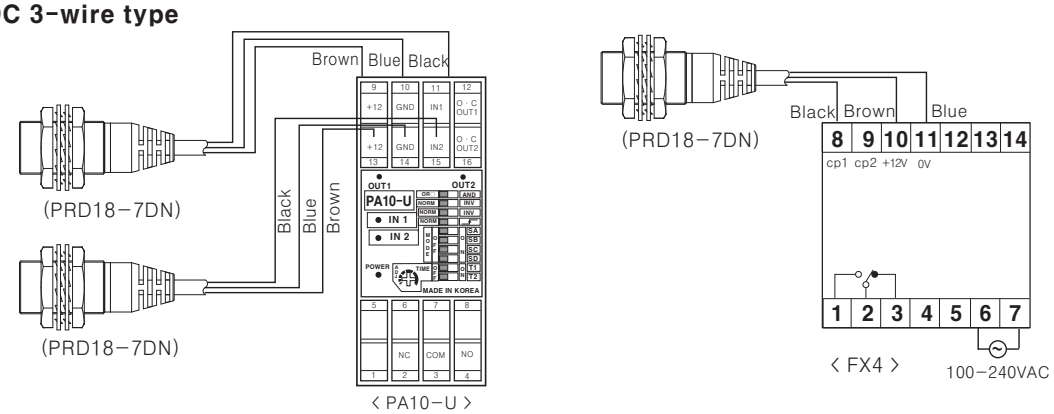
▣Connections

◎DC 2-wire type



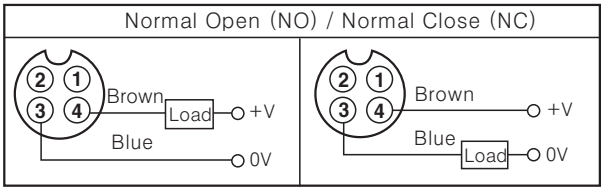
※The load can be connected to either wire.

◎DC 3-wire type



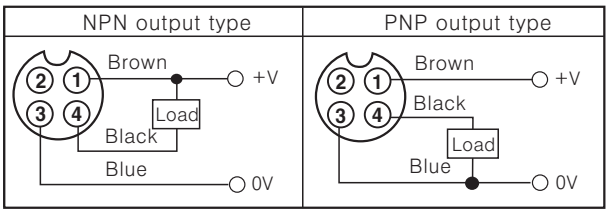
▣Wiring diagram

◎DC 2-wire type(Standard type)



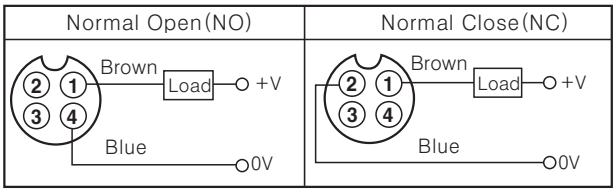
※Pin ①, ② are N.C (Not Connected) terminals.
※For DC 3-wire type connector cable, it is available to use with black wire(12-24VDC) and blue wire(0V).

◎DC 3-wire type



※Please fasten the cleat of connector not to shown the thread. (0.39 to 0.49N • m)
※Please fasten the vibration part with Teflon tape.
※See G-2 about IEC standard connector wires and specifications.

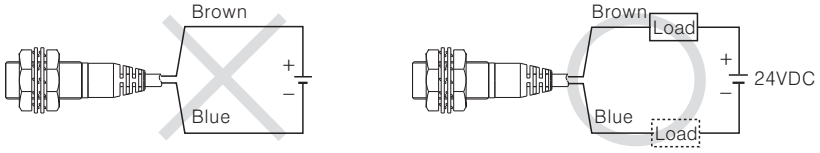
◎DC 2-wire type(IEC standard type)



※The pin arrangement of connector applying IEC standard is being developed.
※Please attach "I" at the end of the name of standard type for purchasing the IEC standard product. Ex)PRDWT12-4DO-I
※The connector cable for IEC standard is being developed. Please attach "I" at the end of the name of standard type. Ex)CID2-2-I, CLD2-5-I

▣Proper usage

◎Load connections

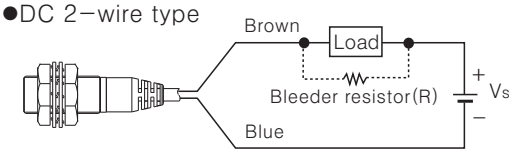


〈 DC 2-wire type 〉 〈 DC 2-wire type 〉

When using DC 2-wire type proximity sensor, the load must be connected otherwise internal components may be damaged. The load can be connected to either wire.

◎In case of the load current is small

●DC 2-wire type



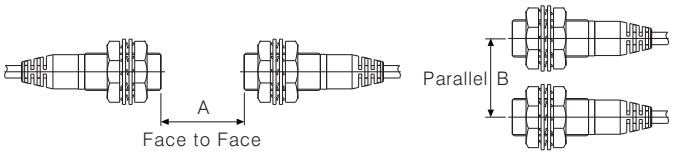
Please make the current on proximity sensor smaller than the return current of load by connecting a bleeder resistor in parallel.
※W value of Bleeder resistor should be bigger for proper heat dissipation.

$$R = \frac{Vs}{Io-Ioff}\ (\Omega) \qquad P = \frac{Vs^2}{R}\ (W)$$

[Vs : Power supply, Io : Min. action current of proximity sensor
Ioff : Return current of load, P : Number of Bleeder resistance watt]

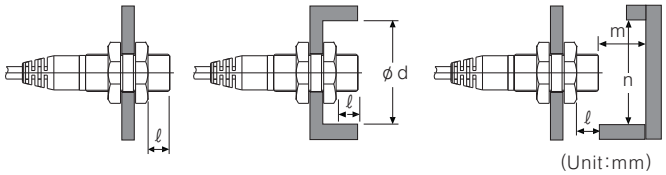
◎Mutual-interference

When several proximity sensors are mounted close to one another a malfunction of the sensor may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors as below chart indicates.



◎Influence by surrounding metals

When sensors are mounted on metallic panel, you must prevent the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart indicates.



(Unit:mm)

Item \ Model	PRD□(T)12-4D□ PRDW□(T)12-4D□	PRD□(T)12-8D□ PRDW□(T)12-8D□	PRD□(T)18-7D□ PRDW□(T)18-7D□	PRD□(T)18-14D□ PRDW□(T)18-14D□	PRD□(T)30-15D□ PRDW□(T)30-15D□	PRD□(T)30-25D□ PRDW□(T)30-25D□
A	24	48	42	84	90	150
B	24	36	36	54	60	90
ℓ	0	11	0	14	0	15
ϕd	12	36	18	54	30	90
m	12	24	21	42	45	75
n	18	36	27	54	45	90

PRDCM Series

Long distance connector type proximity sensor

NEW

▣Features

- **Long sensing distance (1.5 to 2 times longer sensing distance guaranteed compared to existing models)**
- Shorten the time of maintenance
- Improved the noise resistance with dedicated IC
- Integrated surge protection, reverse polarity protection, overload & short protection circuit
- Red LED status indication
- Protection structure IP67 (IEC standard)
- Replaceable for micro switches and limit switches

⚠ **Please read "Caution for your safety" in operation manual before using.**

CE

▣Specifications

●DC 2-wire type

Model	PRDCMT18-7DO PRDCMT18-7DC PRDCMT18-7DO-I PRDCMT18-7DC-I PRDCMLT18-7DO PRDCMLT18-7DC PRDCMLT18-7DO-I PRDCMLT18-7DC-I	PRDCMT18-14DO PRDCMT18-14DC PRDCMT18-14DO-I PRDCMT18-14DC-I PRDCMLT18-14DO PRDCMLT18-14DC PRDCMLT18-14DO-I PRDCMLT18-14DC-I	PRDCMT30-15DO PRDCMT30-15DC PRDCMT30-15DO-I PRDCMT30-15DC-I PRDCMLT30-15DO PRDCMLT30-15DC PRDCMLT30-15DO-I PRDCMLT30-15DC-I	PRDCMT30-25DO PRDCMT30-25DC PRDCMT30-25DO-I PRDCMT30-25DC-I PRDCMLT30-25DO PRDCMLT30-25DC PRDCMLT30-25DO-I PRDCMLT30-25DC-I
Sensing distance	7mm ±10%	14mm ±10%	15mm ±10%	25mm ±10%
Hysteresis	Max. 10% of sensing distance			
Standard sensing target	20×20×1mm (Iron)	40×40×1mm (Iron)	45×45×1mm (Iron)	75×75×1mm (Iron)
Setting distance	0 to 4.9mm	0 to 9.8mm	0 to 10.5mm	0 to 17.5mm
Power supply (Operating voltage)	12-24VDC (10-30VDC)			
Leakage current	Max. 0.6mA			
Response frequency **(*1)**	250Hz	200Hz	100Hz	
Residual voltage	Max. 3.5V			
Affection by Temp.	Within ±10% max. of sensing distance at 20℃ in temperature range of -25 to 70℃			
Control output	2 to 100mA			
Insulation resistance	Min. 50MΩ (at 500VDC megger)			
Dielectric strength	1500VAC 50/60Hz for 1minute			
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours			
Shock	500m/s² (50G) X, Y, Z directions for 3 times			
Indicator	Output operation indicator (Red LED)			
Ambient temperature	-25 to 70℃ (non-freezing condition)			
Storage temperature	-30 to 80℃ (non-freezing condition)			
Ambient humidity	35 to 95%RH (at non-dew status)			
Protection circuit	Surge protection circuit, Reverse polarity proteciton circuit, Overload & Short protection circuit			
Protection	IP67 (IEC Standard)			
Material	Case/Nut: Nikel plated Brass, Washer: Nikel plated Iron, Sensing surface: Heat-resistant ABS			
Approval	CE			
Unit weight	PRDCMT : Approx. 49g PRDCMLT : Approx. 73g		PRDCMT : Approx. 134g PRDCMLT : Approx. 169g	

※**(*1)** The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

▣Specifications

●DC 3-wire type

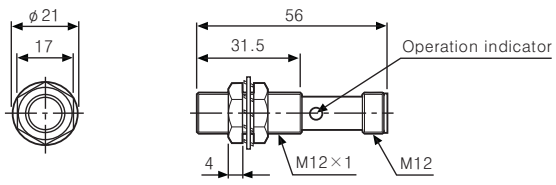
Model	PRDCM12-4DN PRDCM12-4DP PRDCM12-4DN2 PRDCM12-4DP2 PRDCML12-4DN PRDCML12-4DP PRDCML12-4DN2 PRDCML12-4DP2	PRDCM12-8DN PRDCM12-8DP PRDCM12-8DN2 PRDCM12-8DP2 PRDCML12-8DN PRDCML12-8DP PRDCML12-8DN2 PRDCML12-8DP2	PRDCM18-7DN PRDCM18-7DP PRDCM18-7DN2 PRDCM18-7DP2 PRDCML18-7DN PRDCML18-7DP PRDCML18-7DN2 PRDCML18-7DP2	PRDCM18-14DN PRDCM18-14DP PRDCM18-14DN2 PRDCM18-14DP2 PRDCML18-14DN PRDCML18-14DP PRDCML18-14DN2 PRDCML18-14DP2	PRDCM30-15DN PRDCM30-15DP PRDCM30-15DN2 PRDCM30-15DP2 PRDCML30-15DN PRDCML30-15DP PRDCML30-15DN2 PRDCML30-15DP2	PRDCM30-25DN PRDCM30-25DP PRDCM30-25DN2 PRDCM30-25DP2 PRDCML30-25DN PRDCML30-25DP PRDCML30-25DN2 PRDCML30-25DP2
Detecting distance	4mm ±10%	8mm ±10%	7mm ±10%	14mm ±10%	15mm ±10%	25mm ±10%
Hysteresis	Max. 10% of detecting distance					
Standard detecting target	12×12×1mm (Iron)	25×25×1mm (Iron)	20×20×1mm (Iron)	40×40×1mm (Iron)	45×45×1mm (Iron)	75×75×1mm (Iron)
Setting distance	0 to 2.8mm	0 to 5.6mm	0 to 4.9mm	0 to 9.8mm	0 to 10.5mm	0 to 17.5mm
Power supply (Operating voltage)	12-24VDC (10-30VDC)					
Current consumption	Max. 10mA					
Response frequency**(*1)**	500Hz	400Hz	300Hz	200Hz	100Hz	
Residual voltage	Max. 1.5V					
Affection by Temp.	±10% max. of detecting distance at 20℃ within temperature range of -25 to 70℃					
Control output	Max. 200mA					
Insulation resistance	Min. 50MΩ (at 500VDC megger)					
Dielectric strength	1500VAC 50/60Hz for 1minute					
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours					
Shock	500m/s² (50G) X, Y, Z directions for 3 times					
Indicator	Output operation indicator (Red LED)					
Ambient temperature	-25 to 70℃ (non-freezing condition)					
Storage temperature	-30 to 80℃ (non-freezing condition)					
Ambient humidity	35 to 95%RH					
Protection circuit	Surge protection circuit, Reverse polarity proteciton circuit, Overload & Short protection circuit					
Protection	IP67 (IEC specification)					
Material	Case/Nut: Nikel plated Brass, Washer: Nikel plated Iron, Sensing surface: Heat-resistant ABS					
Approval	CE					
Weight	PRDCM : Approx. 26g PRDCML : Approx. 36g			PRDCM : Approx. 49g PRDCML : Approx. 73g		

※**(*1)** The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

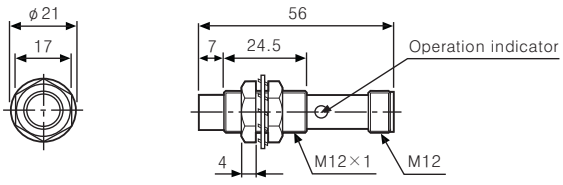
▣Dimensions

(Unit:mm)

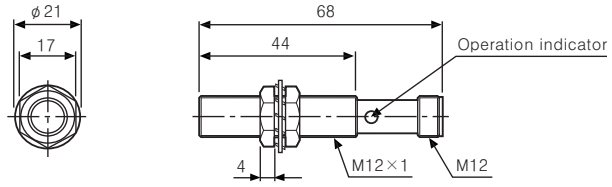
●PRDCM12-4D□



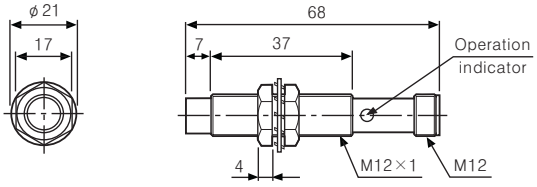
●PRDCM12-8D□



●PRDCML12-4D□



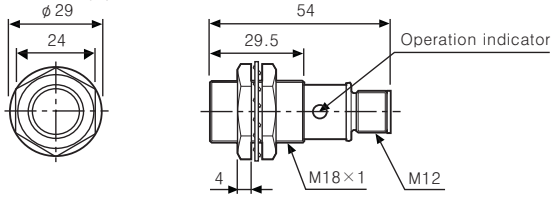
●PRDCML12-8D□



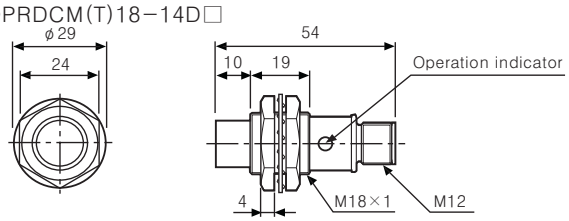
▣Dimensions

(Unit:mm)

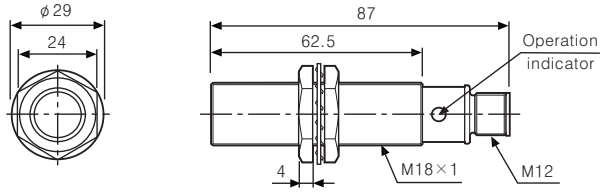
●PRDCM(T)18−7D□



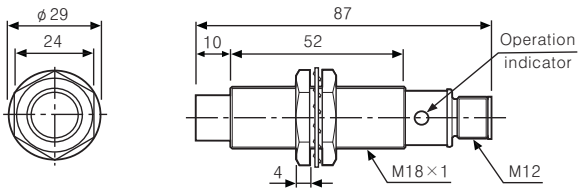
●PRDCM(T)18−14D□



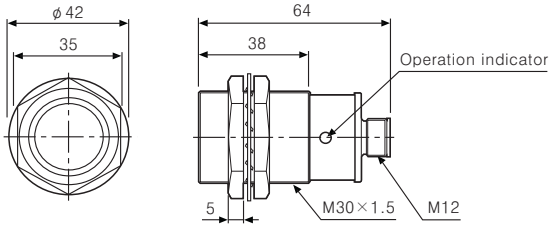
●PRDCML(T)18−7D□



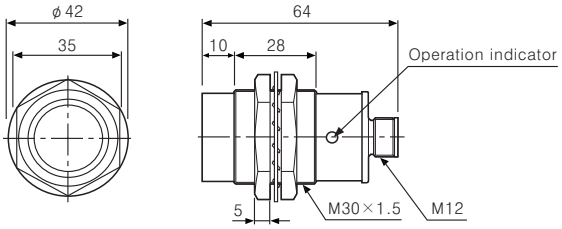
●PRDCML(T)18−14D□



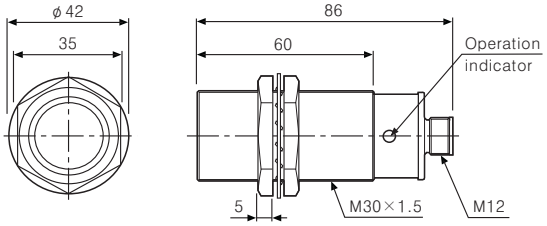
●PRDCM(T)30−15D□



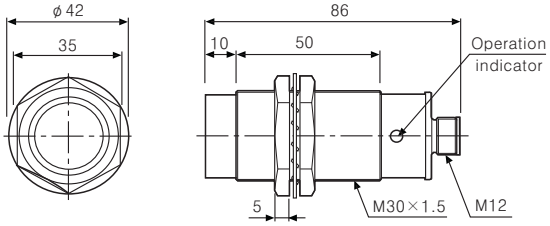
●PRDCM(T)30−25D□



●PRDCML(T)30−15D□

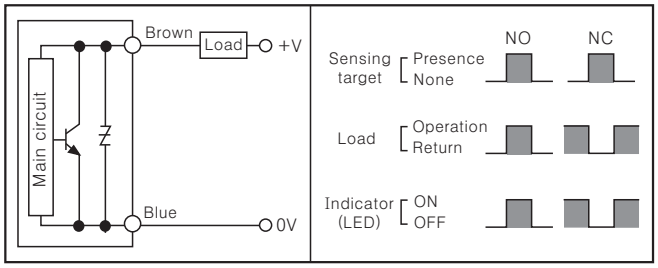


●PRDCML(T)30−25D□



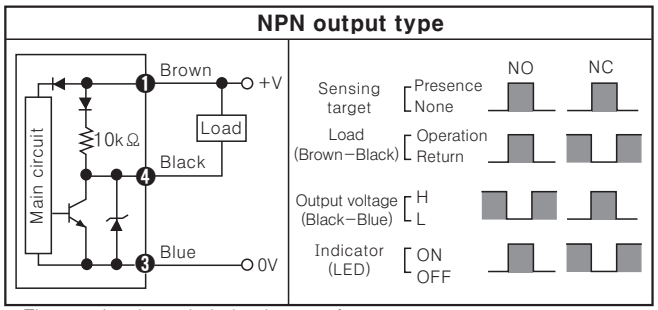
▣Control output diagram

◎DC 2-wire type

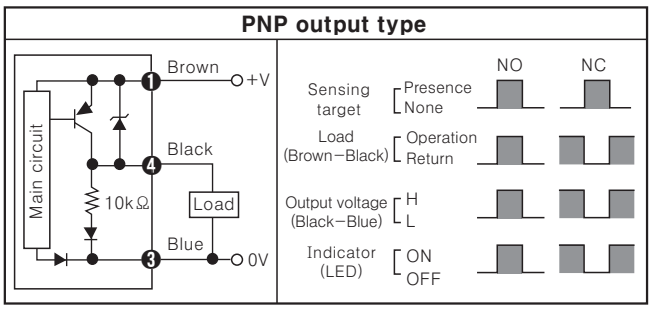


◎DC 3-wire type

NPN output type



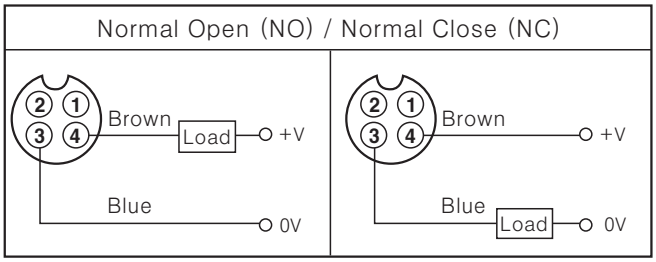
PNP output type



※The number in a circle is pin no. of connector.

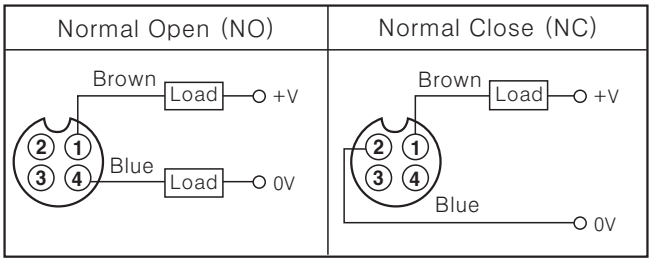
▣Wiring diagram

◎DC 2-wire type(Standard type)



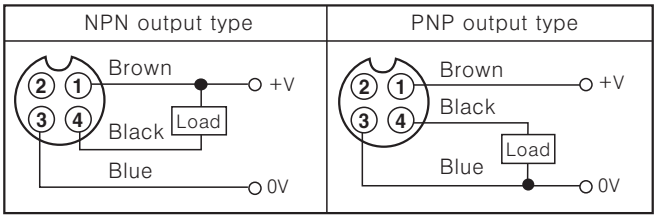
※Pin ①, ② are N.C (Not Connected) terminals.
※For DC 3-wire type connector cable, it is available to use with black wire(12-24VDC) and blue wire(0V).

◎DC 2-wire type(IEC standard type)



※The pin arrangement of connector applying IEC standard is being developed.
※Please attach "I" at the end of the name of standard type for purchasing the IEC standard product. Ex)PRDCMT12-4DO-I
※The connector cable for IEC standard is being developed. Please attach "I" at the end of the name of standard type. Ex)CID2-2-I, CLD2-5-I

◎DC 3-wire

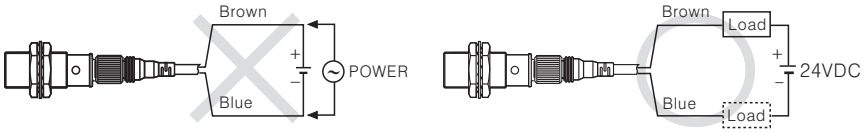


※Please fasten the cleat of connector not to shown the thread. (0.39 to 0.49N • m)

※Please fasten the vibration part with Teflon tape.
※See G-2 about IEC standard connector wires and specifications.

▣Proper usage

◎Load connections

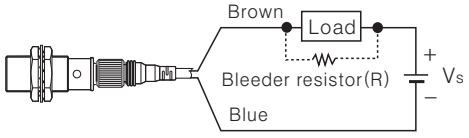


〈 DC 2-wire type 〉 〈 DC 2-wire type 〉

When using DC 2-wire type proximity sensor, the load must be connected otherwise internal components may be damaged. The load can be connected to either wire.

◎In case of the load current is small

●DC 2-wire type



It may cause return failure of load by residual voltage. If the load current is under 5mA, please make sure the residual voltage is less than the return voltage of the load by connecting a bleeder resistor in parallel with the load as shown in the diagram.

$$R = \frac{V_S}{I}\ (\Omega) \qquad P = \frac{V_S^2}{R}\ (W)$$

[I:Action current of load, R:Bleeder resistance, P:Permissible power]

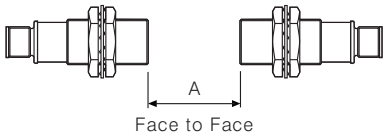
Please make the current on proximity sensor smaller than the return current of load by connecting a bleeder resistor in parallel.
※W value of Bleeder resistor should be bigger for proper heat dissipation.

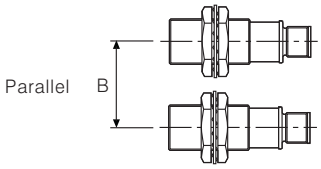
$$R = \frac{V_S}{Io-Ioff}\ (\Omega) \qquad P = \frac{V_S^2}{R}\ (W)$$

[Vs : Power supply, Io : Min. action current of proximity sensor
Ioff : Return current of load, P : Number of Bleeder resistance watt]

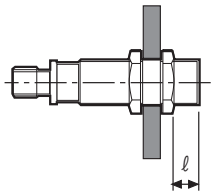
◎Mutual-interference & Influence by surrounding metals

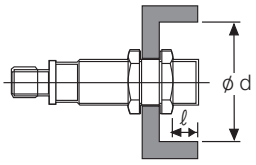
When several proximity sensors are mounted close to one another a malfunction of the may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors as below chart indicates.

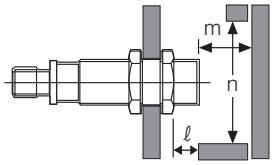




When sensors are mounted on metallic panel, you must prevent the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart indicates.







(Unit:mm)

Model / Item	PRDCM12-4D□ PRDCML12-4D□	PRDCM12-8D□ PRDCML12-8D□	PRDCM(T)18-7D□ PRDCML(T)18-7D□	PRDCM(T)18-14D□ PRDCML(T)18-14D□	PRDCMT30-15D□ PRDCMLT30-15D□	PRDCMT30-25D□ PRDCMLT30-25D□
A	24	48	42	84	90	150
B	24	36	36	54	60	90
ℓ	0	11	0	14	0	15
ϕd	12	36	18	54	30	90
m	12	24	21	42	45	75
n	18	36	27	54	45	90

Cylindrical type proximity sensor

▣Features

- ●Improved the noise resistance with dedicated IC
- ●Integrated surge protection circuit
- ●Integrated overload & short protection circuit (DC 2-wire, 3-wire type)
- ●Integrated reverse polarity protection circuit (DC 3-wire type)
- ●Long life cycle and high reliability, and simple operation
- ●Red LED status indication
- ●Protection structure IP67 (IEC standard)
- ●Replaceable for micro switches and limit switches

⚠ Please read "Caution for your safety" in operation manual before using.

CE

▣Specifications

●DC 2-wire type

Model	PRT08-1.5DO PRT08-1.5DC	PRT08-2DO PRT08-2DC	PRT12-2DO PRT12-2DC	PRT12-4DO PRT12-4DC	PRT18-5DO PRT18-5DC	PRT18-8DO PRT18-8DC	PRT30-10DO PRT30-10DC	PRT30-15DO PRT30-15DC
Sensing distance	1.5mm ±10%	2mm ±10%	2mm ±10%	4mm ±10%	5mm ±10%	8mm ±10%	10mm ±10%	15mm ±10%
Hysteresis	Max. 10% of sensing distance							
Standard sensing target	8×8×1mm (Iron)		12×12×1mm (Iron)		18×18×1mm (Iron)	25×25×1mm (Iron)	30×30×1mm (Iron)	45×45×1mm (Iron)
Setting distance	0 to 1.05mm	0 to 1.4mm	0 to 1.4mm	0 to 2.8mm	0 to 3.5mm	0 to 5.6mm	0 to 7mm	0 to 10.5mm
Power supply (Operation voltage)	12-24VDC (10-30VDC)							
Leakage current	Max. 0.6mA							
Response frequency(*1)	1.5kHz	1kHz	1.5kHz	500Hz		350Hz	400Hz	200Hz
Residual voltage	Max. 3.5V							
Affection by Temp.	±10% Max. for sensing distance at 20℃ (For PRT08 series : ±20% Max.)							
Control output	2 to 100mA							
Insulation resistance	Min. 50MΩ (at 500VDC megger)							
Dielectric strength	1500VAC 50/60Hz for 1minute							
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours							
Shock	500m/s² (50G) in X, Y, Z direction for 3 times							
Indicator	Output operation indicator (Red LED)							
Ambient temperature	-25 to 70℃ (at non-freezing status)							
Storage temperature	-30 to 80℃ (at non-freezing status)							
Ambient humidity	35 to 95%RH							
Protection circuit	Surge protection circuit, Overload & Short protection circuit							
Protection	IP67 (IEC standard)							
Cable spec.	φ3.5×2P, 2m		φ4×2P, 2m		φ5×2P, 2m			
Material	Case/Nut: Nikel plated Brass, Washer: Nikel plated Iron, Sensing surface: Heat-resistant ABS, Standard cable (Black): Polyvinyl chloride (PVC), Oil resistant cable (Gray): Oil resistant Polyvinyl chlorde (PVC)							
Approval	CE							
Unit weight	Approx.36g	Approx.36g	Approx.63g	Approx.63g	Approx.122g	Approx.122g	Approx.181g	Approx.181g

※(*1) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

●DC 3-wire type

Model	PR08-1.5DN PR08-1.5DP PR08-1.5DN2 PR08-1.5DP2 PRL08-1.5DN PRL08-1.5DP PRL08-1.5DN2 PRL08-1.5DP2	PR08-2DN PR08-2DP PR08-2DN2 PR08-2DP2 PRL08-2DN PRL08-2DP PRL08-2DN2 PRL08-2DP2	PR12-2DN PR12-2DP PR12-2DN2 PR12-2DP2 PRS12-2DN PRS12-2DP PRS12-2DN2	PR12-4DN PR12-4DP PR12-4DN2 PR12-4DP2 PRS12-4DN PRS12-4DP PRS12-4DN2 PRL12-4DN PRL12-4DP	PR18-5DN PR18-5DP PR18-5DN2 PR18-5DP2 PRL18-5DN PRL18-5DP PRL18-5DN2 PRL18-5DP2	PR18-8DN PR18-8DP PR18-8DN2 PR18-8DP2 PRL18-8DN PRL18-8DP PRL18-8DN2 PRL18-8DP2	PR30-10DN PR30-10DP PR30-10DN2 PR30-10DP2 PRL30-10DN PRL30-10DP PRL30-10DN2 PRL30-10DP2	PR30-15DN PR30-15DP PR30-15DN2 PR30-15DP2 PRL30-15DN PRL30-15DP PRL30-15DN2 PRL30-15DP2
Sensing distance	1.5mm ±10%	2mm ±10%	2mm ±10%	4mm ±10%	5mm ±10%	8mm ±10%	10mm ±10%	15mm ±10%
Hysteresis	Max. 10% of sensing distance							
Standard sensing target	8×8×1mm(Iron)		12×12×1mm(Iron)		18×18×1mm (Iron)	25×25×1mm (Iron)	30×30×1mm (Iron)	45×45×1mm (Iron)
Setting distance	0 to 1.05mm	0 to 1.4mm	0 to 1.4mm	0 to 2.8mm	0 to 3.5mm	0 to 5.6mm	0 to 7mm	0 to 10.5mm
Power supply (Operation voltage)	12-24VDC (10-30VDC)							
Leakage current	Max. 10mA							
Response frequency(*1)	1.5kHz	1kHz	1.5kHz	500Hz		350Hz	400Hz	200Hz
Residual voltage	Max. 1.5V							
Affection by Temp.	±10% Max. for sensing distance at 20℃ within temperature range of -25 to 70℃, PR08 Series : Max. ±20%							
Control output	Max. 200mA							
Insulation resistance	Min. 50MΩ (at 500VDC megger)							
Dielectric strength	1500VAC 50/60Hz for 1minute							
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours							
Shock	500m/s² (50G) in X, Y, Z direction for 3 times							
Indicator	Output operation indicator(Red LED)							
Ambient temperature	-25 to 70℃ (at non-freezing status)							
Storage temperature	-30 to 80℃ (at non-freezing status)							
Ambient humidity	35 to 95%RH							
Protection circuit	Surge protection circuit, Reverse polarity proteciton circuit, Overload & Short protection circuit							
Protection	IP67(IEC standard)							
Material	Case/Nut: Nikel plated Brass, Washer: Nikel plated Iron, Sensing surface: Heat-resistant ABS, Standard cable(Black): Polyvinyl chloride(PVC), Oil resistant cable(Gray): Oil resistant Polyvinyl chlorde(PVC)							
Cable spec.	φ3.5×3P, 2m		φ4×3P, 2m		φ5×3P, 2m			
Approval	CE							
Unit weight	Approx. 36g	Approx. 36g	PR:Approx. 70g PRS:Approx. 68g	PR:Approx. 70g PRS:Approx. 68g	PR:Approx. 119g PRL:Approx. 150g	PR:Approx. 118g PRL:Approx. 150g	PR:Approx. 184g PRL:Approx. 222g	PR:Approx. 181g PRL:Approx. 227g

※**(*1)** The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

●AC 2-wire type

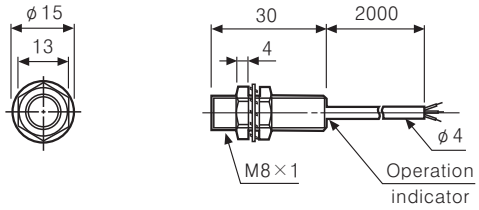
Model	PR12-2AO PR12-2AC	PR12-4AO PR12-4AC	PR18-5AO PR18-5AC PRL18-5AO PRL18-5AC	PR18-8AO PR18-8AC PRL18-8AO PRL18-8AC	PR30-10AO PR30-10AC PRL30-10AO PRL30-10AC	PR30-15AO PR30-15AC PRL30-15AO PRL30-15AC
Sensing distance	2mm ±10%	4mm ±10%	5mm ±10%	8mm ±10%	10mm ±10%	15mm ±10%
Hysteresis	Max. 10% of sensing distance					
Standard sensing target	12×12×1mm(Iron)		18×18×1mm(Iron)	25×25×1mm(Iron)	30×30×1mm(Iron)	45×45×1mm(Iron)
Setting distance	0 to 1.4mm	0 to 2.8mm	0 to 3.5mm	0 to 5.6mm	0 to 7mm	0 to 10.5mm
Power supply (Operation voltage)	100-240VAC (85-264VAC)					
Leakage current	Max. 2.5mA					
Response frequency(*1)	20Hz					
Residual voltage	Max. 10V					
Affection by Temp.	±10% Max. for sensing distance at 20℃ within temperature range of -25 to 70℃					
Control output	5 to 150mA		5 to 200mA			
Insulation resistance	Min. 50MΩ (at 500VDC megger)					
Dielectric strength	2500VAC 50/60Hz for 1minute					
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours					
Shock	500m/s² (50G) in X, Y, Z direction for 3 times					
Indicator	Operation indicator(Red LED)					
Ambient temperature	-25 to 70℃ (at non-freezing status)					
Storage temperature	-30 to 80℃ (at non-freezing status)					
Ambient humidity	35 to 95%RH					
Protection circuit	Surge protection circuit					
Protection	IP67(IEC standard)					
Cable spec.	φ4×2P, 2m		φ5×2P, 2m			
Material	Case/Nut: Nikel plated Brass, Washer: Nikel plated Iron, Sensing surface: Heat-resistant ABS, Standard cable(Black): Polyvinyl chloride(PVC)					
Approval	CE					
Unit weight	Approx. 66g	Approx. 66g	PR : Appox. 130g PRL : Appox. 150g	PR : Appox. 130g PRL : Appox. 150g	PR : Appox. 185g PRL : Appox. 224g	PR : Appox. 117g PRL : Appox. 222g

※**(*1)** The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

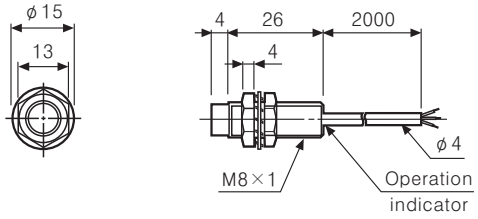
▣Dimensions

(Unit:mm)

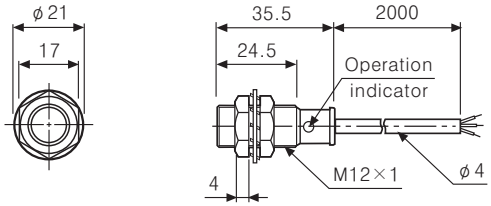
●PR(T)08-1.5D□



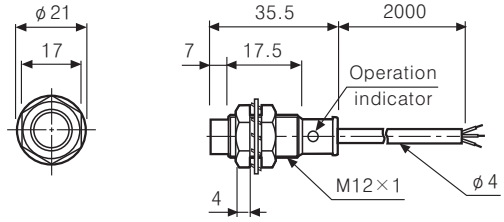
●PR(T)08-2D□



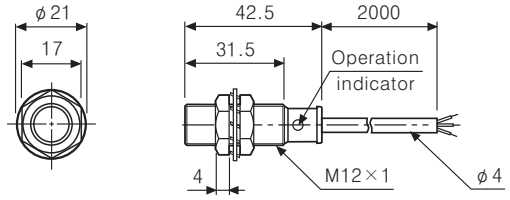
●PRS12-2D□



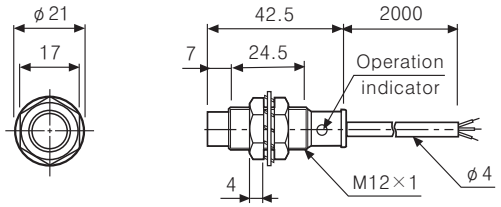
●PRS12-4D□



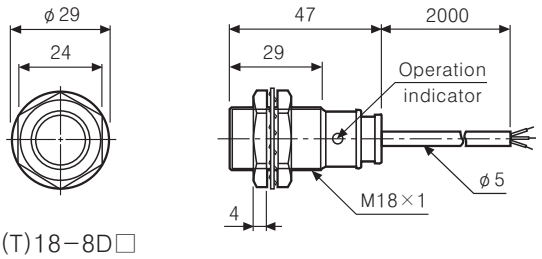
●PR(T)12-2D□



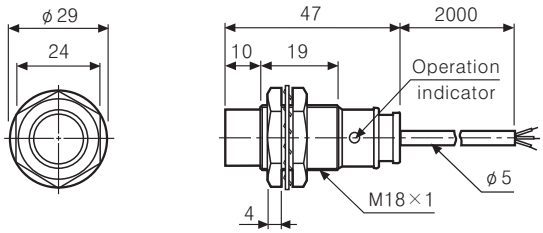
●PR(T)12-4D□



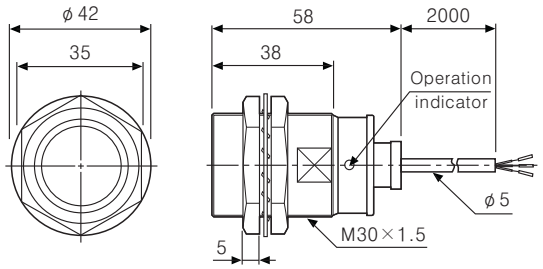
●PR(T)18-5D□



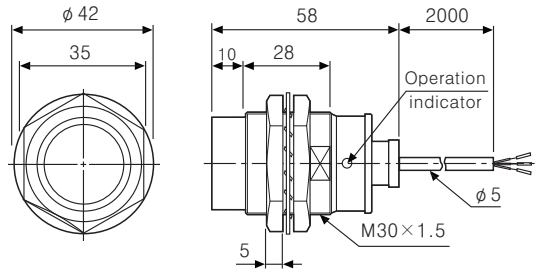
●PR(T)18-8D□



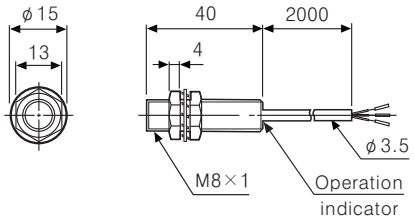
●PR(T)30-10D□



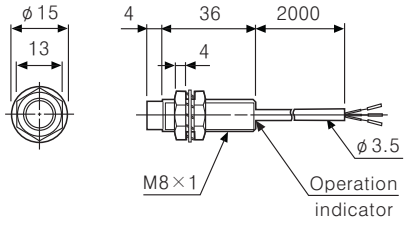
●PR(T)30-15D□



●PRL08-1.5D□



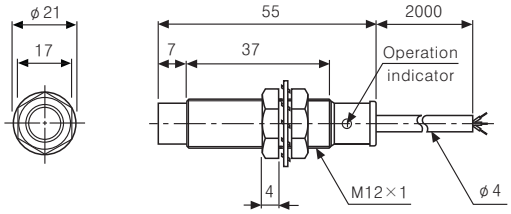
●PRL08-2D□



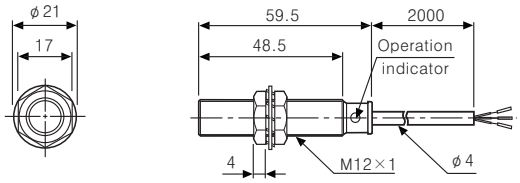
▣Dimensions

(Unit:mm)

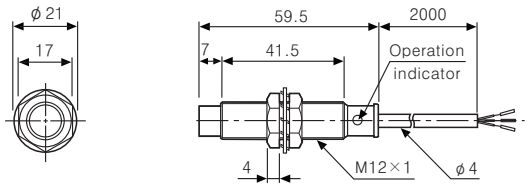
●PRL12-4D□



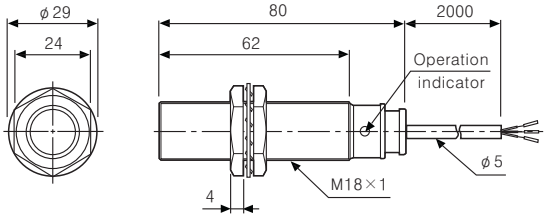
●PR12-2A□



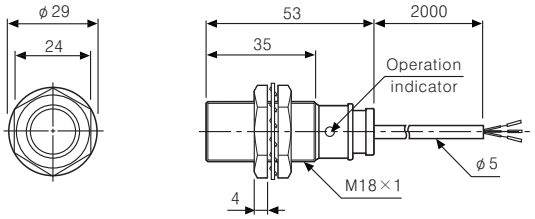
●PR12-4A□



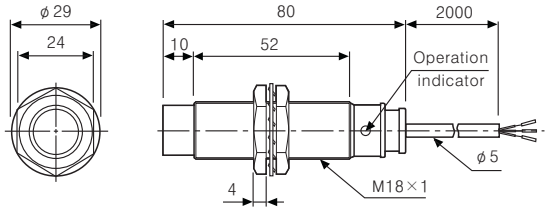
●PRL18-5D□ ●PRL18-5A□



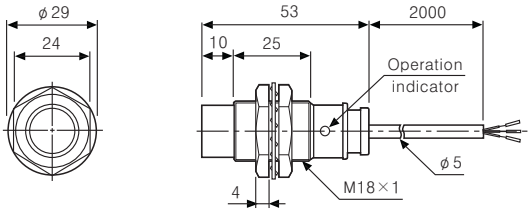
●PR18-5A□



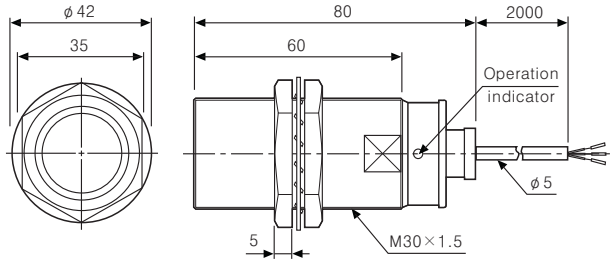
●PRL18-8D□ ●PRL18-8A□



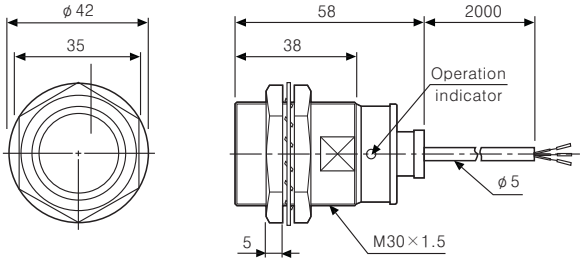
●PR18-8A□



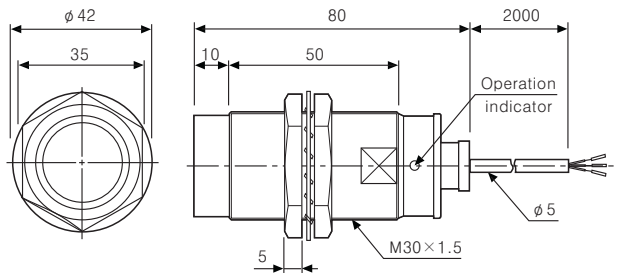
●PRL30-10D□ ●PRL30-10A□



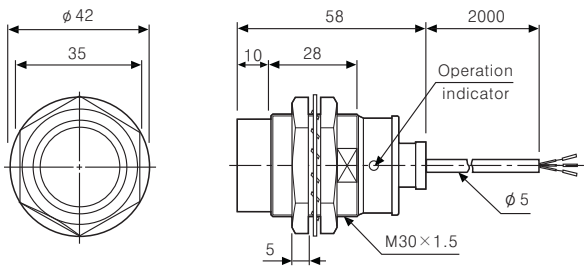
●PR30-10A□



●PRL30-15D□ ●PRL30-15A□

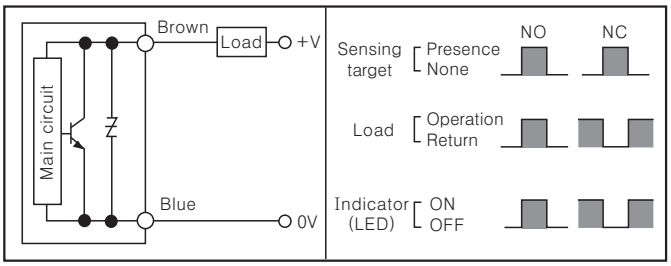


●PR30-15A□



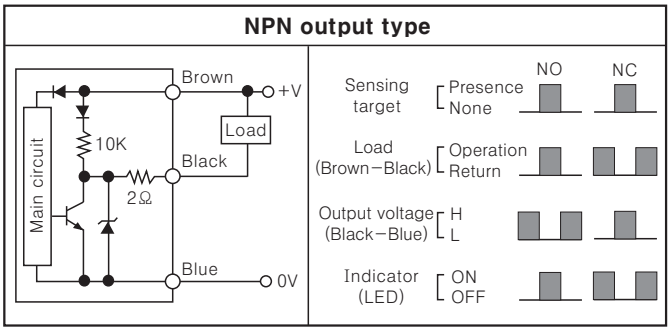
▣Control output diagram

◎DC 2-wire type

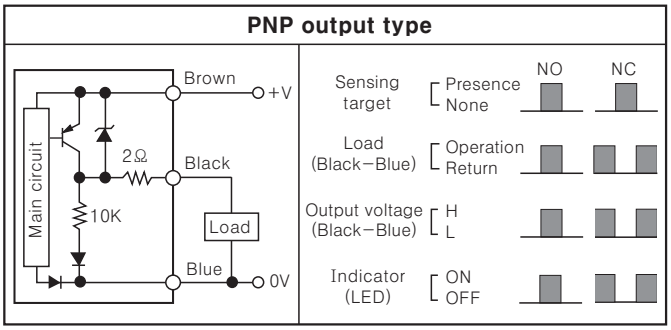


◎DC 3-wire type

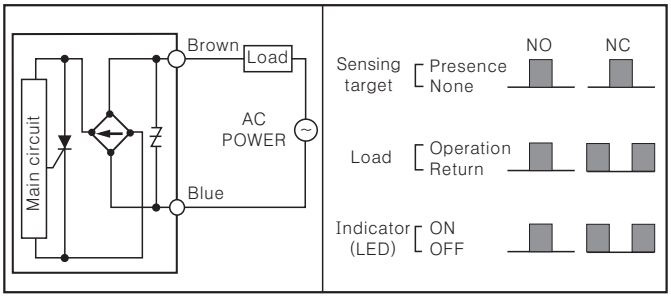
NPN output type



PNP output type

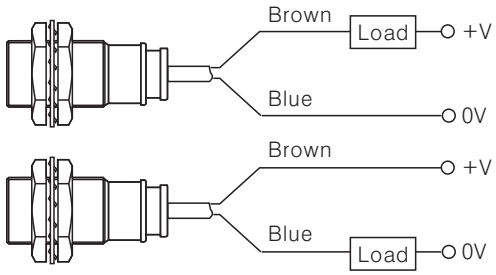


◎AC 2-wire type



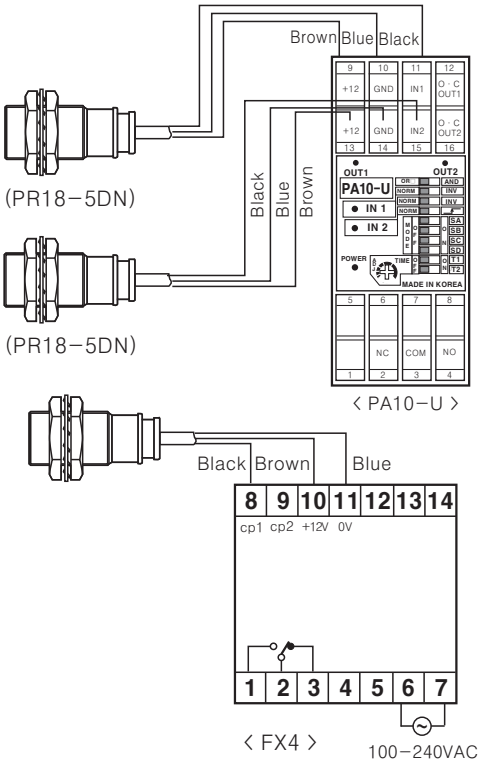
▣Connections

◎DC 2-wire type

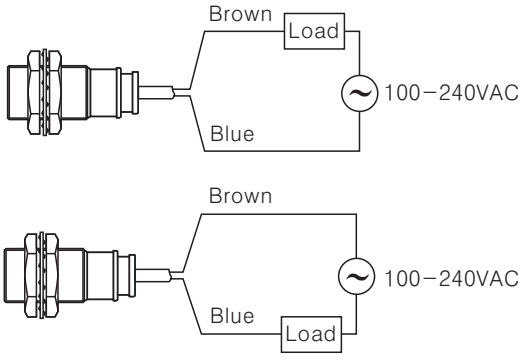


※The load can be connected to either wire.

◎DC 3-wire type



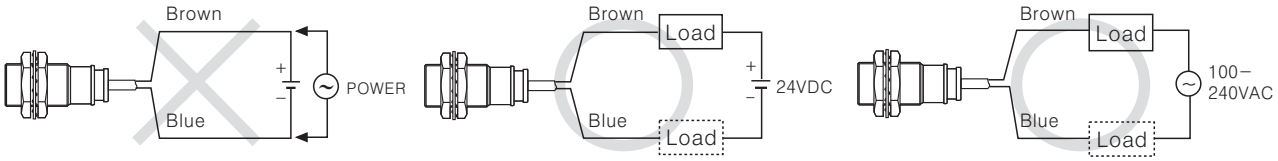
◎AC 2-wire type



※The load can be connected to either wire.

▣Proper usage

◎Load connections

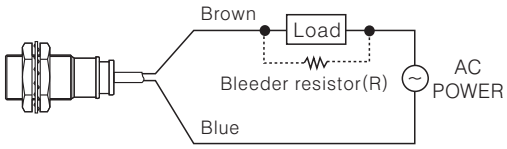


〈 DC 2-wire type & AC 2-wire type 〉 〈 DC 2-wire type 〉 〈 AC 2-wire type 〉

When using DC or AC 2-wire type proximity sensor, the load must be connected, otherwise internal components may be damaged. The load can be connected to either wire.

◎In case of the load current is small

●AC 2-wire type



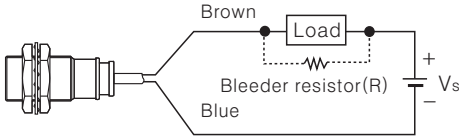
110VAC : Min. 20kΩ 3W
220VAC : Min. 39kΩ 10W

It may cause return failure of load by residual voltage. If the load current is under 5mA, please make sure the residual voltage is less than the return voltage of the load by connecting a bleeder resistor in parallel with the load as shown in the diagram.

$$R = \frac{V_S}{I}\ (\Omega) \qquad P = \frac{V_S^2}{R}\ (W)$$

[I:Action current of load, R:Bleeder resistance, P:Permissible power]

●DC 2-wire type



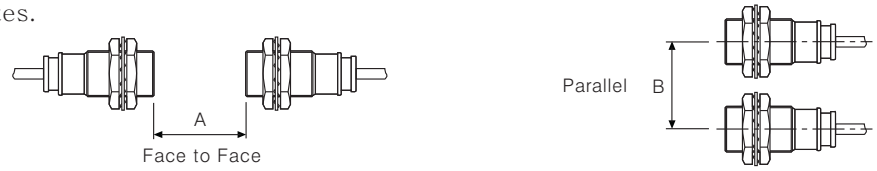
Please make the current on proximity sensor smaller than the return current of load by connecting a bleeder resistor in parallel.
※W value of Bleeder resistor should be bigger for proper heat dissipation.

$$R = \frac{V_S}{Io - Ioff}\ (\Omega) \qquad P = \frac{V_S^2}{R}\ (W)$$

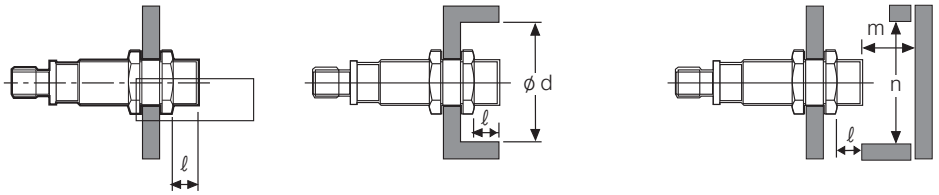
[Vs : Power supply, Io : Min. action current of proximity sensor
Ioff : Return current of load, P : Number of Bleeder resistance watt]

◎Mutual-interference & Influence by surrounding metals

When several proximity sensors are mounted close to one another a malfunction of the may be caused due to mutual interference. Therefore, be sure to keep a minimum distance between the two sensors as below chart indicates.



When sensors are mounted on metallic panel, it is required to protect the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart indicates.



(Unit:mm)

Model / Item	PR08-1.5D□ PRT08-1.5D□	PR08-2D□ PRT08-2D□	PR(T)12-2D□ PRS12-2D□ PR12-2A□	PR(T)12-4D□ PRS12-4D□ PR12-4A□	PR(T)18-5D□ PRL18-5D□ PR18-5A□ PRL18-5A□	PR(T)18-8D□ PRL18-8D□ PR18-8A□ PRL18-8A□	PR(T)30-10D□ PRL30-10D□ PR30-10A□ PRL30-10A□	PR(T)30-15D□ PRL30-15D□ PR30-15A□ PRL30-15A□
A	9	12	12	24	30	48	60	90
B	16	24	24	36	36	54	60	90
ℓ	0	8	0	11	0	14	0	15
ϕd	8	24	12	36	18	54	30	90
m	4.5	6	6	12	15	24	30	54
n	12	24	18	36	27	54	45	90

Cylindrical cable outgoing connector type proximity sensor

▣Features

- ●Shorten the time of maintenance with the body
- ●Improved the noise resistance with dedicated IC
- ●Integrated surge protection circuit
- ●Integrated overload & short protection circuit (DC 2-wire, 3-wire type)
- ●Integrated reverse polarity protection circuit (DC 3-wire type)
- ●Red LED status indication
- ●Waterproof structure IP67 (IEC standard)
- ●Replaceable for micro switches and limit switches

⚠ **Please read "Caution for your safety" in operation manual before using.**

CE

▣Specifications

●DC 2-wire type

Model	PRWT08-1.5DO PRWT08-1.5DC PRWT08-1.5DO-I PRWT08-1.5DC-I PRWT08-1.5DO-IV PRWT08-1.5DC-IV	PRWT08-2DO PRWT08-2DC PRWT08-2DO-I PRWT08-2DC-I PRWT08-2DO-IV PRWT08-2DC-IV	PRWT12-2DO PRWT12-2DC PRWT12-2DO-I PRWT12-2DC-I	PRWT12-4DO PRWT12-4DC PRWT12-4DO-I PRWT12-4DC-I	PRWT18-5DO PRWT18-5DC PRWT18-5DO-I PRWT18-5DC-I	PRWT18-8DO PRWT18-8DC PRWT18-8DO-I PRWT18-8DC-I	PRWT30-10DO PRWT30-10DC PRWT30-10DO-I PRWT30-10DC-I PRWT30-10DO-V PRWT30-10DC-IV	PRWT30-15DO PRWT30-15DC PRWT30-15DO-I PRWT30-15DC-I PRWT30-15DO-V PRWT30-15DC-IV
Sensing distance	1.5mm ±10%	2mm ±10%		4mm ±10%	5mm ±10%	8mm ±10%	10mm ±10%	15mm ±10%
Hysteresis	Max. 10% of sensing distance							
Standard sensing target	8×8×1mm(Iron)		12×12×1mm(Iron)		18×18×1mm (Iron)	25×25×1mm (Iron)	30×30×1mm (Iron)	45×45×1mm (Iron)
Setting distance	0 to 1.05mm	0 to 1.4mm		0 to 2.8mm	0 to 3.5mm	0 to 5.6mm	0 to 7mm	0 to 10.5mm
Power supply (Operation voltage)	12-24VDC (10-30VDC)							
Leakage current	Max. 0.6mA							
Response frequency(*1)	1.5kHz	1kHz	1.5kHz	500Hz		350Hz	400Hz	200Hz
Residual voltage	Max. 3.5V							
Affection by Temp.	±10% Max. for sensing distance at 20℃(For PRWT08 series : ±20% Max,)							
Control output	2 to 100mA							
Insulation resistance	Min. 50MΩ(at 500VDC meggera)							
Dielectric strength	1500VAC 50/60Hz for 1 minute							
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours							
Shock	500m/s² (50G) in X, Y, Z directions for 3 times							
Indicator	Output operation indicator(Red LED)							
Ambient temperature	-25 to 70℃(at non-freezing status)							
Storage temperature	-30 to 80℃(at non-freezing status)							
Ambient humidity	35 to 95%RH							
Protection circuit	Surge protection circuit, Overload & Short protection circuit							
Protection	IP67(IEC standard)							
Material	Case/Nut: Nikel plated Brass, Washer: Nikel plated Iron, Sensing surface: Heat-resistant ABS, Standard cable(Black): Polyvinyl chloride(PVC), Oil resistant cable(Gray): Oil resistant Polyvinyl chlorde(PVC)							
Approval	CE							
Unit weight	Approx. 30g		Approx. 45g		Approx. 65g		Approx. 130g	

※**(*1)** The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.
※Please fasten the vibration part with Teflon type.
※See G-2 for IEC standard connector cables and specifications.

▣Specifications

●DC 3-wire type

Model	PRW08-1.5DN PRW08-1.5DP PRW08-1.5DN2 PRW08-1.5DP2 PRW08-1.5DN-V PRW08-1.5DP-V PRWL08-1.5DN PRWL08-1.5DP PRWL08-1.5DN2 PRWL08-1.5DP2	PRW08-2DN PRW08-2DP PRW08-2DN2 PRW08-2DP2 PRW08-2DN-V PRW08-2DP-V PRWL08-2DN PRWL08-2DP PRWL08-2DN2 PRWL08-2DP2	PRW12-2DN PRW12-2DP PRW12-2DN2 PRW12-2DP2	PRW12-4DN PRW12-4DP PRW12-4DN2 PRW12-4DP2	PRW18-5DN PRW18-5DP PRW18-5DN2 PRW18-5DP2 PRWL18-5DN PRWL18-5DP PRWL18-5DN2 PRWL18-5DP2	PRW18-8DN PRW18-8DP PRW18-8DN2 PRW18-8DP2 PRWL18-8DN PRWL18-8DP PRWL18-8DN2 PRWL18-8DP2	PRW30-10DN PRW30-10DP PRW30-10DN2 PRW30-10DP2 PRW30-10DN-V PRW30-10DP-V PRWL30-10DN PRWL30-10DP PRWL30-10DN2 PRWL30-10DP2	PRW30-15DN PRW30-15DP PRW30-15DN2 PRW30-15DP2 PRW30-15DN-V PRW30-15DP-V PRWL30-15DN PRWL30-15DP PRWL30-15DN2 PRWL30-15DP2
Sensing distance	1.5mm ±10%	2mm ±10%		4mm ±10%	5mm ±10%	8mm ±10%	10mm ±10%	15mm ±10%
Hysteresis	Max. 10% of sensing distance							
Standard sensing target	8×8×1mm(Iron)		12×12×1mm(Iron)		18×18×1mm (Iron)	25×25×1mm (Iron)	30×30×1mm (Iron)	45×45×1mm (Iron)
Setting distance	0 to 1.05mm	0 to 1.4mm	0 to 1.4mm	0 to 2.8mm	0 to 3.5mm	0 to 5.6mm	0 to 7mm	0 to 10.5mm
Power supply (Operation voltage)	12-24VDC (10-30VDC)							
Current consumption	Max. 10mA							
Response frequency(*1)	1.5kHz	1kHz	1.5kHz	500Hz		350Hz	400Hz	200Hz
Residual voltage	Max. 2V		Max. 1.5V					
Affection by Temp.	±10% Max. for sensing distance at 20℃ (For PRW(L)08 series : ±20% Max,)							
Control output	200mA							
Insulation resistance	Min. 50MΩ (at 500VDC megger)							
Dielectric strength	1500VAC 50/60Hz for 1minute							
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours							
Shock	500m/s² (50G) in X, Y, Z direction for 3 times							
Indicator	Output operation indicator(Red LED)							
Ambient temperature	-25 to 70℃ (at non-freezing status)							
Storage temperature	-30 to 80℃ (at non-freezing status)							
Ambient humidity	35 to 95%RH							
Protection circuit	Surge protection circuit, Reverse polarity proteciton circuit, Overload & Short protection circuit							
Protection	IP67(IEC standard)							
Material	Case/Nut: Nikel plated Brass, Washer: Nikel plated Iron, Sensing surface: Heat-resistant ABS, Standard cable(Black): Polyvinyl chloride(PVC), Oil resistant cable(Gray): Oil resistant Polyvinyl chlorde(PVC)							
Approval	CE							
Unit weight	PR08:Approx. 68g PRW08:Approx. 30g		Approx. 40g		PRW18:Approx. 84g PRWL18:Approx. 108g		PRW30:Approx. 143g PRWL30:Approx. 178g	

※(*1) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

●AC 2-wire type

Model	PRW12-2AO PRW12-2AC	PRW12-4AO PRW12-4AC	PRW18-5AO PRW18-5AC PRWL18-5AO PRWL18-5AC	PRW18-8AO PRW18-8AC PRWL18-8AO PRWL18-8AC	PRW30-10AO PRW30-10AC PRWL30-10AO PRWL30-10AC	PRW30-15AO PRW30-15AC PRWL30-15AO PRWL30-15AC
Sensing distance	2mm ±10%	4mm ±10%	5mm ±10%	8mm ±10%	10mm ±10%	15mm ±10%
Hysteresis	Max. 10% of sensing distance					
Standard sensing target	12×12×1mm(Iron)		18×18×1mm(Iron)	25×25×1mm(Iron)	30×30×1mm(Iron)	45×45×1mm(Iron)
Setting distance	0 to 1.4mm	0 to 2.8mm	0 to 3.5mm	0 to 5.6mm	0 to 7mm	0 to 10.5mm
Power supply (Operation voltage)	100-240VAC (85-264VAC)					
Leakage current	Max. 2.5mA					
Response frequency(*1)	20Hz					
Residual voltage	Max. 10V					
Affection by Temp.	±10% Max. for sensing distance at 20℃ within temperature range of -25 to 70℃					
Control output	5 to 150mA		5 to 200mA			
Insulation resistance	Min. 50MΩ (at 500VDC megger)					
Dielectric strength	1500VAC 50/60Hz for 1minute					
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours					
Shock	500m/s² (50G) in X, Y, Z direction for 3 times					
Indicator	Output operation indicator(Red LED)					
Ambient temperature	-25 to 70℃ (at non-freezing status)					
Storage temperature	-30 to 80℃ (at non-freezing status)					
Ambient humidity	35 to 95%RH					
Protection circuit	Surge protection circuit					
Protection	IP67(IEC standard)					
Material	Case/Nut: Nikel plated Brass, Washer: Nikel plated Iron, Sensing surface: Heat-resistant ABS, Standard cable(Black): Polyvinyl chloride(PVC)					
Approval	CE					
Unit weight	Approx. 42g		PRW18 : Approx. 87g PRWL18 : Approx. 112g		PRW30 : Approx. 148g PRWL30 : Approx. 185g	

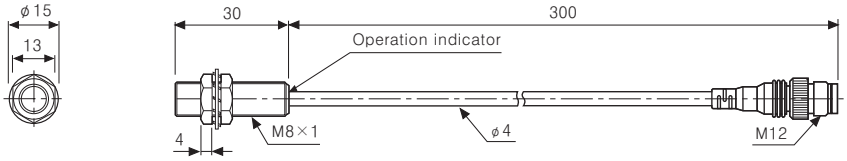
※(*1) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

▣Dimensions

(Unit:mm)

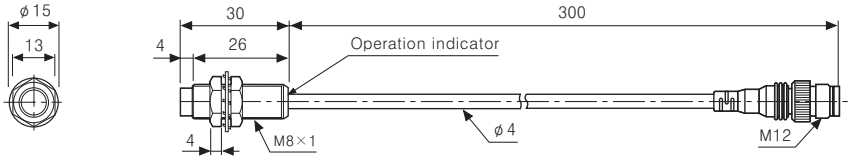
●PRWT08-1.5D□(-I)

●PRW08-1.5D□

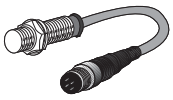


●PRWT08-2D□(-I)

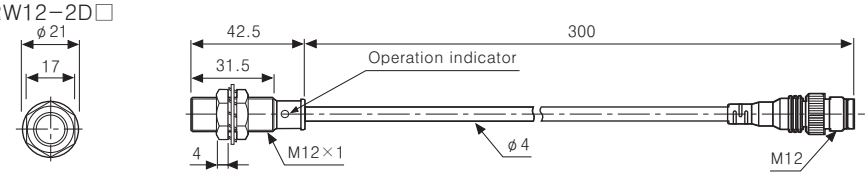
●PRW08-2D□



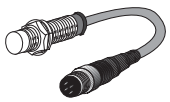
●PRWT12-2D□(-I)



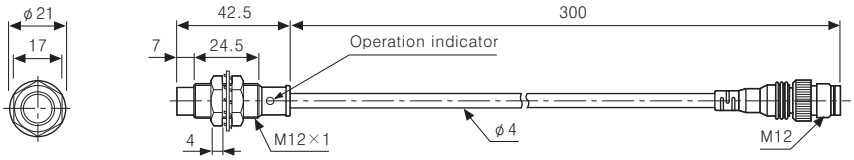
●PRW12-2D□



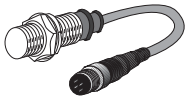
●PRWT12-4D□(-I)



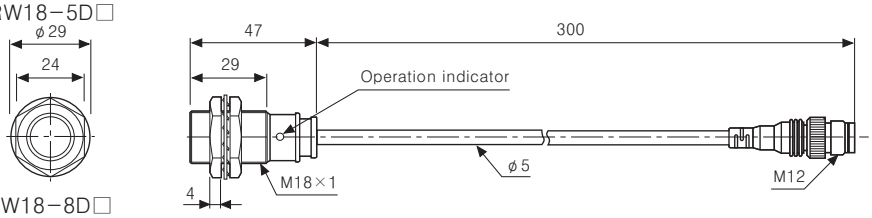
●PRW12-4D□



●PRWT18-5D□(-I)

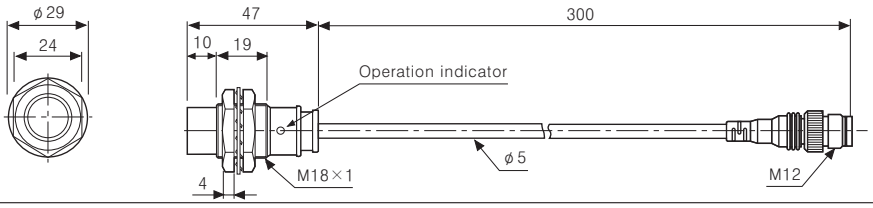


●PRW18-5D□

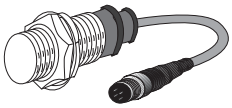


●PRWT18-8D□(-I)

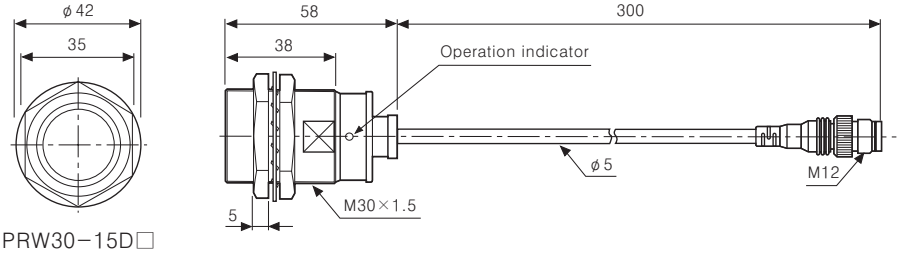
●PRW18-8D□



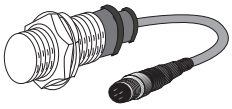
●PRWT30-10D□(-I)



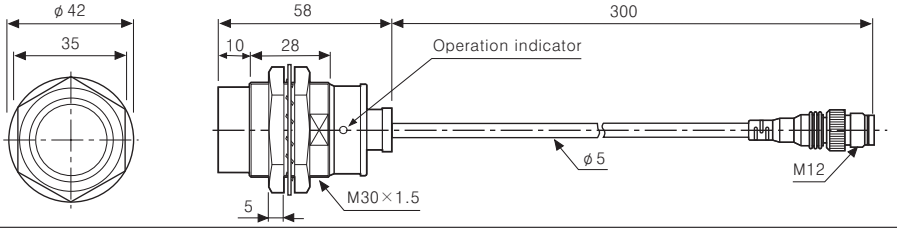
●PRW30-10D□



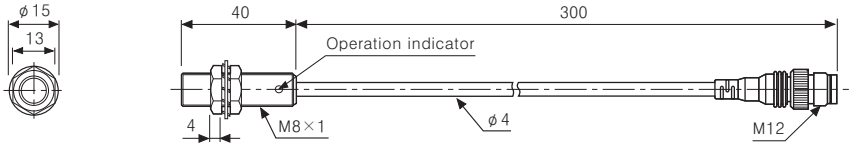
●PRWT30-15D□(-I)



●PRW30-15D□



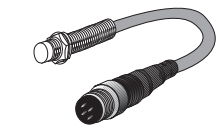
●PRWL08-1.5D□

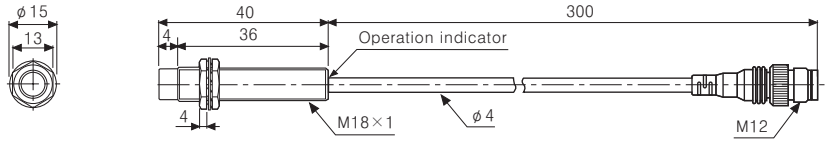


▣Dimensions

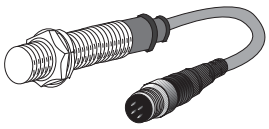
(Unit:mm)

●PRWL08-2D□

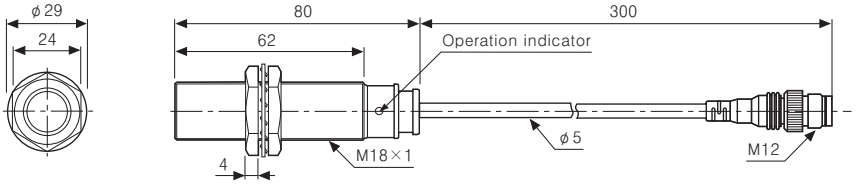




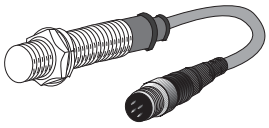
●PRWL18-5D□



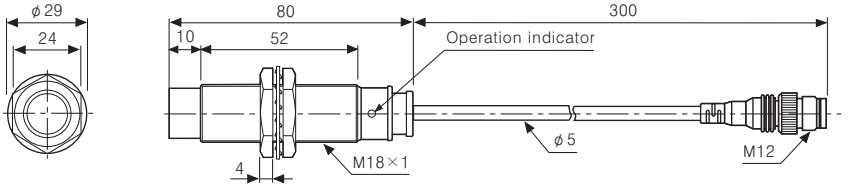
●PRWL18-2D□



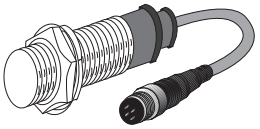
●PRWL18-8D□



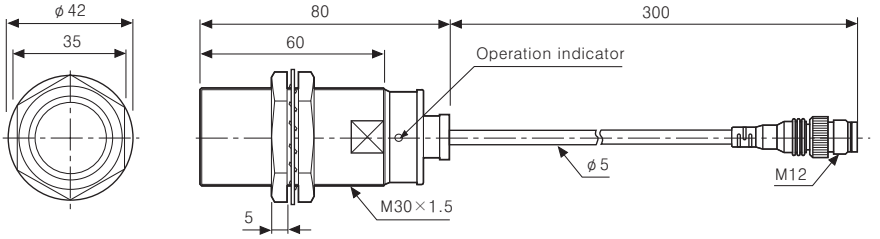
●PRWL18-8A□



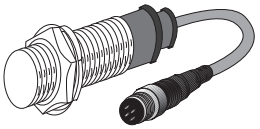
●PRWL30-10D□



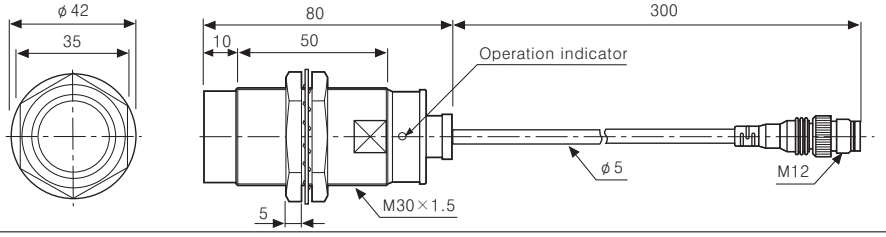
●PRWL30-10A□



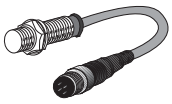
●PRWL30-15D□

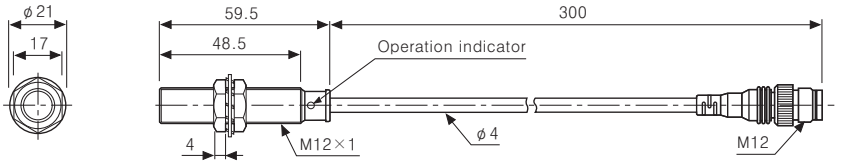


●PRWL30-15A□

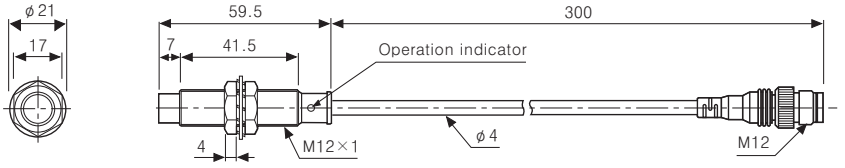


●PRW12-2A□

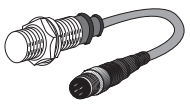


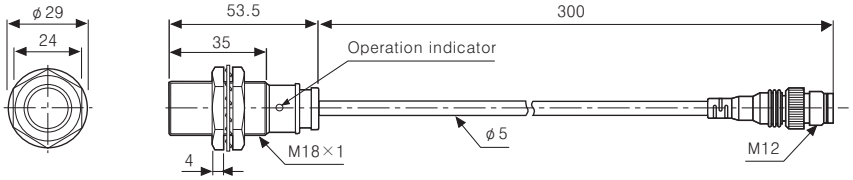


●PRW12-4A□

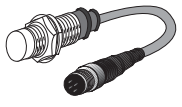


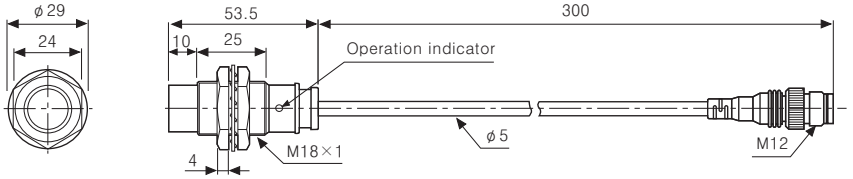
●PRW18-5A□





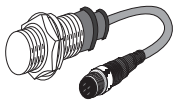
●PRW18-8A□

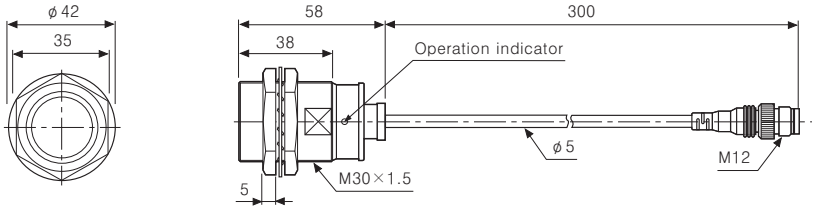




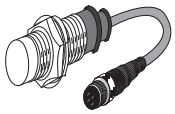
▣Dimensions

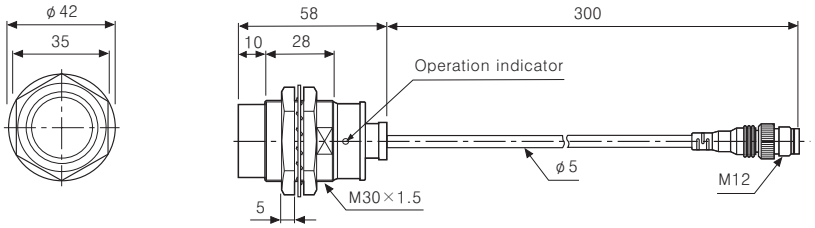
●PRW30-10A□





●PRW30-15A□

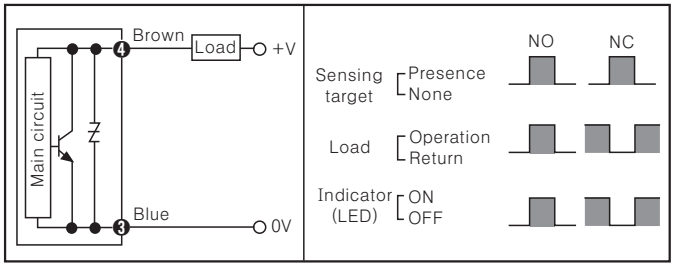




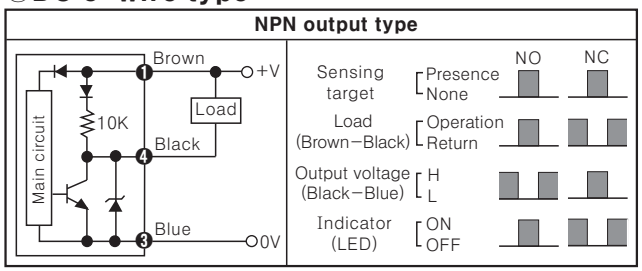
(Unit:mm)

▣Control output diagram

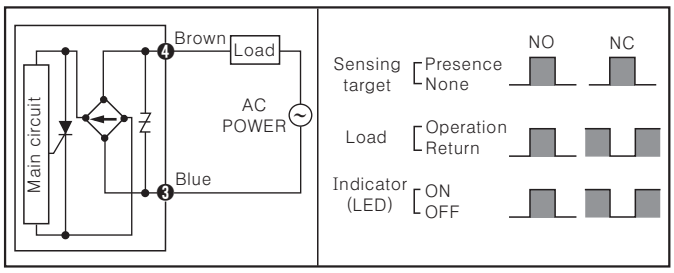
◎DC 2-wire type

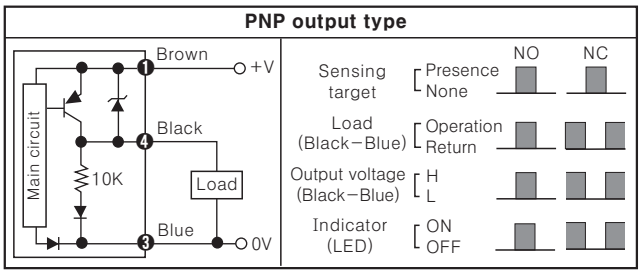


◎DC 3-wire type



◎AC 2-wire type

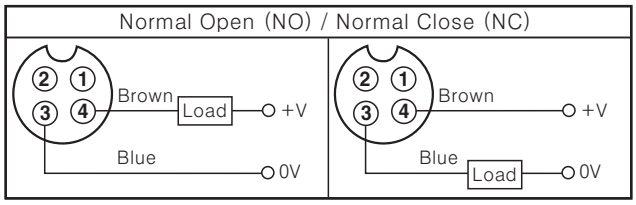




※The number in a circle is pin no. of connector.

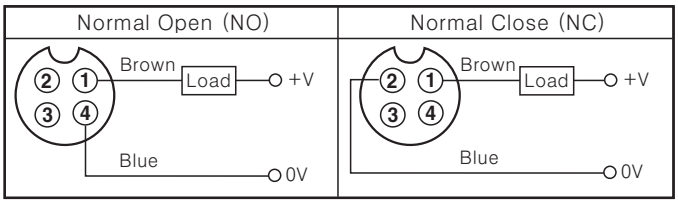
▣Wiring diagram

◎DC 2-wire type(Standard type)



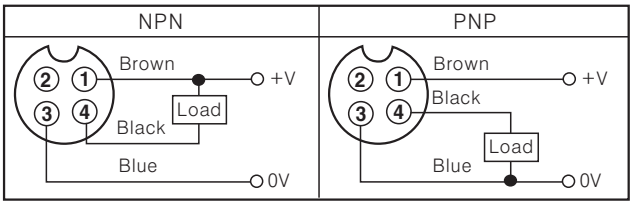
※Pin ① and ② are not connected.
※When using DC 3-wire type of connector cable, black(12-24VDC) and blue(0V) cables can be used.

◎DC 2-wire type(IEC standard type)



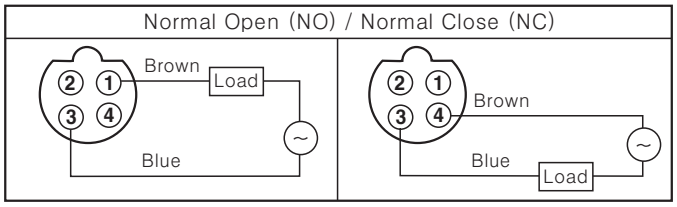
※The type, pin arrangment of connector based upon IEC standard is being developed.
※Please put "I" behind of standard type for purchasing IEC standard product. Ex)PRWT12-4DO-I
※Please put "I" behind of model name for selecting proximity sensor by IEC standard. Ex)CID2-2-I, CLD2-2-I

◎DC 3-wire type



※Please fasten the cleat of connector not to shown the thread. (0.39 to 0.49N • m)

◎AC 2-wire type

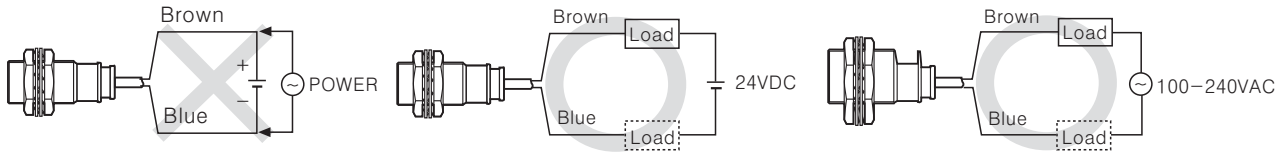


※In case of AC switching type, ② and ③, ① and ④ are connected to each other inside.

※Please fasten the vibration part with Teflon tape. ※See G-2 for IEC standard connector cables and specifications.

▣Proper usage

◎Load connections

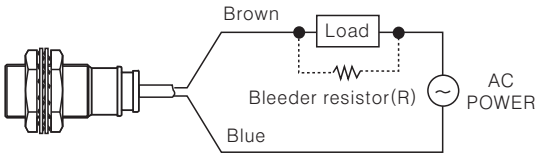


〈DC 2-wire type & AC 2-wire type〉 〈 DC 2-wire type 〉 〈 AC 2-wire type 〉

When using DC or AC 2-wire type proximity sensor, the load must be connected otherwise internal components may be damaged. The load can be connected to either wire.

◎In case of the load current is small

●AC 2-wire type



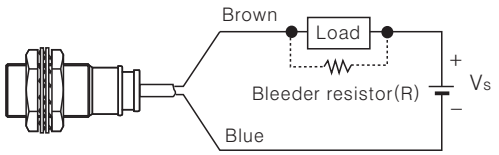
110VAC : Over 20kΩ 3W
220VAC : Over 39kΩ 10W

It may cause return failure of load by residual voltage.
If the load current is under 5mA, please make sure the residual voltage is less than the return voltage of the load by connecting a bleeder resistor in parallel with the load as shown in the diagram.

$$R = \frac{V_S}{I}\ (\Omega) \qquad P = \frac{V_S^2}{R}\ (W)$$

[I:Action current of load, R:Bleeder resistance, P:Permissible power]

●DC 2-wire type



Please make the current on proximity sensor smaller than the return current of load by connecting a bleeder resistor in parallel.

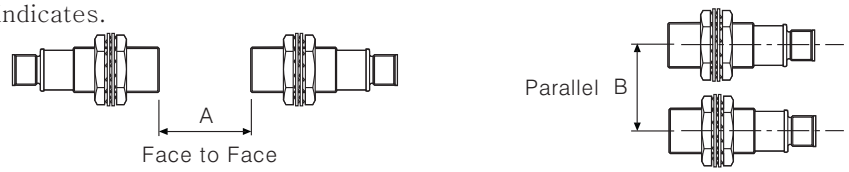
※W value of Bleeder resistor should be bigger for proper heat dissipation.

$$R = \frac{V_S}{Io - Ioff}\ (\Omega) \qquad P = \frac{V_S^2}{R}\ (W)$$

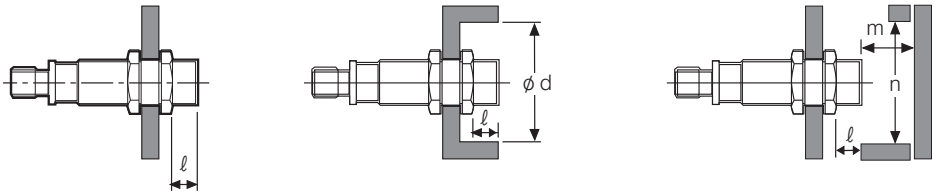
[Vs : Power supply, Io : Min. action current of proximity sensor
Ioff : Return current of load, P : Number of Bleeder resistance watt]

◎Mutual-interference & Influence by surrounding metals

When several proximity sensors are mounted close to one another a malfunction of the may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors as below chart indicates.



When sensors are mounted on metallic panel, it must be prevented sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart indicates.



(Unit:mm)

Model / Item	PRW08-1.5D□ PRWT08-1.5D□ PRWL08-1.5D□	PRW08-2D□ PRWT08-2D□ PRWL08-2D□	PRWT12-2D□ PRW12-2A□	PRWT12-4D□ PRW12-4A□	PRWT18-5D□ PRW(L)18-5D□ PRW(L)18-5A□	PRWT18-8D□ PRW(L)18-8D□ PRW(L)18-8A□	PRWT30-10D□ PRW(L)30-10D□ PRW(L)30-10A□	PRWT30-15D□ PRW(L)30-15D□ PRW(L)30-15A□
A	9	12	12	24	30	48	60	90
B	16	24	24	36	36	54	60	90
ℓ	0	8	0	11	0	14	0	15
ø d	8	24	12	36	18	54	30	90
m	4.5	6	6	12	15	24	30	54
n	12	24	18	36	27	54	45	90

Cylindrical connector type proximity sensor

▣Features

- ●Shorten the time of maintenance
- ●Improved the noise resistance with dedicated IC
- ●Integrated surge protection circuit
- ●Integrated overload & short protection circuit (DC 2-wire, 3-wire type)
- ●Integrated reverse polarity protection circuit (DC 3-wire type)
- ●Red LED status indication
- ●Protection structure IP67 (IEC standard) for connector part
- ●Replaceable for micro switches and limit switches

⚠ Please read "Caution for your safety" in operation manual before using.

CE

▣Specifications

●DC 2-wire type

Model	PRCMT12-2DO PRCMT12-2DC PRCMT12-2DO-I PRCMT12-2DC-I	PRCMT12-4DO PRCMT12-4DC PRCMT12-4DO-I PRCMT12-4DC-I	PRCMT18-5DO PRCMT18-5DC PRCMT18-5DO-I PRCMT18-5DC-I	PRCMT18-8DO PRCMT18-8DC PRCMT18-8DO-I PRCMT18-8DC-I	PRCMT30-10DO PRCMT30-10DC PRCMT30-10DO-I PRCMT30-10DC-I	PRCMT30-15DO PRCMT30-15DC PRCMT30-15DO-I PRCMT30-15DC-I
Sensing distance	2mm ±10%	4mm ±10%	5mm ±10%	8mm ±10%	10mm ±10%	15mm ±10%
Hysteresis	Max. 10% of sensing distance					
Standard sensing target	12×12×1mm(Iron)		18×18×1mm (Iron)	25×25×1mm (Iron)	30×30×1mm (Iron)	45×45×1mm (Iron)
Setting distance	0 to 1.4mm	0 to 2.8mm	0 to 3.5mm	0 to 5.6mm	0 to 7mm	0 to 10.5mm
Power supply (Operation voltage)	12-24VDC (10-30VDC)					
Leakage current	Max. 0.6mA					
Response frequency(*1)	1.5kHz	500Hz		350Hz	400Hz	200Hz
Residual voltage	Max. 3.5V					
Affection by Temp.	±10% Max. for sensing distance at +20℃ within temperature range of -25 to 70℃					
Control output	2 to 100mA					
Dielectric strength	Min. 50MΩ (at 500VDC megger)					
Insulation resistance	1500VAC 50/60Hz for 1 minute					
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours					
Shock	500m/s² (50G) in X, Y, Z directions for 3 times					
Indicator	Output operation indicator(Red LED)					
Ambient temperature	-25 to 70℃ (at non-freezing status)					
Storage temperature	-30 to 80℃ (at non-freezing status)					
Ambient humidity	35 to 95%RH					
Protection circuit	Surge protection circuit, Overload & Short protection circuit					
Protection	IP67(IEC standard)					
Material	Case/Nut: Nikel plated Brass, Washer: Nikel plated Iron, Sensing surface: Heat-resistant ABS					
Approval	CE					
Unit weight	Approx. 26g		Approx. 49g		Approx. 134g	

※(*1) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

※See G-2 for IEC standard connector cables and specifications.

▣Specifications

●DC 3-wire type

Model	PRCM12-2DN PRCM12-2DP PRCM12-2DN2 PRCM12-2DP2	PRCM12-4DN PRCM12-4DP PRCM12-4DN2 PRCM12-4DP2	PRCM18-5DN PRCM18-5DP PRCM18-5DN2 PRCM18-5DP2 PRCML18-5DN PRCML18-5DP PRCML18-5DN2 PRCML18-5DP2	PRCM18-8DN PRCM18-8DP PRCM18-8DN2 PRCM18-8DP2 PRCML18-8DN PRCML18-8DP PRCML18-8DN2 PRCML18-8DP2	PRCM30-10DN PRCM30-10DP PRCM30-10DN2 PRCM30-10DP2 PRCML30-10DN PRCML30-10DP PRCML30-10DN2 PRCML30-10DP2	PRCM30-15DN PRCM30-15DP PRCM30-15DN2 PRCM30-15DP2 PRCML30-15DN PRCML30-15DP PRCML30-15DN2 PRCML30-15DP2
Sensing distance	2mm ±10%	4mm ±10%	5mm ±10%	8mm ±10%	10mm ±10%	15mm ±10%
Hysteresis	Max. 10% of sensing distance					
Standard sensing target	12×12×1mm(Iron)		18×18×1mm(Iron)	25×25×1mm(Iron)	30×30×1mm(Iron)	45×45×1mm(Iron)
Setting distance	0 to 1.4mm	0 to 2.8mm	0 to 3.5mm	0 to 5.6mm	0 to 7mm	0 to 10.5mm
Power supply (Operation voltage)	12-24VDC (10-30VDC)					
Current consumption	Max. 10mA					
Response frequency(*1)	1.5kHz	500Hz		350Hz	400Hz	200Hz
Residual voltage	Max. 1.5V					
Affection by Temp.	±10% Max. for sensing distance at +20℃ within temperature range of -25 to 70℃					
Control output	Max. 200mA					
Dielectric strength	Min. 50MΩ (at 500VDC megger)					
Insulation resistance	1500VAC 50/60Hz for 1 minute					
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours					
Shock	500m/s² (50G) in X, Y, Z directions for 3 times					
Indicator	Output operation indicator(Red LED)					
Ambient temperature	-25 to 70℃ (at non-freezing status)					
Storage temperature	-30 to 80℃ (at non-freezing status)					
Ambient humidity	35 to 95%RH					
Protection circuit	Surge protection circuit, Reverse polarity proteciton circuit, Overload & Short protection circuit					
Protection	IP67(IEC standard)					
Material	Case/Nut: Nikel plated Brass, Washer: Nikel plated Iron, Sensing surface: Heat-resistant ABS					
Approval	CE					
Unit weight	Approx. 26g		PRCM18 : Approx. 49g PRCML18 : Approx. 73g		PRCM30 : Approx. 134g PRCML : Approx. 169g	

※(*1) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

●AC 2-wire type

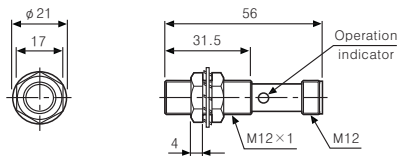
Model	PRCM12-2AO PRCM12-2AC	PRCM12-4AO PRCM12-4AC	PRCM18-5AO PRCM18-5AC PRCML18-5AO PRCML18-5AC	PRCM18-8AO PRCM18-8AC PRCML18-8AO PRCML18-8AC	PRCM30-10AO PRCM30-10AC PRCML30-10AO PRCML30-10AC	PRCM30-15AO PRCM30-15AC PRCML30-15AO PRCML30-15AC
Sensing distance	2mm ±10%	4mm ±10%	5mm ±10%	8mm ±10%	10mm ±10%	15mm ±10%
Hysteresis	Max. 10% of sensing distance					
Standard sensing target	12×12×1mm(Iron)		18×18×1mm(Iron)	25×25×1mm(Iron)	30×30×1mm(Iron)	45×45×1mm(Iron)
Setting distance	0 to 1.4mm	0 to 2.8mm	0 to 3.5mm	0 to 5.6mm	0 to 7mm	0 to 10.5mm
Power supply (Operation voltage)	100-240VAC (85-264VAC)					
Leakage current	Max. 2.5mA					
Response frequency(*1)	20Hz					
Residual voltage	Max. 10V					
Affection by Temp.	±10% Max. for sensing distance at +20℃ within temperature range of -25 to 70℃					
Control output	5 to 150mA		5 to 200mA			
Dielectric strength	Min. 50MΩ (at 500VDC megger)					
Insulation resistance	2500VAC 50/60Hz for 1 minute					
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours					
Shock	500m/s² (50G) in X, Y, Z directions for 3 times					
Indicator	Output operation indicator(Red LED)					
Ambient temperature	-25 to 70℃ (at non-freezing status)					
Storage temperature	-30 to 80℃ (at non-freezing status)					
Ambient humidity	35 to 95%RH					
Protection circuit	Surge protection circuit					
Protection	IP67(IEC standard)					
Approval	Case/Nut: Nikel plated Brass, Washer: Nikel plated Iron, Sensing surface: Heat-resistant ABS					
Approval	CE					
Unit weight	Approx. 30g		PRCM18 : Approx. 53g PRCML18 : Approx. 74g		PRCM30 : Approx. 134g PRCML30 : Approx. 169g	

※(*1) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

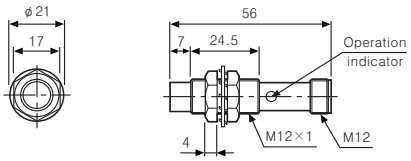
▣Dimensions

(Unit:mm)

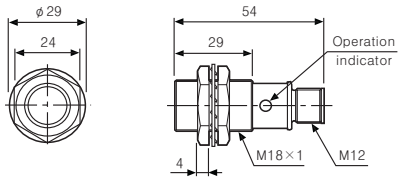
●PRCM12-2D□ / PRCMT12-2D□(-I)



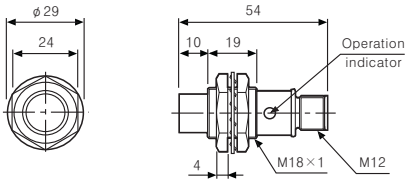
●PRCM12-4D□ / PRCMT12-4D□(-I)



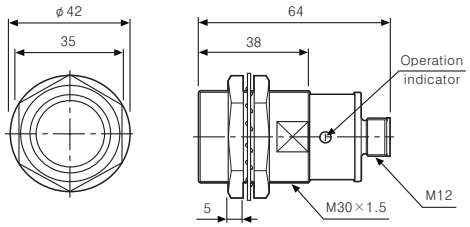
●PRCM18-5D□ / PRCMT18-5D□(-I)



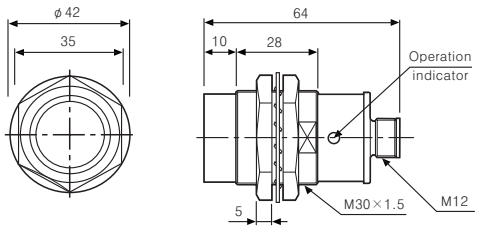
●PRCM18-8D□ / PRCMT18-8D□(-I)



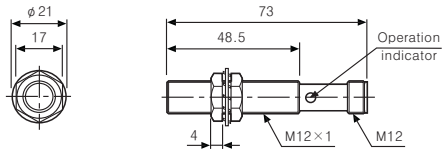
●PRCM30-10D□ / PRCMT30-10D□(-I)



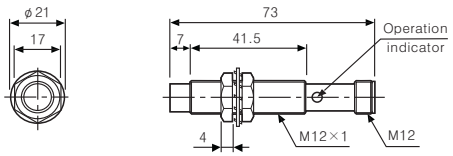
●PRCM30-15D□ / PRCMT30-15D□(-I)



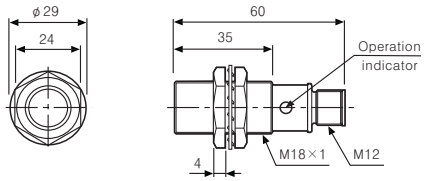
●PRCM12-2A□



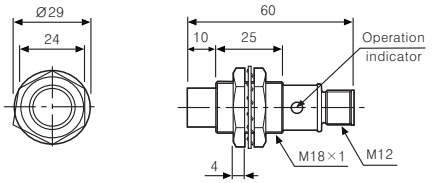
●PRCM12-4A□



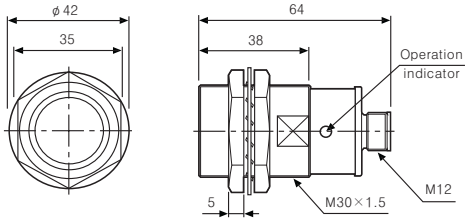
●PRCM18-5A□



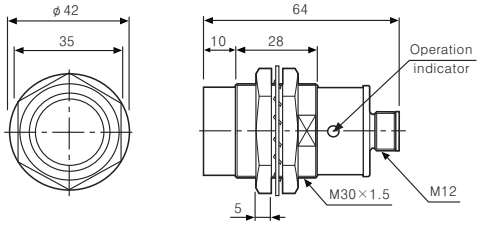
●PRCM18-8A□



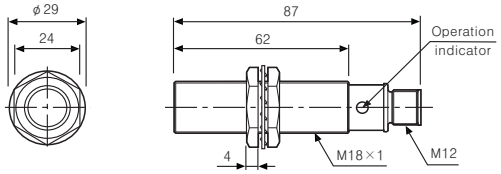
●PRCM30-10A□



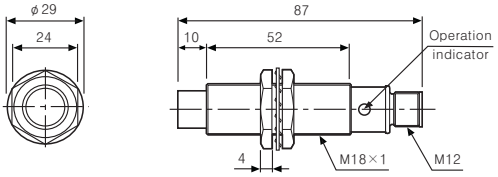
●PRCM30-15A□



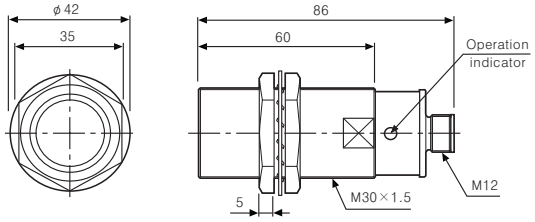
●PRCML18-5D□ / PRCML18-5A□



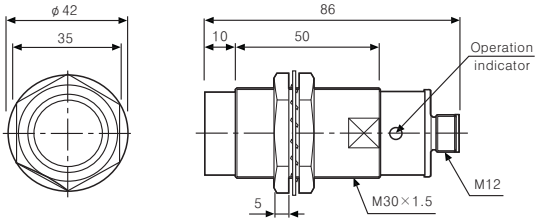
●PRCML18-8D□ / PRCML18-8A□



●PRCML30-10D□ / PRCML30-10A□

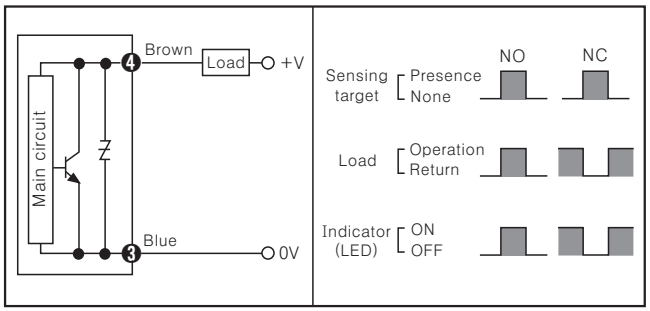


●PRCML30-15D□ / PRCML30-15A□

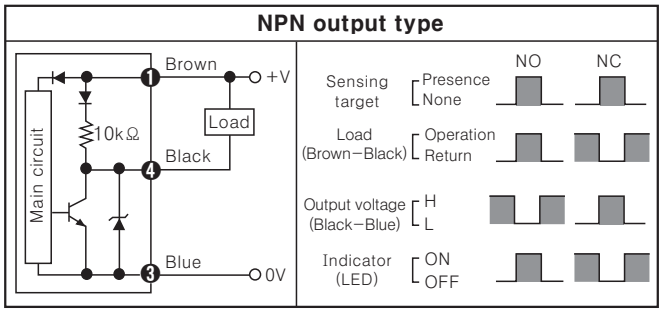


▣Control output diagram

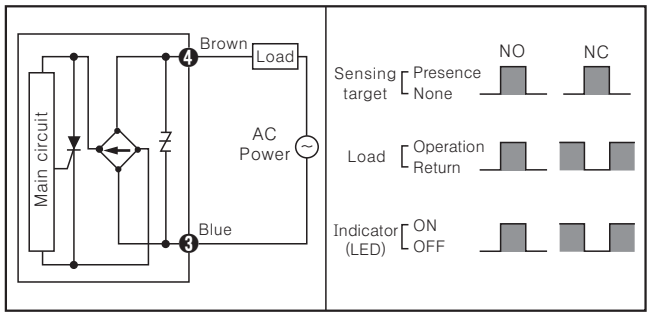
◎DC 2-wire type

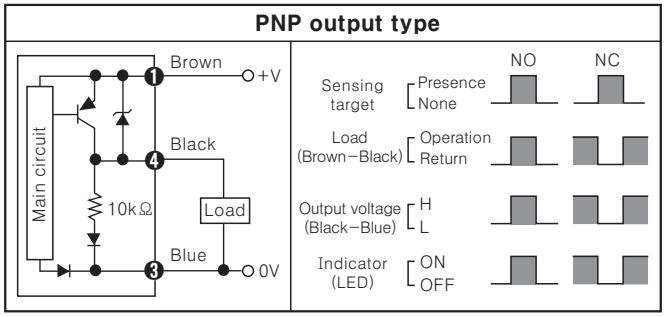


◎DC 3-wire type



◎AC 2-wire type

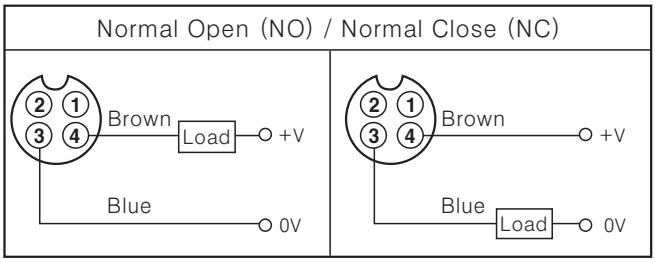




※The number in a circle is pin no. of connector.

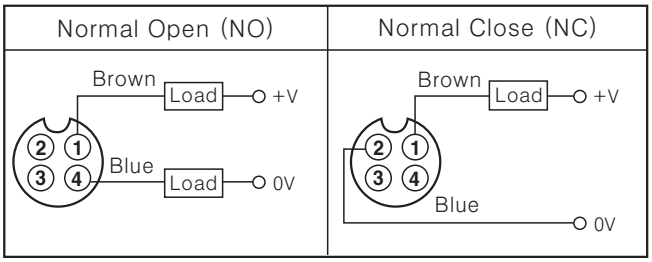
▣Wiring diagram

◎DC 2-wire type(Standard type)



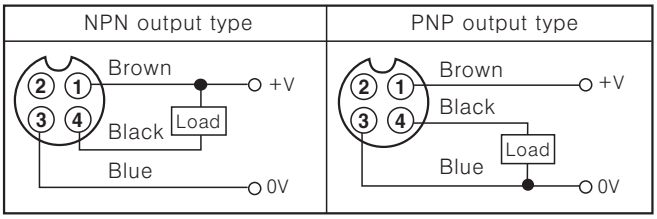
※Pin ①, ② are N.C (Not Connected) terminals.
※For DC 3-wire type connector cable, it is available to use with black wire(12-24VDC) and blue wire(0V).

◎DC 2-wire type(IEC standard type)



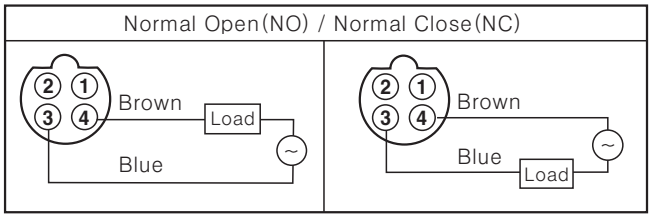
※The pin arrangement of connector applying IEC standard is being developed.
※Please attach "I" at the end of the name of standard type for purchasing the IEC standard product. Ex)PRCMT12-4DO-I
※The connector cable for IEC standard is being developed. Please attach "I' at the end of the name of standard type. Ex)CID2-2-I, CLD2-5-I

◎DC 3-wire



※Please fasten the cleat of connector not to shown the thread. (0.39 to 0.49N • m)

◎AC 2-wire

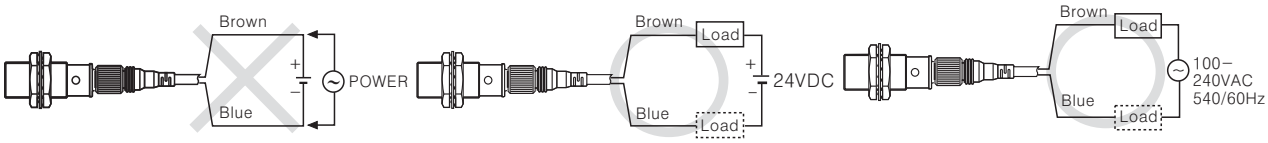


※In AC inductive type, ② and ③, ① and ④ are connected inside of the connector cable.

※Please fasten the vibration part with Teflon tape.
※See G-2 about IEC standard connector wires and specifications.

▣Proper usage

◎Load connections

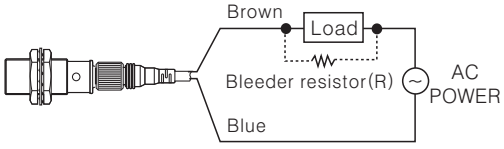


〈 DC 2-wire type & AC 2-wire type 〉 〈 DC 2-wire type 〉 〈 AC 2-wire type 〉

When using DC or AC 2-wire type proximity sensor, the load must be connected otherwise internal components may be damaged. The load can be connected to either wire.

◎In case of the load current is small

●AC 2-wire type



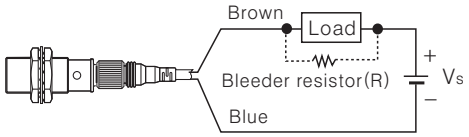
110VAC : 20kΩ min. 3W
220VAC : 39kΩ min. 10W

It may cause return failure of load by residual voltage. If the load current is under 5mA, please make sure the residual voltage is less than the return voltage of the load by connecting a bleeder resistor in parallel with the load as shown in the diagram.

$$R = \frac{V_S}{I}\ (\Omega) \qquad P = \frac{V_S^2}{R}\ (W)$$

[I:Action current of load, R:Bleeder resistance, P:Permissible power]

●DC 2-wire type



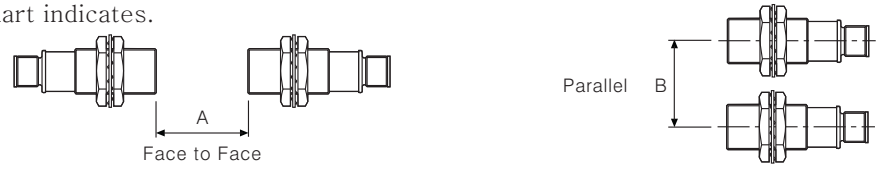
Please make the current on proximity sensor smaller than the return current of load by connecting a bleeder resistor in parallel.
※W value of Bleeder resistor should be bigger for proper heat dissipation.

$$R = \frac{V_S}{Io - Ioff}\ (\Omega) \qquad P = \frac{V_S^2}{R}\ (W)$$

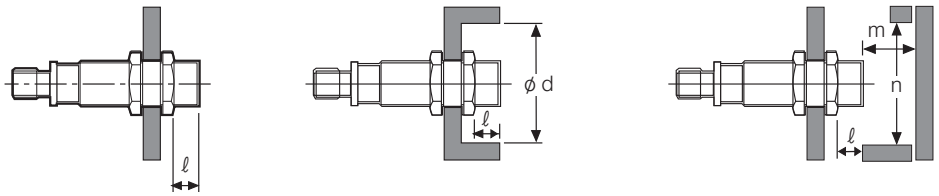
[Vs : Power supply, Io : Min. action current of proximity sensor
Ioff : Return current of load, P : Number of Bleeder resistance watt]

◎Mutual-interference & Influence by surrounding metals

When several proximity sensors are mounted close to one another a malfunction of the may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors as below chart indicates.



When sensors are mounted on metallic panel, you must prevent the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart indicates.



(Unit:mm)

Model / Item	PRCMT12-2D□ PRCM12-2D□ PRCM12-2A□	PRCMT12-4D□ PRCM12-4D□ PRCM12-4A□	PRCMT18-5D PRCM(L)18-5D PRCM(L)18-5A	PRCMT18-8D□ PRCM(L)18-8D□ PRCM(L)18-8A□	PRCMT30-10D□ PRCM(L)30-10D□ PRCM(L)30-10A□	PRCMT30-15D PRCM(L)30-15D PRCM(L)30-15A
A	12	24	30	48	60	90
B	24	36	36	54	60	90
ℓ	0	11	0	14	0	15
ϕd	12	36	18	54	30	90
m	6	12	15	24	30	54
n	18	36	27	54	45	90

Spatter-resistance type proximity sensor

▣Features

- ●Coated with teflon against thermal resistance (Prevention of malfunction due to spatter)
- ●Improvede the noise resistance with dedicated IC
- ●Integrated surge protection circuit
- ●Integrated overload & short protection circuit (DC 2-wire, 3-wire type)
- ●Integrated reverse polarity protection circuit (DC 3-wire type)
- ●Red LED status indication
- ●Protection structure IP67(IEC standard)
- ●Replaceable for spatter-resistance type limit switches

⚠ **Please read "Caution for your safety" in operation manual before using.**

CE

▣The characteristic of spatter-resistance type

The hot arc from arc welding machine is adhesive even with metals or plastics.
Therefore, normal proximity sensor might have malfunction even though there are no sensing object if the arcs are put on the sensing surface. The arcs are not adhered on the sensing part of the spatter-resistance type proximity sensor as the part is coated with teflon against thermal resistance.
Also, the protection cover sold optionally has the same function.

▣Specifications

●DC 2-wire type

Model	PRAT12-2DO PRAT12-2DC	PRAWT12-2DO PRAWT12-2DC	PRAT18-5DO PRAT18-5DC	PRAWT18-5DO PRAWT18-5DC	PRAT30-10DO PRAT30-10DC	PRAWT30-10DO PRAWT30-10DC
Sensing distance	2mm ±10%		5mm ±10%		10mm ±10%	
Hysteresis	Max. 10% of sensing distance					
Standard sensing target	12×12×1mm(Iron)		18×18×1mm(Iron)		30×30×1mm(Iron)	
Setting distance	0 to 1.4mm		0 to 3.5mm		0 to 7mm	
Power supply (Operating voltage)	12-24VDC (10-30VDC)					
Leakage current	Max. 0.6mA					
Response frequency**(*1)**	1.5kHz		500Hz		400Hz	
Residual voltage	Max. 3.5V					
Affection by Temp.	±10% Max. for sensing distance at +20℃ within temperature range of -25 to 70℃					
Control output	2 to 100mA					
Insulation resistance	Min. 50MΩ(at 500VDC megger)					
Dielectric strength	1500VAC 50/60Hz for 1 minute					
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours					
Shock	500m/s² (50G) in X, Y, Z direction for 3 times					
Indicator	Output operation indicator(Red LED)					
Ambient temperature	-25 to 70℃(at non-freezing status)					
Storage temperature	-30 to 80℃(at non-freezing status)					
Ambient humidity	35 to 95%RH					
Protection circuit	Surge protection circuit, overload & short protection circuit					
Protection	IP67(IEC standard)					
Cable	ϕ4×2P, 2m		ϕ5×2P, 2m			
Approval	CE					
Unit weight	Approx. 63g	Approx. 45g	Approx. 122g	Approx. 65g	Approx. 181g	Approx. 130g

※**(*1)** The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.
※IEC standard item is available and add "-I" to the end of model. Ex)PRAWT12-2DO-I
※See G-2 for IEC standard connector cables and specifications.

▣Specifications

●DC 3-wire type

Model	PRA12-2DN PRA12-2DP PRA12-2DN2 PRA12-2DP2	PRA18-5DN PRA18-5DP PRA18-5DN2 PRA18-5DP2	PRA30-10DN PRA30-10DP PRA30-10DN2 PRA30-10DP2
Sensing distance	2mm ±10%	5mm ±10%	10mm ±10%
Hysteresis	Max. 10% of sensing distance		
Standard sensing target	12×12×1mm(Iron)	18×18×1mm(Iron)	30×30×1mm(Iron)
Setting distance	0 to 1.4mm	0 to 3.5mm	0 to 7mm
Power supply (Operating voltage)	12-24VDC (10-30VDC)		
Current consumption	Max. 10mA		
Response frequency(*1)	1.5kHz	500Hz	400Hz
Residual voltage	Max. 1.5V		
Affection by Temp.	±10% Max. for sensing distance at +20℃ within temperature range of -25 to 70℃		
Control output	Max. 200mA		
Insulation resistance	Min. 50MΩ (at 500VDC megger)		
Dielectric strength	1500VAC 50/60Hz for 1 minute		
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours		
Shock	500m/s² (50G) in X, Y, Z direction for 3 times		
Indicator	Output operation indicator(Red LED)		
Ambient temperature	-25 to 70℃(at non-freezing status)		
Storage temperature	-30 to 80℃(at non-freezing status)		
Ambient humidity	35 to 95%RH		
Protection circuit	Surge protection circuit, reverse polarity proteciton circuit, overload & short protection circuit		
Protection	IP67(IEC standard)		
Cable	φ4×3P, 2m	φ5×3P, 2m	
Approval	CE		
Unit weight	Approx. 70g	Approx. 119g	Approx. 184g

※(*1) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

●AC 2-wire type

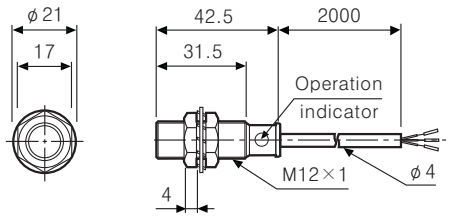
Model	PRA12-2AO PRA12-2AC	PRA18-5AO PRA18-5AC	PRA30-10AO PRA30-10AC
Sensing distance	2mm ±10%	5mm ±10%	10mm ±10%
Hysteresis	Max. 10% of sensing distance		
Standard sensing target	12×12×1mm(Iron)	18×18×1mm(Iron)	30×30×1mm(Iron)
Setting distance	0 to 1.4mm	0 to 3.5mm	0 to 7mm
Power supply (Operating voltage)	100-240VAC (85-264VAC)		
Leakage current	Max. 2.5mA		
Response frequency(*1)	20Hz		
Residual voltage	Max. 10V		
Affection by Temp.	±10% Max. for sensing distance at +20℃ within temperature range of -25 to 70℃		
Control output	5 ~ 150mA	5 ~ 200mA	
Insulation resistance	Min. 50MΩ (at 500VDC megger)		
Dielectric strength	2500VAC 50/60Hz for 1 minute		
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours		
Shock	500m/s² (50G) in X, Y, Z direction for 3 times		
Indicator	Output operation indicator(Red LED)		
Ambient temperature	-25 to 70℃(at non-freezing status)		
Storage temperature	-30 to 80℃(at non-freezing status)		
Ambient humidity	35 to 95%RH		
Protection circuit	Surge protection circuit, overload & short protection circuit		
Protection	IP67(IEC standard)		
Cable	φ4×2P, 2m	φ5×2P, 2m	
Approval	CE		
Unit weight	Approx. 66g	Approx. 130g	Approx. 185g

※(*1) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

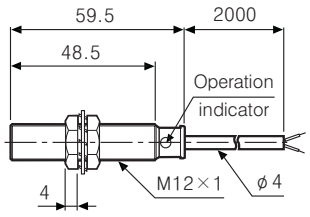
▣Dimensions

(Unit:mm)

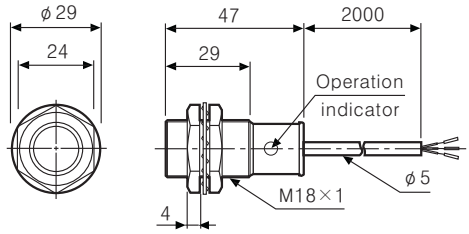
●PRA12-2D□ / PRAT12-2D□ / PRAWT12-2D□



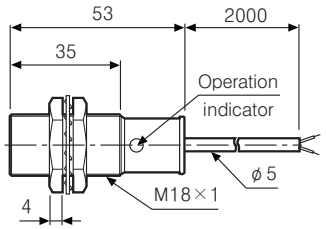
●PRA12-2A□



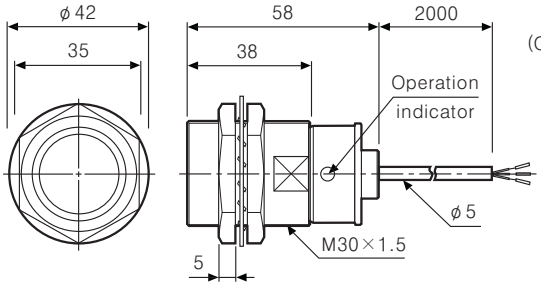
●PRA18-5D□ / PRAT18-5D□ / PRAWT18-5D□



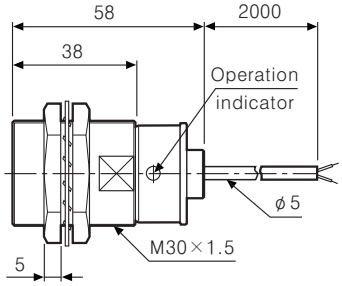
●PRA18-5A□



●PRA30-10D□ / PRAT30-10D□ / PRAWT30-10D□

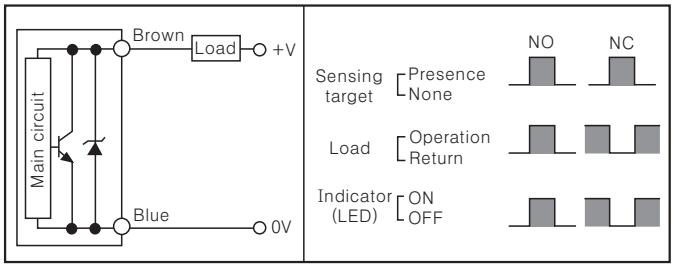


●PRA30-10A□

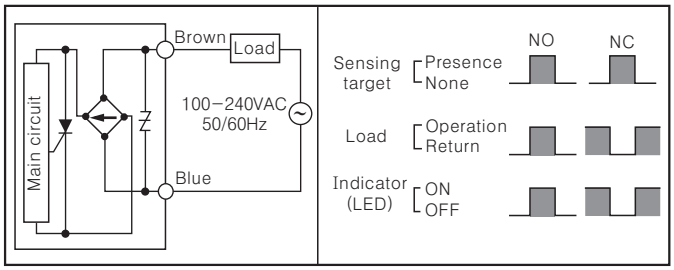


▣Control output diagram

◎DC 2-wire type

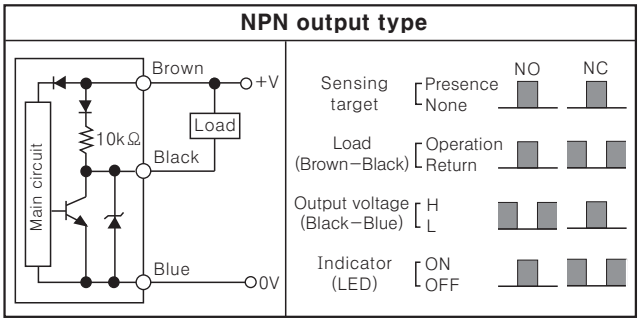


◎AC 2-wire type

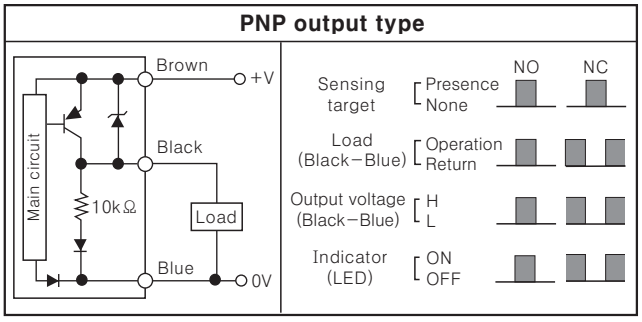


◎DC 3-wire type

NPN output type

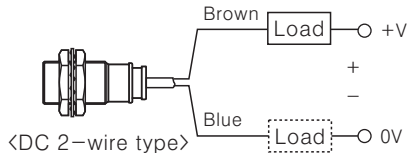


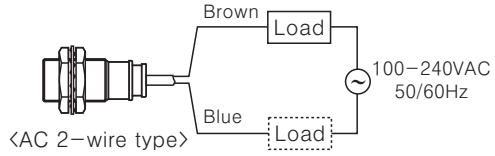
PNP output type



▣Connections

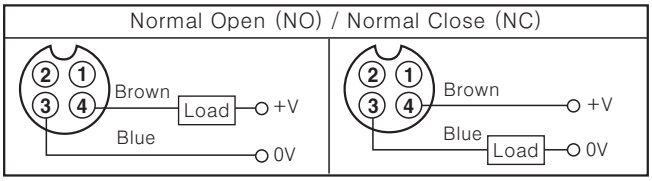
◎DC 2-wire standard type / AC 2-wire type





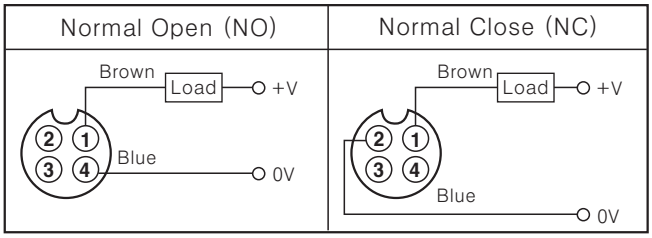
※When using DC 2-wire and AC 2-wire type, a load must be connected before applying power; otherwise, components can be damaged.
※The load can be connected to either wire.

◎Connector



※①, ② are N · C(Not Connected) terminals.

◎DC 2-wire type(IEC standard type)

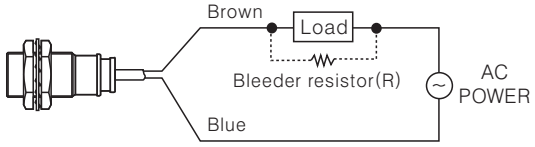


※②, ③ of NO Type and ③, ④ of NC Type are N · C(Not Connected)terminals.

▣Proper usage

◎In case of the load current is small

●AC 2-wire type



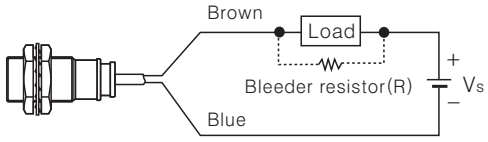
110VAC : Min. 20kΩ 3W
220VAC : Min. 39kΩ 10W

If the load current is under 5mA, please make sure the residual voltage is less than the return voltage of the load by connecting a bleeder resistor in parallel with the load as shown in the diagram.

$$R = \frac{V_S}{I}\ (\Omega) \qquad P = \frac{V_S^2}{R}\ (W)$$

[I:Action current of load, R:Bleeder resistance, P:Permissible power]

●DC 2-wire type



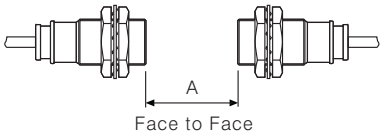
Please make the current on proximity sensor smaller than the return current of load by connecting a bleeder resistor in parallel.
※W value of Bleeder resistor should be bigger for proper heat dissipation.

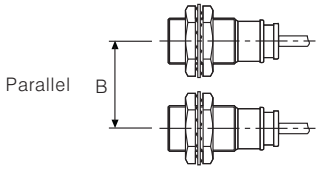
$$R = \frac{V_S}{Io - Ioff}\ (\Omega) \qquad P = \frac{V_S^2}{R}\ (W)$$

[Vs : Power supply, Io : Min. action current of proximity sensor
Ioff : Return current of load, P : Number of Bleeder resistance watt]

◎Mutual-interference & Influence by surrounding metals

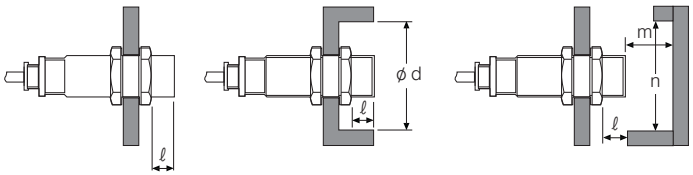
When several proximity sensors are mounted close to one another a malfunction of th may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors as below chart indicates.





When sensors are mounted on metallic panel, you must prevent the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart indicates.

(Unit:mm)



Item \ Model	PRA□12-2□□	PRA□18-5□□	PRA□30-10□□
A	12	30	60
B	24	36	60
ℓ	0	0	0
ϕd	12	18	30
m	6	15	30
n	18	27	45

Rectangular type proximity sensor

▣Features

- ●Improved the noise resistance with dedicated IC (DC 3-wire type)
- ●Integrated surge protection circuit
- ●Integrated overload & short protection circuit (DC 2-wire, 3-wire type)
- ●Integrated reverse polarity protection circuit (DC 3-wire type)
- ●Long life cycle and high reliability
- ●Red LED status indication
- ●Protection structure IP67 (IEC standard)
- ●Replaceable for micro switches and limit switches

Please read "Caution for your safety" in operation manual before using.

▣Specifications

●DC 2-wire type

※The existing PST17 is upgraded its function and design and changed as PSN17.
※The case color of Normal Close type is changed from orange to gray.

Model	PSNT17-5DO PSNT17-5DC	PSNT17-5DOU PSNT17-5DCU
Sensing distance	5mm ±10%	
Hysteresis	Max. 10% of sensing distance	
Standard sensing target	18×18×1mm (Iron)	
Setting distance	0 to 3.5mm	
Power supply (Operating voltage)	12-24VDC (10-30VC)	
Leakage current	Max. 0.6mA	
Response frequency(*1)	700Hz	
Residual voltage	Max. 3.5V	
Affection by Temp.	±10% Max. for sensing distance at 20℃ within temperature range of -25 to 70℃	
Control output	2 to 100mA	
Insulation resistance	Min. 50MΩ (at 500VDC megger)	
Dielectric strength	1500VAC 50/60Hz for 1 minute	
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours	
Shock	500m/s² (50G) in X, Y, Z direction for 3 times	
Indicator	Output operation indicator (Red LED)	
Ambient temperature	-25 to 70℃ (at non-freezing status)	
Storage temperature	-30 to 80℃ (at non-freezing status)	
Ambient humidity	35 to 95%RH	
Protection circuit	Surge protection circuit, Overload & Short protection circuit	
Protection	IP67 (IEC standard)	
Cable	φ4×3P, 2m	
Approval	CE	
Unit weight	Approx. 69g	

※(*1) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

▣Specifications

●DC 3-wire type

※The existing PS17 is upgraded its function and design and changed as PSN17.
※The case color of PNP output type is changed from orange to gray.

Model	PS12-4DN PS12-4DP PS12-4DN2 PS12-4DNU PS12-4DPU PS12-4DN2U	PSN17-5DN PSN17-5DP PSN17-5DN2 PSN17-5DP2 PSN17-5DNU PSN17-5DPU PSN17-5DN2U PSN17-5DN-F	PSN17-8DN PSN17-8DP PSN17-8DN2 PSN17-8DNU PSN17-8DPU	PSN17-8DN-F PSN17-8DP-F PSN17-8DN2-F PSN17-8DNU-F PSN17-8DPU-F PSN17-8DN2U-F	PSN25-5DN PSN25-5DP PSN25-5DN2 PSN25-5DP2	PSN30-10DN PSN30-10DP PSN30-10DN2 PSN30-10DP2	PSN30-15DN PSN30-15DP PSN30-15DN2 PSN30-15DP2	PSN40-20DN PSN40-20DP PSN40-20DN2 PSN40-20DP2	PS50-30DN PS50-30DP PS50-30DN2 PS50-30DP2
Sensing distance	4mm ±10%	5mm ±10%	8mm ±10%		5mm ±10%	10mm ±10%	15mm ±10%	20mm ±10%	30mm ±10%
Hysteresis	Max. 10% of sensing distance								
Standard sensing target	12×12×1mm(Iron)	18×18×1mm(Iron)	25×25×1mm(Iron)			30×30×1mm(Iron)	45×45×1mm(Iron)	60×60×1mm(Iron)	90×90×1mm(Iron)
Setting distance	0 to 2.8mm	0 to 3.5mm	0 to 5.6mm		0 to 3.5mm	0 to 7mm	0 to 10.5mm	0 to 14mm	0 to 21mm
Power supply (Operation voltage)	12-24VDC (10-30VDC)								
Current consumption	Max. 10mA								
Response frequency(*1)	500Hz	700Hz	200Hz		300Hz	250Hz	200Hz	100Hz	50Hz
Residual voltage	Max. 1.5V								
Affection by Temp.	±10% Max. for sensing distance at 20℃ within temperature range of -25 to 70℃								
Control output	Max. 200mA								
Insulation resistance	Min. 50MΩ (at 500VDC megger)								
Dielectric strength	1500VAC 50/60Hz for 1minute								
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours								
Shock	500m/s² (50G) in X, Y, Z direction for 3 times								
Indicator	Output operation indicator(Red LED)								
Ambient temperature	-25 to 70℃ (at non-freezing status)								
Storage temperature	-30 to 80℃ (at non-freezing status)								
Ambient humidity	35 to 95%RH								
Protection circuit	Surge protection circuit, overload & short protection circuit, reverse polarity protection circuit								
Protection	IP67(IEC standard)								
Cable spec.	φ4×2P, 2m					φ5×2P, 2m			
Approval	CE								
Unit weight	Approx. 62g	Approx. 71g	Approx. 70g			Approx. 111g		Approx. 158g	Approx. 220g

※(*1) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

●AC 2-wire type

※The case color of Normal Close type is changed from orange to gray.

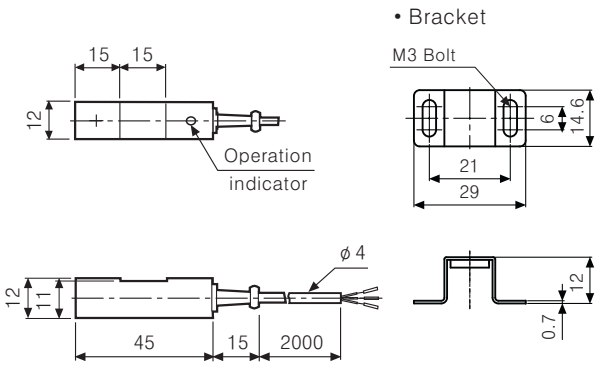
Model	PSN25-5AO PSN25-5AC	PSN30-10AO PSN30-10AC	PSN30-15AO PSN30-15AC	PSN40-20AO PSN40-20AC
Sensing distance	5mm ±10%	10mm ±10%	15mm ±10%	20mm ±10%
Hysteresis	Max. 10% of sensing distance			
Standard sensing target	25×25×1mm(Iron)	30×30×1mm(Iron)	45×45×1mm(Iron)	60×60×1mm(Iron)
Setting distance	0 to 3.5mm	0 to 7mm	0 to 10.5mm	0 to 14mm
Power supply (Operating voltage)	100-240VDC (85-264VC)			
Leakage current	Max. 2.5mA			
Response frequency(*1)	20Hz			
Residual voltage	Max. 10V			
Affection by Temp.	±10% Max. for sensing distance at 20℃ within temperature range of -25 to 70℃			
Control output	5 to 200mA			
Insulation resistance	Min. 50MΩ (at 500VDC megger)			
Dielectric strength	1500VAC 50/60Hz for 1 minute			
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours			
Shock	500m/s² (50G) in X, Y, Z direction for 3 times			
Indicator	Output operation indicator(Red LED)			
Ambient temperature	-25 to 70℃ (at non-freezing status)			
Storage temperature	-30 to 80℃ (at non-freezing status)			
Ambient humidity	35 to 95%RH			
Protection circuit	Surge protection circuit			
Protection	IP67(IEC standard)			
Cable	φ4×2P, 2m	φ5×2P, 2m		
Approval	CE			
Unit weight	Approx. 65g	Approx. 106g		Approx. 152g

※(*1) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

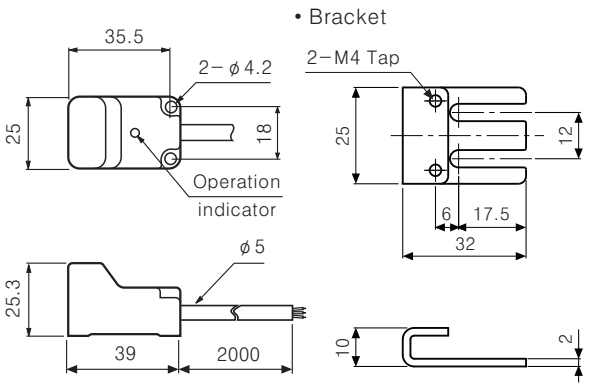
▣Dimensions

(Unit:mm)

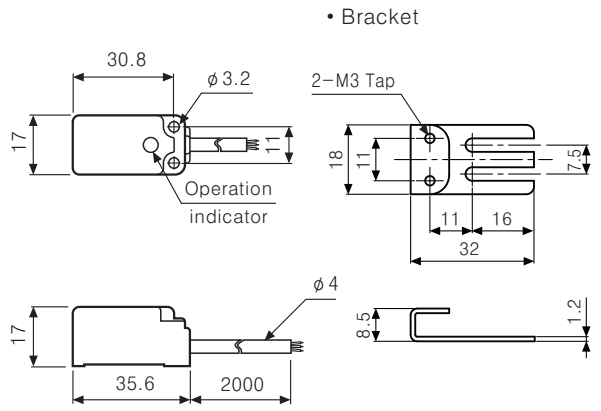
●PS12



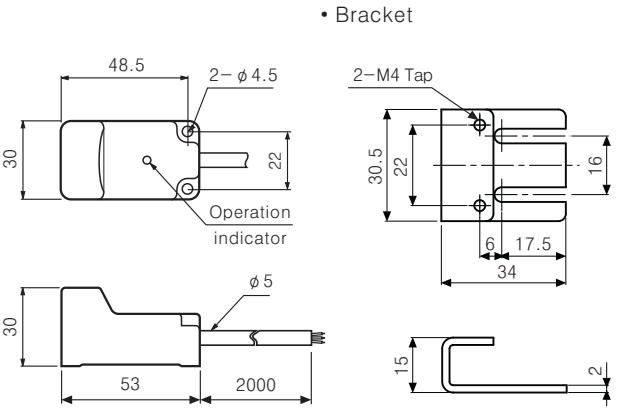
●PSN25



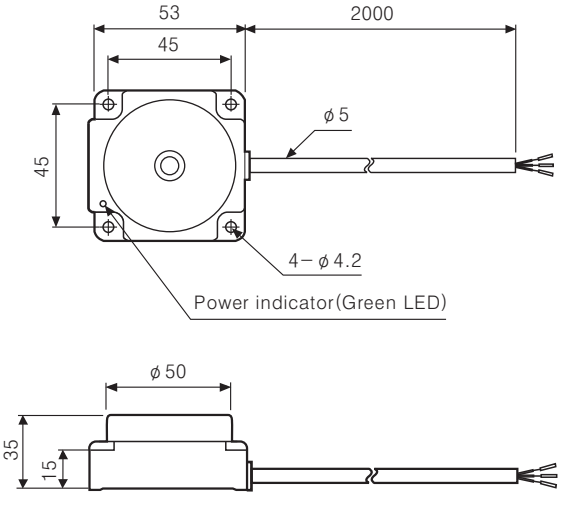
●PSN17 / PSNT17(Former : PS17/ PST17)



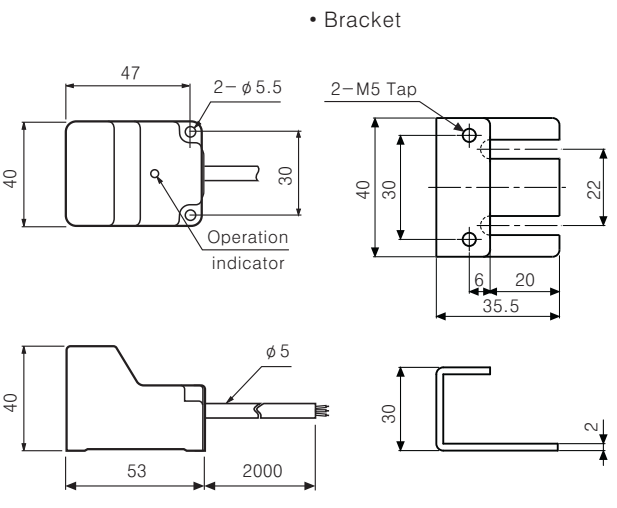
●PSN30



●PS50



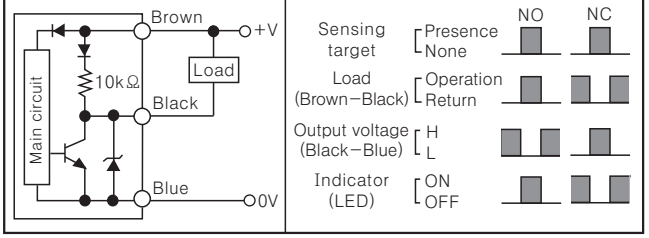
●PSN40



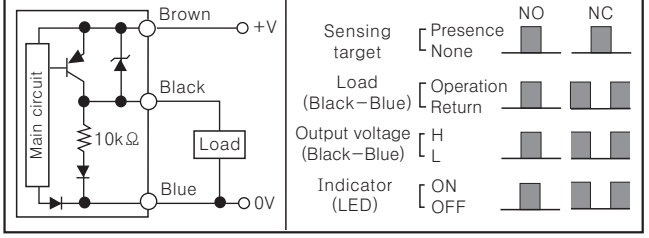
▣Control output diagram

◎DC 3-wire type

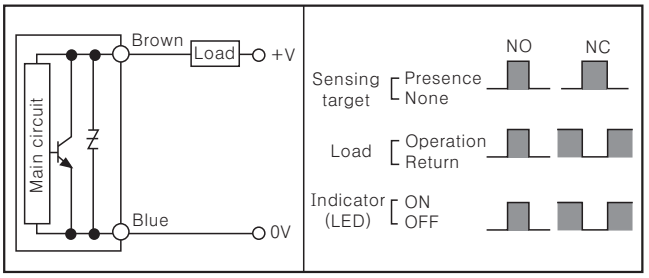
NPN output type



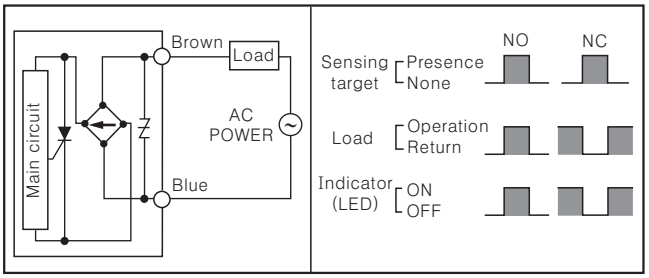
PNP output type



◎DC 2-wire type

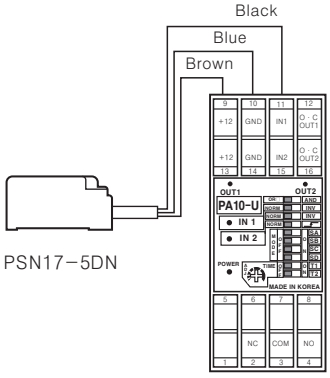


◎AC 2-wire type

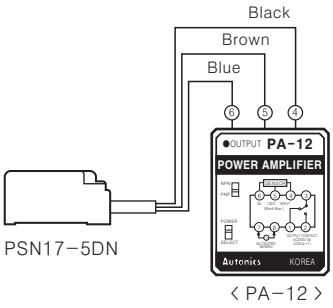


▣Connections

◎DC 3-wire type



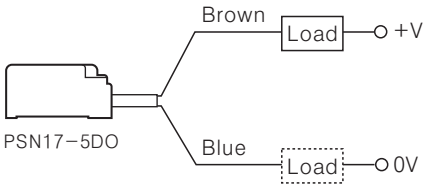
〈 PA10−U 〉



〈 PA−12 〉

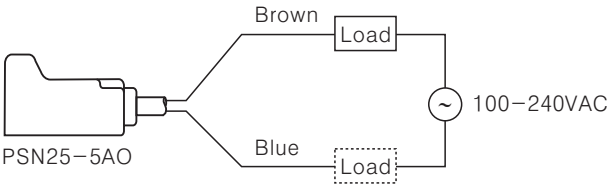
※There is NPN/PNP selection switch in PA−12.

◎DC 2-wire type



※The load can be connected to either wire.

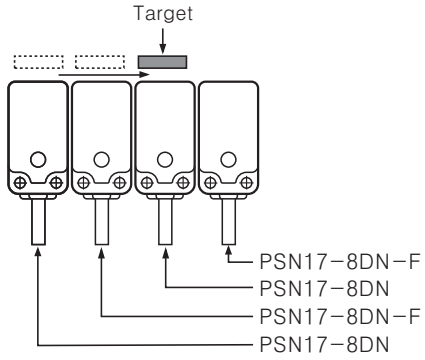
◎AC 2-wire type



※The load can be connected to either wire.

▣Proper usage

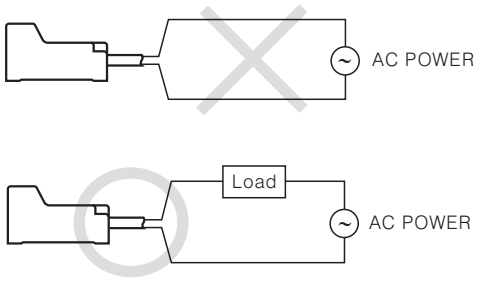
◎Differential frequency



When installing several proximity sensor closely, it may cause malfunction due to mutual interference. Therefore, please use differential frequency for the application.

※Differential frequency type is only for 17 square.

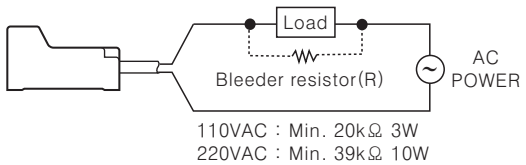
◎Connection of the power supply



When using DC 2-wire and AC 2-wire type, a load must be connected before applying power; otherwise, components can be damaged.

◎In case of the load current is small

●AC 2-wire type

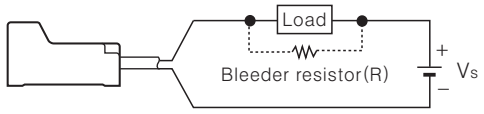


It may cause return failure of load by residual voltage.
If the load current is under 5mA, please make sure the residual voltage is less than the return voltage of the load by connecting a bleeder resistor in parallel with the load as shown in the diagram.

$$R = \frac{V_S}{I}\ (\Omega) \qquad P = \frac{V_S^2}{R}\ (W)$$

[I:Action current of load, R:Bleeder resistance, P:Permissible power]

●DC 2-wire type



Please make the current on proximity sensor smaller than the return current of load by connecting a Bleeder resistor in parallel.

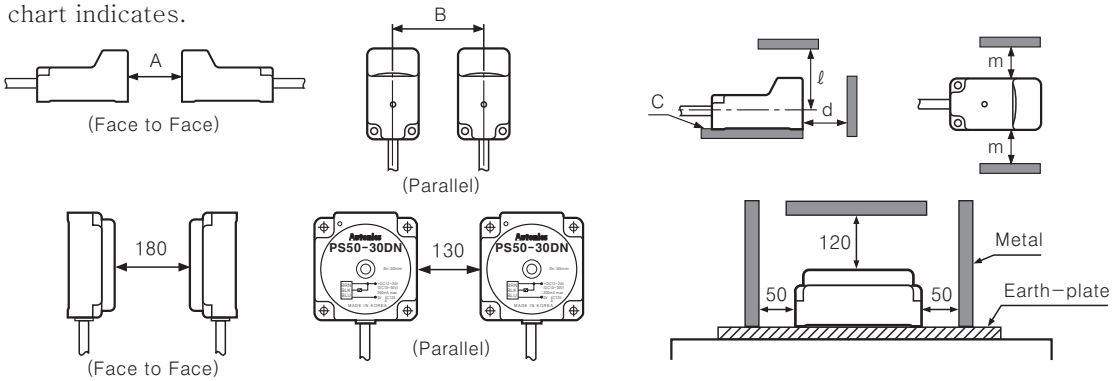
※W value of Bleeder resistor should be bigger for proper heat dissipation.

$$R = \frac{V_S}{Io - Ioff}\ (\Omega) \qquad P = \frac{V_S^2}{R}\ (W)$$

[Vs : Power supply, Io : Min. action current of proximity sensor
Ioff : Return current of load, P : Number of Bleeder resistance watt]

◎Mutual-interference & Influence by surrounding metals

When several proximity sensors are mounted close to one another a malfunction of the may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors as below chart indicates.



Unit:mm

Item \ Model	PS12	PSN17		PSN25	PSN30		PSN40
	4mm	5mm	8mm	5mm	10mm	15mm	20mm
A	24	30	48	30	60	90	120
B	24	36	40	40	50	85	70
C	5	5	5	5	5	5	5
d	12	15	24	15	30	45	60
ℓ	18	24	33	25	30	45	45
m	12	18	20	20	25	35	35

Flat type proximity sensor

▣Features

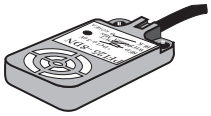
- ●Easy to mount in narrow space by flat structure(Height:10mm)
- ●Integrated surge protection circuit
- ●Integrated overload & short protection circuit, reverse polarity protection circuit (DC type)
- ●Improved the noise resistance with dedicated IC (DC type)
- ●Red LED status indication
- ●Protection structure IP67(IEC standard)
- ●Replaceable for micro switches and limit switches

⚠ **Please read "Caution for your safety" in operation manual before using.**

CE

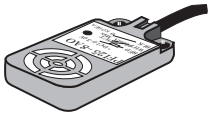
▣Type

◎DC 3-wire type

Appearance	Model
	**PFI25-8DN**
	PFI25-8DP
	PFI25-8DN2 ※
	PFI25-8DP2 ※

▶"※" mark can be customized.

◎AC 2-wire type

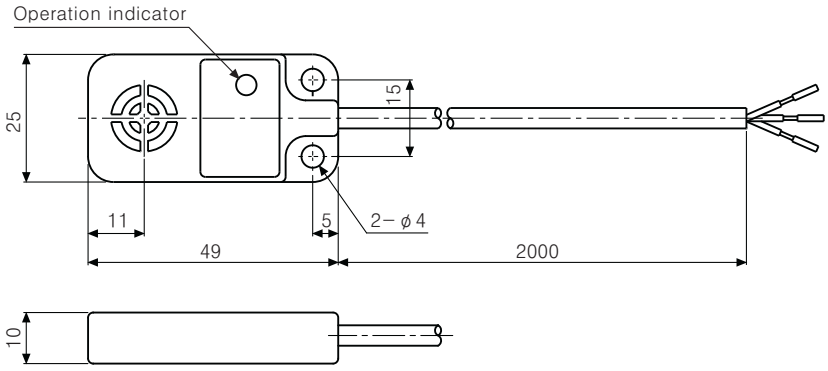
Appearance	Model
	**PFI25-8AO**
	PFI25-8AC

▣Specification

Model	**PFI25-8DN PFI25-8DP PFI25-8DN2 PFI25-8DP2**	**PFI25-8AO PFI25-8AC**
Sensing distance	8mm ±10%	
Hysteresis	Max. 10% of sensing distance	
Standard sensing target	25×25×1mm(Iron)	
Setting distance	0 to 5.6mm	
Power supply (Operating voltage)	12-24VDC (10-30VDC)	100-240VDC (85-264VAC)
Current/Leakage consumption	Max. 10mA	Max. 2.5mA
Response frequency**(*1)**	200Hz	20Hz
Residual voltage	Max. 1.5V	Max. 10V
Affection by Temp.	±10% Max. for sensing distance at 20℃ within temperature range of -25 to 70℃	
Control output	Max. 200mA	Max. 150mA
Insulation resistance	Min. 50MΩ(at 500VDC megger)	
Dielectric strength	1500VAC 50/60Hz for 1 minute	2500VAC 50/60Hz for 1 minute
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours	
Shock	500m/s² (50G) in X, Y, Z direction for 3 times	
Indicator	Output operation indicator(Red LED)	
Ambient temperature	-25 to 70℃(at non-freezing status)	
Storage temperature	-30 to 80℃(at non-freezing status)	
Ambient humidity	35 to 95%RH	
Protection circuit	Surge protection circuit, Reverse polarity proteciton circuit, Overload & Short protection circuit	Surge protection circuit
Cable	φ4×3P, 2m	φ4×2P, 2m
Protection	IP67(IEC standard)	
Approval	CE	
Unit weight	Approx. 80g	

※**(*1)** The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

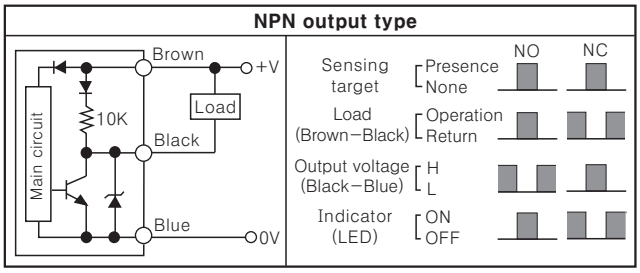
▣Dimensions

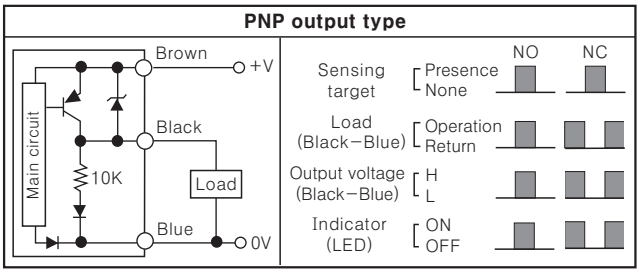


(Unit:mm)

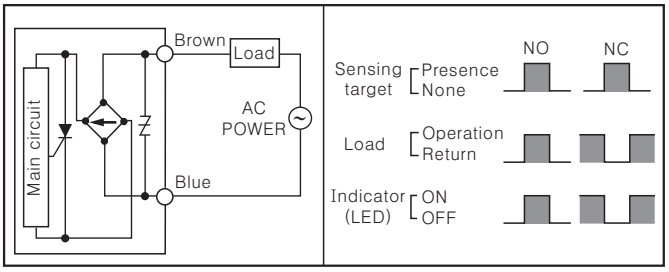
▣Control output diagram

◎DC 3-wire type





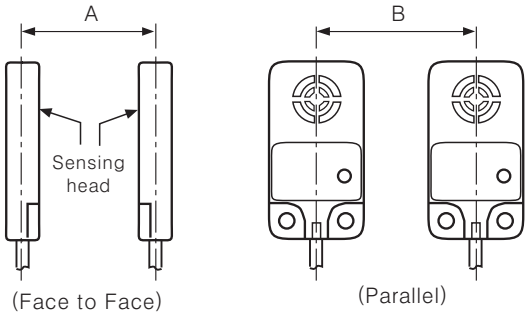
◎AC 2-wire type



▣Proper usage

◎Mutual-interference

When several proximity sensors are mounted close to one another a malfunction of the sensor may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors as below chart indicates.

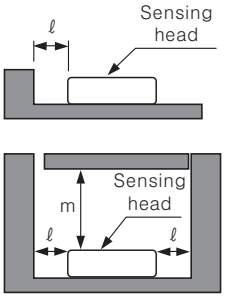


A	100
B	80

(Unit:mm)

◎Influence by surrounding metals

When sensors are mounted on metallic panel, you must prevent the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart indicates.



When the height between the proximity sensor and surrounding metals is same.

When the height between the proximity sensor and surrounding metals is different.

ℓ	5
m	15

(Unit:mm)

Long sensing distance type proximity sensor

▣Features

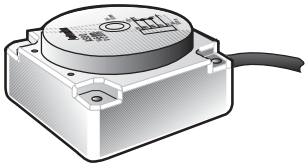
- ●Sensing up to as 50mm
- ●Improved the noise resistance with dedicated IC
- ●Integrated surge protection circuit, reverse polarity protection circuit, overload & short protection circuit
- ●Wide range of power supply : 12−48VDC (Voltage range : 10−65VDC)
- ●Simultaneous output of Normal Open+Normal Close
- ●Built−in power indicator and operation indicator
- ●Protection structure IP67(IEC standard)

⚠ **Please read "Caution for your safety" in operation manual before using.**

CE

▣Type

◎DC 4−wire long distance type

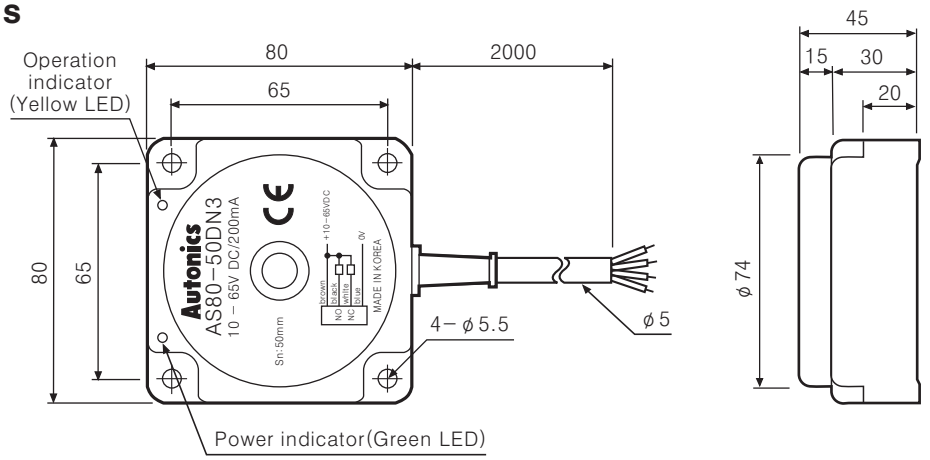
Appearance	Model
	**AS80-50DN3**
	AS80-50DP3

▣Speicifcations

Model	**AS80-50DN3**	**AS80-50DP3**
Sensing type	NPN Normal Open + Normal Close	PNP Normal Open + Normal Close
Sensing distance	50mm ±10%	
Hysteresis	Max. 10% of sensing distance	
Standard sensing target	150×150×1mm(Iron)	
Setting distance	0 to 35mm	
Power supply (Operating voltage)	12−48VDC (10−65VDC)	
Current consumption	Max. 10mA	
Response frequency**(*1)**	30Hz	
Residual voltage	Max. 1.8V	
Affection by Temp.	±10% Max. for sensing distance at 20℃ within temperature range of −25 to 70℃	
Control output	Max. 200mA	
Insulation resistance	Min. 50MΩ (at 500VDC megger)	
Dielectric strength	1500VAC 50/60Hz for 1 minute	
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours	
Shock	500m/s² (50G) in X, Y, Z direction for 3 times	
Indicator	Output operation indicator(Red LED)	
Ambient temperature	−25 to 70℃ (at non−freezing status)	
Storage temperature	−30 to 80℃ (at non−freezing status)	
Ambient humidity	35 to 95%RH	
Protection circuit	Surge protection circuit, Reverse polarity proteciton circuit, Overload & Short protection circuit	
Cable	φ5×4P, 2m	
Protection	IP67(IEC standard)	
Approval	CE	
Unit weight	Approx. 470g	

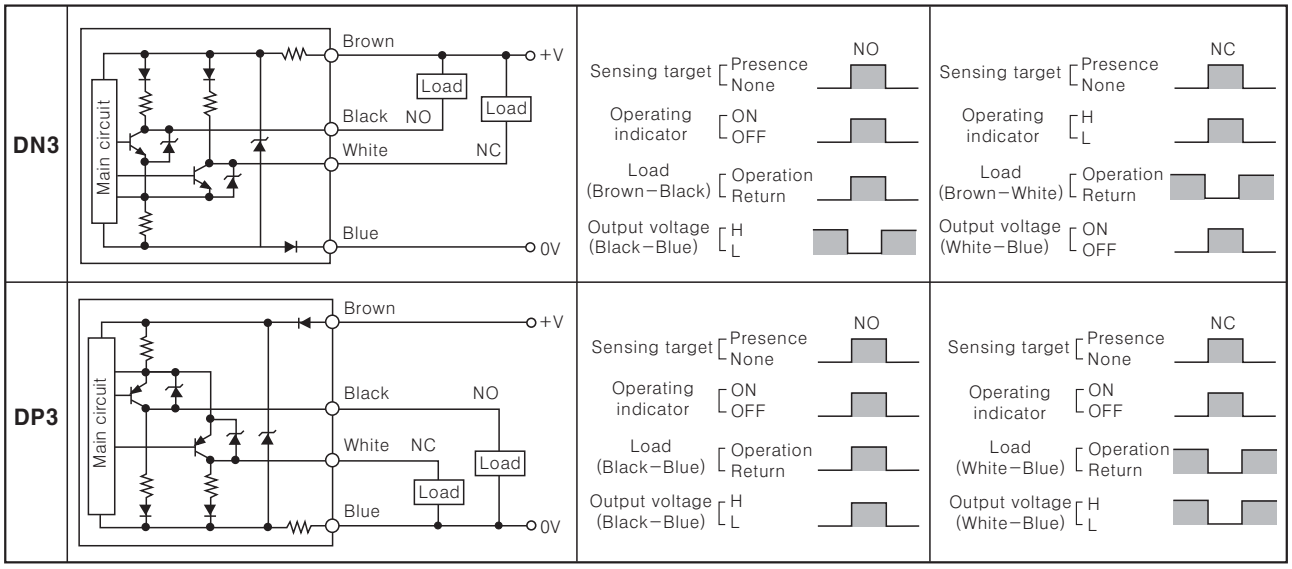
※**(*1)** The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

▣Dimensions



(Unit:mm)

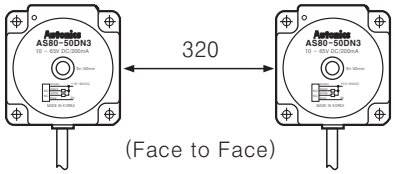
▣Control output diagram

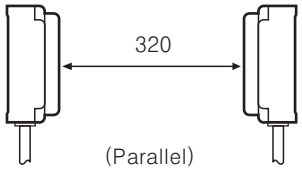


▣Mutual-interference & Influence by surrounding metals

◎Mutual-interference

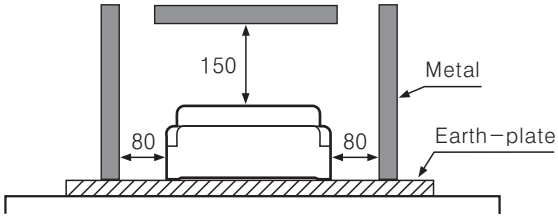
When several proximity sensors are mounted close to one another a malfunction of the sensor may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors as below chart indicates.





◎Influence by surrounding metals

When sensors are mounted on metallic panel, you must prevent the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart indicates.



(Unit:mm)

Electric capacitive type proximity sensor

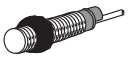
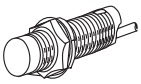
▣Features

- ●Sensing of iron, metal, plastic, water, stone, wood etc.
- ●Long life cycle and high reliability
- ●Integrated surge protection circuit
- ●Integrated reverse polarity protection circuit (DC type)
- ●Easy to adjust of the sensing distance with sensitivity adjuster
- ●Red LED status indication
- ●Easy to control of level and position

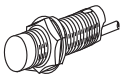
⚠ **Please read "Caution for your safety" in operation manual before using.**

▣Type

◎DC 3-wire type

Appearances		Model
M18		**CR18-8DN**
		CR18-8DP
		CR18-8DN2 ※
M30		**CR30-15DN**
		CR30-15DP
		CR30-15DN2 ※

◎AC 2-wire type

Appearances		Model
M18		**CR18-8AO**
		CR18-8AC
M30		**CR30-15AO**
		CR30-15AC

▶"※" mark can be customized.

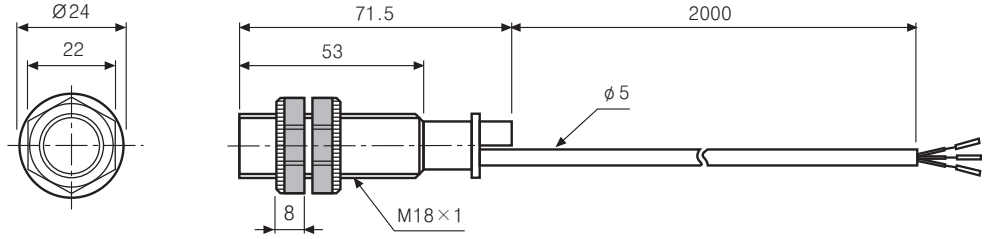
▣Specifications

Model	**CR18-8DN CR18-8DP CR18-8DN2**	**CR30-15DN CR30-15DP CR30-15DN2**	**CR18-8AO CR18-8AC**	**CR30-15AO CR30-15AC**
Sensing distance	8mm ±10%	15mm ±10%	8mm ±10%	15mm ±10%
Hysteresis	Max. 20% of sensing distance			
Standard sensing target	50×50×1mm(Iron)			
Setting distance	0 to 5.6mm	0 to 10.5mm	0 to 5.6mm	0 to 10.5mm
Power supply (Operating voltage)	12-24VDC (10-30VDC)		100-240VAC (85-264VAC)	
Current consumption	Max. 15mA		———	
Leakage consumption	———		Max. 2.2mA	
Response frequency**(*1)**	50Hz		20Hz	
Residual voltage	Max. 1.5V		Max. 20V	
Affection by Temp.	±10% Max. for sensing distance at 20℃ within temperature range of -25 to 70℃			
Control output	Max. 200mA		Max. 5 to 200mA	
Insulation resistance	Min. 50MΩ (at 500VDC megger)			
Dielectric strength	1500VAC 50/60Hz for 1 minute			
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours			
Shock	500m/s² (50G) in X, Y, Z direction for 3 times			
Indicator	Output operation indicator(Red LED)			
Ambient temperature	-25 to 70℃ (at non-freezing status)			
Storage temperature	-30 to 80℃ (at non-freezing status)			
Ambient humidity	35 to 95%RH			
Protection circuit	Surge protection circuit, Reverse polarity proteciton circuit		Overload & Short protection circuit	
Protection	IP66(IEC standard)	IP65(IEC standard)	IP66(IEC standard)	IP65(IEC standard)
Cable	φ4×3P, 2m		φ4×2P, 2m	
Unit weight	Approx. 72g	Approx. 212g	Approx. 63g	Approx. 220g

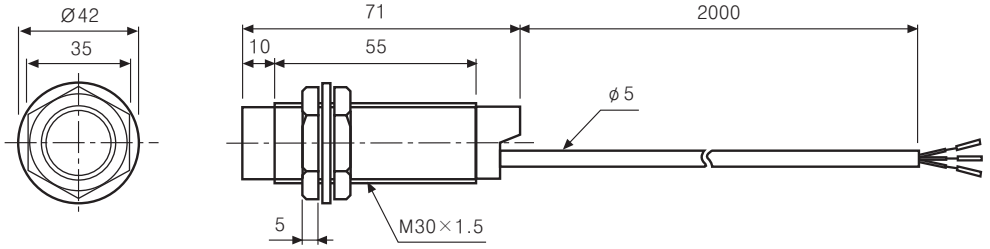
※**(*1)** The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

▣Dimensions

●CR18-8D□ ●CR18-8A□



●CR30-15D□ ●CR30-15A□

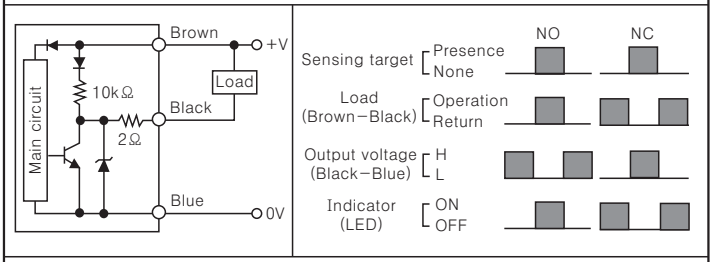


(Unit:mm)

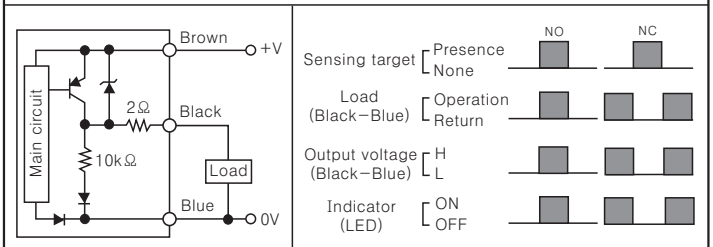
▣Control output diagram

◎DC 3-wire type

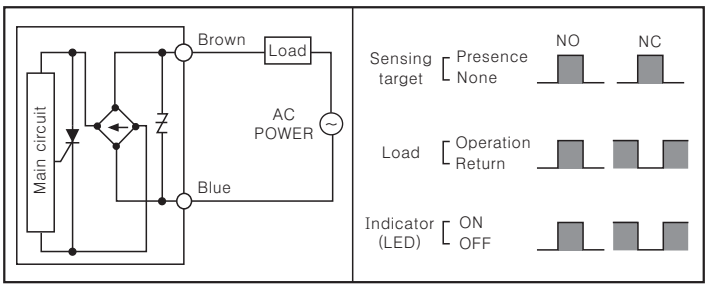
NPN output type



PNP output type

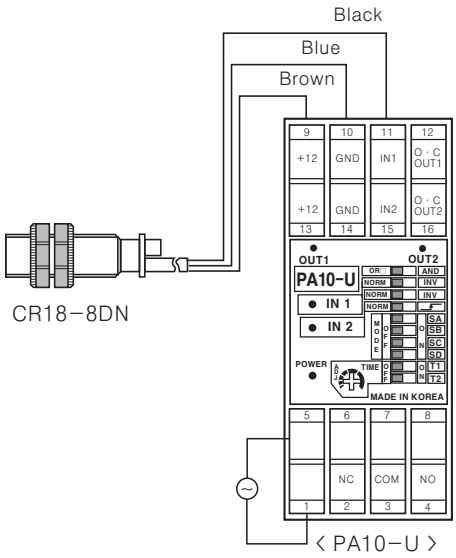


◎AC 2-wire type



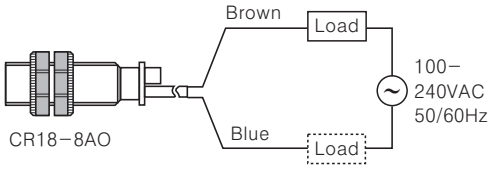
▣Connections

◎DC 3-wire type



〈 PA10-U 〉

◎AC 2-wire type

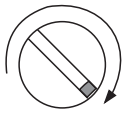


※The load can be connected to either wire.

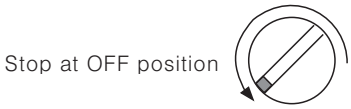
▣Sensitivity adjustment

Please turn potention VR to set sensitivity as below procedure.

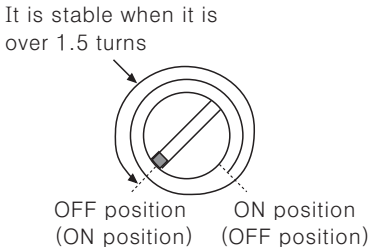
❶ Without a sensing object, turn the potention VR to the right and stop at the proximity sensor is ON(OFF).



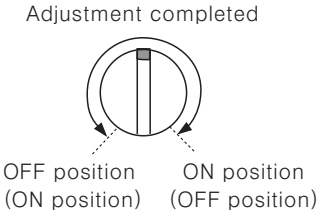
❷ Put the object in right sensing position, turn the potention VR to the left and stop at the proximity sensor is OFF(ON).



❸ If the difference of the number of potention VR rotation between the ON(OFF) point and the OFF(ON) point is more than 1.5 turns, the sensing operation will be stable.



❹ If it is set in sensitivity adjustment position of potention VR at center between ❶ and ❷, sensitivity setting will be completed.



※When there is distance fluctuation between proximity sensor and the target, please adjust ❷ at the farthest distance from this unit.

※Turning potention VR toward clockwise, it will be max. and turning toward counter clockwise, it will be min. the number of adjustment should be 15±3 revolution and if it is turned to the right or left excessively, it will not stop, but it idles without breakdown.

※( ) is for Normal Close type.

▣Grounding

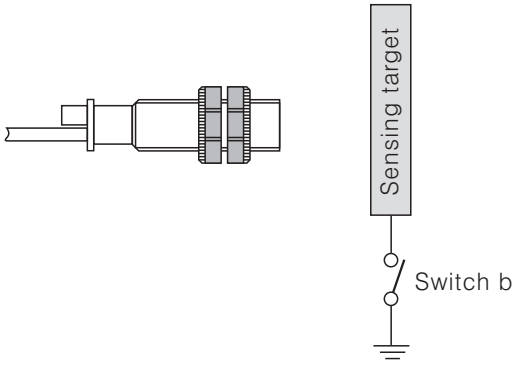
The sensing distance will be changed by grounding status of capacitive proximity sensor and the target[50×50×1mm(Iron)]. Please check the material when installing it on panel.

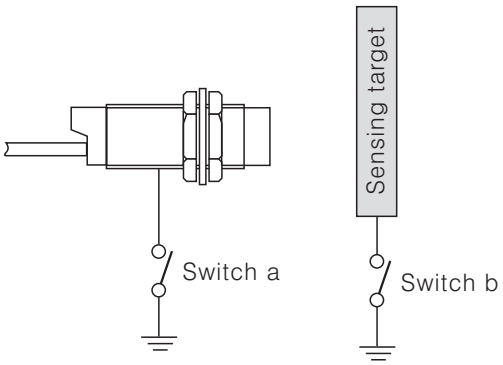
●CR18 Type

Ground condition (Switch b)	ON	OFF
Operating distance (mm)	8	4

●CR30 Type

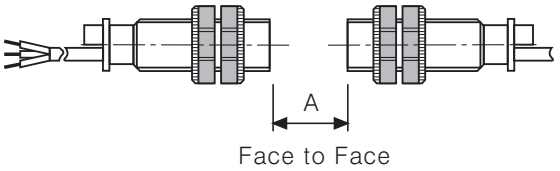
Ground condition					
	Switch a	ON	OFF	ON	OFF
	Switch b	ON	ON	OFF	OFF
Operating distance(mm)		15	18	6	6





▣Mutual-interference & Influence by surrounding metals

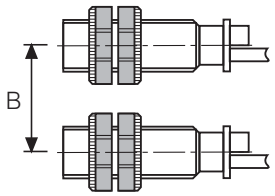
When several proximity sensors are mounted close to one another a malfunction of the sensor may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors as below chart indicates.



Face to Face

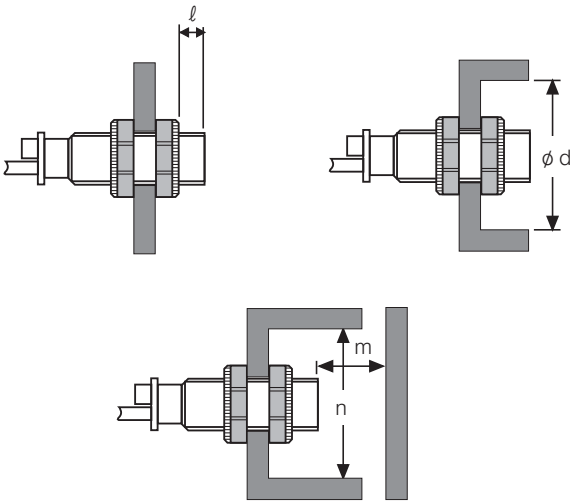
Item \ Model	CR18	CR30
A	48	90
B	54	90

(Unit:mm)



Parallel

When sensors are mounted on metallic panel, you must prevent the sensors from being affected by any metallic object except target. Therefore, be sure to provide a minimum distance as below chart indicates.



Item \ Model	CR18	CR30
ℓ	20	10
ϕd	54	90
m	24	45
n	54	90

(Unit:mm)

▣Materials

◎Materials of sensing targets

Sensing distance may be different by electrical characteristic of sensing target(conductivity, non dielectric constant)and status of water absorption, size etc.

◎Effect by high frequency electrical field

It may cause malfunction by machinery which generate high frequency of electrical field such as a washing machine etc.

◎Surrounding environment

There is water or oil on surface of sensing part, it may cause malfunction.
If the bottle for sensing of level is coated by oil etc., it may cause malfunction.
Especially, 15mm type has high sensitivity for induced objects, please be careful of waterdrops.

◎Oil

Do not let the oil or oil liquid is flowed into the sensor, the case is made by plastic.

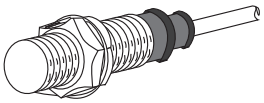
Transmission coupler

▣Features

- ●Loop powered type
  The signal is transmitted by magnetic coupling of coils.
- ●Superior with environmental resistance
  Non-malfunction for oil or dust on transmission part
- ●Applications
  Drilling, Machine table, Robot arm, Conveyor belt and Various revolution axis.

⚠ **Please read "Caution for your safety" in operation manual before using.**

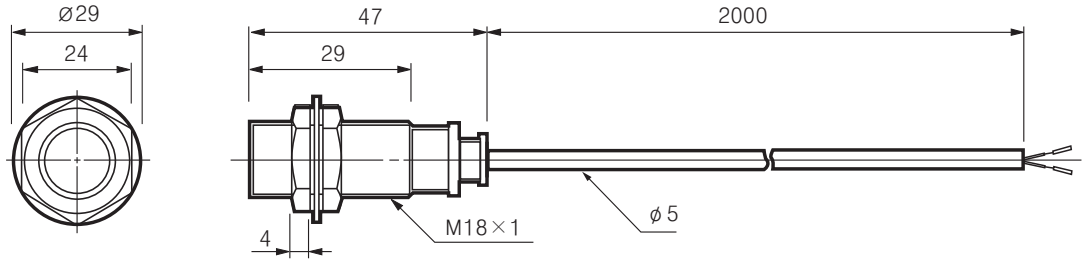
▣Type

Appearances		Model
M18		**PET18-5**

▣Specifications

Model	**PET18-5**
Transmission distance	5mm ±10%
Setting transmission distance	1 to 4.5mm
Response time	Max. 1ms
Ambient temperature	-25 to 70℃(at non-freezing status)
Ambient humidity	35 to 95%RH
Insulation resistance	Min. 50MΩ(at 500VDC megger)
Dielectric strength	1500VAC 50/60Hz for 1minute
Vibration	1mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 2 hours
Shock	500m/s² (50G) in X, Y, Z direction for 3 times
Protection	IP67(IEC standard)
Unit weight	Approx. 121g
Applicable proximity sensor	PR18-5DN PRW18-5DN PRCM18-5DN PRWL18-5DN PRL18-5DN PRCML18-5DN PRT18-5DO PR18-5DP PRW18-5DP PRCM18-5DP PRWL18-5DP PRL18-5DP PRCML18-5DP PRT18-5DC PR18-5DN2 PRW18-5DN2 PRCM18-5DN2 PRWL18-5DN2 PRL18-5DN2 PRCML18-5DN2 PRCMT18-5DO PR18-5DP2 PRW18-5DP2 PRCM18-5DP2 PRWL18-5DP2 PRL18-5DP2 PRCML18-5DP2 PRCMT18-5DC

▣Dimensions

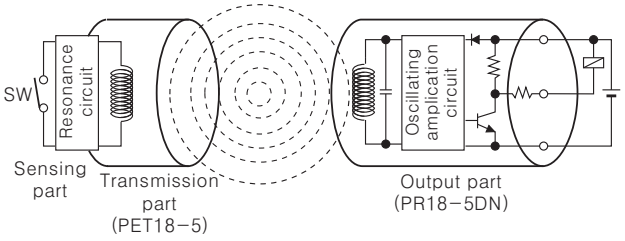


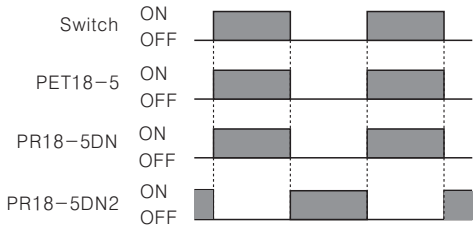
(Unit:mm)

▣Operation mechanism

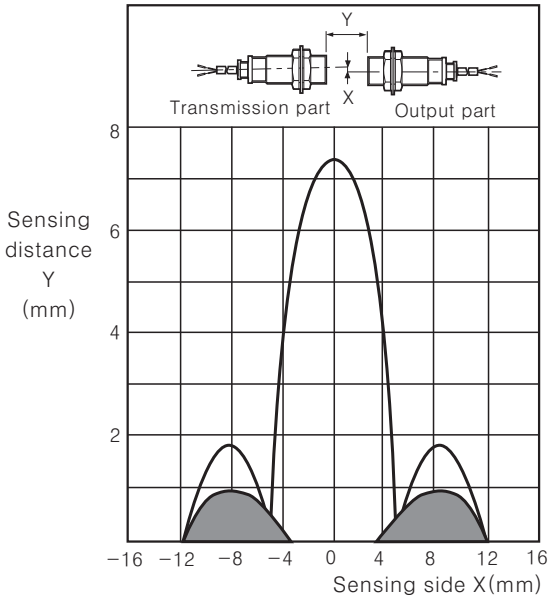
It transmits ON/OFF signal with a magnetic coupling of coils.

The coil of transmission part and proximity sensor is coupled electronically, the induced current is generated at closed-loop of transmission part influenced by a magnetic field from proximity sensor coil when the switch of sensing part is ON.



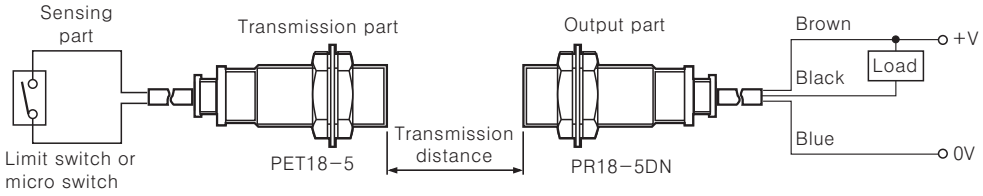


▣Feature data



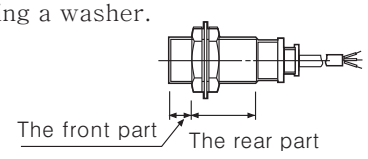
☞ Please note the proximity sensor detects the surrounding cover of the sensing side of transmission coupler even the connection switch is OFF in sensing ▩ part.

▣Connections

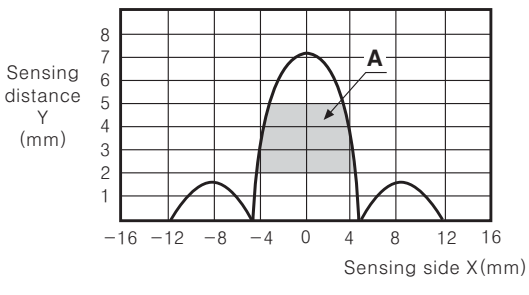


▣Proper usage

1. Please use the device within the rated temperature range and do not use outdoors.
2. Please use the code tensile strength within the rated range.
3. Please do not share the connection of proximity code and power line.
4. Please do not tighten the nut with excessive power and use a washer for assembling.
   ①The allowable tightening strength at the front and latter part is 150kgf • cm.
   ②The above allowable tightening strength is for using a washer.



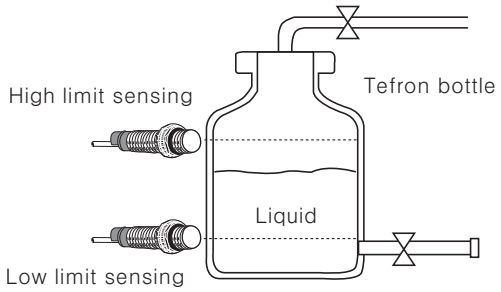
5. Please shorten the wiring to avoid noise.
6. Please use the cable written on the specification of the product. If the other cable or a crooked cable is used, the waterproof cannot be maintained.
7. 0.3mm² or larger cable can be extended up to 5m.
8. When the transceiver is attached to the proximity sensor or close to the wires, it may cause a malfunction.
9. The contact switch in the sensing part should not have leakage current when it is OFF.
10. The contact resistance is under 300mΩ, open resistance is more than 10MΩ to satisfy the specification of contact switch. (Limit switch or micro switch)
11. The inductive proximity sensor used in output part may cause a malfunction, if metal particles attach to sensing area.
12. It is able to transmit signal through the plastic or mirror.
13. Please set sensing distance within part A of the below operation range for mounting at the rotator.



▣Applications

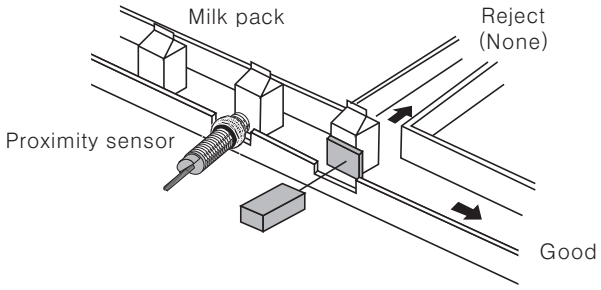
Sensing of liquid level(Capacitive type)

It is able to detect the level of liquid inside of bottle from outside.

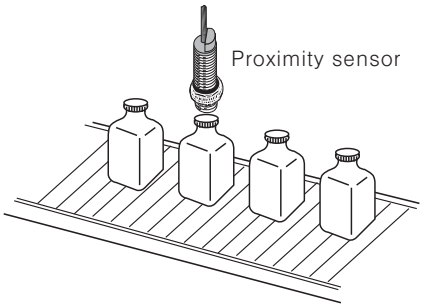


Sensing milk in paper pack(Capacitive type)

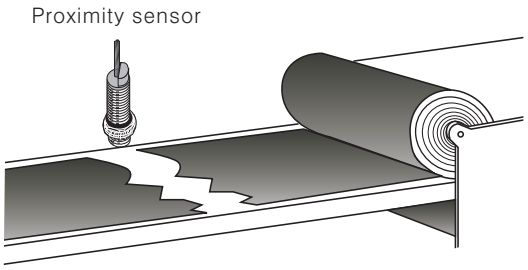
It is able to detect milk in side of pack by capacitive proximity sensor.



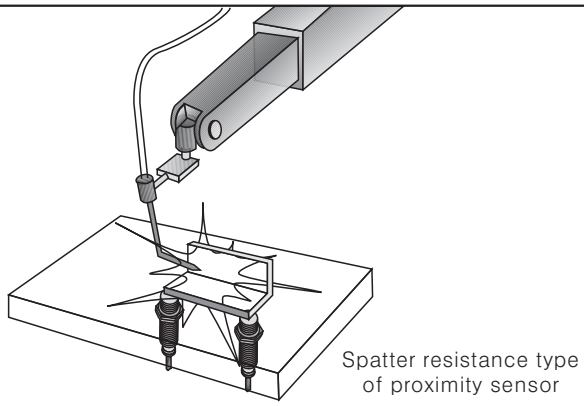
Sensing of cap of bottles(Capacitive type)



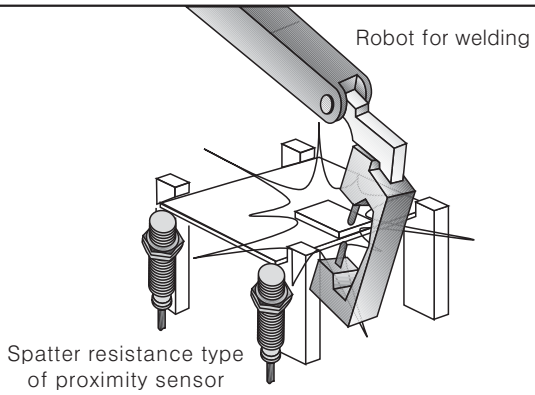
Sensing of band defective(Capacitive type)



Fixing the point to be welded(Arc)

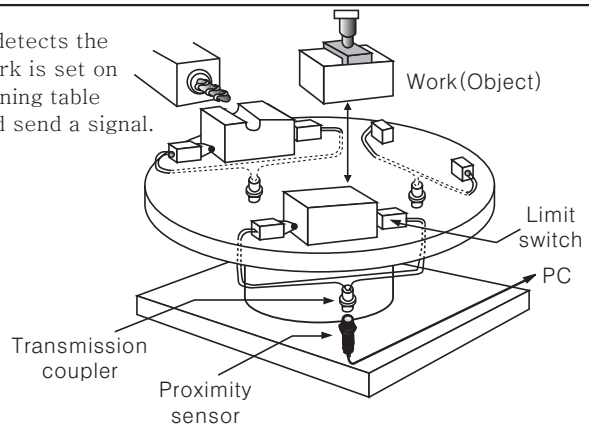


Checking the position for Spot welding



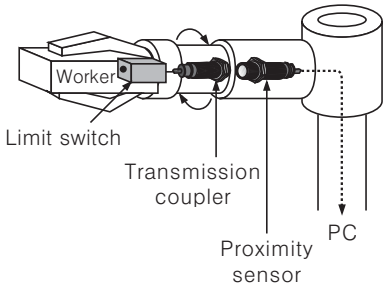
Turning table(Transmission coupler)

It detects the work is set on turning table and send a signal.



Transmitting the signal of checking(Transmission coupler)

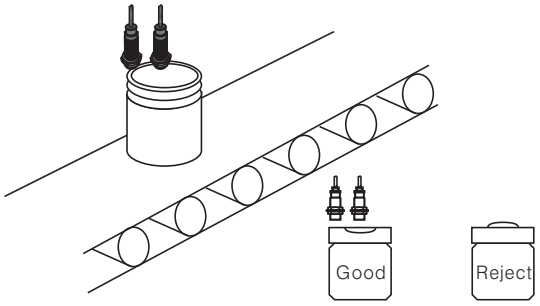
It detects if the robot arm is holding the work and send a signal.



▣Applications

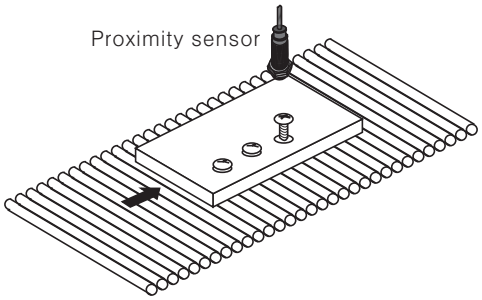
Sensing condition of cans

Proximity sensor



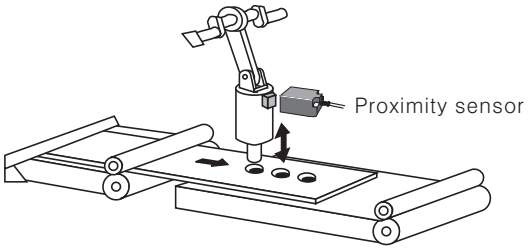
Measuring the heigth of screw

Sensing the status of screw



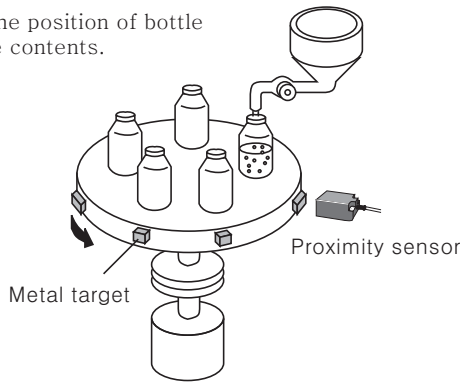
Controlling a press

Making a hole on panel by constant distance



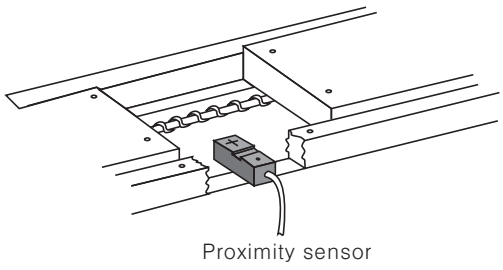
Positioning control

Sensing the position of bottle
for fill the contents.

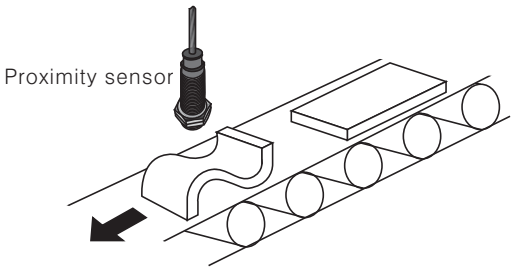


Sensing position of target

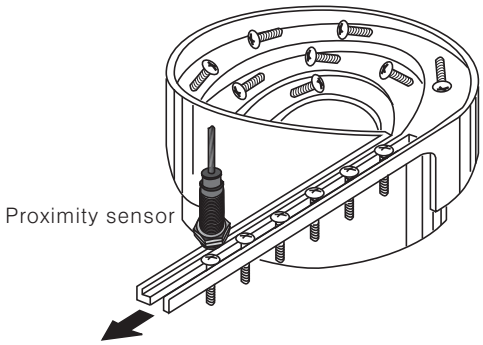
Automatic assembly conveyor line



Sensing incorrect shape of target

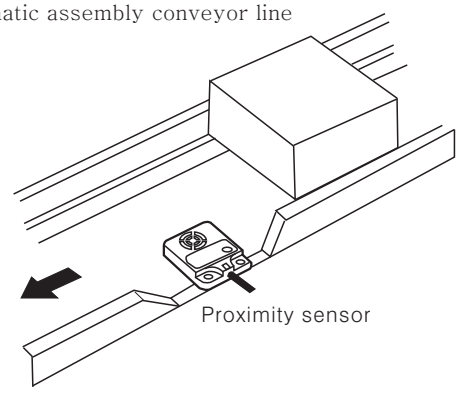


Counting screws



Sensing position of target(PFI 25)

Automatic assembly conveyor line



▣Overview

Proximity sensor is the non contact detector (sensor) which detects the sensing target when it comes close, not same as the micro switch or the limit switch using the mechanical contact sensing method.

▣Principle and feature

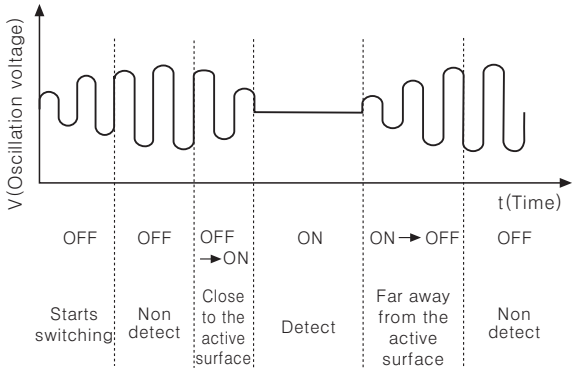
◎Inductive proximity sensor

●Principle

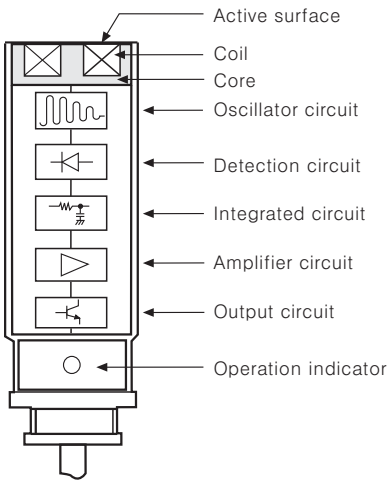
When the object (metallic) approaches the high-frequency magnetic field which is produced at the detection coil, induced currents flow in the metal, causing thermal loss and resulting in the reduction or stopping of oscillations. This change in state is detected by an oscillation state sensing circuit which then operates the output circuit.

●Principles of operation

When the proximity sensor is on, the oscillation of the current within 60ms will be increased to certain frequency, and electric field is formed. After that, if the object approaches, the induced current surrounding the sensing object will be increased, the oscillation of the current will be decreased. When the object is detected completely, the current will be close to 0V. This very little oscillation of the current will be amplified, and will operate the output section.



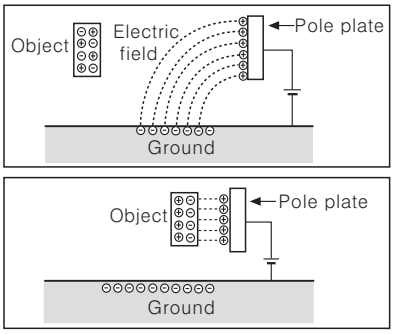
●Configuration



◎Capacitive proximity sensor

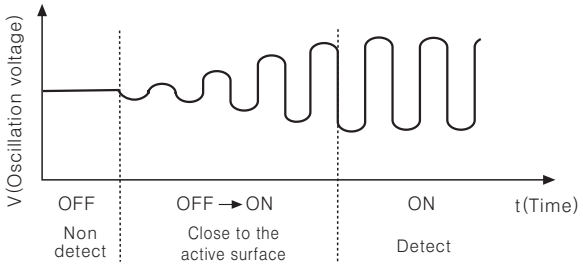
●Principle

As shown below picture, when + current applies on the pole plate, + charge will be on the pole plate, − charge will be on the ground, and the electric field will be occurred between the pole plate and the ground. When the object approaches to the pole plate, the charges in the object move by the electrostatic induction. − charge will move to the pole plate side, and + charge will move to the other side. This state is called polarization. The object is detected by the strength of the polarization which is strong when the object moves to the pole plate side, and is weak when the object moves far away from the pole plate.

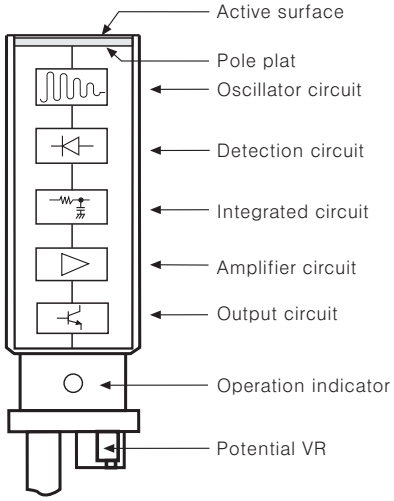


●Principle of operation

Capacitive proximity sensor works contrary method to the inductive proximity sensor. When the sensor power is on, the oscillation of the current is close to 0V. When the object approaches to the sensor, the capacitance will be increased and the oscillation of the current is increased. This output section will be operated by increasing the oscillation.



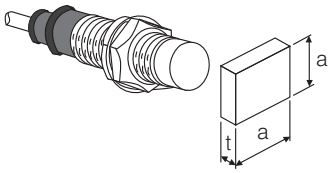
●Configuration



▣Glossary

◎Standard sensing target

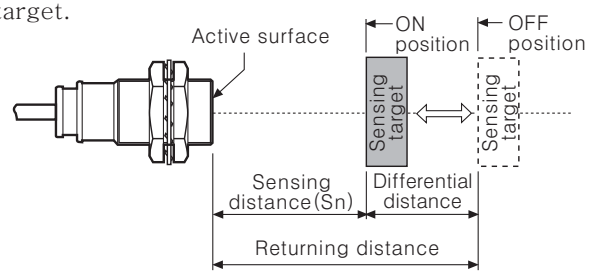
It is the standard of shape, size, and material for each model to measure the standard performance.



t : Thickness of the Target(mm)
a : the length of the one side of the Target(mm)

◎Sensing distance(Sn)

It is the distance between the active surface and the surface of the sensing target, when the output works by approaching the sensing target to the active surface. The specification of sensing distance (Sn) for each series is measured by standard sensing target.

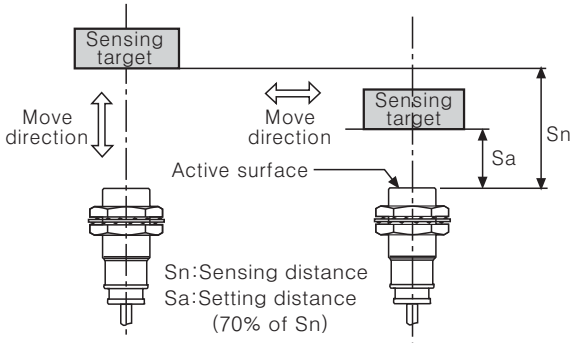


◎Differential distance(Hysteresis)

The hysteresis is the difference between the operation distance, when the sensor first operates with the standard sensing target approaching from the active surface direction, and the returning distance, when the sensor first stops operating with the standard sensing target receding. This hysteresis prevents chattering of the output due to vibration, etc., of the sensing target.

◎Setting distance

It is the sensing range for which the sensor can stably detect the standard sensing target even if there is an ambient temperature drift and/or supply voltage fluctuation. Normally, it is 70% of the maximum operation distance.

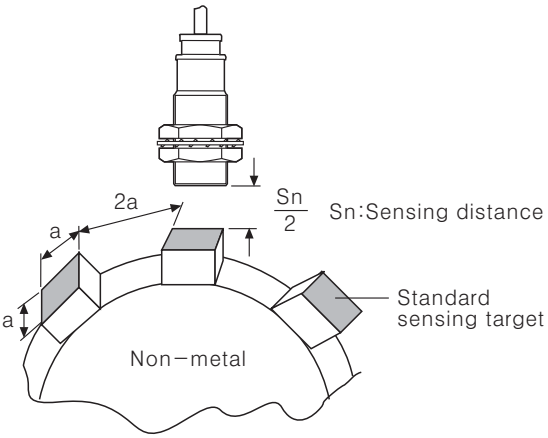


<Figure a> <Figure b>

●After verify the sensing distance like <Figure a>, please move the target within the stable sensing range like <Figure b>.

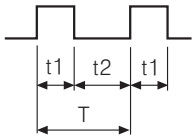
◎Response frequency

The number of times per second at which sensing can be done without malfunction, when approach the standard sensing target to the sensor. It shows Hz.



< Response frequency measurement method >

$$\text{Response frequency(f)} = \frac{1}{T}\ [\text{Hz}]$$



◎Relative dielectric constant

It is the ratio of between the dielectric constant of the material (ε) and the dielectric constant of vacuum (ε_0).

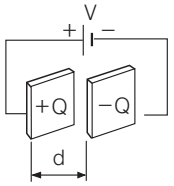
$$\varepsilon_S = \frac{\varepsilon}{\varepsilon_0}$$

As the relative dielectric constant is big, the sensing distance is long. And each material has its own value of the relative dielectric constant. The value of the relative dielectric constant for solid is bigger than liquid. There are the relative dielectric constants for typical materials.

Air	1	Polystyrene	1.2
Paper	2.3	PVC	3
Wood	6 to 8	Glass	5
Alcohol	25.8	Water	80

◎Capacitance

It is the amount of the accumulated charge (Q), when apply voltage at the insulated conductors. As the accumulated charge (Q) is big, the sensing distance becomes long.



$$\text{Capacitance(C)} = \frac{Q}{V} = \frac{\varepsilon A}{d}$$

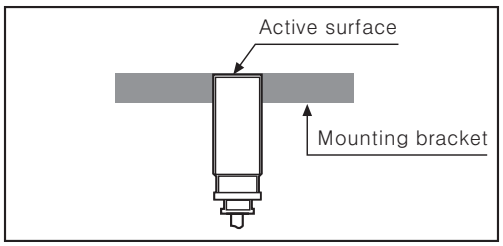
A : The area of the pole plate
d : The distance between two pole plate
Q : Charge
ε : Dielectric constant

As shown above formula, the capacitance (C) will be increased as the amount of charge (Q) is increased. There are the methods to increase the capacitance, increase the area of the pole plate, use the material that the relative dielectric constant is big or narrow the distance between two pole plates.

▣Mount sensor

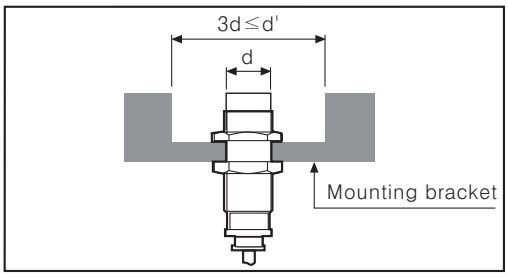
◎Flush type mounting (Shield type)

The most area of the proximity sensor is surrounded by metal except the active surface to prevent the effect of the approaching metal from side. Even though the sensing distance is shorter than non-flush type, the active surface of the sensor can be mounted at the same level of the metal enclosure like below figure.



◎Non-flush type mounting (Non shield type)

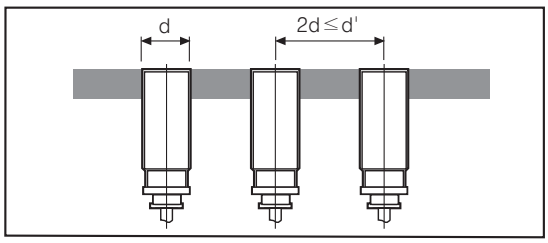
The sensor is affected easily by approaching metal from side because the side of the active surface was not shield by metal. The sensing distance is longer than the flush type, but when mount the sensor, please mount on the concave side, and keep the distance three times longer than the diameter of the sensor like below figure.



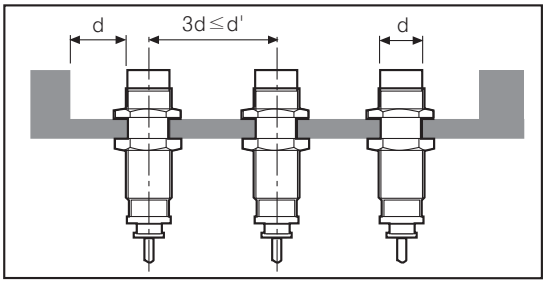
◎Parallel mounting

When several proximity sensors are mounted close together, there is the effect of mutual interference. Therefore please keep the distance which is two times longer than the diameter of the sensor for flush type, and three times longer than the diameter of the sensor for the non-flush type.

(Non-flush type)

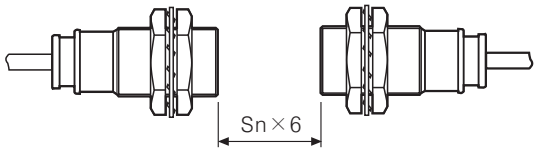


(Flush type)



◎Face to face mounting

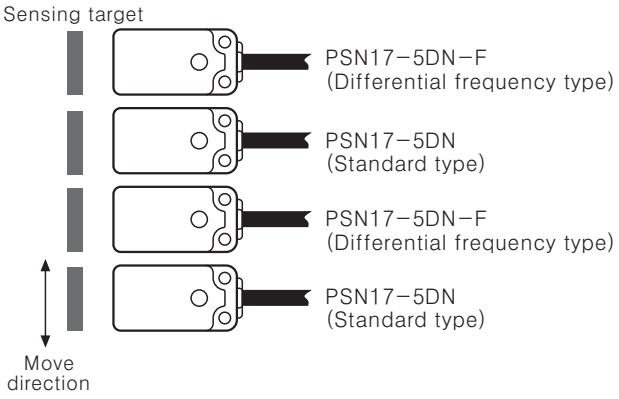
When proximity sensors are mounted in face to face, malfunction of sensor may be caused due to mutual interference. Therefore, please keep the distance which is six times longer than the sensing distance.



※Sn : Sensing distance

◎Tightly mounting

When proximity sensors are mounted tightly, malfunction of sensor may be caused due to mutual interference. Therefore, please use differential frequency for the application like below picture. Differential frequency type is only for PSN17 series.

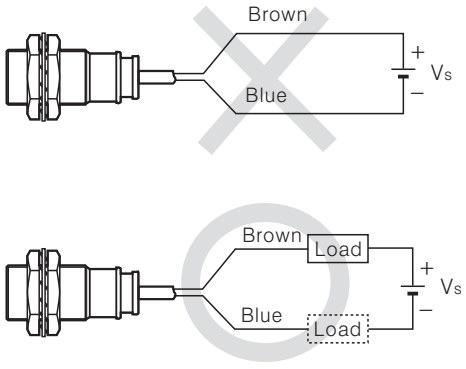


▣Connection for DC type

◎DC 2-wire type

●Load connection

If DC 2-wire type is connected without load, the inner device of DC 2-wire type can get damage. Please connect the load before apply power. The load can be connected any power line.



●To connect DC 2-wire type sensor with PLC(Programmable Logic Controller)

DC 2-wire type of proximity sensor can be connected with PLC when input specification of PLC and proximity sensor specification comply with the conditions shown below.

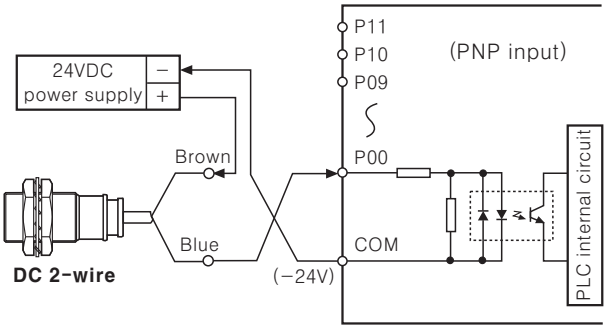
1) When ON voltage of PLC and residual voltage of sensor meet following formula.
   $Von \leq V_S - V_R$
2) When OFF voltage of PLC and a leakage current of sensor meet following formula.
   $Ioff \geq I_L$
3) When ON current of PLC and control output current of sensor meet following formula.
   $Iout(min) \leq Ion$

[Note]
- Von : ON voltage of PLC
- V_S : Source voltage
- V_R : Residual voltage of proximity sensor
- Ioff : OFF current of PLC
- I_L : A leakage current of proximity sensor
- Iout(min) : The min. value of proximity sensor's control output
- Ion : ON current of PLC

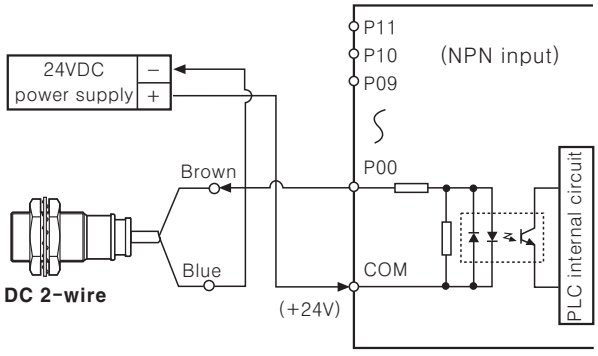
Ex) PLC input specification ☞ ON voltage: over 15VDC
ON current: over 4.3mA
OFF current: under 1.5mA
Proximity sensor ☞ PRT18-5DO, source voltage is 24VDC

1) $Von(15V) \leq V_S(24V) - V_R(3.5V) = 20.5V$: OK
2) $Ioff(1.5mA) \geq I_L(0.6mA)$: OK
3) $Iout(min)\ (2mA) \leq Ion(4.3mA)$: OK

●Connect DC 2-wire type sensor with PLC (Programmable Logic Controller)



< PLC's Common terminal is "–24V" >



< PLC's Common terminal is "+24V" >

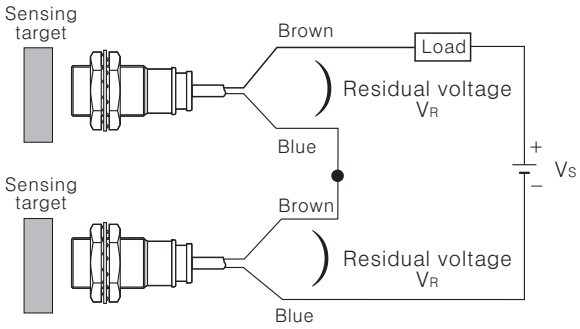
●AND(series) connection

When it is connected in series, all proximity sensors have to be in working to make loads operated. The residual voltage which is related with the number of the sensor should not influence both operating voltage of proximity sensors and driving voltage of a load, and which condition should be considered to choose how many sensors to be connected in series.

To connect sensors in series, choose the number of proximity sensors within the amount that meets formula below.

$V_S - (n \times V_R) \geq$ Operatingvolatage of load.

[V_S : Source voltage V_R : Residual voltage
n : The number of connected sensors]



●OR(parallel) connection

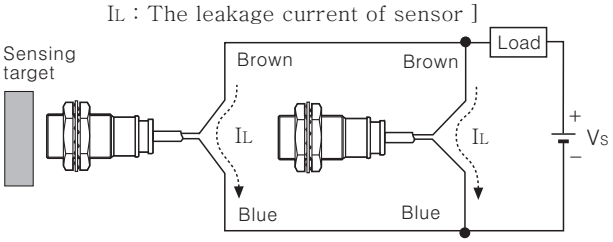
When it is connected in parallel, it works even only one sensor is on operation. A little current flows as a leakage current because proximity sensor operates internal circuit even when it is OFF. Because a number of sensors connected in parallel increase the amount of leakage current, load could run when proximity sensor is in OFF status.

Thus, the leakage current which is related with the number of the sensor should not influence the returning current of load, and which condition should be considered to choose how many sensors to be connected in parallel.

To connect several sensors in parallel, choose the number of proximity sensors within the amount that meets the formula below.

$n \times I_L \leq$ The returning current of load

[n : The number of connected sensors
I_L : The leakage current of sensor]



Ex) When load is relay(24VDC), and connecting PRT18-5DO in parallel,
- The returning current of load : Max. 3.7mA
- The leakage current of PRT18-5DO : Max. 0.6mA

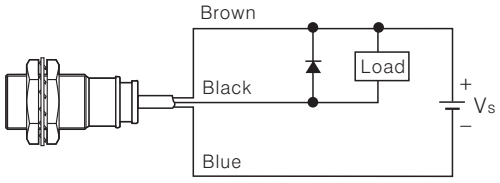
Six sensors can be connected in parallel in Max.

◎DC 3-wire type

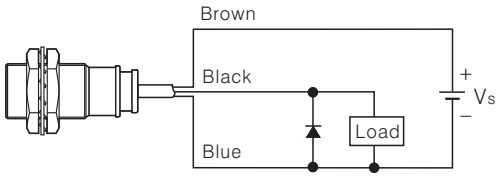
●Load connection

In DC 3-wire type of proximity sensor, there are two types of output, NPN and PNP, and they can either open or close power relay, solenoid, electric counter, PLC, etc.

※In case of using inductive load(relay, motor, magnet, etc.), connect surge absorber diode in parallel with load.
(Use diode, of which withstand voltage is threefold over power supply.)



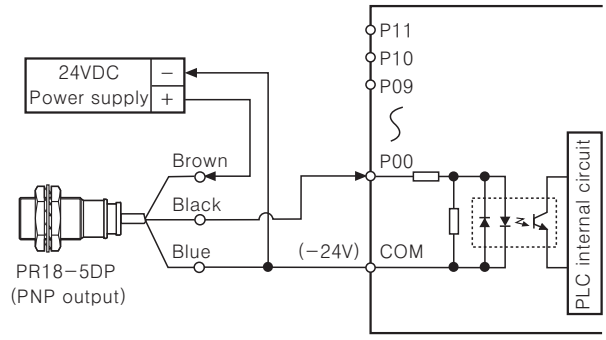
(A circuit using NPN type sensor)



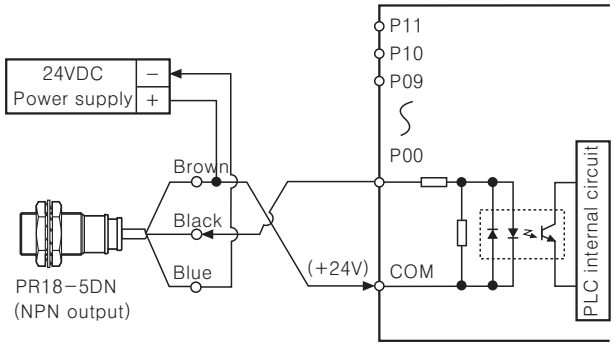
(A circuit using PNP type sensor)

●Connection with PLC(Programmable Logic Controller)

When connecting DC 3-wire type of proximity sensor with PLC, applicable sensor is chosen differently depend on common terminal status.



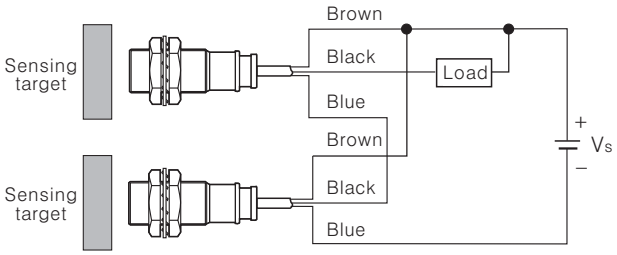
< PLC's Common terminal is "-24V" >



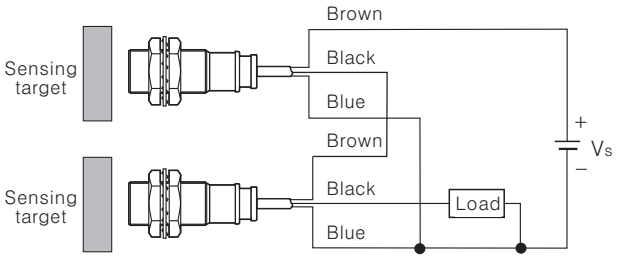
< PLC's Common terminal is "+24V" >

●AND(series) connection

When it is connected in series, all proximity sensors have to be in working to make loads operated. The residual voltage which is related with the number of the sensor should not influence both operating voltage of proximity sensors and driving voltage of a load, and which condition should be considered to choose how many sensors to be connected in series. PNP output type sensor and NPN output type sensor cannot be used in a same circuit.



(Series connection of NPN output type sensors)

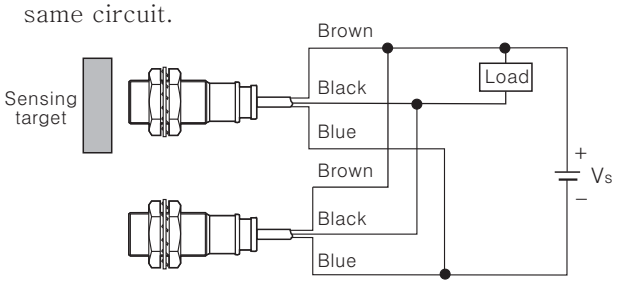


(Series connection of PNP output type sensors)

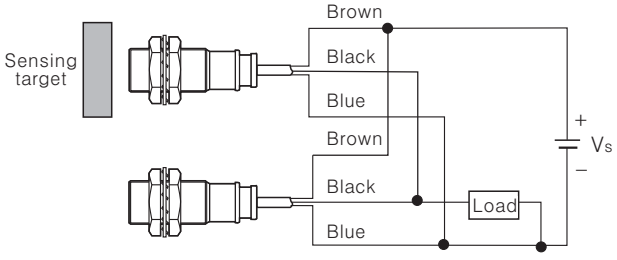
●OR(parallel) connection

When it is connected in parallel, it works even one sensor is on operation.

The leakage current which is related with the number of the sensor should not influence the returning current of load, and which condition should be considered to choose how many sensors to be connected in parallel. PNP output type sensor and NPN output type sensor cannot be used in a same circuit.



(Parallel connection of NPN output type sensors)

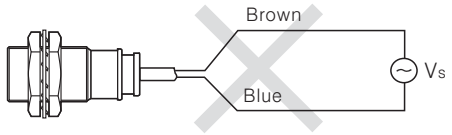


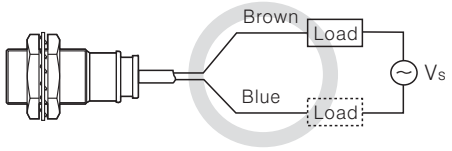
(Parallel connection of PNP output type sensors)

▣How to connect AC type proximity sensor

◎Load connection

When using AC 2-wire type sensor, load have to be wired in circuit, otherwise internal element gets burn when power is supplied. Load could be connected any side of power wire.





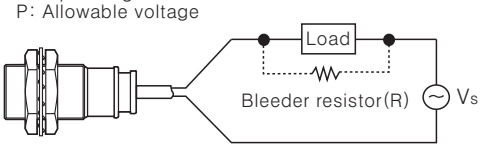
●When operating current of load is not enough

When operating current of load is under 5mA, use bleeder resistance so that current flowing through load can be increased to over 5mA.

Use the formula below to calculate the value of bleeder resistance and allowable current.

$$R = \frac{V_S}{I}\ (\Omega) \qquad P = \frac{V_S^2}{R}\ (W)$$

* I : Operating current of load R: Bleeder resistance
P: Allowable voltage

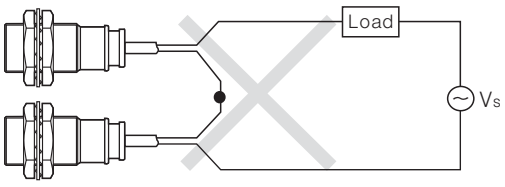


Use load of over 20kΩ 3W for 110VAC power, over 39kΩ 10W for 220VAC.

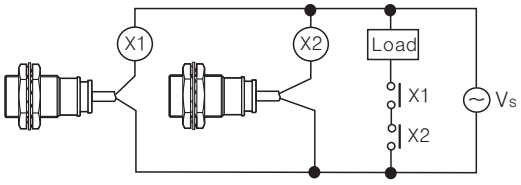
※When having thermogenetic problem, use load that has larger value of watt.

◎AND(series) connection

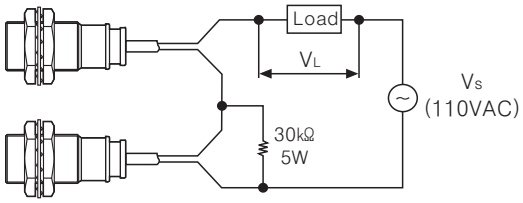
In principle AC type of proximity sensor cannot be used in series connection. To use it in series connection, put relay or bleeder resistance in circuit.



(Figure 1) The wrong way of series connection



(Figure 2) The right way of series connection



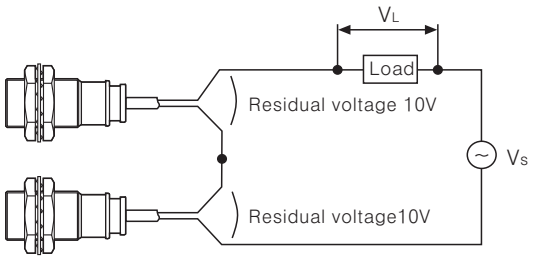
(Figure 3) Bleeder resistance connection method

※Bleeder resistance is not needed when power voltage is 220VAC.

●Load power voltage check

When connecting in series, operating voltage, V_L, is calculated as subtraction of power source voltage and residual voltage of proximity sensor. Thus, it would follow a formula ; V_L=power source voltage-(residual voltage of proximity sensor× the number of sensor)

Ex) V_S = 110VAC, operating voltage of load V_L = 110 - (10×2) = 90V, so load that works with 90VAC must be used.

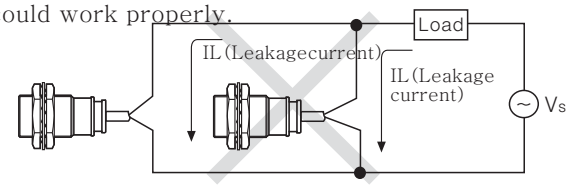


◎OR(parallel) connection

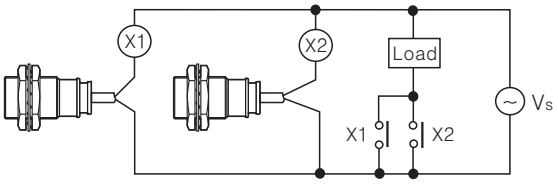
More than two sensors cannot be connected in a same circuit to operate load. Even though parallel connection is possible when those sensors are not being operated at a same time, because leaking current is increased by n times, returning faulty of load can occur.

(n: the number of connected sensors)

Thus, put relay to connect in parallel so that load could work properly.



(Figure 4) The wrong way of series connection



(Figure 5) The right way of series connection