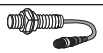
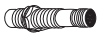
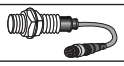
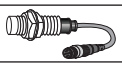
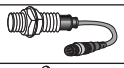
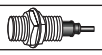
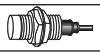
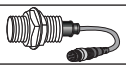
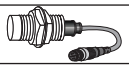
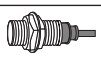
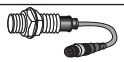
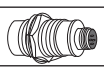
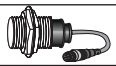
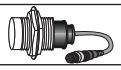
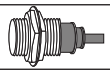
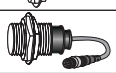
## ▣Cylindrical DC 2-wire type (Power:24VDC)

CE

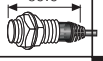
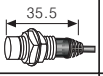
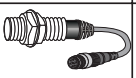
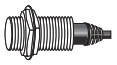
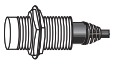
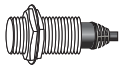
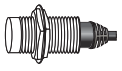
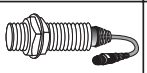
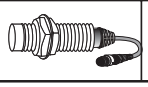
| Appearance | | Appearance Classification | | | | Model | Sensing distance (mm) | | Response frequency (Hz) |
|---|---|---|---|---|---|---|---|---|---|
| | | Standard type | | Long type | | | | | |
| | | Shield | Non Shield | Shield | Non Shield | | Shield | Non shield | |
| M08 | Normal type | | | | | PRT08-1.5DO<br>PRT08-1.5DC | 1.5 | | 1500 |
| | | | | | | PRT08-2DO<br>PRT08-2DC | | 2 | 1000 |
| | Cable outgoing connector type |  | | | | PRWT08-1.5DO<br>PRWT08-1.5DC | 1.5 | | 1500 |
| | | | | | | PRWT08-2DO<br>PRWT08-2DC | | 2 | 1000 |
| M12 | Normal type | | | | | PRT12-2DO<br>PRT12-2DC | 2 | | 1500 |
| | | | | | | PRT12-4DO<br>PRT12-4DC | | 4 | 500 |
| | Connector type | | | | | PRCMT12-2DO<br>PRCMT12-2DC | 2 | | 1500 |
| | | |  | | | PRCMT12-4DO<br>PRCMT12-4DC | | 4 | 500 |
| | Cable outgoing connector type |  | | | | PRWT12-2DO<br>PRWT12-2DC | 2 | | 1500 |
| | | |  | | | PRWT12-4DO<br>PRWT12-4DC | | 4 | 500 |
| | Spatter resistance type | | | | | PRAT12-2DO<br>PRAT12-2DC | 2 | | 1500 |
| | Spatter resistance cable outgoing connector type |  | | | | PRAWT12-2DO<br>PRAWT12-2DC | 2 | | 1500 |
| M18 | Normal type |  | | | | PRT18-5DO<br>PRT18-5DC | 5 | | 500 |
| | | |  | | | PRT18-8DO<br>PRT18-8DC | | 8 | 350 |
| | | | | | | PRDT18-7DO<br>PRDT18-7DC | 7 | | 250 |
| | | | | | | PRDT18-14DO<br>PRDT18-14DC | | 14 | 200 |
| | Connector type | | | | | PRCMT18-5DO<br>PRCMT18-5DC | 5 | | 500 |
| | | | | | | PRCMT18-8DO<br>PRCMT18-8DC | | 8 | 350 |
| | Cable outgoing connector type |  | | | | PRWT18-5DO<br>PRWT18-5DC | 5 | | 500 |
| | | |  | | | PRWT18-8DO<br>PRWT18-8DC | | 8 | 350 |
| | | | | | | PRDWT18-7DO<br>PRDWT18-7DC | 5 | | 500 |
| | | | | | | PRDWT18-14DO<br>PRDWT18-14DC | | 8 | 350 |
| | Spatter resistance type |  | | | | PRAT18-5DO<br>PRAT18-5DC | 5 | | 500 |
| | Spatter resistance cable outgoing connector type |  | | | | PRAWT18-5DO<br>PRAWT18-5DC | 5 | | 500 |
| M30 | Normal type | | | | | PRT30-10DO<br>PRT30-10DC | 10 | | 400 |
| | | | | | | PRT30-15DO<br>PRT30-15DC | | 15 | 200 |
| | Connector type | | | | | PRCMT30-10DO<br>PRCMT30-10DC | 10 | | 400 |
| | | |  | | | PRCMT30-15DO<br>PRCMT30-15DC | | 15 | 200 |
| | Cable outgoing connector type |  | | | | PRWT30-10DO<br>PRWT30-10DC | 10 | | 400 |
| | | |  | | | PRWT30-15DO<br>PRWT30-15DC | | 15 | 200 |
| | Spatter resistance type |  | | | | PRAT30-10DO<br>PRAT30-10DC | 10 | | 400 |
| | Spatter resistance cable outgoing connector type |  | | | | PRAWT30-10DO<br>PRAWT30-10DC | 10 | | 400 |

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

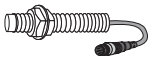
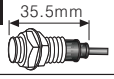
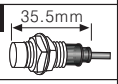
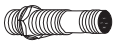
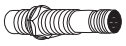
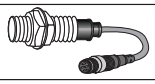
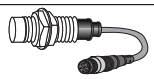
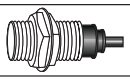
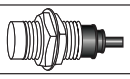
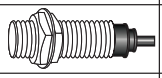
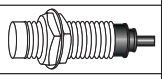
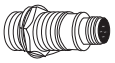
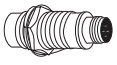
# Product Overview

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

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<br>PRD12-4DP<br>PRD12-4DN2<br>PRD12-4DP2 | 4 | | 500 |
| | | | | | | PRD12-8DN<br>PRD12-8DP<br>PRD12-8DN2<br>PRD12-8DP2 | | 8 | 400 |
| | | Short 35.5  | | | | PRDS12-4DN<br>PRDS12-4DP<br>PRDS12-4DN2 | 4 | | 500 |
| | | | Short 35.5  | | | PRDS12-8DN<br>PRDS12-8DP<br>PRDS12-8DN2 | | 8 | 400 |
| | Cable outgoing connector type |  | | | | PRDW12-4DN<br>PRDW12-4DP<br>PRDW12-4DN2<br>PRDW12-4DP2 | 4 | | 500 |
| | | | | | | PRDW12-8DN<br>PRDW12-8DP<br>PRDW12-8DN2<br>PRDW12-8DP2 | | 8 | 400 |
| M18 | Normal type | | | | | PRD18-7DN<br>PRD18-7DP<br>PRD18-7DN2<br>PRD18-7DP2 | 7 | | 300 |
| | | | | | | PRD18-14DN<br>PRD18-14DP<br>PRD18-14DN2<br>PRD18-14DP2 | | 14 | 200 |
| | | | |  | | PRDL18-7DN<br>PRDL18-7DP<br>PRDL18-7DN2<br>PRDL18-7DP2 | 7 | | 300 |
| | | | | |  | PRDL18-14DN<br>PRDL18-14DP<br>PRDL18-14DN2<br>PRDL18-14DP2 | | 14 | 200 |
| | Cable outgoing connector type | | | | | PRDW18-7DN<br>PRDW18-7DP<br>PRDW18-7DN2<br>PRDW18-7DP2 | 7 | | 300 |
| | | | | | | PRDW18-14DN<br>PRDW18-14DP<br>PRDW18-14DN2<br>PRDW18-14DP2 | | 14 | 200 |
| | | | | | | PRDWL18-7DN<br>PRDWL18-7DP<br>PRDWL18-7DN2<br>PRDWL18-7DP2 | 7 | | 300 |
| | | | | | | PRDWL18-14DN<br>PRDWL18-14DP<br>PRDWL18-14DN2<br>PRDWL18-14DP2 | | 14 | 200 |
| M30 | Normal type | | | | | PRD30-15DN<br>PRD30-15DP<br>PRD30-15DN2<br>PRD30-15DP2 | 15 | | 200 |
| | | | | | | PRD30-25DN<br>PRD30-25DP<br>PRD30-25DN2<br>PRD30-25DP2 | | 25 | 100 |
| | | | |  | | PRDL30-15DN<br>PRDL30-15DP<br>PRDL30-15DN2<br>PRDL30-15DP2 | 15 | | 200 |
| | | | | |  | PRDL30-25DN<br>PRDL30-25DP<br>PRDL30-25DN2<br>PRDL30-25DP2 | | 25 | 100 |
| | Cable outgoing connector type | | | | | PRDW30-15DN<br>PRDW30-15DP<br>PRDW30-15DN2<br>PRDW30-15DP2 | 15 | | 200 |
| | | | | | | PRDW30-25DN<br>PRDW30-25DP<br>PRDW30-25DN2<br>PRDW30-25DP2 | | 25 | 100 |
| | | | |  | | PRDWL30-15DN<br>PRDWL30-15DP<br>PRDWL30-15DN2<br>PRDWL30-15DP2 | 15 | | 200 |
| | | | | |  | PRDWL30-25DN<br>PRDWL30-25DP<br>PRDWL30-25DN2<br>PRDWL30-25DP2 | | 25 | 100 |

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

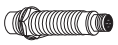
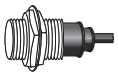
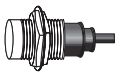
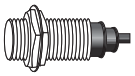
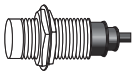
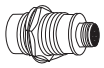
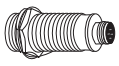
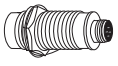
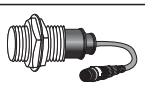
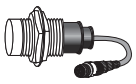
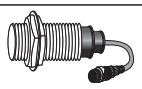
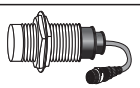
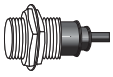
| Appearance | | Appearance Classification | | | | Model | Sensing distance (mm) | | Response frequency (Hz) |
|---|---|---|---|---|---|---|---|---|---|
| | | Standard type | | Long type | | | | | |
| | | Shield | Non Shield | Shield | Non Shield | | Shield | Non shield | |
| M08 | Normal type | | |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

▶"※" mark can be customized.

# Product Overview

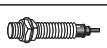
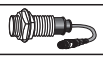
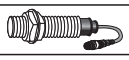
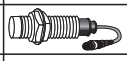
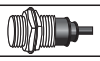
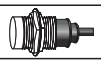
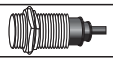
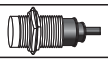
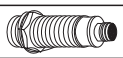
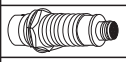
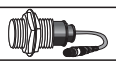
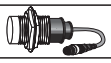
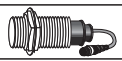
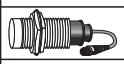
## ▣Cylindrical DC 3-wire type (Power:12-24VDC)

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<br>PRCML18-5DP<br>PRCML18-5DN2 ※<br>PRCML18-5DP2 ※ | 5 | | 500 |
| | | | | |  | PRCML18-8DN<br>PRCML18-8DP<br>PRCML18-8DN2 ※<br>PRCML18-8DP2 ※ | | 8 | 350 |
| | Cable outgoing connector type | | | | | PRW18-5DN<br>PRW18-5DP<br>PRW18-5DN2 ※<br>PRW18-5DP2 ※ | 5 | | 500 |
| | | | | | | PRW18-8DN<br>PRW18-8DP<br>PRW18-8DN2 ※<br>PRW18-8DP2 ※ | | 8 | 350 |
| | | | | | | PRWL18-5DN<br>PRWL18-5DP<br>PRWL18-5DN2 ※<br>PRWL18-5DP2 ※ | 5 | | 500 |
| | | | | | | PRWL18-8DN<br>PRWL18-8DP<br>PRWL18-8DN2 ※<br>PRWL18-8DP2 ※ | | 8 | 350 |
| | Spatter resistance type | | | | | PRA18-5DN<br>PRA18-5DP<br>PRA18-5DN2 ※<br>PRA18-5DP2 ※ | 5 | | 500 |
| M30 | Normal type |  | | | | PR30-10DN<br>PR30-10DP<br>PR30-10DN2 ※<br>PR30-10DP2 ※ | 10 | | 400 |
| | | |  | | | PR30-15DN<br>PR30-15DP<br>PR30-15DN2 ※<br>PR30-15DP2 ※ | | 15 | 200 |
| | | | |  | | PRL30-10DN<br>PRL30-10DP<br>PRL30-10DN2 ※<br>PRL30-10DP2 ※ | 10 | | 400 |
| | | | | |  | PRL30-15DN<br>PRL30-15DP<br>PRL30-15DN2 ※<br>PRL30-15DP2 ※ | | 15 | 200 |
| | Connector type | | | | | PRCM30-10DN<br>PRCM30-10DP<br>PRCM30-10DN2 ※<br>PRCM30-10DP2 ※ | 10 | | 400 |
| | | |  | | | PRCM30-15DN<br>PRCM30-15DP<br>PRCM30-15DN2 ※<br>PRCM30-15DP2 ※ | | 15 | 200 |
| | | | |  | | PRCML30-10DN<br>PRCML30-10DP<br>PRCML30-10DN2 ※<br>PRCML30-10DP2 ※ | 10 | | 400 |
| | | | | |  | PRCML30-15DN<br>PRCML30-15DP<br>PRCML30-15DN2 ※<br>PRCML30-15DP2 ※ | | 15 | 200 |
| | Cable outgoing connector type |  | | | | PRW30-10DN<br>PRW30-10DP<br>PRW30-10DN2 ※<br>PRW30-10DP2 ※ | 10 | | 400 |
| | | |  | | | PRW30-15DN<br>PRW30-15DP<br>PRW30-15DN2 ※<br>PRW30-15DP2 ※ | | 15 | 200 |
| | | | |  | | PRWL30-10DN<br>PRWL30-10DP<br>PRWL30-10DN2 ※<br>PRWL30-10DP2 ※ | 10 | | 400 |
| | | | | |  | PRWL30-15DN<br>PRWL30-15DP<br>PRWL30-15DN2 ※<br>PRWL30-15DP2 ※ | | 15 | 200 |
| | Spatter resistance type |  | | | | PRA30-10DN<br>PRA30-10DP<br>PRA30-10DN2 ※<br>PRA30-10DP2 ※ | 10 | | 400 |

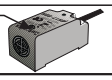
▶"※" mark can be customized.

## ▣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<br>PR12-2AC | 2 | | 20 |
| | | | | | | PR12-4AO<br>PR12-4AC | | 4 | |
| | Connector type | | | | | PRCM12-2AO<br>PRCM12-2AC | 2 | | |
| | | | | | | PRCM12-4AO<br>PRCM12-4AC | | 4 | |
| | Cable outgoing connector type | | | | | PRW12-2AO<br>PRW12-2AC | 2 | | |
| | | | | | | PRW12-4AO<br>PRW12-4AC | | 4 | |
| | Spatter resistance type |  | | | | PRA12-2AO<br>PRA12-2AC | 2 | | |
| M18 | Normal type | | | | | PR18-5AO<br>PR18-5AC | 5 | | |
| | | | | | | PR18-8AO<br>PR18-8AC | | 8 | |
| | | | | | | PRL18-5AO<br>PRL18-5AC | 5 | | |
| | | | | | | PRL18-8AO<br>PRL18-8AC | | 8 | |
| | Connector type | | | | | PRCM18-5AO<br>PRCM18-5AC | 5 | | |
| | | | | | | PRCM18-8AO<br>PRCM18-8AC | | 8 | |
| | | | | | | PRCML18-5AO<br>PRCML18-5AC | 5 | | |
| | | | | | | PRCML18-8AO<br>PRCML18-8AC | | 8 | |
| | Cable outgoing connector type |  | | | | PRW18-5AO<br>PRW18-5AC | 5 | | |
| | | | | | | PRW18-8AO<br>PRW18-8AC | | 8 | |
| | | | |  | | PRWL18-5AO<br>PRWL18-5AC | 5 | | |
| | | | | |  | PRWL18-8AO<br>PRWL18-8AC | | 8 | |
| | Spatter resistance type | | | | | PRA18-5AO<br>PRA18-5AC | 5 | | |
| M30 | Normal type |  | | | | PR30-10AO<br>PR30-10AC | 10 | | |
| | | |  | | | PR30-15AO<br>PR30-15AC | | 15 | |
| | | | |  | | PRL30-10AO<br>PRL30-10AC | 10 | | |
| | | | | |  | PRL30-15AO<br>PRL30-15AC | | 15 | |
| | Connector type | | | | | PRCM30-10AO<br>PRCM30-10AC | 10 | | |
| | | | | | | PRCM30-15AO<br>PRCM30-15AC | | 15 | |
| | | | |  | | PRCML30-10AO<br>PRCML30-10AC | 10 | | |
| | | | | |  | PRCML30-15AO<br>PRCML30-15AC | | 15 | |
| | Cable outgoing connector type |  | | | | PRW30-10AO<br>PRW30-10AC | 10 | | |
| | | |  | | | PRW30-15AO<br>PRW30-15AC | | 15 | |
| | | | |  | | PRWL30-10AO<br>PRWL30-10AC | 10 | | |
| | | | | |  | PRWL30-15AO<br>PRWL30-15AC | | 15 | |
| | Spatter resistance type | | | | | PRA30-10AO<br>PRA30-10AC | 10 | | |

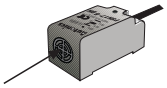
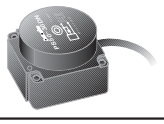
# Product Overview

## ▣Square DC 2-wire type(Power: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

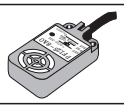
| Appearance Classification | | | | Model | Sensing distance (mm) | Response frequency (Hz) |
|---|---|---|---|---|---|---|
| | | Standard type(Front sensing) | Upside sensing | | | |
| 12 Square | Normal type | (Front sensing type) | | PS12-4DN | 4 | 500 |
| | | | | PS12-4DP | | |
| | | | | PS12-4DN2 | | |
| | | | (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 | New 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 | New 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 | New 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.

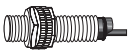
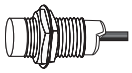
## ▣Rectangular DC 4-wire type(Power:12-48VDC) CE

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

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

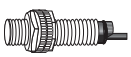
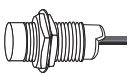
| Appearance Classification | | | | Model | Sensing distance (mm) | Response frequency (Hz) |
|---|---|---|---|---|---|---|
| Classification | | Standard type(Front sensing) | Upside sensing | | | |
| 25 Square | Normal type | New Type | | PSN25-5AO | 5 | 20 |
| | | | | PSN25-5AC | | |
| | Flat type | | Flat Type  | PFI25-8AO | 8 | |
| | | | | PFI25-8AC | | |
| 30 Square | Normal type | New Type | | PSN30-10AO | 10 | |
| | | | | PSN30-10AC | | |
| | | | | PSN30-15AO | 15 | |
| | | | | PSN30-15AC | | |
| 40 Square | Normal type | New 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:100-240VDC)

| 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 sensing distance proximity sensor

Upgrade

### ▣Features

- **Realization of long sensing distance (1.5~2 times longer sensing distance guaranteed compared to existing models)**
- Improved the noise resistance with dedicated IC
- Reverse power polarity, surge, overcurrent protection
- Long life cycle and reliable
- Red LED status indication
- IP67 rated waterproof structure(IEC standard)
- Replacer for micro switches and limit switches
- Cable Support adopted : For more reliable flexural strength of sensor/cable connecting part

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

CE

### ▣Specifications

### ●DC 2-wire type

| Model | PRDT12-4DO<br>PRDT12-4DC<br>PRDT12-4DO-V<br>PRDT12-4DC-V<br>PRDLT12-4DO<br>PRDLT12-4DC<br>PRDLT12-4DO-V<br>PRDLT12-4DC-V<br>PRDWT12-4DO<br>PRDWT12-4DC<br>PRDWT12-4DO-I<br>PRDWT12-4DC-I<br>PRDWT12-4DO-V<br>PRDWT12-4DC-V<br>PRDWT12-4DO-IV<br>PRDWT12-4DC-IV | PRDT12-8DO<br>PRDT12-8DC<br>PRDT12-8DO-V<br>PRDT12-8DC-V<br>PRDLT12-8DO<br>PRDLT12-8DC<br>PRDLT12-8DO-V<br>PRDLT12-8DC-V<br>PRDWT12-8DO<br>PRDWT12-8DC<br>PRDWT12-8DO-I<br>PRDWT12-8DC-I<br>PRDWT12-8DO-V<br>PRDWT12-8DC-V<br>PRDWT12-8DO-IV<br>PRDWT12-8DC-IV | PRDT18-7DO<br>PRDT18-7DC<br>PRDT18-7DO-V<br>PRDT18-7DC-V<br>PRDLT18-7DO<br>PRDLT18-7DC<br>PRDLT18-7DO-V<br>PRDLT18-7DC-V<br>PRDWT18-7DO<br>PRDWT18-7DC<br>PRDWT18-7DO-I<br>PRDWT18-7DC-I<br>PRDWT18-7DO-V<br>PRDWT18-7DC-V<br>PRDWT18-7DO-IV<br>PRDWT18-7DC-IV | PRDT18-14DO<br>PRDT18-14DC<br>PRDT18-14DO-V<br>PRDT18-14DC-V<br>PRDLT18-14DO<br>PRDLT18-14DC<br>PRDLT18-14DO-V<br>PRDLT18-14DC-V<br>PRDWT18-14DO<br>PRDWT18-14DC<br>PRDWT18-14DO-I<br>PRDWT18-14DC-I<br>PRDWT18-14DO-V<br>PRDWT18-14DC-V<br>PRDWT18-14DO-IV<br>PRDWT18-14DC-IV |
|---|---|---|---|---|
| Sensing distance | 4mm ±10% | 8mm ±10% | 7mm ±10% | 14mm ±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) |
| Setting distance | 0~2.8mm | 0~5.6mm | 0~4.9mm | 0~9.8mm |
| Power supply (Operating voltage) | 12-24VDC (10-30VDC) | | | |
| Leakage current | Max. 0.6mA | | | |
| Response frequency **(*1)** | 450Hz | 400Hz | 250Hz | 200Hz |
| 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 ~ 100mA | | | |
| Insulation resistance | Min. 50MΩ (at 500VDC mega) | | | |
| Dielectric strength | 1500VAC 50/60Hz for 1minute | | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours | | | |
| Shock | 500m/s² (50G) X, Y, Z directions for 3 times | | | |
| Indicator | Operating indicator(Red LED) | | | |
| Ambient temperature | -25 ~ +70℃ (non-freezing condition) | | | |
| Storage temperature | -30 ~ +80℃ (non-freezing condition) | | | |
| Ambient humidity | 35~95%RH | | | |
| Protection circuit | Reverse polarity proteciton, Surge protection, Over current protection | | | |
| Protection | IP67(IEC Standard) | | | |
| Unit weight | PRDT : Approx. 74g<br>PRDLT : Approx. 94g<br>PRDWT : Approx. 44g | PRDT : Approx. 72g<br>PRDLT : Approx. 92g<br>PRDWT : Approx. 42g | PRDT : Approx. 115g<br>PRDLT : Approx. 145g<br>PRDWT : Approx. 80g | PRDT : Approx. 110g<br>PRDLT : Approx. 140g<br>PRDWT : Approx. 75g |

※**(*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

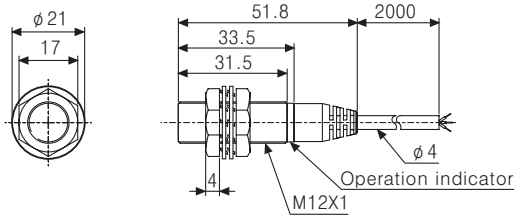
| Model | PRD12-4DN<br>PRD12-4DP<br>PRD12-4DN2<br>PRD12-4DP2<br>PRDL12-4DN<br>PRDL12-4DP<br>PRDL12-4DN2<br>PRDL12-4DP2<br>PRDW12-4DN<br>PRDW12-4DP<br>PRDW12-4DN2<br>PRDW12-4DP2<br>PRDWL12-4DN<br>PRDWL12-4DP<br>PRDWL12-4DN2<br>PRDWL12-4DP2 | PRD12-8DN<br>PRD12-8DP<br>PRD12-8DN2<br>PRD12-8DP2<br>PRDL12-8DN<br>PRDL12-8DP<br>PRDL12-8DN2<br>PRDL12-8DP2<br>PRDW12-8DN<br>PRDW12-8DP<br>PRDW12-8DN2<br>PRDW12-8DP2<br>PRDWL12-8DN<br>PRDWL12-8DP<br>PRDWL12-8DN2<br>PRDWL12-8DP2 | PRD18-7DN<br>PRD18-7DP<br>PRD18-7DN2<br>PRD18-7DP2<br>PRDL18-7DN<br>PRDL18-7DP<br>PRDL18-7DN2<br>PRDL18-7DP2<br>PRDW18-7DN<br>PRDW18-7DP<br>PRDW18-7DN2<br>PRDW18-7DP2<br>PRDWL18-7DN<br>PRDWL18-7DP<br>PRDWL18-7DN2<br>PRDWL18-7DP2 | PRD18-14DN<br>PRD18-14DP<br>PRD18-14DN2<br>PRD18-14DP2<br>PRDL18-14DN<br>PRDL18-14DP<br>PRDL18-14DN2<br>PRDL18-14DP2<br>PRDW18-14DN<br>PRDW18-14DP<br>PRDW18-14DN2<br>PRDW18-14DP2<br>PRDWL18-14DN<br>PRDWL18-14DP<br>PRDWL18-14DN2<br>PRDWL18-14DP2 |
|---|---|---|---|---|
| Sensing distance | 4mm ±10% | 8mm ±10% | 7mm ±10% | 14mm ±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) |
| Setting distance | 0 to 2.8mm | 0 to 5.6mm | 0 to 4.9mm | 0 to 9.8mm |
| Power supply (Operating voltage) | 12-24VDC (10-30VDC) | | | |
| Current consumption | Max. 10mA | | | |
| Response frequency**(*1)** | 500Hz | 400Hz | 300Hz | 200Hz |
| 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 mega) | | | |
| Dielectric strength | 1500VAC 50/60Hz for 1minute | | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours | | | |
| Shock | 500m/s² (50G) X, Y, Z directions for 3 times | | | |
| Indicator | Operating indicator (Red LED) | | | |
| Ambient temperature | -25 ~ +70℃ (non-freezing condition) | | | |
| Storage temperature | -30 ~ +80℃ (non-freezing condition) | | | |
| Ambient humidity | 35 ~ 95%RH | | | |
| Protection circuit | Surge, Reverse poser polarity, Overcurrent protection circuit | | | |
| Protection | IP67 (IEC Standard) | | | |
| Approval | CE | | | |
| Unit weight | PRD : Approx. 74g<br>PRDL : Approx. 94g<br>PRDW : Approx. 44g<br>PRDWL: Approx. 64g | PRD : Approx. 72g<br>PRDL : Approx. 92g<br>PRDW : Approx. 42g<br>PRDWL : Approx. 62g | PRD : Approx. 115g<br>PRDL : Approx. 145g<br>PRDW : Approx. 80g<br>PRDWL : Approx. 110g | PRD : Approx. 110g<br>PRDL : Approx. 140g<br>PRDW : Approx. 75g<br>PRDWL : Approx. 105g |

※**(*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.

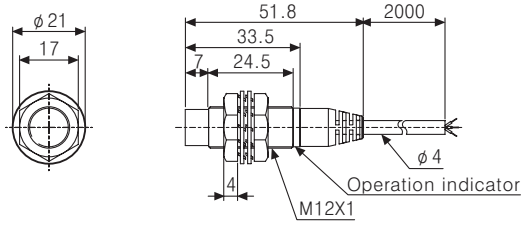
## ▣Dimensions

(Unit:mm)

●PRD(T)12-4D□



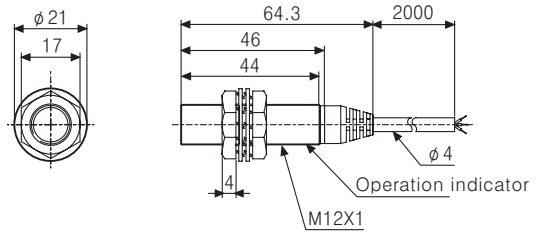

●PRD(T)12-8D□



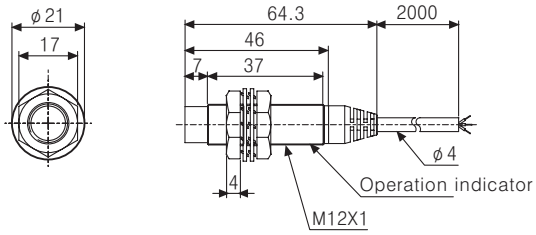
## ▣Dimensions

(Unit:mm)

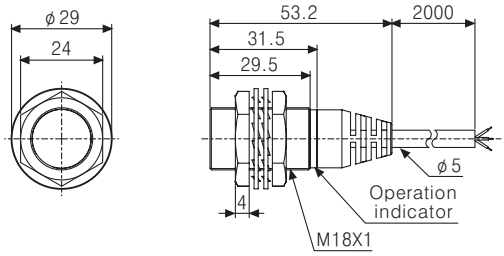
●PRDL(T)12-4D□



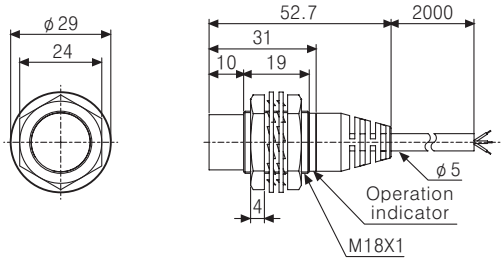

●PRDL(T)12-8D□



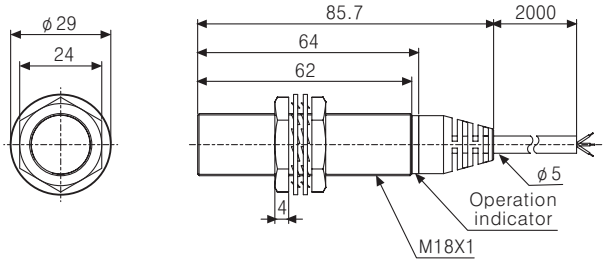

●PRD(T)18-7D□



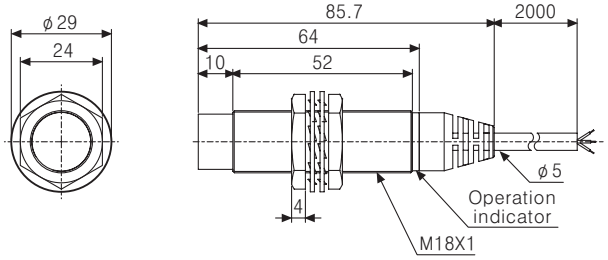

●PRD(T)18-14D□



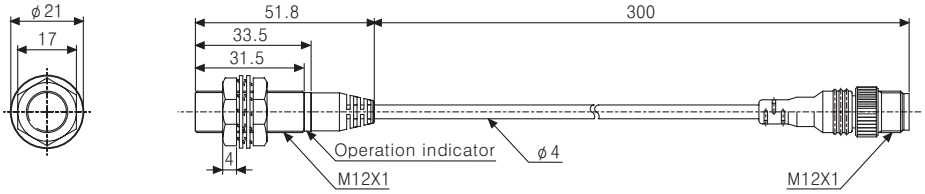

●PRDL(T)18-7D□



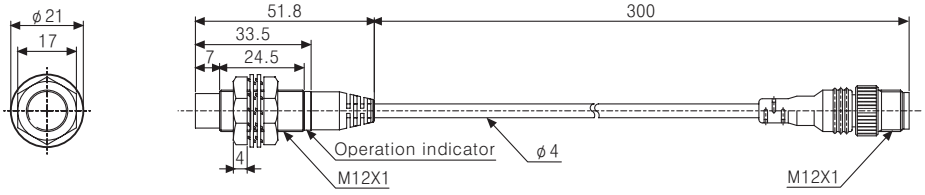

●PRDL(T)18-14D□



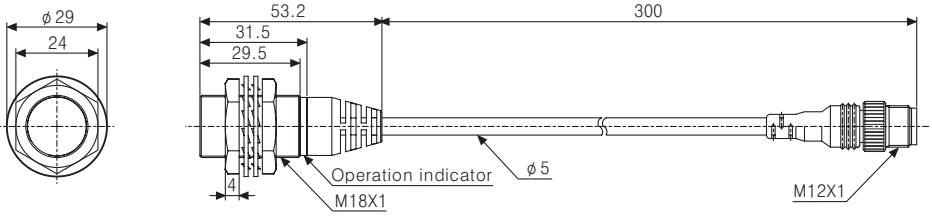

●PRDW(T)12-4D□



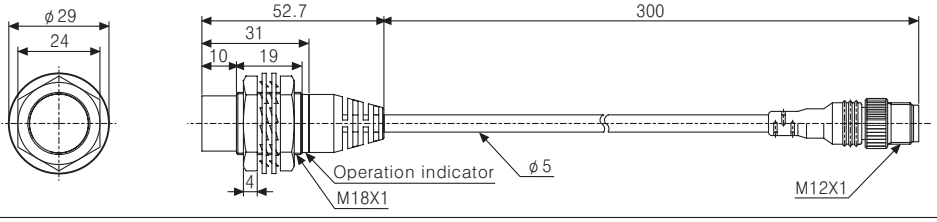

●PRDW(T)12-8D□




●PRDW(T)18-7D□



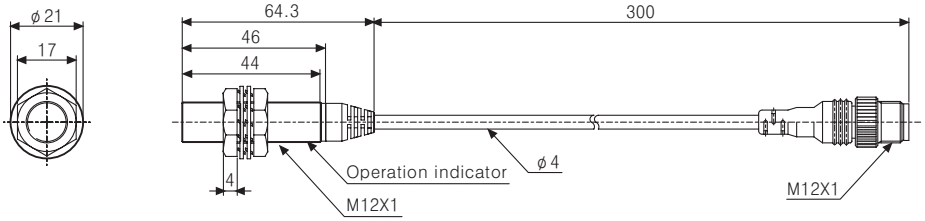

●PRDW(T)18-14D□



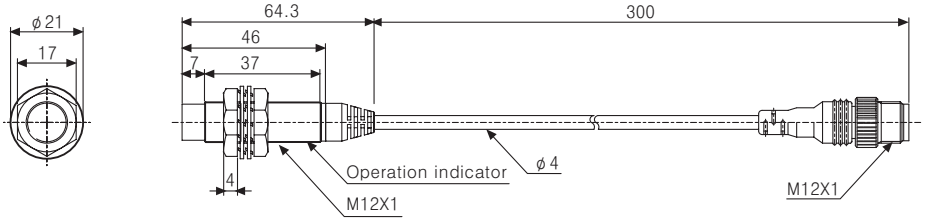
## ▣Dimensions

(Unit:mm)

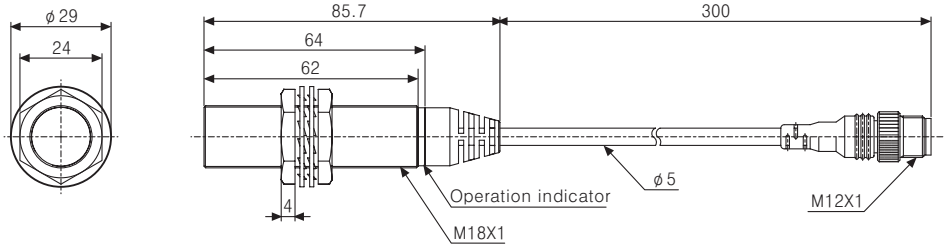
●PRDWL12-4D□



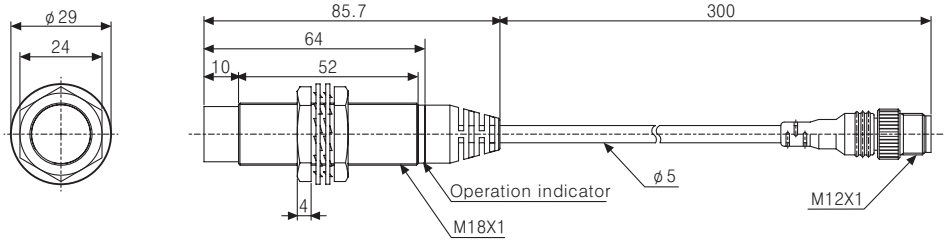

●PRDWL12-8D□




●PRDWL18-7D□

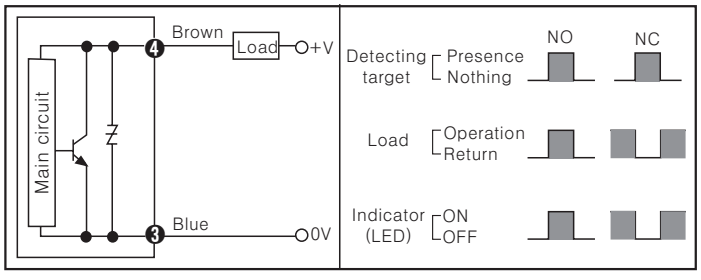



●PRDWL18-14D□




## ▣Control output diagram

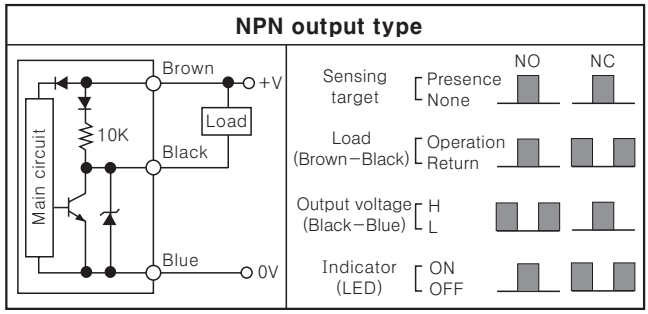
### ◎DC 2-wire type



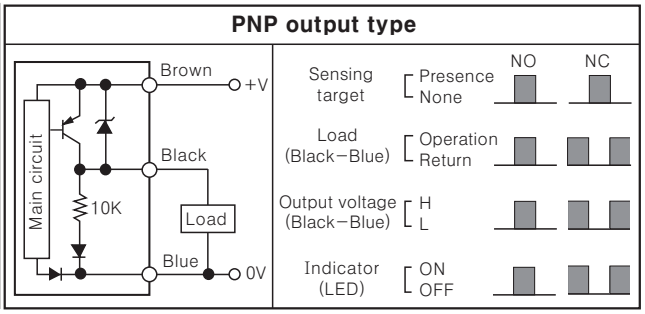

※The number in a circle is pin no. of connector.

### ◎DC 3-wire type

**NPN output type**

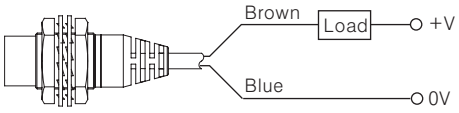



**PNP output type**

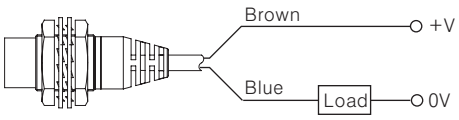


## ▣Connections

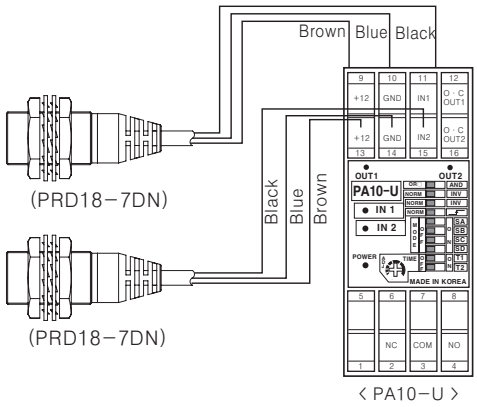
### ◎DC 2-wire type

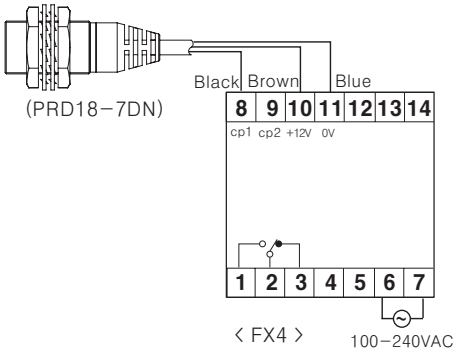



※The load can be connected to either wire.



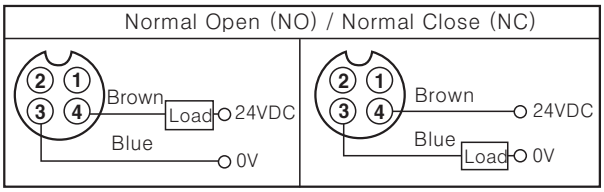

### ◎DC 3-wire type



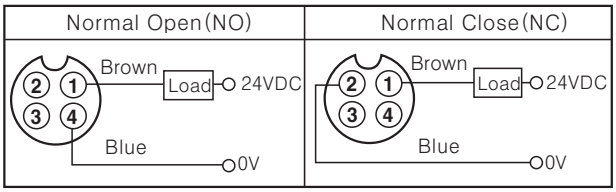

## ▣Wiring diagram

### ◎DC 2-wire type(Standard type)



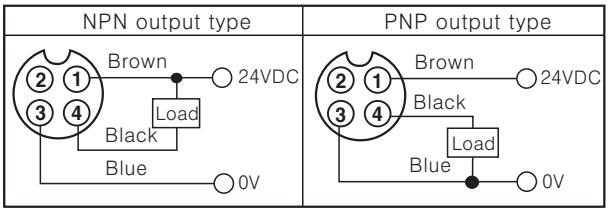

※Pin ①, ② are N.C (Not Connected) terminals.
※For DC 3-wire type connector cable, it is available to use with black wire(24VDC) and blue wire(0V).

### ◎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)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

### ◎DC 3-wire type

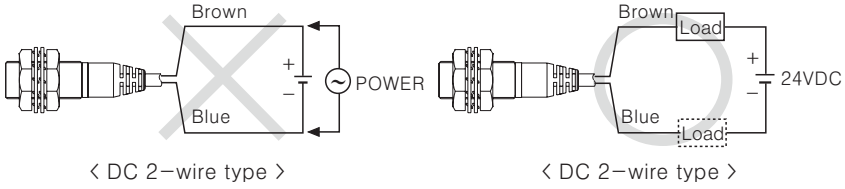



※Please fasten the cleat of connector not to shown the thread. (0.39~0.49N • m)

※Please fasten the vibration part with Teflon tape.
※See J-51 about IEC standard connector wires and specifications.

## ▣Proper usage

### ◎Load connections

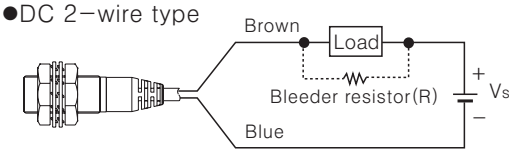



〈 DC 2-wire type 〉 〈 DC 2-wire type 〉

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

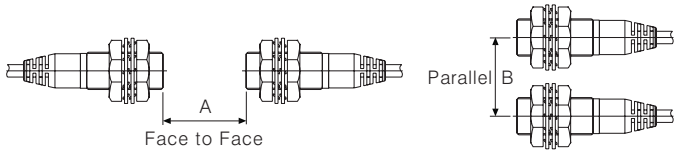
※W value of Bleeder resistor should be bigger for proper heat dissipation.

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

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

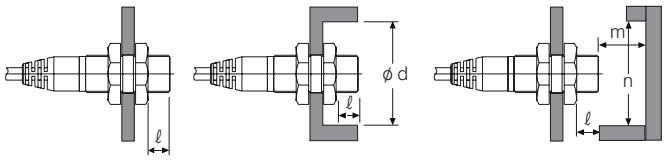
### ◎Mutual-interference

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




### ◎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.




(Unit:mm)

| Item \ Model | PRD□(T)12-4D□<br>PRDW□(T)12-4D□ | PRD(T)□12-8D□<br>PRDW(T)□12-8D□ | PRD□18(T)-7D□<br>PRDW□18(T)-7D□ | PRD□18(T)-14D□<br>PRDW□18(T)-14D□ |
|---|---|---|---|---|
| A | 24 | 48 | 42 | 84 |
| B | 24 | 36 | 36 | 54 |
| ℓ | 0 | 11 | 0 | 14 |
| ϕd | 12 | 36 | 18 | 54 |
| m | 12 | 24 | 21 | 42 |
| n | 18 | 36 | 27 | 54 |

# Cylindrical type proximity sensor

## ▣Features

- ●Improved the noise resistance with dedicated IC
- ●Reverse power polarity(DC 3-wire), surge(AC/DC), overcurrent protection(DC)
- ●Long life cycle and reliable simple operation
- ●Red LED status indication
- ●IP67 rated waterproof structure(IEC standard)
- ●Replacer 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 ~ 1.05mm | 0 ~ 1.4mm | 0 ~ 1.4mm | 0 ~ 2.8mm | 0 ~ 3.5mm | 0 ~ 5.6mm | 0 ~ 7mm | 0 ~ 10.5mm |
| Power supply (Operation voltage) | 24VDC (10-30VDC) | | | | | | | |
| Leakage current | Max. 0.6mA | | | | | | | |
| Response frequency(*1) | 1.5kHz | 1kHz | 1.5kHz | 500Hz | | 350Hz | 400Hz | 200Hz |
| Residual voltage | Max. 7V | | | | | | | |
| Affection by Temp. | ±10% Max. for sensing distance at +20℃(For PRT08 series : ±20% Max.) | | | | | | | |
| Control output | 2 ~ 100mA | | | | | | | |
| Insulation resistance | Min. 50MΩ(at 500VDC mega) | | | | | | | |
| Dielectric strength | 1500VAC 50/60Hz for 1minute | | | | | | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 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 ~ +70℃(at non-freezing status) | | | | | | | |
| Storage temperature | -30 ~ +80℃(at non-freezing status) | | | | | | | |
| Ambient humidity | 35 ~ 95%RH | | | | | | | |
| Protection circuit | Surge, Overcurrent protection circuit | | | | | | | |
| Protection | IP67(IEC standard) | | | | | | | |
| Cable spec. | φ3.5×2P, 2m | | φ4×2P, 2m | | φ5×2P, 2m | | | |
| 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<br>PR08-1.5DP<br>PR08-1.5DN2<br>PR08-1.5DP2<br>PRL08-1.5DN<br>PRL08-1.5DP<br>PRL08-1.5DN2<br>PRL08-1.5DP2 | PR08-2DN<br>PR08-2DP<br>PR08-2DN2<br>PR08-2DP2<br>PRL08-2DN<br>PRL08-2DP<br>PRL08-2DN2<br>PRL08-2DP2 | PR12-2DN<br>PR12-2DP<br>PR12-2DN2<br>PR12-2DP2<br>PRS12-2DN<br>PRS12-2DP<br>PRS12-2DN2 | PR12-4DN<br>PR12-4DP<br>PR12-4DN2<br>PR12-4DP2<br>PRS12-4DN<br>PRS12-4DP<br>PRS12-4DN2<br>PRL12-4DN<br>PRL12-4DP | PR18-5DN<br>PR18-5DP<br>PR18-5DN2<br>PR18-5DP2<br>PRL18-5DN<br>PRL18-5DP<br>PRL18-5DN2<br>PRL18-5DP2 | PR18-8DN<br>PR18-8DP<br>PR18-8DN2<br>PR18-8DP2<br>PRL18-8DN<br>PRL18-8DP<br>PRL18-8DN2<br>PRL18-8DP2 | PR30-10DN<br>PR30-10DP<br>PR30-10DN2<br>PR30-10DP2<br>PRL30-10DN<br>PRL30-10DP<br>PRL30-10DN2<br>PRL30-10DP2 | PR30-15DN<br>PR30-15DP<br>PR30-15DN2<br>PR30-15DP2<br>PRL30-15DN<br>PRL30-15DP<br>PRL30-15DN2<br>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 ~ 1.05mm | 0 ~ 1.4mm | 0 ~ 1.4mm | 0 ~ 2.8mm | 0 ~ 3.5mm | 0 ~ 5.6mm | 0 ~ 7mm | 0 ~ 10.5mm |
| Power supply (Operation voltage) | 12-24VDC<br>(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 ~ +70℃, PR08 Series:Max. ±20% | | | | | | | |
| Control output | 200mA | | | | | | | |
| Insulation resistance | Min. 50MΩ(at 500VDC mega) | | | | | | | |
| Dielectric strength | 1500VAC 50/60Hz for 1minute | | | | | | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 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 ~ +70℃(at non-freezing status) | | | | | | | |
| Storage temperature | -30 ~ +80℃(at non-freezing status) | | | | | | | |
| Ambient humidity | 35 ~ 95%RH | | | | | | | |
| Protection circuit | Surge, Reverse power polarity, Overcurrent protection circuit | | | | | | | |
| Protection | IP67(IEC standard) | | | | | | | |
| Cable spec. | φ3.5×3P, 2m | | φ4×3P, 2m | | φ5×3P, 2m | | | |
| Approval | CE | | | | | | | |
| Unit weight | Approx. 36g | Approx. 36g | PR:Approx. 70g<br>PRS:Approx. 68g | PR:Approx. 70g<br>PRS:Approx. 68g | PR:Approx. 119g<br>PRL:Approx. 150g | PR:Approx. 118g<br>PRL:Approx. 150g | PR:Approx. 184g<br>PRL:Approx. 222g | PR:Approx. 181g<br>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

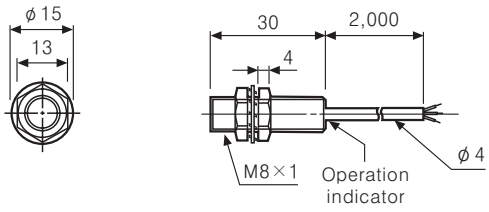
| Model | PR12-2AO<br>PR12-2AC | PR12-4AO<br>PR12-4AC | PR18-5AO<br>PR18-5AC<br>PRL18-5AO<br>PRL18-5AC | PR18-8AO<br>PR18-8AC<br>PRL18-8AO<br>PRL18-8AC | PR30-10AO<br>PR30-10AC<br>PRL30-10AO<br>PRL30-10AC | PR30-15AO<br>PR30-15AC<br>PRL30-15AO<br>PRL30-15AC |
|---|---|---|---|---|---|---|
| Sensing distance | 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 ~ 1.4mm | 0 ~ 2.8mm | 0 ~ 3.5mm | 0 ~ 5.6mm | 0 ~ 7mm | 0 ~ 10.5mm |
| Power supply (Operation voltage) | 100-240VAC<br>(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 ~ +70℃ | | | | | |
| Control output | 5 ~ 150mA | | 5 ~ 200mA | | | |
| Insulation resistance | Min. 50MΩ(at 500VDC mega) | | | | | |
| Dielectric strength | 2500VAC 50/60Hz for 1minute | | | | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 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 ~ +70℃(at non-freezing status) | | | | | |
| Storage temperature | -30 ~ +80℃(at non-freezing status) | | | | | |
| Ambient humidity | 35 ~ 95%RH | | | | | |
| Protection circuit | Surge protection circuit | | | | | |
| Protection | IP67(IEC standard) | | | | | |
| Cable spec. | φ4×2P, 2m | | φ5×2P, 2m | | | |
| Approval | CE | | | | | |
| Unit weight | Approx. 66g | Approx. 66g | PR : Appox. 130g<br>PRL : Appox. 150g | PR : Appox. 130g<br>PRL : Appox. 150g | PR : Appox. 185g<br>PRL : Appox. 224g | PR : Appox. 117g<br>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.

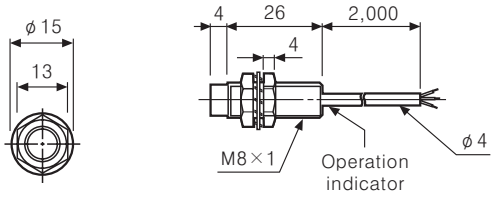
## ▣Dimensions

(Unit:mm)

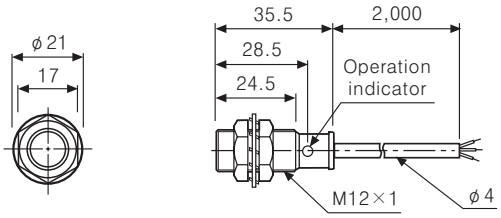
●PR(T)08-1.5D□



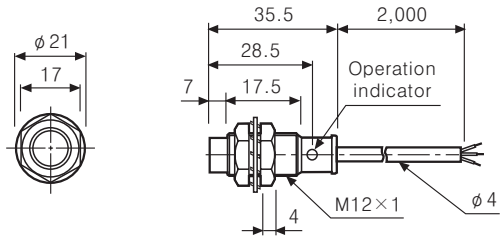

●PR(T)08-2D□



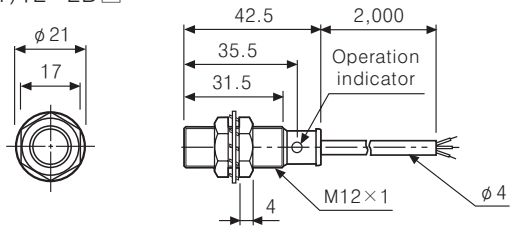

●PRS12-2D□



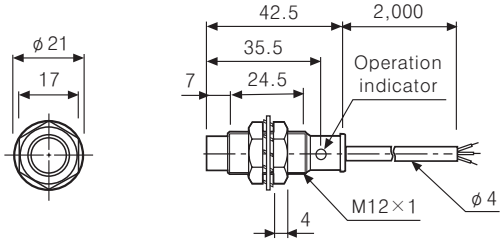

●PRS12-4D□



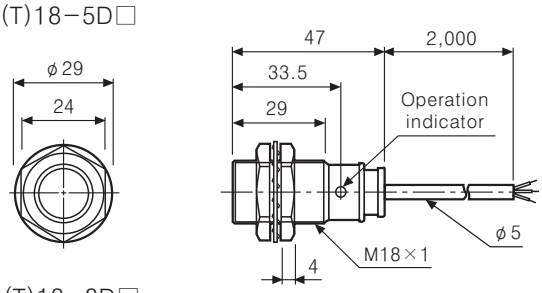

●PR(T)12-2D□



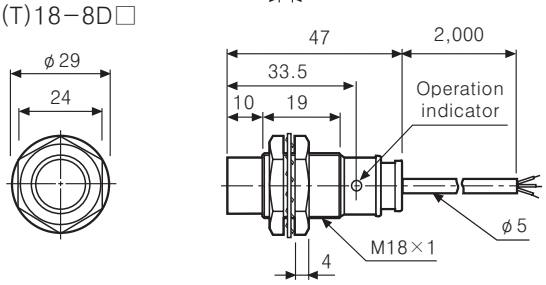

●PR(T)12-4D□



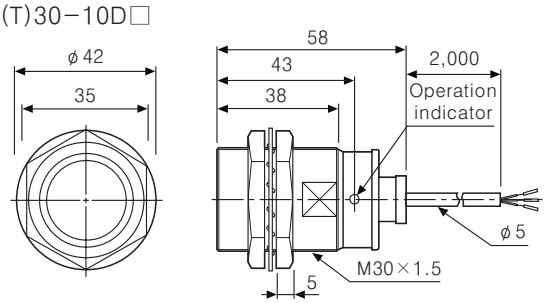

●PR(T)18-5D□



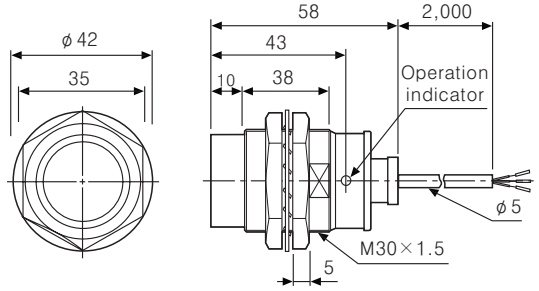

●PR(T)18-8D□



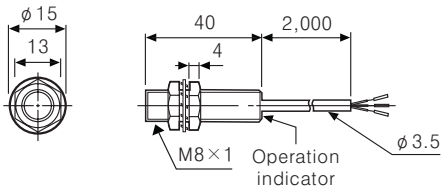

●PR(T)30-10D□



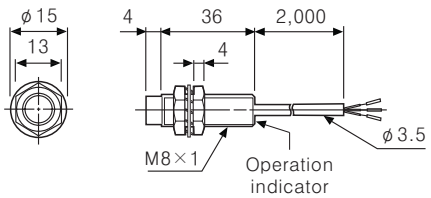

●PR(T)30-15D□




●PRL08-1.5D□



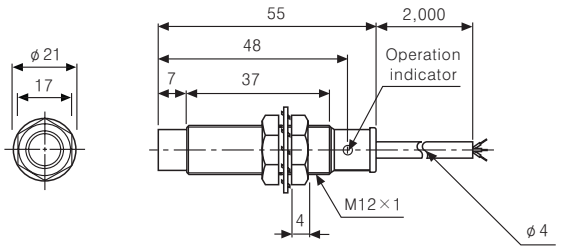

●PRL08-2D□



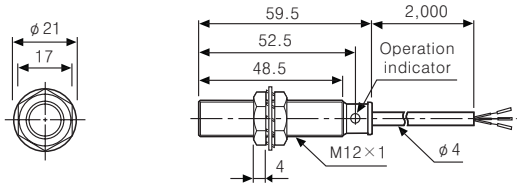
## ▣Dimensions

(Unit:mm)

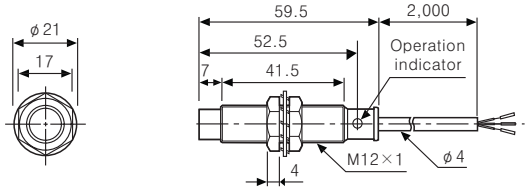
●PRL12-4D□



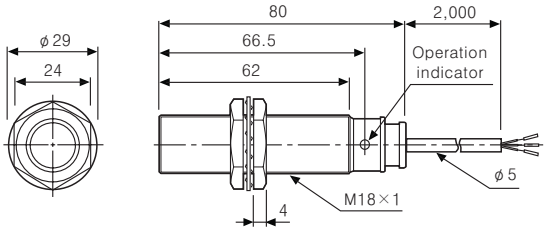

●PR12-2A□



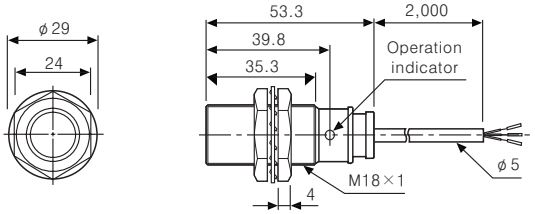

●PR12-4A□



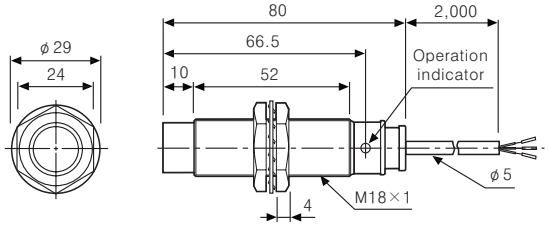

●PRL18-5D□ ●PRL18-5A□



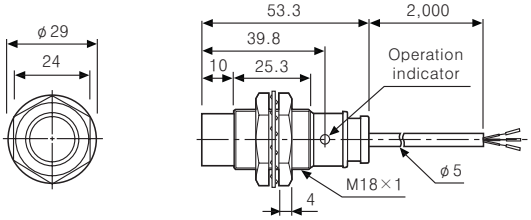

●PR18-5A□



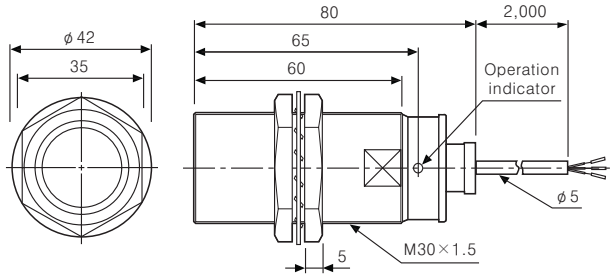

●PRL18-8D□ ●PRL18-8A□



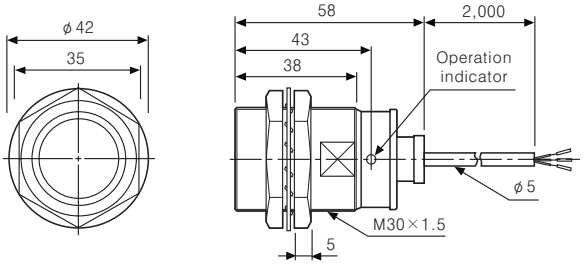

●PR18-8A□



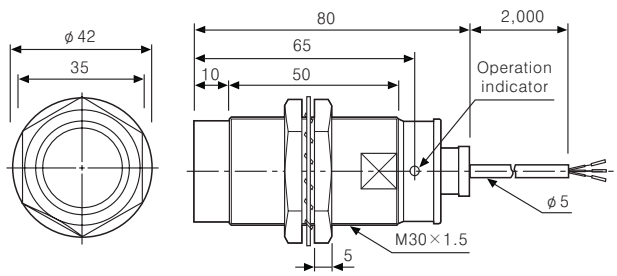

●PRL30-10D□ ●PRL30-10A□



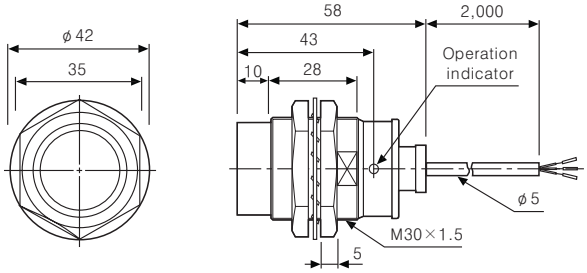

●PR30-10A□




●PRL30-15D□ ●PRL30-15A□

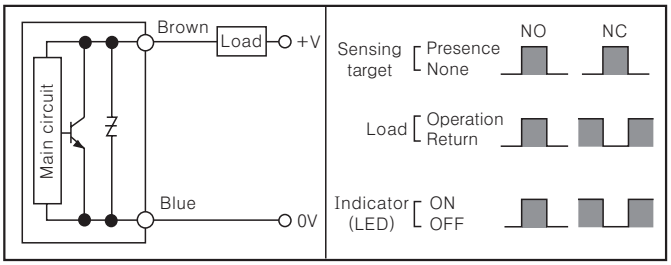



●PR30-15A□



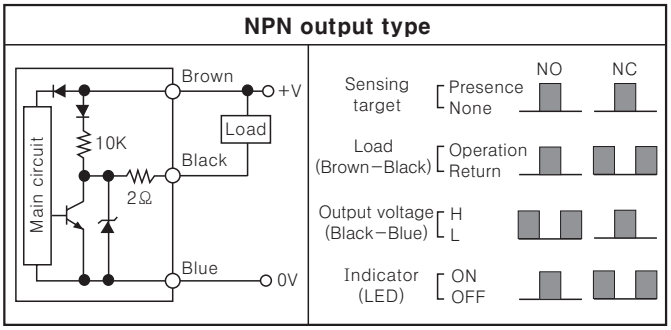
## ▣Control output diagram

### ◎DC 2-wire type

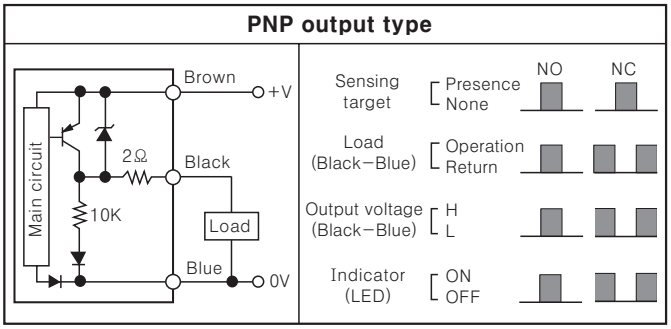



### ◎DC 3-wire type

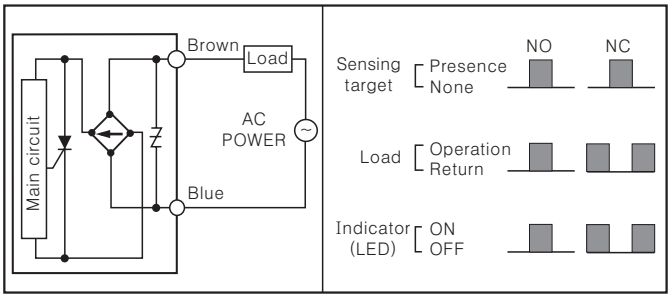
**NPN output type**




**PNP output type**

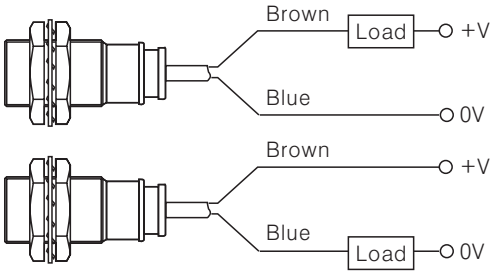



### ◎AC 2-wire type



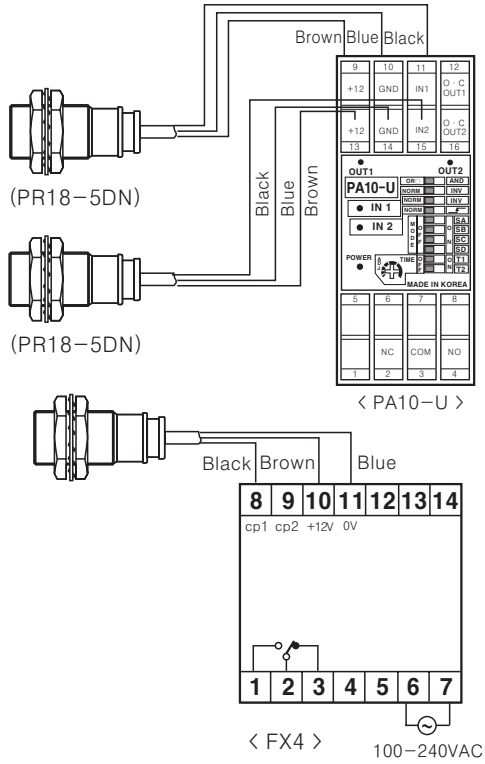

## ▣Connections

### ◎DC 2-wire type

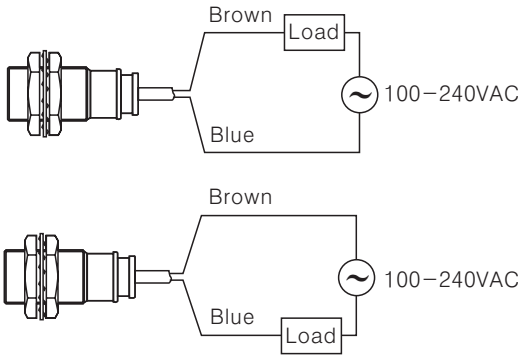



※The load can be connected to either wire.

### ◎DC 3-wire type



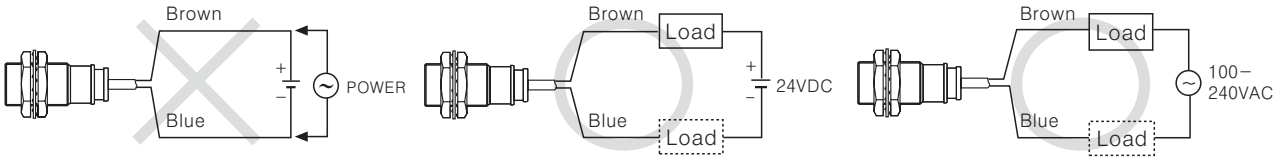

### ◎AC 2-wire type




※The load can be connected to either wire.

## ▣Proper usage

◎Load connections

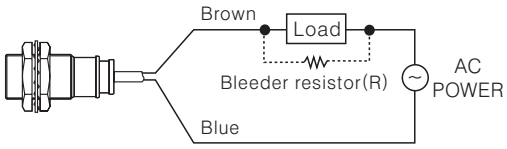



〈 DC 2-wire type & AC 2-wire type 〉 〈 DC 2-wire type 〉 〈 AC 2-wire type 〉

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

◎In case of the load current is small

●AC 2-wire type



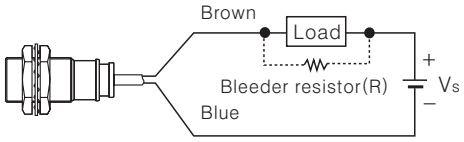

110VAC : Min. 20kΩ 3W
220VAC : Min. 39kΩ 10W

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.

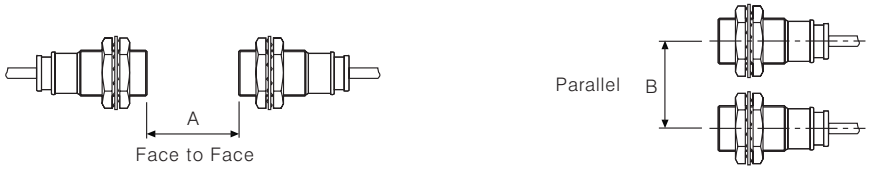
※W value of Bleeder resistor should be bigger for proper heat dissipation.

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

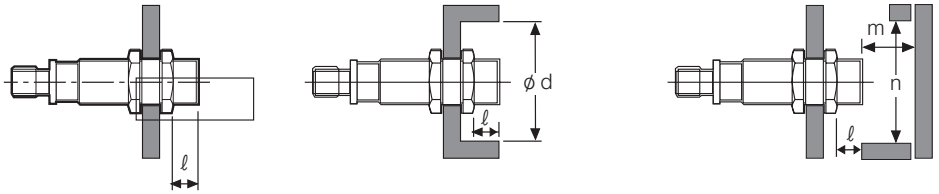
[Vs : Power supply, Io : Min. action current of proximity sensor
Ioff : Return current of load, P : Number of Bleeder resistance watt]

◎Mutual-interference & Influence by surrounding metals

When several proximity sensors are mounted closely, malfunction may be caused due to mutual interference. Therefore, be sure to keep a minimum distance between the two sensors, as below charts.




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.




(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 |

## Spatter-resistance type proximity sensor

### ▣Features

- ●Improvede the noise resistance with dedicated IC(DC 3wire)
- ●Reverse power polarity(DC 3-wire), surge(DC/AC), overcurrent protection(DC)
- ●Red LED status indication
- ●IP67 rated waterproof structure(IEC standard)
- ●Replacer 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<br>PRAT12-2DC | PRAWT12-2DO<br>PRAWT12-2DC | PRAT18-5DO<br>PRAT18-5DC | PRAWT18-5DO<br>PRAWT18-5DC | PRAT30-10DO<br>PRAT30-10DC | PRAWT30-10DO<br>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 ~ 1.4mm | | 0 ~ 3.5mm | | 0 ~ 7mm | |
| Power supply<br>(Operating voltage) | 12-24VDC<br>(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 ~ +70℃ | | | | | |
| Control output | 2 ~ 100mA | | | | | |
| Insulation resistance | Min. 50MΩ(at 500VDC mega) | | | | | |
| Dielectric strength | 1500VAC 50/60Hz for 1 minute | | | | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours | | | | | |
| Shock | 500m/s² (50G) in X, Y, Z direction for 3 times | | | | | |
| Indicator | Operating indicator(Red LED) | | | | | |
| Ambient temperature | -25 ~ +70℃(at non-freezing status) | | | | | |
| Storage temperature | -30 ~ +80℃(at non-freezing status) | | | | | |
| Ambient humidity | 35 ~ 95%RH | | | | | |
| Protection circuit | Surge, Overcurrent 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 J-51 for IEC standard connector cables and specifications.

## ▣Specifications

### ●DC 3-wire type

| Model | PRA12-2DN<br>PRA12-2DP<br>PRA12-2DN2<br>PRA12-2DP2 | PRA18-5DN<br>PRA18-5DP<br>PRA18-5DN2<br>PRA18-5DP2 | PRA30-10DN<br>PRA30-10DP<br>PRA30-10DN2<br>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 ~ 1.4mm | 0 ~ 3.5mm | 0 ~ 7mm |
| Power supply<br>(Operating voltage) | 12-24VDC<br>(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 ~ +70℃ | | |
| Control output | Max. 200mA | | |
| Insulation resistance | Min. 50MΩ (at 500VDC mega) | | |
| Dielectric strength | 1500VAC 50/60Hz for 1 minute | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 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 ~ +70℃ (at non-freezing status) | | |
| Storage temperature | -30 ~ +80℃ (at non-freezing status) | | |
| Ambient humidity | 35 ~ 95%RH | | |
| Protection circuit | Reverse polarity protection, Surge protection circuit, Overload & short circuit protection | | |
| 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

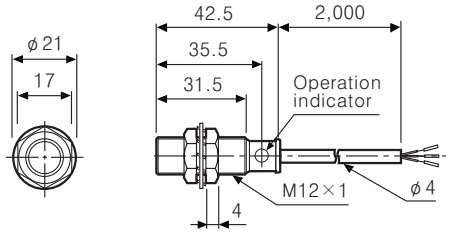
| Model | PRA12-2AO<br>PRA12-2AC | PRA18-5AO<br>PRA18-5AC | PRA30-10AO<br>PRA30-10AC |
|---|---|---|---|
| Sensing distance | 2mm ±10% | 5mm ±10% | 10mm ±10% |
| Hysteresis | Max. 10% of sensing distance | | |
| Standard sensing target | 12×12×1mm(Iron) | 18×18×1mm(Iron) | 30×30×1mm(Iron) |
| Setting distance | 0 ~ 1.4mm | 0 ~ 3.5mm | 0 ~ 7mm |
| Power supply<br>(Operating voltage) | 100-240VAC<br>(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 ~ +70℃ | | |
| Control output | 5 ~ 150mA | 5 ~ 200mA | |
| Insulation resistance | Min. 50MΩ (at 500VDC mega) | | |
| Dielectric strength | 2500VAC 50/60Hz for 1 minute | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 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 ~ +70℃ (at non-freezing status) | | |
| Storage temperature | -30 ~ +80℃ (at non-freezing status) | | |
| Ambient humidity | 35 ~ 95%RH | | |
| Protection circuit | Surge protection circuit | | |
| Protection | IP67(IEC standard) | | |
| Cable | φ4×2P, 2m | φ5×2P, 2m | |
| Approval | CE | | |
| Unit weight | Approx. 66g | Approx. 130g | Approx. 185g |

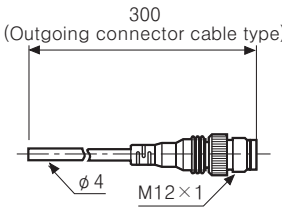
※(*1) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

## ▣Dimensions

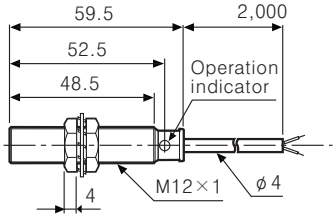
(Unit:mm)

●PRA12-2D□ ●PRAT12-2D□ ●PRAWT12-2D□

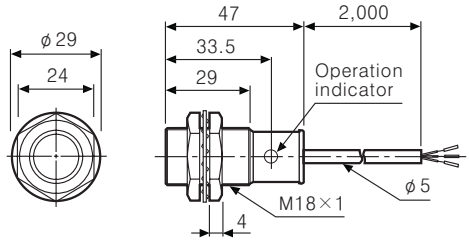


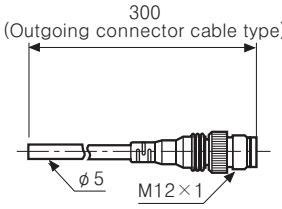




●PRA12-2A□

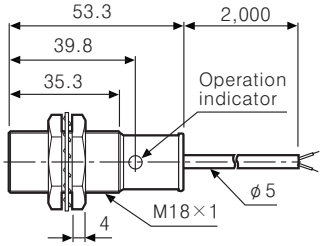



●PRA18-5D□ ●PRAT18-5D□ ●PRAWT18-5D□

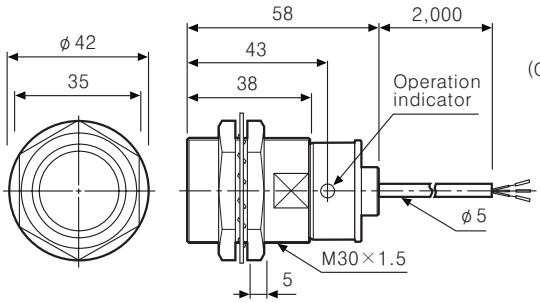


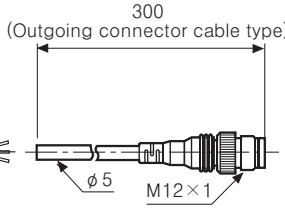




●PRA18-5A□

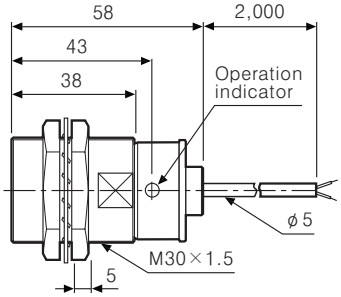



●PRA30-10D□ ●PRAT30-10D□ ●PRAWT30-10D□



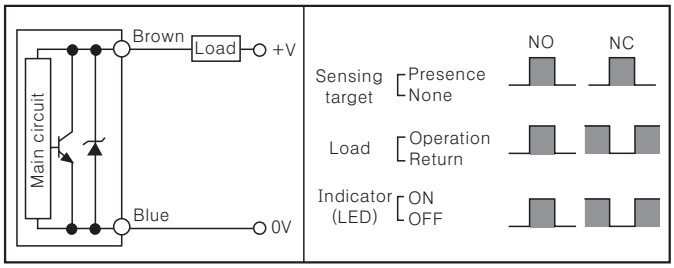




●PRA30-10A□

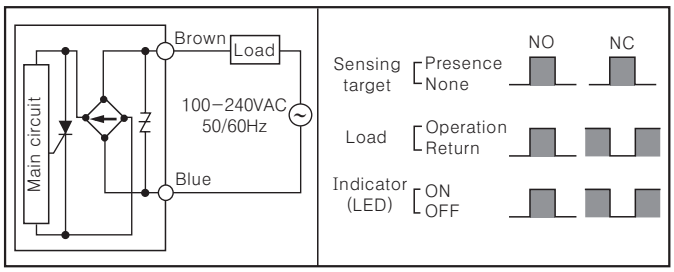



## ▣Control output diagram

### ◎DC 2-wire type

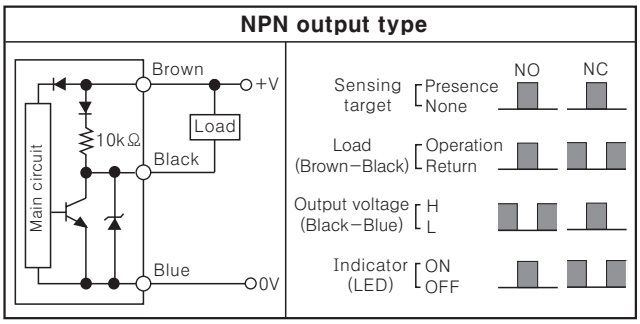



### ◎AC 2-wire type

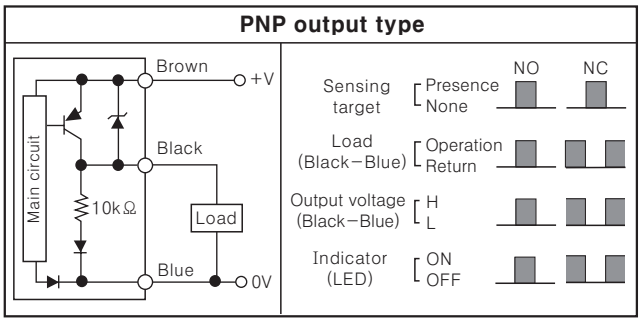



### ◎DC 3-wire type

**NPN output type**

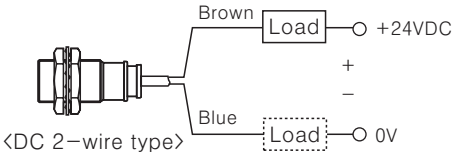


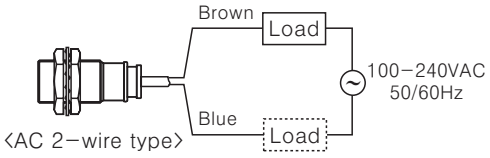

**PNP output type**



## ▣Connections

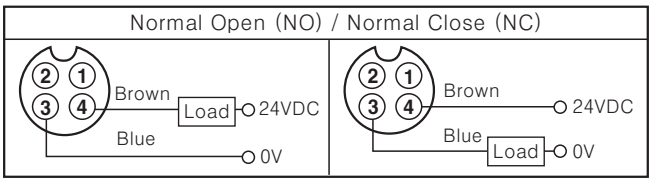
### ◎DC 2-wire standard type / AC 2-wire type



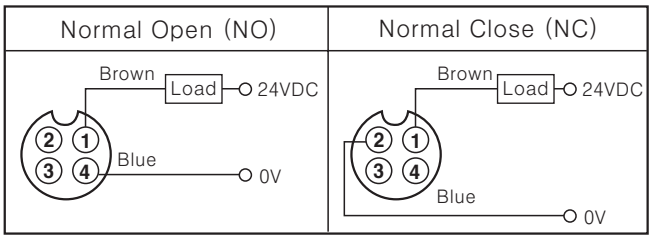

※When using DC 2-wire and AC 2-wire type, a load must be connected before applying power; otherwise, components can be damaged.
※The load can be connected to either wire.

### ◎Connector




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

### ◎DC 2-wire type(IEC standard type)

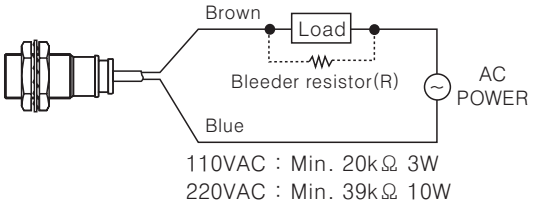



※②, ③ of NO Type and ③, ④ of NC Type are N · C(Not Connected)terminals.

## ▣Proper usage

### ◎In case of the load current is small

●AC 2-wire type



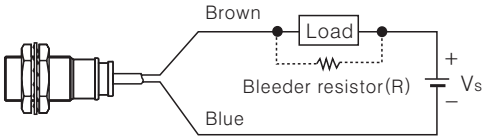

110VAC : Min. 20kΩ 3W
220VAC : Min. 39kΩ 10W

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



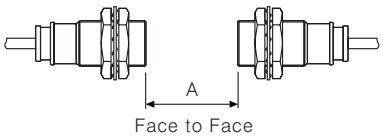

Please make the current on proximity sensor smaller than the return current of load by connecting a bleeder resistor in parallel.
※W value of Bleeder resistor should be bigger for proper heat dissipation.

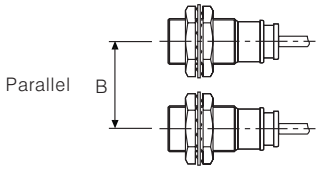
$$R = \frac{V_S}{Io - Ioff}\ (\Omega) \qquad P = \frac{V_S^2}{R}\ (W)$$

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

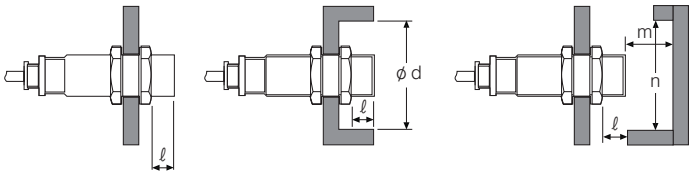
### ◎Mutual-interference & Influence by surrounding metals

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




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.




(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 |

## Cylindrical connector type proximity sensor

### ▣Features

- ●Shorten the time of maintenance
- ●Improved the noise resistance with dedicated IC (DC 3-wire type)
- ●Reverse power polarity(DC 3-wire), surge, overcurrent protection(DC type)
- ●Red LED status indication
- ●IP67 rated waterproof structure(IEC standard)
- ●Replacer 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<br>PRCMT12-2DC | PRCMT12-4DO<br>PRCMT12-4DC | PRCMT18-5DO<br>PRCMT18-5DC | PRCMT18-8DO<br>PRCMT18-8DC | PRCMT30-10DO<br>PRCMT30-10DC | PRCMT30-15DO<br>PRCMT30-15DC |
|---|---|---|---|---|---|---|
| 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 ~ 1.4mm | 0 ~ 2.8mm | 0 ~ 3.5mm | 0 ~ 5.6mm | 0 ~ 7mm | 0 ~ 10.5mm |
| Power supply (Operation voltage) | 24VDC (15-30VDC) | | | | | |
| Leakage current | Max. 0.6mA | | | | | |
| Response frequency**(*1)** | 1.5kHz | 500Hz | | 350Hz | 400Hz | 200Hz |
| Residual voltage | Max. 7V | | | | | |
| Affection by Temp. | ±10% Max. for sensing distance at +20℃ within temperature range of -25 ~ +70℃ | | | | | |
| Control output | 2 ~ 100mA | | | | | |
| Dielectric strength | Min. 50MΩ(at 500VDC mega) | | | | | |
| Insulation resistance | 1500VAC 50/60Hz for 1 minute | | | | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours | | | | | |
| Shock | 500m/s² (50G) in X, Y, Z directions for 3 times | | | | | |
| Indicator | Operation indicator(Red LED) | | | | | |
| Ambient temperature | -25 ~ +70℃(at non-freezing status) | | | | | |
| Storage temperature | -30 ~ +80℃(at non-freezing status) | | | | | |
| Ambient humidity | 35 ~ 95%RH | | | | | |
| Protection circuit | Surge protection circuit, Overload & Short circuit protection | | | | | |
| Protection | IP67(IEC standard) | | | | | |
| 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.
※IEC standard item is available and add "-I" to the end of model. Ex)PRCM12-4DO-I
※See J-48 for IEC standard connector cables and specifications.

## ▣Specifications

### ●DC 3-wire type

| Model | PRCM12-2DN<br>PRCM12-2DP<br>PRCM12-2DN2<br>PRCM12-2DP2 | PRCM12-4DN<br>PRCM12-4DP<br>PRCM12-4DN2<br>PRCM12-4DP2 | PRCM18-5DN<br>PRCM18-5DP<br>PRCM18-5DN2<br>PRCM18-5DP2<br>PRCML18-5DN<br>PRCML18-5DP<br>PRCML18-5DN2<br>PRCML18-5DP2 | PRCM18-8DN<br>PRCM18-8DP<br>PRCM18-8DN2<br>PRCM18-8DP2<br>PRCML18-8DN<br>PRCML18-8DP<br>PRCML18-8DN2<br>PRCML18-8DP2 | PRCM30-10DN<br>PRCM30-10DP<br>PRCM30-10DN2<br>PRCM30-10DP2<br>PRCML30-10DN<br>PRCML30-10DP<br>PRCML30-10DN2<br>PRCML30-10DP2 | PRCM30-15DN<br>PRCM30-15DP<br>PRCM30-15DN2<br>PRCM30-15DP2<br>PRCML30-15DN<br>PRCML30-15DP<br>PRCML30-15DN2<br>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 ~ 1.4mm | 0 ~ 2.8mm | 0 ~ 3.5mm | 0 ~ 5.6mm | 0 ~ 7mm | 0 ~ 10.5mm |
| Power supply<br>(Operation voltage) | 12-24VDC<br>(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 ~ +70℃ | | | | | |
| Control output | Max. 200mA | | | | | |
| Dielectric strength | Min. 50MΩ (at 500VDC mega) | | | | | |
| Insulation resistance | 1500VAC 50/60Hz for 1 minute | | | | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours | | | | | |
| Shock | 500m/s² (50G) in X, Y, Z directions for 3 times | | | | | |
| Indicator | Operation indicator(Red LED) | | | | | |
| Ambient temperature | -25 ~ +70℃ (at non-freezing status) | | | | | |
| Storage temperature | -30 ~ +80℃ (at non-freezing status) | | | | | |
| Ambient humidity | 35 ~ 95%RH | | | | | |
| Protection circuit | Surge, Reverse power polarity, Overcurrent protection circuit | | | | | |
| Protection | IP67(IEC standard) | | | | | |
| Approval | CE | | | | | |
| Unit weight | Approx. 26g | | PRCM18 : Approx. 49g<br>PRCML18 : Approx. 73g | | PRCM30 : Approx. 134g<br>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

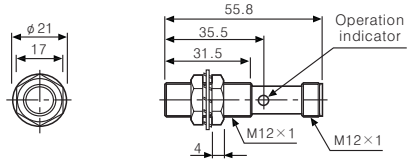
| Model | PRCM12-2AO<br>PRCM12-2AC | PRCM12-4AO<br>PRCM12-4AC | PRCM18-5AO<br>PRCM18-5AC<br>PRCML18-5AO<br>PRCML18-5AC | PRCM18-8AO<br>PRCM18-8AC<br>PRCML18-8AO<br>PRCML18-8AC | PRCM30-10AO<br>PRCM30-10AC<br>PRCML30-10AO<br>PRCML30-10AC | PRCM30-15AO<br>PRCM30-15AC<br>PRCML30-15AO<br>PRCML30-15AC |
|---|---|---|---|---|---|---|
| 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 ~ 1.4mm | 0 ~ 2.8mm | | 0 ~ 5.6mm | 0 ~ 7mm | 0 ~ 10.5mm |
| Power supply<br>(Operation voltage) | 100-240VAC<br>(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 ~ +70℃ | | | | | |
| Control output | 5 ~ 150mA | | 5 ~ 200mA | | | |
| Dielectric strength | Min. 50MΩ (at 500VDC mega) | | | | | |
| Insulation resistance | 2500VAC 50/60Hz for 1 minute | | | | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours | | | | | |
| Shock | 500m/s² (50G) in X, Y, Z directions for 3 times | | | | | |
| Indicator | Operation indicator(Red LED) | | | | | |
| Ambient temperature | -25 ~ +70℃ (at non-freezing status) | | | | | |
| Storage temperature | -30 ~ +80℃ (at non-freezing status) | | | | | |
| Ambient humidity | 35 ~ 95%RH | | | | | |
| Protection circuit | Surge protection circuit | | | | | |
| Protection | IP67(IEC standard) | | | | | |
| Approval | CE | | | | | |
| Unit weight | Approx. 30g | | PRCM18 : Approx. 53g<br>PRCML18 : Approx. 74g | | PRCM30 : Approx. 134g<br>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.

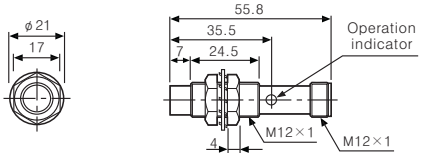
## ▣Dimensions

(Unit:mm)

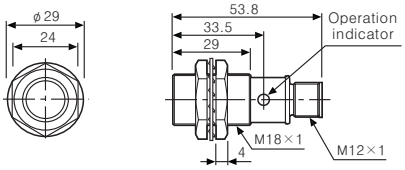
●PRCM(T)12-2D□



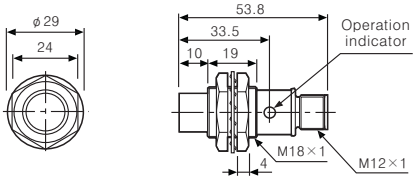

●PRCM(T)12-4D□



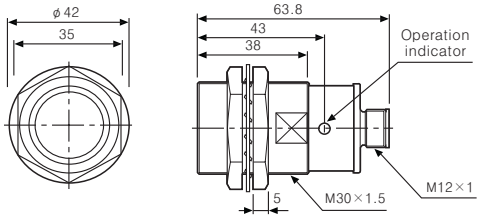

●PRCM(T)18-5D□



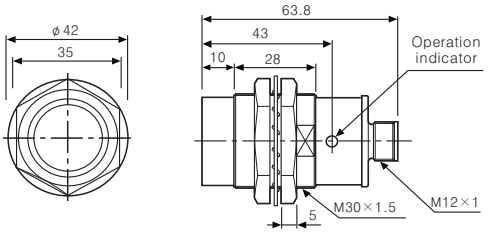

●PRCM(T)18-8D□



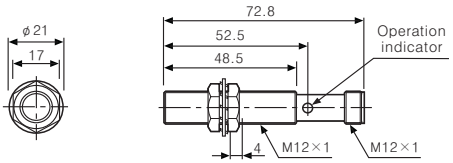

●PRCM(T)30-10D□



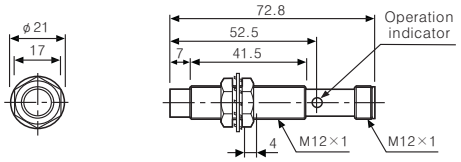

●PRCM(T)30-15D□



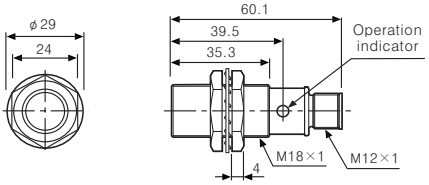

●PRCM12-2A□



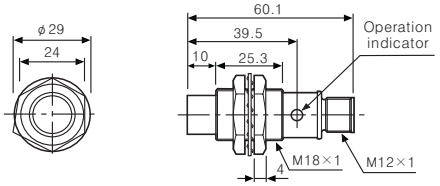

●PRCM12-4A□



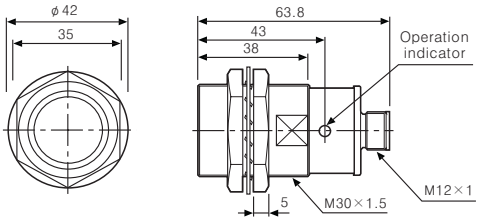

●PRCM18-5A□



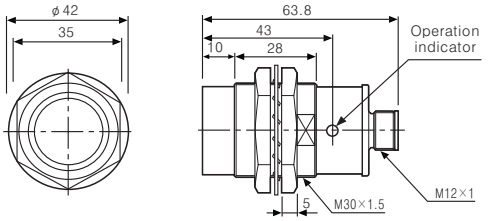

●PRCM18-8A□



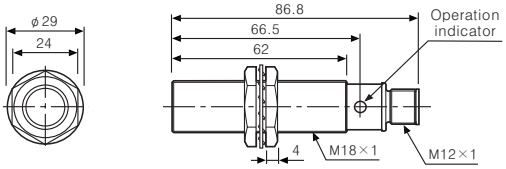

●PRCM30-10A□



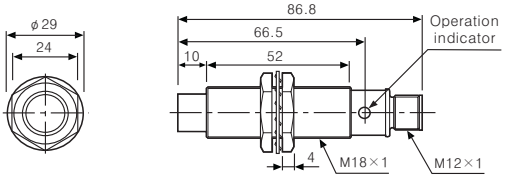

●PRCM30-15A□



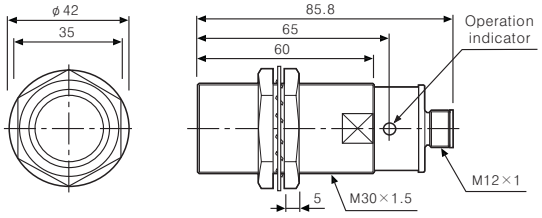

●PRCML18-5D□ / PRCML18-5A□



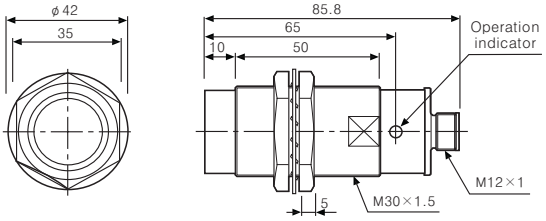

●PRCML18-8D□ / PRCML18-8A□




●PRCML30-10D□ / PRCML30-10A□

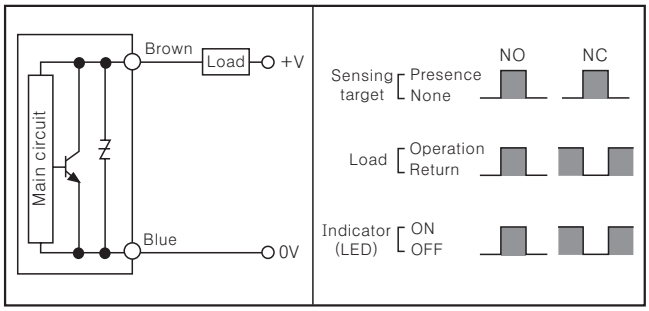



●PRCML30-15D□ / PRCML30-15A□

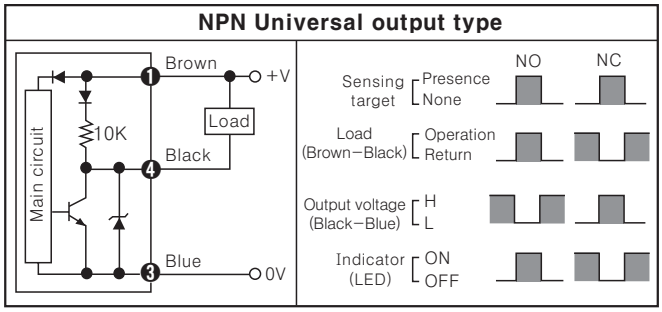


## ▣Control output diagram

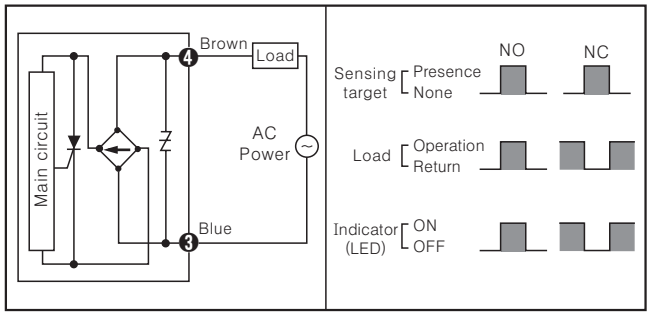
### ◎DC 2-wire type

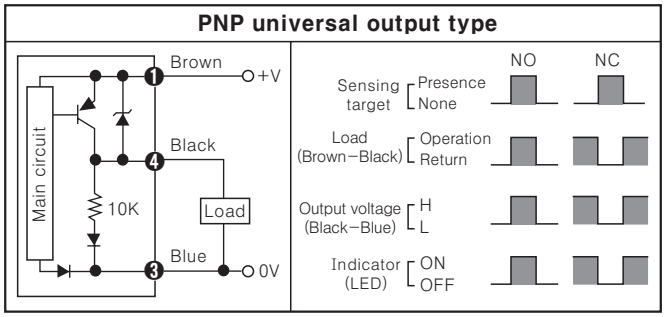



### ◎DC 3-wire type




### ◎AC 2-wire type

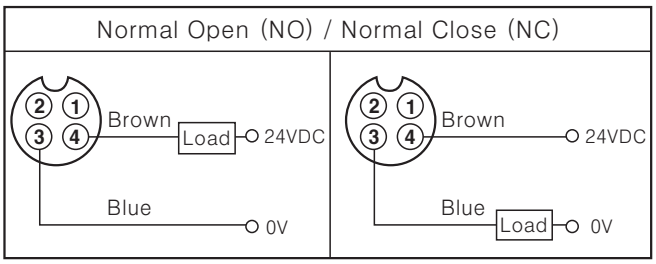



※The number in a circle is pin no. of connector.

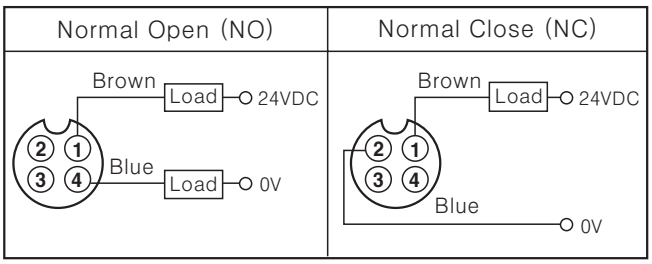
## ▣Wiring diagram

### ◎DC 2-wire type(Standard type)



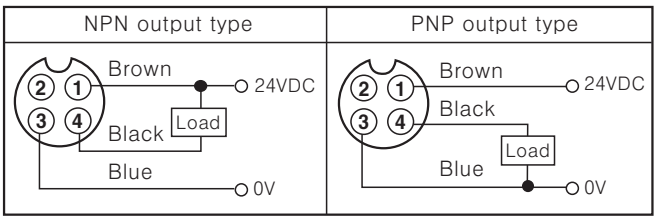

※Pin ①, ② are N.C (Not Connected) terminals.
※For DC 3-wire type connector cable, it is available to use with black wire(24VDC) and blue wire(0V).

### ◎DC 2-wire type(IEC standard type)



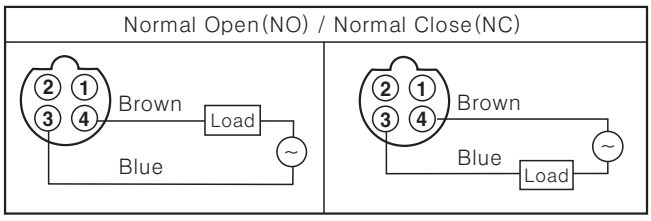

※The pin arrangement of connector applying IEC standard is being developed.
※Please attach "I" at the end of the name of standard type for purchasing the IEC standard product. Ex)PRCMT12-4DO-I
※The connector cable for IEC standard is being developed. Please attach "I" at the end of the name of standard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

### ◎DC 3-wire




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

### ◎AC 2-wire

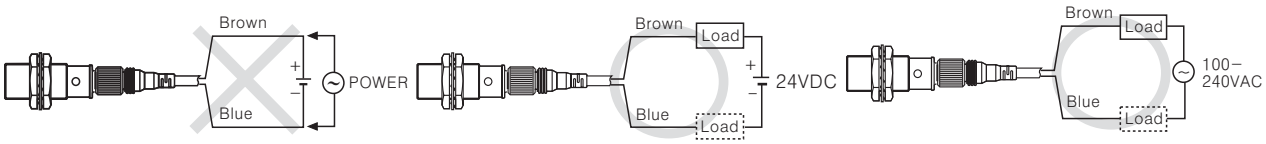



※In AC inductive type, ② and ③, ① and ④ are connected inside of the connector cable.

※Please fasten the vibration part with Teflon tape.
※See J-48 about IEC standard connector wires and specifications.

## ▣Proper usage

◎Load connections

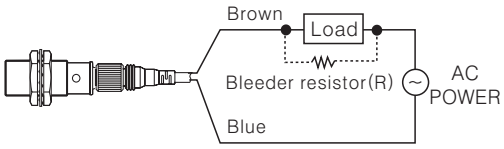



〈 DC 2-wire type & AC 2-wire type 〉 〈 DC 2-wire type 〉 〈 AC 2-wire type 〉

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

◎In case of the load current is small

●AC 2-wire type



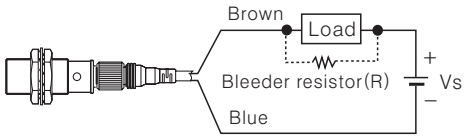

110VAC : 20kΩ min. 3W
220VAC : 39kΩ min. 10W

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



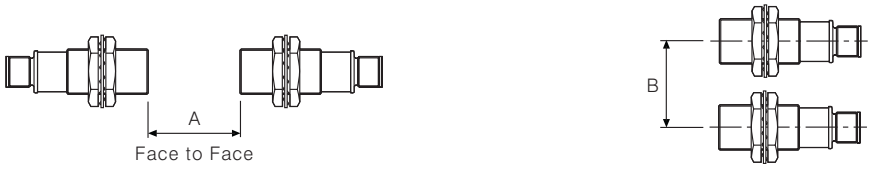

Please make the current on proximity sensor smaller than the return current of load by connecting a bleeder resistor in parallel.
※W value of Bleeder resistor should be bigger for proper heat dissipation.

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

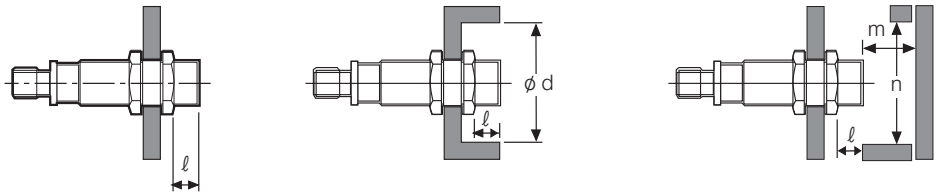
[Vs : Power supply, Io : Min. action current of proximity sensor
Ioff : Return current of load, P : Number of Bleeder resistance watt]

◎Mutual-interference & Influence by surrounding metals

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




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.




(Unit:mm)

| Model / Item | PRCMT12-2D□<br>PRCM12-2D□<br>PRCM12-2A□ | PRCMT12-4D□<br>PRCM12-4D□<br>PRCM12-4A□ | PRCMT18-5D<br>PRCM(L)18-5D<br>PRCM(L)18-5A | PRCMT18-8D□<br>PRCM(L)18-8D□<br>PRCM(L)18-8A□ | PRCMT30-10D□<br>PRCM(L)30-10D□<br>PRCM(L)30-10A□ | PRCMT30-15D<br>PRCM(L)30-15D<br>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 |

## Cylindrical cable outgoing connector type proximity sensor

### ▣Features

- ●Shorten the time of maintenance with the body
- ●Improved the noise resistance by adopting dedicated IC (DC 3-wire)
- ●Reverse power polarity(DC 3-wire), surge(AC/DC), overcurrent protection(DC)
- ●Red LED status indication
- ●IP67 rated waterproof structure(IEC standard)
- ●Replacer 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<br>PRWT08-1.5DC<br>PRWT08-1.5DO-I<br>PRWT08-1.5DC-I<br>PRWT08-1.5DO-IV<br>PRWT08-1.5DC-IV | PRWT08-2DO<br>PRWT08-2DC<br>PRWT08-2DO-I<br>PRWT08-2DC-I<br>PRWT08-2DO-IV<br>PRWT08-2DC-IV | PRWT12-2DO<br>PRWT12-2DC<br>PRWT12-2DO-I<br>PRWT12-2DC-I | PRWT12-4DO<br>PRWT12-4DC<br>PRWT12-4DO-I<br>PRWT12-4DC-I | PRWT18-5DO<br>PRWT18-5DC<br>PRWT18-5DO-I<br>PRWT18-5DC-I | PRWT18-8DO<br>PRWT18-8DC<br>PRWT18-8DO-I<br>PRWT18-8DC-I | PRWT30-10DO<br>PRWT30-10DC<br>PRWT30-10DO-I<br>PRWT30-10DC-I | PRWT30-15DO<br>PRWT30-15DC<br>PRWT30-15DO-I<br>PRWT30-15DC-I |
|---|---|---|---|---|---|---|---|---|
| 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 ~ 1.05mm | 0 ~ 1.4mm | | 0 ~ 2.8mm | 0 ~ 3.5mm | 0 ~ 5.6mm | 0 ~ 7mm | 0 ~ 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 ~ 100mA | | | | | | | |
| Insulation resistance | Min. 50MΩ(at 500VDC mega) | | | | | | | |
| Dielectric strength | 1500VAC 50/60Hz for 1 minute | | | | | | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours | | | | | | | |
| Shock | 500m/s² (50G) in X, Y, Z directions for 3 times | | | | | | | |
| Indicator | Operation indicator(Red LED) | | | | | | | |
| Ambient temperature | -25 ~ +70℃(at non-freezing status) | | | | | | | |
| Storage temperature | -30 ~ +80℃(at non-freezing status) | | | | | | | |
| Ambient humidity | 35 ~ 95%RH | | | | | | | |
| Protection circuit | Surge, Overcurrent protection circuit | | | | | | | |
| Protection | IP67(IEC standard) | | | | | | | |
| 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 J-51 for IEC standard connector cables and specifications.

## ●Specifications(DC 3-wire type)

| Model | PRW08-1.5DN<br>PRW08-1.5DP<br>PRW08-1.5DN2<br>PRW08-1.5DP2<br>PRWL08-1.5DN<br>PRWL08-1.5DP<br>PRWL08-1.5DN2<br>PRWL08-1.5DP2 | PRW08-2DN<br>PRW08-2DP<br>PRW08-2DN2<br>PRW08-2DP2 | PRW12-2DN<br>PRW12-2DP<br>PRW12-2DN2<br>PRW12-2DP2 | PRW12-4DN<br>PRW12-4DP<br>PRW12-4DN2<br>PRW12-4DP2 | PRW18-5DN<br>PRW18-5DP<br>PRW18-5DN2<br>PRW18-5DP2<br>PRWL18-5DN<br>PRWL18-5DP<br>PRWL18-5DN2<br>PRWL18-5DP2 | PRW18-8DN<br>PRW18-8DP<br>PRW18-8DN2<br>PRW18-8DP2<br>PRWL18-8DN<br>PRWL18-8DP<br>PRWL18-8DN2<br>PRWL18-8DP2 | PRW30-10DN<br>PRW30-10DP<br>PRW30-10DN2<br>PRW30-10DP2<br>PRWL30-10DN<br>PRWL30-10DP<br>PRWL30-10DN2<br>PRWL30-10DP2 | PRW30-15DN<br>PRW30-15DP<br>PRW30-15DN2<br>PRW30-15DP2<br>PRWL30-15DN<br>PRWL30-15DP<br>PRWL30-15DN2<br>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 ~ 1.05mm | 0 ~ 1.4mm | 0 ~ 1.4mm | 0 ~ 2.8mm | 0 ~ 3.5mm | 0 ~ 5.6mm | 0 ~ 7mm | 0 ~ 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. 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 mega) | | | | | | | |
| Dielectric strength | 1500VAC 50/60Hz for 1minute | | | | | | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 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 ~ +70℃ (at non-freezing status) | | | | | | | |
| Storage temperature | -30 ~ +80℃ (at non-freezing status) | | | | | | | |
| Ambient humidity | 35 ~ 95%RH | | | | | | | |
| Protection circuit | Surge, Reverse power polarity, Overcurrent protection circuit | | | | | | | |
| Protection | IP67(IEC standard) | | | | | | | |
| Approval | CE | | | | | | | |
| Unit weight | PR08:Approx. 68g<br>PRW08:Approx. 30g | | Approx. 40g | | PRW18:Approx. 84g<br>PRWL18:Approx. 108g | | PRW30:Approx. 143g<br>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.

## ●Specifications(AC 2-wire type)

| Model | PRW12-2AO<br>PRW12-2AC | PRW12-4AO<br>PRW12-4AC | PRW18-5AO<br>PRW18-5AC<br>PRWL18-5AO<br>PRWL18-5AC | PRW18-8AO<br>PRW18-8AC<br>PRWL18-8AO<br>PRWL18-8AC | PRW30-10AO<br>PRW30-10AC<br>PRWL30-10AO<br>PRWL30-10AC | PRW30-15AO<br>PRW30-15AC<br>PRWL30-15AO<br>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 ~ 1.4mm | 0 ~ 2.8mm | 0 ~ 3.5mm | 0 ~ 5.6mm | 0 ~ 7mm | 0 ~ 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 ~ +70℃ | | | | | |
| Control output | 5 ~ 150mA | | 5 ~ 200mA | | | |
| Insulation resistance | Min. 50MΩ (at 500VDC mega) | | | | | |
| Dielectric strength | 1500VAC 50/60Hz for 1minute | | | | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 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 ~ +70℃ (at non-freezing status) | | | | | |
| Storage temperature | -30 ~ +80℃ (at non-freezing status) | | | | | |
| Ambient humidity | 35 ~ 95%RH | | | | | |
| Protection circuit | Surge protection circuit | | | | | |
| Protection | IP67(IEC standard) | | | | | |
| Approval | CE | | | | | |
| Unit weight | Approx. 42g | | PRW18 : Approx. 87g<br>PRWL18 : Approx. 112g | | PRW30 : Approx. 148g<br>PRWL30 : Approx. 185g | |

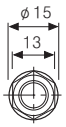
※(*1) The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

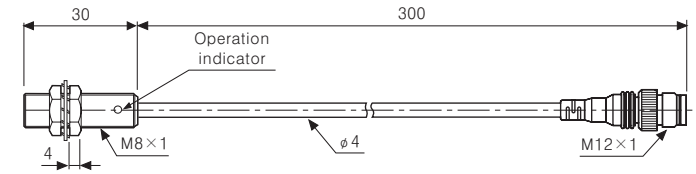
## ▣Dimensions

(Unit:mm)

●PRWT08-1.5D□(-I)

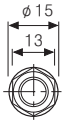
●PRW08-1.5D□

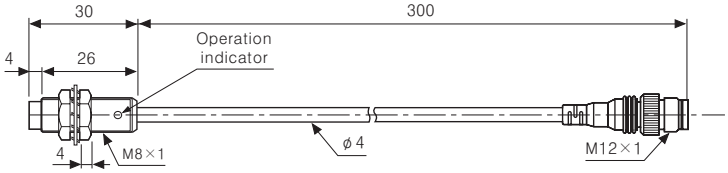


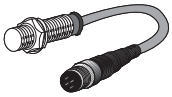

●PRWT08-2D□(-I)

●PRW08-2D□

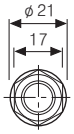


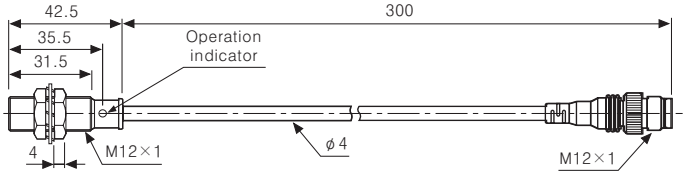




●PRWT12-2D□(-I)



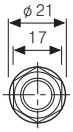
●PRW12-2D□

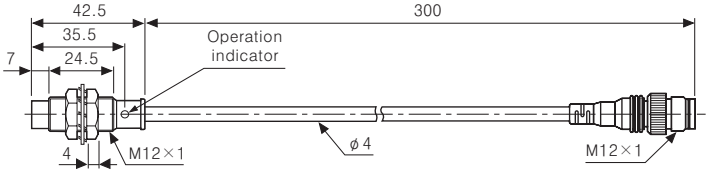



●PRWT12-4D□(-I)

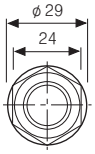
●PRW12-4D□

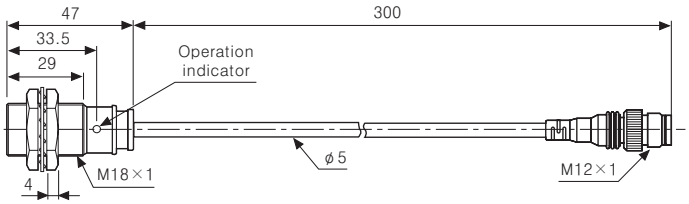



●PRWT18-5D□(-I)

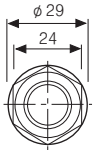
●PRW18-5D□

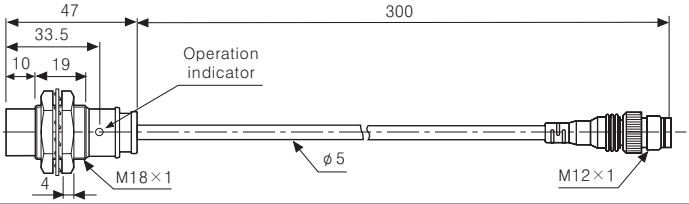


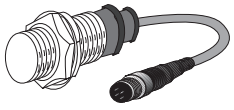

●PRWT18-8D□(-I)

●PRW18-8D□

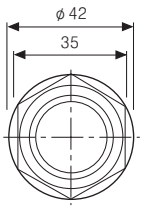


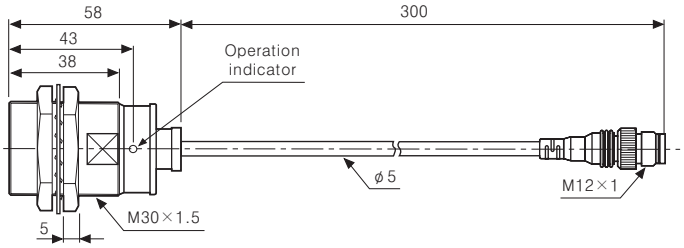




●PRWT30-10D□(-I)

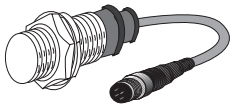


●PRW30-10D□

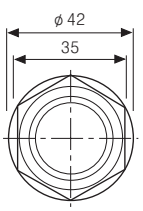


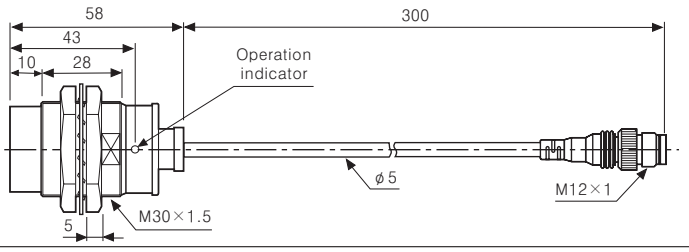




●PRWT30-15D□(-I)

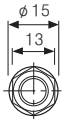


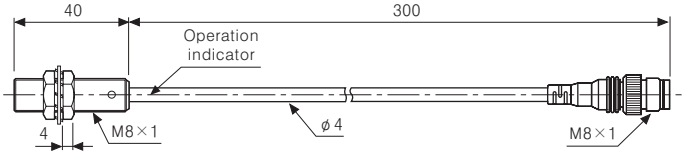
●PRW30-15D□




●PRWL08-1.5D□

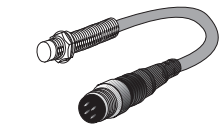


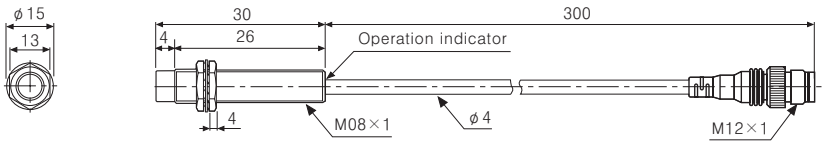



## ▣Dimensions

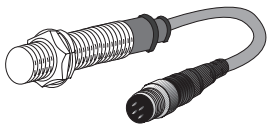
(Unit:mm)

●PRWL08-2D□

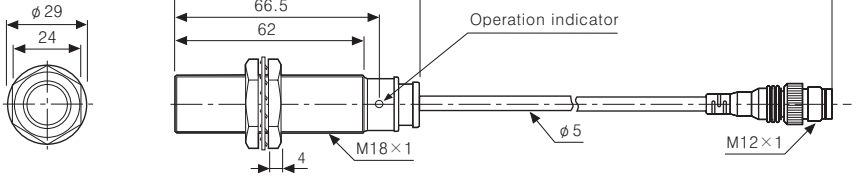




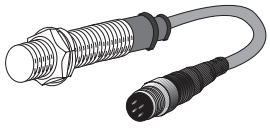

●PRWL18-5D□



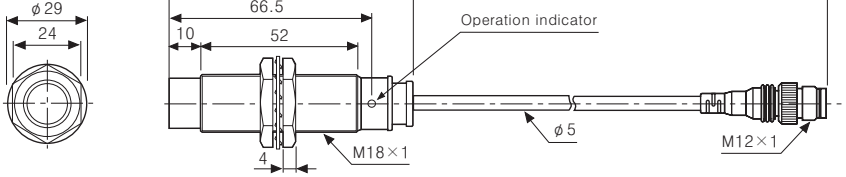
●PRWL18-5A□



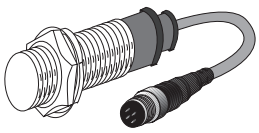

●PRWL18-8D□



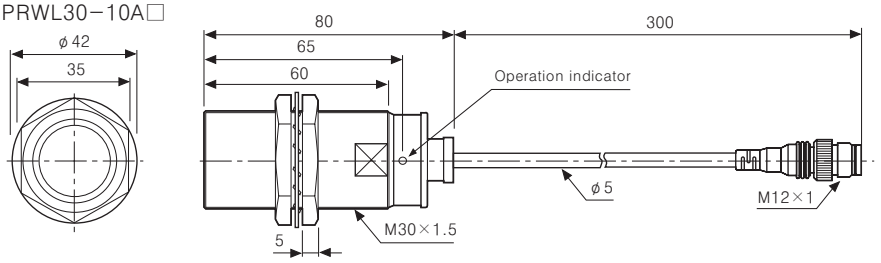
●PRWL18-8A□



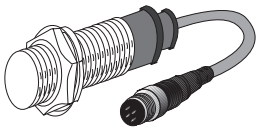

●PRWL30-10D□



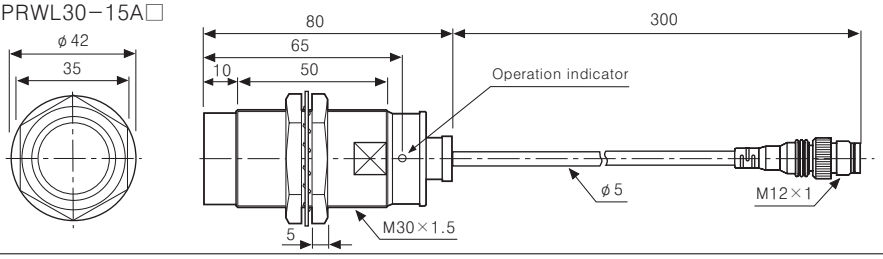
●PRWL30-10A□



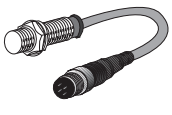

●PRWL30-15D□

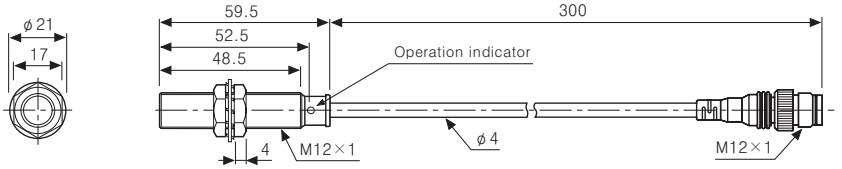


●PRWL30-15A□

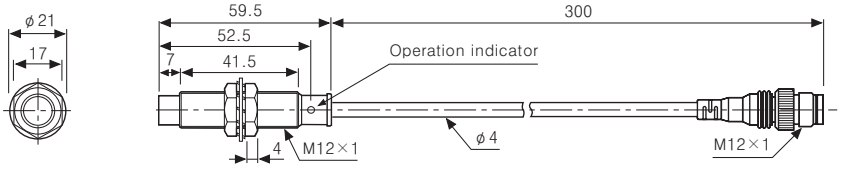



●PRW12-2A□

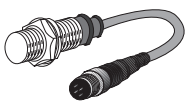


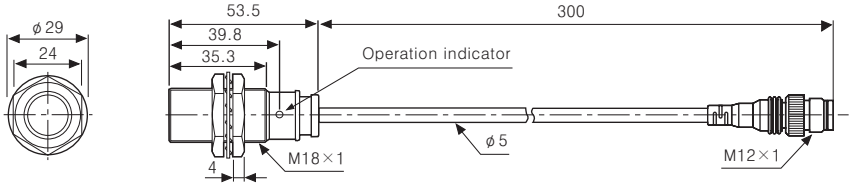



●PRW12-4A□

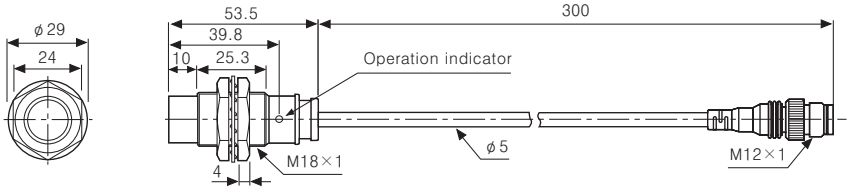



●PRW18-5A□



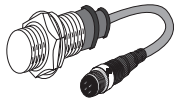


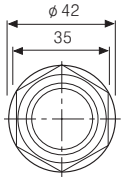

●PRW18-8A□

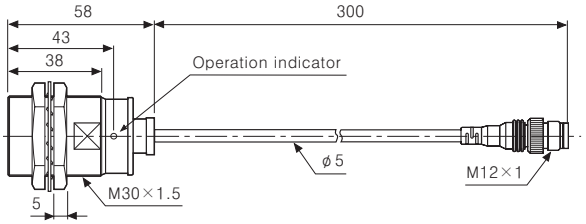


## ▣Dimensions

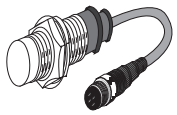
●PRW30-10A□

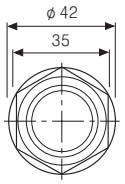


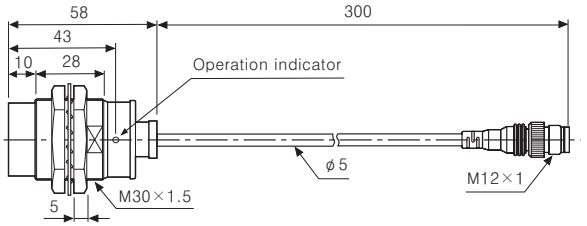



●PRW30-15A□



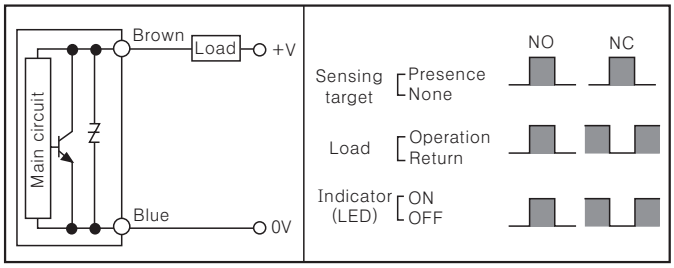


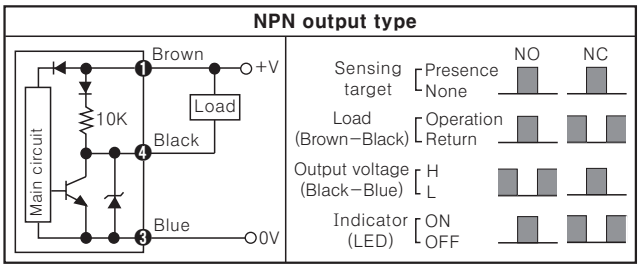

(Unit:mm)

## ▣Control output diagram

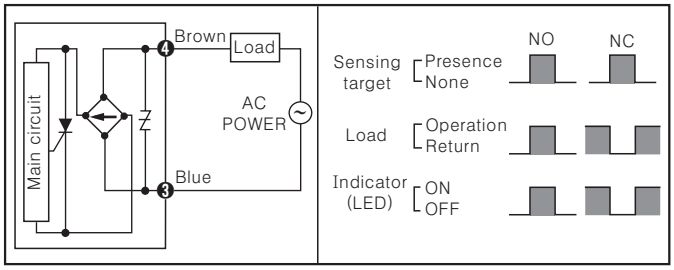
### ◎DC 2-wire type

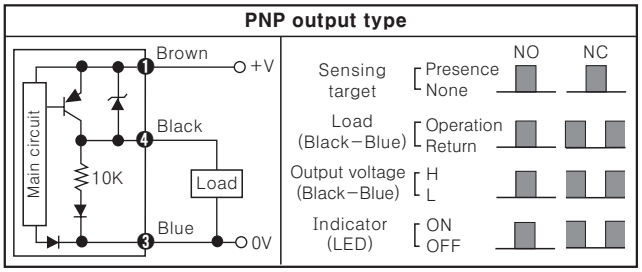



### ◎DC 3-wire type




### ◎AC 2-wire type

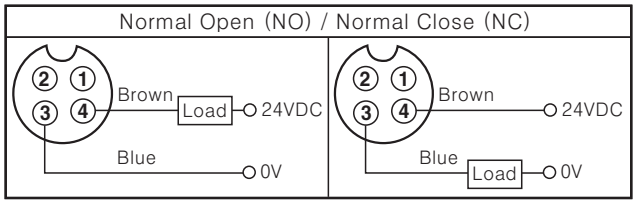



※The number in a circle is pin no. of connector.

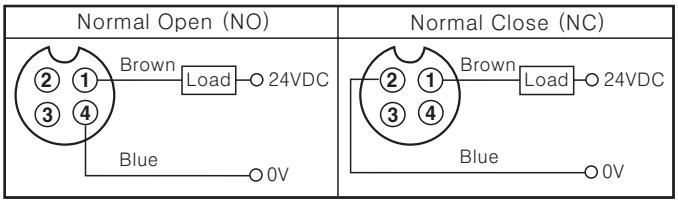
## ▣Wiring diagram

### ◎DC 2-wire type(Standard/non-polar type)



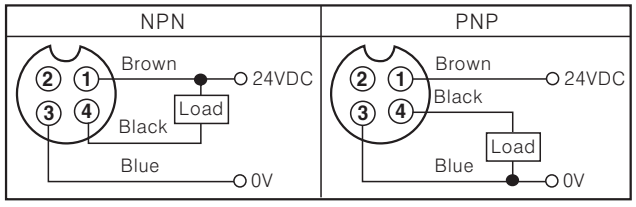

※Pin ① and ② are not connected.
※When using DC 3-wire type of connector cable, black(24VDC) and blue(0V) cables can be used.

### ◎DC 2-wire type(IEC standard/IEC standard non-polar type)

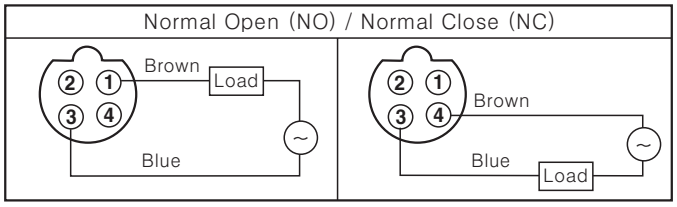



※The type, pin arrangment of connector based upon IEC standard is being developed.
※Please put "I" behind of standard type for purchasing IEC standard product. Ex)PRWT12-4DO-I
※Please put "I" behind of model name for selecting proximity sensor by IEC standard. Ex)CID2-2-I, CLD2-2-I

### ◎DC 3-wire type



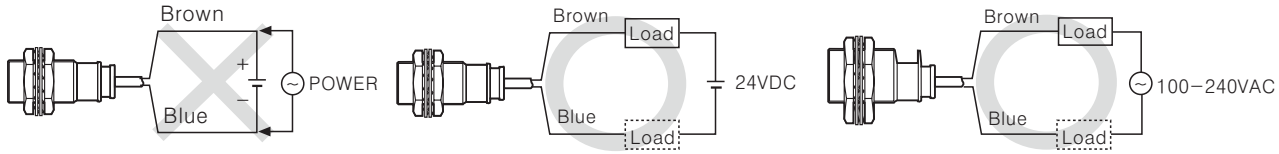

### ◎AC 2-wire type




※Please fasten the cleat of connector not to shown the thread. (0.39~0.49N • m)
※Please fasten the vibration part with Teflon tape.
※In case of AC switching type, ② and ③, ① and ④ are connected to each other inside.
※See J-51 for IEC standard connector cables and specifications.

## ▣Proper usage

◎Load connections

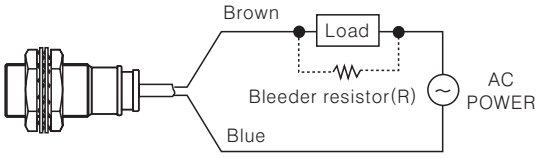



〈DC 2-wire type & AC 2-wire type〉 〈DC 2-wire type〉 〈AC 2-wire type〉

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

◎In case of the load current is small

●AC 2-wire type



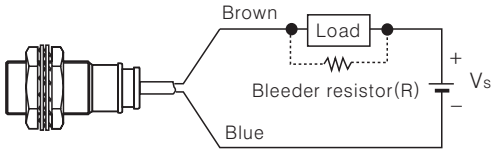

110VAC : Over 20kΩ 3W
220VAC : Over 39kΩ 10W

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.

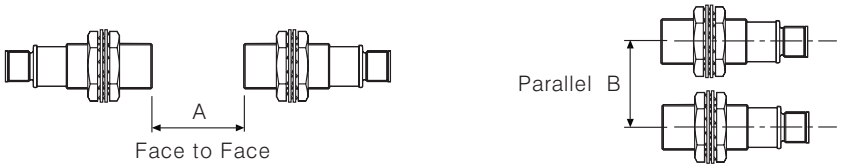
※W value of Bleeder resistor should be bigger for proper heat dissipation.

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

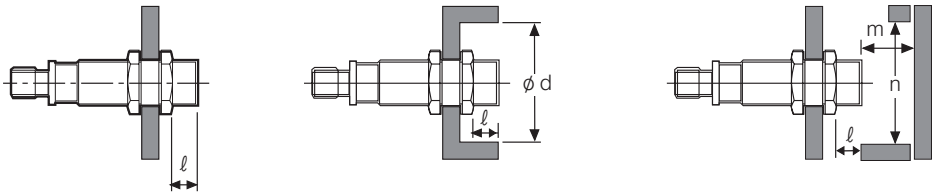
[Vs : Power supply, Io : Min. action current of proximity sensor
Ioff : Return current of load, P : Number of Bleeder resistance watt]

◎Mutual-interference & Influence by surrounding metals

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




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.



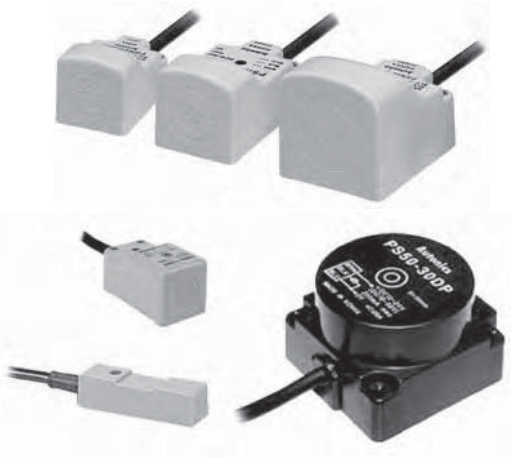

(Unit:mm)

| 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 |
| 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 |

## Rectangular type proximity sensor

### ▣Features

- ●Shorten the time of maintenance with the body
- ●Improved the noise resistance by adopting dedicated IC (DC 3-wire type)
- ●Reverse power polarity(DC), surge(DC/AC), overcurrent protection(DC type-Except for PS12 Series.)
- ●Long life cycle and high reliability
- ●Red LED status indication
- ●IP67 rated waterproof structure(IEC standard)
- ●Replacer for micro switches and limit switches



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

CE

### ▣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<br>PS12-4DP<br>PS12-4DN2<br>PS12-4DNU<br>PS12-4DPU<br>PS12-4DN2U | PSN17-5DN<br>PSN17-5DP<br>PSN17-5DN2<br>PSN17-5DP2<br>PSN17-5DNU<br>PSN17-5DPU<br>PSN17-5DN2U<br>PSN17-5DN-F | PSN17-8DN<br>PSN17-8DP<br>PSN17-8DN2<br>PSN17-8DNU<br>PSN17-8DPU | PSN17-8DN-F<br>PSN17-8DP-F<br>PSN17-8DN2-F<br>PSN17-8DNU-F<br>PSN17-8DPU-F<br>PSN17-8DN2U-F | PSN25-5DN<br>PSN25-5DP<br>PSN25-5DN2<br>PSN25-5DP2 | PSN30-10DN<br>PSN30-10DP<br>PSN30-10DN2<br>PSN30-10DP2 | PSN30-15DN<br>PSN30-15DP<br>PSN30-15DN2<br>PSN30-15DP2 | PSN40-20DN<br>PSN40-20DP<br>PSN40-20DN2<br>PSN40-20DP2 | PS50-30DN<br>PS50-30DP<br>PS50-30DN2<br>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 | 0~2.8mm | 0~3.5mm | 0~5.6mm | | 0~3.5mm | 0~7mm | 0~10.5mm | 0~14mm | 0~21mm |
| Power supply (Operation voltage) | 12-24VDC (1-30VDC) | | | | | | | | |
| 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 ~ +70℃ | | | | | | | | |
| Control output | Max. 200mA | | | | | | | | |
| Insulation resistance | Min. 50MΩ (at 500VDC mega) | | | | | | | | |
| Dielectric strength | 1500VAC 50/60Hz for 1minute | | | | | | | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 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 ~ +70℃ (at non-freezing status) | | | | | | | | |
| Storage temperature | -30 ~ +80℃ (at non-freezing status) | | | | | | | | |
| Ambient humidity | 35 ~ 95%RH | | | | | | | | |
| Protection circuit | Surge, Reverse power polarity protection circuit | | Surge, Reverse power polarity, Overcurrent 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.

## ▣Specifications

### ●DC 2-wire type

※The existing PS17 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<br>PSNT17-5DC | PSNT17-5DOU<br>PSNT17-5DCU |
|---|---|---|
| Sensing distance | 5mm ±10% | |
| Hysteresis | Max. 10% of sensing distance | |
| Standard sensing target | 18×18×1mm(Iron) | |
| Setting distance | 0 ~ 3.5mm | |
| Power supply<br>(Operating voltage) | 24VDC<br>(15-30VC) | |
| 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 ~ +70℃ | |
| Control output | 2~100mA | |
| Insulation resistance | Min. 50MΩ (at 500VDC mega) | |
| Dielectric strength | 1500VAC 50/60Hz for 1 minute | |
| Vibration | 1mm amplitude at frequency of 10 ~ 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 ~ +70℃ (at non-freezing status) | |
| Storage temperature | -30 ~ +80℃ (at non-freezing status) | |
| Ambient humidity | 35 ~ 95%RH | |
| Protection circuit | Surge 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.

### ●AC 2-wire type

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

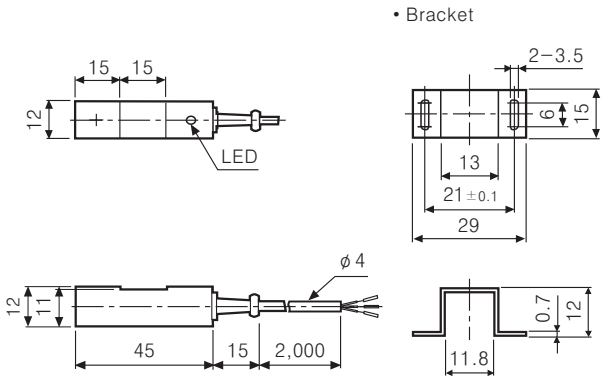
| Model | PSN25-5AO<br>PSN25-5AC | PSN30-10AO<br>PSN30-10AC | PSN30-15AO<br>PSN30-15AC | PSN40-20AO<br>PSN40-20AC |
|---|---|---|---|---|
| Sensing distance | 5mm ±10% | 10mm ±10% | 15mm ±10% | 20mm ±10% |
| Hysteresis | Max. 10% of sensing distance | | | |
| Standard sensing target | 25×25×1mm(Iron) | 30×30×1mm(Iron) | 45×45×1mm(Iron) | 60×60×1mm(Iron) |
| Setting distance | 0 ~ 3.5mm | 0 ~ 7mm | 0 ~ 10.5mm | 0 ~ 14mm |
| Power supply<br>(Operating voltage) | 100-240VDC<br>(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 ~ +70℃ | | | |
| Control output | 5 ~ 200mA | | | |
| Insulation resistance | Min. 50MΩ (at 500VDC mega) | | | |
| Dielectric strength | 2500VAC 50/60Hz for 1 minute | | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 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 ~ +70℃ (at non-freezing status) | | | |
| Storage temperature | -30 ~ +80℃ (at non-freezing status) | | | |
| Ambient humidity | 35 ~ 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.

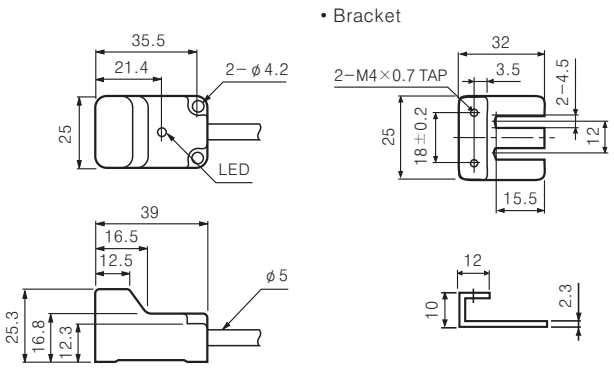
## ▣Dimensions

(Unit:mm)

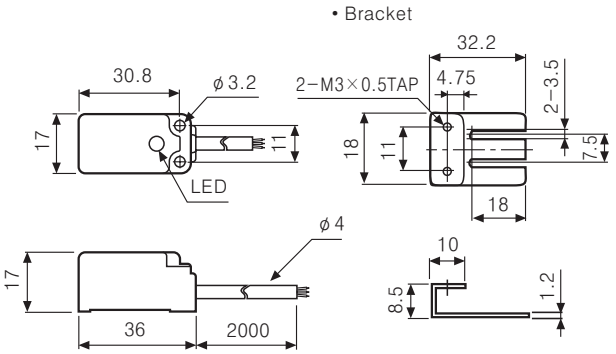
●PS12



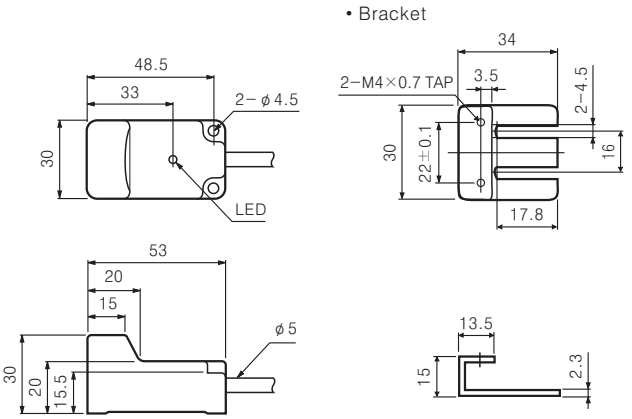

●PSN25



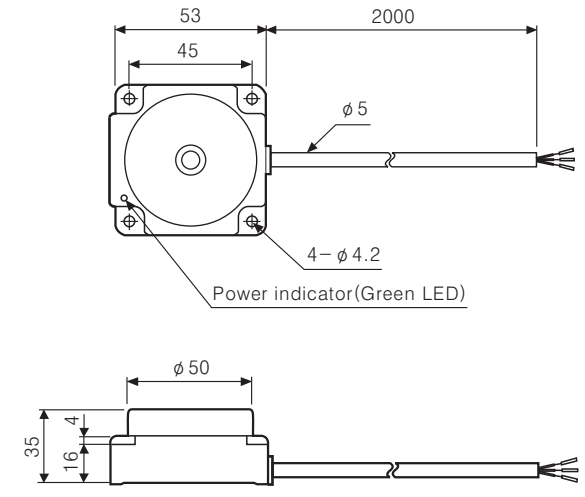

●PSN17 / PSNT17 (Former : PS17/ PST17)



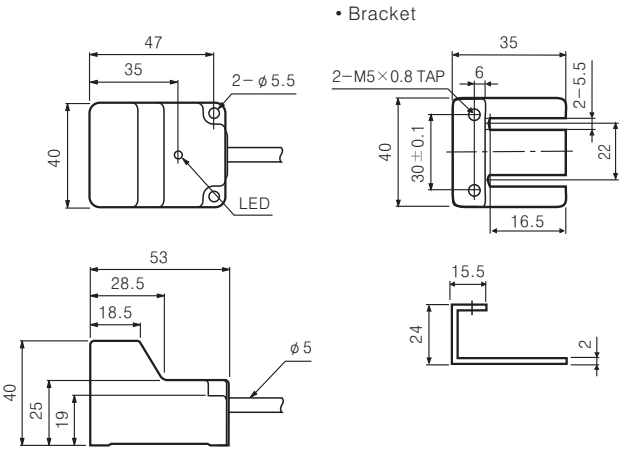

●PSN30




●PS50



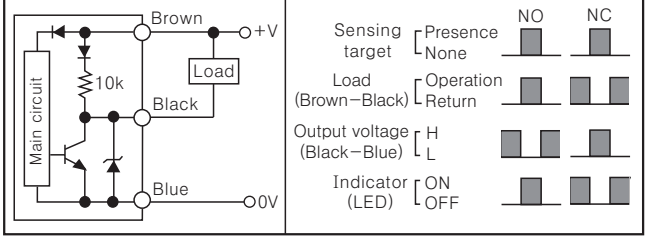

●PSN40



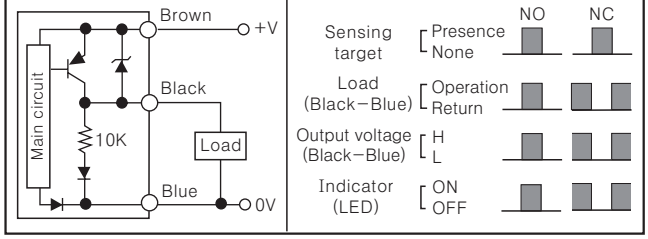
## ▣Control output diagram

### ◎DC 3-wire type

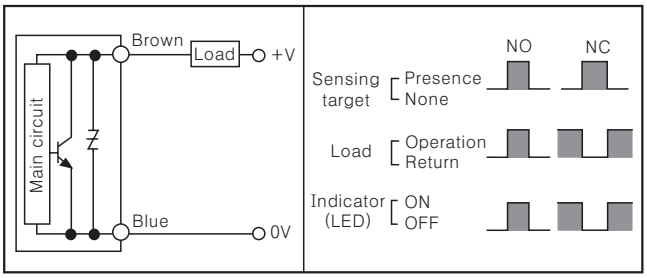
**NPN universal output type**



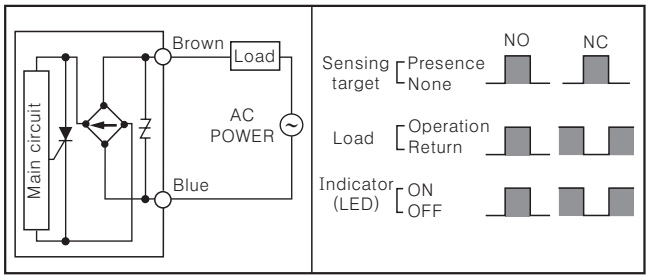

**PNP universal output type**




### ◎DC 2-wire type

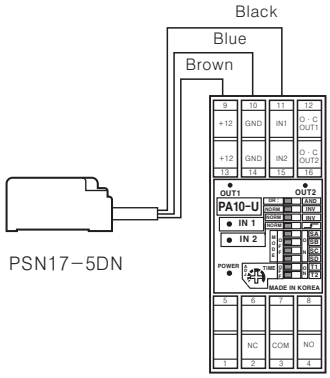



### ◎AC 2-wire type

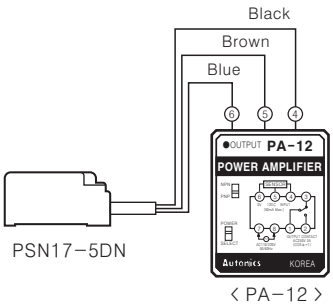



## ▣Connections

### ◎DC 3-wire type



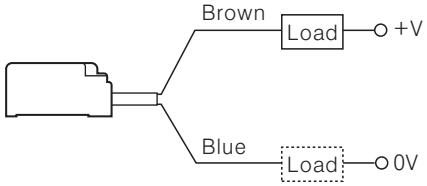

〈 PA10-U 〉




〈 PA-12 〉

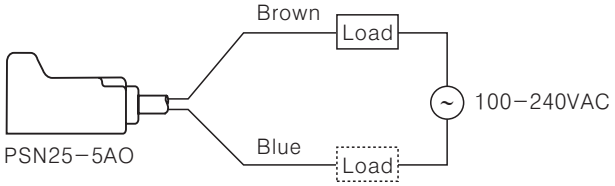
※There is NPN/PNP selection switch in PA-12.

### ◎DC 2-wire type




※The load can be connected to either wire.

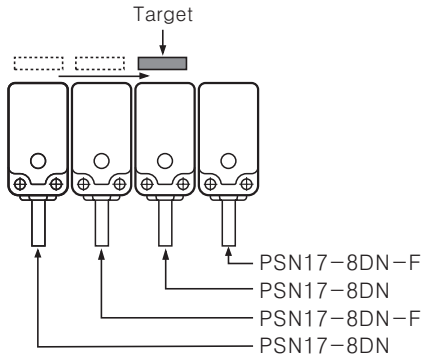
### ◎AC 2-wire type




※The load can be connected to either wire.

## ▣Proper usage

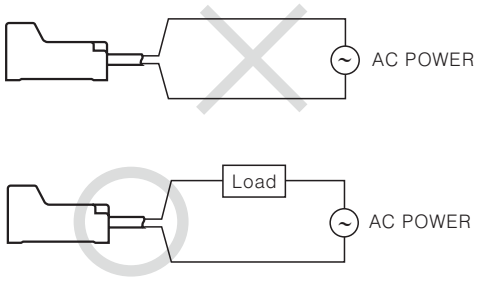
◎Differential frequency




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.

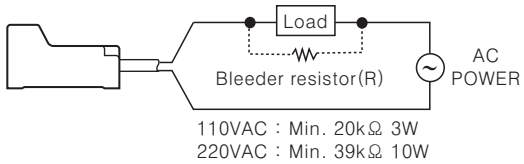
◎Connection of the power supply




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

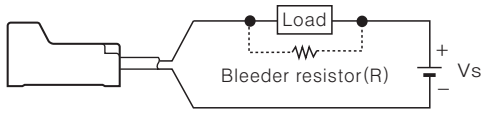



It may cause return failure of load by residual voltage.
If the load current is under 5mA, please make sure the residual voltage is less than the return voltage of the load by connecting a bleeder resistor in parallel with the load as shown in the diagram.

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

[ 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.

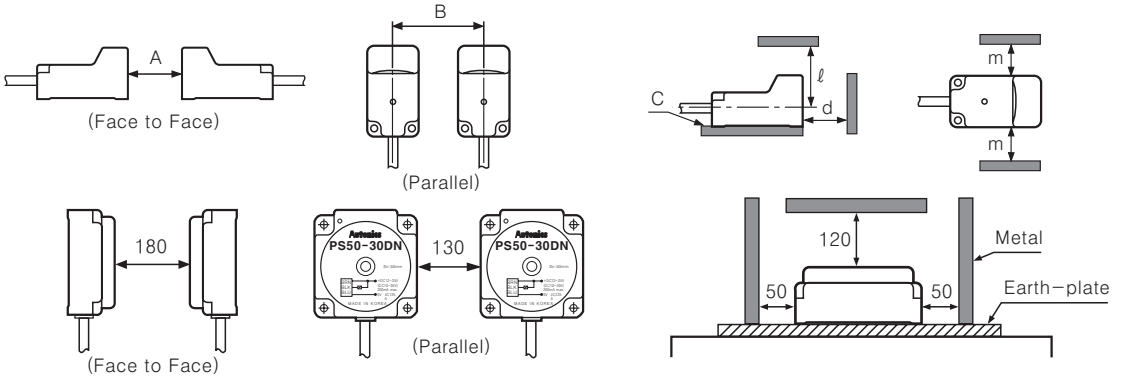
※W value of Bleeder resistor should be bigger for proper heat dissipation.

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

[ 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 closely, malfunction of sensor may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors, as below.




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

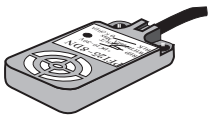
## ▣Features

- ●Easy to mount in narrow space by Flat structure(Height:10mm)
- ●Improved the noise resistance with dedicated IC(DC)
- ●Reverse power polarity(DC), surge(AC/DC), overcurrent protection(DC)
- ●Red LED status indication
- ●IP67 rated waterproof structure(IEC standard)
- ●Replacer for micro switches and limit switches

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

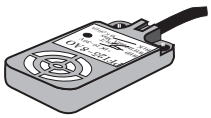
## ▣Type

### ◎DC 3-wire type

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

▶"※" mark can be customized.

### ◎AC 3-wire type

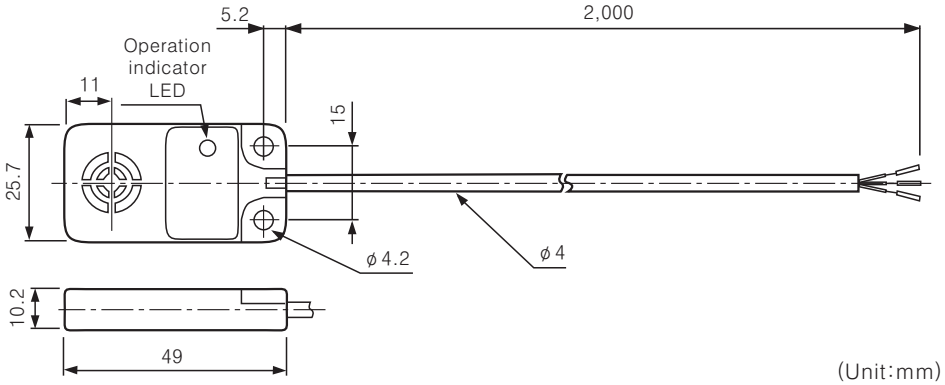
| Appearance | Model |
|---|---|
|  | **PFI25-8AO** |
| | **PFI25-8AC** |

## ▣Specification

| Model | **PFI25-8DN<br>PFI25-8DP<br>PFI25-8DN2<br>PFI25-8DP2** | **PFI25-8AO<br>PFI25-8AC** |
|---|---|---|
| Sensing distance | 8mm ±10% | |
| Hysteresis | Max. 10% of sensing distance | |
| Standard sensing target | 25×25×1mm(Iron) | |
| Setting distance | 0 ~ 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 ~ +70℃ | |
| Control output | Max. 200mA | Max. 150mA |
| Insulation resistance | Min. 50MΩ (at 500VDC mega) | |
| Dielectric strength | 1500VAC 50/60Hz for 1 minute | 2500VAC 50/60Hz for 1 minute |
| Vibration | 1mm amplitude at frequency of 10 ~ 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 ~ +70℃(at non-freezing status) | |
| Storage temperature | -30 ~ +80℃(at non-freezing status) | |
| Ambient humidity | 35 ~ 95%RH | |
| Protection circuit | Surge, Reverse poewer polarity, Overcurrent 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.

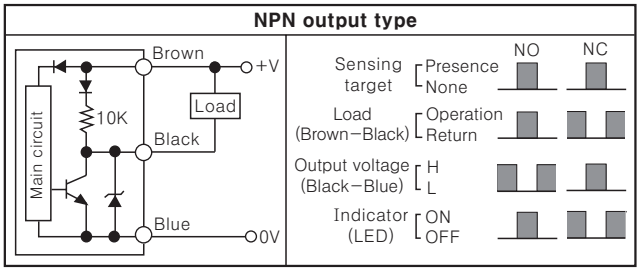
## ▣Dimensions

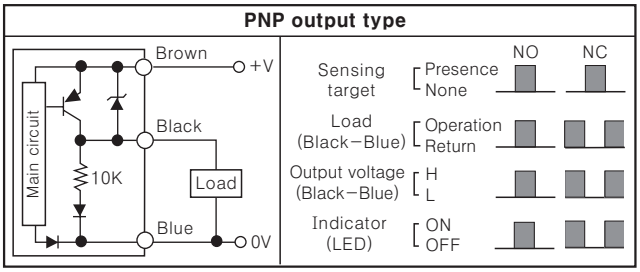



(Unit:mm)

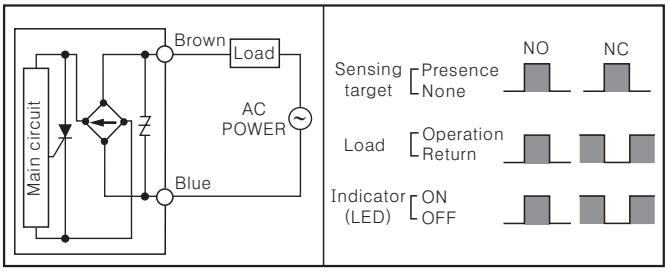
## ▣Control output diagram

### ◎DC 3-wire type



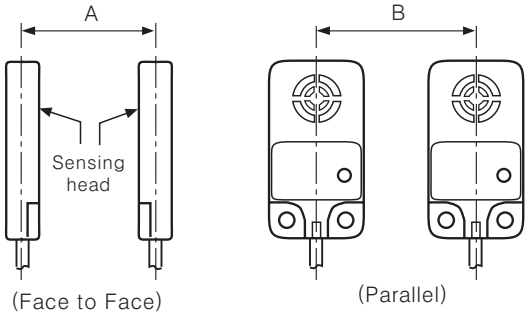

### ◎AC 2-wire type




## ▣Proper usage

### ◎Mutual-interference

When several proximity sensors are mounted closely, sensors may cause a malfunction due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors, as below chart.

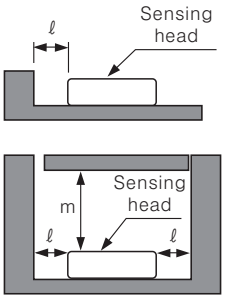



| | |
|---|---|
| A | 100 |
| B | 80 |

(Unit:mm)

### ◎Influence by surrounding metals

When sensors are mounted on metallic panel, it may cause malfunction affected by any metallic object except target. Therefore, be sure to provide a minimum as below chart.




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

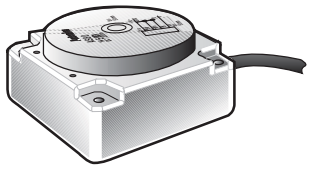
- ●Able to detect up to as 50mm
- ●Improved the noise resistance with dedicated IC
- ●Reverse power polarity, surge, overcurrent protection
- ●Wide range of power supply : 12−48VDC (Voltage range:10−65VDC)
- ●Simultaneous output of Normal Open+Normal Close
- ●Built−in power indicator and operation indicator
- ●IP67 rated waterproof structure(IEC standard)

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

CE

## ▣Type

◎DC 4−wire long sensing distance type

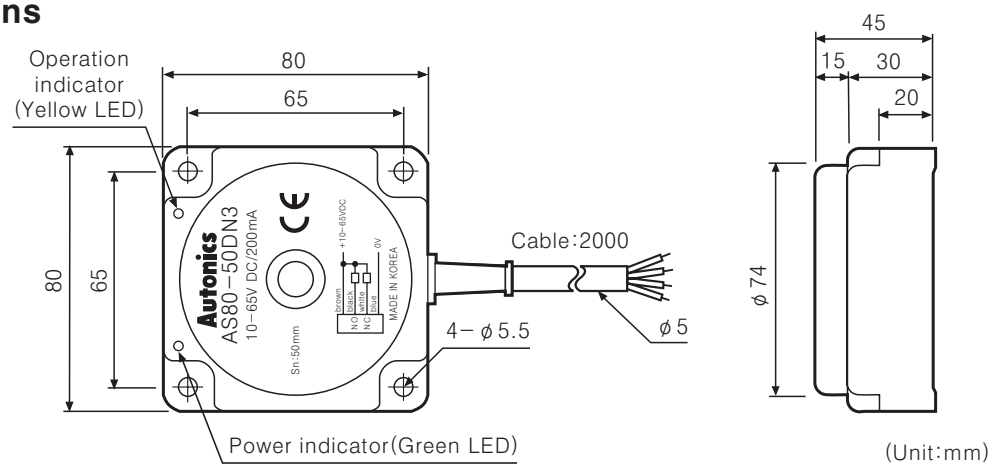
| Appearance | Model |
|---|---|
|  | **AS80-50DN3** |
| | **AS80-50DP3** |

## ▣Speicifcations

| Model | **AS80-50DN3** | **AS80-50DP3** |
|---|---|---|
| Sensing type | NPN Normal Open + Normal Close | PNP Normal Open + Normal Close |
| Sensing distance | 50mm ±10% | |
| Hysteresis | Max. 15% of sensing distance | |
| Standard sensing target | 150×150×1mm(Iron) | |
| Setting distance | 0 ~ 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 ~ +70℃ | |
| Control output | Max. 200mA | |
| Insulation resistance | Min. 50MΩ (at 500VDC mega) | |
| Dielectric strength | 1500VAC 50/60Hz for 1 minute | |
| Vibration | 1mm amplitude at frequency of 10 ~ 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 ~ +70℃(at non−freezing status) | |
| Storage temperature | −30 ~ +80℃(at non−freezing status) | |
| Ambient humidity | 35 ~ 95%RH | |
| Protection circuit | Surge, Reverse power polarity, Overcurrent protection circuit | |
| Cable | φ5×4P, 2m | |
| Protection | IP67(IEC standard) | |
| Approval | CE | |
| Unit weight | Approx. 470g | |

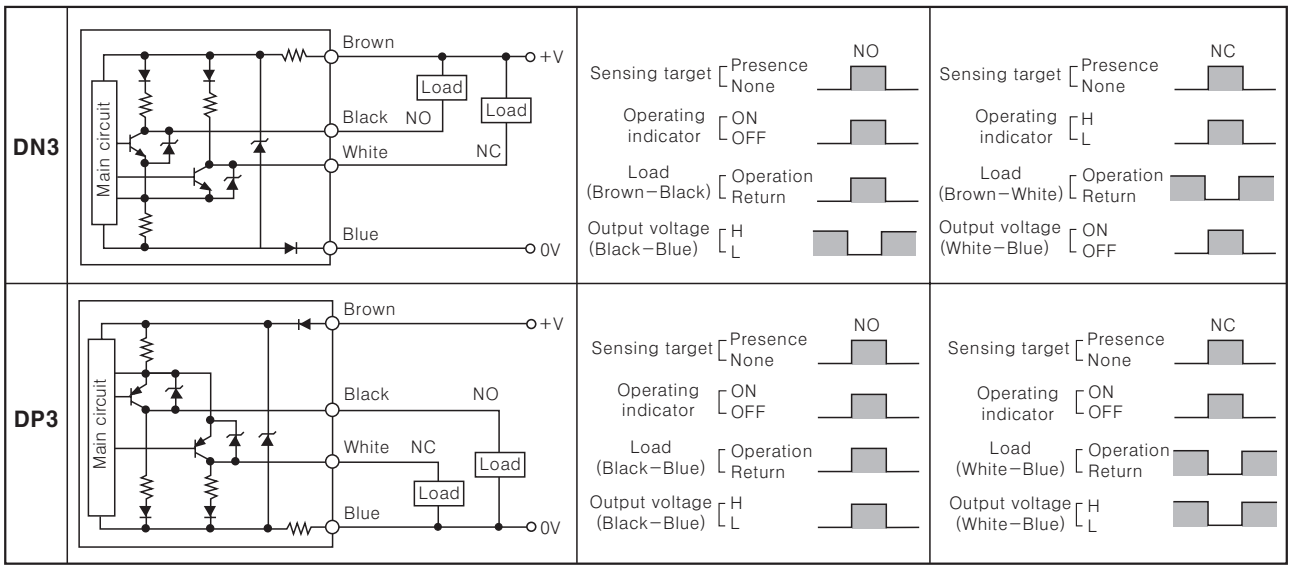
※**(*1)** The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

## ▣Dimensions




(Unit:mm)

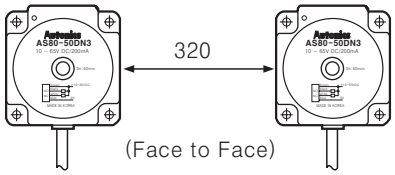
## ▣Control output diagram

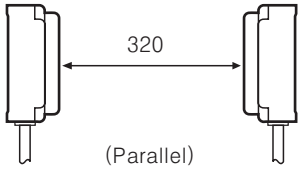



## ▣Mutual-interference & Influence by surrounding metals

◎Mutual-interference

When several proximity sensors are mounted closely, sensors may cause a malfunction due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors, as picture below.

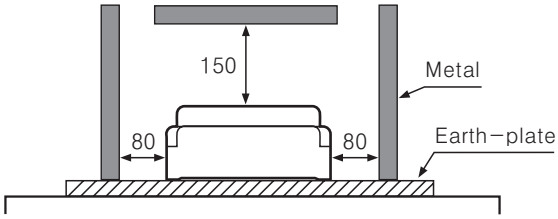



◎Influence by surrounding metals

When sensors are mounted on metallic panel, it may malfunction affected by any metallic object except target.

Therefore, be sure to provide a minimum distance as shown in picture below.




(Unit:mm)

# Electric capacitive type proximity sensor

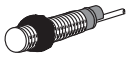
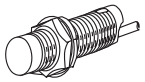
## ▣Features

- ●Able to detect iron, metal, plastic, water, stone, wood etc
- ●Long life cycle and High reliability
- ●Reverse power polarity(DC), surge(AC/DC)
- ●Easy to adjust of the sensing distance with sensitivity adjuster
- ●Red LED status indication
- ●Easy to control of level and position

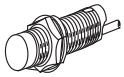
⚠ **Please read "Caution for your safety" in operation manual before using.**

## ▣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.

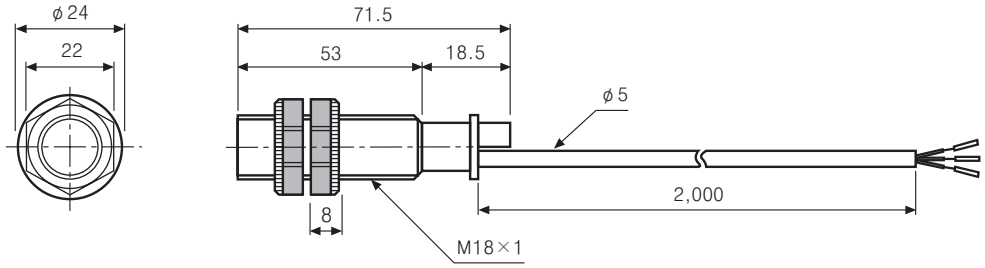
## ▣Specifications

| Model | **CR18-8DN<br>CR18-8DP<br>CR18-8DN2** | **CR30-15DN<br>CR30-15DP<br>CR30-15DN2** | **CR18-8AO<br>CR18-8AC** | **CR30-15AO<br>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 ~ 5.6mm | 0 ~ 10.5mm | 0 ~ 5.6mm | 0 ~ 10.5mm |
| Power supply<br>(Operating voltage) | 12-24VDC<br>(10-30VDC) | | 100-240VAC<br>(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 ~ +70℃ | | | |
| Control output | Max. 200mA | | Max. 5 ~ 200mA | |
| Insulation resistance | Min. 50MΩ(at 500VDC mega) | | | |
| Dielectric strength | 1500VAC 50/60Hz for 1 minute | | | |
| Vibration | 1mm amplitude at frequency of 10 ~ 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 ~ +70℃(at non-freezing status) | | | |
| Storage temperature | -30 ~ +80℃(at non-freezing status) | | | |
| Ambient humidity | 35 ~ 95%RH | | | |
| Protection circuit | Surge protection circuit, Reverse polarity protection | | Surge 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 |

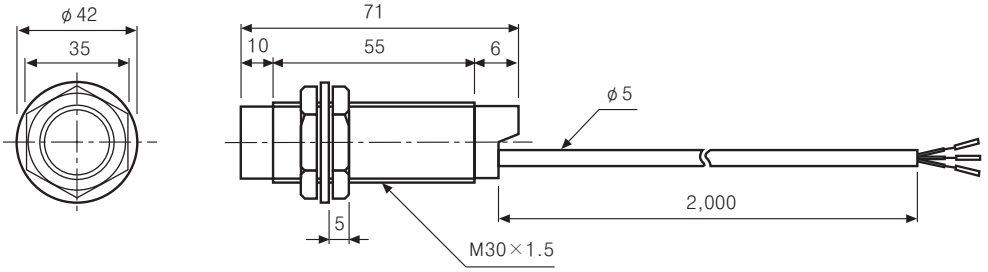
※**(*1)** The response frequency is the average value. The standard sensing target is used and the width is set as 2 times of the standard sensing target, 1/2 of the sensing distance for the distance.

## ▣Dimensions

●CR18-8D□ ●CR18-8A□




●CR30-15D□ ●CR30-15A□

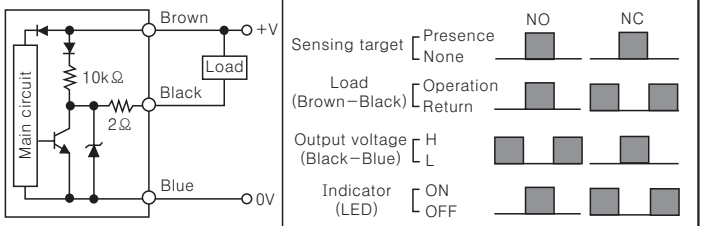



(Unit:mm)

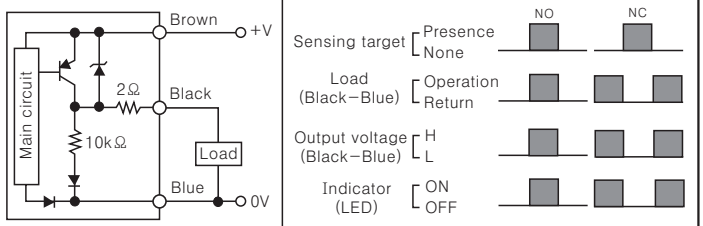
## ▣Control output diagram

### ◎DC 3-wire type

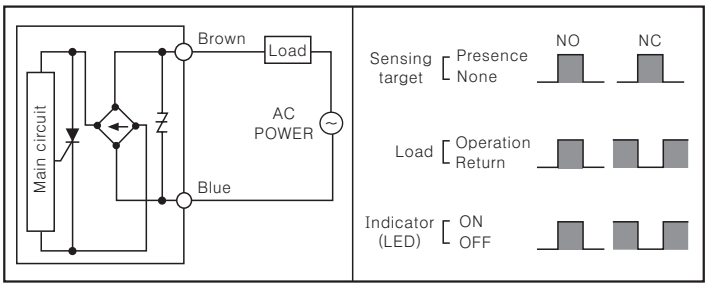
**NPN output type**




**PNP output type**

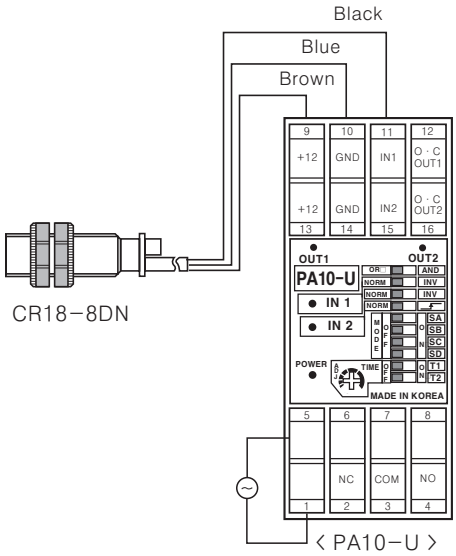



### ◎AC 2-wire type

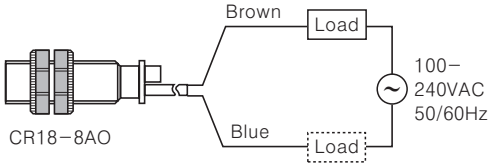



## ▣Connections

### ◎DC 3-wire type




### ◎AC 2-wire type

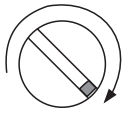



※The load can be connected to either wire.

## ▣Sensitivity adjustment

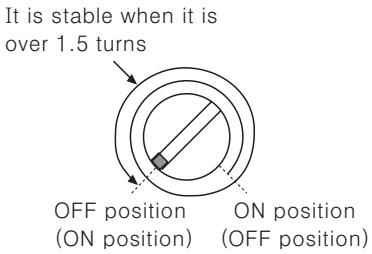
Please turn potention VR to set sensitivity as below procedure.

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

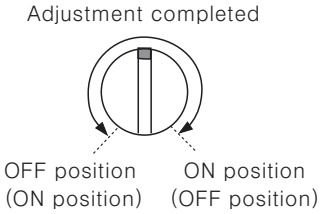



❷ Put the object in right sensing position, turn the potention VR to the left and stop at the proximity sensor is OFF(ON).

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

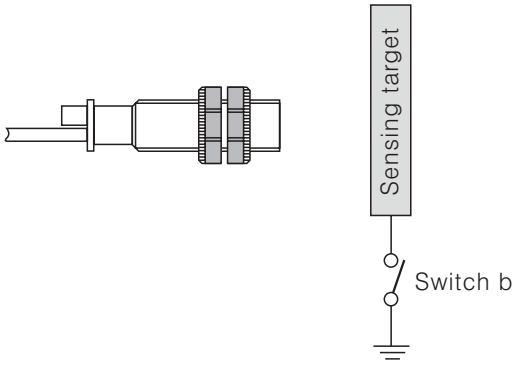
The sensing distance will be changed by grounding status of capacitive proximity sensor and the target[50×50×1mm(Iron)]. Please check the material when installing it on panel.

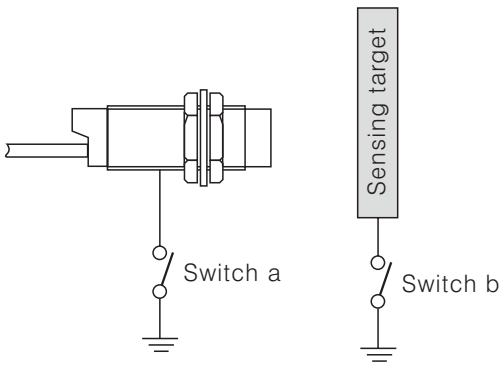
●CR18 Type

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

●CR30 Type

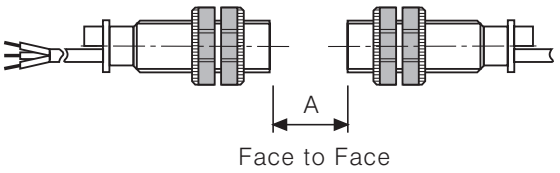
| Ground condition | | | | | |
|---|---|---|---|---|---|
| | Switch a | ON | OFF | ON | OFF |
| | Switch b | ON | ON | OFF | OFF |
| Operating distance(mm) | | 15 | 18 | 6 | 6 |



## ▣Mutual-interference & Influence by surrounding metals

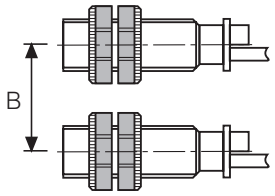
When several proximity sensors are mounted closely, malfunction of sensor may be caused due to mutual interference. Therefore, be sure to provide a minimum distance between the two sensors, as below charts.




Face to Face

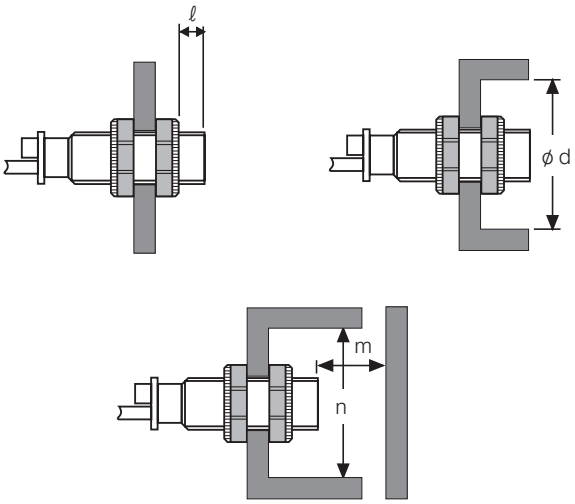
| Item \ Model | CR18 | CR30 |
|---|---|---|
| A | 48 | 90 |
| B | 54 | 90 |

(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, provide minimum distance as shown.




| 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 detecting 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.

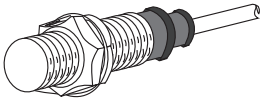
# Transmission coupler

## ▣Features

●Loop powered type
The signal is transmitted by magnetic coupling of coils.
●Superior with environmental resistance
It does not cause any malfunction even the device is smeared with oily substances.
●Applications
A drilling, machine table, robot arm, conveyor belt and various revolution axis.

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

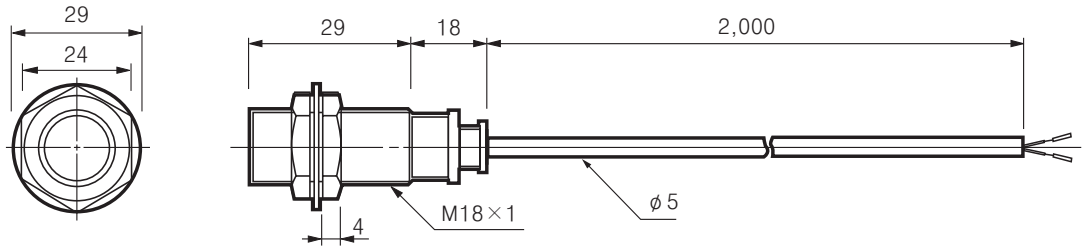
## ▣Type

| Appearances | | Model |
|---|---|---|
| M18 |  | **PET18-5** |

## ▣Specifications

| Model | **PET18-5** |
|---|---|
| Transmission distance | 5mm ±10% |
| Setting transmission distance | 1 ~ 4.5mm |
| Response time | Max. 1ms |
| Ambient temperature | −25 ~ +70℃ (at non−freezing status) |
| Ambient humidity | 35 ~ 95%RH |
| Insulation resistance | Min. 50MΩ (at 500VDC mega) |
| Dielectric strength | 1500VAC 50/60Hz for 1minute |
| Vibration | 1mm amplitude at frequency of 10 ~ 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<br>PR18−5DP PRW18−5DP PRCM18−5DP PRWL18−5DP PRL18−5DP PRCML18−5DP PRT18−5DC<br>PR18−5DN2 PRW18−5DN2 PRCM18−5DN2 PRWL18−5DN2 PRL18−5DN2 PRCML18−5DN2 PRCMT18−5DO<br>PR18−5DP2 PRW18−5DP2 PRCM18−5DP2 PRWL18−5DP2 PRL18−5DP2 PRCML18−5DP2 PRCMT18−5DC |

## ▣Dimensions

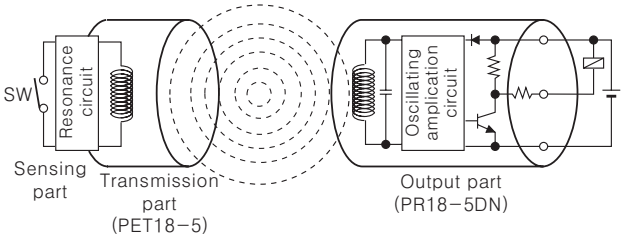


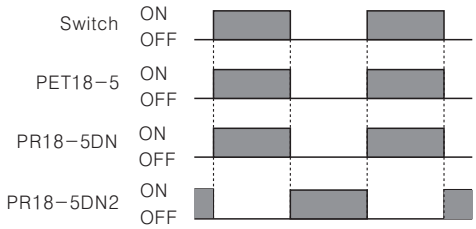

(Unit:mm)

## ▣Operation mechanism

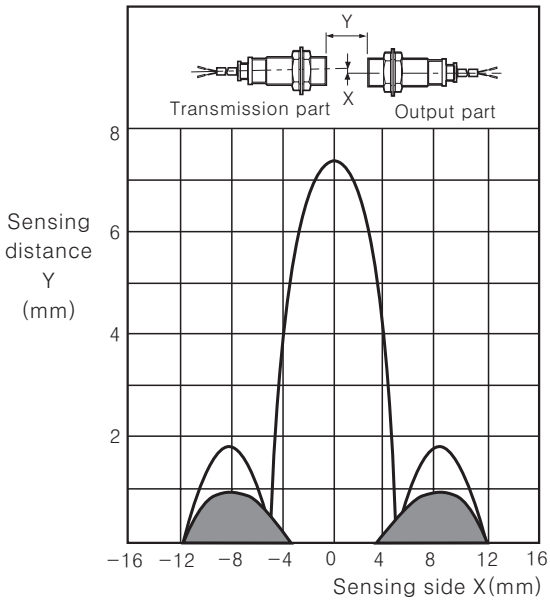
It transmits ON/OFF signal with a magnetic coupling of coils.

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.



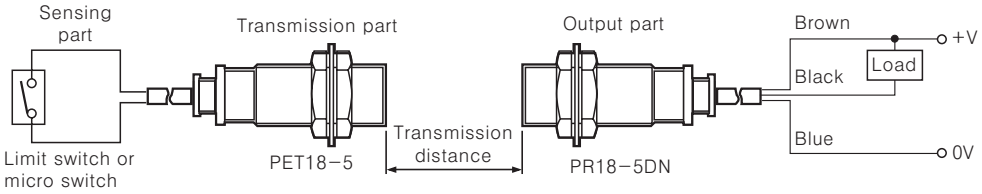




## ▣Feature data



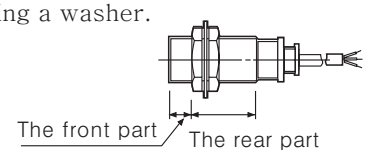

☞ Please note the proximity sensor detects the surrounding cover of the sensing side of transmission coupler even the connection switch is OFF. (Sensing part) for ▩ part.

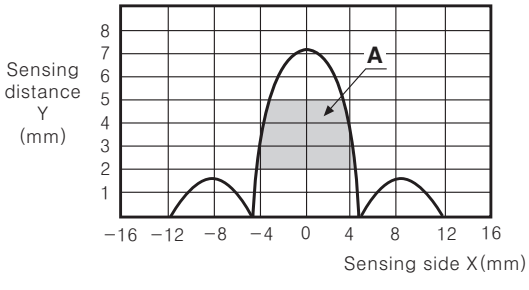
## ▣Connections




## ▣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.