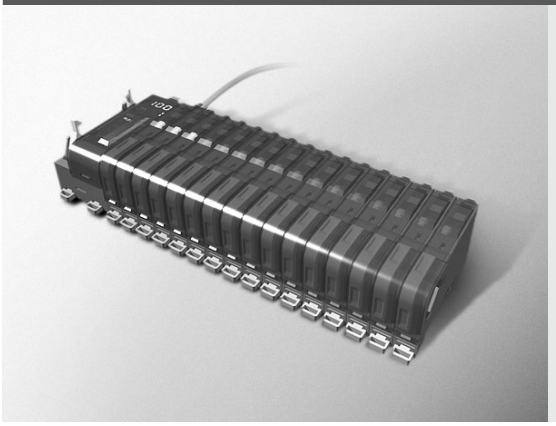
## Gang-Mounted Remote Cluster

# HPX-ET Series

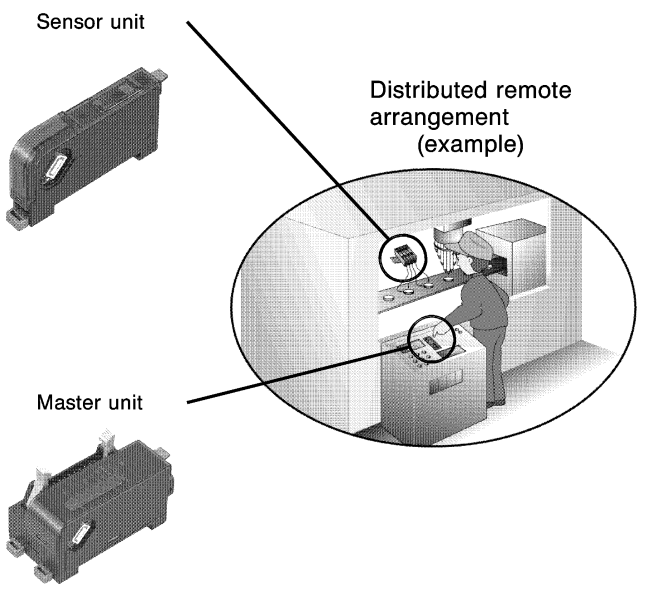
**Connector connection type 16-unit gang-mounting sensors strongly support the request for wiring and space savings. Distributed remote cluster arrangement is a new concept for designing equipment.**

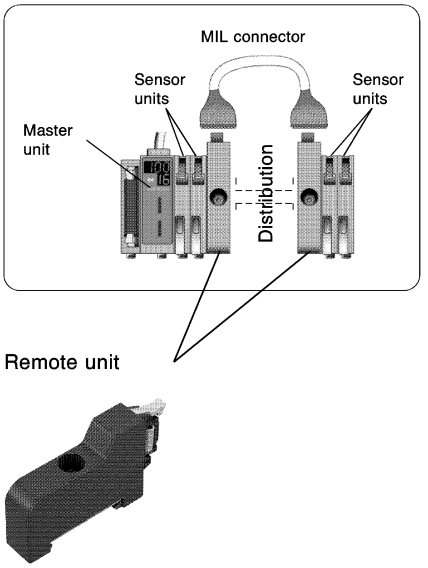


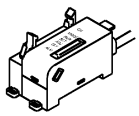
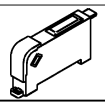
- **Connector connection type 16-unit gang-mounting:**
  Sensor Slave and Master units can be mounted on DIN rail and connected to each other by a slide connector in a single-touch method without requesting wiring work. MIL style connectors are used for batch connection except for power supply wiring. (Option exists for inclusion of power wiring too.)
- **The remote distribution arrangement system has removed the limitations in designing equipment caused by wiring arrangement of fibers.**
- **3-digit digital indication of the application contrast stability (margin between ON and OFF) when doing initial setting and incoming received light levels.**
- **5 types of Programming Options for Setting Threshold. 2-position sensitivity, positioning, maximum sensitivity, BGS and full-auto tuning.**
- **Mutual interference prevention function: Side-by-side mounting is possible up to 4 fiber units.**

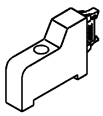
## DISTRIBUTED REMOTE ARRANGEMENT

The **HPX-ET** enables both gang-mounting (master unit and sensor units are connected in series) and a distributed remote arrangement using remote units (can be separated between master unit and sensor units, and also between sensor units: maximum 5 clusters per Master due to resistance buildup). This distributed remote arrangement allows the wiring and location of the Master unit in a position close to the operator where programming and monitoring functions are more easily accomplished. It also allows the ability to locate the Slave sensor units where sensing functions need to be accomplished. The distributed remote arrangement can solve the problems of wiring arrangement for electical cabling and fiberoptic cables and will enable full flexibility to the designer for saving wiring, ease of use, and ability to use shorter fibercable lengths. Change out of faulty sensor units is also easily done by quick disconnection and programming through the Master as needed without having to rewire.



| Model | Shape | Supply voltage | Output mode | Operation mode | 3-digit indicator | Selective five tuning ways | Setting delay timer | Mutual interference prevention | Catalog listing |
|---|---|---|---|---|---|---|---|---|---|
| Master unit |  | 12 to 24Vdc | NPN open collector | depend on selectable-switch of Sensor unit | ○ | ○ | ○ | ○ | **HPX-ET1** |
| | | | PNP open collector | | | | | | **HPX-ET2** |
| Sensor unit |  | Based on master unit | | Light ON/ dark ON selectable | Based on master unit | | | | **HPX-ETS** |

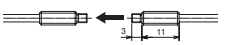
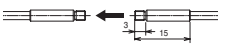
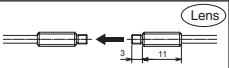
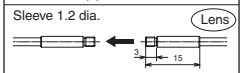
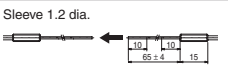
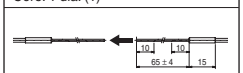
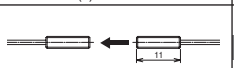
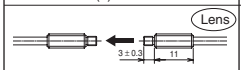
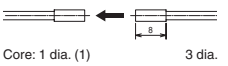
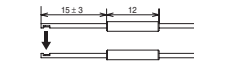
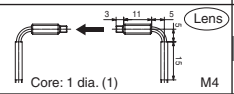
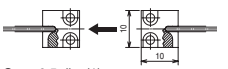
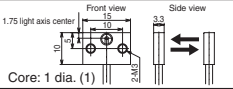
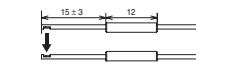
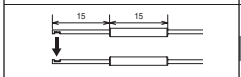
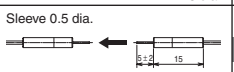
| Model | Shape | Application | Catalog listing |
|---|---|---|---|
| Remoto unit<br>(Remote connections: Max. 5 locations<br>Remote cable length: Max. 2 each) |  | (Male connector)<br>Attach only at the right side for both the master and sensor unit. | **HPX-ETR1** |
| | | (Female connector)<br>Attach only at the left side for the sensor unit. | **HPX-ETR2** |

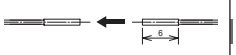
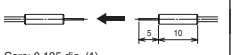
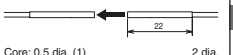
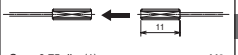
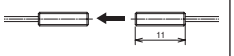
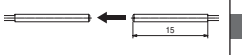
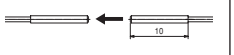
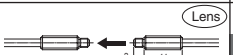
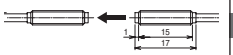
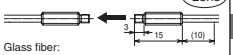
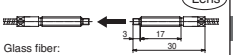
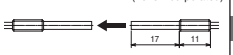
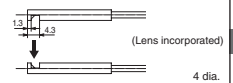
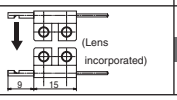
| Model | Master unit | | Sensor unit |
|---|---|---|---|
| Catalog listing | **HPX-ET1** | **HPX-ET2** | **HPX-ETS** |
| Supply voltage | 12 to 24Vdc | | Supplied from Master unit |
| Current consumption | 60mA + (35mA × Number of Sensor unit) | | 35mA |
| Operation mode | — | | Light-ON/Dark-ON switch selectable |
| Output mode | NPN transistor open collector | PNP transistor open collector | — |
| Control output | Output switching circuit: 50mA max. (resistive load),<br>Output dielectric strength: 30V max.,<br>Voltage drop: 1V max. (at 50mA switching circuit) | | — |
| Response time | 1ms max. | | |
| Sensitivity adjustment | Set by Master unit: (2-step, Position, Maximum sensitivity, BGS, Full-auto), (OP level adjust) | | |
| Light emitter | — | | Red LED |
| Display functions | Green digital display (1 to 16): Adless of Sensor units<br>Orange digital display (−100 to 100): Receiving light level, Contrast margin, OP level, Delay timer<br>Mode display: RUN, SET, ADJ, DLY, ALM | | |
| Timer function | Set by Master unit: ON delay/OFF delay/instantaneous<br>Delay time setting: 1 to 100msec at 1msec step, 100msec to 1sec at 100msec step) | | |
| Ambient light immunity | — | | Incandescent lamp: 5,000lux max.<br>Sunlight: 20,000lux max. |
| Operating temperature range | −20 to +50°C (condensation not allowed) * | | |
| Storange temperature range | −40 to +70°C (condensation not allowed) | | |
| Humidity range | 35 to 85% RH (condensation not allowed) | | |
| Insulation resistance | 20MΩ min. (at 500Vdc) | | |
| Dielectric strength | 1,000Vac, 50/60Hz for 1 minute between case and electrically live metals | | |
| Vibration resistance | 10 to 55Hz, 1.5mm peak-to-peak amplitude, 2hrs in X, Y and Z directions. | | |
| Shock resistance | 500m/s$^2$, 3 timers in X, Y and Z directions | | |
| Wiring method | Voltage: Pre-leaded, Output: MIL connector (MIL-C-83503) | | Connection to master unit by gang-mounting method or remote unit |
| Circuit protection | Reverse connection protection circuit, Output short-circuit protection circuit | | |

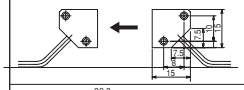
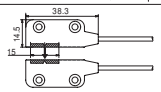
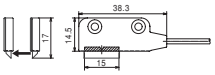
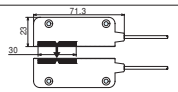
* Operating temperature range depends on the numbers of gang-mounted sensor units.
1 to 4 units: −20 to +50°C, 5 to 6 units: −20 to +45°C, 7 to 16 units: −20 to +40°C

## FIBER UNIT

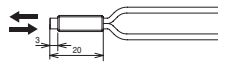
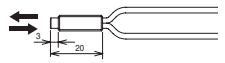
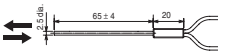
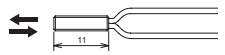
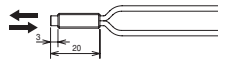
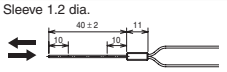
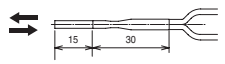
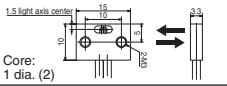
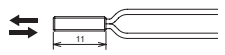
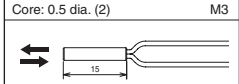
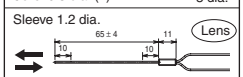
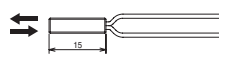
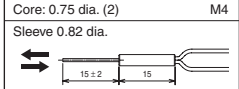
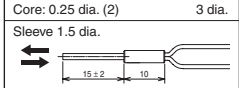
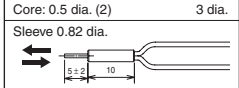
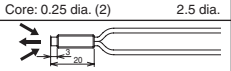
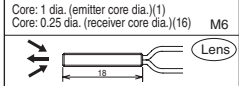
Thru scan

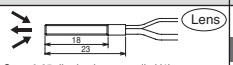
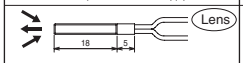
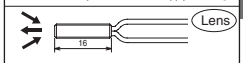
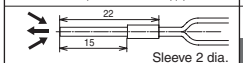
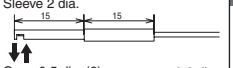
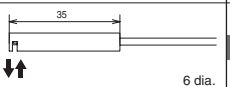
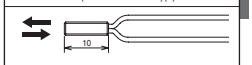
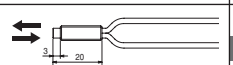
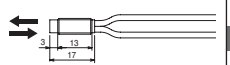
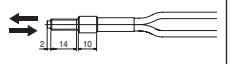
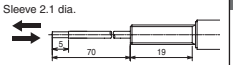
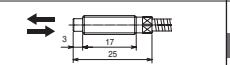
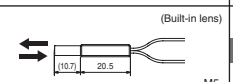
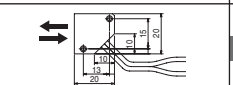
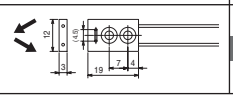
| Group | Appearance | Scanning distance (mm) | Features | Cable length (cuttable) | Bend radius | Catalog listing |
|---|---|---|---|---|---|---|
| Long distance |  Core: 1.4 dia. (1) M4 | 540 | Long scanning distance | Cut to length 2m | R20 | HPF-T001 |
| |  Core: 1.4 dia. (1) 3 dia. | | | | | HPF-T002 |
| Standard |  Core: 1 dia. (1) M4 | 290 | Standard | Cut to length 2m | R20 | HPF-T003 |
| |  Core: 1 dia. (1) 3 dia. | | | | | HPF-T004 |
| |  Core: 1 dia. (1) M4 | | Sleeve (flexible) | | R10/R20 | HPF-T005 |
| |  Core: 1 dia. (1) 3 dia. | | | | | HPF-T006 |
| |  Core: 1 dia. (1) M3 | | Standard diameter and compact | | R20 | HPF-T045 |
| Ultra bend - tolerant |  Core: 0.5 dia. (1) M3 | 35 | Static installation, flexible, and small diameter | Cut to length 2m | R1 | HPF-T024 |
| |  Core: 1 dia. (1) M4 | 220 | Static installation, flexible, and standard model | | R2 | HPF-T025 |
| |  Core: 1 dia. (1) 3 dia. | | | | | HPF-T031 |
| |  Sleeve 1 dia. 2.5 dia. | 14 | Static installation, flexible, and side view model | | R1 | HPF-T026 |
| Space saving |  Core: 1 dia. (1) M4 | 210 | Elbow | Cut to length 2m | R20 | HPF-T010 |
| |  Core: 0.5 dia. (1) | 35 | Static installation, flexible, small diameter, and flat top view model | | R1 | HPF-T028 |
| |  Core: 1 dia. (1) | 56 | Static installation, flexible, standard, and flat side view model | | R5 | HPF-T028LF |
| Side view |  Sleeve 1 dia. 2.5 dia. | 40 | Small diameter sleeve | Cut to length 2m | R15 | HPF-T007 |
| |  Sleeve 0.88 dia. 2.5 dia. | 14 | Fine diameter sleeve | Cut to length 1m | R5 | HPF-T037 |
| |  3 dia. | 160 | Standard diameter | Cut to length 2m | R20 | HPF-T042 |
| Small diameter |  Core: 0.25 dia. (1) 3 dia. | 9 | Fine diameter | Cut to length 2m | R15 | HPF-T015 |

| Group | Appearance | Scanning distance (mm) | Features | Cable length (cuttable) | Bend radius | Catalog listing |
|---|---|---|---|---|---|---|
| Small diameter |  Core: 0.25 dia. (1) 1.0 dia. | 9 | Fine diameter | Connector 0.5m | R15 | HPF-T038 |
| | Sleeve 0.4 dia.  Core: 0.125 dia. (1) | 4 | Fine diameter sleeve | | | HPF-T039 |
| | Sleeve 0.4 dia.  Core: 0.25 dia. (1) 3 dia. | 9 | Fine diameter sleeve | Cut to length 2m | | HPF-T040 |
| |  Core: 0.5 dia. (1) 2 dia. | 70 | Small diameter | | | HPF-T043 |
| |  Core: 0.75 dia. (1) M3 | 160 | Small diameter and long scanning distance | | | HPF-T044 |
| Elastic |  Core: 0.25 dia. (1) M3 | 45 | Elastic small diameter | Cut to length 2m | R4 | HPF-T008 |
| |  Core: 0.25 dia. (4) 1.5 dia. | | | | | HPF-T009 |
| |  Core: 0.25 dia. (4) 1.5 dia. | | | | | HPF-T046 |
| | Lens  Core: 0.25 dia. (16) M4 | 200 | Elastic standard diameter | | | HPF-T033 |
| Heat resistant | Lens  Core: 1 dia. (1) M4 | 170 | To 105˚C | Cut to length 2m | R25 | HPF-T012 |
| |  Core: 1.5 dia. (1) M4 | 290 | To 150˚C | | R35 | HPF-T017 |
| | Lens  Glass fiber: 1 dia. (0.05 dia. x 320) (1) M4 | 150 | To 200˚C | Connector 1m | R15 | HPF-T018 |
| | Lens  Glass fiber: 0.05 dia. (0.05 dia. x 370) M4 | 160 | Heat and cold resistant from -60˚C to +350˚C | Connector 2m | R25 | HPF-T014 |
| Narrow beam | (Lens incorporated)  M4 | 1,000 | Parallel beam top view | Cut to length 2m | R20 | HPF-T019 |
| |  (Lens incorporated) 4 dia. | 1,100 | Parallel beam side view | | | HPF-T020 |
| | (Lens incorporated)  M4 | 870 | Narrow beam top view | | R15 | HPF-T023 |
| Mapping | Core: 1.5 dia. (1)  (Lens incorporated) | 220 | Narrow beam -1.5˚/+1.5˚max. side view | Cut to length 2m | R5 | HPF-T030 |

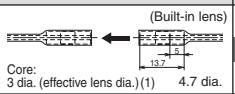
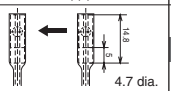
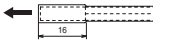
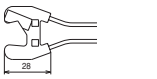
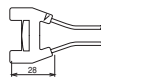
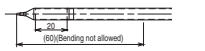
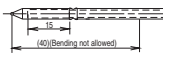
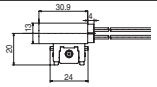
| Group | Appearance | Scanning distance (mm) | Features | Cable length (cuttable) | Bend radius | Catalog listing |
|---|---|---|---|---|---|---|
| Wide beam |  | 190 | Array | Cut to length 2m | R4 | HPF-T021 |
| |  | 850 | Beam 15mm wide | | R15 | HPF-T021T |
| |  | 800 | Beam 15mm wide Side beam | | | HPF-T021S |
| |  | 1,400 | Beam 30mm wide | | | HPF-T021WT |

## Diffuse scan

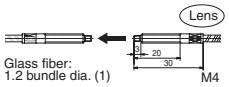
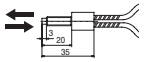
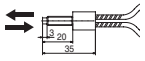
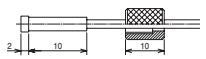
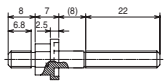
| Group | Appearance | Scanning distance (mm) | Features | Cable length (cuttable) | Bend radius | Catalog listing |
|---|---|---|---|---|---|---|
| Long distance |  Core: 1.4 dia. (2) M6 | 150 | Long scanning distance | Cut to length 2m | R20 | HPF-D001 |
| Standard |  Core: 1 dia. (2) M6 | 110 | Standard | Cut to length 2m | R20 | HPF-D002 |
| |  Core: 1 dia. (2) M6 | | | | | HPF-D003 |
| Ultra bend - tolerant |  Core: 0.5 dia. (2) M3 | 7 | Small diameter | Cut to length 2m | R1 | HPF-D029 |
| |  Core: 1 dia. (2) M6 | 60 | Standard | | R2 | HPF-D030 |
| | Sleeve 1.2 dia.  Core: 0.5 dia. (2) M4 | 7 | Small diameter sleeve (bendable) | | R10/R1 | HPF-D031 |
| |  Core: 0.5 dia. (emitter core dia.)(1) Core: 0.25 dia. (receiver core dia.)(4) M3 | 13 | Coaxial | | R1/R4 | HPF-D032 |
| |  Core: 1 dia. (2) 3 dia. | 60 | Standard diameter | | R5 | HPF-D044 |
| Compact |  Core: 1 dia. (2) | For details, contact Yamatake Corporation. | Static installation, flexible, standard, and flat side-view model | Cut to length 2m | R2 | HPF-D045LF |
| Small diameter |  Core: 0.5 dia. (2) M3 | | Small diameter | Cut to length 2m | R15 | HPF-D004 |
| |  Core: 0.5 dia. (2) 3 dia. | 30 | | | | HPF-D005 |
| | Sleeve 1.2 dia.  Core: 0.5 dia. (2) M4 | | Small diameter sleeve | | | HPF-D006 |
| |  Core: 0.75 dia. (2) M4 | 55 | Small diameter long scanning distance | | | HPF-D018 |
| | Sleeve 0.82 dia.  Core: 0.25 dia. (2) 3 dia. | 3 | Fine diameter sleeve | Cut to length 0.5m | | HPF-D019 |
| | Sleeve 1.5 dia.  Core: 0.5 dia. (2) 3 dia. | 25 | Small diameter sleeve | Cut to length 2m | | HPF-D021 |
| | Sleeve 0.82 dia.  Core: 0.25 dia. (2) 2.5 dia. | 3 | Fine diameter sleeve | Cut to length 0.5m | R4 | HPF-D039 |
| Coaxial |  Core: 1 dia. (emitter core dia.)(1) Core: 0.25 dia. (receiver core dia.)(16) M6 | 110 | Coaxial | Cut to length 2m | R20 | HPF-D009 |
| |  Core: 0.5 dia. (emitter core dia.)(1) Core: 0.25 dia. (receiver core dia.)(4) M3 | 25 | | | R15 | HPF-D010 |

| Group | Appearance | Scanning distance (mm) | Features | Cable length (cuttable) | Bend radius | Catalog listing |
|---|---|---|---|---|---|---|
| Coaxial |  Core: 0.25 dia. (emitter core dia.)(1) Core: 0.25 dia. (receiver core dia.)(6) M3 | 18 | Coaxial | Connector 0.5m | R4 | HPF-D034 |
| |  Core: 0.5 dia. (emitter core dia.)(1) Core: 0.25 dia. (receiver core dia.)(9) M3 | 35 | | Cut to length 2m | R15 | HPF-D035 |
| |  Core: 0.5 dia. (emitter core dia.)(1) Core: 0.25 dia. (receiver core dia.)(9) M4 | | | | | HPF-D038 |
| |  Core: 0.5 dia. (emitter core dia.)(1) Core: 0.25 dia. (receiver core dia.)(9) 3 dia. | 25 | Small diameter coaxial | | | HPF-D042 |
| Side view | Sleeve 2 dia.<br>  Core: 0.5 dia. (2) 3 dia. | 12 | Small diameter sleeve | Cut to length 2m | R15 | HPF-D011 |
| | Sleeve 2 dia.<br>  Core: 0.5 dia. (2) 2.8 dia. | | Small diameter short sleeve | | | HPF-D041 |
| |  6 dia. | 48 | Standard diameter | | R20 | HPF-D043 |
| Elastic |  Core: 0.25 dia. (emitter core dia.)(16) Core: 0.25 dia. (receiver core dia.)(16) M6 | 70 | Standard | Cut to length 2m | R4 | HPF-D012 |
| |  Core: 0.25 dia. (emitter core dia.)(2) Core: 0.25 dia. (receiver core dia.)(2) 1.5 dia. | 6 | Small diameter sleeve | Connector 1m | | HPF-D036 |
| |  Core: 0.25 dia. (emitter core dia.)(2) Core: 0.25 dia. (receiver core dia.)(2) M3 | | Small diameter | Cut to length 2m | | HPF-D037 |
| Heat resistant |  Core: 1 dia. (2) M6 | 70 | To 105˚C | Cut to length 2m | R25 | HPF-D013 |
| |  Core: 1.5 dia. (2) M6 | 110 | To 150˚C | | R35 | HPF-D022 |
| |  Glass fiber: 1.4 dia. M6 | 50 | To 200˚C | Connector 1m | R15 | HPF-D023 |
| | Sleeve 2.1 dia.<br>  Glass fiber: 1.4 dia. M6 | | Sleeve heat resistant to 200˚C | | | HPF-D024 |
| |  Glass fiber: 1.5 dia. M6 | 60 | Heat and cold resistant from -60˚C to 350˚C | Cut to length 2m | R25 | HPF-D015 |
| Parallel beam | (Built-in lens)<br>  M5 | 20 | Parallel beam reflection | Cut to length 2m | R15 | HPF-D025 |
| Wide beam |  | 75 | Array | Cut to length 2m | R4 | HPF-D026 |
| Limited reflection |  | 2.5±0.5 | Limited reflection | Cut to length 2m | R15 | HPF-D028 |

## Wet process

| Group | Appearance | Scanning distance (mm) | Features | Cable length (cuttable) | Bend radius | Catalog listing |
|---|---|---|---|---|---|---|
| Oil and chemical-proof |  | 1,050 | PFA tube small diameter | Cut to length 2m | R20 | HPF-T029 |
| |  | 250 | | | | HPF-T035 |
| |  | 50 | PFA tube | | R20/R80 | HPF-D014 |
| Liquid level |  | — | Pipe-mounted. Light received when liquid present. 3 to 13mm dia. pipes. | Cut to length 5m | R4 | HPF-T032 |
| |  | — | Pipe-mounted. Light received when liquid absent. 8 to 19mm dia. pipes. | | | HPF-T034 |
| |  | — | Contact type. PFA tube 6mm dia. | Cut to length 2m | R25/R40 | HPF-D027 |
| |  | — | Contact type. PFA tube 4mm dia. | | R15/R30 | HPF-D033 |
| Liquid leak |  | — | Contact type | Cut to length 5m | R20 | HPF-D040 |

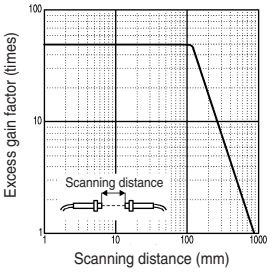
## Vacuum

| Group | Appearance | Scanning distance (mm) | Features | Cable length (cuttable) | Bend radius | Catalog listing |
|---|---|---|---|---|---|---|
| Thru scan |  | 90 | Heat resistant to 350˚C. Elbow connection | Connector 1m | R25 | HPF-VT07 |
| Diffuse scan |  | 25 | | | | HPF-VD07 |
| |  | | Heat resistant to 350˚C. Straight connection | | | HPF-VD09 |
| — |  | — | Air side (2 units) | Cut to length 2m | R20 | HPF-VA01 |
| |  | — | Heat resistant to 200˚C. Light connector (2 units) | — | — | HPF-VJ03 |

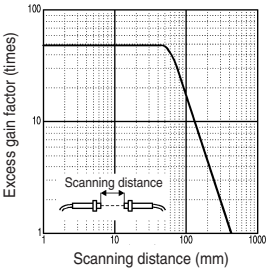
## CHARACTERISTICS DIAGRAMS

### ●Excess gain (light received over required level)(typical)

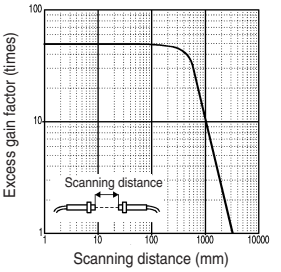
**HPF-T001,T002**



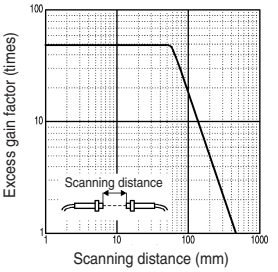

**HPF-T003,T004,T005,T006**



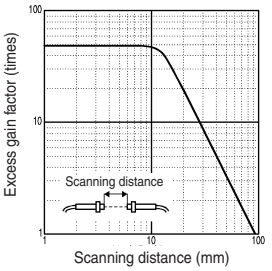

**HPF-T003,T004**
**+ long-distance lens FE-PA-L1**



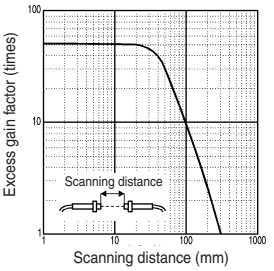

**HPF-T003,T004**
**+ side-view unit FE-PA-S1**



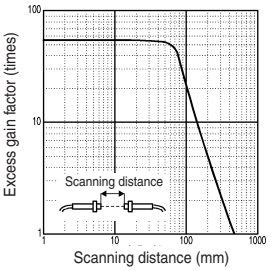

**HPF-T008,T009**



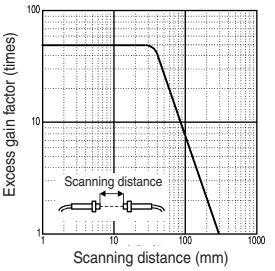

**HPF-T012**



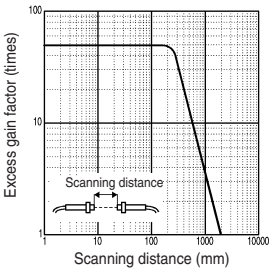

**HPF-T017**



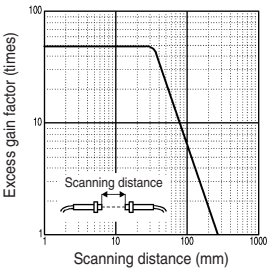

**HPF-T014**



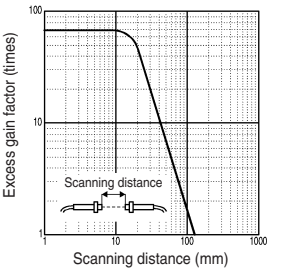

**HPF-T014**
**+ long-distance lens FE-PA-L1**



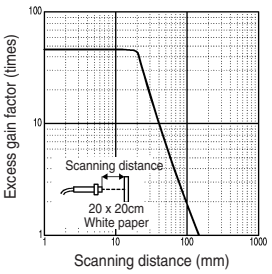

**HPF-T014**
**+ side-view unit FE-PA-S1**



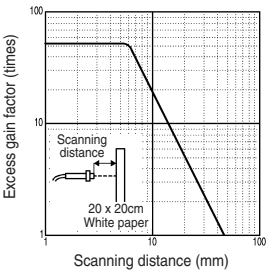

**HPF-T024**



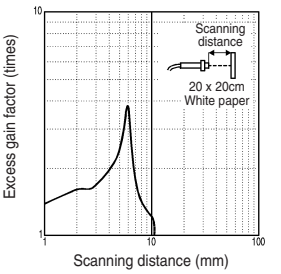

**HPF-D002,D003**



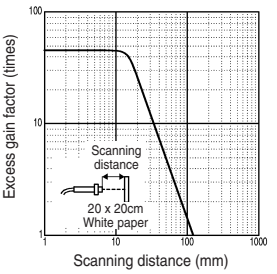

**HPF-D004,D005,D006**



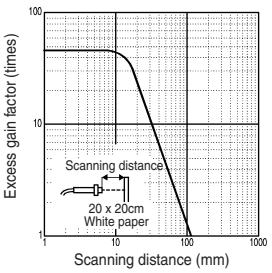

**HPF-D010**
**+ micro-spot lens HPF-LU01**



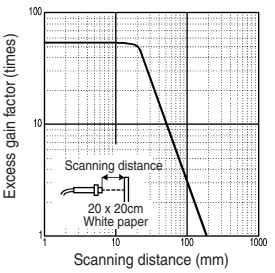

**HPF-D012**



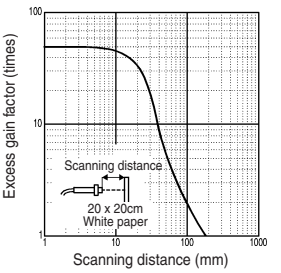

**HPF-D013**



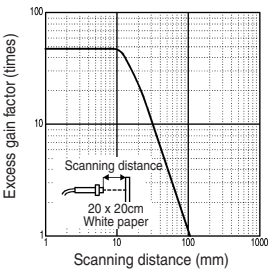

**HPF-D022**



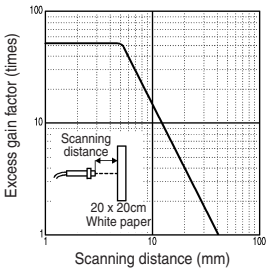

**HPF-D023,D024**



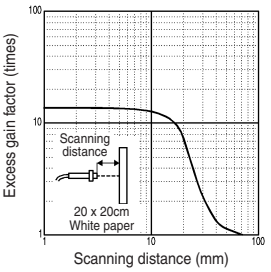

**HPF-D015**



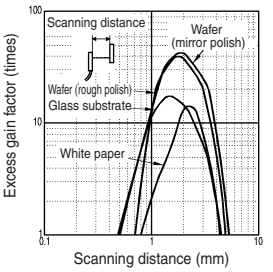
**HPF-D021**



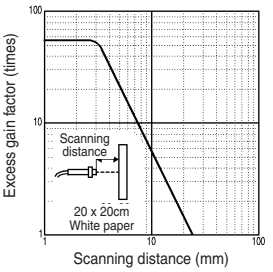

**HPF-D025**



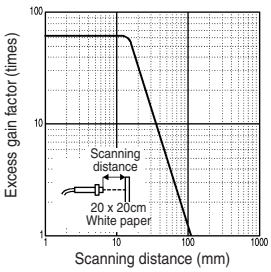

**HPF-D028**



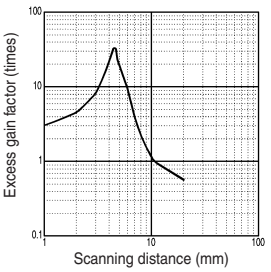

**HPF-D029, D031**




**HPF-D030**

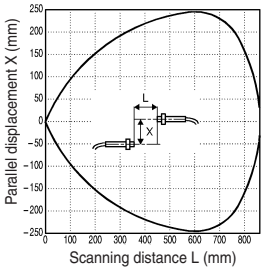



**HPF-D034**
**+ micro-spot lens HPF-LU07**

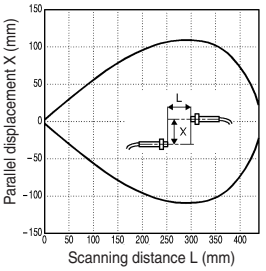


## ●Parallel displacement (typical)

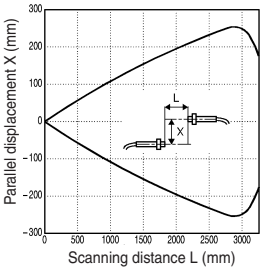
**HPF-T001,T002**



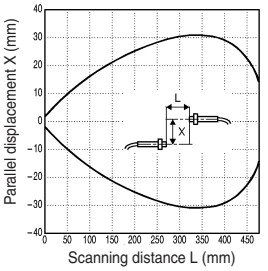

**HPF-T003,T004,T005,T006**



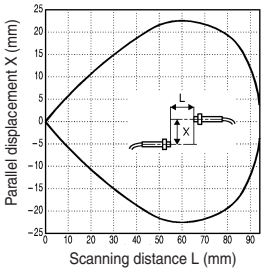

**HPF-T003,T004**
**+ long-distance lens FE-PA-L1**



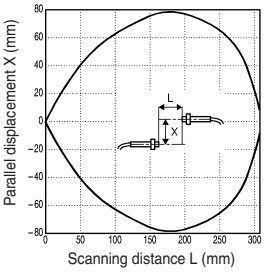

**HPF-T003,T004**
**+ side-view unit FE-PA-S1**



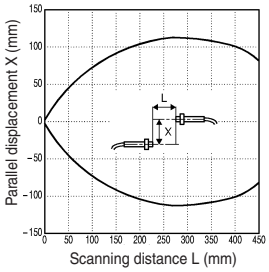

**HPF-T008,T009**



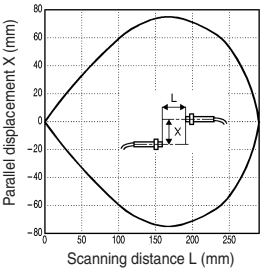

**HPF-T012**



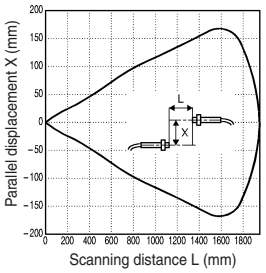

**HPF-T017**



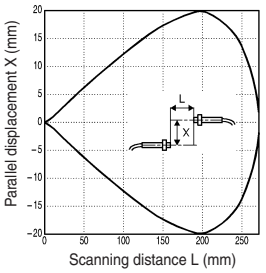

**HPF-T014**



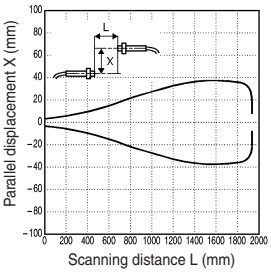

**HPF-T014**
**+ long-distance lens FE-PA-L1**



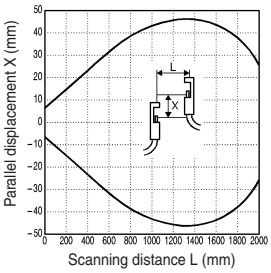

**HPF-T014**
**+ side-view unit FE-PA-S1**



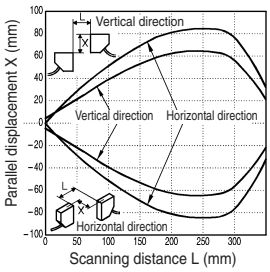

**HPF-T019**



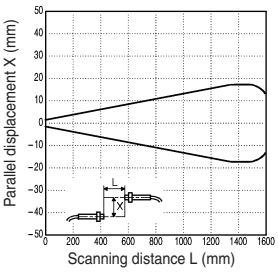

**HPF-T020**



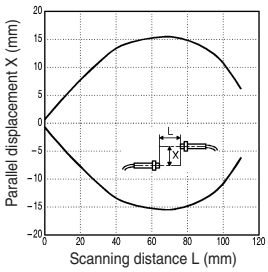

**HPF-T021**



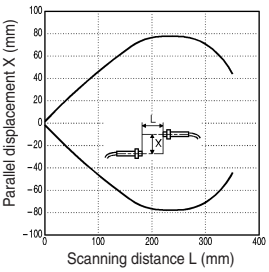

**HPF-T023**



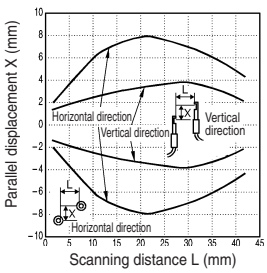

**HPF-T024**




**HPF-T025**

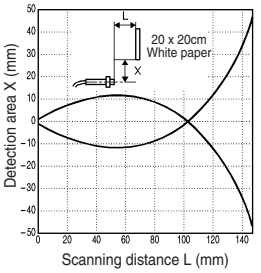



**HPF-T026**

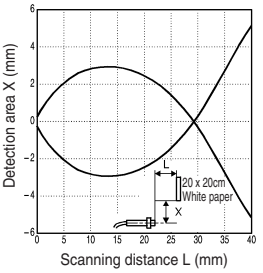


## ●Detection area (typical)

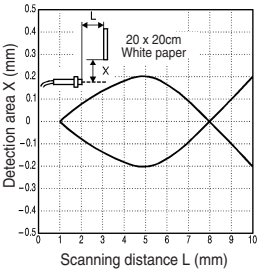
**HPF-D002, D003**



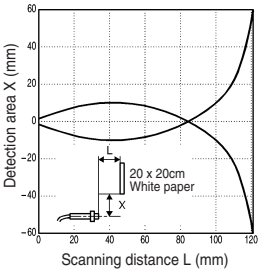

**HPF-D004, D005, D006**



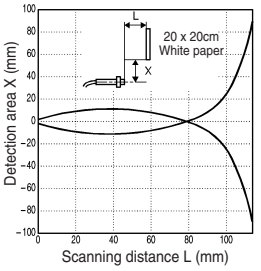

**HPF-D010**
**+ micro-spot lens HPF-LU01**



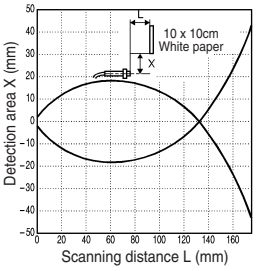

**HPF-D012**



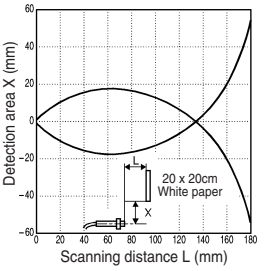

**HPF-D013**



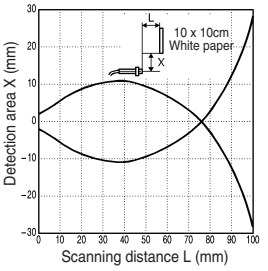

**HPF-D022**



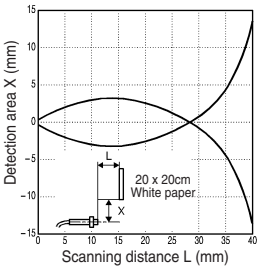

**HPF-D023, D024**



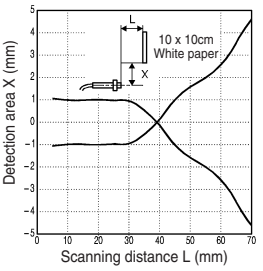

**HPF-D015**



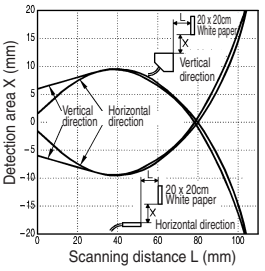

**HPF-D021**



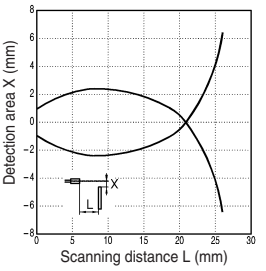

**HPF-D025**



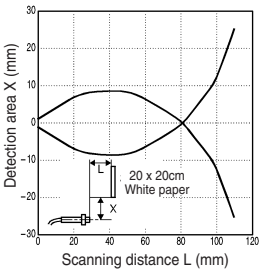

**HPF-D026**



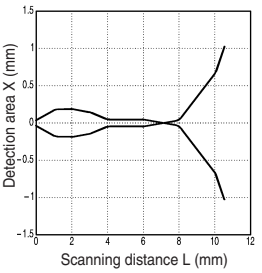

**HPF-D029, D031**




**HPF-D030**



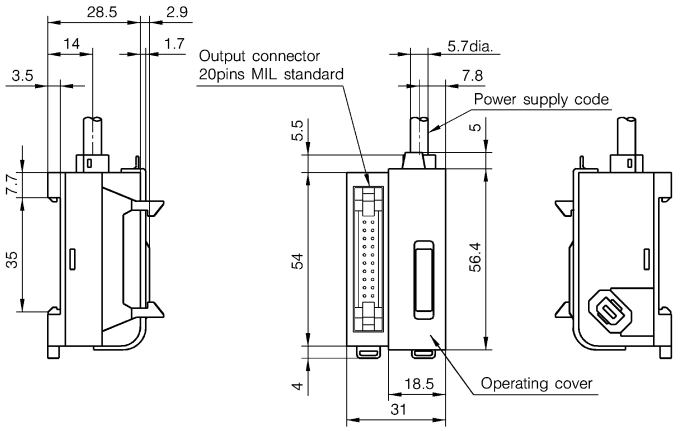

**HPF-D034**
**+ micro-spot lens HPF-LU07**



## EXTERNAL DIMENSIONS

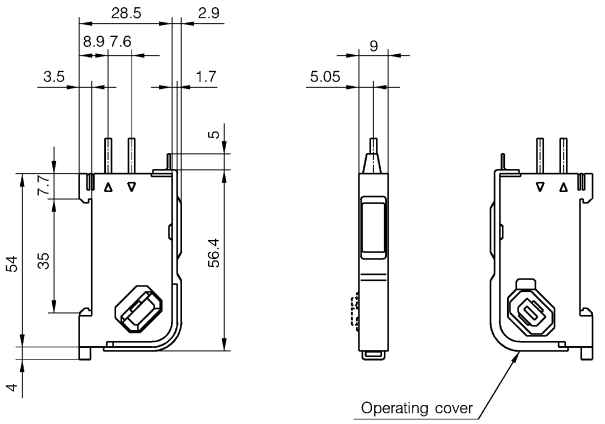
(unit: mm)

● Master unit (**HPX-ET1, HPX-ET2**)




**Note:**
1. Material
   Master unit body: PC/ABS alloy resin/dark gray
   Operating cover: PC resin/clear gray
2. Cord: Oil resistant
   5.8mm dia., 0.5mm$^2$ cross section
   Sheath color: Gray
3. Recommended connector (MIL-C-83503)
   AXM120415 (Matsushita)
   Applicable wire
   Strarded wire: pitch 1.27mm/conductor AWG #28 (7 units/0.127mm dia.)

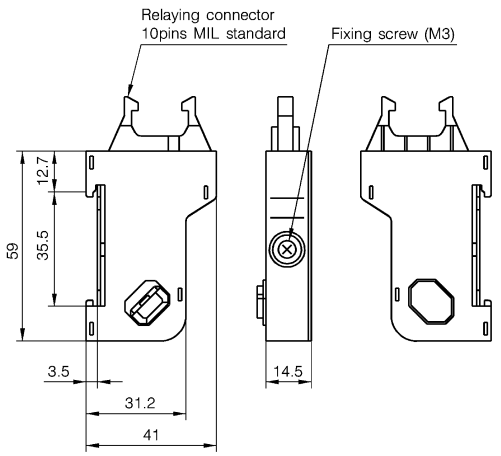
● Sensor unit (**HPX-ETS**)




**Note:**
1. Material
   Sensor unit body: PC/ABS allorg/dark gray
   Operating cover: PC resin/clear gray

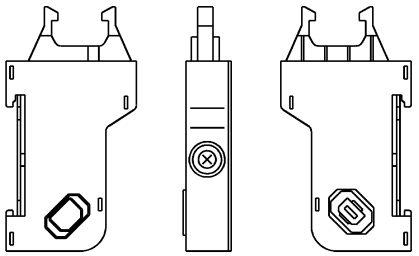
● Remoto unit

• **HPX-ETR1**




**Note:**
1. Material
   Sensor unit body: PC/ABS alloy resin/dark gray

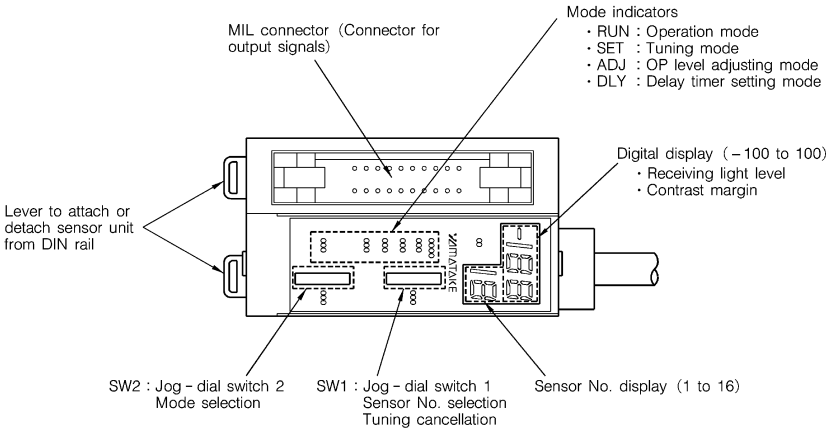
• **HPX-ETR2**



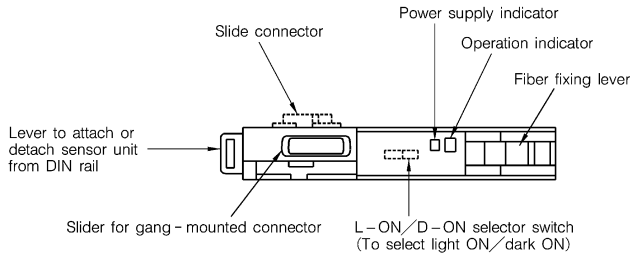
2. Recommended connector (MIL-C-83503)
   AXM110415 (Matsushita)
   Applicable wire
   Stranded wire: pitch 1.27mm/conductor AWG #28 (7 units/0.127mm dia.)

## NAMES OF PARTS

● Master unit



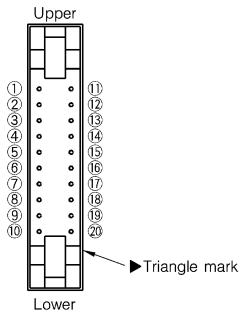

● Sensor unit



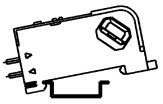

## MASTER UNIT MIL CONNECTOR PIN ASSIGNMENT

| Pin No. | Sensor unit No. | |
|---|---|---|
| | HPX-ET1 | HPX-ET2 |
| ① | Out 1 | |
| ② | Out 2 | |
| ③ | Out 3 | |
| ④ | Out 4 | |
| ⑤ | Out 5 | |
| ⑥ | Out 6 | |
| ⑦ | Out 7 | |
| ⑧ | Out 8 | |
| ⑨ | Vcc | 0V |
| ⑩ | COM | |

| Pin No. | Sensor unit No. | |
|---|---|---|
| | HPX-ET1 | HPX-ET2 |
| ⑪ | Out 9 | |
| ⑫ | Out 10 | |
| ⑬ | Out 11 | |
| ⑭ | Out 12 | |
| ⑮ | Out 13 | |
| ⑯ | Out 14 | |
| ⑰ | Out 15 | |
| ⑱ | Out 16 | |
| ⑲ | Vcc | 0V |
| ⑳ | COM | |



## MOUNING METHOD

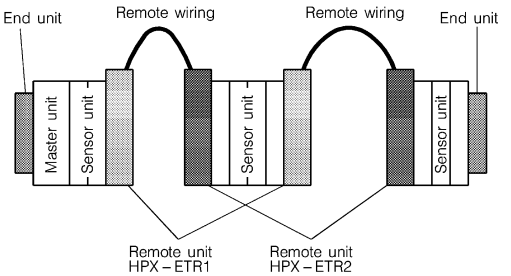


- Remove side connector protection cover.
- Pull lever back from underneath Master and Sensor unit.
- Attach the gang-mounted Master and sensor units on DIN rail.
- Lock the attach or the detach lever underneath the unit.
- Remove the protection cover on sensor unit.
- Slide the slide connector from right to left and connect all sensor units.
- Attach end units from both sides and fasten them.
- Last of all, attach a protection cover removed (5).

* When removing a sensor unit, first, move the slide connector of the sensor unit on the right side from left to right, then detach the connection and remove the sensor unit from the DIN rail.

Attention : Mount and dismount sensor units, only after switching the power OFF.

● Mounting method for remote units




- Refer to the above illustration, **ETR1** is always attached on the right side and **ETR2** is always attached on the left side.
- The remote unit is also the end unit, therefore fasten it by screws after mouning.
- The remote wiring must be connected to **ETR1** and **ETR2**.
- Remote wiring can be performed for max. 5 locations. Cable for each remote wring is max. 2m.

## BASIC PRECAUTIONS

● Wiring

- Be sure to connect the photoelectric sensor to the power supply and load correctly.
- If a high-voltage cable or power cable is located near a photoelectric sensor, isolate the photoelectric sensor's cable or lay in a separate conduit to prevent surge or the influence of noise.
- Connect the cable securely to the connector using a crimp terminal.
- Use leads of 0.3mm$^2$ in cross-sectional area for extensions. The lead length should be kept to 100m at most. When connecting extensions, consider the possible influence of noise.
- If a switching power supply is used, ground its frame.

● Handling

- Do not swing a photoelectric sensor by its cable.
- Do not impact or damage the scanning head.
- Do not pull the cable of the photoelectric sensor with excessive force. The tensile strength of the cable is about 49N at 50cm from the conduit.