

N R W Series



Waterproof equivalent to IP-67

Safety standard certified products available

R o H S

Quick lock

Overview

- Made of resin and light weight. Quick lock system to make these connectors most suitable for portable equipment.
- Proven performance in outdoor measuring equipment, semiconductor equipment, temporary equipment for events, etc.

Feature

| | |
|------------------------------------|--|
| RoHS | RoHS Directive compliant |
| Waterproof | Waterproof connector 【 Waterproof function equivalent to IP-67 when coupled 】 |
| Lock method | Quick lock |
| Features of mechanism/ material | <ul style="list-style-type: none"> ○ Shell made of weather-resistant, high-strength plastic. ○ Light weight and sturdy. ○ Installation in a small space enabled by use of the L za. |
| Standards | <ul style="list-style-type: none"> ○ UL • CSA standard certified connectors available. (UL : UL1977 CSA : C22.2 No.182.3) ○ Safety standard certified connectors available. (EN61984 compliant, TÜV certified) <p><small>Note: The specifications of safety standard certified products are slightly different from those of standard products. For the rated voltage, current and cable conductor cross sectional area, refer to A List of Standards Acquired (pp.128 and 130).</small></p> |
| Cable termination | Soldering |

Characteristics

Insulation resistance , Withstand voltage , Contact resistance , Waterproof p.112

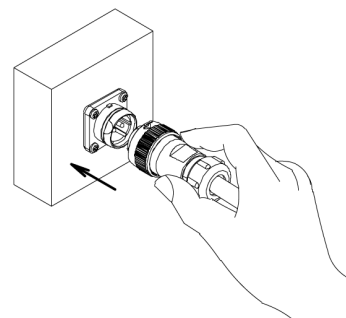


The pin contact type has an **exposed electrode**. If it is used on the [power supply] side, it may cause **electric shock** or **short-circuit accidents**. To prevent such accidents, use the socket contact type on the [power supply] side and the pin contact type on the [equipment] side.

Insertion

Align the plug and the guide of the mating connector (receptacle/adaptor) and push in straight.

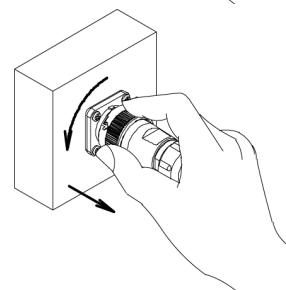
Caution: When inserting, do not turn the coupling nut.



Extraction

With the coupling nut turned CCW 45 degrees in the arrow direction, extract the connector.

Caution: When extracting, do not turn the end bell.



N R W Series

Product No. designation

NRW - 24 ■ - P M □

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

- ① Series designation
- ② Shell size
- ③ Number of contacts
- ④ Shell shape
- ⑤ Contact shape < Pin (male) contact : M , Socket (female) contact : F >
- ⑥ Guide position change symbol (X , Y , Z) 《 Required only when changing the guide position 》
- ⑦ Symbol indicating cable packing size. 《 Plug & adapter require symbol to be specified. 》
- ⑧ Safety standard specification (< UL • CSA > , < UL • CSA , TUV >)
《 Required only when safety standard is to be specified. 》 For applicable products, see pp.128 and 130.

《Option》

- When using a plural number of same products at the same time, the guide position can be changed in order to prevent mis-insertion.

(For applicable products, see below.)

Product name example : NRW-2010-PFX

Guide position change symbol (X , Y , Z) in the red character part.

Cable termination : Soldering

Material and Finish

| | Material | Finish |
|-----------|------------------|--------------------------------|
| Shell | Synthetic resin | — |
| Insulator | | |
| Contact | Copper alloy | Silver plating Gold plating |
| Packing | Synthetic rubber | — |

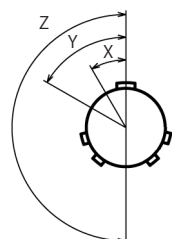
Operating temperature range

| Shell size | Number of Contacts | Operating temperature range |
|------------|------------------------------|-----------------------------|
| 20 | 2 , 3 , 4 , 5 , 7 , 10 , 12 | -25°C to +85°C |
| 24 | 2 , 3 , 4 , 5 , 10 , 14 , 16 | |
| 28 | 16 , 24 | |
| 20 | 14 | -25°C to +60°C |
| 24 | 21 , 24 | |
| 28 | 31 , 37 | |

To change the guide position (Following number of contacts only)

| Shell size | Number of Contacts | Guide Position Symbol | | |
|------------|--------------------|-----------------------|-----|------|
| | | X | Y | Z |
| 20 | 7 | 30° | - | - |
| | * 10 | 45° | 90° | 315° |
| | 12 | | 95° | 190° |
| 24 | 10 | 45° | 90° | 315° |
| | 14 | | | |
| | 16 | | | |
| 28 | * 16 | 45° | 90° | 315° |
| | * 24 | | | |

* UL • CSA products supported also.



An image of guide position change

< When viewed from the pin (male) contact side coupling face >

Upper limit of ambient temperature at rated current

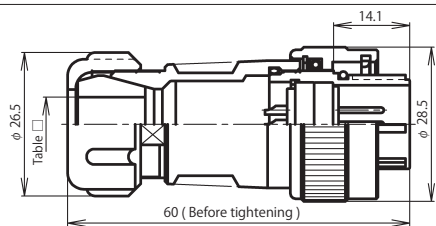
TÜV products only

| Shell size | Number of Contacts | | | |
|------------|--------------------|-------|-------|-------|
| | 2 | 3 | 4 | 5 |
| 20 | +77°C | +77°C | +77°C | +77°C |
| 24 | +67°C | +67°C | +77°C | +77°C |

(Note) Max.ambient temp. at rated current

(Based on TÜV certification test results)

【 Power receiving side 】 < Pin (male) contact used >



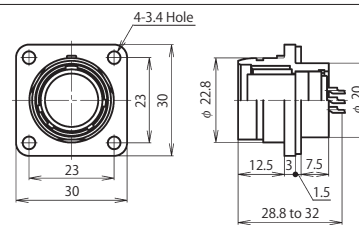
NRW-20 ■ -PM □

G Type

Plug



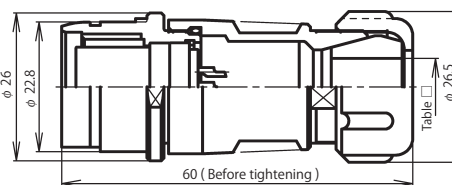
【 Power supply side 】 < Socket (female) contact used >



NRW-20 ■ -RF

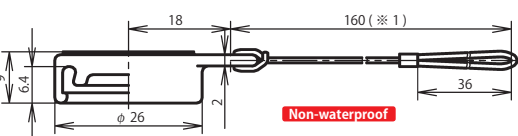
Receptacle

Adapter



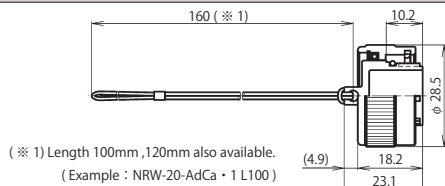
NRW-20 ■ -AdF □

Plug waterproof cap : NRW-20-PCa • 1



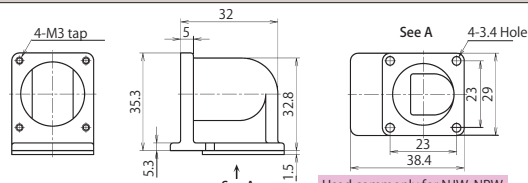
(※ 1) Length 100mm, 120mm also available. (Example : NRW-20-AdCa L100)

Adapter rubber cap : NRW-20-AdCa



(※ 1) Length 100mm, 120mm also available.
(Example : NRW-20-AdCa • 1 L100)

Adapter waterproof cap : NRW-20-AdCa • 1



NJW-20-L za

For the plug and adapter , be sure to select □ (cable packing symbol).

Table □

In order to secure the intended waterproof function, a cable to be used for the plug/adapter should have an appropriate specification and structure.

| Shell size | Symbol □ | Outer diameter of cable used | Normal products | Safety standard | Symbol □ | Outer diameter of cable used | Normal products | Safety standard |
|------------|----------|------------------------------|-----------------|-----------------|----------|------------------------------|-----------------|-----------------|
| 20 | 6 | φ 5.5 to φ 6.3 | ● | — | 10 | φ 8.6 to φ 10.5 | ● | ● |
| | 8 | φ 7.0 to φ 8.5 | ● | ● | 12 | φ 10.6 to φ 12.5 | ● | ● |

■ indicates the number of contacts.

The conductor cross sectional area is less than the following value. However, for safety standard certified products, use a cable having a value shown on pp.128 and 130.

| Shell size | Number of Contacts | 2 | 3 | 4 | 5 | 7 | 10 | 12 | 14 | | |
|------------|--|------------|---|---|---|--------|----|----|-------------|-----|--------|
| 20 | Contact arrangement <When viewed from the pin (male) contact coupling side> | | | | | | | | | | |
| | Safety standard (Note-1) | UL・CSA,TÜV | | | | UL・CSA | | | | — | |
| | Rating (Allowable current for signals) | 250V | | | | 250V | | | | — | |
| | Withstand voltage (V r.m.s.) | 15A | | | | 10A | | | | 5A | [3A] |
| | Wire size (mm ²) | 1,500 | | | | 1,000 | | | | 500 | |
| | Wire size (mm ²) | 2 | | | | 1.25 | | | | 0.5 | 0.3 |
| Remarks | — | | | | — | | | | For signals | | |

[] : Gold plating contact

Note-1 : Specified separately. Selection of either "specified as a set of UL and CSA" or "UL, CSA and TÜV specified." For safety standards, see pp. 128 and 130.

【 Power supply side 】 < Socket (female) contact used >

NRW-20 ■ -PF □

S Type

Plug

Receptacle

Adapter

Coupled

【 Power receiving side 】 < Pin (male) contact used >

NRW-20 ■ -RM

Plug waterproof cap : NRW-20-PCa • 1

Adapter rubber cap : NRW-20-AdCa

Adapter waterproof cap : NRW-20-AdCa • 1

NJW-20-L za

Used commonly for NJW, NRW

Accessory

NRW-20 ■ -AdM □

Receptacle rubber cap : NRW-20-RCa

Receptacle waterproof cap : NRW-20-RCa • 1

Receptacle rubber cap : NRW-20-RCa • 2

The flange packing part is water tight.
The cap is not water tight.

For the plug and adapter , be sure to select □ (cable packing symbol).









Table □

In order to secure the intended waterproof function, a cable to be used for the plug/adapter should have an appropriate specification and structure.

| Shell size | Symbol □ | Outer diameter of cable used | Normal products | Safety standard | Symbol □ | Outer diameter of cable used | Normal products | Safety standard |
|------------|----------|------------------------------|-----------------|-----------------|----------|------------------------------|-----------------|-----------------|
| 20 | 6 | φ 5.5 to φ 6.3 | ● | — | 10 | φ 8.6 to φ 10.5 | ● | ● |
| | 8 | φ 7.0 to φ 8.5 | ● | ● | 12 | φ 10.6 to φ 12.5 | ● | ● |

■ indicates the number of contacts.

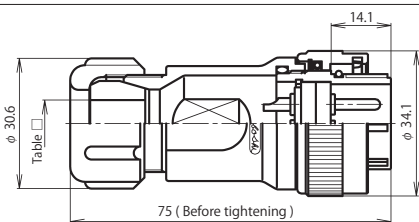
The conductor cross sectional area is less than the following value. However, for safety standard certified products, use a cable having a value shown on pp.128 and 130.

| Shell size | Number of Contacts | 2 | 3 | 4 | 5 | 7 | 10 | 12 | 14 | |
|------------|--|---|---|---|---|---|---|---|--|--------|
| 20 | Contact arrangement <When viewed from the pin (male) contact coupling side> |  |  |  |  |  |  |  |  | |
| | Safety standard (Note-1) | UL・CSA,TÜV | | | | | UL・CSA | | | — |
| | Rating (Allowable current for signals) | 250V | | | | | | | | — |
| | Withstand voltage (V r.m.s.) | 15A | | 10A | | | 5A | | | [3A] |
| | Wire size (mm ²) | 1,500 | | | | | 1,000 | | | 500 |
| | Remarks | 2 | | 1.25 | | | 0.5 | | | 0.3 |
| | — | | | | | | | | For signals | |

[] : Gold plating contact

Note-1 : Specified separately. Selection of either "specified as a set of UL and CSA" or "UL, CSA and TÜV specified." For safety standards, see pp. 128 and 130.

【 Power receiving side 】 < Pin (male) contact used >



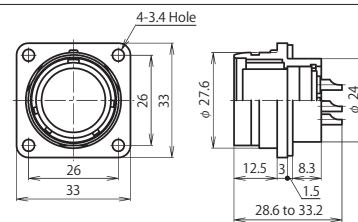
NRW-24 ■ -PM □

G Type

Plug



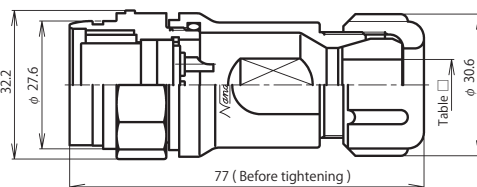
【 Power supply side 】 < Socket (female) contact used >



NRW-24 ■ -RF

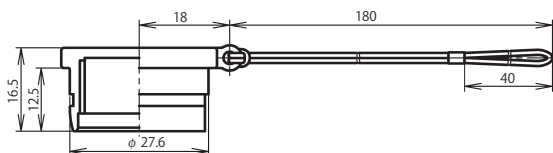
Receptacle

Adapter

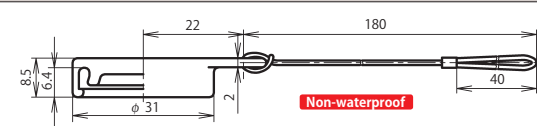


NRW-24 ■ -AdF □

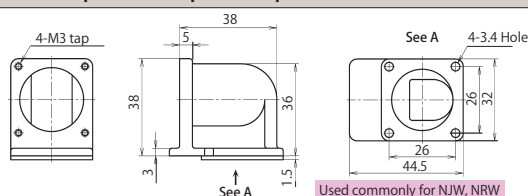
Plug waterproof cap : NRW-24-PCa • 1



Adapter rubber cap : NRW-24-AdCa



Adapter waterproof cap : NRW-24-AdCa • 1



NJW-24-L za

For the plug and adapter , be sure to select □ (cable packing symbol).

Table □

In order to secure the intended waterproof function, a cable to be used for the plug/adapter should have an appropriate specification and structure.

| Shell size | Symbol | Outer diameter of cable used | Normal products | Safety standard |
|------------|--------|------------------------------|-----------------|-----------------|
| 24 | 8 | φ 6.8 to φ 8.0 | ● | — |
| | 11 | φ 9.5 to φ 11.0 | ● | ● |
| | 13 | φ 11.1 to φ 13.0 | ● | ● |
| | 15 | φ 13.1 to φ 15.0 | ● | ● |

■ indicates the number of contacts.

The conductor cross sectional area is less than the following value. However, for safety standard certified products, use a cable having a value shown on pp.128 and 130.

| Shell size | Number of Contacts | 2 | 3 | 4 | 5 | 10 | 14 | 16 | 21 | 24 |
|------------|--|------------|---|---|---|--------|----|----|----|-------------------------|
| 24 | Contact arrangement <When viewed from the pin (male) contact coupling side> | | | | | | | | | |
| | Safety standard (Note-1) | UL・CSA,TÜV | | | | UL・CSA | | | | — |
| | Rating (Allowable current for signals) | 250V | | | | 250V | | | | — |
| | Withstand voltage (V r.m.s.) | 20A | | | | 15A | | | | 3pcs=6A [18pcs=3A] |
| | Wire size (mm ²) | 3.5 | | | | 2 | | | | 3pcs=0.75 18pcs=0.3 |
| | Remarks | — | | | | — | | | | For signals |

[] : Gold plating contact

Note-1 : Specified separately. Selection of either "specified as a set of UL and CSA" or "UL, CSA and TÜV specified." For safety standards, see pp. 128 and 130.

【 Power supply side 】 < Socket (female) contact used >

NRW-24 ■ -PF □

S Type

Plug

Receptacle

Adapter

Coupled

【 Power receiving side 】 < Pin (male) contact used >

NRW-24 ■ -RM

Accessory

Plug waterproof cap : NRW-24-PCa • 1

Adapter rubber cap : NRW-24-AdCa

Adapter waterproof cap : NRW-24-AdCa • 1

NJW-24-L za

Accessory

Receptacle rubber cap : NRW-24-RCa

(※ 1) Length 35 mm also available. (Example : NRW-24-RCa L35)

Receptacle rubber cap : NRW-24-RCa • 1

(※ 1) Length 120 mm also available. (Example : NRW-24-RCa • 1 L120)

Receptacle waterproof cap : NRW-24-RCa • 1

The flange packing part is water tight.
The cap is not water tight.

Receptacle waterproof cap : NRW-24-RCa • 1

Receptacle rubber cap : NRW-24-RCa • 2

For the plug and adapter , be sure to select □ (cable packing symbol).

Table □

In order to secure the intended waterproof function, a cable to be used for the plug/adapter should have an appropriate specification and structure.

| Shell size | Symbol | Outer diameter of cable used | Normal products | Safety standard |
|------------|--------|------------------------------|-----------------|-----------------|
| 24 | 8 | φ 6.8 to φ 8.0 | ● | — |
| | 11 | φ 9.5 to φ 11.0 | ● | ● |
| | 13 | φ 11.1 to φ 13.0 | ● | ● |
| | 15 | φ 13.1 to φ 15.0 | ● | ● |

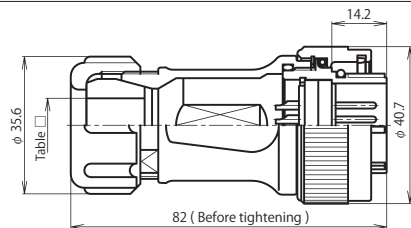
■ indicates the number of contacts.
The conductor cross sectional area is less than the following value. However, for safety standard certified products, use a cable having a value shown on pp.128 and 130.

| Shell size | Number of Contacts | 2 | 3 | 4 | 5 | 10 | 14 | 16 | 21 | 24 |
|------------|--|------------|---|---|---|--------|----|----|----|-------------------------|
| 24 | Contact arrangement <When viewed from the pin (male) contact coupling side> | | | | | | | | | |
| | Safety standard (Note-1) | UL・CSA,TÜV | | | | UL・CSA | | | | — |
| | Rating (Allowable current for signals) | 250V | | | | 250V | | | | — |
| | Withstand voltage (V r.m.s.) | 20A | | | | 15A | | | | 3pcs=6A [18pcs=3A] |
| | Wire size (mm ²) | 3.5 | | | | 2 | | | | 3pcs=0.75 18pcs=0.3 |
| | Remarks | — | | | | — | | | | For signals |

[] : Gold plating contact

Note-1 : Specified separately. Selection of either "specified as a set of UL and CSA" or "UL, CSA and TÜV specified." For safety standards, see pp. 128 and 130.

【 Power receiving side 】 < Pin (male) contact used >



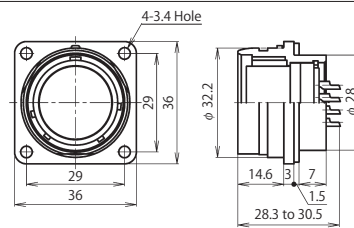
NRW-28 ■ -PM □

G Type

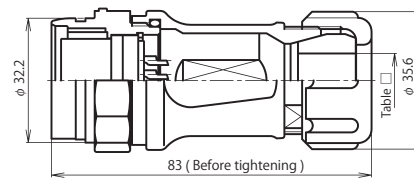
Plug



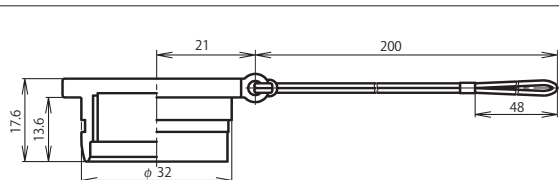
【 Power supply side 】 < Socket (female) contact used >



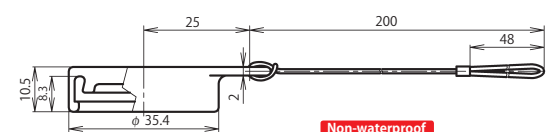
NRW-28 ■ -RF



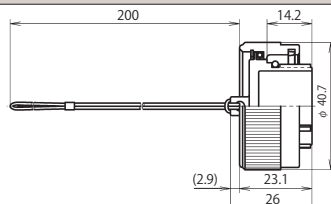
NRW-28 ■ -AdF □



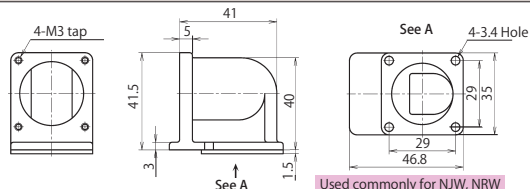
Plug waterproof cap : NRW-28-PCa • 1



Adapter rubber cap : NRW-28-AdCa



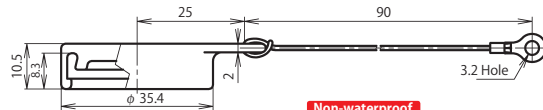
Adapter waterproof cap : NRW-28-AdCa • 1



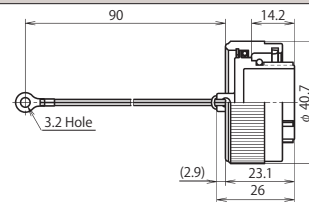
NJW-28-L za

Accessory

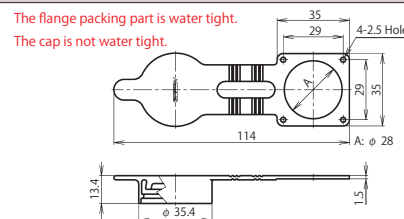
Accessory



Receptacle rubber cap : NRW-28-RCa



Receptacle waterproof cap : NRW-28-RCa • 1



Receptacle rubber cap : NRW-28-RCa • 2

For the plug and adapter , be sure to select □ (cable packing symbol).

Table □

In order to secure the intended waterproof function, a cable to be used for the plug/adapter should have an appropriate specification and structure.

| Shell size | Symbol □ | Outer diameter of cable used | Normal products | Safety standard | Symbol □ | Outer diameter of cable used | Normal products | Safety standard |
|------------|----------|------------------------------|-----------------|-----------------|----------|------------------------------|-----------------|-----------------|
| 28 | 10 | φ 9.0 to φ 10.9 | ● | ● | 16 | φ 14.1 to φ 16.0 | ● | ● |
| | 12 | φ 11.0 to φ 12.4 | ● | ● | 18 | φ 16.1 to φ 18.0 | ● | ● |
| | 14 | φ 12.5 to φ 14.0 | ● | ● | | | | |

■ indicates the number of contacts.

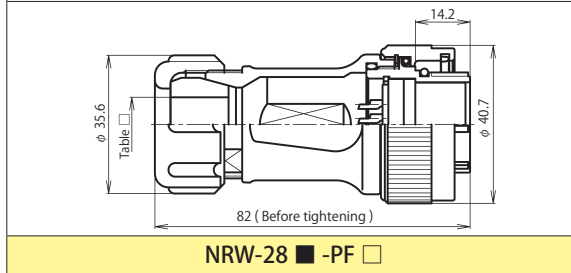
The conductor cross sectional area is less than the following value. However, for safety standard certified products, use a cable having a value shown on p.128.

| Shell size | Number of Contacts | 16 | 24 | 31 | 37 |
|------------|--|----------|-----|-------------------------|--------|
| 28 | Contact arrangement <When viewed from the pin (male) contact coupling side> | | | | |
| | Safety standard (Note-1) | UL • CSA | — | — | — |
| | Rating (Allowable current for signals) | 10A | 5A | 3pcs=6A [28pcs=3A] | [3A] |
| | Withstand voltage (V r.m.s.) | 1,000 | 500 | — | — |
| | Wire size (mm ²) | 1.25 | 0.5 | 3pcs=0.75 28pcs=0.3 | 0.3 |
| | Remarks | — | — | For signals | — |

[] : Gold plating contact

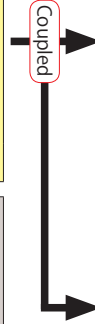
Note-1 : Specified separately. "Specified as a set of UL and CSA". For safety standards, see p.128.

【 Power supply side 】 < **Socket** (female) contact used >

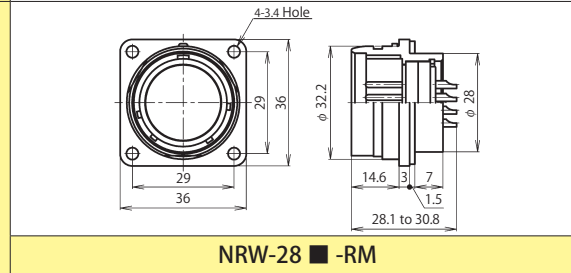


S Type

Plug

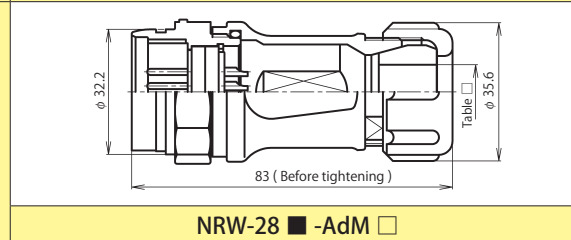


【 Power receiving side 】 < **Pin** (male) contact used >

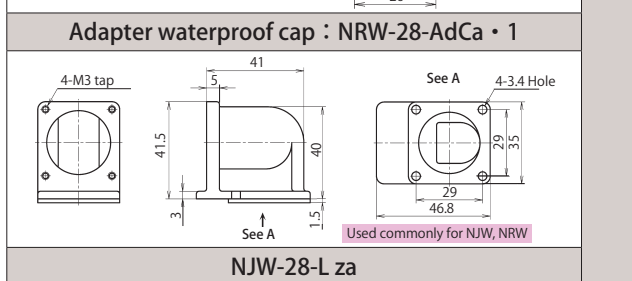
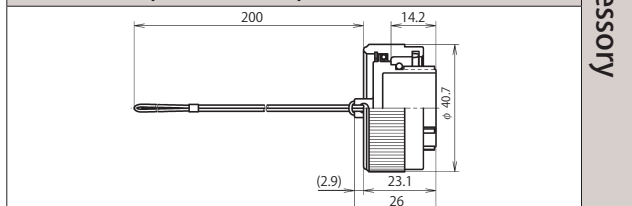
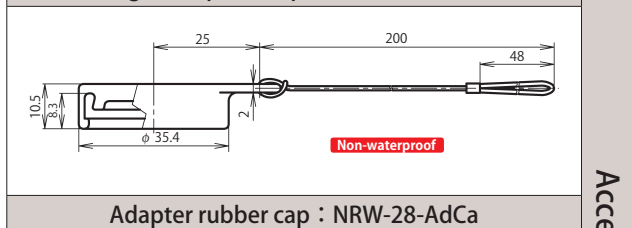
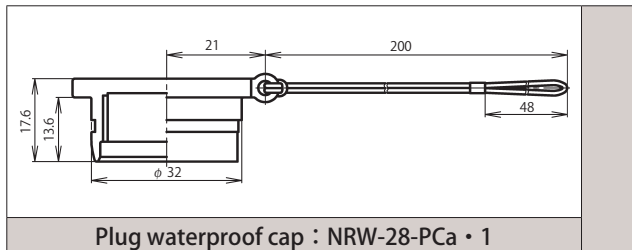


Receptacle

Adapter

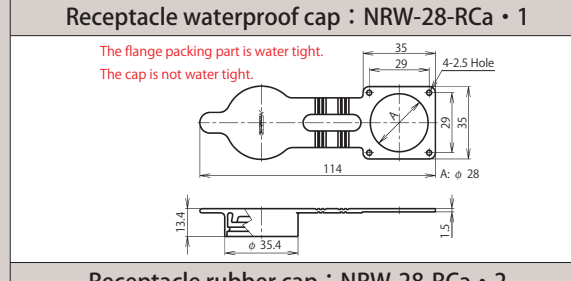
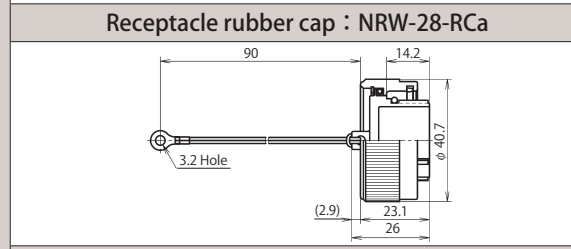
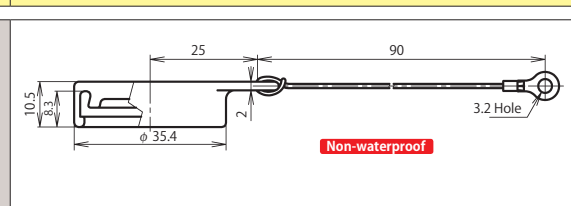


NRW-28 ■ -AdM □



Accessory

Accessory



For the plug and adapter , be sure to select □ (cable packing symbol).

Table □

In order to secure the intended waterproof function, a cable to be used for the plug/adapter should have an appropriate specification and structure.

| Shell size | Symbol □ | Outer diameter of cable used | Normal products | Safety standard | Symbol □ | Outer diameter of cable used | Normal products | Safety standard |
|------------|----------|------------------------------|-----------------|-----------------|----------|------------------------------|-----------------|-----------------|
| 28 | 10 | φ 9.0 to φ 10.9 | ● | ● | 16 | φ 14.1 to φ 16.0 | ● | ● |
| | 12 | φ 11.0 to φ 12.4 | ● | ● | 18 | φ 16.1 to φ 18.0 | ● | ● |
| | 14 | φ 12.5 to φ 14.0 | ● | ● | | | | |

■ indicates the number of contacts.

The conductor cross sectional area is less than the following value. However, for safety standard certified products, use a cable having a value shown on p.128.

| Shell size | Number of Contacts | 16 | 24 | 31 | 37 |
|------------|--|--------|-----|------------------------|-----|
| 28 | Contact arrangement <When viewed from the pin (male) contact coupling side> | | | | |
| | Safety standard (Note-1) | UL・CSA | | — | |
| | Rating (Allowable current for signals) | 250V | | — | |
| | Withstand voltage (V r.m.s.) | 1,000 | | 500 | |
| | Wire size (mm ²) | 1.25 | 0.5 | 3pcs=0.75 28pcs=0.3 | 0.3 |
| | Remarks | — | | For signals | |

[] : Gold plating contact

Note-1 : Specified separately. "Specified as a set of UL and CSA". For safety standards, see p.128.

NRW Series Characteristics

| Number of contacts | | | | | | | | | | |
|--------------------|---------|-------------------------------|-----------------|-----------------------|----------------------------|-----------------|----------------|--------------------------------|-----------------|----------------|
| Shell size | Contact | Insulation resistance (M Ω) | | | Contact resistance (m Ω) | | | Withstand voltage (V r.m.s.) | | |
| | | Normal products | Safety standard | | Normal products | Safety standard | | Normal products | Safety standard | |
| | | | UL • CSA | UL • CSA , TÜV | | UL • CSA | UL • CSA , TÜV | | UL • CSA | UL • CSA , TÜV |
| 20 | 2 | DC 500V 2,000 min. | — | DC 500V 2,000 min. | 3 max. | — | 3 max. | 1,500 | — | 1,500 |
| | 3 | | | | | | | | | |
| | 4 | | | | | | | | | |
| | 5 | | | | | | | | | |
| | 7 | DC 500V 2,000 min. | — | 3 max. | — | 1,000 | — | | | |
| | 10 | DC 500V 1,000 min. | | 5 max. | | | | | | |
| | 12 | | | | | | | | | |
| | 14 | DC 250V 1,000 min. | — | 5 max. | — | 500 | — | | | |
| 24 | 2 | DC 500V 2,000 min. | — | DC 500V 2,000 min. | 3 max. | — | 3 max. | 1,500 | — | 1,500 |
| | 3 | | | | | | | | | |
| | 4 | | | | | | | | | |
| | 5 | | | | | | | | | |
| | 10 | DC 500V 2,000 min. | — | 3 max. | — | 1,000 | — | | | |
| | 14 | DC 500V 1,000 min. | | 5 max. | | | | | | |
| | 16 | | | | | | | | | |
| | 21 | DC 250V | — | 5 max. | — | 500 | — | | | |
| | 24 | 1,000 min. | | | | | | | | |
| 28 | 16 | DC 500V 2,000 min. | — | 3 max. | — | 1,000 | — | | | |
| | 24 | DC 500V 1,000 min. | | 5 max. | | | | | | |
| | 31 | DC 250V | — | 5 max. | — | 500 | — | | | |
| | 37 | 1,000 min. | | | | | | | | |

(Waterproof) No trace of water exposure after being kept at a water pressure of 40 kPa for 24 hours in the coupled state in its normal state of use.