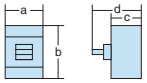
## 11 Single phase 3-wire circuit breaker with neutral phase open protection and earth leakage alarm (Harmonics/surge with countermeasure)

| Frame size (A) | | | 100 | 125 | 100 | 125 | 225 | 250 | 225 | 250 |
|---|---|---|---|---|---|---|---|---|---|---|
| Type | | | NAE125-SF | | NAS125-SF | | NAE250-SF | | NAS250-SF | |
| Number of poles / Elements | | | 3P3E ⑩ | 3P3E ⑩ | 3P3E ⑩ | 3P3E ⑩ | 3P3E ⑩ | 3P3E ⑩ | 3P3E ⑩ | 3P3E ⑩ |
| Phase and wires | | | 1ø3W | 1ø3W | 1ø3W | 1ø3W | 1ø3W | 1ø3W | 1ø3W | 1ø3W |
| ■Ratings | | | | | | | | | | |
| Rated current, A | | | 15 50 | 125 | 15 50 | 125 | 125 225 | 250 | 125 225 | 250 |
| Calibrated at 40°C | | | 20 60 | | 20 60 | | 150 | | 150 | |
| | | | 30 75 | | 30 75 | | 175 | | 175 | |
| | | | 40 100 | | 40 100 | | 200 | | 200 | |
| Rated operational voltage AC V | | | 100/200 | 100/200 | 100/200 | 100/200 | 100/200 | 100/200 | 100/200 | 100/200 |
| Rated impulse withstand voltage ($U_{imp}$) kV | | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Single 3-phase neutral wire open phase protection characteristics | Rated operating overvoltage AC V | | 135 | 135 | 135 | 135 | 135 | 135 | 135 | 135 |
| | Rated non-operating overvoltage AC V | | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| | Rated overvoltage operating time (sec) | | 1 or less | 1 or less | 1 or less | 1 or less | 1 or less | 1 or less | 1 or less | 1 or less |
| ■Rated breaking capacity, kA | | | | | | | | | | |
| JIS C 8201-2-1 Ann.2 $I_{cu}$ (sym) | | AC 100/200V | 35 | 35 | 50 | 50 | 35 | 35 | 85 | 85 |
| ■External dimensions, mm | | | | | | | | | | |
|  | a | | 100 | 100 | 100 | 100 | 130 | 130 | 130 | 130 |
| | b | | 130 | 130 | 130 | 130 | 165 | 165 | 165 | 165 |
| | c | | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| | d | | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 |
| Weight (◉ marked standard type) kg | | | 1.15 | 1.15 | 1.15 | 1.15 | 1.8 | 1.8 | 1.8 | 1.8 |
| ■Earth leakage alarm specifications | | | | | | | | | | |
| Earth leakage detection (Current operation type) | | | Electronic | Electronic | Electronic | Electronic | Electronic | Electronic | Electronic | Electronic |
| Rated sensitivity current mA | | | 30/100/500 selectable | 30/100/500 selectable | 30/100/500 selectable | 30/100/500 selectable | 30/100/500 selectable | 30/100/500 selectable | 30/100/500 selectable | 30/100/500 selectable |
| | | | 100/200/500 selectable | 100/200/500 selectable | 100/200/500 selectable | 100/200/500 selectable | 100/200/500 selectable | 100/200/500 selectable | 100/200/500 selectable | 100/200/500 selectable |
| Max. operating time sec | | | 0.1/0.45/1.0 selectable | 0.1/0.45/1.0 selectable | 0.1/0.45/1.0 selectable | 0.1/0.45/1.0 selectable | 0.1/0.45/1.0 selectable | 0.1/0.45/1.0 selectable | 0.1/0.45/1.0 selectable | 0.1/0.45/1.0 selectable |
| Earth leakage alarm output contact configuration ㉚ | | | 1c | 1c | 1c | 1c | 1c | 1c | 1c | 1c |
| Alarm reset function (manual reset) ㊴ | | | Push button ⑧ | Push button ⑧ | Push button ⑧ | Push button ⑧ | Push button ⑧ | Push button ⑧ | Push button ⑧ | Push button ⑧ |
| Earth leakage indication | | | LED (Red) | LED (Red) | LED (Red) | LED (Red) | LED (Red) | LED (Red) | LED (Red) | LED (Red) |
| ■Connections and Mountings | | | | | | | | | | |
| Front-connected (FC) | Terminal screws | | ◉ ④ | ◉ | ◉ ④ | ◉ | ◉ | ◉ | ◉ | ◉ |
| | With extension bars | | ○ ㊸ | ○ ㊸ | ○ ㊸ | ○ ㊸ | ○ ㊸ | ○ ㊸ | ○ ㊸ | ○ ㊸ |
| Rear-connected (RC) | Flat bar studs | | △ | △ | △ | △ | △ | △ | △ | △ |
| ■Accessories (optional) | | Symbol | | | | | | | | |
| Internally mounted | Auxiliary switch | A X | ● | ● | ● | ● | ● | ● | ● | ● |
| | Alarm switch | A L | ● | ● | ● | ● | ● | ● | ● | ● |
| | Shunt trips | S H | — | — | — | — | — | — | — | — |
| | Undervoltage trips | U V | — | — | — | — | — | — | — | — |
| | Test lead | T L | — | — | — | — | — | — | — | — |
| | Megger test switch | M G | ● | ● | ● | ● | ● | ● | ● | ● |
| Externally mounted | Motor operator | M C | — | — | — | — | ● | ● | ● | ● |
| | External operating handle — Breaker-mounted | H B | ● | ● | ● | ● | ● | ● | ● | ● |
| | External operating handle — Door-mounted (variable depth) | H P | ● | ● | ● | ● | ● | ● | ● | ● |
| | Toggle extension | H A | — | — | — | — | — | — | — | — |
| | Mechanical interlock — Slide type | M S | — | — | — | — | — | — | — | — |
| | Mechanical interlock — Link type | M L | — | — | — | — | — | — | — | — |
| | Mechanical interlock — Wire type | M W | — | — | — | — | — | — | — | — |
| | Toggle holder | H H | ● | ● | ● | ● | ● | ● | ● | ● |
| | Toggle lock | H L | ● | ● | ● | ● | ● | ● | ● | ● |
| | Terminal cover — For front-connected | C F | ● | ● | ● | ● | ● | ● | ● | ● |
| | Terminal cover — For rear-connected | C R | ● | ● | ● | ● | ● | ● | ● | ● |
| | Terminal block for lead | T F | ● | ● | ● | ● | ● | ● | ● | ● |
| | Door flange | D F | — | — | — | — | — | — | — | — |
| CE marking | | | Non | Non | Non | Non | Non | Non | Non | Non |
| Overcurrent trip mechanism | | | Thermal-magnetic | Thermal-magnetic | Thermal-magnetic | Thermal-magnetic | Thermal-magnetic | Thermal-magnetic | Thermal-magnetic | Thermal-magnetic |
| Colour of cover | | | Grey Blue | Grey Blue | Grey Blue | Grey Blue | Grey Blue | Grey Blue | Grey Blue | Grey Blue |
| Trip button (Colour) | | | Yes (Red) | Yes (Red) | Yes (Red) | Yes (Red) | Yes (Red) | Yes (Red) | Yes (Red) | Yes (Red) |
| Suitability for isolation | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Reverse power flow circuit | | | Yes ㉕ | Yes ㉕ | Yes ㉕ | Yes ㉕ | Yes ㉕ | Yes ㉕ | Yes ㉕ | Yes ㉕ |
| Page of characteristics and outline dimensions | | | 7-148 | 7-148 | 7-148 | 7-148 | 7-150 | 7-150 | 7-150 | 7-150 |

**Notes:**

◉ : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.

● : "yes" or "available". — : "no" or "not available". △ : Custom-built product. Please contact us for details.

④ : 50A or less is the M5 wire clamping terminal.

⑧ : Optional remote reset or automatic reset available on request. Please apply this when the reset button cannot be pressed due to the installation of external accessories, etc. See page 6-27 for details.

⑩ : They can also be applied to circuits where overcurrent flows in the neutral wire.

㉚ : See page 6-22 for the contact rating.

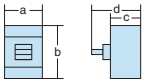
㊴ : An earth leakage alarm maintains the operating state until pressing the reset button or turning the main circuit power OFF. If the electric leakage continues, it will be reset while you hold down the reset button, but when you release the reset button, it will return to the operating state.

㊸ : For the extension bars, please place the order separately in parts.

㉕ : Since the overvoltage and earth leakage detection circuit has a continuous rating specification, there is no need to turn off the power of the detection circuit using a megger test switch, etc.

Remarks: See pages 3-25 and 3-26 for connection details.

## 11 Single phase 3-wire circuit breaker with neutral phase open protection and earth leakage alarm (Harmonics/surge with countermeasure)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Frame size (A) | | | 400 | 400 | | | | | | |
| Type | | | **NAE400-NF** | **NAS400-NF** | | | | | | |
| Number of poles / Elements | | | 3P2E ⑱ | 3P2E ⑱ | | | | | | |
| Phase and wires | | | 1ø3W | 1ø3W | | | | | | |
| **■Ratings** | | | | | | | | | | |
| Rated current, A | | | 250 | 250 | | | | | | |
| Calibrated at 40°C | | | 300 | 300 | | | | | | |
| | | | 350 | 350 | | | | | | |
| | | | 400 | 400 | | | | | | |
| Rated operational voltage AC V | | | 100/200 | 100/200 | | | | | | |
| Rated impulse withstand voltage 〔$U_{imp}$〕 kV | | | 8 | 8 | | | | | | |
| Single 3-phase neutral wire open phase protection characteristics | Rated operating overvoltage AC V | | 135 | 135 | | | | | | |
| | Rated non-operating overvoltage AC V | | 120 | 120 | | | | | | |
| | Rated overvoltage operating time (sec) | | 1 or less | 1 or less | | | | | | |
| **■Rated breaking capacity, kA** | | | | | | | | | | |
| JIS C 8201-2-1 Ann.2 $I_{cu}$ (sym) | | AC 100/200V | 35 | 85 | | | | | | |
| **■External dimensions, mm** | | | | | | | | | | |
|  | | a | 170 | 170 | | | | | | |
| | | b | 260 | 260 | | | | | | |
| | | c | 103 | 103 | | | | | | |
| | | d | 145 | 145 | | | | | | |
| Weight (◉ marked standard type) kg | | | 4.9 | 4.9 | | | | | | |
| **■Earth leakage alarm specifications** | | | | | | | | | | |
| Earth leakage detection (Current operation type) | | | Electronic | Electronic | | | | | | |
| Rated sensitivity current mA | | | 30/100/500 selectable | 30/100/500 selectable | | | | | | |
| | | | 100/200/500 selectable | 100/200/500 selectable | | | | | | |
| Max. operating time sec | | | 0.1/0.45/1.0 selectable | 0.1/0.45/1.0 selectable | | | | | | |
| Earth leakage alarm output contact configuration ㉚ | | | 1c | 1c | | | | | | |
| Alarm reset function (manual reset) ㊴ | | | Push button ⑧ | Push button ⑧ | | | | | | |
| Earth leakage indication | | | LED (Red) | LED (Red) | | | | | | |
| **■Connections and Mountings** | | | | | | | | | | |
| Front-connected (FC) | Terminal screws | | ◉ | ◉ | | | | | | |
| | With extension bars | | ○ | ○ | | | | | | |
| Rear-connected (RC) | Flat bar studs | | △ | △ | | | | | | |
| **■Accessories (optional)** | | | **Symbol** | | | | | | | |
| Internally mounted | Auxiliary switch | | A X | ● | ● | | | | | |
| | Alarm switch | | A L | ● | ● | | | | | |
| | Shunt trips | | S H | — | — | | | | | |
| | Undervoltage trips | | U V | — | — | | | | | |
| | Test lead | | T L | — | — | | | | | |
| | Megger test switch | | M G | ● | ● | | | | | |
| Externally mounted | Motor operator | | M C | ● | ● | | | | | |
| | External operating handle | Breaker-mounted | H B | ● | ● | | | | | |
| | | Door-mounted (variable depth) | H P | ● | ● | | | | | |
| | Toggle extension | | H A | ● | ● | | | | | |
| | Mechanical interlock | Slide type | M S | — | — | | | | | |
| | | Link type | M L | — | — | | | | | |
| | | Wire type | M W | — | — | | | | | |
| | Toggle holder | | H H | ● | ● | | | | | |
| | Toggle lock | | H L | | | | | | | |
| | Terminal cover | For front-connected | C F | ● | ● | | | | | |
| | | For rear-connected | C R | ● | ● | | | | | |
| | Terminal block for lead | | T F | ● | ● | | | | | |
| | Door flange | | D F | — | — | | | | | |
| CE marking | | | | Non | Non | | | | | |
| Overcurrent trip mechanism | | | | Thermal-magnetic | Thermal-magnetic (adjustable) | | | | | |
| Colour of cover | | | | Grey Blue | Grey Blue | | | | | |
| Trip button (Colour) | | | | Yes (Red) | Yes (Red) | | | | | |
| Suitability for isolation | | | | Yes | Yes | | | | | |
| Reverse power flow circuit | | | | Yes ㉕ | Yes ㉕ | | | | | |
| Page of characteristics and outline dimensions | | | | 7-152 | 7-152 | | | | | |

**Notes:**

◉ : Standard. This configuration used unless otherwise specified. ○ : Optional standard. Specify when ordering.

● : "yes" or "available". — : "no" or "not available". △ : Custom-built product. Please contact us for details.

⑧ : Optional remote reset or automatic reset available on request. Please apply this when the reset button cannot be pressed due to the installation of external accessories, etc. See page 6-27 for details.

⑱ : Do not apply to circuits where overcurrent flows in the neutral wire.

㉚ : See page 6-22 for the contact rating.

㊴ : An earth leakage alarm maintains the operating state until pressing the reset button or turning the main circuit power OFF. If the electric leakage continues, it will be reset while you hold down the reset button, but when you release the reset button, it will return to the operating state.

㉕ : Since the overvoltage and earth leakage detection circuit has a continuous rating specification, there is no need to turn off the power of the detection circuit using a megger test switch, etc.

Remarks: See pages 3-25 and 3-26 for connection details.