

# Fuji Odyssey Series 3N Contactors



## Description

- 180 - 361A rating (AC3)
- Provides higher current and horsepower capabilities than SC-E series. Designed for reliable use in applications requiring constant switching, reduced coil energy consumption, and increased horsepower capabilities.
- Available in 154mm and 169mm frame widths
- SUPERMAGNET™ for high operating reliability.
- Use with Odyssey 3N series overload relays.

## Features

- Equipped with 2 N.O. and 2 N.C. auxiliary contacts
- Chatter-free operation eliminates contact welding and coil burning
- SUPERMAGNET™ coil operates on either AC or DC voltage
- Wire Terminal Connection Type: Crimp ring Terminal

## Agency approvals

- UL listed file E42419, Standard UL508
- cUL listed file E42419, Standard CSA C22.2 No. 14
- CE: Meets LVD EN60947-4-1
- SEMI F47-0200

## Optional accessories

- Terminal covers
- Auxiliary contacts



**3NC4H0122**

## Ecology

- Low power consumption
- Recycled thermoplastic resin used for plastic parts.
- The names of materials are indicated on all major parts to facilitate recycling.

## Odyssey 3N Series Contactors 180–361 Amps

| Part Number               | Fuji Type | Price    | Coil Voltage            | Rated Motor Capacity (HP) |          |          |          |          |          | Rated AC-3 Current (A) [note 1] | Rated AC-1 Thermal Current (A) [note 2] | Quantity of Auxiliary Contacts |    | SCCR Ratings (KA) | Frame Width (mm) |
|---------------------------|-----------|----------|-------------------------|---------------------------|----------|----------|----------|----------|----------|---------------------------------|-----------------------------------------|--------------------------------|----|-------------------|------------------|
|                           |           |          |                         | 3-Phase                   |          |          |          | 1-Phase  |          |                                 |                                         | NO                             | NC |                   |                  |
|                           |           |          |                         | 200–208V                  | 220–240V | 440–480V | 550–600V | 100–120V | 220–240V |                                 |                                         |                                |    |                   |                  |
| <a href="#">3NC4Q0E22</a> | SC-N8     | \$543.00 | 24–25VAC / 24VDC        | 60                        | 60       | 150      | 150      | N/A      | 180      | 260                             | 2                                       | 2                              | 10 | 138               |                  |
| <a href="#">3NC4Q0122</a> |           | \$543.00 | 100–127VAC / 100–120VDC |                           |          |          |          |          |          |                                 |                                         |                                |    |                   |                  |
| <a href="#">3NC4Q0222</a> |           | \$543.00 | 200–250VAC / 200–240VDC |                           |          |          |          |          |          |                                 |                                         |                                |    |                   |                  |
| <a href="#">3NC4H0E22</a> | SC-N10    | \$643.00 | 24–25VAC / 24VDC        | 75                        | 75       | 150      | 200      | N/A      | 221      | 260                             | 2                                       | 2                              | 10 | 138               |                  |
| <a href="#">3NC4H0122</a> |           | \$643.00 | 100–127VAC / 100–120VDC |                           |          |          |          |          |          |                                 |                                         |                                |    |                   |                  |
| <a href="#">3NC4H0222</a> |           | \$643.00 | 200–250VAC / 200–240VDC |                           |          |          |          |          |          |                                 |                                         |                                |    |                   |                  |
| <a href="#">3NC4H0Q22</a> |           | \$643.00 | 380–450VAC              |                           |          |          |          |          |          |                                 |                                         |                                |    |                   |                  |
| <a href="#">3NC4H0422</a> |           | \$643.00 | 460–575VAC              |                           |          |          |          |          |          |                                 |                                         |                                |    |                   |                  |
| <a href="#">3NC5F0E22</a> | SC-N11    | \$840.00 | 24–25VAC / 24VDC        | 100                       | 100      | 200      | 250      | N/A      | 285      | 350                             | 2                                       | 2                              | 18 | 148               |                  |
| <a href="#">3NC5F0122</a> |           | \$840.00 | 100–127VAC / 100–120VDC |                           |          |          |          |          |          |                                 |                                         |                                |    |                   |                  |
| <a href="#">3NC5F0222</a> |           | \$840.00 | 200–250VAC / 200–240VDC |                           |          |          |          |          |          |                                 |                                         |                                |    |                   |                  |
| <a href="#">3NC5H0E22</a> | SC-N12    | \$919.00 | 24–25VAC / 24VDC        | 125                       | 150      | 300      | 350      | N/A      | 361      | 450                             | 2                                       | 2                              | 18 | 148               |                  |
| <a href="#">3NC5H0122</a> |           | \$919.00 | 100–127VAC / 100–120VDC |                           |          |          |          |          |          |                                 |                                         |                                |    |                   |                  |
| <a href="#">3NC5H0222</a> |           | \$919.00 | 200–250VAC / 200–240VDC |                           |          |          |          |          |          |                                 |                                         |                                |    |                   |                  |
| <a href="#">3NC5H0Q22</a> |           | \$919.00 | 380–450VAC              |                           |          |          |          |          |          |                                 |                                         |                                |    |                   |                  |
| <a href="#">3NC5H0422</a> |           | \$919.00 | 460–575VAC              |                           |          |          |          |          |          |                                 |                                         |                                |    |                   |                  |

Notes: 1. AC3 type loads consist of squirrel cage three-phase motors; occasional, limited jogging duty.

2. AC1 non-inductive or slightly inductive loads. Typically resistive loads (i.e. furnaces, ovens, etc.)

## Contactors Coil Characteristics - AC Input

| Part Number                                           | Power Consumption (VA) |        | Pick-up Voltage (V) | Drop-out Voltage (V) | Operating Time (ms)   |                         |
|-------------------------------------------------------|------------------------|--------|---------------------|----------------------|-----------------------|-------------------------|
|                                                       | Inrush                 | Sealed |                     |                      | Coil ON to Contact ON | Coil OFF to Contact OFF |
| <a href="#">3NC4Qxxxx</a> , <a href="#">3NC4Hxxxx</a> | 277                    | 5.4    | 70-80               | 35-50                | 35-41                 | 37-45                   |
| <a href="#">3NC5Fxxxx</a> , <a href="#">3NC5Hxxxx</a> | 265                    | 5.9    | 70-80               | 35-50                | 40-47                 | 36-43                   |

NOTE: This data is based on 100-120V SUPERMAGNET™ coil, tested at 120VAC, 60Hz.

# Fuji Odyssey Series 3N Contactors

## Contactor Coil Characteristics - DC Input - 110VDC

| Part Number          | Power Consumption (watts) |        | Pick-up Voltage (V) | Drop-out Voltage (V) | Operating Time (ms)   |                         |
|----------------------|---------------------------|--------|---------------------|----------------------|-----------------------|-------------------------|
|                      | Inrush                    | Sealed |                     |                      | Coil ON to Contact ON | Coil OFF to Contact OFF |
| 3NC4Qxxxx, 3NC4Hxxxx | 324                       | 4.1    | 77-88               | 28-44                | 35-41                 | 37-45                   |
| 3NC5Fxxxx, 3NC5Hxxxx | 340                       | 4.5    | 77-88               | 28-44                | 40-47                 | 36-43                   |

NOTE: This data is based on 100-120V SUPERMAGNET™ coil, tested at 110VDC.

## Contactor Coil Characteristics - DC Input - 24VDC

| Part Number          | Power Consumption (watts) |        | Pick-up Voltage (V) | Drop-out Voltage (V) | Operating Time (ms)   |                         |
|----------------------|---------------------------|--------|---------------------|----------------------|-----------------------|-------------------------|
|                      | Inrush                    | Sealed |                     |                      | Coil ON to Contact ON | Coil OFF to Contact OFF |
| 3NC4Qxxxx, 3NC4Hxxxx | 250                       | 5.9    | 17-19.2             | 6-12                 | 35-41                 | 37-45                   |

NOTE: This data is based on 100-120V SUPERMAGNET™ coil, tested at 110VDC.

## Contactor Auxiliary Contact Ratings

| NEMA ICS 5-2000 Ratings ( note 1 ) |           |             |             |                    |
|------------------------------------|-----------|-------------|-------------|--------------------|
| AC Ratings                         |           |             | DC Ratings  |                    |
| Designation                        | Making VA | Breaking VA | Designation | Making/Breaking VA |
| A600                               | 7200      | 720         | Q300        | 69                 |

Note 1: NEMA ICS 5-2000. For more information, refer to Control Circuit Contact Electrical Ratings, page MRC-tMRC-130.

## Contactor Terminal Tightening Torque Chart

| Part Number            | Terminal Size | Cable Size Maximum | Applicable Max. Width for Ring Terminal | Tightening Torque         |
|------------------------|---------------|--------------------|-----------------------------------------|---------------------------|
| 3NC4Q0xxx              | M10           | 300MCM [152mm²]    | 36.5 mm [1.44 in]                       | 15-20 N·m [133-177 lb·in] |
| 3NC4H0xxx              | M10           | 300MCM [152mm²]    | 36.5 mm [1.44 in]                       | 15-20 N·m [133-177 lb·in] |
| 3NC5F0xxx<br>3NC5H0xxx | M12           | 400MCM [203mm²]    | 44.5 mm [1.75 in]                       | 35-45 N·m [310-399 lb·in] |

## Contactor Life Expectancy Performance Data

| Model                       | Current Capacity Make/Break | Operating Cycles per Hour | Life Expectancy (million operations) |            |
|-----------------------------|-----------------------------|---------------------------|--------------------------------------|------------|
|                             |                             |                           | Electrical                           | Mechanical |
| 3NC4Qxxxx through 3NC5Fxxxx | 12xle/10xle                 | 1200                      | 1                                    | 5          |
| 3NC5Hxxxx                   | 12xle/10xle                 | 1200                      | 0.5                                  | 5          |

Note: Rated operational current. Electrical life test: Conforming to IEC947-4-1, AC3. The endurance test complies with the requirements of international standard IEC, JIS and JEM.

Note: Super Magnet Coils on 3NC4 and 3NC5 series contactors have internal surge suppression. See diagram below.

## Optional Accessories

### Terminal covers

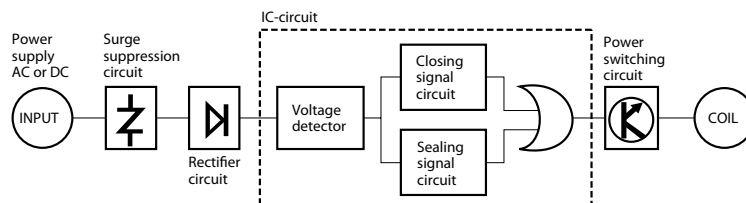
Prevent contact with electrified terminals.



**SZ-N8T**



**SZ-N11T**



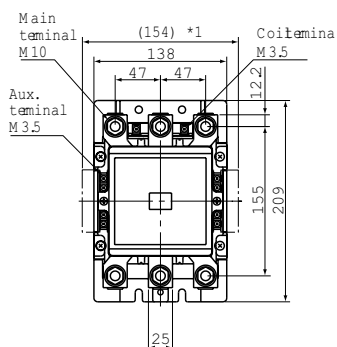
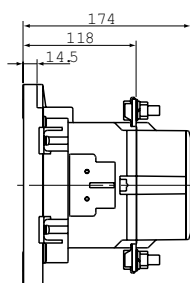
## Odyssey Series Contactor Terminal Covers

| Part Number    | Price   | Description                                                                                  | Applicable Contactors           |
|----------------|---------|----------------------------------------------------------------------------------------------|---------------------------------|
| <b>SZ-N8T</b>  | \$67.00 | Terminal cover for line or load side. Prevents contact with electrified contactor terminals. | 3NC4Qxxxx, 3NC4Hxxxx contactors |
| <b>SZ-N11T</b> | \$83.00 |                                                                                              | 3NC5Fxxxx, 3NC5Hxxxx contactors |

# Fuji Odyssey Series 3N Contactors

## Dimensions (mm)

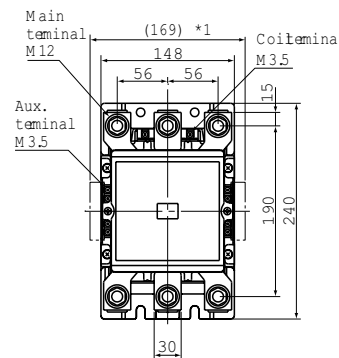
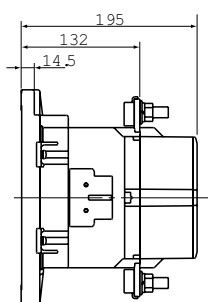
3NC4Q0#22  
3NC4H0#22



\* 1Aux. contact block is mounted

Weight: 49kg

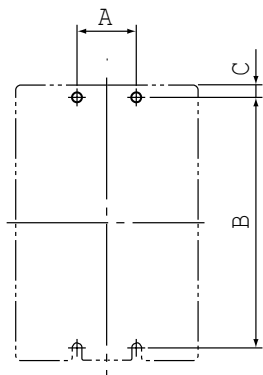
3NC5F0#22  
3NC5H0#22



\* 1Aux. contact block is mounted

Weight: 7.8kg

## Mounting Dimensions

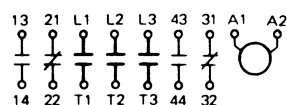


| Frame Size | A  | B   | C   | Screw Size |
|------------|----|-----|-----|------------|
| 3NC4Qxxxx  | 45 | 190 | 9.5 | 4-M6       |
| 3NC4Hxxxx  | 45 | 190 | 9.5 | 4-M6       |
| 3NC5Fxxxx  | 60 | 220 | 10  | 4-M8       |
| 3NC5Hxxxx  | 60 | 220 | 10  | 4-M8       |

**F** Fuji Electric

## Wiring Diagrams

### Non-reversing Contactors



# Fuji Odyssey Series 3N Overload Relays

## General Information

- Use with Odyssey 3N series contactors.
- Protects motor windings from burning due to overloads, locked rotor currents, or open phases.

### Agency approvals:

- UL listed file E42419, Standard UL 508
- cUL listed file E42419, Standard CSA C22.2 No. 14
- CE: LVD EN60947-4-1

**3NK4QL****3NK4HN****3NK5HQ**

| Odyssey Series Overload Relays |           |          |                              |                 |                      |                          |
|--------------------------------|-----------|----------|------------------------------|-----------------|----------------------|--------------------------|
| Part Number                    | Fuji Type | Price    | Adjustable Current Range (A) | Frame Width     | Compatible Contactor | Trip Class IEC 60947-4-1 |
| <a href="#">3NK4QL</a>         | TK-N8     | \$202.00 | 85 - 125                     | 119mm [4.69 in] | 3NC4Qxxxx            | 10A                      |
| <a href="#">3NK4QN</a>         | TK-N8     | \$202.00 | 110 - 160                    |                 |                      |                          |
| <a href="#">3NK4QP</a>         | TK-N8     | \$202.00 | 125 - 185                    |                 |                      |                          |
| <a href="#">3NK4HP</a>         | TK-N10    | \$240.00 | 125 - 185                    | 138mm [5.43 in] | 3NC4Hxxxx            | 20                       |
| <a href="#">3NK4HQ</a>         | TK-N10    | \$240.00 | 160 - 240                    |                 |                      |                          |
| <a href="#">3NK5HQ</a>         | TK-N12    | \$396.00 | 160 - 240                    | 142mm [5.59 in] | 3NC5Fxxxx, 3NC5Hxxxx | 20                       |
| <a href="#">3NK5HR</a>         | TK-N12    | \$396.00 | 200 - 300                    |                 |                      |                          |
| <a href="#">3NK5HS</a>         | TK-N12    | \$396.00 | 240 - 360                    |                 | 3NC5Hxxxx            |                          |

## Specifications

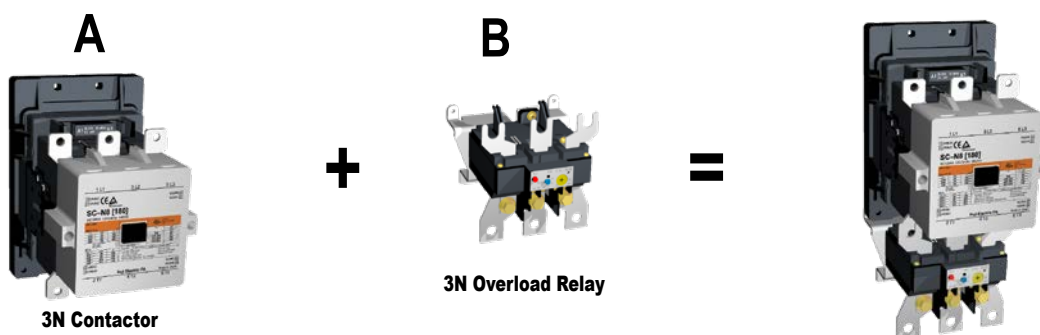
| Overload Relay Alarm Contact Ratings |           |             |                       |                    |
|--------------------------------------|-----------|-------------|-----------------------|--------------------|
| AC Ratings ( note 1 )                |           |             | DC Ratings ( note 1 ) |                    |
| Designation                          | Making VA | Breaking VA | Designation           | Making/Breaking VA |
| <b>C600</b>                          | 1800      | 180         | ---                   | ---                |

### Notes:

1. NEMA ICS 5-2000. For more information, refer to Control Circuit Contact Electrical Ratings.

| Wire Terminal Tightening Torque Chart |                      |               |                              |                                         |                           |
|---------------------------------------|----------------------|---------------|------------------------------|-----------------------------------------|---------------------------|
| Part Number                           | Contactor or Starter | Terminal Size | Cable Size Maximum           | Applicable Max. Width for Ring Terminal | Tightening Torque         |
| <a href="#">3NK4Qx</a>                | 3NC4Q0               | M10           | 300MCM (152mm <sup>2</sup> ) | 36.5 mm                                 | 133-177 in.lbs., 15-20 Nm |
| <a href="#">3NK4Hx</a>                | 3NC4H0               | M10           | 300MCM (152mm <sup>2</sup> ) | 36.5 mm                                 | 133-177 in.lbs., 15-20 Nm |
| <a href="#">3NK5Hx</a>                | 3NC5F0               | M12           | 400MCM (203mm <sup>2</sup> ) | 44.5 mm                                 | 310-399 in.lbs., 35-45 Nm |
|                                       | 3NC5H0               |               |                              |                                         |                           |

# Fuji Odyssey Series 3N Overload Relays Selection Tables



Step 1. Select an Odyssey 3N contactor from Column A based on motor voltage and horsepower.

Step 2. Select an Odyssey 3N overload relay from Column B to work with the contactor selected in Step 1. The motor full load current (FLA) should be within the adjustable current range of the overload relay.

## 220-240V 3-Phase Motor (60 to 150 hp)

| Motor Rating |                                                | A         | B                      |                          |
|--------------|------------------------------------------------|-----------|------------------------|--------------------------|
| HP           | Motor Full Load Amperage (FLA)<br>(See Note 1) | Contactor | Overload Relay         |                          |
|              |                                                |           | Part Number            | Adjustable Current Range |
| 60           | 154                                            | 3NC4Q0x22 | <a href="#">3NK4QN</a> | 110 to 160 Amps          |
| 75           | 192                                            | 3NC4H0x22 | <a href="#">3NK4HQ</a> | 160 to 240 Amps          |
| 100          | 248                                            | 3NC5F0x22 | <a href="#">3NK5HR</a> | 200 to 300 Amps          |
| 125          | 312                                            | 3NC5H0x22 | <a href="#">3NK5HS</a> | 240 to 360 Amps          |
| 150          | 360                                            | 3NC5H0x22 | <a href="#">3NK5HT</a> | 300 to 450 Amps          |

Note 1: Per NEC 2005 Table 430.250

## 440-480V 3-Phase Motor (125 to 300 hp)

| Motor Rating |                                                | A         | B                      |                          |
|--------------|------------------------------------------------|-----------|------------------------|--------------------------|
| HP           | Motor Full Load Amperage (FLA)<br>(See Note 1) | Contactor | Overload Relay         |                          |
|              |                                                |           | Part Number            | Adjustable Current Range |
| 125          | 156                                            | 3NC4Q0x22 | <a href="#">3NK4QP</a> | 125 to 185 Amps          |
| 150          | 180                                            | 3NC4H0x22 | <a href="#">3NK4HQ</a> | 160 to 240 Amps          |
| 200          | 240                                            | 3NC5F0x22 | <a href="#">3NK5HR</a> | 200 to 300 Amps          |
| 250          | 302                                            | 3NC5H0x22 | <a href="#">3NK5HS</a> | 240 to 360 Amps          |
| 300          | 361                                            | 3NC5H0x22 | <a href="#">3NK5HT</a> | 300 to 450 Amps          |

Note 1: Per NEC 2005 Table 430.250

# Fuji Odyssey Series 3N Overload Relays

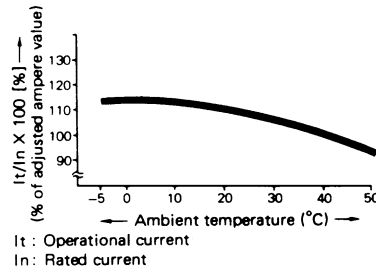
## Specifications

### Ambient temperature compensator

Overload relays are provided with an ambient temperature compensator. Their characteristics limit current value changes to approximately 10% as the ambient temperature changes between  $-5^{\circ}\text{C}$  and  $40^{\circ}\text{C}$ .

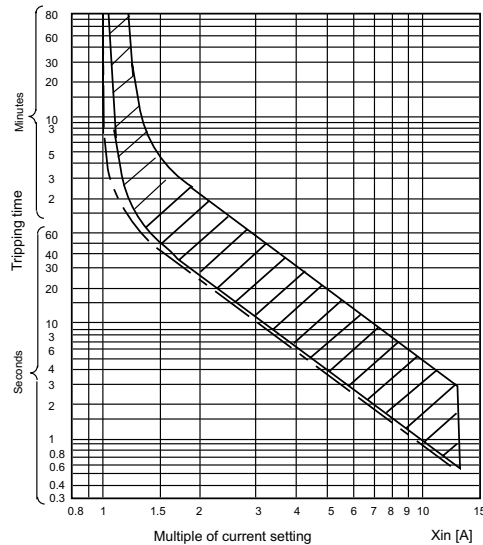
### Open-phase protection

### Compensation characteristics (Average value)

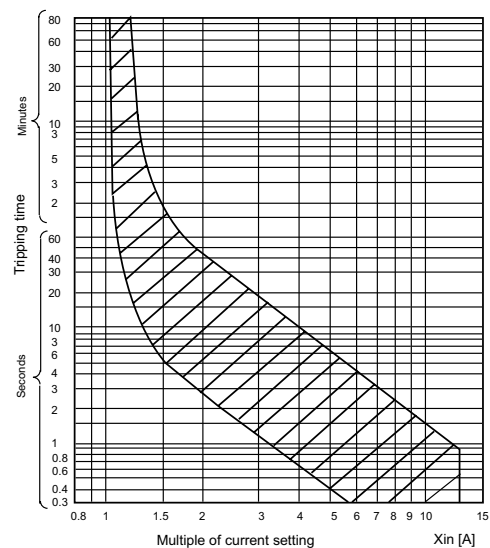


### 3NK4Qx

#### Cold start

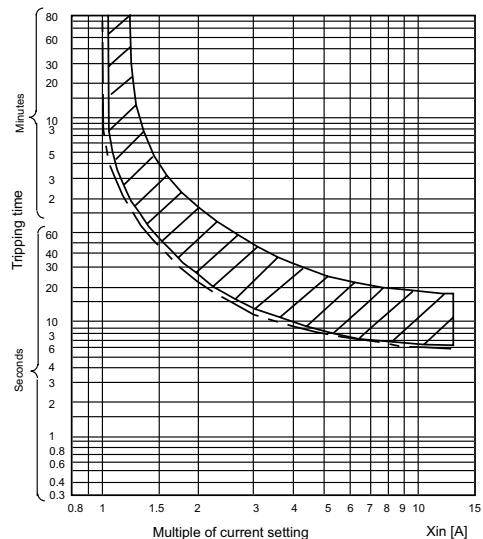


#### Hot start

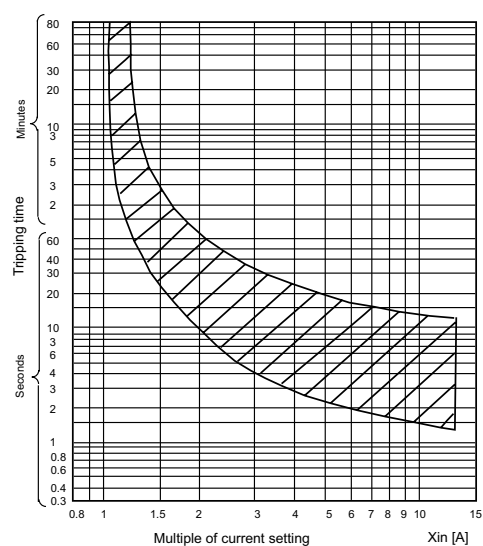


### 3NK4Hx, 3NK5Hx

#### Cold start



#### Hot start



# Fuji Odyssey Series 3N Overload Relays

## Optional Accessories

### Terminal covers

NOTE: Larger terminal covers may require some adjustment for proper fit.



**SZ-WN8T**



**SZ-WN10T**



**SZ-WN11T**

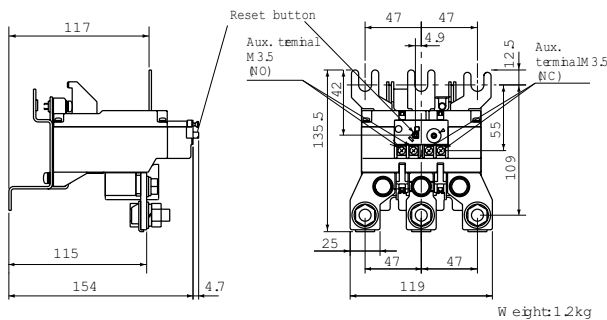


### Odyssey Series Overload Relay Terminal Covers

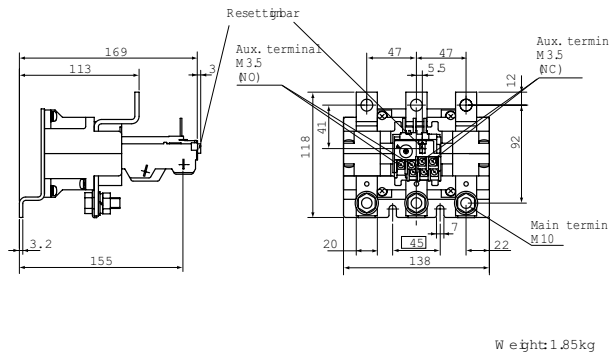
| Part number     | Price    | Description                                                                          | Applicable Contactors, Overload Relays |
|-----------------|----------|--------------------------------------------------------------------------------------|----------------------------------------|
| <b>SZ-WN8T</b>  | \$101.00 | Terminal cover for load side. Prevents contact with electrified contactor terminals. | 3NK4Qx overload relays                 |
| <b>SZ-WN10T</b> | \$101.00 |                                                                                      | 3NK4Hx overload relays                 |
| <b>SZ-WN11T</b> | \$116.00 |                                                                                      | 3NK5Hx overload relays                 |

## Dimensions [mm]

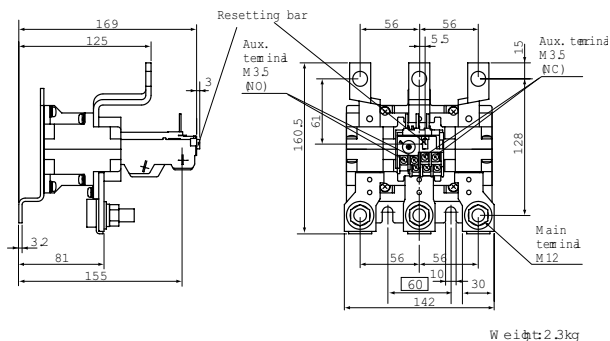
3NK4Qx



3NK4Hx

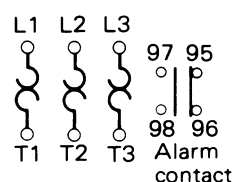


3NK5Hx

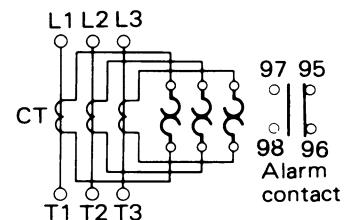


## Wiring Diagrams

3NK4Qx



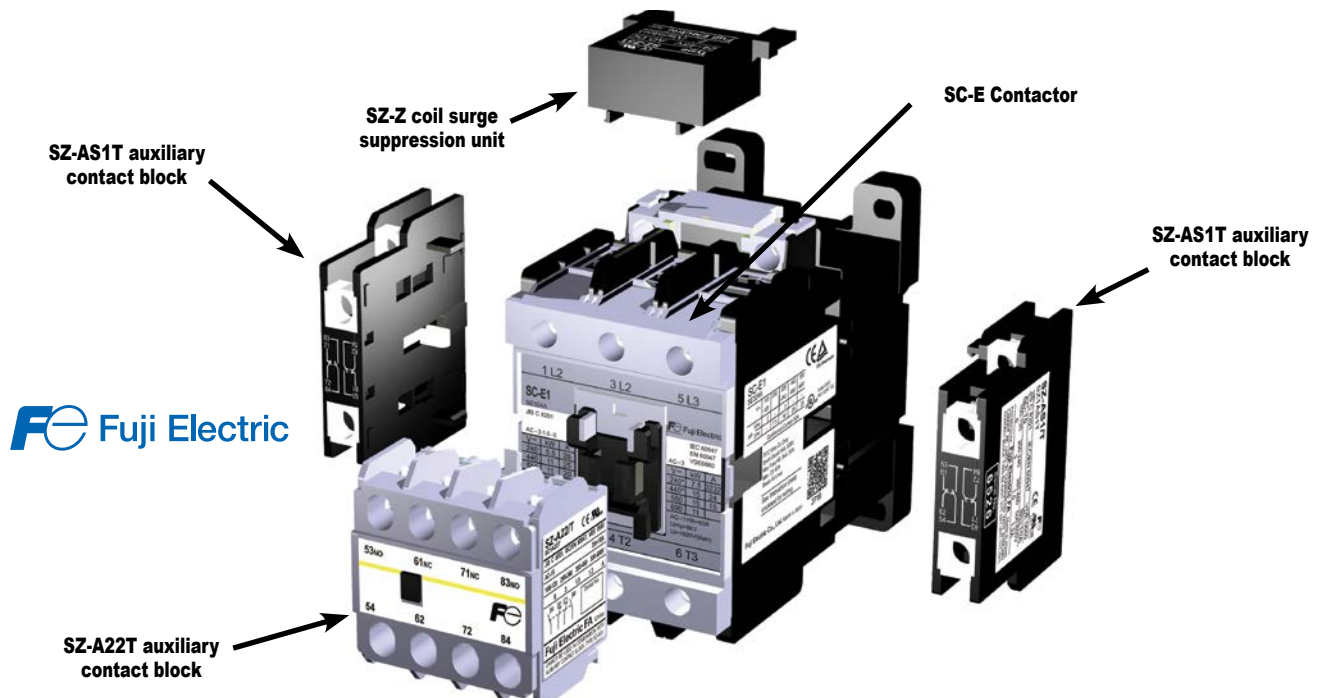
3NK4 H x, 3NK 5H x



# Fuji Duo Series SC-E Contactors

## Accessories

### Optional accessories



#### Auxiliary contact blocks with terminal covers

Maximum auxiliary contact blocks:

2 side mounted (1 per side) OR 1 front mounted. The front and side blocks cannot be mounted together on the same contactor.



**SZ-A22T**



**SZ-A11T**



**SZ-AS1T**



**SZ-AS2T**

#### Caution on use:

1. Front mounting auxiliary contact block and side mounting block cannot be attached to one contactor at the same time.
2. Only one front mounting block can be attached to one contactor.
3. Where interlock unit is already attached, side mounting auxiliary contact block can be attached on one side only.

#### Auxiliary Contact Blocks with Terminal Covers

| Part Number                    | Price   | Applicable Contactor       | Mounting       | Number of Contacts | Contact Arrangement |
|--------------------------------|---------|----------------------------|----------------|--------------------|---------------------|
| <a href="#"><u>SZ-A22T</u></a> | \$19.50 | SC-E02(G)-xxx to E4(G)-xxx | Front mounting | 4                  | 2NO + 2NC           |
| <a href="#"><u>SZ-A20T</u></a> | \$12.50 |                            |                | 2                  | 2NO                 |
| <a href="#"><u>SZ-A11T</u></a> | \$12.50 |                            |                | 2                  | 1NO + 1NC           |
| <a href="#"><u>SZ-AS1T</u></a> | \$19.50 | SC-E02(G)-xxx to E4(G)-xxx | Side mounting  | 2                  | 1NO + 1NC           |
| <a href="#"><u>SZ-AS2T</u></a> | \$19.50 |                            |                | 2                  | 1NO + 1NC           |

#### Accessory Auxiliary Contact Ratings - UL and CSA

| NEMA ICS 5-2000 Ratings ( note 1 ) |           |             |             |                    |
|------------------------------------|-----------|-------------|-------------|--------------------|
| AC Ratings                         |           |             | DC Ratings  |                    |
| Designation                        | Making VA | Breaking VA | Designation | Making/Breaking VA |
| <b>A600</b>                        | 7200      | 720         | Q300        | 69                 |

Note: For more information, refer to Control Circuit Contact Electrical Ratings

Accessory Auxiliary Contact Ratings - IEC and JIS continued on next page.