Instruction Manual

# Automatic Transfer Switches


## ⚠ Safety Cautions

- Please read this user manual carefully for safe use of this switchgear before using it.
- The switchgear described in this manual has limitations in use, conditions, locations, and etc., and require regular inspections.
  Please contact your local reseller or us for appropriate use of this switchgear.
- Do not disassemble or repair this switchgear for maintenance or repair.
  Please contact authorized and certified individuals for maintenance or repair.
- For your own safety, it is recommended that you use a specialist in electrical engineering, electrical wiring, etc.

VITZRO EM
www.vitzroem.com

# VITZRO EM

INSTRUCTION MANUAL

# Automatic Transfer Switches

Instruction Manual


VITZRO EM

## Safety Precautions for Switchgear

# Safety Precautions

Thank you for purchasing VITZRO EM switchgear. These safety precautions provide important descriptions related to safety.
Before starting any types of operations with the switchgear, please read these safety precautions, the user manual, and other related documentation for appropriate use. Use this switchgear only after reading and understanding all of the safety information and precautions for it. In this user manual, the safety precautions are classified into three categories based on the severity : [Danger], [Warning], and [Caution].

| | |
|---|---|
| ⚠ DANGER | A critical situation which can cause death or serious injury when the switchgear is handled improperly. |
| ⚠ WARNING | A serious situation which may cause death or serious injury when the switchgear is handled improperly. |
| ⚠ CAUTION | A potentially serious situation which may cause a moderate or slight injury when the switchgear is handled improperly. |

### ◈ Cautions when transporting

| | |
|---|---|
| ⚠ DANGER | • Do not go under the switchgear when lifting it with lifters or with chain-blocks.<br>As switchgear is heavy, it may cause injuries or even death when dropped. |

### ◈ Cautions for Installation (Connection and Mount)

| | |
|---|---|
| ⚠ DANGER | • Only qualified individuals (electrical engineers or electrical engineering certified technicians) should perform installation.<br>• Before starting installation, open all of the breakers to block all power supplies. Otherwise, electric shock may occur.<br>• Connect terminal bolts with the standard torque. Otherwise, a fire may occur.<br>• Firmly connect and fix the switchgear vertically on a flat surface.<br>• Do not install the switchgear in an environment where high temperature, high humidity, corrosive gas, dust, vibration, or shock exists.<br>Fire, non-trip, or malfunction may occur.<br>• Prevent dust, concrete dust or metal shavings from getting into the switchgear. Fire, non-trip, or malfunction may occur.<br>• For the 4-pole switch, connect the neutral line of the 3-phase 4-line to the phase N pole.<br>Overcurrent may cause non-trip or fire. |

### ◈ Cautions for Operation

| | |
|---|---|
| ⚠ DANGER<br>⚠ CAUTION | • Do not touch the main circuit, control circuits, or the terminal section being energized. Otherwise, an electric shock may occur.<br>• When a breaker is open (tripped) automatically, remove the cause and provide the power.<br>Otherwise, a fire may occur. |

### ◈ Cautions for Repair, Inspection, and Part Replacement

| | |
|---|---|
| ⚠ CAUTION | • Only qualified individuals should perform repair, inspection, and part replacement.<br>• Before starting any work, turn off the switchgear, and check whether all of the main circuit and the control circuits are de-energized. Otherwise, an electric shock may occur.<br>• Before inspecting the inside of the switchgear open the breaker and ensure that Power A and the Power B are open. Otherwise, fingers or tools may be caught and injured in the equipment.<br>• Check and tighten the terminal bolts with the standard torque in a regular basis.<br>Loose bolts may lead to a fire. |

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# 1. Handling

For storage, transport, and installation of the switchgear, read this manual carefully and understand all of the safety information and precautions before using the equipment.

## 1-1 Storage

The switchgear must be installed immediately after delivered. However, if it is impossible for any reason, please follow the instructions described below.

1. High temperature and high humidity degrade the performance of the switchgear. Please store the switchgear in a dry place.
   (Accidents may occur when any foreign materials get into the energized sections.)
2. Do not store the switchgear outdoors or in the place where dust or harmful gas exist.
   Otherwise, corrosion of the switchgear may occur.
3. Store the switchgear on a flat surface without touching the floor directly.
4. The switchgear must be "OPEN" and the string must be "DISCHARGED" while being stored.

## 1-2 Transport

Please follow the instructions described below when transporting the switchgear.

| | |
|---|---|
| ⚠ DANGER | • **Do not go under the switchgear when lifting the switchgear with lifters or with chain-blocks.**<br>• **The switchgear is heavy which may cause injuries or death when dropping.** |

1. Make sure that the type "WN" switchgear is in the "OPEN" state while transporting it.
2. Move the switchgear slowly to avoid any shock to the switch.

# 2. Ratings

## 2-1. W Type

| Types | | | 61W | | 62W | | 64W | | |
|---|---|---|---|---|---|---|---|---|---|
| Rated Current (In) | | A | 100 | | 200 | | 400 | | |
| Rated Operational Voltage (Ue) | | V | AC600 | | AC600 | | AC600 | | |
| Rated Insulation Voltage (Ui) | | V | AC800 | | AC800 | | AC800 | | |
| Rated Impulse Withstand Voltage (Uimp) | | kV | 8 | | 8 | | 8 | | |
| Number of Poles | | P | 3, 4 | | 3, 4 | | 2, 3, 4 | | |
| Number of Throws | | T | Double Throw | | Double Throw | | Double Throw | | |
| Connection Type | | | Front | | Front | | Front, Back | | |
| Performance | | | | | | | | | |
| Rated Short Time Current (1sec) Icw | | kA | 5 | | 10 | | 12 | | |
| Rated Short-circuit Closing Current Icm | | kA | 5 | | 10 | | 12 | | |
| With breakers (SPCD) | | kA | 14 | | 25 | | 35 | | |
| With fuses | | kA | 200 | | 200 | | 200 | | |
| Switching Capability [Note 1)] | | Class | AC-33B | | AC-33B | | AC-33B | | |
| Life Time | Electrical | Number | 5,000 | | 5,000 | | 5,000 | | |
| | Mechanical | Number | 10,000 | | 10,000 | | 10,000 | | |
| Switchover Sequence | | | A ↔ B | | A ↔ B | | A ↔ B | | |
| Run Time | Opening | msec | ≤30 | | ≤30 | | ≤60 | | |
| | Switching | msec | ≤60 | | ≤60 | | ≤200 | | |
| | Off | sec | - | | - | | - | | |
| Operating Voltage and Current (rms) | | | 3P | 4P | 3P | 4P | 2P | 3P | 4P |
| Switching | AC/DC 110V | A | - | - | - | - | 7 | 7 | 10 |
| | AC 220V | A | 8 | 8 | 8 | 8 | 3.5 | 3.5 | 5 |
| External Dimensions and Weight | | | | | | | | | |
| Weight | Front | kg | 2.5 | 3 | 3.5 | 4 | 7.5 | 9 | 10.5 |
| | Back | kg | - | - | - | - | 6 | 8 | 10 |

Note 1) Switching Capacity : Class AC-33B : Overload switching performance (Closing 10×Ie, Breaking 10×Ie, CosØ = 0.35),
Rated load switching performance (Closing 1×Ie, Breaking 1×Ie, CosØ = 0.8)


W Type(100~200A)


W Type(400A)/WN Type(~600A)


WN Type(800~3000A)

## 2-2. WN Type

| Types | | | 61WN | | | 62WN | | | 64WN | | | 66WN | | 68WN | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rated Current (In) | | A | 100 | | | 200 | | | 400 | | | 600 | | 800 | |
| Rated Operational Voltage (Ue) | | V | AC600 | | | AC600 | | | AC600 | | | AC600 | | AC600 | |
| Rated Insulation Voltage (Ui) | | V | AC800 | | | AC800 | | | AC800 | | | AC800 | | AC800 | |
| Rated Impulse Withstand Voltage (Uimp) | | kV | 8 | | | 8 | | | 8 | | | 8 | | 8 | |
| Number of Poles | | P | 2, 3, 4 | | | 2, 3, 4 | | | 2, 3, 4 | | | 3, 4 | | 3, 4 | |
| Number of Throws | | T | Double Throw | | | | | | | | | | | | |
| Connection Type | | | Front, Back | | | | | | | | | | | | |
| Performance | | | | | | | | | | | | | | | |
| Rated Short Time Current (1sec) Icw | | kA | 5 | | | 10 | | | 12 | | | 15 | | 22 | |
| Rated Short-circuit Closing Current Icm | | kA | 5 | | | 10 | | | 12 | | | 15 | | 22 | |
| With breakers (SPCD) | | kA | 14 | | | 25 | | | 35 | | | 42 | | 50 | |
| With fuses | | kA | 200 | | | 200 | | | 200 | | | 200 | | 200 | |
| Switching Capability [Note 1] | | Class | AC-33B | | | AC-33B | | | AC-33B | | | AC-33B | | AC-33B | |
| Life Time | Electrical | Number | 5,000 | | | 5,000 | | | 5,000 | | | 5,000 | | 5,000 | |
| | Mechanical | Number | 10,000 | | | 10,000 | | | 10,000 | | | 10,000 | | 10,000 | |
| Switchover Sequence | | | A ↔ B, A ↔ Neutral(off) ↔ B | | | | | | | | | | | | |
| Run Time | Closing | msec | ≤60 | | | ≤60 | | | ≤60 | | | ≤100 | | ≤100 | |
| | Trip | msec | ≤20 | | | ≤20 | | | ≤20 | | | ≤30 | | ≤30 | |
| Operating Voltage and Current (rms) | | | 2P | 3P | 4P | 2P | 3P | 4P | 2P | 3P | 4P | 3P | 4P | 3P | 4P |
| Closing | AC/DC 110V | A | 7 | 7 | 7 | 7 | 7 | 7 | 8 | 8 | 8 | 8 | 10 | 10 | 10 |
| | AC 220V | A | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 4 | 4 | 4 | 4 | 5 | 5 | 5 |
| Trip [Note 2] | AC/DC 110V | A | 3 | | | 3 | | | 3 | | | 4 | | 4 | |
| | AC 220V | A | 1.5 | | | 1.5 | | | 1.5 | | | 2 | | 2 | |
| External Dimensions and Weight | | | | | | | | | | | | | | | |
| Weight | Front | kg | 4.5 | 6 | 8 | 4.5 | 6 | 8 | 7.5 | 9 | 10.5 | 15 | 18 | 20 | 24 |
| | Back | kg | 4.5 | 6 | 8 | 4.5 | 6 | 8 | 6 | 8 | 10 | 14 | 17 | 19 | 23 |

Note 1) Switching Capacity : Class AC-33B : Overload switching performance (Closing 10×Ie, Breaking 10×Ie, CosØ = 0.35),
Rated load switching performance (Closing 1×Ie, Breaking 1×Ie, CosØ = 0.8)

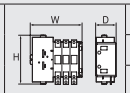
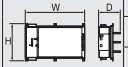
Note 2) Trip : The phenomenon in which the circuit at the Power A or the Power B is open to the Neutral position.

| Types | | | 610WN | | 612WN | | 616WN | | 620WN | | 625WN | | 630WN | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rated Current (In) | | A | 1000 | | 1200 | | 1600 | | 2000 | | 2500 | | 3000 | |
| Rated Operational Voltage (Ue) | | V | AC600 | | AC600 | | AC600 | | AC600 | | AC600 | | AC600 | |
| Rated Insulation Voltage (Ui) | | V | AC800 | | AC800 | | AC800 | | AC800 | | AC800 | | AC800 | |
| Rated Impulse Withstand Voltage (Uimp) | | kV | 8 | | 8 | | 8 | | 8 | | 8 | | 8 | |
| Number of Poles | | P | 3, 4 | | 3, 4 | | 3, 4 | | 3, 4 | | 3, 4 | | 3, 4 | |
| Number of Throws | | T | Double Throw | | | | | | | | | | | |
| Connection Type | | | Front, Back | | | | | | Back | | | | | |
| Performance | | | | | | | | | | | | | | |
| Rated Short Time Current (1sec) Icw | | kA | 22 | | 25 | | 32 | | 40 | | 50 | | 50 | |
| Rated Short-circuit Closing Current Icm | | kA | 22 | | 25 | | 32 | | 40 | | 50 | | 50 | |
| With breakers (SPCD) | | kA | 50 | | 65 | | 65 | | 85 | | 85 | | 85 | |
| With fuses | | kA | 200 | | 200 | | 200 | | 200 | | 200 | | 200 | |
| Switching Capability Note 1) | | Class | AC-33B | | AC-33B | | AC-33B | | AC-33B | | AC-33B | | AC-33B | |
| Life Time | Electrical | Number | 5,000 | | 5,000 | | 5,000 | | 3,000 | | 3,000 | | 3,000 | |
| | Mechanical | Number | 10,000 | | 10,000 | | 10,000 | | 5,000 | | 5,000 | | 5,000 | |
| Switchover Sequence | | | | | | | | | | | | | | |
| Run Time | Closing | msec | ≤100 | | ≤150 | | ≤150 | | ≤180 | | ≤180 | | ≤180 | |
| | Trip | msec | ≤30 | | ≤30 | | ≤30 | | ≤35 | | ≤35 | | ≤35 | |
| Operating Voltage and Current (rms) | | | 3P | 4P | 3P | 4P | 3P | 4P | 3P | 4P | 3P | 4P | 3P | 4P |
| Closing | AC/DC 110V | A | 10 | 10 | 8 | 10 | 8 | 10 | 13 | 16 | - | - | - | - |
| | AC 220V | A | 5 | 5 | 4 | 5 | 4 | 5 | 6.5 | 8 | 12 | 15 | 12 | 15 |
| Trip Note 2) | AC/DC 110V | A | 4 | | 4 | | 4 | | 4 | | - | | - | |
| | AC 220V | A | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| External Dimensions and Weight | | | | | | | | | | | | | | |
| Weight | Front | kg | 21 | 25 | 52.5 | 63.5 | 58 | 69 | - | - | - | - | - | - |
| | Back | kg | 20 | 24 | 50 | 60 | 55 | 65 | 65 | 85 | 92.5 | 119 | 92.5 | 119 |

Note 1) Switching Capacity : Class AC-33B : Overload switching performance (Closing 10×Ie, Breaking 10×Ie, CosØ = 0.35),
Rated load switching performance (Closing 1×Ie, Breaking 1×Ie, CosØ = 0.8)

Note 2) Trip : The phenomenon in which the circuit at the Power A or the Power B is open to the Neutral position.

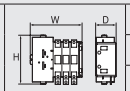
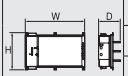
## 2-3. CTTS Type

| Types | | | 61CT | | | 62CT | | | 64CT | | | 66CT | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rated Current (In) | | A | 100 | | | 200 | | | 400 | | | 600 | |
| Rated Operational Voltage (Ue) | | V | AC600 | | | AC600 | | | AC600 | | | AC600 | |
| Rated Insulation Voltage (Ui) | | V | AC800 | | | AC800 | | | AC800 | | | AC800 | |
| Rated Impulse Withstand Voltage (Uimp) | | kV | 8 | | | 8 | | | 8 | | | 8 | |
| Number of Poles | | P | 2, 3, 4 | | | 2, 3, 4 | | | 2, 3, 4 | | | 3, 4 | |
| Number of Throws | | T | Double Throw | | | Double Throw | | | Double Throw | | | Double Throw | |
| Connection Type | Front | | ● | | | ● | | | ● | | | ● | |
| | Back | | - | | | - | | | ● | | | ● | |
| Performance | | | | | | | | | | | | | |
| Rated Short Time Current (1sec) Icw | | kA | 5 | | | 10 | | | 12 | | | 15 | |
| Rated Short-circuit Closing Current Icm | | kA | 5 | | | 10 | | | 12 | | | 15 | |
| With breakers (SPCD) | | kA | 14 | | | 25 | | | 35 | | | 50 | |
| With fuses | | kA | 200 | | | 200 | | | 200 | | | 200 | |
| Switching Capability Note 1) | | Class | AC-33B | | | AC-33B | | | AC-33B | | | AC-33B | |
| Life Time | Electrical | Number | 5,000 | | | 5,000 | | | 5,000 | | | 5,000 | |
| | Mechanical | Number | 10,000 | | | 10,000 | | | 10,000 | | | 10,000 | |
| Switchover Sequence | | | A↔Overlapping↔B , A↔B, A↔Neutral(off)↔B | | | | | | | | | | |
| Conditions of Uninterruptible Switchover | | | Phase Difference: within the electrical angle of 10°, Frequency Difference: within 0.2 Hz. Voltage: within 5% of the voltage difference with the all-electric power source, instantaneous coupled time: within 0.05 sec. | | | | | | | | | | |
| Run Time | Closing | msec | ≤60 | | | ≤60 | | | ≤100 | | | ≤150 | |
| | Trip | msec | ≤20 | | | ≤20 | | | ≤30 | | | ≤30 | |
| Operating Voltage and Current (rms) | | | 2P | 3P | 4P | 2P | 3P | 4P | 2P | 3P | 4P | 3P | 4P |
| Closing | AC/DC 110V | A | 5 | 5 | 7 | 7 | 7 | 7 | 7 | 7 | 9 | 7 | 8 |
| | AC 220V | A | 2.5 | 2.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 4.5 | 3.5 | 4 |
| Trip Note 2) | AC/DC 110V | A | 3 | | | 3 | | | 4 | | | 4 | |
| | AC 220V | A | 1.5 | | | 1.5 | | | 2 | | | 2 | |
| External Dimensions and Weight | | | | | | | | | | | | | |
| Front Dimensions |  | H | 268 | 268 | 268 | 283 | 283 | 283 | 307 | 307 | 307 | 545 | 545 |
| | | W | 210.8 | 240.8 | 270.8 | 240.8 | 285.8 | 330.8 | 292.5 | 352.5 | 412.5 | 465 | 530 |
| | | D | 111 | 111 | 111 | 111 | 111 | 111 | 132 | 132 | 132 | 219.4 | 219.4 |
| Back Dimensions |  | H | - | - | - | - | - | - | - | - | - | 478 | 478 |
| | | W | - | - | - | - | - | - | - | - | - | 465 | 530 |
| | | D | - | - | - | - | - | - | - | - | - | 254.4 | 254.4 |
| Weight | Front | kg | 6.5 | 8 | 10 | 8 | 10 | 12 | 14 | 17 | 21 | 53 | 61 |
| | Back | kg | - | - | - | - | - | - | - | - | - | - | - |

Note 1) Switching Capacity : Class AC-33B : Overload switching performance (Closing 10×Ie, Breaking 10×Ie, CosØ = 0.35),
Rated load switching performance (Closing 1×Ie, Breaking 1×Ie, CosØ = 0.8)

Note 2) Trip : The phenomenon in which the circuit at the Power A or the Power B is open to the Neutral position.

Note 3) 416CT/425CT have adequate test reports.

| Types | | | 610CT | 616CT \| 416CT [Note 3] | 620CT | 425CT [Note 3] | 630CT |
|---|---|---|---|---|---|---|---|
| Rated Current (In) | | A | 800, 1000 | 1200, 1600 | 2000 | 2,500 | 2500, 3000 |
| Rated Operational Voltage (Ue) | | V | AC600 | AC600 \| AC415V | AC600 | AC415 | AC600 |
| Rated Insulation Voltage (Ui) | | V | AC800 | AC800 \| AC600V | AC800 | AC600 | AC800 |
| Rated Impulse Withstand Voltage (Uimp) | | kV | 8 | 8 \| 6 | 8 | 6 | 8 |
| Number of Poles | | P | 3, 4 | 3, 4 | 3, 4 | 3, 4 | 3, 4 |
| Number of Throws | | T | Double Throw | Double Throw | Double Throw | Double Throw | Double Throw |
| Connection Type | Front | | ● | ● | - | - | - |
| | Back | | - | ● | ● | ● | ● |
| Performance | | | | | | | |
| Rated Short Time Current (1sec) Icw | | kA | 25 | 32 | 40 | 50 | 50 |
| Rated Short-circuit Closing Current Icm | | kA | 25 | 32 | 40 | 50 | 50 |
| With breakers (SPCD) | | kA | 50 | 65 | 85 | 85 | 85 |
| With fuses | | kA | 200 | 200 | 200 | 200 | 200 |
| Switching Capability [Note 1] | | Class | AC-33B | AC-33B | AC-33B | AC-33B | AC-33B |
| Life Time | Electrical | Number | 5,000 | 5,000 | 3,000 | 3,000 | 3,000 |
| | Mechanical | Number | 10,000 | 10,000 | 5,000 | 5,000 | |
| Switchover Sequence | | | A↔Overlapping↔B , A↔B, A↔Neutral(off)↔B | | | | |
| Conditions of Uninterruptible Switchover | | | Phase Difference: within the electrical angle of 10°, Frequency Difference: within 0.2 Hz. Voltage: within 5% of the voltage difference with the all-electric power source, instantaneous coupled time: within 0.05 sec. | | | | |
| Run Time | Closing | msec | ≤150 | ≤150 | ≤250 | ≤250 | ≤250 |
| | Trip | msec | ≤30 | ≤60 | ≤80 | ≤80 | ≤80 |
| Operating Voltage and Current (rms) | | | 3P 4P | 3P 4P | 3P 4P | 3P 4P | 3P 4P |
| Closing | AC/DC 110V | A | 8 10 | 10/16 13/16 | 13 16 | - - | 16 18 |
| | AC 220V | A | 4 5 | 5/8 6.5/8 | 6.5 8 | 12 12 | 8 9 |
| Trip [Note 2] | AC/DC 110V | A | 4 | 4/4 | 4 | - | 4 |
| | AC 220V | A | 2 | 2/4 | 2 | 4 | 2 |
| External Dimensions and Weight | | | | | | | |
| Front Dimensions |  | H | 607 607 | 644 644 | - - | - - | - - |
| | | W | 510 590 | 570 670 | - - | - - | - - |
| | | D | 219.4 219.4 | 219.4 219.4 | - - | - - | - - |
| Back Dimensions |  | H | 478 478 | 478 478 | 580 580 | 580 580 | 580 580 |
| | | W | 510 590 | 570 670 | 685 820 | 835 1020 | 835 1020 |
| | | D | 299.4 299.4 | 299.4 299.4 | 335 335 | 370 370 | 370 370 |
| Weight | Front | kg | 66 76 | 72 84 | - - | - - | - - |
| | Back | kg | - - | 72 84 | 130 150 | 165 205 | 165 205 |

Note 1) Switching Capacity : Class AC-33B : Overload switching performance (Closing 10×Ie, Breaking 10×Ie, CosØ = 0.35),
Rated load switching performance (Closing 1×Ie, Breaking 1×Ie, CosØ = 0.8)

Note 2) Trip : The phenomenon in which the circuit at the Power A or the Power B is open to the Neutral position.

Note 3) 416CT/425CT have adequate test reports.

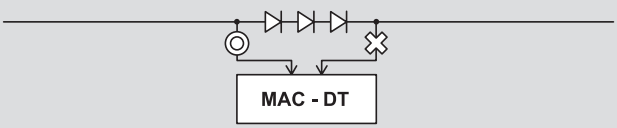
# 3. Installation

Please read and follow the instructions below before installation.

| | |
|---|---|
| ⚠ DANGER | • Block all power supplies including the main circuit and the control circuits before installation.<br>Otherwise, fire, electric shock, or a severe accident may occur. |

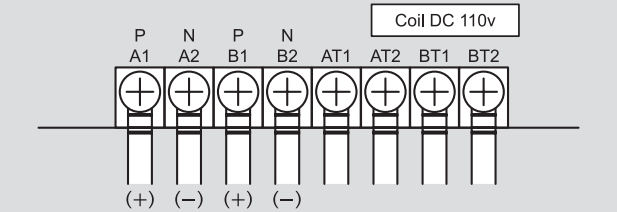
| | |
|---|---|
| ⚠ CAUTION | • Only qualified individuals (electrical engineers or electrical engineering certified technicians) should perform the installation.<br>Otherwise, the switchgear may malfunction.<br>• Do not install the switchgear in a place where high temperature, high humidity, or harmful gas exists.<br>Otherwise, the switchgear may malfunction.<br>• Maintain a sufficient insulation distance from the ARC CHUTE.<br>Otherwise, the switch performance may be lowered.<br>• Firmly connect and fix the switchgear vertically on the flat surface with the standard torque.<br>Otherwise, it may fall. |

| | |
|---|---|
| ⚠ CAUTION | • If a dropper circuit is included in the DC control power, the ATS control power should be connected to the input of the dropper circuit, not to the output. |




| | |
|---|---|
| ⚠ CAUTION | • Use the control powers and lines with sufficient capacities.<br>In particular, be careful of the battery capacity for DC control. |

| | |
|---|---|
| ⚠ CAUTION | • For the DC control specifications for 61-630WN, connect A1 and B1 to the +(P), and A2 and B2 to the -(N). |

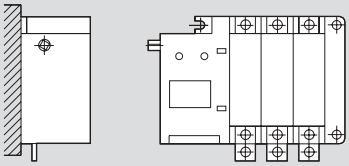


## 3-1. Installation

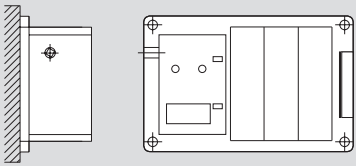
| CAUTION | • Do not pull the lines forcibly which connect the switch bus and the panel bus. Otherwise, it may lead to a fire or failure of operation properties. |
|---|---|

1. The ATS is designed to be installed in a specific direction. Changing this installation direction changes the properties of ATS. Be careful of the direction while installing the ATS.
2. If it is not possible to install the switchgear in a correct way due to the wiring or layout of the peripheral equipment, please contact us.
3. The switchgear should be installed in the direction from which you can see the switch nameplate in front of the switchgear, as well as the switchgear should be parallel to the vertical surface of the panel.

64W Front

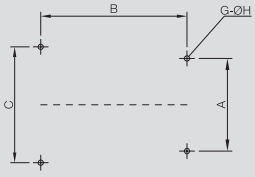


66WN Back



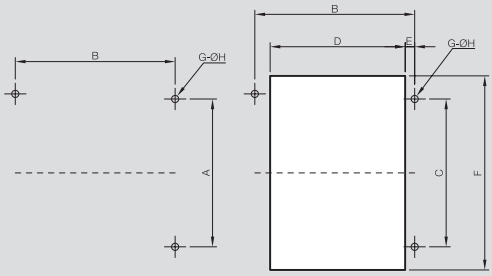
## 3-2. Panel Dimensions

1) Type W 100A-200A Dimensions




Front

2) Type W 400A Dimensions

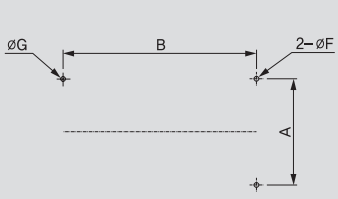



Front Back

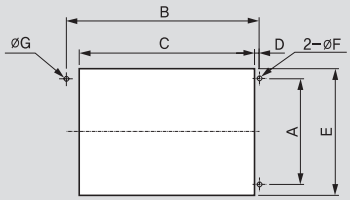
| TYPE | | 100~200A | 400A | |
|---|---|---|---|---|
| | | FRONT | FRONT | BACK |
| A | | 91 | 152 | - |
| B | 2P | - | 141 | 141 |
| | 3P | 148 | 192 | 192 |
| | 4P | 148 | 243 | 243 |
| C | | 150 | 152 | 152 |
| D | 2P | - | - | 120 |
| | 3P | - | - | 170 |
| | 4P | - | - | 220 |
| E | | - | - | 9.5 |
| F | | - | - | 155 |
| G | | 4 | 3 | 3 |
| H | | 9 | 9 | 9 |

## 3-2. Panel Dimensions

3) Type WN 100A-1000A Dimensions



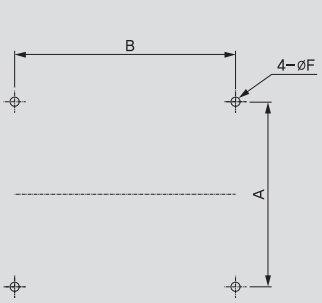

Front



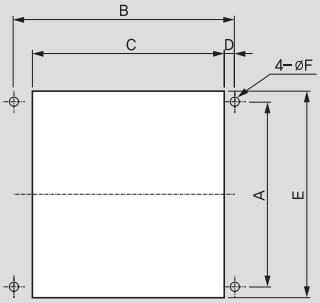

Back

| TYPE | | 100~200A | | 400A | | 600A | | 800A | | 1000A | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FRONT | BACK | FRONT | BACK | FRONT | BACK | FRONT | BACK | FRONT | BACK |
| A | | 152 | 152 | 152 | 152 | 200 | 200 | 200 | 200 | 200 | 200 |
| B | 2P | 111 | 111 | 141 | 141 | - | - | - | - | - | - |
| | 3P | 147 | 147 | 192 | 192 | 224 | 224 | 284 | 284 | 284 | 284 |
| | 4P | 183 | 183 | 243 | 243 | 284 | 284 | 364 | 364 | 364 | 364 |
| C | 2P | - | 88 | - | 118 | - | - | - | - | - | - |
| | 3P | - | 124 | - | 169 | - | 200 | - | 250 | - | 250 |
| | 4P | - | 160 | - | 220 | - | 260 | - | 330 | - | 330 |
| D | | - | 9.5 | - | 9.5 | - | 9 | - | 9 | - | 9 |
| E | | - | 172 | - | 155 | - | 215 | - | 240 | - | 240 |
| F | | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| G | | 7 | 7 | 7 | 7 | 10 | 10 | 10 | 10 | 10 | 10 |

## 4) Type WN 1200A-3000A Dimensions




Front

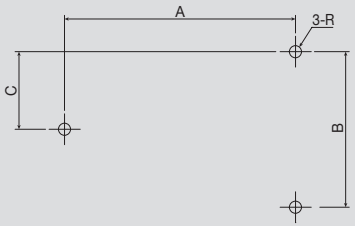



Back

| TYPE | | 1200A | | 1600A | | 2000A | 3000A |
|---|---|---|---|---|---|---|---|
| | | FRONT | BACK | FRONT | BACK | BACK | BACK |
| A | | 349.5 | 349.5 | 349.5 | 349.5 | 349.5 | 349.5 |
| B | 2P | - | - | - | - | - | - |
| | 3P | 334 | 334 | 334 | 334 | 409 | 482 |
| | 4P | 417 | 417 | 417 | 417 | 517 | 617 |
| C | 2P | - | - | - | - | - | - |
| | 3P | - | 279 | - | 279 | 354 | 432 |
| | 4P | - | 362 | - | 362 | 462 | 565 |
| D | | - | 18.5 | - | 18.5 | 18.5 | 18.5 |
| E | | - | 390 | - | 390 | 390 | 390 |
| F | | 14 | 14 | 14 | 14 | 14 | 14 |
| G | | - | - | - | - | - | - |

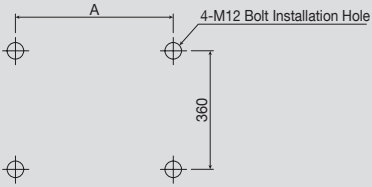
## 3-2. Panel Dimensions

### 5) 61-64CT Front Connection



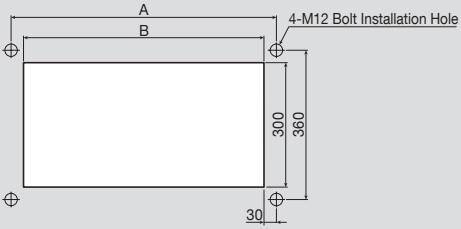

| Type | | 100A | 200A | 400A |
|---|---|---|---|---|
| A | 2P | 199.8 | 229.8 | 278.5 |
| | 3P | 229.8 | 274.8 | 338.5 |
| | 4P | 259.8 | 319.8 | 398.5 |
| B | | 152 | | 200 |
| C | | 76 | | 100 |
| R | | M5 | | M8 |

### 6) 66-616CT Front Connection



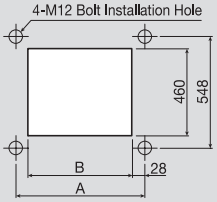

| Type | | 600A | 800A | 1000A | 1200A | 1600A |
|---|---|---|---|---|---|---|
| A | 3P | 435 | 480 | | 540 | |
| | 4P | 500 | 560 | | 640 | |

### 7) 66-616CT Back Connection

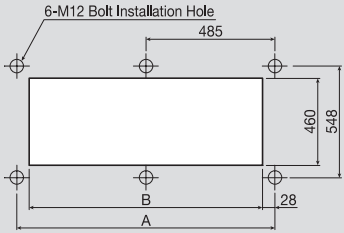



| Type | | 600A | 800A | 1000A | 1200A | 1600A |
|---|---|---|---|---|---|---|
| A | 3P | 435 | 480 | | 540 | |
| | 4P | 500 | 560 | | 640 | |
| B | 3P | 375 | 420 | | 480 | |
| | 4P | 440 | 500 | | 580 | |

## 8) 620-630CT Back Connection




CTTS 2000A-3000A(3P)

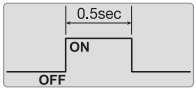



CTTS 3000A(4P)

| Type | | 2000A | 3000A |
|---|---|---|---|
| A | 3P | 645 | 795 |
| | 4P | 780 | 980 |
| B | 3P | 420 | 570 |
| | 4P | 555 | 755 |

# 4. Operation

Please read and follow the instructions below while operating the switchgear.

| | |
|---|---|
| ⚠ CAUTION | • Do not touch or get near to the energized main circuit or control circuits. Otherwise, electric shock may occur. |
| ⚠ CAUTION | • Closing and rack-out operation are completed within 0.3 seconds. However, for safe and correct operation, set the sequence to issue the control command for more than 0.5 seconds.   |
| ⚠ CAUTION | • Do not issue both the closing command and the trip command; when both the closing command and the trip command are issued to the same power simultaneously, the switch status is changed to the closing status and the coil is continuously energized.<br>• If the closing or the trip is not performed properly, do not force the switchgear to do the operation, but remove the cause and then start the operation again. Otherwise, fire or malfunction may occur.<br>• Do not operate the switchgear while removing the ARC CHUTE. Otherwise, it may cause fire or failure of operation properties.<br>• Operate the switchgear in the automatic mode, not in the manual mode. |

## 4-1. Manual Operation

Our ATS guarantees the switching performance in the automatic mode. However, the switching performance, such as the switching power and the speed, varies according to the operator's capabilities. In the manual mode, we do not guarantee the switching performance as described in this manual.

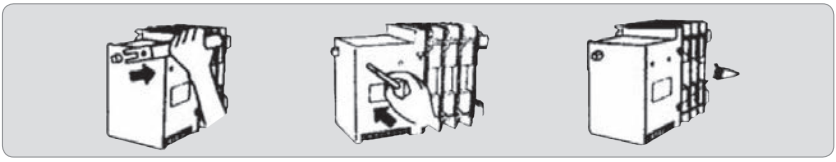
| | |
|---|---|
| ⚠ WARNING | • Make sure that all power supplies are blocked before starting manual operation.<br>• Otherwise, fire, electric shock, or a severe accident may occur. |
| ⚠ CAUTION | • Performing load switching in the manual mode may cause contact consumption or contact fused. Do not perform manual operation except the cases described below.<br>ⅰ) The switch performs switching continuously without the control power.<br>ⅱ) Inspection of the control devices and the contact section is performed during idle operation.<br>ⅲ) The switch does not operate due to any abnormalities of the switchgear.<br>• When performing manual operation, make sure that the control power is turned 'OFF'. Otherwise, electric shock may occur. |

### 1. TYPE 'WN'

TYPE 'WN' allows operations of A→A, A→B, B→B, B→A, and neutral.

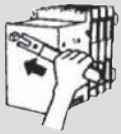
1) Trip

The switchgear is tripped when a screwdriver is inserted into the T section while the manual handle is pulled out.



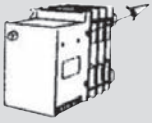
| CAUTION | • Make sure that the manual handle is pulled out before trying trip. Otherwise, the worker may be injured.<br>After the switchgear has been tripped, ensure that the 'ON' and 'OFF' display is changed to 'OFF'. |
|---|---|

2) How to input power to the A side



Place the manual handle onto the Ⓜ control shaft.

Turn the handle to the direction indicated by the arrow in the figure.

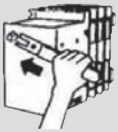


Check whether the ON/OFF display shows 'ON'.

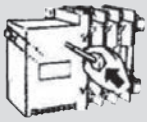
After completing control, pull out the handle.

| CAUTION | • Remove the manual handle after controlling the shaft.<br>If the handle is not removed, the worker may be injured while the ATS is being operated. |
|---|---|

3) How to input power to the B side

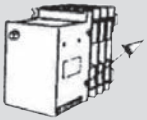


Place the manual handle onto the Ⓜ control shaft.



Insert and push a screwdriver into the S section.

While the screwdriver is being pushed into the S section, control the manual handle in the direction indicated by the arrow.



Check whether the ON/OFF display shows 'ON'. After completing control, pull out the handle.

| CAUTION | • Remove the manual handle after controlling the shaft.<br>If the handle is not removed, the worker may be injured while the ATS is being operated. |
|---|---|

## 2. TYPE 'W'

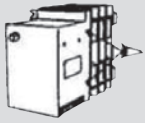
TYPE 'W' is switched as A→B and B→A.

| CAUTION | • For manual operation, make sure that the control power is set to 'OFF'.<br>If the handle is not removed, the worker may be injured while the ATS is being operated. |
|---|---|

Place the manual handle onto the Ⓜ control shaft.

Turn the handle to the direction indicated by the arrow in the figure until the handle stops.

When returning the handle to the original position, the contact is switched over.



Check whether the ON/OFF display shows 'ON' or 'OFF' according to the operation.

| CAUTION | • When input is made to the A side, the B side is tripped. In addition, when input is made to the B side, the A side is tripped.<br>• Remove the manual handle after controlling the shaft. |
|---|---|

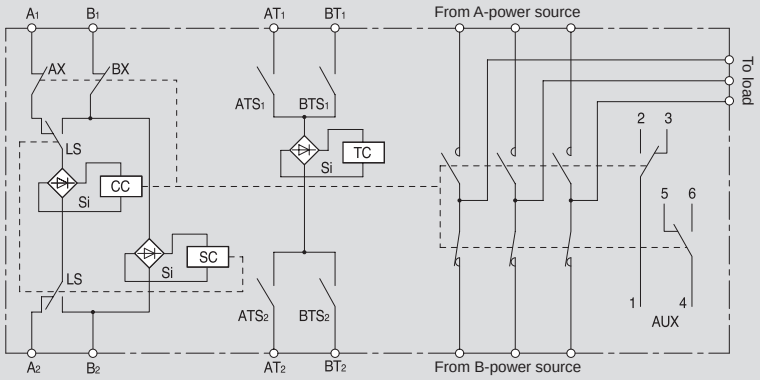
## 4-2. Automatic Operation

For automatic operation, please refer to the following operation circuit as a reference.

| CAUTION | • If the closing or the trip is not performed properly, do not force the switchgear to do the operation, but remove the cause and then start the operation again.<br>• Do not issue both the closing command and the trip command; when both the closing command and the trip command are issued to the same power simultaneously, the switch status is changed to the closing status and the coil is continuously energized. |
|---|---|

### 1. WN TYPE

① Control circuit

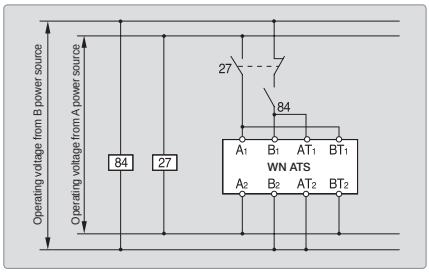



| Name | | | |
|---|---|---|---|
| CC | Closing Coil | AX, BX | Control Switch |
| SI | Silicon Rectifier | SC | Selection Coil |
| LS | Limit Switch | TC | Trip Coil |
| $ATS_1$, $ATS_2$ | Trip Control Switch | AUX | Auxiliary Switch |

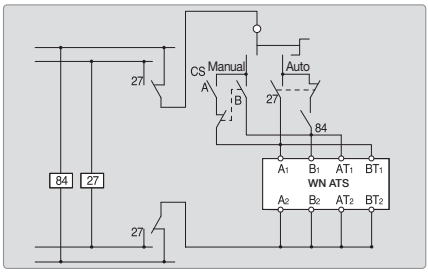
| Operation Terminal | |
|---|---|
| A1-A2 | Input Terminal at the Power A |
| B1-B2 | Input Terminal at the Power B |
| AT1-AT2 | Trip Terminal at the Power A |
| BT1-BT2 | Trip Terminal at the Power B |

### ② Example of the operation circuit

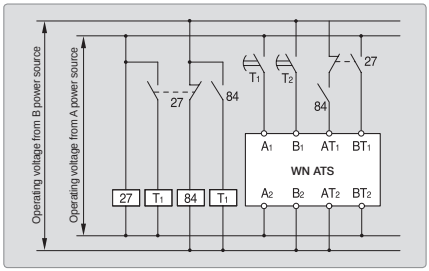
a) For general switchover (Instantaneous switchover)



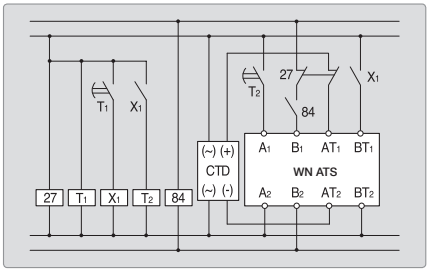

b) For manual-automatic switchover COS section




c) For using the switchover timer



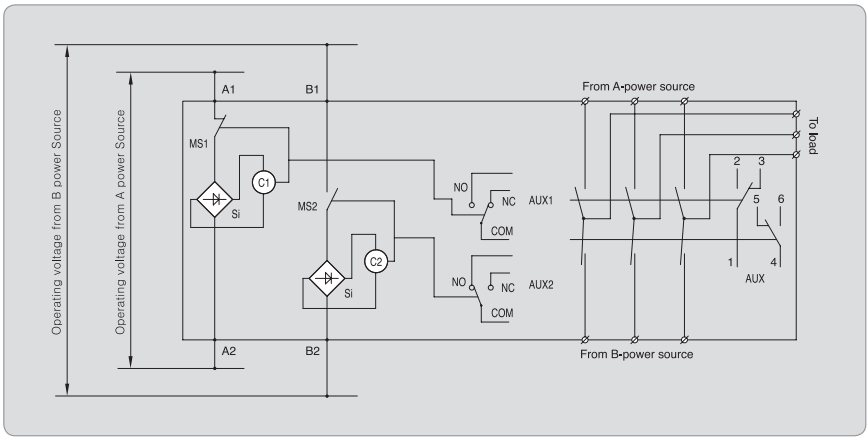

d) For condenser trip




## 2. W TYPE

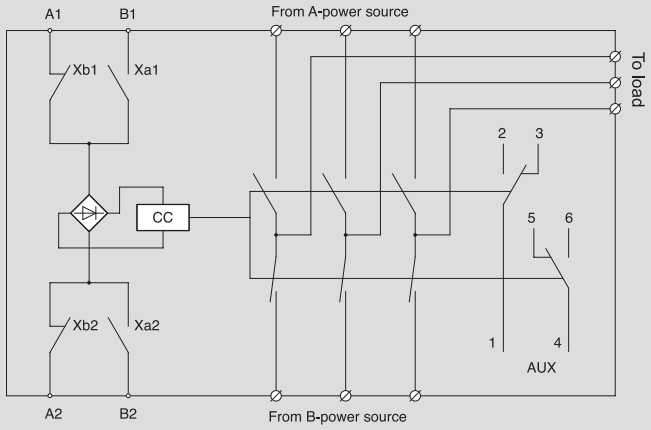
### 1) 100~200A W-Type

### ① Control circuit



## 2) 400A W-Type

### ① Control circuit

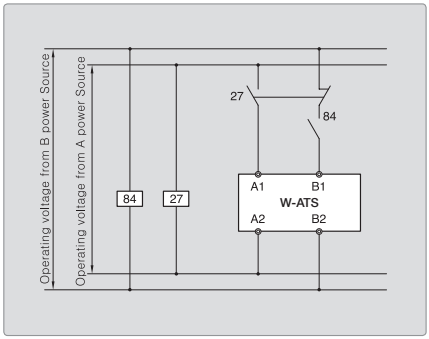



| Name | |
|---|---|
| CC | Closing Coil |
| Si | Silicon Rectifier |
| Xa1-Xa2 | Control Switch |
| Xb1-Xb2 | |

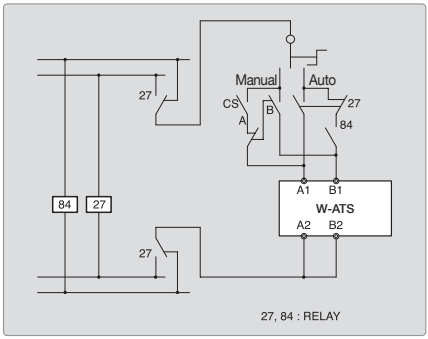
| Operation Terminal | |
|---|---|
| A1-A2 | Input Terminal at the Power A |
| B1-B2 | Input Terminal at the Power B |
| AUX | Auxiliary Switch |

### ② Example of operation circuit (common for 100-400A)

a) For general switchover (Instantaneous switchover)

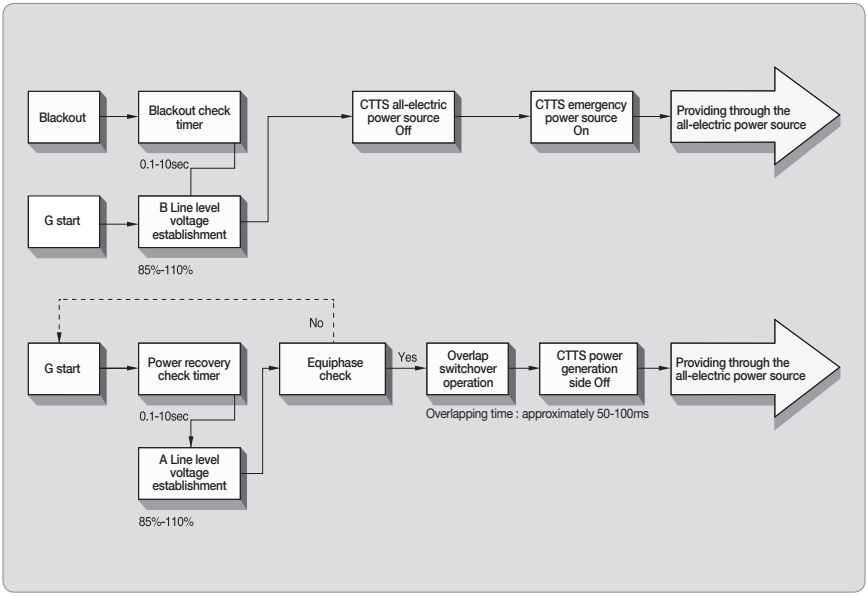



b) For manual-automatic switchover COS section

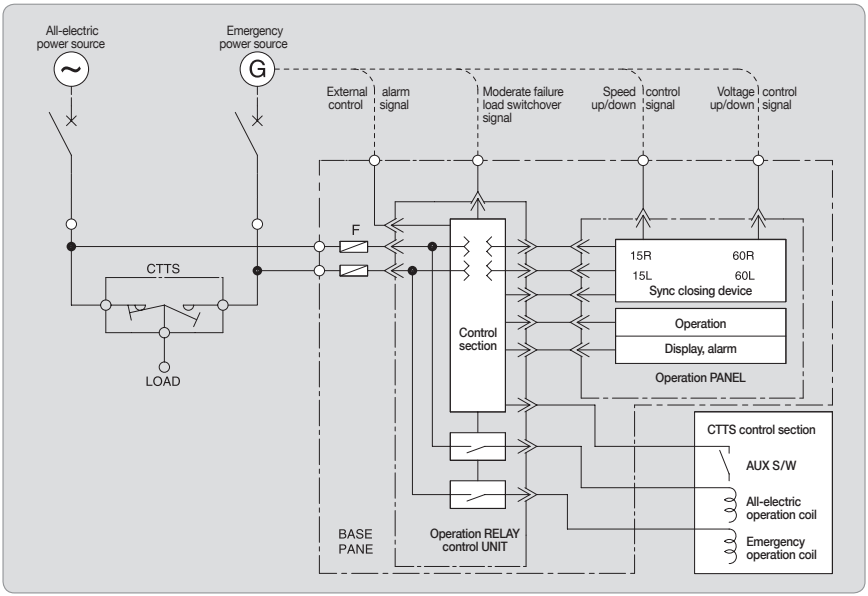


## 4-3. Circuit Diagram (CTTS)

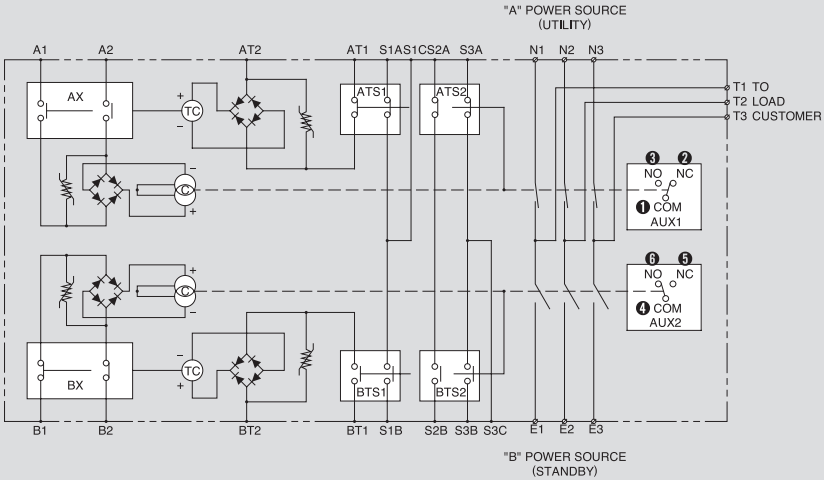
### 1) Operation Flow Chart




### 2) Operation circuit



## 3) Internal circuit




| | |
|---|---|
| A1, A2 | "A"Power source side(On) |
| AT1, AT2 | "A"Power source side(Trip) |
| ATS1, ATS2 | Switch, Position contacts |
| BTS1, BTS2 | |
| AUX1, 2 | Switch, Auxiliary |
| AX, BX | Switch, Control |
| B1, B2 | "B"Power source side(On) |
| BT1, BT2 | "B"Power source side(Trip) |
| C | Coil, Closing |
| COM | Common |
| CTTS | Closed transition transfer swiitch |
| $E_1$, $E_2$, $E_3$ | Standby power source conn. |
| NO | Normally open |
| NC | Normally closed |
| $N_1$, $N_2$, $N_3$ | Utility power source |
| S1A, S1B, S1C | Switch, Position sensing |
| S2A, S2B | |
| S3A, S3B, S3C | |
| TC | Coil, Trip |
| $T_1$, $T_2$, $T_3$ | Costomer load conn. |

All contacts of switch shown in :
Utility : Closed
Standby : Open

× : Closed ○ : Open

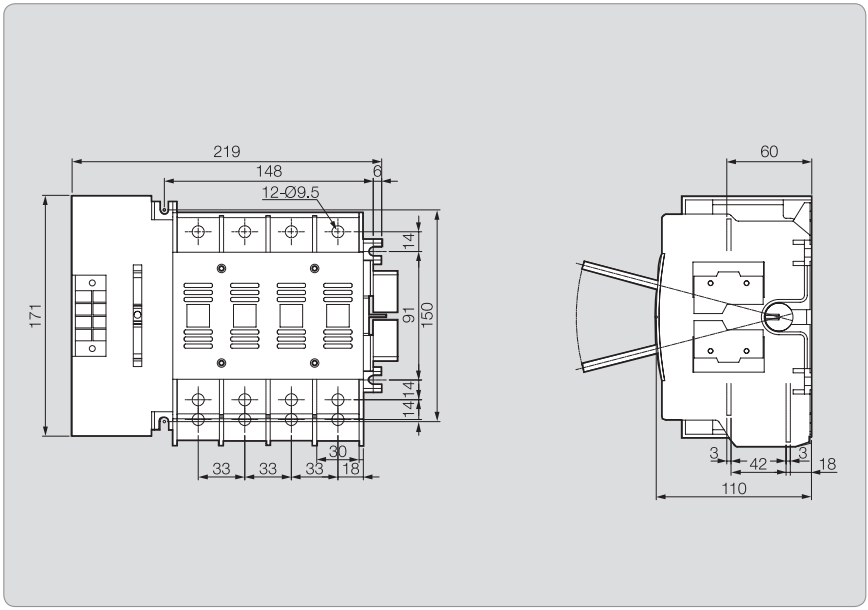
| Utility side | Switch position | Utility closed | Neutral | Utility open |
|---|---|---|---|---|
| Aux. 1 | ①COM - ②NC | × | ○ | ○ |
| | ①COM - ③NO | ○ | × | × |

| Utility side | Switch position | Standby open | Neutral | Standby closed |
|---|---|---|---|---|
| Aux. 2 | ④COM - ⑤NC | ○ | ○ | × |
| | ④COM - ⑥NO | × | × | ○ |

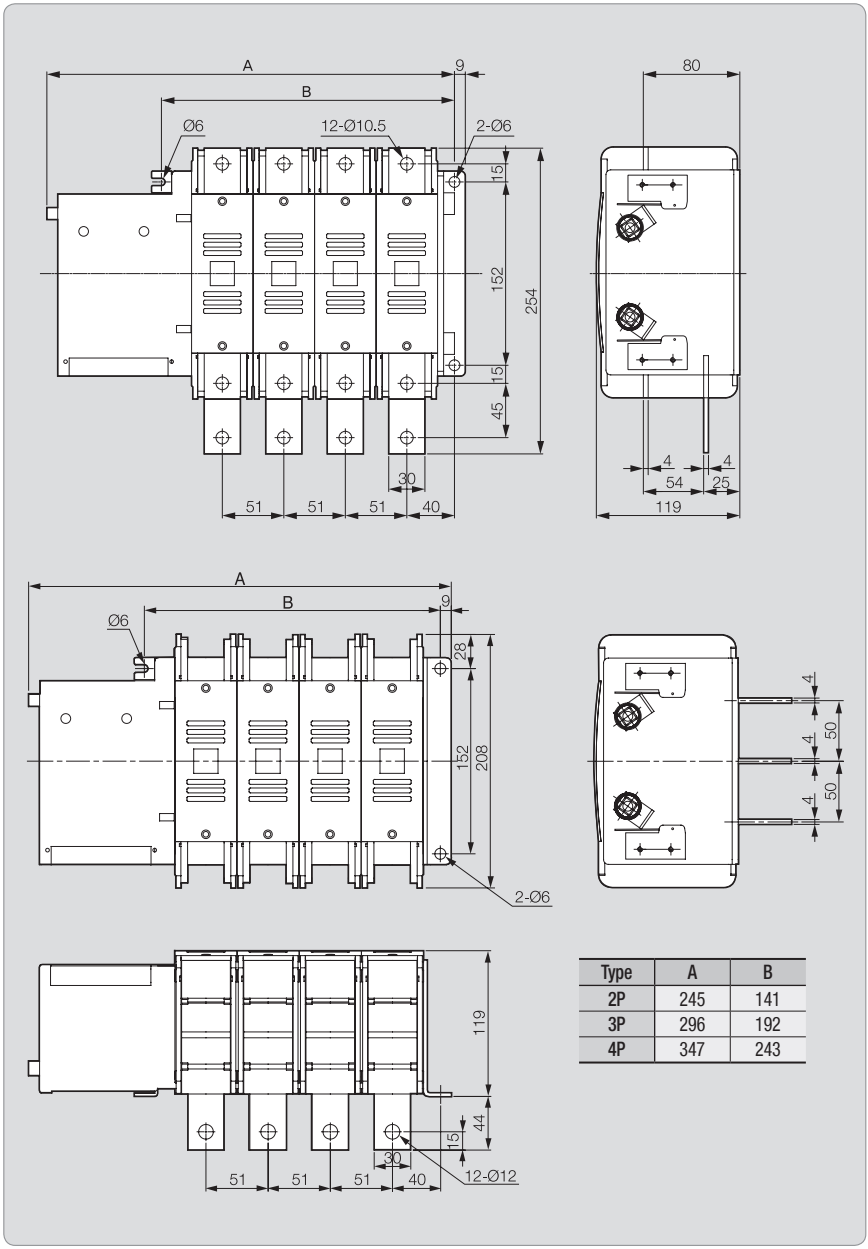
# 5. External Dimensions

## 5-1. W-Type

1) 61CT Front Connection



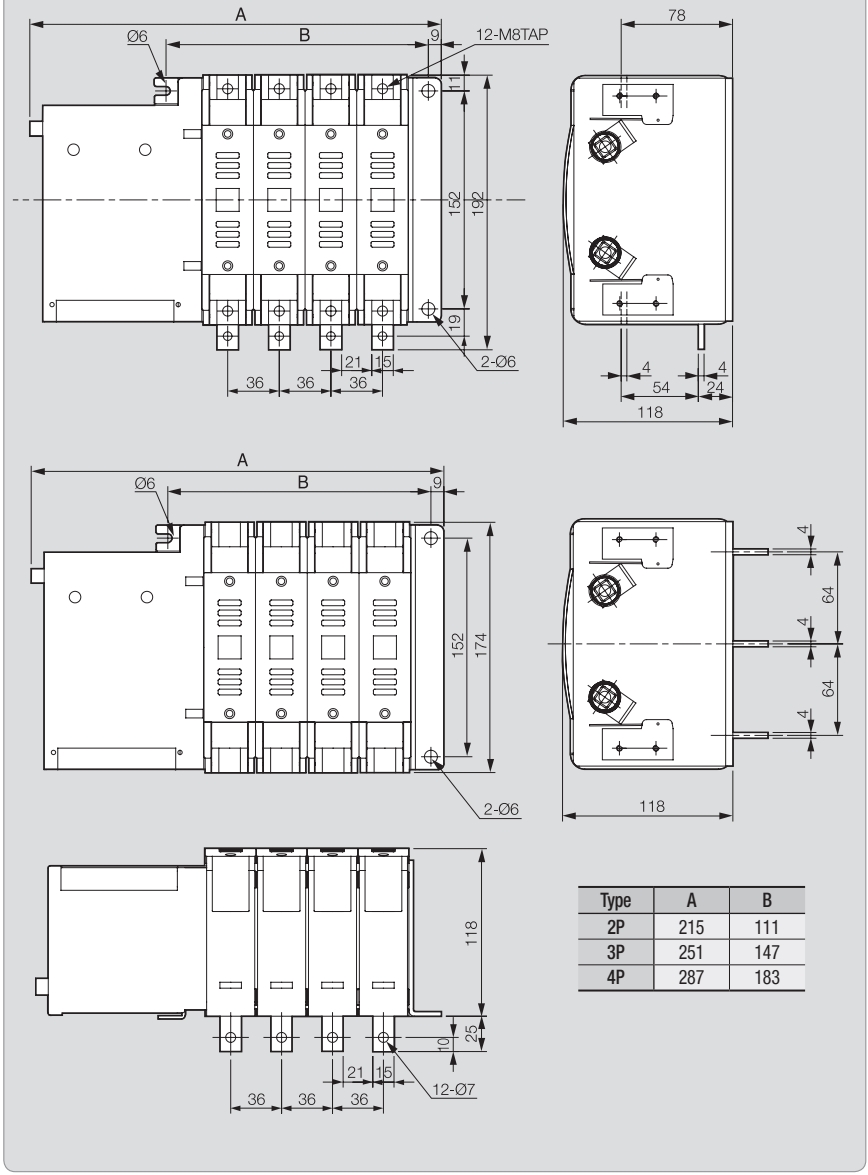
## 2) 64W FRONT/BACK




| Type | A | B |
|---|---|---|
| 2P | 245 | 141 |
| 3P | 296 | 192 |
| 4P | 347 | 243 |

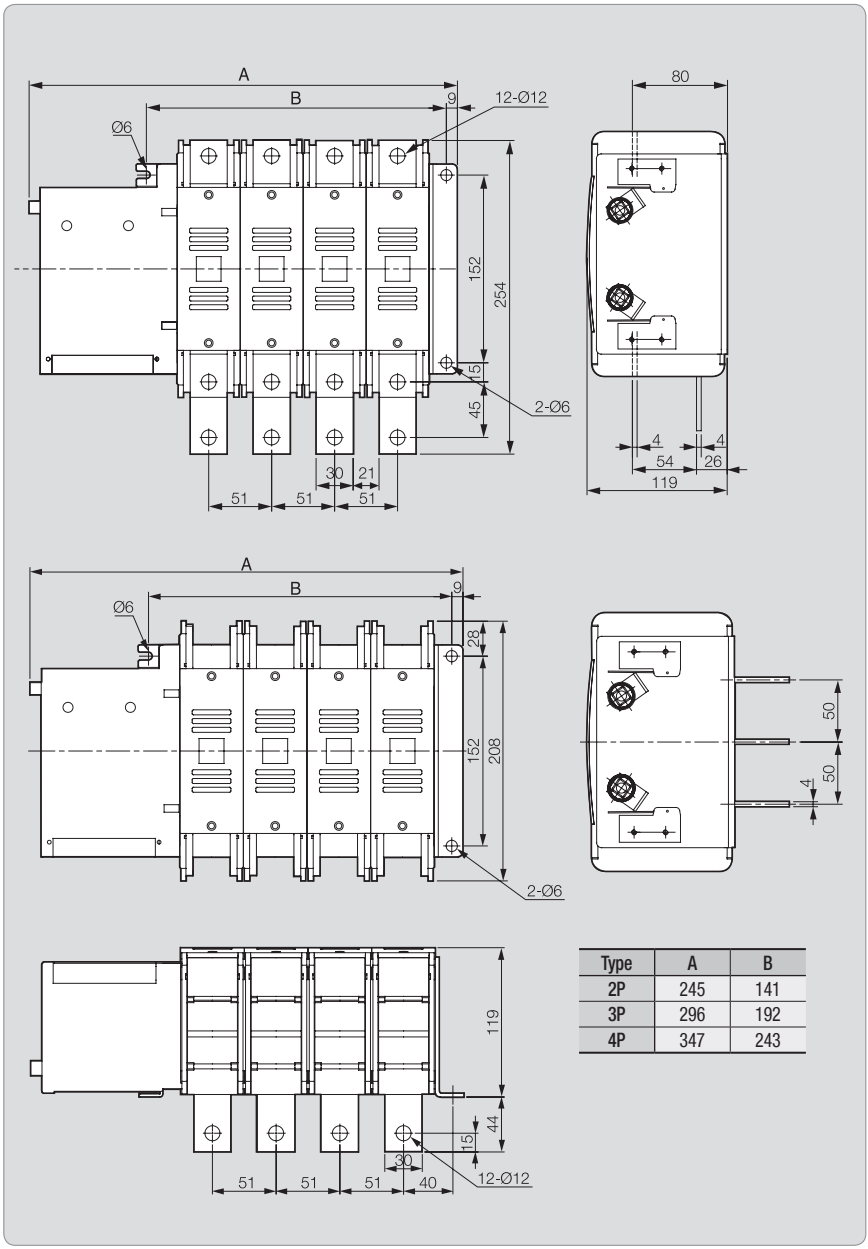
## 5-2. WN-Type

### 1) 61WN~62WN FRONT/BACK



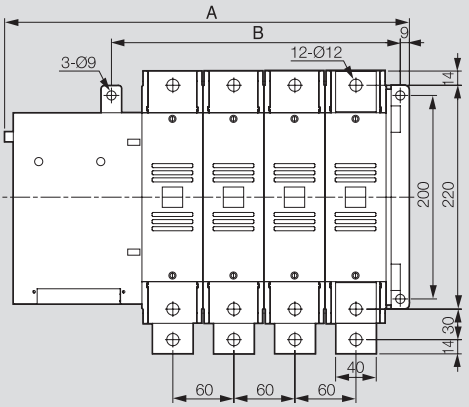

| Type | A | B |
|---|---|---|
| 2P | 215 | 111 |
| 3P | 251 | 147 |
| 4P | 287 | 183 |

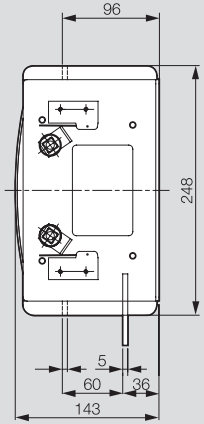
## 2) 64WN FRONT/BACK

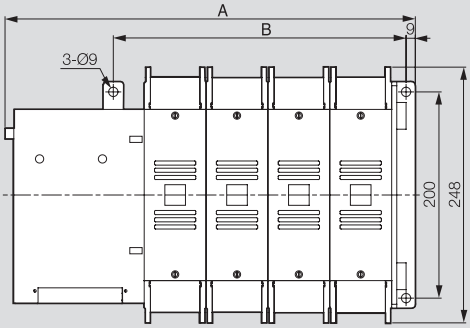


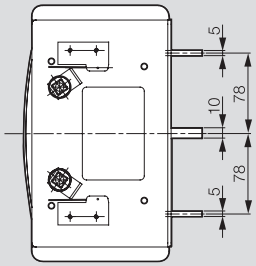

| Type | A | B |
|---|---|---|
| 2P | 245 | 141 |
| 3P | 296 | 192 |
| 4P | 347 | 243 |

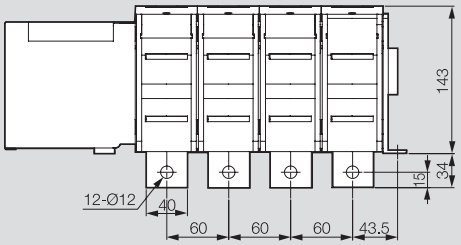
## 3) 66WN FRONT/BACK



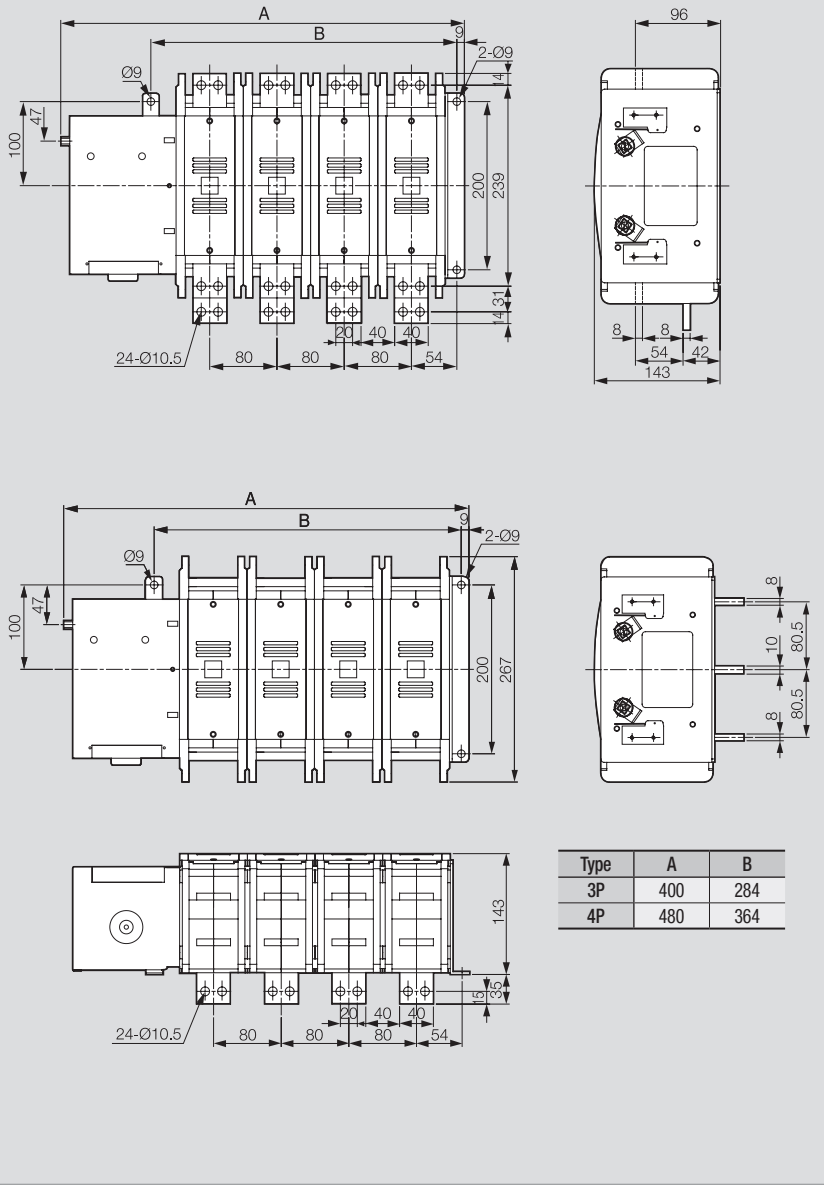



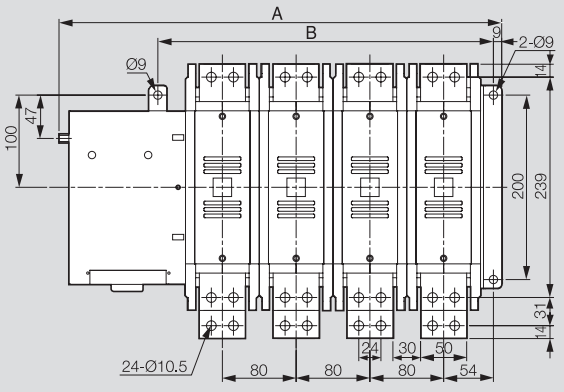

| Type | A | B |
|---|---|---|
| 3P | 340 | 224 |
| 4P | 400 | 284 |

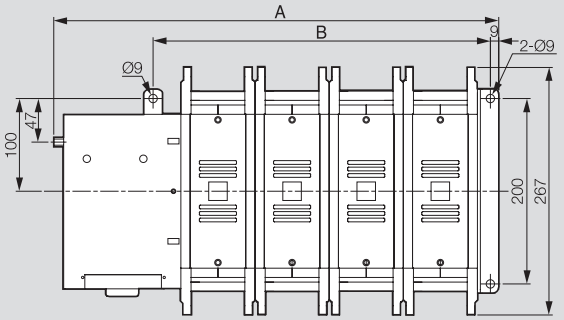
## 4) 68WN FRONT/BACK

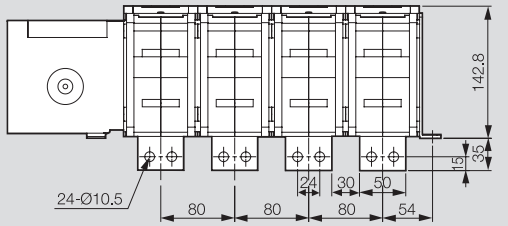



| Type | A | B |
|---|---|---|
| 3P | 400 | 284 |
| 4P | 480 | 364 |

## 5) 610WN FRONT/BACK

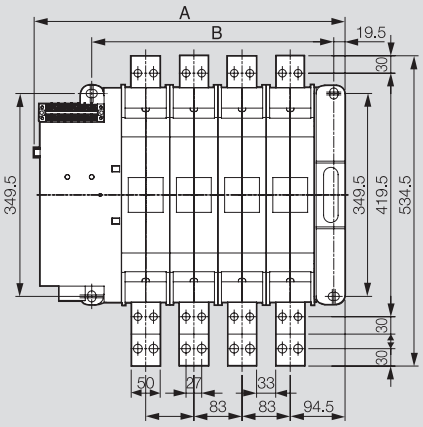


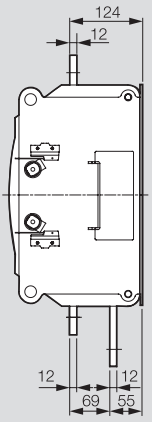



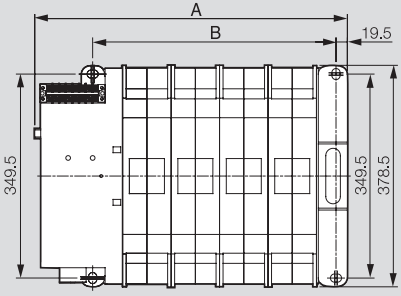



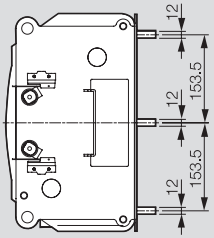

| Type | A | B |
|---|---|---|
| 3P | 400 | 284 |
| 4P | 480 | 364 |

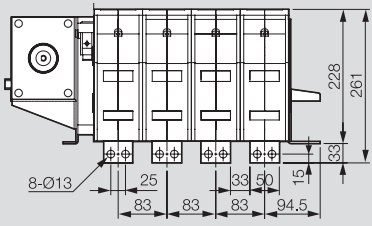
## 6) 612WN FRONT/BACK



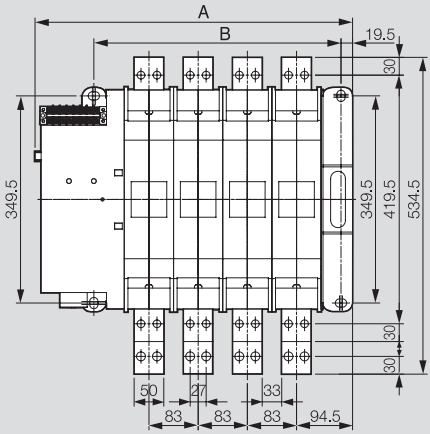



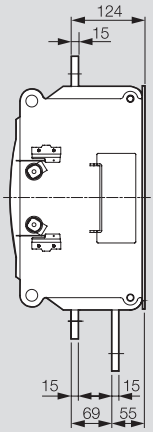



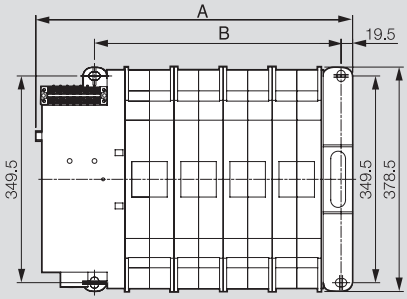



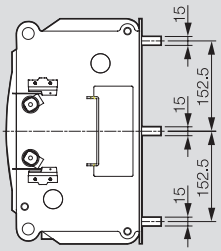

| Type | A | B |
|---|---|---|
| 3P | 452.5 | 334 |
| 4P | 535.5 | 417 |

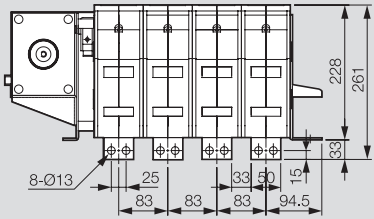
## 7) 616WN FRONT/BACK



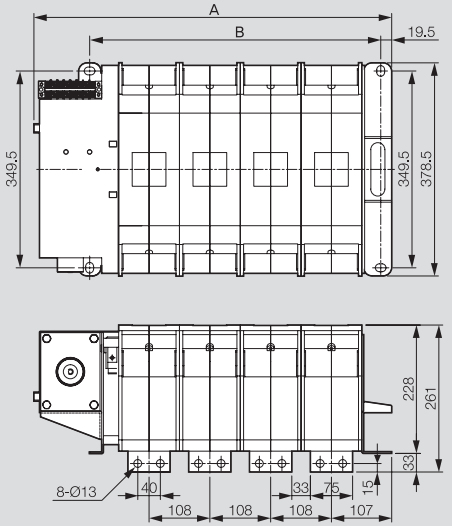



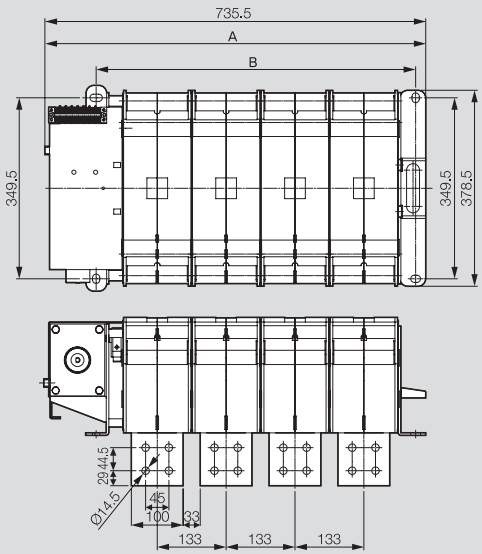

| Type | A | B |
|---|---|---|
| 3P | 452.5 | 334 |
| 4P | 535.5 | 417 |

## 8) 620WN BACK




| Type | A | B |
|---|---|---|
| 3P | 527.5 | 409 |
| 4P | 635.5 | 517 |

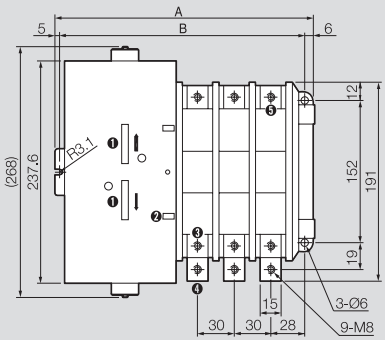
## 9) 625~630WN BACK

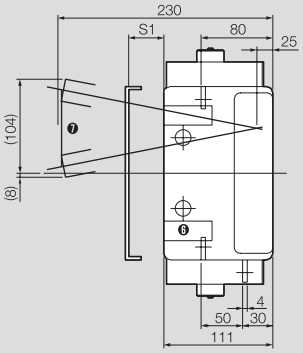



| Type | A | B |
|---|---|---|
| 3P | 602.5 | 484 |
| 4P | 735.5 | 617 |

## 5-3. CTTS-Type

### 1) 61CT Front connection



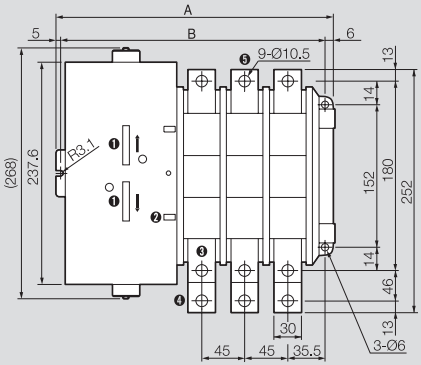



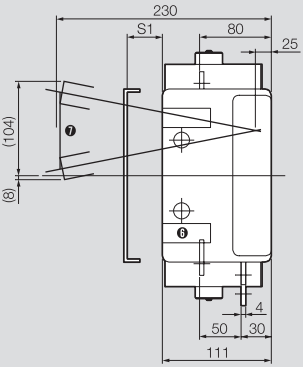

❶ Manual operation hole
❷ Switchover display
❸ Main circuit terminal on the Power B side
❹ Main circuit terminal on the load side
❺ Main circuit terminal on the Power A side
❻ Auxiliary switch
❼ Manual handle

Arc space dimensions (S1) is 30 mm for 220 V of the circuit voltage, 60 mm for 600 V of the circuit voltage.

| Type | A | B |
|---|---|---|
| 2P | 210.8 | 199.8 |
| 3P | 240.8 | 229.8 |
| 4P | 270.8 | 259.8 |

### 2) 62CT Front connection



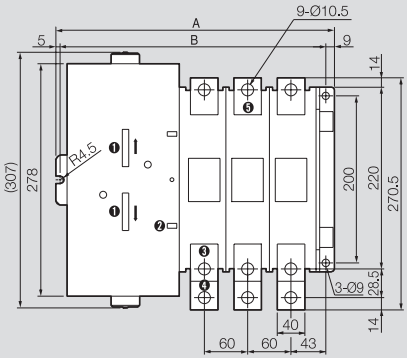



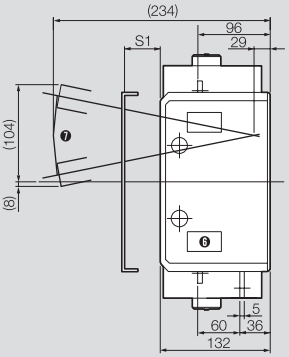

❶ Manual operation hole
❷ Switchover display
❸ Main circuit terminal on the Power B side
❹ Main circuit terminal on the load side
❺ Main circuit terminal on the Power A side
❻ Auxiliary switch
❼ Manual handle

Arc space dimensions (S1) is 30 mm for 220 V of the circuit voltage, 60 mm for 600 V of the circuit voltage.

| Type | A | B |
|---|---|---|
| 2P | 240.8 | 229.8 |
| 3P | 285.8 | 274.8 |
| 4P | 330.8 | 319.8 |

## 3) 64CT Front connection



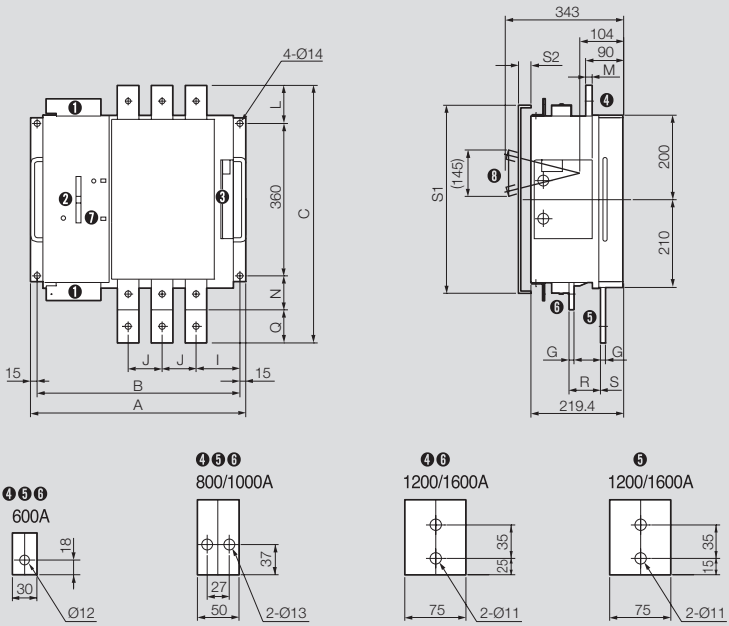




❶ Manual operation hole
❷ Switchover display
❸ Main circuit terminal on the Power B side
❹ Main circuit terminal on the load side
❺ Main circuit terminal on the Power A side
❻ Auxiliary switch
❼ Manual handle

Arc space dimensions (S1) is 30 mm for 220 V of the circuit voltage, 60 mm for 600 V of the circuit voltage.

| Type | A | B |
|---|---|---|
| 2P | 292.5 | 278.5 |
| 3P | 352.5 | 338.5 |
| 4P | 412.5 | 398.5 |

## 4) 66-616CT Front connection



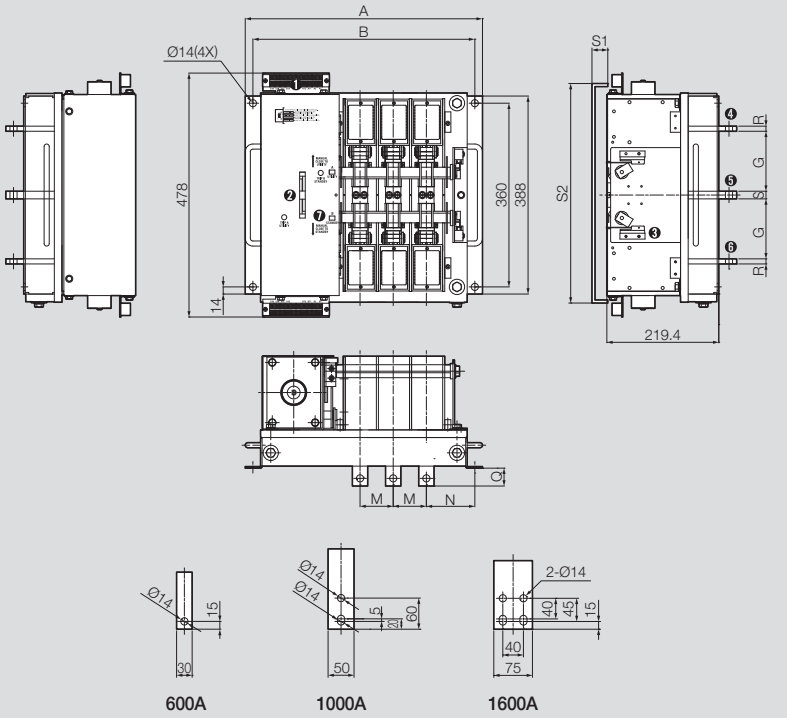

❶ Operation circuit terminal
❷ Manual operation hole
❸ Auxiliary switch
❹ Main circuit terminal on the Power A side
❺ Main circuit terminal on the load side
❻ Main circuit terminal on the Power B side
❼ Switchover display
❽ Manual handle

Arc space dimensions

| Main circuit voltage | S1 | S2 |
|---|---|---|
| 200V | 430mm | 25mm |
| 600V | 450mm | 90mm |

| Dimensions | | 600A | 800A | 1000A | 1200A | 1600A |
|---|---|---|---|---|---|---|
| A | 3P | 465 | 510 | | 570 | |
| | 4P | 530 | 590 | | 670 | |
| B | 3P | 435 | 480 | | 540 | |
| | 4P | 500 | 560 | | 640 | |
| C | | 545 | 607 | | 644 | |
| G | | 10 | 12 | | 15 | |
| I | | 95 | 103 | | 112.5 | |
| J | | 65 | 80 | | 100 | |
| L | | 70 | 90 | | 109 | |
| M | | 15 | 15 | | 15 | |
| N | | 71 | 79 | | 109 | |
| Q | | 44 | 79 | | 66 | |
| R | | 75 | 75 | | 75 | |
| S | | 55 | 55 | | 55 | |

## 5) 66-616CT Back connection



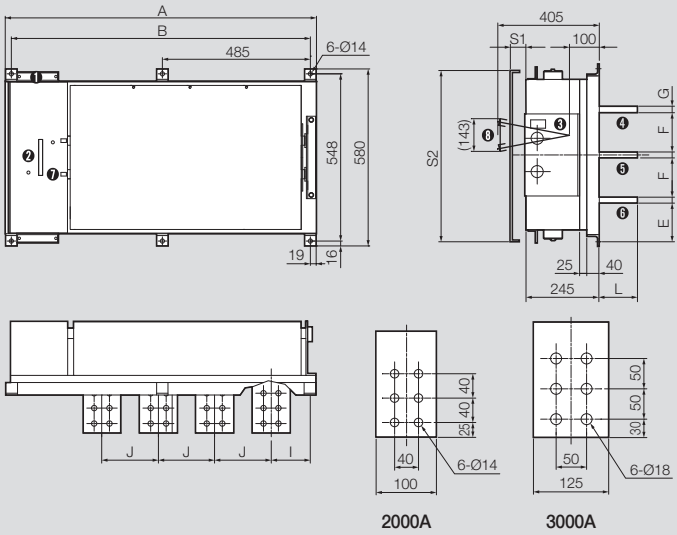

❶ Operation circuit terminal
❷ Manual operation hole
❸ Auxiliary switch
❹ Main circuit terminal on the Power A side
❺ Main circuit terminal on the load side
❻ Main circuit terminal on the Power B side
❼ Switchover display
❽ Manual handle

Arc space dimensions

| Main circuit voltage | S1 | S2 |
|---|---|---|
| 200V | 26 | 430 |
| 600V | 90 | 450 |

| Dimensions | | 600A | 1000A | 1600A |
|---|---|---|---|---|
| A | 3P | 465 | 510 | 570 |
| | 4P | 530 | 590 | 670 |
| B | 3P | 435 | 480 | 540 |
| | 4P | 500 | 560 | 640 |
| G | | 117.5 | 116.5 | 116.5 |
| M | | 65 | 80 | 100 |
| N | | 95 | 103 | 112.5 |
| Q | | 35 | 80 | 80 |
| R | | 10 | 15 | 15 |
| S | | 15 | 15 | 15 |

## 6) 620-630CT Back connection




❶ Operation circuit terminal
❷ Manual operation hole
❸ Auxiliary switch
❹ Main circuit terminal on the Power A side
❺ Main circuit terminal on the load side
❻ Main circuit terminal on the Power B side
❼ Switchover display
❽ Manual handle

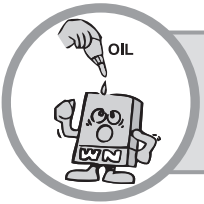
Arc space dimensions

| Main circuit voltage | S1 | S2 |
|---|---|---|
| 200V | 50 | 560 |
| 600V | 100 | 600 |

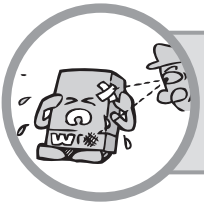
| Dimensions | | 2000A | 3000A |
|---|---|---|---|
| A | 3P | 685 | 835 |
| | 4P | 820 | 1020 |
| B | 3P | 645 | 795 |
| | 4P | 780 | 980 |
| E | | 119 | 114 |
| F | | 132.5 | 130 |
| G | | 15 | 20 |
| H | | 15 | 20 |
| I | | 103 | 128 |
| J | | 135 | 185 |
| L | | 90 | 125 |

# 6. Inspection and Repair

To maintain the adequate performance of the power switchover switch, follow the standards described below when performing inspection and repair.

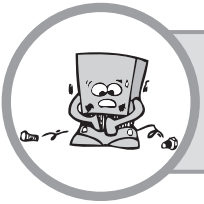



**6-1.** Perform inspection every six months to prevent malfunction or maloperation caused by dust and oil drops.



**6-2.** Visual inspection should be made to detect damages or discoloration of the contacts.

**6-3.** Rust, oxidation or dust on the contact surface may lead to contact failure. To prevent this, perform switching at least once a year.



**6-4.** Ensure safety of workers while performing inspection and check the tightness of nuts and bolts.

## 6-5. Inspection Standard

| Inspection Category | Inspection Cycle | |
|---|---|---|
| | General environment | Severe environment |
| Instantaneous inspection | Once / Every six months | Once / Once a month |
| Regular Inspection | Once / Once a year | Once / Every six months |
| Temporary inspection | Inspection if required | |

## 6-6. Instantaneous inspection

| Inspection Item | Inspection Item |
|---|---|
| Visual inspection | • Overheating and discolorization of the terminals<br>• Rust<br>• Dust and damages by pollution<br>• Odd smell<br>• Cracks, damage, deformation, and discolorization discolorization of the insulating materials |

# 7. Regular Inspection

| Inspection Items | | Inspection Point | Countermeasures and Description |
|---|---|---|---|
| Related to insulating materials | Attached insulating frame for contacts | • Is there any crack or damage on the insulating materials?<br>• Is there any dust or moisture attached to the surface?<br>• Are all bolts on the contact section properly tightened?<br>• Is there any arc welding on the insulating plate? | • If there is any crack or damage, discontinue operation and replace it if needed.<br>• If there is a lot of dust or moisture, discontinue operation and clean.<br>• Tighten the bolts at the specified torque while maintaining balance among the torque of bolts.<br>• If welding is noticeable, it means that the contact section and the arc extinguish chamber have failed. Perform a sufficient inspection and replace them if needed. |
| | Arc extinguish chamber | • Is the arc extinguish chamber damaged significantly?<br>• Is the arc extinguish plate damaged significantly? | • The inside of the arc extinguish chamber is discolored by arc. But if the internal partition wall seems to be damaged, replace it with a new one.<br>• If the arc extinguish plate is significantly damaged, replace it with a new one. |
| | Insulation resistance | • Between the same phases, between different phases, and phase to earth<br>• Insulation resistance of the control circuit | • 5MΩ or higher<br>• 2MΩ or higher |
| Related to live parts | Contact section | • Damage of the auxiliary contact<br>• Is the contact state adequate?<br>• Is the main contact smooth?<br>• Is there any sign of overheating or discolorization on the conductor contacts?<br>• Are the bolts of the contacts tightened appropriately? | • If damaged by the arc, sand or file with sandpaper or a fine file. If the damage is severe, replace it with a new one.<br>• Bad connection leads to an abnormal rise in temperature.<br>• Overheating may occur in the following situations. (Discolorization, lighting, or odd smell is shown on the connection part.)<br>• If severe, the insulating plate may be discolored or deformed.<br>• Loose bolts may cause overheating, therefore, please tighten bolts with the specified torque. |
| Related to Control Part | Mechanism | • Is the state of the rotating section and the lubricated surface good?<br>• Is there any damage or rust on the rotating section and the lubricated surface?<br>• Is there any damage or rust on the springs?<br>• Are the nuts and bolts of the control mechanism tightened appropriately?<br>• Is there any E-ring or split pin that has been omitted or damaged? | • Apply lubricating oil to the rotation section and the lubricating plate.<br>• Otherwise, it may lead to malfunction.<br>• If there are any abnormalities, replace it immediately.<br>• Tighten bolts to the specified torque.<br>• Otherwise, it may lead to dropping or omission of pins. |

MEMO

# WARRANTY

| Model | Manufacturing No. |
|---|---|
| | |

| | | | |
|---|---|---|---|
| Warranty Period | | Year | |
| Date Purchased | | Year Month Date | |
| Customer | Company | Tel. | |
| | Address | | |
| Store | Name | | |
| | Store Name | | |
| | Address | Tel. | |

- This product has been manufactured through strict quality control and testing.
- If the product is defective due to any manufacturing defect, we will repair it at no cost within the warranty period.
- After the expiration of the warranty period, we will repair the product at actual cost.
- Please produce this warranty when requesting repair service.

**Service Details**

- **Free Service**
  - 2 years from date of purchase
    (2.5 years from date of manufacture if purchase date can not be confirmed)
- **Paid Service**
  - You must pay a certain amount of fee after the warranty period and in the following cases.
  - When the product is defective due to user negligence.
  - When the product has been repaired or remodeled by a person other than authorized service personnel.
  - When the product is defective or damaged due to natural disasters such as fire and flood. When the user isnot able to produce this warranty.

VITZRO EM

## ■ Repair and Inspection History

| Date | Description of Repair and Manual | Free/Paid | Repaired by | Service Person Name | Signature |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
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※ Please ensure that you have the repair history and signature written in the table for the benefit of subsequent services.

VITZRO EM

INSTRUCTION MANUAL

# Automatic Transfer Switches


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※ This Instruction Manual is available on VITZRO EM's website.
※ This Instruction Manual may be modified without prior notice in order to improve the performance of products.
※ In the event of any problems or inconveniences related to ourproducts, please contact VITZRO EM.

www.**vitzroem**.com

VITZRO EM


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