MITSUBISHI ELECTRIC

OPERATION CHECK & SETUP UNIT

MODEL

Y-360

Instruction Manual

Applicable types

(Breaker type name)

Series	Molded Case Electronic Circuit Breaker & Earth Leakage Circuit Breaker	MDU Breaker
WS-V Series	NF125-SEV/HEV NF250-SEV/HEV NV125-SEV/HEV NV250-SEV/HEV	NF250-SEV/HEV with MDU
W&WS Series	NF400-SEW/HEW/REW/UEW NF630-SEW/HEW/REW NF800-CEW/SEW/HEW/REW/UEW NF1000-SEW, NF1250-SEW NF1600-SEW NV400-SEW/HEW NV630-SEW/HEW NV800-SEW/HEW	NF400-SEW/HEW with MDU NF800-SEW/HEW with MDU

• The following names are used in this manual to refer to the above circuit breakers.

-WS-V series molded case circuit breaker & earth leakage circuit breaker: WS-V series circuit breaker;

-WS-V series MDU breaker: WS-V MDU breaker

-W&WS series molded case circuit breaker & earth leakage circuit breaker: W&WS series circuit breaker;

-W&WS series MDU breaker: W&WS MDU breaker

• The applicable types and included test cables that correspond to each cable set type name are indicated below.

Cable set type name	Applicable types	Included test cable
Y-360-V	WS-V series circuit breaker, WS-V MDU breaker, W&WS MDU breaker	Y-360-CB-V
Y-360-W	W&WS series circuit breaker	Y-360-CB-W
Y-360-VW	All types	Y-360-CB-V, Y-360-CB-W

- Before use, please be sure to read this instruction manual in order to use correctly and safely.
- Please keep this instruction manual carefully and read it when necessary.
- Please deliver this instruction manual to the end user.

The marks used mean the following.

⚠ **Caution**	Wrong handling can cause dangerous situation in which possibility of significant or minor injuries or only impersonal damages is assumed.
⚠	Be careful of electrocution under specific conditions.

The 2D code is our management code.

Introduction

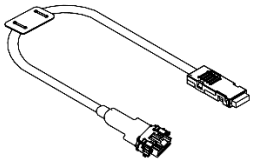
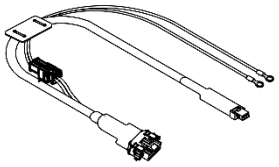
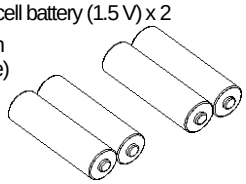
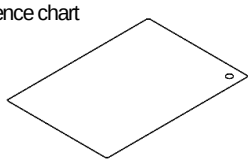
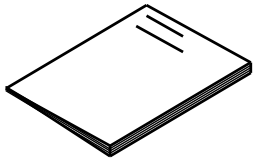
Thank you for purchasing the Mitsubishi Operation Check & Setup Unit Y-360.
This manual describes how to use the Operation Check & Setup Unit Y-360. Read this manual so that you can learn how to use the product safely and correctly.
After reading the manual, store it in a safe place where you can refer to it at any time.
Also make sure to deliver this instruction manual to the end user.

Features

This product (hereinafter the "Y-360") is a portable tester and setup unit for circuit breakers, earth leakage circuit breakers, and MDU breakers.
Y-360 can conduct simple operation check of trip relays and sets/monitors characteristic values in the field without energizing the circuit breakers.
Simple operation checks are for confirming that circuit breakers operate within the bandwidth of operating characteristic curves, and do not guarantee the precision of operating time and pickup current values.

Checking the included items

The following items are included with the Y-360. Confirm that no items are missing. (The information after the "Y-360" indicates the type of test cable included.)

Name	Quantity		
	Y-360-V	Y-360-W	Y-360-VW
-Y-360 	1	1	1
-Test cable Y-360-CB-V 	1	----	1
-Test cable Y-360-CB-W 	----	1	1
-AA sized dry-cell battery (1.5 V) x 2 (For operation checks) (Note) 	2 pieces x 2 (4 total)	2 pieces x 2 (4 total)	2 pieces x 2 (4 total)
-Test reference chart 	1	1	1
-Instruction manual (this document) 	1	1	1

Note: The included batteries are for checking operation. As the batteries may be exhausted at the time of unpacking, replace them with new batteries if operation is unstable.

Optional items

Product	Model	Applicable type
Test cable	Y-360-CB-V	WS-V series circuit breaker, WS-V MDU breaker, W&WS MDU breaker
	Y-360-CB-W	W&WS series circuit breaker

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1. Safety precautions

Make sure to follow the precautions indicated below when using the Y-360. Handling of this product should be done by a person with expertise on electricity.

⚠Caution

- Do not test the main circuit of a circuit breaker with voltage applied. This leads in the dangerous state where the circuit breaker trips or an arc is generated.
- Follow the usage environment, usage method, and storage state indicated in this manual. Failure to do so may lead to electric shock, fire, malfunction, or reduced product life.

1. 1 Usage environment and usage conditions

The standard usage status of the Y-360 is as follows. Please use it within these conditions.

[1] Operating ambient temperature : 0ºC to + 40ºC (However, the average temperature in 24 hours should not exceed + 35ºC.) (Note)
[2] Operating relative humidity: 85% RH or lower without condensation
[3] Elevation: 2000 m or less
[4] Usage environment: Do not use in abnormal environments such as those subject to dust, smoke, corrosive gas, combustible gas, moisture, salt, strong electric fields, or external noise.
Note : There is no need to correct temperature in the operating temperature range.

*The product in this manual is designed and manufactured as a general-purpose product to be used in general industry.When considering the use of this product for special applications such as devices and systems in the field of nuclear power, power generation, aerospace, medical, and mobile riding equipment, please contact a sales representative.

⚠Caution

- Do not store in abnormal environments such as those subject to high temperature, high humidity, dust, corrosive gas, vibration, shock, or noise. Failure to do so may result in electric shock or fire.

1. 2 Preparations before use

Read "4. Before use" and follow the usage environment and usage conditions when using the product.

⚠Caution

- Do not use secondary batteries (rechargeable batteries). Doing so may result in a danger of ignition or explosion.
- Make sure the batteries are correctly oriented plus and minus. Be sure insert the battery form the minus side first.
- Do not mix different types of batteries or new batteries and old batteries.
- Do not disassemble, short-circuit, throw batteries into the fire, or charge it.
- Do not use batteries with the external film peeled off.

1. 3 Usage method

- Use the product within the range of specifications indicated in this manual.
- Read "5. Usage" and use the product according to the indicated procedures.

⚠Caution

- Handling of the Y-360 should be done by a person with expertise on electricity. Failure to observe this may result in accidental electric shock.
- Do not test the main circuit of a circuit breaker with voltage applied. This leads in the dangerous state where the circuit breaker trips or an arc is generated.
- Do not touch the charging area of the circuit breaker or included modules. Failure to observe this may result in electric shock.
- Do not press the trip button or perform a test with the circuit breaker in the OFF state. Failure to observe this may damage the mechanism inside the circuit breaker.
- Do not apply external voltage between the PAL contacts of the test cable (Y-360-CB-W). Failure to observe this may damage the Y-360 and circuit breaker.
- When not using the PAL contacts of the test cable (Y-360-CB-W), disconnect the PAL contact relay connector or make sure to insulate the solderless terminal if not disconnecting the connector. The PAL contacts touching the charging area may cause electrocution and damage the Y-360 and circuit breaker.
- When connecting the PAL contacts of the test cable (Y-360-CB-W) to an insulating relay, make sure to turn the control power supply of the PAL module OFF. Failure to observe this may result in electric shock.
- When connecting the PAL contacts of the test cable (Y-360-CB-W) to an insulating relay, make sure that the Y-360 or PAL contact relay connector has been removed. Connect the test cable of the Y-360 or PAL contact relay connector of the test cable after all connections are complete.
- Use an insulating relay that matches the Y-360 contact input specifications to connect. (Refer to (3) in Section 5.1.)
- Do not pull the strap strongly. Failure to observe this may cause the strap to become detached.
- Do not swing the Y-360 around while holding the strap. Failure to observe this may result in the Y-360 hitting a wall, pillar, or other equipment, or cause the strap to become detached and lead to a fall or failure.
- Do not drop the Y-360 when removing the strap. Failure to observe this may lead to failure.
- Do not use the Y-360 with the auxiliary handle (HT) screwed in incompletely. The handle may become detached when a trip occurs and lead to injury.

1. 4 Handling failure and abnormal operation

When failure or abnormal operation occurs, please contact a dealer or the Mitsubishi Electric System & Service Co., Ltd. or Mitsubishi Electric branch office indicated at the end of this manual.

⚠Caution

• If abnormal noise, smell, smoke, or heat is emitted from the Y-360, turn OFF the power of the Y-360 immediately, remove the batteries, and stop use.

1. 5 Maintenance and inspection

- Wipe the surface lean with a soft, dry cloth, etc.
- Do not wipe the Y-360 using thinner, detergent, or a chemical dust cloth. Failure to observe this may cause deformation to the mold case. Perform cleaning with an air cleaner or by brushing.
- Perform the following routine inspection on the Y-360 to ensure that it can be used correctly for a long time.
  [1] Check the Y-360 for damage.
  [2] Check the test cable coating for damage.
  [3] Check the test cable connectors for deformation.
  [4] Check the test cable for broken wires.
  [5] Check the Y-360 connectors for deformation.
  [6] Check the batteries for leaks if they have been inserted for an extended period of time. Also check for drops in voltage.

1. 6 Storage

The standard storage status of the Y-360 is as follows. Please store it within these conditions.
When the Y-360 will not be used for an extended period of time, store it with the batteries removed.

[1] Storage ambient temperature: - 10ºC to + 50ºC (However, the average temperature in 24 hours should not exceed + 35ºC.)
[2] Storage relative humidity: 85% RH or lower without freezing.
[3] Elevation: 2000 m or less
[4] Storage environment: Do not store in abnormal environments such as those subject to dust, smoke, corrosive gas, combustible gas, moisture, or salt.

⚠Caution

Do not store in abnormal environment such as high temperature, high humidity, dust, corrosive gas, vibration, shock. Failure to do so may result in electric shock or fire.

1. 7 Disposal

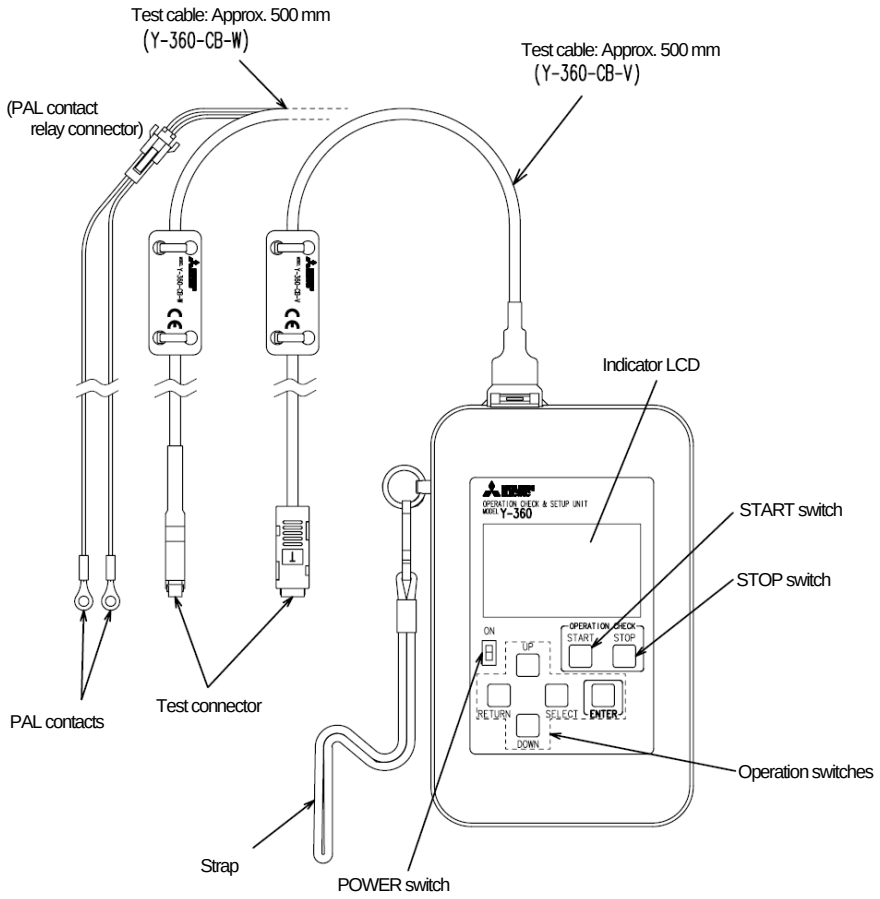
When disposing of the Y-360, remove the batteries and test cable, and treat it as industrial waste.

⚠Caution

• Do not disassemble, short-circuit, throw batteries into the fire, or charge it.

2. Names and functions of parts

Name	Function
(1) POWER switch	The power supply switch of the Y-360. The menu is displayed on the indicator LCD by turning on this switch. Operate the switch ON and OFF slowly and surely.
(2) Indicator LCD	The display screen of the Y-360.
(3) Operation switches	There are five input switches: UP, DOWN, SELECT, RETURN and ENTER They are used to switch the screen and determine items.
(4) START switch	When this switch is pressed during an operation test, current signals are output and the time counter starts counting up from zero. When this switch is pressed while the Model Information screen is displayed, model information is read out from the circuit breaker and the screen is updated.
(5) STOP switch	When this switch is pressed during an operation test, current signals are stopped and the time counter stops counting up. When this switch is pressed while the Model Information screen is displayed, model information is read out from the circuit breaker and the screen is updated.
(6) Test cable	The cable for connecting the circuit breaker and the Y-360. There are two types of cable: the Y-360-CB-V and Y-360-CB-W.
(7) Test connector	This is a connector to be inserted into a circuit breaker.
(8) PAL contacts	When using the Pre-alarm operating time test, connect the normal open contact to stop the time counter. (Y-360-CB-W only)
(9) Strap	This is wrapped around the wrist for fall prevention.



3. Specifications

The Y-360 is a portable tester and setup unit for electronic type circuit breakers, earth leakage circuit breakers, and MDU breakers (hereinafter "breakers").
Y-360 can conduct simple operation check of trip relays and sets/monitors characteristic values in the field without energizing the circuit breakers.
Simple operation checks are for confirming that circuit breakers operate within the bandwidth of operating characteristic curves, and do not guarantee the precision of operating time and pickup current values.

Item		Description	
		Y-360-VW	
		Y-360-V	Y-360-W
Operation test	LTD trip test	Pickup current test (Selectable from 30% to 600% of the current setting (Ir) in 1% steps.)	Pickup current test (Selectable from 30% to 300% of the rated current in 1% increments.)
		Operating time test (Operation at 200% of the current setting (Ir))	
	STD trip test	Operating time test (Operation at 150% of the STD pickup current (Is))	Operating time test (Operation at 1500% of the rated current max.)
	Instantaneous (hereinafter called INST) trip test	Operating time test (Operation at 2000% of the rated current.)	
	Pre-alarm operation test (Note 1)	Pickup current test (Selectable from 30% to 600% of the current setting (Ir) in 1% increments.)	Pickup current test (Selectable from 30% to 300% of the rated current in 1% increments.)
		Operating time test (Operation at 200% of the current setting (Ir))	
Characteristic setting (Note 2)		LTD operating time (TL) (Selectable from 12, 60, 80 and 100 s.) LTD I^6t characteristic ON/OFF selection STD pickup current (Is) (Selectable from 2, 2.5, 3, 3.5, 4, 5, 6, 7, 8, 9, 10 x Ir.) STD operating time (Ts) (Selectable from 0.1, 0.2 and 0. 3 s.) STD I^2t characteristic ON/OFF selection Neutral pole protection ON/OFF selection (Selectable only for 4-pole circuit breakers.)	------
Model information display		Current setting (Ir) LTD operating time (TL), Ramp characteristic of LTD (I^6t characteristics) ON/OFF STD pickup current (Is), STD operating time (Ts), Ramp characteristic of STD (I^2t characteristics) ON/OFF Neutral pole protection ON/OFF INST pickup current (Ii) Pre-alarm pickup current (Ip), Pre-alarm operating time (Tp) Rated residual operating current I⊿n, Earth leakage operating time (Te)	The following items can be checked with the circuit breaker 70% LED light time and number of flashes. (Refer to Section 5.5.) Current setting (In/Ir) LTD operating time (TL) STD pickup current (Is) STD operating time (Ts) Pre-alarm pickup current (Ip)
Alarm contact output (Note 3)		Pre-alarm: PAL OVER current trip alarm: OAL	------
Power supply		AA sized dry-cell battery (R6P or LR6) x 4 Three types of operation test using new batteries (LTD operating time test, STD operating time test, INST operating time test) Each 100 times for a total of 300 times (when using alkaline batteries)	
Pre-alarm contact input specifications (Note 4)		Non-voltage normal open contact or open collector (open drain) Current of around DC 3.3V and 0.3 mA flows to the contacts, so use something appropriate for opening and closing them. ON voltage 0.5 V (0.3 mA) or less Leak current when OFF 1 μA or less	
External dimensions and weight		96 (W) ×154 (H)×37 (D) mm (excluding test cable and strap) Test cable length: 500 mm Weight: 0.5 kg	

Note 1 : The WS-V series can only be tested when the pre-alarm module is included.
Note 2 : Only the WS-V series can be set. W&WS MDU breakers can only be monitored.
Note 3 : They can output with an option.
Note 4 : Connect the pre-alarm signal when W&WS series circuit breakers have the pre-alarm option. However, with the PAL module (pre-alarm module) has SLT, use a microload relay, etc. for insulation. (Refer to Fig. 4 in Section 5.1.)

4. Before Use

Remove the scratch-proof protection sheet from the indicator LCD of the Y-360 before use.

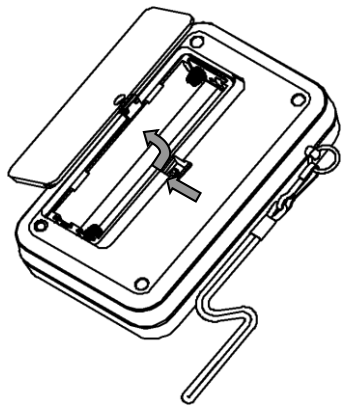
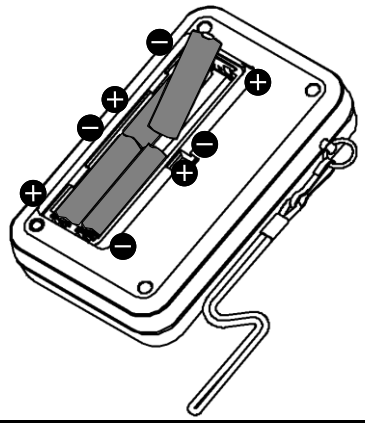
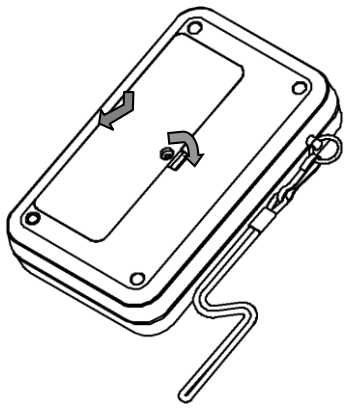
4. 1 Inserting batteries

Use four AA sized dry-cell batteries (R6P or LR6).

If the Y-360 stops or "LOW BAT" is indicated, replace all of the four batteries with new ones.

⚠ Caution

- Do not use secondary batteries (rechargeable batteries). Doing so may result in a danger of ignition or explosion.
- Make sure the batteries are correctly oriented plus and minus. Be sure to insert the battery from the minus side first.
- Do not mix different types of batteries or new batteries and old batteries.
- Do not disassemble, short-circuit, throw batteries into the fire, or charge it.
- Do not use batteries with the external film peeled off.

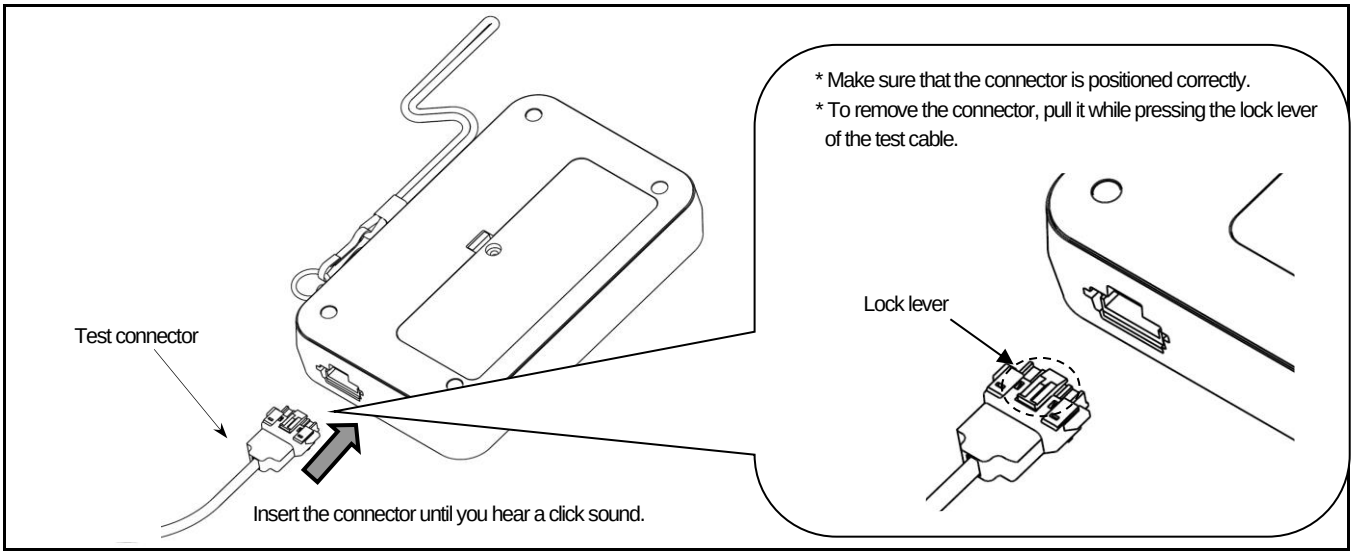
1. Remove the back cover.	2. Check the orientation of the batteries (+/-) and insert them from the negative terminal.	3. Attach the back cover.
Pull the back cover while pushing it.	⚠ Caution Be sure to insert the battery from the minus side first.	
		

4. 2 Connecting the test cable

Connect the test cable that supports the circuit breaker. (Refer to the cover.)

When the test connector has been inserted and removed into/from breakers repeatedly 1,000 times or more, replace it with a new one

You can purchase the test cable separately. Contact your dealer to ask for the purchase of the test cable.



5. Usage

5. 1 Procedure and precautions for use

⚠Caution

- Do not test the main circuit of a circuit breaker with voltage applied. This leads in the dangerous state where the circuit breaker trips or an arc is generated.
- Do not touch the charging area of the circuit breaker or included modules. Failure to observe this may result in electric shock.
- Do not press the trip button used to perform a test with the circuit breaker in the OFF state. Failure to observe this may damage the mechanism inside the circuit breaker.
- Do not pull the strap strongly. Failure to observe this may cause the strap to become detached.
- Do not swing the Y-360 around while holding the strap. Failure to observe this may result in the Y-360 hitting a wall, pillar, or other equipment, or cause the strap to become detached and lead to a fall or failure.
- Do not drop the Y-360 when removing the strap. Failure to observe this may lead to failure.

Y-360 should be used according to the following procedure (for testing and setting).

(1) If the circuit breaker is on, turn off or trip the circuit breaker before testing.

If a W&WS series circuit breaker with a PAL module is used, make sure to connect an insulating relay to the PAL terminal when PAL performing testing. (Fig. 4)

For a W&WS series circuit breaker PAL lead (SSR output), use a terminal block, etc. for connection.

Disconnect the PAL contact relay connector of the test cable when connecting to an insulating relay. (Fig. 5)

(2) Connect the test cable that matches the type of circuit breaker to test to the Y-360. Confirm that the power of the Y-360 is off at this time.

(3) Connect the test connector to a breaker.

Open the test cover or transparent cover on the front of the circuit breaker and insert the test connector. (Fig. 1, Fig. 2-1, Fig. 2-2)

The test connector should be positioned correctly, so do not insert it forcibly.

Insert the test connector with the marking sticker facing the line side or right side of the circuit breaker. (Fig. 3)

(4) Turn on the breaker. If the breaker has tripped, reset the breaker and then turn it on.

(5) Turn on the POWER switch of the Y-360.

(6) Conduct various tests and settings using the Y-360.

(7) Turn off the POWER switch to prevent battery drain after testing or setting.

When the POWER switch is turned off while the test screen is being displayed, that screen is displayed when the POWER switch is turned on next time.

This is useful when the same test is repeatedly conducted for multiple breakers. (Only the test screen is stored.)

(8) Disconnect the test connector from the breaker.

When the test connector is disconnected, close the test cover or transparent cover of the circuit breaker to return it to its original state.

*If the Y-360 was not used to trip the circuit breaker at the end of testing, turn off or trip the circuit breaker.

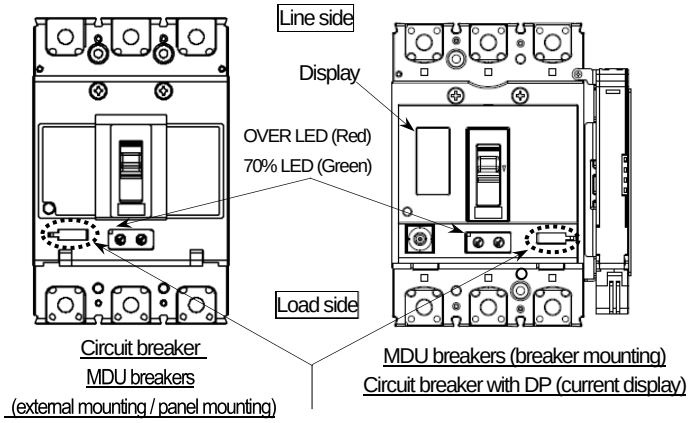


Fig. 1 Test connector insertion position (WS-V series)

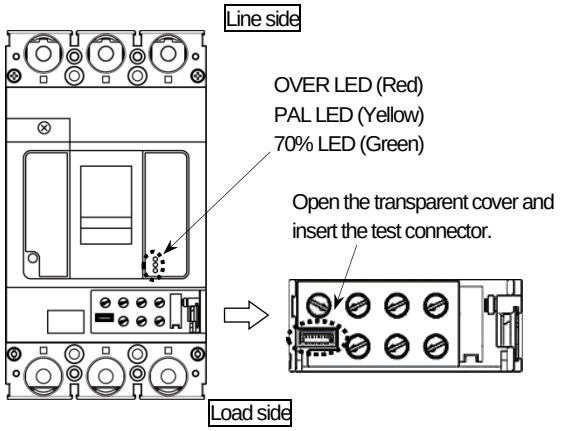


Fig. 2-1 Test connector insertion position (W&WS MDU breaker)

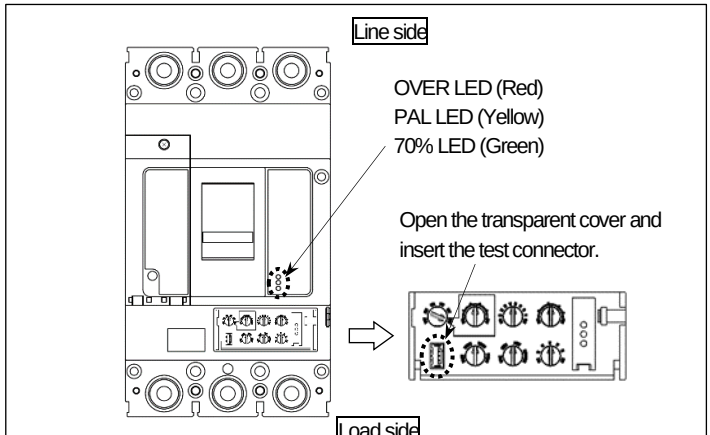


Fig. 2-2 Test connector insertion position (W&WS series circuit breaker)

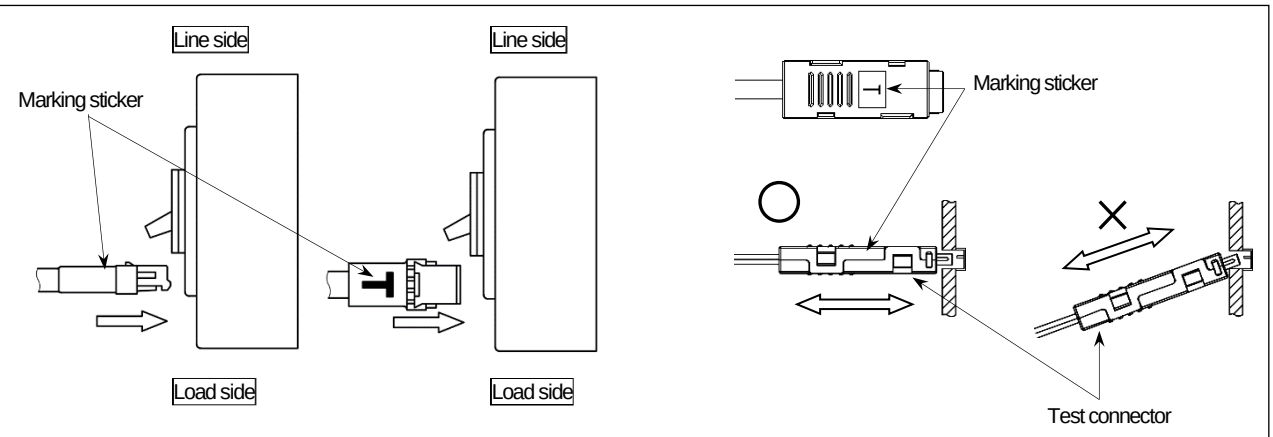


Fig. 3 Test connector insertion direction

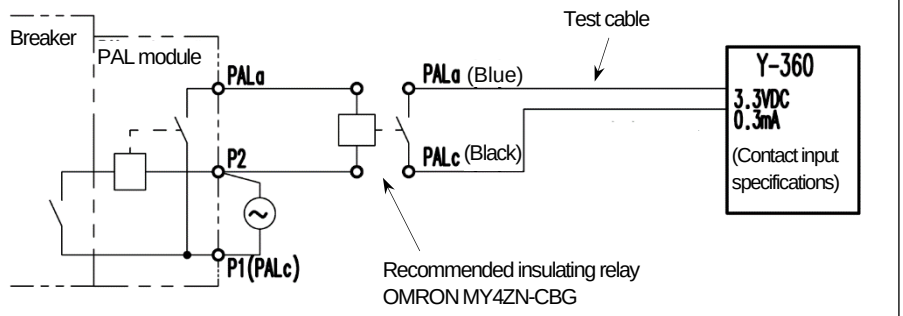


Fig. 4 W&WS series circuit breaker PAL module connection

⚠Caution

- Do not apply external voltage between the PAL contacts of the test cable (Y-360-CB-W).
  Failure to observe this may break down the Y-360 and circuit breaker.
- When not using the PAL contacts of the test cable (Y-360-CB-W), disconnect the PAL contact relay connector or make sure to insulate the solderless terminal if not disconnecting the connector. The PAL contacts touching the charging area may damage the Y-360 and circuit breaker.
- When connecting the PAL contacts of the test cable (Y-360-CB-W) to an insulating relay, make sure to turn the control power supply of the PAL module OFF.
  Failure to observe this may result in electric shock.
- When connecting the PAL contacts of the test cable (Y-360-CB-W) to an insulating relay, make sure that the Y-360 has been removed.
  Connect the test cable of the Y-360 after all connections are complete.
- Use an insulating relay that matches the Y-360 contact input specifications to connect.
- When connecting the PAL contacts of the test cable (Y-360-CB-W) and other cables for wiring, take care to ensure that the screws do not fall.

[Other precautions]

(1) Common precautions

- Do not slant the connector when attaching or removing the test connector to/from a breaker. (Fig. 3)
  Doing so may break the test connector. Do not hold the cable but the tip of the test connector when attaching or removing the test connector.
- Do not use a test connector which has been attached and removed 1,000 times or more or a broken test connector for testing
  Testing may not be able to be performed correctly.
  Remove the test cable from Y-360 and replace it with a new one. (Refer to Section 4.2)
- Do not subject the Y-360 to impacts during testing. Doing so may abort the test and reset the display screen.
- On the test screen, the batteries will be exhausted. If "LOW BAT" is displayed, replace batteries with new ones.
- When you turn on the POWER switch, do not touch other switches (START/STOP switches, operation switches).
- When the POWER switch is instantaneously turned on and off, the stored screen may be "LOW BAT".
- When the test connector is disconnected after testing, close the test cover or transparent cover of the circuit breaker to return it to its original state.

(2) Precautions for using an MDU breaker

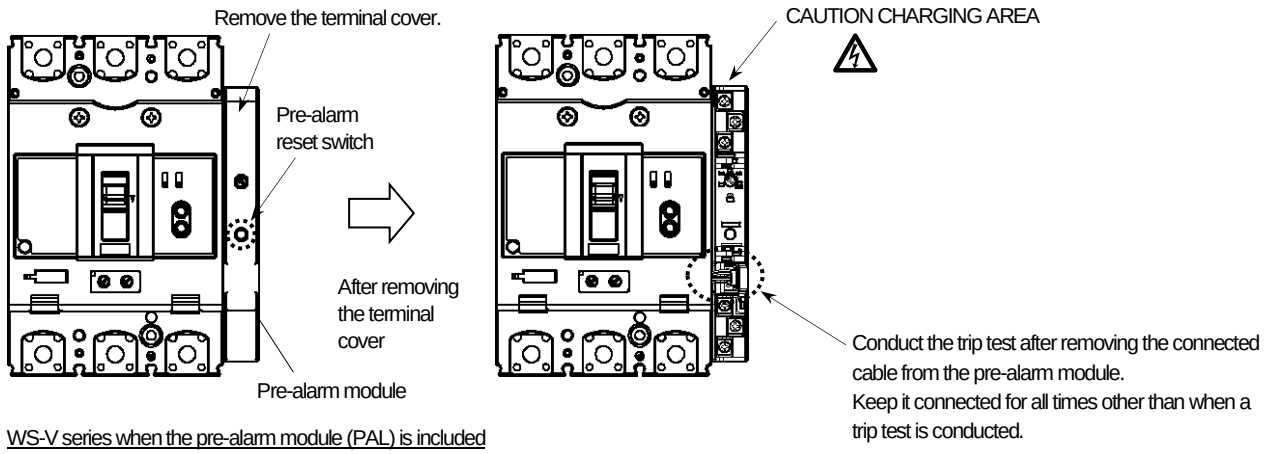
- If the Y-360 is connected while the control power is applied to the MDU unit, the power amount and the reactive power amount may decrease (or return to the values of 30 minutes ago at the maximum).
  Before connecting the Y-360, turn off the control power of the MDU unit or set them by the power amount setting.
  The power amount when the control power supply is turned off is stored when the control power supply of the MDU unit is turned off.
  Follow the Instruction Manual for the MDU breaker for the power amount setting.

(3) Precautions for using a WS-V series circuit breaker

- When conducting a trip test on a circuit breaker with a pre-alarm module (PAL), remove the connection cable between the circuit breaker and the pre-alarm module in advance. The connection cable can be connected/disconnected via the lock connector on the pre-alarm module side. (Fig. 5) (Note 1)
- WS-V series circuit breakers with DP (current display) come with a pre-alarm module as standard.
  Before conducting a trip test, be sure to remove the connection cable. (Fig. 5) (Note 1)
  When a trip test is conducted with the connection cable of the pre-alarm module disconnected, the display of the breaker lights up when power is supplied from the Y-360.
  After the test is completed, the display goes off to prevent battery drain. This has no influence on the breaker operation.
- After conducting the trip test, connect the cable between the circuit breaker and the pre-alarm module. (Note 2)

Note 1: Operation may not be performed unless the connection cable has been removed.

Note 2: Connect the pre-alarm module when conducting tests other than a trip test
(pre-alarm operating current test, pre-alarm operating time test, contact output test, model information).



WS-V series when the pre-alarm module (PAL) is included

Fig. 5 When a trip test is conducted on a breaker with a pre-alarm module (PAL)

(4) Precautions for using "NF250-SEV/HEV with MDU" and "electronic circuit breakers (with display)"

- If the Y-360 is connected while the control power is applied to the MDU and a pre-alarm module, "Now Testing ..." is displayed on the display.
  Note that the functions of the MDU and current display cannot be used.

(5) Precautions when setting the operating characteristics

When setting the operating characteristics, make sure of the following. Refer to the instruction manual for the circuit breaker for details on the settings.

Precautions for setting the STD pickup current (Is) and the INST pickup current (Ii)

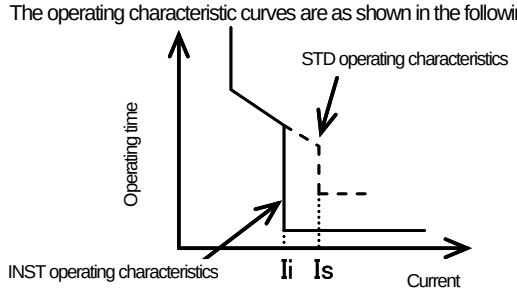
* When the STD pickup current (Is) is set to be equal to or larger than the INST pickup current (Ii), the STD operation does not occur.

(1) When the STD pickup current (Is) exceeds the INST pickup current (Ii)

Example: NF250-SEV when Ir is 250 A

When "Is is 3 x Ir" and "Ii is 2 x rated current," Is becomes 750 A and Ii becomes 500 A, and the INST trip operation occurs in priority to the STD trip operation.

The operating characteristic curves are as shown in the following figure.

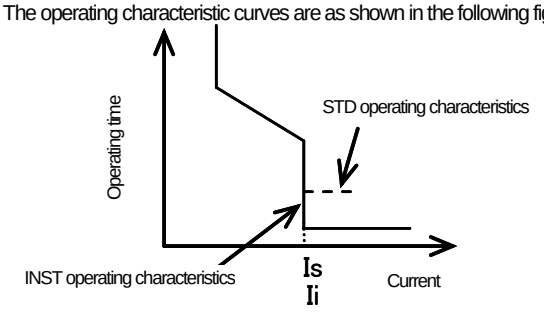


(2) When the STD pickup current (Is) is equal to the INST pickup current (Ii)

Example: NF250-SEV when Ir is 250 A

When "Is is 3 x Ir" and "Ii is 3 x rated current," Is becomes 750 A and Ii becomes 750 A, and the INST trip operation occurs in priority to the STD trip operation.

The operating characteristic curves are as shown in the following figure.

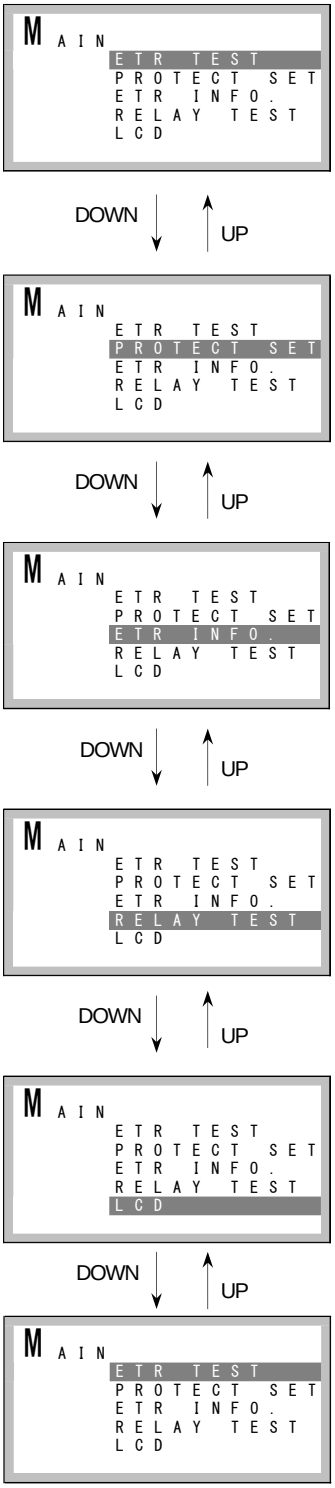


- The Y-360 can only set the operating characteristics for WS-V series.
- Set the overcurrent trip operating characteristics of W&WS series using the dial on the front of the circuit breaker.
  Refer to the instruction manual for the circuit breaker for details.
  Note that the LTD I^6t characteristics and STD I^2t characteristics (lamp characteristics) are always ON.
- The overcurrent trip operating characteristics of MDU breakers can be checked on the MDU.
  Refer to the instruction manual of the MDU breaker for details.
- the overcurrent trip operating characteristics of WS-V MDU breakers can also be set on the MDU.
- When performing the LTD trip operating time test (5.3.2.2) or pre-alarm operating time test (5.3.5.2), if performing the test with a current signal level other than 200%, set the STD tripping current (Is) and INST tripping current (Ii) to one of the following.
  [1] Set the current signal value to 90% or less of the Is or Ii setting value of the circuit breaker.
  [2] Set the Is or Ii of the circuit breakers to the maximum value.

5. 2 Menu selection

Select a menu item to be displayed by pressing the UP or DOWN switch. You can go to the screen of the selected menu item by pressing the ENTER switch.
You can return to the Main Menu screen by pressing the RETURN switch.

[Main Menu screen]



Select when conduct an operation test of a breaker.
Refer to Section 5.3.

[Select Test screen]
You can select various operation tests.

Select when setting the operating characteristics for WS-V series.
Refer to Section 5.4.

[Select File screen]
You can select a file whose characteristic setting is to be stored.

Select when displaying the model information of the circuit breaker.
Refer to Section 5.5.

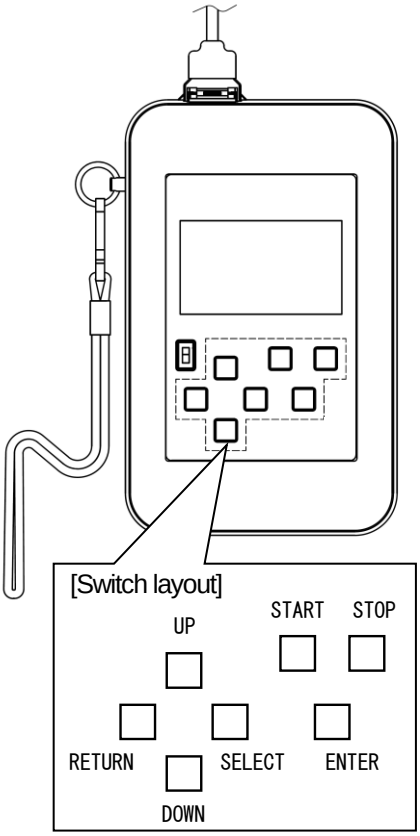
[Model Information screen]
You can check model information and operating characteristics of a breaker.

Select when performing the contact output test of a WS-V series / W&WS MDU breaker.
Refer to Section 5.6.

[Relay Contact Output Test screen]
You can conduct a relay ON/OFF test of a pre-alarm module.

Select when adjust contrast of the indicator LCD.
Refer to Section 5.7.

[Set Contrast screen]
You can set the contrast of the display screen.

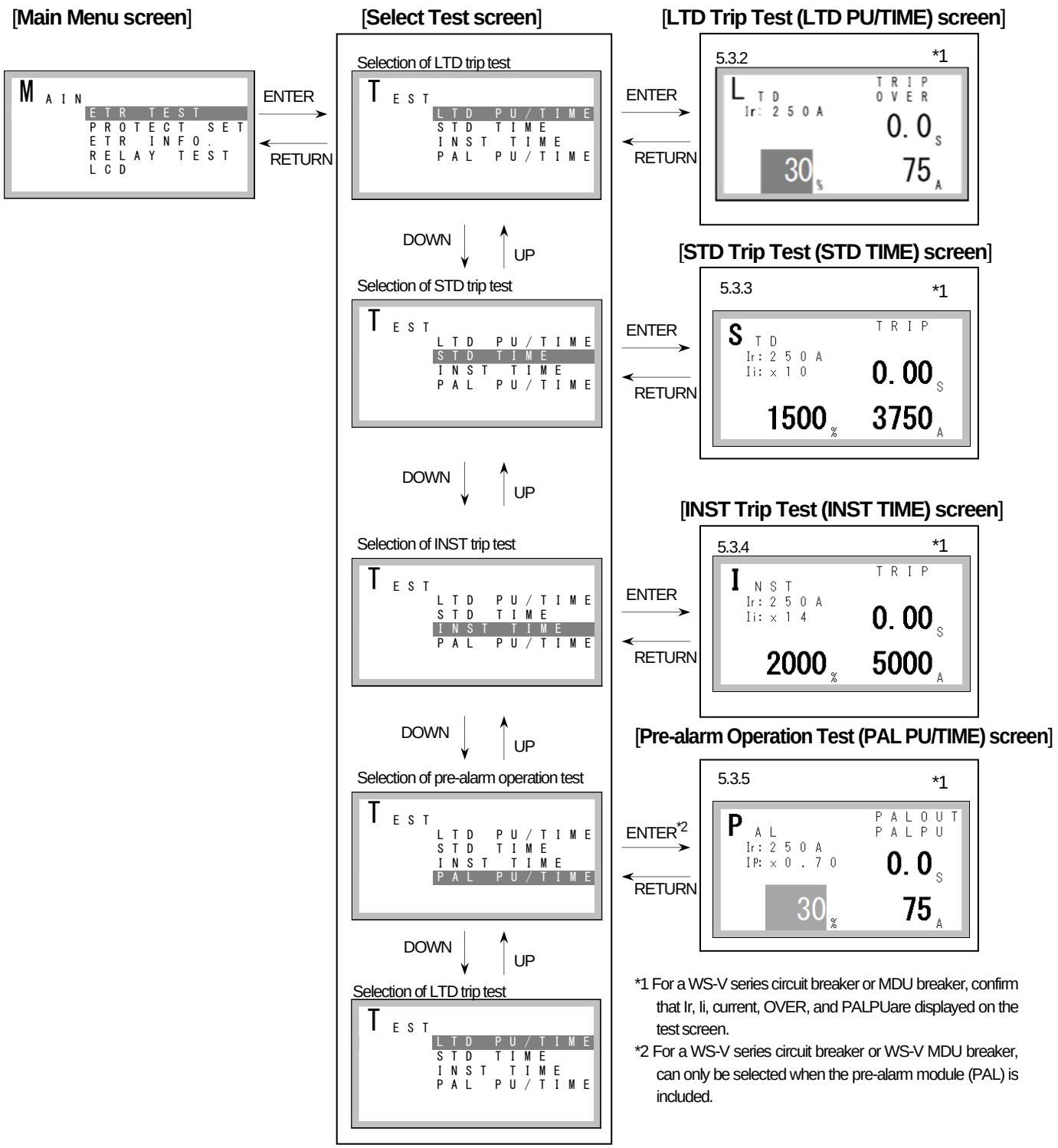


5. 3 Test method

5. 3. 1 Test selection method

Select ETR TEST from the Main Menu screen and press the ENTER switch. Then the Select Test (ETR TEST) screen appears.

Select a test item by pressing the UP or DOWN switch. You can go to the selected test screen by pressing the ENTER switch.



*1 For a WS-V series circuit breaker or MDU breaker, confirm that Ir, Ii, current, OVER, and PALPUare displayed on the test screen.

*2 For a WS-V series circuit breaker or WS-V MDU breaker, can only be selected when the pre-alarm module (PAL) is included.

⚠Caution

- Do not trip test the main circuit of a circuit breaker with voltage applied. This leads to the dangerous state where the circuit breaker trips or an arc is generated.
- When conducting a trip test on a WS-V series with the pre-alarm module (PAL), remove the connection cable between the circuit breaker and the pre-alarm module in advance. (Refer to Fig. 5 in "5.1 Procedure and precautions for use" for details.)
  Before conducting a test other than a trip test, be sure to connect the connection cable between the circuit breaker and the pre-alarm module.
- When an LTD trip test (pickup current test) is interrupted and a pre-alarm operation test is performed, the operating time may be shorter when continuing testing as the breaker stores the current. If you did, trip the breaker once during a test such as an INST trip test and then conduct the test.
- When conducting an operation test on the pre-alarm module (PAL) or TI module (alarm contact output) of a WS-V series or W&WS MDU breaker, perform the procedure in "5.6 Contact Output Test".
  Alarm contact output cannot be reset while the Y-360 is connected.

5. 3. 2 LTD trip test

5. 3. 2. 1 LTD trip operating current (pickup current) test

(1) Select LTD PU/TIME on the Select Test (ETR TEST) screen and press the ENTER switch to go to the LTD Trip Test (LTD PU/TIME) screen.

(2) Set the current signal level by pressing the UP or DOWN switch. (Screen 1)

Note that if the current signal level you set is too high, the breaker will trip in a short time.

(Example: For NF250-SEV, if the current signal level is set to 600% when TL is 100 s, the breaker will trip in about 10 s.)

(3) When you press the START switch, the time counter starts counting up to indicate that the current signal is being output. (Screen 2)

(4) Adjust the current signal level by pressing the UP or DOWN switch and check the current signal level at the time when the OVER indicator on the Y-360 test screen turns on. (Fig. 1 and 2)

For a WS-V series or W&WS MDU breaker, the current signal level can also be checked when the OVER indicator Turns ON on the Y-360 test screen. (Screen 3)

(5) The result is good if the signal level is within the reference range in the test reference chart (refer to Table 1-1, and Table 2 on p. 18 and p. 19). (Screen 3)

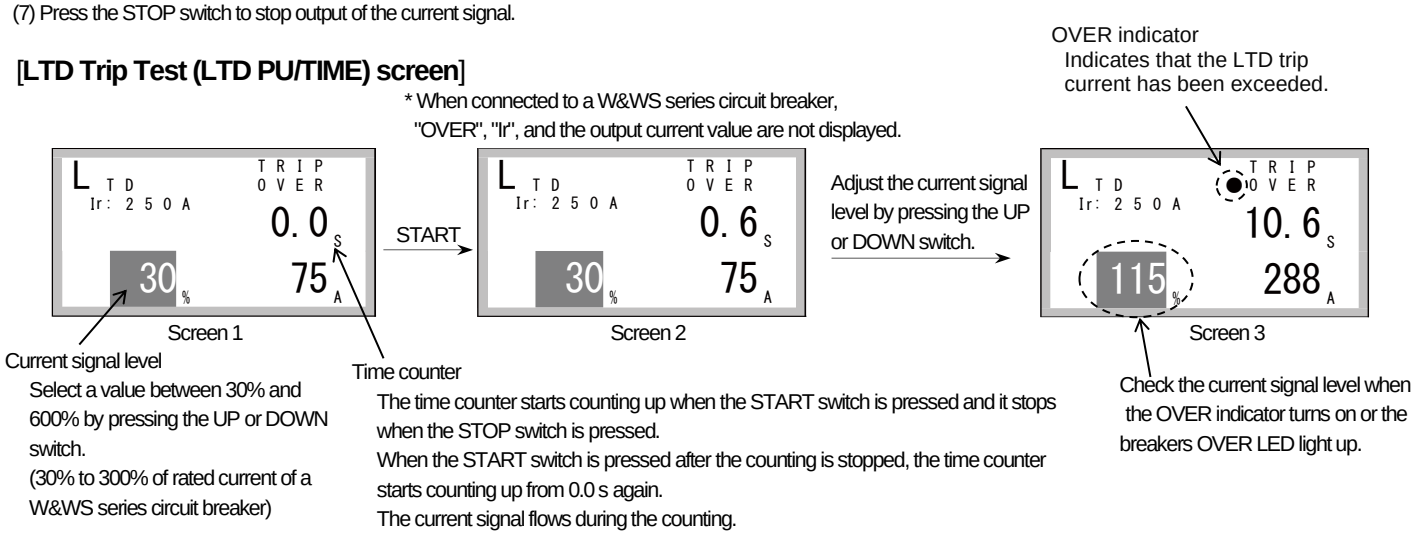
- For a WS-V series or W&WS MDU breaker, it should be between 105% and 125%. (It does not depend on the current setting.)
- For a W&WS series circuit breaker, refer to Table 2 for the signal level considered good, because the signal level where the OVER LED lights up depends on the current setting.

(Example: For NF400-SEW, when the current setting is 200A, it should be between 53% and 62%.)

(6) When you hold down the UP/DOWN switch, the current signal level changes by 1% at first. When you keep holding it further, it changes by 10%.

(7) Press the STOP switch to stop output of the current signal.

[LTD Trip Test (LTD PU/TIME) screen]



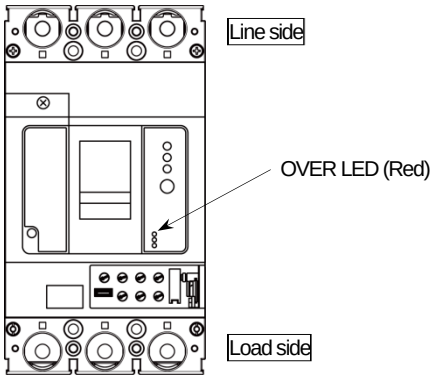


Fig. 1 W&WS series

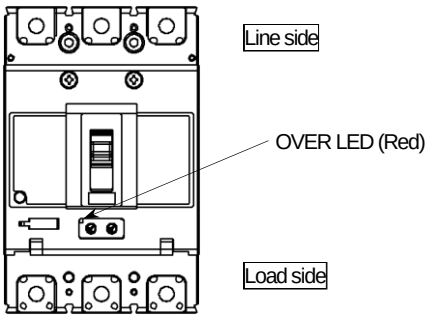


Fig. 2 WS-V series

5. 3. 2. 2 LTD trip operating time test

If a test such as the operation current test of an LTD trip test is performed immediately before this test, trip the breaker once during a test such as an INST trip test and then conduct this test again. The correct operating time may not be displayed.

(1) Select LTD PU/TIME on the Select Test (ETR TEST) screen and press the ENTER switch to go to the LTD Trip Test (LTD PU/TIME) screen.

(2) Set the current signal level by pressing the UP or DOWN switch. (Screen 1)

- For a WS-V series or MDU breaker, set it to 200%.
- For a W&WS series circuit breaker, align with the 200% signal level (%IT) on Table 2 of p. 19.

(Example: For the NF400-SEW 300A, set the current signal level to 150%.)

(3) When you press the START switch, the current signal is output and time counter starts counting up.
In this case, the 70%, PAL, and OVER LED light up for W&WS series and the OVER LED lights up for a WS-V series. (Fig. 1 and 2)
For a WS-V series or W&WS MDU breaker, the OVER indicator of the Y-360 test screen turns on. (Screen 2)

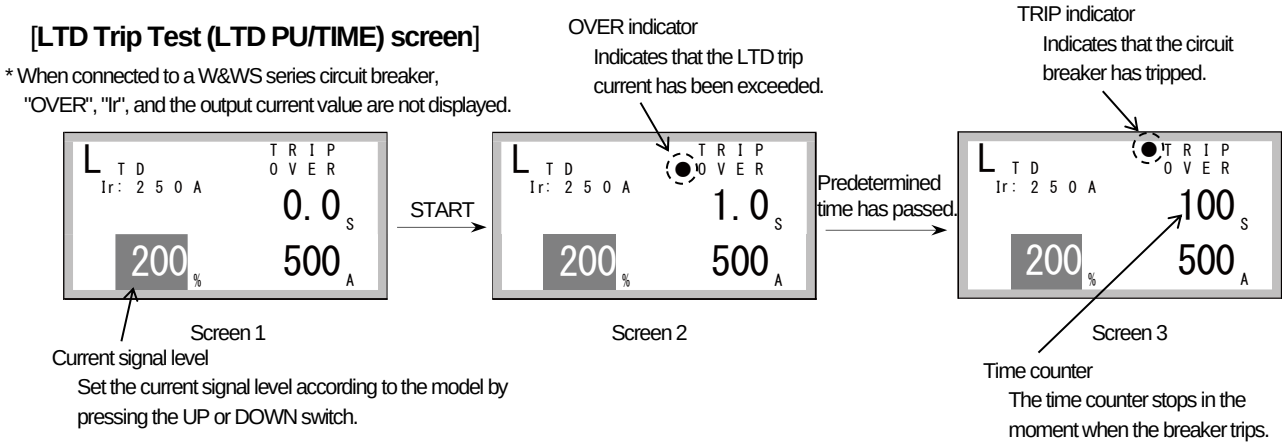
(4) The circuit breaker trips predetermined time has passed and the time counter stops.
At this time, TRIP indicator on the T-360 test screen turns on. (Screen 3)

(5) The result is good if the time counter value is within the reference range in the test reference chart (refer to Table 1-1, and Table 2 on p. 18 and p. 19).
(Example: When TL is 100 s, it should be between 80 and 120 s.)

(6) When you reset and turn on the breaker and then press the START switch, you can conduct an operating time test again.

(7) Press the STOP switch to cancel the test. To continue performing an operating time test, trip the breaker once during a test such as an INST trip test first.

* Testing is possible with the current signal at a value other than above. Refer to "(5) Precautions when setting the operating characteristics" on p. 10 for the setting details.



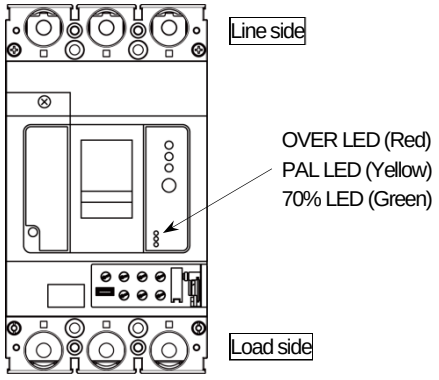


Fig. 1 W&WS series

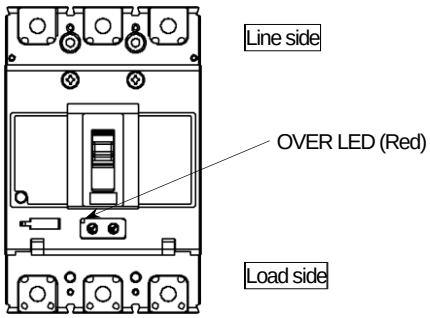


Fig. 2 WS-V series

5. 3. 3 STD trip test (operating time test)

• Check the setting value of the INST pickup current Ii before conducting this test.
When the setting value is equal to or lower than "current signal level for STD trip test," an INST trip operation may occur, thus the STD operating time may not be displayed.
(Example: For NF250-SEV, when Ir is 250 A, Is is 4 x Ir, and Ii is 5 x rated current, Is is 1000 A and Ii is 1250 A. 0.01 s is displayed as the operating time because the current signal level is Is x 1.5 = 1500 A, and this exceeds the INST tripping current.)

(1) Select STD TIME on the Select Test (ETR TEST) screen and press the ENTER switch to go to the STD Trip Test (STD TIME) screen.
You cannot change the current signal level in this mode. (Screen 1)

(2) When you press the START switch, the current signal is output and the breaker trips.
At this time, TRIP indicator on the Y-360 test screen turns on. (Screen 2)

(3) The result is good if the time counter value is within the reference range in the test reference chart (refer to Table 1-1, and Table 2 on p. 18 and p. 19).
(Example: When Ts is 0.3 s, it should be between 0.22 and 0.34 s.)

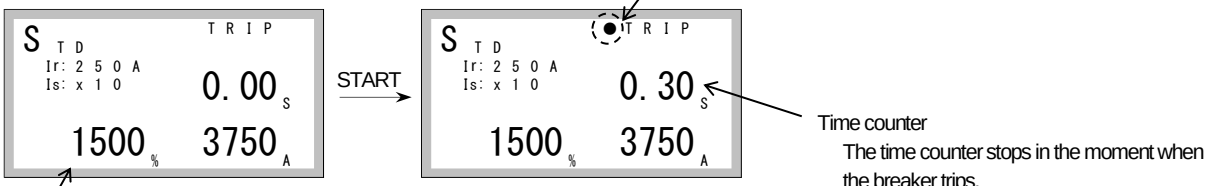
(4) When you reset and turn on the breaker and then press the START switch, you can conduct a STD trip test again.

(5) Press the STOP switch to cancel the test. To continue performing an STD trip test, trip the breaker once during a test such as an INST trip test first.

[STD Trip Test (STD TIME)

TRIP indicator
Indicates that the circuit breaker has tripped.

* When connected to a W&WS series circuit breaker,
"Ir", "Is", and the output current value are not displayed.



Time counter
The time counter stops in the moment when the breaker trips.

Screen 1 Screen 2

Current signal level
Fixed to the STD pickup current Is x 150%.
(For a W&WS series circuit breaker, the current signal level is fixed to 1500% of the rated current.)

5. 3. 4 INST trip test (operating time test)

(1) Select INST TIME on the Select Test (ETR TEST) screen and press the ENTER switch to go to the INST Trip Test (INST TIME) screen.
You cannot change the current signal level in this mode. (Screen 1)

(2) When you press the START switch, the current signal is output and the breaker trips.
At this time, TRIP indicator on the Y-360 test screen turns on. (Screen 2)

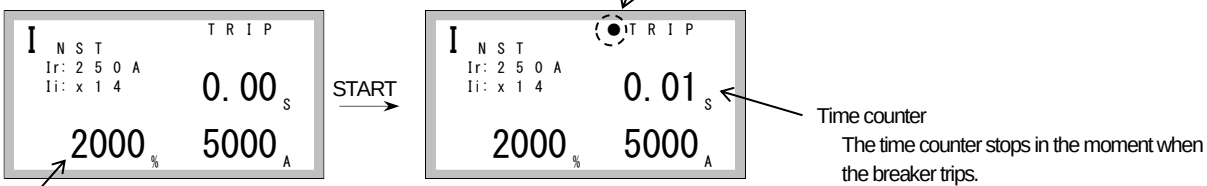
(3) The result is good if the time counter value is within the reference range in the test reference chart (refer to Table 1-1, and Table 2 on p. 18 and p. 19).
(Example: It should be between 0.00 and 0.02 s.)

(4) When you reset and turn on the breaker and then press the START switch, you can conduct an INST trip test again.

[INST Trip Test (INST TIME) screen]

TRIP indicator
Indicates that the circuit breaker has tripped.

* When connected to a W&WS series circuit breaker,
"Ir", "Ii", and the output current value are not displayed.



Time counter
The time counter stops in the moment when the breaker trips.

Screen 1 Screen 2

Current signal level
Fixed to 2000% of the rated current,
and cannot be changed.

5. 3. 5 Pre-alarm operation test

5. 3. 5. 1 Pre-alarm operating current (pickup current) test

• Can be performed for a WS-V series when a pre-alarm module (PAL) is included.
Confirm that the pre-alarm module is connected.

• For a W&WS series circuit breaker with a PAL contact, connect this contact to an insulating relay. (Refer to (3) in Section 5.1.)

(1) Select PAL PU/TIME on the Select Test (ETR TEST) screen and press the ENTER switch to go to the Pre-alarm Test (PAL PU/TIME) screen.

(2) Set the current signal level by pressing the UP or DOWN switch. (Screen 1)

(3) When you press the START switch, the time counter starts counting up to indicate that the current signal is being output. (Screen 2)

(4) Adjust the current signal level by pressing the UP or DOWN switch and check the current signal level at the time when the PAL LED of the circuit breaker flashes (for a W&WS series). (Fig. 1 and 2)
For a WS-V series or W&WS MDU breaker, the current signal level can also be checked when the PALPU indicator on the Y-360 test screen turns on.

(5) The result is good if the current signal level is within the reference range in the test reference chart (refer to Table 1-2, and Table 2 on p. 18 and p. 19). (Screen 3)
- When the pre-alarm current Ip = Ir x 0.7 for a WS-V series or W&WS MDU breaker, it should be between 60% and 80%. (It does not depend on the current setting.)
- For a W&WS series circuit breaker, refer to Table 2 for the signal level considered good, because the signal level where the PAL LED starts flashing depends on the current setting.

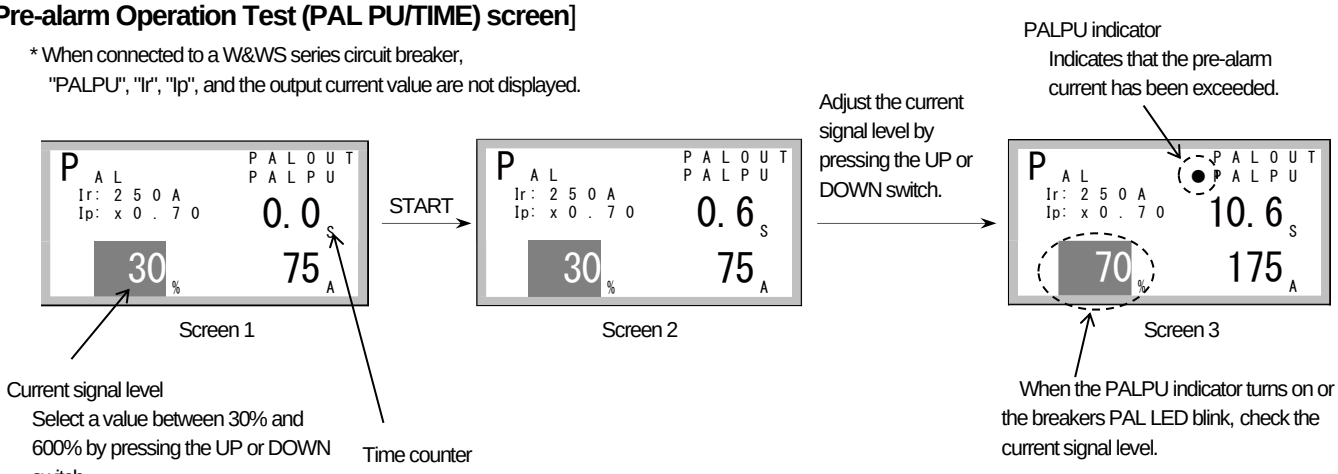
(Example: When the pre-alarm current Ip = In x 0.7 for NF400-SEW, with the current set to 200 A, it should be between 30% and 40%.)

(6) When you hold down the UP/DOWN switch, the current signal level changes by 1% at first. When you keep holding it further, it changes by 10%.

(7) Press the STOP switch to stop the output of the current signal.

[Pre-alarm Operation Test (PAL PU/TIME) screen]

* When connected to a W&WS series circuit breaker,
"PALPU", "Ir", "Ip", and the output current value are not displayed.



The time counter starts counting up when the START switch is pressed and it stops when the STOP switch is pressed.
When the START switch is pressed after the counting is stopped, the time counter starts counting up from 0.0 s again.
The current signal flows during the counting.

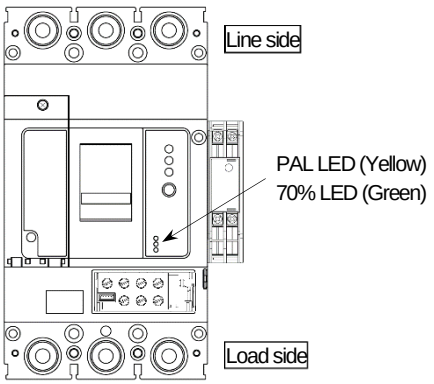


Fig. 1 W&WS series

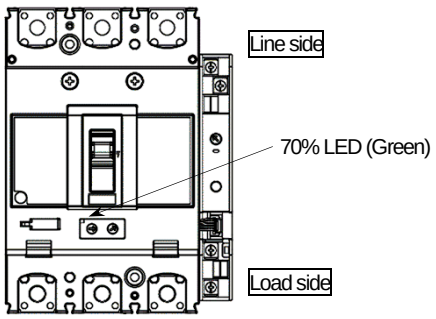


Fig. 2 WS-V series

5. 3. 5. 2 Pre-alarm operating time test

• Can be performed for a WS-V series when a pre-alarm module (PAL) is included.
Confirm that the pre-alarm module is connected.

• For a W&WS series circuit breaker with a PAL contact, connect this contact to an insulating relay. (Refer to (3) in Section 5.1.)

• If a test such as the operation current test of an LTD trip test is performed immediately before this test, trip the breaker once during a test such as an INST trip test and then conduct this test again.

(1) Select PAL PU/TIME on the Select Test (ETR TEST) screen and press the ENTER switch to go to the Pre-alarm Test (PAL PU/TIME) screen.

(2) Set the current signal level by pressing the UP or DOWN switch. (Screen 1)
- For a WS-V series or W&WS MDU circuit breaker, set it to 200%.
- For a W&WS series circuit breaker, align with the 200% signal level (%IT) on Table 2 of p. 19.
(Example: For the NF400-SEW 300A, set the current signal level to 150%.)

(3) When you press the START switch, the current signal is output and time counter starts counting up.
- For a WS-V series or W&WS MDU breaker
In this case, for a W&WS MDU breaker, the 70% and OVER LED light up and the PAL LED flashes. (Fig. 1)
For a WS-V series, the OVER LED lights up. (Fig. 2)
The PALPU indicator on the Y-360 test screen turns on. (Screen 2)
- For a W&WS series circuit breaker
In this case, the 70% and OVER LED of the breaker light up and the PAL LED flashes. Nothing is displayed on the Y-360 test screen.

(4) The time counter stops. (Manually stop when nothing is connected to the PAL terminal of a W&WS series cercuit breaker.)
- For a WS-V series or W&WS MDU breaker
The time counter automatically stops when the predetermined time has passed, and the PALOUT indicator on the Y-360 test screen turns on. (Screen 3)
- For a W&WS series circuit breaker
[1] When the PAL terminal is connected, the time counter automatically stops when the specified time elapses, and the PALOUT indicator on the test screen lights up. (Screen 3)
[2] When nothing is connected to the PAL terminal, press the STOP switch of the Y-360 at the same time that the PAL LED of the circuit breaker switches from flashing to being lit up to stop the time counter. (The time counter does not stop automatically.)

(5) The result is good if the time counter value is within the reference range in the test reference chart (refer to Table 1-2, and Table 2 on p. 18 and p. 19).
(Example: When the pre-alarm current Ip = Ir x 0.7 and TL is 100 s, it should be between 40 and 60 s.)

(6) Press the STOP switch to cancel the test.
When you conduct another operation test immediately after this test, trip the breaker once in a test such as an INST trip test in advance.

* Testing is possible with the current signal at a value other than above. Refer to "(5) Precautions when setting the operating characteristics" on p. 10 for the setting details.

* Perform testing with a current signal where the operating time will be 3 s or longer for WS-V series or W&WS MDU breakers. (The detection time may be delayed if the operating time is less than 3 s.)

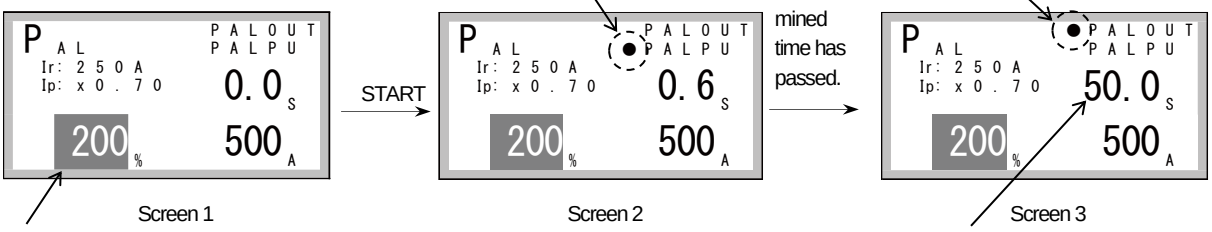
* When stopping self-holding type PAL alarm output, press the pre-alarm reset switch or use the RETURN switch to display the test selection screen. The automatic reset type PAL alarm output automatically stops after testing is complete for WS-V series or W&WS MDU breaker.
(Refer to the manual of the pre-alarm module or manual of the circuit breaker for information on the self-holding and automatic reset type alarm output.)

[Pre-alarm Operation Test (PAL PU/TIME) screen]

* When connected to a W&WS series circuit breaker, "PALPU", "Ir", "Ip", and the output current value are not displayed.

PALPU indicator
Indicates that the pre-alarm current has been exceeded.

PALOUT indicator
Indicates that the pre-alarm is output.



Screen 1 Screen 2 Screen 3

Current signal level
Set the current signal level according to the model by pressing the UP or DOWN switch.

Time counter

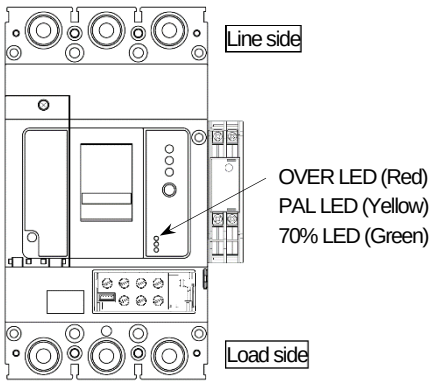


Fig. 1 W&WS sereies

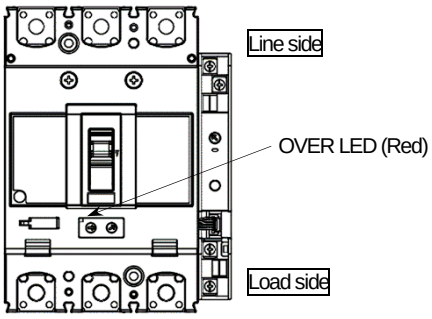


Fig. 2 WS-V series

Table 1-1. Test reference table (WS-V series circuit breaker or WS-V MDU breaker/W&WS MDU breaker)

Breaker model	STD trip test		LTD trip test		
	Operating time test		Operating time test		Operating current (pickup current) test
	STD operating time Ts setting value (s)	STD operating time range (s)	LTD operating time TL setting value (s)	200% operating time range (s)	Operating current (pickup current) range (%)
NF125-SEV/HEV NF250-SEV/HEV NV125-SEV/HEV NV250-SEV/HEV NF250-SEV/HEV with MDU	0.1	**0.05 to 0.11**	12	**10 to 14**	**105 to 125**
	0.2	**0.14 to 0.22**	60	**48 to 72**	
	0.3	**0.22 to 0.34**	80	**64 to 96**	
	----	**----**	100	**80 to 120**	
NF400-SEW/HEW with MDU NF800-SEW/HEW with MDU	0.06	**0.02 to 0.06**	12	**10 to 14**	
	0.1	**0.05 to 0.11**	60	**48 to 72**	
	0.2	**0.14 to 0.22**	100	**80 to 120**	
	0.3	**0.22 to 0.34**	150	**120 to 180**	

Table 1-2. Test reference table (WS-V series circuit breaker or WS-V MDU breaker/W&WS MDU breaker)

Breaker model	Pre-alarm operation test		Pre-alarm operation test		INST operating time test
	Operating time test		Pickup current test		
	Pre-alarm operating time Tp= TL/2 setting value (s)	200% operating time range (s)	Pre-alarm pickup current (Ip) setting value (x Ir)	Pickup current range (%)	INST operating time range (s)
NF125-SEV/HEV NF250-SEV/HEV NV125-SEV/HEV NV250-SEV/HEV NF250-SEV/HEV With MDU	6	**4.8 to 7.2**	0.70	**60 to 80**	**0.00 to 0.02**
	30	**24 to 36**	0.75	**65 to 85**	
	40	**32 to 48**	0.80	**70 to 90**	
	50	**40 to 60**	0.85	**75 to 95**	
NF400-SEW/HEW with MDU NF800-SEW/HEW with MDU	6	**4.8 to 7.2**	0.90	**80 to 100**	
	30	**24 to 36**	0.95	**85 to 105**	
	50	**40 to 60**	1.0	**90 to 110**	
	75	**60 to 90**			

Table 2. Test reference table (W&WS series circuit breaker)

Breaker model	Rated current (A)	Current setting		Pickup current		Operating time range			
						200% signal level			STD, INST (s)
		(A)	(%IT)	LTD (%IT)	70% PAL (%IT)	(%IT)	LTD (s)	PAL (s)	
NF400-SEW/HEW/REW/ UEW NV400-SEW/HEW	400	200	50	53 to 62	30 to 40	100	TL = 12 10 to 14	TL = 12 5 to 7	Ts = 0.06 0.02 to 0.06
		225	56	60 to 70	34 to 45	112			
		250	62	66 to 78	37 to 50	125			
		300	75	79 to 93	45 to 60	150			
		350	87	92 to 109	52 to 70	175			
		400	100	105 to 125	60 to 80	200			
NF630-SEW/HEW/REW NV630-SEW/HEW	630	300	47	48 to 60	30 to 38	95			
		350	55	57 to 70	35 to 44	111			
		400	63	65 to 80	40 to 50	127			
		500	79	81 to 100	50 to 62	159			
		600	95	98 to 120	60 to 74	190			
		630	100	105 to 125	60 to 80	200			
NF800-CEW/SEW/HEW/ REW/UEW NV800-SEW/HEW	800	400	50	53 to 62	30 to 40	100	TL = 60 48 to 72	TL = 60 24 to 36	Ts = 0.1 0.05 to 0.11
		450	56	60 to 70	34 to 45	112			
		500	62	66 to 78	37 to 50	125			
		600	75	79 to 93	45 to 60	150			
		700	87	92 to 109	52 to 70	175			
		800	100	105 to 125	60 to 80	200			
NF1000-SEW	1000	500	50	53 to 62	30 to 40	100	TL = 100 80 to 120	TL = 100 40 to 60	Ts = 0.2 0.14 to 0.22
		600	60	63 to 75	36 to 48	120			
		700	70	74 to 87	42 to 56	140			
		800	80	84 to 100	48 to 64	160			
		900	90	101 to 120	54 to 72	180			Ts = 0.3 0.22 to 0.34
		1000	100	105 to 125	60 to 80	200			
NF1250-SEW	1250	600	48	50 to 60	29 to 38	96	TL = 150 120 to 180	TL = 150 60 to 90	INST 0.00 to 0.02
		700	56	60 to 70	34 to 45	112			
		800	64	67 to 80	38 to 51	128			
		1000	80	84 to 100	48 to 64	160			
		1200	96	101 to 120	58 to 77	192			
		1250	100	105 to 125	60 to 80	200			
NF1600-SEW	1600	800	50	53 to 62	30 to 40	100			
		1000	63	65 to 80	40 to 50	127			
		1200	75	79 to 93	45 to 60	150			
		1400	88	92 to 109	53 to 70	175			
		1500	94	98 to 117	56 to 75	188			
		1600	100	105 to 125	60 to 80	200			

5. 4 Setting the operating characteristics

- For WS-V series only, the operating characteristics can be set by editing them with the Y-360 and sending them to the circuit breaker.
- Set the operating characteristics of W&WS series using the dials on the front of the circuit breaker.
- Perform the setting procedure with the circuit breaker off or in the tripped state.
- Refer to the instruction manual for the circuit breaker for other details.

5. 4. 1 Configurable operating characteristics (only the WS-V series can be set)

The configureable operating characteristics are indicated below.

[1] LTD operating time TL (Selectable from 12, 60, 80 and 100 s)

[2] Ramp characteristics of LTD (I^6t ON/OFF selection)

[3] STD pickup current Is (Selectable from 2, 2.5, 3, 3.5, 4, 5, 6, 7, 8, 9, 10 x Ir)

[4] STD operating time (Ts) (Selectable from 0.1, 0.2 and 0.3 s)

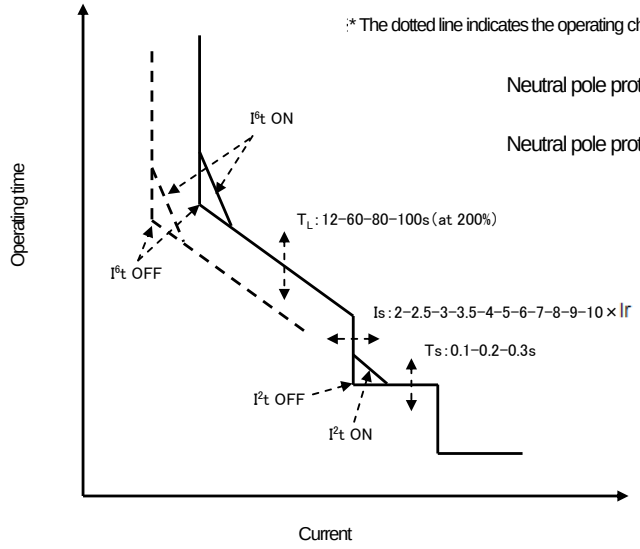
[5] Ramp characteristics of STD (I^2t ON/OFF selection)

[6] Neutral pole protection ON/OFF selection (selectable only for LTD characteristic setting of 4-pole breakers.)

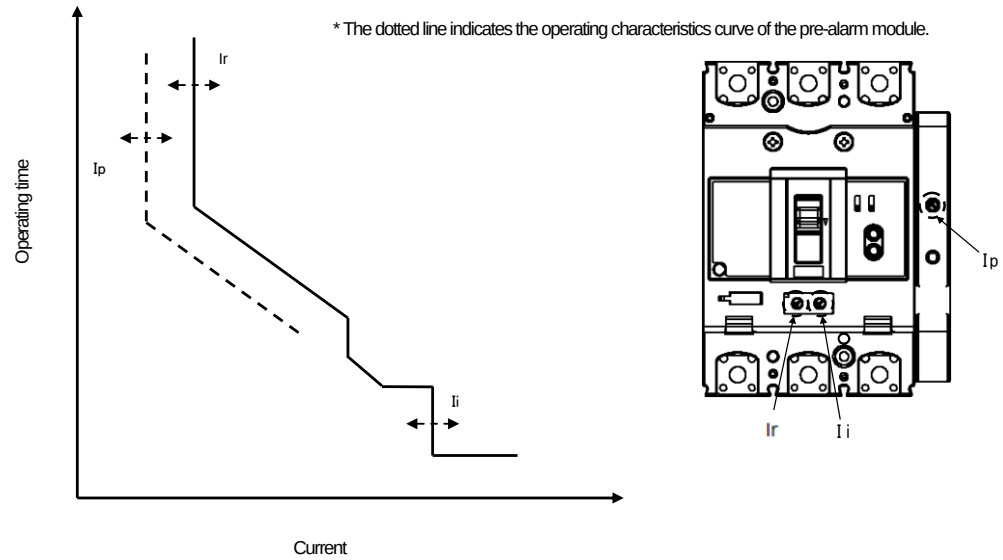
The items available with the Y-360 are indicated above the operating characteristic curves of the circuit breaker in the figure below.

The rated current Ir and the INST pickup current Ii can be set with the setting switch on the breaker, while the pre-alarm pickup current Ip can be set with the setting switch on the pre-alarm module.

Characteristics available with the Y-360



(Reference) Characteristics that can be set by the setting switches on the breaker and the pre-alarm module



5. 4. 2 Selecting the characteristic setting method (only the WS-V series can be set)

The following two methods are provided for setting the operating characteristics.

[1] Method for reading the setting information from the connected breaker to change the settings

Enables the settings to be configured while checking the current settings of the circuit breaker. Used when setting different characteristics for each device.

[2] Method for configuring settings by sending the preset values stored in Y-360 to the breaker

The procedure for changing the setting values can be skipped when setting the same values for multiple devices. Up to four patterns of settings information can be stored.

The setting procedure is indicated below.

Select PROTECT SET from the Main Menu screen and press the ENTER switch to display the file selection screen.

Pressing the UP or DOWN switch changes the menu items as follows: ETR ⇔ File 1 ⇔ File 2 ⇔ File 3 ⇔ File 4 ⇔ ETR

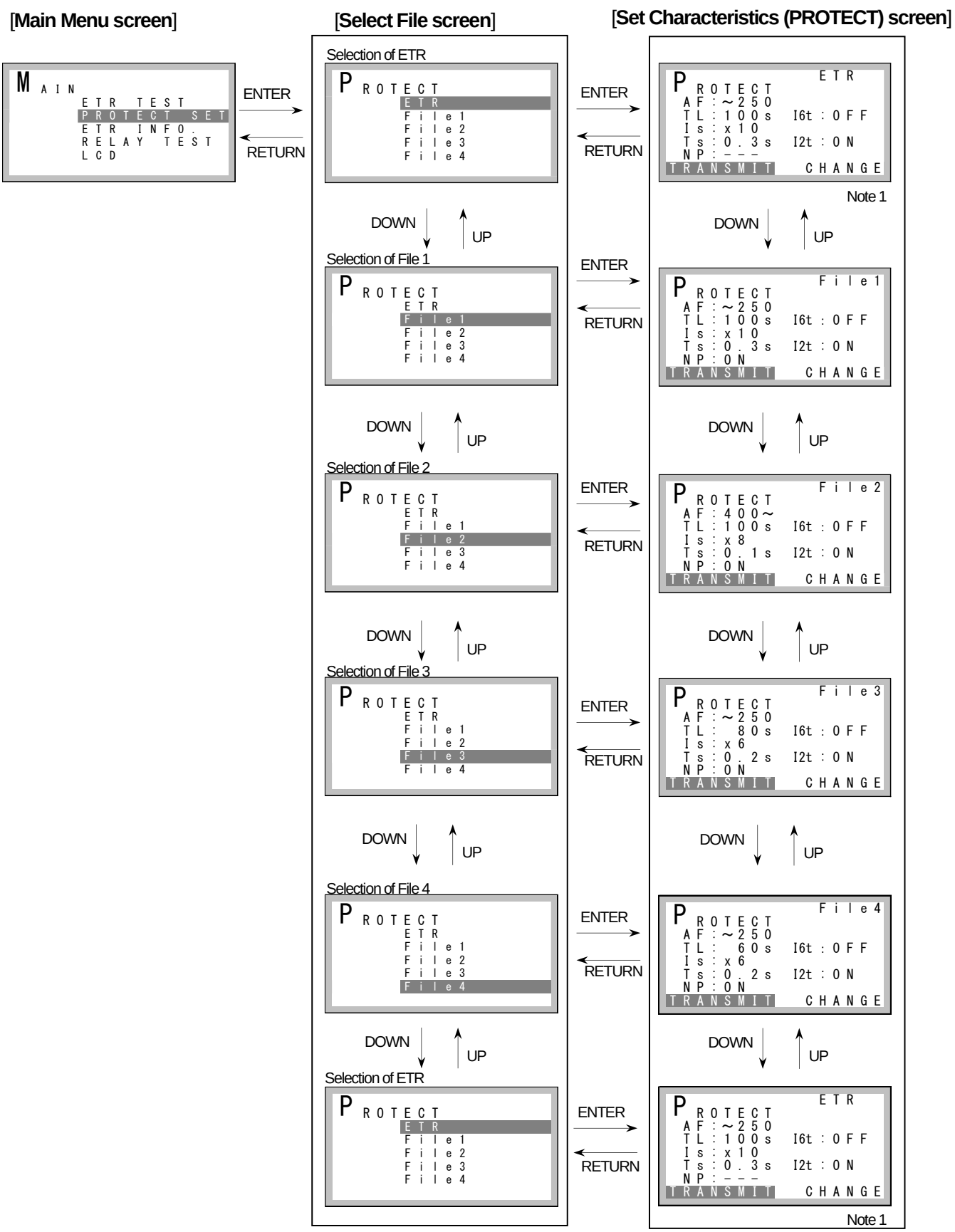
[1] To read the setting information from the connected breaker to change the settings, select ETR.

[2] To configure settings by sending the preset values stored in Y-360 to the breaker, select File 1, File 2, File 3, or File 4.

By pressing the ENTER switch on the Select File (PROTET SET) screen, you can go to the Set Characteristics (PROTECT) screen of ETR or the file you selected.

By selecting ETR on the Select File (PROTECT SET) screen and pressing the ENTER switch, you can load the characteristic setting values of the currently connected breaker.

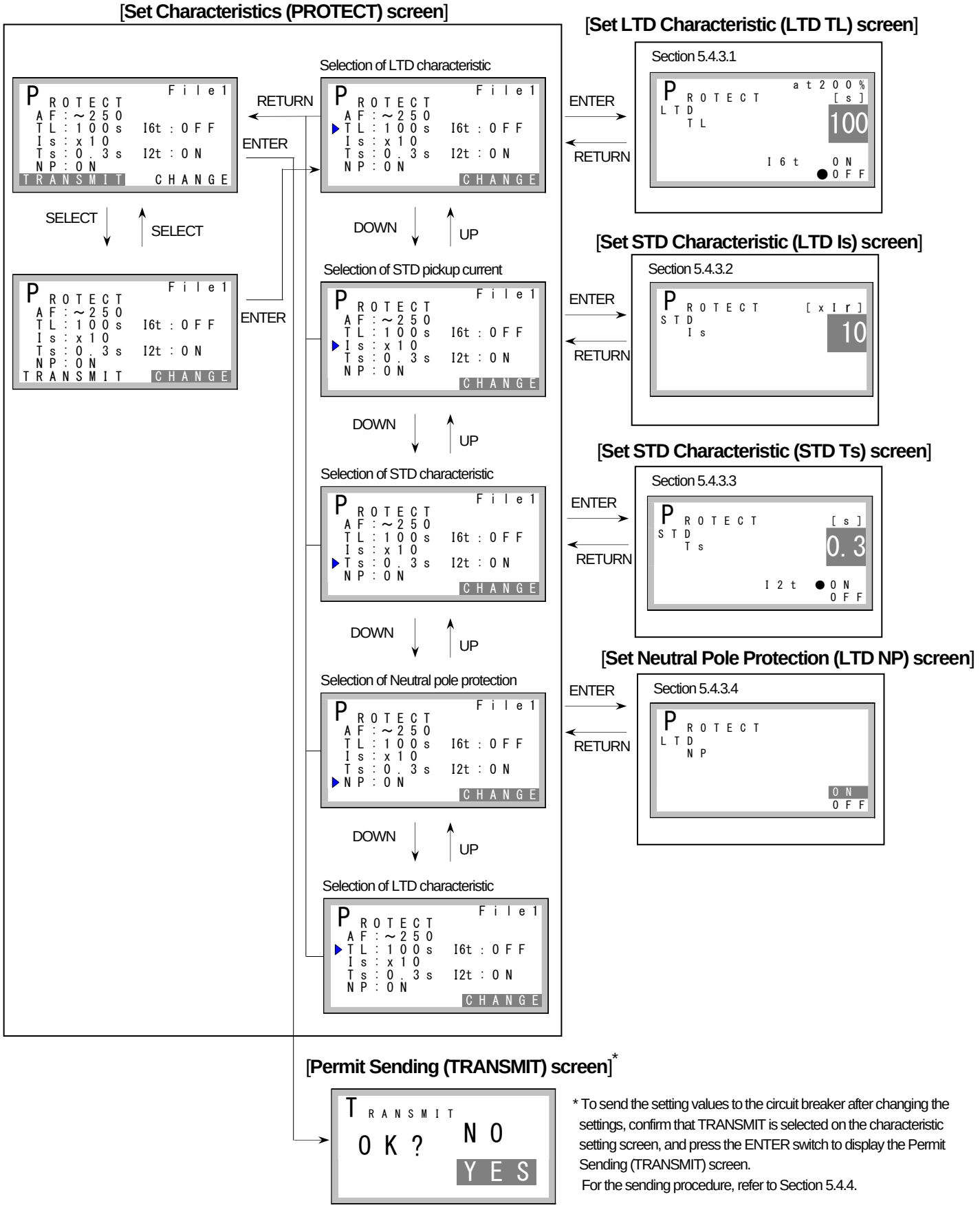
(For the procedute, refer to the next page.)



Note 1: "TRANSMIT" and "CHANGE" are not displayed when a W&WS MDU breaker is connected.

5. 4. 3 Changing the characteristic setting values (only the WS-V series can be set)

Select CHANGE on the Set Characteristics (PROTECT) Screen by pressing the SELECT switch. By pressing the ENTER switch, you can select the characteristics.
When you press the UP or DOWN switch, the selected items change as follows: TL ⇔ Is ⇔ Ts ⇔ NP.
NP cannot be selected if ETR is selected in Section 5.4.2 and the circuit breaker is not a 4-pole breaker.
By pressing the ENTER switch when an item you want to change is selected, you can go to the Set Characteristics (PROTECT) screen of the selected item.



* To send the setting values to the circuit breaker after changing the settings, confirm that TRANSMIT is selected on the characteristic setting screen, and press the ENTER switch to display the Permit Sending (TRANSMIT) screen.
For the sending procedure, refer to Section 5.4.4.

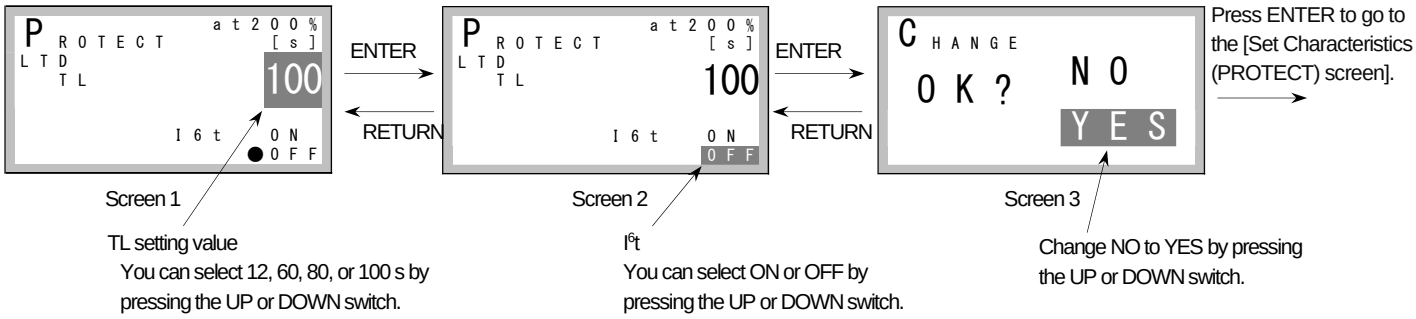
5. 4. 3. 1 Changing the LTD operating characteristic (TL, I^6t characteristic ON/OFF)

(1) You can change the LTD operating time TL using the Set LTD Characteristic (LTD TL) screen.
When you press the UP and DOWN switches, the setting value changes as follows: 12 ⇔ 60 ⇔ 80 ⇔ 100. Press the ENTER switch to determine your selection. (Screen 1)

(2) Next, the ramp characteristics of LTD I^6t ON / OFF becomes changeable.
To change the setting, select ON or OFF by pressing the UP or DOWN switch and press the ENTER switch to determine your selection. (Screen 2)

(3) On the Permit Change (Change) screen, select YES (or change NO to YES) by pressing the UP or DOWN switch and press the ENTER switch to change the setting. (Screen 3)
You will return to the Set Characteristics (PROTECT) screen after the setting is changed.

[Set LTD Characteristic (LTD TL) screen] **[Permit Change (Change) screen]**



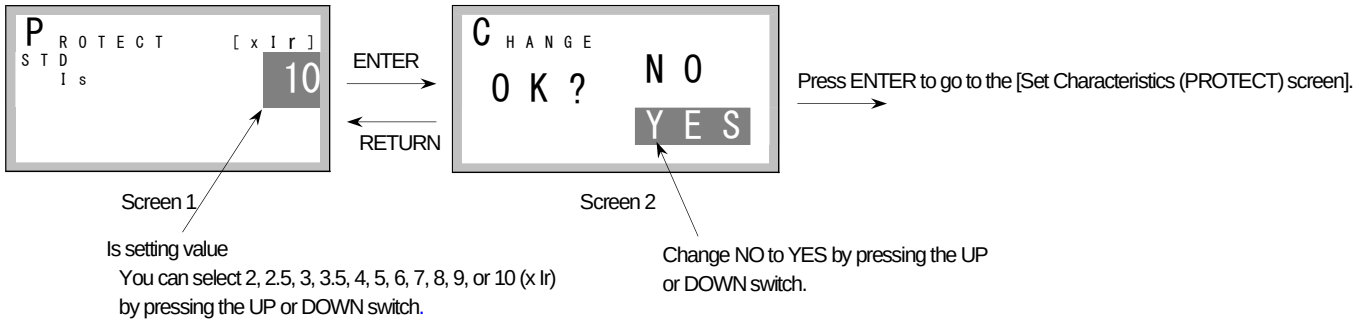
5. 4. 3. 2 Changing the STD pickup current (Is)

(1) You can change the STD pickup current Is using the Set STD Pickup Current (STD Is) screen.

(2) When you press the UP and DOWN switches, the setting value changes as follows: 2 ⇔ 2.5 ⇔ 3 ⇔ 3.5 ⇔ 4 ⇔ 5 ⇔ 6 ⇔ 7 ⇔ 8 ⇔ 9 ⇔ 10. Press the ENTER switch to determine your selection. (Screen 1)

(3) On the Permit Change (Change) screen, select YES (or change NO to YES) by pressing the UP or DOWN switch and press the ENTER switch to change the setting. (Screen 3)
You will return to the Set Characteristics (PROTECT) screen after the setting is changed.

[Set STD Characteristic (STD Is) screen] **[Permit Change (Change) screen]**



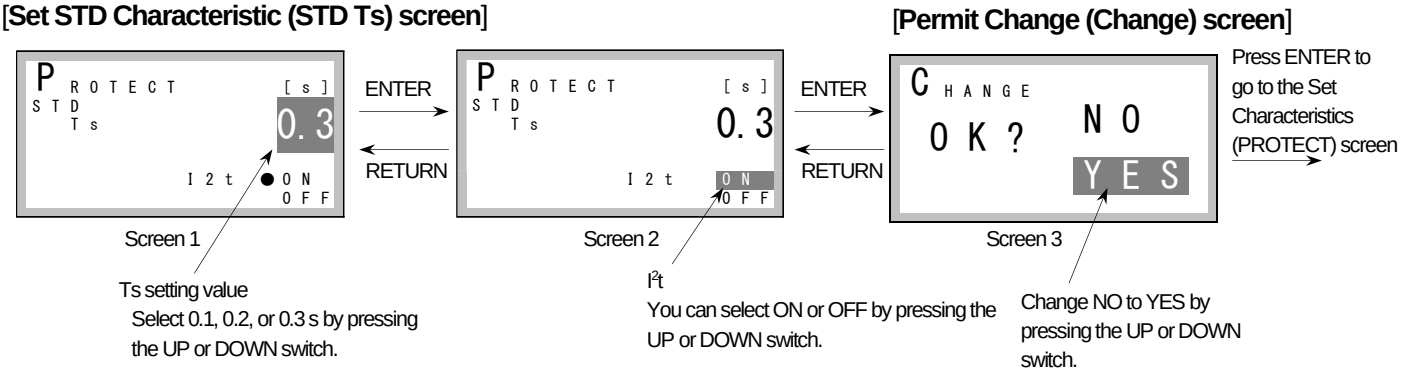
5. 4. 3. 3 Changing the STD operating characteristic (Ts, I^2t characteristic ON/OFF)

(1) You can change the STD operating time Ts using the Set STD Characteristic (STD Ts) screen.
When you press the UP or DOWN switch, the setting value changes as follows: 0.1 ⇔ 0.2 ⇔ 0.3. Press the ENTER switch to determine your selection. (Screen 1)

(2) Next, the ramp characteristics of STD I^2t ON / OFF becomes changeable.
To change the setting, select ON or OFF by pressing the UP or DOWN switch and press the ENTER switch to determine your selection. (Screen 2)

(3) On the Permit Change (Change) screen, select YES (or change NO to YES) by pressing the UP or DOWN switch and press the ENTER switch to change the setting. (Screen 3)
You will return to the Set Characteristics (PROTECT) screen after the setting is changed.

[Set STD Characteristic (STD Ts) screen] **[Permit Change (Change) screen]**



5. 4. 3. 4 Changing the Neutral Pole protection setting

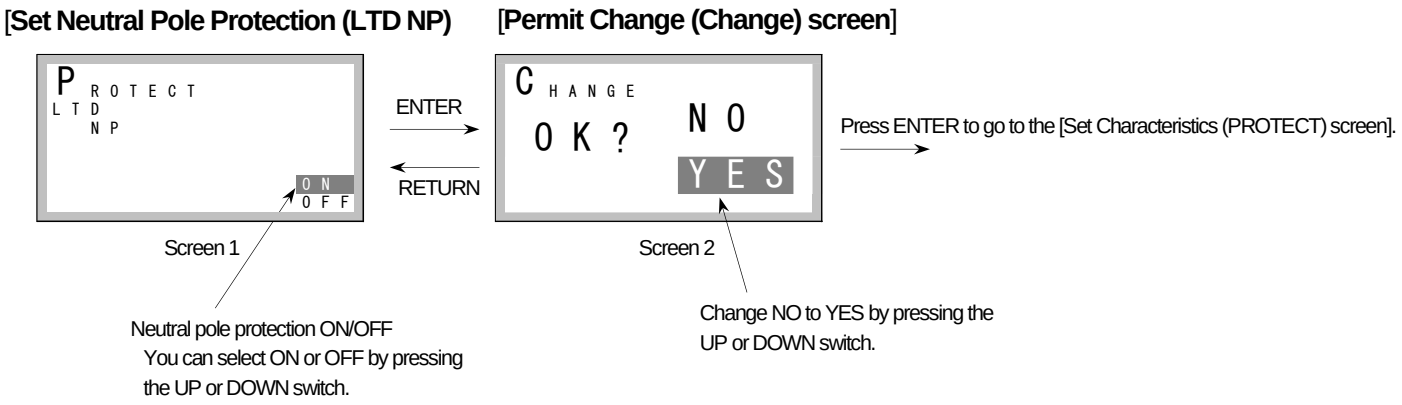
• You can set the Neutral pole protection by selecting File 1, File 2, File 3, or File 4 on the Select File (PROTECT SET) screen.

• When you select ETR on the Select File (PROTECT SET) screen, you can set only 4-pole breakers.

(1) Select ON or OFF on the Set Neutral Pole Protection (LTD NP) screen by pressing the UP or DOWN switch and press the ENTER switch to determine your selection. (Screen 1)

(2) On the Permit Change (Change) screen, select YES (or change NO to YES) by pressing the UP or DOWN switch and press the ENTER switch to change the setting. (Screen 2)
You will return to the Set Characteristics (PROTECT) screen after the setting is changed.

* Before changing the settings of File 1, File 2, File 3, or File 4, set the Neutral pole protection to OFF for breakers other than 4-pole breakers. If you set it to ON and then send the data to any breaker other than 4-pole breakers, the error appears, thus this setting is disabled.



5. 4. 4 Sending the setting values (only the WS-V series can be set)

• You have not completed changing the characteristic setting values of the breaker yet when you changed only the characteristic setting values in Section 5.4.3. (Only the setting values of the Y-360 have been changed.)

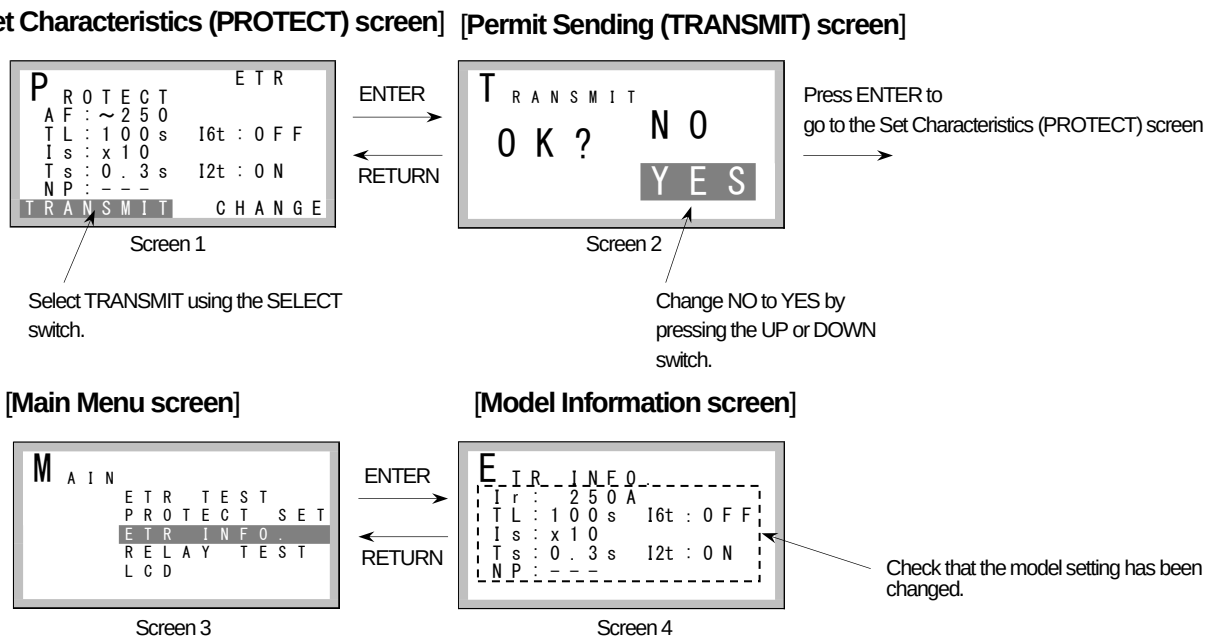
* By sending the setting values to the breaker, you can actually change the setting values of the breaker.

• After changing the characteristic setting values in Section 5.4.3, send them to the breaker.

(1) Select TRANSMIT on the Set Characteristics (PROTECT) screen using the SELECT switch and press the ENTER switch. (Screen 1)

(2) When the Permit Sending (TRANSMIT) screen is displayed, select YES by pressing the UP or DOWN switch and then press the ENTER switch. (Screen 2)

(3) On the Model Information (ETR INFO.) screen (refer to Section 5.5), check that the model setting has been changed. (Screen 3 and 4)



5. 4. 5 Setting the same characteristics to multiple breakers repeatedly (only the WS-V series can be set)

(1) Storing the setting values

Store the setting values in the Y-360 in advance. For storage, select File 1, File 2, File 3, or File 4 on the Select File (PROTECT SET) screen as described in Section 5.4.2.

After that, the setting values changed in Section 5.4.3 are stored in the Y-360. You can perform this process without connecting the Y-360 to the breaker.

(2) Sending the setting values to the breaker

Connect the Y-360 that stores the setting values to the desired breaker.

Select a file (any of File 1, File 2, File 3, and File 4) that holds the setting values on the Select File (PROTECT SET) screen as described in Section 5.4.2.

After that, perform Section 5.4.4 (1) (2) operation and send the set value.

(3) Set the same characteristics to other breakers repeatedly.

When Step (2) above is completed, the Y-360 is still displaying the Set Characteristics (PROTECT) screen of the file you selected. Therefore, disconnect the breaker whose setting has been completed from the Y-360 and then connect the Y-360 to a breaker to be set next. (The power of the Y-360 must be kept on.)

After connecting Y-360 to another breaker, take Steps (1) and (2) of Section 5.4.4. This is the end of the setting of this breaker.

By repeating this procedure, you can set the same characteristics to multiple breakers.

(4) After all settings are completed, check the setting values collectively.

You cannot check if the setting values have been properly changed only by taking the procedure above. Therefore, be sure to check them after completing the setting.

You can also check the settings repeatedly. According to the procedure described in Section 5.5, check the model information of the first breaker.

After completing checking, disconnect the Y-360 from the breaker that has already been checked with the Model Information (ETR INFO.) screen displayed. Then, connect Y-360 to a breaker whose settings are checked next. (The power of the Y-360 must be kept on.)

After connecting the Y-360 to another breaker, press the START or STOP switch. Then, the setting values are read from the breaker and you can check them on the Model Information (ETR INFO.) screen.

By repeating this procedure, you can check the setting values of multiple breakers.

5. 5 Displaying the model information

• For a WS-V series or W&WS MDU breaker

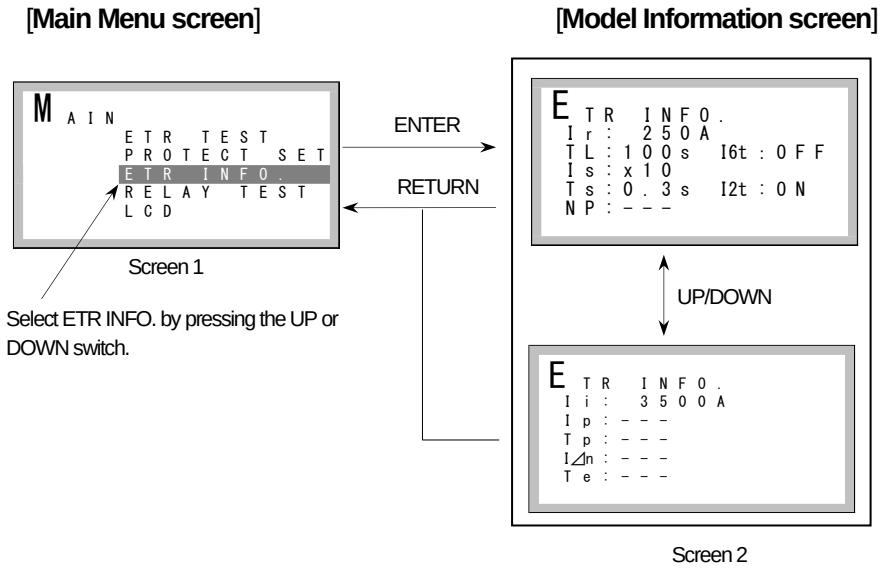
(1) Select ETR INFO. (Screen 1) on the Main Menu screen by pressing the UP or DOWN switch and press the ENTER switch to display the Model Information screen. (Screen 2)

(2) When the model information is displayed, press the UP or DOWN switch to switch the Model Information screen and check the characteristic setting values.

*When the START or STOP switch is pressed while the Model Information screen is displayed, model information is read out from the breaker again and the screen is updated.

(Use this to change the destination circuit breaker to connect to and the setting values (Ir, Ii, Ip etc…) of the circuit breaker.)

(3) You can return to the Main Menu screen by pressing the RETURN switch.



• For a W&WS series circuit breaker

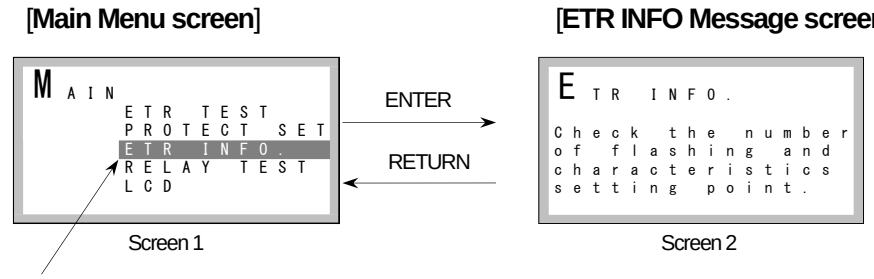
(1) Select ETR INFO. by pressing the UP or DOWN switch on the Main Menu screen. (Screen 1)

(2) When you press the ENTER switch, the 70% LED of the circuit breaker immediately starts flashing. The number of flashes enables you to check the setting values of Ir, TL, Is, Ts, and Ip.

Refer to the table below for the number of flashes (lighting time) and the corresponding setting values.

At this time, a message is displayed on the Y-360. (Screen 2)

(3) You can return to the Main Menu screen by pressing the RETURN switch.



Number of flashes and Setting points of characteristics

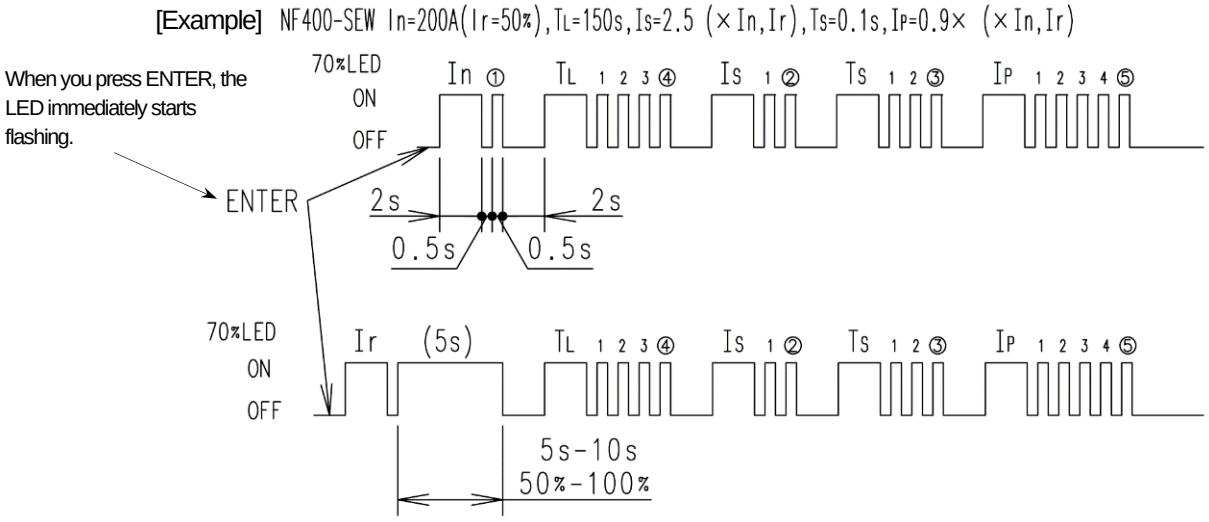
Number of flashes		1	2	3	4	5	6	7	8	9	10
Current setting In (A) Ir (Note 1)	400A	200	225	250	300	350	400	---	---	---	---
	630A	300	350	400	500	600	630	---	---	---	---
	800A	400	450	500	600	700	800	---	---	---	---
	1000A	500	600	700	800	900	1000	---	---	---	---
	1250A	600	700	800	1000	1200	1250	---	---	---	---
	1600A	800	1000	1200	1400	1500	1600	---	---	---	---
TL (s)		12	60	100	150	---	---	---	---	---	---
Is (× In, Ir)		2	2.5	3	3.5	4	5	6	7	8	10
Ts (s)		---	0.06	0.1	0.2	0.3	---	---	---	---	---
Ip (× In, Ir)		0.7	0.75	0.8	0.85	0.9	0.95	1.0	---	---	---

Note 1: The flash operation differs according to the current setting.

For the step type (In), check the number of flashes.

For the continuously adjustable type (Ir), check the light up time.

However, check the number of flashes when continuously adjustable type (Ir) is set to the maximum current.



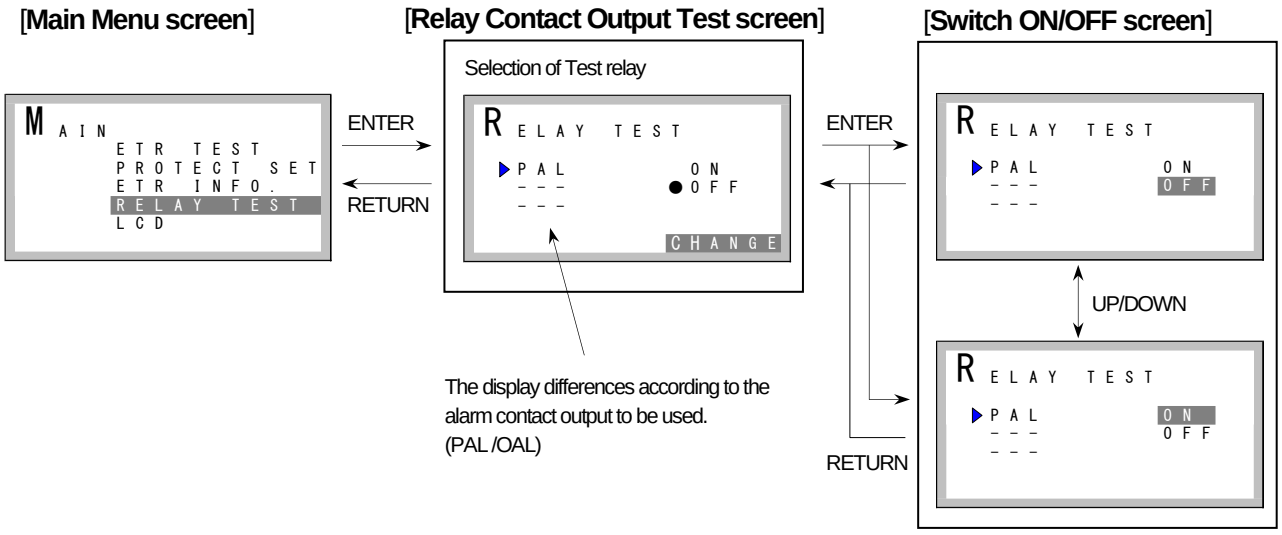
5. 6 Contact output test (for WS-V series and W&WS MDU breakers)

⚠Caution

- You can perform the contact output test only with a breaker with an alarm contact output (optional).
- Before conducting the contact output test, make sure that the alarm contact output is connected and powered.
- If you leave the contact output test screen with the alarm contact output on, the contact output will turn off.
- Contact output will not be reset when you press the reset button of the pre-alarm module with the contact output on. (Except for with MDU breakers)

(1) Select RELAY TEST on the Main Menu screen and press the ENTER switch to go to the Contact Output Test (RELAY TEST) screen.
Select the relay to be tested with the UP / DOWN switch. You can select ---, but if you select ---, the contact output test is not conducted even if you select ON on the Switch ON/OFF screen.

(2) Select the relay to be tested and pressing the ENTER switch, you can go to the Switch ON/OFF screen. Select ON or OFF for output control (according to the screen display) by pressing the UP or DOWN switch.

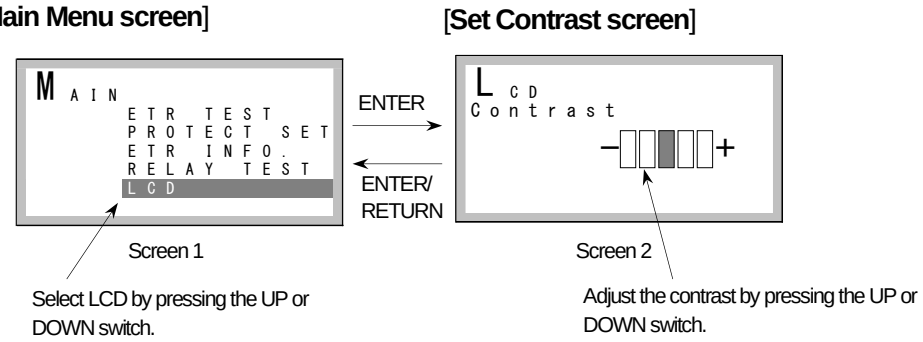


5. 7 Setting the contrast of the indicator LCD

(1) Select LCD on the Main Menu screen by pressing the UP and DOWN switches and press the ENTER switch to go to the Set Contrast (LCD) screen. (Screen 1)

(2) Adjust the LCD while checking the LCD screen contrast by pressing the UP or DOWN switch.
The setting is applied while you adjust the contrast. (Screen 2)

(3) You can return to the Main Menu screen by pressing the ENTER/RETURN switch.



6. Troubleshooting

6. 1 When you think the Y-360 may have failed

Symptom	Cause and solution	Reference
Nothing is displayed on the screen when the POWER switch is turned on.	The batteries may have been inserted with the incorrect terminal orientation (+/-). Check the orientation of the batteries.	P7
When the Y-360 test connector is connected to a breaker, the display of the MDU unit lights up red.	You may have inserted or removed the test connector with the POWER switch of the Y-360 set to ON and during the test. If so, turn off the POWER switch of the Y-360 and remove the test cable. This has no influence on the breaker operation.	P7 to P10
In an operating time test, the breaker does not trip even when the predetermined time has passed. (For a breaker with a pre-alarm module (PAL))	With a WS-V series, remove the connection cable of the pre-alarm module before conducting a test.	P8 to P10, P12 to P15
After an operation test is completed, the display of the breaker turns on and off repeatedly. (For a breaker with display)	To prevent battery drain, the display of the breaker goes out after an operation test is completed for WS-V series. This is not a breaker failure and has no influence on the breaker operation.	P10
Though the setting switches of the breaker and pre-alarm module have been changed, their settings are not applied to the Model Information (ETR INFO.) screen.	Press the START or STOP switch to update the display.	P27
In a pre-alarm operating time test, PALOUT lights up earlier than the predetermined time.	Check the following. • Did you conduct a pickup current test before conducting this test? If you did, trip the breaker once during a test such as an INST trip test and then conduct this test again. • Check the STD pickup current Is and the INST pickup current Ii. If Is is equal to or larger than Ii, the STD operation does not occur. • Confirm that there are no sources of strong electromagnetic fields or noise nearby, such as lines passing a high current. If there is, remove the Y-360 and test cable away from the source and perform the test again. • Check if the test cable is connected properly because it may not be connected properly. • The test cable may be deteriorated or broken. Replace the test cable with a new one when the test cable has been inserted and removed 1,000 times (as a guide).	P7, P8 to P10, P12 to P15, P17
In an LTD/STD trip operating time test, the breaker trips earlier than the predetermined time.		
The screen indicates that the W&WS series circuit breaker is connected despite the WS-V series being connected.	Check the following. • Check if the test cable is connected properly because it may not be connected properly. • The test cable may be deteriorated or broken. Replace the test cable with a new one when the test cable has been inserted and removed 1,000 times (as a guide).	P7, P12 to P17

If not, the circuit breaker may have failed. Please contact a dealer or the Mitsubishi Electric System & Service Co., Ltd. or Mitsubishi Electric branch office indicated on the back cover of this manual.

⚠ Caution

• If abnormal noise, smell, smoke, or heat is emitted from the Y-360, turn OFF the power of the Y-360 immediately, remove the batteries, and stop use.

6. 2 Error codes and troubleshooting

If an error occurs during operation, refer to the following table.

Error code	Description	Troubleshooting
E001 (Note 1)	Communication error between circuit breaker and Y-360	Check if the test cable is connected properly between the circuit breaker and the Y-360.
		The Y-360 cannot configure the characteristic settings for W&WS series circuit breakers.
E002	Communication error inside the circuit breaker	This is an internal communication error. Check if the operating environment is proper. For a WS-V series, check whether the alarm contact output (optional) is connected to the circuit breaker.
E003	Setting value error between circuit breaker and Y-360, or connection error	This is caused by an internal communication error when configuring the characteristic settings (Section 5.4.3). Check if the operating environment is proper. For a WS-V series, check whether the alarm contact output (optional) is connected to the circuit breaker.
		Check if the model setting (refer to Section 5.4.3) matches that of the breaker. Check if the settings have been sent to breakers other than 4-pole breakers with the Neutral pole protection set to ON (Section 5.4.3.4).
		Check whether the test cable has been connected or disconnected while the test screen was displayed. Make sure to connect or disconnect the test cable with the power of the Y-360 off or during the test.
E004	Communication error between the alarm contact output (optional) and Y-360	For a WS-V series, check whether the alarm contact output (optional) is connected to the circuit breaker and whether power is supplied to the alarm contact output. For an MDU breaker, check whether the MDU and circuit breaker are connected and whether power is supplied to the MDU.
LOW BAT (Note 2)	Battery voltage drop	Replace all of the four batteries with new ones.
		Check whether the batteries are inserted properly. Check whether the batteries are dirty. If they are dirty, remove any dirt with a clean cloth, etc. Check whether the batteries have leaked. If they have leaked, wipe the device clean and replace all of the four batteries with new ones.
		Turn the power off and then on again. Operate the switch ON and OFF slowly and surely when doing so.
Other	Y-360 internal error	Check if the operating environment is proper. Turn the power off and then on again after several minutes have elapsed.

Note 1: If "E001" is displayed when ETR is selected from the Select File (PROTECT) screen and the LCD display does not return to the previous screen, press the "RETURN", "UP", or "DOWN" operation switch to return to the previous screen. (Section 5.4.2)

Note 2: If "LOW BAT" is displayed, it is necessary to turn the POWER switch of the Y-360 off and then on again because the LCD display does not return to the previous screen.

7. Maintenance

- Wipe the surface lean with a soft, dry cloth, etc.
- Do not wipe the Y-360 using thinner, detergent, or a chemical dust cloth. Failure to observe this may cause deformation to the mold case. Perform cleaning with an air cleaner or by brushing.

8. Storage

- When storing the Y-360, turn the power off, remove the test cables, and store the Y-360 in a polyethylene bag, etc.
- When the Y-360 will not be used for an extended period of time, turn the power off and store it with the batteries removed. Store the removed batteries in a separate polyethylene bag, etc. from the Y-360 and test cables.
- Store test cables in a polyethylene bag, etc.
- Refer to "1.6 Storage" for precautions regarding storage.

9. Inspection

- Perform routine inspection on the Y-360 to ensure that it can be used correctly for a long time.
- Refer to "1.5 Maintenance and inspection" for precautions regarding maintenance and inspection.

10. After-sale service

If you have any questions or if failure occurs, please contact a dealer or Mitsubishi Electric branch office indicated on the back cover of this manual.

- The gratis warranty term and range for the Y-360 are indicated below.
- Gratis warranty term

  The gratis warranty term of the product shall be for one year after the date of purchase.
- Warranty range

(1) The range shall be limited to normal use within the usage state, usage methods, usage environment, and other conditions which follow the conditions and precautions given in the catalog, instruction manual, and caution labels on the product, and free repair is provided if the product fails within the warranty term. Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months.

(2) Even within the gratis warranty term, repairs shall be charged for in the following cases.

- Failure occurring due to inappropriate storage or handling, carelessness or negligence by the user.
- Failure caused by problems with installation.
- Failure due to inappropriate use or unauthorized modification.
- Failure caused by external factors such as fires or abnormal voltages, and failure caused by force majeure such as earthquakes or wind damage.
- Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.

In addition, this warranty applies to only this product. It does not apply to the damage that is caused by the failure of this product.

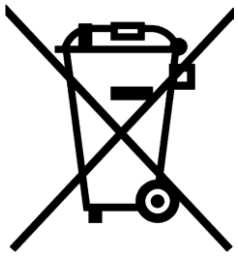
- Unauthorized reproduction of this manual, in part or in full, is not permitted, and Mitsubishi shall not provide compensation for any damages, etc. caused by the unauthorized reproduction or copying of this manual in any form. Mitsubishi also does not provide corrections.
- The content of this manual is updated according to software and hardware revisions, but may not be up to date in some cases.
- Mitsubishi shall not be held responsible for damages caused by any cause not attributable to Mitsubishi, lost customer opportunities or profit caused by the failure of Mitsubishi products, or provide compensation for other work or damages to non-Mitsubishi products, accidents, secondary damage, or damages caused by exceptional circumstances, whether anticipated by Mitsubishi or not.

11. Handling of batteries and devices with builtin batteries in EU member states

11.1 Disposal precautions

In EU member states, there is a separate collection system for waste batteries. Dispose of batteries properly at the local community waste collection/recycling center.

The symbol shown below is printed on the packaging and the enclosed batteries used for the Operation Check & Setup Unit Y-360.



Note : This symbol is for EU member states only.
The symbol is specified in the new EU Battery Directive (2006/66/EC) Article 20 "Information for end-users" and Annex II.

The symbol indicates that batteries need to be disposed of separately from other wastes.

11.2 Exportation precautions

The new EU Battery Directive (2006/66/EC) requires the following when batteries and/or devices with built-in batteries are marketed or exported to EU member states.

- To print the symbol on batteries, devices, or their packaging.
- To explain the symbol in the manuals of the products.

(1) Labelling

To market or export batteries and/or devices with built-in batteries, which have no symbol, to EU member states on September 26, 2008 or later, print the symbol shown above on the batteries, devices, or their packaging.

(2) Explaining the symbol in the manuals

To export the Operation Check & Setup Unit Y-360 to EU member states on September 26, 2008 or later, provide the latest manuals that include the explanation of the symbol.

If no Mitsubishi manuals or any old manuals without the explanation of the symbol are provided, separately attach an explanatory note regarding the symbol to the manual of the devices.

Note : The requirements apply to batteries and/or devices with built-in batteries manufactured before the enforcement date of the new EU Battery Directive (2006/66/EC).

OPERATION CHECK & SETUP UNIT Y-360

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