# BIO-Tester Relion® REX640

Quick operation guide

# Copyright



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## Conformity

This product complies with the directive of the Council of the European Communities on the approximation of the laws of the Member States concerning electrical equipment for use within specified voltage limits (Low-voltage directive 2014/35/EU). This conformity is the result of partial Safety Approval tests conducted by the third party testing laboratory SGS Fimko Oy in accordance with essential safety requirements as defined in the safety standards IEC/EN 61010-1:2010 and IEC/EN 61010-2-030:2010.

# Safety information

Dangerous voltages can occur on the connectors, even though the auxiliary voltage has been disconnected.

Non-observance can result in death, personal injury or substantial property damage.

Only trained and qualified persons are allowed to connect and operate BIO-Tester Relion REX640.

National and local electrical safety regulations must always be followed.

The necessary and required earthing connections must be made according to the product guidelines and regulations.

When the withdrawable module has been detached from the case, do not touch the inside of the case. The relay case internals may contain high voltage potential and touching these may cause personal injury.

The protection relay contains components which are sensitive to electrostatic discharge. Unnecessary touching of electronic components must therefore be avoided.

Whenever changes are made in the protection relay, measures should be taken to avoid inadvertent tripping.

# 1. BIO-Tester overview

Figure 1: BIO-Tester Relion® REX640 in a waterproof case and required cables

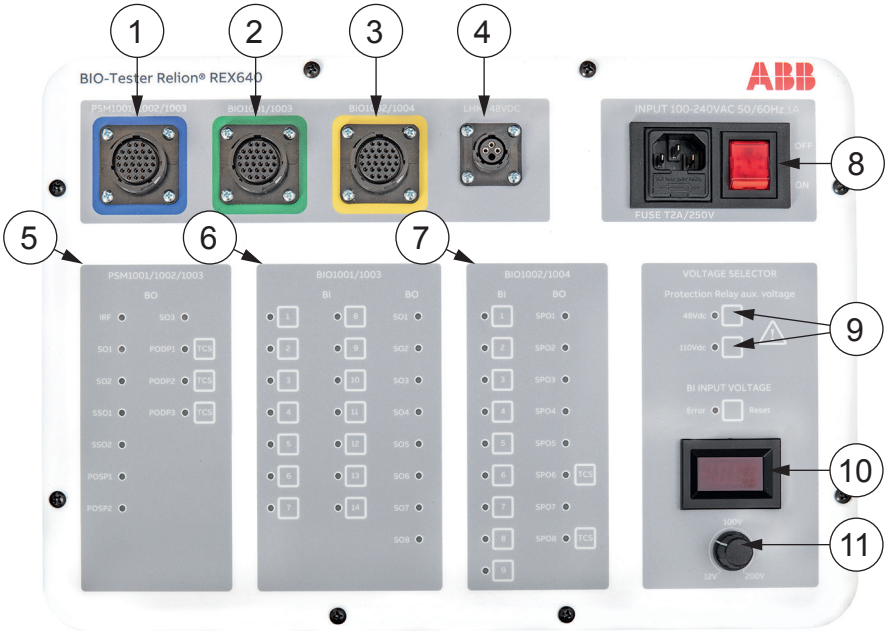



Figure 2: Front view of BIO-Tester Relion® REX640

1. **PSM1001/PSM1002/PSM1003 connector**
2. **BIO1001/BIO1003 connector**
3. **BIO1002/BIO1004 connector**
4. **LHMI 48 V DC connector**
5. **PSM1001/PSM1002/PSM1003 test switches and indication LEDs**
6. **BIO1001/BIO1003 test switches and indication LEDs**
7. **BIO1002/BIO1004 test switches and indication LEDs**
8. **Main power switch and main's wall plug connector**
9. **Protection relay's auxiliary power supply selection: 48 V DC or 110 V DC**
10. **Screen for displaying the selected binary input supply voltage**
11. **Potentiometer for selecting the correct binary input supply voltage value**

# 2. Preparations

Refer to the local safety rules and regulations before starting any operations with BIO-Tester Relion® REX640.

The auxiliary supply voltages of both the REX640 protection relay and the LHMI need to be switched off before the preparations.

After the auxiliary supply voltage of the protection relay has been switched off, it is possible to start the preparations.

Loosen the both screws of power supply module connectors.

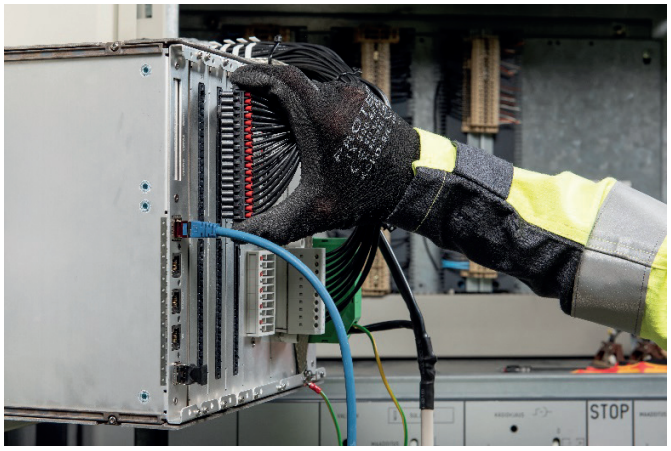
Remove the PSM secondary wiring connector terminals.

Loosen the protective earth screw TX30 on the protection relay but DO NOT remove the existing earth lead.

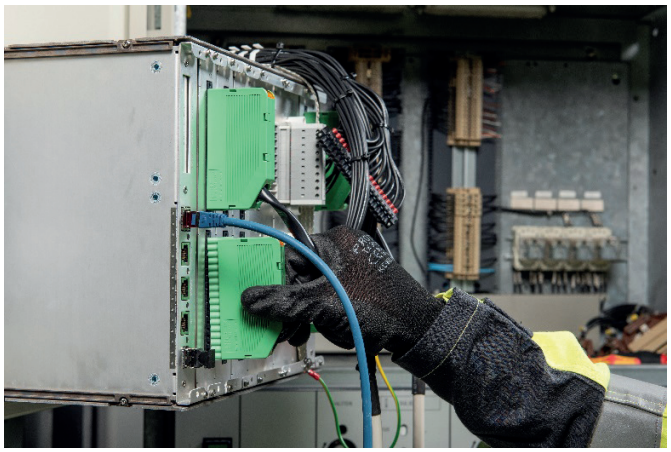
Connect the separate earth protection lead of BIO-Tester to the protective earth pin of the protection relay.

Follow the connector label when connecting the connector cables between the BIO-Tester and the protection relay.

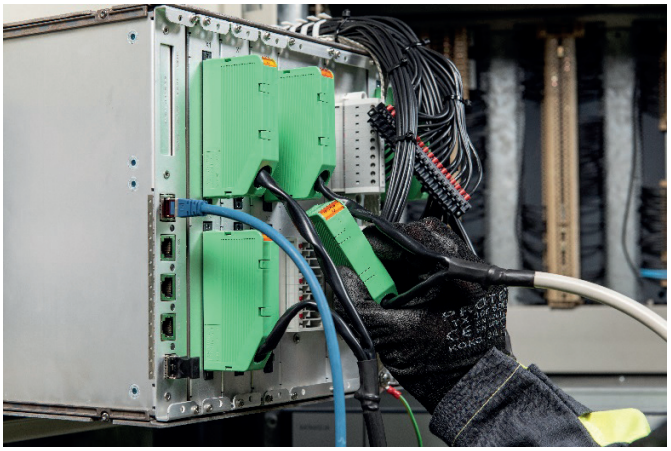
Connect the connector cables to the protection relay.



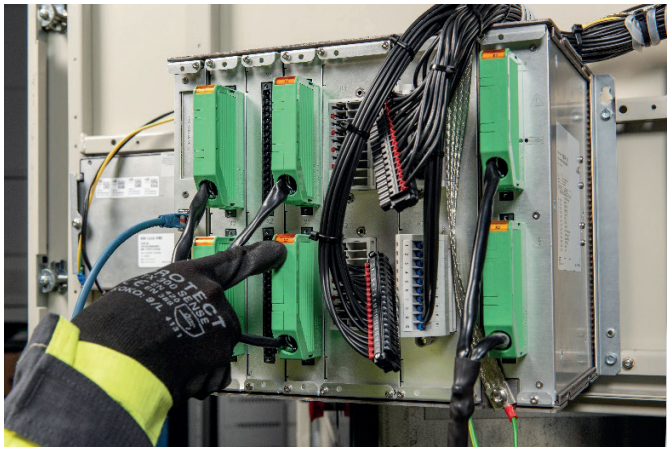

Remove the BIO module's secondary wiring connector terminals.



Connect the correct connector cables between the BIO-Tester and the protection relay.



Connect the connector cables by following the connector labels.



BIO1001 and BIO1002 have their own connector cables. The different power supply modules (PSM1001/PSM1002/ PSM1003) have the same connector cable.


Double-check that the auxiliary voltage of the LHMI is switched off.

Release the LHMI's power connector plug by turning the locking latches to the open position and remove the LHMI's power connector.

Loosen the protective earth screw T20 on the LHMI but DO NOT remove the existing LHMI's earth lead.

Connect the separate earth protection lead of BIO-Tester.

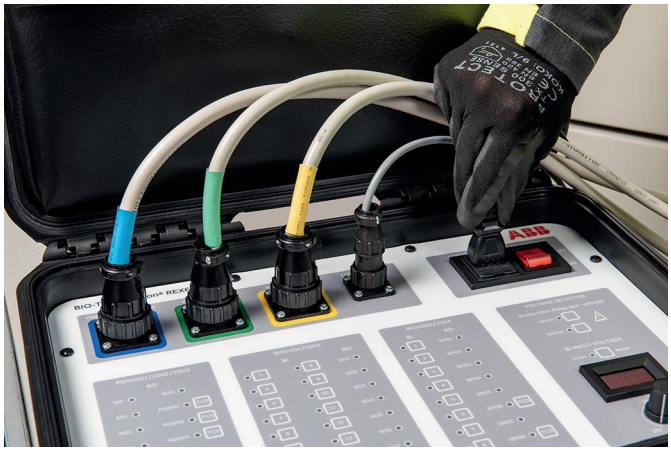
Tighten the protective earth screw to 1.5 Nm ±10%.

Connect the LHMI connector of BIO-Tester to the LHMI by pushing the power connector plug to the bottom.


Follow the connectors' color coding when connecting the cables to BIO-Tester.


Check the pins and markings of the connector's plug before pushing it to the BIO-Tester.

Push the cable connector in place and secure it by turning it clockwise.



Check that all the connectors' cables have been connected, including the separate power supply connector cable for the LHMI.

Connect the power supply cable of the BIO-Tester to the main's wall plug connector.


Power up BIO-Tester using the mains connection.


Select the protection relay's operating voltage depending on the power supply module used in the relay:

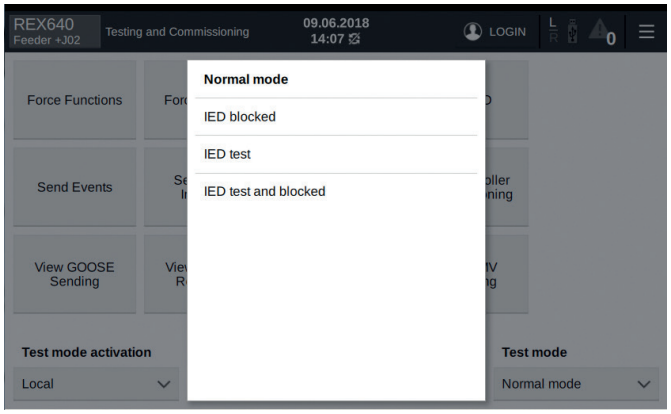
- 48 VDC (PSM1001)
- 110 VDC (PSM1002/PSM1003)

Keep the selected voltage selector button pressed for three seconds.

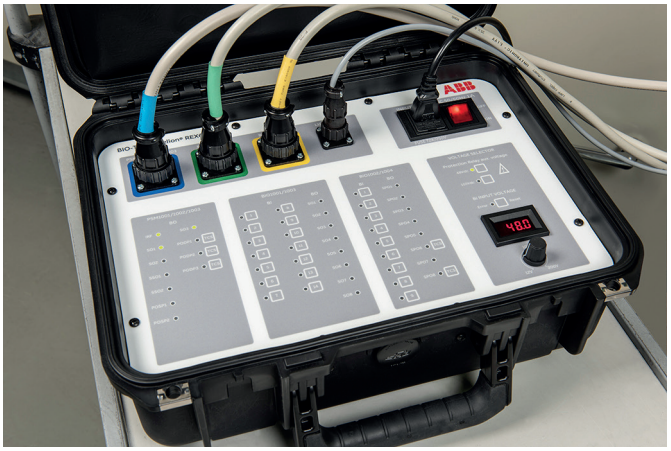
Supply to the LHMI is always 48 VDC.

# 3. Using BIO-Tester Relion® REX640

See the BIO-Tester Relion® REX640 User Manual for more information on using BIO-Tester.

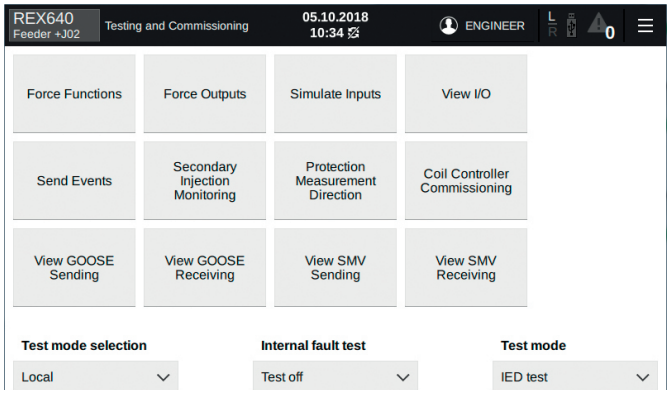



Select IED test mode. The test mode can be activated via REX640 LHMI.

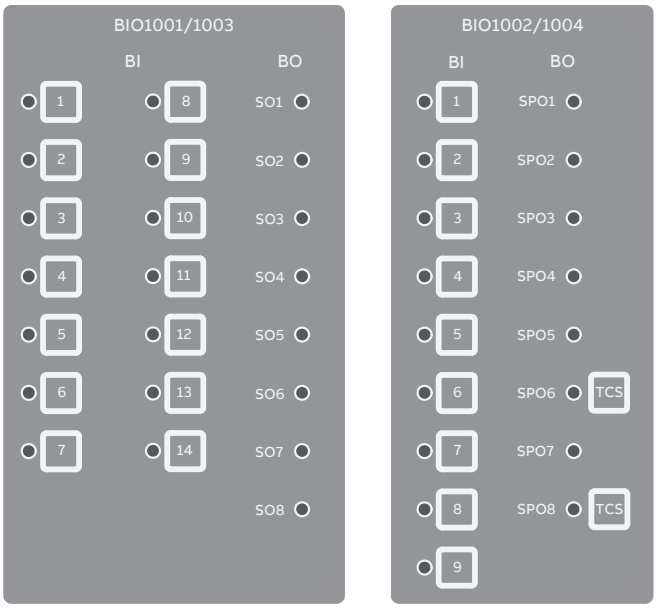


Testing binary inputs:

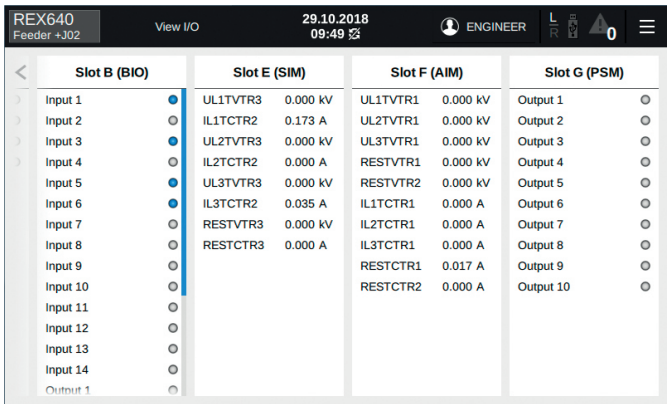
- Select the correct rated voltage by adjusting the potentiometer.
- Set the input supply voltage level above the set value of the binary input's threshold voltage.
- The supply voltage level can be adjusted between 12...200 V DC.



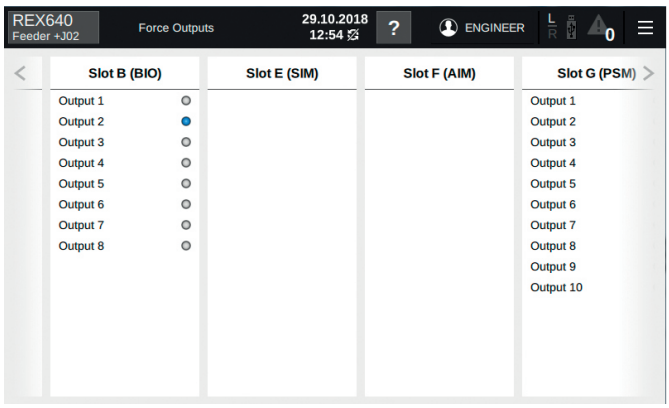

On the REX640 LHMI **Testing and Commissioning** page, select **View I/O**.




Push the BI button of each BIO module on BIO-Tester.

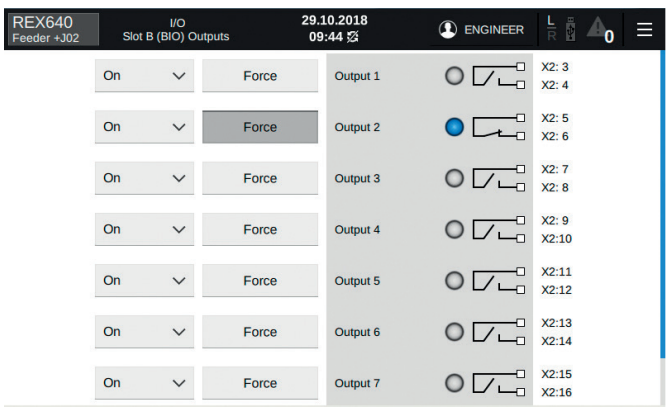



On the REX640 LHMI **View I/O** page, monitor the status of binary inputs.




Testing binary outputs:

- On the REX640 LHMI **Testing and Commissioning** page select **Force Outputs**.




On the REX640 LHMI module-specific page, select state **On** or **Off** for the selected output channel and tap **Force**.

Monitor the status of binary output operation on BIO-Tester.

After successful testing:

- Switch off the power supply. Ensure the de-energized state of both REX640 protection relay under testing and the BIO-Tester.
- Remove all test connector cables and put them back inside the BIO-Tester case.
- Connect all secondary wiring connector terminals back to the protection relay. Ensure the correctness and tightness of connectors.
- Switch on the auxiliary supply voltages of the protection relay and the LHMI.
- Restore all the settings according to recommended settings chart and follow the site testing and commissioning guidlines before energizing the feeder.

# 4. Ordering data

**Table 1: Order codes for BIO-Tester Relion® REX640 and accessories**

| Item | Order number |
|---|---|
| BIO-Tester Relion® REX640 in a waterproof case<br>• BIO-Tester Relion®REX640<br>• Power supply cable<br>• C-60A200 RE_640 tester BIO1001 cable<br>• C-61A200 RE_640 tester BIO1002 cable<br>• C-62A200 RE_640 tester PSM100x cable<br>• C-63A200 RE_640 tester HMI cable | 2RCA050442 |
| Power supply cable | 2RCA050928 |
| C-60A200 RE_640 tester BIO1001 cable | 2RCA050929 |
| C-61A200 RE_640 tester BIO1002 cable | 2RCA050930 |
| C-62A200 RE_640 tester PSM100x cable | 2RCA050931 |
| C-63A200 RE_640 tester HMI cable | 2RCA050932 |

**Additional information**
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