

## HV circuit breaker analyzer

### PKV/M17

new development

**Note:** Standard complete set of the PKV/M17 includes two displacement transducers – the linear DP12 and the angular DP21 – for measuring travel and speed parameters. For **simultaneous monitoring across 3 phases**, the device must be equipped with two additional transducers of the same type, two sticks (when selecting DP12 transducers), and two transducer cables. The device can also be equipped with a DP32 rheostat transducer (on order).

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### Standard complete set:

| Item                                                                    | Photo                                                                               | Application                                                                                                                                                       |
|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Main instrument<br>PKV/M17<br>047.00.00.000                             |  | Instrument and additional documents: Calibration Certificate, User Manual, Log Book.                                                                              |
| Angular displacement<br>transducer DP21<br>009.00.00.000                |  | For measuring the angle of shaft turn in high-voltage circuit breakers. Measuring range: 0.2 – 360°. Resolution: 0.09°.                                           |
| Linear displacement<br>transducer DP12<br>012.00.00.000                 |  | For displacement measurement of moving parts in high-voltage circuit breakers. Range: 1 – 900 mm. Resolution: 0.5 mm. To be used together with a measuring stick. |
| Measuring stick<br>012.03.00.000-02                                     |  | Measuring stick in a case. To be used together with linear displacement transducer DP12. Length in a standard complete set: 700 mm.                               |
| Attachment devices set<br>to install transducers<br>on circuit breakers |  | For attachment of DP12 and DP21 transducers to various types of circuit breakers.                                                                                 |

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|-----------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transducer cable<br>047.20.00.000             |    | For connecting linear (DP12) or angular (DP21) displacement transducer to the instrument. Length: 7 m.                                                                   |
| Pole cables<br>047.11.00.000K                 |    | For connecting to the pole of high-voltage circuit breaker. The cable is equipped with Crocodile clamps. Length: 7.5 m.                                                  |
| Auxiliary channel cable<br>047.23.00.000      |    | For recording the moments when electrical voltage is applied/removed, and for the closing/opening moments of various contacts on the circuit breaker drive. Length: 5 m. |
| Control unit cable<br>047.19.00.000K          |    | For connecting to the control circuits of a high-voltage circuit breaker. Length: 5 m.                                                                                   |
| Mains cable<br>018.09.00.000                  |    | Mains cable 1 x 2 m. For instrument connection to the mains. Temperature range: -25°C to +45°C. Rubber insulation.                                                       |
| Ground cable<br>010.01.00.000                 |  | Ground cable 1 x 2 m (0.07 kg) for instrument grounding. The cable is equipped with a C-clamp and a screw end cap. Rated current is 50 A.                                |
| LAN cable<br>024.26.00.000                    |  | For connecting the instrument to the computer network or laptop. Length: 2 m.                                                                                            |
| Fuse 0505020 MXEP<br>(2 pcs.)                 |  | For the drive control connectors.                                                                                                                                        |
| Fuse VP2B-1V-2 A<br>(2 pcs.)                  |  | For the power source protection.                                                                                                                                         |
| Tool bag<br>147.06.00.000                     |  | Convenient, robust, wear proof bag for transportation of cables, documentation and other accessories.                                                                    |
| Attachment devices<br>set kit<br>126.06.02.00 |  | Tool bag for attachment devices.                                                                                                                                         |

### Additional complete set for simultaneous monitoring across 3 phases (on order):

| Item                                                              | Photo                                                                               | Application                                                                                                                                                                                                                                                                                                           |
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| Angular displacement transducer DP21<br>(2 pcs.)<br>009.00.00.000 |  | Two additional transducers (DP12 and/or DP21) allow you to simultaneously measure the travel and speed parameters of the circuit breaker across all 3 phases (includes Log Book and Calibration Certificate). Measuring range: 0.2 – 360°. Resolution: 0.09°. Standard complete set includes DP21 transducer (1 pc.). |

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| <p>Linear displacement transducer DP12 (2 pcs.)</p> <p>012.00.00.000</p>                          |  | Two additional transducers (DP12 and/or DP21) allow you to simultaneously measure the travel and speed parameters of the circuit breaker across all 3 phases (includes Log Book and Calibration Certificate). To work with transducers, measuring sticks are required (see below). Range: 1 – 900 mm. Resolution: 0.5 mm. Standard complete set includes DP12 transducer (1 pc.). |
| <p>Measuring stick</p> <p>012.03.00.00-02 (2 pcs.)</p> <p>012.03.00.00</p> <p>012.03.00.00-01</p> |  | Two additional measuring sticks are required when using DP12 transducers for displacement measurement of moving parts in high-voltage circuit breakers across all 3 phases simultaneously. Measuring stick in a case. Length on order – 550 mm, 700 mm and 1,000 mm. Standard complete set includes 1 measuring stick 700 mm.                                                     |
| <p>Transducer cable (2 pcs.)</p> <p>047.20.00.000-01</p> <p>047.20.00.000-02</p>                  |  | For connecting linear (DP12) or angular (DP21) displacement transducer to the instrument. Standard complete set includes 1 pc. Length: 7 m.                                                                                                                                                                                                                                       |

### Additional complete set (on order):

| Item                                                          | Photo                                                                               | Application                                                                                                                                                                                             |
|---------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Rheostat transducer DP32</p> <p>026.22.00.000</p>          |   | For measuring the linear displacement of vacuum circuit breakers with an open insulating housing in the range of 0.2 – 20 mm. Accuracy is $\pm 0.2$ mm. It is used complete with adapter 026.24.00.000. |
| <p>Pole cable</p> <p>047.11.00.000K</p>                       |  | Additional pole cables 7.5 m with jaw up to 50 mm for circuit breakers with two open circuits per phase.                                                                                                |
| <p>Pole cable extension</p> <p>058.07.00.000K</p>             |  | A set of extensions to lengthen standard complete set pole cables. Length: 5 m.                                                                                                                         |
| <p>Drive power supply unit</p> <p>053.13.00.000</p>           |  | For controlling DC and AC drives during internal triggering and spring winding in high-voltage circuit breaker drives. Supplied together with cable 047.19.00.000 (2 pcs.). Length: 5 m.                |
| <p>Auxiliary channel cable</p> <p>047.23.00.000</p>           |  | For recording the moments when electrical voltage is applied/removed, and for the closing/opening moments of various contacts on the circuit breaker drive. Length: 5 m.                                |
| <p>Auxiliary channel extension cable</p> <p>047.24.00.000</p> |  | For placing the PKV/M17 device more than 5 meters away from the circuit breaker drive. Length: 5 m                                                                                                      |
| <p>Transducer cable extension</p> <p>047.18.00.000K</p>       |  | For extending the length of the transducer cable. Length: 5 m.                                                                                                                                          |

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| Additional battery unit<br>058.10.00.000                          |  | Additional battery unit for easy replacement.                                                                                                                                                                 |
| Attachment devices set to install transducers on circuit breakers |  | Additional attachment devices for attaching DP12 and DP21 transducers to all 3 phases simultaneously (clamps, mounting plates, adapters, etc.).<br>Can be purchased separately or on order.                   |
| Calibration cable for analog transducers<br>047.41.00.000         |  | Cable 1 x 1.5 m for calibrating analog transducers channels is designed to check the metrological characteristics of the analog transducers channels on the PKV/M17 instrument during testing or calibration. |

## Recommended accessories:

| Item                                                                      | Photo                                                                               | Application                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DCRT-200<br>059.00.00.000                                                 |    | Dynamic contact resistance tester which is designed to determine the state of the arc extinguish chamber of SF6 circuit breakers by DCRM method.<br><br>In conjunction with the PKV/M17, the DCRT-200 provides complete diagnostics and detection of defects in the contact system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Manipulating rod<br>010.41.00.000<br>010.41.00.000-01<br>010.41.00.000-02 |  | Manipulating rod is designed for test cables connection from the ground or from the tank cover to the bushings of high-voltage circuit breakers, and to the structural elements of high-voltage disconnecting switches and earthing devices, without the use of ladders or elevated platforms.<br><br><b>The manipulating rod is completed with special extension cables 3.3 m.</b> There is a Kelvin clamp with current and potential contacts to connect to the object on one side, and a contact pad on the other side. The device test cable is connected to the contact pad from the ground or a tank cover.<br><br>Manipulating rod extension cable is made according to a four-wire (Kelvin) scheme with the test current capacity of 100 A in the presence of a good contact.<br><br>Manipulating rod - 2.2 (length 2.2 m / weight as an assembled set 3.4 kg);<br>Manipulating rod - 3.7 (length 3.7 m / weight as an assembled set 4.0 kg);<br>Manipulating rod - 5.1 (length 5.1 m / weight as an assembled set 4.6 kg). |
| Extension cable set (2 pcs.)<br>010.41.08.000                             |  | <b>An additional extension cable set</b> for the manipulating rod's standard complete set, designed for <b>simultaneous connection to 4 high-voltage object bushings</b> . Weight: 1.72 kg.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Extension cable set (4 pcs.)<br>010.41.08.000                             |  | <b>An additional extension cable set</b> for the manipulating rod's standard complete set, designed for <b>simultaneous connection to 6 high-voltage object bushings</b> . Weight: 3.44 kg.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |