

# Orion 3.1 | Orion M1

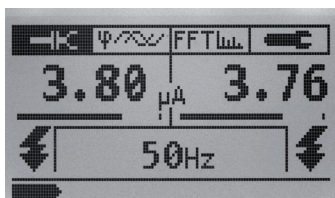
Combined voltage detection and indication systems



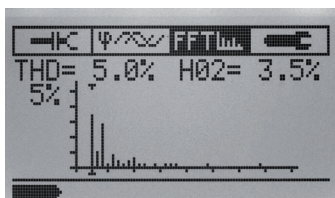
Orion 3.1



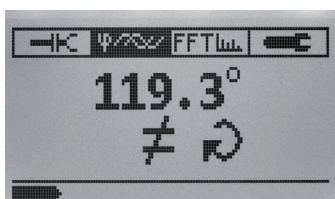
Orion M1



Indication capacitive interface



Indication voltage quality



Indication phase comparison

## Product feature

- Designed according to IEC 61243-5 (VDE 0682-415)
- Voltage detector
- Phase comparator
- Interface detector
- Phase-sequence indicator with status RGB LED
- Orion M1 with additional functions
  - Voltage harmonics and interface current measurement
  - Phase angle measurement
  - LCD display
  - Measured data storage, readable
  - Data transmission via USB interface

Orion 3.1 and Orion M1 are testing and indication devices for voltage detection, phase comparison and coupling part maintenance testing according to IEC 61243-5. They are used at LRM and HR interfaces in medium voltage switch-gears.

The Orion M1 features a large LCD display with back-light. It allows easy reading of the measured values, e. g. interface current, phase angle and voltage harmonics (according to EN 50160). The integrated USB interface is used to retrieve the stored data results for further evaluation.

Besides the information on the next maintenance test and the indication of the battery status, the Orion M1 device provides the user with menu language options (German/English) and option of setting the power frequency (16,7Hz / 50Hz / 60Hz).

## Capacitive interface

- Precise current measurement in  $\mu\text{A}$  (2 x CH)
- Voltage testing symbols for both channels
- Maintenance tests on coupling parts
- Phase-sequence indication
- Frequency setting and battery status

## Voltage quality

- FFT (Fast Fourier Transformation)
- Total harmonic distortion (THD) [%]
- Up to the 40<sup>th</sup> harmonic [%]
- Bar graph for voltage harmonics [%]

## Phase comparison

- Phase angle difference
- Phase balance / phase unbalance symbol
- Phase-sequence indication

According to the German accident prevention standard DGUV Regulation 3 (Table 1c), the device is subject to maintenance tests with minimum intervals of at least 6 years.

Technical data	Orion 3.1	Orion M1
Nominal frequency	50 or 60 Hz	16.7, 50, 60 Hz (adjustable)
Current measurement	–	Measuring range 1: 0–5 $\mu$ A ( $\pm$ 2 %) Measuring range 2: 0–25 $\mu$ A ( $\pm$ 2 %)
Phase angle measurement	–	Measuring range: -180° to +180° ( $\pm$ 1°)
Harmonic voltage measurement	–	Bar graph: 0–5 % / 0–10 % THD: 0–100 % ( $\pm$ 1 %) Harmonic (2–40): 0–100 % ( $\pm$ 1 %)
Indication	RGB-LEDs	RGB LEDs LCD display
Power supply	4 mignon cells; replaceable 6 years of service life, 1,000 operating cycles/year	
Temperature range	–25 to +55 °C	–25 to +55 °C, below -15 °C LED indication only

Dimension drawing see on page 160, M21LWDWR



Orion 3.1	Nominal frequency	Order no.
1 indication unit incl. plastic case, set of measuring cables, 2 HR/LRM adapter	50 Hz	51-0206-101
1 indication unit incl. plastic case, set of measuring cables, 2 HR/LRM adapter	60 Hz	51-0206-102



Orion M1	Nominal frequency	Order no.
1 indication unit incl. plastic case, set of measuring cables, 2 HR/LRM adapter, USB cable, CD with application software, magnetic holder	16.7, 50, 60 Hz	51-0206-201

## Accessories



**LR-LRM adapter**  
Order no. 52-0206-002



**Weva adapter Orion, 104 mm**  
Order no. 10 kV 52-0206-004  
Order no. 20 kV 52-0206-005



**Weva adapter Orion, 130 mm**  
Order no. 10 kV 52-0206-014  
Order no. 20 kV 52-0206-024



**Special adapter (HR/IVIS)**  
Set consists of 2 x red and 2 x black adapters  
Cable length approx. 0.1 m  
Order no. 52-0206-017



**Magnetic holder**  
Part of the Orion M1 set  
Order no. 49-6001-010