



MESSKO® MTO

OIL LEVEL INDICATOR  
FOR TRANSFORMERS.

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# MESSKO® MTO – OIL LEVEL INDICATOR FOR PRECISE OIL LEVEL MEASUREMENT.

MESSKO® oil level indicator from the MTO type series are measuring devices with or without main switching contacts that are especially well-suited for measuring the fill level in transformer oil conservators.

## Design of MESSKO® MTO oil level indicator

The oil level indicator from MESSKO® consists of a housing with a display scale and a float. The float rod transmits the float's stroke movement to a shaft connected to the pointer axis over a magnetic coupling. There are two different drive types for the float: radial and axial. The electrical connection is made out of the connection terminals under a cover panel inside the housing that has the connection diagram printed on it.

The inspection glass consists of laminated safety glass with a UV filter, ensuring the legibility of the digitally printed dials for years to come. The inspection glass is integrated into a metal ring with a seal. The bayonet lock ensures secure closing and protection for moving parts inside the housing.

## Float drive types – radial or axial

The MESSKO® MTO oil level indicator can be ordered with two different float movements relative to the oil conservator:

The design with float movement in a radial direction is ideal for use in standard conservators (without an air cushion).

The design with float movement in the axial direction is ideal for use in narrow or flat conservators where only small amounts of float movement are possible, as well as in conservators without an air pocket. The float movement can be expressed in a ratio of 1:1, 1:2, 1:3 or 1:4.

## Versions of micro-switches (change-over contacts)

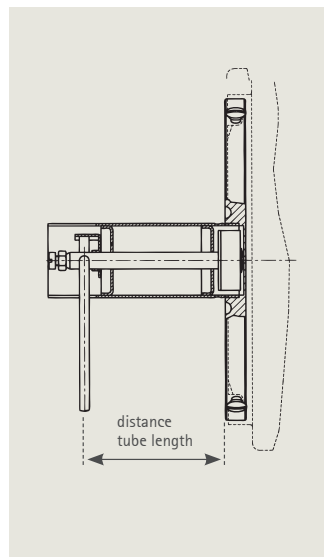
### MESSKO® MTO-ST160 (G)

The colored switching triangles on the dial face are adjustable limit switches (3 micro-switches possible). These switching triangles can be moved over the entire scale range. Color of the switching triangles: MAX = blue, MIN = red

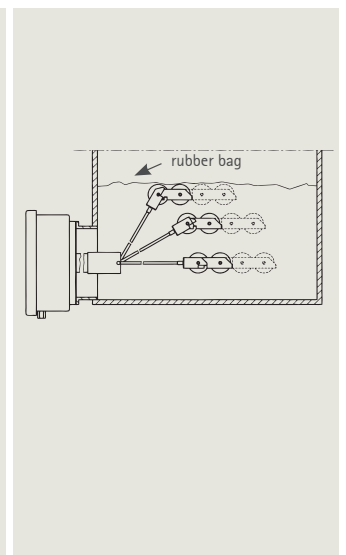
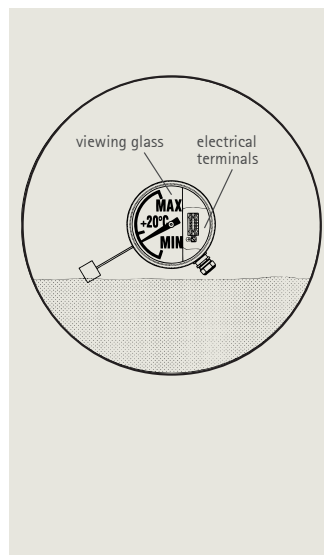
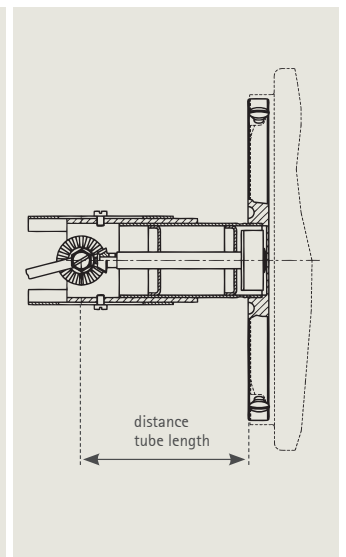
### MESSKO® MTO-STF160 (G)

Permanently set limit switches (max. 3 change-over contacts) are indicated by a line (switching mark) 5° before where MAX/MIN is printed. They are fixed at the factory; subsequent adjustment is not possible.

Float movement in radial direction



Float movement in axial direction



# MESSKO® MTO – BENEFITS AT A GLANCE.

- ▮ Extreme durability and functional reliability
- ▮ No readjustment or recalibration necessary at any point during the service life
- ▮ Radial or axial version with various floats for adapting to different tank geometries
- ▮ Inspection glass made of laminated safety glass with integrated UV filter
- ▮ Scratch-resistant dial faces made with a colorfast digital printing process
- ▮ No switches or a max. of 3 fixed limit switches freely adjustable over the scale range
- ▮ IEC or ANSI-compliant design
- ▮ RS-485 interface
- ▮ Individual scale adjustment

## Optional:

- ▮ Installation with angle of inclination (15°; 30°; 45°)
- ▮ Remote display option over optional TT-30 signal converter
- ▮ Option for connecting an EI 100/160 remote display over TT30
- ▮ Offshore design



## Individual display scales

Thanks to the state-of-the-art digital printing process, additional designs are available on request in addition to the standard display (min 20 °C).

## Example configurations



MTO-STF/TT  
with integrated  
signal converter  
for measured value  
remote transmission



MTO-STF RM  
with IEC or ANSI-  
compliant design



## Optional: Oil level indicator with remote display

In areas where space is limited (installation in a building), for very large transformers, for displaying the oil level in a remote control room or for connecting to a monitoring system, all variants of the oil level indicator can be equipped with permanently set limit switches with the option of an analog or digital output signal.

- ▮ Analog outputs: (optionally adjustable at the factory) – 0 ... 1 mA; – 0 ... 20 mA; – 4 ... 20 mA;
- ▮ Digital RS485 output (optional)
- ▮ K1 micro-switch (specify switching point when ordering)

Electronic displays such as the EI100/160 can be used for visualizing the 4 ... 20 mA signal.

# FEATURE MODULAR KIT FOR OIL LEVEL INDICATORS.

Direct displays  
at the transformer



Switching signal



Matching  
accessories

Signal converter



①



②

③

- ① Signal converter TT
- ② Analog output
- ③ Digital output  
RS485 standard  
(optional)

Switch room /  
Control cabinet



④



⑤

- ④ Electronic  
indicator EI100
- ⑤ Electronic  
indicator EI160

Control room



SCADA-System



Additional  
information:





# MESSKO® MTO – OIL LEVEL INDICATOR WITH OPTIONAL REMOTE DISPLAY.

| MESSKO® MTO   | Technical data  |
|---|---|
| Housing   | Sheet steel, galvanized, standard RAL 7033 color tone, other color tones on request, coated in acrylic resin  |
| Flange  | Aluminum AISi1MgMn  |
| Viewing glass   | Laminated safety glass with UV filter   |
| Cable gland   | Brass, nickel-plated (standard), A4 stainless steel (offshore)  |
| Indicator scale                                       | Aluminum-coated, with UV wide format printing and protective paint  |
| Labeling  | Black, indicator in red daylight luminous paint   |
| Terminals   | min. 0.25 mm <sup>2</sup> / max. 2.5 mm <sup>2</sup>  |
| Float rod   | Aluminum; optional brass for L ≤ 350 mm   |
| Float   | Rohacell 110, oil-resistant, temperature-resistant to 160 °C  |
| Dial lettering  | „MIN“, „+20 °C“, „MAX“ (other lettering possible)   |
| Operating temperature                                 | -40 °C ... +70 °C; limited temperature range with optional TT- box (see below)  |
| Degree of protection                                  | IP55 (DIN EN 60529)   |
| Ventilation   | Ventilation element in the gauge part for avoiding the build up of condensation water   |
| Installation  | Indoors and outdoors, tropic-proof  |
| Adjustable micro-switches:<br>MTO-ST160 (G)           | Up to 3 freely adjustable micro-switches<br>Contact material: Silver alloy (AgNi10)<br>Switching capacity (separating power) AC in accordance with DIN EN 60947-5-1:<br>AC-12: 230 V / 5 A; AC-15: 230 V / 260 mA, 120 V / 500 mA, 24 V / 2 A<br>Switching capacity (separating power) DC in accordance with DIN EN 60947-5-1:<br>DC-12: 220 V / 200 mA, 110 V / 400 mA; DC-13: 220 V / 110 mA, 120 V / 210 mA, 24 V / 1.04 A |
| Permanently pre-set micro-switches:<br>MTO-STF160 (G) | Up to 3 permanently pre-set switches<br>Contact material: Silver alloy<br>AC: 250 V / 15 A / cosφ = 1; DC: 12 V / 5 A (non-inductive); DC: 250 V / 0.25 A (non-inductive)   |

| MESSKO® MTO TT box (optional) | Technical data  |
|-------------------------------|---|
| Housing                       | Cast AISi   |
| Dimensions                    | 120 (L) x 80 (W) x 60 (H) mm  |
| Color                         | Standard RAL 7033 color tone, other color tones on request, coated in acrylic resin |
| Cable gland                   | 2 x M20 x 1.5, nickel-plated brass, offshore variant: A4 stainless steel            |
| Connection plug (optional)    | 9-pin   |
| Installation                  | Indoors and outdoors, tropic-proof  |
| Operating temperature         | -25 °C ... +70 °C   |
| Housing degree of protection  | IP55 (DIN EN 60529)   |
| Supply voltage                | 24 V DC (+/- 15%)   |
| Current draw                  | About 80 mA   |
| Status display                | Power ON (green LED), contact K1 (red LED)  |
| Limit contact                 | 1 x changeover switch   |
| Contact load                  | AC: 250 V / 5 A / cosφ = 1<br>DC: 250 V / 0.3 A (non-inductive)                     |
| Analog output signals         | 0 ... 1 mA, 0 ... 20 mA, 4 ... 20 mA (optional factory setting)                     |
| Digital output signal         | 1 x RS485 at terminals (optional)   |

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Die in allen unseren Publikationen enthaltenen Angaben  
können in Details von dem gelieferten Gerät abweichen.  
Änderungen bleiben vorbehalten.

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THE POWER BEHIND POWER.

