TAPGUARD® 240
TAPGUARD® 260
MONITORING FOR ON-LOAD TAP-CHANGERS.
WWW.REINHAUSEN.COM
Cutting costs through optimized servicing of equipment is an important aspect of remaining competitive. TAPGUARD® 240 and 260 from MR are ideal tools for condition-dependent maintenance of your systems. The monitoring systems were developed specially for servicing MR on-load tap-changers. They provide our customers with reliable condition monitoring based on decades of experience.

The easy way to keep track

Our TAPGUARD® 240 and 260 online monitoring systems make it easy for you to monitor all the relevant parameters of your MR tap changer. They are mainly used in mid- and high-performance network transformers. TAPGUARD® determines service intervals, contact wear and oil carbonization of MR on-load tap-changers. This enables you to reduce the product lifecycle costs of your tap changer, avoid unforeseen downtimes and therefore improve the reliability of your transformer.

TAPGUARD® 260 – monitoring system for the highest expectations

TAPGUARD® 260 gives you even better operational reliability. During every switching process, the device determines additional tap changer operating parameters. If these deviate from the limit values, the TAPGUARD® 260 can block further tap changes to prevent the tap changer and transformer from being damaged.

Our monitoring systems are based on the wealth of knowledge we have accumulated in 50 years of servicing tap changers. They provide our customers with a simple and reliable way of getting the best out of their systems.
The standard monitoring system TAPGUARD® 240 is straightforward in every respect. It is easy to install and its clearly structured information is easy to use.

TAPGUARD® 240 calculates the most important servicing criteria for the on-load tap-changer. The current condition and the time until the next maintenance intervention are indicated. Highly complex calculations, for example to determine the soot content of the oil or the contact wear, run in the background.

**Function**

When the service interval for one of the tap changer’s condition criteria is reached, this is indicated by the TAPGUARD® 240 in two ways. First, the relay contact provides a collective message and second, a graphic indicator appears on the display. A function key on the monitor provides further information for each criterion. Upcoming servicing work can therefore be planned far more efficiently.

**Operation**

TAPGUARD® 240 supports you in your daily work. For example, you can use a criterion – either dependent on number of tap-change operations or time – for your own plant management work, such as a regular plant inspection. A “service life record” indicates the times and scope of all servicing measures.

**Planning, installation and commissioning**

During development, we placed particular emphasis on simple system planning and installation. All the information you need to assess the condition of the tap changer – in particular its load current and tap position – can be obtained from a standard voltage regulator. The TAPGUARD® 240 is therefore designed so that it can be easily used as an add-on to the MR voltage regulators TAPCON® 240, TAPCON® 260, TRAFOGUARD® and ISM® (Integrated Smart Module), but also works as a 19” stand-alone unit.

**Benefits for you when using a TAPCON® voltage regulator with additional TAPGUARD® 240 function**

- No additional sensor wiring
- Up to 90 % of the system planning for the TAPCON® can also be used for the TAPGUARD® 240
TAPGUARD® 260 – CORRECT TAP-CHANGES GUARANTEED.

Because the TAPGUARD® 260 records additional tap changer operating parameters during tap-change operations, it delivers increased operational reliability.

The system uses the load current, temperature, motor-drive data, tap changer torque and contact position to assess online whether every tap-change is performed correctly. In the event of deviations from the preset limit values, the TAPGUARD® 260 can block further tap changes thereby preventing potential damage to the tap changer and transformer. Of course, the parameter limit values can be changed within defined ranges to suit your system.

Features

- TAPcontrol® software for visualization and data parameterization
- Print-out of all relevant data using TAPcontrol® software
- Clear graphic display
- Self-monitoring function
- SID2 card for quick data creation and data base download
- Supportive messages for fault rectification, expandable by customer-specific lists of measures
- Management of all service data of up to three diverter switch insert sets (e.g. for process transformers)
- Simple integration of TAPGUARD® 260 in the existing control and protection technology using existing standard protocols, e.g. IEC 61850, DNP 3.0, IEC 60850-101, 103, Modbus RTU, Modbus ASCII
- Grouping of all monitoring functions in the relevant logical nodes within the IEC 61850
- Optional software module for cooling system control – including aging calculation for the transformer in accordance with ANSI loading guide, IEC 354 or EN 60076-7
- Retrofit solution for existing tap changers on request
- Optional provision of data for transformer monitoring and control technology systems
- Direct communication between TAPGUARD® 260 and TAPCON® ISM® (IEC1850) – the transfer of the required regulation data is carried out by a simple network cable, an installation of several cables is not necessary
### TAPGUARD® 240, TAPGUARD® 260 TECHNICAL DATA.

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MORE POWER – MORE VALUE.
Correct tap-changes guaranteed.

Reduction of life-cycle costs
- Condition-based maintenance reduces the product lifecycle costs of your on-load tap-changer
- Greater transformer availability and therefore fewer periods of non-supply of electrical energy
- Optimized servicing improves transformer reliability and availability
- Efficient planning of repairs

Maximum operational reliability
- High resistance to electromagnetic interference (EMC)
- Enhanced protection with TAPGUARD® 260 by recording and evaluating additional operating parameters and automatically blocking the motor-drive unit in the event of errors
- Audited in accordance with BDEW White Paper
- Encryption algorithms in accordance with BSI recommendation
- OpenSSH and SFTP
- Password protection for all interfaces (saved as hash)

Quick and easy installation
- Clamp/plug method (Easy-Cable connection)
- TAPGUARD® 240 can be used with TAPCON® 240 or TAPCON® 260 voltage regulators (19” devices) as well as with TRAFOGUARD® and ISM® (Integrated Smart Module) without additional hardware or sensor wiring
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Please note:
The data in our publications may differ from the data of the devices delivered. We reserve the right to make changes without notice.

IN3756304/02 EN – TAPGUARD® 240 – TAPGUARD® 260
F0317502 – 02/17 – uw
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