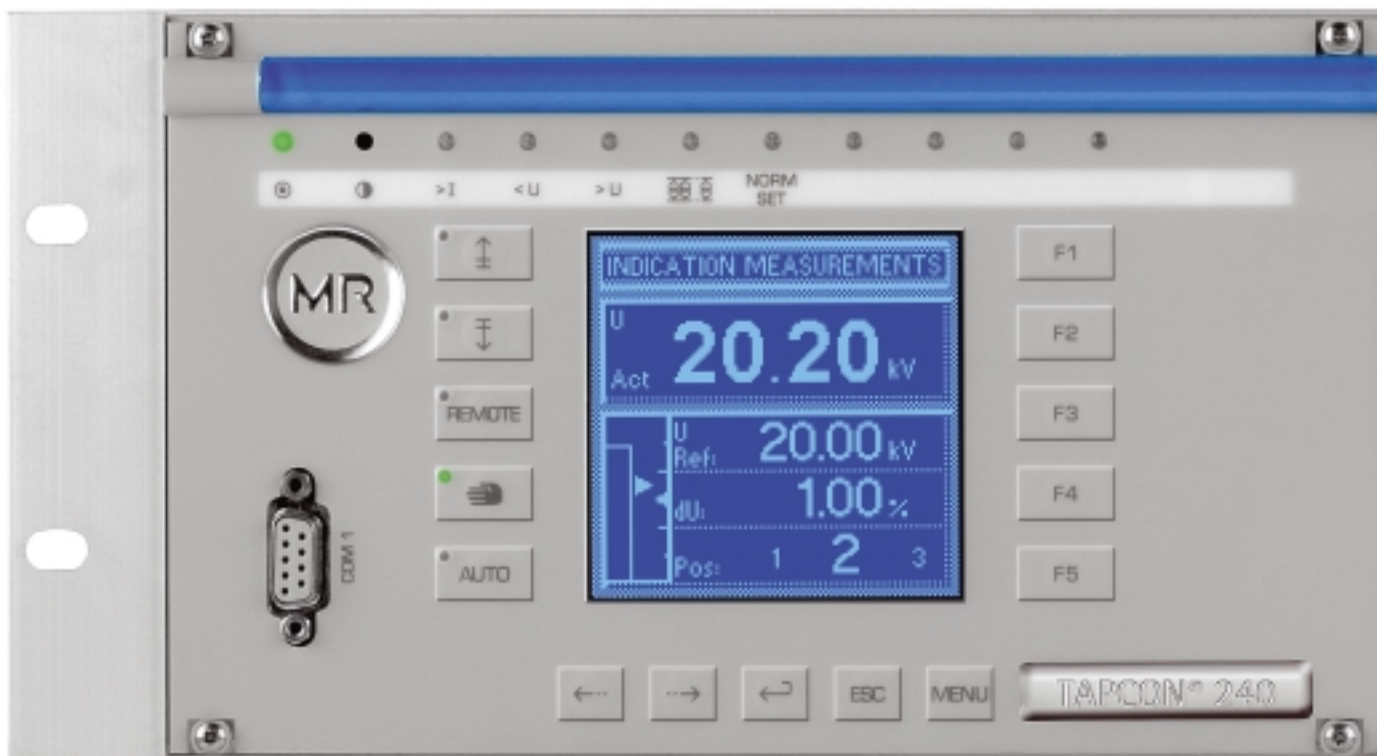


TAPCON® 240

Voltage Regulator
for Regulating Transformers



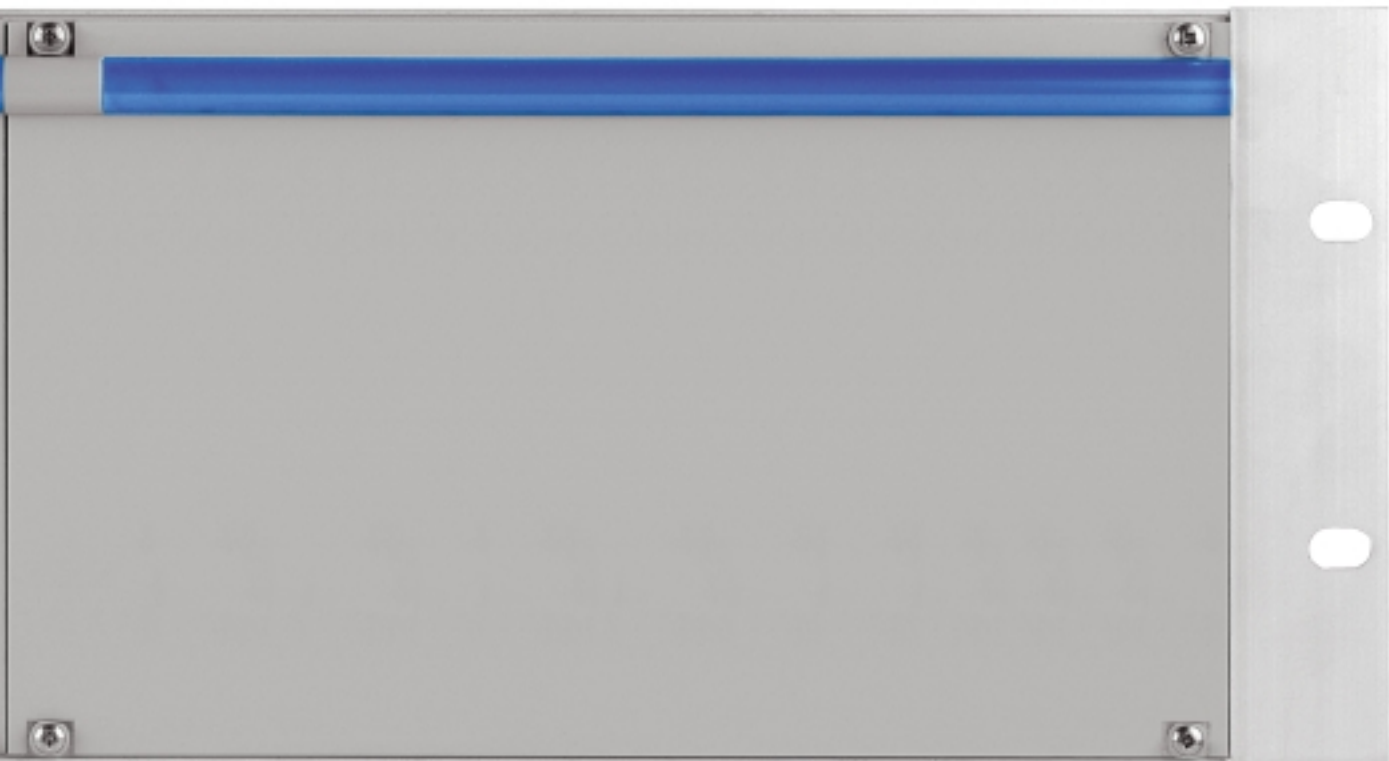


TAPCON® – The next generation of voltage regulators

TAPCON®: a name which is synonymous for an entirely new and ground-breaking series of voltage regulators uniquely designed by Maschinenfabrik Reinhausen (MR). Be it simple control tasks or complex and sophisticated control systems (e. g. for phase-shifter transformers) – the voltage regulators of the TAPCON® series are suitable for all applications. Their chief characteristic is ease of operation, coupled with the degree of reliability typical of all MR products. The development of this new product is based both on experiences gained from the previous generation and on specific user requests. The product's elegant BLUE Line design will be an optical enhancement to every control room.

Plug-and-play with NORMset

TAPCON® 240 is the 19" version of the new product family. Its clear, well-arranged and large display (128 x 128 dot) makes commissioning very easy. Thanks to the new standard function called NORMset, the only thing to do for the user is to enter the voltage level and the voltage transformer ratio. The device takes care of all the rest. Needless to say, parameterization can also be performed manually or via the Windows based P.C. visualization software. Should input errors occur, the reset-function shortly gives the factory preset parameter values.



The scope of equipment delivered

- **Clear and well-arranged display**

At a single glance: indication of mains voltage and on-load tapchanger position. No need for additional displays in the switching cabinet.

- **Rapid installation**

All cable leads are outfitted with plug connectors, which are directly connected to terminals inside the switching cabinet.

- **Parallel control of transformers**

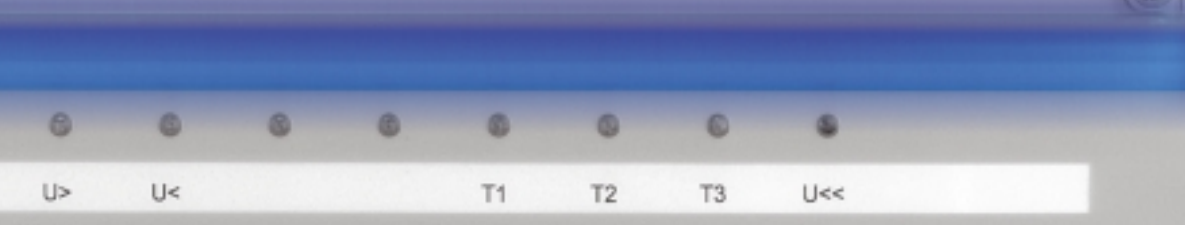
- Parallel operation according to the principle of minimum circulating reactive current or Master/Follower method.
- The implementation of a CAN-bus system allows parallel control, in standard cases, of two groups featuring n participants without an additional control device.
- One of the options available is system topology detection in a multiple bus bar system. In that case, the regulators will detect automatically which of the transformers are engaged in parallel operation. There is no need for an additional control device, too.

- **Freely programmable inputs and outputs**

Certain inputs and outputs can be connected and/or assigned for further processing by the customer, which saves wiring work.

- **Easy extensions**

All modules are connected by a bus connection. This allows for simple retrofit and extension of additional functionalities. Software updates are performed via parametering interfaces and flash programming.



Measured value memory (optional)



Edit menu (with help text)



TAPGUARD™ (optional)

The options

- (Cross) monitoring of a voltage regulator**
 By another voltage measuring input it will also be possible to autonomously monitor a further voltage regulator.
- Serial interfaces to operation control system**
 In addition to communication protocols to all renowned manufacturers of operation control systems, we also provide protocols corresponding to IEC 60870-5-101 and IEC 60870-5-103.
- Measured value memory, record function**
 The time characteristic of a measuring-circuit voltage is recorded in a separate measured value memory and can be recalled either via display, or via P.C. using the visualization software.
- Second measurement input**
 For special applications, e. g. the regulation of three-winding transformers, a second, electrically insulated measurement input for power and voltage is available.
- TAPGUARD™**
 Condition-based maintenance of your MR on-load tap-changer OILTAP®. Based on the variables, current and tap position present in the voltage regulator, the equipment will calculate all the relevant maintenance deadlines for your OLTC, thus helping to save considerable maintenance costs for your OLTC.



TAPCON® 240: Setting ranges

	Range
Desired voltage level 1 ... 3	60 ... 160 V
Bandwidth	$\pm 0.5 \dots \pm 9 \%$
Delay time T1	1 ... 600 s
Delay time T2	1 ... 10 s
Switching pulse duration	1.5 s
LDC	Ur = 0 ... ± 25 V Ux = 0 ... ± 25 V
Z compensation selection	Voltage rise 0 ... 15 % of desired voltage level Limitation 0 ... 15 % of desired voltage level
Undervoltage blocking	60 ... 100 % of desired voltage level
Overvoltage detection with high speed return control (interruptible)	100 ... 140 % of desired voltage level Pulse signal 1.5 / 1.5 s
Overcurrent blocking	50 ... 210 %
Voltage transformer	0.1 ... 999.0 kV / 100 V
Current transformer	100 ... 10.000 A / 5 / 1 / 0.2 A

TAPCON® 240: Operation elements, display

Function keys	Manual / Automatic Raise / Lower Menu keys
Display	Monochromatic display with graphics capabilities, 128 x 128 dot 1 LED lamp (green) for operating status 1 LED lamp (yellow) for signalling, "parallel operation active" status 1 LED lamp (red) each for signalling U<, U>, I> 1 LED lamp (green) for signalling "NORMset active" status 3 LED lamps (yellow) for random assignment 1 LED lamp (yellow / green / red) for random assignment
Power supply	DC 36 ... 72 V, 18 ... 32 V on demand AC/DC 88 ... 265 V Power consumption approx. 25 VA
Protective housing	19" rack 483 x 133 x 178 mm (W x H x D) Degree of protection: IP 00 according to IEC 60529 Weight approx. 5 kgs
Operating temperature	- 25 ... +70° C
Storage temperature	- 35 ... +80° C

