



TAPCON[®] 230

USER-FRIENDLY,
FLEXIBLE AND RELIABLE.

TRANSFORMER CONTROL



TAPCON® 230 – THE NEW STANDARD IN VOLTAGE CONTROL.



Maschinenfabrik Reinhausen (MR) has been developing and manufacturing voltage regulators for over 40 years. Today thousands of them provide reliable service worldwide, in some cases under extreme conditions of use. Our TAPCON® 230 series combines this extensive expertise with maximum customer benefit.

Major improvements – maximum customer benefit

The TAPCON® 230 series offers an impressive number of product improvements and therefore concrete customer benefits. Prepare to be impressed by its rapid installation, simple operation and flexible communication options. Our test engineers achieved major advances in quality during the development phase: not just from additional checks using product and process FMEAs (failure mode and effect analyses) but also through extensive type testing, far surpassing the requirements of the relevant standards. For example, the TAPCON® 230 is setting standards in immunity to interference.

Every single TAPCON® 230 has to pass a series of strict tests before it leaves our factory. All devices undergo automatic optical inspections, in-circuit tests, burn-in-tests and high-voltage tests. Only if

the hardware is fully free from faults can the firmware be loaded. The function tests then follow. If everything is in order, our experts sign the test report and the TAPCON® 230 can go out to the customer in its robust packaging. Then and only then does it meet our standard of maximum quality for faultless operation.



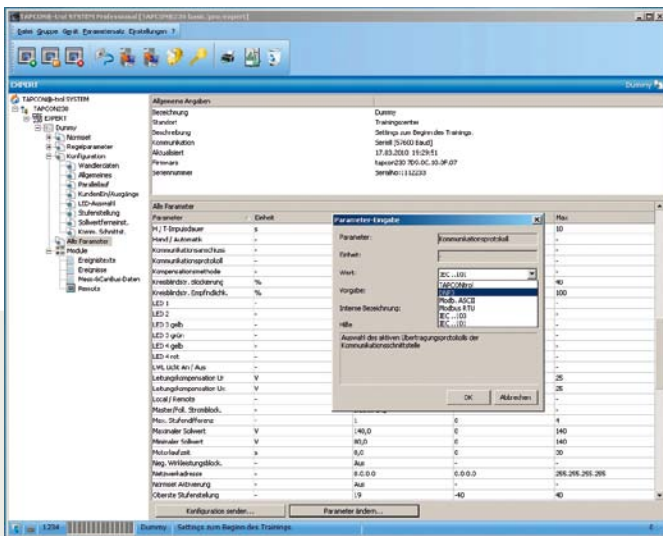
THE VOLTAGE REGULATOR FOR STANDARD APPLICATIONS – WITH IEC61850.

Measuring, controlling and regulating – the TAPCON® 230 voltage regulator provides all these functions in one device.



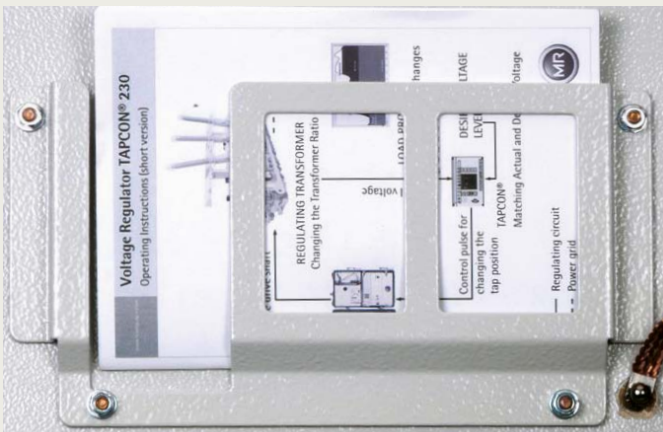
Intuitive and easy to operate

- Clear display/signaling by means of graphic display with logical menu structure and LEDs of different colors, some of which can be freely configured
- User-friendly arrangement of control and function keys
- Display languages: German, English, Italian, Spanish, Portuguese, French and Russian



Convenient and time-saving parameterization via TAPCON®-trol

- Complete parameterization using "MR-Suite" PC software
- Local parameterization possible via RS232 front interface
- TAPCON® 230 expert remote parameterization via Ethernet
- Real-time remote control



Modular, task-oriented documentation for mounting, commissioning and operating control

- Connection diagram as slide-in module in device
- Installation and commissioning instructions
- Operating instructions
- Quick reference guide in the device



Flexible choice of control system communication

- Protocols and interfaces to SCADA can be selected on the device
- For IEC60870-5-101/ -103, ModBus ASCII & ModBus RTU, DNP 3:
 - RS232 or RS485
 - CAN bus
 - RJ45 Ethernet
 - FO serial (optional)
- For IEC61850:
 - FO Ethernet
 - RJ45 Ethernet



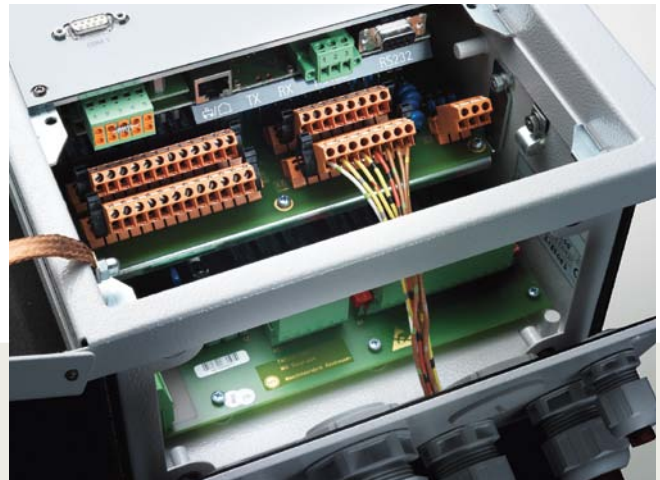
Reliable device technology with various mounting options

- Steel-sheet housing, powder-coated
- IP54 level of protection
- Housing can be locked
- Door can be unhinged
- Various mounting options:
wall, installation, cap rail
- Entire base plate can be taken off/removed



Large cable connection space for simple wiring and measurements

- Modern "Easy Cable" screw connection method
- Plenty of space for cable connections
- Cable screw connections of various sizes for traction relief and sealing the connecting leads



TAPCON® 230 – other special features

- Tap positions captured by analog value or BCD code
- Automatic calibration function for capturing tap positions for resistor contact series
- All-in-one mains unit, 88 – 265 V AC/DC
- Additional mains unit to supply the digital inputs on TAPCON® 230 pro and expert

THREE MODELS – THE RIGHT DEVICE FOR EVERY APPLICATION.

Excellent technology in a state-of-the-art housing design – available in three variants (basic, pro and expert), the TAPCON® 230 covers all requirements.



TAPCON® 230

Functions			basic	pro	expert
Mounting variants	Design		x	x	x
	Installation		x	x	x
	Cap rail		o	o	o
Monitoring	Limit values	I>, U>, U<	x	x	x
	General	Status, function monitoring	x	x	x
Power supply	AC or DC	88-265 V DC/AC	x	x	x
	Transformer power supply	88-265 V DC/AC	x	x	x
	Additional mains unit	70-210 V DC to supply the digital inputs		x	x
Customer-specific	Inputs/outputs	Digital	x	x	x
	LED selection	Red, green, yellow	x	x	x
	Input	Analog		x	x
Parallel operation	Integrated	Circulating reactive current minimization, master / follower		x	x
Tap position	Capture	BCD, dual, gray code, 0(4)-20 mA, potentiometer		x	x
	Output	BCD		x	x
Interfaces	Control system protocol	IEC60870-5-101/ -103, ModBus ASCII and ModBus RTU, DNP 3			x
	Hardware CI card	RS232; RS485			x
		RJ45 Ethernet			o
		Fiber Optic (serial)			o
	Control system protocol	IEC61850			x
	Hardware IEC61850 card	RJ45 Ethernet			x
Fiber optic - FO-LC plug (Ethernet)				x	

Standard = x Optional = o

TAPCON® 230

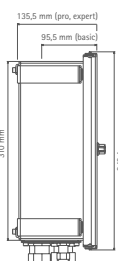
TECHNICAL DATA.

TAPCON® 230: Setting ranges

	Range
Desired values 1 ... 3	49 ... 140 V
Bandwidth	0.5 ... 9.0%
Delay time T1	0 ... 600 s
Delay time T2	1 ... 10 s
Switching pulse duration	0 ... 10 s
Line drop compensation	U_R : -25 ... +25 V U_X : -25 ... +25 V
Undervoltage blocking	60 ... 100 % of desired value
Overvoltage blocking with high-speed return (can be deactivated)	100 ... 140 % of desired value
Undercurrent blocking	0 ... 210 %
Overcurrent blocking	50 ... 210 %
Voltage transformer	0 ... 9999 kV / 57 ... 113 V
Current transformer	0 ... 9999 A / 1 or 5 A

TAPCON® 230 protective housing

	basic	pro	expert
Housing (W x H)	198 x 310 mm		
Depth	95.5 mm	135.5 mm	
Door (W x H)	242 x 343 mm		
Weight	6.0 kg	6.8 kg	7.0 kg



Control system communication (only TAPCON® 230 expert)

	RS232	RS485	Fiber optic (FO) (serial)	RJ45 (Ethernet, only TCP)	Fiber optic (FO) (Ethernet)
TAPCON®-trol	x	x	o	x	
DNP3 (level 2)	x	x	o	x	
MODBUS ASCII	x	x	o		
MODBUS RTU	x	x	o	x*	
IEC60870-5-101	x	x	o		
IEC60870-5-103	x	x	o		
IEC61850				x	x

* doesn't apply to Modbus TCP, but Modbus RTU via TCP
Standard = x Optional = o

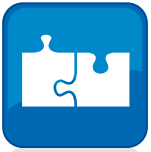
MORE POWER, MORE VALUE.

Be on the safe side when operating on-load tap-changers.
With our expert knowledge and the voltage regulators of the TAPCON® series.



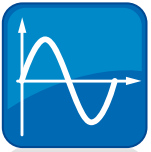
Quick and reliable

- "MR-Suite" PC software or directly on the device
- Option of remote parameterization via Ethernet
- Various mounting options
- Simple integration into its environment thanks to flexible choice of control system communication



Different variants available

Three variants with different ranges of functions cover all requirements



Graphic display

- Clear display directly on device and simple operation
- Six standard languages pre-installed



Maximum operational reliability

Lockable steel-sheet housing in accordance with IP54 level of protection



Maschinenfabrik Reinhausen GmbH

Falkensteinstrasse 8
93059 Regensburg, Germany

Phone: +49 941 4090-0

Fax: +49 941 4090-7001

Email: info@reinhausen.com

www.reinhausen.com

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.

IN2106859/04 EN – TAPCON® 230 –

F0200203 – 05/13 – uw –

©Maschinenfabrik Reinhausen GmbH 2013

THE POWER BEHIND POWER.

