

# REACTIVE POWER REGULATORS



Regulators



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Reactive power regulators

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# REACTIVE POWER REGULATORS

Reactive power regulators

## AUTOMATIC REACTIVE POWER REGULATOR REG 144

Instrument with microprocessor, programmable, display indicator for measurements, and built-in keypad.

- DIN 144 x 144 INSTRUMENT
- LCD DISPLAY
- COS  $\phi$  DISPLAY
- AUTOMATIC SELF ADJUSTMENT FOR C/K VALUE
- AUTOMATIC STEP SETTING FOR CONNECTED CAPACITORS
- RS485/RS232 COMMUNICATION (optional)



### DISPLAY

ELECTRICAL PARAMETER	Symbol	L1	L2	L3	SYSTEM
Voltage	V	•	•	•	
Current (ref. to the secondary)	A				•
Frequency	Hz				•
Active power (P)	kW				•
Reactive power (Q)	kVAr				•
Apparent power (S)	kVA				•
Power factor (cos $\phi$ )	PF				•
Connected steps					•
Operating program					•
Correct transformer connection					•

### MODEL

- REG-144**
- 6 Output relays
  - 9 Output relays
  - 12 Output relays
  - 14 Output relays

Output relays            6, 9, 12 or 14  
 Series output            485-RS232 (optional)

### SETTING

#### Mode 1: Automatic

Automatically checks the connected capacitor steps. (Automatic self adjustment for C/K value). Prevents mistakes through poor current transformer or phase connection.

#### Mode 2: Manual

### CONTACT OUTPUTS

Type:                            Voltage free contacts (relays).  
 Number of outputs        6, 9, 12 or 14 (according to model).

### SERIES OUTPUT (optional)

- Type:                            RS485  
 - Protocol                        MODBUS RTU  
 - Transmission speed:  
    Programmable  
    300 - 19200 bauds.  
    Standard 9600 bauds.

### LCD DISPLAY

- LCD display with built-in keypad.
- Height of digits: 14 mm.
- Pages selectable with up ( $\uparrow$ ) and down ( $\downarrow$ ) keys.

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## TECHNICAL SPECIFICATIONS

### INPUT

3-phase, 4 wire, balanced.  
 Rated voltage (Un) 230 or 400 V  $\pm$ 50%  
 Burden 5 VA  
 Operating range 10-120 % Un  
 Rated current (In) ..1/5 or .../1 A  
 Burden 0,2 VA  
 Operating range 4 -120 % In  
 Frequency 45-65 Hz  
 Overload 2 In (continuously) 5 In (10 s.)

### OUTPUT CONTACTS

Number of outputs 6, 9, 12 or 14 (according to model)  
 Type N.O. relay  
 250 V, 3 A  
 Mechanical life 20x10<sup>6</sup>  
 Electrical life 100x10<sup>3</sup>  
 Maximum voltage 250 V ac./125 V ac.  
 Connection delay 4 s.  
 Security time 10 s.  
 Insulation 2 kV

### SERIES OUTPUT (optional)

Type RS485/RS232  
 Connection 2 Wires  
 Transmission speed Programmable  
 Max. No. of instruments per line 9600 bauds  
 Max. No. of instruments per line 32  
 Max. length of system per line (without amplifier) 1250 m

### AUXILIARY VOLTAGE

Aux V. Self supplied

## GENERAL FEATURES

Case material Metal+ABS, UL94 V0  
 Dimensions DIN 144 x 144 mm (82 depth)  
 Terminals Pluggable  
 Max. wire diameter 2,5 mm<sup>2</sup>  
 WEIGHT 1,75 kg  
 Protección IP54 (front)  
 IP20 (Terminals)  
 Electrical safety (EN 61010) Class 2  
 Category III

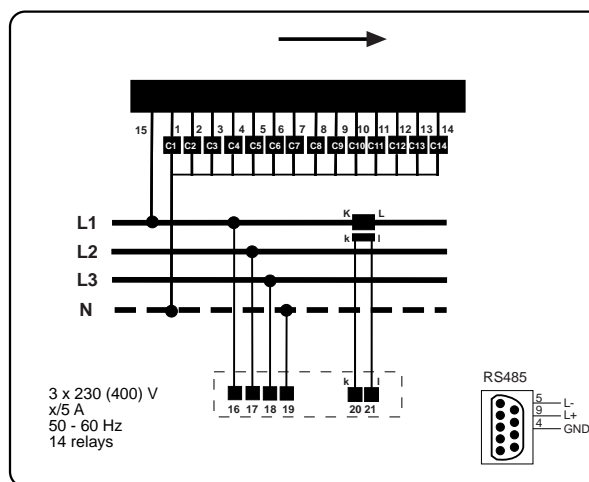
## ACCESSORIES

x/5 A or x/1 A transformers  
 5+5+5/5 A summation current transformers  
 RS232 / RS485 converters

## ACCURACY

Parameter	Operating range	Accuracy
Voltage	10-120 %	0.5% (read.+ scale end)
Current	4-120%	0.5% (read.+ scale end)
Active power	10-150%	0.5% (read.+ scale end)
Reactive power	10-150%	1% (read.+ scale end)
Apparent power	10-150%	1% (read.+ scale end)
Power factor	0-1-0	1% (of 120° electr.)
Frequency	45-65 Hz	0.1% (rated freq.)

## CONNECTION DIAGRAM





# REACTIVE POWER REGULATORS

Reactive power regulators

## OUTPUT CONTACTS

Number of outputs	6, 9, 12 or 14 (according to model)
Type	N.O. relay 250 V, 3 A
Mechanical life	20x10 <sup>6</sup>
Electrical life	100x10 <sup>3</sup>
Maximum voltage	250 V ac./125 V ac.
Reclosing delay	4 s.
Security time	10 s.
Insulation	2 kV

## AUXILIARY VOLTAGE

aux V. 63.5/110 V or 230/400 V AC. ± 20 %

## ACCURACY

Parameter	Operating range	Accuracy
Voltage	10-120 %	0.5% (read.+ scale end)
Current	4-120%	0.5% (read.+ scale end)
Active power	10-150%	0.5% (read.+ scale end)
Reactive power	10-150%	1% (read.+ scale end)
Apparent power	10-150%	1% (read.+ scale end)
Power factor	0-1-0	1% (of 120° electr.)
Frequency	45-65 Hz	0.1% (rated freq.)

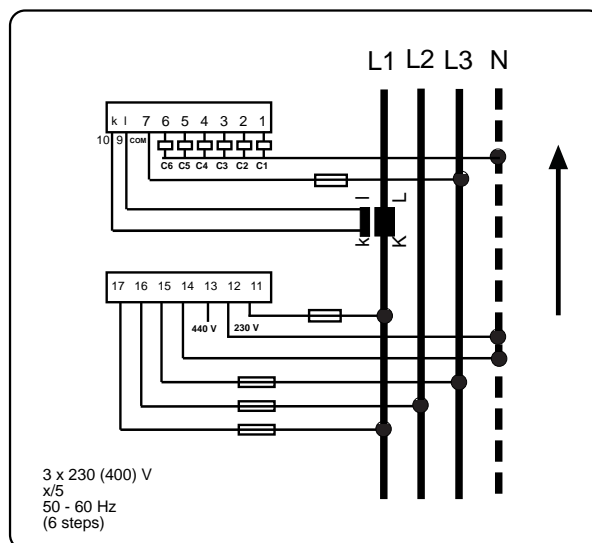
## GENERAL FEATURES

Case material	Metal+ABS, UL94 V0
Dimensions:	DIN 96 x 96 mm (74 depth)
Terminals	Pluggable
Max. wire diameter	2,5 mm <sup>2</sup>
WEIGHT	1,75 kg
Protection	P54 (front) IP20 (terminals)
Electrical safety (EN 61010)	Class 2
Category III	

## ACCESSORIES

x/5 A or x/1 A transformers  
5+5+5/5 A summation current transformers

## CONNECTION DIAGRAM



# REACTIVE POWER REGULATORS

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## REACTIVE POWER REGULATOR REG 144 D

Reactive energy regulators measure the system  $\cos \phi$  and regulate the capacitor connection and disconnection to correct it.

- DIN 144x 144 INSTRUMENT
- LCD DISPLAY
- $\cos \phi$  DISPLAY
- PROGRAMMABLE



### DISPLAY

ELECTRICAL PARAMETER	Symbol	SYSTEM
Cos $\phi$ value (inductive)	PF	•
Cos $\phi$ value (capacitive)	PF	•
No. of connected and disconnected steps	Hz	•

### MODEL

- **REG-144D** - 6 Output relays
- 12 Output relays

Output relays - 6 or 12

### SETTING

See Instruction manual

### CONTACT OUTPUTS

Type: Voltage free contacts (relays).  
 Numbers of outputs: 6 or 12 (according to model).

### DISPLAY LCD

- LCD display
- 1 line x 3 digits x 7 segments

### TECHNICAL SPECIFICATIONS

#### INPUT

3-phase, 4 wire, balanced.  
 Rated voltage ( $U_n$ ) 110, 230, 400 or 480 V  
 Operating range -10 / +15 %  $U_n$   
 Rated current ( $I_n$ ) ..5 A  
 Operating range 2 -120 %  $I_n$   
 Accuracy 45-65 Hz  
 Burden 3VA (6 steps), 4VA (12 steps)

#### OUTPUT CONTACTS

Number of outputs 6 or 12 (according to model)  
 Type N.O. relay  
 250 V, 4 A  
 Insulation 2 kV

#### AUXILIARY VOLTAGE

Aux V. Self supplied

### GENERAL FEATURES

Case material ABS, UL94 V0  
 Dimensions: DIN 144 x 144 mm (50 depth)  
 Terminals, max. wire diameter 2,5 mm<sup>2</sup>  
 Weight 0,540 kg  
 Protection IP54 (front)  
 IP20 (terminals)  
 Electrical safety (EN 61010) Class 2  
 Category III

### ACCESSORIES

x/5 A or x/1 A transformers  
 5+5+5/5 A summation current transformers

### ACCURACY

Parameter	Operating range	Accuracy
Voltage	-10/+15%	1%
Current	2-120%	1%
Power factor	0-1-0	2%+-1 digit
Frequency	45-65 Hz	0.1% (rated freq.)

### CONNECTION DIAGRAM

