

P o w e r

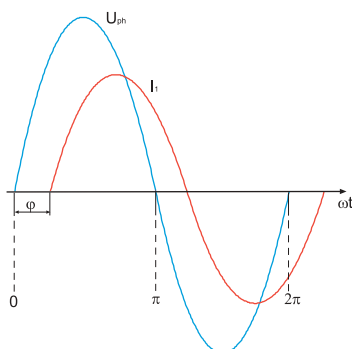
F a c t o r

C o n t r o l l e r

Prophi[®]



Professional Power Factor Control





Power Factor Controller

Application

Reactive power compensation plants are used to decrease the load of cables and power distributions caused by inductive currents and to save reactive power costs. The power factor controller is a main part of such a plant and connects or disconnects capacitor stages automatically. The power factor controller Prophi is suitable for the use in conventional or dynamic reactive power compensation systems, and a mixed operation is possible as well.



General operation

The one phase electronic measuring system detects the reactive and real vectors of current via current and voltage path. By means of these values the controller computes the phase divergence between the fundamentals of current and voltage, and compares it to the set phase divergence. In case of a difference capacitor contactors will be switched on or off. Here the reactive power controller distinguishes the switching of capacitors via contactors or semiconductor switches. The controlling via capacitor contactors is carried out optimized, which means, that the target cos-phi is reached by as less switching operations as possible. Transistor outputs for the controlling of semiconductor switches compensate any difference.

Overtemperature disconnection

With the overtemperature disconnection connected stages can be disconnected to lower the inner temperature and to protect the capacitors. An upper and lower limit can be set with a switch off time.

Ventilator control

One relay output can be used for ventilator control, where an upper and lower limit is programmable.

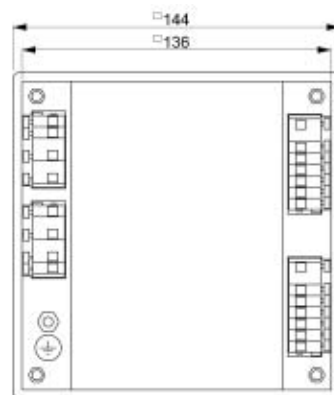
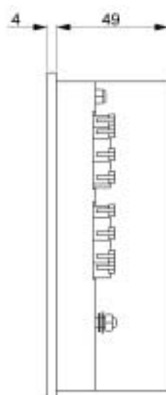
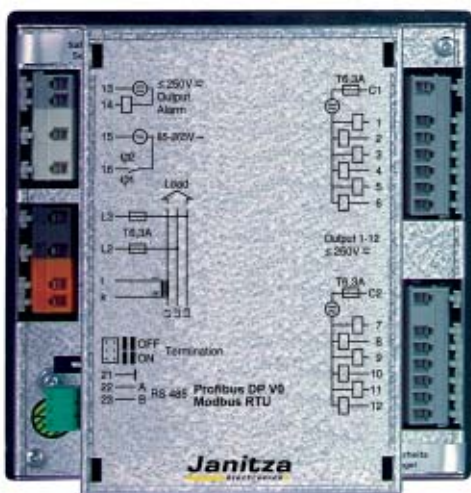
Properties

- Indication of U, I, f, Q, P, S, cos-phi, all odd harmonics from 1-19 of current and voltage
- Indication of the capacitor currents measured indirectly
- Indication of the switching operations of each capacitor stage
- Indication of the total switch-on-time of each capacitor stage
- Zero voltage releasing within 15 ms
- Choke degree in % for each stage programmable from 0-20%
- Setting of the discharge time for all contactor stages of 0-1200 seconds.



- Capacitor power programmable for each stage
- Temperature feeler for ventilator control
- Overtemperature disconnection programmable
- Controlling of external semiconductor switches (max. 50 switchings per second)
- Current transformer input for $\approx 1A$ and $\approx 5A$
- Automatic or manual configuration
- Password protection
- External switchable target cos phi
- Alarm output programmable for
 - Under voltage recognition
 - Over voltage recognition
 - Under compensation
 - Current interruption
 - Measuring current exceeding
 - Harmonic threshold
 - Supply of real power
 - Overtemperature

Technical data



Type Prophi	3R	3T	6R	6T	12R	12T	6R6T
Relay outputs (conventionally)	3		6		12		6
Transistor outputs (dynamically)		3		6		12	6
Alarm output	○	○	●	●	●	●	●
Change over of target-cos-phi 1/2	○	○	○	○	●	●	●
Measurement. and supply voltage	●	●	●	●	●	●	●
400V AC (+10%,-15%) ¹	●	●	●	●	●	●	●
Interface RS485 ²	○	○	○	○	⦿	⦿	⦿
Profibus DP ²	○	○	○	○	⦿	⦿	⦿
Modbus RTU ²	○	○	○	○	⦿	⦿	⦿

- = existing
- = not possible
- ⦿ = optional

*1 Option measurement and supply voltage 100V, 110V, 200V, 230V, 440V AC (+10%,-15%)

*2 not possible for 50 switchings per second

Technical data

Over voltage class:	III
Pollution degree:	2
Ambient temperature:	-10°C .. +55°C
Storage temperature:	-20°C .. +60°C
Mounting position:	any
Protection class:	1=device with protective wire
Measurement and auxiliary voltage Uh:	(see versions)
Power consumption:	max. 7VA
Frequency of fundamental:	45Hz .. 65Hz
Current measurement:	.. /5A (1A)
Power consumption:	ca. 0,2 VA
Minimum working current:	10 mA
Measuring rate:	30 measurements per second (50 measurements per second)
Actualisation of display:	1 time per second
Tariff changeover (option)	
Current consumption:	ca. 2,5 mA .. 10 mA
Semiconductor outputs (option)	
Relay outputs	
Switching voltage:	max. 250 VAC
Switching power:	max. 1000W

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Representative