

Varlogic N power factor controller

A new range of power factor controllers designed with two benefits in mind:

Simplicity

- simplified programming and possibility of intelligent self set-up,
- ergonomic layout of control buttons.

User-friendliness

- large, easy to read backlit display,
- easy to use, intuitive menus,
- direct display of main measurements.



The Varlogic N power factor controller:

- analyses and provides information on network characteristics
- controls the reactive power required to obtain the target power factor
- monitors and provides information on equipment status
- communicates on the Modbus network (Varlogic NRC12).

Varlogic NR6 and NR12



User-friendly interface

The backlit display allows:

- direct viewing of installation electrical information and capacitor stage condition,
- direct reading of set-up configuration,
- intuitive browsing in the various menus (indication, commissioning, configuration),
- alarm indication.

Performance

- access to a wealth of network and capacitor bank data,
- new control algorithm designed to reduce the number of switching operations and quickly attain the required power factor.

Simplified installation and set-up

- quick and simple mounting and wiring,
- insensitive to current transformer polarity and phase rotation polarity,
- a special menu allows controller self-configuration.

Monitoring and protection

Alarms

- should an anomaly occur on the network or the capacitor bank, alarms are indicated on the screen and alarm contact closure is initiated,
- the alarm message is maintained on the screen once the fault clears until it is manually removed.

Protection

- if necessary, the capacitor steps are automatically disconnected to protect the equipment.

Varlogic NRC12

An even greater level of information and control

In addition to the functions of Varlogic NR6/NR12, the Varlogic NRC12 provides the following additional features:

- measurement of total current harmonic distortion,
- spectral analysis of network harmonic currents and voltages,
- immediate display of the network's main parameters,
- possibility of a dual target power factor,
- configuration possible with fixed step,
- step condition monitoring (capacitance loss),
- on-line user help menus.

A communicating model

- optional communication auxiliary (RS485 Modbus).



Technical data

General data

- operating temperature: 0...60°C
- storage temperature: -20°C...60°C
- colour: RAL 7016
- standards: EMC: IEC 61326
electrical: IEC/EN 61010-1.
- panel mounting or mounting on 35 mm DIN rail (EN 50022)
- protection class in panel mounting: front face: IP41
rear face: IP20
- display: NR6, NR12 type: 65 x 21 mm backlighted screen
NRC12 type: 55 x 28 mm backlighted screen
languages: English, French, German, Portuguese, Spanish
- alarm contact
- internal temperature probe
- separate fan relay contact
- access alarm history.

Inputs

- type of connection: phase-to-phase or phase-to-neutral
- insensitive to CT polarity
- insensitive to phase rotation polarity
- current input: NR6, NR12 type: CT... X/5 A
NRC12 type: CT... X/5 A and X/1 A

Outputs

- potential free output contacts: AC: 1 A/400 V, 2 A/250 V, 5 A/120 V
DC: 0.3 A/110 V, 0.6 A/60 V, 2 A/24 V

Settings and parameters

- target $\cos \varphi$ setting: 0.85 ind...0.9 cap
- possibility of a dual $\cos \varphi$ target (NRC12 type)
- manual or automatic setting of all controller parameters
- a choice of programs: linear, normal, circular, optimal
- main step sequences: 1.1.1.1.1 - 1.2.2.2.2 - 1.2.3.4.4 - 1.1.2.2.2 - 1.2.3.3.3 - 1.2.4.4.4 - 1.1.2.3.3 - 1.2.4.8.8
- custom-made sequences possible on the NRC12
- stage delay between successive switching:
 - NR6, NR12 type: 10 ... 600 s
 - NRC12 type: 10 ... 900 s
- step configuration programming: fixed, auto, disconnected (NRC12 type)
- 4-quadrant operation for generator application (NRC12 type)
- manual switching.



Type	Number of step output contacts	Supply voltage (V) 50-60 Hz network	Measuring voltage (V)	References
NR6	6	110-220/240-380/415	110-220/240-380/415	52448
NR12	12	110-220/240-380/415	110-220/240-380/415	52449
NRC12	12	110-220/240-380/415	110-220/240-380/415-690	52450

Varlogic N accessories	References
Communication RS485 Modbus auxiliary for NRC12	52451
Temperature external probe for NRC12. In addition to internal probe, allows measurement at the hottest point inside the capacitor bank. Better tuning of alarm and/or disconnection level.	52452

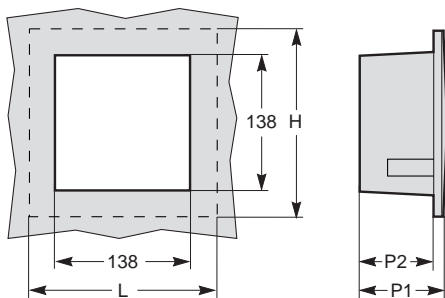
Information supplied	NR6/NR12	NRC12
Cos φ	■	■
Connected steps	■	■
Switching cycles and connected time counter	■	■
Step configuration (fixed step, auto, disconnected)		■
Step output status (capacitance loss monitoring)		■
Network technical data: load and reactive currents, voltage, powers (S, P, Q)	■	■
Ambient temperature inside the cubicle	■	■
Total voltage harmonic distortion THD (U)	■	■
Total current harmonic distortion THD (I)		■
Capacitor current overload (Irms/I ₁)		■
Voltage and current harmonic spectrum (orders 3, 5, 7, 11, 13)		■
Alarm history	■	■

Alarms	Thresholds	Actions	NR6/NR12	NRC12
Low power factor		message and alarm contact	■	■
Hunting (unstable regulation)		message and alarm contact disconnection ⁽²⁾	■	■
Abnormal cos φ	< 0.5 ind or 0.8 cap	message and alarm contact	■	■
Overcompensation		message and alarm contact	■	■
Overcurrent	> 115% I ₁	message and alarm contact	■	■
Voltage low	< 80% U ₀ within 1 s	message and alarm contact disconnection ⁽²⁾	■	■
Overvoltage	> 110% U ₀	message and alarm contact disconnection ⁽²⁾	■	■
Overtemperature	$\theta \geq \theta_0$ ($\theta_0 = 50^\circ\text{C max}$) ⁽¹⁾	message and alarm contact disconnection ⁽²⁾	■	■
	$\theta \geq \theta_0 - 15^\circ\text{C}$	fan switch	■	■
Total harmonic distortion	> 7% ⁽¹⁾	message and alarm contact disconnection ⁽²⁾	■	■
Capacitor current overload	(Irms/I ₁) > 1.5 ⁽¹⁾	message and alarm contact disconnection ⁽²⁾	■	■
Capacitor capacitance loss	- 25%	message and alarm contact disconnection ⁽²⁾	■	■
Low current	< 2.5%	message	■	■
High current	> 115%	message	■	■
Undervoltage	5% U ₀	message		■

U₀: measuring voltage.

(1): alarm threshold values can be configured according to the installation.

(2): capacitor steps are automatically reconnected after fault clearance and a safety delay.



Dimensions and weight

Type	Dimensions (mm)				Weight (kg)
	H	L	P1	P2	
Varlogic NR6/NR12	150	150	70	60	1
Varlogic NRC12	150	150	80	70	1

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