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, intuative 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).**

a brand of Schneider Electric

Merlin Gerin

Varlogic NR6 and NR12

User-friendly interface

The backlighted display allows:
■ direct viewing of installation electrical information and capacitor stage condition,
■ direct reading of set-up configuration,
■ intuative 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 φ setting: 0.85 ind…0.9 cap
- possibility of a dual cos φ 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.

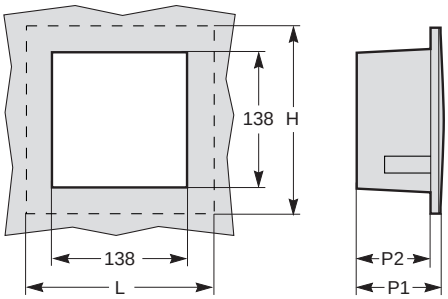
Type	Number of step output contacts	Supply voltage (V) 50-60 Hz network	Measuring voltage (V)	References
NR6	6	110-220/240-380/415	110-220/240-380/415	**52448**
NR12	12	110-220/240-380/415	110-220/240-380/415	**52449**
NRC12	12	110-220/240-380/415	110-220/240-380/415-690	**52450**

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 hotest 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	$\theta \geq \theta_0$ (θ_0 = 50°C max)(1)	message and alarm contact	disconnection (2)	■	■
	$\theta \geq \theta_0$ - 15°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			■

U_0: 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

Schneider Electric Industries SAS

Rectiphase
399 rue de la Gare
74370 Pringy - France
Tel.: +33 (0)4 50 66 95 00
Fax: +33 (0)4 50 27 24 19

http://www.schneider-electric.com

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