

Power Factor Compensation System

Norelco NACB



NORELCO

Nordic Electric Company

NACB

Power Factor Compensation System

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General description

Save in the electric bill

- no extra charge for the reactive power
- less power losses
- the capacity of the net increases

Versatile use

The standard sizes of the NORELCO power factor correction equipments (compensation systems) are 100 to 300kVar as a floormounted type and 25 to 100 kVar as wallmounted type. It is also possible to have different sizes, e.g. compensation systems bigger than 300 kVar.

Microprocessor controlled regulators are available for connection 6 or 12 capacitor banks.

The commissioning of BLR regulator is fast and easy, since during the commissioning no values are required to be set. BLR regulator checks the capacitive power of the each capacitor bank and restores the value into it's non-volatile memory. When the need for capacitive power changes, the regulator switches the most suitable bank. The regulator also checks the power of the each bank and in the case there is a malfunction, regulator disconnect defective capacitor bank from use. Regulator also counts the connection intervals, which will help in servicing the capacitor bank. Thru the RS232-connection and a PC-software it is possible to monitor conditions of electric net. BLR regulators are equipped with protection for micro breaks of the net voltage.

Each compensation system will be tested in the factory before delivery. It is also possible to deliver compensation system including the installation and commissioning. Possibility to integrate compensation system into main distribution board, which is costeffective to customer.



Norelco NACBR+L

Wall-mounted compensation systems

Compact size less space needed wall-mounted compensation system with blocking inductance are installed in NORELCO's splash-proof metal enclosed switchboard system EHR. The standard dimensions of the enclosure are: 450 x 1230 x 350 (W x H x D).

Capacitor bank sizes are 12,5 ja 25 kVAR. Maximum amount of the capacitor banks inside the cabinet is four, giving max. power of 100kVAR. As a standard a resonance frequency of 189Hz is used. Also other frequencies are available.

Compensation systems fulfil standards IEC / SFS-EN 60831 and IEC / SFS-EN 60439-2. It is also very easy to install the compensation system into any factory assembled switchboard of NORELCO, which eases the cabling work of the customer. The integration of the compensation system and the switchboard into one unit, improves the utilization of space and at the same time simplifies the structure.

Capacitor units are manufactured using 3-phase condensators. Discharging resistors are included discharging condensor below 50V in 50sec after disconnection. Condensators are gas-insulated, and self-healing type. Adding of new capacitor bank is easy since they are designed as modular units. Just order new unit and install it into spare space in the cabinet.

Easy installation is foreseen eg. by pre-installed wall mounting brackets. Power supply and control cabling is done directly to the terminals from top of the cabinet. Cabinets has been foreseen with 1pcs ventilation fan.



NACBR+L standard sizes and capacitor banks

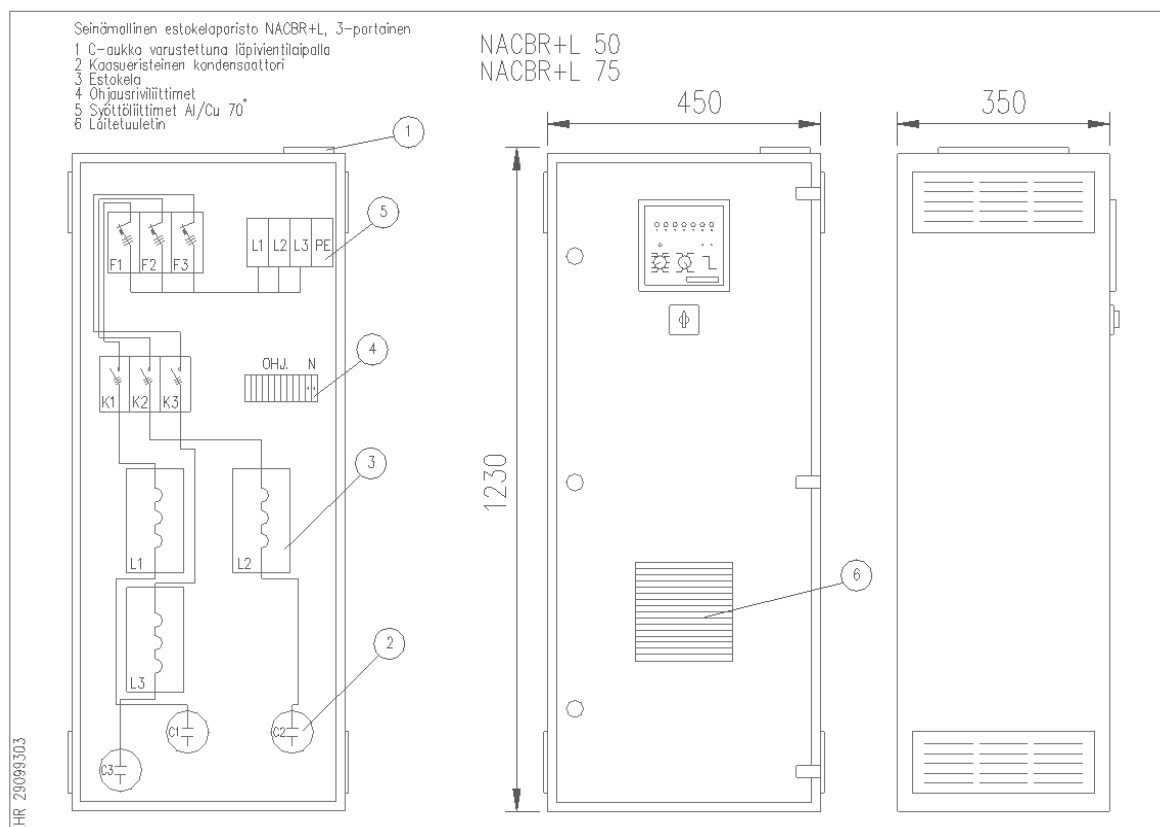
POWER KVAR	TYPE	CODE	I_n A	FUSE A	CABLE Cu,mm	CAPASITOR BANKS KVAR	SPARE SPACE KVAR
25	NACBR+L 25	58 410 500	36	3 X 63	3X70+35	12,5+12,5	2 X 25
37,5	NACBR+L 37,5	58 410 510	54	3 X 63	3X70+35	12,5+25	2 X 25
50	NACBR+L 50	58 410 520	72	3 X 125	3X70+35	12,5+12,5+25	25
75	NACBR+L 75	58 410 530	108	3 X 200	3X70+35	25+25+25	25
100	NACBR+L 100	58 410 540	144	3 X 200	3X70+35	25+25+25+25	-
12,5	NACBR+L 12,5	58 410 550	18		additional unit 12,5 kvar.		-
25	NACBR+L 25	58 410 560	36		additional unit 25 kvar		-

NACBR+L technical specifications

Rated voltage and frequency	400 V, 50 Hz.
Standards	IEC / SFS-EN 61921 ja IEC / SFS-EN 61439-2
Power range	12,5....100 kvar
Tolerance	-5%....+5%
Degree of protection	IP 30
Max. operating voltage	1,2 x Un
Max. overcurrent	2 x In
Min. operating temperature	-5 °C
Max. ambient temperature	instantaneous +30°C, average in 24h period +25°C
Power losses	< 0,5 W/kvar condensators (blocking inductance < 4W/kvar)
Material	hot-zinc coated MBS- steel plate
Surface treatment	durable powder coat paint
Standard color, frame	light brown, Oxyplast 9280
Standard color, doors	blue, RAL 5012
Cooling	ventilation fan and grill at both sides of the cabinet

Additional unit includes:

- front device(fuse base) + connection bars
- contactor
- blocking inductance
- connection cables
- condensor



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Floor mounted compensation systems

NORELCO manufactures floor mounted free standing compensation system with blocking inductance. Dimensions of the enclosure are only 2230 x 524 x 750mm. Compensation system with blocking inductance consists of modular units(banks). As a standard a resonance frequency of 189Hz is used. Also other frequencies are available. The standard size of cassettes are 12.5, 25 and 50 kVAR and the total amount of cassettes per cabinet is 6pcs. So it is possible to mount totally 300kVAR into one cabinet.



The system is very modular, since each cassette consists of all the components, namely capacitors, fuses, contactor and blocking inductance. Compensation system is manufactured using 3-phase condensators. Discharging resistors are included discharging condensor below 50V in 50sec after disconnection. Condensators are gas insulated and self-healing type.



Easy installation, according to order main cabling can be done either from the top or from the bottom. Control wiring is connected to terminals.

Easy to install, affordable to use

Easy to dismount cassette units for reducing weight of the cabinet during the installation if needed. Cabinet has been foreseen with 2pcs ventilation fan. Adding of new cassette is easy, since the cassette is mounted using sliding rails. Cassette is then mechanically locked. The system is user-safe because of its layout. The busbar is placed into separate compartment at the back of the system to make it safe.

NACBL is affordable for its entire life cycle. Old worn out cassette can easily be replaced by just changing it with new one. Also, expanding the system is easy by just getting more cassettes when needed.

NACBL technical specifications

Rated voltages and frequency	400V (690V), 50Hz
Standards	IEC / SFS-EN 61921 IEC / SFS-EN 61439-2
Power range	12,5 ... 300 kvar
Tolerance	-5% ..+5%
Degree of protection	IP 20
Power losses	< 0,5 W/kvar condensators (blocking inductance <4W/kvar)
Max. operating voltage	1,2 x Un
Max. overcurrent	2 x In
Min. operating temperature	-5 °C
Max. ambient temperature	instantaneous +30°C, average in 24h period+25°C
Material	hot-zinc MBS –steel plate
Surface treatment	durable powder coat paint
Standard color, doors	blue, RAL 5012
Cooling	2 ventilation fans and grills at the back plate

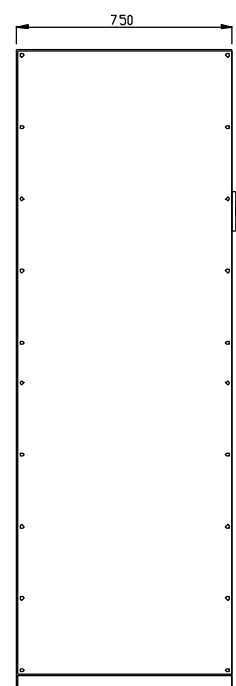
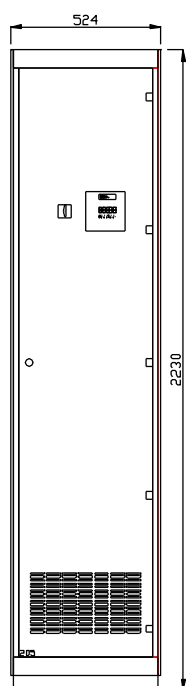
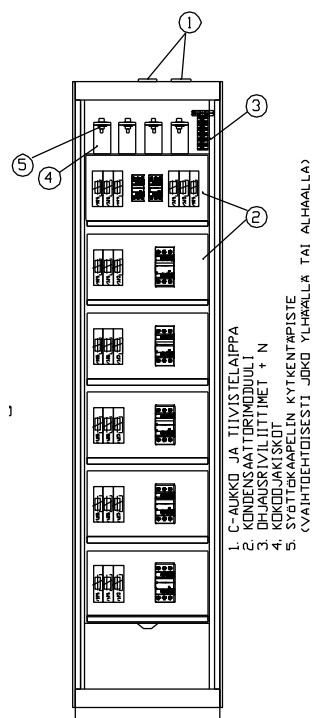


NACBL standard sizes and capacitor banks

POWER KVAR	TYPE	CODE	I_n A	FUSE A	CAPACITOR BANK KVAR	RESERVE SPACE KVAR	DIMENSIONS	OTHER
1)	NACBL	58404355	--	--	--	--	2250x524x750	
2 x 12,5	NLU 2x12,5	58404386	2 x 12,5 kvar condensator				250x425x450	
2 x 25	NLU 2 x 25	58404382	2 x 25 kvar condensator				250x425x450	
25	NLU25	58404370	36	25 kvar condensator module			250x425x450	
50	NLU50	58404362	72	50 kvar condensator module			250x425x450	

1) NACBL is an empty cabin, which can be mounted with capacitor bank mentioned on the table, Max. amount is 6 banks.


NACBL Structural Drawing



Large selection of high quality LV and MV switchboards and substations

The main products of Norelco include:


Factory Made Primary Substation
NorSwitch®



NORELCO
Switch Quality On

NorSwitch Factory Made Primary Substation

Withdrawable MV Switchgear
NorMega®



NORELCO
Switch Quality On

NorMega Withdrawable MV Switchgear

Modular MV Switchboard System
NorMax®



NORELCO
Switch Quality On

Modular MV Switchboard System **NorMax**


Modular Secondary Substation
NPM 200



NORELCO
Switch Quality On

Modular Secondary Substation **NPM 200**

Standard Secondary Substation
NPM 300



NORELCO
Switch Quality On

Standard Secondary Substation **NPM 300**

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Switch Quality On

Power Factor Compensation Systems **NACB**

Metal Enclosed LV Switchboard System
NorPower® 1250



NORELCO
Switch Quality On

Modular IP54 Switchboard System **NorPower 1250**


Switchboard system
NorLine® 800



NORELCO
Switch quality on

Modular IP30 Switchboard System **NorLine 800**

Multi-cubicle type switchboard systems
NorPower® 5000



NORELCO
Switch Quality On

Motor Control Center **NorPower 5000**

Busbar trunking system
NorBus® 5000



NORELCO
Switch Quality On

Busbar Trunking System **NorBus 5000**

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