

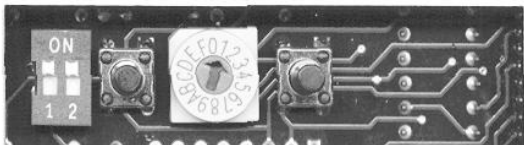
BLR CX and CXD range of power factor control relays

By the means of the measurement values of voltage and current BLR-CX / CXD calculates the conditions in the network. As standard the voltage L2-L3 and the current in L1 is used. By the means of a switchover in the device menu also single phase measurement can be adjusted (e.g. voltage L1-N / current in L1) if necessary. The sensitivity of the BLR-CX / CXD is 10mA, whereby a reliable and accurate regulation is guaranteed. Both 1A transducers and 5A transducers can be used. The power factor regulator detects this autonomously and it adapts to the used type automatically. By the means of providing an independent auxiliary voltage, and measurement voltage, a voltage measurement range between 50 - 530V is possible in these relays.

By the use of the optional fan control the power factor relay, BLR-CX "L" can also measure out the ambient temperature inside the compensation system. If the temperature exceeds an adjustable threshold the integrated fan control relay directly switches on a connected fan to cool down the temperature inside the switchboard.

On the rear side, the power factor regulator BLR-CX is equipped with a TTL interface as standard. This interface can also be used for diagnostic purposes. By the use of a separate available adapter cable, this interface is transformed to an RS232 connection that can directly be connected to a PC. The software "WINBSTO" enables the user to make very easy and effective diagnostics. By this way problems can be detected very fast and afterwards they can be eliminated.

The intelligent regulation algorithm from BELUK switches the steps optimized and by this it guarantees short compensation times combined with smallest amount of operations. The operating cycles are shared equally to all steps.



All relevant parameters for the regulation are set ex works in the way that in nearly all cases for BLR-CX no further adjustments are necessary to start the regulation. But this does not mean, that the power factor relays cannot be specifically adapted to the compensation system, by the means of further adjustments. If necessary, parameters can easily be changed by the means of the Hex-switch and the two keys (see picture alongside). This is also possible during operation.

Regulation: defective steps detection, target cosphi, switching time, automatic mode, manual mode, step limitation, alarm mode, target cosphi-2 (option "L" and "LT"), asymmetrical switching time, lock-time, switching mode Switchover from target cosphi 1 to target cosphi 2 (option "L") is done by the means of the digital input. With option "LT" the switchover is done automatically by exceeding an ambient temperature of 57°C. By this the compensation system can additionally be protected against too high temperatures.

Measurement: current transformer ratio and voltage transformer ratio (only option "M", CT- and PT-ratio are only necessary with option "M" to display the correct measurement values. The regulating function works independent of these settings.

Additionally to the mentioned settings the following step information can be displayed:

- defective capacitor steps
- switching operations per step
- step size

The displayed value of the step size is always relative, only option "M" displays the values in kvar. This display is divided into two values: F-value (at commissioning) and L-value (current step size). By means of these values a reduced step size e.g. because of aging can be detected early.

The BLR-CX assumes a lot of different supervision functions to guarantee a durable safe operation of the compensation system and to ensure a long life cycle of the used components. Some of these functions are; low voltage detection to avoid flutter of contactors (automatic disconnection of the capacitors); alarm in case of defective steps (with adjustable limit); alarm in case of not reaching target power factor. In case of alarm this is signaled by the display and also by the integrated alarm relay. By means of this internal relay an alarm can also be transmitted externally, so that a problem is reported immediately and a fast trouble shooting is possible. The different adjustable alarm modes allow to adapt the power factor controller optimal to the requirements.



The BLR CXD range

From the BELUK range, exclusively you also get to select from the BLR CXD range. This model is designed for providing a totally TAMPER PROOF facility to all users, since the relay does not have any on-board facility to alter or influence the operation. The fascia is a "clean slate" with only indication facility.

Any changes can be however performed using an external plug in programming adaptor. This adaptor is of course common to all CXD relays, and therefore can be retained only in the hands of experts or authorized technical personnel to perform any changes in switching time delay, target PF, or view any parameters.

BLR CX / CXD range highlights

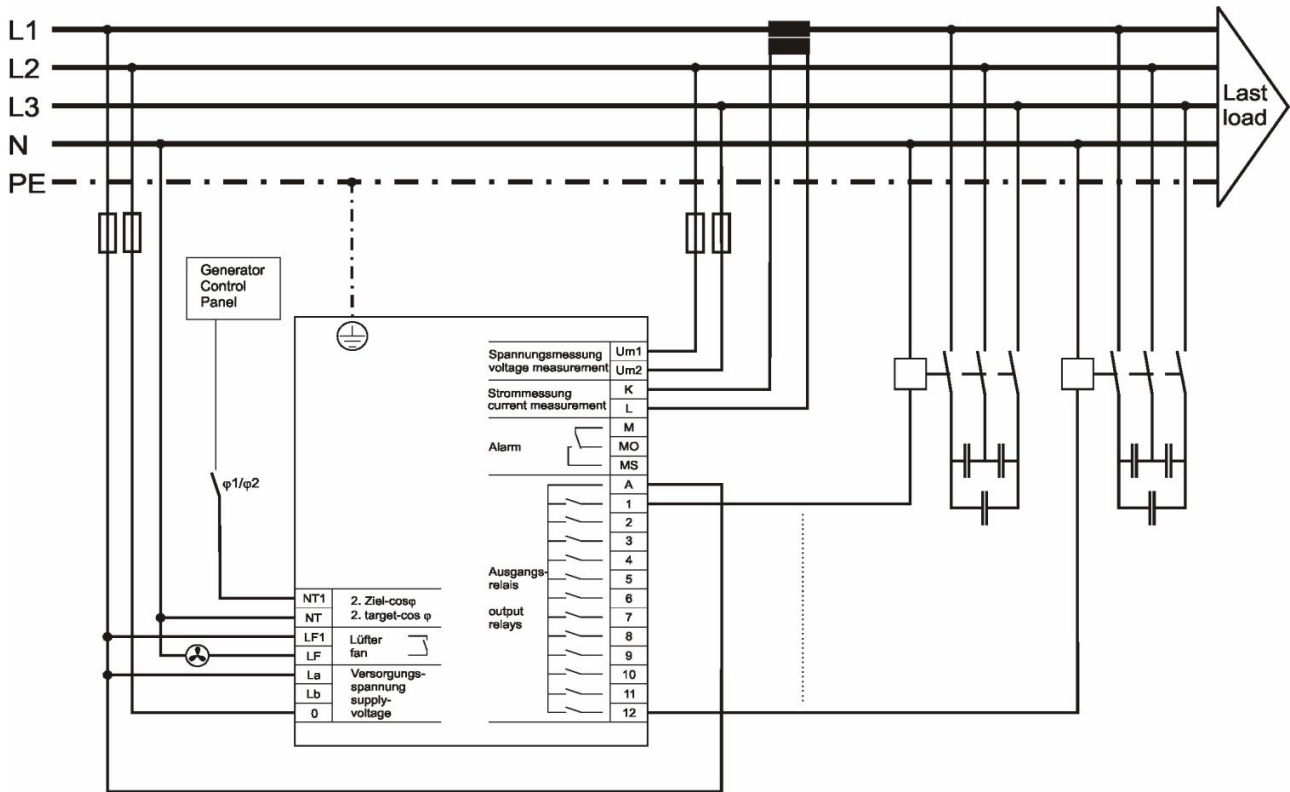
- Fully-automatic c/k-value setting, self adapting, connection of different capacitor step sizes possible
- Automatic detection and usage of the optimum capacitor step
- Switching programs: automatic, LIFO, manual mode, combi-filter (on request)
- Capable for 4-quadrant operation
- 1-phase measurement system also suitable for non sinusoidal currents and voltages
- Supply voltage 415/115V, 45-65Hz, other voltages on request
- Voltage measuring 50 – 530V, 45 – 65Hz
- Current measuring 10mA – 5A, suitable for CT x/1A and x/5A
- Connection with cage clamps
- Commissioning can be performed, without any additional settings or programming
- LED display for cos-phi and parameters
- States of capacitor steps indicated via LED
- Alarm relay with volt-free c/o contact. "AL" indication for defective steps, low PF, excess temperature
- TTL-interface on back
- Instrument casing dimension 144 x 144mm, depth 49mm
- Protection class IP20 (casing) and IP50 (front)
- Built in no-volt release with auto reset feature

Description (for both BLR CX and BLR CXD range)	Model Type
Power Factor Control Relay 4 relay outputs	CX 04 / CXD 04
Power Factor Control Relay 6 relay outputs	CX 06 / CXD 06
Power Factor Control Relay 8 relay outputs	CX 08 / CXD 08
Power Factor Control Relay 12 relay outputs	CX 12 / CXD 12
Power Factor Control Relay 6 transistor output	CX 06T / NA
Power Factor Control Relay 12 transistor output	CX 12T / NA
Options (only for BLR CX range)	Option Type
Fan control and tariff switchover (applicable for DG + EB dual PF setting)	- L
Measured value display (cos-phi, U, I, P, S, Q, F)	- M
Temperature dependent cos-phi switchover	- LT
Pluggable terminals	- K2
Accessories (only for BLR CX range)	Accessory Type
Software WINBSTO (WIN95/98/ME/NT/2000/XP)	Special model
Data cable TTL/RS232 including software WINBSTO	Special model
Data cable TTL/USB including software WINBSTO	Special model
Measuring adapter 100 – 750V	Special model
Transparent cover with lock IP54	- VT
Wall mounting bracket	Special model

Specifications

Voltage measuring	:50 - 530V, 45-65Hz, PT-ratio 1 - 350
Current measuring	:0-5A, sensitivity 10mA, burden 15mOhm, overload 20% continuous, CT-ratio 1-4000
Regulation outputs	:relays:N/O, one common point, max. fuse 6A breaking capacity: 250V,AC/5A (2500VA energizing)
Alarm contact	:C/O, volt-free max. fuse 6A, breaking capacity 250V AC / 3A
Fan control	:N/O, volt-free max. fuse 6A, breaking capacity 250V AC / 5A
Interface	:TTL, rear side
Ambient temperature	:operation: 0°C ... +70°C, storage: -20°C ... +85°C
Humidity	:0% - 95%, without moisture condensation
Standards	:DIN VDE 0110 Teil1 (IEC 60664-1:1992) VDE 0411 Teil1 (DIN EN 61010-1 / IEC 61010-1:2001), VDE 0843 Teil 20 (DIN EN 61326 / IEC 61326: 1997 + A1: 1998 +A2:2000)
Conformity and listing	:CE, UL, cUL
Terminals	:cage clamp, max. 2,5qmm
Casing	:front: instrument casing plastic (UL94-VO), rear: metal
Protection class	:front: IP50 (optional IP54 and lockable), rear: IP20
Weight	:Approx 0,8 kg
Dimensions	:144 x 144 x 58 mm h x w x d, cutout 138+0,5 x 138+0,5mm

CX / CXD connection chart



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