8

1

NOTE :



Installation:

During installation, all valid standards and safety instructions have to be kept!

1) Compare voltage and current ratings of BLR-CXD with data of mains and installation.

2) Mount the relay in the control panel with the 2 mounting clips.

3) Connect protection earth to PE connection of metal case.

4) Connect BLR-CXD according to the connection diagram.

5) Remove short-link from CT.

Commissioning:

BLR-CXD is detecting not used control outputs and is blocking them. A wrong connection of voltage and current path is recognized and corrected. After automatic initialisation is finished, BLR-CXD starts its control function and is recognizing capacitor size during standard operation. Settings of c/k values and switching program are not necessary.

When mains conditions are not suitable for automatic initialization, it will be interrupted. BLR-CXD is showing then error code: **"Ai Abrt"**. Automatic initialization can be repeated by restarting of the relay. If multiple repeat shows no results, then the setting instructions of reference manual should be considered. (not scope of delivery).

Display "Auto": Message "Auto" shows, that control function is working. When "Auto" is not displayed, then control function is stopped. Reasons for this are: manual operation is active, measured current on is less 15mA, voltage is out of range or harmonic level of voltage is too high.

Over- and undervoltage monitoring: BLR-CXD is equipped with over- and undervoltage monitoring. The allowed range of voltage depends on nominal voltage. When nominal voltage is out of range, message U Alarm is shown. Then the setting of nominal voltage has to be adjusted to local ratings.

Process Technique Electronics (Pvt) Limited

 SANDILYA' 324, # 3, 1st Cross, Civil Aviation Road, P.B. 1776, Konena Agrahara, Vimanapura, Bangalore - 560 017, India Tel : +91-80-2522 8895, 2522 3736 Telefax : +91-80-4125 8146 E-mail : relays@processtechnique.com
www. processtechnique.com

ᠿᡅ

		_
	BELUK	▶
-		_

COMMISIONING INSTRUCTION

BLR-CXD

NOTE :

2

7

BELUK

AUTO, MANUAL: cosphi	INFO	:capacitor
SETUP, INFO	AUTO	:automatic
NT INFO EXPORT C. C. MANUAL THOMAS C. C. C. MANUAL NANUAL NANUAL NANUAL NANUAL NANUAL NANUAL NANUAL NANUAL NANUAL NANUAL NANUAL NANUAL NANUAL NANUAL NANUAL NANUAL NANUAL NANUAL	SETUP ALARM EXPORT 1 – 14	:setup mer :blinking d :export of :control ou

database control is running lode nu during alarm active energy Itputs

Operation of BLR-CXD is done by 4 keys, which are part of an external programming adapter.

In main menu level, you can choose by pushing ▲or ▼ the main menus. Selection by ▶(┙) is opening

submenus. By pushing of

BLR-CXD

Display and Operation:

(esc) the menu is left to next higher level.



Measuring values (each measurement value is displayed for 5 seconds): voltage U_{Ph-Ph}, THD U, displacement power factor cosp, power factor PF (A)

INFO capacitor database: Attention: The state of the outputs is not shown in this menu! All available switching outputs are displayed in the step indication, with ▲ and ▼ the switching outputs can be selected. The information's about the selected switching outputs are displayed by pressing the

▶ (←) button. The selected switching output will flash in the step indication.

[]		OC		·	
INFO 99.9%	▼	INFO 10.12 k	▼	info AUTO	
percentage actual to		number of operations		step type	

Possible step types: Auto, Fon (Fix on), Foff (Fix off), Defective, AL (Alarm) N/C contact.

MANUAL operation:

Attention: In manual operation, automatic control is not active!

After calling manual mode, the regulator freezes the outputs in actual position. By pushing ▲ und ▼ key, the individual steps can be chosen. The state of the outputs is changed by pushing **>**(+) key. The state of the outputs is shown. In manual mode, switching time delay is not working but capacitor discharge lock time is working. When leaving manual mode, BLR-CXD continues controlling without switching-off all steps before.

SETUP: Setup/Expert menu is structured in 6 submenus (100 - 600). Only menu 100 can be reached by calling Setup with short pushing of enter. If enter is pushed for 3 sec, the Expert-menu is started. By pushing

▲ und ▼ the sub-menus or parameters are chosen. By pushing ►(---) submenus are opened or parameters are switched to edit mode. By pushing \blacktriangleleft (esc) the next higher level is reached..

In edit mode, the cursor is blinking. By pushing ▲ and ▼ the values can be changed, by pushing

✓ and ▶ the cursor can be moved.

To save the settings, $\blacktriangleright(\dashv)$ must be pushed, when cursor is on right position. To refuse the settings, ◄ (esc) can be pushed, when cursor is on left position.



6

Menu structure:

The table gives an overview about parameters of BLR-CXD settings in menus 100 to 600 that could be done only by using the adapter.

Menu 100:

- Un nominal voltage (is necessary for over- and undervoltage monitoring and is reference for capacitor database)
- Ai start of automatic initialization (this function is running only, when "Auto" is shown in LCD)
- CP1 target-PF 1

St switching time delay					
MENU	FUNCTION	DEFAULT			
100	QUICK START SETUP				
Un	Nominal voltage (phase-phase)	400V			
Ai	Start automatic initializing				
CP1	Target-PF 1	1,00			
St	Switching time delay	10s			
200	SETUP MEASURING SYSTEM	1			
201	Nominal voltage (phase-phase)	400V			
204	Tolerance nominal voltage	15%			
206	Phase-offset	90°			
207	Start automatic initializing				
208	Activate Ai by every start	N			
209	Synchronisation to frequency	Auto			
300	SETUP CONTROL SYSTEM	1			
301	Switching threshold	60%			
302	Target-PF 1	1,00			
305	Switching time delay				
306	Switching time delay for fine control 2				
307	Fine control active				
309	Blocking of defective capacitors				
311	Control algorithm 1=auto, 4 = progressive 1				
313	Asymmetrical switching time delay 1				
314	Switch-off capacitors in leading condition N				
400	SETUP CAPACITOR DATABASE	ſ			
401	Discharging time	75s			
403	Type of exit: step 1max. 14	Auto			
404	Switching operations: step 1max. 14	0			
500	SETUP ALARM SYSTEM				
502	THD alarm	N			
503	Threshold THD	20%			
504	Disconnect capacitors when THD >	N			
505	Delay THD Alarm	60sec			
515	Control alarm (target cannot be reached)	N			
516	Defective steps alarm	N			
517	Loss of power alarm	N			
600	RESET	600			
601	Reset to default values				
602	Reset capacitor database to default				
607	Software revision				

Trouble Shooting

Problem	Possible cause	Remedy
no display	auxiliary voltage missing	check correct connection of auxiliary voltage, if necessary rectify
display " ⁰⁰ _{ALARM} "	measurement voltage out of range wrong settings for voltage measurement	check correct connection of measurement voltage, if necessary rectify check settings in menu "SETUP", if necessary rectify
display "0 лаям"	measurement current too small	check connection of CT, probably there is a break in the line CT ratio too high, if necessary replace CT remove short circuit link of the CT
wrong display of current or voltage	wrong transformer ratio	check settings PT- or CT-ratio in menu "SETUP", if necessary rectify
wrong power factor is displayed	wrong settings at the regulator	Start "Ai" in menu "SETUP" or check point 206 and rectify the phase compensation if necessary.
power factor doesn't change after switching on a step, step is switched off again	CT mounted in wrong position	check mounting position referring circuit diagram (current of load and capacitors have to be measured!), if necessary rectify
display 8 H 0 ALARM''	current higher than allowed	check CT ratio, probably replace by suitable transformer type
display PFL alarm"	permanent overcompensation permanent undercompensation	check settings check contactors, probably contact stick together check settings check capacitors, possibly fuse defective check dimensioning of the compensation unit
reversed control mode	current or voltage clamps interchanged	correct connection or adapt phase compensation
single steps are not switched on or off	wrong settings	check, if referring steps are defined as fix steps (permanently on or off)
steps are detected as defective	step defective	check capacitor steps, probably fuse, capacitor or contactor defective
steps are not switched on	step size too large	necessary reactive power smaller than switching threshold of step size of the smallest step

BELUK





load

BELUK

4

Technical Data

						incasuring- and supp
						Current measuring:
						Control Outputs:
		-				Interface:
						Ambient temperature
		:				Humidity:
— :						Voltage class:
1-K14						Standards:
×					s can tered n	Conformity and listing
		4	\bigcirc		aları	Connection
		<u>-</u>		ÍI	e para for a	Case:
L TL TL					ق 8	Protection class:
⊢ <u>⊢</u> ţē		<u> </u>	4	ΓI	4 kits	Weight:
=			× i		0 1 0 6)	Dimension:
	_				up 1 contre	
			Ϋ́			Alarms:
						BLR-CXD has a
						When an alarm is
						Possible error co
A - 6A 360 - 480V	LR-CXD					
 بو	B	<u> </u>		⊢		
	_	Ľ				
						ו האצורו

z d

Pr

360 – 480V AC, L-L , 45-65HZ, 5VA, max. fuse 6A			
15mA – 6A, single phase, burden 20mOhm,			
Up to 14 relays, n/o, with common point, max. fuse 6A breaking capacity: 250V AC / 5A			
TTL, rear			
Operation: -20°C – 70°C, storage: -40°C – 85°C			
0% - 95%, without moisture condensation			
II, dirt class 3 (DIN VDE 0110, part 1 / IEC60664-1)			
DIN VDE 0110 part 1 (IEC 60664-1:1992) VDE 0411 part 1 (DIN EN 61010-1 / IEC 61010-1:2001) VDE 0643 part 20 (DIN EN 61326 / IEC 61326: 1997 + A1:1998 +A2: 2000)			
Pluggable terminal block, screw type max. 4qmm			
Front: instrument case PC/ABS (UL94-VO), Rear: metal			
Front: IP50, (IP54 by using a gasket), Rear: IP20			
ca. 0,6kg			
144x144x58mm h x w x d, cut out 138 (+0,5) x 138 (+0,5)mm			

BELUK

BLR-CXD has an extended alarm system. All possible settings are shown in menu structure. When an alarm is active, the sign ALARM in the display is blinking. An error code is shown in LCD. Possible error codes are:

		Measuring voltage is out of tolerance
ilo	ALARM	Measuring current is less 15mA (please check current path)
8 Ho	ALARM	Measuring current is too high.
PFL	ALARM	Target cannot be reached
HAr	ALARM	THD U alarm (harmonic alarm)
SFEP	alarm IFLFY alarm	One or more steps are defective. The defective steps are blinking together with the ALARM sign.
5PL		One or more steps have less than 70% of original size. Number of step and alarm text are blinking alternately.
} hi	ALARM	Over temperature alarm. The steps will be switched-off step by step.
A. / Ab	rŀ	Abort of automatic initialization due to not suitable load conditions

X/1A or X/5A

power-input utility

Ξ

L3 L3

