02.06	Item	Key	LED / Display	Menu Item	Menu Action	Display / Input
This short form guide relates to SW 02.06 of 2019-10-22 It also applies similarly to all other software versions 02.xx					Please always use short form guide matching the controller SW !	

Common Legend to this document issued 2019-10-23 We

		"_"	A blank display position is depicted by the underline character for readability		"____" = blank display
			gray shaded menu items can be used only with a special password or are yet not implemented		
		on/off	change parameter setting between on and off, standard value is off (underlined)		
		""/""/""	An output chain is denoted like that (text parts rotating with 1.5 or 3 sec time-lag):		"SELF"/"InIt"/"donE."

Dear User ...

	... please don't resign on the huge amount of actions, settings, etc. the CR4.0 controller provides. Don't hesitate to try any desired action or setting - no damage will result. At most your experiment may result in a bumpy switching manner and in missing the cos phi target.
	... please don't become impatient. In some cases the CR4.0 controller needs up to 1.5 sec after start of an action until you observe any response. Not before that time retry action start - in some cases the CR4.0 needs a second action start because it checks password and prerequisites after the first action start and in doing so forgets to start.
	... Attention! Menu items invalid for the present controller variant or for the actual operation mode will be omitted as a general rule with exceptions, e.g. Pb._2 is usually followed by Pb._4 . Please check the menu item displayed !

Emergency Stop, Reconnection, Reset key combinations: press both keys at the same time

		ESC + SET 3s		STOP!, emergency stop (operation mode "StoP")	works in all operation modes (in commissioning not necessary)	Display shows operation mode "StoP" at times
		▼+ ► 3s	when in Stop mode	reconnection to the mode prior to (emergency) stop	passes Reset / Restart (indicated by 2s lamp test)	when password protected enter the service password
		▼+ ► 3s	elsewise	SW Reset (op. mode persists)	passes Reset / Restart (indicated by 2s lamp test)	when password protected enter the service password

Common LED Coding without user's intervention

		all LEDs are lighting	Lamp Test (after reset lasting 2 seconds)	
		LED is off	action / property / reading is inactive (at green "Auto"/"cos phi": regulation is suspended)	
		LED lights	action / property / reading is active	
		red Alarm LED lights	alarm is active, no alarm switch-off of steps, or	
			alarm with alarm switch-off of steps is active	"-AL-" (displayed at times)
		red Steps LED blinks	short-term or midlle-term (up to hours) situation, LED Alarm/Steps off: step out of use for regulation, e.g. in test	
			permanently, LED Alarm/Steps lights: step already usable for regulation but alarmed, e.g. to many duty hours	
		red Steps LED lights	step is inoperative due to defect analysis, e.g. resonence, step power loss, etc.	
		Commissioning: several red Steps LEDs are binking, at times one green lights	The commissioning proces uses the steps with red blinking for gauging / sizing. The green LED shows which step is actually turned on for measurement. During sizing the steps powers the red blinking LED goes out whenever sizing that step*s power has been completed.	

Common LED Coding during user's access

		One LED lights within the left-sided vertical LED ribbon at "Auto" or "Service", or fastly flashes within "Alarm", or One "Steps" LED fastly flashes (=2.5 Hz)	= position of the menu cursor respective steps cursor	
		"Info" or "Set" blinks	The menu cursor resides within the menu tree; menu item at numerical display, e.g. "H1.13"	
		"Man" blinks	Manual Mode is active	(slow blinking at 1,25Hz)
		One red "Steps" LED is fastly flashing	= Steps Cursor, i.e. the reading shown at the numerical display refers to that step, e.g. the the steps size of commissioning result, or that step is selected for switching in manual mode	
		"Set" blinks, "Info" on	= result display ("Info") by an action ("Set") during commissioning; one green LED may blink, too	
		One LED within the left-sided vertical LED ribbon at "Auto" or LED "Alarm"/"cos pi" slowly blinks		
			any parameter related to the LEDs item is going to be changed.	(slow blinking at 1,25Hz)

Common LED Coding at the Numerical Display including the "Cap"/"Ind" LEDs; Number Entry

		Number with Cap/Ind	Number Display; "Cap"/"Ind" work as sign prefix for cos phi values or reactive power	
		whole number blinks	displayed number in error (e.g. current reading before current transducer entered)	
		single digit blinks	= position of the numerical Cursor at number entry; that digit can be changed. At number entry leading zeroesare shown, but the numerical cursor omits unchangeable digits and figures; e.g. for the maximum number 615 the cursor begins at the second left digit "0(0)00".	
		▼	By the arrow down key ▼ that digit changes from 0 to 6 thus limiting input to 699.	
		Cap/Ind fastly flashes	select Cap/Ind as "sign" digit; ▼ toggles between them; use ► to proceed to the next digit	
		►,SET	►: proceed right to the next digit; ► at the rightmost digit or SET anywhere closes the input	
		whole number flashes very fastly	invalied number entered	Flashing duration some seconds
		the whole numerical display is blinking, 4 digits with the upper and lower segments only, or 4 dots only		"====" or "...."
			displayed number is invalid, e.g. > 4 digits, or unknown format	

02.06	Item	Key	LED / Display	Menu Item	Menu Action	Display / Input
Left-sided vertical LED Ribbon, Auto + Service						
	0	▼	Auto/cos phi stays off	cos phi display during alarm switch-off of steps	show the actual cos phi - automatic regulation stopped	Cap/Ind "_0.68"
	1	▼	Auto/cos phi	cos phi	show the actual cos phi	Cap/Ind "_0.98"
	0/1	►	... blinks	change target cos phi (actual tariff 1/2 indicated as "t1__" / "t2__")		normal operation only
	0/1		leftmost digit of cos phi value	(-8K controller only) Tendency Indicator, comes at about half of the actual response time; with inductive steps: switching L on = switching C off		switch C on: vertical line upper left switch C off: vertical line down left
	2	▼	Auto/THDU	THDU	show the actual THDUin %	"__2.7" in 1/10%
		►	... blinks	change alarm threshold THDU in %		normal operation only
	3	▼	Auto/U(V)	U	show the actual Urms in V (not U1 !)	"_225" in V
		►	... blinks	change voltage transducer ratio		commissioning only
		►	... blinks	change alarm threshold Umin in % of Umains		normal operation
	4	▼	Auto/I(A)	I	show the actual Irms in A (not I1 !)	"__70" in A
		►	... blinks	change current transducer ratio (ctr)		commissioning only
		►	... blinks	change inrush surge current dead time in seconds		normal operation
	5	▼	Service/ΔQ	Delta Q=Qmiss.to target cos phi	show actual Qmissing (minus =Cap.)	"_-12" in kvar (without Cap LED)
	6	▼	Service/Info	menu tree "Info"	after entry by ► or SET ...	"InFo"
	7	▼	Service/Man	manual mode	... the yellow Man LED blinks /	"_MAn"
	8	▼	Service/Set	Menu tree "Set"	... the yellow Info or Set LED blinks	"Set_"
		▼		no alarm: round robin --> 1		
Left-sided vertical LED Ribbon, Alarm						
	9 - 13	▼	any Alarm LED lights	alarm without switch-off or with switch-off of steps	e.g. red LED Steps =duty period e.g. red LED U =low voltage	concerned Steps LEDs on / blinking; "-AL-"=Alarm switch off (in the numerical display)
	not lighting alarm LEDs are skipped by the menu cursor					
		▼		round robin: without alarm switch-off of steps --> 1; with alarm switch-off of steps --> 0		
Standard Screens						
		♦	Falls back into one of the standard screens after 3 min. without keystroke, long-term action, and result display			
Item 1 or 0				standard screen while normal operation		regulation is active / is off
Item 3				standard screen during commissioning		
Item 7				standard screen while manual mode is active		
Other Alarms / Special Alarm Screens						
			one alarm LED fastly flashes	=alarm LED selected by the menu curcor	Num. Display shows the highest priority new alarm for that LED	"AL.20" = single harmonics (the red THDU LED is flashing)
		SET	one alarm LED fastly flashes	=acknowledge the alarm displayed for that LED	the alarm of that LED group with next less priority is displayed	"AL21" = THDU alarm (with the red Alarm/THDU LED flashing)
		Note: after acknowledging the last alarm of one group that alarm may still remain displayed. Please proceed the menu cursor yourself by ▼.				
			Alarm w/o assigned LED	Special alarms, e.g. excess temperature	Num. Display shows the highest priority new alarm of that group	"AL.24" = excess temperature (displayed at times)
		SET	cursor at LED Auto/cos phi	acknowledge displayed alarm w/o LED assigned	Num. Display shows the alarm of that LED group with next less prio	"AL23" = frequency alarm (displayed at times)
				special case: SW error with additional information	here: frequency to unstable to be measured (=error: 88, info: 0x0200)	"AL29"/"__88"/"_200"
			Display: "AL..."	special alarm screen indicating acknowledged alarms still active due to restore acknowledged but still active alarms		"AL..." (displayed at times) use menu item C0._8
			Display: "-AL-"	alarm switch-off of steps is activated; alarm screen will remove with last switch-off reason		
Password Request						
			Display "Pwd=" "Pwd_" / "=Err"	= password request; start entry with SET or ▼, edit number using ▼ and ►; check entry by SET. on error retry password entry with SET or abort password request using ESC		
				Some menu items have forgotten the initial SET after password entry, so repeat SET if the menu got stuck.		
				During commissioning no service password is required; but the service password itself remans unchanged.		

02.06	Item	Key	LED / Display	Menu Item	Menu Action	Display / Input
Start Auto-Commissioning from comissioning mode						
		▼+ ► 3sec.	= SW-Reset	Start Auto-Commissioning (same as menu item "In._2")	(no automatic start at Power On to allow different persons for install / commiss.)	(use "In._2" to re-enter commissioning mode from automatic standard modes)
	result display: net config.			e.g. Please approve: cos phi=0.67, phas angle=180°, mains voltage=400V		"APPr"/"ConF"/"_0.67"/"180°"/"_400"
	result display: transducer			e.g. Please approve: current transducer ratio (ctr)=120, total current=327A		"APPr"/"I.ctr"/"_120"/"I.tot"/"_327"
	result display: steps sizes			e.g. Please approve: steps powers: in total=200kvar, summed from: 24, 25,...		"APPr"/ "SIZE"/"_200"/"__24"/"__26"/..
	Auto-Commiss. Finished			after message passes Reset / Restart (indicated by 2s lamp test)		"SELF"/"InIt"/"donE."
		ESC		terminate unintentionally started auto-commiss.	passes Reset / Restart (indicated by 2s lamp test)	confirm assurance query "SUrE""_to_" /"Abrt" by SET
Error Codes on Abort of Auto-Commissioning						"Err.7" e.g. error no. 7
		1=abort by user (ESC key), 2=auto-gauge/enter net configuration before, 3=enter/auto-size steps sizes before (2,3 after menu item In.20), 4=ALL steps unpopulated (=result of auto-gauging/sizing), 5=SE Mode not solved, 6=catenation preset does not match the system, 7,8=timeout on auto-gauging/auto-sizing, 9=SE Mode presets do not match the system				
Manual Mode (MAN)						
	0		LED "Man"on	"_Man" displayeed, no	= menu cursor resides at the	= ... manual mode inactive
	1		"Man" blinks	Steps LED is fastly flashing	"Man" LED; manual mode= ...	= ... manual mode active
	2	SET or ►	LED "Man" on (/ blinks)	(re-) entrance into manual mode's action menu	step 1 is selected for switching, so red Steps LED 1 fastly flashes	when password protected enter the service password
		duration 3sec	Man LED flashes very fast (5Hz)	when entrance into the action menu didn't work	manual mode not possible	
	3	►	selected red	select the next step	selected step's LED fastly flashes	round robin, idle between step 8 and 1
	4	▼ or SET	"Steps" LED fastly flashes	toggle state on/off of step when possible		green LED on = step on (green LED lights when red LED pauses)
		duration 3sec	Steps LED flashes very fast (5Hz)	after trying to switch the step's state to "on"	switch on refused, e.g. idling time is still running, alarm switch-off, or resonance	
	5	►	only LED "Man" blinks	Display: "_Man", no fastly flashing red Steps LED	=menu cursor resides at Man LED, no step selected / standard screen	manual mode still active; leave manual mode (temporarely)
	6	item 5 then ▼	LED "Man" blinks, LED "Set" lights	manual mode temporarely left, e.g. to show readings or change settings	use the menu cursor to navigate throughout the whole menu space	
	7	item 5 then ESC	directly fall back to Std. Screen, e.g. Auto/cos phi)	exit manual mode (menu cursor must reside at yellow LED "Service"/"MAN"!)	immediately switch off defective steps and forbidden step combinations, then start regulation in in automatic mode	when password protected enter the service password
Menu Tree Info						
	0		LED Service / Info lights	Info menu, menu cursor resides at LED Service/Info	select Info menu series by ►	"InFo"
	1	►,SET	LED Info blinks	"C1" Series Info Basic	series selection	"C1__"
	2	►	LED Info blinks	"M" Series Measurement	series selection	"M___"
				Note: "M" looks at the 7-segment display like an upside down "U" and needs practice for accustoming		
	3	►	LED Info blinks	"H" Series Harmonics Info	series selection	"H___"
	4	►	LED Info blinks	"S" Series Steps Info	series selection	"S___"
	5	►	LED Info blinks	"A" Series Alarm Info	series selection	"A___"
	6	►	LED Info blinks	"Lt" Series Long Term Data	series selection	"A___"
				Note: "Lt" values are intended for use by the service staff. Do not misuse that data against your utility company!		
		►		round robin --> 0		
Info Series Basic "C1" (=identical in the BASIC Controller)						
	0		LED Info blinks	"C1" Series Info Basic		"C1__"
	1	▼,SET	C1._1	I1P = real current, actual reading in A (fundamental's share)		
	2	▼	C1._2	I1Q = reactive current, actual reading in A (fundamental's share)		
	3	▼	C1._3	THDI in %		
	4	▼	C1._4	Q on (U-,f-corrected) in kvar		
	5	▼	C1._5	Show all data created by commissioning (net-/step-data); start by SET (automatically proceeds every 2s; may be accelerated by ►)		e.g. "C1._5"/"180°"/"_400"/"_120"/ "_200"/"__24"/"__26"/"__51"...
				i.e. phase angle=180° (N-L1), mains voltage=400V, current transducer ratio (ctr)=120, steps powers in total=200kvar, steps=24, 26, 51,... Kvar		
	6	▼	C1._6	Power Loss per step in %	► for step selection	start by SET
	7	▼	C1._7	Show the Raw Measurement Readings at controller contacts, start by SET (automatically proceeds every 2s; may be accelerated by ►)		e.g. "C1._7"/"_231."/"_2.37"/"50.08" i.e. Urms=231V, Irms=2,37A, F=ca. 50,1Hz
	8	▼	C1._8	Software Version	01.01, 01.02, ... ,2.01, ...	
	9	▼	C1._9	Serial Number of Hardware	0001, 0002, ... (without date code)	
	10	▼	C1.10	Controller Type (8T, 4T4K)	skipped at standard type 8K	"8t__", "4t4h", ("8h__" for 8K)
		▼		round robin --> 0		

02.06	Item	Key	LED / Display	Menu Item	Menu Action	Display / Input

Info Series "M" (▼,► Matrix, 2-dimensional)

			Series / Line	Measurement Series	► **Column Selection:** Categories 1..13 round robin	
	0		LED Info blinks	"M" Series Measurement		"M___"
	1	▼, SET	M1	actual readings	category options, see below	(new value every 0.3sec .. 2.5sec; flicker suppression with 1.5sec)
	2	▼	M2	maximum of act. readings	category options, see below	resettable by C0.11
	3	▼	M3	minimum of act. readings	category options, see below	resettable by C0.11
	4	▼	M4	act. readings, 1/4h average	category options, see below	special values for:
	5	▼	M5	maximum of 1/4h average	category options, see below	Temperature: dayly average,
	6	▼	M6	minimum of 1/4h average	category options, see below	frequency: internal setting for FFT
		▼		round robin --> 0		

... Measurement Categories

	1	►	Mx._1	Irms=total current through transducer in A, incl. Harm. (not I1 !)
	2	►	Mx._2	I1S=apparent current share of fundamental in A
	3	►	Mx._3	I1P=real current share of fundamental in A
	4	►	Mx._4	I1Q=reactive current share of fundamental in A
	5	►	Mx._5	Urms= total mains voltage in V, including harmonics (not U1 !)
	6	►	Mx._6	P1=real power of fundamental in kW
	7	►	Mx._7	Q1=reactive power of fundamental in kvar with Cap/Ind LEDs as sign, LV
	8	►	Mx._8	Qon=compensation power in kvar in effect, U-,f- corrected
	9	►	Mx._9	Qmiss=ΔQ=compensation power missing to reach target cos phi (at nominal U,f)
	10	►	Mx.10	cos phi, HV, with Cap/Ind LEDs as sign; i.e. calculated for the high/medium voltage network (HV) from measurement at the low voltage network (LV) with fixed compensation power / base load (In.12, P0._8) for transformer compensation
	11	►	Mx.11	cos phi, LV, as measured at the transducer in the low voltage network (LV), Cap/Ind LEDs as sign; i.e. regardless of a fixed compensation power / base load setting for transformer compensation or any other reason.
	12	►	Mx.12	temperature [°C] at the controllers rear plus temperature Offset P0.18; dayly avarage instead 1/4h
	13	►	Mx.13	frequency of measuring voltage in Hz; instead of 1/4h values the fourier transform setting
		►		round robin --> 1
	Note: Irms, Urms incl. harmonics; I1, U1, P1, Q1 are the fundamental shares only from Irms, Urms, ...; categories 7..11 with Cap/Ind LEDs as sign			

Info Series "H", "S", "A" (▼,► Matrixes, 2-dimensional)

	"H"		Series / Line	Harmonics Series	► **Column Selection:** Harmonical Index 0..31 round robin	
	0		LED Info blinks	"H" Series Harmonics		"H___"
	1	▼, SET	H1	Harmonics U in %, actual	0=THD, 1=fundamental, 2...31=harmonical index	
	2	▼	H2	Harmonics I in %, actual	0=THD, 1=fundamental, 2...31=harmonical index	
	3	▼	H3	Harmonics U in %, Max.	0=THD, 1=fundam., 2...31=harm. index	resettable by C0.12
	4	▼	H4	Harmonics I in %, Max.	0=THD, 1=fundam., 2...31=harm. index	resettable by C0.12
	5	▼	H5	Harmonics U, 1/4h avarage	0=THD, 1=fundamental, 2...31=harmonical index	
	6	▼	H6	Harmonics I, 1/4h avarage	0=THD, 1=fundamental, 2...31=harmonical index	
	7	▼	H7	Harmonics U [%], 1/4h Max.	0=THD, 1=fundam., 2...31=harm. index	resettable by C0.12
	8	▼	H8	Harmonics I in %, 1/4h Max.	0=THD, 1=fundam., 2...31=harm. index	resettable by C0.12
		▼		round robin --> 0		

	"S"		Series / Line	Steps Item Series	► **Column Selection:** Step Number 1..8 round robin	
	0		LED Info blinks	"S" Series Step Info		"S___"
	1	▼, SET	S1	Derating / Power Loss in %	per step 1..8; the red Steps LED of the selected step fastly flashes	
	2	▼	S2	Step Power, latest value [kvar]	per step 1..8; the red Steps LED of the selected step fastly flashes	
	3	▼	S3	Step Power, initial in kvar	per step 1..8; the red Steps LED of the selected step fastly flashes	
	4	▼	S4	Detuning Factor in %	per step 1..8; the red Steps LED of the selected step fastly flashes	
	5	▼	S5	Duty Period in 100h	per step 1..8; the red Steps LED of the selected step fastly flashes	
	6	▼	S6	Switching Cycles in 100	per step 1..8; the red Steps LED of the selected step fastly flashes	
		▼		round robin --> 0		

	"A"		Series / Line	Alarm Count Series	► **Column Selection**: Alarm Type 1..60 round robin	
	0		LED Info blinks	"A" Series Alarm Info		"A___"
	1	▼, SET	A1	Alarms counted per alarm type (see last page) since last reset		resettable by C0.13
	2	▼	A2	Alarms counted per alarm type (see last page) that had been occurred ever (not resetable)		
		▼		round robin --> 0		

	"Lt"		Info Series Long Term Data			
	0		LED Info blinks	"Lt" series Long Term Data		"C1__"
	1-6	▼	Lt._1 .. Lt._6	long term cos phi, periods 1h, 4h, 1d, 1week, 1month, 1a Note: "Lt" values are intended for use by the service staff. Do not misuse that data against your utility company!		e.g. "YEAr"/"_0.98" for year
		▼		round robin --> 0		

02.06	Item	Key	LED / Display	Menu Item	Menu Action	Display / Input
			Menu Tree Set			
	0		LED "Service" / "Set" lights	Set menu, menu cursor resides at LED Service/Set	select Set menu series by ►	"Set_"
	1	►, SET	LED "Service" / "Set" blinks	"C0" Series Set Basic ["ci""zero", not "ci""ou"!]	series selection	"C0__"
	2	►	LED Set blinks	"In" Series Installation	series selection	"In__"
	3	►	LED Set blinks	"S" Series Step Settings; (Type, Power, duty, cycles, etc.)	series selection	"S___"
	4	►	LED Set blinks	"P" Series Parameter; (Alarm, Binary, Parameter etc.)	series selection	"P___"
	5	► Commiss. Mode only!	LED Set blinks	"SE" Series SE-Mode pre-programming	series selection (for factory / equipment manufacturer)	"SE__"
		►		round robin --> 0		
			Set Series Basic "C0" (=identical in the BASIC Controller up to C0.16)			**start action by SET**
	0		LED Set blinks	"C0" Series Set Basic	["ci""zero", not "ci""ou"!]	"C0__"
	1	▼, SET	C0._1	change parameter current transducer ratio (ctr)		LED Auto / I blinks
	2	▼	C0._2	change parameter target cos phi (tariff 1)		LED Auto / cos phi blinks
	3	▼	C0._3	change parameter alarm cos phi, towards inductive (tariff 1)		LED Alarm / cos phi blinks
	4	▼	C0._4	change parameter alarm delay for cos phi alarms in hours		LED Alarm / cos phi blinks
	5	▼	C0._5	change parameter response time regulation for contactor switched steps in seconds		
	6	▼	C0._6	change parameter idle time for contactor switched steps in seconds		
	7	▼	C0._7	change binary parameter defect analysis / step power sizing, off/on		
	8	▼	C0._8	restore display of acknowledged, still active alarms		"AL..." indicates those alarms
	9	▼	C0._9	change service password	0000=no password protection	
	10	▼	C0.10	hold fan for 30 minutes (if controller controlled)		
	11	▼	C0.11	reset min/max values of measurement matrix "Mx.yy"		"ALL.M"/"0000"/"=Set."
	12	▼	C0.12	reset max values of harmonics matrix "Hx.yy"		"ALL.H"/"0000"/"=Set."
	13	▼	C0.13	reset actual alarm count of menu series "A1.yy"		"ALL.A"/"0000"/"=Set."
	14	▼	C0.14	acknowledge "maintenance done"; maintanance timer starts again (ca. 2 years)		
	15	▼	C0.15	fan test (SET: toggle on/off)		
	16	▼	C0.16	alarm relay test (SET: toggle on/off)		
	17	▼	C0.17	repair / check step size (side effects: re-activate defective step / start defect analysis whatever is appropriate)		
	18	▼	C0.18	repair / step replaced or added with automatic step sizing		not in commissioning mode
	19	▼	C0.19	repair / step replaced or added with step size input by hand (before action start with no step selected this item displays the smallest and biggest step sizes that can be entered)		not in commissioning mode
	20	▼	C0.20	repair / re-activate defective step without checks		item visible only with special password
		▼		round robin --> 0		
			During Normal Operation: **Set-Series Installation "In"** (=identical in the BASIC Controller)			**start action by SET**
	0		LED Set blinks	"In" Series Installation		"In__"
	1a	▼, SET	In._1	revert to **Standard Parameters**, parameter set I. No re-comm.		normal operation modes, only
	2a	▼	In._2	change from Normal Operation mode to Re-Commissioning		normal operation modes, only
		▼		round robin --> 0		
			During Commissioning only: **Set-Series Installation "In"** (=identical in the BASIC Controller)			**start action by SET**
	0		LED Set blinks	"In" Series Installation		"In__"
	1b	▼, SET	In._1	revert to the **(customer specific) Factory Defaults**, Re-Commissioning required thereafter		commissioning mode, only
	2b	▼	In._2	Auto Commissioning like Auto-Start		commissioning mode, only
			downwards from here: **Experts Menu** of Commissioning mode			
	3	▼	In._3	finish commissioning mode, change to Auto Regulation mode		=experts menu of commiss.
	4	▼	In._4	enter current transducer by primary and secondary current in A		=experts menu of commiss.
	5	▼	In._5	change current transducer ratio (ctr)		=experts menu of commiss.
	6	▼	In._6	limit number of populatable steps (also called "end-stop")		=experts menu of commiss.
	7	▼	In._7	select steps types	► per step (e.g. fixed step)	=experts menu of commiss.
	8	▼	In._8	enter detuning factor p [%]	► per step or all the same	=experts menu of commiss.
	9	▼	In._9	change service password	0000=no password protection	=experts menu of commiss.
	10	▼	In.10	change binary parameter detailed info on/off (std=off)		=experts menu of commiss.
	11	▼	In.11	Auto Commissioning like Auto-Start		commissioning mode, only
	12	▼	In.12	auto-gauge net configuration (phase angle, U/f nominal)		=experts menu of commiss.
	13	▼	In.13	enter net configuration by input signals: "2311"=L2-L3;L1,k-l		=experts menu of commiss.
	14	▼	In.14	enter net configuration: phase angle [0°, 30°, .. 360°]		=experts menu of commiss.

02.06	Item	Key	LED / Display	Menu Item	Menu Action	Display / Input
	15	▼	In.15	enter net configuration: nominal mains voltage in V		=experts menu of commiss.
	16	▼	In.16	enter parameter target frequency, 50 / 60Hz		=experts menu of commiss.
	17	▼	In.17	enter fixed compensation power / base load in kvar (also SE m.)		=experts menu of commiss.
	18	▼	In.18	enter steps powers	► per step (also SE mode) [kvar]	=experts menu of commiss.
	19	▼	In.19	auto-size steps powers (also SE mode after In.18, SE._7)		=experts menu of commiss.
	20	▼	In.20	finish commissioning mode, change to Auto Regulation mode		=experts menu of commiss.
	21	▼	In.21	change binary parameter show result on/off (std=on)		=experts menu of commiss.
	22	▼	In.22	save current settings as customer specific Standard Parameters		=experts menu of commiss.
		▼		round robin --> 0		

		Error Codes on Abort of Auto-Commissioning	"Err.7" e.g. error no. 7
		1=abort by user (ESC key), 2=auto-gauge/enter net configuration before, 3=enter/auto-size steps sizes before (2,3 after menu item In.20), 4=ALL steps unpopulated (=result of auto-gauging/sizing), 5=SE Mode not solved, 6=catenation preset does not match the system, 7,8=timeout on auto-gauging/auto-sizing, 9=SE Mode presets do not match the system	

Set Series "S": "St", "S0", "SP", "Sd", "Sc" (▼,► Matrix, 2-dimensional)

	"S"		Series / Line	Setting Series	► **Column Selection:** Step Number 1..8 (,0) round robin	
	0		LED Set blinks	"S" Series Steps settings	column= step number 1..8 or 0	"S___"
	1	▼, SET	St	Steps Types (OFF, AUTO CAP/IND, ON CAP/IND (=fixed step); std=AUTO CAP. Start selection by SET, select type using ▼ and accept selection by SET or cancel input with ESC. Commissioning mode: select any step type; normal operation mode: toggle between selected step type and OFF.		
	2	▼	S0	Initial Step Power in kvar. Note that SE mode internally uses a different scale with respect to standard size.		
	3	▼	SP	Detuning Factor in %. Take care, not to have different values if not desired because any combi detuning is active.		
	4	▼	Sd	Duty Period in 100h. This menu item may only be used to reset the value accumulated during normal operation.		
	5	▼	Sc	Switching Cycles in 100. This menu item may only be used to reset the value accumulated during normal operation.		
		▼		round robin --> 0		
	Commissioning mode: use column 0="__.All" to enter the same value for all steps. "S0" default value is 50kvar. The red Steps LED of the selected step number/column fastly flashes (=Steps Cursor), all red Steps LEDs for column 0="ALL"					

Set Series "P": "PA", "Pb", "P0", "PI", "PC" (no Matrix usage)

	"P"		Series / Line	Setting Series	► **Column Selection**: 1..n round robin	
	0		LED Set blinks	"P" Series Parameter		"P___"
	1	▼, SET	PA	External Alarm signal at ...	for colums see separate table below	
	2	▼	Pb	Binary Parameter (on/off)	for colums see separate table below	
	3	▼	P0	Common Parameter	for colums see separate table below	["pi""zero", not "pi""ou"!]
	4	▼	PI	Configure Control Input	for colums see separate table below	
	5	▼	PC	Configure Communications	for colums see separate table below	
		▼		round robin --> 0		

		Show all "Set" menu items in ervery mode but input is restricted to commissioning mode in most cases.	
		For servuce staff only: some menus have additional series or columns if the confidential SE password is active	

			Series "PA": External Alarms via alarm relay		**Alarm**	**Threshold, Delay**
	1	►	PA._1	cos phi to inductive	alarm forwarded by relay on/off. Std=on	AL._1	C0._4, P0._7, C0._3, P0._5
	2	►	PA._2	cos phi to capacitive	alarm forwarded by relay on/off. Std=on	AL._2	C0._4, P0._7, P0._6
	3	►	PA._3	step defective, power loss	alarm forwarded by relay on/off. Std=on	AL.31-38	c0._7, Pb._2, P0.15
	4	►	PA._4	duty period exceeded	alarm forwarded by relay on/off. Std=on	AL.41-48	P0.17
	5	►	PA._5	switching cycles exceeded	alarm forwarded by relay on/off. Std=on	AL.51-58	P0.16
	6	►	PA._6	voltage U rms < U min	alarm forwarded by relay on/off. Std=on	AL.10-11	fest:75% / Pb._7. P0.13
	7	►	PA._7	voltage U rms > U max	alarm forwarded by relay on/off. Std=on	AL.12	P0.12
	8	►	PA._8	U rms < metering range	alarm forwarded by relay on/off. Std=on	AL.16	fest, ca. 50V (8K)
	9	►	PA._9	U rms > metering range	alarm forwarded by relay on/off. Std=on	AL.17	fest, ca. 780V (8K)
	10	►	PA.10	I rms > metering range	alarm forwarded by relay on/off. Std=on	AL.18	P0.14, fest, ca. 7,7A (8K)
	11	►	PA.11	Harmonics alarm	alarm forwarded by relay on/off. Std=on	AL._8 AL.21-22	(fest:) 130% P0._9 .. 11
	12	►	PA.12	Frequency alarm	alarm forwarded by relay on/off. Std=on	AL.23	(fest:) 107%
	13	►	PA.13	Excess temperature	alarm forwarded by relay on/off. Std=on	AL.24	P0.20 .. 21
	14	►	PA.14	internal HW error, e.g. low microprocessor voltage	alarm forwarded by relay on/off. Std=on	AL.25	
	15	►	PA.15	Restart executed, e.g. after SW error, also at manual reset	alarm forwarded by relay on/off. Std=on	AL.29-30	
		►		round robin --> 1			

02.06	Item	Key	LED / Display	Menu Item	Menu Action	Display / Input
			Series "Pb": Binary Parameters, e.g. on/off			**Variant** **Operat. Mode; Pwd.**
	1	▶	Pb._1	strictly avoid regulation to capacitive cos phi (at low P), on/off		all variants
	2	▶	Pb._2	defect analysis / steps powers supervision, off/on,		all variants
	3	▶	Pb._3	thyristor fast mode (response time 25 msec @ 50Hz), off/on		variants 4T4K and 8T only
	4	▶	Pb._4	detail info: show intermediate results during comissioning, off/on (automatically switched to on at transducer entry, to off in SE-Mode)		all var. applicable only during commiss.
	5	▶	Pb._5	show self auto-commissioning results, off/on		all var. applicable only during commiss.
	6	▶	Pb._6	contactors switch all together instead of subsequently, on/off		all variants
	7	▶	Pb._7	contactors switch on despite U rms < Umin, on/off in the range from zero voltage (75%) to Umin (std: 88%) because of contactor's starting moment		all variants
	8	▶	Pb._8	fan always blows if at least one thyristor is on, off/on because of the thermal dissipation by thyristor switches		variants 4T4K and 8T only
	9	▶	Pb._9	mixed detuning: combi detuning instead of absorption circuit controls the order of step usage according to the individual detuning factors		all variants
	10	▶	Pb.10 yet not implemented	low load cos phi alarms (alarms also at net conditions not controller caused)		all variants
		▶		round robin --> 1		
			Series "P0": Common Parameters		["pi""zero", not "pi""ou"!]	**Variant** **Operat. Mode; Pwd.**
	1	▶	P0._1	Current Transducer Ratio (ctr)		all variants
	2	▶	P0._2	Response Time for contactor switched steps in seconds		variants 8K and 4T4K only
	3	▶	P0._3	Idle Time for contactor switched steps in seconds		variants 8K and 4T4K only
	4	▶	P0._4	Target cos phi (, tariff 1)		all variants
	5	▶	P0._5	Alarm Threshold cos phi towards inductive (, tariff 1)		all variants
	6	▶	P0._6	Alarm Threshold cos phi towards capacitive (, tariff 1)		all variants
	7	▶	P0._7	Alarm Delay for cos phi alarms in minutes		all variants
	8	▶	P0._8	Fixed Compensation Power / Base Load in kvar (also inductive)		all variants
	9	▶	P0._9	Alarm Threshold THDU in %		all variants
	10	▶	P0.10	Alarm Threshold Single Harmonics in %		all variants
	11	▶	P0.11	Alarm Delay Harmonics in minutes		all variants
	12	▶	P0.12	Alarm Threshold Umax in % to Umains		all variants
	13	▶	P0.13	Alarm Threshold Umin in % to Umains		all variants
	14	▶	P0.14	Alarm Delay Long / inrush surge current dead time in seconds		all variants
	15	▶	P0.15	Alarm Threshold Power Loss in %		all variants
	16	▶	P0.16	Alarm Treshold Switching Cycles on/off in 100 occurrences		all variants
	17	▶	P0.17	Alarm Threshold Duty Period in 100 hours		all variants
	18	▶	P0.18	Temperature Offset in celsius degrees (Tcabinet - Tcontroller)		all variants
	19	▶	P0.19	Fan Activation Temperature in celsius degrees		all variants
	20	▶	P0.20	Shut-down Excess Temperature in celsius degrees		all variants
	21	▶	P0.21	Alarm Delay Excess Temperature in minutes		all variants
	22	▶	P0.22	Limitation of steps powers switching alltogether in % of largest step		all variants
	23	▶	P0.23	Response Time for thyristor switched steps in milli-seconds		variants 4T4K and 8T only
	24	▶	P0.24	Idle Time for thyristor switched steps in seconds		variants 4T4K and 8T only
	25	▶	P0.25	Response Time for contactor switched follow-up steps in seconds		variant 4T4K only
	26	▶	P0.26	Output/Wiring Test: cycle count 1 ... 2000, std.=5		all variants
	27	▶	P0.27	Output/Wiring Test: cycle period 1s ... 60s, std.=2s		all variants
	28	▶	P0.28	Phase Angle Correction for summing Transducers, voltage transducers, etc. in angle minutes in range +- 15 angle degrees		all var. commiss. mode only
	29	▶	P0.29	Current Transducer Overload: preset in A / reset automatic=0A		all var. commiss. mode only
	30	▶	P0.30	Fixed Operation Frequency in Hz (!! be careful, harmonics may rise !!)		all var. commiss. mode only
	31	▶	P0.31	Catenation Factor Preset; 0=auto, 1=AC, 2=L-L (1.73), 3=L-N (3.0)		all var. commiss. mode only
		Interface Parameters of Control Input / tarriff select and Communications I/f in menu series PI and PC				
		▶		round robin --> 1		

Preceding parameters are skipped if not relevant for the actual controller variant.
No input to parameters outside the matching operation mode and without the required password.

02.06	Item	Key	LED / Display	Menu Item	Menu Action	Display / Input
	Series "PI": Control-Interface Parameters: tariff entry, etc.					**Variant** **Operat. Mode; Pwd.**
	1	▶	PI._1	Configure the Control Interface (hardware and software usage)		all variants
	2	▶	PI._2	Configure CI digital modes This menu item is always accessible		"__4.1" = displays input current use SET due to start sub-menu
	Further menu offering depends on selection in "PI._1" …					
	3	▶	PI._3	Regulation curve cos phi (P) according to VDE AR-4105:2007		use SET due to start sub-menu
	4	▶	PI._4	Regulation curve cos phi (CI-Signal), LEW-Type		use SET due to start sub-menu
	5	▶	PI._5	Regulation curve cos phi (CI-Signal), common		use SET due to start sub-menu
	6	▶	PI._6	Regulation curve cos phi (P), common		use SET due to start sub-menu
	7	▶	PI._7	Regulation curve cos phi (U), common without Hysteresis		use SET due to start sub-menu
	8	▶	PI._8	Regulation curve Q (CI-Signal), common		use SET due to start sub-menu
	9	▶	PI._9	Regulation curve Q (P), common		use SET due to start sub-menu
	10	▶	PI.10	Regulation curve Q (U), common without Hysteresis		use SET due to start sub-menu
		▶		round robin --> 1		

	… "PI": Control Interface Types					**Variant** **Operat. Mode; Pwd.**
	2	**CI type**	**Mode (Hex)**	**Interface Function**	**for digital: 04mA or 230V AC= ...**	all var. displays input current
		digital	0x0000/0001	alternate tariff 1 / 2	tariff 2 / tariff 1	
		digital	0x0002/0003	dual feed (w. section switch)	section switch on / off	
		digital	0x0004/0005	temporarely hold-off regulation	regulation hold / inversal	
		digital	0x0006/0007	synchronize quarter hour	quarter start=04mA begin / end	
		none	0x0080	internal tariff change	< 0,5A=tariff 2, >= 0,5A=tariff 1; current treshhold programmable in P0.28	
		analogue	0x0010..00F0	analogue 04-20mA input	04mA=lowest, 20mA=largest control signal input value	

		CI type	**Mode (Hex)**	**Regulation Curve**	**for analogue input: 04mA..20mA=lowest..highest control value**
	3	none	0x0500	regulation curve cos phi (P) according to VDE AR-4105:2007	
	4	analogue	0x0150	regulation curve cos phi (CI signal), LEW Type	
	5	analogue	0x0110	regulation curve cos phi (CI signal), common	
	6	none	0x0100	regulation curve cos phi (P), common	
	7	none	0x1000	regulation curve cos phi (U), common without hysteresis	
	8	analogue	0x0220	regulation curve Q (CI signal), common	
	9	none	0x0200	regulation curve Q (P), common	
	10	none	0x2000	regulation curve Q (U), common, without hysteresis	

				Either of the (CI) or (P) curves may be combined with one of the (U) curves. All besides the (CI) curves may be combined with one digital CI interface function

	… Sub-Menus of PI					
	2		PI.21	all digital CI input types	target cos phi, tariff 2	
			PI.22	all digital CI input types	alarm cos phi threshold inductive side, tariff 2	
			PI.23	all digital CI input types	alarm cos phi threshold capacitive side, tariff 2	
			PI.24	all digital CI input types	dual feed, section switch in normal position (mostly used): current transducer, primary and secondary in A	
			PI.25	all digital CI input types	dual feed, section switched: current transducer, primary in A	
			PI.26	all digital CI input types	dual feed, section switched: phase angle correction, (yet not in use)	
			PI.27	all digital CI input types	dual feed, section switched: gauge current transducer	
			PI.28	internal tariff change	current threshold in % of 5A/1A <Std: 0.5A/0.1A=10%>, hysteresis 4%	
	5		PI.31	cos phi (CI signal)	target cos phi at 04mA	
			PI.32	cos phi (CI signal)	target cos phi at 20mA	
	4		PI.36	cos phi (CI signal), LEW	target cos phi at 04mA	
			PI.37	cos phi (CI signal), LEW	target cos phi at 20mA	
	6		PI.41	cos phi (P)	lower reference value: real power in kW	
			PI.42	cos phi (P)	lower reference value: cos phi	
			PI.43	cos phi (P)	upper reference value: real power in kW	
			PI.44	cos phi (P)	upper reference value: cos phi	
	3		PI.46	cos phi (P), AR-4105:2007	rated real power Ppeak in kW	
			PI.47	cos phi (P), AR-4105:2007	cos phi at Ppeak	
			PI.48	cos phi (P), AR-4105:2007	start of regulation curve, real power (please calculate from % value)	
	7		PI.51	cos phi (U) without hysteresis	lower reference value: voltage	
			PI.52	cos phi (U) without hysteresis	lower reference value: cos phi	
			PI.53	cos phi (U) without hysteresis	upper reference value: voltage	
			PI.54	cos phi (U) without hysteresis	upper reference value: cos phi	
	8		PI.61	Q (CI) signal	reactive power at 04mA in kvar	
			PI.62	Q (CI) signal	reactive power at 20mA in kvar	

02.06	Item	Key	LED / Display	Menu Item	Menu Action	Display / Input
	9		PI.71	Q (P)	lower reference value: real power in kW	
			PI.72	Q (P)	lower reference value: reactive power in kvar	
			PI.73	Q (P)	upper reference value: real power in kW	
			PI.74	Q (P)	upper reference value: reactive power in kvar	
	10		PI.81	Q (U)	lower reference value: voltage	
			PI.82	Q (U)	lower reference value: reactive power in kvar	
			PI.83	Q (U)	upper reference value: voltage	
			PI.84	Q (U)	upper reference value: reactive power in kvar	

	Series "PC": Communication Interface (RS485 interface, etc.)					**Variant**	**Operat. Mode; Pwd.**
	1	▶	PC._1	configure the communication iInterface (RS485 interface) Selection: off, CR200M remote PC, big display EA3117		all variants " OFF", "2000", "3117"	
	2	▶	PC._2	baudrate	auto, 19,2kBaud .. 300Baud	"Auto", "19.2 ", "9600" .. " 300"	
	3	▶	PC._3	parity	2=even, 1=odd, 0=without		
	4	▶	PC._4	half-duplex pause after direction change in msec, std.=6.00msec			
	5	▶	PC._5	pause after transmission of a character in msec, std.=0			
	6	▶	PC._6	equipment address, Std.=1			
		▶		round robin --> 1			

	During Commissioning only: **Set-Series SE Mode Pre-programming "SE"**					**start action by SET**	
	0		LED Set blinks	"SE" Series SE-Pre-progr.		"SE__"	Commissioning Mode only
	1	▼, SET	SE._1	execute power-less output test (wiring test)			Commissioning Mode only
	2	▼	SE._2	pre-programming controller in SE mode, on/<u>off</u>			Commissioning Mode only
	3	▼	SE._3	preset the target frequency, 50 / 60Hz; 0=automatical detection			Commissioning Mode only
	4	▼	SE._4	limit number of populatable steps (also called "end-stop")			Commissioning Mode only
	5	▼	SE._5	select steps types	▶ per step (e.g. fixed step)	=St.yy	Commissioning Mode only
	6	▼	SE._6	enter detuning factor p [%]	▶ per step or all the same	=SP.vv	Commissioning Mode only
	7	▼	SE._7	enter steps powers	▶ per step [kvar]	=S0.yy	Commissioning Mode only
	8	▼	SE._8	enter fixed compensation power / base load in kvar		=P0._8	Commissioning Mode only
	9	▼	SE._9	enter current transducer by primary and secondary current in A			Commissioning Mode only
	10	▼	SE.10	change current transducer ratio (ctr)		=P0._1	Commissioning Mode only
	11	▼	SE.11	disable defect analysis / step power measurement, on/<u>off</u>		=Pb._2	Commissioning Mode only
	12	▼	SE.12	disable thyristor fast mode based on half-waves, on/<u>off</u>		=Pb._3	Commissioning Mode only
	13	▼	SE.13	select contry specific settings for cos phi, etc.	"_.dE_"=Germany (SE standard) "_.CH_"=Switzerland		Commissioning Mode only
	14	▼	SE.14	save current settings as customer specific Standard Parameters			Commissioning Mode only
	15	▼	SE.15	change binary parameter show result on/off (std=on)		=Pb._5	Commissioning Mode only
	16	▼	SE.16	change parameter Temperature Offset (Tcabinet - Tcontroller)		=P0.18	Commissioning Mode only
	17	▼	SE.17	change parameter Fan Activation Temperature [°C]		=P0.19	Commissioning Mode only
	18	▼	SE.18	change parameter Shut-Down Excess Temperature [!C]		=P0.20	Commissioning Mode only
	19	▼	SE.19	change parameter Alarm Delay Excess Temperature [Minutes]		=P0.21	Commissioning Mode only
	20	▼	SE.20	change parameter Response Time for Contactor Steps [sec]		=P0._2	Commissioning Mode only
	21	▼	SE.21	change parameter Idle Time for Contactor Steps [sec]		=P0._3	Commissioning Mode only
	22	▼	SE.22	change parameter Response Time for Thyristor Steps [msec]		=P0.23	Commissioning Mode only
	23	▼	SE.23	change parameter Idle Time for Thyristor Steps [sec]		=P0.24	Commissioning Mode only
	24	▼	SE.24	change parameter Target cos phi, tariff 1		=P0._4	Commissioning Mode only
	25	▼	SE.25	change parameter Target cos phi, tariff 2		=PI.21	Commissioning Mode only
	26	▼	SE.26	change parameter Alarm Threshold cos phi inductive, tariff 1		=P0._5	Commissioning Mode only
	27	▼	SE.27	change parameter Alarm Threshold cos phi inductive, tariff 2		=PI.22	Commissioning Mode only
	28	▼	SE.28	change parameter Alarm Threshold cos phi capacitive, tariff 1		=P0._6	Commissioning Mode only
	29	▼	SE.29	change parameter Alarm Threshold cos phi capacitive, tariff 2		=PI.23	Commissioning Mode only
	30	▼	SE.30	change parameter Alarm Delay for cos phi alarms [Minutes]		=P0._7	Commissioning Mode only
	31	▼	SE.31	enable regulation without cos phi capacitive (for CH), on/<u>off</u>		=Pb._1	Commissioning Mode only
	32	▼	SE.32	revert to the **SYSTEM ELECTRIC (SE) Factory Defaults**, Re-Commissioning required thereafter		customer specific defaults get lost	Commissioning Mode only
	33	▼	SE.33	save current settings as customer specific Standard Parameters			Commissioning Mode only
		▼		round robin --> 0			

02.06	Item	Key	LED / Display	Menu Item	Menu Action	Display / Input

Alarm Types, general Alarms without or with alarm switch-off

AL-Code	Priority	Alarm Group =Alarm LED, () without Alarm LED	Alarm Reason	related to ... / notes	Code	Alarm Consequence
"AL_1"	Prio 1	cosphi	cosphi to inductive	alarm delay in range of hours !	"AL_1"	alarm note only
"AL_2"	Prio 0	cosphi	cosphi to capacitive	alarm delay in range of hours !	"AL_2"	alarm note only
"AL_3"	Prio 3	(SW)	Defect analysis / step power supervision is inactive !! No alarm from steps power loss (reminder coming with other alarms)		"AL_3"	alarm note only !! with side effects !!
"AL_4"	Prio 4	(SW)	maintenance interval expired, time to perform next check		"AL_4"	alarm note only
"AL_8"	Prio 2	THDU	(calculated) current through any step capacitor is to high		"AL_8"	with single step switch-off
"AL_9"	Prio 2	(TEMP)	advance warning on excess temperature		"AL_9"	alarm note only
"AL10"	Prio 4	U	zero voltage (alarm count includes short term interruption w/o alarm)		"AL10"	with alarm switch-off
"AL11"	Prio 2	U	U < Umin		"AL11"	with alarm switch-off
"AL12"	Prio 3	U	U > Umax		"AL12"	with alarm switch-off
"AL16"	Prio 0	U	U < metering range (ca. 50V)		"AL16"	with alarm switch-off
"AL17"	Prio 1	U	U > metering range (ca. 780V)		"AL17"	with alarm switch-off
"AL18"	Prio 0	I	I > metering range (ca. 7,7A)		"AL18"	with alarm switch-off
"AL20"	Prio 0	THDU	harmonics threshold exceeded on any singe frequency		"AL20"	with alarm switch-off
"AL21"	Prio 1	THDU	harmonics threshold exceeded on THDU		"AL21"	with alarm switch-off
"AL23"	Prio 1	(TEMP)	excess mains fundamental frequency / freq. not measurable		"AL23"	with alarm switch-off
"AL24"	Prio 0	(TEMP)	excess temperature	may escalate to shut-down ("StoP")	"AL24"	with alarm switch-off
"AL25"	Prio 2	(SW)	low internal supply voltage		"AL25"	with alarm switch-off
"AL27"	Prio 7	(TEMP)	**no alarm**, switch-off all steps on demand of CI control interface		"AL27"	with alarm switch-off
"AL29"	Prio 1	(SW)	internal software error	triggers reset, alarm thereafter	"AL29"	displayed after reset with additional Information
"AL30"	Prio 0	(SW)	pendular switch-offs/resets	triggers controller shut-down ("StoP"), alarm thereafter	"AL30"	displayed after reset controller shut-down

Alarm Types, steps related alarms without or with single step switch-off

"AL31"	Prio 7	Step	power loss ...	step 1 …	"AL31" ...	
... "AL38"	Prio 0	Step	... exceeds threshold	step 8	"AL38"	with single step switch-off
"AL41"	Prio 7	Step	duty period ...	step 1 …	"AL41" ...	
... "AL48"	Prio 0	Step	... exceeds threshold	step 8	"AL48"	alarm note only
"AL51"	Prio 7	Step	switching cycles on/off ...	step 1 …	"AL51" ...	
... "AL58"	Prio 0	Step	... exceeds threshold	step 8	"AL58"	alarm note only
"AL60"	additional alarm info		first alarm type within the last alarm cluster with switch-off		"AL60"	information note only

	For several alarms assigned to the same LED / group the numerical display only shows the highest priority alarm (=lowest Prio value) yet not acknowledged. Acknowledge that alarm using "SET"; then the next priority alarm cuts through. Use menu item "C0._8" due to restore already acknowledged but still active alarms (indicated by "AL...").