User and operator manual for display for protection releases Tmax XT series

Ekip Display

User and operator manual

Power and productivity
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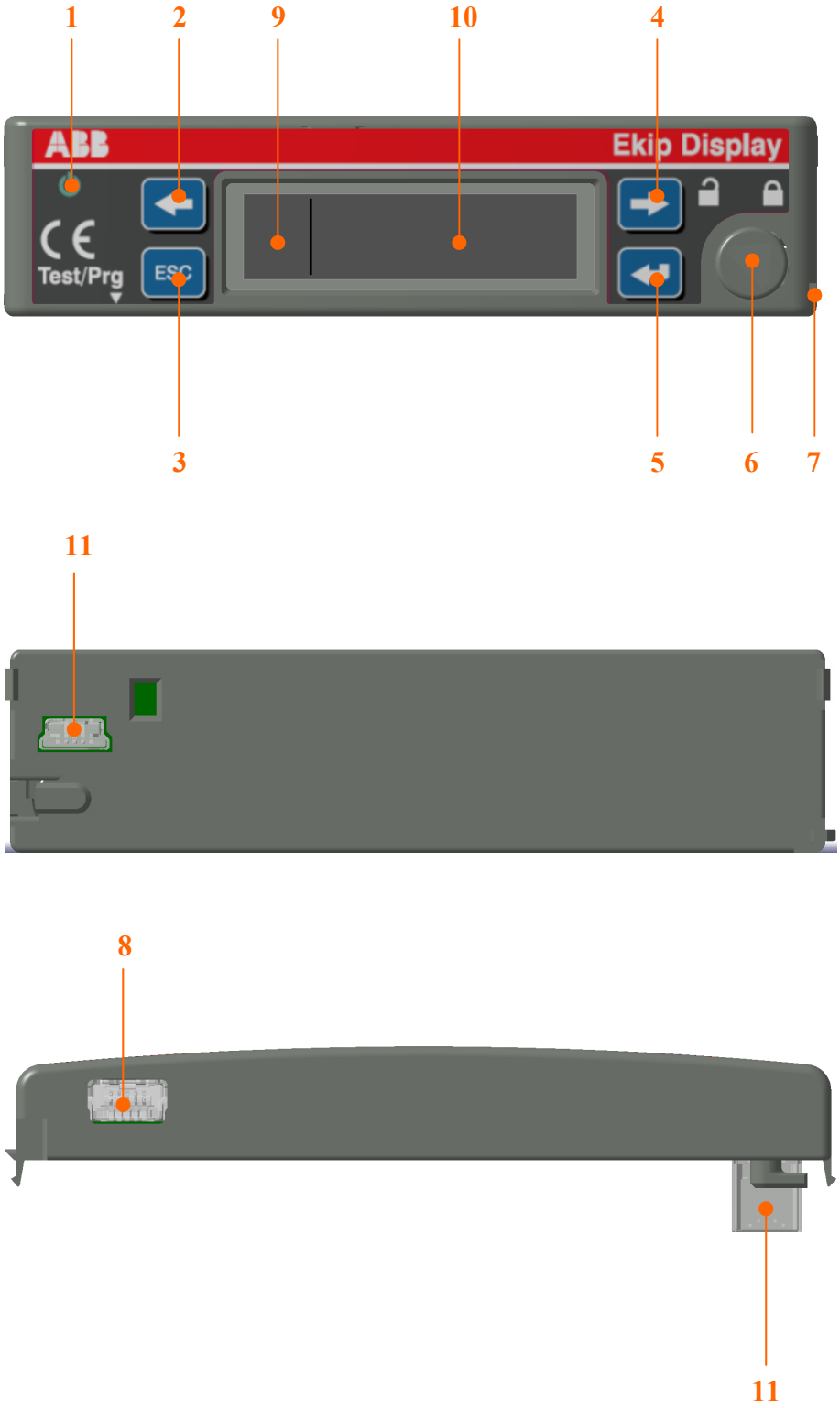
INDEX

ABBREVIATIONS

Tmax XT	New series of moulded case breakers from ABB SACE
CB	Circuit Breaker
TU	Trip Unit
TC	Trip Coil
PTC	Rotor thermal protection
Ekip LSI	Protection relay for ABB SACE Tmax XT CB series
Ekip LSIG	Protection relay for ABB SACE Tmax XT CB series
Ekip M-LRIU	Protection relay for ABB SACE Tmax XT CB series
Ekip E-LSIG	Protection relay for ABB SACE Tmax XT CB series
Ekip TT	ABB SACE test unit
Ekip T&P	ABB SACE communication unit
rms	Root Mean Square value
s/n	Serial number
SW	Software

1 User interface



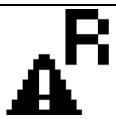
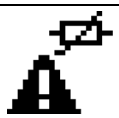
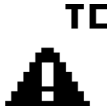
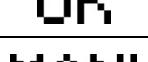
1.1 Legend

Ref.	Description	Notes
1	‘Power’ led	
2	‘Left’ cursor button	
3	Exit or cancellation ‘Esc’ button	
4	‘Right’ cursor button	
5	Confirm ‘Enter’ button	
6	Mechanical fastening	
7	Sealing slot	
8	Ekip TT or Ekip T&P connector	
9	Signalling icons display area	See *Par. 2: Signalling icons*
10	Menu display area	See *Par. 4: main menu detail*
11	TU connector	

Tab. 1: user interface

2 Signalling icons

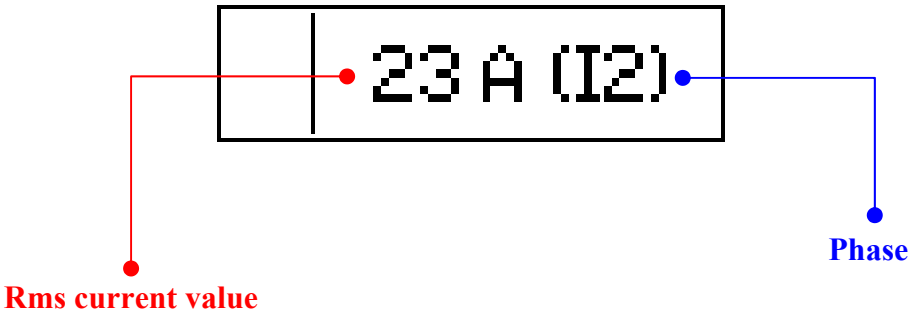
Signalling icons table					
Symbol	**Description**	**Ekip LSI**	**Ekip LSIG**	**Ekip M-LRIU**	**Ekip E-LSIG**
MAN	Manual parameters selected	✓	✓	✓	✓
ELT	Electronic parameters selected	✓	✓	✓	✓
REM	Remote mode selected	✓	✓	✗	✓
LOC	Local mode selected	✓	✓	✗	✓
	Auxiliary power supply presence	✓	✓	✓	✓
PL 	L prealarm	✓	✓	✓	✓
L 	L timing	✓	✓	✓	✓
S 	S timing	✓	✓	✗	✓
G 	G timing	✗	✓	✓	✓

Signalling icons table					
Symbol	**Description**	**Ekip LSI**	**Ekip LSIG**	**Ekip M-LRIU**	**Ekip E-LSIG**
	R (stall) timing R (jam) timing	✘	✘	✓	✘
	U (unbalance) timing	✘	✘	✓	✘
	U (undercurrent) timing	✘	✘	✓	✘
	U (phase loss) timing	✘	✘	✓	✘
	OV/UV timing UV/OV alarm	✘	✘	✘	✓
	PTC timing	✘	✘	✓	✘
	No communication between TU and display	✓	✓	✓	✓
	TC not connected	✓	✓	✓	✓
	ERROR: protection parameters incongruency TU programming failed	✓	✓	✘	✓
		✓	✓	✓	✓
		✓	✓	✘	✓
		✘	✘	✓	✘
	TU programming failed	✓	✓	✓	✓
	TU programming correctly saved	✓	✓	✓	✓
	TU programming correctly saved with manual parameters selected	✓	✓	✓	✓

Tab. 2: icons

3 Default page

Ekip Display default page shows a phase with higher current and its value, expressed in ampere rms (A):

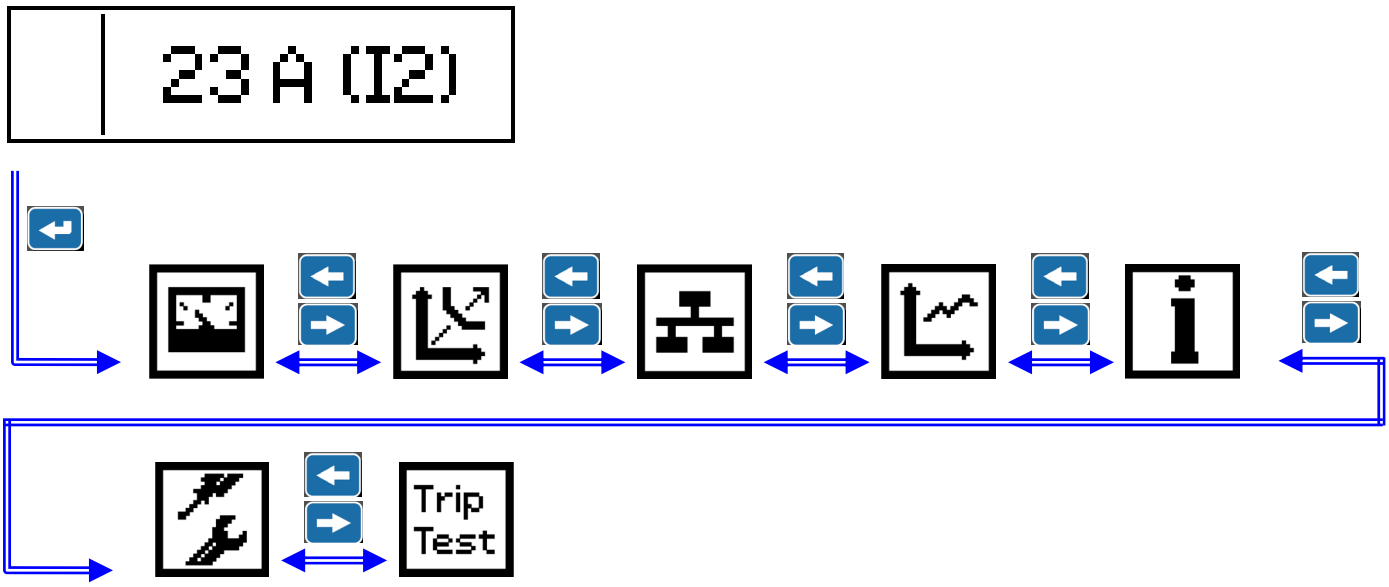


In case there is no current on all phases, is showed the following page:

4 Main menu detail

4.1 Main menu

4.1.1 Menu structure



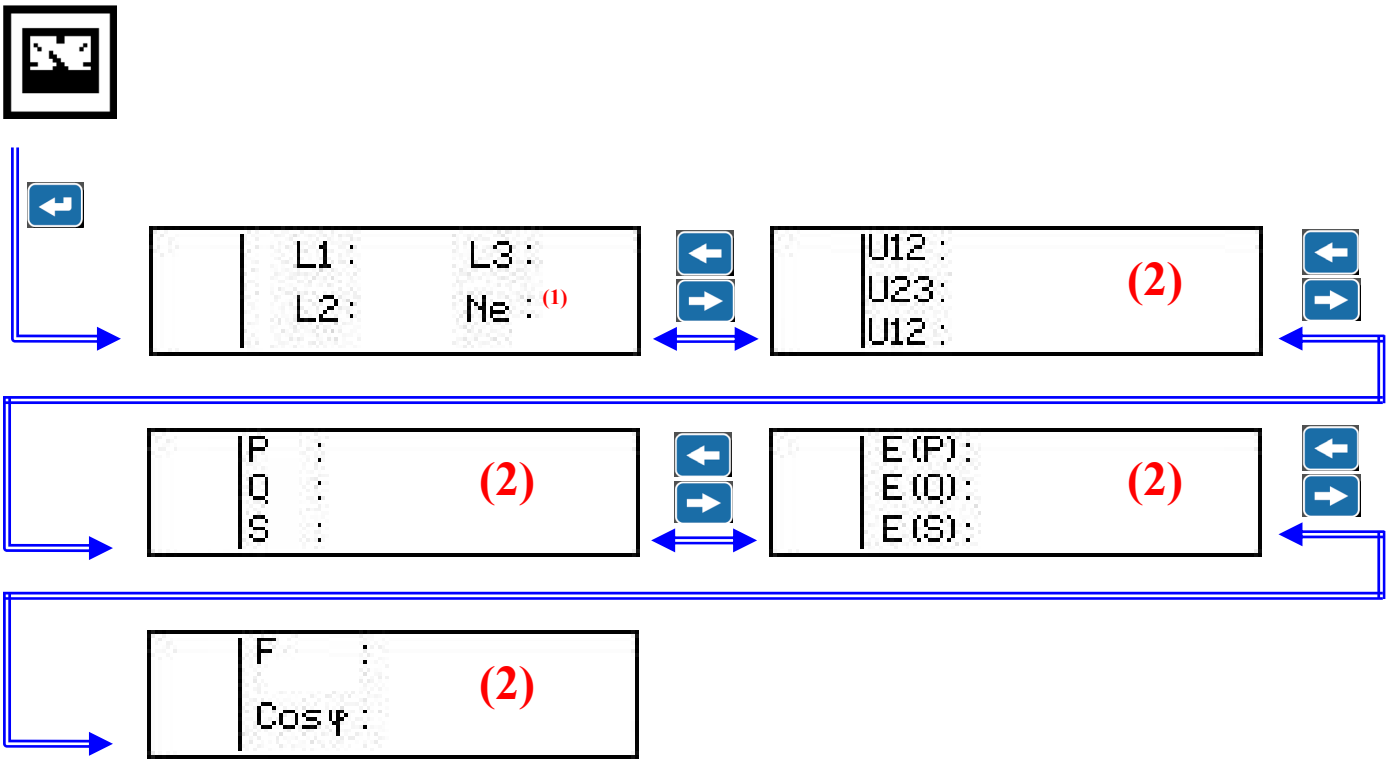
4.1.2 Available submenus

Available submenus			
Symbol	**Name**	**Description**	**Par.**
	**Measures**	Show the measures related to the CB connected to the display	4.2
	**Parameters**	Show and edit protection and configuration settings of the TU connected to the display	4.3
	**Communication**	Show and edit communication settings for the TU connected to the display	4.4
	**History**	Show historical trip information of the TU	4.5
	**Information**	Show serial number and information about CB, TU and display	4.6
	**Settings**	Enter the display self-test procedures menu	4.7
	**Trip test**	Enter the CB trip test menu	4.8

4.2 'Measures' menu

Show the runtime current values of all phases.

4.2.1 Menu structure



(1) *Not available for 'Ekip M-LRIU' TU type*
(2) *Available for 'Ekip E-LSIG' TU type only*

4.2.2 Available submenus

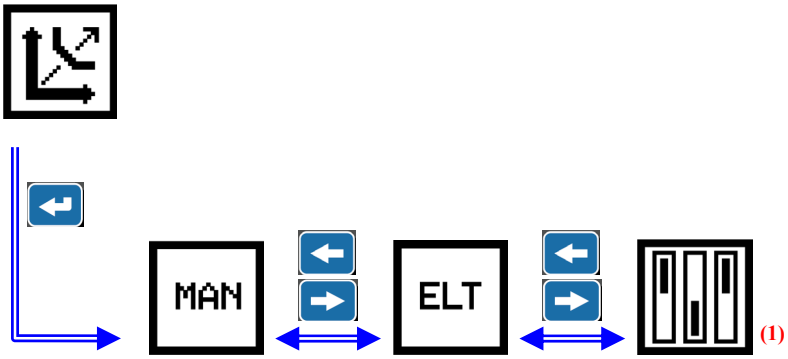
Accessing this menu (see par. 4.2.1) you can see:

- the runtime value, expressed in ampere rms (A), of the phases current of the system which the TU is connected.
- the runtime value, expressed in volt rms (V), of the phase voltages of the system which the TU is connected.(1)
- the runtime value, expressed in watt - reactive voltampere - voltampere rms (W – Var - VA), of the total power of the system which the TU is connected.(1)
- the runtime value, expressed in kilowatt/hour – reactive kilovoltamperer/hour - kilovoltampere/hour rms (kWh – kVArh - kVAh), of the total energy of the system which the TU is connected.(1)
- the runtime value, expressed in hertz (Hz), of the frequency and the runtime value of the phase displacement cosφ of the system which the TU is connected.(1)

(1) *Available for 'Ekip E-LSIG' TU type only*

4.3 'Parameters' menu

4.3.1 Menu structure



(1) *Not available for 'Ekip LSI', 'Ekip LSIG' and 'Ekip LSIG' TU type*

4.3.2 Available submenus

Available submenus			
Symbol	**Name**	**Description**	**Par.**
MAN	**Manual set parameters**	Show the protection settings made by dip-switch on the TU connected to the display	4.3.3
ELT	**Electronic set parameters**	Show and edit protection settings stored in the TU connected to the display	4.3.4
	Configuration set parameters(1)	Show and edit configuration settings stored in the TU connected to the display	4.3.5

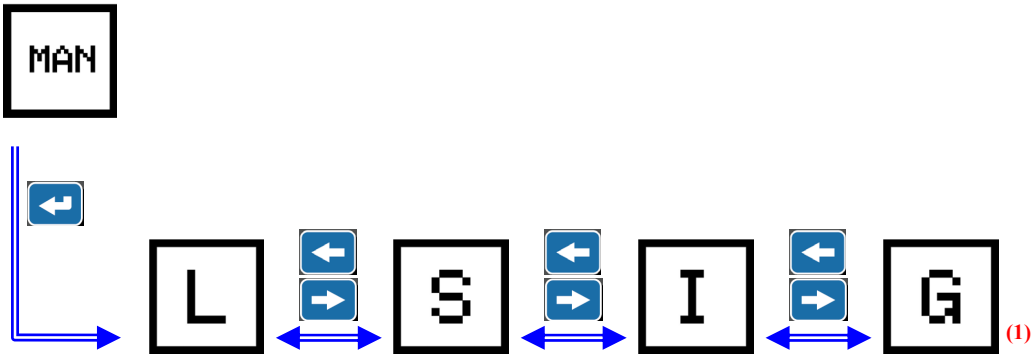
(1) *Not available for 'Ekip LSI', 'Ekip LSIG' and 'Ekip LSIG' TU type*

4.3.3 'Manual set parameters' menu

Accessing this menu is showed the protection setting made by dip-switch on the TU connected to the display.

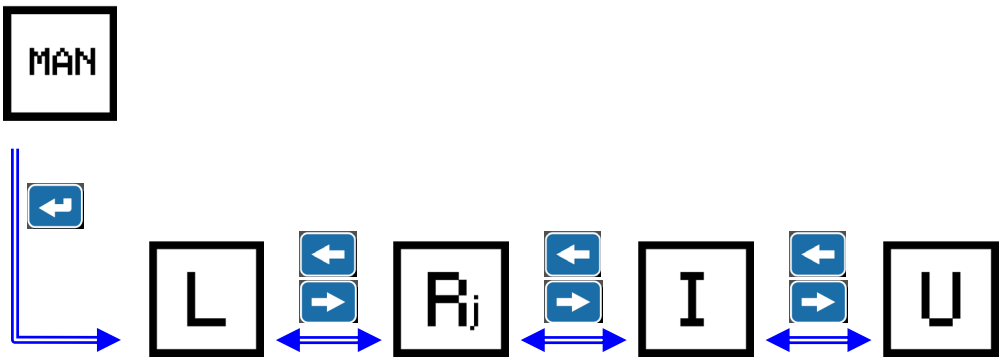
4.3.3.1 Menu structure

The submenus available are different depending of the TU type connected to the display.
In case of use of 'Ekip LSI', 'Ekip LSIG' o 'Ekip E-LSIG' TU type the following structure is available:



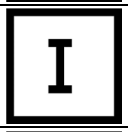
(1) *Not available for 'Ekip LSI' and 'Ekip E-LSIG' TU type*

In case of use of 'Ekip M-LRIU' TU type the following structure is available:



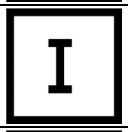
4.3.3.2 Available submenus

The submenus available are different depending of the TU type connected to the display.
In case of use of 'Ekip LSI', 'Ekip LSIG' or 'Ekip E-LSIG' TU type the following structure is available:

Available submenus			
Symbol	**Name**	**Description**	**Par.**
	**L** **protection**	Show the manual settings for protection against overloading made by dip-switch on the TU connected to the display	4.3.3.3
	**S** **protection**	Show the manual settings for protection against short circuit with adjustable delay made by dip-switch on the TU connected to the display	4.3.3.4
	**I** **protection**	Show the manual settings for istantaneous protection against short circuit made by dip-switch on the TU connected to the display	4.3.3.5
	**G** **protection**(1)	Show the manual settings for protection against ground fault made by dip-switch on the TU connected to the display	4.3.3.6

(1) *Not available for 'Ekip LSI' and 'Ekip E-LSIG' TU type*

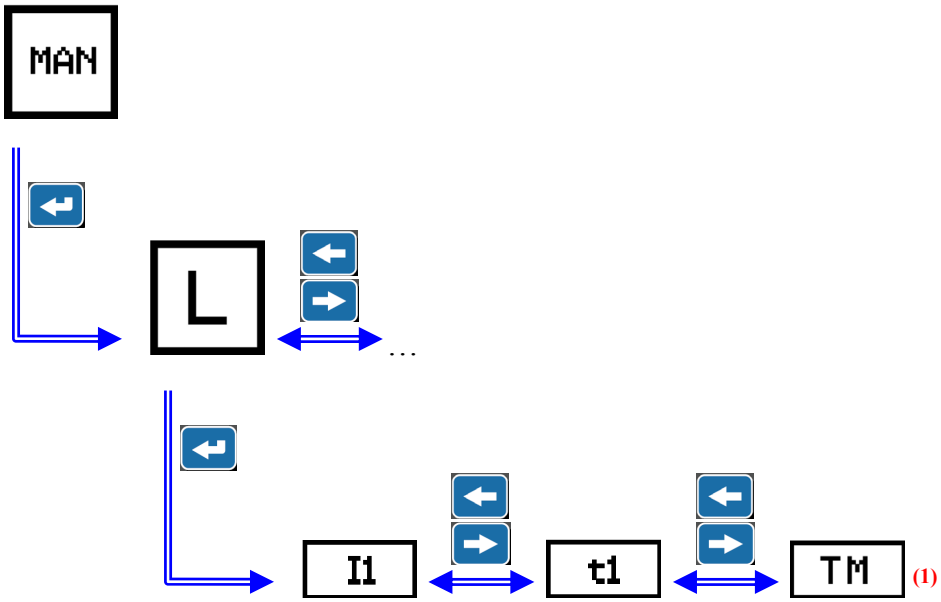
In case of use of 'Ekip M-LRIU' TU type the following structure is available:

Available submenus			
Symbol	**Name**	**Description**	**Par.**
	**L** **protection**	Show the manual settings for protection against overloading made by dip-switch on the TU connected to the display	4.3.3.3
	**R (jam)** **protection**	Show the manual settings for protection against rotor jam made by dip-switch on the TU connected to the display	4.3.3.7
	**I** **protection**	Show the manual settings for istantaneous protection against short circuit made by dip-switch on the TU connected to the display	4.3.3.5
	**U (phase loss)** **protection**	Show the manual settings for protection against phase loss made by dip-switch on the TU connected to the display	4.3.3.8

4.3.3.3 Manual ‘L’ protection parameters

Show the manual settings for protection against overload ‘L’ made by dip-switch on the TU connected to the display.
This protection is available for ‘Ekip LSI’, ‘Ekip LSIG’, ‘Ekip M-LRIU’ and ‘Ekip E-LSIG’ TU type.

4.3.3.3.1 Structure



(1) *Not available for ‘Ekip M-LRIU’ and ‘Ekip E-LSIG’ TU type*

4.3.3.3.2 Available parameters

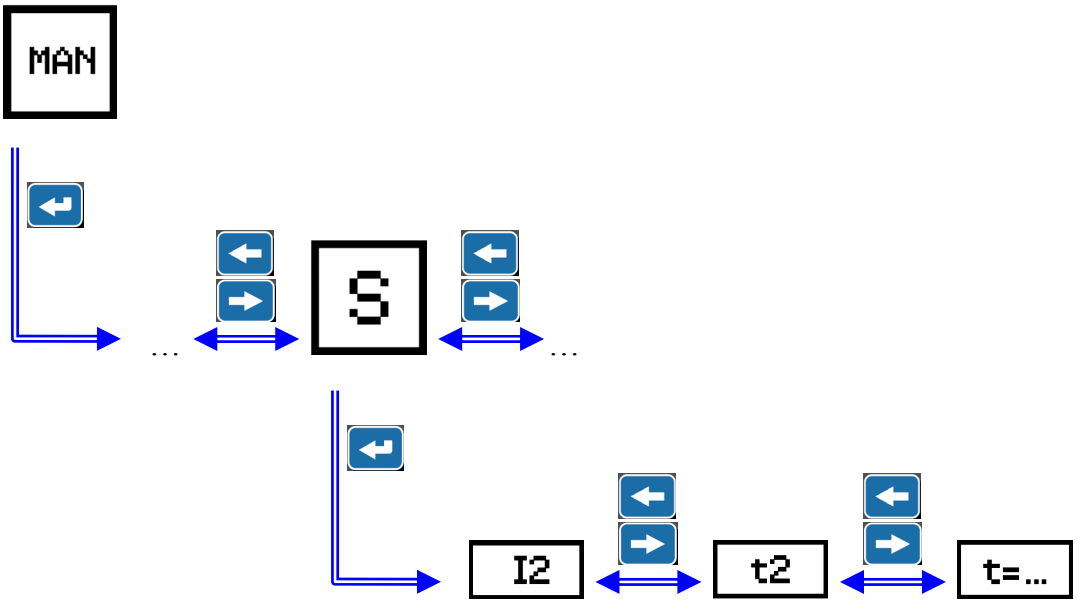
Symbol	Name
I1	**Manual L threshold**
t1	**Manual L time**
TM	**Thermal memory status** (1)

(1) *Not available for ‘Ekip M-LRIU’ and ‘Ekip E-LSIG’ TU type*

4.3.3.4 Manual ‘S’ protection parameters

Show the manual settings for protection against short circuit with adjustable delay ‘S’ made by dip-switch on the TU connected to the display.
This protection is available for ‘Ekip LSI’, ‘Ekip LSIG’ and ‘Ekip E-LSIG’ TU type.

4.3.3.4.1 Structure



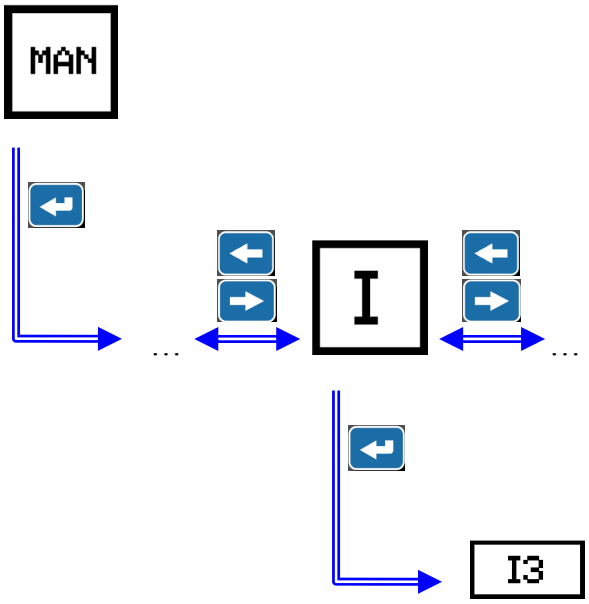
4.3.3.4.2 Available parameters

Symbol	Name
I2	**Manual S threshold**
t2	**Manual S time**
t=...	**Manual S protection curve type**

4.3.3.5 Manual ‘I’ protection parameters

Show the manual settings for istantaneous protection against short circuit ‘I’ made by dip-switch on the TU connected to the display.
This protection is available for ‘Ekip LSI’, ‘Ekip LSIG’, ‘Ekip M-LRIU’ and ‘Ekip E-LSIG’ TU type.

4.3.3.5.1 Structure



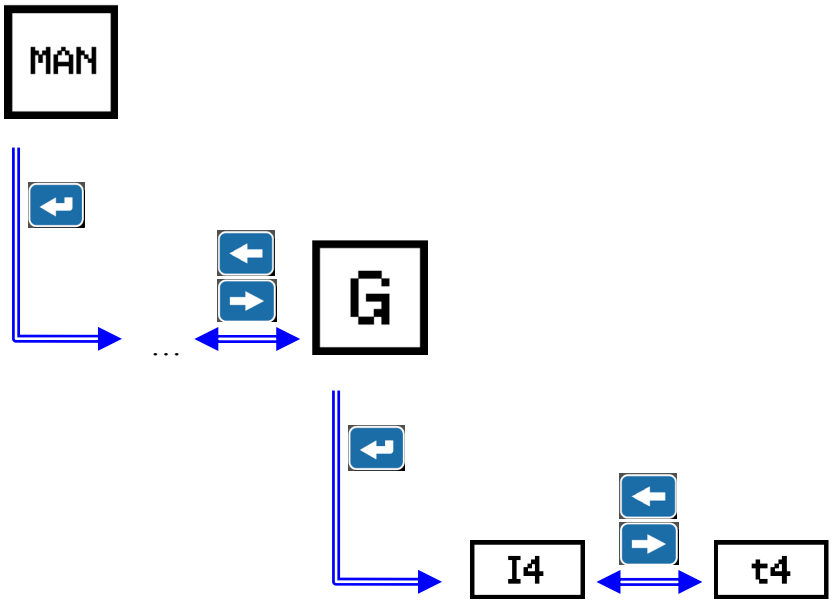
4.3.3.5.2 Available parameters

Symbol	Name
I3	**Manual I protection status**

4.3.3.6 Manual ‘G’ protection parameters

Show the manual settings for protection against ground fault ‘G’ made by dip-switch on the TU connected to the display.
This protection is available only for ‘Ekip LSIG’ TU type.

4.3.3.6.1 Structure



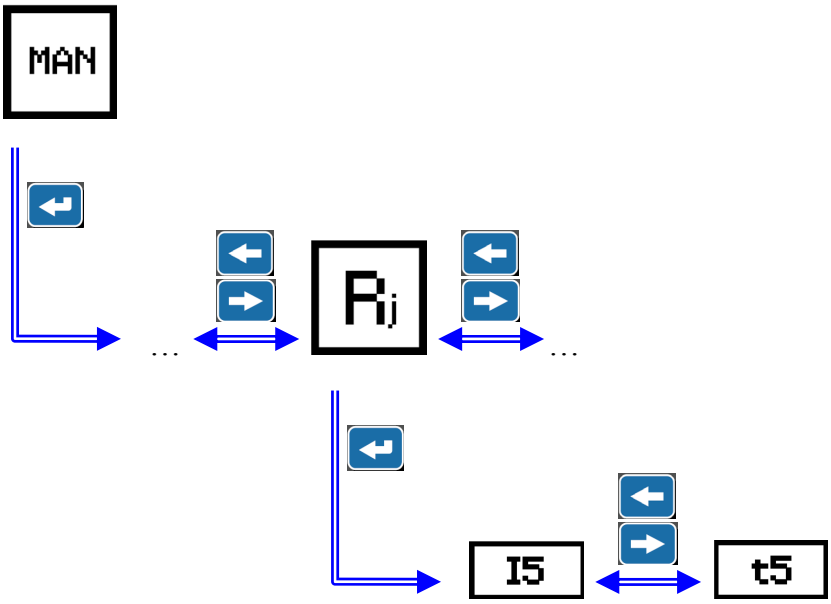
4.3.3.6.2 Available parameters

Symbol	Name
I4	**Manual G threshold**
t4	**Manual G time**

4.3.3.7 Manual ‘R (jam)’ protection parameters

Show the manual settings for protection against rotor jam ‘R (jam)’ made by dip-switch on the TU connected to the display.
This protection is available only for ‘Ekip M-LRIU’ TU type.

4.3.3.7.1 Structure



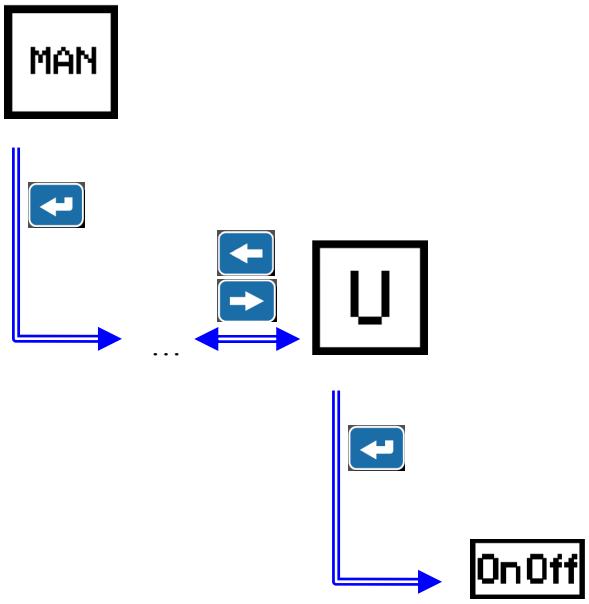
4.3.3.7.2 Available parameters

Symbol	Name
I5	**Manual R (jam) threshold**
t5	**Manual R (jam) time**

4.3.3.8 Protection parameters ‘U (phase loss)’ manuals

Show the manual settings for protection against phase loss ‘U (phase loss)’ made by dip-switch on the TU connected to the display.
This protection is available only for ‘Ekip M-LRIU’ TU type.

4.3.3.8.1 Structure



4.3.3.8.2 Available parameters

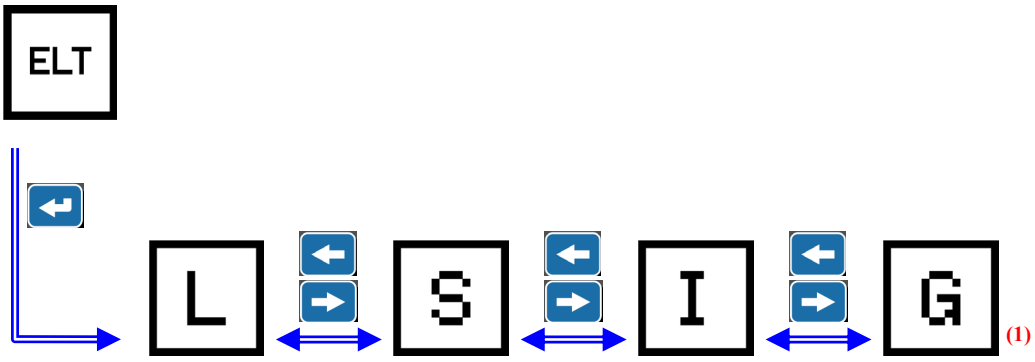
Symbol	Name
OnOff	**Manual U (phase loss) protection status**

4.3.4 ‘Electronic set parameters’ menu

Accessing this menu is possible to show and edit the protection settings stored in the TU connected to the display.

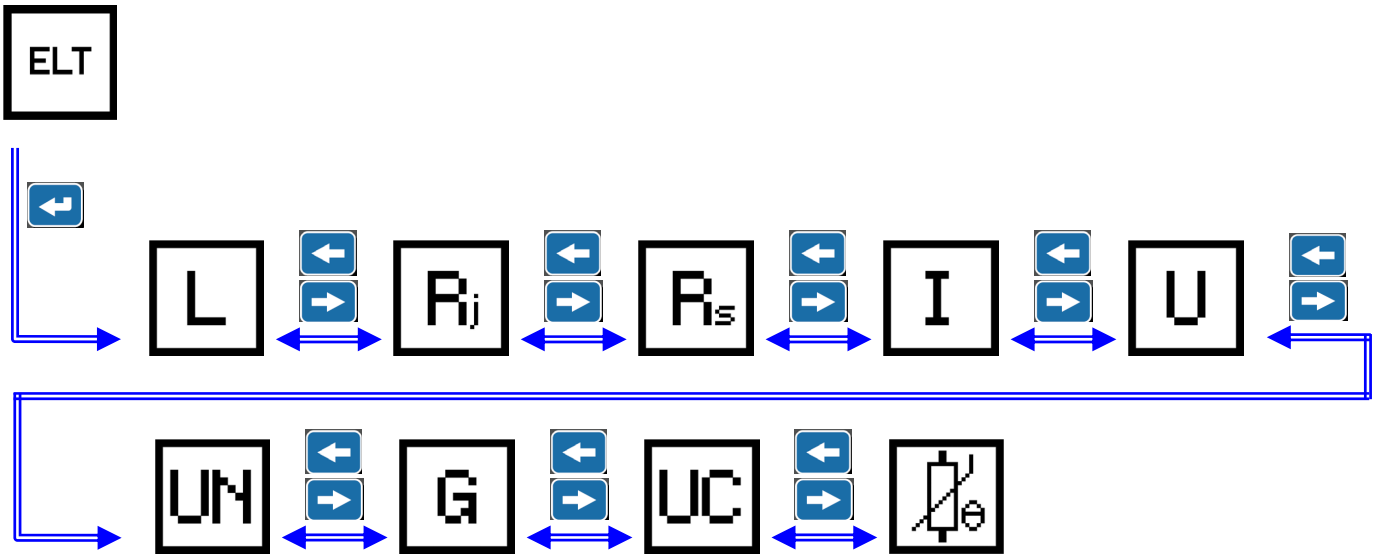
4.3.4.1 Menu structure

The submenus available are different depending of the TU type connected to the display.
In case of use of ‘Ekip LSI’ or ‘Ekip LSIG’ TU type the following structure is available:

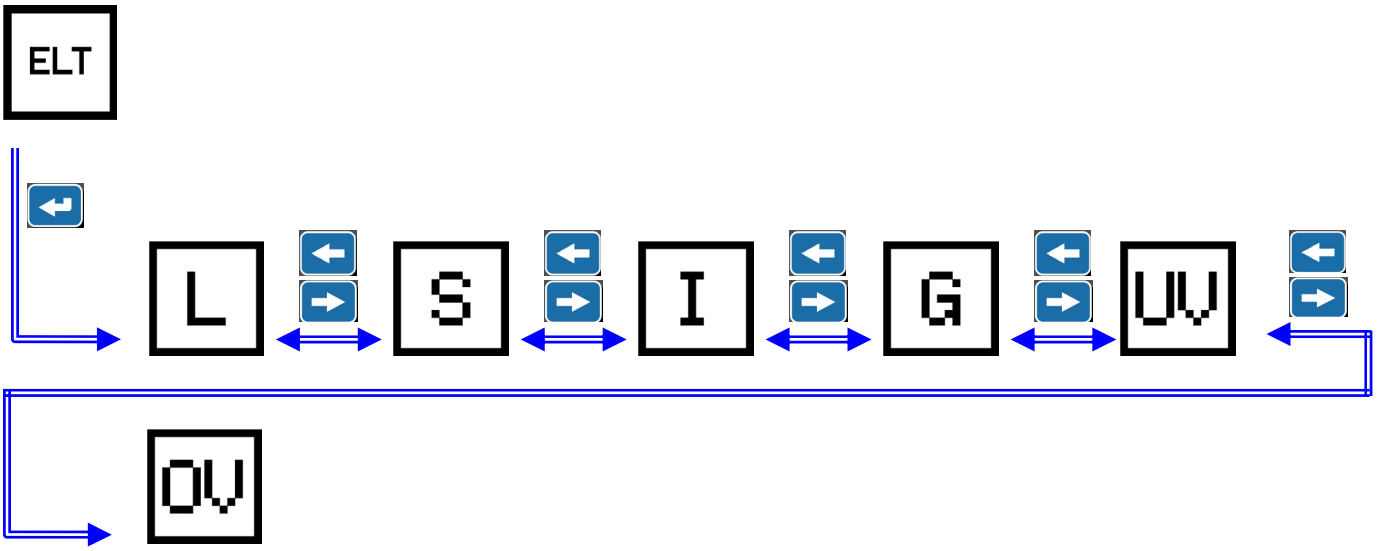


(1) *Not available for ‘Ekip-LSI’ TU type*

In case of use of ‘Ekip M-LRIU’ TU type the following structure is available:



In case of use of ‘Ekip E-LSIG’ TU type the following structure is available:



4.3.4.2 Available submenus

The submenus available are different depending of the TU type connected to the display.
In case of use of ‘Ekip LSI’ or ‘Ekip LSIG’ TU type the following structure is available:

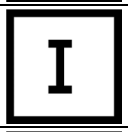
Available submenus			
Symbol	**Name**	**Description**	**Par.**
L	**L** **protection**	Show and edit the electronic settings for protection against overloading of the TU connected to the display	4.3.4.3
S	**S** **protection**	Show and edit the electronic settings for protection against short circuit with adjustable delay of the TU connected to the display	4.3.4.4
I	**I** **protection**	Show and edit the electronic settings for istantaneous protection against short circuit of the TU connected to the display	4.3.4.5
G	**G** **protection**(1)	Show and edit the electronic settings for protection against ground fault of the TU connected to the display	4.3.4.6

(1) *Not available for ‘Ekip-LSI’ TU type*

In case of use of ‘Ekip M-LRIU’ TU type the following structure is available:

Available submenus			
Symbol	**Name**	**Description**	**Par.**
	**L** **protection**	Show and edit the electronic settings for protection against overloading of the TU connected to the display	4.3.4.3
	**R (jam)** **protection**	Show and edit the electronic settings for protection against rotor jam of the TU connected to the display	4.3.4.7
	**R (stall)** **protection**	Show and edit the electronic settings for protection against stall of the TU connected to the display	4.3.4.8
	**I** **protection**	Show and edit the electronic settings for istantaneous protection against short circuit of the TU connected to the display	4.3.4.5
	**U (phase loss)** **protection**	Show and edit the electronic settings for protection against phase loss of the TU connected to the display	4.3.4.9
	**U (unbalance)** **protection**	Show and edit the electronic settings for protection against current unbalance of the TU connected to the display	4.3.4.10
	**G** **protection**	Show and edit the electronic settings for protection against ground fault of the TU connected to the display	4.3.4.6
	**U (undercurrent)** **protection**	Show and edit the electronic settings for protection against undercurrent of the TU connected to the display	4.3.4.11
	**PTC** **protection**	Show and edit the electronic settings for PTC protection of the TU connected to the display	4.3.4.12

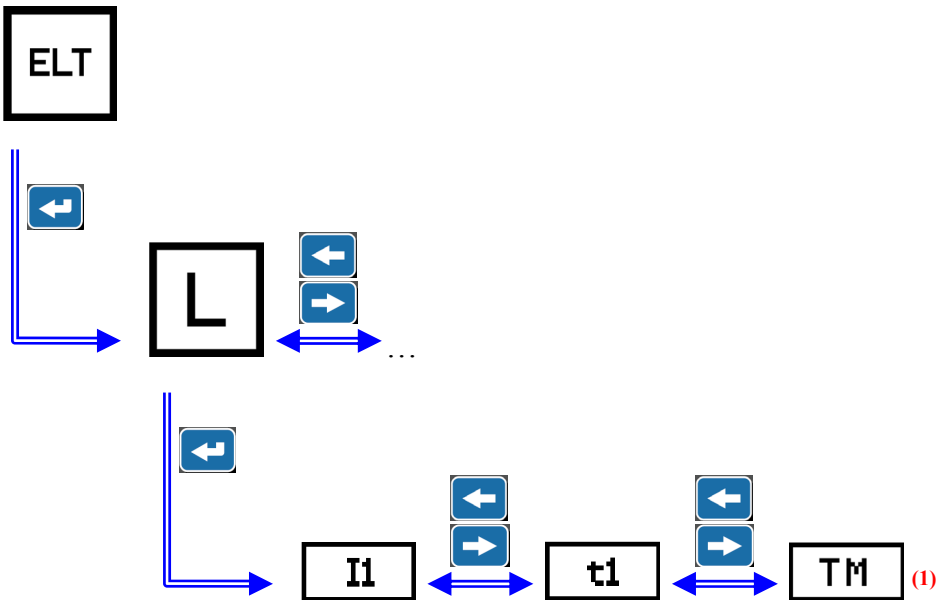
In case of use of ‘Ekip E-LSIG’ TU type the following structure is available:

Available submenus			
Symbol	**Name**	**Description**	**Par.**
	**L** **protection**	Show and edit the electronic settings for protection against overloading of the TU connected to the display	4.3.4.3
	**S** **protection**	Show and edit the electronic settings for protection against short circuit with adjustable delay of the TU connected to the display	4.3.4.4
	**I** **protection**	Show and edit the electronic settings for istantaneous protection against short circuit of the TU connected to the display	4.3.4.5
	**G** **protection**	Show and edit the electronic settings for protection against ground fault of the TU connected to the display	4.3.4.6
	**UV** **protection**	Show and edit the electronic settings for protection against undervoltage of the TU connected to the display	4.3.4.13
	**OV** **protection**	Show and edit the electronic settings for protection against overvoltage of the TU connected to the display	4.3.4.14

4.3.4.3 Electronic ‘L’ protection parameters

Show and edit the electronic settings for protection against overload ‘L’ of the TU connected to the display. This protection is available for ‘Ekip LSI’, ‘Ekip LSIG’, ‘Ekip M-LRIU’ and ‘Ekip E-LSIG’ TU type.

4.3.4.3.1 Structure



(1) *Not available for ‘Ekip M-LRIU’ and ‘Ekip E-LSIG’ TU type*

4.3.4.3.2 Available parameters

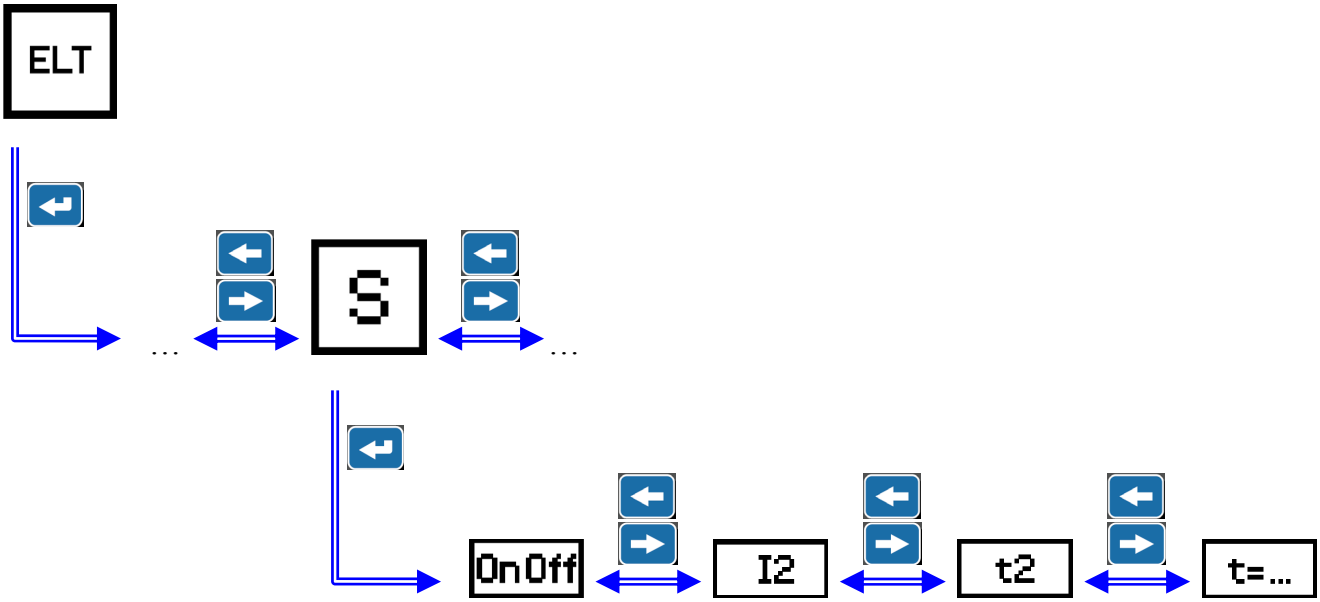
Symbol	Name
I1	**Electronic L threshold**
t1	**Electronic L time**
TM	**Thermal memory status** (1)

(1) *Not available for ‘Ekip M-LRIU’ and ‘Ekip E-LSIG’ TU type*

4.3.4.4 Electronic ‘S’ protection parameters

Show and edit the electronic settings for protection against short circuit with adjustable delay ‘S’ of the TU connected to the display.
This protection is available for ‘Ekip LSI’, ‘Ekip LSIG’ and ‘Ekip E-LSIG’ TU type.

4.3.4.4.1 Structure



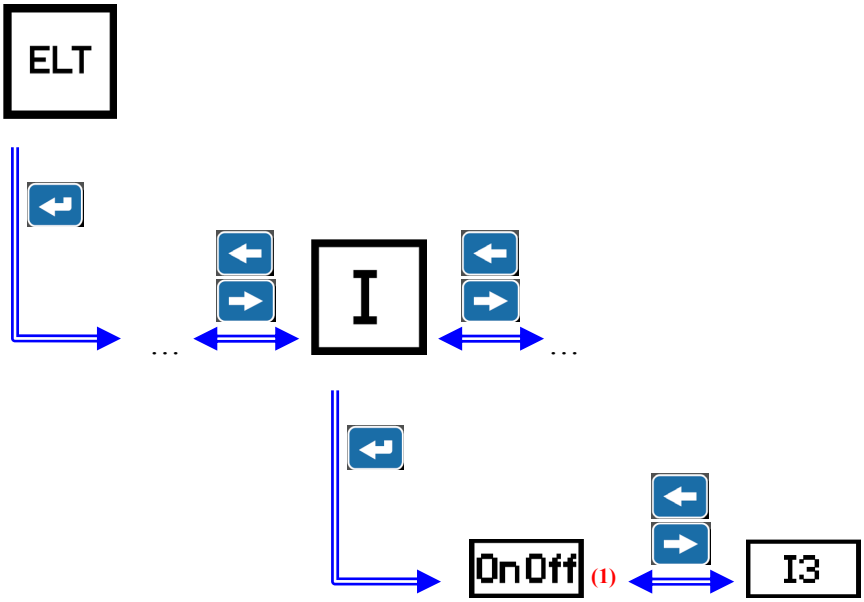
4.3.4.4.2 Available parameters

Symbol	Name
OnOff	**Electronic S protection status**
I2	**Electronic S threshold**
t2	**Electronic S time**
t=...	**Electronic S protection curve type**

4.3.4.5 Electronic ‘I’ protection parameters

Show and edit the electronic settings for istantaneous protection against short circuit ‘I’ of the TU connected to the display.
This protection is available for ‘Ekip LSI’, ‘Ekip LSIG’, ‘Ekip M-LRIU’ and ‘Ekip E-LSIG’ TU type.

4.3.4.5.1 Structure



(1) *Not available for ‘Ekip M-LRIU’ TU type*

4.3.4.5.2 Available parameters

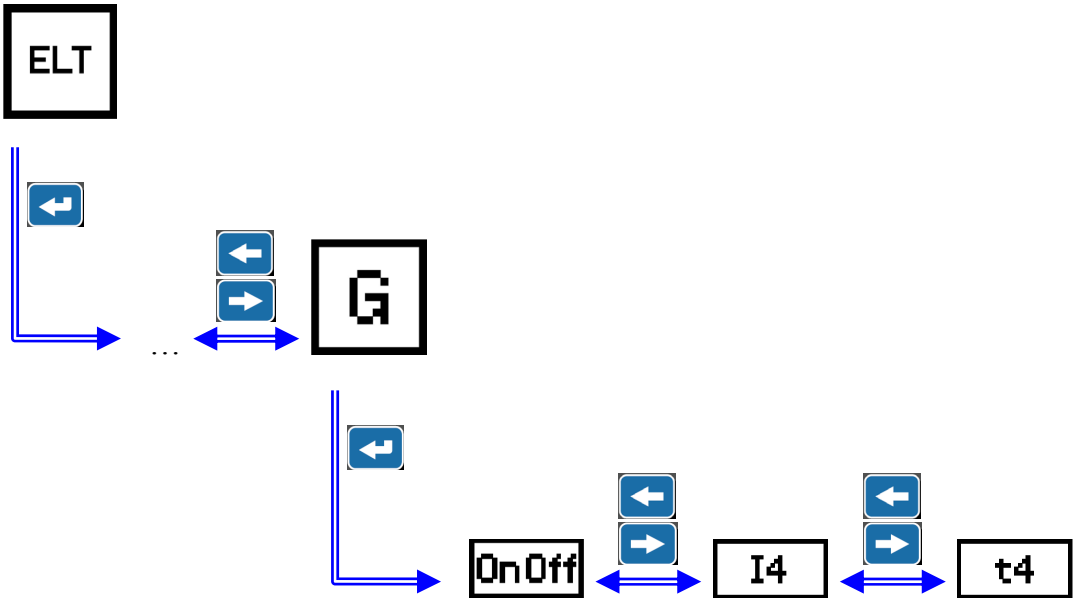
Symbol	Name
OnOff	**Electronic I protection status** (1)
I3	**Electronic I threshold**

(1) *Not available for ‘Ekip M-LRIU’ TU type*

4.3.4.6 Electronic ‘G’ protection parameters

Show and edit the electronic settings for protection against ground fault ‘G’ of the TU connected to the display.
This protection is available for ‘Ekip LSIG’, ‘Ekip M-LRIU’ and ‘Ekip E-LSIG’ TU type.

4.3.4.6.1 Structure



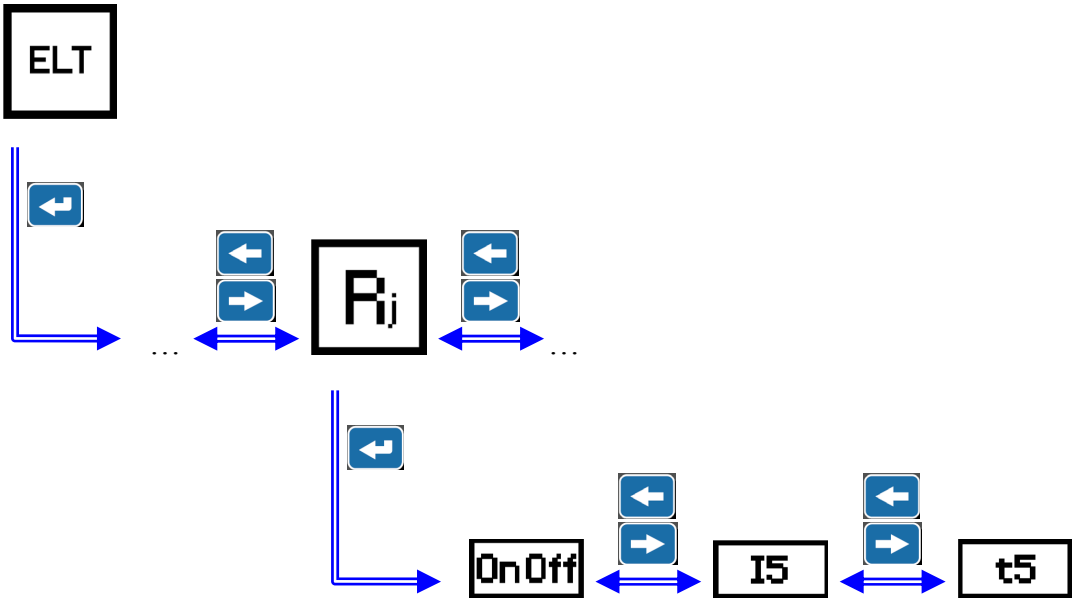
4.3.4.6.2 Available parameters

Symbol	Name
OnOff	**Electronic G protection status**
I4	**Electronic G threshold**
t4	**Electronic G time**

4.3.4.7 Electronic ‘R (jam)’ protection parameters

Show and edit the electronic settings for protection against rotor jam ‘R (jam)’ of the TU connected to the display.
This protection is available only for ‘Ekip M-LRIU’ TU type.

4.3.4.7.1 Structure



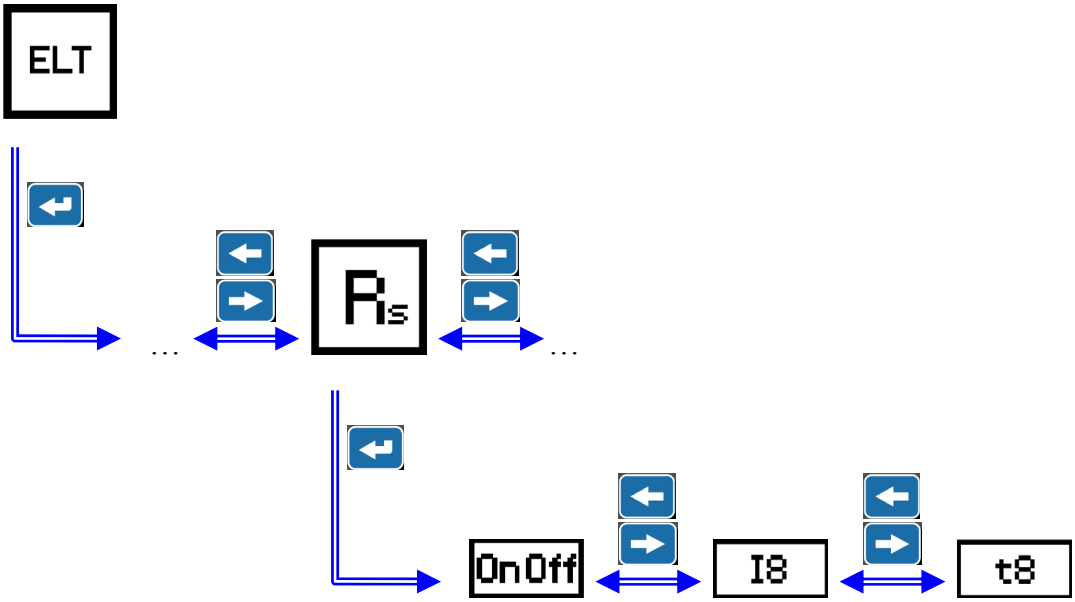
4.3.4.7.2 Available parameters

Symbol	Name
OnOff	**Electronic R (jam) protection status**
I5	**Electronic R (jam) threshold**
t5	**Electronic R (jam) time**

4.3.4.8 Electronic ‘R (stall)’ protection parameters

Show and edit the electronic settings for protection against stall ‘R (stall)’ of the TU connected to the display.
This protection is available only for ‘Ekip M-LRIU’ TU type.

4.3.4.8.1 Structure



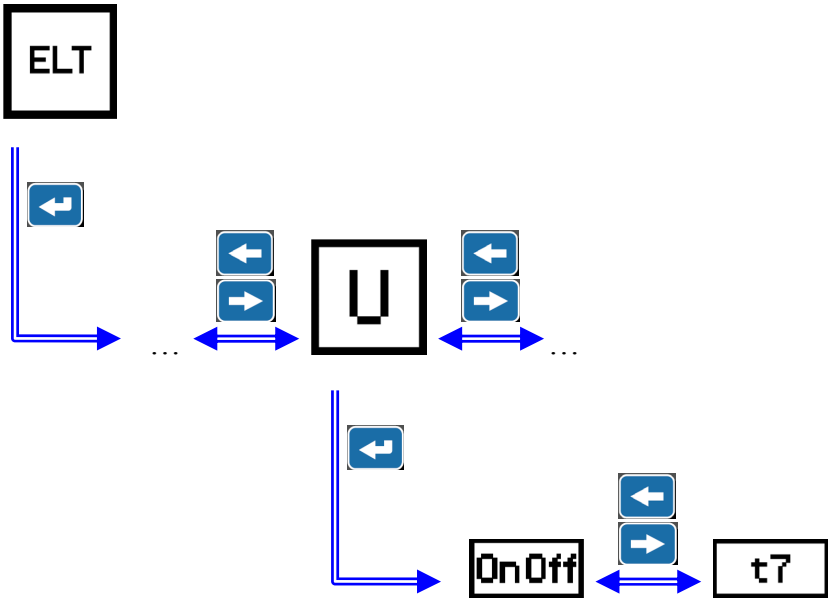
4.3.4.8.2 Available parameters

Symbol	Name
OnOff	**Electronic R (stall) protection status**
I8	**Electronic R (stall) threshold**
t8	**Electronic R (stall) time**

4.3.4.9 Electronic ‘U (phase loss)’ protection parameters

Show and edit the electronic settings for protection against phase loss ‘U (phase loss)’ of the TU connected to the display.
This protection is available only for ‘Ekip M-LRIU’ TU type.

4.3.4.9.1 Structure



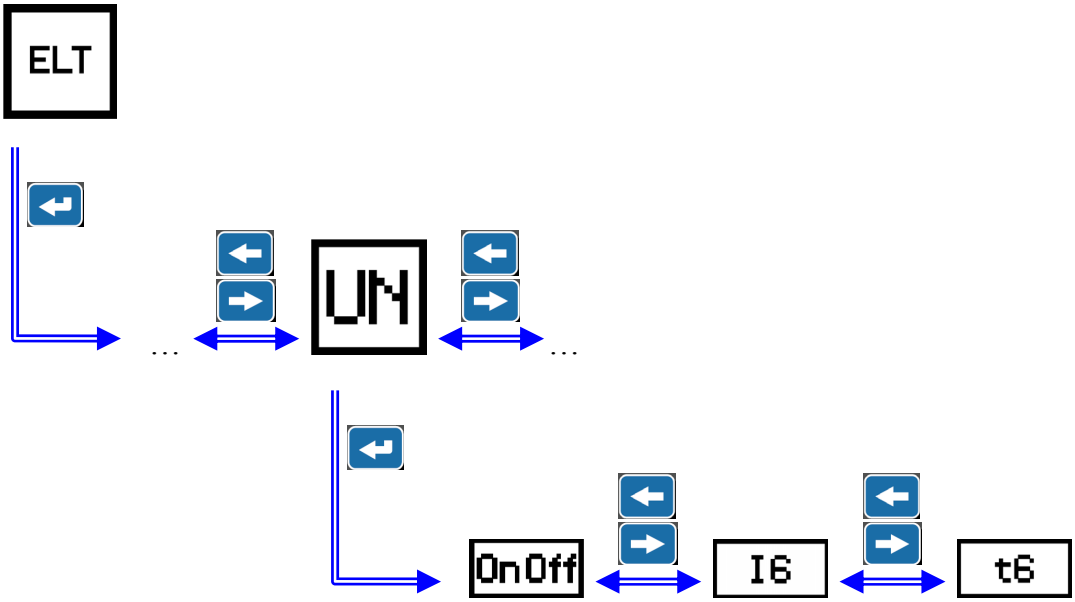
4.3.4.9.2 Available parameters

Symbol	Name
OnOff	**Electronic U (phase loss) protection status**
t7	**Electronic U (phase loss) time**

4.3.4.10 Electronic ‘U (unbalance)’ protection parameters

Show and edit the electronic settings for protection against phase current unbalance ‘U (undercurrent)’ of the TU connected to the display.
This protection is available only for ‘Ekip M-LRIU’ TU type.

4.3.4.10.1 Structure



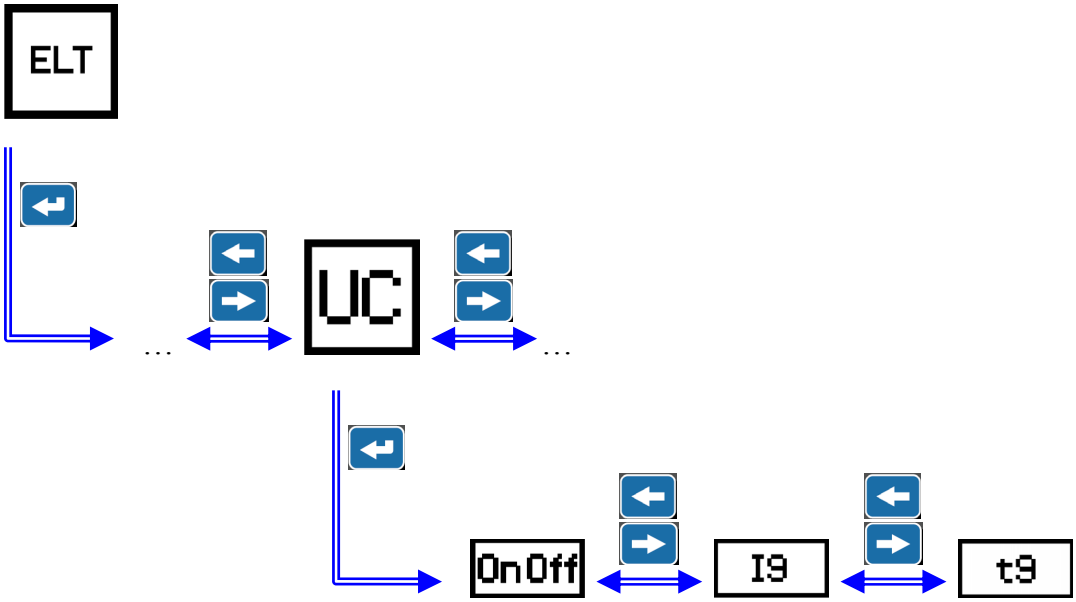
4.3.4.10.2 Available parameters

Symbol	Name
OnOff	**Electronic U (unbalance) protection status**
I6	**Electronic U (unbalance) threshold**
t6	**Electronic U (unbalance) time**

4.3.4.11 Electronic ‘U (undercurrent)’ protection parameters

Show and edit the electronic settings for protection against undercurrent ‘U (undercurrent)’ of the TU connected to the display.
This protection is available only for ‘Ekip M-LRIU’ TU type.

4.3.4.11.1 Structure



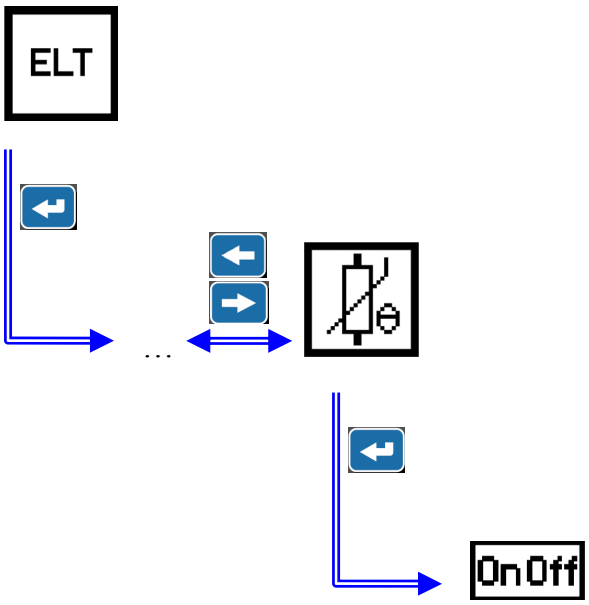
4.3.4.11.2 Available parameters

Symbol	Name
OnOff	**Electronic U (undercurrent) protection status**
I9	**Electronic U (undercurrent) threshold**
t9	**Electronic U (undercurrent) time**

4.3.4.12 ‘PTC’ protection parameters

Show and edit the electronic settings for ‘PTC’ protection of the TU connected to the display.
This protection is available only for ‘Ekip M-LRIU’ TU type.

4.3.4.12.1 Structure



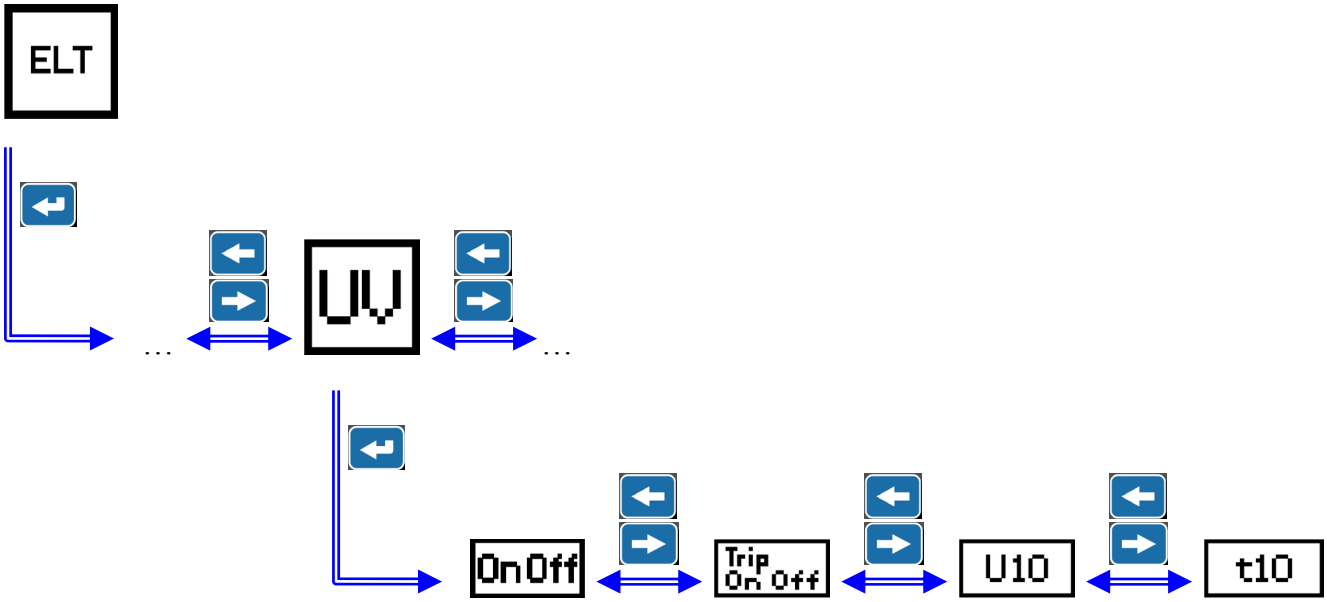
4.3.4.12.2 Available parameters

Symbol	Name
On Off	**PTC protection status**

4.3.4.13 Electronic ‘UV’ protection parameters

Show and edit the electronic settings for protection against undervoltage ‘UV’ of the TU connected to the display.
This protection is available only for ‘Ekip E-LSIG’ TU type.

4.3.4.13.1 Structure



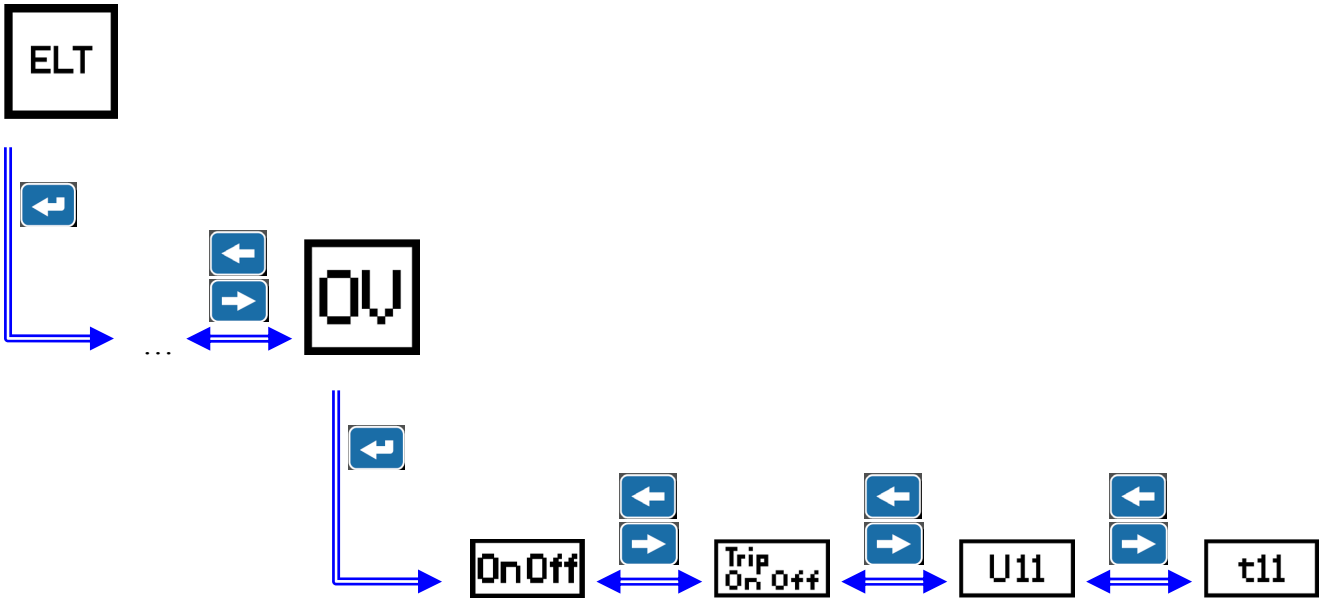
4.3.4.13.2 Available parameters

Symbol	Name
OnOff	**Electronic UV protection status**
Trip On Off	**Electronic UV protection trip status**
U10	**Electronic UV threshold**
t10	**Electronic UV time**

4.3.4.14 Electronic ‘OV’ protection parameters

Show and edit the electronic settings for protection against overvoltage ‘OV’ of the TU connected to the display.
This protection is available only for ‘Ekip E-LSIG’ TU type.

4.3.4.14.1 Structure



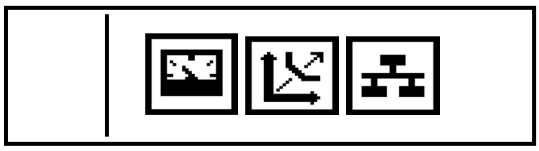
4.3.4.14.2 Available parameters

Symbol	Name
OnOff	**Electronic OV protection status**
Trip On Off	**Electronic OV protection trip status**
U11	**Electronic OV threshold**
t11	**Electronic OV time**

4.3.4.15 Electronic protection parameters programming example

1. From default page:

2. press ‘Enter’ for access to main menu:

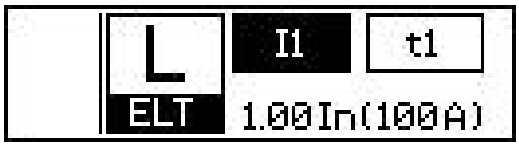


3. move through main menu with ‘Right’ and ‘Left’ buttons and press ‘Enter’ to select ‘Parameters’ menu:

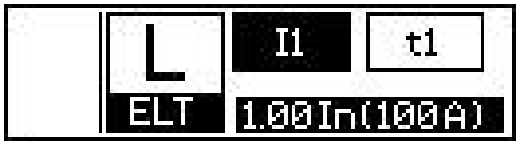
4. press ‘Enter’ to select ‘Electronic set parameters’ menu:

5. move through ‘Electronic set parameters’ menu and select ‘Electronic L protection’ submenu:

6. press ‘Enter’ to select ‘Electronic L threshold (I1) parameter:



7. using ‘Right’ and ‘Left’ buttons select the wanted value:



8. press ‘Enter’ to confirm the parameter selection:

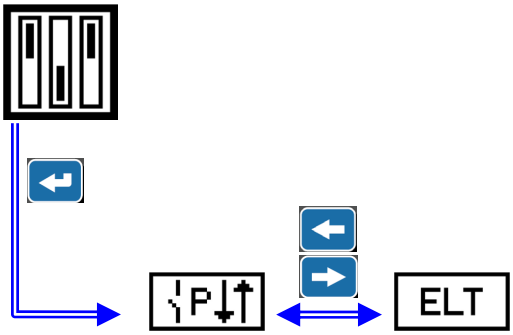
9. press ‘Esc’ to go back to the previous page.

4.3.5 ‘Configuration set parameters’ menu

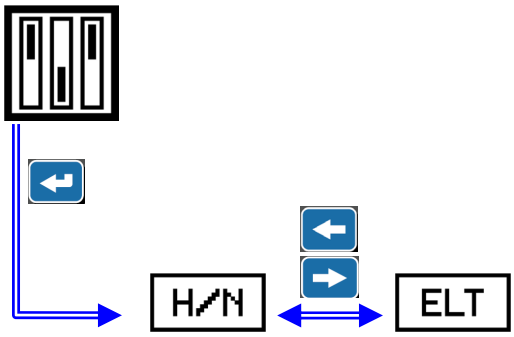
Accessing this menu is possible to show and edit the configuration settings stored in the TU connected to the display.

4.3.5.1 Menu structure

The parameters available are different depending of the TU type connected to the display.
In case of use of ‘Ekip E-LSIG’ TU type the following structure is available:



In case of use of ‘Ekip M-LRIU’ TU type the following structure is available:



4.3.5.2 Available parameters

In case of use of ‘Ekip E-LSIG’ TU type the following structure is available:

Symbol	Name	Par.
P	**Power direction**	4.3.5.3
ELT	**Protection set**	4.3.5.5

In case of use of ‘Ekip M-LRIU’ TU type the following structure is available:

Symbol	Name	Par.
H/N	**Actuator type selection**	4.3.5.4
ELT	**Protection set**	4.3.5.5

4.3.5.3 ‘Power direction’ parameter

Show and edit the setting for power direction of the TU connected to the display.

This parameter is available only for ‘Ekip E-LSIG’ TU type.

Available parameter set are:

Parameter set	Direction
↓	Top ➔ Bottom
↑	Bottom ➔ Top

4.3.5.4 ‘Actuator type selection’ parameter

Show and edit the setting for the actuator type selection of the TU connected to the display.

This parameter is available only for ‘Ekip M-LRIU’ TU type.

Available parameter set are:

Parameter set	Actuator type
Heavy	Trip coil
Normal	Contactor

4.3.5.5 ‘Protection set’ parameter

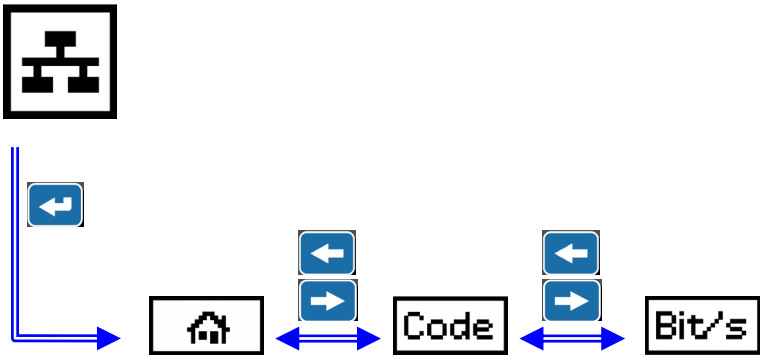
Show and edit the protection parameters set used by the TU connected to the display.

This parameter is available for ‘Ekip M-LRIU’ and ‘Ekip E-LSIG’ TU type.

It’s possible to choose between ‘Manual’ or ‘Electronic’ protection set.

4.4 'Communication' menu

4.4.1 Menu structure



4.4.2 Available parameters

Communication parameters concern the communication with system bus, using Ekip Com unit.

Communication between TU and display is set with fixed parameters.

Symbol	Name	Par.
	**Slave address**	4.4.3
	**Code**	4.4.4
	**Baudrate**	4.4.5

4.4.3 'Slave address' parameter

Show and edit Modbus address of the TU connected to the display.

It's possible to set any address between 1 and 247.

4.4.4 'Code' parameter

Show and edit Modbus protocol coding parameters of the TU connected to the display.

Available parameters set are:

Parameter set	Parity	Bit number	Stop bit
E,8,1	Even	8	1
O,8,1	Odd	8	1
N,8,2	None	8	2
N,8,1	None	8	1

4.4.5 'Baudrate' parameter

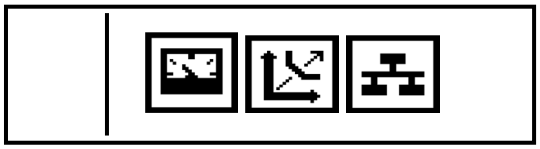
Show and edit the communication speed parameter of the TU connected to the display.

It's possible to set a baudrate equal to 9600 bit/s or 19200 bit/s.

4.4.6 Communication parameter programming example

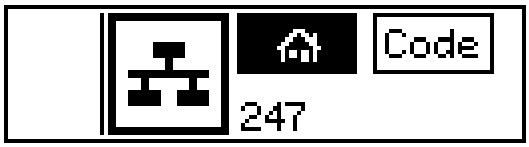
1. From default page:

2. press ‘Enter’ for access to main menu:

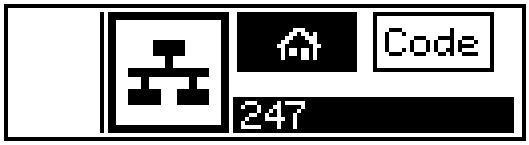


3. move through main menu with ‘Right’ and ‘Left’ buttons and press ‘Enter’ to select ‘Communicationì menu:

4. press ‘Enter’ to select ‘Slave address’ parameter:



5. using ‘Right’ and ‘Left’ buttons select the wanted value:

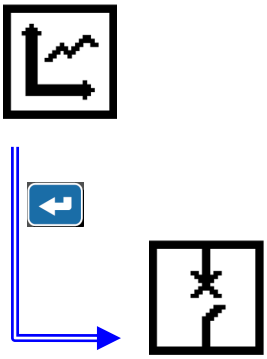


6. press ‘Enter’ to confirm the parameter selection:

7. press ‘Esc’ to go back to the previous page.

4.5 'History' menu

4.5.1 Menu structure



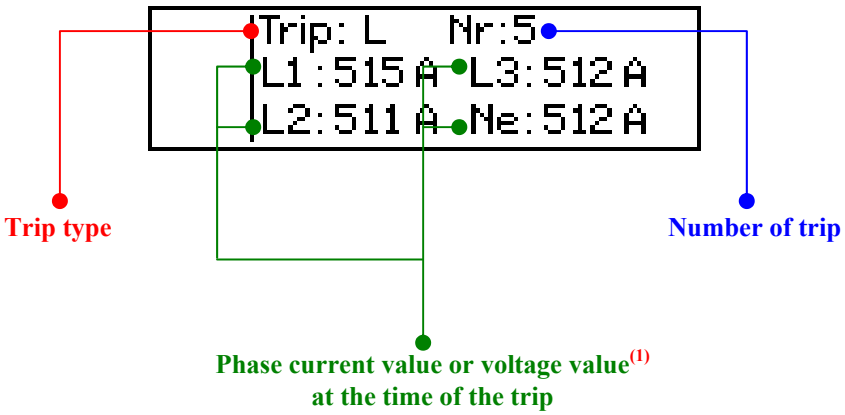
4.5.2 Available submenus

Available submenus			
Symbol	**Name**	**Description**	**Par.**
	**Trip history**	Show the information about the protective trip made by TU	4.5.3

4.5.3 'Trip history' menu

Show the information about all protective trip made by TU.

Available information are:



(1) *Available for 'Ekip E-LSIG' TU type only*

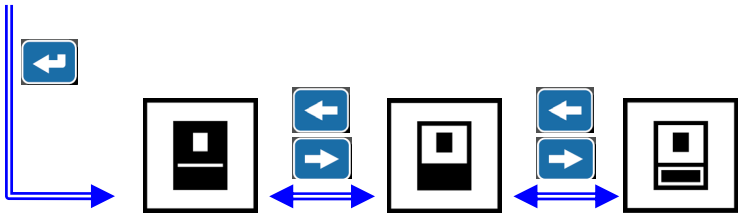
The higher 'Trip number' indicates the last trip occured.

The trip showed at 'Trip history' menu access is the last trip occured.

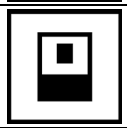
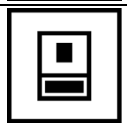
Is possible to scroll the trip using 'Right' and 'Left' buttons.

4.6 'Information' menu

4.6.1 Menu structure

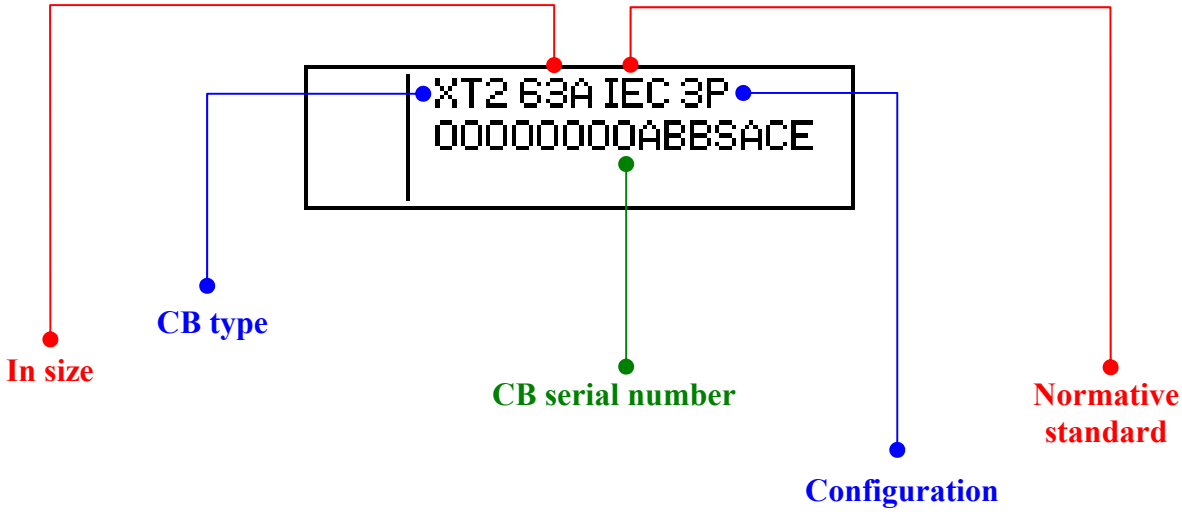


4.6.2 Available submenus

Available submenus			
Symbol	**Name**	**Description**	**Par.**
	**CB information**	Show configuration information about the CB connected to the TU	4.6.3
	**TRIP UNIT information**	Show configuration information about the TU connected to the display	4.6.4
	**DISPLAY information**	Show information about the dispaly	4.6.5

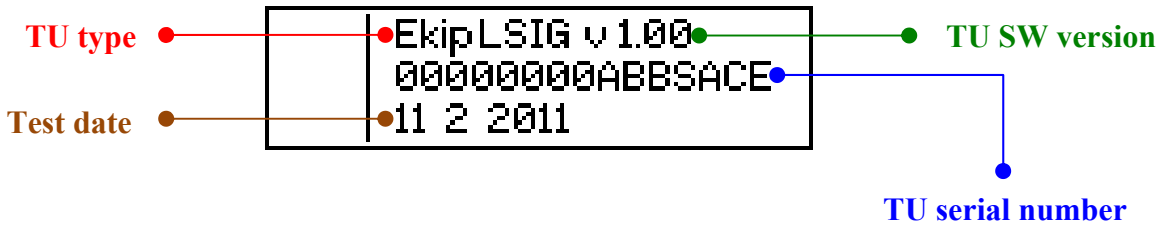
4.6.3 'CB information' menu

Show the following information about CB:



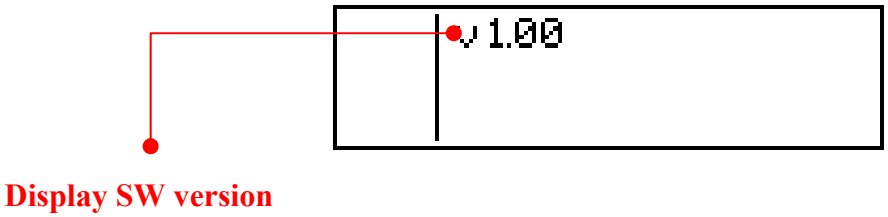
4.6.4 'TRIP UNIT information' menu

Show the following information about TU:



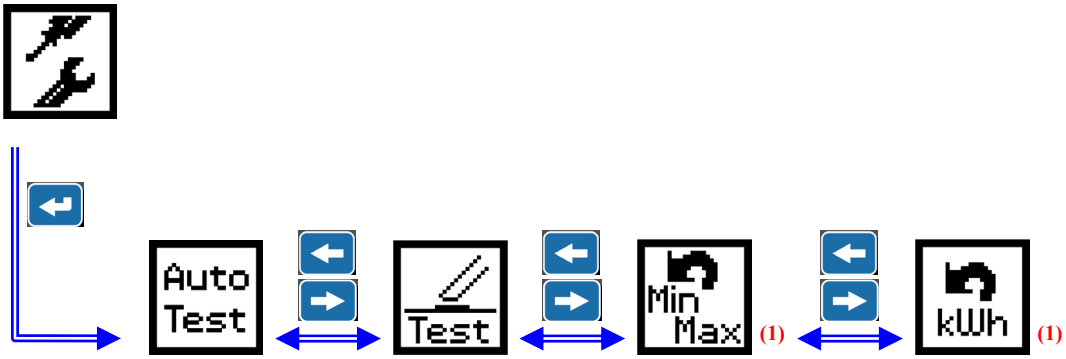
4.6.5 'DISPLAY information' menu

Consente la visualizzazione delle seguenti informazioni relative al display:



4.7 'Settings' menu

4.7.1 Menu structure



(1) *Available for 'Ekip E-LSIG' TU type only*

4.7.2 Available submenus

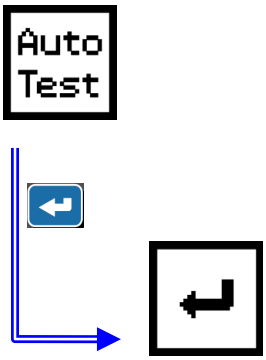
Available submenus			
Symbol	**Name**	**Description**	**Par.**
	**Autotest**	Display operation verify	4.7.3
	**Buttons test**	Buttons operation verify	4.7.4
	**MIN/MAX reset**(1)	Reset the 'minimum/maximum' statistics information of the TU connected to the display	4.7.5
	**ENERGY reset**(1)	Reset the energy meter information of the TU connected to the display	4.7.6

(1) *Available for 'Ekip E-LSIG' TU type only*

4.7.3 'Autotest' menu

Allow to verify proper operation of all pixel of the display.

4.7.3.1 Menu structure



Available submenus		
Symbol	**Name**	**Description**
	**Autotest start**	Push 'Enter' button to perform autotest procedure; the positive result of autotest is highlighted by simultaneously ignition, for 2 times, of all pixel of the display

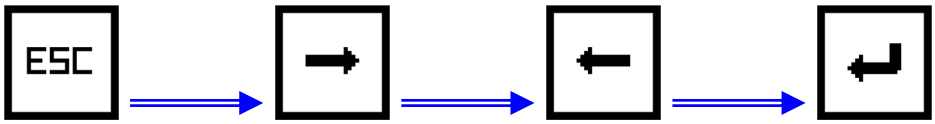
In case of negative result of autotest, contact ABB SACE customer service.

4.7.4 'Buttons test' menu

Allow to verify proper operation of all buttons of the display.

The buttons test procedure is composed by 4 sequential steps.
At each step is showed the button that have to be pressed; in case that display correctly identify the pressure of the button, the test continue with the next button.

The buttons pressure order is:



In case of positive result of test, after 'Enter' button is pressed, display automatically returns at upper menu 'Settings'.

In case of malfunctioning of any button, the button test procedure don't pass over to following step. In this case to return anyway to default page is necessary turn off and afterward turn on the display.

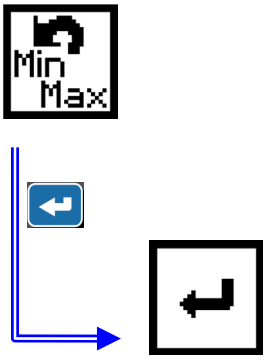
In case of negative result of buttons test, contact ABB SACE customer service.

4.7.5 'MIN/MAX reset' menu

Allow to reset all the 'minimum/maximum' statistical information stored in the TU connected to the display.

This function is available only for 'Ekip E-LSIG' TU type.

4.7.5.1 Menu structure



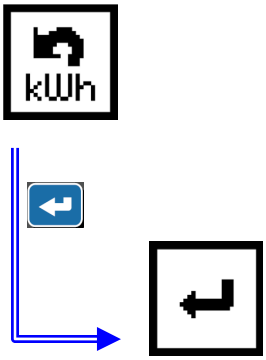
Available submenus		
Symbol	**Name**	**Description**
	**MIN/MAX reset**	Push 'Enter' button to send to the TU a command to reset all the 'minimum/maximum' statistical information of the TU connected to the display

4.7.6 ‘ENERGY reset’ menu

Allow to reset all the energy measures stored in the TU connected to the display.

This function is available only for ‘Ekip E-LSIG’ TU type.

4.7.6.1 Menu structure

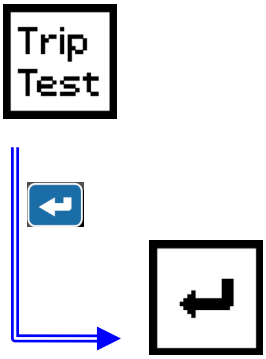


Available submenus		
Symbol	**Name**	**Description**
	**ENERGY reset**	Push ‘Enter’ button to send to the TU a command to reset all the energy measures of the TU connected to the display

4.8 'Trip test' menu

Allow to perform an opening operation of the CB through the TU.
Before proceed with the trip test verify that TU and CB are in the conditions indicated in ABB SACE product documentation.

4.8.1 Menu structure



Available submenus		
Symbol	**Name**	**Description**
	**Trip test start**	Push 'Enter' button to perform the trip test of TU; the positive result of the trip test is highlighted by the opening of CB where TU is installed

In case of negative result of trip test, contact ABB SACE customer service.

5 Miscellaneous information

5.1 Display features

Characteristic	Description
Type	LCD display 128x32
Backlight timeout time	30 seconds
Operation conditions	With auxiliary power supply presence or with self supply condition
Operation temperature	LCD screen switching on with temperature range included from -25 to +70 °C, tolerance ±5 °C

5.2 Backlight features

Backlight status	Conditions
High intensity	Auxiliary power supply presence NO default page
	NO auxiliary power supply Self supply condition with ΣI > 1In NO default page
Low intensity	Auxiliary power supply presence Default page
	NO auxiliary power supply Self supply condition with ΣI > 1In Default page
	NO auxiliary power supply Self supply condition with 0.35In < ΣI < 1In
Off	NO auxiliary power supply Self supply condition with ΣI < 0.35In
Blinking	Alarm condition

5.3 'Power' led features

'Power' led state	Description
On	'Power mode' TU configuration
Blinking with f = 2Hz	'Wink' command sent to TU
Blinking with f = 0,5Hz	'Alive mode' TU configuration

5.4 Ekip TT or Ekip T&P unit connection

When connected, Ekip T&P communication mode is actived by default:

It's possible to change the operation mode;press any key to make available following submenus:

Available submenus			
Symbol	**Name**	**Description**	**Par.**
	**Ekip TT connection**	Allow to use Ekip TT test unit keeping the navigation through menus active	5.4.1
	**Ekip T&P connection**	Allow to use Ekip T&P communication unit preventing the navigation through menus	

In case of use with Ekip TT, if 'Trip test' button is pressed, the trip test of TU is performed and display returns to default conditions.

5.4.1 Ekip TT or Ekip T&P connection procedure