

Technical Manual Malfunction Indicator- / Communication Module

BSA 3120 E

Nr. 5310902-05/04 E

Software vers. sha 980122/1

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General

The BSA module was developed as a combined alarm indicator & communication module in an ELREHA controller network (E-Link). The BSA module contains the two following function groups:

- Alarm indicator for monitoring up to 16 alarm conditions with mains voltage inputs, each of them can be assigned to four priority levels with an output relay each, extensive process functions,
- Communication module, which cares for data transfer of detected alarm messages on the network (E-Link, RS-485) to the alarm relays or (soon coming) a telephone modem.

This features allow to connect a controller network with the external world to transmit important informations to a Personal Computer.

Technical Data

Supply voltage BSA 3120	230V / 50-60Hz
BSA 23120 ..	115 / 60 Hz
Power consumption	appr. 6VA max.
Ambient temperature	0...+60°C (32...140°F)
Alarm inputs	16x mains voltage
Relay outputs	4x SPDT contacts, dry 8A cos phi=1, 4A ind. / 250V AC or Solid State Relays, 1A / 250V
Analog outputs	0...10V, 4...20mA
Interfaces	2x RS 232, RS 485, fibre optics (opt.)
Real time clock	x-tal, automatic summer/winter shift
Data storage	typ. 10 years without mains voltage
Display	LCD, backlighted, 2x 16 characters
Housing	plastic for 30mm DIN-rail, with foil keypad
Protection	IP 30

Type overview

BSA 3120 E Display language english, data interface RS-485, dry relay contacts, supply voltage 230V AC.

BSA 23120 Display language english, data interface RS-485, dry relay contacts, supply voltage 115V AC.

Please ask for versions with Solid-State-Relays and/or fibre optics interface for data transmission.

Functions

Alarm unit

The BSA unit is equipped with 16 alarm inputs. Specific characteristics can be assigned to each of them by programmable parameters. (X = input number)

"Input X:"

Alarm mode of this input. Fixes if the input reports when voltage is present (active) or not (passive)

"Inp(ut) X alarm delay."

This timer must be run down before an alarm message can be generated.

"Inp(ut) X remain time"

Shows the time remaining until the alarm message occurs

"Inp(ut) X alm repeat"

If an input will be reset while the failure is still present, the message will be repeated after this time.

"Inp(ut) X rep remain"

Shows the time remaining until the alarm message will be repeated.

"Inp(ut) X priority"

Fixes which relay (1-4) will be de-activated to report the failure.

"Inp(ut) X interface"

Fixes if this message will be reported via modem interface.

"Inp(ut) X clearable"

Fixes if the alarm message can be reset if the failure is still present.

"Inp(ut) X autoreset"

If you enter "yes" the relay will be reset automatically after the failure is removed.
If you enter "no" the relay condition remains stable.

"Inp(ut) X message txt"

Message text for this input. This text appears on the display in case of a failure.
Maximum length: 16 characters.

The following characters can be displayed:

A	B	C	D	E	F	G	H	I	J
K	L	M	N	O	P	Q	R	S	T
U	V	W	X	Y	Z	0	1	2	3
4	5	6	7	8	9	blank			

The alarm inputs need ~3 sec to detect a voltage change. The message will then be generated considering the set parameters. If the delay timer is run down, the alarm relays will be basically de-activated. A LED indicates this relay condition. The failure will be shown on the display as "actual failure" together with the entered message text of the input.

The BSA tries to transfer the failure message via the connected modem.

Failure messages from the network

The BSA module has the ability to detect failure messages from other units in the network. This messages can be assigned to one of the four alarm relays. The parameter "external failure" fixes if such a failure will be reported with one of the relays and the relay number. The relays will be basically de-activated.

Reset

Failure messages can be cleared by pushing key "**PROG**".
If more than one failure is present, always only the currently actual failure shown on the display can be cleared.

Communication Module

The BSA unit can be networked together with other controller units via its RS-485-interface. For the communication processes the following parameters are responsible:

Address in netwk., (Modes pages)

During the runup every unit in the network gets its own address number between 0 and 78, this allows specific data flow with the different units in the network.

Scan-min-adress

This parameter fixes the lowest adress to monitor in the network.
Example: Your addresses begin with 10, setting scan-min-adress to '10' prevents that the BSA searches for messages from units with addresses < 10; = increased reactivity

Scan-max-adress

This parameter fixes the highest adress to monitor in the network. To understand the sense you can use the schematic diagram on the last but one page.
The diagram shows eight (8) units networked. The BSA has adress "0" and the eighth controller has adress "7".
In this example "**scan-max-adress**" was set to "7", to make shure the BSA will not search messages of units which are not connected. The BSA waits for response for a short time while calling an adress. So it is possible that the total inquiry time for the network can be disproportional lenghtened, if the BSA tries to communicate with 71 not connected units.

Line-control

Number of trials to communicate with a networked controller unit (e.g. 3 times). The BSA generates a failure message if there is no reponse after this trials.

Party-line-mode

"automatic": The BSA searches active for failure messages of other units in the network. If it have found one, the BSA tries to transmit the messages to a PC software via modem. If more than one BSA's are networked, only the one unit can set to 'automatic' which is connected to a modem. All other BSA units must be set to 'permanent passive'.
If a PC software contacts the unit, the BSA stops scanning the network to allow the PC controlling the network.
If the software-link will be disconnected, the BSA starts scanning the network for messages automatically if the status of "**party-line-mode**" was "automatic" before.

Party-line

Shows the actual operation mode.

If failures from the network and failures from the alarm inputs are detected at the same time, the display 'actual failure' alternates between this two messages every second.

Scan mode

Kind of reaction on status alterations or failure messages from other units in the network.
 'Connect mode' is the standard value.
 'Failure mode' effects that the BSA reacts too if the message of a detected and cleared failure was deleted from the corresponding unit (OK-note).
 This mode can be used if the BSA has to transmit data to a supervising, evaluating PC-software.

Messages via phone line

A commercial, Hayes compatible modem can be connected to the BSA's modem interface.
 If the BSA has to transmit a failure message, then it gives a ring to the first of two (2) telephone numbers and connects the PC-software with the unit which has detected the failure. The PC-software can now evaluate this message.
 If the first phone number is busy, the BSA tries to reach the second number. The both phone numbers cannot be entered via the BSA's keypad but only from outside via the PC-software.
 It is not possible to read off this number from the LCD display.

Failure message history

The last 20 failure messages, independent of their origin, remain stored in memory with time and date of their occurrence. They can be read off (mode-page, hist. failure #1-20) or recalled by modem.

The failure description on the display is made in a short form:

main = mains voltage breakdown
 BI (X) = alarm input X,
 AD (X)= failure at adress X,
 that means controller with this adress within the network.


Real time clock


For precise registration of performing failures the BSA unit contains a real time clock.
 This timer works with an automatic summer/winter-shifting. With the parameter '(summer/winter sw', Modes page) you can toggle between no automatic ('no'), the norm ending december 1995 (EU thru '95) and the new norm beginning with january 1996 (EU since '96).

Installation and Runup


This chapter will give you a little help to start up your BSA3000 respectively your E-link network. As a base we use the schematic diagram shown in the appendix.

You assemble a little E-link network, which consists of four (4) TKP and once a unit of STP, PMP, TMP and BSA. Please note the installation instruction of these units.


 Before applying voltage to the controller, make sure that all wiring has been made in accordance with the wiring diagram in this manual and fits the application. All data wiring must be made with shielded cable (twisted pair). This avoids irregular switching events caused by electro-magnetic interference. The shielding of the data wires must be connected to the PE-terminals of every unit. The PE terminal must be connected to PE, if not, the integrated distortion filter cannot work properly.

 Please note that the mounting position allows a good thermic convection, so that the maximum ambient temperature cannot be increased.

You can find specific informations about data wiring in our actual main catalogue.

 The connection between the BSA and the modem must be shielded too, the shielding must be connected to ground at both ends.

When voltage is applied to the controller, the display shows the actual failure. By pressing any key the display backlight turns on.

 Please enter now the necessary parameters (located on the mode-page) for our example:

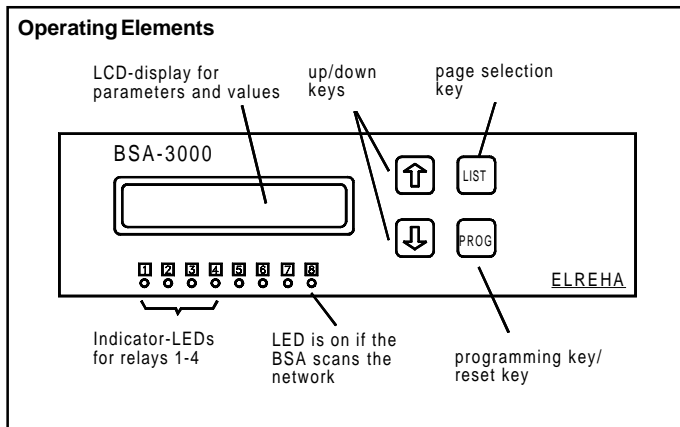
- adress in netwk. = "0"
- actual date
- actual time
- Party-line = "automatic"
- Scan max-adress = "7".

Now you can enter the parameters which belong to the individual alarm inputs, please note the parameter lists from page 5.

The E-link network is ready for operation if you have predefined all network addresses at the units in the network.

Operating

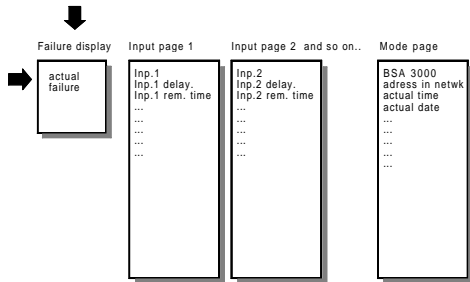
Operating the controller is very easy. No additional tools are needed. All operating is done from the front via four (4) keys and the backlighted LCD display. The unit contain no additional operating elements like jumpers or DIP-switches.



Programming

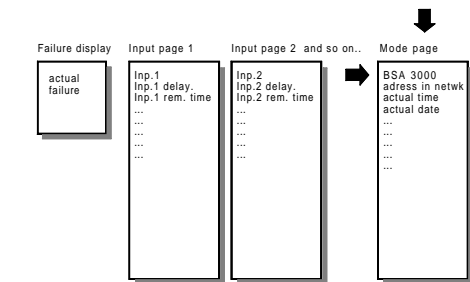
All parameters are listed in pages. One 'Input'-page for every alarm input which contains the parameters for processing this message. Initial settings and functional modes are located in the mode-page.

When no key is hit for about 5 minutes, the display shows the actual value.



To edit a certain parameter, select the page with the "PAGE" (Liste) key.

Using the keys "↑" and "↓" you can scroll now through the list of parameters in this page.



Start programming

- Push key 'Prog': parameter name starts flashing

Change values

- You are in editing mode now and with the arrow keys you can edit the value or select a given mode. The arrow keys, when pressed momentarily, change the value by one step; continued pressing lets the display run with a certain speed.

End programming

- Pressing 'PROG' again brings you back to normal mode, the new value is stored and the parameter name stops flashing.

Unauthorized Manipulating

To avoid editing of parameters by unauthorized persons, the 'PROG' function is locked until the correct user code was entered. The request >Identification< asks you for entering the correct code when you try to edit. The code is related from the time of the day as the sum of the hour (0 to 23) plus '10'.

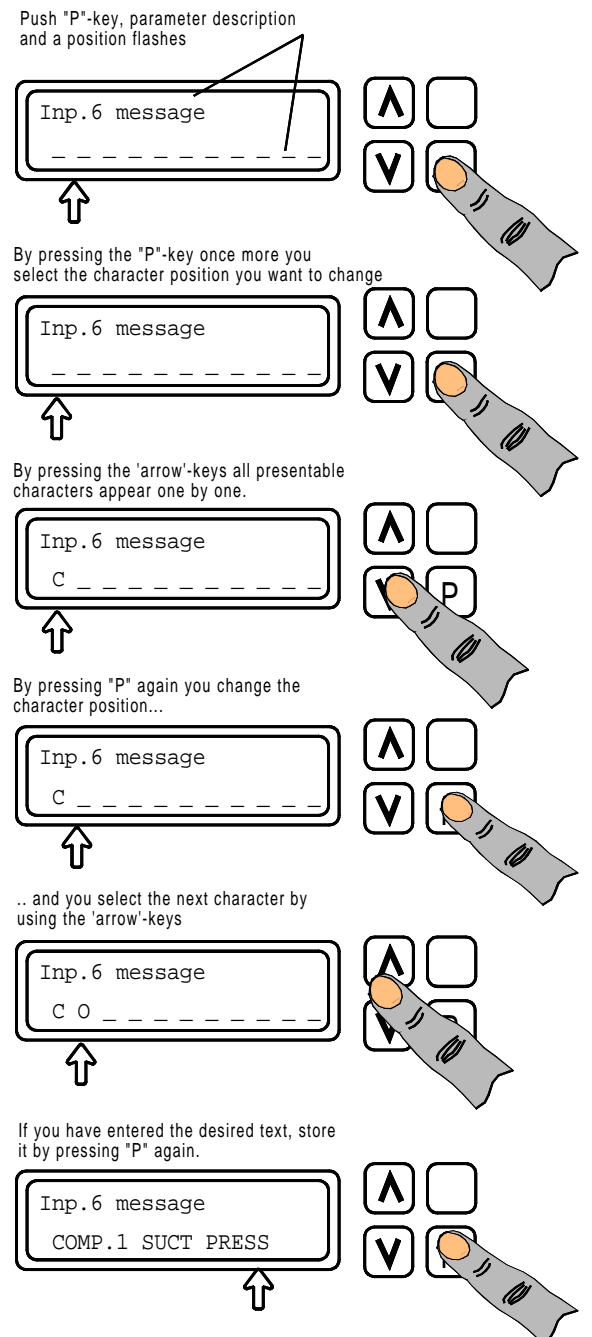
Example: At 9:35 a.m. the code is 9 + 10 = 19.
At 9:35 p.m. the code would be 21 + 10 = 31

NOTE: You can find the actual time as a parameter in the 'Modes' page. Correct if necessary.

If you have pressed no key for about 5 minutes after entering the code, or the timer changes the hour (e.g. from 8:59 to 9:00) the 'PROG' key is locked again automatically.

Entry of message texts

Select parameter "Inp.X message text" (X = No. of alarm input). Start programming by pressing key "PROG". The following diagram will show you the further way :



Parameter pages

Actual failure

PARAMETER	VALUE (2. row)
actual failure	failure description (e.g. "failure adr. 12")

Modes page

PARAMETER	DIS only	Description	Range	Default	Your value
BSA 3000	X	Type of unit		BSA 3000	
plant-ident-No	X				
adress in netw.		Network adress	0...78	0	
actual time					
actual date					
program version	X	Shows the internal software version			
party line	X	Shows the actual operation mode	permanent passive / automatic		
scan min-adress		Lowest adress in the network	0...78	0	
scan max-adress		Highest adress in the network	0...78	78	
party line mode		Shall the network be scanned for failure messages ? automatic = yes, permanent passive = no	permanent passiv / automatic	automatic	
summer/winter sh(ift)		Procedure of summer / winter shift	OFF (-), EU till '95, EU since '96		
scan mode		Working mode as a reaction on state changes in the network	connect- mode / failure mode	connect- mode	
line-control		Quantity of trials to setup a connection to another unit in the network	1 thru 20	5	
hist. failure #1		youngest failure			
hist. failure #2		Example for a failure message: hist. failure #10 13:07 28.7 BI 16, that means that at 1:07pm, date 28th july, input no. 16 has detected a failure			
hist. failure #3					
hist. failure #19					
hist. failure #20		oldest failure			
external failure		Which relay should be used to report failures from the network ?	---, relay 1 thru relay 4	relay 1	

Parameters marked with "X" are for information only and cannot be programmed.
'Default values' are those values the controller will have programmed initially when delivered or after loss of data.

Input pages, one of them for each input

Parameter	Dis only	Description	Range	Default	Input 1	Input 2	Input 3	Input 4
Inp(ut) x		Alarm mode of this input. Active = alarm if voltage is present	active / passive	passive				
Inp(ut)x alarm delay		Time delay until alarm message will be generated	00:00:00 thru 12:00:00 h:m:s	00:00:00				
Inp(ut)x remain time	X	Time remaining until the alarm message occurs						
Inp(ut)x alm repeat		Time delay until the alarm message will be repeated	00:00:00 thru 12:00:00 h:m:s	00:00:00				
Inp(ut)x rep(eat) remain	X	Time remaining until the alarm message will be repeated						
Inp(ut).x priority		Which relay shall be used to report this message ?	1 / 2 / 3 / 4	1				
Inp(ut).x interface		Must the message be reported via interface ?	yes / no	yes				
Inp(ut).x clearable		Can the message be cleared while the failure is still present ?	yes / no	no				
Inp(ut).x autoreset		The relay must be cleared automatically after the failure is removed	yes / no	no				
Inp(ut)x message txt		Display text for this message	"xxxxx"					

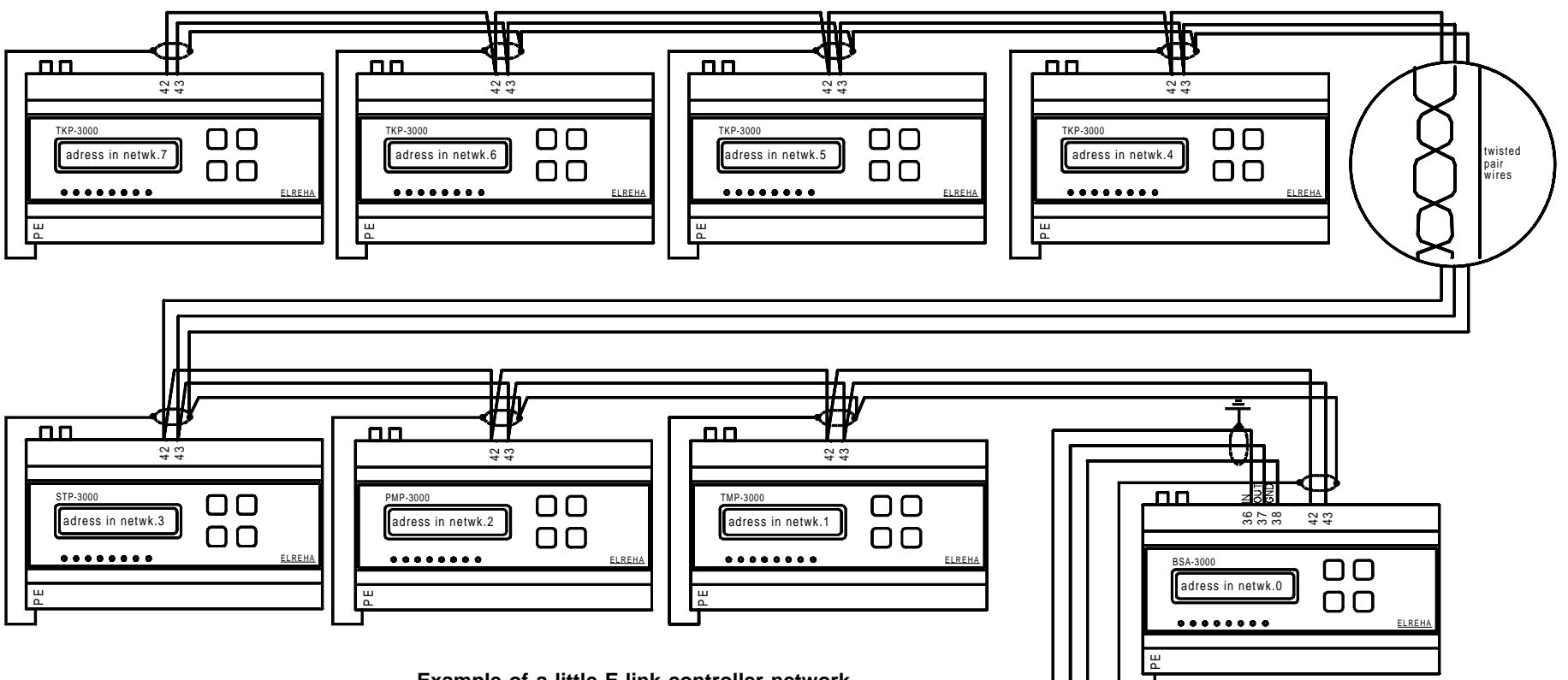
Parameter	Dis only	Description	Range	Default	Input 5	Input 6	Input 7	Input 8
Inp(ut) x		Alarm mode of this input. Active = alarm if voltage is present	active / passive	passive				
Inp(ut)x alarm delay		Time delay until alarm message will be generated	00:00:00 thru 12:00:00 h:m:s	00:00:00				
Inp(ut)x remain time	X	Time remaining until the alarm message occurs						
Inp(ut)x alm repeat		Time delay until the alarm message will be repeated	00:00:00 thru 12:00:00 h:m:s	00:00:00				
Inp(ut)x rep(eat) remain	X	Time remaining until the alarm message will be repeated						
Inp(ut).x priority		Which relay shall be used to report this message ?	1 / 2 / 3 / 4	1				
Inp(ut).x interface		Must the message be reported via interface ?	yes / no	yes				
Inp(ut).x clearable		Can the message be cleared while the failure is still present ?	yes / no	no				
Inp(ut).x autoreset		The relay must be cleared automatically after the failure is removed	yes / no	no				
Inp(ut)x message txt		Display text for this message	"xxxxx"					

Input pages, one of them for each input

Parameter	Dis only	Description	Range	Default	Input 9	Input 10	Input 11	Input 12
Inp(ut) x		Alarm mode of this input. Active = alarm if voltage is present	active / passive	passive				
Inp(ut)x alarm delay		Time delay until alarm message will be generated	00:00:00 thru 12:00:00 h:m:s	00:00:00				
Inp(ut)x remain time	X	Time remaining until the alarm message occurs						
Inp(ut)x alm repeat		Time delay until the alarm message will be repeated	00:00:00 thru 12:00:00 h:m:s	00:00:00				
Inp(ut)x rep(eat) remain	X	Time remaining until the alarm message will be repeated						
Inp(ut).x priority		Which relay shall be used to report this message ?	1 / 2 / 3 / 4	1				
Inp(ut).x interface		Must the message be reported via interface ?	yes / no	yes				
Inp(ut).x clearable		Can the message be cleared while the failure is still present ?	yes / no	no				
Inp(ut).x autoreset		The relay must be cleared automatically after the failure is removed	yes / no	no				
Inp(ut)x message txt		Display text for this message	"xxxxx"					

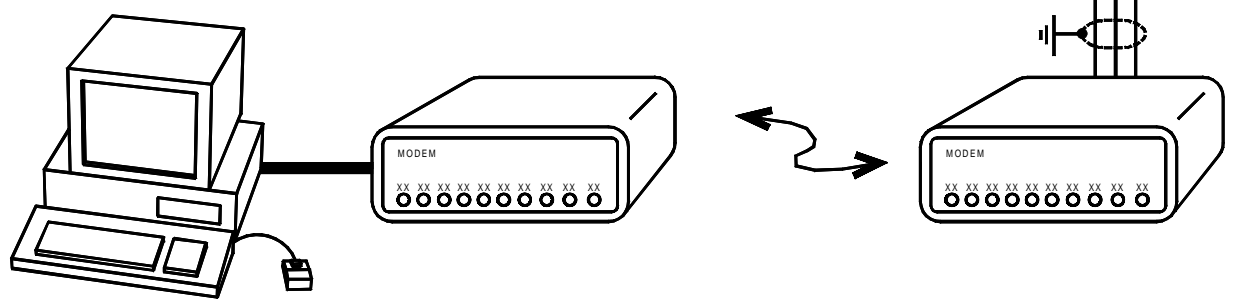
Parameter	Dis only	Description	Range	Default	Input 13	Input 14	Input 15	Input 16
Inp(ut) x		Alarm mode of this input. Active = alarm if voltage is present	active / passive	passive				
Inp(ut)x alarm delay		Time delay until alarm message will be generated	00:00:00 thru 12:00:00 h:m:s	00:00:00				
Inp(ut)x remain time	X	Time remaining until the alarm message occurs						
Inp(ut)x alm repeat		Time delay until the alarm message will be repeated	00:00:00 thru 12:00:00 h:m:s	00:00:00				
Inp(ut)x rep(eat) remain	X	Time remaining until the alarm message will be repeated						
Inp(ut).x priority		Which relay shall be used to report this message ?	1 / 2 / 3 / 4	1				
Inp(ut).x interface		Must the message be reported via interface ?	yes / no	yes				
Inp(ut).x clearable		Can the message be cleared while the failure is still present ?	yes / no	no				
Inp(ut).x autoreset		The relay must be cleared automatically after the failure is removed	yes / no	no				
Inp(ut)x message txt		Display text for this message	"xxxxx"					

**Controller Network
Example**

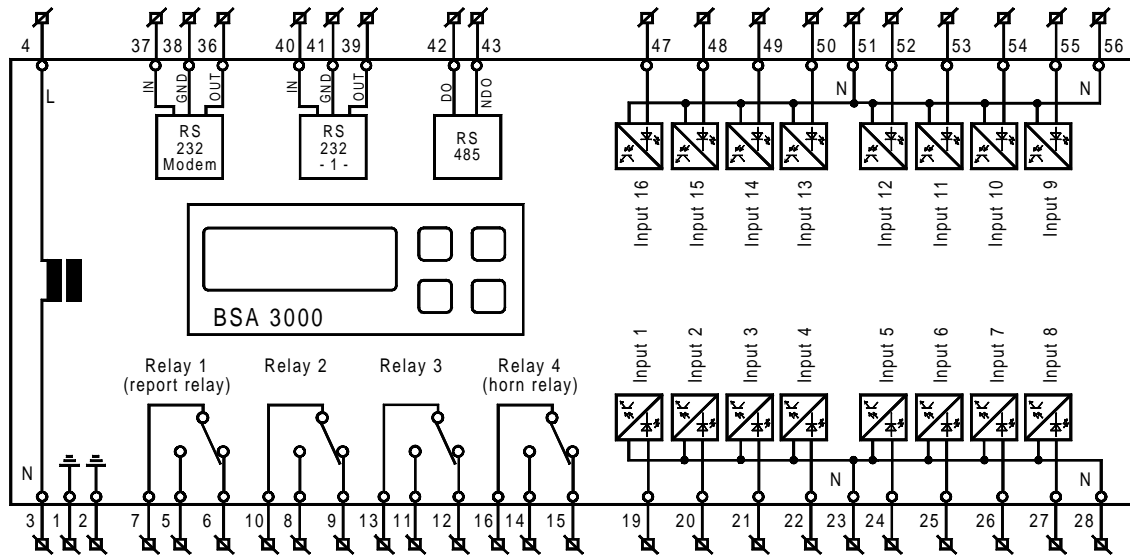


Example of a little E-link controller network.

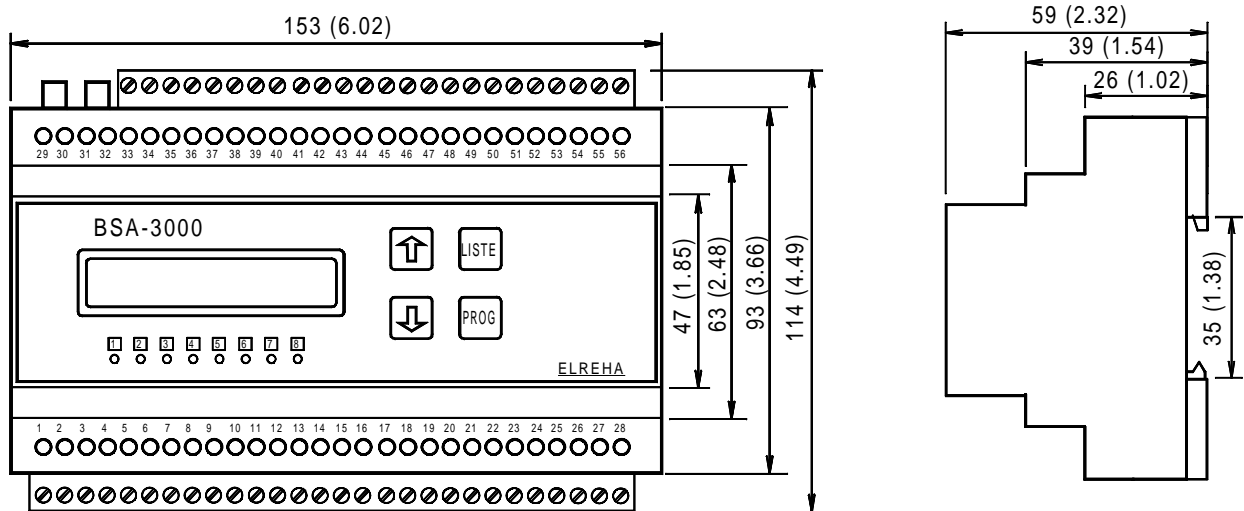
Read further informations in chapter 'Installation / Runup'.



Schematic Diagram



Outline Dimensions



EG-Statement of Conformity

We state the following: When operated in accordance with the technical manual, the criteria have been met that are outlined in the guidelines of the council for alignment of statutory orders of the member states on electro-magnetic consistency (89/336/EWG). This declaration is valid for those products covered by the technical manual which itself is part of the declaration. Following standards (newest editions) were consulted for the confirmity testing with regard to electromagentic consistency :

**IEC 1000-4-1, IEC 1000-4-2, IEC 1000-4-3*, IEC 1000-4-4, IEC 1000-4-5, IEC 1000-4-6*,
EN 55011 B, EN 50081, part 1 and 2, EN 50082, part 1 and 2**

This statement is made from the manufacturer / importer

by:

ELREHA Elektronische Regelungen GmbH
D-68766 Hockenheim, Germany
(name / adress)

Klaus Birkner,.....
Development and Leader of the EMC-Laboratory.....

Hockenheim.....**15.3.96**.....
(city) (date)

(sign)

*The conformity with IEC 1000-4-3/6 is derived from the IEC 1000-4-2 and IEC 1000-4-4 test results. The correlation with IEC 1000-4-3/6 is based on test results which are located on site at the manufacturer.

This manual has been set up with care and to our best knowledge, but mistakes are still possible. Technical details, especially the software, can be changed without notice. Please note that this manual is only valid for controllers which contain the software-version shown on page 1. This version-number is also displayed in the mode page (parameter 'Program Version'). If you have still problems or difficulties or questions please don't hesitate asking our technical support. Called trademarks are properties of their companies.

set-up: 24.1.98	by: mv/jr
checked 24.1.98	von: mv/er
approved 24.1.98	von: mv/sha