

DC-CONTROLLER MU1000C - Configurator

USER MANUAL

(Version 1.39)

MU1000C Configurator Version 1.39.6 File Data R5232 Help					<u>-0×</u>
	Registered f	or : Eltek Vale	ere Indust		Exit
Signal configuration Battery	Boost -/ M	anual charge/S		Counter cells	MM1 n / RS 232
Text Analog inputs Uig Serial-No. JJ000000-000.000 Project MU Firmware Version 2.08 Path Nominal voltage range : MU1000C-I (20%)	- Lan - El - G - G - S	nresnoids guage MU1000 nglish erman wedish		Logo line 1 Eltek Valere Number of characters : 15 Logo line 2 MU1000_C V 2.08 Number of characters : 15	
Memo					X
	0//		0		
InterfaceCOM1	<u>0</u> K	<u> </u>	<u>C</u> ancel	19.6.2008 10:22:33	

UM_MU1000_Config_E_R03



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Information about the user manual

IMPORTANT! Please read this user manual very carefully before assembling and starting this device!

The user manual is a part of the delivery of this device, i.e. it should be made available to each and every person involved with the starting, maintenance or operation of the device. The device should be transported, mounted, started, maintained and operated only by Electro technical personnel.

The local specifications for the prevention of accidents as well as the general guidelines according to IEC 364 should always be followed!

The functional descriptions in the user manual correspond to those at the time of the publication. Technical changes can be carried out by the Eltek Valere Industrial GmbH without making any revisions or announcements. There is no responsibility for the constant revision of the operation manual.

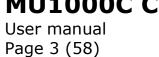
The device complies to the EN- and VDE-standards applicable at the time of the publication. The CE symbol on the device confirms the conformation of the EU-guidelines 2006/95/EG (Low voltage directive) and 2004/108/EG (EMC directive).

The devices are delivered exclusively according to our delivery and sales conditions. Alterations in the technical details in this operation manual as well as the respective data sheets are reserved.

Complaints about the delivered goods should be made as soon as possible on receiving them along with the packing invoice as well as the information about the type, serial number and complaint.

Guarantee claims of the customer will not be entertained in the case of visible external influences (e.g. absent or loose screws, welding, loose sheets, etc.), that could be attributed to a non permitted opening of the device.

Eltek Valere Industrial GmbH does not undertake any responsibility for applications of the device, which have not been intended by the manufacturer. It is the responsibility of the final-consumer to take the necessary measures for the prevention of damage to personnel and to goods (see upper text section).





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The current revision status of this manual is the following:

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Date: 2009-06-24

System: MU1000

System voltage: 24/48/108/216VDC

Revision	Description of changes	Author	Date
00	New Layout	PS	19.06.2008
01	New Layout	PS	29.09.2008
02	Section 5.7 updated	RTH	2009-02-12
03	Section 8. "Input LCD characters" added, minor text modifications	PS/RTH	2009-06-24



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1. Introduction

The MU1000C configurator is a program to change and adjust values of a MU1000C-unit. The values are changed using a PC and transmitted via serial interface RS232 to the MU1000C.

1.1 Requirements to start programming of MU1000C

To start with configuration of MU1000C via this program you have to check whether the following requirements are fulfilled:

- 1. MU1000C is switched on and the display shows the main menu
- 2. RS232 port is connected via an null modem cable (Sub-Min D 9-pole) to an free COM port of your computer
- 3. The transmission speed of the used COM port is set to 9600 Bps
- 4. The file MuConfV1_xx.EXE (delivered on CD) has been saved in a specific directory on your hard disk

The software is tested with following operation systems: $Microsoft^{\text{®}}$ Windows $95^{\text{®}}$, $Microsoft^{\text{®}}$ Windows $2000^{\text{®}}$ +XP.

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2. Program start

Bit Data B522 Bit Registered for: Eltek Valere Ind. Image: State	MU1000C Configurator Version 1.39.4			Click on MuConfV1_xx.exe in the specific directory
Signal configuration Battery Boost -/ Manual charge / System test Counter cells MM1 Text Analog inputs Digital inputs Thresholds Devices Outputs Modem /RS 232 Serial-No. JJ000000-000.000 Language MU1000 Logo line 1 In the main menu bar you find following items:	Elle Data RS232 Help			
Text Analog inputs Digital inputs Thresholds Devices Outputs Modem / RS 232 The picture on the fett shows the main screen are starting the MU1000C-Configurator. Serial-No. JJ000000-000.000 C English Logo line 1 In the main menu bar you find following items: Project HANDBUCH Eltek Valere In the main menu bar you find following items:	💷 📐 📴 😤 🔮 Reg	istered for : Eltek Valere Ind.	Exit	
Text Analog inputs Digital inputs Thresholds Devices Outputs Modem /RS 232 starting the MU1000C-Configurator. Serial-No. JJ000000-000.000 Language MU1000 Configurator In the main menu bar you find following items:	Signal configuration Battery Bo	oost -/ Manual charge / System test	Counter cells MM1	The picture on the left shows the main screen after
Serial-No. JJ000000-000.000 C Language MU1000 C English Logo line 1 In the main menu bar you find following items:	Text Analog inputs Digital inputs	Thresholds Devices	Outputs Modem / RS 232	
Serial-No. µU000000-000 000 C English C Englis		- Language MI 11000		starting the Horoboe configurator.
Project HANDBUCH	Serial-No. JJ000000-000.000	Edinguago mo rocc	Logo line 1	In the main menu har you find following items:
Project HANDBUCH		 English 		In the main menu bar you mu following items.
	Project HANDBUCH			NEILe // few energy (along / any a / wint wasing theiler
			Number of characters : 1.6	• "File" for open/close/save/print project files
	MU Firmware	German	Logo line O	 "Data" to start the transmission of data to
Parm Clooched Subchard Debringhood C English • R5252 to check and change the badura	Path C\SOURCES\BORLAND DELPHI\MUCO	C English		 "RS232" to check and change the baudrate
Number of characters : 16 and COM port for transmission cable			Number of characters : 1.6	and COM port for transmission cable
Nominal voltage range : MU1000C-I (20V-80V) • "Help" with MU1000C version and	Nominal voltage range : MU1000C-I (20V-80V)			 "Help" with MU1000C version and
registration code information				registration code information
Memo In the icon bar you find buttons for "Read data fro	Memo			In the icon bar you find buttons for "Read data from
			×	MU1000C", "Write data to MU1000C", "Open project
				file", "Close project file", "Print configuration data"
and "Exit".				
and Lat.				
The configuration voluce are arranged in 12				The configuration values are arranged in 12
The configuration values are arranged in 12				
registers.				registers.
			<u>×</u>	
				\sim
				Content C
InterfaceCOM1 QK Cancel 5.2.2008 11.23.14	InterfaceCOM1 Of	Cancel	5. 2.2008 11:29:14	





3. Main menu items

3.1 Main menu item – "File"

File Date Resize Help Own	MU1000C Configurator Versio	n 1.39.4		
Oder Store Ø Battery Boost -/ Manual charge / System test Counter cells MM1 Save Ø Jinputs Digital inputs Thresholds Devices Outputs Modem /RS 232 Prete configuration 9000.000 C English Language MU1000 Counter cells MM1 Que -000.000 C English Logo line 1 El tek Valere Number of characters : 16 Cogo line 2 MU1000_C C V2.0x Number of characters : 16 Nominal voltage range : MU1000C-I (20V-80V) Class of the second	File Data R5232 Help			
Serve as inputs Digital inputs Thresholds Devices Outputs Modem / RS 232 Project HANDBUCH -000.000 C English Language MU1000 Project HANDBUCH C English Eltek Valere MU Firmware CSOURCESYBORLAND DELPHIMUCO English Logo line 1 Path C/SOURCESYBORLAND DELPHIMUCO English MU1000_C V2.0x Nominal voltage range : MU1000C-I (20V-80V) Mumber of characters : 16 Memo		Pegis Regis	tered for : Eltek Valere Ind.	Exit
Preter configuration Biglish English Project HANDBUCH MU Firmware Path C\SOURCES\BORLAND DELPHI\MUCO Nominal voltage range : MU1000C-I (200-80v)				
Protect HANDBUCH Project HANDBUCH MU Firmware CiscouRcessBoRLaND DELPHIMUCO Path CiscouRcessBoRLaND DELPHIMUCO Nominal voltage range : MU1000C-I (20V-80V)		pinputs Digital inputs	Thresholds Devices	Outputs Modem / RS 232
Project HANDBUCH MU Firmware • English Path C\SOURCES\BORLAND DELPHIMUCO Nominal voltage range : MU1000C-I (20V-80V)		-D-000.000	Language MU1000	
Project HANDBUCH MU Firmware German Path CXSOURCESYBORLAND DELPHIMUCO Nominal voltage range : MU1000C-I (20V-80V) Memo	Quit	000.000		Logo line 1
MU Firmware Path C\SOURCES\BORLAND DELPHIMUCO Nominal voltage range : MU1000C-I (20V-80V) Memo	Project HANDB	UCH	• English	
Path C\SOURCES\BORLAND DELPHIMUCO Nominal voltage range : MU1000C-I (20V-80V) Memo			C German	Number of characters : 16
Path C English Number of characters : 16	MU Firmware			Logo line 2
Nominal voltage range : MU1000C-I (20V-80V) Memo Image: Image	Path C\SOUR	CES\BORLAND DELPHI\MUCO	C English	MU1000_C V2.0x
Memo			Linghon	Number of characters : 16
InterfaceCOM1 QK Qancel 5.22008 112252		MUTUUUU-H (20V-80V)		2
InterfaceCOM1 QK Qancel 5.22008 11:22:52				×
InterfaceCOM1 QK Qancel 5.2.2008 11.22:52				
	Interface	сом1QК	Cancel	5. 2.2008 11:22:52

- New Project generate a new project file
- Open open a saved project file
- Save save the changed project file

 $\ensuremath{\textit{Save as}}\xspace$ – save the changed project file with another name

Printer configuration – set the default printer for printing the configuration data list

Print – print out the configuration data list

Quit – exit the program

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3.2 Main menu item – "Data"

MU1000C Configurator Version 1.39.6 File Deta BS232 Help			Read MU1000C->PC – start data transmission from
	d for : IIIIIIII/IIII41/41/18	Exit	MU1000C to your computer
Signal configuration Battery Boost -/ M Text Analog inputs Digital inputs Serial-No. JJ000000-000.000 Lar Project C MU Firmware Version 2.08	anguage MU1000 English German Swedish	o line 1 Eltek Valere hber of characters : 16 o line 2 KU1000_C V 2.08 hber of characters : 16	Write PC->MU1000C - start data transmission from your computer to MU1000C
InterfaceCOM1 QK	Cancel	24.6.2008 12:56:08	*
			Newson Dr. Oww. N1388 11885
©2009. ELTEK VALERE DEUTSCHLAND GmbH.			

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3.3 Main menu item – "RS232"

Ele Data 85232 Help		
	Registered for : IIIIIIII'IIII'IV4TIB	<u>Exit</u>
Signal configuration Battery	Boost -/ Manual charge / System	
Text Analog inputs Digital inp	uts Thresholds Dev	vices Outputs Modem / RS 232
Serial-No. JJ000000-000.000 Project MIL Firmware Version 2.08	Language MU1000 Canglage MU1000 Canglish Comman Comman Comman Canglish Comman	Logo line 1 Eltek Valere Number of characters : 16
InterfaceCOM1	QK <u>C</u> ancel	24.6.2008 14:30:23

During startup of the software a free COM port is automatically detected. In case of detection failures you can adjust the correct COM port manually.

Comm. Port – COM port on which the serial transmission cable is connected

Baud Rate – the default rate is 9600

Data bits – the standard value is "8"

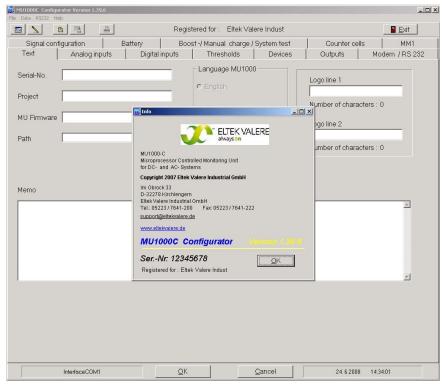
Stop bits – the standard value is "1"

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3.4 Main menu item – "Help"



This menu item shows the main service parameters of the actual configurator software and the online help:

Menu item - "Info":

- Support address for questions to the used -MU1000C-Hardware
- Support address for questions to the used configurator software
- Software version -
- Serial number of configuration software -
- Name of registered user -

Menu item – "Help":

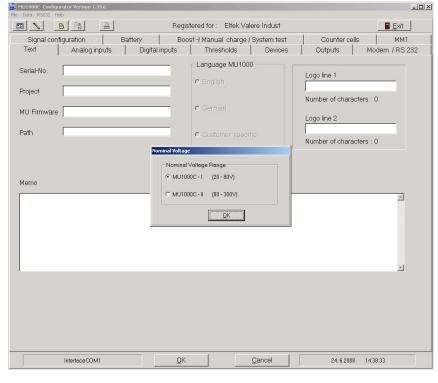
- Direct help (in future) Explain different "catchwords" (in future)



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4. Generate a project file

4.1 New project file



If you try to fill in data for MU1000C configuration before you opened a new project file or a saved project file you get the message: "Please open a file, new project or read data from MU1000!"

To generate a new project file select File/New ...

Choose the *Nominal Voltage Range* of the MU1000C unit that you are using.

Confirm with "OK".



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*
▼ <u>S</u> peichern
Abbrechen

The window "Save as" will appear.

Give a name for the new project file.

 ${}^{\ensuremath{\mathcal{C}}^n}$ We recommend to use subdirectories named to order code for each new project.

The project file suffix is "mc1". Old versions before V2.0 have the suffix "mcu". You do not need to fill in the suffix, because the software will generate it automatically.

Confirm with "OK".





4.2 Open existing project file

Öffnen					?	×
<u>S</u> uchen in:	🔁 Konfig		•	🗢 🗈 💣 🗉	H -	
Verlauf Desktop Arbeitsplatz	Handbuch.mc1					-
	Datei <u>n</u> ame:	Handbuch.mc1		-	Ö <u>f</u> fnen]
	Dateityp:	MU1000C-files ex V2.0 (*.mc1)	•	Abbrechen	

To open an existing project file select File/Open...

The window "File open" will appear.

Search for the right file in your harddisk subdirectories (suffix ".mc1" is preadjusted).

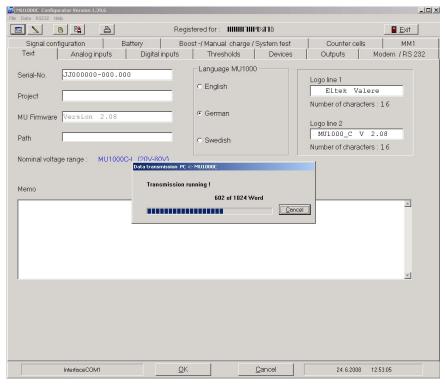
Click on the file name and confirm with "OK".

Content



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4.3 Read data from MU1000C



To read data from MU1000C select Data/Read MU1000->PC...

The window "Data transmission PC <- MU1000C" will appear.

With "cancel" you stop the data transmission.



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5. Configuration registers

5.1 Register – "Text"

Ele Data R5232 Help				
🔳 📐 📑 🛤 📇	Registered f	or : Eltek Valere Indust		Exit
Signal configuration Battery	Boost -/ M	anual charge/System test	Counter cells	MM1
Text Analog inputs [Digital inputs T	hresholds Devices	Outputs	Modem / RS 232
Serial-No. JJ000000-000.000 Project MU Firmware Version 2.08 Path Nominal voltage range : MU1000C-I (2)		nglish nglish erman wedish	Logo line 1 Eltek V Number of characte Logo line 2 MU1000_C V Number of characte	alere ers:15 2.08
Memo				A
InterfaceCOM1	QK	Qancel	19.6.2008	10:22:33

Serial no. – the serial number of the MU1000C hardware is shown automatically in this line

Project – project file name You can change this name if you save the project file with "File/Save as..." with another name.

Firmware – firmware version of MU1000C processor software.

The firmware version will be read out from the MU1000C during data transmission from MU1000C to PC.

Path – file path for your project file You can change this file path if you save the project file with "File/Save as..." in another subdirectory on your harddisk.





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MU1000C Configurator Version 1.39.6 Elle Data B5232 Help			Language – choose the language that you usually use to display in the MU1000C.
	ered for : Eltek Valere Indust st-/ Manual charge / System test Thresholds Devices C anguage MU1000 C English C German C Swedish	■ Exit Counter cells MM1 Outputs Modem / RS 282 Logo line 1 Eltek Valere Number of characters : 15 Logo line 2 MU1000_C v 2.08 Number of characters : 15	 The third language is customer specific. If you read from the MU1000C than you will see the language in the MU. Logo name line 1 - fill in your company name (max. 16 letters) The logo name will appear in the main menu on MU1000C display. Logo name line 2 - fill in any statement or note (max. 16 letters) The logo name will appear in the main menu on MU1000C display.
		A	In the Logo lines you can also put in special characters like Cyrillic, to display in the MU1000C. <i>Click on the right mouse button to get a LCD character</i> <i>set, than paste the string into the line.</i>
InterfaceCOM1 QK	Çancel	19.62008 10.22.33	

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5.2 Register – "Analog inputs and Shunts"

5.2.1 Analog inputs

Ele Data R5232 Help				
	Registered fo	r : Eltek Valere Indust		Exit
Signal configuration Batt		nual charge/System test	Counter cells	MM1
Text Analog inputs	Digital inputs Th	resholds Devices	Outputs M	1odem / RS 232
Analog inputs MU 1000C Input Display Text 1Vdc1				
11dc2 50 🗘 A				
11dc3 50				
InterfaceCOM1	QK	Cancel	24.6.2008 15	:08:03
S2007. LETER VALENE DEUTSCH				

On this page you are able to assign the designations for the analogue measuring inputs of MU1000C.

Following designations are possible for every measuring input:

Display - Yes - value is displayed on MU1000C display

(use this selection if the measuring input is used)

Display - No – value is not displayed on MU1000C display (use this selection if the measuring input is not used)

Text - User defined voltage and current measurement designations - fill in your own measurement designation if you do not want to use predefined designators (max. 8 letters)

You can also put in specific characters such as Cyrillic, to display the text in the MU1000C (for details see section 8.)

Click the right mouse button to get a LCD character set, than paste the string into the line.

Content

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MU1000C Configurator Version 1.39.6 Data R5232 Help		
	Registered for : Eltek Valere Indust	Exit
Signal configuration Batte		Counter cells MM1
Text Analog inputs Analog inputs MU 1000C Input Display Text 1Vdc1 r Yes No 1Vdc2 r Yes No 1Vdc3 r Yes No 11dc1 r Yes No 11dc2 r Yes No	Digital inputs Thresholds Devices BM1 Socket X1 Input Display Text 2Vdc1 r Yes r No 2Udc1: 2Vdc3 r Yes r No 2Udc3: 2ldc1 r Yes r No 2Idc1:	Outputs Modem / RS 232
11dc3 <u>C Yes € No</u> Shunts 11dc1 50	Shunt 21dc1 50 A	
InterfaceCOM1	QK Qancel	25.6.2008 09:50:41

Depending on the number of batteries the BM1board appears on the display. The max number of battery banks which can be measured is 3. (to set the number see Register "Battery") The picture shows a battery count of 2.



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5.2.2 Shunts

MU1000C Configurator Version 1.39.6 File Data R5232 Help		_II ×
	Registered for : Eltek Valere Indust	Exit
Signal configuration Battery Text Analog inputs Di	Boost -/ Manual charge / System test gital inputs Thresholds Devices	Counter cells MM1 Outputs Modem / RS 232
Analog inputs MU 1000C Input Display Text 1Vdc1 r Yes r No 1Vdc2 r Yes r No 1Vdc3 r Yes r No 11dc1 r Yes r No 11dc1 r Yes r No 11dc2 r Yes r No	BM1 Socket X1 Input Display Text 2Vdc1 • Yes r No 2Udc1: 2Vdc3 • Yes r No 2Udc3: 2ldc1 • Yes r No 2Idc1:	
Shunts 11dc1 50 11dc2 50 11dc3 50	Shunt 21dc1 50 🗘 A	
InterfaceCOM1	QK <u>Q</u> ancel	25.62008 10.50.32

 $\mathit{Idc1}$ – set the correct shunt size connected to measuring input $\mathit{Idc1}$

^{CP} To measure the battery charge/discharge current you have to use Idc1 input because this input can handle positive and negative measurement values.

 $\mathit{Idc2}$ – set the correct shunt size connected to measuring input $\mathit{Idc2}$

 $\mathit{Idc3}$ – set the correct shunt size connected to measuring input $\mathit{Idc3}$



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5.3 Register – "Digital inputs"

If you connect external signaling loops to MU1000C digital input interface you can configure every input (16 in total, 8 inputs from MU1000 and 8 inputs from external I/O-Board or DIG8) as following:

MU1000C Data RS	Configurator Ve 232 Help	rsion 1.39.6											
		<u>a</u>			Regist	ered for	Eltek Vale	ere Indu	ist			E	xit
Signa Text	al configuratio	on alog inputs	Battery I	, Digital inp			ial charge/ sholds		test vices	Counter o Outputs		N bdem / F	4M1 RS 232
MU inpu	uts		Cor	ntact			- I/O - or E)IGI8 in	puts	Cor	ntact		
Input-Nr	Tex	t	Break	/ Close	Delay	in sec.	Input-Nr.		Text	Break	/ Close	Delay	in sec.
Input 1	input	1	c	۹	0	•	Input 9	I/0	inputl	¢	c	0	•
Input 2	input	2	c	۰	0	•	Input 10	I/0	input2	¢	C	0	*
Input 3	input	3	C	۲	0	* *	Input 11	I/O	input3	¢	C	0	•
Input 4	input	4	с	۲	0	* *	Input 12	I/0	input4	¢	с	0	•
Input 5	input	5	C	۰	0	•	Input 13	I/0	input5	G	c	0	
Input 6	input	6	C	۲	0	•	Input 14	I/0	input6	¢	C	0	* *
Input 7	input	7	С	٦	0	•	Input 15	I/0	input7	¢	C	0	*
Input 8	input	8	c	۲	0	*	Input 16	I/0	input8	¢	C	0	* *
	Interfa	ceCOM1			<u>0</u> K			<u>C</u> ancel		25. 6.20	108 10:5	4:08	

Input no. – number of used digital input If you use the optional MU1000C-I/O board to increase the numbers of outgoing relay contacts you have to use the digital inputs on this board instead of the inputs on MU1000C hardware!

Text – fill in a error text (max. 16 letters) This text will be used to show the signal change on digital input during operation in the error list and/or history list on MU1000 display.

Break contact/Close contact – MU1000C detects an error on the input if the input contacts are "open"/"close"

Delay – delay time for digital input error detection in sec.

You can also put in especial characters such as Cyrillic, to display the input text in the MU1000C.

You can click the right mouse button to get a LCD character set, than paste the string into the edit field.

The panel $^{\prime}I/O^{-}$ or DIG8 inputs" appears only if an I/O-board or a DIG8-board is configured.



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5.4 Register – "Thresholds"

Configuration of monitoring thresholds for measuring inputs Vdc1, Vdc2, Vdc3, Idc1-3max, temperature and isolation resistance.

1U1000C Conf Data RS232		on 1.39.6						
		8		Registe	red for : Eltek V	alere Indust		Exit
Signal co	nfiguration	I Bi	attery	Boost	-/ Manual charge	/ System test	Counte	r cells MM1
Text	Anal	og inputs	Digital	inputs	Thresholds	Devices	Outputs	Modem / RS 232
Threshold			// !!	Dalas E		11		
Vmax Vwarn	57,6 45,6	V => 2,40 V => 1,90		Delay 1	Sec.	Hysteresis	1 * %	
Vmin	43,2	V => 1,80		Delay 1	sec.	Hysteresis	5 🔹 %	
Vdc2								
Vmax	57,6	V => 2,40	V/cell	Delay 1	Sec.	Hysteresis	1 %	
Vmin	43,2	V => 1,80	V/cell	Delay 1	🔹 sec.	Hysteresis	5 🗘 %	
Vdc3 - Vmax	28,8	V => 1,20	Vicoli	Delay 1	Sec.	Hysteresis	1 %	
Vmin	20,0	V => 0,90		Delay 1	sec.	Hysteresis	5 \$%	
ldc1max	40,0	A		Delay 1	sec.	Hysteresis	1 * %	
ldc2max	40,0	A		Delay 1	Sec.	Hysteresis	1 %	
ldc3max	40,0	A		Delay 1	sec.	Hysteresis	1 %	
Tempera	ture high	60,0 %	5	Delay 1	🔹 sec.	Hysteresis	5 🔹 %	
Battery c	peration	20,0	4	Delay 1	sec.	Hysteresis	5 🔹 %	
Riso erro	r	60 🖡 K	Ohm	Delay 1	▲ Sec.	Hysteresis	5 🔹 %	
	Interface	COM1		<u>0</u> K		<u>C</u> ancel	25.6	.2008 11:04:19

Vdc1 -

Vmax: over voltage threshold for measuring point Vdc1 You can put in the value in V or in V/cell. This threshold is used also for controlling of LED "Udc>" on MU1000C front panel.

Vwarn: prewarning threshold for measuring point Vdc1 You can put in the value in V or in V/cell.

Vmin: under voltage threshold for measuring point Vdc1 You can put in the value in V or in V/cell.

Delay: delay time for error signalization in sec.

 $\mathit{Hysteresis:}$ range between error detection start and stop value in % of programmed value

Content



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IU1000C Confi Data R5232	igurator ¥ersi Heln	on 1.39.6								
		B		Regis	tered for :	Eltek \	/alere Indust			Exit
Signal co	onfiguration	1	Battery	Boo	st -/ Manua	l charg	e / System test	00	unter cells	MM1
Text	Anal	og inputs	Digital	inputs	Thres	holds	Devices	U Outp	outs	Modem / RS 23
Threshold	c									
Vdc1 -										
Vmax	57,6	V => 2.	40 V/cell	Delay	1	sec.	Hysteresis	1 * %		
Vwarn	45,6	V => 1,		() 		_	·	- <u></u>		
Vmin	43,2	V => 1,		Delay	1	sec.	Hysteresis	5 \$%		
Vdc2		1,			<u></u>	-				
Vmax	57,6	V => 2,	40 V/cell	Delay	1	sec.	Hysteresis	1 %		
Vmin	43,2	V => 1,	80 V/cell	Delay	1	sec.	Hysteresis	5 \$%		
Vdc3		,								
Vmax	28,8	V => 1,	20 V/cell	Delay	1	sec.	Hysteresis	1 %		
Vmin	21,6	∨ =>0,	90 V/cell	Delay	1	sec.	Hysteresis	5 🗘 %		
ldc1max	40,0	A		Delay	1	Sec.	Hysteresis	1 \$%		
ldc2max	40.0	A		Delay	1	sec.	Hysteresis	1 %		
	1							-		
lucomax	40,0	A		Delay	1	SeC.	Hysteresis	1 %		
Tempera	ture high	60,0	°C	Delay	1	sec.	Hysteresis	5 🔹 %		
Battery o	peration	20,0	A	Delay	1	sec.	Hysteresis	5 🔹 %		
Riso erro	or	60	KOhm	Delay	1	sec.	Hysteresis	5 🔹 %		
	Interface	COM1		<u>0</u> K			Cancel		25. 6.2008	11:04:19

🗵 Vdc2 –

Vmax: over voltage threshold for measuring point Vdc2 You can put in the value in V or in V/cell.

Vmin: under voltage threshold for measuring point Vdc2 You can put in the value in V or in V/cell. This threshold is used also for controlling of LED "Udc<" on MU1000C front panel.

Delay: delay time for error signalization in sec.

 $\mathit{Hysteresis:}$ range between error detection start and stop value in % of programmed value

Vdc3 -

Vmax: over voltage threshold for measuring point Vdc3 You can put in the value in V or in V/cell.

Vmin: under voltage threshold for measuring point Vdc3 You can put in the value in V or in V/cell.

Delay: delay time for error signalization in sec.

Hysteresis: range between error detection start and stop value in % of programmed value



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	8	4		Registe	red for : Eltek V	/alere Indust				Exit
Signal co	nfiguration	1	Battery	Boost	-/ Manual charg	e / System test	ſ	Counter cell	s	MM1
Text	Anal	og inputs	Digital	inputs	Thresholds	Devices		Outputs	Mode	m / RS 2
Thresholds	e									
Vdc1 -	5									
Vmax	57,6	V => 2,	40 V/cell	Delay 1	Sec.	Hysteresis	1	• %		
Vwarn	45.6	V => 1,		Doid) IT	. ■ 300.	11/3/010313	1±	• · ·		
Vmin	43.2	V => 1,		Delay 1	Sec.	Hysteresis	5	* %		
Vdc2 -	45,2	, . [L,	00 0000	Doidy II	. ■ 300.	Hystoresis	lo.	• /°		
Vmax	57,6	V => 2,	40 V/cell	Delay 1	sec.	Hysteresis	1	%		
Vmin	43,2	V => 1,		Delay 1	sec.	Hysteresis	5	* %		
Vdc3 -	140,2	· · ±,	00 000	100id) [1	- 3000.	11/3/010303	12			
Vmax	28,8	V => 1,	20 V/cell	Delay 1	sec.	Hysteresis	1	%		
Vmin	21,6	V => 0,		Delay 1	- sec.	Hysteresis	5	• %		
******	121,0	· · [0,	30 11001	Doid) IT	_ 300.	11/3/010313	15	. ∕°		
ldc1max	40,0	A		Delay 1	🔹 sec.	Hysteresis	1	\$%		
ldc2max	40.0	A		Delay 1		Hysteresis	1	~ %		
		_		_			-			
ldc3max	40,0	A		Delay 1	Sec.	Hysteresis	1	%		
			_	_						
Temperat	ture high	60,0	°C	Delay 1	🔹 sec.	Hysteresis	5	• %		
Battery of	peration	20,0	A	Delay 1	🔹 sec.	Hysteresis	5	* %		
Riso errol	r	60	KOhm	Delay 1	🔹 sec.	Hysteresis	5	• %		
				<u>0</u> K						

×

Idc1 – 3 Idc1-3max: over current threshold for measuring point

Temperature high -

threshold for temperature monitoring inside the cabinet (an external connected temperature sensor is required)

Delay: delay time for error signalization in sec.

Hysteresis: range between error detection start and stop value in % of programmed value

Battery operation -

threshold for signalization of "Battery discharge operation"

The signal occurs if the measured negative voltage drop on battery current shunt exceeds this value.





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<u>\</u>	B 🛤	4		Regist	ered for : Eltek V	alere Indust			Exit
Signal co Text	nfiguration	og inputs	Battery Digital		it -/ Manual charge Thresholds	/ System test Devices	Cou Outpu	nter cells its	MM1 Modem / RS 23
Threshold: Vdc1 -	s								
Vmax Vwarn	57,6	∨ => 2, ∨ => 1,	40 V/cell 90 V/cell	Delay	1 🔹 sec.	Hysteresis	1 * %		
Vmin	43,2		80 V/cell	Delay [1 🔹 sec.	Hysteresis	5 🔹 %		
Vdc2 - Vmax	57,6	V => 2,	40 V/cell	Delay [1 sec.	Hysteresis	1 %		
Vmin Vdc3 -	43,2	V => 1,	80 V/cell	Delay	1 🔹 sec.	Hysteresis	5 🔹 %		
Vmax	28,8		20 V/cell	Delay		Hysteresis	1 %		
Vmin _	21,6	∨ => 0,	90 V/cell	Delay	1 🔹 sec.	Hysteresis	5 🔹 %		
ldc1max	40,0	A		Delay	1 🔹 sec.	Hysteresis	1 * %		
ldc2max	1	A .		Delay		Hysteresis	1 %		
ldc3max	40,0	A		Delay	1 sec.	Hysteresis	1 %		
Tempera	ture high	60,0	°C	Delay [1. 🔹 sec.	Hysteresis	5 🔹 %		
Battery o	peration	20,0	A	Delay [Hysteresis	5 🔹 %		
Riso erro	r	60	KOhm	Delay	1 🗘 sec.	Hysteresis	5 🔹 %		
	Interface	COM1		<u>0</u> K	[Cancel		5. 6.2008	11:04:19

Delay: delay time for error signalization in sec.

 $\mathit{Hysteresis:}$ range between error detection start and stop value in % of programmed value

Riso error -

threshold for signalization of "Isolation fault"

The signal occurs if the measured resistance between pluspole and earth or minuspole and earth exceeds this value.

Delay: delay time for error signalization in sec.

 $\it Hysteresis:$ range between error detection start and stop value in % of programmed value



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5.5 Register – "Devices"

5.5.1 Device

Signal configuration ext Analog inputs	Battery Digital in		anual charge / System test Thresholds Devices	Counter cells Outputs Mode	MM1 m / RS 232
exi Analog inputs Device Rec. count Redundant Rec. count Redundant Rec. count Thyristor count Thyristor count Thyristor count I/O - board or Mains monit MM1 UNB Temperature sensor1 MU Temperature sensor2 BM1 Temperature sensor3 BM1 Riso measurement Riso reference to	Image: second	f no f no	Rectifier Nominal voltage Battery test voltage Boost charge voltage Nominal current Load limit Load limit delay Load current difference Current distribution delay blink if CAN-Adr. 0 Thyristor Voltage Current Inv. Nominal voltage	54,5 ∨ => 2,27 42.5 ∨ => 1,77 57.5 ∨ => 2,40 50.0 A 100 * % 60 55 * 55 * 20∨ = 100,0 20∨ = 100,0 20∨ = 100,0 20∨ = 100,0 20∨ = 100,0 20∨ = 100,0	V/cell V/cell

On this page you have to configure the main operation parameter for controlling of connected (via CAN-Bus) power supply modules.

PSS count – number of CAN- connected PSS rectifier modules (max. 54)

 $\ensuremath{\ensuremath{\mathcal{C}}}\xspace^{\ensuremath{\ensuremath{\mathcal{C}}}\xspace}$ This value is used to

detect the error state of connected rectifier modules. Every single module in the system has its own CAN address.

Example: If you have 5 units inside of your power supply you have to set the "PSS count" to 5 and the addresses on modules from 1 to 5.

Redundant PSS count – number of CAN-connected PSS rectifier modules for redundant operation

 $\widehat{\mathscr{B}}$ This value is used to detect the error state of





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📐 🖪 💾 🛓	Registered	for : Eltek Valere Indust	Exit
Signal configuration Text Analog inputs	· · · · · ·	lanual charge / System test Thresholds Devices	Counter cells MM1 Outputs Modem / RS 232
Device Rec. count Inv. count Redundant Rec. count Redundant Inv. count		Rectifier Nominal voltage Battery test voltage Boost charge voltage Nominal current	54.5 $\lor \Rightarrow 2,27$ $\lor/cell$ 42.5 $\lor \Rightarrow 1,77$ $\lor/cell$ 57.5 $\lor \Rightarrow 2,40$ $\lor/cell$ 50.0 \land \land
Thyristor count Fan tray count I/O - board	0 x 0 x 0 x 0 x c yes c no	Load limit Load limit delay Load current difference	100 * % 60 * sec. 10 * %
or Mains monit MM1 UNB		Current distribution delay blink if CAN-Adr. 0	5 sec.
Temperature sensor1 MU Temperature sensor2 BM1 Temperature sensor3 BM1	r yes r no r yes r no r yes r no	☐ Thyristor Voltage Current	20V= 100,0 V 20V= 100,0 A
Riso measurement Riso reference to	Cyes €no €Udc1 €Udc2	Inv. Nominal voltage	230 V

redundant connected rectifier modules. Every single module in the system has its own CAN address.

Example: If you have 5 units inside of your power supply and you use 4 for load supply + battery charging and 1 module for redundancy operation - you have to set the "PSS count" to 5, the "Redundant PSS count" to 1 and the addresses on modules from 1 to 5.

INV count – number of CAN- connected INV inverter modules

 ${}^{\textcircled{B}}$ This value is used to

detect the error state of connected inverter modules. Every single module in the system has its own CAN address.

Example: If you have 5 units inside of your power supply you have to set the "INV count" to 5 and the addresses on modules from 1 to 5.



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		Registered f	or : Eltek Valere Indust		Exit
Signal configuration	Battery Digital in		anual charge/System.test Thresholds Devices	Counter cells Outputs Mo	MM1 dem / RS 232
Device			Rectifier Nominal voltage Battery test voltage Boost charge voltage Nominal current	54.5 V => 2,2 42.5 V => 1,7 57.5 V => 2,4 50.0 A	7 V/cell
Fan tray count I/O - board or Mains monit MM1 UNB	0 € C yes F RB6 C yes	r no I⊽ DIGI8 r no r no	Load limit Load limit delay Load current difference Current distribution delay blink if CAN-Adr. 0	100 • % 60 • se 10 • % 5 • se	
Temperature sensor1 MU Temperature sensor2 BM1 Temperature sensor3 BM1 Riso measurement Riso reference to	 C yes 	no r no r no r no r no r Udc2	Thyristor Voltage Current	20V = 100,0 V 20V = 100,0 A 230 + V	
		0002			

Redundant INV count – number of CAN-connected INV inverter modules for redundant operation

^{CP} This value is used to detect the error state of redundant connected inverter modules. Every single module in the system has its own CAN address.

Example: If you have 5 units inside of your power supply and you use 4 for load supply and 1 module for redundancy operation - you have to set the "INV count" to 4, the "Redundant INV count" to 1 and the addresses on modules from 1 to 5.

Relay board RK1 or RB6/DIG8 – turn on/off the CANconnected relay board MU1000C-I/O

/		~
-	Content	



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		Registered f	or : Eltek Valere Indust		Exit
Signal configuration	Battery Digital inpu	1	anual charge / System test hresholds Devices	Counter cells Outputs Mode	MM1 em / RS 232
Device			Rectifier		
Rec. count	0		Nominal voltage	54,5 V ⇒ 2,27	V/cell
Inv. count	0		Battery test voltage	42,5 V => 1,77	V/cell
Redundant Rec. count	0		Boost charge voltage	57,5 V => 2,40	V/cell
Redundant Inv. count	0		Nominal current	50,0 A	
Thyristor count	0				
Fan tray count	0		Load limit	100 🗘 %	
I/O - board	Cyes	• no	Load limit delay	60 + sec.	
or	,	✓ DIGI8	Load current difference	10 🔹 %	
			Current distribution delay	5 Sec.	
Mains monit MM1	C yes	• no	blink if CAN-Adr. 0		
UNB	C yes	• no			
Temperature sensor1 MU	€ yes	° no	- Thyristor		
Temperature sensor2 BM1	C yes	• no	Voltage	20∨= 100,0 ∨	
	C yes	• no	Current	20∨= 100,0 A	
Riso measurement	C yes	• no	_ Inv.		
Riso reference to	€ Udc1	C Udc2	Nominal voltage	230 🔹 V	
InterfaceCOM1		QK	Cancel	25.6.2008 11:16:2	10

^{CP} If you turn on the relay board option you can use the digital input interface on I/O board and on MU1000C hardware to connect external signaling loops. You can use either an I/O board or a RB6 and/or DIG8 board.

Mains monit. MM1 – turn on/off the CAN-connected mains monitoring board MU1000C-MM

UNB – turn on if static bypass switch UNB is also connected to the CAN bus

 ${}^{{}_{{\ensuremath{\mathcal{S}}}^{{}_{{\ensuremath{\mathcal{S}}}}}}}$ This feature prevents "Master" collisions on CAN bus.

Temperature sensor – turn on/off an external connected active temperature sensor

You need this feature if you want to use temperature compensation of charge voltage or to monitor the cabinet temperature.



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	Regist	ered for : Eltek Valere Indust	Exit
Signal configuration	Battery Boos	t -/ Manual charge / System test Thresholds Devices	Counter cells MM1 Outputs Modem / RS 232
Device		Rectifier	
Rec. count	0	Nominal voltage	54,5 V => 2,27 V/cell
Inv. count	0	Battery test voltage	42,5 V => 1,77 V/cell
Redundant Rec. count	0	Boost charge voltage	57,5 V => 2,40 V/cell
Redundant Inv. count	0	Nominal current	50,0 A
Thyristor count	0		
Fan tray count		Load limit	100 🔹 %
	·	Load limit delay	60 sec.
I/O - board	⊂yes €no	Load current difference	10 * %
or	RB6 RDIGI	8 Current distribution delay	5 sec .
Mains monit MM1	C yes 🔍 no	blink if CAN-Adr. 0	
UNB	⊂ yes ● no	Dirik i CANAdi. 0	-
Temperature sensor1 MU	€ yes ⊂ no	- Thyristor	
Temperature sensor2 BM1	⊂ yes € no		20V= 100,0 V
	⊂ yes € no	Current	20V= 100,0 A
Riso measurement	⊂ yes ເ⊂ no		
Riso reference to	© Udc1 ⊂ Udc2		230 V
InterfaceCOM1	ОК	Cancel	25.6.2008 11:16:22

The number of the temperature sensors depends on the count of the batteries. (see register "Battery"). The picture shows 2 sensors (sensor1 - MU; sensor2 - BM1)

 $\it Riso\ measurement\ -\ turn\ on/off\ the\ isolation\ fault\ monitoring$

 ${}^{\mathscr{P}}$ Turn off if one pole is earthed in the system or if two monitoring units are connected to the same DC bus.



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5.5.2 INV

	Registered for : Eltek Valere Indust					
Signal configuration	Battery Boost -/ I Digital inputs	Manual charge / System test Thresholds Devices	Counter cells MM1 Outputs Modem / RS 232			
Device Rec. count Inv. count Redundant Rec. count Redundant Inv. count Thyristor count Fan tray count		Rectifier Nominal voltage Battery test voltage Boost charge voltage Nominal current Load limit	$\begin{array}{c c} 54.5 & \forall \Rightarrow 2,27 & \forall \text{/cell} \\ \hline 42.5 & \forall \Rightarrow 1,77 & \forall \text{/cell} \\ \hline 57.5 & \forall \Rightarrow 2,40 & \forall \text{/cell} \\ \hline 50.0 & \text{A} \\ \hline 100 & \bigstar \% \end{array}$			
I/O - board or Mains monit MM1 UNB	Cyes €no ₩ RB6 ₩ DIGI8 Cyes €no Cyes €no	Load limit delay Load current difference Current distribution delay blink if CAN-Adr. 0	60 ★ sec. 10 ★ % 5 ★ sec.			
Temperature sensor1 MU Temperature sensor2 BM1 Temperature sensor3 BM1	r yes r no r yes r no r yes r no r yes r no r yes r no	Current	20V = 100,0 V 20V = 100,0 A			
Riso measurement Riso reference to	C yes C no C Udc1 C Udc2	Nominal voltage	230 × V			
InterfaceCOM1	ок	Cancel	25.6.2008 11:16:22			

Nominal voltage: set the nominal output voltage for the connected inverters



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5.5.3 Rectifier

MU1000C Configurator Version 1.39.6			
	Registered for	or : Eltek Valere Indust	Exit
Signal configuration Text Analog inputs		anual charge / System test hresholds Devices	Counter cells MM1 Outputs Modem / RS 232
Device Rec. count Inv. count Redundant Rec. count Redundant Inv. count Thyristor count Fan tray count I/O - board		Rectifier Nominal voltage Battery test voltage Boost charge voltage Nominal current Load limit Load limit	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $
Mains monit MM1	r yes r no r RB6 r DIGI8 r yes r no	Load current difference Current distribution delay blink if CAN-Adr. 0	10 ★ % 5 ★ sec.
Temperature sensor1 MU Temperature sensor2 BM1 Temperature sensor3 BM1	C yes C no C yes C no C yes C no C yes C no	- Thyristor Voltage Current	20V = 100,0 V 20V = 100,0 A
Riso measurement Riso reference to	C yes C no C Udc1 C Udc2	Inv. Nominal voltage	230 V
InterfaceCOM1	<u></u> K	Cancel	25.6.2008 11:16:22

Nominal voltage: set the nominal charge voltage for the connected rectifier modules. You can put in the value in V or in V/cell.

Battery test voltage: set the voltage level for decreasing the rectifier output voltage during battery test

To secure an uninterruptable load supply you have to set this value higher than battery low threshold of your system. That way the rectifiers are able to take over the load before the battery will disconnected from the load.

You have to turn on the battery test function before this value will have any influence on the system function.

Boost charge voltage – set the value for boost charge voltage

 ${}^{\tiny {\rm CP}}$ You have to turn on the boost charge function before this value will have any influence on the system function.

 $\it Nominal\ current\ -$ set the nominal current limitation of the single rectifier module

 ${}^{{}_{\rm CP}}$ Please check the specific data of the used rectifier module type to adjust the correct current limitation.

Load limit – pre warning threshold for total rectifier output power



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		E D	Exit		
Signal configuration	1	anual charge/System.test hresholds Devices	Counter cells M Outputs Modem / F	IM1 RS 232	
Device			Rectifier		
Rec. count	0		Nominal voltage	54,5 V => 2,27 V/c	ell
Inv. count	0		Battery test voltage	42,5 V => 1,77 V/c	ell
Redundant Rec. count	0		Boost charge voltage	57,5 V => 2,40 V/c	ell
Redundant Inv. count	0		Nominal current	50,0 A	
Thyristor count	0				
Fan tray count	0		Load limit	100 🗘 %	
			Load limit delay	60 🔺 sec.	
I/O - board	C yes	€ no	Load current difference	10 * %	
or	RB6	DIGI8	Current distribution delay	5 \$ sec.	
Mains monit MM1	⊂ yes	€ no	blink if CAN-Adr. 0	D 000.	
UNB	C yes	€ no	DIFIK IT CAN-AUL U		
Temperature sensor1 MU		C no	- Thyristor		
Temperature sensor2 BM1	C yes	€ no	Voltage	20V = 100,0 V	
	C yes	€ no	Current	20V= 100,0 A	
Riso measurement	⊂ yes	€ no	_ Inv.		
Riso reference to	♥ Udc1	C Udc2	Nominal voltage	230 V	
InterfaceCOM1		QK	Cancel	25.6.2008 11:16:22	

Example: You defined a maximum load on system output of 80% because you do not want that every rectifier operates permanent with 100% output power. The 100% load value will be calculated with number of connected rectifier modules multiplied by max. output current of the single module.

If the connected load exceeds the adjusted load limit level the system generates an alarm signal.

Load limit delay - delay time for load limitation alarm

Blink if CAN-ID 0 – enable this value if you want to know whether a module has the CAN address ``0''

^{CP} This feature is used when you get new modules for system extension. Usually the new modules have the CAN address "0". If you put in all new modules you can see by blinking display that only these modules have to be reprogrammed with a new CAN address.

DC-Controller MU1000C Configurator User manual



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5.6 Register – "Outputs"

On this page you can configure the isolated relay outputs.

5.6.1 MU1000C

	8 8		Registere	d for : Eltek Vale	re Indust			Exit
	nfiguration	Battery		Manual charge/S			unter cells	MM1
Text	Analog inputs	Digit	al inputs	Thresholds	Devices	Outp	outs Mo	odem / RS 233
MU 1000C	;			I/O-Board or F	RB6			
	delay	break cont.	close cont.	delay		break cont.	close cont.	
Alarm A	1 Sec.	c	۰	K11 0	🔹 sec.	c	۲	
Alarm B	1 🗘 sec.	С	¢	K12 0	🔹 sec.	с	۲	
LED S1	1 🗘 sec.			К13 0	sec.	с	۰	
LED ST				К14 0	🔹 sec.	с	œ	
LED 52	1 sec.			К 15 0	sec.	C	·	
Relay K1	1 sec.	e	C	К16 0	🔹 sec.	с	¢	
Relay K2	1 🔹 sec.	e	c					
	InterfaceCOM1		QK	1	ancel		25.6.2008 12:2	

Alarm A - delay time for alarm signalization on relay A

Alarm B - delay time for alarm signalization on relay B

Break/close cont. – in case of failure the relay contacts are opened/closed

^{CP} We recommend to include all urgent single alarm signals to alarm A (urgent alarm) and all non urgent alarms to alarm B (non urgent alarm). The alarm configuration will be made in Register "Signal configuration".

 $\ensuremath{\textit{LED S1/S2}}$ – delay time for LED signalization S1/S2 on MU1000C front panel





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	8	<u>B</u>	Registere	ed for : Eltek Vale	re Indust			Exit
2	nfiguration	Battery		/Manual charge/			nter cells	MM1
Text	Analog inpu	uts Digit	al inputs	Thresholds	Devices	Outpu	ts Mo	odem / RS 23
MU 1000C				I/O-Board or	RB6			
	delay	break cont.	close cont.	delay		break cont.	close cont.	
Alarm A	1 🔹 se	c. C	۰	К11 0	sec.	c	۲	
Alarm B	1 🔹 se	c. C	c	K 12 0	🔹 sec.	с	۲	
LED S1	1 🗘 se	c.		К 13 0	🔹 sec.	c	۲	
LED S2	1 🗘 se			K14 0	🔹 sec.	c	۲	
				K 15 0	🔹 sec.	C	۲	
Relay K1	1 🗘 se		с	K16 0	🔹 sec.	c	۲	
Relay K2	1 🗘 se	c. c	C					
	InterfaceCOM1		QK		Cancel		5.6.2008 12:2	3:50

^P You can set a single failure signalization to LED S1/S2. In that way you are able to expand the front side LED functionality for two additional LED signals.

Relay K1 - delay time for alarm signalization on relay K1

Relay K2 - delay time for alarm signalization on relay K2

Break/close cont. – in case of failure the relay contacts are opened/closed

^{GP} You can use relay K1 and relay K2 on MU1000C to signalize single failures by single relay outputs. It is possible to include more than one single failure to one relay output.



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5.7 Register – "Modem/RS232"

HU1000C Configurator Version 1.39.6		×
Elle Data B5232 Help	Registered for : Eltek Valere Indust	Exit
B B Signal configuration Battery Text Analog inputs D Data transmission C Modem C	Registered for : Eltek Valere Indust Boost -/ Manual charge / System test igital inputs Thresholds Devices IP-Address I92_168_1192_168	Counter cells MM1 Outputs Modem / RS 232
InterfaceCOM1	QKQancel	25.62008 122528

 $RS232\,$ – modem connection is disabled, programming via RS232 cable is possible

Modem – programming via RS232 is disabled, modem connection is possible



DC-Controller MU1000C Configurator User manual Page 38 (58)



🖽 MU1000C Configurator Version 1.39.6	Modem –
Pic Date Size Heb Pic Date Size Heb Pic Date Size Heb Dial configuration Battery Boost / Manual charge / System test Counter cells Modern C RS 232 Dial mode Pulse C Response to external dialin Error messages Daily system state report at Ring detect dial back Telephonenumber O Error message delay time 1 Station Station Station	Modem – Dial Mode – set dial mode to pulse or tone dial Response to external dial in – switch on/off the possibility for remote access Error messages – enables the automatic dial back function caused by system faults Daily system state report – the system send every day a state message to a predefined phone number; time is adjustable Ring detect dial back – enables the automatic dial back function after receiving a call (higher security than direct remote dial in) Phone number – set the phone number for automatic dial back function Error message delay time – delay time for error
InterfaceCOM1 QK Cancel 25.6.2008 12.26.36	



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MU1000C Configurator Version 1.39.6				<u>_0×</u>	signalization by automatic
Password	Digital inputs Threshol	harge / System test ds Devices 168 1 1	Counter cells Outputs M	MM1 odem / RS 232	This delay time is used automatic system dial back caused by short non messages. Station identification – fill station; the name will be t modem connection Password – fill in a password Modem init string – fill in a string for the used modem Do not change the factory preconfigured systems!
					Content
InterfaceCOM1	<u>0</u> K	Cancel	25. 6.2008 12:	26:36	

omatic dial back in minutes

is used to prevent ial rt non permanent error

- fill in a name for the vill be transmitted during

bassword for remote access

fill in a specific modem init nodem actory setting for ms!



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MU1000C Configurator Version 1.39.6	-D×
Ele Deta BS22 Eleb Registered for : Eltek Valere Indust	Exit
Signal configuration Battery Boost -/ Manual charge / System test Counter cells Text Analog inputs Digital inputs Thresholds Devices Outputs M	MM1 1odem / RS 232
Data transmission IP - Address • Modem • RS 232 192 168	
Dial mode weekday Pulse C Tone ✓ Monday Response to external dial-in ✓ Wednesday Error messages ✓ Thursday ✓ Daily system state report at Ø 0 : 00 Ring detect dial back ✓ Saturday	
Telephonenumber 0 Error message delay time 1	
Station identification Station 1 Password CONVERTRONIC	
Modem init. string AT AT&O AT&F %dATX3E0L1S0=0	
InterfaceCOM1 QK Cancel 25.62008 12	:28:02

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Daily system state report at – time adjustment: set week, days and time (hour/minutes)



5.8 Register – "Signal configuration"

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🔜 📐 🔢	<u>)</u> 📲 🚽	2	Regist	ered for : IIIIIIII'II	11 °1/√11B		Exit
Text	Analog inpu	its Digital	inputs	Thresholds	Devices	Outputs Mo	dem / RS 232
Signal conf	- 1	Battery	Boos	it-/Manual charge	/ System test	Counter cells	MM1
	Rectifier	Rectifier re	ed.	Rec.load limit	Rec.load distrib	Inv.fault	_
Error state							
Event history							
LED S1							
LED S2							
Alarm A (K4)							
Alarm B (K3)							
Relay K1							
Relay K2							
Relay K11							
Relay K12							
Relay K13							
Relay K14							
Relay K15							-
Relay K16							
Relay K17							†
Relay K18							-
Modern		• • • • • • • • • •					+

On this page you can assign every single failure signal in the system to one or more output channels. Click in the row of output device you want to add a fault signal. The actual fault signal is marked in red. The black sign shows that the fault is enabled on this output device.

 $\it Error\ state\ -\ assign\ a\ single\ error\ to\ error\ state\ list\ on\ MU1000\ display$

 $\ensuremath{\textit{Event history}}\xspace$ – assign a single fault to MU1000C event history list

[©] The event history show time and date when the fault occurs and time and date when the fault is gone. The event history is a memory stack for 100 messages. If the stack limit is reached the oldest message will be erased.

LED S1/S2 – assign a single fault to front side LED S1/S2



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Text Signal configu Bignal configu Error state Event history	Analog inputs ration	Digital inputs	egistered for : IIIIIIIII'I Thresholds Boost -/ Manual charg: Rec.load limit	Devices	Counter cells	Modem / RS 232
Signal configu P Error state Event history	Analog inputs ration	Battery I	Boost-/ Manual charge	e / System test	Counter cells	
P Error state Event history			-			MM1
Error state Event history	ectifier	Rectifier red.	Rec.load limit	Rec.load dist	wile Incode	
Event history					ino inviduit	
LED S1						
LED S2						
Alarm A (K4)						
Alarm B (K3)						
Relay K1						
Relay K2						
Relay K11						
Relay K12						
Relay K13						
Relay K14						
Relay K15						
Relay K16						
Relay K17						
Relay K18						+++-
Modem		╸╸╸╸╸				+++-

Alarm A/B – assign a single fault to alarm relay K4/K3 on MU1000C hardware

Relay K1/K2 – assign a single fault to alarm relay K1/K2 on MU1000C hardware

Relay K11-K18 – assign a single fault to alarm relay K11-K18 on MU1000C-I/O board (optional board have to be connected on CAN bus)

Modem – assign a single fault to modem (fault messages will be sent during remote access by modem)

All fault signals are OR-operation.



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5.9 Register – "Battery"

5.9.1 Value

Elle Data R5232 Help	
Registered for : Ettek Valere Indust	
Text Analog inputs Digital inputs Thresholds Devices Outputs Modem / RS Signal configuration Battery Boost -/ Manual charge / System test Counter cells MM	
Value Test Battery count	
Battery unsymmetry 2.5 V Delay 1 * sec. Hysteresis 10 * % Battery current control Tk -2 mV/(Cell * *K) rectifier voltage increase delay 0 * sec. Tk min 0 *C Tk max 60,0 *C	
InterfaceCOM1 QK Cancel 25.6.2008 11:29:51	

Battery count - number of monitored battery banks

 ${}^{{}_{\rm SP}}$ If you connect the optional MU1000C-BM board to monitor a second or third battery bank with MU1000C you have to increase this value to the number of monitored banks.

By changing the number of battery banks the number of BM-sockets in the register "Analog inputs" will change.

 $\ensuremath{\textit{Cell count}}$ – number of installed battery cells of each bank

Tapping point – number of cells where the tapping point for battery unsymmetric voltage measurement is connected (counted from minus side)

Nominal capacity 1/2/3 – nominal battery capacity of bank 1/2/3



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Text Analog inputs Digital inputs Three Signal configuration Battery Boost -/ Manua	sholds Devices Outputs Modem / al charge / System test Counter cells h	Max. charge current – value for charging current limitation of bank 1/2/3 Battery asymmetry – Value for maximal voltage deviation between both sides of battery	ו block
Value Battery count Cell count 24 tapping point (from -) 12 Nominal capacity 1 50 An Max. charge current 1 30,0 A Nominal capacity 2 50 An Max. charge current 2 30,0 A Nominal capacity 3 50 An	Test Min. discharge voltage 40,0 V Max. discharge capacity 80 € % Max. test-duration 04:00 € hhmm □ Manual test enabled □ Boost charge after test □ Automatic test enabled Start test digit input	 This value should be higher than voltage of on battery cell. Delay – delay time for unsymmetric fault signalization in sec. 	ation ult
Max. charge current 3 30,0 A Battery unsymmetry 2,5 V Delay 1 sec. Hysteresis 10 % Battery current control rectifier voltage increase delay 0 sec. V Delay 1 sec. Participation of the sec. V Delay 1 sec.	Tk -2 ★ mV/(Cell * °K) Tk min 0 °C Tk max 60,0 °C		
InterfaceCOM1 QK	Qancel 25.6.2008 11:29:51		



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5.9.2 Test

MU1000C Configurator Version 1.39.6	X
Ele Data 85232 Help	Eltek Valere Indust
Text Analog inputs Digital inputs Thre	Link value indust ■ Lot sholds Devices Outputs Modem / RS 232 at charge / System test Counter cells MM1 Test Min. discharge voltage 40,0 V Max. discharge capacity 80 \$% Max. test-duration 04 : 00 \$ □ Manual test enabled □ Boost charge after test □ Automatic test enabled Start test digit.input 0
Battery unsymmetry 2.5 V Delay 1 • sec. Hysteresis 10 • % Battery current control • • • rectifier voltage increase delay 0 • sec. rectifier voltage decrease delay 0 • sec.	Tk -2 mV/(Cell * *K) Tk min 0 *C Tk max 60,0 *C
InterfaceCOM1 QK	Qancel 25.6.2008 11:29:51

Min. discharge voltage – battery low threshold for battery test

Max. discharge capacity – maximal discharge capacity in % of nominal battery capacity Max. test duration – maximal battery test time in hour:minutes

Manual test enable – enables the possibility to start the battery manual via front side keys

Automatic test enable – enables the automatic battery test function

Test start at – date of first battery test (year/month/day and hour/min)

Repetition – interval for new battery tests beginning from first test date (in days)



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5.9.3 Tk

MU1000C Configurator Version 1.39.6	
Ele Data R5232 Help	
💼 📐 🖪 🖺 🔮 Registered for :	Eltek Valere Indust
Text Analog inputs Digital inputs Thre	sholds Devices Outputs Modem / RS 232
Signal configuration Battery Boost -/ Manu	al charge / System test Counter cells MM1
Value Battery count Cell count 24 tapping point (from -) 12 Nominal capacity 1 50 Ah Max. charge current 1 30,0 A Nominal capacity 2 50 Ah Max. charge current 2 30,0 A Nominal capacity 3 50 Ah Max. charge current 3 30,0 Battery unsymmetry 2,5 Hysteresis 10 Battery current control rectifier voltage increase delay Cell count 24 Cell co	al charge / System test Counter cells MM1 Test Min. discharge voltage 40,0 V Max. discharge capacity 80 € % Max. test-duration 04:00 € hh.mm □ Manual test enabled □ Boost charge after test □ Automatic test enabled Start test digit input 0 € Tk Tk -2 € mV/(Cell **K) Tk min 0 °C
rectifier voltage decrease delay 0 ★ sec.	Tk max 60,0 °C
	201001

With these values you can have influence on the charge line characteristic (inclination, start/stop temperature for temperature compensation).

Tk – temperature coefficient for temperature compensation of charge voltage Put in the value without sign ("4" means "-4" mV/cell/K).

Tk min – minimum temperature for temperature compensation of charge voltage

Tk max – maximum temperature for temperature compensation of charge voltage

If temperature of battery is out of the defined range the temperature compensation is switched off. Also during boost charge the temperature compensation is switched off.



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5.10 Register – "Boost-/Manual charge/System test"

5.10.1 Boost charge

Ele Data R5232 Help	
	<u>E</u> xit
Text Analog inputs Digital inputs Thresholds Devices Outputs Modem Signal configuration Battery Boost -/ Manual charge / System test Counter cells Counter cells Boost charge Manual charge Automat. boost charge enabled Image: Counter cells Counter cells Automat. boost charge enabled Image: Counter cells Activation enabled Image: Counter cells Automat. boost charge enabled Image: Counter cells Activation enabled Image: Counter cells Automat. boost charge enabled Image: Counter cells Activation enabled Image: Counter cells Automat. boost charge enabled Image: Counter cells Activation enabled Image: Counter cells Automat. boost charge enabled Image: Counter cells Activation enabled Image: Counter cells Automat. boost charge starts below 43.2 V Vmax 65.0 V => 2.7.1 After a delay of 2 sec. Vmax 65.0 V => 2.7.1 Vicell Boost charge dis. digital input Image: Counter cells Max. charging current 40.0 A Emerg. switch off : Vmax + 3.5 V <t< th=""><th>/RS 232 MM1</th></t<>	/RS 232 MM1
Boost charge start digital input 0 • Goldw-up charge starts above 1 • or lbatt (ldc1) <	
Fan delay 5 min. Max.charging current 50,0 A InterfaceCOM1 QK Qancel 25.62008 11:3320	

Manual boost charge enabled – enables the possibility to start battery boost charging function manually via front side keys

Automat. boost charge enabled – enables the automatic boost charging function (reasons to start boost charge automatically: battery voltage low and/or mains fault)

Aut. Boost charge starts below – minimum battery voltage level where automatic boost charge starts

After a delay of – delay time for start boost charge after voltage level was reached

Battery operation/Mains fault – maximal time duration for mains failure or battery operation to start boost charging automatically





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HU1000C Configurator Version 1.39.6 File Data R5232 Help	
	Registered for : Eltek Valere Indust
Text Analog inputs Signal configuration Boost charge Boost charge Manual boost charge enabled Automat. boost charge enabled Automat. boost charge enabled Automat. boost charge starts below or lbatt (ldc1) > after a delay of Battery operation / mains fault Boost charge dis. digital input	
Boost charge start digital input Boost charge max. time	0 Image: System test 1 Image: h 0 Image: System test 1 Image: h 0 Image: System test 1 Image: System test 1 </td
follow-up charge starts above or lbatt (Idc1) < after a delay of follow-up charge duration	56.0 V Alarm delay after system test 600 sec. 30 A Vmin 20.0 V => 0,83 V/cell 1 sec. Vmax 80.0 V => 3,33 V/cell Max. charging current 50.0 A A A A A
Fan delay	5 * min.
InterfaceCOM1	QK Qancel 25.62008 11:3320

Boost charge inhibit – By activing this item you can choose the input to cut off fast

Follow-up charge starts above - battery voltage level where follow-up charging time will start

After a delay of – delay time for start follow-up charging time after boost charge end voltage level was reached

Follow-up charge duration – duration time for follow-up charging (in minutes)

Fan delay – delay time for battery room ventilation fan (an external fan has to be connected to an outgoing alarm relay for this function)



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5.10.2 Manual charge

MU1000C Configurator Version 1.39.6	
Ele Data R5232 Help	Registered for : Eltek Valere Indust
Text Analog inputs Signal configuration E	Digital inputs Thresholds Devices Outputs Modem / RS 232 3attery Boost -/ Manual charge / System test Counter cells MM1
or Ibatt (Idc1) > after a delay of Battery operation / mains fault	Manual charge Activation enabled Over voltage alarm enabled Alarm delay after manual charge Alarm delay after manual charge Alarm delay after manual charge Sec. Vmax 65.0 V=> 2 Sec. 1 min. Emerg. switch off : Vmax + 3.5
	0 ► System test 1 ► h Activation enabled Over voltage alarm enabled
or Ibatt (Idc1) < after a delay of follow-up charge duration	56.0 V 30 A 1 • sec. Vmin 20.0 V=> 0,83 V/cell Vmax 80.0 V=> Max. charging current 50,0 A
InterfaceCOM1	QK <u>Q</u> ancel 25.62008 11:33:20

Activation enabled – enables the possibility to start manual charge with front side keys

Over voltage alarm enabled – possibility to disable the over voltage alarm if the voltage level is reached due to manual charging

Alarm delay after manual charge – time to give a reminding alarm to the user after manual charge have been started (to avoid over charging of the battery in case that the user has forgotten to switch off manual charging)

Vmax – maximal allowed charging voltage

Max. charging current – maximal battery charging current during manual charge operation

Emerg. Switch off - not used



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5.10.3 System test

MU1000C Configurator Version 1.39.6	
Ele Data R5232 Help	
	Registered for : Eltek Valere Indust
Text Analog inputs	Digital inputs Thresholds Devices Outputs Modern / RS 232
Signal configuration	Battery Boost -/ Manual charge / System test Counter cells MM1
Boost charge Manual boost charge enabled Automat, boost charge enabled Automat, boost charge enabled Aut, boost charge starts below or ibatt (idc1) > after a delay of Battery operation / mains fault Boost charge dis, digital input Boost charge dis, digital input Boost charge start digital input Boost charge start digital input Boost charge start above or ibatt (idc1) < after a delay of follow-up charge starts above or ibatt (idc1) < after a delay of follow-up charge duration Fan delay	Manual charge Manual charge Activation enabled Alarm delay after manual charge Qoer voltage alarm enabled Manual charge Alarm delay after manual charge Good Sec. Manual charge Manual charge Activation enabled Manual charge Good Sec. Max Code and the sec. Max System test Activation enabled Code and the sec. System test Activation enabled Over voltage alarm enabled Over voltage alarm enabled Max Alarm delay after system test Good Sec. Vmin 20.0 V= Max M
InterfaceCOM1	QK Qancel 25.6.2008 11:33:20

This function can be used to test all monitoring thresholds of the system during commissioning.

Activation enabled – enables the possibility to start system test with voltage variation function

Over voltage alarm enabled – possibility to disable the over voltage alarm if voltage level is reached due to manual system test.

Alarm delay after manual charge – time to give a reminding alarm to the user after system test have been started (to avoid that system operates permanent in wrong mode in case that the user has forgotten to switch off system test)

Vmin - minimal allowed system test voltage

Vmax - maximal allowed system test voltage

Max. charging current – maximal battery charging current during system test operation



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5.11 Register – "Counter cell"

🔜 MU1000C Configurator Version 1.39.6	
Ele Data 85232 Help	SI
E N B R A Registered for : Eltek Valere Indust	th
Text Analog inputs Digital inputs Thresholds Devices Outputs Modern / RS	
Signal configuration Battery Boost -/ Manual charge / System test Counter cells MM	Ce
Counter cells	C
on	
Counter cell 1 60,0 V 58,5 V	C
Counter cell 2 61,0 V 59,5 V	С
Voltage reference	cl
re Vdc1 re Vdc2 re Vdc3	С
	cl
	V u:
	u.
InterfaceCOM1 OK Cancel 25.6.2008 11:34:48	

On this page you can configure the values for switching a one-level or two-level counter cell. For this function one or two external contactors have to be connected to outgoing alarm relays. The counter cell function has to be assigned in signal configuration menu to the used alarm relays.

Counter cells-

Counter cell 1 – voltage value for open (on) and close (off) the dropping diode contactor 1

Counter cell 2 – voltage value for open (on) and close (off) the dropping diode contactor 2

Voltage reference – sets the measuring input that is used to measure the reference voltage



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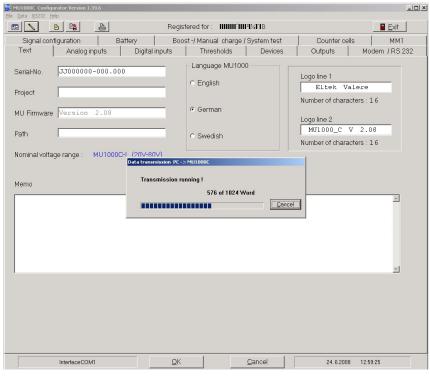
5.12 Register – " MM1"

Image: Second state Image: Second state Image: Second state Image: Second state <th>Configuration of the optional CAN connected mains monitoring board MU1000C-MM. <i>MM1 –</i> <i>Monitoring L1/L2/L3 –</i> enables the monitoring channel for phase L1. L2, L3 <i>V> -</i> monitoring threshold mains voltage high alarm in % of measuring value <i>V< -</i> monitoring threshold for mains voltage low alarm in % of measuring value <i>Delay –</i> delay time for mains fault detection <i>Display –</i> enables the display for measured voltage and/or current value of all enabled phases</th>	Configuration of the optional CAN connected mains monitoring board MU1000C-MM. <i>MM1 –</i> <i>Monitoring L1/L2/L3 –</i> enables the monitoring channel for phase L1. L2, L3 <i>V> -</i> monitoring threshold mains voltage high alarm in % of measuring value <i>V< -</i> monitoring threshold for mains voltage low alarm in % of measuring value <i>Delay –</i> delay time for mains fault detection <i>Display –</i> enables the display for measured voltage and/or current value of all enabled phases
Interface/COM1 OK Cancel 25.6.2008 11:35:49	
InterfaceCOM1 QK Cancel 25.62008 11:35:49	1



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6. Send new data to MU1000C



If you finished the configuration on all register entrees, you have to send the new data to MU1000C.

Select File/Data/Write PC->MU1000C...

If any error occurs please try to start the transmission again.



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7. Save project file

MU1000C Configurator Version 1.39.6 File Data R5232 Help	
	Registered for : Eltek Valere Indust
Signal configuration	Battery Boost -/ Manual charge / System test Counter cells MM1 b Digital inputs Thresholds Devices Outputs Modem / RS 232
Serial-No. JJ000000-C	
Project HANDBUCH MU Firmware Version 2 Path C:\sources\r Nominal voltage range : M	Spechemini Image: Spechemini in the spechemimini in th
Memo	Netzwerkung - Daleigane: Handsochmos v Speichen beforen v Daleigen wir Abbrechen v 20 v Abbrechen v 20 v v V V V V V V V V V V V V V V V V V
InterfaceCOM1	QK <u>C</u> ancel 25.6.2008 12:36:14

To save the changed project file select File/Save...

To save the new generated project file select *File/Save as...,* search for right subdirectory on your harddisk, put in a new file name and confirm with "OK".

DC-Controller MU1000C Configurator User manual Page 55 (58)



8. Input LCD characters (especial for cyrillic characters)

HU1000C Configurator Version 1.39.6 File Data RS232 Help			_ 🗆 ×						
	tered for : '		Exit						
	st -/ Manual charge / System tes		MM1						
Text Analog inputs Digital inputs	Thresholds Device	s Outputs Mod	dem / RS 232						
Serial-No. JJ000000-000.000	Language MU1000								
Senal-No. Jacobooo-ooo.ooo	0 F 1 I	Logo line 1							
Project	C English	Eltek Valere	LCD character						
Floject		Number of characters : 1	6 Paste						
MU Firmware Version 2.12	 German 								
Norminal provide the		Logo line 2							
Path	C Swedish	MU1000_C V2.12							
	Soweusii	Number of characters : 1	.6						
Nominal voltage range : MU1000C-I (20V-80V)									
Memo									
			*						
			*						
			-						
InterfaceCOM1 OK	<u>C</u> ancel	27. 4.2009 15:12	::06						

There is the possibility to key in specific LCD characters in different text fields, as for example in the *Logo line 1* and 2, in *Analog inputs* or *Digital inputs* (see section 8.1.).

Press the right mouse key in the respective text field. After that there appears a Popup menu with the choice of "LCD character" and "paste".

With the choice of "LCD character" a form appears such as shown at section 8.1. (see the following page).

It is possible to key in a maximum of 16 characters. These characters appear in the edit field below. Click on *Copy* to load the required character(s) into the buffer, leave the form with *Exit* and copy this into the text field with another click on the right mouse key choosing *Paste*.





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8.1. LCD character set

8	Cha	rSet															
		Low															
		0	1	2	3	4	5	6	7	8	9	A	в	С	D	E	F
gh	1		•	56	"	1	Ŧ	•		t	Ļ	->	-	<	≥		•
	2		!	4	Ħ	\$	8	&	,	ſ)	*	+	,	-	-3	1
1	3	0	1	2	3	4	5	6	7	8	9	:	;	<	-	>	?
	4	@	A	в	С	D	Е	F	G	н	I	J	к	L	м	N	0
1	5	Р	Q	R	s	т	U	v	M	х	Y	z	[١	1	^	_3
	6	1	a	b	с	d	e	£	g	h	i	j	k	1	m	n	0
1	7	р	q	r	s	t	ц	v	W	x	У	z	ſ	E	}	~	۵
	8	Б	д	ж	Э	И	Й	л	П	У	ц	ч	ш	щ	ъ	ы	з
1	9	α	ħ	г	л	Σ	σ	ß	τ	A	θ	Ω	δ	60	*	ε	Π
	A	Ш	i	¢	£	α	¥	ł	s	F	©	a	«	Ю	я	®	5
1	в	0	±	2	з	PŁ	μ	T		ω	ι	2	»	4	Ŀ2	34	ż
	С	À	Á	Â	Ā	Ä	Å	Æ	ç	È	É	Ê	Ë	Ì	Í	Î	Ï
1	D	Ð	Ñ	Ò	Ó	ô	ō	ö	×	φ	Ù	Ú	Û	Ü	Ý	þ	ß
1	E	à	á	â	ā	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
	£	ð	ñ	ò	ó	ô	ō	ö	÷	φ	ù	ú	û	ü	Ý	Þ	Ý
			P	leas	ie, c	lick	on a	cha	racto C	er ta opy	put	into	the	edit	field		ait
		f char -Hex-C		(m	nax. 16	6 chara	acters		De	elete					<u></u>		

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The picture on the left shows the especial LCD character set.



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9. Notes



10. Data transmission Error / Data transmission abortion

Transmission Error:

On display	Error	Error probability	
"Transmission Error	Communication error	The MU1000C is not switched on	The MU1000C switch on
No answer from the		The MU1000C is in the menue	Leave the menue by pressing the
MU1000C"		(to push on the Enter-button)	ESC-button
		communication is not possible	
		Read/write-error: the MU1000C is in timeout	Wait until timeout is over
			(display)
		Chose wrong interface	Check the interface in the menue
			RS232/com
		Interface connection defect	Check the communication
		(Hardware)	between
			PC and MU1000C
"Checksum error"	Check sum	Data transmission failed	

Transmission abortion:

Pressing the abort button during the data transmission

Transmission abortion during the write cycle:

Important: The MU1000C lost their new values during the transmission time. At this point the MU1000C gets internal default values. At this time you have to repeat the write cycle.