

M1000C RS232 Configuration Programmer's Manual



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Introductory notes

This document describes how to configure the SELCO M1000C Alarm Annunciator using the included RS232 cable and a Windows® PC running Microsoft® HyperTerminal.

RS232 Configuration

There are two ways of configuring the M1000C Alarm Annunciator – by the 16 dip switches located on the rear of the unit, or through the build-in RS232 interface (RJ plug). The 16 dip switches have a limited number of combinations and provide only restricted combinations for e.g. channels and delays. The RS232 based configuration is unrestricted.

RS232 based configuration is easily done using a standard ANSI compatible terminal application e.g. Microsoft® HyperTerminal (which is supplied with the Windows® operating system) or any other ANSI terminal. The configuration is done through the special RS232 cable, which is delivered with the M1000 units.

Installation

Wiring

Plug one end of the supplied RS232 cable into the grey RJ plug located on the side of the M1000C (next to the supply). The other end of the cable (with the DB9 plug) connects to a PC COM port (COM1 is used in this manual).

Important: Do not attach the power supply to the M1000 before the Microsoft® HyperTerminal application is running. No damage will occur, but it might prevent the M1000C from initializing the communication.

Windows® software

Windows® NT, 2000 and XP will normally install HyperTerminal by default. Windows® 95, 98 and ME will normally not install HyperTerminal by default.

It's important to make sure that an ANSI terminal application is installed on the PC. To find out if Microsoft® HyperTerminal already is installed, please:

1. Click on the *Start* button (in the lower left corner of the Windows® screen).
2. Click on the menu item *All* programs*.
3. Click on the menu item *Accessories*.
4. Click on the menu item *Communication*.
5. Check if there is a menu item named: *HyperTerminal*.

If you already have installed Microsoft® HyperTerminal, please continue in the section **Create a new connection** on page 4.

* On Windows® XP the button is named *All programs*. If the operating system is older than Windows® XP, the button is only named *Programs*.

Installing HyperTerminal

This section describes the procedure for installing HyperTerminal, which is supplied on the Windows® 9x CD-ROM.

Please note that the installing procedure for HyperTerminal might be a little different dependent on which version of Windows® you have installed. It should however be possible to configure the system using this procedure:

1. Click on the Start button (in the lower left corner of the Windows® screen).
2. Click on the menu item Control panel.

The Control Panel will appear on the screen, please:

3. Double-click on the Add/Remove Programs icon.

The Add/Remove Programs Properties dialogue will appear on the screen, please:

4. Click on the tab Windows Setup.
5. Click on *Communications components*.
6. Click on the button *Details*.
7. Enable the check box just left of the HyperTerminal application.
8. Click on the button *OK*.

Windows will now ask for the installation CD-ROM. After inserting the CD-ROM, Windows will install the files for the HyperTerminal application.

Create a new connection


HyperTerminal is now fully installed and its time for creating a new connection, please:

1. Click on the *Start* button (in the lower left corner of the Windows® screen).
2. Click on the menu item *All* programs*.
3. Click on the menu item *Accessories*.
4. Click on the menu item *Communication*.
5. Click on the menu item *HyperTerminal*.


The *New connection* dialogue will appear on the screen, please:

6. Type in **Direct COM1** (assuming that COM1 is used for the connection) in the input field *Name*
7. Click on the button *OK*.

The *Connect to* dialogue will appear on the screen, please:

8. Click on the drop down menu, opposite to the input field *Connect to*, and choose which COM port you want to connect to, e.g. 
9. Click on the button *OK*.

The *Port Properties* dialogue will appear on the screen. Please choose the settings illustrated below:



The screenshot shows the 'Port Properties' dialog box with the following settings:

Bit pr. sekund:	9600
Databit:	8
Paritet:	Ingen
Stopbit:	1
Flow-styring:	Ingen

10. Click on the button *OK*.

Important: The *HyperTerminal* dialogue will appear on the screen. To check the connection between the M1000C unit and the pc (via COM1), please turn the power on to the M100C unit.

*) On Windows® XP the button is named *All programs*. If the operating system is older than Windows® XP, the button is only named *Programs*.

Save connection

The M1000C is now connected to the PC through RS232. The screen dump below shows the welcome message, transmitted by the M1000C which indicates that it is ready for configuration.

Systems parameters	Next
Save PROM	Act
Source	SW
RS485 baud rate	9600
Protocol	ModB
RS485 address	01
Special program	00
Repeat siren x min.	00
Factory defaults	Act
Read config.	Act
Load config.	Act

In order to avoid the starting and configuration procedure, every time you start up the Microsoft® HyperTerminal in the future, it's practical to save the setup. To save the setup, please:

1. Click on the menu *File* (in the upper left corner of the HyperTerminal dialogue).
2. Click on the menu item *Save as...*

The *Save as...* dialogue will appear on the screen, please:






3. Note that the name *Direct COM1* is already typed into the input field *Filename*
4. Click on the button *Save*.

The configuration has been saved as a HyperTerminal shortcut icon. This icon (named *Direct COM1*) can be accessed directly through the start menu (same location as HyperTerminal).

Introduction to Microsoft® HyperTerminal

Icon explanation

Below you will find an explanation for the frequently used icons in Microsoft® HyperTerminal.

Icon	Description
	Use this icon if you need to create a new connection e.g. if you need to communicate by another COM port, than your default connection does
	Use this icon if you need to open a new connection e.g. the connection you have saved as <i>Direct COM1</i>
	Use this icon if you need to connect to the unit related to the pc e.g. M1000C
	Use this icon if you need to disconnect to the unit related to the pc e.g. M1000C
	Use this icon if you need to correct some of the properties for the active connection e.g. <i>Direct COM1</i>

Error detection

1 Communication problems

1.1 Communication problems might be solved by briefly removing the power supply to the M1000C after HyperTerminal has been started. For further information please refer to the web site www.microsoft.com

Configuration of M1000C

Important: Do not attach the power supply to the M1000 before the Microsoft® HyperTerminal application is running. No damage will occur, but it might prevent the M1000C from initializing the communication.

Make sure that the M1000C RS232 port is connected to the PC COM1 serial port.

Now It's time to configure the M1000C using the preconfigured settings for HyperTerminal, please:

1. Click on the *Start* button (in the lower left corner of the Windows® screen).
2. Click on the menu item *All*) programs*.
3. Click on the menu item *Accessories*.
4. Click on the menu item *Communication*.
5. Click on the menu folder *HyperTerminal*.
6. Click on the menu item *Direct COM1*.

The *Direct COM1 - HyperTerminal* dialogue will appear on the screen.

Show parameters

Reconnect the power supply to the M1000C unit. Now the configuration text appears in the terminal window:

Systems parameters	Next
Save PROM	Act
Source	SH
RS485 baud rate	9600
Protocol	ModB
RS485 address	01
Special program	00
Repeat siren x min.	00
Factory defaults	Act
Read config.	Act
Load config.	Act

All parameters inside the terminal window can be changed or activated according to the descriptions on every single parameter, which you are able to read about on the following pages in this manual.

To navigate up and down between the parameters inside the terminal window, please use the arrow, V or B keys. To select (toggle) a parameter, please use the space key.

*) On Windows® XP the button is named *All programs*. If the operating system is older than Windows® XP, the button is only named *Programs*.

System parameters (screen 1)

The initial screen shows the *system parameters*. In the table below every single parameter are listed in company with a detailed explanation of what the parameter could be used for.

Systems parameters	Next
Save PROM	Act
Source	PROM
RS485 baud rate	9600
Protocol	ModB
RS485 address	01
Special program	00
Repeat siren x min.	00
Factory defaults	Act
Read config.	Act
Load config.	Act

Parameter	Options	Description
Save Prom	Act	When activated all settings, in all 3 Microsoft® HyperTerminal windows, will be saved into the EPROM (memory) inside M1000C
Source	SW	SW means switches. When selected all settings can only be adjusted by the dip switches on the rear side of the M1000C unit.
	PROM	PROM means EPROM. When selected all settings can only be adjusted by the configuration inside the Microsoft® HyperTerminal.
RS485 Baud rate	-	Baud rate for the RS485 port
	19,2	
	1200	
	2400	
	4800	
Protocol	ModB	<i>ModB</i> means MODBUS. When selected M1000C is able to communicate with other sort of units, by MODBUS communication.
	SelB	<i>SelB</i> means SELCOBUS. When selected It's possible to use the M1000C together with the SELCO N0500 or N0300 software. The software must also be configured to run with 9.600 baud (opposed to the default 1.200 baud).
RS485 address	00-62	Slave address on the MODBUS / SELCOBUS
Special program	0-3	Used for special customized configurations (NOT recommended)
Repeat siren x min.	0-30	Acknowledged alarms are repeated as new alarms after selected counts of minutes, providing that the fault(s) is/are still present. TIP: This security function prevents the operator from forgetting an important alarm condition after having acknowledged the alarm(s).

Parameter	Options	Description
Factory defaults	Act	<p>When selected all special settings on the EPROM will be DELETED!</p> <p>This will restore M1000C back to the default configuration.</p>
Read config.	Act	<p>With this setting it is possible to read the configuration from the M1000C unit and save it in an external file (*.txt), please:</p> <p>Click on the menu item <i>Transfer</i></p> <ol style="list-style-type: none"> 1. Click on the menu <i>Transfer</i>. 2. Click on the menu item <i>Capture text</i>. 3. Choose the position of the destination file 4. Click on the button <i>Start</i>. 5. Navigate down the parameters, inside the terminal window and position the cursor on the <i>Act</i> item <i>Read config</i>. 6. Press the <i>space</i> key (the configuration will be listed in the terminal window) 7. Click on the menu <i>Transfer</i>. 8. Point on the menu item <i>Capture text</i>. 9. Point on the menu item <i>Stop</i>. <p>Now the configuration of the M1000C unit is saved into the external file. If you open the file you are able to read (and write) the configuration with a text editor.</p> <p>When you need to load the configuration from the file, into a M1000C unit, please refer to the next section.</p>

Parameter	Options	Description
Load config.	Act	<p>With this setting it is possible to load the configuration from a external file and save it into the M1000C unit, please:</p> <ol style="list-style-type: none"> 1. Navigate down the parameters, inside the terminal window and position the cursor on the <i>Act</i> item <i>Load config</i>. 2. Press the <i>space</i> key (the directions of next step will be listed in the top of the terminal window) 3. Click on the menu <i>Transfer</i>. 4. Click on the menu item <i>Send text file</i>. 5. Select the source file 6. Click on the button <i>Open</i>. <p>Now the configuration in the external file is loaded into the M1000C unit.</p> <p>When you need to save the configuration from the M1000C unit, into an external file, please refer to the section above.</p>

Toggle the field *Next* to move to the next configuration screen. This will be the individually configuration of *Channel 1-10*.

Set Channel 1-10 (screen 2)

The second screen contains some special parameters that are possible to setup individually for channel 1-10. In the table below every single parameter are listed in company with a detailed explanation of what the parameter could be used for.

Set Channel 1-10		Next					
	Delay	Factor	Contact	Reset	Output	Block	
Channel No. 1	10	0.01	NO	Norm	01	On	
Channel No. 2	10	0.01	NO	Norm	02	On	
Channel No. 3	10	0.01	NO	Norm	03	On	
Channel No. 4	10	0.01	NO	Norm	04	On	
Channel No. 5	10	0.01	NO	Norm	05	On	
Channel No. 6	10	0.01	NO	Norm	06	On	
Channel No. 7	10	0.01	NO	Norm	07	On	
Channel No. 8	10	0.01	NO	Norm	08	On	
Channel No. 9	10	0.01	NO	Norm	09	On	
Channel No. 10	10	0.01	NO	Norm	10	On	

Parameter	Options	Description
Delay	00-99 second(s)	Delay value for the selected channel
Factor	0,01	Delay factor for the selected channel Channel delay is defined as Delay value X Delay factor.
	0,1	
	1	
	10	
Contact	NO	This setting concerns contact function (NO/NC). M1000C need to know which kind of sensor/switch there is connected to the input(s). With this setting you also have the possibility to determine how ever the selected channel should observe the channel regarding cable faults. Choose this setting if you're connecting a sensor, switch etc. with contact function <i>NO</i> to the selected input.
	NC	Choose this setting if you're connecting a sensor, switch etc. with contact function <i>NC</i> to the selected input.
	NO+C	Choose this setting if you're connecting a sensor, switch etc. with contact function <i>NO</i> to the selected input and you further more need to get an alarm if the connected cable is being damaged.
	NC+C	Choose this setting if you're connecting a sensor, switch etc. with contact function <i>NC</i> to the selected input and you further more need to get an alarm if the connected cable is being damaged or reconnected. Important: If you want to use cable fault monitoring (<i>NO+C</i> or <i>NC+C</i>), we recommend that you use <i>Extension Cable Monitoring</i> . For further information please refer to the section <i>Extension cable mon.</i> on page 19 in this manual. For further information regarding wiring, please refer to the data sheet.

General information's concerning operational principle of M1000C

Before you read the descriptive information on page 13 regarding the different settings on the reset configuration, we recommend that you read this section concerning some general scenarios on the M1000C unit. There are two basically scenarios that you need to know about before you configuring the reset settings:

Important: It's only possible to produce the two scenarios when the M1000C unit is in *Factory default* mode.

1. **Manual reset.** This scenario relates to the situation where an alarm is detected and you manually resetting the alarm before the alarm signal are deactivated.
2. **Deactivated input.** This scenario relates to the situation where an alarm is detected and the alarm signal is deactivated before you're manually resetting the alarm.

Scenario 1 (manual reset): Alarm input is activated, the display goes flashing and the interconnected output, alarm-out (terminal 27) and the siren goes ON. When reset button is being activated, the display goes steady and the siren goes OFF together with alarm-out (terminal 27), the interconnected output is still ON. When alarm input is de-activated, display and the interconnected output go OFF.

Please refer to figure 1.

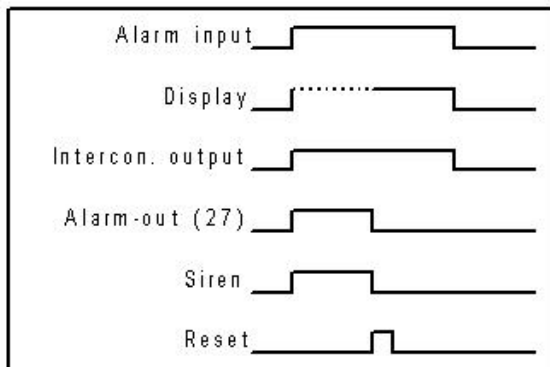


Fig. 1 Function diagram – manual reset

Scenario 2 (deactivated input): Alarm input is activated, the display goes flashing and the interconnected output, alarm-out (terminal 27) and the siren goes ON. Alarm input is de-activated, the display is still flashing and the interconnected output, alarm-out (terminal 27) and the siren is still ON. When reset button is being activated, the display and the siren goes OFF together with alarm-out (terminal 27), and the interconnected output.

Please refer to figure 2.

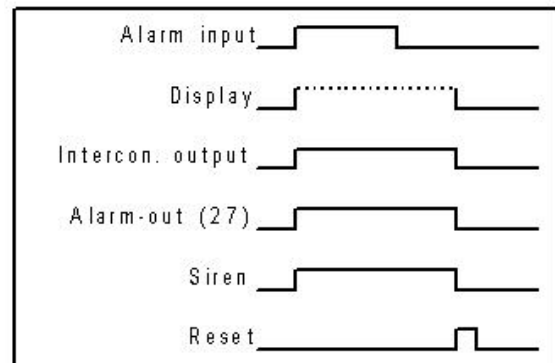


Fig. 2 Function diagram – deactivated input

Parameter	Options	Description
<p>Reset</p>	<p>Norm</p>	<p>This <i>Reset</i> setting determines how the reset button (on front or external positioned) affect on the display, the interconnected output, alarm-out (terminal 27) and the siren.</p> <p><i>Norm</i> means normal. This is the default reset setting, similar to the programming switch S12 (ON).</p> <p>Scenarios: Both scenario 1 and 2 apply to the <i>Norm</i> setting. Please refer to page 12 for further information's.</p>
	<p>Auto</p>	<p><i>Auto</i> means automatic reset.</p> <p>Scenarios: Scenario 1 applies to the <i>Auto</i> setting. Please refer to page 12 for further information's.</p> <p>Scenario 2 doesn't apply to the <i>Auto</i> setting; instead <i>Automatic reset</i> will automatically reset the channel once the input signal is deactivated. This means that the indication on the channel can switch directly from flashing light to no light.</p>
	<p>Loc</p>	<p><i>Loc</i> means local reset. Channels working with local reset cannot be reset with the external reset signal, if it's connected through a 39 KΩ resistor. The resistor has to be connected in series with the external reset signal (terminal 12).</p> <p>It's still possible to perform reset on the reset button (on front or external positioned button connected directly to terminal 12).</p> <p>Scenarios: Both scenario 1 and 2 apply to the <i>Loc</i> setting. Please refer to page 12 for further information's.</p>
	<p>Indi</p>	<p><i>Indi</i> means indicator. Display and interconnected output(s) follows the alarm input. It isn't possible (or necessary) to reset channels whit this configuration.</p> <p>Scenario 3 (deactivated input): Alarm input is activated, the display goes Steady and the interconnected output goes ON. Alarm input is deactivated, display and interconnected output goes OFF.</p> <div data-bbox="587 1664 1040 1962" data-label="Diagram"> </div> <p>Fig. 3 Function diagram – deactivated input (Indi)</p> <p>Note: When this setting is used, siren and alarm-out (terminal 27) isn't activated on this channel.</p>

Parameter	Options	Description
Output	00-10	<p><i>Output</i> means interconnected output. This means that it isn't necessary to have output 1 activated when input 1 is activated etc.</p> <p>With this setting it's possible to group the outputs on the inputs. E.g. you can have output 1 activated when either input 1 or 2 is activated. If you select <i>00</i>, no output will be activated when you get an alarm on the particular channel.</p>
Block	On	<p>With this setting it's possible to block the output signal on one or more channels. All you need is to have the positive supply (terminal 28) connected to terminal 13.</p> <p><i>ON</i> is the default setting on all channels. If you select <i>ON</i>, the interconnected output will not be activated if you get an alarm on the particular input (positive input on terminal 13 affects all channels with this setting selected).</p> <p>TIP: Upon you have blocked the output; you need to check if there have been any alarms. If you have had any alarms in the meantime you need to reset them, please refer to page 13.</p>
	Off	<p>If you select <i>OFF</i> the interconnected output will not be affected of an eventually input signal on terminal 13.</p>

Toggle the field *Next* to move to the next configuration screen. This will be the configuration of *Flags*.

Flags (screen 3)

The third screen contains all the *flag* parameters. All these parameters are characterized by the *on* and *off* settings. In the table below every single parameter are listed in company with a detailed explanation of what the parameter could be used for.

Flags	Next
Reset activated 2 times	Off
Sync-out on output 10	Off
Normally deact. siren	Off
Insulation mon. ch 7/8	Off
Voltage mon. ch 2/3	Off
Extension	
Flashing outputs	Off
Inverted outputs	Off
First reset only siren	Off
2 seconds siren pulse	Off
Siren on ackn. alarms	Off
Siren 2nd alarm pulse	Off
Al-out 2nd alarm pulse	Off
Al-out on cable fault	Off
Extension cable mon.	Off
Cable fault on output9	Off

Parameter	Options	Description
Reset activated 2 times	Off	Factory default setting
	On	<p>This setting will change the default configuration described in the section <i>General information's concerning operational principle of M1000C</i> on page 12</p> <p>After reset the steady light is maintained until reset is again activated, provided that the fault has been cleared. Please refer to figure 4 below:</p>

Fig. 4 Function diagram – reset activated 2 times

Parameter	Options	Description
Sync-out on output 10	Off	Factory default setting.
	On	<p>The sync-out function provides the possibility of synchronised LED flashing between multiple M1000 units.</p> <p>The selection of this function disables the default output function of output 10 (terminal 26) on the first unit positioned in a multiple M1000 installation.</p> <p>Sync-out has no functional importance other than providing visual continuity. Please refer to figure 7 in the data sheet regarding wiring information.</p>
Normally deact. Siren	Off	Factory default setting. The default operation of the siren is normally energised.
	On	Selecting <i>On</i> cause the siren relay to operate normally de-energised.
Insulation mon. ch 7/8	Off	Factory default setting.
	On	<p>This selection provides the possibility of getting an alarm on output 7 or 8, if the unit calculates a deviation in the insulation resistance between ground and power terminals.</p> <p>12/24V DC version: If insulation resistance between ground (terminal 16) and power ÷ (terminal 29) becomes lower than $25\text{kohm} \pm 8\text{kohm}$, channel 7 will indicate alarm.</p> <p>If insulation resistance between ground (terminal 16) and power + (terminal 28) becomes lower than $25\text{kohm} \pm 8\text{kohm}$, channel 8 will indicate alarm.</p> <p>48/110V DC version: If insulation resistance between ground (terminal 16) and power ÷ (terminal 29) becomes lower than $50\text{kohm} \pm 10\text{kohm}$, channel 7 will indicate alarm.</p> <p>If insulation resistance between ground (terminal 16) and power + (terminal 28) becomes lower than $50\text{kohm} \pm 10\text{kohm}$, channel 8 will indicate alarm.</p>

Parameter	Options	Description							
Voltage mon. ch 2/3	Off	Factory default setting.							
	On	<p>This setting will activate the voltage monitoring. Over voltage alarm is indicated on channel 2, under voltage on channel 3. A resistor must be connected to the unit for this function.</p> <p>The calculation of the resistor sizes is slightly different for the c-version than for the b-version. To find the resistor size, please use the calculation method illustrated below in figure 5:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="padding: 5px;"> U_U = Upper voltage limit. U_L = Lower voltage limit </td> </tr> <tr> <th style="width: 50%; padding: 5px;">B Version</th> <th style="width: 50%; padding: 5px;">C Version</th> </tr> <tr> <td style="padding: 5px;"> 12V to 48V versions: $R = \frac{16 \times (U_U - U_L)}{U_L}$ </td> <td style="padding: 5px;"> 12V to 24V versions: $R = \frac{16 \times (U_U - U_L)}{U_L}$ </td> </tr> <tr> <td style="padding: 5px;"> 110V versions: $R = \frac{84,2 \times (U_U - U_L)}{U_L}$ </td> <td style="padding: 5px;"> 48V to 110V versions: $R = \frac{84,2 \times (U_U - U_L)}{U_L}$ </td> </tr> </table> <p>Fig. 5 calculation of resistor size - voltage</p> <p>Please refer to figure 9 in the data sheet regarding wiring information.</p>	U_U = Upper voltage limit. U_L = Lower voltage limit		B Version	C Version	12V to 48V versions: $R = \frac{16 \times (U_U - U_L)}{U_L}$	12V to 24V versions: $R = \frac{16 \times (U_U - U_L)}{U_L}$	110V versions: $R = \frac{84,2 \times (U_U - U_L)}{U_L}$
U_U = Upper voltage limit. U_L = Lower voltage limit									
B Version	C Version								
12V to 48V versions: $R = \frac{16 \times (U_U - U_L)}{U_L}$	12V to 24V versions: $R = \frac{16 \times (U_U - U_L)}{U_L}$								
110V versions: $R = \frac{84,2 \times (U_U - U_L)}{U_L}$	48V to 110V versions: $R = \frac{84,2 \times (U_U - U_L)}{U_L}$								

Extension (screen 3)

The third screen also contains all the *extension* parameters. All these parameters are, like the flag parameters, characterized by the *on* and *off* settings. Please note that these parameters can be used while the unit is configured for dip switch based configuration.

In the table below every single parameter are listed in company with a detailed explanation of what the parameter could be used for.

Parameter	Options	Description
Flashing outputs	Off	Factory default setting.
	On	Output 1-10 will flash in accordance with the display (LED). This function is practical if you need remote indication, using the interconnected outputs.
Inverted outputs	Off	Factory default setting.
	On	The interconnected outputs will work opposite the display (LED) on the unit.
First reset only siren	Off	Factory default setting.
	On	This setting will change the default configuration described in the section <i>General information's concerning operational principle of M1000C</i> on page 12. First time you push the reset button (on front or external positioned) only the siren will be deactivated.
2 seconds siren pulse	Off	Factory default setting.
	On	This setting will change the default configuration described in the section <i>General information's concerning operational principle of M1000C</i> on page 12. The siren relay will only stay active for two seconds. Normally the relay stays active until the first reset.
Siren on ackn. alarms	Off	Factory default setting.
	On	This setting will change the default configuration described in the section <i>General information's concerning operational principle of M1000C</i> on page 12. The siren relay will stay active until the alarm signal is deactivated even if the unit has been reset. The siren relay is normally deactivated by the first reset.
Siren 2nd alarm pulse	Off	Factory default setting.
	On	When one of the alarm inputs is activated the normal scenario will occur, except for the siren. The siren will be activated with in a time delay on about 1 second. If another alarm signal is activated (meanwhile the first alarm input is still active), the siren will stay silent in about 1 second and start again. This will occur every time a new alarm is activated.

Parameter	Options	Description
Al-out 2nd alarm pulse	Off	Factory default setting.
	On	<p>When one of the alarm inputs is activated the normal scenario will occur, except for <i>alarm-out (terminal 27)</i>. <i>Alarm-out</i> will be activated with in a time delay on about 1 second.</p> <p>If another alarm signal is activated (meanwhile the first alarm input is still active), <i>alarm-out</i> will be deactivated in about 1 second and then activated again. This will occur every time a new alarm is activated.</p>
Al-out on cable fault	Off	Factory default setting. When resetting an alarm, released because of a cable fault, <i>alarm-out (terminal 27)</i> is deactivated.
	On	When there appears an alarm, released because of a cable fault, <i>alarm-out</i> will not be deactivated when you're resetting the unit. The signal on <i>alarm-out</i> disappears when there no longer is a cable fault.
Extension cable mon.	Off	<p>Important: If you want to use this option you need to setup the input contacts to use cable fault monitoring. For further information please refer to the section <i>Contact</i> on page 11 in this manual.</p> <p>Factory default setting. With this setting the default cable monitoring is activated.</p> <p>Important: When you use the default setting, be aware that there only is cable break monitoring for <i>NO</i> inputs and short-circuit monitoring for <i>NC</i> inputs.</p>
	On	<p>With this extended version of cable monitoring it's possible to translate both cable break and short-circuit monitoring into an alarm (cable fault), whatever a <i>NO</i> or <i>NC</i> sensor/switch is connected to the input(s).</p> <p>For wiring you need to use 2 measuring resistors. For further information regarding wiring, please refer to the data sheet.</p>
Cable fault on output 9. Included from firmware version 021008	Off	<p>Important: If you want to use this option you need to setup the input contacts to use cable fault monitoring. For further information please refer to the section <i>Contact</i> on page 11 in this manual.</p> <p>Factory default setting. With this setting cable faults on a specific channel will not be shown on the interconnected output(s).</p>
	On	<p>When there appears an alarm, released because of a cable fault, <i>output 9</i> will be activated</p> <p>Output 9 will not be deactivated when you're resetting the unit. The signal on <i>output 9</i> disappears when there no longer is a cable fault.</p> <p>NOTE The function <i>Inverted outputs</i> described on page 18 in this manual is out of function when this setting is activated.</p>