ELBRO LTD
Wiring Systems
Measuring and Circuitry

Operating Instructions

SMS Switch Butler

SMSB48

BDA V1.02

Contents

1 Introduction

1.1 Short description

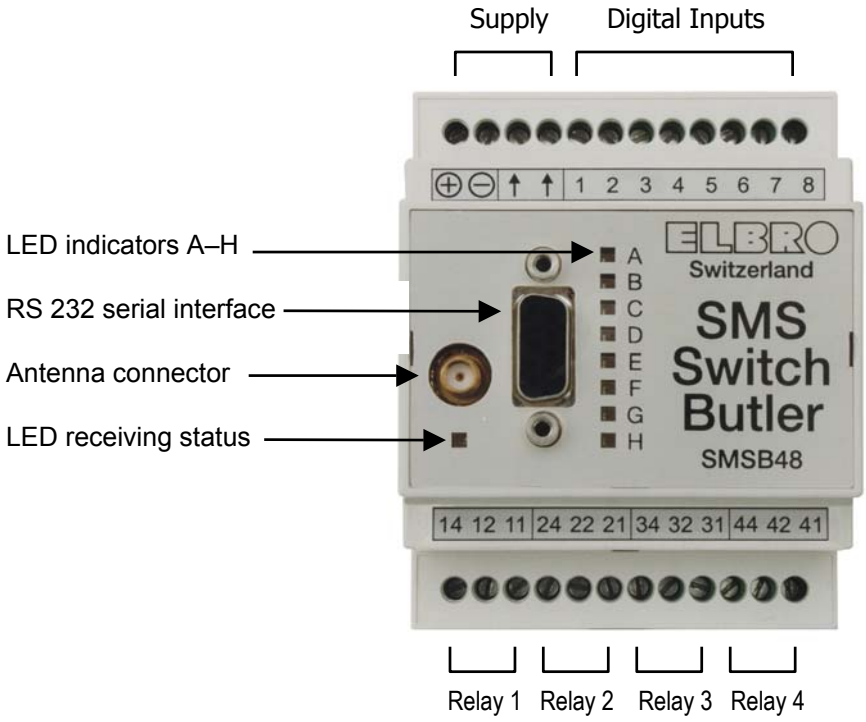
Our sincere thanks and congratulations on your purchase of the SMS Switch Butler!
This high quality device, when combined with a mobile (cell phone) will make your life easier:

- **Remote switching**: Allows transmitting an SMS from your mobile to the SMS Switch Butler to switch devices on or off.
  Example: Heating in a holiday flat.
- **Remote alarm signalization**: Notification via SMS if there is a change in an operational status being monitored by the SMS Switch Butler.
  Example: An alarm system.
- **Remote interrogation**: Per SMS you can interrogate the switch status of the four relays and eight inputs at any time.

Additional product features:

- Up to eight users can be registered to use each SMS Switch Butler.
- Easy mounting of the compact plastic housing (70 mm width) on a DIN top hat rail.
- Communication with a PC via the easily accessible serial interface at the top of the SMS Switch Butler.
- Optional SMS Switch Butler software considerably simplifies system configuration. Various user-friendly functions are accessible only with this software. For example, you can tailor predefined SMS messages on a user-specific basis.
- A SIM card (not included) is inserted behind the front cover and is so protected from access by unauthorised personnel.

1.2 Illustration



1.3 Areas of application

- Building supervision
- Industrial systems
- Pumping stations
- Security systems / Access control
- Water supply systems
- Traffic systems / Railway systems / Vehicles
- Energy systems
- Water clarification plants
- Heating power plants

1.4 Security directives

- Installation of the SMS Switch Butler must be carried out by trained personnel.
- The SIM card owner is exclusively responsible for protection against misuse.
- Momentary system status is not retained upon power failure.
  Upon return of power:
  - all relays are reset
  - all registered users receive a “System started” SMS.

2 Commissioning

2.1 Extent of supply

- SMS Switch Butler
- 2 m flexible antenna
- Operating Instructions

2.2 Functional prerequisites

- **SIM acquisition**:
  Obtain your personal SIM card from the mobile telephone company of your choice. You will receive a telephone number and a PIN code with your SIM card.

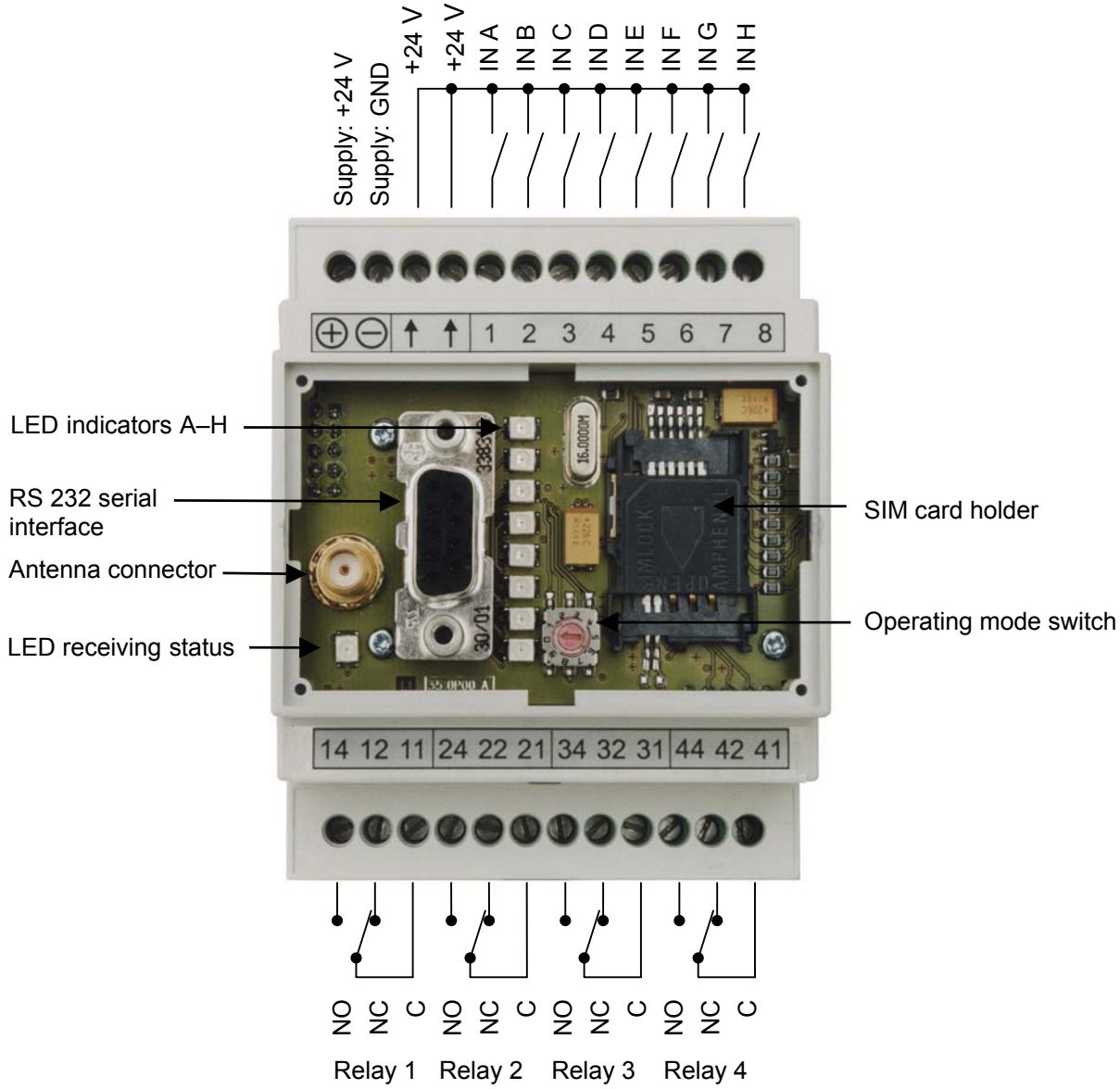
- **Prepare the SIM card for use in the SMS Switch Butler**:
  - Insert the SIM card into your mobile.
  - Change your **PIN code to 1234**.

  Proceed as explained in the instructions for your mobile (cell phone).

- **Mobile telephone provider signal**:
  To guarantee flawless operation of your SMS Switch Butler, ensure that adequate signal strength is permanently available to and from your mobile telephone network. Check this with your mobile before installation.

2.3 Installation

- **SMS Switch Butler installation**:
  Install your SMS Switch Butler on suitable installation rails and connect to it the power source (12 or 24 V_{DC}), the devices to be switched and the status signalers per the following schematic:
- **Connect the antenna cable**: Fix the nut with an 8 mm open-end spanner.



2.4 Insert / change SIM card

- **Open housing cover**: Position a small screwdriver into the slit on the edge of the housing cover, press inwards and lift (do not remove the antenna).

- **Shutdown the modem**: Turn the Operating Mode Switch to position 0. First all eight LEDs light, then they go out one after the other until only the two lowest alternately flash. Only then:

- **Insert / change the SIM card**: Lift open the SIM card holder. When changing: Remove the old SIM card and insert the new one. Close down the SIM card holder, press down and simultaneously press against the marked arrow direction to the stop in order to lock the upper part of the card holder.
- **Startup the modem**: Turn the Operating Mode Switch to a position other than 0. Modem startup is then indicated in that the LEDs begin to light from bottom to top until all of them light. The LED indicator state is then dependent on the position of the Operating Mode Switch (see section 6.2, “LED indicators A-H”).
- **Replace the housing cover**: Press until it locks in place.

3 SMS command language

This chapter provides basic information which facilitates understanding of chapters 4 "Configuration" and 5 "Operation".

3.1 Representation

Communication between the user's mobile and the SMS Switch Butler is represented in these Operating Instructions as follows:

U	D	SMS text	Explanation
1	⇒	`Example`	User 1 (the master) sends SMS "Example" to Butler.
a	⇐	`Sample`	Butler sends SMS "Sample" to all registered users.

Column U specifies which **U**ser sends or receives the SMS:

- 1 = User 1 (the master)
- 2 = User 2
- 12 = User 1 (the master) and User 2
- a = All registered users (maximum 8)

Column D specifies the **D**irection the SMS is to be sent:

- ⇒ from the user's mobile to the Butler
- ⇐ from the Butler to the user's mobile

3.2 Command structure

Example:

U	D	SMS text	Explanation

1	⇒	`:US1 PW:1234`
		`PW:5678`
		`NR:+41791112233`
			▪ US1 = User Set 1 means register User 1 (the master)
			▪ PW = Password
			▪ NR = Telephone number (here that of User 1 [the master])

All **SMS commands** to the SMS Switch Butler are identically structured. This simplifies learning and recognising the relevant commands.

- The 1st block always begins with a colon (:) followed by 3 characters.
- The 2nd block always begins with PW: and is followed by the password of the user sending the command.
- Additional blocks each begin with 2 or 3 letters before the colon, followed by user-specific data (e.g., telephone number, PIN code, etc.).

An overview of the commands is given in chapter 9 "Quick reference".
Caution: Use chapter 9 as a quick reference only after you have carefully read all chapters of these instructions.
The tabular "Command overview" of chapter 9 shows the clear structure of the commands.

3.3 User friendly solution (command abbreviations)

Since all further blocks are unambiguously defined after the 1st block, it is permissible and, of course, very practical to drop the letters before the colon starting with the 2nd block.
Note: The leading **colon** is always required.
The example of section 3.2 then appears in abbreviated form as follows:

1	⇒	:US1:1234:5678 :+41791112233	▪ Abbreviated version

For the sake of overview, chapters 4 “Configuration” and 5 “Operation” use the unabbreviated form throughout.

3.4 Passwords

The factory settings in the SMS Switch Butler are 1234 both for all passwords and the PIN code.

Passwords use the “4 numbers” format.

For reasons of security, we recommend immediately changing the password of any user as soon as that user is registered. Any password can, of course, be later changed again, but only by User 1 (the master).

To simplify matters in the following examples, User 1 (the master) and User 2 will have the following passwords:

- The password of User 1 (the master) will be changed upon registration to 5678.
- The password of User 2 will be changed upon registration to 2345 and later upon password change to 3456.

4 Configuration

In this chapter, only User 1 (the master) is authorised to access to all functions.

4.1 Registration of User 1 (the master)

The first user to register must register as User 1 (the master).

U	D	SMS Text	Explanation
1	⇒	:US1 PW:1234 UPW:5678 NR:+41791112233	▪ User 1 (the master) can register using US1 (User Set 1). ▪ First enter the current password (i.e., the factory set 1234) and then the new **U**ser **P**ass**W**ord (UPW) in the 4 number format i.e., 5678. ▪ User 1 (the master) enters **his/her mobile number** after NR: in the format shown to the left (that is, starting with +country code, here +41 [for Switzerland]).
1	⇐	USER1 :5678 +41791112233	▪ The Butler acknowledges the password and telephone number on the mobile of User 1 (the master).

4.2 Registering additional users

U	D	SMS Text	Explanation
1	⇒	:US2 PW:5678 UPW:2345 NR:+41782223344	▪ Using US2 to 8 (User Set), **User 1 (the master)** can register Users 2 to 8. ▪ Here, User 1 (the master) specifies User 2. Then User 1 enters his/her own password (PW). User 1 then enters a password of User 2 to 8 (here 2). ▪ User 1 then enters the telephone number of the user being registered—see format at left after NR: (number).
1 2	⇐	USER2 :2345 +41782223344	▪ The Butler sends an acknowledgement of the registration to User 1 (the master) and also to the newly registered user (here User 2) plus password and telephone number.

4.3 Interrogating user data

U	D	SMS Text	Explanation
1	⇒	:UG2 PW:5678	▪ User 1 (the master) can interrogate registered user data (here 2) using UG1 to 8 (User Get).
1	⇐	USER2 :2345 +41782223344	▪ The Butler answers with user number, user password and user telephone number.

4.4 Deleting users

We assume in the following that User 3 is already registered.

U	D	SMS Text	Explanation
1	⇒	:UC3 PW:5678	▪ Using UC1 to 8 (User Clear), User 1 (the master) deletes the desired user (here User 3).
1	⇐	USER3 :CLR	▪ The Butler verifies the deletion with CLR and resets the User 3 password to the factory setting of 1234.

4.5 Changing passwords

U	D	SMS Text	Explanation
1	⇒	:PC2 PW:5678 UPW:3456	▪ Using PC1 to 8 (Password Change), User 1 (the master) sets up to change the password of the associated user (here User 2). ▪ User 1 then enters his/her own password. ▪ Finally, User 1 enters the new password for User 1 to 8 (here User 2).
1 2	⇐	USER2 :3456 +41782223344	▪ The Butler verifies the new password as well as the (unchanged) telephone number of the user.

4.6 Changing the PIN

U	D	SMS Text	Explanation
1	⇒	:PIN PW:5678 PO:1234 PN:4567	▪ Using PIN (Personal Identity Number), User 1 (the master) can change the PIN code of a SIM card. ▪ PO = **P**IN code, **O**ld ; PN = **P**IN code, **N**ew
1	⇐	PIN :4567	▪ The Butler verifies the new PIN code.

4.7 System configuration using PC software

PC software (separately available from your dealer) allows you to conveniently carry out in-depth configurations, and in addition, allows:

- renaming the pre-defined messages for your specific use
- defining which user should receive an alarm about which events
- defining who is authorised to remotely switch relays
- configuring a sequential alarm signalization.

The PC software has a practical online help.

5 Operation

All registered users are authorised to use all functions of this chapter.

5.1 Alarms from SMS Switch Butler

In the default setting, if an input status changes, all registered users receive an alarm.
However, the PC software (section 4.7 “System configuration using PC software”) allows defining which user should be notified about which alarm.
Two examples of alarm messages:

U	D	SMS Text	Explanation
a	⇐	`Alarm 1 ON`	▪ Input 1 changed from OFF to ON (signal went high).
a	⇐	`Alarm 3 OFF`	▪ Input 3 changed from ON to OFF (signal went low).

5.2 Acknowledge sequential alarms

Sequential alarms can be configured with the PC software only.
Detailed information is available from the online help of the PC software.

Using the PC software, alarms can be configured as to:

- which users are to be notified about the alarm
- the delay before the SMS Switch Butler notifies the next user if the first addressed does not answer.

The SMS Switch Butler sends alarms until a user acknowledges the alarm.
Example of a possible sequence:

U	D	SMS Text	Explanation
1	⇐	`Sequential Alarm`	▪ The first user to be notified (here User 1) receives the “Sequential Alarm” SMS. The text “Sequential Alarm” is the factory setting (default). It can be changed as desired using the PC software, e.g., to “Refill oil”, etc.
2	⇐	`Sequential Alarm`	▪ If User 1 (the master) does not acknowledge the alarm within a specified (definable) time, the SMS is sent to the second user to be notified (here User 2).
2	⇒	`:ALQ PW:3456`	▪ User 2 now recognises the alarm and acknowledges it with ALQ (Alarm Quit = acknowledgement).
a	⇐	`USER2` `ALARM QUIT`	▪ All users configured to be notified about the alarm are informed about which user (here User 2) acknowledged the alarm.

5.3 Status interrogation

U	D	SMS Text	Explanation
2	⇒	:IOS PW:3456	▪ Using IOS (Input Output Status), each user (here e.g., User 2) can interrogate the status of the inputs and outputs.
2	⇐	STAT:ABCDEFGH IN :01101001 REL :1100 TMR :0010	Explanation of the input status at left: ▪ A OFF, B ON, C ON, D OFF, E ON, F OFF, G OFF, H ON ▪ Relay status: A ON, B ON, C OFF, D OFF ▪ TMR (timer) for Relay C = 1, meaning that Relay C is subject to a time switching command—see section 5.6, “Switching commands with timer”.

5.4 Enable relays

U	D	SMS Text	Explanation
1	⇒	:RS3 PW:5678	▪ Using RS1 to 4 (Relay Set), any user (here User 1) can enable a relay (here 3).
a	⇐	USER1: Relay 3 ON	▪ Butler sends an acknowledgement to all registered users that the switching command from User 1 (the master) was executed.

5.5 Disable relays

U	D	SMS Text	Explanation
2	⇒	:RC4 PW:3456	▪ Using RC1 to 4 (Relay Clear), any user (here User 2) can disable a relay (here 4).
a	⇐	USER2: Relay 4 OFF	▪ Butler acknowledges all registered users about the execution of the switching command from User 2.

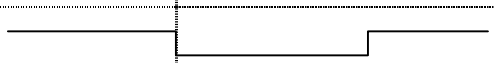
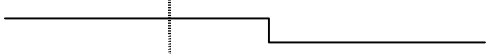
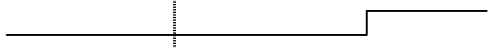
5.6 Timer switching commands

U	D	SMS Text	Explanation
1	⇒	:RS3 PW:5678 TM:30M	▪ Time data can be added to switch-on or switch-off commands. ▪ The example at left means: Relay 3 (RS = Relay Set) is to be switched on for TiMe = 30 minutes and then switched off again. **Note**: Enter the time in an “NNU” format or “Number-Number-Units” where, e.g., 35M means 35 minutes, 09S means 9 seconds, etc. Allowable values: S = seconds (Max. allowable value: 99) M = minutes (Max. allowable value: 99) H = hours (Max. allowable value: 24) None = 1/10 sec. (Max. allowable value: 99) Example: 09M = 9 minutes. **Note**: 9M (without 0) is incorrect.
a	⇐	USER1: Relay 3 ON	▪ Butler acknowledges the execution of the switching command from User 1 (the master) to all registered users.

The time data defines the time span between the two switching sequences:

- Switch-on command (:RS1): Time span between switch-on and switch-off
- Switch-off command (:RC1): Time span between switch-off and switch-on.

Both ON or OFF commands can be given to a device that is currently ON or OFF. Thus, depending on the initial state of the relay, two categories become possible (in grey below):

The current operational state is to be changed **for** a defined time			
	Relay's initial state	**Timer switching command**	**Explanation**
1a	Off	:RS1 TM:30M	30 minute switch-on command.
			The device is switched ON **for** 30 minutes.
1b	On	:RC1 TM:01H	One hour switch-off command.
			The device is switched OFF **for** 1 hour.
The current operational state is to be changed **after** a defined time			
2a	On	:RS1 TM:30M	30 minute switch-on command (device is already ON, thus the command now means to wait 30 minutes and then switch it OFF).
			The device is switched OFF **after** 30 minutes.
2b	Off	:RC1 TM:01H	One hour switch-off command (device is already OFF, thus the command now means to wait one hour and then switch it ON)
			The device is switched ON **after** 1 hour.

5.7 Interrogating device information

U	D	SMS Text	Explanation
2	⇒	`:INF PW:3456`	▪ Using INF (Information) any user (here User 2) can call up data "About SMS Switch Butler".

2	⇐	`SNR :XXXXXX`
		`HW :1.02`
		`SW :1.02`
			▪ SNR = Serial Number (6 numbers)
			▪ HW = Hardware version of the SMS Switch Butler
			▪ SW = Software version of the SMS Switch Butler

6 Indicators

6.1 LED receiving status

The status of the LED provides information about the modem operational state as follows:

LED	Modem state
Off	Modem not operational

Long flashes (0.6 sec. on, 0.6 sec. off)	No SIM card inserted / No PIN code entered / Modem is searching for mobile provider network / Logging into mobile network / User authorisation being checked
Short flashes (0.1 sec. on, 3 sec. off)	Modem ready; reception OK
On	Modem is operating (telephoning)

6.2 LED indicators A-H

The position of the Operating Mode Switch determines the information provided by the eight LED indicators A-H.

Operating Mode Switch	**LED indicators**
Position 0	Turning the Operating Mode Switch to 0 activates **modem shutdown**. When this happens, all eight LEDs light together, then one after the other go out until only the lowest two flash alternately.
Position 1	**Relay Status**: LEDs A to D indicate the states of relays 1 to 4 respectively (LEDs E to H are not used). LED lit = its associated relay is enabled.
Position 2	**Relay Timer**: LEDs A to D provide information about timing for relays 1 to 4 respectively. LED lit = its associated relay is currently controlled by a timer switching command (see section 5.6, “Timer switching commands”).
Position 3	**Input Status**: LEDs A to H indicate the state of inputs 1 to 8 respectively. LED lit = voltage at associated input.
Positions 4 to 9	unused

7 Error messages

The error messages are introduced in the following table.
Corrective actions for troubleshooting are given for those that you can correct yourself. If you cannot eliminate the error, please contact your dealer.

Error indication on the LED indicators of the SMS Switch Butler

One or more **flashing LEDs** A to H on the SMS Switch Butler indicate an error.

LED Flashing	**Meaning**	**Corrective action**
A	No function active	
B	SMS could not be sent	None. Butler starts the next transmission attempt in 20 seconds.
C	No function active	
D	SIM card blocked	Change the PIN per section 2.2 “Functional prerequisites” to the currently valid PIN (factory setting: 1234).
E	Wrong PIN	
F	SIM card error	If no card is yet inserted: Insert the card per section 2.4 “Insert / change SIM card”.
G	Modem hardware error	Please contact your dealer.
H	Control board hardware error	Please contact your dealer.

Error message per SMS to mobile (cell phone)
Error messages received via SMS all begin with ERROR followed by two numbers:

SMS	Meaning	Corrective action
ERROR 01	1st command block invalid	Possible entry error (typing error)? Repeat the command exactly as described herein.
ERROR 02	Invalid syntax	
ERROR 03	Invalid user or relay number used.	Check user number and relay number. Re-send the command with the correct number.
ERROR 04	Unknown or inactive user.	Is the user registered? Register the user per sections 4.1 and 4.2.
ERROR 05	User not authorised to send switching commands.	If desired by User 1 (the master), the affected user could be authorised to give switching commands.
ERROR 06	Invalid password	Be sure that the password and its entry are correct.
ERROR 07	Buffer overflow	If these errors occur, check to ensure that you are using the correct command entry.
ERROR 08	Input / output error	
ERROR 09	Other errors	

8 Technical data

Power supply

Voltage connection:	12 / 24 V_{DC}	10 to 30 V_{DC} (limit values)
Power consumption:	1.5 to 6 W	Depends on transmit mode, relays
Reversed polarity protection:	Yes	

Digital inputs	8	
Operating range:	12 / 24 V_{DC}	10 to 30 V_{DC} (limit values)
Current consumption:	2 to 4 mA	at 24 V
Control:	Contact for +24 V	Relay / switch
Reaction time:	100 ms	

Relay outputs	4	
Max. AC loading:	250 V_{AC} / 10 A_{AC}	AC1
Max. DC loading:	24 V_{DC} / 10 A_{DC}	
Circuits:	Potential free change-over contacts	

GSM Modem:	Siemens TC35	900 / 1800 MHz dual band

Standards

CE conformity:	Yes
SEV:	Yes
EMV:	EN 50081.1

Environmental
Operating temperature range: -20 to +40 °C
Relative humidity: 5 to 95%, non-condensing

Accessories

Software:	SMSBSX1
24 V power supply:	SMSBN24

9 Quick reference

Format

Passwords: 4 numbers
Telephone numbers: +(country code)(telephone number)
Time data: 2 numbers & letter of unit (S = seconds, M = minutes, H = hours, none = 1/10 sec.)

Command overview

The numbers entered below (passwords, telephone numbers, etc.) are arbitrarily selected and are for illustrative purposes only.

Access rights	SMS Text	English	Section
Only User 1 (the master)	:US1 PW:1234 UPW:5678 NR:+41791112233	**U**ser **S**et	4.1, 4.2
Only User 1 (the master)	:UG2 PW:5678	**U**ser **G**et	4.3
Only User 1 (the master)	:UC3 PW:5678	**U**ser **C**lear	4.4
Only User 1 (the master)	:PC2 PW:5678 UPW:3456	**P**assword **C**hange	4.5
Only User 1 (the master)	:PIN PW:5678 PO:1234 PN:4567	**P**ersonal **I**dentity **N**o. (Change)	4.6
All users	:ALQ PW:3456	**AL**arm **Q**uit (Acknowledgement)	5.2
All users	:IOS PW:3456	**I**nput **O**utput **S**tatus	5.3
All users	:RS3 PW:3456	**R**elay **S**et	5.4
All users	:RC4 PW:3456	**R**elay **C**lear	5.5
All users	:RS3 PW:3456 TM:30M	**RS** / **RC** with **Tim**er	5.6
All users	:INF PW:3456	**INF**ormation	5.7

Your SMS Switch Butler configuration table

Location	Telephone No.	PIN code
	+	

Your user configuration table

User	Name	Telephone No.	Password
User 1 (the master)		+	
User 2		+	
User 3		+	
User 4		+	
User 5		+	
User 6		+	
User 7		+	
User 8		+	

10 Guarantee

12 month guarantee

Elbro devices are subject to strict quality control. Nevertheless, should a functional fault occur during daily usage, we provide a guarantee of 12 months (valid only with your receipt).

- Manufacturing or material faults will be corrected insofar that the device has not been modified or opened before return to us.
- Damage resulting from mechanical influences or incorrect handling are not covered by the guarantee.

If functional faults occur after the guarantee period, our service department will repair the unit at the costs prevailing at that time.

Please contact:

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These Operating Instructions were prepared with great care. Nevertheless, we cannot make assurances about the correctness and completeness of the data, illustrations and drawings herein.