SVL Manual

MEASURE - REGULATE - REPORT

Contents

1   Introduction

This manual covers the SVL module equipped with firmware version 1.0 and higher.

The SVL is an alarm dialler and can be used to monitor processes and report alarms via SMS and email.

1.1   Variants

The SVL is available in two variants:

- The SVL with universal inputs and an output open collector.
- The SVL with universal inputs, output open collector and a relay output.
- The SVL with universal inputs, output open collector and a PT100 2-wire or 3-wire temperature sensor
- The SVL with contact inputs and a PT100 2-wire or 3-wire temperature sensor

1.2   Features of the SVL series

- Checkmyproces.com
- Configurable delay times.
- Reporting of power failure
- Periodic restart (reset) of the SVL (can be switched on and off)
- Ethernet interface UTP connection
- Settings and SMS texts are permanently stored in the internal flash memory of the SVL..

> We recommend that you read the user manual carefully so that you can make optimal use of all SVL options.

1.3   Safety criteria

Before using the SVL, there are several criteria that the user should meet.

- The SVL should be installed in a controlled environment (for reasons of fire prevention).
- The SVL should be supplied with power using a SELV-type power supply.
- External Ethernet should not be connected directly to an SVL, but should be connected via an overvoltage protection device.
- To reduce the probability of damage to the equipment, the SVL should be placed in an environment protected against electrostatic discharge (ESD).
- The SVL is intended for use as a modem or alarm dialler. The SVL is not intended for use as part of a critical safety system in a critical process.

1.4   Checking the delivery

Check the packaging for damage. Contact your supplier immediately if the delivery is found to be damaged or incomplete upon receipt.

The standard delivery includes:

- SVL module
- Connection terminals
- Ethernet cable
- This user manual

Optional items include:

- Antenna and antenna cable (various models, including vandalism-proof antennas)
- Mains adapter 230 Vac/12 Vdc (item number **SV-20**)

1.5   Environment

This product contains materials that can harm the environment. For the sake of the environment, if the product has to be replaced at the end of its service life please do not dispose of it through the household waste. Please return the device to your supplier or hand it over to a designated depot.

1.6   Warranty and repair

ADÉSYS performs a series of extensive tests on each SVL before dispatch. ADÉSYS uses a warranty period of **1 year**.

Warranty claims are invalidated if:

- The defect is caused by gross negligence or inexpert installation
- The device has been opened and/or repairs or modifications have been performed without the permission of ADÉSYS
- It is found that the serial number has been removed or damaged.

Please get in touch with Adésys customer service if you have any questions regarding the warranty or repairs.

1.7   Liability

ADÉSYS accepts no liability for consequential loss in the event of the stagnation of the alarm. An alarm dialler does not provide a 100% guarantee against damage, it is merely a tool to prevent damage. You should therefore discuss the remaining risk with your insurer.

1.8 Identification

Figure 1 Identification of SVL

1	Reset button
2	LED status indicator: antenna level (network), error messages (error) and general status (on/busy)
3	Antenna connection type: SMA female
4	SIM card holder
5	Ethernet connection
6	Information sticker
7	Input/output connection terminals
8	Supply voltage connection terminals
9	Connection sticker
10	DIN-rail mounting clamp

2   Connection

To connect the SVL correctly, we recommend using exclusively Camden CTB922HE/# type connectors. Measurements may be affected if other connectors are used.

2.1   Positioning

Position the SVL where it is not affected by direct sunlight or other heat sources. Choose the place of installation such that moisture cannot penetrate the device. The SVL can be mounted onto the TS35 rail without screws. The permitted ambient temperature range for the electronics is -20°C to +55°C.

⚠️ The transmission power of the SVL's internal GSM/3G module is higher than that of a standard mobile phone. Under certain conditions this may affect the functioning of surrounding electronic equipment. The effects depend upon the distance between the antenna and surrounding equipment.

2.2   Affixing and removal: DIN rail

The SVL should be affixed to a DIN rail before connection.
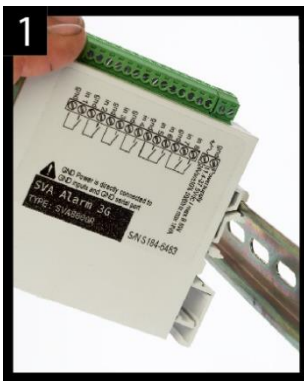
- Put the SVL onto the DIN rail at an angle [1]. It is important that the SVL's DIN rail clip is positioned on the top of the DIN rail.

- Tilt the SVL to clip it into place [2]. Then check whether it is securely seated.

The SVL is removed from a DIN rail as follows.

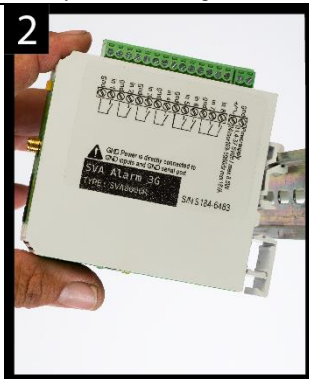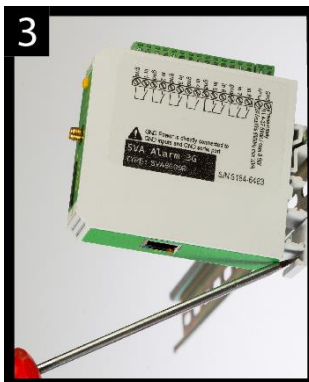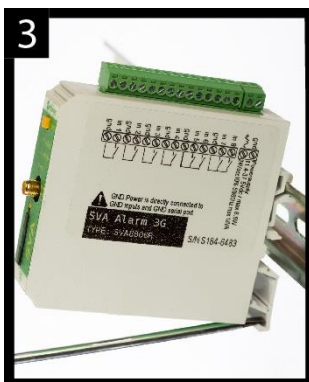- Place a screwdriver on the underside of the DIN rail clip [3]. Use this as a lever; after approx. 3 mm the SVL can be tilted to release it from the DIN rail.

2.3   SIM card

If the SIM card has a PIN code, this should be entered in the setup tool SV-prog. The required SIM card is installed as follows:

- Switch the SVL off by disconnecting the supply voltage, then press and hold the reset key for 8 seconds to switch off the dialler.
- The SIM card holder is made accessible by pressing the button next to it using a sharp object. The holder is then pushed outwards.
- Place the SIM card in the holder and slide this back into the SVL.
- Reconnect the supply voltage to switch the SVL on.

The SVL should be completely switched off before the SIM card is installed. Fitting or removing the SIM card with the SVL switched on may damage the SIM card.

The use of a "Prepaid" SIM card for dialling purposes is strongly discouraged. The mobile network cannot automatically request the call credit, which means that this can be run down without anyone noticing, resulting in outgoing notifications coming to a standstill.

2.4 Antenna

Connect the antenna cable to the SVL's antenna connection. The antenna plus associated cable can be obtained from Adésys. The antenna should be affixed to as high a point as possible to obtain the best possible range.

After installation, always check the field strength of the antenna signal (max. is 5 flashes of the yellow "**network**" LED). Notification of changes in signal strength will always take place after a long delay (± 30 seconds). Take this into account if, for example, the antenna is moved.

2.5 Power supply

2.5.1 SV-20 mains adapter

A 230Vac/12Vdc mains adapter with item number SV-20 can be obtained as an option to supply power to the SVL.

When fitting the terminal block to the power supply cable, ensure that the polarity plus (+) and minus (-) is correct.

An extra power supply fuse is not necessary here.

If the SVL is not supplied with power using the above-mentioned mains adapter, the connection regulations in the section below apply.

2.5.2 Power supply

Connect the SVL to a DC power supply of 12 to 37.5 Vdc (at least 8.5 W) or a transformer of 24Vac (at least 18VA). The power supply input of the SVL is **not galvanically isolated** from the other connections. The GND connection of the power supply connector is directly connected internally to the GND connection of the input connector and the COM port.

If the SVL is connected to an application (process controller, PLC, computer, active sensor, etc.) without galvanic isolation and the SVL is connected to the same power supply, there is a real chance of earth loops and/or short circuits in this power supply.

2.6 Reset key

The reset key has three functions: first of all, it is used to interrupt the alarm. Pressing this briefly ends the current notification; the SMS messages that have not yet been sent are not sent.

A second function of the reset key is to restart the dialler. The dialler can be restarted by holding this key down for a period of 8 seconds. This only occurs if a power supply is connected.

 If no power supply is connected, the reset key functions as an off button. Holding the key down for a period of 8 seconds switches off the dialler.

Statuses of inputs will **not** be stored in a permanent memory. If the supply voltage fails, and the built-in supercap is entirely discharged, the contents of this memory is lost. If the SVL is restarted manually, this status will also be reset. When the supply voltage is restored, the SVL behaves as if it is being started up for the first time. This means that:

- o After the supply voltage has been restored, **only** active inputs are reported **once again**.
- o **No** recovery message will be sent if the status of the input has been recovered **during** this power failure.

2.7   Ethernet

The Ethernet connection can be used for an **external** connection. This is set up in the SVL: see the **SV-prog** section. By default this is set up to connect to Checkmyproces.com.

2.8   2G/3G connection

To use the SVL with a 2G/3G connection, a SIM card with Internet subscription should be installed in the SVL. It is important that the correct APN, APN user and APN password are entered, otherwise the SVL will not be able to connect. This can be entered in SV-prog in the 2G/3G window.

The SVL does not provide a notification if something goes wrong with the APN. For more information about the APN, please contact your provider.

2.9   Inputs and outputs

It is possible to connect several variants of inputs and outputs to the SVL, such as contact inputs and voltage inputs. When connecting different inputs it is important to look carefully at the wiring diagram. This can be found on the side of the SVL.

3   SV-prog

3.1   Installation

SV-prog is used to set up the SV series. This program can be downloaded free of charge from the Adésys website (www.adesys.nl). All settings will be stored in the internal flash memory. It is **not** possible to store the settings on the SIM card.

SV-prog must be installed on your PC before it can be used. Follow the instructions displayed on your screen during the installation process. As soon as the installation process is complete, start the program via the shortcut or via the program menu in MS Windows.

Connect the SVL to a power source and connect the SVL to the PC using the Ethernet cable set supplied. The SVL can be connected to the local network or directly to the PC.

As soon as the SVL has been switched on, the tool will display this in the overview after a few seconds and the SVL can be configured by clicking it. When search dialers is pressed, SV-prog shows all accessible dialers.

Terms used in SV-prog

The terms you will encounter in SV-prog are explained below.

3.2   Status screen

The status screen provides you with information on the SVL. Examples of this information are the IMEI code, the serial number, the MAC address and the current status of the inputs and alarms/errors.

3.3   Call list

A call list is a group of contacts(SMS or email) that can be coupled to the input to send an alarm message or alarm recovery message.. One to eight contacts can be programmed into a call list

3.4   I/O

Inputs are displayed in this window. All inputs can be set up separately from one another. Settings can also be established here for **Mains Power Failure** and **System Errors**.

One call list can be set up for each input. As soon as an input becomes active, the notification procedure starts. The associated alarm message is sent to all set telephone numbers one after the other. This is explained further in the **Notification Procedure** section.

3.4.1   Input delay

A delay can be set for the status notification (active and idle message) in *input delay*. This means the status notification will not be sent until the input has been activated or deactivated for longer than this period. The maximum that can be set is "3600" seconds.

If an input goes back into idle mode during the delay time, the notification procedure does **not** start.

3.4.2   Recovery report (idle)

If desired, a recovery *report* SMS can be sent after the input goes into idle mode. The default setting is off even if nothing has been selected. Select "Yes" to activate this notification. A recovery report will always be sent to the external server.

3.4.3   System errors

Various system errors can be detected by the SVL. Notifications can be set up individually for each error. Depending upon the error, this is displayed in the programming tool and a notification is sent via SMS. By default the notification of all system errors via SMS is switched off.

3.5   Connections

The term 'connections' is used to mean the connection to an external server. With the SVL it is possible to make a connection to Checkmyproces.com or to a dedicated server.

3.5.1   Checkmyproces.com

Checkmyproces is a server on which the status of the SVL can be logged and is displayed via the cloud. After logging in, SVL dialers can be connected to the account. This connection takes place via the IMEI number. The IMEI number can be obtained via SV-prog in the status screen.

If the network is secured by use of a firewall. Please make the following exceptions.

Data connection

url:	http://svx.meetcentrale.nl:80/severa
protocol:	http
port	80

System settings

url:	mqtt.meetcentrale.nl
protocol:	mqtt
port	1883

Own server
It is also possible to enter your own server IP instead of Checkmyproces.com. Log data and status are then sent to this IP address. The connection to your own server is made via two paths. The message is sent via HTTP POST and the settings via MQTT. For more information please contact Adésys.

3.5.2   Connection interval
This is the interval at which data is sent to the server, either via Ethernet or 2G/3G.
If both are switched off, no data will be sent. If both connections are connected and correctly set up, Ethernet will be used as the main connection type and 2G/3G will serve as a back-up in case a connection via Ethernet is not possible.

3.6   System
In the system section you can change the general SVL settings, enter GSM and mobile data settings or trigger a factory reset.

3.6.1   Device
In this window you can change device-specific settings such as device name, alarm active text, alarm recovery text, automatic updates and a periodic reset.

3.6.2   Ethernet
Ethernet can be set up with a DHCP server or with the IP, DNS and gateway entered by the user.

3.6.3   GSM and mobile data
Here, the GSM module can be switched off, the PIN code entered, 2G/3G mobile data switched off or the data from the APN set up. Please contact your provider for the APN settings.

3.6.4   Factory reset
By performing a factory reset all settings will be lost and a reset to the default settings will be prompted.

4   Notification procedure
The notification procedure starts in the event of a status change or error. If set up, the SVL will first establish a data connection and send data, and then send the associated notification message to the first contact on the call list that has been set up.
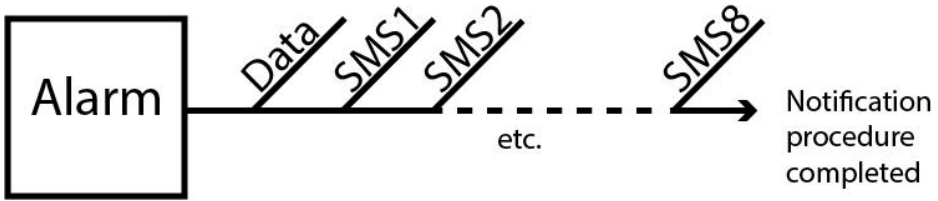
Figure 2: Notification procedure

4.1 SMS notification message

An SMS alarm message is structured as follows.

Device name, input name, status

- "Device name": contains a text chosen by the user. This can be set up in the system menu.
- "Input name": contains a text chosen by the user, which is coupled to the input channel. This can be set up in the I/O menu for the relevant input.

> ⚠️ System errors such as the Ethernet error and the 'no numbers coupled' error have a fixed text (in English) that cannot be changed. For example, **powerfailure** is used for a mains power failure.

- "STATUS" shows whether an input channel is *Active* or *Idle*. Active and recovery texts can be set up in the system menu.

    Email
- This is used if an email address is entered in the call list. In the event of a notification, the dialer first sends a message to Checkmyproces via httppost, whereupon Checkmyproces converts the notification into an email message and sends this to the email address that has been entered. The structure of the message is the same as the SMS.

4.2 Notification of status changes

After input channel 1 has been activated, the following can be observed:

- The green LED (on/busy) flashes 1x to indicate that input channel 1 is active.
- After a few seconds, the green LED (**on/busy**) flashes faster to indicate that the SMS message is being sent.
- The green LED (**on/busy**) again flashes 1x. The SMS message has been sent.
- The notification message appears on the mobile phone to which the SMS message has been sent; this message can be structured as follows:
  LOCATION PUMP FAULT Active
- The green LED (**on/busy**) continues to show the status of the input until this ceases to be active.

- If the input returns to idle mode and a recovery report has been set up, the notification message will be structured as follows:
  LOCATION PUMP FAULT Idle

4.3   Notification of mains power failure

The SVL is equipped with a supercap. This gives the dialler the option of sending a few messages in the event of a power failure. The associated notification message is sent to the first number in the call list linked to the mains power failure. After the power fails, the following can be observed:

- The red LED (**error**) flashes 5x to indicate that the supply voltage has been lost.
- After a few seconds, the green LED (**on/busy**) flashes faster to indicate that the SMS message is being sent.
- The green LED (**on/busy**) remains on. The SMS message has been sent.
- The notification appears on the mobile phone to which the SMS message has been sent; this message can be structured as follows:
  LOCATION powerfailure Active
- The red LED (**error**) continues to show the status of the mains power failure until this has been recovered.

A mains power failure message always takes priority over an ongoing notification of a status change. After notification of the mains power failure, any interrupted notification can be restarted. Notification of status changes that have not yet been notified then continues. This priority arrangement applies for both **Active** and **Idle.**

5   Output switching by SMS

With the SVL, the output channel can be switched by means of an SMS message. The SMS message should be structured as follows.

#<Command><parameter1><parameter2>#

Where:
Command = O (Output)
Parameter1 = A (Active) of I (Idle) or P (switch Pulse, default: 2 seconds active)
Parameter2 = input number

Examples:
Output 1 active: #OA1#
Output 1 Idle: #OI1#
Output 1 with default Pulse: #OP1#
Output 1 with 8s Pulse: #OP18#
Output 1 with 20s Pulse: #OP120#

6   Appendices

6.1   LED status indication

Number of flashes for error (red)	
1x	Problem with GSM module
2x	No SIM card detected
3x	Incorrect pin code
4x	PUK code necessary
5x	Power failure
6x	No SMS central number / no antenna level
7x	No telephone number coupled to input / 2G/3G connection cannot be established / Ethernet error
8x	Connection to external server cannot be established.

Number of flashes for network (orange)	
Off	No antenna
Constant	Connected to external server
1x	Antenna level 1% <> 20%
2x	Antenna level 21% <> 40%
3x	Antenna level 41% <> 60%
4x	Antenna level 61% <> 80%
5x	Antenna level 81% <> 100%
1x long	In case of modem emulation, ring signal
Faster	Establishing connection

Number of flashes for on/busy (green)	
Off	SVL is switched off
On	SVL is switched on
Faster	Starting up / sending message
1x	Input 1 active
2x	Input 2 active
3x	Input 3 active
4x	Input 4 active
5x	Input 5 active
6x	Input 6 active
7x	Input 7 active
8x	Input 8 active

6.2 Technical specifications

General		
Number of dialling numbers	3 call lists, each containing 8 dialling numbers per call list, maximum of 20 digits per dialling number	
Notification by:	SMS message or text message over IP network	
Input/output options (differs for each SV L model)	Contact input	2 – 8
	Digital input (0=10V)	2 – 8
	Pulse counter	4 – 8
	Analogue input (0..10V)	4 – 8
	Current input (0..20mA)	4 – 8
	PT100 input (80..157Ω)	0 – 4
	Open collector output	4 – 8
	Relay output	0 – 2

Physical properties	
Connection	DIN rail (TS35) enclosure
Dimensions (D x W x H)	104 x 95 x 23 (mm)
Weight:	125g
Max. operating temperature	-20°C to +55°C
Air humidity	Between 20 and 85 % (without condensation)
IP code	IP10
Operational height	Up to 2000 metres (Above 2000 metres the max. operating temperature is reduced by 1.5°C per 300 metres up to a maximum height of 4000 metres)
Enclosure	Fire resistant UL94-V0

Power supply	
Power supply:	Nominal: 1-2 watts (2W whilst the supercap is charging) Peak: 8.5 watts / 18 VA (AC) Imax: 0.75A @ Vin= 11.4 V
Power supply range	11.4 - 37.5 V DC (SELV) 24 V (± 10%)AC (SELV)* * if 24 Vac is used, it is possible that communication will not work if the following situations all arise at once. - GPRS 800/850 MHz mode - Weak connection with GSM mast (for example in the event of an incorrect antenna combination) and - Multi-slot class 1 to 10 not supported by the provider

Built-in emergency power supply	Supercap; this means the emergency power supply is very quickly charged and the dialler can still send a few alerts in the event of a mains power failure

GSM/GPRS/UMTS	
Mobile network:	GSM/GPRS/EDGE 850/900/1800/1900 MHz (Quadband)
	UMTS/HSPA+ 800/850/900/1900/2100 MHz (Pentaband)
Power supply	Class 4 (+33dBm ±2dB) with EGSM850 Class 4 (+33dBm ±2dB) with EGSM900 Class 1 (+30dBm ±2dB) with GSM1800 Class 1 (+30dBm ±2dB) with GSM1900 Class E2 (+27dBm ± 3dB) with GSM 850 8-PSK Class E2 (+27dBm ± 3dB) with GSM 900 8-PSK Class E2 (+26dBm +3 /-4dB) with GSM 1800 8-PSK Class E2 (+26dBm +3 /-4dB) with GSM 1900 8-PSK Class 3 (+24dBm +1/-3dB) with UMTS 2100, WCDMA FDD BdI Class 3 (+24dBm +1/-3dB) with UMTS 1900,WCDMA FDD BdII Class 3 (+24dBm +1/-3dB) with UMTS 900, WCDMA FDD BdVIII Class 3 (+24dBm +1/-3dB) with UMTS 850, WCDMA FDD BdV Class 3 (+24dBm +1/-3dB) with UMTS 800, WCDMA FDD BdVI
Antenna connection:	Connector type SMA female

Ethernet	
Type	10Base-T/ 100Base-TX
Auto MDIX	Yes

EMC rules	
CE	Emission: EN 301 489-01 V1.9.2 & EN 301 489-03 V1.4.1 (Class B) Immunity: EN 301 489-01 V1.9.2 & EN 301 489-03 V1.4.1(Class A)

Safety	
CE	EN 60950-1 (2006) + A11 (2009) + A1 (2010) + A12 (2011) + AC (2011) + A2 (2013)

Expected service life	
Calculated MTBF (According to component-counting method)	88167 hours (= 10 years)

BY
FAR
THE
BEST

adésys
IN CONTROL