SOLO-NX EXT

COMPACT GSM DOOR ENTRY UNIT WITH 1, 2 or 4 CALL BUTTONS

INSTALLATION MANUAL

Version: Solo-NX EXT - Installation-Manual_V3_0-04102016.doc
Valid from SW release: "SOLO_EF_B_ON_PCK_20160822_v_3_2_4".

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1 FOR YOUR SAFETY

Read these simple guidelines. Not following them may be dangerous or illegal. Read the complete user guide for further information.

SWITCH ON SAFELY

Do not switch the unit on when use of wireless phone is prohibited or when it may cause interference or danger.

INTERFERENCE

All wireless phones and units may be susceptible to interference, which could affect performance.

SWITCH OFF IN HOSPITALS

Follow any restrictions. Switch the unit off near medical equipment.

SWITCH OFF IN AIRCRAFT

Follow any restrictions. Wireless devices can cause interference in aircraft.

SWITCH OFF WHEN REFUELING

Do not use the unit at a refueling point. Do not use near fuel or chemicals.

SWITCH OFF NEAR BLASTING

Follow any restrictions. Do not use the unit where blasting is in progress.

USE SENSIBLY

Use only in the normal position as explained in the product documentation. Do not touch the antenna unnecessarily.

2 INTRODUCTION

SOLO-NX is a simple GSM intercom communication system that is designed to ensure low-cost, reliable and single box solution for intercom application. It is designed for unlimited range, wire free GSM intercom and Caller ID recognition – CLIP support.
In addition SOLO-NX supports alarm detection, stay-alive messages, credit detection etc…

3 FEATURES AND APPLICATIONS

Features:

⇒ Built-in 4 (2G) or 5 (3G) band GSM module
⇒ Up-to 4 intercom call button support (5 numbers each)
⇒ Caller ID numbers control (up-to 1000 caller ID numbers)
⇒ Up to 100 temporary SPIN access codes
⇒ Up to 1000 PIN access codes
⇒ 2 x input Wiegand receiver
⇒ 2 outputs (relay supported)

⇒ Programming with PC via “USB to Mini USB cable” connected to the unit
⇒ Programming by WEB server
⇒ Programming by SMS commands

Applications:

⇒ Single box, wire free intercom solution
⇒ Remote gate opener – Caller ID number recognition
⇒ Simple (Wiegand) access system

4 START UP

VERY IMPORTANT	USE A **MICRO SIM CARD** (micro-SIM, see the picture→) **WITH MEMORY FOR UP TO 250 CONTACTS!** 

⇒ Insert SIM card to be used for SOLO-NX in your personal mobile phone.

IMPORTANT	ERASE THE PIN CODE!

⇒ Insert SIM card in SOLO-NX device. The unit must be switched OFF when you insert the SIM!
⇒ Connect inputs and outputs to SOLO-NX.
⇒ Connect the antenna to antenna connector.
⇒ Connect power cable to SOLO-NX device
⇒ Connect device to source power supply voltage.
⇒ Wait until LED3 display is turned ON (Yellow) and LED1 (Blue) starts flashing. This is set in around 30 – 45 seconds.
⇒ SOLO-NX unit is now ready to operate.

IMPORTANT	Before sending any SMS commands to SOLO-NX device, SOLO-NX must be in normal operation!

NOTE	SOLO-NX device will “beep” in 15s interval until the device is not in normal operation.

5 LED DISPLAY

BLUE LED (LED1)

- Indicates the level of the GSM signal from 1 to 5 LED flashes (1 is weak signal, 5 is excellent signal)

RED LED (LED2)

- When LED 2 is ON the unit has a problem with a GSM network connection or the GSM part of the unit is out of order. In this case immediately call the service!

YELLOW LED (LED3)

- Short flashing indicates that the GSM module is ON, but it is not yet connected on the GSM network. After connection, Yellow LED is flashing with short pulse ON and a long pulse OFF.

6 CLEAR ALL PROGRAMMED DATA FROM SOLO-NX

This is highly recommended when a SIM card you are going to use for the SOLO-NX is not new and it already has some data stored in the phone book memory.

By sending this SMS to SOLO-NX all programmed parameters and numbers are cleared:
;SDCLR;

After sending SMS you should wait at least 30 second for the command to be executed!

NOTE	By sending this command to the SOLO-NX all programmed data are erased from the SIM card, and from the memory inside the SOLO-NX device! After the device will start it will be configured with factory defaults.

7 CONNECTION DIAGRAM

Before connection the SOLO-NX please take a look at connection diagram.

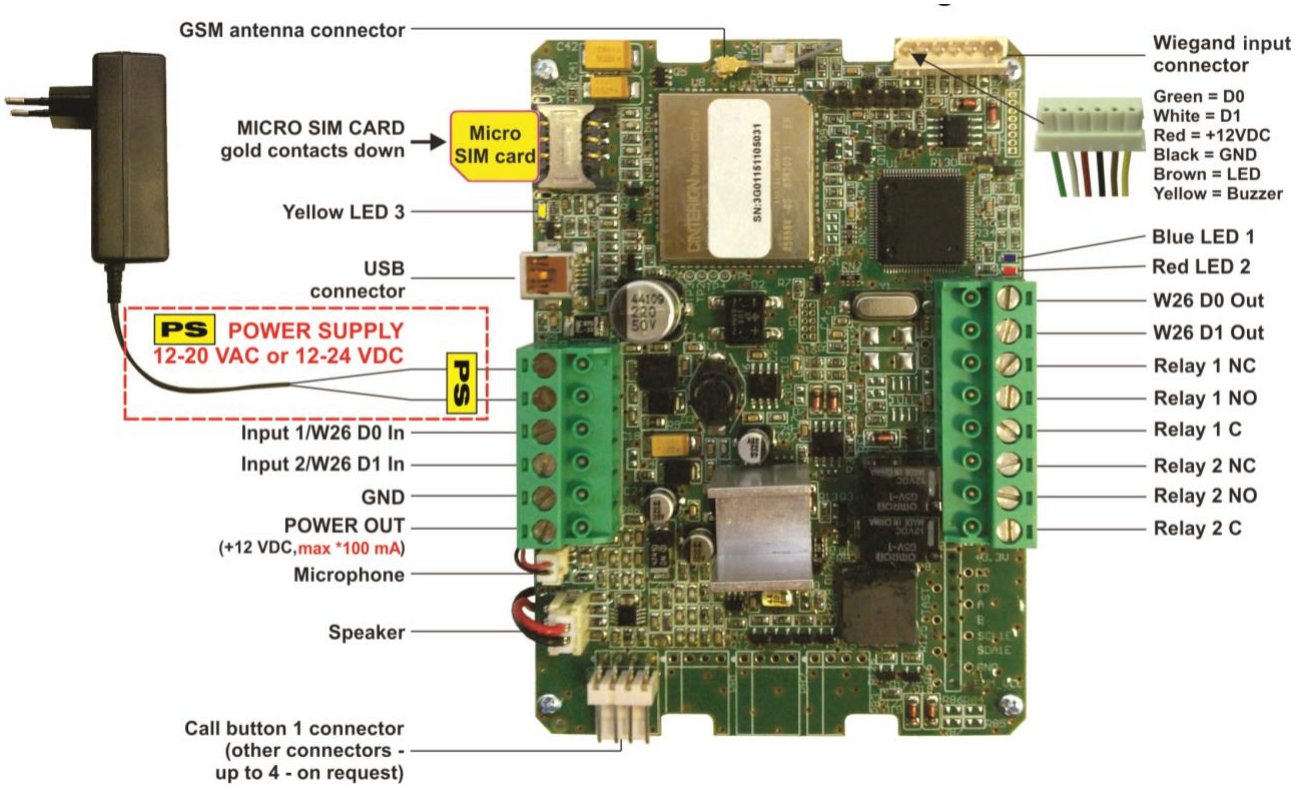

Figure 1: SOLO-NX Connection diagram

Do not use the Power out (12V AUX) for electric lock driving! You can use it to power external sensors: Short-term current load (up to 1 minute) - up to 500mA; Long-term current load - up to 100mA! Use separate power source for door electric lock!

8 PROGRAMMING SOLO-NX

SOLO-NX device supports different types of programming:

⇒ *With direct USB connection (USB to Mini USB cable), with the use of configuration software EasySet running on PC.

⇒ Remotely by sending text messages - SMS commands.

⇒ **Remotely with Android application or with IOS application.

⇒ ***Remotely with Web server application – www.easyset.eu.

NOTES	*To receive configuration software for PC please contact your local distributor. **You must download applications from **Google play** or **App Store** ***For using Web server, you must register to use it.

9 THE SOLO-NX PARAMETERS

To support versatile functionality of SOLO-NX different parameters are used. The parameters are divided in logical sections and are described in the following chapters.

9.1 ALARM SUPPORT

Alarm reporting is supported by group of different parameters. First section is used to define the relations needed for alarm to be trigged. The second section is used to report alarm.

9.1.1 ALARM TRIGGERING

Parameters are used to control (filter) the triggering of the alarm inputs.

9.1.1.1 IN parameter

Alarm input can be on only used as normal open (N.O.) triggered with GND. When you need the input feedback information it is possible to receive SMS when input returns from alarm to normal position. To receive the return SMS use IN setting 4.

⇒ IN = 0 – Normal Open – triggered with negative voltage (GND)
⇒ IN = 4 = IN = 0 + input reset SMS

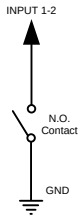

Figure 2: Input Connection diagram.

9.1.1.2 ID parameter

ID parameter determines time period of the pulse length to trigger the alarm. The pulse time can be from 0,5 seconds to 9999 seconds. The default time is 0,5 seconds when the parameter value is 0.

9.1.1.3 DD parameter

This parameter is used to define the delay between the time that alarm input is trigged and the time that alarm is reported.

9.1.1.4 Table of parameters

Name	Comment
IN1	Mode of operation for input 1
IN2	Mode of operation for input 2
ID1	Input time integration delay on input 1
ID2	Input time integration delay on input 2
DD1	Time delay for alarm reporting on input 1
DD2	Time delay for alarm reporting on input 2

Table 1: IN, ID and DD parameters

Example:

- **Direct programming on the SIM card**

SOLO-NX PROGRAMMING TABLE		
Name	**Number**	**Description**
IN1	0	Alarm activated by connecting to GND
IN2	4	Alarm activated by connecting to GND + RST SMS
ID1	10	Input 1 has to be valid for 10 second to trigger the alarm
ID2	0	Input 2 has to be valid for 0,5 second to trigger the alarm
DD1	0	Reporting of the alarm on input 1 is delayed by 0s
DD2	15	Reporting of the alarm on input 1 is delayed by 15s

Table 2: IN, ID, DD parameters example

- **Remote programming by SMS**
  ;IN1=0;IN2=4;ID1=10;ID2=0;DD1=0;DD2=15;

9.1.2 REMOTE REPORTING ALARM EVENTS

Parameters used to define the way to report the alarm event.

NOTE	SOLO-NX device send SMS messages for reporting alarm events.

9.1.2.1 TN parameter

Telephone numbers for remote alarm reporting are listed as TN parameters. Remote alarm reporting on SOLO-NX is done via SMS messages.

9.1.2.2 LN parameter

This parameter is used to link alarm event from inputs or any other source to the telephone numbers from TN list.

9.1.2.3 LOT parameter

LOT parameter is used to define the time control for voice calls. The start of voice connection starts the LOT timer. If the voice connection is still ON when the LOT timer expires SOLO-NX disconnects voice connection.

9.1.2.4 Table of parameters

Name	Comment
TN1	1st telephone number
TN2	2nd telephone number
TN3	3rd telephone number
TN4	4th telephone number
TN5	5th telephone number
LN1	Input & telephone No. linking for 1st alarm input (TN1 – TN5)
LN2	Input & telephone No. linking for 2nd alarm input (TN1 – TN5)
LN3	Input & telephone No. linking for 3nd alarm input (TN1 – TN5)
LN4	Input & telephone No. linking for 3nd alarm input (TN1 – TN5)
LN5	Periodic test SMS. No. linking (TN1 – TN5)
LN6	SIM card refill. No. linking (TN1 – TN5)
LN7	NAC list. No. linking (TN1 – TN5) (see note)
LN8	Log status. No. linking (TN1 – TN5)
LOT	Time out for GSM connection.

Table 3: Remote alarm reporting parameters

NOTE	When telephone number (calling or messaging SOLO-NX) is not on the CLIP list, not acknowledge event occurs (NAC). The telephone number responsible for this event can be send to TN user for notification.

Example:

- **Direct programming on the SIM card**

SOLO-NX PROGRAMMING TABLE		
Name	**Number**	**Description**
TN1	042376678	1st telephone number
LN1	13	Input 1 reports alarm to TN1 & TN3
LN2	1234	Input 2 reports alarm to TN1 & TN2 & TN3 & TN4
LN7	1	NAC event sent to TN1
LOT	60	Voice connection stay valid for max of 60s, after this time Voice connection breaks

Table 4: Remote alarm reporting example

- **Remote programming by SMS**
  ;TN1=042376678;LN1=13;LN2=1234;LN7=1;LOT=60;

9.1.3 CONTROLING OUTPUTS WITH DTMF

SOLO-NX can control the outputs with the use of DTMF. This is very useful function in the intercom application.

To control the outputs the user must press the combination of 2 digits. First digit is used to select the output (1 to 2), the second digit is used to activate (1) or deactivate (0) the output. There is a special case when the user can select for first digit (output selection) number 0. In this case all outputs control by the same time.

Combination must be pressed in 2s interval, and must be 3s apart to be valid.

NOTE	**SOLO-NX must be in voice connection to support DTMF output control!**

Example:

DTMF combination	Description
00	Deactivate ALL outputs
01	Activate ALL outputs
11	Activate output 1
10	Deactivate output 1 (if in latching mode)
21	Activate output 2
20	Deactivate output 2 (if in latching mode)

Table 5: DTMF control example

9.2 OUTPUT MANAGEMENT

SOLO-NX supports the possibility to report alarms from inputs and any other events locally via 2 outputs. The behavior is defined using next parameters

9.2.1 OS parameter

SOLO-NX device has 2 dedicated relay supported outputs. Outputs can be configured to different behavior:

- ⇒ OS = 0 – Disabled
- ⇒ OS = 1 – Bi-stable toggle mode
- ⇒ OS = xxx – Mono-stable pulse mode (duration in seconds)

Typical connection for the output:

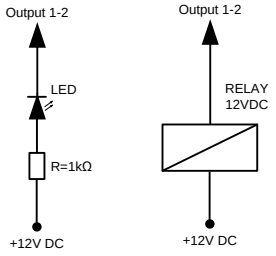

Figure 3: Output Connection diagram

9.2.2 OD parameter

OD parameter is used to link the alarm event directly to output.

9.2.3 OP1, OP2 parameters

Parameters are used to invert the polarity of the outputs.

⇒ 0 – normal

⇒ 1 – inverted

9.2.4 Table of parameters

Name	Comment
OS1	Mode of operation for output 1
OS2	Mode of operation for output 2
OD1	Input 1 direct link to outputs
OD2	Input 2 direct link to outputs
OD3	NAC direct link to outputs
OP1	Invert control for output 1
OP2	Invert control for output 2

Table 6: Output management parameters

Example:

- **Direct programming on the SIM card**

SOLO-NX PROGRAMMING TABLE		
Name	**Number**	**Description**
OS1	1	Bistable toggle mode
OS2	14	Monostable pulse mode (14s pusle)
OD1	1	Input 1 activates output 1
OD4	2	Input 2 activates output 2
OP1	1	Output 1 inverted

Table 7: Output management parameters example

- **Remote programming by SMS**

;OS1=1;OS2=14;OD1=1;OD4=2;OP1=1;

9.3 SECURITY LEVEL - SL

SL parameter from 0 to 5 defines which telephone number stored in the phone book from TN1 – TN5 can enter into programming and remote control of the SOLO-NX (dialing the SOLO-NX phone number or sending the SMS).

NOTE	When the SL level is 0, an access to the SOLO-NX is possible from any phone!

IMPORTANT	Before any SL number is programmed the SOLO-NX can accept ALL CALLS. Remote SMS programming and remote controlling is possible from any phone!

Name / value	Comment
SL = 0	All calls and SMS are accepted
SL = 1	Only number stored under parameter TN1 has access to unit
SL = 2	Numbers stored under parameters TN1 to TN2 have access to unit
SL = 3	Numbers stored under parameters TN1 to TN3 have access to unit
SL = 4	Numbers stored under parameters TN1 to TN4 have access to unit
SL = 5	Numbers stored under parameters TN1 to TN5 have access to unit

Table 8: SL parameter

Example:

- **Direct programming on the SIM card**

SOLO-NX PROGRAMMING TABLE		
Name	**Number**	**Description**
SL	3	Numbers stored under parameters TN1 to TN3 have access to unit

Table 9: SL example

- **Remote programming by SMS**
  ;SL=3;

9.4 PREPAID CARD CREDIT AND VALIDITY INFORMATION

SOLO-NX can be used with prepaid SIM cards and its limitations. To be able to overcome this limitation of the prepaid SIM cards, SOLO-NX offers the possibility of automatic checking mechanism for credit and time expiration.

NOTE	SOLO-NX automatically sends warning SMS when the credit reaches low level defined by LCV parameter or SIM card validity is near to expiration.

NOTE	For support of different GSM providers contact support.

9.4.1 Programming prepaid card credit and validity string

To be able to support credit and time validity checking different parameters are used.

9.4.1.1 LCV and SCV parameter

LCV is used to set the limit for low credit event. If the credit on prepaid SIM cards falls below this limit SMS is send.

SCV the period of valid operating time varies with different GSM network providers. The value can be programmed from 1 to 360 days. The default value does not presume any kind of expiry warning.
For example in Slovenia SCV are 90 and in Italy 360 days

9.4.1.2 CC1, CC2 and CC3 parameters

Number used to check low credit value. They are provided from the GSM providers.

- ⇒ CC1 - This method can be used by any GSM provider that supports Unstructured Supplementary Service Data
- ⇒ CC2 - This method is dedicated to Italian TIM mobile provider
- ⇒ CC3 - This method is dedicated to Italian Vodafone mobile provider

9.4.1.3 CREF, CTIM, CVODA parameters

Parameters are used to find the credit value of the prepaid SIM card. Strings under these parameters are used to pars the replay message from the GSM provider.

- ⇒ CREF - Pars string for the replays received from CC1 number
- ⇒ CVODA - Pars string for the replays received from CC2 number
- ⇒ CTIM - Pars string for the replays received from CC3 number

9.4.1.4 Table of parameters

Name	Comment
LCV	Low credit value, bottom limit for low credit event.
SCV	Sim card validity time (in days)
CC1	Credit number for credit check universally used
CC2	Credit number for credit check dedicated for Italian TIM mobile provider
CC3	Credit number for credit check dedicated for Italian Vodafone mobile provider
CREF	String for parsing replay message from CC1 number
CVODA	String for parsing replay message from CC2 number
CTIM	String for parsing replay message from CC3 number

Table 10: Prepaid card validity parameters

Example:

- **Direct programming on the SIM card**

SOLO-NX PROGRAMMING TABLE		
Name	**Number**	**Description**
CC1	*448#	Simobil
CC2	4916	TIM Italy
CC3	404	Vodafone Italy
LCV	4	Low credit message will be send bellow 4

Table 11: Credit example

- **Remote programming by SMS**
  ;CC1=*448#;CC2=4916;CC3=404;LCV=4;

9.5 SET-UP PARAMETERS

Different parameters are used to support versatile functionality of SOLO-NX.

9.5.1 HTN parameter

Hidden telephone number is a parameter used in order to conceal the telephone number of the SOLO-NX device. The default value is set to “1” which means that the number is displayed.

9.5.2 ESC parameter

Parameter is used to define the input used to cancle the outgoing call from the SOLO-NX device.

9.5.3 UDC parameter

Parameter is used to synchronise SOLO-NX clock to GSM network clock. User must enter here the number of the SOLO-NX SIM card (Telephone number of SOLO-NX device).

9.5.4 RAN parameter

Parameter is used to provide support for auto-answer options for SOLO-NX device. The number defines the numbers of rings needed for SOLO-NX device to answer the incoming call. The incoming number must be on the TN list for SOLO-NX device to answer.

9.5.5 TST parameter

A test SMS is sent periodically. SOLO-NX can send the test message in the interval ranging from 1 hour to 240 hours.

Example:

To send test SMS TST value is set to 12, the numbers linked to "LN5" receive a test message every 12 hours.

9.5.6 TSTT parameter

TSTT parameter is used to define reference point for sending test message. If this parameter is set than after restart of the ZEUS4-MC first test SMS will be send out at time defined with TSTT parameter.
Parameter value is defined in hours.

Example:

To receive first test SMS at 20.00h TSTT value must be set to 20

NOTE	By setting TSTT=0 this function is disabled

9.5.7 MNF parameter

When it is necessary to fix the GSM network to one provider the user can use the MNF parameter. The MNF parameter switches automatic network searching to manual.

Example:

MCC/MNC code for Simobil is 29340, Mobitel is 29341, TIM is 22201, and Vodafone Italy is 22210.
More information about national MCC/MNC codes can be acquired at:
http://www.activexperts.com/activsms/networkcodes/

9.5.8 MIC parameter

MIC parameter enables you to change the sound level on microphone

9.5.9 SPK parameter

SPK parameter enables you to change the speaker sound level.

9.5.10 MUT parameter

MUT parameter enables you mutate the speaker sound while initiating voice connection.

9.5.11 ARST parameter

ARST parameter defines periodic of auto restart time (in hours) of the SOLO-NX device.

9.5.12 ADF parameter

Parameter is used to define voice refresh function, to prevent blocking of SIM in some networks.

9.5.13 LNG parameter

LNG parameter switches between the preprogrammed languages:

- ⇒ 0 - English
- ⇒ 1 - Italian
- ⇒ 2 - Slovenian
- ⇒ 3 - Croatian
- ⇒ 4 - Dutch
- ⇒ 5 - German
- ⇒ 6 - Spanish

9.5.14 BUZ parameter

Parameter is used to control buzzer functionality on SOLO-NX. Buzzer is used to audio support some events on SOLO-NX device.

9.5.15 Table of parameters

Name	Comment
UDC	Tel. number of SOLO-NX device
ESC	Input used as cancel button
RAN	Auto answer ring number
HTN	Hidden telephone number
TST	SMS test time out
TSTT	Periodic test SMS start time
MNF	Manual GSM provider selection
MIC	Microphone volume control
SPK	Speaker volume control
ARST	Time out control for automatic system restart
ADF	Auto dial functionality (Call TN1)
LNG	Language selection
BUZ	Buzzer control

Table 12: Set-up parameters.

Example:

- **Direct programming on the SIM card**

SOLO-NX PROGRAMMING TABLE		
Name	**Number**	**Description**
HTN	0	Hidden telephone number of the SOLO-NX device
MNF	29340	Manual fixing of the GSM provider (Simobil)
LNG	1	Switch on Italian language
MIC	2	Microphone volume level
SPK	20	Speaker volume level
TST	24	24 hours periodic test SMS
BUZ	0	Mute buzzer
ESC	2	Input 2 is used as cancel button

Table 13: Set-up parameters example.

- **Remote programming by SMS**

;HTN=0;MFN=29340;LNG=1;MIC=2;SPK=20;TST=24; BUZ=0;ESC=2;

9.6 SMS MESSAGES EDITOR

You can write and send a short SMS message for each alarm input. The default message is English, but it is possible to change language with LNG parameter. Each message is built from 3 parts and user can write the first (User Location) and the second (alarm event) part of the message. Unit adds the third part (alarm event description) automatically. Language of the 3rd part may be changed by **LNG** parameter. The message is stored in the SIM phone book so you should add any number for correct operation.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
#	0	U	S	E	R		L	O	C	A	T	I	O	N	
#	1	I	N	P	U	T		1							
#	2	I	N	P	U	T		2							
#	3	I	N	P	U	T		3							
#	4	I	N	P	U	T		4							

NOTE	Message should not be longer than 14 characters! Space is also counted as one character!

9.6.1 Table of parameters

Name	Comment
#0	User location, same for all alarm messages
#1	Input 1, second part of message
#2	Input 2, second part of message
#3	Input 3, second part of message
#4	Input 4, second part of message

Table 14: Message parameters.

Example:

- **Direct programming on the SIM card**

SOLO-NX PROGRAMMING TABLE		
Name	**Number**	**Description**
#0House	1	Location definition
#1Kitchen	1	Alarm input is from the kitchen

Table 15: Message parameters example.

- **Remote programming by SMS**
  ;#0HOUSE=1;#1KITCHEN=1;

9.7 GSM INTERCOM

Intercom functionality is supported by a set of parameters, used to tweak the functionality to each user needs.

For each button SOLO-NX incorporates a group of parameters. There are up to 4 groups of parameters.

IMPORTANT	SOLO-NX **is capable** of supporting up-to **4 call buttons.** The current version is equipped with 1,2 or 4 call buttons so **GROUP A, GROUP B**, **GROUP C and GROUP D** are all described in this manual.

Figure 4: Designation of Call buttons

9.7.1 xTN1 to xTN5 parameters

Parameters are the call numbers for intercom application.

9.7.2 RTNx parameter

Parameter defines the ring time time-out. RTNx timer is started when the call button is pressed. If the RTNx timer expires before the GSM voice connection is established then SOLO-NX device calls the next number in XTN1-XTN5 call list.

9.7.3 DTMF auto dial functionality

This function is used to provide a support for SOLO-NX device to be able select extended numbers via DTMF command.

9.7.3.1 SDNx parameter

Parameter is used to set the DTMF number in auto self-select function.

9.7.3.2 SDDx parameter

Parameter is used to set the delay (in sec.) for sending DTMF number in auto self-select function.

9.7.4 Time zone

Time zone support. When both time limits are sets (TZSx and TZEx) time zone functionality is ON. When the current time is in the limits of the time zone parameters the button event calls the number from xTN1 to xTN4, else button event calls xTN5.

9.7.4.1 TZSx parameter

Parameter is used to configure the start time for the time zone functionality - 24h time format.

9.7.4.2 TZEx parameter

Parameter is used to configure the end time for the time zone functionality - 24h time format.

9.7.5 Table of parameters

Name	Comment
ATN1	Button 1, Telephone number 1.
ATN2	Button 1, Telephone number 2.
ATN3	Button 1, Telephone number 3.
ATN4	Button 1, Telephone number 4.
ATN5	Button 1, Telephone number 5.
RTNA	Button 1, time out control for voice connection.
SDNA	Button 1, DTMF number to send.
SDDA	Button 1, delay for DTMF number to send.
TZSA	Button 1, time zone start period.
TZEA	Button 1, time zone end period.
BTN1	Button 2, Telephone number 1.
BTN2	Button 2, Telephone number 2.
BTN3	Button 2, Telephone number 3.
BTN4	Button 2, Telephone number 4.
BTN5	Button 2, Telephone number 5.

Name	Comment
RTNB	Button 2, time out control for voice connection.
SDNB	Button 2, DTMF number to send.
SDDB	Button 2, delay for DTMF number to send.
TZSB	Button 2, time zone start period.
TZEB	Button 2, time zone end period.
CTN1	Button 3, Telephone number 1.
CTN2	Button 3, Telephone number 2.
CTN3	Button 3, Telephone number 3.
CTN4	Button 3, Telephone number 4.
CTN5	Button 3, Telephone number 5.
RTNC	Button 3, time out control for voice connection.
SDNC	Button 3, DTMF number to send.
SDDC	Button 3, delay for DTMF number to send.
TZSC	Button 3, time zone start period.
TZEC	Button 3, time zone end period.
DTN1	Button 4, Telephone number 1.
DTN2	Button 4, Telephone number 2.
DTN3	Button 4, Telephone number 3.
DTN4	Button 4, Telephone number 4.
DTN5	Button 4, Telephone number 5.
RTND	Button 4, time out control for voice connection.
SDND	Button 4, DTMF number to send.
SDDD	Button 4, delay for DTMF number to send.
TZSD	Button 4, time zone start period.
TZED	Button 4, time zone end period.

Table 16: Intercom parameters.

Example:

- **Direct programming on the SIM card**

SOLO-NX PROGRAMMING TABLE		
Name	**Number**	**Description**
ATN1	040713470	Button 1, Telephone number 1.
ATN2	+38643364850	Button 1, Telephone number 2.
BTN1	040123585	Button 2, Telephone number 1.
RTNA	30	Button 1, time out control for voice connection.

Table 17: Intercom parameters example.

- **Remote programming by SMS**

;ATN1=040713470;ATN2=+38643364850;BTN1=040123585;RTNA=30;

9.8 CALLER ID RECOGNITION - CLIP

CLIP is used to provide the “free of charge” options to control the outputs.

9.8.1 CLPEN parameter

Parameter used to enable CLIP functionality.

9.8.2 CLPOU parameter

Parameter used to choose which output will be controlled by the CLIP functionality.

9.8.3 CLPI parameter

This parameter, if set, is a precondition for CLIP function to control the output.

9.8.4 CLP1 … CLP1000 parameter

Set of telephone number, which can control the output. The number not on CLP list is not able to control the output using clip functionality.

9.8.5 Table of parameters

Name	Comment
CLPEN	Enable CLIP functionality
CLPOU	Control output pin when CLIP event
CLPI	CLIP input activation condition
CLP1	CLIP number 1
.	.
.	.
.	.
CLP1000	CLIP number 1000

Table 18: CLIP parameters.

Example:

- **Direct programming on the SIM card**

SOLO-NX PROGRAMMING TABLE		
Name	**Number**	**Description**
CLPEN	1	Enable CLIP functionality
CLPOU	2	CLIP control output 2
CLPI	0	No input activation condition
CLP1	040414414	CLIP number 1
CLP2	042340880	CLIP number 2

Table 19: CLIP parameters example.

- **Remote programming by SMS**

;CLPEN=1;CLPOU=2;CLPI=0;CLP1=040414414;CLP2=042340880;

9.9 DIRECT ACCESS BY ENTERING PIN ACCESS CODE

On SOLO-NX PCB there is a Wiegand input connector, where you can connect any Wiegand operated Keypad / Card reader.

The user may control the predefined outputs by entering PIN access codes (up to 1000) and SPIN temporary access codes (up to 100).

PIN access code from 1 to 500 (PIN1 to PIN500) will activate Output 1, PIN access codes from 501 to 1000 (PIN501 to PIN1000) will activate Output 2.

9.9.1 PIN1 to PIN1000

PINx parameters are the PIN access codes for controlling the outputs.

9.9.2 Table of parameters

Name	Comment
PIN1	PIN access code 1.
PIN2	PIN access code 2.
PIN3	PIN access code 3.
.	.
.	.
.	.
PIN998	PIN access code 998.
PIN999	PIN access code 999.
PIN1000	PIN access code 1000.

Table 20: Entering PIN code parameters.

Example:

- **Direct programming on the SIM card**

SOLO PROGRAMMING TABLE		
Name	**Number**	**Description**
PIN1	3369	PIN access code 1.
PIN122	1234	PIN access code 122.

Table 21: Entering PIN code parameters example.

- **Remote programming by SMS**

;PIN1 =3369;PIN122 =1234;

NOTE	PINx access codes must be from 4 to 10 digits long, and must start with number greater or equal 1.

9.10 DIRECT ACCESS BY ENTERING TEMPORARY ACCESS CODES – SPIN - VIA ILLUMINATED KEYPAD

The user may control the relay output by entering up to 100 temporary SPIN access codes which can be determined how many times they will be used.
SPIN access code from SPIN1 to SPIN100 will activate the relay output.

NOTE	Set the SPIN access entry codes active output first (disabled by default). **;SPINO=1;**

9.10.1 SPIN1 to SPIN100

SPINx parameters are the temporary SPIN access codes for controlling the relay output. SPINCx parameters are the determination, how many times SPINx code can be used.

9.10.2 Table of parameters

Name	Comment
SPIN1	SPIN access code 1.
SPIN2	SPIN access code 2.
…	
SPIN100	SPIN access code 100.

Table 22: Entering SPIN access code parameters

Example:

- **Direct programming on the SIM card**

PROGRAMMING TABLE		
Name	**Number**	**Description**
SPINO	1	SPIN Output is enabled.
SPIN8	5524	SPIN code 8
SPINC8	3	SPIN code 8 can be used 3 times
SPIN20	1234	SPIN code 20
SPINC20	1	SPIN code 20 can be used 1 time, then won't be valid anymore

Table 23: Entering SPIN access codes example

- **Remote programming by SMS**
  ;SPINO=1;SPIN8=5524; SPINC8=3; SPIN20=1234; SPINC20=1;

Explanation: SPIN8 code 5524 can be used 3 times and after the 3th time it won't be valid anymore. And SPIN20 code 1234 can be used 1 time and after that time it won't be valid anymore.

9.10.3 Using the keypad for activating the Output – opening the doors

The user **presses the 4 digit PIN access code** and **then presses the '#' key** on the keypad to confirm the entry. If the code is correct, the output relay is activated which triggers the electric lock, ramp, bollard, sliding doors, etc…

- **Typing the PIN (SPIN) access code on the keypad**

Explanation: For PIN1 **type 3369 and press** '#'. If the code is correct you will hear long beep confirmation, if the PIN access code is incorrect you will hear 3 short beeps.

9.11 EVENT LOGGING

SOLO-NX device support logging of specific events. SOLO-NX logs CLIP event and alarm input events. Log event consist of event type, time and telephone number or input number.
Up to 20.000 Log events can be stored.

9.11.1 LOGN parameter

Parameter is used for defining the number of events printed out on PLOG request.

9.11.2 LOGI parameter

Parameter is used to define the media used for logging of events on SOLO-NX. User can select between nonvolatile memory on SOLO-NX or select USB to transfer events directly via USB to PC.

⇒ LOGI=0 Logging is OFF
⇒ LOGI=1 Logging in internal memory
⇒ LOGI=2 Logging to USB interface

9.11.3 ALC parameter

Parameter is used to control behavior when log on SOLO-NX is full. User can select between auto log clear or manual clear of log.

⇒ ALC=0 Automatically delete buffer when memory is FULL
⇒ ALC=1 Memory buffer must be deleted manually when it is FULL

9.11.4 Table of parameters

Name	Comment
LOGN	Number of log events for printing out
LOGI	Log interface
ALC	Automatic log clear

Table 24: LOG parameters

Example:

- **Direct programming on the SIM card**

SOLO-NX PROGRAMMING TABLE		
Name	**Number**	**Description**
LOGN	5	5 log events will be printed out on PLOG command
LOGI	0	Nonvolatile memory on SOLO-NX
ALC	1	Log is auto cleared when full

Table 25: LOG parameters example

- **Remote programming by SMS**

;LOGN=5;LOGI=0;ALC=1;

9.12 SPECIAL SMS COMMANDS

These commands can only be issued only over SMS message, and are used to control some special functions of SOLO-NX device.

9.12.1 ORC command

Command is used to control outputs directly via SMS message

9.12.2 SDCLR command

To clear all data on SIM card SDCLR command is used.

9.12.3 LCRL command

Command clears log on SOLO-NX device.

9.12.4 CLPCLR command

Command is used to delete all CLP numbers.

9.12.5 MRES command

Command is used to manually restart GSM module on SOLO-NX device.

9.12.6 SSRES command

Command is used to manually restart SOLO-NX device.

9.12.7 Table of parameters

Name	Comment
ORC1	Control of output 1
ORC2	Control of output 2
SDCLR	Delete all SIM content
LCRL	Delete log on SOLO-NX device
MRES	Manual reset of GSM module
SSRES	Manual reset of SOLO-NX device

Table 26: SMS commands.

Example:

- **Remote programming by SMS**

SMS commad	Description
;ORC1=1;	Activate output 1
;ORC2=0;	Deactivate output 2
;SDCLR;	Clear all data on SIM
;LCLR;	Delete log on SOLO-NX device
;MRES;	Manual reset of GSM module
;SSRES;	Manual reset of SOLO-NX device

Table 27: SMS commands example.

10 PRINT-OUT OF THE PARAMETERS

The user can check the settings of ALL parameters on the SOLO-NX.

10.1 RECEIVE ALL PARAMETERS (PALL)

By sending this command to SOLO-NX you receive SMS messages with all parameters that are currently programmed in the unit:
;PALL;

10.2 CHECK SW REVISION (PSW)

By sending this command to SOLO-NX you receive SMS messages with current SW version running on SOLO-NX device:
;PSW;

10.3 CHECK SIGNAL QUALITY (PSQ)

By sending this command to SOLO-NX you receive SMS messages with signal quality SOLO-NX device is connected to network:
;PSQ;

10.4 RECEIVE TELEPHONE NUMBERS (PTN)

By sending this command to SOLO-NX you receive SMS message with all currently programmed telephone numbers (TN1 – TN5):
;PTN;

10.5 RECEIVE LINKS (PLN)

By sending this command to SOLO-NX you receive SMS message with all currently programmed links (LN1 –LN8):
;PLN;

10.6 RECEIVE INPUT PARAMETERS (PIN)

By sending this command to SOLO-NX you receive SMS message with all currently programmed Input parameters (IN1 – IN4):
;PIN;

10.7 RECEIVE INPUT FILTER VALUE (PID)

By sending this command to SOLO-NX you receive SMS message with all currently programmed Input filters (ID1 – ID4):
;PID;

10.8 RECEIVE OUTPUT FILTER VALUE (POD)

By sending this command to SOLO-NX you receive SMS message with all currently programmed direct output links (OD1 – OD5):
;POD;

10.9 RECEIVE DELAY BEFORE DIAL VALUE (PDD)

By sending this command to SOLO-NX you receive SMS message with all currently programmed Input filters (DD1 – DD4):
;PDD;

10.10 RECEIVE ACCESS TELEPHONE NUMBERS (PSL)

By sending this command to SOLO-NX you receive SMS message with programmed SL level:
;PSL;

10.11 RECEIVE OUTPUT PARAMETERS (POS)

By sending this command to SOLO-NX you receive SMS message with all currently programmed Outputs parameters (OS1 – OS2):
;POS;

10.12 RECEIVE ALL PROGRAMMED SMS MESSAGES (P#)

By sending this command to SOLO-NX you receive SMS message with all currently programmed alarm SMS messages (#0 - #4):
;P#;

10.13 RECEIVE SET UP PARAMETERS VALUE (PPA)

By sending this command to SOLO-NX you receive SMS message with all currently programmed Setup parameters (TST, MNF…):
;PPA;

10.14 RECEIVE CREDIT PARS PARAMETERS (PCREF)

By sending this command to SOLO-NX you receive SMS message with all currently programmed credit parse parameters (CREF, CVODA…):
;PCREF;

10.15 RECEIVE ALL CLIP PARAMETERS (PCLP)

By sending this command to SOLO-NX you receive SMS message with all currently programmed CLIP functionality related parameters (CLPEN, CLPOU, CLPI, CLPx):
;PCLP;

NOTE	User can use ;PCLP=x,y; to limit the number of CLIP numbers to be printed. x = start number y = end number Example ;PCLP=1,30; Prints first 30 CLIP numbers

10.16 RECEIVE INTERCOM BUTTON 1 PARAMATERS (PDEA)

By sending this command to SOLO-NX you receive SMS message with all currently programmed button 1 group parameters (ATN1, ATN2, ATN3, ATN4, ATN5, RTNA, SDNA, SDDA, TZSA, TZEA):
;PDEA;

10.17 RECEIVE INTERCOM BUTTON 2 PARAMATERS (PDEB)

By sending this command to SOLO-NX you receive SMS message with all currently programmed button 2 group parameters (BTN1, BTN2, BTN3, BTN4, BTN5, RTNB, SDNB, SDDB, TZSB, TZEB):
;PDEB;

10.18 RECEIVE INTERCOM BUTTON 3 PARAMATERS (PDEC)

By sending this command to SOLO-NX you receive SMS message with all currently programmed button 1 group parameters (CTN1, CTN2, CTN3, CTN4, CTN5, RTNC, SDNC, SDDC, TZSC, TZEC):
;PDEC;

10.19 RECEIVE INTERCOM BUTTON 4 PARAMATERS (PDED)

By sending this command to SOLO-NX you receive SMS message with all currently programmed button 2 group parameters (DTN1, DTN2, DTN3, DTN4, DTN5, RTND, SDND, SDDD, TZSD, TZED):
;PDED;

10.20 RECEIVE PIN ACCESS CODES (PPIN)

By sending this command to SOLO-NX/CL you receive SMS message with all currently programmed PIN access codes (PIN1, PIN2, …, PIN999, PIN1000).
;PPIN;

NOTE	User can use ;PPIN=x,y; to limit the number of PIN numbers to be printed. x = start number y = end number Example ;PPIN=1,30; Prints first 30 PIN numbers

10.21 RECEIVE SPIN ACCESS CODES PARAMETERS (PSPIN)

By sending this command to the device you receive SMS message with all currently programmed SPIN parameters:
;PSPIN;

NOTE	User can use ;PSPIN=x,y; to limit the number of SPIN numbers to be printed. x = start number y = end number Example ;PSPIN=1,5; Prints first 5 SPIN numbers

10.22 STATE OF THE CREDIT FOR THE PREPAID CARD

By sending this command to SOLO-NX you receive SMS message with Credit amount on your prepaid SIM card:
;**PCCX;**
Where X is the number of programmed prepaid card provider.

10.23 STATE OF THE OUTPUTS (PORC)

By sending this command to SOLO-NX you receive SMS message with current outputs state.
;PORC;

10.24 MANUAL GSM MODULE RESTART (MRES)

By sending this command to SOLO-NX shuts down GSM module and after a few second it switches the power of the GSM module ON again. The unit reboots all parameters from the SIM card.
;MRES;

10.25 RECEIVE STATUS OF INPUTS (INS)

By sending this command to SOLO-NX you receive SMS message with current input state.
;INS;

10.26 RECEIVE SOLO-NX LOG

By sending this command to SOLO-NX you receive SMS message with log on SOLO-NX device.
;PLOG;

NOTE	User can use ;PLOG=x,y; to define the number of logs to be printed. x = start event y = end event Example ;PLOG=1, 30; Prints first 30 log events

11 CHANGING PARAMETERS USING THE SMS COMMANDS

All programming parameters for SOLO-NX can also be sent by SMS command. Each SMS command should start and stop with semicolon. If the confirmation SMS is needed, put "+" at the beginning of the command SMS.

The first SMS is SMS with telephone numbers (TN1 – TN4). If you would like to check which telephone numbers are programmed in SOLO-NX please use the following command:
;PTN;

Return SMS is (example):
;TN1=0;TN2=0;

If you would like to enter telephone numbers in to SOLO-NX you can use the following example:
;TN1=040713470;TN2=+38643364850;

If you would like to receive confirmation SMS write "+" before SMS command:
;+TN1=040713470;TN2=+38643364850;

Return SMS from SOLO-NX is:
;TN1=040713470;TN2=+38643364850;

NOTE	**You can use the same programming procedure for all parameters.**

It is also possible to change different parameters with one SMS. Consider that the SMS message should not be longer than **160 characters** (included space characters).

If you would like to change the following parameters **TN1, IN1, IN2, OS1, OS2; ID1, LN1 and CRE** and would like to receive confirmation SMS, try next example:
;+TN1=+38640713470;IN1=1;IN2=1;OS1=15;OS2=1;ID1=120;LN1=1;

Send SMS message to SOLO-NX telephone number and in a few seconds you receive SMS message from SOLO-NX. The sentence of the SMS must be the same as the one you have sent to SOLO-NX before.

12 DEFAULT SETTINGS ON SOLO-NX

SOLO-NX PROGRAMMING TABLE		
Name	**Default Value**	**Short Description**
TN1	Empty	Telephone number 1
TN2	Empty	Telephone number 1
TN3	Empty	Telephone number 2
TN4	Empty	Telephone number 3
TN5	Empty	Telephone number 4
IN1	0	Input 1 control
IN2	0	Input 2 control
OS1	5	Output 1 mode
OS2	5	Output 2 mode
OD1	1	Input 1 direct output link
OD2	0	Input 2 direct output link
OD5	0	NAC direct output link
LN1	Empty	Input 1, link to tel. numbers
LN2	1	Input 2, link to tel. numbers
LN3	Empty	Input 3, link to tel. numbers
LN4	1	Input 4, link to tel. numbers
LN5	Empty	Periodic SMS text, link to tel. numbers
LN6	Empty	SIM card refill, link to tel. numbers
LN7	Empty	NAC, link to tel. numbers
LN8	Empty	LOG full, link to tel. numbers
ID1	1	Input 1 delay filter on input
ID2	120	Input 2 delay filter on input
DD1	0	Input 1 delay before dialing
DD2	0	Input 2 delay before dialing
SL	0	Security level
#0	“User Location”	SMS main head text
#1	“Input1”	SMS input 1 text
#2	“Input2”	SMS input 2 text
CC1	Empty	Check credit Num 1
CC2	Empty	Check credit, TIM Italy
CC3	Empty	Check credit, Vodafone Italy
ESC	0	Input used as cancel button
UDC	Empty	Tel. number of SOLO-NX device
HTN	1	Hidden telephone number
RAN	0	Auto answer ring number
SCV	0	SIM card time validity
TST	24	Periodic test SMS timeout
TSTT	0	Periodic test SMS start time
MNF	0	Network connection type
MIC	15	Microphone volume setting (0 - 40)
MUT	0	Mute functionality

SOLO-NX PROGRAMMING TABLE		
Name	**Default Value**	**Short Description**
SPK	10	Speaker volume setting (0 - 20)
LCV	4	Low credit value
LNG	0	Language selection
LOT	90	Connection time out value
LOGN	5	Number of log events for printing out
LOGI	0	Log interface
ALC	1	Automatic log clear
ADF	90	Auto dial functionality (Call TN1)
ARST	0	Automatic reset timeout
CREF	“EUR”	Parse text (contact support)
CTIM	“EURO”	Parse text (contact support)
CVODA	“DISPON. E.”	Parse text (contact support)
OP1	1	Output invert 1
OP2	1	Output invert 2
BUZ	1	Buzzer control
SPO	1	SIM card starting position
CLPEN	1	Enable CLIP functionality
CLPOU	1	Control output pin when CLIP event
CLPI	0	CLIP input activation condition
CLP1	Empty	CLIP number 1
.	.	
.	.	
CLP1000	Empty	CLIP number 1000
ATN1	Empty	Button 1, Telephone number 1
ATN2	Empty	Button 1, Telephone number 2
ATN3	Empty	Button 1, Telephone number 3
ATN4	Empty	Button 1, Telephone number 4
ATN5	Empty	Button 1, Telephone number 5
RTNA	25	Ring time, Button 1
SDNA	0	DTMF number to send
SDDA	0	Delay for DTMF to send
TZSA	0	Time zone start interval
TZEA	0	Time zone end interval
BTN1	Empty	Button 2, Telephone number 1
BTN2	Empty	Button 2, Telephone number 2
BTN3	Empty	Button 2, Telephone number 3
BTN4	Empty	Button 2, Telephone number 4
BTN5	Empty	Button 2, Telephone number 5
RTNB	25	Ring time, Button 2
SDNB	0	DTMF number to send
SDDB	0	Delay for DTMF to send
TZSB	0	Time zone start interval
TZEB	0	Time zone end interval
CTN1	Empty	Button 3, Telephone number 1

SOLO-NX PROGRAMMING TABLE		
Name	**Default Value**	**Short Description**
CTN2	Empty	Button 3, Telephone number 2
CTN3	Empty	Button 3, Telephone number 3
CTN4	Empty	Button 3, Telephone number 4
CTN5	Empty	Button 3, Telephone number 5
RTNC	25	Ring time, Button 3
SDNC	0	DTMF number to send
SDDC	0	Delay for DTMF to send
TZSC	0	Time zone start interval
TZEC	0	Time zone end interval
DTN1	Empty	Button 4, Telephone number 1
DTN2	Empty	Button 4, Telephone number 2
DTN3	Empty	Button 4, Telephone number 3
DTN4	Empty	Button 4, Telephone number 4
DTN5	Empty	Button 4, Telephone number 5
RTND	25	Ring time, Button 4
SDND	0	DTMF number to send
SDDD	0	Delay for DTMF to send
TZSD	0	Time zone start interval
TZED	0	Time zone end interval
PIN1	Empty	PIN access code 1
…	…	…
PIN1000	Empty	PIN access code 1000
SPINO	Empty	Control SPIN relay output event
SPIN1	Empty	SPIN access code 100
SPINC1	Empty	Maximum number of times the code can be used
…		
SPIN100	Empty	SPIN access code 100
SPINC100	Empty	Maximum number of times the code can be used

Table 28: SOLO-NX default settings

13 PARAMETERS PRINT-OUT COMMANDS

SOLO-NX PROGRAMMING TABLE	
Name	**Short Description**
PALL	Prints all parameters available on SOLO-NX.
PSW	Prints SW version of SOLO-NX.
PSQ	Prints GSM network signal quality of SOLO-NX.
PTN	Prints TNx numbers.
PLN	Prints LNx links.
PIN	Prints INx parameters.
PID	Prints IDx parameters.
POD	Prints ODx parameters.
PDD	Prints DDx parameters
PSL	Prints SL parameter.
POS	Prints OSx parameters.
P#	Prints #x parameters.
PPA	Prints various setup parameters.
PCLP	Prints CLIP parameters.
PLOG	Prints log of the SOLO-NX.
PCREF	Prints credit pars parameters.
PCN	Prints credit request numbers.
PCC1	Prints credit for SOLO-NX (universal request).
PCC2	Prints credit for SOLO-NX. (TIM Italy).
PCC3	Prints credit for SOLO-NX. (VODAFONE Italy).
PWG	Prints Wiegand parameters.
INS	Prints status of the inputs.
PORC	Prints (controls) the status of outputs.
PDEA	Prints intercom button 1 parameters.
PDEB	Prints intercom button 2 parameters.
PDEC	Prints intercom button 3 parameters.
PDED	Prints intercom button 4 parameters.
PPIN	Prints PIN access codes.
PSPIN	Prints SPIN parameters

Table 29: SOLO-NX parameters print out commands.

14 TECHNICAL SPECIFICATIONS

Description	Value
Power Supply	12,0 – 20,0 V AC or 12,0 – 24,0 V DC (1,0 – 2,0A)
Current consumption - peak	2A
Current consumption - transmitting mode	250mA
Current consumption - idle mode	40mA
Quad band GSM module	850/900/1800/1900 MHz
PCB dimensions	106 × 89 mm
Unit dimensions (1 and 2 buttons)	156 x 116 x 70 (51) mm
Call buttons	Up to 4 (in larger enclosure: 290 × 116 × 70 mm)
External Antenna	1
Weight	Approx. 1000 gr.
Alarm inputs	2
Alarm outputs (relay)	2
12V DC Aux. Power Supply output	Y (max. *100 mA)
12,0 – 20,0 V AC or 12,0 – 24,0 V DC Power Supply input	Y
Anti-tamper protection	optional

15 CONTACTS

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