SmartLink Advanced
Telephone dialler
Installation and programming manual

GameOver

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Directive 1999/5/CE (R&TTE) compliance

Hereby INIM Electronics s.r.l. declares that the SmartLink-G and SmartLink-GP are in compliance with the essential requirements and other relevant provisions of Directive 1999/5/CE.

The full declarations of conformity of the above-mentioned devices are available at URL: www.inim.biz/dc.html.

Table of contents

ABOUT THIS MANUAL

DCMIINE0SLINKA	**MANUAL CODE**
1.00	**VERSION**

Terminology   0-1

If not otherwise specified, refers to the SmartLink.	**DEVICE**
Directions as seen by the operator when directly in front of the mounted device.	**LEFT, RIGHT, BEHIND, ABOVE, BELOW**
A device which sends voice calls or digital reports to programmed contact numbers in the event of an alarm.	**DIALLER**
Persons whose training, expertise and knowledge of the products and laws regarding security systems, are able to create, in accordance with the requirements of the purchaser, the most suitable solution for the protected premises.	**QUALIFIED PERSONNEL**
Click on a specific item on the interface (drop-down menu, options box, graphic object, etc.).	**SELECT**
Click on a video button, or push a key on the control-panel keypad.	**PRESS**

Graphic conventions   0-2

Following are the graphic conventions used in this manual.

Conventions	Example	Description
Text in italics	Refer to *paragraph 0-2 Graphic conventions*	Indicates the title of a chapter, section, paragraph, table or figure in this manual or other published reference.
Text in boldface	**menu ?**, **Information**	Indicates the title of a section, key or software item
<text>	#<AccountCode>	Editable field

The "Note" sections contain important information relating to the text.   **Note**

The "Attention" prompts indicate that total or partial disregard of the procedure could damage the device or its peripherals.   **ATTENTION!**

Chapter 1

GENERAL INFORMATION

Manufacturer's details   1-1

Manufacturer:	INIM Electronics s.r.l.
Production plant:	Via Fosso Antico - Centobuchi
	63076 Monteprandone (AP) - Italy
Tel:	+39 0735 705007
Fax:	+39 0735 704912
e-mail:	info@inim.biz
Web:	www.inim.biz

The persons authorized by the manufacturer to repair or replace the parts of this system, hold authorization to work on INIM Electronics brand devices only.

Description of the product   1-2
and various models

The SmartLink device described in this manual is a reserve telephone line generator and dialler.

DESCRIPTION

The SmartLink guarantees telephone connections by switching to the GSM network during line-down conditions (line trouble or wire-cutting).

RESERVE TELEPHONE LINE

When operating over the GSM network, the SmartLink continuously checks the landline to see if normal PSTN operating conditions have been restored. If the PSTN line is found to be operating normally again and there are no ongoing telephone calls passing through the interface, the system will switch back to the main PSTN line. Otherwise, it will switch back to the PSTN only when all the necessary outgoing calls have been forwarded.

The SmartLink generates a series of operations (e.g. calls, output commands) in relation to internal events (e.g. low battery) or external events (e.g. input status changes, received call, received SMS commands).

TELEPHONE DIALLER

• Status control and output actions via SMS messages
• Output control and output actions via calls using the voice menu
• Output actions via Caller ID recognition
• Digital dialler (Ademco 10bps, Ademco 14bps, Franklin 20bps, Radionics 40bps, Scantronic 10bps, Contact-ID, SIA-IP)
• SMS dialler
• Voice dialler
• Open tamper protection
• Jamming detector
• Easyscan (automatic search for the best GSM provider)

OTHER FUNCTIONS

SmartLink Advanced GP - reserve telephone line generator and dialler over GSM network and PSTN landline   **MODELS**

SmartLink Advanced G - reserve telephone line generator and dialler over GSM network

SmartLink Advanced P - PSTN landline dialler

Table 1: **Applications**

Models	SmartLink/P	SmartLink/G	SmartLink/GP
Reserve telephone line generator		●	●
On-board voice module with 15 minutes	●		●
Anti-intrusion function	●		●
Dialler over GSM network and PSTN landline and GPRS modem		●	●
Dialler over PSTN landline	●		●
SMS dialler over GSM network		●	●
Manges DTMF commands over GSM network		●	●
Manges DTMF commands over PSTN landline	●		●
Priority channel choice between SM network and PSTN landline		●	●
Fault signalling	●	●	●
Incoming SMS divert		●	●
Actions using Caller ID		●	●
Manages commands via SMS with code or identifier of the sender		●	●
Ring or SMS confirmation for commands receiving via SMS		●	●
Warning calls for each event over GSM network and PSTN landline		●	●
Manages GPRS for remote programming/monitoring		●	●
Manages supervision over GPRS		●	●
Periodic supervision between 2 SmartLink Advanced devices		●	●
Manages SIA-IP and transmits information to alarm receiving centres via the most widely used protocols		●	●
Answerphone with voice menu	●		●
Manages and signals Roaming status		●	●
EasyScan function		●	●
Jamming detector function		●	●
SIM card credit enquiry		●	●

Supplied documentation   1-3

- Installation manual (this manual)
- Programming via the SmartLeague programme

The manuals are regularly supplied with the apparatus and can be downloaded from the "Download" section of our website: www.inim.biz.

The installation manual is included in the package. To order further copies contact the offices at INIM Electronics and quote the order number shown in *Appendix B, Order Codes.*

Chapter 2

DEVICE DESCRIPTION

Unpacking the device   2-1

The SmartLink is packed inside a cardboard box containing:
- the device, consisting of a PCB mounted inside a metal box.
- A bag containing the installation kit comprising:
  - •• Antenna
  - •• 10 x 3k9 Ohm 1/4W resistors
  - •• 10 x 6k8 Ohm 1/4W resistors
  - •• 4 screws to secure the cover to the metal backbox
- Installation manual (this manual)

The installation kit does not include:
- 1.2 A/h battery
- Switching power supply/battery charger
- SIM card

These items must be purchased before beginning the installation phase.   **Note**

Accessory items   2-2

The following accessory devices are individually packed and must be ordered separately (refer to *Appendix B, Order Codes* for the respective order codes):
- Switching power supply/battery charger
- Remote antenna for indoor use
- High-performance GSM antenna
- High-performance GSM antenna with 3m of cable for indoor use

Technical description   2-3

A device-data label, similar to the one opposite, can be found inside the metal box.

Following are the technical features of the devices and the description of their components:

SMARTLINK GP		07/2013
ADVANCED		
inim ELECTRONICS	Alimentazione / Power Tension / Alimentacion	13.8 Vdc
	Consumo / Consumption Consommation / Consumo	600 mA
CE MADE IN ITALY	Classe di Isolamento / Insulation class Insulation class / Clase aislante	I

PCB board

Metal backbox
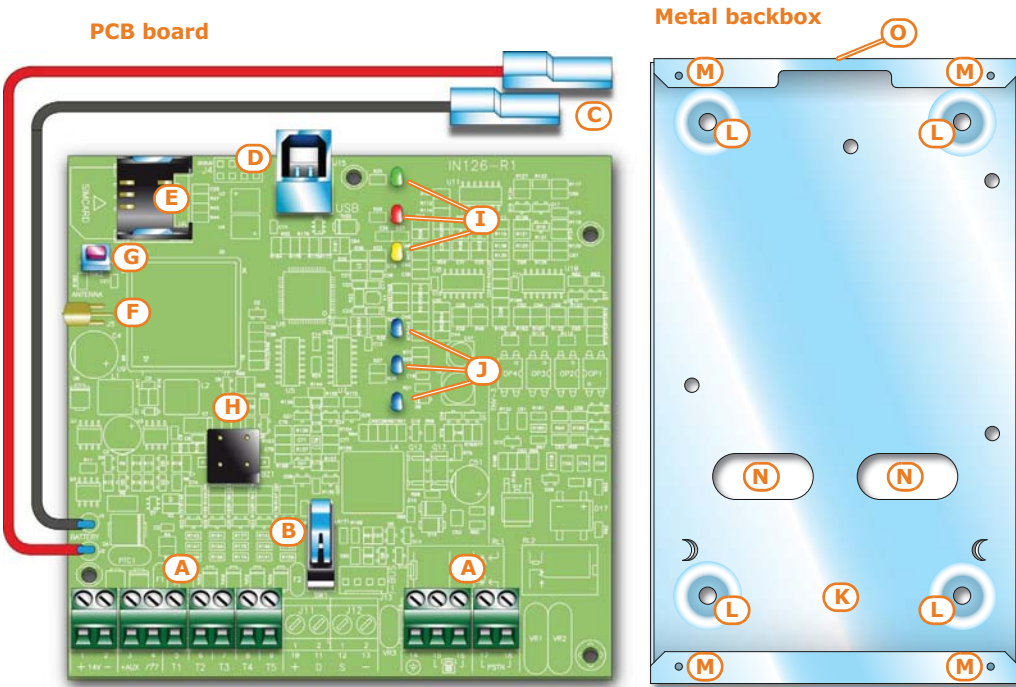
Table 2: **PCB - description of parts**

A	Terminal board
B	Open-tamper microswitch
C	Battery connector
D	USB connector
E	SIM card connector
F	Antenna connector
G	Default-data reset button
H	Buzzer
I	Activity LED
J	GSM signal reception LED

Table 3: **PCB - description of parts**

K	Battery housing
L	Wall-mount screw locations
M	Screw holes
N	Cable entries
O	Antenna placement hole

Table 4: **Terminals on the terminal board**

n.	icon/identifier	function
1	+ 14V	Positive power terminal
2	- 14V	Negative power terminal
3	+AUX	12V Ancillary power supply
4	⏚	Power supply negative (earth or GND)
5-6-7-8-9	T1-T2-T3-T4-T5	Control panel input terminals: T1, T2, T3, T4 and T5
14	⊕	Earth connection
15-16	☎	Internal telephone-line connection
17-18	PSTN	Landline connection

Table 5: **Technical specifications**

Models		SmartLink/P	SmartLink/G	SmartLink/GP
Voltage	**Nominal output voltage**	13.8 Vdc ±10%		
	Functioning range	11 - 16 V		
PCB current-draw during	**standby status**	40 mA	100 mA	
	during transmission	-	300 mA	
	maximum	70 mA	600 mA	
Maximum current draw of +AUX terminals		400 mA		
Switching power supply		14V dc 1.05A		
Backup battery		12V, 1.2Ah lead battery		
Inputs		5		
Outputs	**total**	5		
	Type	150 mA open collector output		
GSM frequency band		-	900 and 1800 Mhz (Dual band)	
Dimensions (W x H x D) excluding antenna		134 x 220 x 53		
Dimensions (W x H x D) including antenna		-	134 x 300 x 53	
Weight		890g		

Table 6: **Technical specifications of the reserve line**

Voltage	40Vdc
Loop current	25mA
Dialling tone	425Hz continuous
Engaged tone	200ms 425Hz / 200ms silent
Recognized dialling tone	DTMF
Ring voltage	90Vpp
Ring frequency	25 - 50 Hz (selectable)

Signalling from device   2-4

Besides generating signals relating to events triggered by telephone calls, SMS messages and output activations, the SmartLink can also provide LED and buzzer signals.

The SmartLink board provides 6 signalling LEDs which are visible on the outside of the metal box thanks to the light guides.   **LED**

The table shows the meanings of the LEDs when activated:

Table 7: **LED signalling**

LED			Status			
Num.	Colour	Signalling	ON	OFF	Slow flashing	Fast flashing
1	Green	Operating status	Device operating		Device initializing	
2	Red	Fault		No faults present	Flash cycle followed by pause: • 1 flash: general battery fault • 2 flashes: telephone line fault • 3 flashes: GSM network trouble • 4 flashes: low credit warning	
3	Yellow	SmartLink armed/ disarmed status Communication status	SmartLink operating	SmartLink not operating and no ongoing calls present	SmartLink not operating but an ongoing call is present	SmartLink operating and an ongoing call is present
4	Light blue	GSM reception status	GSM signal quality: • One LED On: poor signal reception • Two LEDs On: average signal reception • Three LEDs On: optimum signal reception		One LED flashing: average signal reception between two of the three predefined levels. All three LEDs flashing: no GSM reception	
5	Light blue					
6	Light blue					

In the event of the presence of more than one fault, LED 2 will indicate all the faults one at a time.

Some operations (for example, calls to alarm receiving centres using Contact-ID, SIA-IP, 10 and 20bps protocols) require that at least two light-blue LEDs are ON solid.

ATTENTION!

The SmartLink provides further LED signals, other than those indicated, recognized by the simultaneous activation of several LEDs:

• During the programming and initializing phases all six LEDs must flash simultaneously.
• SmartLink ready for the "Easyscan" and active "Easyscan" functions (refer to *paragraph 3-7 Easyscan*): successive activation in cyclic mode of all the LEDs starting from LED 6 to LED 1.
• Incoming SMS: successive activation in non-cyclic mode of one LED at a time starting from LED 1 to LED 6.

The buzzer provides the end-user with audible signalling. **BUZZER**

The buzzer provides entry time, exit time and command confirmation signals (if programmed). Activation of these signals can be configured during the programming phase.

Table 8: **Signalling and signal type**

Signalling	Signal type
Entry time running	Short pulse cycles
Entry time running	Long pulse cycles
Command carried out	3 short pulses
Command not carried out	5 long pulses

Chapter 3

SMARTLINK FUNCTIONS

Telephone line down management   **3-1**

The devices that are to use the reserve line during PSTN line-down conditions must be connected to terminals 15 and 16.

When the PSTN line is operating properly, terminals 15 and 16 are connected internally to 17 and 18.

If the voltage on these terminals drops below 3Vdc for a period of 10 seconds, the SmartLink disconnects the PSTN line and switches to the ancillary line. The status of the PSTN line will be checked for restoral every 3 minutes.

The absence of the PSTN line is signalled on the fault LED (red LED) by 2 flashes. The signalling will activate only after the PSTN line has been down for the programmed time.

Input/Output terminals   **3-2**

The five terminals 5-9 can be configured individually as:
- Input zone terminal
- Double zone terminal (ZONE DOUBLING)
- Output terminal
- Controlled output terminal (I/O)
- Unused terminal

INPUT/ZONE
An electrical input point used for the management/supervision of signals coming from a device. The activation of this signal may cause the SmartLink to generate the following operations:
- Send an SMS message
- Send a digital protocol message
- Send a voice message
- Command an output
- Change the armed/disarmed status of the SmartLink

OUTPUT
The outputs are open-collector outputs and allow the transmission of commands to external devices (e.g. switch on lights, open gate, etc.).

The outputs can be activated by the SmartLink in response to events, and from remote locations (via SMS, over-the-phone using DTMF tones, Caller ID).

The standby condition of each output can be:
- Open
- Closed

The outputs can be configured as:
- Bistable
- Pulse

This is an output whose status can be controlled (activated/deactivated) and used for other activations.

CONTROLLED OUTPUT

An electrical input point used for the management/control of signals coming from two devices.

DOUBLE ZONE

The terminal the zone is connected to must be configured as a "double input zone". Terminals with this configuration allow the system to distinguish between two distinct alarms coming from the two different zones it is connected to.

Event activations   3-3

The SmartLink is capable of recognizing specific external signals coming from the PSTN or GSM network or through input terminals T1, T5, and also internal signals from elements such as "events".

When such events activate or restore (return to default conditions), the SmartLink can perform any of the following activations:

• activate outputs
• generate voice calls
• send digital protocol messages
• send SMS messages

In *Appendix A, Events* you can find the complete list of events generated by the SmartLink.

Dialler function   3-4

The digital dialler function generates digital-protocol calls directly to alarm receiving centres.

DIGITAL

The available protocols are: Ademco 10bps, Ademco 14bps, Franklin 20bps, Radionics 40bps, Scantronic 10bps, Contact-ID, SIA-IP

The SMS dialler function generates outgoing SMS messages. The outgoing SMS messages are sent in response to an event.

SMS FUNCTION

During the programming phase you can select the SMS message type, which can be automatic, predefined by the SmartLink or customized by the installer.

The voice-dialler function activates outgoing calls containing recorded voice messages.

VOICE

During the programming phase you can select the voice messages, which can be either predefined by the SmartLink or customized by the installer.

INIM does not guarantee the total availability of all the GSM functions described in this manual, due to the various combinations of GSM service providers, SIM types and telephone models that may be in use.

ATTENTION!

Command and Shortcuts 3-5

A command is a request from the end-user or a device to the SmartLink to carry out one or more of its functions.

During the programming phase of the SmartLink you can arrange the commands into shortcuts. A shortcut is a single request that activates a series of successive functions. If necessary, you can define the shortcut parameter, in other words, the object of the shortcut (e.g. define a specific output for functions such as "activate output" shortcuts).

SHORTCUTS

Table 9: **Available shortcuts**

description	function	parameter	note
Arm/Disarm	Applies a pre-set scenario	which scenario	Shortcuts are available only when the SmartLink is programmed as an intrusion control panel
Stop alarms	Deactivates instantly the outputs activated by alarm and tamper events		
Delete memory	Carries out a "Stop alarms" operation and, at the same time, deletes alarm and tamper memories.		
Clear call queue	Cancels the call queue and stops ongoing calls (if any).		
Output activation	Activates one of the programmed outputs	which output	
Output deactivation	Deactivates one of the programmed outputs	which output	
Voice info	Starts playback of the audible message playback that informs the user of the device status		Shortcuts available for codes only
Status enquiry	Activates a device status enquiry; the user will receive one or more SMS messages containing a list of the parameter values relating to the status.		Refer to the default commands described in *paragraph 3-6 Remote activation*
Credit enquiry	Activates balance enquiries relating to the SIM card of the device; the user will receive an SMS text indicating the remaining credit.		
GPRS Client	Activates the GPRS connection with the SmartLeague software programme via SMS		

Remote activation 3-6

All the functions of the SmartLink device can be activated from remote locations.

Therefore, it is possible to send commands to the SmartLink by means of:
- SMS messages
- telephone calls using Caller ID
- telephone calls assisted by a voice guide ("Answerphone" function)

After receiving one of the above-mentioned commands, the SmartLink will activate the associated actions.

Both commands and their associated actions can be configured through the SmartLeague software programme, in the sections relative to the GSM network commands and user codes.

Commands over the GSM network   3-6-1

Up to 200 actions can be programmed to activate in response to remote GSM commands.

Each of the actions can be triggered by either an SMS command or a Caller ID command or both.

Users who wish to activate a command via SMS text must enter the command details as follows:

COMMAND VIA SMS MESSAGE

<xxxxxx> <SMS Text>

where:

• <xxxxxx> stands for the user PIN
• a blank space must be keyed in after PIN entry
• <SMS text> is the identification of the command, as programmed via software

Three commands are predefined at default:

DEFAULT COMMANDS

• "**CREDIT**" for balance enquiries relating to the SIM card of the device; the user will receive an SMS text indicating the remaining credit.
• "**STATUS**" for enquiries relating to the status of the SmartLink; the user will receive an SMS text indicating:
  •• device name and firmware revision
  •• GSM network provider
  •• GSM signal reception level
  •• Presence of the PSTN line
  •• list of faults present
  •• device tamper status
  •• power supply of the circuit
  •• armed/disarmed status of the SmartLink
  •• list of zones in alarm status
  •• list of terminals in tamper status
  •• status of outputs
  •• remaining credit as last read
• "**CONNECT**" for the maintenance request; the message text format must be:

  <xxxxxx> CONNECT <Connection Name> <URL>:<Port>

  where:
  •• <xxxxxx> is the installer code PIN, followed by a blank space
  •• "CONNECT" is the connection command, followed by a space
  •• <Connection Name> is the description of the connection followed by a space
  •• <URL>: is the IP address of the server you wish to connect to, followed by ":"
  •• <Port> is the connection port

    the latter two parameters can be omitted if they have already been included in the GPRS section programming fields of the SmartLink.

A Caller ID command is a command requested over-the-phone by an end-user whose telephone number is present in the configuration of the actions to be carried out following the command. This type of telephone number must be associated with a user code.

INCOMING CALLER ID COMMANDS

The SmartLink recognizes the Caller ID and activates the programmed actions.

The remaining credit control feature is subject to temporary or even permanent unavailability caused by changes in the implementation of the methods used by the GSM/GPRS service provider.
INIM provides device programming functions which may be capable of restoring this feature, by means of manual changes to the respective parameter settings.

Note

Answerphone 3-6-2

The "answerphone" function, if enabled by the installer on the PSTN or GSM network line, allows the SmartLink to answer incoming phone calls. Following is the procedure which activates the programmed action:

1. Call the number of the SIM Card inserted in the SmartLink or the telephone number of the PSTN line connected to the device.
2. After a programmed number of rings, the SmartLink will engage the line and play the voice message:

   Type-in code followed by "#"
3. Enter a valid user-code then press "#" on the telephone keypad.
4. The SmartLink will start a voice message listing the shortcuts associated with the entered code and the corresponding keys on the telephone keypad (voice menu).
5. Activate the required commands by pressing the correspon- ding keys on the telephone keypad.

Easyscan 3-7

The "Easyscan" function of the SmartLink allows the installer to select the best GSM network provider for the SmartLink installation, in accordance with the signal reception.

This function can be activated exclusively via the SmartLeague software programme and does not require the presence of a SIM card in the SmartLink.

Once initialized, the SmartLink scans the GSM signals available in the installation zone. When the scan is complete the software will show a list of the operators detected in the area and the reception quality of their signals. This data can be used by the installer to optimize the installation.

Jamming detector 3-8

The jamming detector allows the SmartLink to check for intentional or unintentional wireless interference and, if necessary, generate a "Jamming" event when the source disrupts wireless transmission and inhibits the GSM network signal.

Chapter 4

INSTALLATION

Wall-mounting   4-1

The SmartLink should be located in a hidden place that cannot be accessed by unauthorized persons.

ATTENTION!

Verify that the GSM network signal of the selected provider is adequate.
Do not install the device near metal objects.
Ensure that there are at least two metres between the SmartLink and other electrical devices.

1. Using the metal backbox (*table 3, L*), mark the anchor screw locations on the wall. Be sure not to drill in the vicinity of electrical wiring or plumbing/gas pipes, etc.
2. Insert the screw anchors (recommended size 6mm).
3. Pull the wires through the wire entry.
4. Using the screws, attach the backbox to the wall.

Note

The cable gland must be flame class rating V-1 or higher.

Connecting to the mains power supply   4-2

The SmartLink must be powered from the mains and must also be connected to a backup battery.

MAINS POWER SUPPLY 230VAC 50HZ

The mains supply requires the use of a power supply (*Appendix A, Events*) and therefore a separate line from the mains box. The line must be protected by a safety-standards compliant circuit breaker (trip switch).

The protective earthing system must be compliant with all safety standards and laws in force.

ATTENTION!

Ensure that the Mains is switched Off during the mains connection phase. Danger of electric shock.

Connect the power supply (already connected to the mains), to terminals "**+ 14 -**" on the PCB (*table 4 "Terminals on the terminal board"*), taking care to respect the correct polarity of the wires. The power supply will provide power to the SmartLink and the devices connected to its outputs and also recharge the backup battery.

The backup-battery connection must be achieved through the connector on the PCB (*table 2, C*) and the specific wire (included) which has a faston terminal at each end.

BACKUP BATTERY

Ensure that battery polarity is correct:
- black wire = negative
- red wire = positive

ATTENTION!

The backup battery is the secondary power source which powers the SmartLink and the devices connected to the outputs during mains failure.

Mounting the antenna 4-3

1. Remove the antenna from the bag.
2. Remove the nut and washer that are screwed onto the antenna.
3. Pass the antenna cable through the cable entry on the top of the enclosure into its housing (*table 3, O*).
4. Using the nut and washer, secure the antenna in place.
5. Connect the antenna wire to the respective connector on the PCB (*table 2, F*).

STANDARD ANTENNA

If it is necessary to install the SmartLink in a place in the building where the GSM network signal is weak, you can purchase a SmartLink-REM-ANT remote antenna (*Appendix A, Events*). This optional item replaces the antenna which is supplied with the device.
The remote antenna is equipped with a long cable, a magnetic base for installation in a place inside the building where the GSM network signal is strong, and an ancillary wire for the connection to the PCB board.

REMOTE ANTENNA

1. Remove the antenna and wire from the bag.
2. Remove the nut and washer that are screwed onto the antenna.
3. Pass the antenna cable through the cable entry on the top of the enclosure into its housing (*table 3, O*).
4. Screw the cable nut onto the antenna.
5. Mount the magnetic base of the antenna in a place where the GSM network reception is good.
6. Using the ancillary wire, connect the antenna wire to the respective connector on the PCB (*table 2, F*).

Telephone connections 4-4

Connect the PSTN line to terminals 17 and 18 (*table 4 "Terminals on the terminal board"*).

Note

The SmartLink is protected against damage caused by electrical storms.

Connect the telephone equipment (or other device/apparatus that requires a reserve telephone line) to terminals 15 and 16.

Up to 4 devices can be connected in parallel.

ATTENTION!

A voltage of up to 100Vdc may be present on terminals 15 and 16 during the ring phase.

Note

If there is an ADSL on the line, you must connect the SmartLink downstream of the ADSL filter, to the line dedicated to telephone equipment (this line is clearly indicated on the filters).

Earth connection 4-5

Connect terminal 14 to earth (*table 4 "Terminals on the terminal board"*).

ATTENTION!

This operation is necessary in order to comply with the security requirements of the telecommunications network, and also to protect the device against overload and/or electrical discharge coming from the external telephone line.

Inserting the SIM card 4-6

Deactivate the PIN code of the SIM card and insert it into its housing (*table 2, E*).

The SIM card must be inserted when the SmartLink is Off (not powered).

ATTENTION!

Any telephone numbers or messages contained in the SIM card may be deleted when it is inserted into the SmartLink.

Before choosing the GSM network provider and inserting the SIM card (refer to *paragraph 5-2 Easyscan procedure*), it is advisable to use the Easyscan function from the SmartLeague software programme in order to identify the best GSM network signal.

PC Connection   4-7

It is necessary to connect to a PC equipped with the SmartLeague software programme (refer to *paragraph 6-1 Using the SmartLeague software programme*) for programming, layout and monitoring of the system the SmartLink is connected to.

This connection can be achieved as follows:

- Connection via USB
- Connecting via GPRS

Connection via USB   4-7-1

The connection with the PC can be achieved through a USB cable (*Appendix A, Events*) inserted into the respective connector on the PCB (*table 2, D*).

Once connected to the SmartLink, the USB device installation driver recognized by the PC provides the SmartLeague software programme installation folder, specifically the following folder (for an installation at default):

C:\Program Files\Inim\SmartLeague\drivers\SmartLink_advanced

Connecting via GPRS   4-7-2

The connection with the SmartLink occurs only after a request for teleservice by means of a SMS command.

Once the GPRS parameter settings are complete, you will be able to activate the GPRS connection by means of the following procedure:

1. Start the SmartLeague software programme and access the **Settings, Application settings** menu section.
   Select **Connection via GPRS** from the options available in the **Communication type** section, then press **Start**.
2. The **Start** button opens the GPRS connection status section, where you must the set port. The setting must coincide with the **Port** described above.
3. Press the **Connect** button to activate the server.
4. Request teleservice by sending the default SMS message "CONNECT" (refer to *paragrafo 3-6-1 Commands over the GSM network*).
5. After the SMS message has been sent, you must wait until the software indicates that the connection has initialized.
6. Once the connection is active, you can carry out the desired upload/download operations via the SmartLeague software programme.
7. Once the programming session is complete access the **Settings, Application data, GPRS Connection** section, then select the **Disconnect** button to end the connection.
   If no upload/download operations are carried out for 5 consecutive minutes, the GPRS connection will end automatically.

Wiring and balancing alarm detectors 4-8

The wiring and respective balancing method depend on the type of detector you are installing, and the level of protection you wish to achieve. The detectors can be powered through:

- terminal [+AUX/12V] and [-/negative] present on the PCB
- from any 12V ancillary source on condition that its GND reference is in common with that of the SmartLink

The resistors used for balancing are:

- 3K9Ohm 1/4W
- 6K8Ohm 1/4W

Red White Orange 3K9 Ohm 1/4W — **Gold**

Red Grey Blue 6K8 Ohm 1/4W — **Gold**
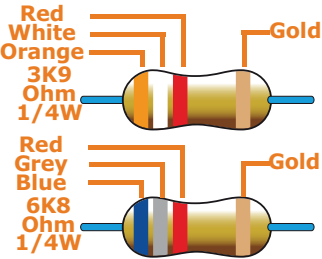
The following table indicates the protection level of each detector type and the balancing options provided:

Table 10: **Protection level**

BALANCING	N.O.	N.C.	Single	Double	Double zone	Double zone with EOL
Infrared or Double technology	very low	low	medium (*)	high	medium	high
Magnetic contact	very low	low	medium		medium	high

(*) Single balancing provides the same level of protection as Double balancing, when the tamper contact of the detector is connected to a balanced zone on the SmartLink.
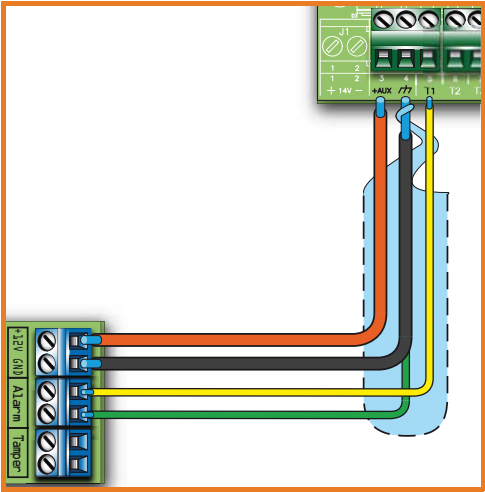
N.C./N.O. Balancing 4-8-1

For N.C. (normally closed) and N.O. balancing (normally open), it is possible to detect two distinct zone conditions:

- standby
- alarm

For each of these, the SmartLink reads different resistance values on the terminal, expressed below in Ohm.

| Ohm	N.C.	N.O.
> 2 x 3900 + 6800	alarm	standby
> 2 x 3900 + 6800	alarm	standby
3900 + 6800	alarm	alarm
2 x 3900	alarm	alarm
3900	standby	alarm
0	standby	alarm

Single balancing   4-8-2

Single zones can discriminate 3 conditions on the entire terminal:

- standby
- alarm
- tamper (short-circuit)

For each of these, the SmartLink reads different resistance values on the terminal, expressed below in Ohm.

| Ohm	Zone
> 6800	alarm
6800	standby
0	tamper
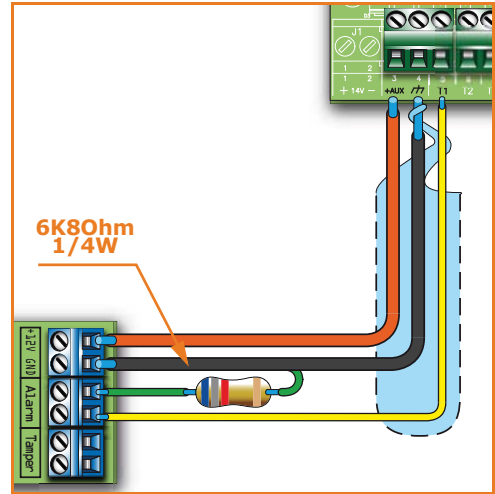
Double balancing   4-8-3

Double balancing discriminates 4 distinct conditions on the zone terminal:

- standby
- alarm
- tamper (short-circuit)
- tamper (wire cutting)

For each of these, the SmartLink reads different resistance values on the terminal, expressed below in Ohm.

| Ohm	Zone
> 6800	tamper (wire cutting)
6800	alarm
6800 / 2	standby
0	tamper (short-circuit)
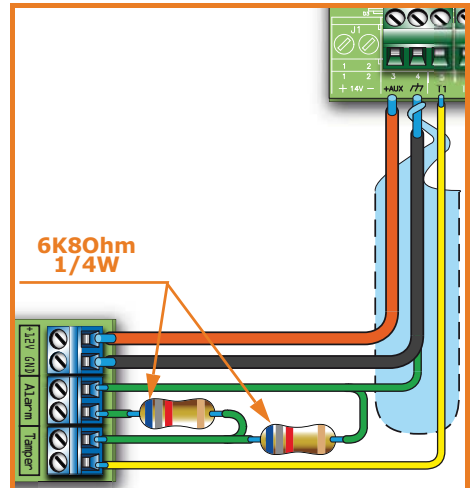
Double–Zone balancing   4-8-4

Double zones without EOL resistor can discriminate 5 conditions on the entire terminal:

• standby on both zones
• alarm on zone 1 and standby on zone 2
• alarm on zone 2 and standby on zone 1
• alarm on both zones
• tamper (wire cutting)

For each of these, the SmartLink reads different resistance values on the terminal, expressed below in Ohm.

| Ohm	Zone 1	Zone 2 (double)
> 3900 + 6800	tamper	
3900 + 6800	alarm	alarm
6800	standby	alarm
3900	alarm	standby
0	standby	standby
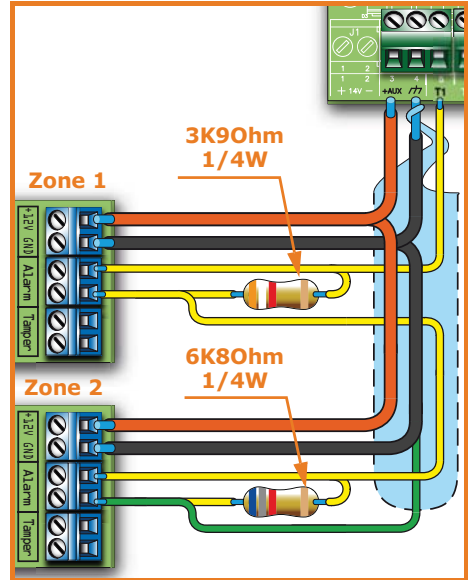
Double Zone balancing   4-8-5
with EOL

Double zones with EOL resistors can discriminate 6 conditions on the entire terminal:

• standby on both zones
• alarm on zone 1 and standby on zone 2
• alarm on zone 2 and standby on zone 1
• alarm on both zones
• tamper (wire cutting)
• tamper (short-circuit)

For each of these, the SmartLink reads different resistance values on the terminal, expressed below in Ohm.

| Ohm	Zone 1	Zone 2 (double)
> 2 x 3900 + 6800	tamper (wire cutting)	
> 2 x 3900 + 6800	alarm	alarm
3900 + 6800	standby	alarm
2 x 3900	alarm	standby
3900	standby	standby
0	tamper (short-circuit)	
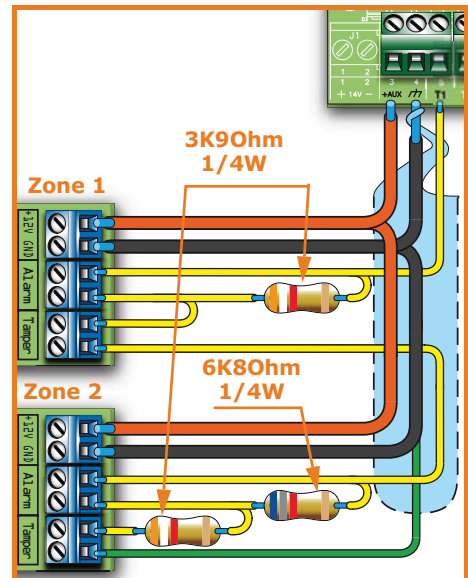
Connecting the outputs   4-9

It is possible to set up an output (or several outputs) to activate in response to any of the events managed by the SmartLink.

All the outputs are open-collector outputs capable of sinking a maximum current of 150 mA.

The wiring diagram below illustrates a series of typical connections for the activation of a load when a Normally Open output closes to GND.
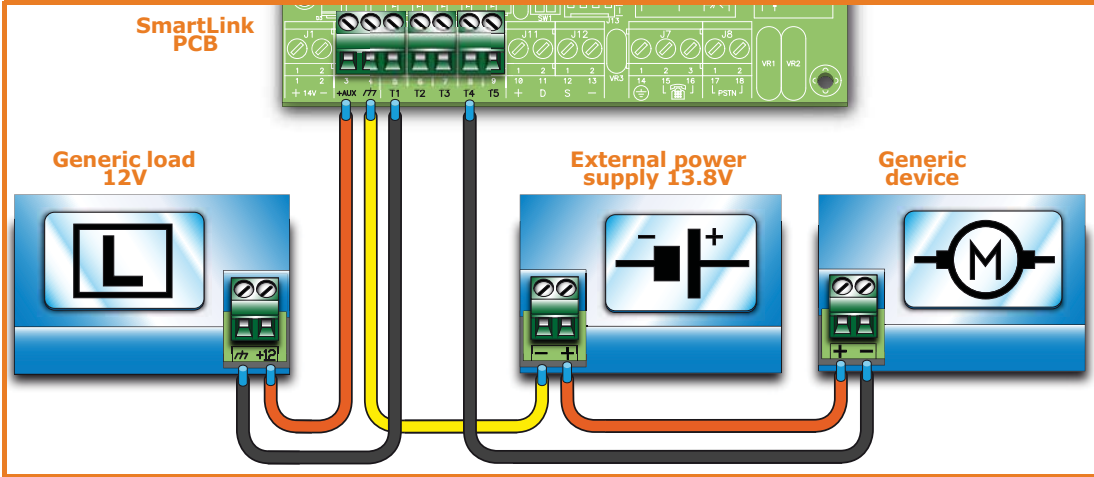
Chapter 5

FIRST POWER UP

In order to allow the system to perform an accurate auto-enrolling operation on "First power-up", work carefully through the following steps.

When wiring the system, be careful not to allow any form of power (mains 230V or battery) to reach the SmartLink or its peripherals.

ATTENTION!

1. Mount the SmartLink to the wall.
2. Connect the antenna.
3. Complete the wiring and balancing of the system detectors.
4. Connect the outputs to the terminals.
5. Connect the telephone line.
6. Connect the primary power source (230V a.c.).
7. Connect the backup battery.
   Start the initializing phase.
8. Start the Easyscan function.
9. Remove all power from the system.
10. Insert the SIM card.
11. Restore power to the system.

Initializing phase   5-1

On powerup, the device carries out a self-diagnosis phase. During this phase all the LEDs will flash.

If no anomalies are detected during the self-diagnosis phase, the device will initialize the normal operating phase after approximately 30 seconds.

Initialization of the normal operating phase is signalled by the deactivation of all the LEDs except the green LED which will be On solid. If, however, anomalies are detected the LEDs will continue flashing.

Easyscan procedure   5-2

During the installation phase of the SmartLink and thus first powerup, the manufacturer strongly advises the use of the "Easyscan" function before selecting the GSM network provider.

This function can be activated exclusively through the SmartLeague software programme, therefore, you must refer to the respective manual for the descriptions of the parameters involved.

The results obtained by the "Easyscan" regarding the GSM signals should not be considered constant throughout time, as they are subject to changes relating to the GSM service.
Therefore, you should carry out the Easyscan operation at regular intervals or, at least, when the system is undergoing maintenance.

Following is the procedure of the Easyscan function:

1. Powerup the SmartLink without inserting the SIM card.

2. The SmartLink will start the initialization phase (*paragraph 5-1 Initializing phase*), once this phase is complete the device will begin a countdown of 40 seconds, during which time you will be able to activate the Easyscan function. The countdown will be signalled on the LED as indicated in *paragraph 2-4 Signalling from device*.
   Before the 40 second countdown ends, you must connect the SmartLink to your PC, otherwise, the device will re-initialize and start the countdown again in preparation for the Easyscan phase. This procedure is cyclical.

3. Connect the SmartLink to your PC (*paragraph 4-7 PC Connection*).

4. Start the SmartLeague software programme and open "SmartLink Advanced" solution.

5. Go to the **Monitoring**, **Easyscan**

6. Click on the **Connect SmartLink** button to start the connection with the GSM module.
   Once the connection is made, the normal software functions (Programming functions) will be inhibited.

7. Click on the **Start Easyscan** button to start the scanning process.
   The software application will list, in two sections, the GSM network providers in accordance with the detected signal reception.

8. Click on the **Disconnect SmartLink** button to interrupt the scanning operation.
   You can utilize this scanning method as often as required.

9. Disconnect your PC.

10. Remove all power from the SmartLink and insert the SIM card into its housing (*table 2, E*).

If you fail to insert the SIM card, the SmartLink will continue to perform the phases described at point 2.

Chapter 6

SMARTLINK PROJECT DEVELOPMENT AND PROGRAMMING

The SmartLink system has been designed to be programmed via PC. All functions relating to project development and programming can be accessed through the software programme. You will need:

- A computer connectable to the SmartLink, ultimately already installed
- The SmartLeague software programme

Using the SmartLeague software programme 6-1

The SmartLeague software programme allows the installer to prepare the majority of the programming parameters without actually being connected to the SmartLink device.

However, connection is required during the upload (to the SmartLink) and download (from the SmartLink) operations. The type of connection depends on the means used (refer to *paragraph 4-7 PC Connection*).

The programming parameters of an installation constitute the "solution". The solution can be saved to the memory of the SmartLeague software programme, either for future use or as a "model" for other installations.

The homepage of the SmartLeague software programme is common to all the programmable devices and is always active, even during the programming session, in the form of a template:

Table 11: **SmartLeague software programme - homepage**

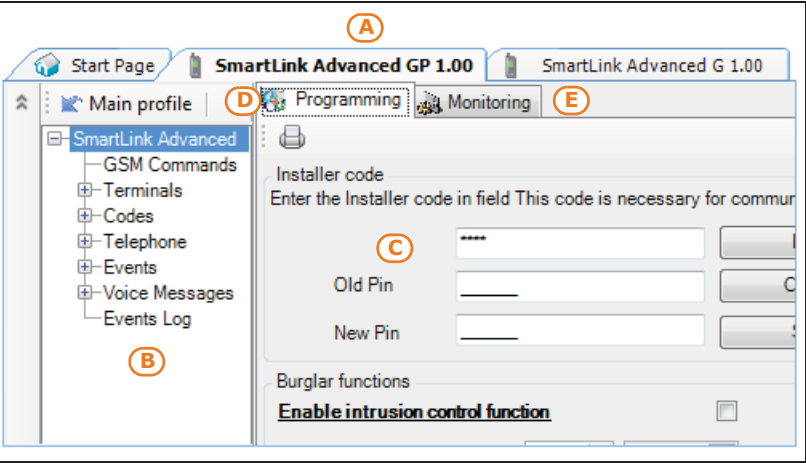|		
A	Open solutions bar	
B	List of recent solutions - which will allow you create new solutions or open existing solutions	
C	Documentation installed on the computer.	
D	Area dedicated to help and service via Internet. It is possible to consult FAQ page, make enquiries and suggestions via e-mail.	
E	Access to the area reserved for registered users of the INIM website. After typing in a Username and Password, you can access the updated versions of the software programme, firmware, technical documentation and service.	

Using the software programme   6-2

Each project, from the most uncomplicated to the most complex of systems, is represented by a solution, which contains the programming parameters and installation structure.

SOLUTIONS

A solution is dedicated to a specific type of apparatus and has its own programming interface. You can work on several solutions simultaneously, even if they involve different types of apparatus. Each solution has a template, located next to the "Homepage", which can be viewed at all times. In this way it is possible to compare different solutions and even keep two solutions open, one real and one for test purposes (in order to verify the effects of programming).

When a solution opens, the SmartLeague software programme presents the following interface:

Table 12: **SmartLeague - solutions**

A	The freshly opened template remains in the forefront whilst the other open template and the Homepage remain in the background.	
B	Installation tree structure.	
C	Section in question.	
D	Programming template of the component to be programmed (selected from the tree structure).	
E	Monitoring board for real-time monitoring of the entire system.	

A solution can be created or changed even without being connected to the apparatus. For example, you can plan the layout of an installation or set the options/parameters at your office and download the settings to the system at a later time.

In this case, you must programme:

• the Installer PIN, by selecting "SmartLink System" from the tree menu on the left. The PIN must be entered in the "Programming - Installer code" section on the right.

• the Connection type via "Settings – Application data". For the connection specifications refer to *paragraph 4-7 PC Connection*.

DATA TRANSFER

The SmartLeague software programme provides buttons (in the tool bar on the topp-left corner) for the transfer of the ongoing project/ programming data:

• ▣ for download operations

• ▣ for upload operations

These buttons will upload/download all the system data (including any ongoing programming). Whereas, if you are working on a message programming section, these buttons will upload/download only the data on the open template.

Programming via the software 6-3

The SmartLink can be programmed exclusively through the SmartLeague software programme.

1. Go to the "Recent solutions" section and either create a new solution or open an existing one, or import the programming data of a real system by clicking on the ▣ button to upload the data.

2. Select the part of the system you wish to programme from the tree menu on the left.
3. Set the parameters in the "Parameters settings" template on the right.
4. To download the data to the SmartLink, click-on the 🖳 key.

During data upload/download operations:
•   all outputs will be forced to standby status.
•   None of the events recognized by the SmartLink will be able to queue calls, activate outputs or be saved to the events log.

This manual is limited solely to instructions regarding navigation through the software and where to find the various parameters. For full instructions regarding the complete programming process refer to the SmartLeague Installation and Configuration manual, supplied with the software.

Reset default settings   6-3-1

To reset the SmartLink default settings, work carefully through the following procedure:
1. Remove the power supply from the SmartLink.
2. Press and hold the Reset button (refer to *table 2, G*).
3. Powerup the SmartLink whilst holding down the Reset button.
4. Wait 5 seconds.
5. Release the button.
    The SmartLink will restore to the factory default settings and restart.

Maintenance and monitoring   6-4

The maintenance procedures and their regularity are to be decided by the installer company.

The system maintenance phase requires the use of the SmartLeague software programme.

SOLUTIONS

Programmed parameters, which are saved as solutions, can be used as "models" for other installations as well as for successive maintenance operations.

In fact, during the maintenance phase you can view the programmed parameters on one SmartLink device and compare them to those saved in a solution and, if necessary, download them to the device you are working on.

MONITORING

The SmartLeague software programme provides a section, which is available only after a direct connection to the SmartLink (refer to *paragraph 4-7 PC Connection*), where you can carry out real-time monitoring of the entire system.

You can reach this section through the **Monitoring** template which is next to the **Programming** template, or by selecting **Control panel**, **Monitoring** options.

The section provides two sub-sections which can be opened by clicking on the header label:

- **System monitoring** - for real-time monitoring of the system
- **Easyscan** - for easy scanning of GSM network signal reception

Refer to the SmartLeague software programme manual for the descriptions of the sections and the parameters being viewed.

The manufacturer strongly advises that the following procedures are carried regularly:

- Cleaning the SmartLink
- Check there are no inappropriate objects inside the box.
- Check the functionality of the LEDs.
- Check the battery efficiency and, if necessary, replace it.
- Check the integrity of the wires and connections.
- Carry out maintenance on the connected devices.

Appendix A

EVENTS

An event is an operative status recognized by the SmartLink; each event is characterized by an activation (when the event occurs) and a restoral (when the event ends).

The following table shows the events the control panel recognizes, the number of events for each type, the trigger and restoral method of each event and whether the event is a pulse event (pulse events restore automatically soon after activation).

Table 13: **Event type**

Name	Occurs when...	Restores when ...	Number of events	Pulse events
Zone alarm	A zone generates an alarm	A zone restores	One event for each zone	no
Terminal tamper	A terminal detects tamper (short-circuit or wire cutting)	A terminal restores	One event for each terminal	no
Generic alarm	At least one zone is generating an alarm	All the zones have reset	1	no
Real-time zone	The electrical status of a zone switches from standby to alarm	The electrical status of a zone switches from alarm to standby	One event for each zone	no
	The event is independent of the zone type and the armed/disarmed status.			
Not ready to arm	A zone is not in standby status	All the zones are in standby status.	1	no
Away arming request	A request is made to arm in Away mode	A request is made to disarm the partition	1	Yes
Stay arming request	A request is made to arm in Stay or in Instant mode	A request is made to disarm the partition	1	Yes
Arming effective	The partition interior and perimeter zones are armed in Away mode	SmartLink is disarmed	1	no
Stay arming effective	SmartLink is armed in Stay or Instant mode	SmartLink is disarmed	1	no
Memory reset	Memory reset is requested		1	Yes
Exit time	The exit time is running	The exit time expires	1	no
Entry time	The entry time is running	The entry time expires	1	no
Valid user-code recognized	A PIN entered at a keypad is recognized as valid		One event for each code	Yes
Open-panel tamper	The smartLink enclosure cover is removed	The smartLink enclosure cover is replaced	1	no
Low battery	The backup-battery voltage is below 10.7V	The backup-battery voltage is over 11.74V	1	no
Battery fault	The backup battery is low	The backup battery is charged	1	no
Battery not connected	Battery not detected or disconnected	Battery connected	1	no

Table 13: **Event type**

| Name	Occurs when...	Restores when ...	Number of events	Pulse events
Deep discharge shutdown	Battery electrically disconnected due to deep discharge	Battery connected	1	no
Mains failure	The primary 230V a.c. power source is not present (blackout)	The primary 230V a.c. power source restores	1	no
Invalid code	An invalid code is entered		1	Yes
GSM communication trouble	Ongoing trouble on the GSM module.	Fault conditions clear	1	no
Telephone line down	The land line is not working	The land line restores	1	no
Periodic event	The Periodic Event occurs		3	Yes
Reset from the control panel	SmartLink has re-initialized The system clock may be wrong or not working properly.		1	Yes
Call queue full	There are no more slots left in the outgoing call queue		1	Yes
Successful call	The call is answered		1	Yes
Input undergoing programming	Access to system programming has occurred	Programming session has ended	1	no
Ongoing call	A call is sent	A call ends	1	no
SMS message not delivered	Failure to send an SMS message through the GSM module has occurred		1	Yes
Output fault	An output fails to switch status as commanded		1	Yes
Low credit	The credit left on the SIM card is below the minimum credit threshold.	The remaining credit is above the minimum credit threshold.	1	no
Unsuccessful call over PSTN	The call sent via PSTN has not been received		1	Yes
Unsuccessful call over GSM	The call sent via GSM has not been received		1	Yes
First ring	An incoming call via PSTN or GSM network	The call is answered or terminated	1	no
Roaming active	The GSM provider the SmartLink is connected to is different from the SIM card provider	The GSM provider that the SmartLink is connected to is the same as the SIM card provider	1	no
Jamming	Jamming detected on the GSM network	Jamming no longer detected on the GSM network	1	no
Supervision failed	The verification of the presence of a remote device (supervision) has failed	Contact with the desired remote device achieved	1	no

Appendix B

ORDER CODES

Please quote the following order codes when ordering items from the INIM Electronics product range:

Access Codes	Product description
DCMIINE0SLEAGUE	SmartLeague software installation, configuration and programming manual
DCMIINE0SLINKA	SmartLink Advanced installation manual
GSM-ANT 100B	High-performance GSM antenna
GSM-ANT 200N	High-performance GSM antenna with 3m of cable for indoor use
IPS12015	1A 14Vdc power supply
LinkUSBAB	USB cable link to PC and/or INIM devices
SmartLeague software programme	Programming software, runs under Windows
SmartLink Advanced G	PSTN and GSM network dialler
SmartLink Advanced GP	Reserve line generator and PSTN and GSM network dialler
SmartLink Advanced P	PSTN dialler
SmartLink/REM-ANT	Remote antenna with 3m cable for indoor use with magnetic base

Notes

ELECTRONICS
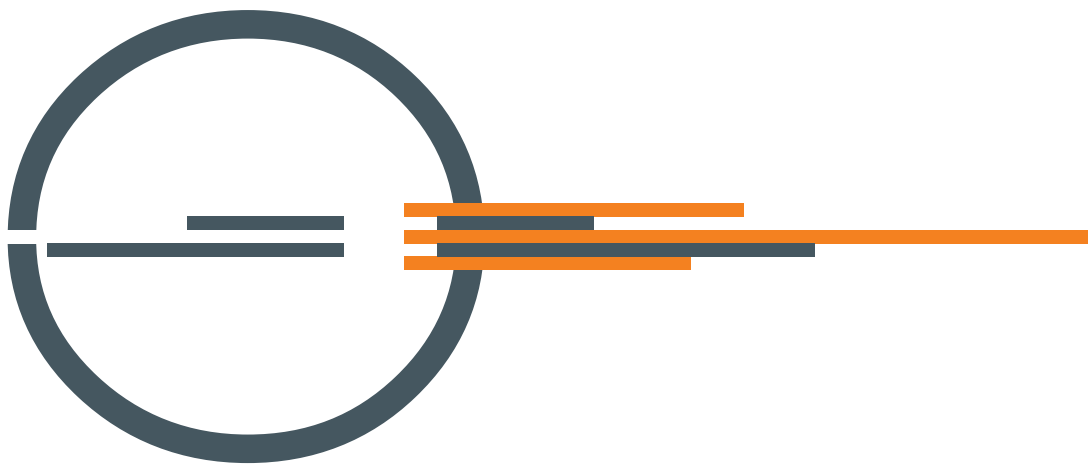
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