ROKONET
RISCO GROUP

SMPS - Switching Mode Power Supply (3A) Installation Guide

For use with Rokonet's ProSYS Security Systems

Introduction

The Switching Mode Power Supply (SMPS) is a reliable, supervised power supply expansion module, for use with Rokonet's ProSYS security systems.
It provides a total current capacity of up to 3A with extensive remote diagnostics features that comply with EN50131requirements. It supports a standby battery and is supervised for loss of Mains, Battery, failure of its auxiliary output power and loss of its sounder device.
Up to 8 modules can be added to the system to ensure reliable operation of the system with its multiple devices and accessories.
The SMPS includes two Utility Outputs, which may be separately programmed by the ProSYS as regular utility outputs.

Main Features

- 3A switching mode power supply with self supervision
- Advanced remote diagnostics – includes remote Upload/download or keypad reading of voltage output and current under load
- Automatic battery protection and remote voltage reading
- Supports 1.7 Amp Siren, with remote reading of siren current
- Includes two 3A utility output relays

The SMPS components and jumpers are shown in Figure 1:

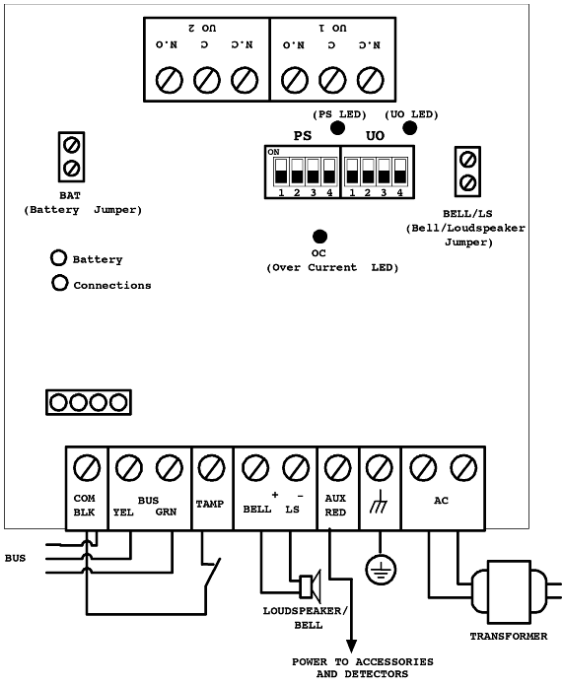

Figure 1: SMPS –General View

Mounting the Power Supply

Mount the SMPS and the backup battery inside a metal box:

⚠ **IMPORTANT:**

The SMPS should be serviced by qualified personnel only!

Unless serviced, the SMPS box must be closed with screws at all times!

Use only safety-approved wires in accordance with the national rules! (See Table 1: Wire Guide" on page 18).

The SMPS is designed for indoor use only!

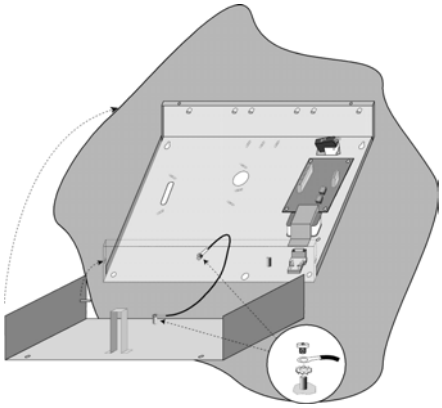

Figure 2: SMPS Inside a Metal Box

NOTE:

Prior to installation calculate the total current consumption of the connected devices in order not to exceed the power supply's maximum current consumption!

IMPORTANT:

To prevent risk of electric shock, disconnect all power sources before servicing! Under no circumstances should mains be connected to the PCB other than to the main terminal block!

1. Locate the SMPS metal box in a clean and dry location, close to the mains.
2. Open the SMPS box by releasing the attaching screws.
3. When attaching the box to the wall, it is recommended to use Ø4.2mm, 32mm length screws (DIN 7981 4.2X32 ZP)
4. Connect the incoming mains cable to the main fuse terminal block as shown in Figure 3:
5. Wire the SMPS terminals as described in "Power Supply Terminal Wiring" on pages 7 - 9.

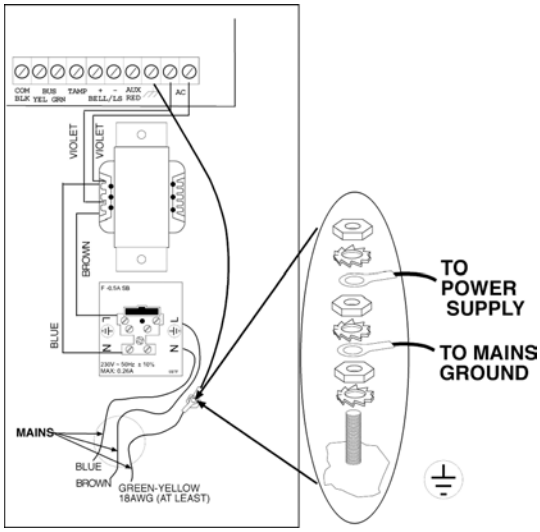

Figure 3: SMPS – AC & Ground Connection

6. Set the SMPS jumpers and the dipswitches as described in “Dip Switches Settings” on page 10 and “Jumper Settings” section on page 11.
7. Locate the battery at the bottom of the SMPS box.
8. Connect flying leads (battery connectors) from the SMPS board to the battery terminals - (+) Red, (-) Black).

NOTE:

Use only Lead Acid battery type, rated 12V, 7-21AH (maximum) and safety approved in accordance with the national standards!

9. Switch on the Mains.
10. Perform a BUS test using the ProSYS menu (refer to ProSYS Installation and Programming Manual).
11. Perform a diagnostic test of the SMPS output and battery, using the ProSYS software as described in the User Programming Menu section on page 13.
12. Close the SMPS metal box.

Power Supply Terminal Wiring

Terminal	D scription/Action
COM BLK	BUS terminals: used to connect the SMPS and its Utility Output module to the ProSYS communication Bus. Connect the wires respectively, point to point, according to the indicated colors.
BUS YEL	
BUS GRN	

NOTE:
Maximum permitted wire run for Bus wiring from the SMPS to the ProSYS is 300m (1000ft)!

IMPORTANT:

DO NOT connect the AUX (RED) terminal to the ProSYS BUS. Ensure that the incoming AUX (usually red) wire from the ProSYS Bus is disconnected!

TAMP	Used for connection of the box's tamper switch between the **TAMP** and the **COM** terminals (normally closed).

NOTES:
It is not necessary to use the box tamper if another module sharing the same box is equipped with one.
To avoid Tamper trouble, if NO connection is made for the TAMP terminal, connect a wire between the **TAMP** and **COM** terminals.
Do not use an End of Line resistor in the tamper switch circuit!

BELL/ LS	Used to connect an external sounder driven by the SMPS (bell or loudspeaker). Position the Bell/LS jumper respectively for the connected device as described in the Jumper Settings section on page 11.

NOTES:

1. To avoid bell loop trouble, if NO connection is made for the BELL/LS terminals, connect a 2.2K resistor in its place.
2. Use a larger wire gauge if the distance between the sounder and the SMPS is significant. Take the sounder(s) current draw into account when selecting a wire gauge (see **Error! Reference source not found.** on page 18).

AUX RED (+)	Used together with the COM (-) terminal to apply power to Aux. devices (e.g. PIRs, smoke/glass break detectors and any other devices that require 12VDC power supply). Total current consumption from the SMPS (Via The Aux./COM and BELL/LS terminals) is 3A.

NOTE:

If one or more of the AUX/BELL/LS outputs is overloaded and the SMPS shuts down, the SMPS must be reset, using the ProSYS software as follows:

From the ProSYS main user menu press * **[2] [0] [2]** (Overload Restore option), or enter and exit the installation-programming mode (refer to the ProSYS Installation Guide).
If overload still exists, perform manual reset as follows:
Disconnect all loads from the AUX/COM terminals for at least 10 seconds before you reconnect any load to the AUX/COM terminals.
Then perform Overload Restore again, using ProSYS main user menu (see "Installer Programming Menu" on page 12.

GROUND (Earth)	Used to connect the GND terminal to the main box ground pin (see illustration on page 6). Use 16 AWG (at least).
AC	Used for connection of the AC terminals (see illustration on page 6) to the transformer outputs (16.5VAC/50 VA).

NOTE:

A readily accessible disconnect device shall be incorporated in the building installation wiring.

Relay Output Wiring

IOTE:
the SMPS Utility Output is to be used, take into onsideration that in such a case one available roSYS output expander is utilized!

The SMPS Utility Output module comprises two relays (Dry Contacts) that are of the “Change Over” type.

Terminal block description:

NO = Normally Open

NC = Normally Closed

C = Common

Connect each of the SMPS relay outputs according to your preferred configuration.

Power Supply Components

The LEDs, Dipswitches, jumpers, and terminals functions are herein described.

LEDs Indication

LED	Description
PS (Power Supply Communication)	Indicates communication status between the Power Supply and the Main Panel.
	On: Normal communication with the Main Panel.
	Off: No input power
	Flashing: Bus communication failure, system in installation mode or PS dipswitch 4 is OFF.
UO (Utility Output Communication)	Indicates communication status between the SMPS UO module and the Main Panel.
	On: Normal communication with the Main Panel.
	Off: No voltage power
	Flashing: Bus communication failure, system in installation mode or UO dipswitch 4 is OFF.

LED	Description
OC (Over Current)	Indicates an actual/potential (calculated) overload.
	On: Total current consumption from the AUX and BELL/LS outputs exceeded 3A (power consumption from both outputs will be disconnected).
	Off: Normal current draw
	Flashing: The SMSP detected a potential current overload when calculating the total value of real current consumption from the AUX output and expected current consumption from the BELL/LS output.

NOTE:
To calculate sounder's current consumption, the Sounder must be operated at least once (recommended to be performed upon installation completion).

Dip Switches Settings

Module	Dip Switch	Description
Power Supply	PS/SW1-SW3	Used to set a unique ID number for the Bus module for communication purposes.
	PS/SW4	Enables/disables Power Supply - ProSYS communication. **On** (up): Communication enabled. **Off** (down): Communication disabled
Utility output	UO/ SW1-SW3	Used to set a unique Bus ID number for the UO module located on the SMPS board.
	UO/SW4	Enables/disables UO module - ProSYS communication. **On** (up): communication enabled. **Off** (down): communication disabled

IOTE:
When PS/SW4, or UO/SW4 is Off, the ID umber defined by SW1-SW3 is not ecognized by the ProSYS and can be used or the connection of another accessory of the ame category. The UO/PS LED will flash ince there is no communication with the ain panel.

Jumper Settings

Jumper	Descrip on	
BAT	Battery discharge protection	
	 Protection ON	If a continuous AC power outage occurs, the SMPS automatically disconnects the battery when its backup battery voltage drops below 10.8VDC. This is done to prevent "deep discharge" that may damage the battery.
	 Protection OFF	The battery mayl be totally discharged during continuous AC failure (no deep discharge protection).
	NOTE: If 2 pins configuration is selected, the battery might be damaged, thus battery replacement may be required.	
Bell/LS	Used to determine the SMPS mode of operation in accordance with the sounder device connected to the BELL/LS terminals. **NOTE:** The sounder(s) connected to the SMPS operates identically to the main panel's sounder(s).	

Jumper	Descrip on	
	Bell 	For a bell/electronic siren with a built-in siren driver, position jumper on one pin; 12VDC is produced at the sounder's terminals during burglary/panic alarms. Slow pulsing voltage is produced during fire alarm.
	LS (Speaker) 	For a loudspeaker without a built-in siren driver, position jumper on both pins. The SMPS produces continuous oscillating voltage for burglary/panic alarms and an interrupted oscillating voltage for fire alarm.

Programming the SMPS

The following section describes additional dedicated SMPS software functions added to the ProSYS software.
It is recommended to read and fully understand the ProSYS/WaveSYS installation procedure before programming the SMPS!
Up to 8 PS modules may be connected (1.5A regular PS or 3A SMPS).

Up to 8 Utility Output Expansion Modules may be connected to the ProSYS according to the following table:

	ProSYS 16	ProSYS 40	ProSYS 128
Maximum UO Expansion Modules	2	4	8

Installer Programming Menu

Function	Quick Key	Description
Add/Delete Power Supply Module:	[7] [1] [4]	Selection of new type: **PS02,** followed by selection of Bell/Speaker (if exists)
Add/Delete Utility Output Module:	[7] [1] [3]	New type: **UO02** A Two-output relay module.

User Programming Menu

Function	Quick Key	Description
Overload Restore	* [2] [0] [2]	**NOTE:** Performed only if Aux. output is overloaded and then switched off, code is required and the relevant SMPS is selected. The Grand Master/Installer/Sub-installer/Manager can use this option to restore the Aux. power (If overload condition is still present, disconnection of all loads from AUX. output is required!).
View Trouble	* [3] [1]	Trouble messages dedicated to the SMPS: **Potential overload**: The SMSP has detected a potential current overload when calculating the total expected current consumption from the siren and the Aux. outputs. **Overload**: The total current consumption from the Aux. and siren outputs exceed 3A.
Battery Test	* [4] [CODE] [2]	Tests the standby battery of the pre-selected SMPS. Battery voltage of the relevant SMPS is displayed on the LCD.
SMPS Diagnostics	* [4] [CODE] [9] [2] (Installer code)	**Battery Voltage** (of pre-selected SMPS); tests battery voltage. **Auxiliary load (**of relevant SMPS): real time Aux output voltage and current of SMPS. SMPS Aux Output voltage & current are displayed on the LCD keypad. **Bell Load (**of relevant SMPS); displays the Bell current

Function	Quick Key	Description
		consumption. The SMPS checks the bell load at each bell operation. The last measured data is displayed on the LCD keypad.

NOTE:

The diagnostic features can be also performed from the separately provided Upload/Download software, locally or remotely.

Event Log Messages

The following list details SMPS dedicated event messages, as displayed on the keypad LCD:

Event Message	Meaning
S=X OVER. RC=YY	Overload in SMPS X. Reset by user YY
POT.OVRLOAD PS=X	Potential overload of SMPS joined by SMPS ID (1-8)=X
POT.LOAD RS PS=X	Potential overload restore from SMPS, joined by the SMPS ID (1-8)=X
OVERLOAD PS=X	Overload from SMPS joined by the SMPS ID =X
OVERLOAD RS PS=X	Overload restore from SMPS, joined by SMPS ID (1-8)=X
WEAK BAT RS PS=X	Weak Bat indication, joined by the SMPS ID (1-8)=X
WEAK BAT RS PS=X	Weak Bat restore from SMPS joined by SMPS ID (1-8)=X

Troubleshooting

This section describes possible system problems and their solution.
Always perform the following preliminary checks before referring to the troubleshooting table.
Perform a complete visual inspection of the SMPS, its battery, and AC transformer for signs of mechanical damage, loose connections, or torn wires.
Check the connections of the incoming AC power source, AC transformer, and battery.

Trouble	Probable Meaning / Cause	Response
AC Failure Trouble	Indicates problem with mains power	Check the mains input and panel box fuse. Replace if necessary with a fuse of the same rating.
Bell Loop Trouble	Indicates that the bell is either faulty or not connected	Check bell/siren wiring. If siren is not used, select the “No Bell/L. speaker” option from the ProSYS menu (see Installer Programming Menu on page 12).
Low Battery Trouble	No battery or battery is faulty, or needs recharging	Check battery voltage; replace if necessary or wait until battery is recharged.
PS/UO LED Flashing	Communication problem	1. Check relevant (PS or UO) dipswitch for correct ID settings and communication enabling. 2. Verify appropriate distance of wiring (refer to on page 18). 3. Perform Bus test from the ProSYS menu.
OC LED Flashing	Indicates a potential overload	Disconnect one or more accessories from the AUX. or siren output. Use the **ProSYS** diagnostics to check system load values (see User Programming Menu on page 13).
No Output Power from SMPS	Faulty SMPS	View PS troubles using the **ProSYS** LCD keypad. Check system for shorts. Perform restore to the SMPS (see User Programming Menu on page 13).
System does not function	PS/UO Dipswitch ID has been changed	Reset the SMPS (see User Programming Menu on page 13), disconnect battery and mains wires, wait for few seconds and reconnect the battery and mains wires.

Trouble	Probable Meaning / Cause	Response
UO Relays do not operate correctly	Incorrect UO programming	Using the **ProSYS** menu, verify that the UO functions are appropriately programmed
Bus Test less than 98%	Communication with PS or UO is not stable	The distance between ProSYS and SMPS is too long; verify appropriate distance and gauge of wiring (refer to Table 1: Wire Gauge).

Post Installation Tests

Upon installation completion, verify that the SMPS is functioning by conducting the “Verify Modules” and Bus Communication tests, from the ProSYS menu.

Technical Specifications

General

- Efficiency: 93% @ 1A load, 85 % Min @ 3A full load
- SMPS card dimensions (HxWxD): 90mm x110mm
- Weight: 0.14Kg
- Main Panel Connection: RS485, 3 Wire Bus, up to 300m from Main panel.

Input

- Power: 16.5VAC @ 50VA (via 230VAC/16.5VAC/50Hz transformer).
- Rechargeable Standby Battery: 12V Up To 21 Amp-Hours (AH)

Output

- Auxiliary output: 3A @13VDC
- Bell/Siren output: 1.7A @13VDC
- Overload Protection: Automatic Electronic Protection

Utility Output

- 12VDC @ 3A max Dry Contact Relays

Environmental

- Operating temperature: 0°-55°C

About Wires

Appropriate use of wires and cables is necessary for the successful installation and operation of the SMPS module. It is important to select wire of the correct thickness to minimize power loss and ensure reliable operation. Take into account both the current requirements and the wiring distances involved.

Table 1: Desired Wire Gauge AWG

	32 ($0.031mm^2$)		30 ($0.049mm^2$)		28 ($0.08\ mm^2$)		26 ($0.13\ mm^2$)		24 ($0.2\ mm^2$)	
	Max Run		Max Run		Max Run		Max Run		Max Run	
Amp	**Met.**	**Feet**	**Met**	**Feet**	**Met.**	**Feet**	**Met.**	**Feet**	**Met.**	**Feet**
0.2	8.2	27.0	30	42.1	19.4	63.6	32.8	108	51.4	169
04	4.1	13.5	12.8	21.0	9.7	31.8	16.4	53.9	25.7	84.4
06	2.7	9.0	6.4	14.0	6.5	21.2	10.9	35.9	17.1	56.2
08	2.1	6.7	4.3	10.5	4.8	15.9	8.2	26.9	12.9	42.2
1	1.6	5.4	3.2	8.4	3.9	12.7	6.6	21.6	10.3	33.7
1.2	1.4	4.5	2.6	7.0	3.2	10.6	5.5	18.0	8.6	28.1
1.4	1.2	3.9	2.1	6.0	2.8	9.1	4.7	15.4	7.3	24.1
1.6	1.0	3.4	1.8	5.3	2.4	8.0	4.1	13.5	6.4	21.1
1.8	0.9	3.0	1.6	4.7	2.2	7.1	3.6	12.0	5.7	18.7
2	0.8	2.7	1.4	4.2	1.9	6.4	3.3	10.8	5.1	16.9
2.2	0.7	2.5	1.3	3.8	1.8	5.8	3.0	9.8	4.7	15.3
2.4	0.7	2.2	1.2	3.5	1.6	5.3	2.7	9.0	4.3	14.1
2.6	0.6	2.1	1.1	3.2	1.5	4.9	2.5	8.3	4.0	13.0
2.8	0.6	1.9	1.0	3.0	1.4	4.5	2.3	7.7	3.7	12.1
3.0	0.5	1.8	0.9	2.8	1.3	4.2	2.2	7.2	3.4	11.2

	2 (0.33 mm²)		0 (0.5 mm²)		8 (0.82 mm²)		6 (1.3 mm²)		4 (2 mm²)	
	Max Run		Max Run		Max Run		Max Run		Max Run	
Amp	Met.	Feet	Met.	Feet	Met.	Feet	Met.	Feet	Met.	Feet
0.2	7.0	85.6	32	33	06	74	46	,136	27	,729
04	3.5	42.8	6.0	17	03	37	73	68	64	64
06	9.0	5.2	4.0	44	8.5	25	15	79	76	76
08	1.8	1.4	3.0	08	1.4	69	7	84	32	32
1	7.4	7.1	6.4	6.6	1.1	35	9	27	05	46
1.2	4.5	7.6	2.0	2.2	4.2	12	8	89	8	88
1.4	2.4	0.8	8.9	1.9	9.4	6	0	62	5	47
1.6	0.9	5.7	6.5	4.1	5.7	4	3	42	6	16
1.8	.7	1.7	4.7	8.1	2.8	5	9	26	9	92
2	.7	8.6	3.2	3.3	0.5	7	5	14	3	73
2.2	.9	6.0	2.0	9.4	8.7	1	2	03	8	57
2.4	.3	3.8	1.0	6.1	7.1	6	9	5	4	44
2.6	.7	2.0	0.2	3.3	5.8	2	7	7	1	33
2.8	.2	0.4	.4	0.9	4.7	8	5	1	8	23
3.0	.8	9	.8	8.9	3.7	5	3	6	5	15

	.2 (3.3 mm²)		10 (5.26 mm²)		8 (8 mm²)		6 (13.6 mm²)		4 (21.73mm²)		34.65 mm2)	
	Max Run		Max Run		Max Run		Max Run		Max Run		Max Run	
Amp	Met.	Feet	Met	Feet	Met.	Feet	Met.	Feet	Met.	Feet	Met.	Feet
[redacted]	833	2,734										
[redacted]	417	1,367	662	2,171	1,023	3,355						
[redacted]	278	911	441	1,447	682	2,237	1,000	3,281				
[redacted]	208	684	331	1,086	511	1,678	750	2,461				
[redacted]	167	547	265	868	409	1,342	600	1,969	1,125	3691		
[redacted]	139	456	221	724	341	1,118	500	1,640	938	3076		
[redacted]	119	391	189	620	292	959	429	1,406	804	2636		
[redacted]	104	342	165	543	256	839	375	1,230	703	2307	,125	,691
[redacted]	93	304	147	482	227	746	333	1,094	625	2051	,000	,281
[redacted]	83	273	132	434	205	671	300	984	563	,845	900	,953
[redacted]	76	249	120	395	186	610	273	895	511	,678	818	,684
[redacted]	69	228	110	362	171	559	250	820	469	,538	750	2,461
[redacted]	64	210	102	334	157	516	231	757	433	,420	692	,271
[redacted]	60	195	95	310	146	479	214	703	402	,318	643	,109
[redacted]	56	182	88	289	136	447	200	656	375	,230	600	,969

Ordering Part Numbers

Part Number	Description
RP128EPS000A	SMPS board
RP128PSPSEUA	SMPS + transformer in a metal box
RP128PSPSUSA	SMPS in metal box without transformer

Customer Information

RTTE COMPLIANCE STATEMENT
Hereby, Rokonet Electronics Ltd, declares that this equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC

NOTES

NOTES

Rokonet Limited Warranty

Rokonet Electronics, Ltd. and its subsidiaries and affiliates ("Seller") warrants its products to be free from defects in materials and workmanship under normal use for 24 months from the date of production. Because Seller does not install or connect the product and because the product may be used in conjunction with products not manufactured by the Seller, Seller cannot guarantee the performance of the security system which uses this product. Seller's obligation and liability under this warranty is expressly limited to repairing and replacing, at Sellers option, within a reasonable time after the date of delivery, any product not meeting the specifications. Seller makes no other warranty, expressed or implied, and makes no warranty of merchantability or of fitness for any particular purpose.
In no case shall seller be liable for any consequential or incidental damages for breach of this or any other warranty, expressed or implied, or upon any other basis of liability whatsoever. Seller's obligation under this warranty shall not include any transportation charges or costs of installation or any liability for direct, indirect, or consequential damages or delay.
Seller does not represent that its product may not be compromised or circumvented; that the product will prevent any persona; injury or property loss by burglary, robbery, fire or otherwise; or that the product will in all cases provide adequate warning or protection. Buyer understands that a properly installed and maintained alarm may only reduce the risk of burglary, robbery or fire without warning, but is not insurance or a guaranty that such will not occur or that there will be no personal injury or property loss as a result. Consequently seller shall have no liability for any personal injury, property damage or loss based on a claim that the product fails to give warning. However, if seller is held liable, whether directly or indirectly, for any loss or damage arising from under this limited warranty or otherwise, regardless of cause or origin, sellers maximum liability shall not exceed the purchase price of the product, which shall be complete and exclusive remedy against seller. No employee or representative of Seller is authorized to change this warranty in any way or grant any other warranty.

Contacting Rokonet

Rokonet Electronics Ltd. is committed to customer service and product support. You can contact us through our website (www.rokonet.com) or at the following telephone and fax numbers:

USA
Tel: (305) 592-3820
Fax: (305) 592-3825

United Kingdom
Tel: +44 (1527) 576-765
Fax: +44 (1527) 576-816

Italy
Tel: +39 (02) 392-5354
Fax: +39 (02) 392-5131

Israel
Tel: +972 (3) 9637777
Fax: +972 (3) 9616584

Brazil
Tel: +55 (11) 3661-8767
Fax: +55 (11) 3661-7783

©ROKONET ELECTRONICS LTD. 07/04 5IN128EPS