Technical Documentation

Telecommunication server IP-PBX

Slican IPU-14

Release 1.0

CE

SLICAN

PRZEDSIĘBIORSTWO FAIR PLAY

SLICAN Sp. z o. o.
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„The manufacturer reserves right to modify the product without prior notice.”

Date of last modification: 20.11.2013

Contents

1 Basic parameters and features of the Slican IPU-14 telecommunication server

1.1 General

The Slican IPU-14 telecommunication server is characterized by flexible configuration possibility. It is available in small, wall-mountable version, which makes it ideal for small companies and offices.

1.2 Functional features

- Cooperation with digital system phones,
- cooperation with CTI modules package,
- open HTTP / EbdRECP / TAPI / HOTELP / XML / CTIP protocols,
- VoIP,
- remote management using a PC via LAN or Internet,
- integrated GSM gateway,
- linking through LAN,
- Embedded Call Recording,
- control of external devices,
- configuration through ConfigMAN,
- real-time monitoring using managing application,
- voice announcement (DISA/Infoline or DND message),
- subscriber services confirmed with voice messages,
- cooperation with PC applications,
- support for Slican doorphones and Slican DPH access control system,
- internal CLIP signalling andtransfer of public signals.

1.3 Terminals

- analogue ports of extension phones with pulse dialling and DTMF,
- full functionality for phones with DTMF,
- digital system phones Slican CTS (U_{p0}),
- public analogue lines (POTS), according to ASS signalling,
- ISDN 2B+D – DSS1 protocol (EURO – ISDN), MSN and DDI,
- GSM – Tri-Band 900/1800/1900MHz,,
- Links:
  - VoIP – VoIP trunk/ab port compatible with SIP (v.2.0) protcol, that logs into VoIP account, or log on to the SIP client oraz protokołem eSSL (Slican Smart Link) pozwalający zlinkować serwer IPU-14 z innymi serwerami SLICAN.
- Interfaces:
  - LAN – Ethernet 10/100 Mbps,
  - USB 2.0,
- sensor/release ports with notification
- protection of cards against overvoltage in the telecommunications network.

1.4 Line coverage

<table>
<tr><th>Type of line</th><th>Range</th></tr>
<tr><td>S-T
(point-to-point)</td><td>400m for AWG24 0,51mm cable, 120nF</td></tr>
<tr><td>POTS (ASS)</td><td>According to PTR – Provider’s Technical Requirements (TP S.A.) - the maximum loop resistance for direct current: 1800 Ω with the end-use device.</td></tr>
<tr><td>LAN</td><td>100 m – only for an unshielded twisted-pair wire, class 5 (length of cable between the devices; VoIP subscriber can be located in any area)</td></tr>
<tr><td>U_{p0}
(terminal for CTS)</td><td>
<table>
<tr><th>Cable length</th><th>CTS-102,
CTS-202</th><th>CTS-202
+
console</th><th>CTS-102
CTS-202
CTS-330
+
power supply unit</th><th>CTS-202
+
konsole
+
power supply unit</th><th>CTS-330
+
konsole
+
power supply unit</th></tr>
<tr><td>200m</td><td>√</td><td>√</td><td>√</td><td>√</td><td>√</td></tr>
<tr><td>400m</td><td>√</td><td>X</td><td>√</td><td>√</td><td>√</td></tr>
<tr><td>600m</td><td>X</td><td>-</td><td>√</td><td>√</td><td>√</td></tr>
<tr><td>800m</td><td>-</td><td>-</td><td>√</td><td>√</td><td>√</td></tr>
<tr><td>1000m</td><td>-</td><td>-</td><td>√</td><td>√</td><td>√</td></tr>
</table>
√ - correct operation
X – possible incorrect operation
(the table lists maximum range values for a AWG24 0,51mm cable (the range may vary, depending on the cable used and possible interference;).
</td></tr>
<tr><td>AB
(analogue subscriber)</td><td>about 3000m for a AWG24 0,51mm cable,</td></tr>
</table>

2 Slican IPU-14 server architecture

2.1 General

Slican IPU-14 telecommunication server is available in two basic versions:

- IPU-14.101 - 8 VoIP channels (without G.729codec); number of accounts 24xAbVoIP, 16xTrVoIP
- IPU-14.102 - 16 VoIP channels (with G.729 codec); number of accounts 64xAbVoIP, 16xTrVoIP.

Base versions are equipped with 6 analog subscriber ports and one RELEASE/SENSOR port. The unit has 4 slots that allows system expansion with additional cards. The list of available cards:

- 2AB card - two analog subscriber ports,
- 1CO1AB card - Hybrid card with one POTS trunk port and one analog subscriber,
- 1CTS card – one digital system phone port,
- 1S Card – one ISDN translation port,
- 1GSM card – one GSM translation port.

Base units are also able to record conversations, there are eight channels in each version (requires the installation of a microSD card and the insertion of appropriate license keys).

2.2 Description of front LED's

Indicator lights are placed on the lid of the server housing. The following table shows the information that can be read from the way these lights flashing.

Behavior of LEDs	***POWER*** *power supply status*	***STATUS*** *server status*	***LINES*** *public line status*	***PHONES*** *subscriber status*
blinks fast	system initialization	critical error	public line damaged	subscriber line damaged
blinks slowly	-	non-critical error	call on at least one line	At least one iphone is ringing (a call)
stays lit	normal operation	-	at least one line is busy	At least one internal line is busy (conversation or number selection)
is not lit	-	normal operation	all lines are available	all internal lines are free

2.3 Opening the IPU-14

To remove the server cover:

- gently fold down the latch on the bottom of the housing cover,
- holding the latch lifted, slightly tilt bottom of the cover,
- slide the cover in the direction shown in Figure 2, during this operation, be careful not to damage the fiber mounted in the lid.

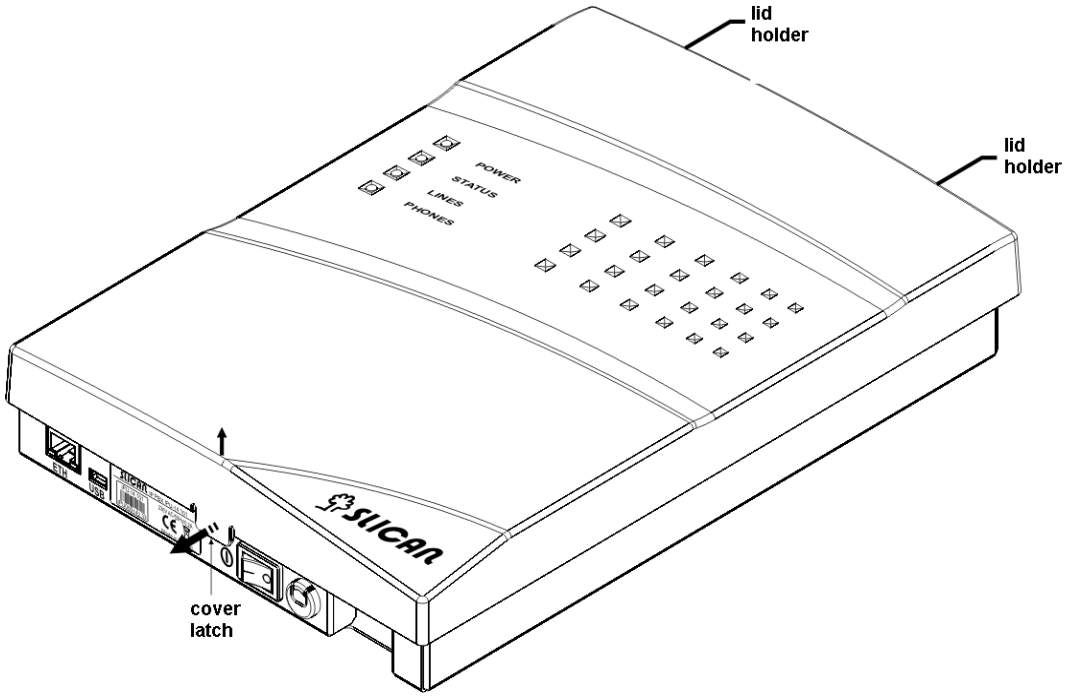


Figure nr 1. IPU-14 – opening the cover - step 1

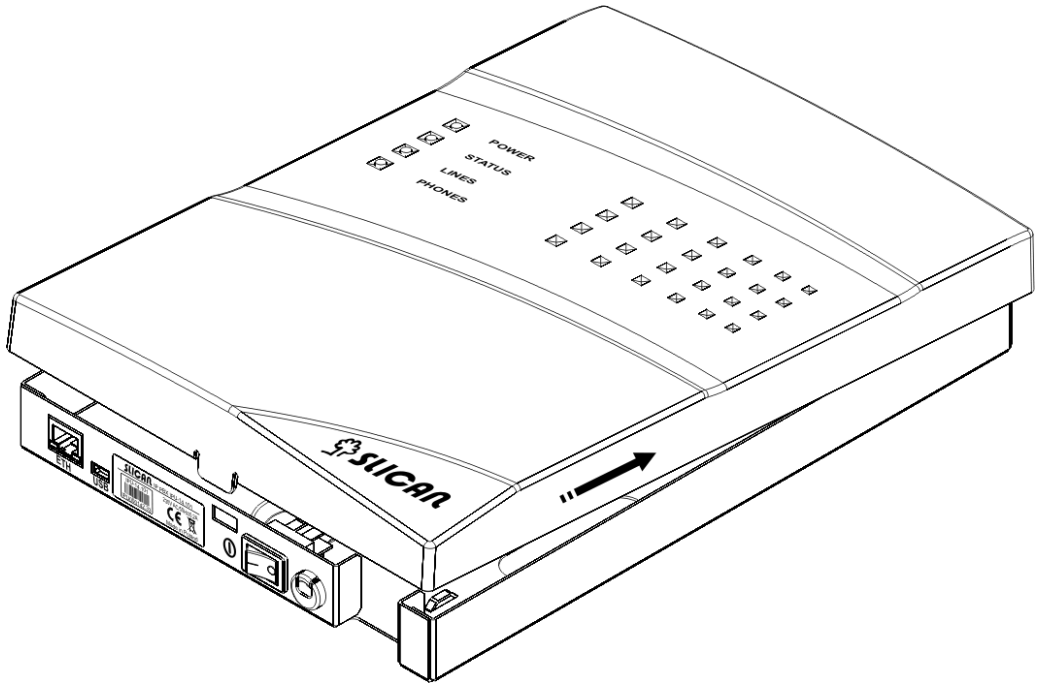


Figure nr 2. IPU-14 – opening the cover - step 2

2.4 Base elements.

Afetr removing the cover, we have access to all the server components, as shown in the figure below.

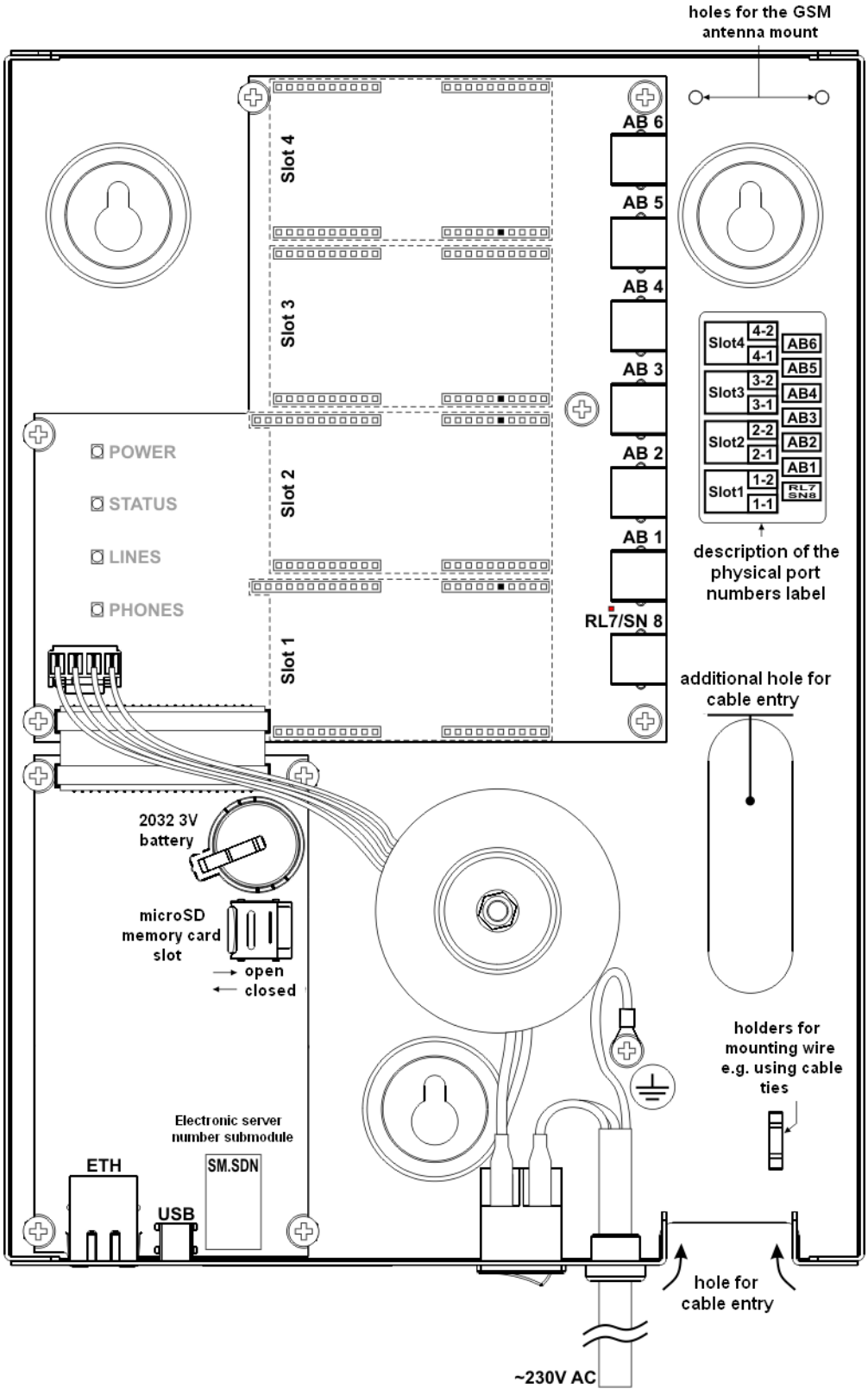


Figure nr 3. IPU-14 – location of the different components in a server

2.4.1 Main board

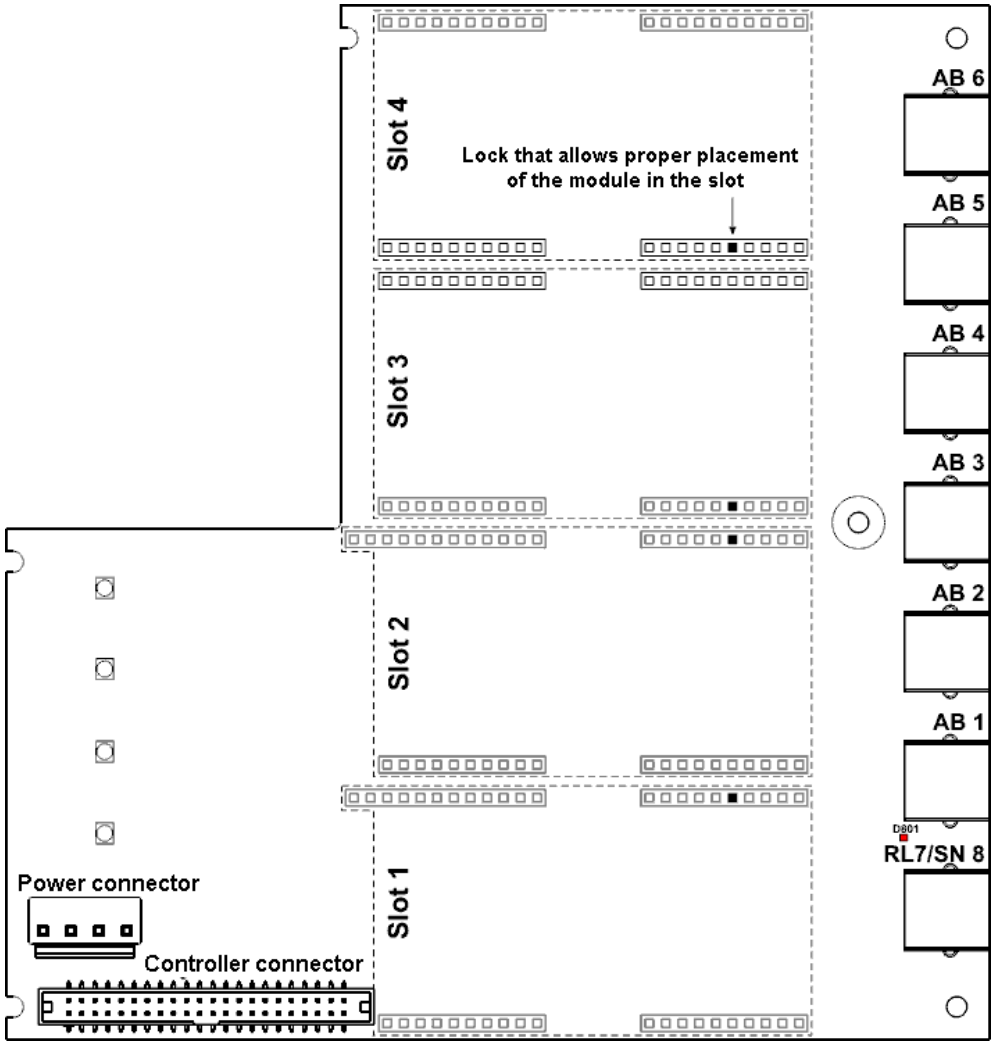
Print name: *IPU6BAZv2*

Card marking: *IPU6BAZ*

Short description of the main board:

Main board is equipped with 6 analog subscriber ports and automation and notification ports and 4 extension ports. Each slot has a connector with the 'key' that helps proper placement of cards and does not allow an incorrect card in the slot.

View of IPU6BAZ main board



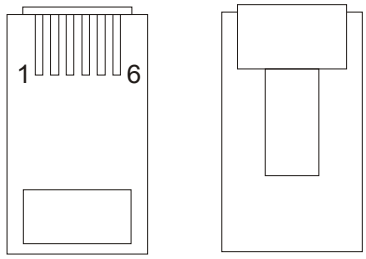
Subscriber ports terminal

Phones connected to the RJ11 socket, labeled AB1 ... AB6. Signals are on the middle pairs on the cable.

Automation and notification port terminal

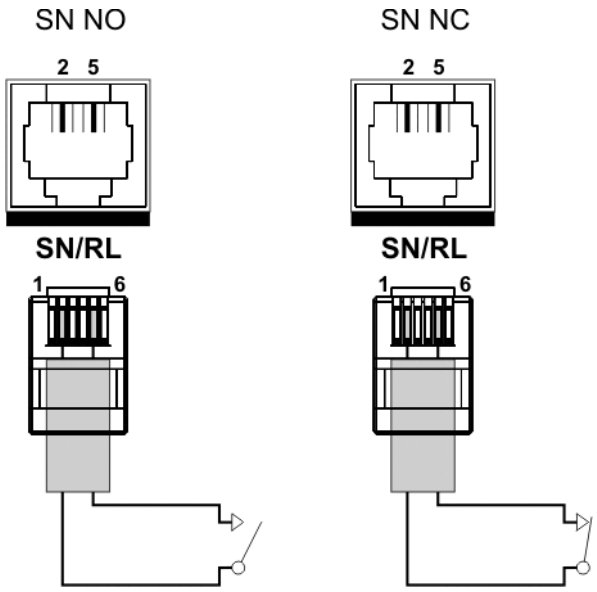
Devices connected to the RJ11 socket marked RL7/SN8. Signals are on the connector as follows:

PIN	FUNCTION
1	RL
2	SN
3	
4	
5	SN
6	RL



SNS sensor port work modes:

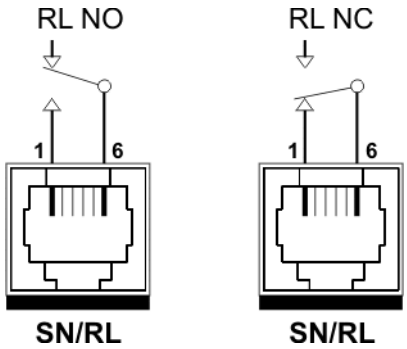
- port can be set in two modes NO (Normal Open) and NC (Normal Connected), mode to choose in the server configuration
- sensor triggering occurs by closing or opening the contact.



REL relay port work modes:

- port modes can be set to NO (Normal Open) or NC (Normal Connected) and bistable and monostable mode, mode setting is selected in the server configuration,
- relay parameters: 24V/100mA/35Ω

Caution! There cannot be a direct connection and control devices powered from 230V. If needed use a proper relay / contactor.



LED flashing (D801) means turning on the realy RL.

2.4.2 Controller module

Print name: *IPU1VPUv0*

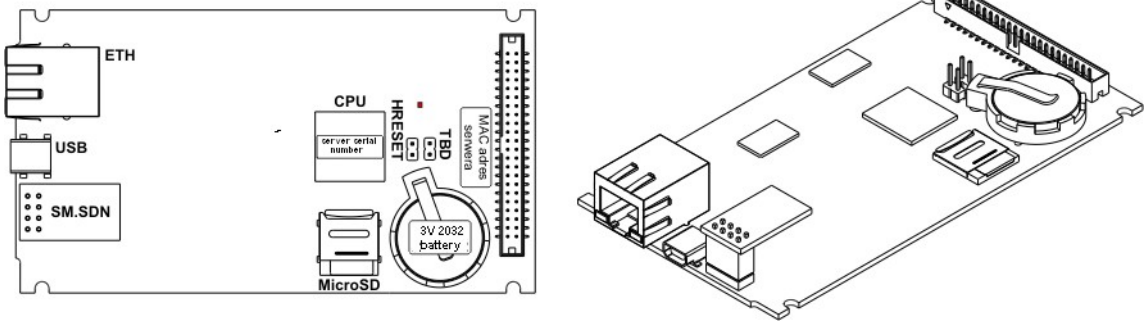
Card marking: *IPU1PU*
IPU1VPU

Short module description:

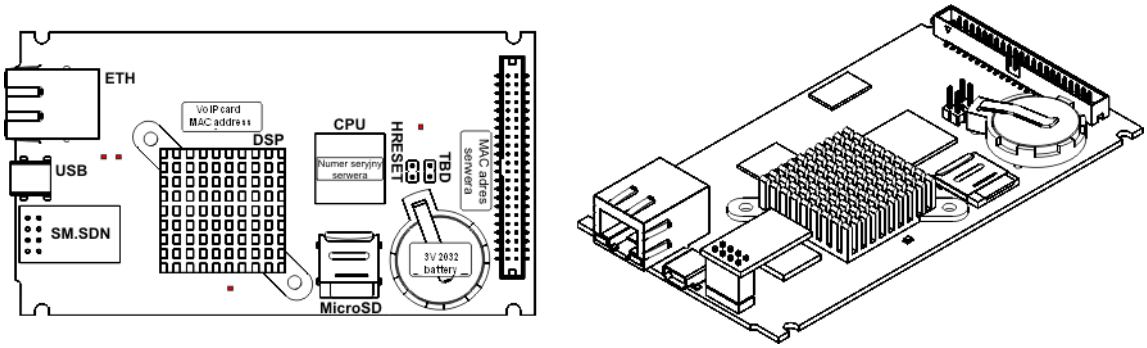
The controller module is responsible for the management of processes in the system, also supports VoIP and EbdRec, comes in two versions:

- IPU1PU – 8 VoIP channels (24 AB accounts, 16 Trunk accounts) (7.11a codec) – used in IPU-14.101
- IPU1VPU - VoIP channels 64 accounts AB, 16 Trunk accounts (729codec) – used in IPU-14.102.

View of IPU1PU controller module



View of IPU1VPU controller module



Name and the serial number label is located on the driver processor.

Description of outputs on controller module

USB – a Mini-USB port for communication with computer (e.g. ConfigMAN)
ETH – RJ-45 port for internal router (MAC address on the label)
MicroSD – socket to mount additional microSD card (storage of recorded calls).
LED description on RJ45 slot:

- **Yellow:** stays lit if the first layer of transmission is present
- **Green:** blinks if any transmission is in progress

Formatting a controller

To remove items from the database and SRAM memory:

- turn off the server
- fit the jumper to the **HRESET** pin
- turn on the server.

About 30 seconds after activation (all red LEDs on the front panel are lit), the server can be switched off, the jumper-pin removed and server switched on. Next, perform backup recovery. There is no need to upload firmware again because only the memory containing data is formatted.

Quick recovery of previous version of firmware:

To quickly return to the previous version of firmware:

- Turn off the server.
- Fit the jumper to the **TBD** pins.
- Turn on the server.

About 30 seconds after activation, an interrupted acoustic signal will be activated, the server can be switched off and the jumper-pin removed.

Backup recovery is not required with this action.

Notes on use of SD memory cards as a storage media.

- It is NOT recommended to ude microSD card with capacity of over 8GB,
- the number of channels available depends on the licence number purchased.

Battery replacement, 2032 3V.

- Note: risk of explosion if the battery is replaced with an incorrect type,
- dispose of used batteries according to the regulations in force.

3 Equipment cards

Additional equipment cards are installed in 4 slots located ona main board. GSM card can only be inserted in slots 1 and 2, while the remaining cards can be installed in any slot.The LED marked „STAT" light indicates that the card works and the server recognized it correctly. If it is not lit or blinking, accept the card in ConfigMAN.

Cards have stickers with name and serial number of the module.Labels can be placed at the top or the bottom off the card.

3.1 Analogue internal port card

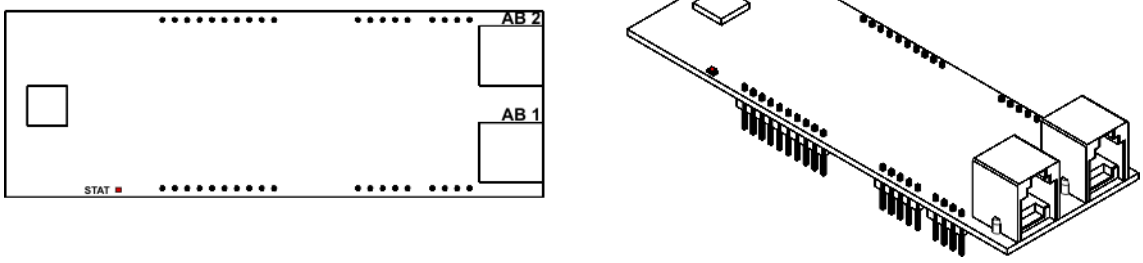
Print name: *IPU2ABv0*

Card marking: *IPU2AB*

Short description of the card:

Internal analogue ports cards support analogue phones with DTMF or pulse dialling. All cards have the CLIP function..

View of IPU2AB card



Installing the card in the server

This type of card can be installed in slots 1 to 4

Outputs

The phones are connected to RJ11 sockets marked as AB1, AB2. The signal is output to the two middle pins.

3.2 Analogue trunk ports and subscriber ports hybrid cardwewnętrznego

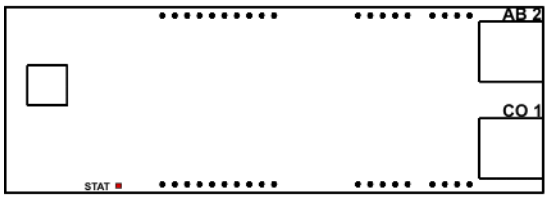
Print name: *IPU1CO1ABv1*

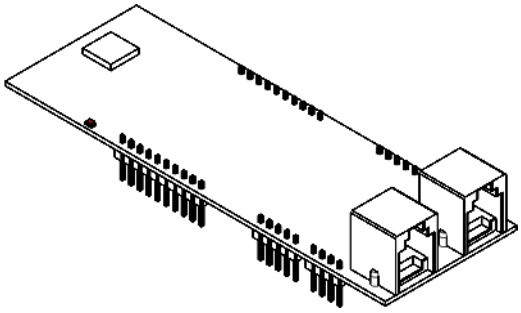
Card marking: *IPU1CO1AB*

Short description of the card:

Enables connection of 1 POTS public line and 1 analogue phone. Card has CLIP function. In case of power failure public line is connected directly to the phone.

View of IPU1CO1AB card





Installing the card in the server

This type of card can be installed in slots 1 to 4

Outputs

We connect public line to RJ11 socket marked CO 1 and phone to RJ11 socket marked AB 2. The signal is output to the two middle pins.

3.3 Digital system phone CTS card

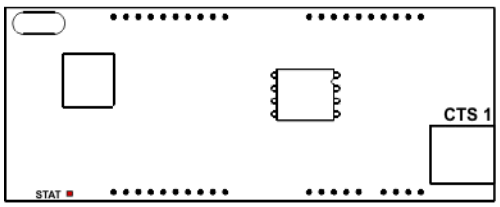
Print name: *IPU1SUv1*

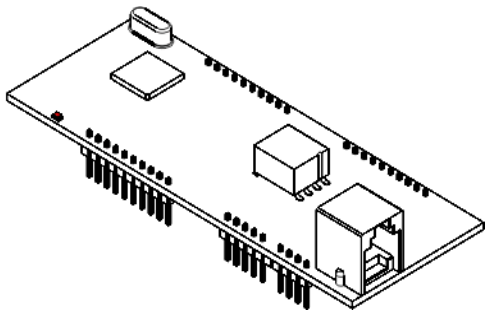
Card marking: *IPU1CTS*

Short description of the card:

The digital port cards offer support for Slican digital system phones from the CTS-102, CTS-202 and CTS-330 families. CTS-330 works only with connected external power supply.

View of IPU1CTS card





Installing the card in the server

This type of card can be installed in slots 1 to 4

Outputs

We connect CTS digital phone to RJ11 socket marked CTS 1. The signal is output to the middle pins.

3.4 ISDN-BRA digital port card

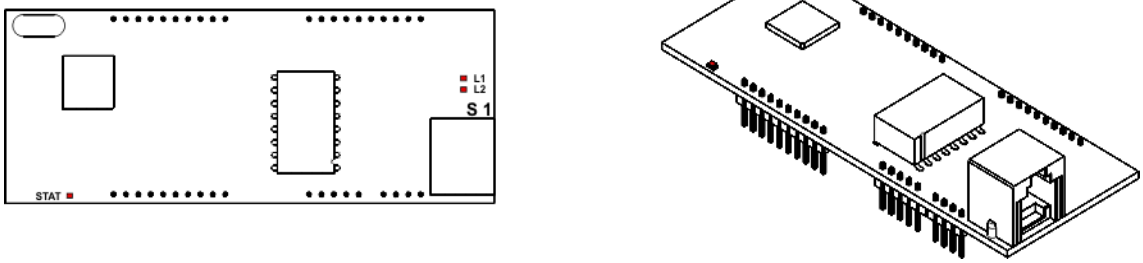
Print name: *IPU1SUv0*

Card marking: *IPU1S*

Short description of the card:

The digital port card include ISDN 2B+D port. The connector can be configured only as a translation (public line).

View of IPU1S card



Installing the card in the server

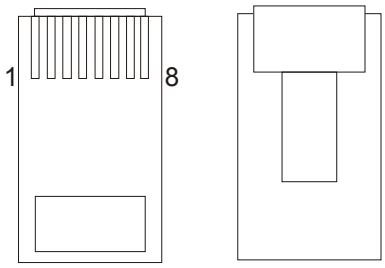
This type of card can be installed in slots 1 to 4.

LED flashing description:

- L1 – stays lit when the link is physically connected to the end of NT,
- L2 – stays lit only if any transmission is in progress,

Description of pins in the RJ45 plug in EXT mode (translation)

PIN	FUNCTION
1	
2	
3	LXA (transmitting pair)
4	LRA (receiving pair)
5	LRB (receiving pair)
6	LXB (transmitting pair)
7	
8	



3.5 GSM trunk card

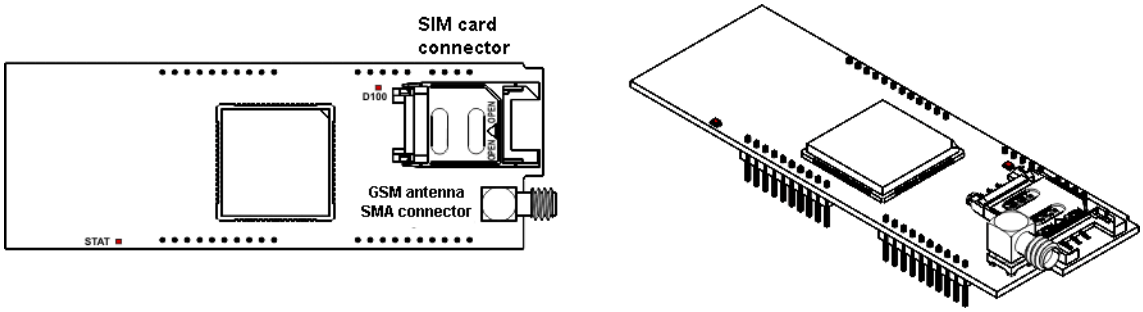
Print name: *IPU1GSMv1*

Card marking: *IPU1GSM*

Short description of the card:

GSM trunk cards are designed to support direct voice calls and SMSs to the mobile communication network. To enable their operation, external antennas and SIM are needed.

View of IPU1GSM card



Installing the card in the server:

This type of card can be installed only in slot 1 and 2, maximum 2 pieces. To insert the SIM card into the connector do as follows:

- open the flap, by shifting it as described, put the SIM card into the connector
- close and latch the flap by shifting it the opposite direction

LED (D100) signalling description:

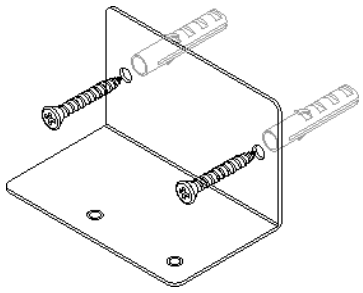
- if it flashes every 0.5 seconds - translation is not logged into the GSM
- if it flashes every 1 second - translation is logged on to the GSM

External aerial for GSM cards (available sepperately)

Use aerial to ensure correct operation of GSM cards. We offer aerials with 3m cable and SMA plug. The SMA type plug on the aerial cable should be installed carefully by hand, without the use of tools,

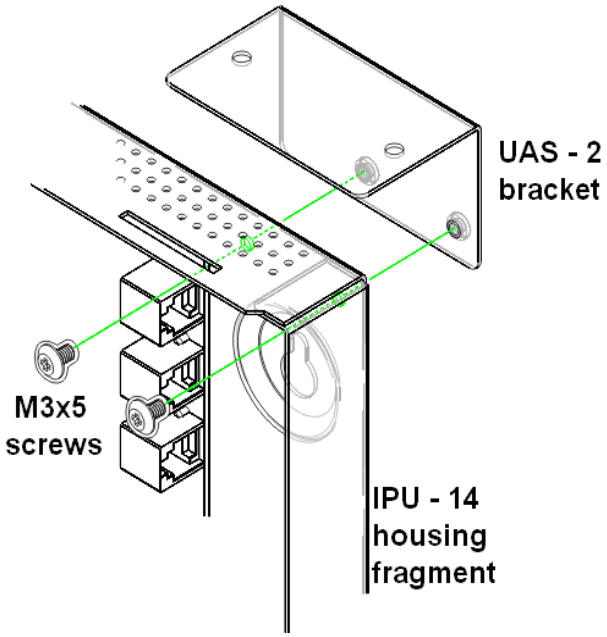
as over tightening may damage the connection. Make sure that the aerial is connected and disconnected while the server is turned off, due to an electrostatic charge. When laying out aerials pay attention not to place them in locations too close to electrical or electronic devices (installations) as they might disturb the operation of a GSM module.

UAS-2 bracket (available sepperately)



UAS-2 bracket is used to aesthetic mount the GSM antenna to a wall or the housing of IPU-14. Bracket is made from a metal (powder coated) therefore the antenna must have a magnetic mount.

Mounting UAS-2 bracket to IPU-14 housing



In the upper right corner of the housing, there are two mounting holes. The bracket is mounted, using two M3x5 screws according to the drawing..

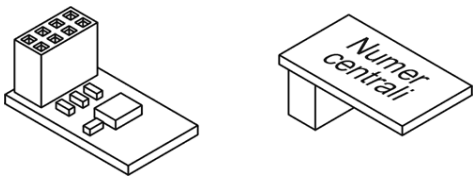
3.6 Electronic server number submodule – SM.SDN

Module name: *SM.SDN*

Short description of the card:

The electronic server number submodule is a physical assembly whose memory contains the server's factory number. If the server number differs from the number in the submodule or if it does not have a number, the licences assigned to the server will not be active.

View of SM.SDN submodule:



Installing the submodule in the server:

The SDN submodule card is installed on the server controller card.

4 List of Slican IPU-14 server specifications

LINKS	
• VoIP	SIP, IAX,SSL, CTS IP phones
• GSM	Tri-Band 900/1800/1900MHz
• S0 (2B+D)	DSS1 protocol (EURO-ISDN)
• Up0 for CTS-102/CTS-202/CTS-330	Contacts for digital phones with the signaling system developed by Slican
• Internal analogue ports	
- line signalling	Compatible with ASS, DTMF
- CLIP signalling	Compatible with ETSI FSK V23 (ETS 300 659-1) 1300Hz +-1,5% 2100Hz +-1,5% 1200bps +-1%
- voltage and current line	32,4V; 20,7mA
- voltage and frequency of the calls	$55V_{RMS}$; 50Hz
- minimum resistance between the wires of the subscriber line or between any conductor and earth	25kΩ
• Analogue POTS ports	
- line signalling	Compatible with ASS, DTMF
- CLIP signalling	Compatible with ETSI FSK V23 (ETS 300 659-1) 1300Hz +-1,5% 2100Hz +-1,5% 1200bps +-1%
- call signal voltage	od $30V_{RMS}$ - $90V_{RMS}$
- call signal frequency	50Hz or 25Hz
- call circuit impedance	9kΩ with 50Hz or 15kΩ with 25Hz
- early recognition of the connection (tarification)	Detection of reversal loop or after time
POWER	
• Power supply	~230V ± 10%, 50Hz
• Power consumption	Max 22W
INTERFACES	
• Ethernet	Ethernet 10/100 Mbps
• USB	2.0
DIMENSIONS	
• Height / width / depth	301/210/55 mm
WEIGHT	
• Server without additional cards and packages	1,6 kg

5 Safety requirements while operating Slican IPU-14 servers

It is essential to comply with the rules governing safety and use to ensure correct operation of this device. Below are the basic elements to be taken into account by the manufacturer in the case of any complaints and claims submitted by the users.

The rules relate to the installation, location of the server and the requirements for the electrical power supply and data communication network.

5.1 Instalation and servicing

- Only authorised or qualified manufacturer's service teams are allowed to install and initialise the device.
- All the installation procedures should be performed in compliance with the assembly principles as well as any occupational health and safety regulations.
- Switch on the cover in position off disconnect voltage ~ 230V).
- It is recommended to take utmost care when replacing real time clock battery because the battery might explode under certain conditions.

- Used batteries and accumulators should be disposed by applicable organizations.

Note:
Unplug the power cable when performing activities on an open server.

5.2 Workplace Environment

- Ambient temperature in the server operation area: from +10°C to +25°C (recommended air-conditioned room 22°C),
- air humidity: 40÷70%,
- assure the necessary space for the installation of various server components and wiring.
- servers should be powered from the mains AC 230V, 50Hz.

The device may begin to malfunction, be affected by interference, or discolour if installed in places exposed to:

- Direct sunlight,
- rooms with high dust concentrations or rooms with highintensity electromagnetic fields.
- areas where the server may be exposed to the effects of chemical factor,
- frequent or strong vibrations or mechanical impacts.

5.3 Electrical requirements

- The device shall have a correct system of setting to zero the power network or must be grounded. Conduct periodic checks of the protective ground/earth,
- all devices connected to the server must have the certificates of conformity with the current standards for the European Union.

CAUTION !!!
The 230V socket, which powers the server should be equipped with a safety pin, and the effectiveness of earth-fault protection, realized in this way shall be endorsed with the appropriate protocol. Failure to do so creates the risk of electric shock!

CAUTION !!!
The server ALWAYS hve to be grounded, because of its impact on the effectiveness of the safeguards against surges coming from lines attached to the server.

6 Cerfiticate of Conformity and Correct Product Disposal

CERTIFICATE OF CONFORMITY			
Manufacturer: **SLICAN sp. z o.o.** ul. M. Konopnickiej 18 85-124 Bydgoszcz	*Type:* **Telecommunication server**	*Model:* **Slican IPU-14.101** **Slican IPU-14.102**	CE
Product description: A subscriber telecommunication server with a modular design and a capacity for up to 14 ports. Analogue general purpose phones with decadic and DTMF dialling, Slican's CTS series digital system phones and ISDN terminals (EuroISDN), VoIP terminals (SIP), server's interfaces for mobile telephony and VoIP, door phones and (through an MAB adapter) acoustic devices can be connected to the servers. The server may work with the following: public telecommunications network, using analogue lines with ASS signalling, digital ISDN lines (EuroISDN) BRA, VoIP (SIP), GSM (1800 MHz, 900 MHz).			
The product complies with Directive No. 99/5/EC R&TTE and meets the requirements specified in the harmonised standards mentioned in harmonised standards:PN-EN 60950-1:2007 + A12:2011; PN-EN 55022:2011; PN-EN 55024:2011			
Additional Information: The updated content of Certificate of Conformity is available on our web page at www.slican.pl/deklaracje/ The device also fulfils the requirements regarding the allowed levels of interference for class B devices.			
Bydgoszcz, 10-09-2013	Dyrektor ds. Rozwoju Czesław Noga CZŁONEK ZARZĄDU		

Product Disposal (old electric and electronic equipment)

If you find this symbol on the product or in relevant documents, it will mean that once the service life is over the product must not be removed in the same way as other household or industrial waste materials. Uncontrolled disposal of this product may cause harm to the natural environment or human health. Carefully separate this product from other wastes and make it recyclable in order to promote the idea of a conscious and standard policy of using resources. Further information on the place and method of safe environmental disposal of this product is available from retail dealers or local governmental agencies. Corporate users should contact the supplier and review the contracts. The product must not be mixed with other municipal waste materials.