Technical Documentation

Telecommunication server

Slican IPM-032

Issue 1.01

CE

SLICAN

PRZEDSIĘBIORSTWO
FAIR PLAY

SLICAN Sp. z o.o.
www.slican.pl
e-mail:office@slican.pl

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"The manufacturer retains the right to modify the product without prior notice".

Date of last modification:30/09/2013

Contents

1 Basic parameters and features of the Slican IPM-032 telecommunication server

1.1 General

The Slican IPM-032 telecommunication server is intended for small and medium companies. It is available as a wall-mounted (WM) version or for installation in 19" racks (2U).

1.2 Functional features

VoIP functionality available in basic configuration,
scalable, modular construction,
remote management using a PC via LAN, Internet or modem (optional),
LCR – intelligent routing of outgoing calls to optimise costs, reliability, networking,
monitoring operating parameters in real time, from inside the managing application,
dedicated digital system and VoIP system Slican phones,
option to configure system phones from inside the application managing the server,
managing the costs of calls and call tariffs by using the internal server mechanisms and an additional application – BillingMAN,
99 voice announcements (DISA/infolines or a DND message),
subscriber services confirmed with voice messages,
operates with PC applications.

1.3 Support and terminals

analogue ports of extension phones with pulse dialling and DTMF,
full functionality for phones with DTMF,
internal CLIP signalling and transfer of public signals,
configurable ISDN ports at BRA 2B+D terminal (int./ext.),
Connectors:
- ISDN 2B+D – DSS1 protocol (EURO – ISDN), MSN and DDI
- ISDN 30B+D – DSS1 protocol (EURO – ISDN), DDI
- public analogue lines (POTS), according to ASS signalling,
- GSM – Tri-Band 900/1800/1900MHz
- VoIP – according to SIP (v.2.0), IAX (v.2.0), SSL (Slican Smart Link),
- Up0 – terminals for digital system phones,
Interfaces:
- LAN, WAN – Ethernet 10/100 Mbps,
- USB 2.0,
support of Slican doorphones and Slican DPH access control system,
power supply from alternating current network ~230V, 50Hz,
maximal power consumption 65W,
protection of cards against over voltage in the telecommunications network,

1.4 Line range

Type of line	Range
E1	1500 m with AWG-22 [1] twisted pair wire
S/T (point-to-point)	1000 m for 0.6 mm^2 cable, 120 nF
S/T (point-to-multipoint)	750 m for 0.6 mm^2 cable, 120 nF
POTS (ASS)	According to OTR – Operator's Technical Requirements (TP S.A.) – the maximum loop resistance for direct current: 1800 Ω with the end-use device (for the cable only - about 1200 Ω)
LAN/WAN	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)

U_{p0} (terminal for CTS)	Cable length	CTS102, CTS202, CTS330	CTS202 + console	CTS202 + 2x console	CTS202 or CTS330 + power supply unit	CTS202 + console + power supply unit	CTS202 + 2x console + power supply unit
	200m	√	√	√	√	√	√
	400m	√		X	√	√	√
	600m		X	X	√	√	√
	800m		X	X	√	√	√
	1000m		X	X	√	√	√

√ - correct operation
  – correct operation, except Hands Free mode
X – incorrect operation possible
(the table lists maximum coverage values for the an 0.6 mm^2 cable. The coverage may vary, depending on the cable used and possible interference; in the case of an AWG-26[1] twisted pair wire, the maximum range for a phone with a power supply unit is up to 1300 m. The table above applies to maximum coverages for connecting two consoles and rules for connecting additional consoles – for more than two see the next chapter).

AB (analogue subscriber)	about 4000 m for 0.5 mm cable

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1 AWG – American Wire Gauge
   AWG-22 – twisted-pair wire, wire outer diameter 0.64516 mm, 55 Ω/km
   AWG-26 – twisted-pair wire, wire outer diameter 0.40368 mm, 143 Ω/km

2   Slican IPM-032 server architecture

2.1 General

Slican IPM-032 telecommunication server with a single processing unit. Three controller versions are available:

> IPM1APU – Alone Processor Unit,
> IPM1LPU – LowCost Processor Unit, i.e. 4 VoIP channels, no support for batteries, no cards
> IPM1E1, IPM32VoIP and submodules SM.DSP-2V as well as SM.DSP-AM,
> IPM1DPU[2] – Distant Processing Unit;

2.2 Marking of servers and shelves of IPM-032 system

IPM-032 server has a modular construction. Different versions available within the basic version. All versions include:

> housing (two models)
> main board (two models)
> power (two models)
> controller (three models)

The index of the specific product is made up of the of the variants listed above:

$$IPM\text{-}032.ab.c$$

where:
> IPM-032 – product family;
> a – single letter:
> > A – (Alone) single unit server;
> > L – (LowCost) single unit server with limited capability;
> b – number of slots x maximum number of ports:
> > 6x4 – six slots with 4 ports each (max. capacity 6*4 = 24);
> > 8x4 – eight slots with 4 ports each (max. capacity 8*4 = 32);
> c – type of housing (installation):
> > WM – wall-mounted housing;
> > 2U – cabinet or euro rack mounted (19");

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2   planned

2.2.1   List of servers and processing units of IPM-032 system

The combination of the variants listed above gives:

IPM-032.A8x4.2U - "Alone" server, up to 32 ports, 2U-19" housing. Controller IPM1APU, power pack MPS-36-65, power module IPM1PS, base board 8 slots IPM8BAZ.

IPM-032.A6x4.WM - "Alone" server, up to 24 ports, wall mounted housing. Controller IPM1APU, power pack MPS-36-65, power module IPM1PS, base board 6 slots IPM6BAZ.

IPM-032.L8x4.2U - "LowCost" server, up to 32 ports, housing 2U-19". Controller IPM1LPU, power pack MPS-36-45, power module IPM1LPS, base board 8 slots IPM8BAZ.

IPM-032.L6x4.WM - "LowCost" server, up to 24 ports, wall mounted housing. Controller IPM1LPU, power pack MPS-36-45, power module IPM1LPS, base board 6 slots IPM6BAZ.

2.3 Marking of terminals (port outputs)

The physical server terminal number has the following format:

$$X-Y-Z$$

where:

X – no. of server processing unit: 1,

Y – slot number: 1...6 (for WM), 1...8 (for 2U)

Z – port number of the port card: 1...4.

Slot number *Shelf number*	*1*	*2*	*3*	*...*	*6*	*7*	*8*
1 (shelf)	1-1-Z	1-2-Z	1-3-Z	...	1-6-Z	1-7-Z	1-8-Z

Table 1.: Terminal numbering in servers IPM-032

3 Slican IPM-032 server base elements

3.1 Version 2U

- installation method – installation in 19" cabinets.
- access to extension cards – after opening a drawer and removing cover
- dimensions – 2U (width 483 mm, height 91 mm, depth 310 mm).
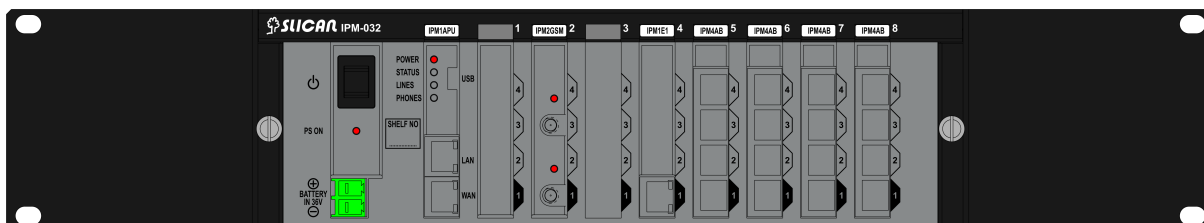
Figure 3 1: IPM-032.A8x4.2U – front view of housing partially populated with cards

- There is a "Shelf NO" field on the front panel located between the power pack and controller module for writing the number of the shelf
- Slot numbers are placed on the front panel, next to the card type, to facilitate navigation between socket numbers.
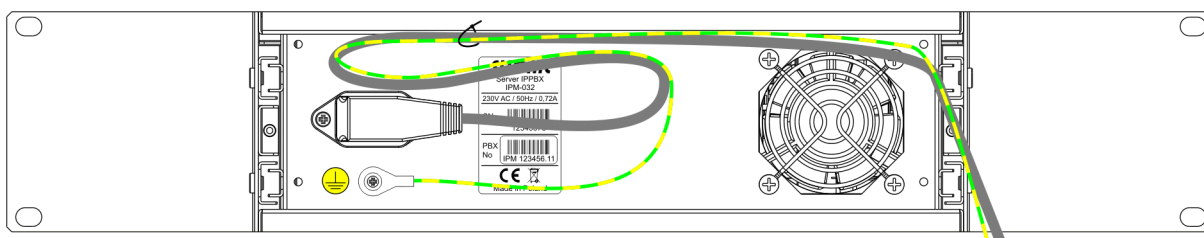
Figure 3 2: IPM-032.2U – back of the housing

The back of the housing includes power socket, ground terminal, ventilation openings and a nameplate.
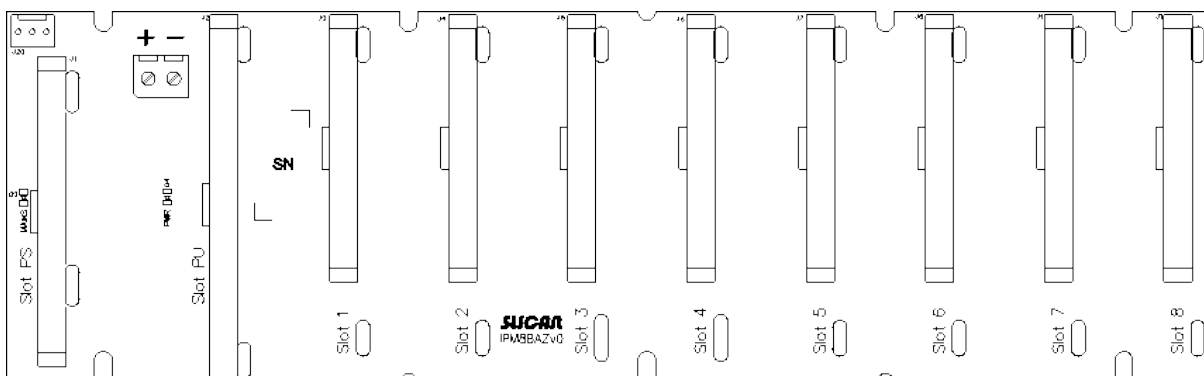
Figure 3 3: IPM-032.2U - base plate

The following slots and outputs can be found on the base plate, from the left:
- PS slot – for installing a shelf power supply card
- PU slot – for installing the controller

- slots from 1 to 8 – for installing expansion cards; **only slots 3 and 4** support IPL1E1 or IPL32VoIP cards.
- FAN socket – for connecting a shelf fan
- (+ / −) – for installing a shelf power supply unit
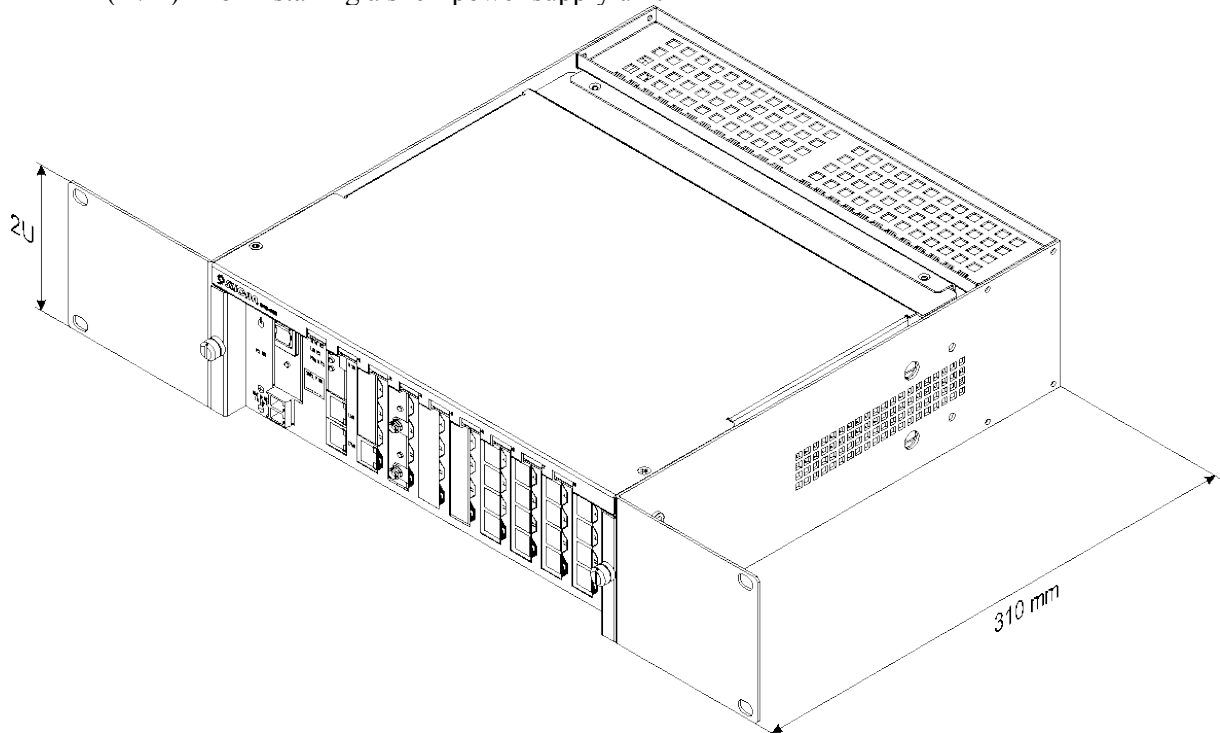
Figure 3 4: IPM-032.A8x4.2U – side view.

The openings in the housing increase the air circulation and lower the risk of too-high temperatures.

3.1.1 Card installation

Read the description for the card in the chapter on port modules before installing expansion cards. Install cards with **power off**, some cards should be installed in dedicated slots (controller, power supply card, E1 card,...).
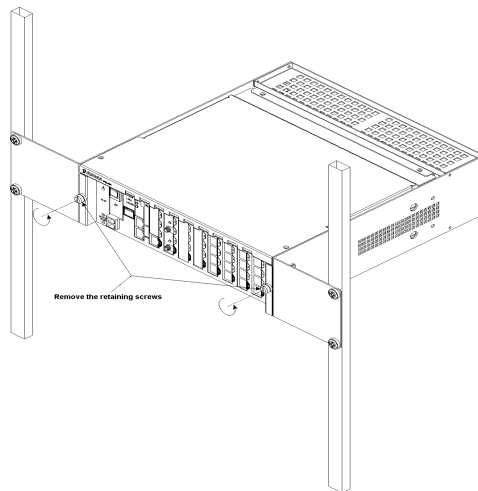
Figure 3 5: IPM-032.A8x4.2U - installation of cards - step 1

Figure   3 6:
IPM-032.A8x4.2U - installation of cards - step 2

Figure 3 7: Figure 3.6: IPM-032.A8x4.2U - installation of cards - step 3

Figure 3 8: Figure 3.6: IPM-032.A8x4.2U - installation of cards - step 4
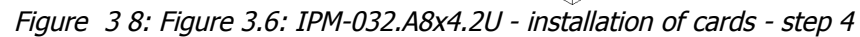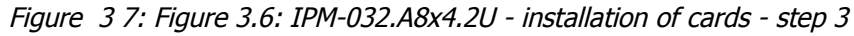
3.2 Version WM

installation method – wall mounted
access to extension cards – after opening a drawer and removing cover
dimensions – width 252 mm, height 276 mm, depth 120 mm
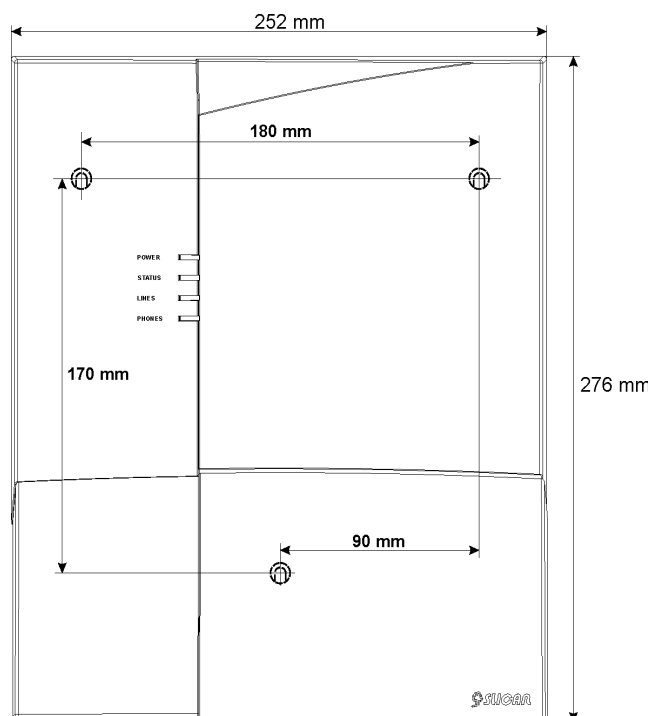
Figure 3 9: IPM-032.WM – front view of the housing

The description of individual control lights is given in the description of the controller card. The figure above also shows the location of holes for mounting on the wall.
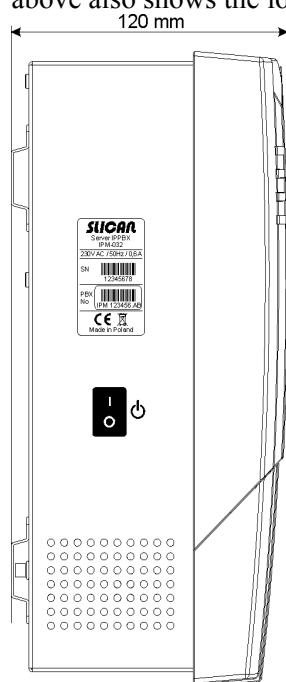
Figure 3 10: IPM-032.WM – side view of the housing

There is a switch and nameplate on the left side of the housing. Fixing handles can be seen at the back of the housing.
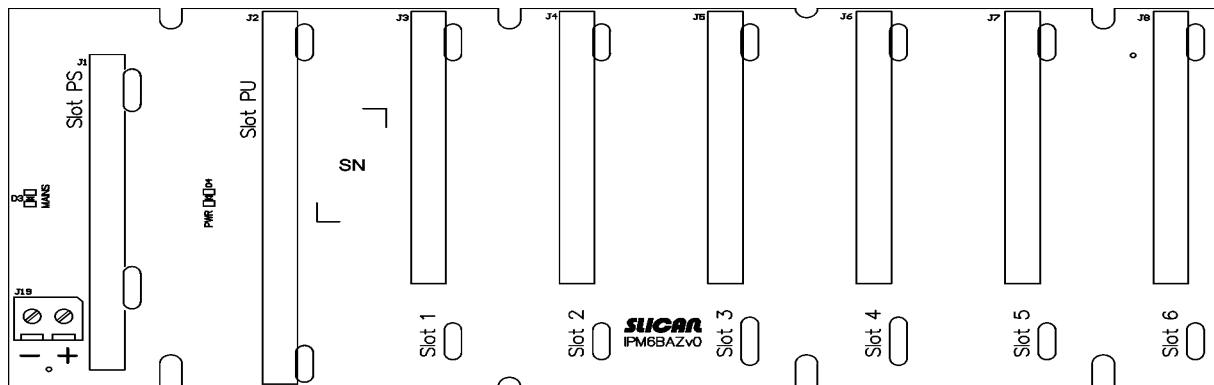
Figure 3 11: IPM-032.WM - base plate

The following slots and outputs can be found on the base plate, from the left:
- PS slot – for installing a shelf power supply card
- PU slot – for installing the controller
- slots 1 to 6 – for installing expansion cards; only slots 3 and 4 support IPL1E1 or IPL32VoIP cards.
- (+ / –) – for installing a shelf power supply unit

3.2.1 Card installation

Read the description for the card in the chapter on port modules before installing expansion cards. Install cards with **power off**, some cards should be installed in dedicated slots (controller, power supply card, E1 card,...).
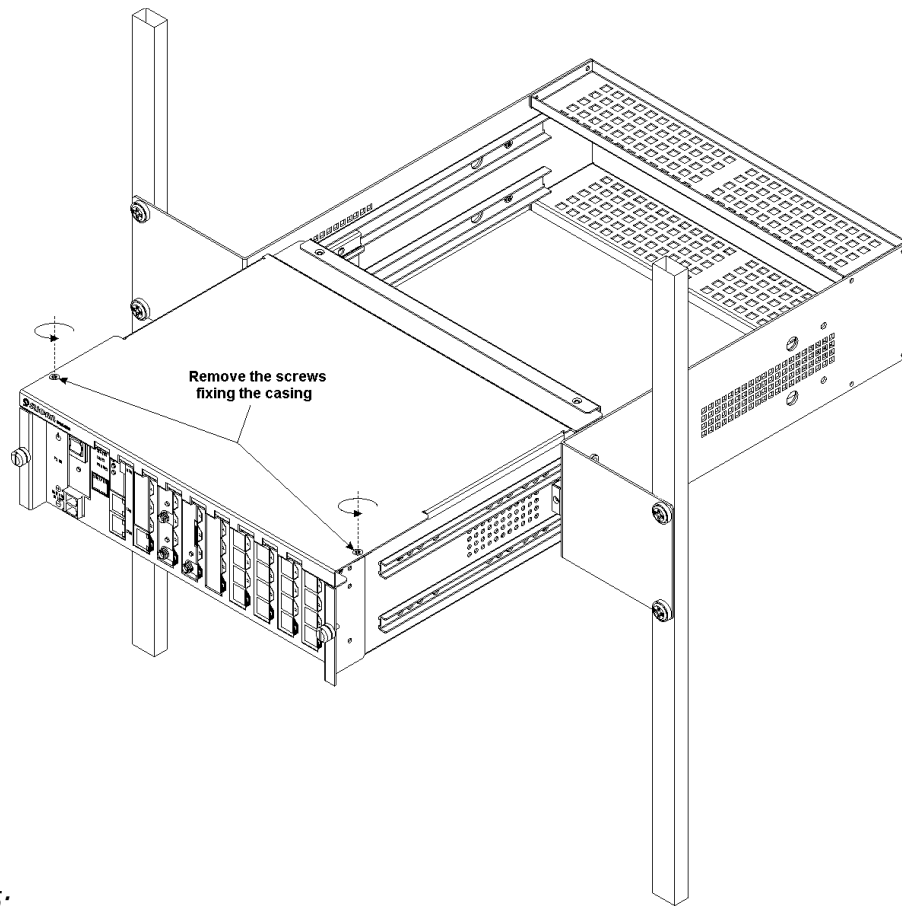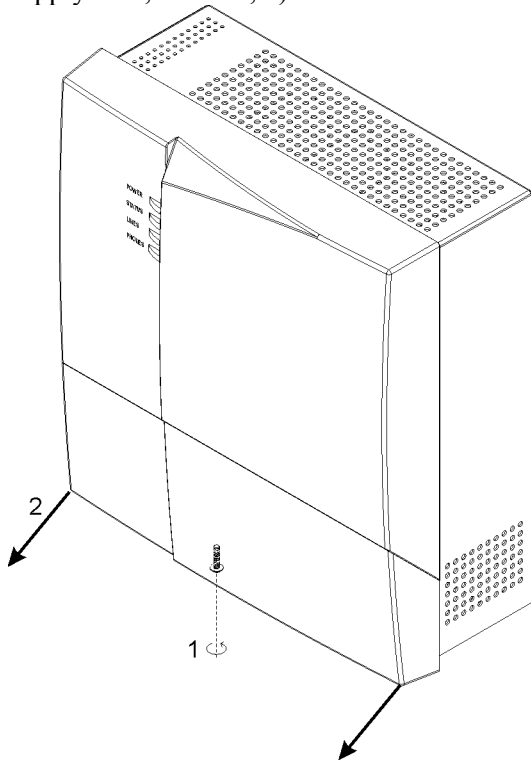

Figure 3 12: IPM-032.WM - card installation - step 1
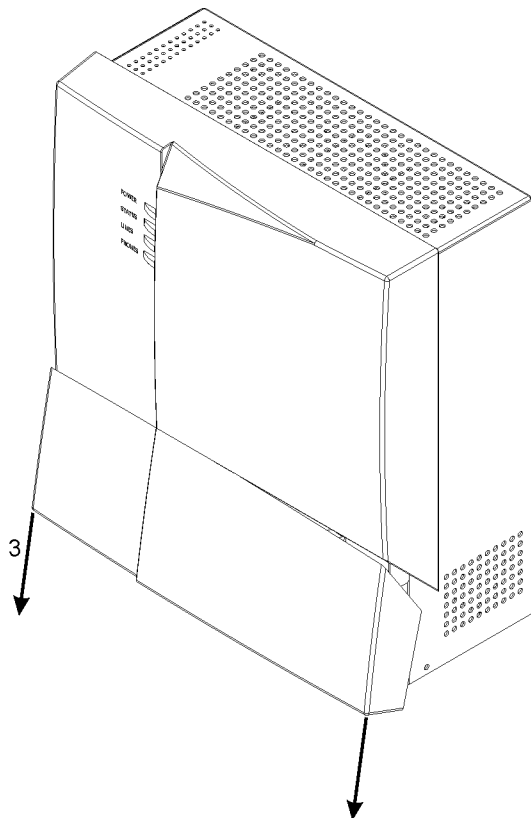
Figure 3 13: IPM-032.WM - card installation - step 2
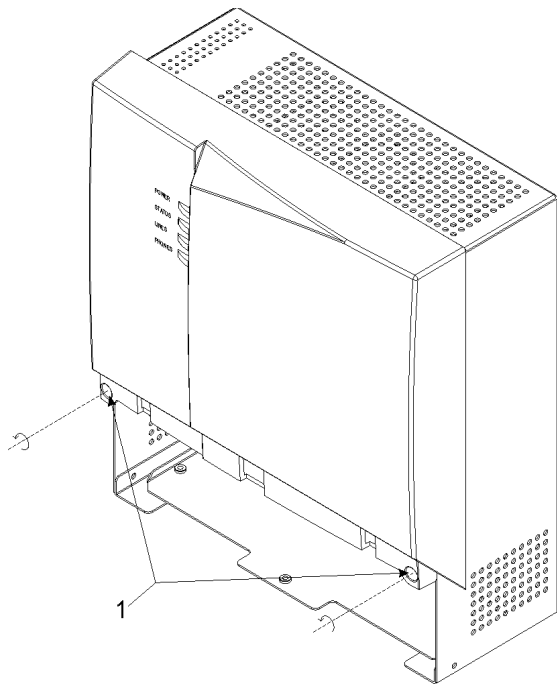
Figure 3 14: IPM-032.WM - card installation - step 3
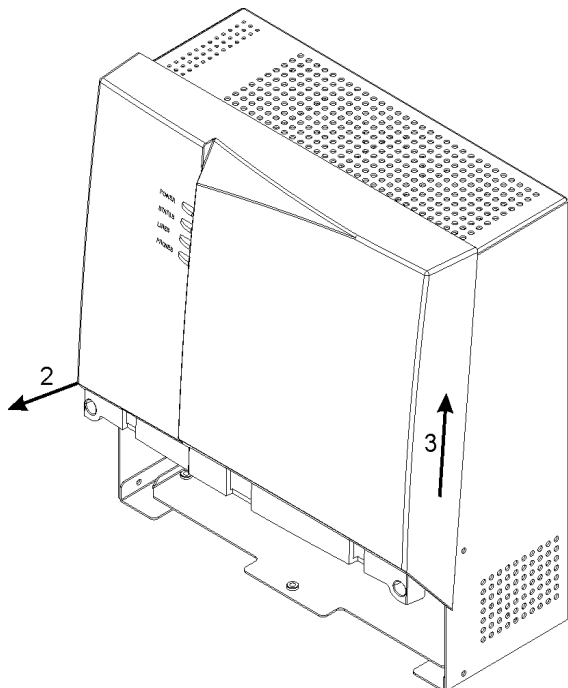
Figure 3 15: IPM-032.WM - card installation - step 4

16
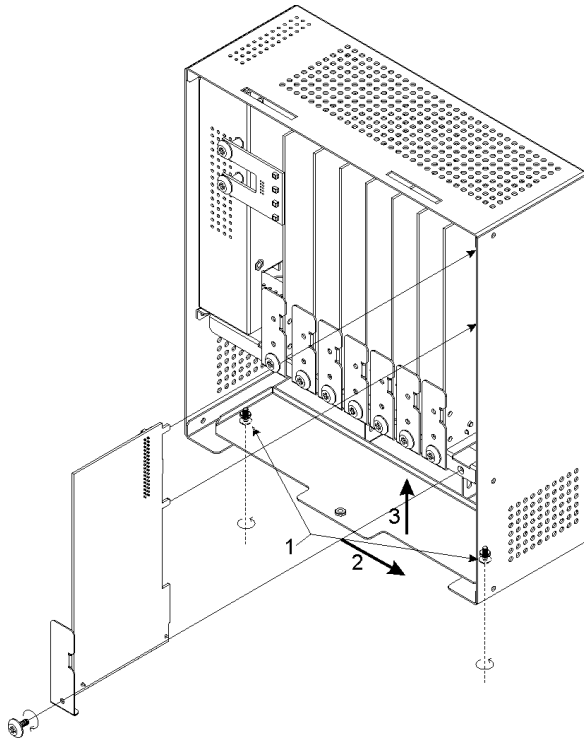
Figure 3 16: IPM-032.WM - card installation - step 5

3.3 Batteries

One type of battery capacity is available:
  · **BATB-3x12/7** - casing for 3x7 Ah batteries dedicated for single shelf servers.
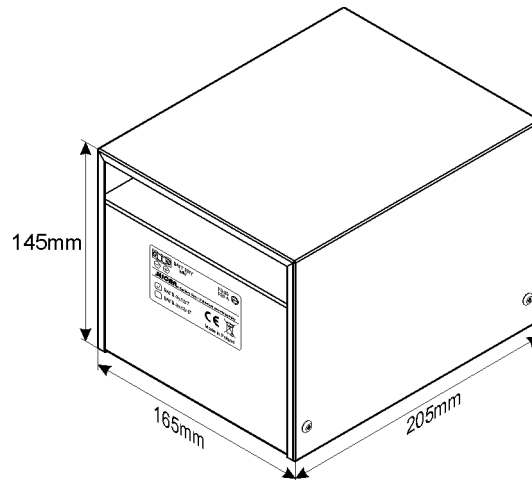
The socket for connecting the power pack is located in the recess over the nameplate Use the two-wire cable with plug (supplied with the casing) to connect the power pack.

If it is necessary to provide power to a server shelf from a stand-alone battery pack, use cable bundle **BC-ST7.M6/25** with an ST7 plug on one end and M6 cable lugs on the other end.

Place three batteries inside the casing and connect them in series. Batteries can be installed only by a person with applicable qualifications.

4   Port modules

IPM servers have a modular construction. A server extension <u>module</u> is an extension card. All cards are placed in the slots designed for them in the base board.

Name	Designation
STAND-ALONE CONTROLLER	IPM1APU
LOW-Cost stand-alone controller	IPM1LPU
Route card E1 (ISDN-PRA 30B+D)	IPM1E1
2 connector card ISDN-BRA ext./int.	IPM2ST
Card for 4 digital system phone ports	IPM4CTS
Analogue internal 4 ports card	IPM4AB
2 public line trunk card and 2 analogue internal ports	IPM2CO2AB
2 gsm port card	IPM2GSM
1 gsm port card	IPM1GSM
2 relay and 2 sensor card	IPM2RL2SN
32VoIP* module	IPM32VOIP
Shelf power supply unit card	IPM1PS
Shelf power supply card (installed only with IPM1LPU controller)	IPM1LPS
Batteries management sub module	SM.3BATC
DSP sub module – 8 channels G.729	SM.DSP-2V
Analogue modem sub module	SM.DSP-AM
ELECTRONIC SERVER NUMBER SUB MODULE	SM.SDN

NOTE!
Each time if card is replaced or mounted, make sure that the screws fixing the front panel to the server shelf are properly tightened to achieve effective protection against any over voltage that may occur in the added telecommunication lines. Disconnect the unit from the power network when performing such activities.

4.1 Max. number of equipment modules in an IPM server

Type of module	IPM-032.WM.A	IPM-032.WM.L Max. number of ports	IPM-032.2U.A Max. number of ports	IPM-032.2U.L Max. number of ports	Remark
AB	24 (6x4)	24 (6x4)	32 (8x4)	32 (8x4)	
CTS	124[3]	124[3]	124[3]	124[3]	Together with CTS.IP
ISDN BRA[4]	12 (6x2)	12 (6x2)	16 (8x2)	16 (8x2)	
POTS	12 (6x2)	12 (6x2)	16 (8x2)	16 (8x2)	
GSM	12 (6x2)	12 (6x2)	16 (8x2)	16 (8x2)	
E1	2	-	2	-	
IPM32VOIP	2	-	2	-	
IPM2RL2SN	24 (6x4)	24 (6x4)	32 (8x4)	32 (8x4)	

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3 Including max. 6 IPM4CTS (WM) cards and 8 IPM4CTS (2U) cards
4card ports can be used as external or internal ones

4.2 Controller cards

4.2.1 Controller card IPM1APU

Print name:	*IPM1PUv0a*	Short description of the card:

Short description of the card:

The controller card is the main server port. It is responsible for managing processes in the system. It also supports the VoIP (g.711a) function and EbdRec.

Card marking: *IPM1APU*

View of the card and its front panel:
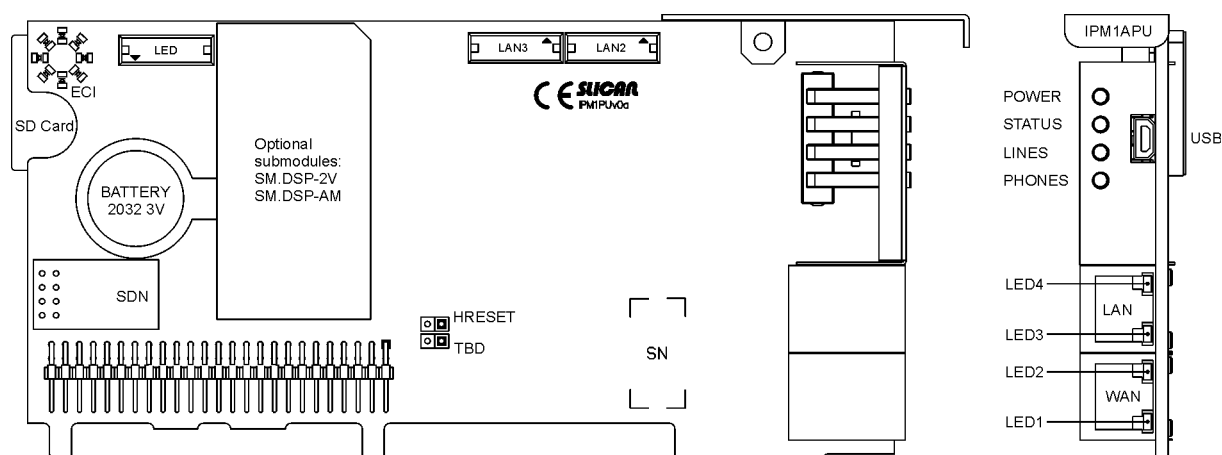
Installing the card in the server:

The controller card is placed in the base board slot marked **Slot PU**. This module is used for installing SDN sub modules, optionally: DSP-2V(codecs G.729 and G.711u), DSP-AM (analogue modem), SD card

Description of LEDs on the front panel (applies to all types of controller):

Behaviour of LEDs	*POWER* power supply status	*STATUS* server status	*LINES* public line status	*PHONES* internal line status
blinks fast	System initialisation	Critical error	Public line damaged	Internal line damaged
blinks slowly	-	Non-critical error	Call on at least one line	At least one phone is ringing (a call)
stays lit	Normal operation	-	At least one line is busy	At least one internal line is busy (call or number selection)
is not lit	-	Proper operation	All lines are free	All internal lines are free

Description of outputs on the front panel:

USB – a Mini-USB port for communication with a computer (e.g. ConfigMAN)

WAN – RJ-45 port for internal router (MAC address on the label)

LAN – RJ-45 port for internal router (MAC address on the label)

 Meaning of LEDs on RJ45 ports:
- **Yellow:** stays lit if the first layer of transmission is present.
- **Green:** blinks if a transmission is in progress.

Description of outputs on the card (PCB)
- **SD Card**: Socket for inserting an optional SD memory card.
- **LED**: LED strip connector (used only in IPM-032.WM).
- **Optional sub modules SM**: a group of connectors for installing sub modules: modem/codecs.
- **LAN2**: for installing POE cards (in preparation).
- **LAN3**: for installing VoIP cards (in preparation).

Controller format:

To remove items from the database and SRAM memory:

- Turn off the server.
- Fit the jumper to the **HRESET** pins.
- 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 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 removed.

Backup recovery is not required with this action.

Notes on use of SD memory cards as a storage media.
- It is recommended not to use SD cards with a capacity of over 8 GB,
- There are 12 channels available when using an SD card,
- The number of channels available depends on the number of licences purchased.

Battery replacement 2032 3V.
- Note: risk of explosion in case of replacing the battery with an incorrect type of battery,
- dispose of used batteries according to the regulations in force.

4.2.2   Controller card IPM1LPU - "LowCost"

Print name:	*IPM1PUv0a*	**Short description of the card:**
		The controller card is the main server port. It is responsible for managing processes in the system. It also supports the VoIP (g.711a) function and EbdRec. This version of processor unit has limited functionalities: 4 VoIP channels, no support for
Card marking:	*IPM1LPU*	IPM1E1, IPM32VoIP cards and submodules SM.DSP-2V and SM.DSP-AM.
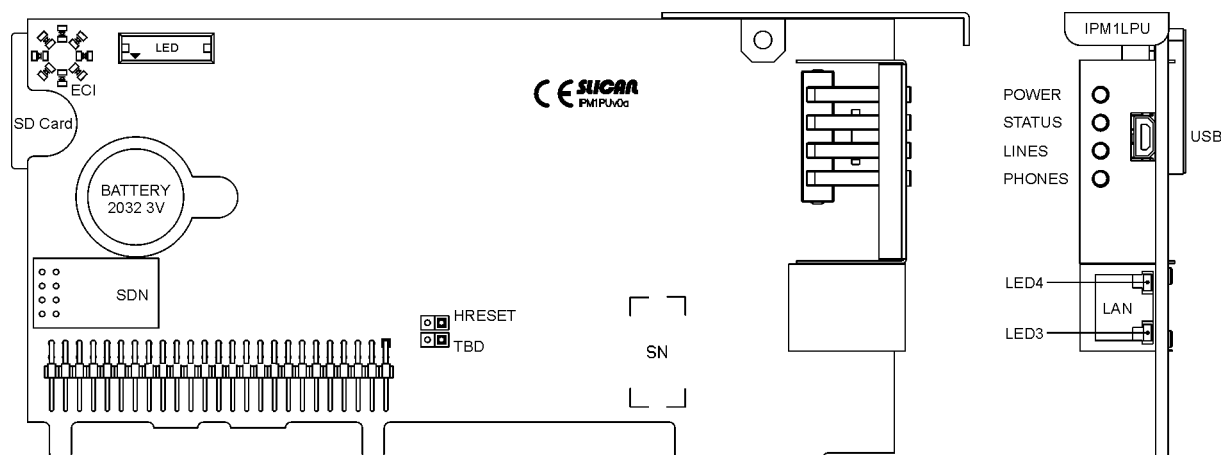
View of the card and its front panel:

Installing the card in the server:

The controller card is placed in the base board slot marked **Slot PU**. SDN sub module is also installed in this module.

Description of LEDs on the front panel

The same as with controller IPM1MPU (see page 21)

Description of outputs on the front panel:

USB – a Mini-USB port for communication with a computer (e.g. ConfigMAN)

LAN – RJ-45 port for internal router (MAC address on the label)

Meaning of LEDs on RJ45 ports (see page 21)

Description of outputs on the card (PCB)

Identical to IPM1MPU (see page 22)

Controller format:

Procedure identical to IPM1MPU (see page 22)

Quick recovery of previous version of firmware:

Procedure identical to IPM1MPU (see page 22)

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

Notes identical to IPM1MPU (see page 22)

Battery replacement 2032 3V.

Procedure identical to IP1APU (see page 22)

4.3 Submodules installed in the controller

### 4.3.1 Electronic server number sub module – SDN

Module name:	*SM.SDN*
Print name:	*SDNv0*
Types of cards:	*SDN*

Short description of the card:

The electronic server number sub-module is a physical assembly whose memory contains the server's factory number. If the server number differs from the number in the sub module, or if it does not have any number, the licences assigned to the server will not be active.
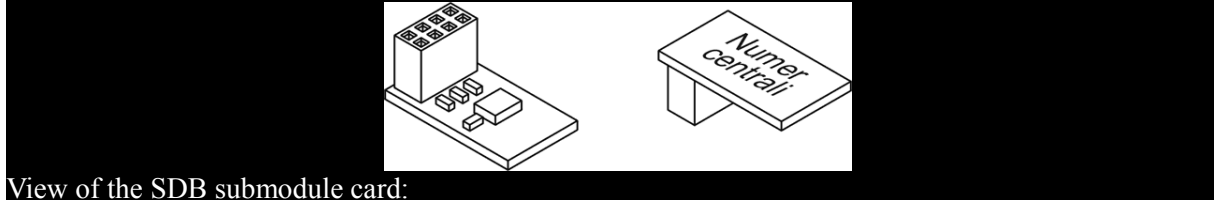
View of the SDB submodule card:

Installing the submodule in the server:

The SDN sub module card is installed on the controller card.

4.3.2 Sub module DSP-2V (VoIP codecs) does not apply to IPM1LPU

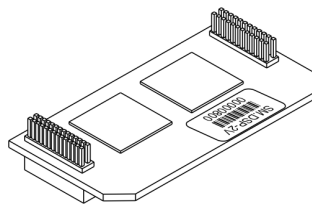|	
Submodule name:	*SM.DSP-2V*
Print name:	*DSP2Vv0*
Submodule marking:	*DSP-2V*

Short description of the submodule:

A submodule expanding the availability of audio codecs: G.729 and G.711μ.

View of DSP-2V submodule:

Installing the submodule in the server:

The DSP sub module should be installed on the main controller card in the location marked SM.DSP. If there is a SD.DSP-AM module installed in this location, remove it and reinstall on SM.DSP-2V by creating a "sandwich".

4.3.3 Sub module DSP-AM (analogue modem) does not apply to IPM1LPU

Sub module name:	*SM.DSP-AM*
Print name:	*DSPTMODv0*
Submodule marking:	*DSP-AM*

Short description of the sub module:

The sub module enables modem transmission for remote server configuration.

View of DSP-2V sub module:
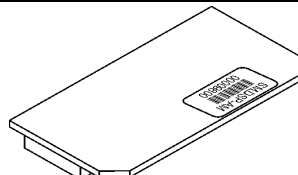
Installing the submodule in the server:

The DSP sub module should be installed on the controller card in the location marked SM.DSP. If there is a SD.DSP-2V module installed in this location, then install the SM.DSP-AM installed on it.

4.4 Route card E1 (ISDN-PRA)

Print name: *IPM1E1v0*

Card marking: *IPM1E1*

Short description of the card:
E1 route card handles communication with PSTN networks or acts as a cross link to a linked PBX via ISDN PRA (30 B+D). The port may also supply power to the HDSL modem.

View of the card and its front panel:
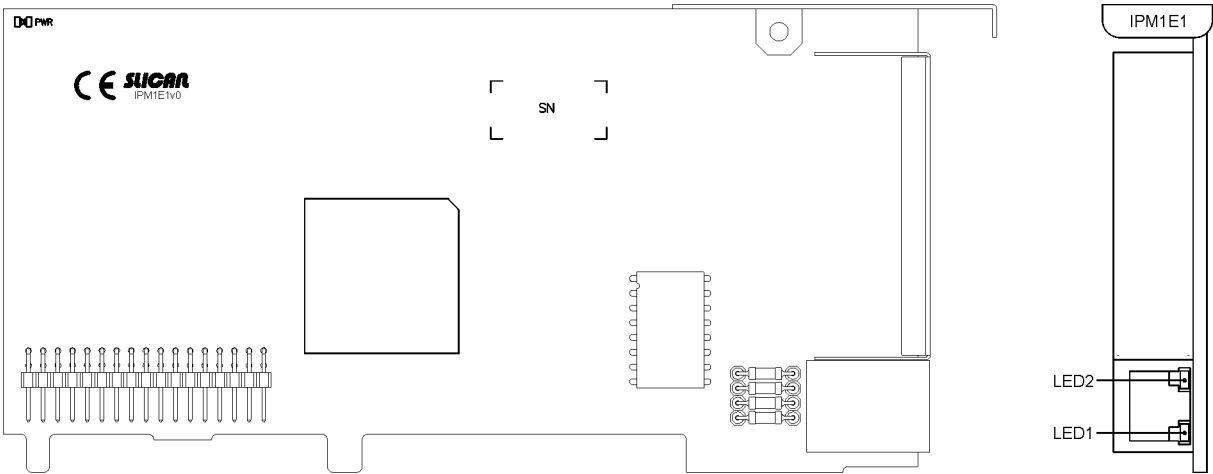
Installation of a card in the server:
E1 route cards are installed only in slots 3 or 4.

Description of LEDs on the front panel:
> **LED2** (green): stays lit if the first layer of ISDN is present.
> **LED1** (yellow): stays lit if the second layer of ISDN is present.

Description of pins in the RJ45 plug:

PIN	FUNCTION
1	RX1 (receiving pair)
2	RX2 (receiving pair)
3	GND
4	TX1 (transmitting pair)
5	TX2 (transmitting pair)
6	GND
7	GND
8	-36V to -41.5V (HDSL modem supply)
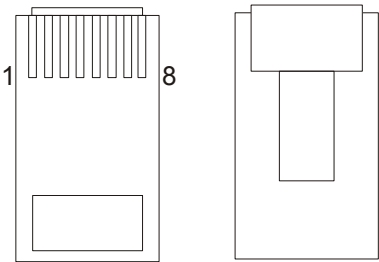
4.5 ISDN-BRA digital port card

Print name:	*IPM2STv0*	**Short description of the card:**
		The digital port cards include ISDN 2B+D ports. Each
Card marking:	*IPM2ST*	connector can be configured as a translation (public
		line) or internal subscriber terminal.

View of the card and its front panel:
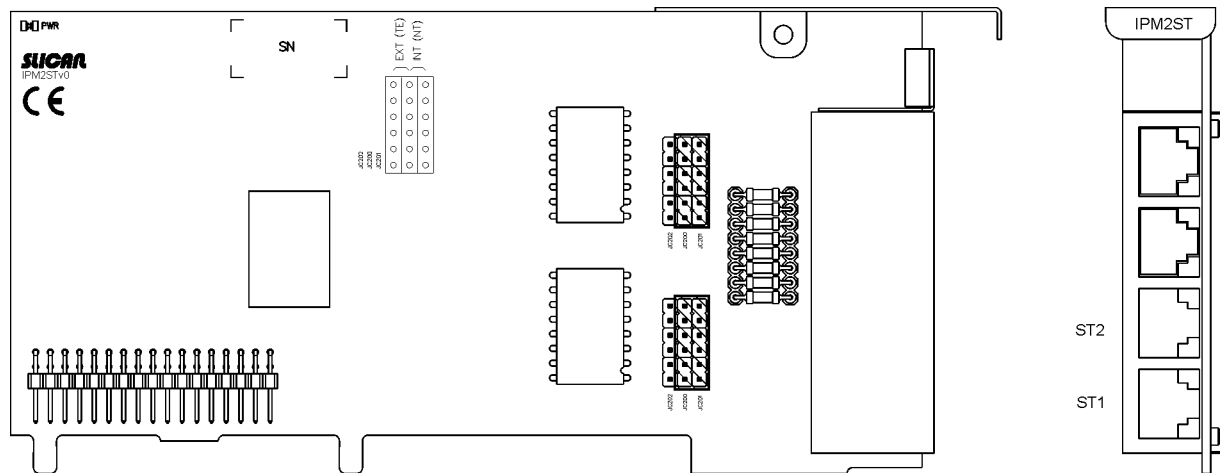
Installing the card in the server:

The ISDN-BRA digital port cards can be installed in any slot number from 1 to 8 (6 for IPM-032.WM).

ISDN terminal configuration elements:

The digital ports marked ST1 and ST2 on the card can be configured as external ports (EXT – translations) or as internal (INT – subscriber) ports. The mode of port operation is determined by the jumper settings, as described on the board. By default, the jumpers are set to EXT.

Description of pins in the RJ45 plug:

In the subscriber port INT mode

PIN	FUNCTION
1	
2	
3	LRA (receiving pair)
4	LXA (transmitting pair)
5	LXB (transmitting pair)
6	LRB (receiving pair)
7	
8	
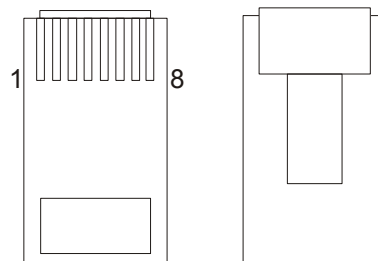
In the transmitting port EXT mode

PIN	FUNCTION
1	
2	
3	LXA (transmitting pair)
4	LRA (receiving pair)
5	LRB (receiving pair)
6	LXB (transmitting pair)
7	
8	
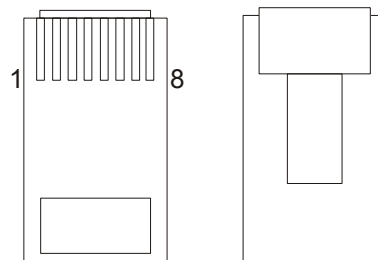
4.6 Card for digital system phones

Print name:	*IPM4CTSv0*	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.

Card marking: *IPM4CTS*

View of the card and its front panel:
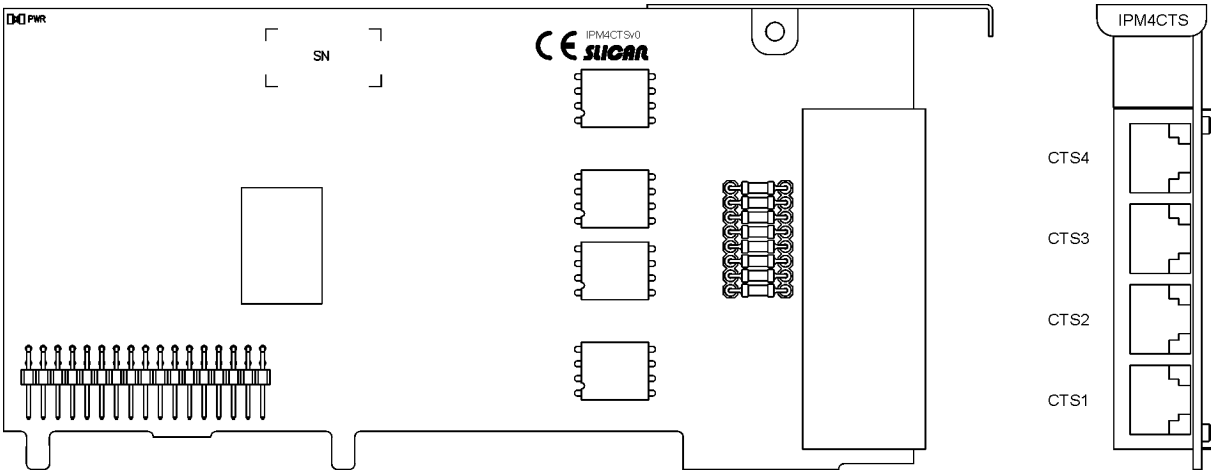
Installation of a card in the server:

This type of card can be installed in any of the slots numbered from 1 to 8 (6 for IPM-032.WM).

Outputs:

The phones are connected to RJ45 sockets marked CTS1 .. CTS4. The signal is lead out from the middle pair of the RJ45 plug, i.e. pins 4 and 5.

Also, socket CTS1 includes additional terminals output from sockets CTS2, CTS3 and CTS4. This enables the output of signals from the card (e.g. to LSA frames) using a single 4-pair wire, i.e. a twisted pair cable. The order of pairs conforms to the T568A standard, i.e.

Socket 1CTS		
Signal	Pins	Twisted pair colour
CTS1	4 and 5	blue/white-blue
CTS2	3 and 6	white-orange/orange
CTS3	1 and 2	white-green/green
CTS4	7 and 8	white-brown/brown

Description of pins in the RJ45 plug:

Port 1

PIN	FUNCTION
1	wire a, port 3
2	wire b, port 3
3	wire a, port 2
4	wire a, port 1
5	wire b, port 1
6	wire b, port 2
7	wire a, port 4
8	wire b, port 4
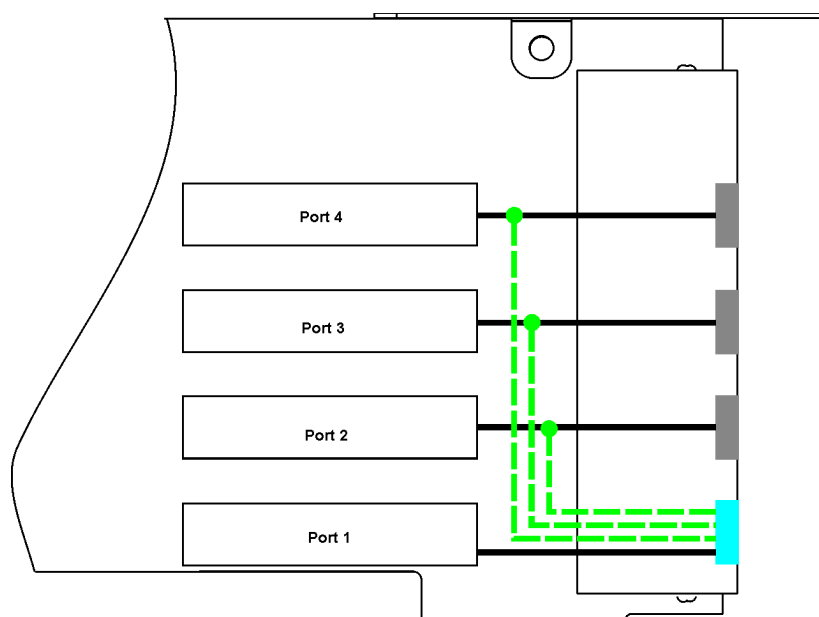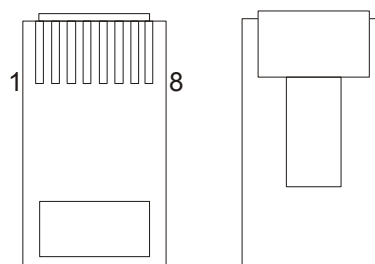
Ports 2 to 4

PIN	FUNCTION
1	
2	
3	
4	Line
5	Line
6	
7	
8	

4.7 Analogue trunk port and subscriber port hybrid card

Print name: *IPM2CO2ABv0*
Card marking: *IPM2CO2AB*

Short description of the card:
Enables connection of 2 analogue POTS trunks and 2 analogue phones.

View of the card and its front panel:

Installing the card in the server:
This type of card can be installed in any of the slots numbered from 1 to 8 (6 for IPM-032.WM).
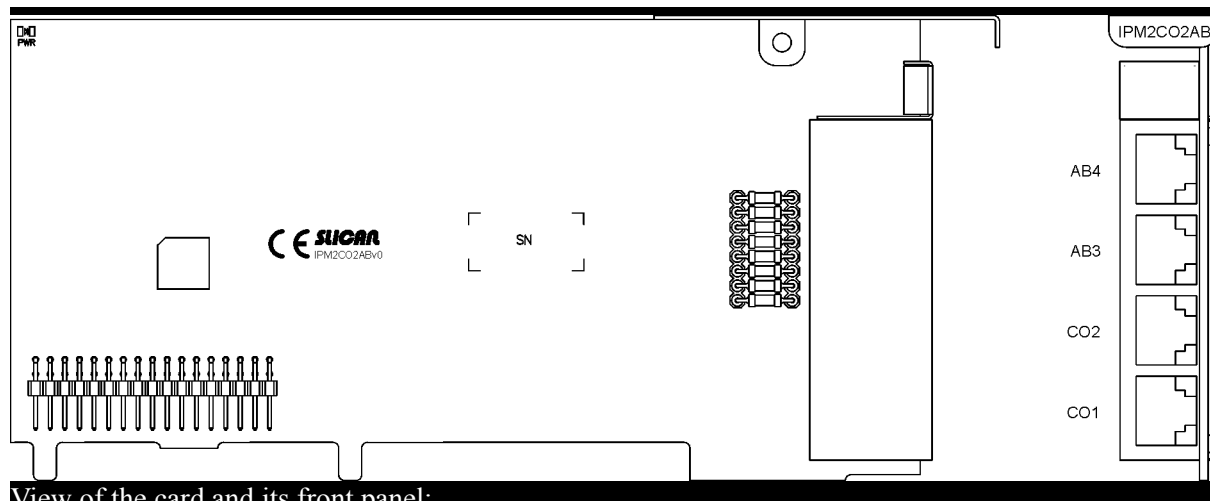
Outputs:
POTS trunks are connected to RJ45 sockets marked CO1 and CO2, analogue phones are connected to sockets AB3 and AB4. The signal is lead out to the middle pair of the RJ45 plug, i.e. pins 4 and 5.
Also, socket CO1 includes additional terminal outputs from sockets CO2, AB3 and AB4. This enables the output of signals from the card (e.g. to LSA frames) using a single 4-pair wire, i.e. a twisted pair cable. The order of pairs conforms to the T568A standard, i.e.

Socket 1CO		
Signal	Pins	Twisted pair colour
CO1	4 and 5	blue/white-blue
CO2	3 and 6	white-orange/orange
AB3	1 and 2	white-green/green
AB4	7 and 8	white-brown/brown

The card is equipped with relays for switching trunks to the selected subscribers in case of server deactivation. Switching is done in accordance with the following rules:

Public line number	The subscriber the line will be switched to
CO1	AB3
CO2	AB4

Description of pins in the RJ45 plug:

Port 1

PIN	FUNCTION
1	wire a, port 3
2	wire b, port 3
3	wire a, port 2
4	wire a, port 1
5	wire b, port 1
6	wire b, port 2
7	wire a, port 4
8	wire b, port 4
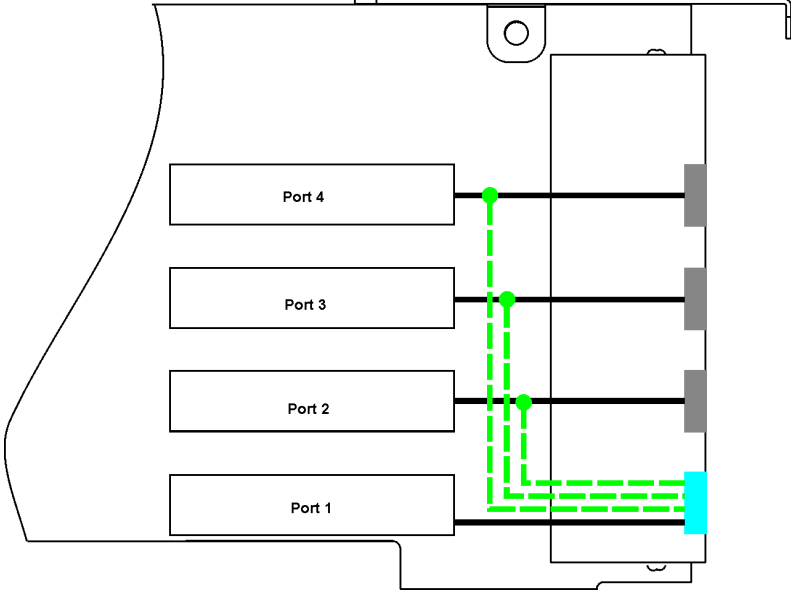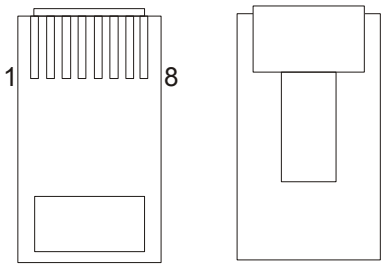
Ports 2-4

PIN	FUNCTION
1	
2	
3	
4	Line
5	Line
6	
7	
8	
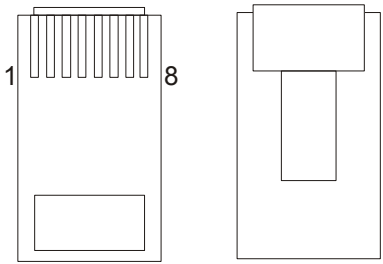
4.8 Analogue internal port card

Print name:	IPM4ABv0	Short description of the card:
Card marking:	IPM4AB	Internal analogue ports cards support analogue phones with DTMF or pulse dialling. All cards have the CLIP function.
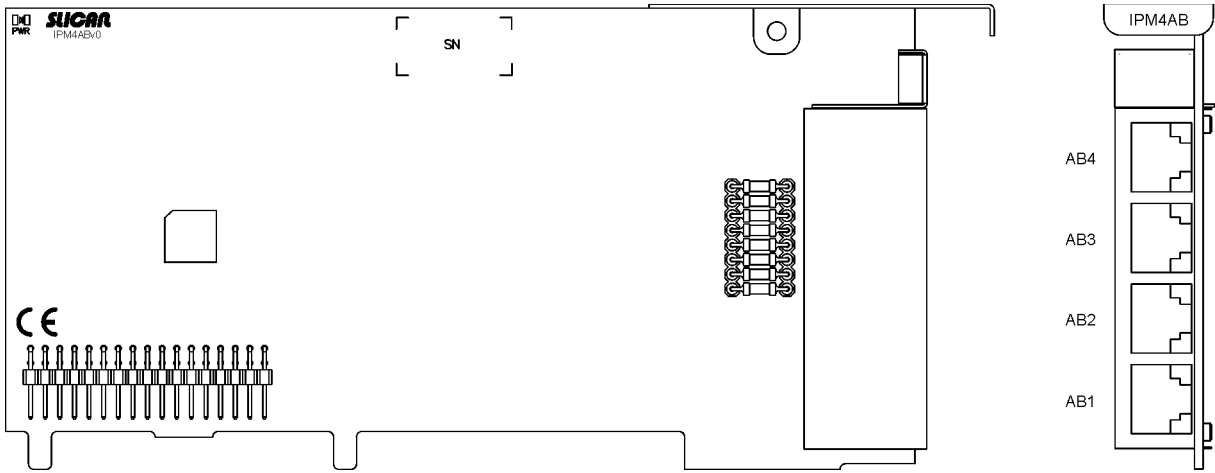
View of the card and its front panel:

Installation of a card in the server:
This type of card can be installed in any of the slots numbered from 1 to 8 (6 for IPM-032.WM).

Outputs:
The phones are connected to RJ45 sockets marked AB1 .. AB4. The signal is lead out from the middle pair of the RJ45 plug, i.e. pins 4 and 5.
Also, socket AB1 includes additional terminals output from sockets AB2, AB3 and AB4. This enables the output of signals from the card (e.g. to LSA frames) using a single 4-pair wire, i.e. a twisted pair cable. The order of pairs conforms to the T568A standard, i.e.

Socket 1AB		
Signal	Pins	Twisted pair colour
AB1	4 and 5	blue/white-blue
AB2	3 and 6	white-orange/orange
AB3	1 and 2	white-green/green
AB4	7 and 9	white-brown/brown

Description of pins in the RJ45 plug:

Port 1

PIN	FUNCTION
1	wire a, port 3
2	wire b, port 3
3	wire a, port 2
4	wire a, port 1
5	wire b, port 1
6	wire b, port 2
7	wire a, port 4
8	wire b, port 4

Ports 2-4

PIN	FUNCTION
1	
2	
3	
4	Line
5	Line
6	
7	
8	
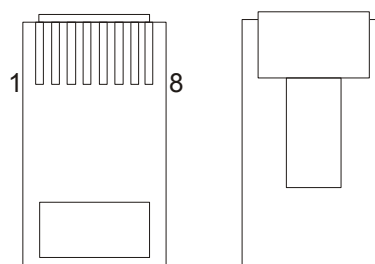
4.9 Automation and notification card

Print name: *IPM2RL2SNv0*
Card marking: *IPM2RL2SN*

Short description of the card:
These cards enable the use of a server to perform automation and notification functions.
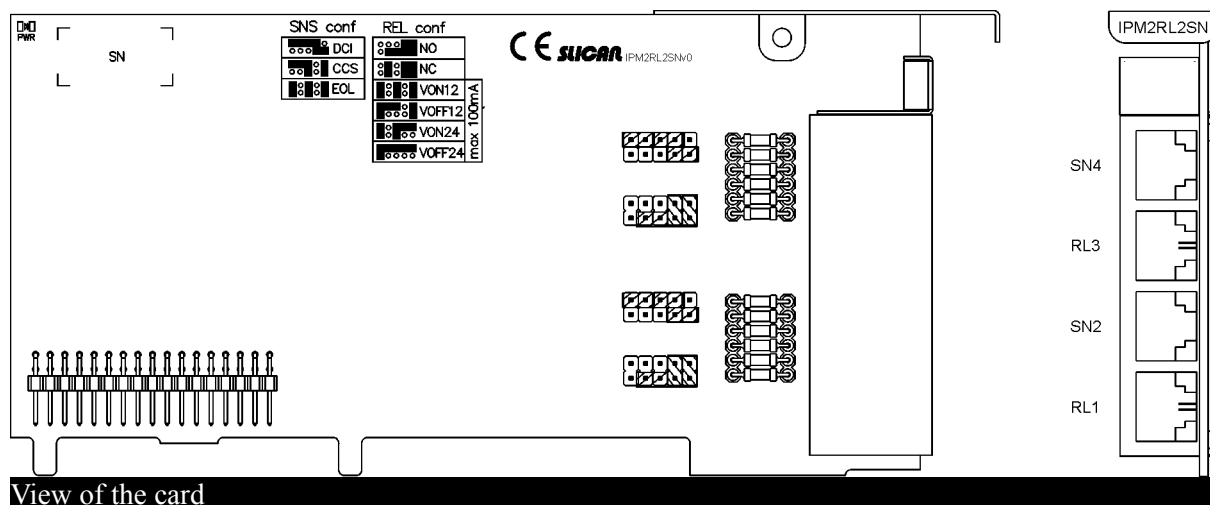
View of the card

Installation of a card in the server:

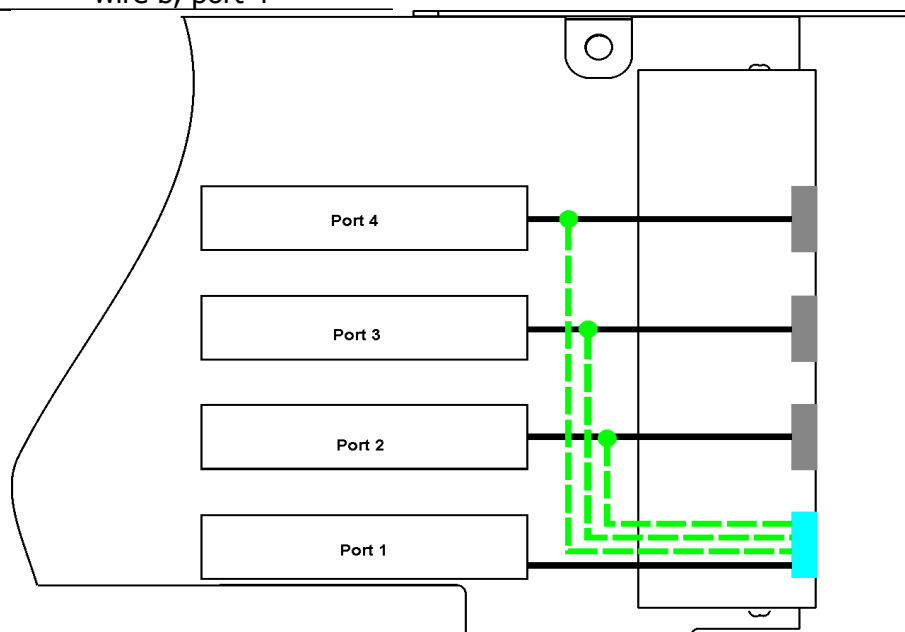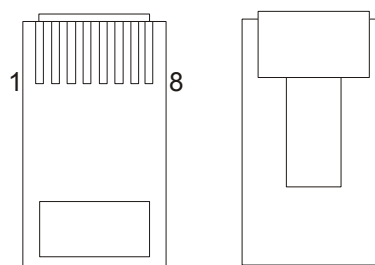This type of card can be installed in any of the slots numbered from 1 to 8 (6 for IPM-032.WM).

Ports on the card:

These cards have the following ports:
- RL1, RL3 – REL (relay)
- SN2, SN4 – SNS (sensor)

REL relay port work modes:

- **NO** – Normally open. Max load 42VAC/0.5A, 42VDC/1A
- **NC** Normally closed. Max load 42VAC/0.5A, 42VDC/1A
- **VON12** – activating 12 VDC supply. Max charge admitted 200 mA
- **VOFF12** – deactivating 12Vdc supply. Maximum charge: 200 mA
- **VON24** – activating 24 VDC supply. Maximum charge: 100 mA
- **VOFF24** – Deactivating 24VDC supply. Maximum charge: 100 mA
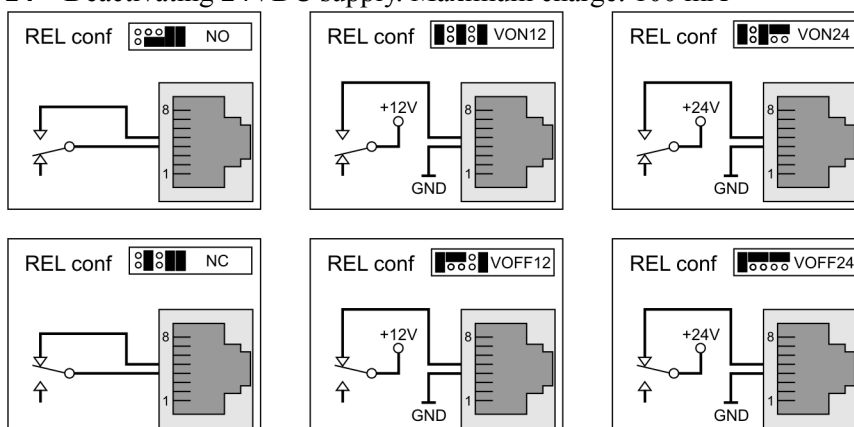
The required relay work mode is selected by putting jumpers marked REL1 and REL3 in the correct positions.

SNS sensor port work modes:

- **CCS** – triggered by a short-circuit
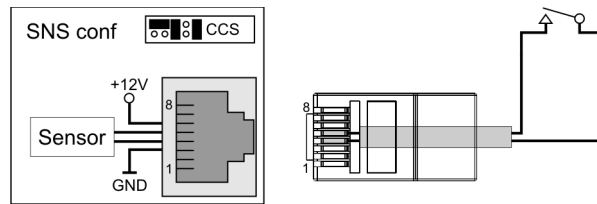
The sensor is triggered after the loop is closed. Maximum resistance of the loop is 1 kΩ.
The voltage between pins 3 and 6 is 12 V DC with a max. charge of 200 mA.
The sensor reaction time is 100 ms.

- **DCI** – triggered by voltage
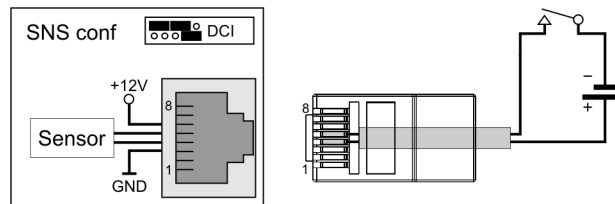
The sensor will be triggered after supplying voltage from the range 5~30 V DC to pins 4 and 5. Max current consumption by the sensor is 5 mA.
The voltage between pins 3 and 6 is 12 V DC with a max. charge of 200 mA.
The sensor reaction time is 100 ms.

NOTE:
The polarity of the supplied voltage is important. Safety resistors are activated if the polarity is changed.

- **EOL** – Parameter loop – triggered by a resistance of 2200 Ω
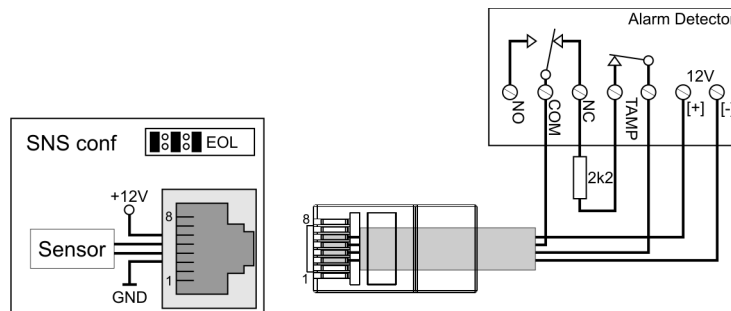
The sensor is active when loop resistance is in the range from 2000 Ω to 2500 Ω. A short circuit or break in the loop sets the sensor to an inactive state.
The voltage between pins 3 and 6 is 12 V DC with a max. charge of 200 mA.

The required relay operation mode is selected by putting jumpers marked SNS2 and SNS4 in the correct positions.

4.10   GSM trunk cards

4.10.1   IPM2GSM card (to 2SIM)

Print name: *IPM2GSMv0*   **Short description of the card:**

                                                      GSM trunk cards are designed to support direct voice
Card marking: *IPM2GSM*   calls and SMSs to the mobile communications
                                                      network. To enable their operation, external aerials and
                                                      SIM cards are required.

View of the card and its front panel:

Installation of a card in the server:

This type of card can be installed in any of the slots numbered from 1 to 8 (6 for IPM-032.WM). To install a SIM card, pull out the shelf and remove cover (IPM-032.EU) or remove covers (IPM-032.WM).

4.10.2   IPM1GSM card (to 1SIM)

Print name:	*IPM2GSMv0*	**Short description of the card:**
Card marking:	*IPM1GSM*	GSM trunk cards are designed to support direct voice calls and SMSs to the mobile communications network. To enable their operation, external aerials and SIM cards are required.
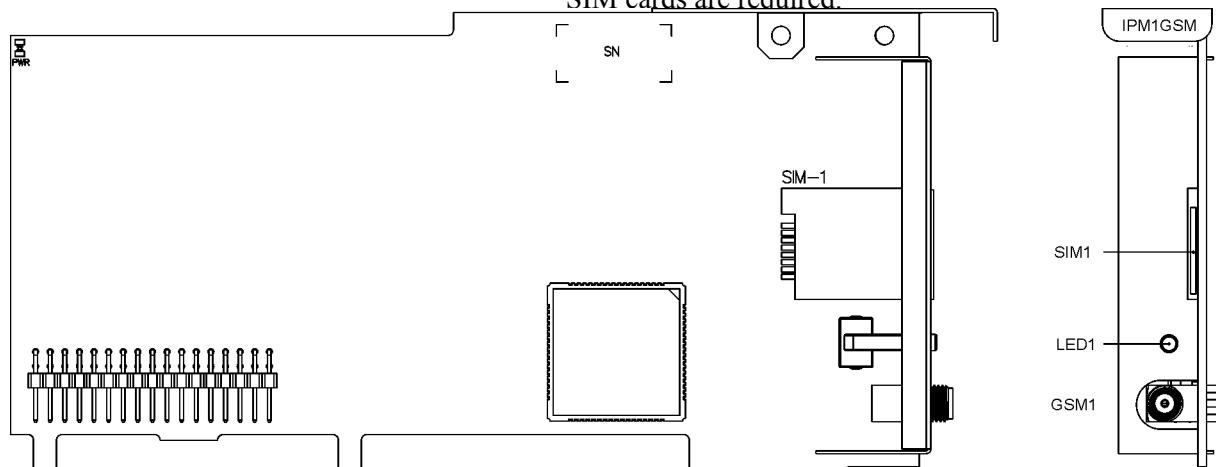
View of the GSM card and its front panel:

Installation of a card in the server:

This type of card can be installed in any of the slots numbered from 1 to 8 (6 for IPM-032.WM). A SIM card is installed by sliding the card directly into the panel from the front (IPM-032.EU) or by removing the bottom cover (IPM-032.WM). SIM cards are installed from the front panel without the need to remove the module from the server.

External aerials for GSM cards:

Use aerial to ensure correct operation of GSM cards. We offer aerials with a 3m cable and SMA plug.

The SMA type plug on the aerial cable should be screwed on 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 electrostatic charge. When laying out aerials, pay attention not to place them in locations too close to electrical and electronic devices (installations) as they might disturb the operation of a GSM module.

4.11 Shelf power supply modules
4.11.1 Power supply card IPM1PS

Module name: *IPM1PS*

Short description of the card:
The card is responsible for supplying the correct voltages necessary for server operation.

Print name: *IPM1PSv0*

View of the card and front panel (for server version 2U)

View of the card and front panel (for server version WM)
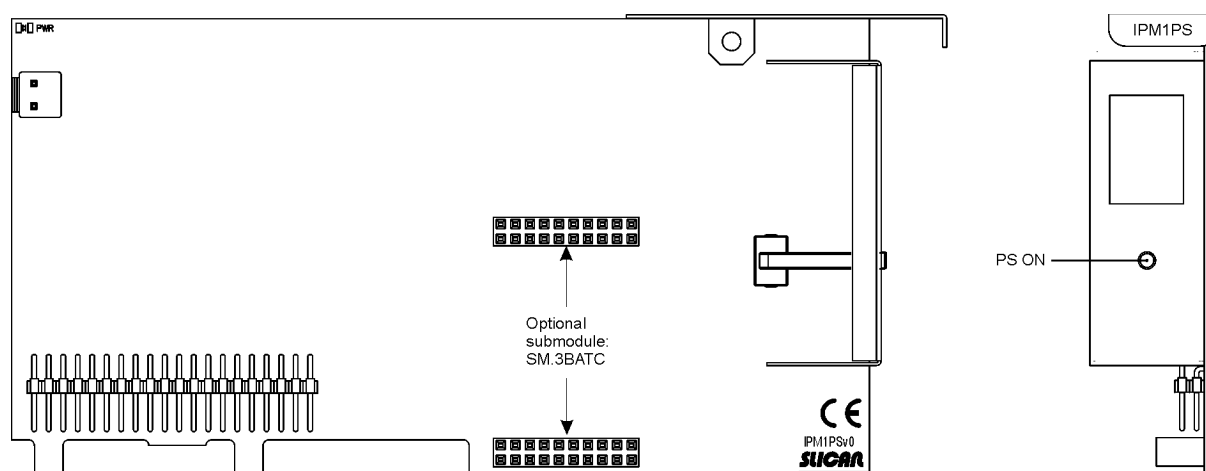
Card installation:
The controller card is installed in the base board slot marked **Slot PS**.

Description of LEDs on the front panel:
LED **PS ON**
• lit – server active, powered from a 230V system,
• blinks (0.5s/0.5s) – server active, powered from accumulators,
• off – server turned off.

4.11.2   Power supply card IPM1LPS for operation with IPM1LPU controller

Module name: *IPM1LPS*

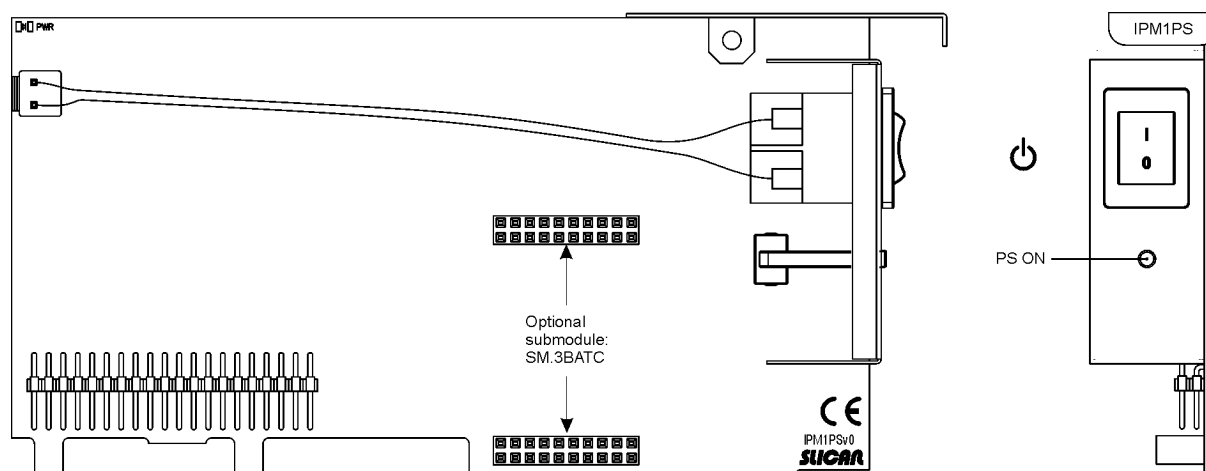Print name: *IPM1LPSv0*

Short description of the card:

The card is responsible for supplying the correct voltages necessary for server operation. This version of the power supply card **does not** enable installation of the SM.3BATC sub module to support accumulators

View of the card and front panel (for server version 2U)
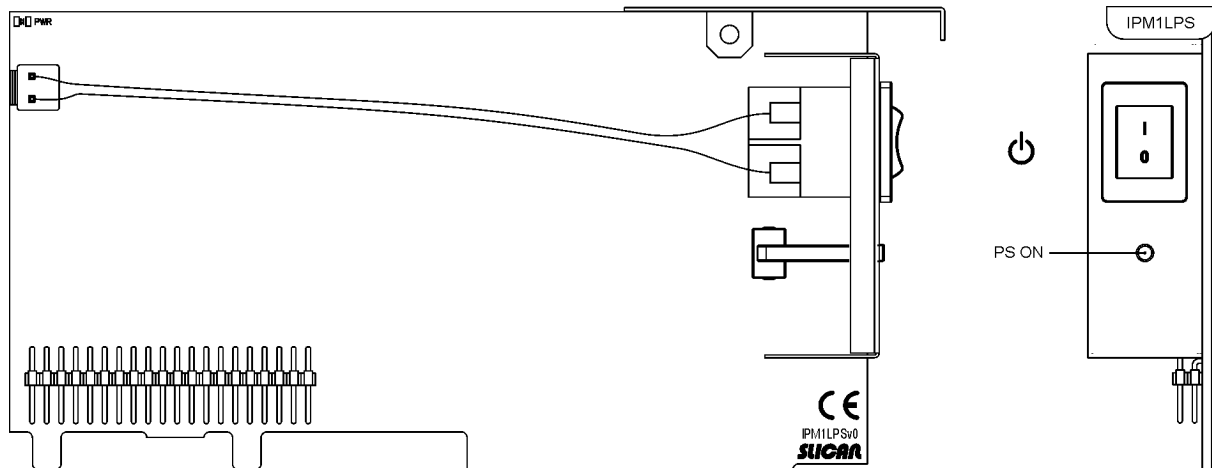
View of the card and front panel (for server version WM)
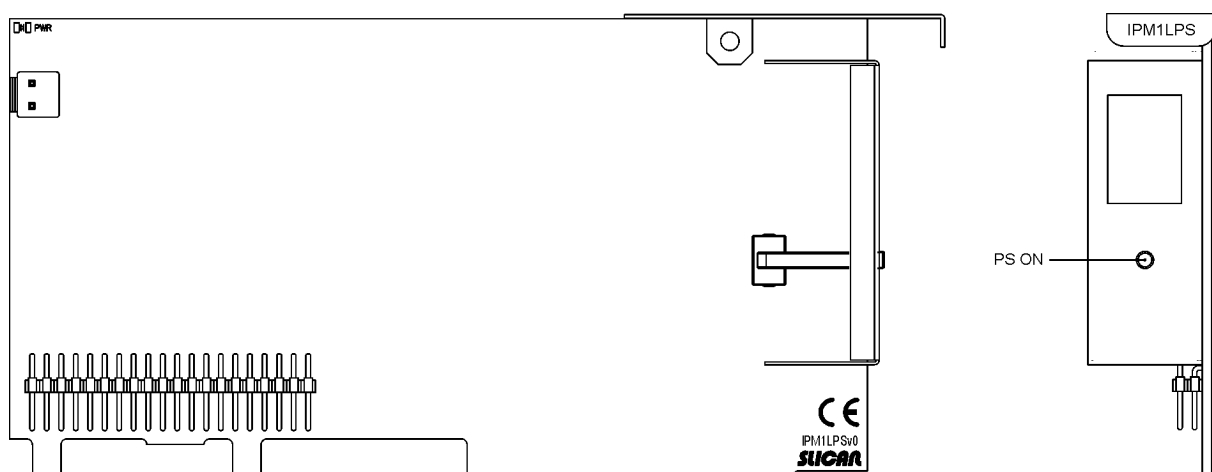
Card installation:

The controller card is installed in the base board slot marked **Slot PS**.

Description of LEDs on the front panel:

LED **PS ON**

• lit – server active, powered from a 230V system,

• off – server turned off.

4.11.3   Battery management sub module

Module name: *SM.3BATC*

Print name: *IPM3BATCv1*

Short description of the sub module:

The sub module is responsible for charging accumulators and supplying current from batteries for server operation.

View of an accumulator management sub module:
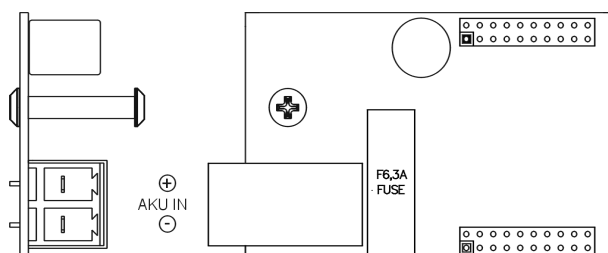
Installing the sub module:

Accumulator management sub module is installed on the return power supply card: **IPM1PS**.
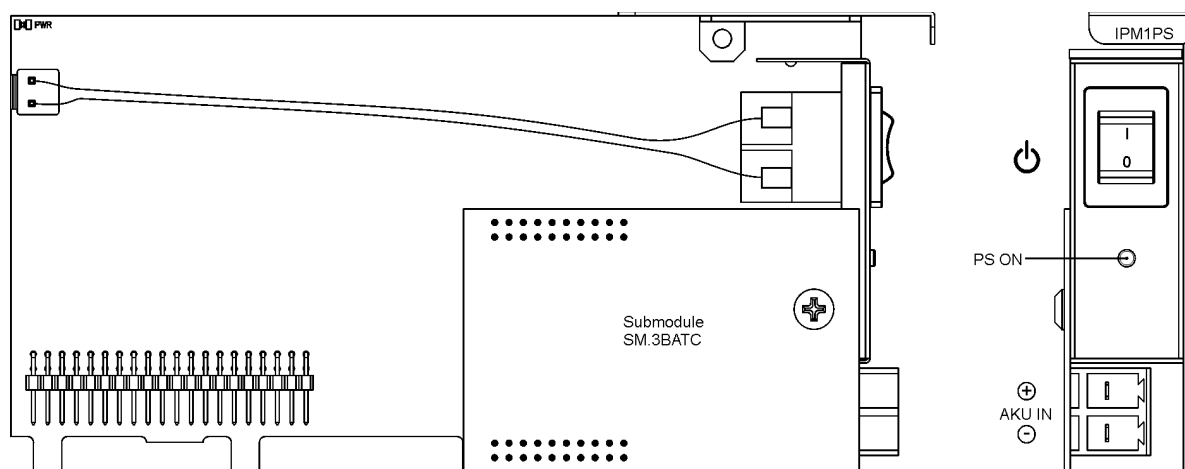
Figure 4 17: Power supply card IPM1PS with sub module SM.3BATC installed for battery management (version for a server in 2U housing)

5 Installing the system

5.1 Assembly requirements

The server should not be installed:
- in rooms with strong sunlight,
- in rooms with high humidity,
- in rooms with a high dust concentration,
- too close to devices which generate strong electromagnetic fields,
- in rooms where the device may be exposed to chemical substances.

It is recommended to mount the 2U server in a factory 19" casing or any other casing owned by the user on condition that it meets requirements for fire-safety casings according to PN-EN 60950 "Safety of IT ports". If the server is installed in the user's cabinet, make sure there is enough room for each server component system. This concerns both the server shelves and cables as well as the power supply system with the battery supply support.
The servers should be supplied from a 230 V, 50 Hz AC power network.

NOTE!
A 230 V power network socket used for the server should have a protective screw and the efficiency of its anti-shock protection should be confirmed by an appropriate protocol. Non-compliance with this requirement causes a risk of electric shock!

- Access shall be provided to the main grounding bar (terminal) in the installation area so that it is possible to ground/earth the server (by connecting a cable with a cross-section conforming to an appropriate standard, to the protective grounding terminal marked ⏚).

NOTE!
ALWAYS ground/earth the server (regardless of the fact whether it is mounted in a factory casing or the user's cabinet) with regard to its impact on the efficiency of protection against over voltage from telecommunication lines connected to the server. Due to that, remember to tighten sufficiently the mounting screws of the front panels of port cards to the shelf housing.

5.2 Buffer power input

A battery connection consists in making a connection between the <u>BATTERY</u> socket in the master power supply and the socket on the battery casing (connecting cable is supplied with the casing).
Making compensating connections is optional and depends on the type of cabinet in which the system is mounted. If the rack manufacturer specifies that the buses to which shelves with ports are screwed ensure an electrical connection between individual shelves and the external casing or frame, it is not necessary to make such connections. Otherwise, compensating connections must be added (cross section of the cable should be selected according to an effective standard) between individual shelves and the rack protective terminal and marked ⏚ (the same symbol is used for marking locations on the server shelf casings where the compensating cable should be connected).

6 System Telephones and consoles

## 6.1 Connecting additional consoles to CTS-202/CTS-203.IP system phones

Slican CTS-202 or Slican CTS-203.IP system phones can be connected to the server. Four of these phones can be connected to up to five Slican CTS-232 consoles. This enables the extension of the number of quick dial keys in such a set to 162 keys. The remaining CTS-202 system phones may be

connected to a maximum of two Slican CTS-232 consoles, which enables the extension of the number of quick dial keys to 72. In the case of CTS-102/CTS-102.IP/CTS-330 phones it is impossible to extend the number of quick dial keys by connecting CTS-232 consoles.

Connecting more consoles (three to five) always requires an optional power pack. The consoles may be powered using a CTS-202 system phone with an optional power pack or directly from an optional power pack.

Several possible connection variants for system phones with the server are shown below.

6.1.1 Variant 1 − consoles powered by a power device connected to CTS
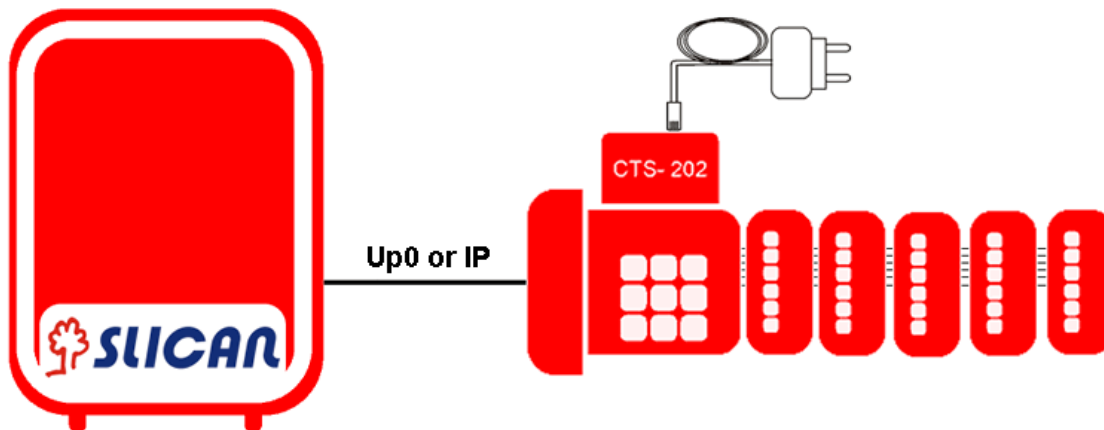
- A system phone connected to server with a standard line phone cable.
- System phone and consoles powered by an optional power pack.
- The phone and subsequent consoles are connected using the standard connection cable supplied with the console (6-wire).

Note: Consoles cannot be used in the case of a loss of 230V~ power. Using a phone might be difficult due to the high power consumption of such a set.

6.1.2 Variant 2 − two consoles powered by CTS, the remaining by a power device

- CTS-202 is connected to the two consoles at the start with a 6-wire cable, (provides power to phone and to the two of the first consoles from server).
- The three consoles are connected to the set with a 4-wire cable (without power).
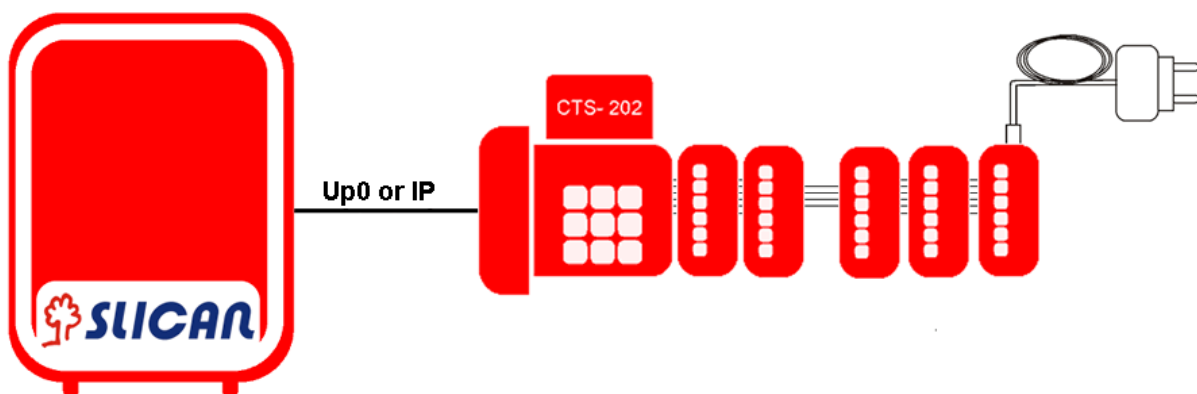
- The connections between these three consoles are made using a standard 6-wire cable.
- These three consoles are powered from an additional power pack which is connected to the console's output socket (OUT).

Note: Consoles cannot be used in the case of a loss of 230V~ power. Using a phone might be difficult due to the high power consumption of such a set. The system phone can be still used in the case of a power cut.

6.1.3　　Variant 3 – All consoles powered by a power device

- A system phone connected to the consoles using a 4-wire cable (phone powered by server).
- The consoles are connected to the phone with a 4-wire cable (without power).
- The connections between the consoles are made using a standard 6-wire cable.
- These consoles are powered from an additional power pack which is connected to the consol's output socket (OUT).
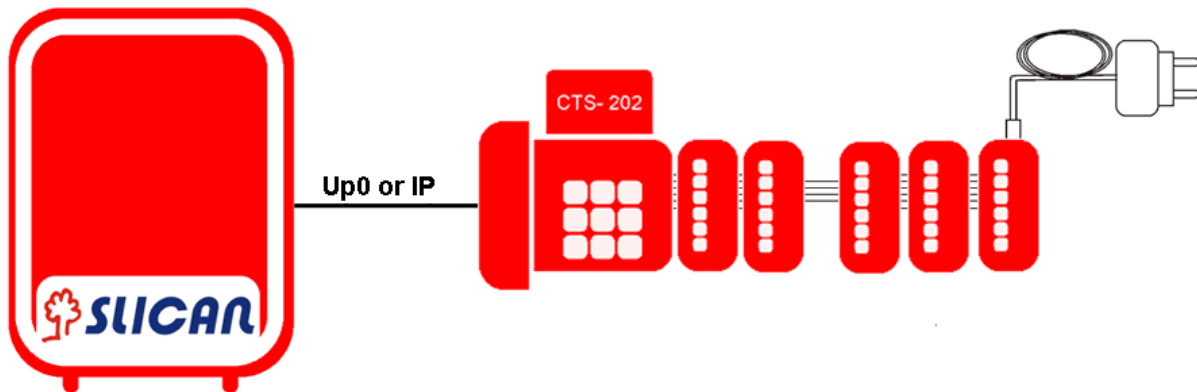
Note: The system phone can be still used during a power cut.

When the power supply is switched on, the additional consoles will automatically connect to the phone in each connection configuration.

6.2 Compatibility of power supply device for system phones and consoles

No.	System telephone	Power pack 36V/160mA	Power pack 12V/1.25A RJ11	Power pack 12V/1.25A	PoE
1	CTS-102.HT	+	-	-	-
2	CTS-102.CL	+	-	-	-
3	CTS-102.IP	+	+	-	-
4	CTS-202.CL	+	-	-	-
5	CTS-202.BT	+	-	-	-
6	CTS-202.IP	+	-	-	+
7	CTS-203.IP	-	-	+	+
8	CTS-330	-	-	+	+
9	Consoles >2	+	+	-	-

7   Connectors and interfaces

7.1 Computer interfaces in IPM-032 servers

Local connections with Slican IPM-032 servers are possible using USB connectors or TCP/IP networks. Servers can also be connected to a WAN. WAN port availability depends on whether the VoIP module is used by the system. All connectors, irrespective of the device version, have outputs on the front panel of the controller card and are arranged as shown below.

1. Ethernet LAN (RJ-45) – Allows for server management via LAN with ConfigMAN and support of TelefonCTI applications. Moreover, HOTELP and CTIP protocols are available on the interface.

2. Ethernet WAN (RJ-45) – available on the IPM1APU controller card, provides VoIP communication in an extended network.

3. USB – allows management of a server locally using computer software.

7.2 Telecommunications interfaces

Names used by Slican	Equivalent names used by other manufacturers	Functionality
CTS	U_{p0}	Digital port for the CTS series of phones
AB	a/b; FXS	Internal analogue port
CO	POTS; C.O.; FXO	External analogue port
ST	BRI (2B+D); S_0; S_0 int/ext;	ISDN digital port, int./ext.
E1	PRA; PRI (30B+D); S_{2M};	ISDN route digital port
LAN	Ethernet	LAN port
WAN	WAN	WAN port
GSM	GSM	GSM port

NOTE!
The interfaces are available in a server if it is equipped with appropriate cards.

8   Slican IPM-032 server technical specifications

CONNECTORS

VoIP	SIP, IAX,SSL, CTS IP phones
GSM	Tri-Band 900/1800/1900MHz
S0 (2B+D) configurable	DSS1 protocol (EURO-ISDN)
S_{2M} (30 B+D)	DSS1 protocol (EURO-ISDN) External
U_{p0} for CTS-102/CTS-202/CTS-330	Terminals for system phones with a signalling system developed by Slican
Analogue	According to ASS signalling

POWER INPUT

Supply voltage	~230V ± 10%, 50Hz
Power consumption	Max. 65W in 2U version, 45W in WM version

EMERGENCY POWER SUPPLY

Battery capacity/ type	3 x 12V/7Ah (recommended EP 7-12 batteries, EUROPOWER or their equivalents)
Estimated battery supply support time	10h for server capacity approx. *20* ports using 7Ah accumulators

INTERFACES

LAN	Ethernet 10/100 Mbps
USB	2.0
WAN	Ethernet 10/100 Mbps

9 Safety requirements for operating Slican IPM-032 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 and location of the server, as well as the requirements for the electrical power supply and data communication network.

9.1 Installation 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.

When the switches on the casing or shelf power supply unit are in the OFF position the device is in a stand-by mode (but still has a 230V supply voltage) and therefore dangerous voltage may occur inside the device which may cause electric shocks.

Pay particular attention during the installation of accumulators due to the risk of acid burn. It is recommended that such a connection is made by a qualified person.

It is recommended to take utmost care when replacing a real time clock battery because the battery might explode under certain conditions.

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

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

9.2 Workplace Environment

ambient temperature at the server operation area: from $+10^{\circ}$C to $+25^{\circ}$C (recommended air-conditioned room at 22°C),

Air humidity: 40-70%,

Due to the emission of noise (fans in the power supply unit), it is not recommended to mount the server in office rooms, close to where people work.

The server must not be located in rooms with high dust concentrations or rooms with high-intensity electromagnetic fields.

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

Direct sunlight;

Frequent or strong vibrations or mechanical impacts;

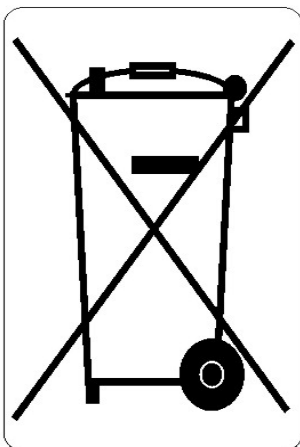Live antenna radiation (short wave in particular).

9.3 Electrical requirements

The device shall have a correct system of setting to zero in 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 meeting the current standards for the European Union.

10 Certificate 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 IPM-032**	CE

Product Description:

A subscriber telecommunication server with a modular design and a capacity for up to 32 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 interfaces for mobile telephony and VoIP, door phones and (through an MAB adapter) acoustic devices can be connected to servers. The server may work with the following: public telecommunications network, using analogue lines with ASS signalling, digital ISDN lines (EuroISDN) BRA, VoIP (SIP), and 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 below:
PN-EN 60950-1:2007 + A12:2011;
PN-EN 55022:2011; PN-EN 55024:2011; PN-EN 61000-3-2:2007 + A2:2010; PN-EN 61000-3-3:2011

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, 20-08-2012

Development Manager
Czesław Noga
Board Member

Proper equipement disposal
(used electric and electronic equipement)

This designation placed on product or in texts regarding this product means, that after product operating time it shouldn't be removed together with other household wastes. To avoid harmful influence on natural environment and humans health as a result of uncontrolled waste removal, product should be separated from wastes of other types. It also should be properly recycled to enable reusing resources.

To obtain information about place and mode of environmental safe recycling this product individual user should contact with retail shop or local authorities. Business users should cotact with supplier and check contract conditions. Product should not be removed together with other commercial wastes.