Espa 443 Converter

Manual of the Espa 4.4.3 to Espa 4.4.4. converter

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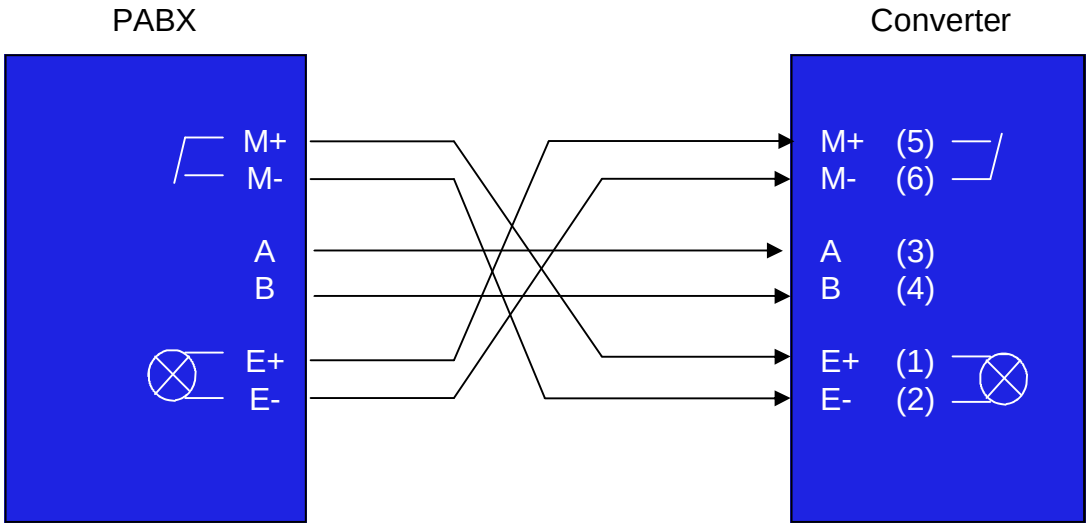
Function of the converter:

The Espa 4.4.3 to Espa 4.4.4. converter acts as a gateway between older Espa 4.4.3. systems and newer Espa 4.4.4. systems, creating the possibility to read Espa 4.4.3 messages from an older system and sent them to a Espa 4.4.4. installation.

The converter is connected to the PABX with:

M and M' (Mouth contact)
E and E' (Ear-contact),
A and B (600 ohm line)

When connecting the PABX to the converter make sure that the M and the E contact are crossed. The Mouth contact for the PABX is like the Ear contact of the converter.



If a call is received via Espa 4.4.3. it will be translated to an Espa 4.4.4 call and sent. The status that is received via Espa 4.4.4. will be forwarded to the Espa 4.4.3. side, generating a 'paged' or 'absent' call on the Espa 4.4.3. side.
If the forward of the status is not needed (or the ESPA 4.4.4. system does not generate a 'paged' or 'absent' status, the status generated on the ESPA 4.4.3. side can be fixed to 'paged' .

Connecting to an existing Espa 4.4.3. installation:

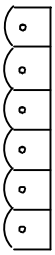
The converter uses PhotoMos technology for the M contact. This contact is used in Espa 4.4.3 to indicate to the PABX that all digits are received, and also to indicate the Absent/Paged status.

The converter also has a build in supply to power the E contact. The supply is limited to 12V 8mA. So if the PABX also supplies the E contact that should not cause any problem. The current will be limited automatically. Please check the polarity (+ and -) of the E contact before connecting the converter. A faulty polarity will not harm the converter, but if the converter sends + 12V and the PABX sends – 12V, both signals end up as 0V, and are not detected by the converter.

The AB line are the lines over which the actual DTMF digits are sent from the PABX to the converter.
If the total amount of digits is received by the converter, it will generate a ‘all digits received’ puls on its M contact, indicating to the PABX that the digits are received. If the amount of DTMF digits is insufficient, a time-out status will occur,

Connecting to an existing Espa 4.4.3. installation:

ESPA 4.4.3 IN 6pole screw-terminal



1: E+
2: E-
3: A
4: B
5: M (+)
6: M' (-)

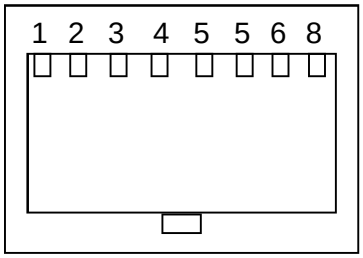
The E+ and E– inputs are connected to the M+ and M– output contacts of the PABX. When the PABX wants to send a message it will start by raising the M contact, connecting M+ and M-. If the M+ and M– outputs of the PABX are not isolated, or send power over the M+ and M- contacts, then please note the polarity of that power. Please note that If the PABX sends +10V to +16V over the M contact, the polarity is important, because the converter uses its own power generator of 12V to read the status of the M contact. If both are 12V and the polarity is wrong, no M contact is detected. Then switch the M+ and M– contact and it should be ok. Internally the detector runs from 10V to 48V DC.

The polarity of the M+ and the M– contact is not important. The contacts are used by the converter to indicate a status present/paged/absent to the PABX on its M+ and M– terminals.

The A and B terminals are used to send DTMF data to the converter. If the PABX occupies the converter, the converter can be programmed to generate a dailtone. Or a busy tone in case the pager is absent.

Connecting to an existing Espa 4.4.3. installation:

ESPA 4.4.3 IN 8 pole RJ45 connector



Connector as shown:
1: E+
2: E-
4: A
5: B
7: M (+)
8: M' (-)

LED indicators for ESPA 4.4.3:

Status:	Short green flash every second: The converter is in idle state, no errors detected on ESPA 4.4.3 or ESPA 4.4.4. side. No calls present in buffer. Long green flash every second: The converter is in idle state, no errors detected on ESPA 4.4.3. or ESPA 4.4.4. side. But there are calls to be transferred in the buffer. Short red flash every second: An error is detected. Long red flash every second: An error has occurred, and the error is remaining. Short orange flash: DTMF data is received.
M	This LED indicates that the converter has activated the M contact .
E	This LED indicates that the E input of the converter is activated by the PABX..

Connecting the power:

The power supply of the converter is 12V DC.
Please us the supplied power supply.

Connecting the Espa 4.4.4. output:

The converter uses a standard 9 pole SUBD connector with RS232 to communicate with its peripheral (PC or other system).

The pin-layout is::

Pin 2: TxD
Pin 3: RxD
Pin 5: GND
Pin 7: CTS
Pin 8: RTS

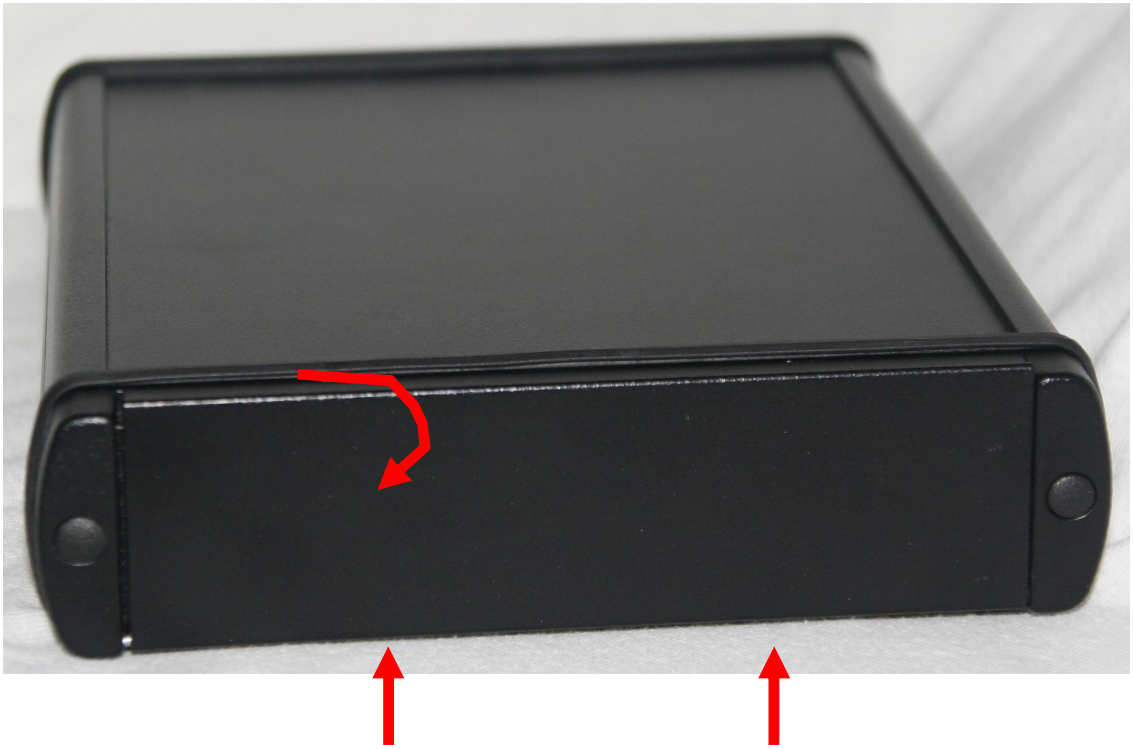
The pin 7 and pin 8 are used for hardware handshake. With a software tool you can select if the hardware handshake is used or not.

We strongly advise to use the locking screws to connect the plug to the converter.

Connecting the Espa 4.4.4. output:

The TxD and RxD leds indicate the communication on the RS232 serial lines to the ESPA 4.4.4. device. If data is sent, the red led lights up shortly, if data is received the green led lights up shortly.

Howto open the cover:

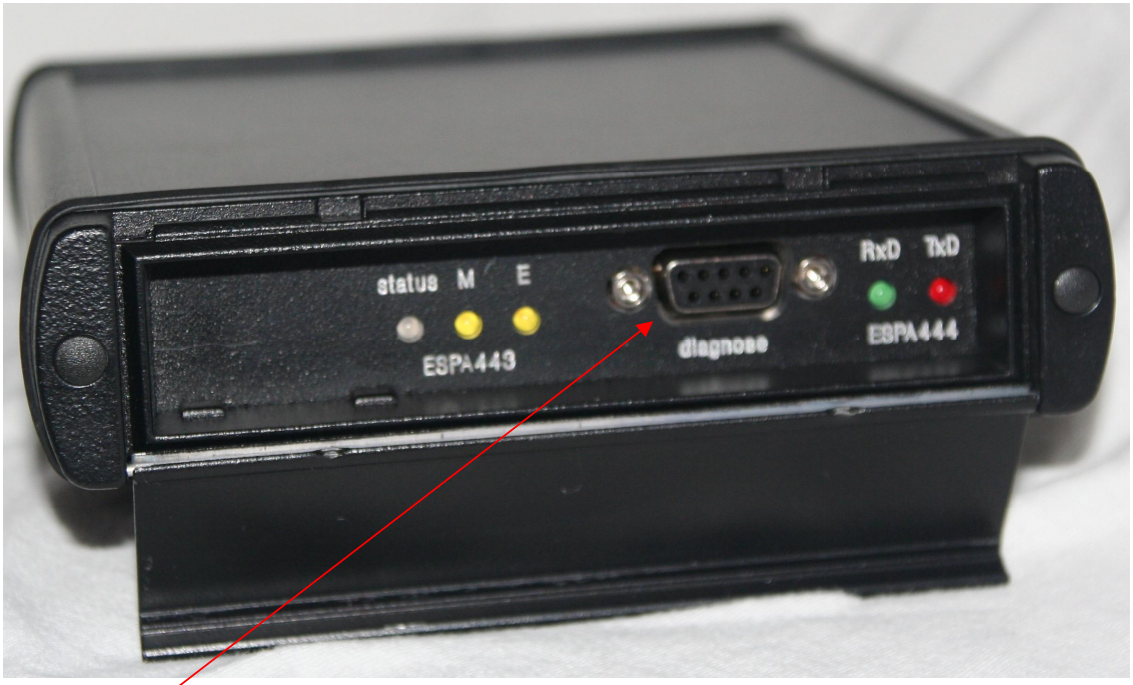


To open the cover push it into the upper direction, then opening it by the use of a screwdriver into one of the two small holes on the top side of the cover.

Diagnose leds:

Status:	Short green flash every second: The converter is in idle state, no errors detected on ESPA 4.4.3 or ESPA 4.4.4. side. No calls present in buffer. Long green flash every second: The converter is in idle state, no errors detected on ESPA 4.4.3. or ESPA 4.4.4. side. But there are calls to be transferred in the buffer. Short red flash every second: An error is detected. Long red flash every second: An error has occurred, and the error is remaining. Short orange flash: DTMF data is received.
M	This LED indicates that the converter has activated the M contact .
E	This LED indicates that the E input of the converter is activated by the PABX..
RxD	This LED indicates data being received by the converter from the connected system.
TxD	This LED indicates data being sent by the converter to the connected system.

Using the configuration port:



If needed, the converter can be setup with a ‘ConfigTool’.
This is a program running under Windows XP, Vista, 7 and 8 using the serial port of a computer of a laptop.
It can be used to program settings into the converter, reading current settings out of the converter and to read serial diagnose information

All settings that can be programmed via the ConfigTool software are documented in the ConfigTool documentation.

Brief explanation about Espa 4.4.3:

Espa 4.4.3 is used to interface between a PABX and a paging system based on transmitting DTMF digits. These digits may be: ‘0’ till ‘9’, ‘*’, ‘#’, ‘A’, ‘B’, ‘C’ and ‘D’. Whereas the digits 0 to 9 are mostly used.

In an idle situation the converter has its M contact activated (closed) indicating to the PABX that the converter is present and ready to accept new calls.

A call is initiated by the PABX by activating the M contact on the PABX. This is detected on the E input on the converter side. The converter will send a dial-tone (if needed) to the PABX. The PABX might react on this dailtone, but it should not be a blocking issue.

The PABX will sent the call by sending DTMF digits over the AB terminals.
If all digits are received, the converter will indicate to the PABX that ‘all digits are received’ by interrupting its M contact for a short period (50 milliseconds). The PABX will detect this on its E input.

The converter will then send the call via ESPA 4.4.4. to the other system, and wait for the status of the call. This will be absent or paged.

Once the status is known to the converter, it will sent the status via the M contact of the converter to the E input of the PABX indicating absent or paged.

When the PABX has received the status, it will stop the transfer by bringing its M output to the idle state.

Then the next message can be sent.

Please note:
The number of DTMF digits that can be sent is not specified in the protocol. The converter can handle this in 2 ways:

A. Setup the number of digits to be received (for example 10 digits)
B. The number of digits is variable, but all calls will be ended with a #.

Once all the digits are transmitted, there are different possibilities about how this ESPA 4.4.3. string of data is build up:

A. How many digits are for the address of the pager
B. Where is the digit indicating the bleepcode of the pager
C. Is there any information that should be sent to the display of the pager?

All these settings can be done with the ConfigTool. First the converter will receive all the digits and then convert them (if needed) to match the arguments needed on the ESPA 4.4.4. side. It is also possible to sent calls when only the pagernumber is received. All other information will then be added by the converter.