



FAQ

How can I connect -48V PABX equipment to Omnitronics products?

Some equipment such as PABX units, IP Multiplexers and Routers commonly have -48V 4 wire +E&M interfaces. In order to connect these devices to Omnitronics 4 wire +E&M Circuits, special directions need to be followed.

The connection of the audio circuits will not be discussed in this FAQ as it is the same as for lower voltage interfaces which has been addressed in the FAQ "How can I connect my radio equipment to an IPR100?".

First a note on Safety

None of the equipment discussed in this FAQ has the isolation required to connect directly to telecommunications infrastructure where approvals are required. This FAQ is for connecting to routers or PABX units where this isolation is not required.

In the configurations where there is a common ground point, the power supply voltages add and can reach a level where they are lethal.

Power Supply Connection

The preferred power supply arrangement is to have the supply for the Omnitronics equipment isolated from the PABX supply. This can only be done if a Type II interface is used.

When a common supply return point or 'earth' must be used, the normal connection for this is to connect the 0V side of the Omnitronics equipment supply to the +48V side of the other equipment supply.

E & M Leads

The E and M signals define where the signal originates. The naming had its origins in telephony.

The M lead, which is sometimes remembered as the Mouth or Magnet, is the signal that originates from the Central Office (CO), or Exchange, providing an output to the signaling equipment. The E lead, which is sometimes remembered as the Ear or Earth, is the signal that originates from the signaling side of the system, and is an input to the CO or Exchange.



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The Omnitronics equipment interface is named using this convention. Normally, the equipment is used in the main infrastructure of a radio system and can be considered CO equipment. In Omnitronics documentation, the E lead is the Busy input (to the Omnitronics equipment) and the M lead is the PTT output (from the Omnitronics equipment).

Types of 48V Interfaces

There are standard descriptions for the types of 48V E&M connections and they are generally referred to as Type I to Type V. The preferred method for connectioning to Omnitronics equipment is the Type II interface. This is a circuit where the switching connections are voltage free contacts. The next preferred method is a Type V interface where the equipment must share a common earth.

The least preferred method is a Type I interface, where the equipment must share a common earth and the PABX supplies -48V to the input of the opto coupler circuit of the equipment. Most Omnitronics equipment is not designed to allow -48V on this input and requires an additional resistor in the signal line.



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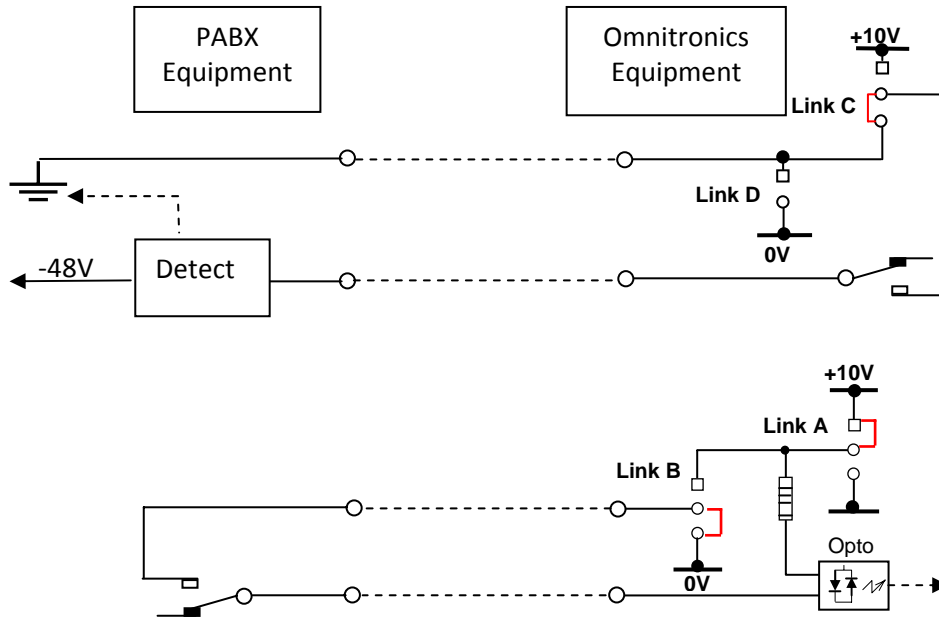


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Type II Interface

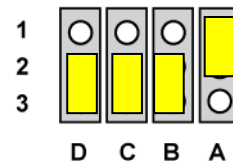
The connection for the supervisory circuits in a Type II interface is shown in the diagram below:



The advantages of this connection are that the power supplies for the equipment do not have to share a common ground point. In addition, the voltage on the opto-coupler in the Omnitronics equipment is only the supply voltage from the internal power supply.

For Omnitronics equipment where the E&M configuration is done using links, the link block is shown in the diagram. For equipment where the configuration is done from a web page, both the E and M leads should be set to 'contact'.

E&M Links



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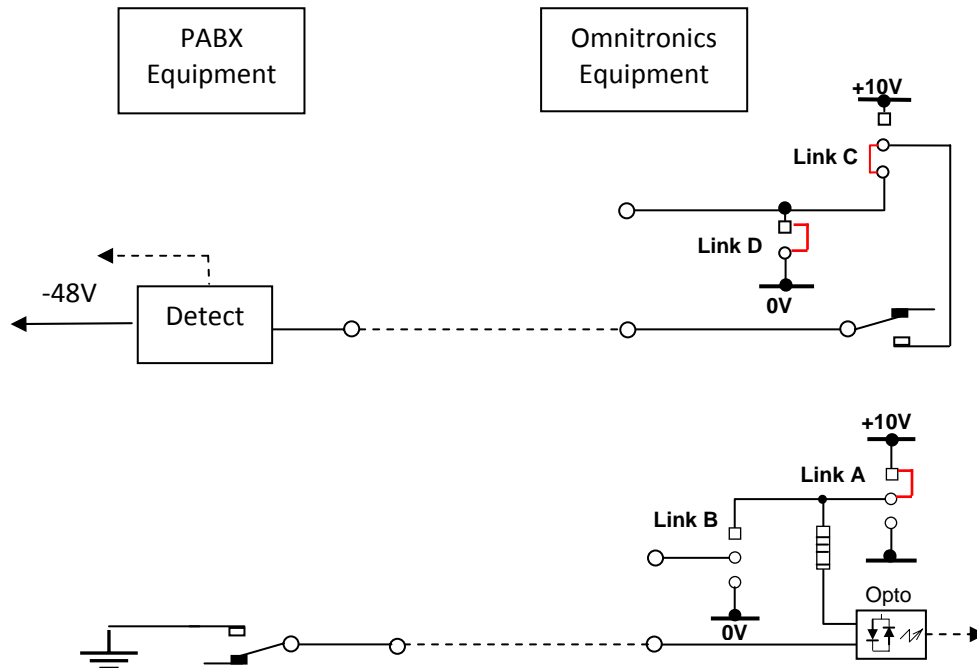


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Type V Interface

The connection for the supervisory circuits in a Type V interface is shown in the diagram below:

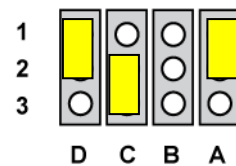


In this configuration the equipment must share a common 'earth' point. The 0V side of the power for the Omnitronics equipment would normally be connected to the +48V side of the other equipment.

When using this configuration, the contacts of the relay in the Omnitronics equipment must withstand 48V but the opto-coupler circuit only has to withstand the current from the internal supply.

For Omnitronics equipment where the E&M configuration is done using links, the link block is shown in the diagram. For equipment where the configuration is done from a web page, both the E and M leads should be set to 'switched ground'.

E&M Links



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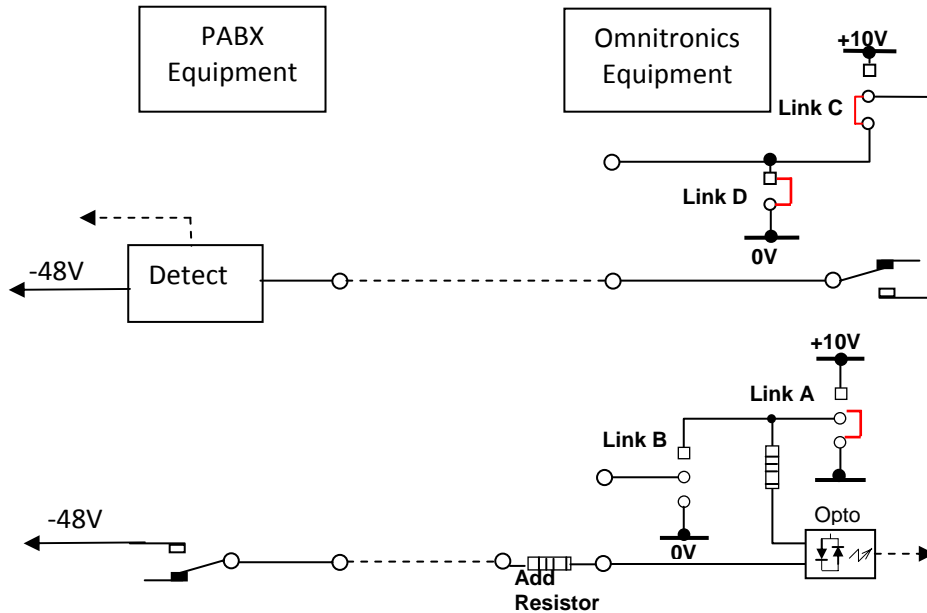


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Type I Interface

The connection for the supervisory circuits in a Type I interface are shown in the diagram below

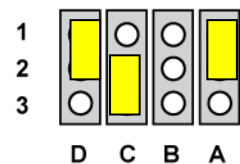


In this configuration the equipment must share a common 'earth' point. The 0V side of the power for the Omnitronics equipment would normally be connected to the +48V side of the other equipment.

When using this configuration the contacts of the relay in the Omnitronics equipment must withstand 48V. The internal series resistor in the opto-coupler circuit is designed to allow for voltages up to 30V. To allow for the extra current from the -48V supply, use a 10k 250mW resistor in series with the busy input to the Omnitronics equipment.

For Omnitronics equipment where the E&M configuration is done using links, the link block is shown in the diagram. For equipment where the configuration is done from a web page, the M lead should be set to 'switched ground' and the E lead set to 'switched voltage'.

E&M Links



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