



Smart Inter System Interface

DVI-100



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Smart Inter System Interface



DVI-100 - The TETRA Voice Bridge (Inter-System-Interface)

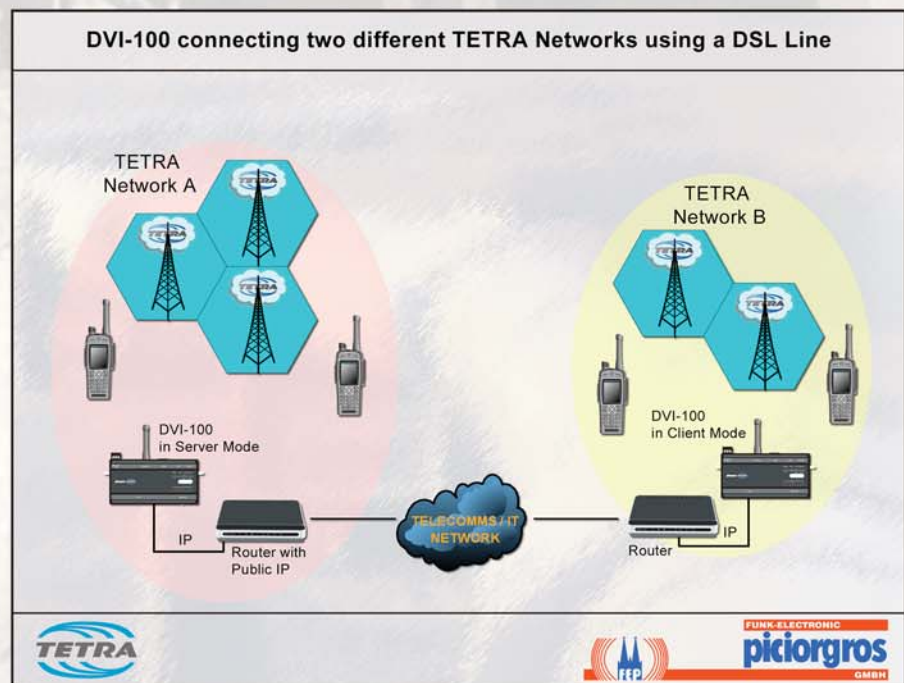
The DVI-100 is designed to interconnect different TETRA networks for voice communication, SDS and Status Messages, regardless of manufacturer, frequency band or geographical location. The device can be logged into any TETRA network in the same way as a TETRA hand terminal. Once registered to the network in DVI-Server mode, it receives the digital ACELP coded voice data of its talk group(s) and transmits it in IP packets to the remotely attached DVI-Clients, iPhone-Clients, iPad-Clients or PC-Clients. During the complete process the digital voice data is not recoded and remains original as TETRA ACELP code, and therefore there will be no loss or reduction of the excellent TETRA voice quality.

There are a number of different options how the DVI-100 can be operated: Back-to-Back using two DVI in two different networks, one DVI directly connected to a TETRA Base Station (SwMi), and in DMO-to-DMO or TMO-to-DMO mode as a TETRA MicroSPOT

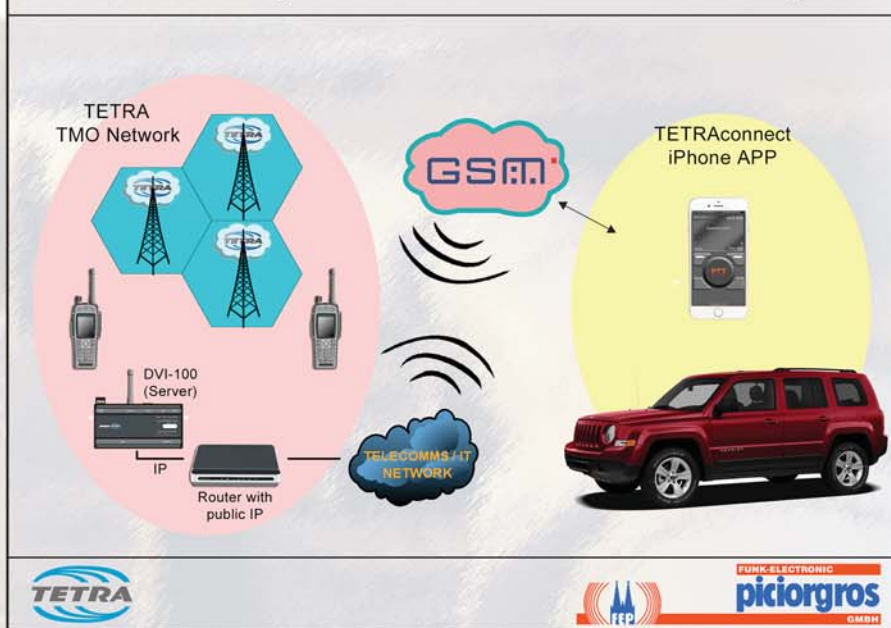
Back-to-Back Operation

In Back-to-Back operation, two DVI-100 (one in Server-Mode and one in Client-Mode) are connected directly by IP to each other. The IP link can be a simple IP-cable, a GSM network, Microwave, Satellite (tested with Thuraya Satellite link and the Thuraya IP Modem) or a router linking through the Internet. But the Back-to-Back operation is not limited to one DVI-Client only – up to ten Clients can be operated at the same time, meaning that 11 TETRA Networks can be connected to each other at the same time. Nevertheless, only one (group) call is possible at the same time.

The setup of the Back-to-Back Mode is done very quickly in just a few seconds, and group calls can be accomplished between the different networks without the need of any settings (except the DVI registration) on the TETRA SwMi.



DVI-100 connecting TETRA via GSM to non TETRA-covered regions



PC, iPhone and iPad Clients

The DVI-100 Server can be linked to other DVI-100 Client devices, but also to an iPhone (or as described above to a TETRA SwMi when the Open-PTX protocol is supported). In total up to ten different clients (even different client types) can be served at the same time. Incoming voice calls will be received by all clients at the same time. Also when speaking from one of the clients, all other clients will hear the voice call.

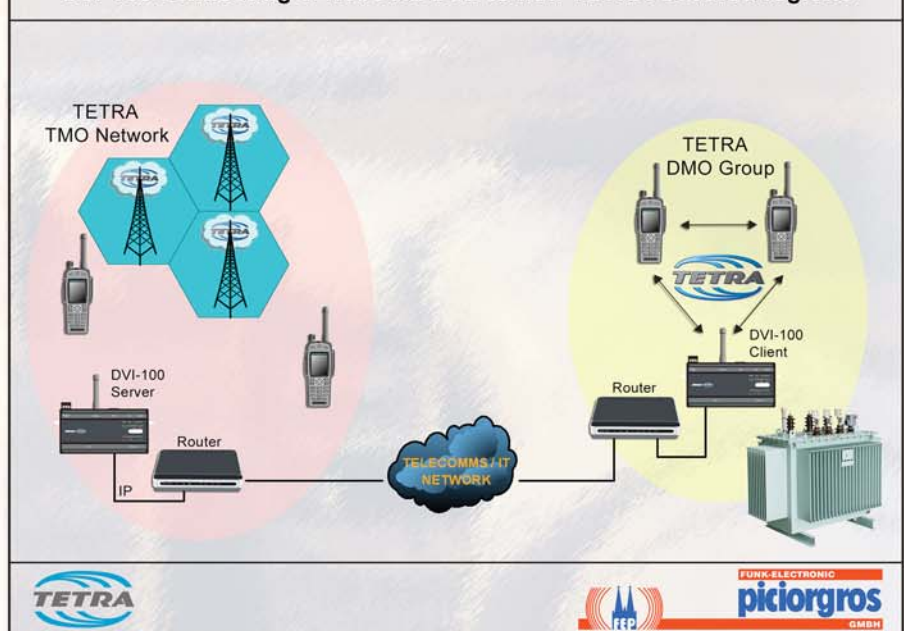
Easy Integration

The DVI-100 Server is attached to a TETRA Network in the same way as a regular TETRA hand portable, and it can be a member of up to 25 talk groups. When it receives a voice call, rather than decoding the digitally coded ACELP data stream into analog audio and feeding it to the loudspeaker, it is sent as a digital (UDP) data stream to up to 10 DVI-100 Client devices

DVI-100 as TETRA MicroSPOT

Sites like transformer stations, oil wells and vessels which are outside of a TETRA network and not reachable, can be linked to the network with a DVI-100 TETRA MicroSPOT operating in DMO-Mode. The link to the main network can be any Telecom IP connection or via Satellite IP. The DVI-100 operates on 300 and 400 MHz frequencies with 3 Watt RF power, and on 800 MHz with 1 Watt. When using an omni directional gain antenna on a tower, coverage of up to many km is possible.

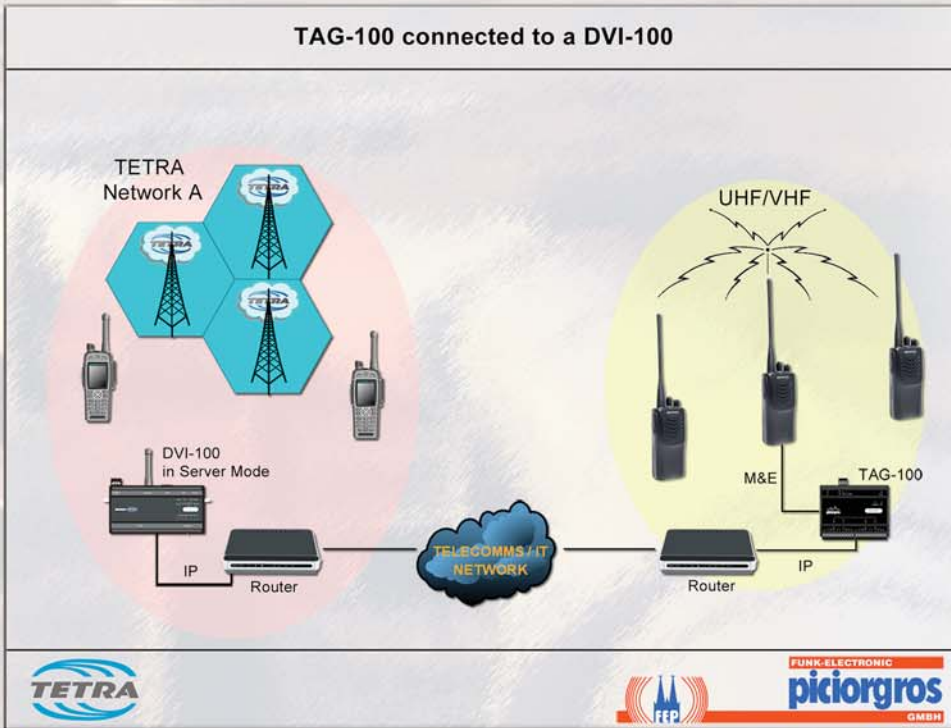
DVI-100 connecting TETRA via DSL to non TETRA-covered regions





TETRA to Analog Gateway

TAG-100 connected to a DVI-100



Analog Gateway

The DVI-100 (TETRA Voice-Bridge) can now also be connected to analog (Narrow Band) radios. This significantly helps when migrating from an Analog Radio Network to a TETRA network, or in cases where an existing TETRA Network does not (yet) cover the complete customers area.

The physical set up of the TAG-100 is quite simple - it only requires a 12-24 Volt DC Power Supply, an IP-Connection to the DVI-100 and an analog radio with an M & E (Microphone, Loudspeaker, PTT, Squelch) interface. Since the DVI-100 uses the TETRA Air Interface, no additional setup is required on the TETRA SwMi.

One of the challenges when interfacing analog radios to TETRA is, that the users do not consider the TETRA call setup time and will start speaking immediately after pressing the PTT on the analog radio. The TAG-100 Gateway handles this situation by using a small FiFo-memory where the digitized audio stream is buffered until the TETRA infrastructure is in call. If a call attempt is made when all TETRA traffic channels are busy, the TAG-100 will indicate this to the analog network by announcing, in speech "Channel Busy, please try again", once the PTT has been released.

One DVI-100 Server Device can operate with up to ten Clients (these can be other DVI-100, TAG-100 or iPhones) which permits a large diversity of applications. For example PTT audio from an iPhone could be delivered to an analog radio or to TETRA handheld/mobile.



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