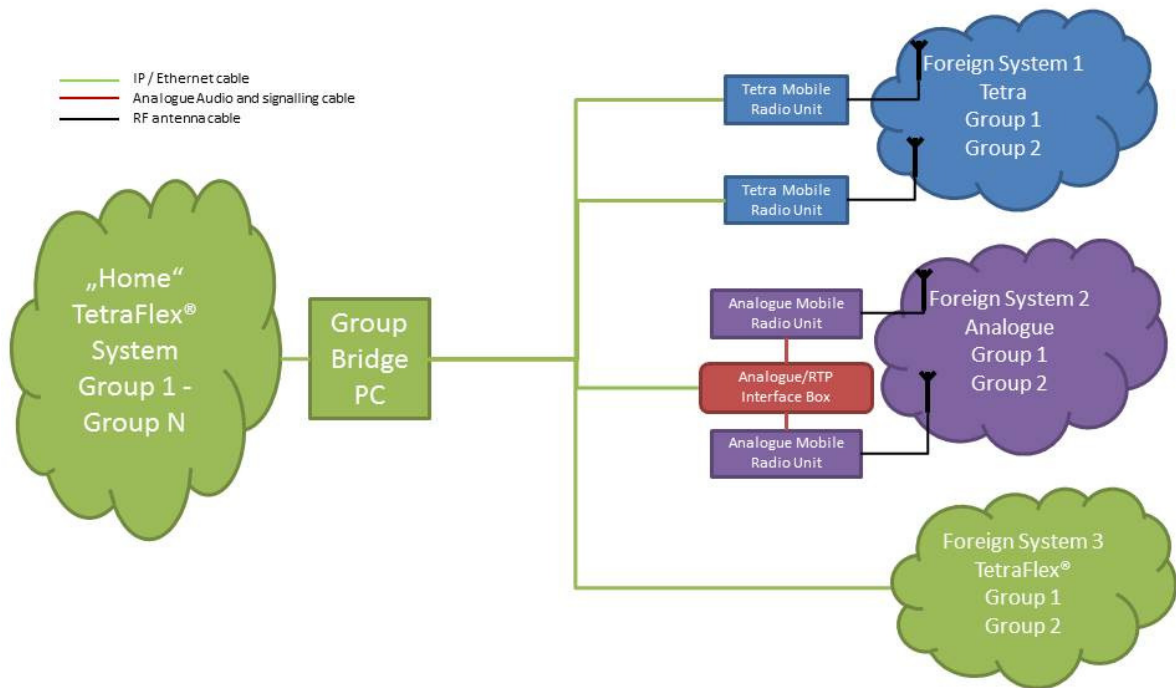




TETRAFLEX® GROUP BRIDGE

Description

The TetraFlex® Group Bridge software is developed to bridge calls to and from a "Home" TetraFlex® system to and from calls in one or more "Foreign" systems:

- TetraFlex® system
- Tetra system from other vendors
- Analogue system

or a combination of above systems.

The bridge can transfer:

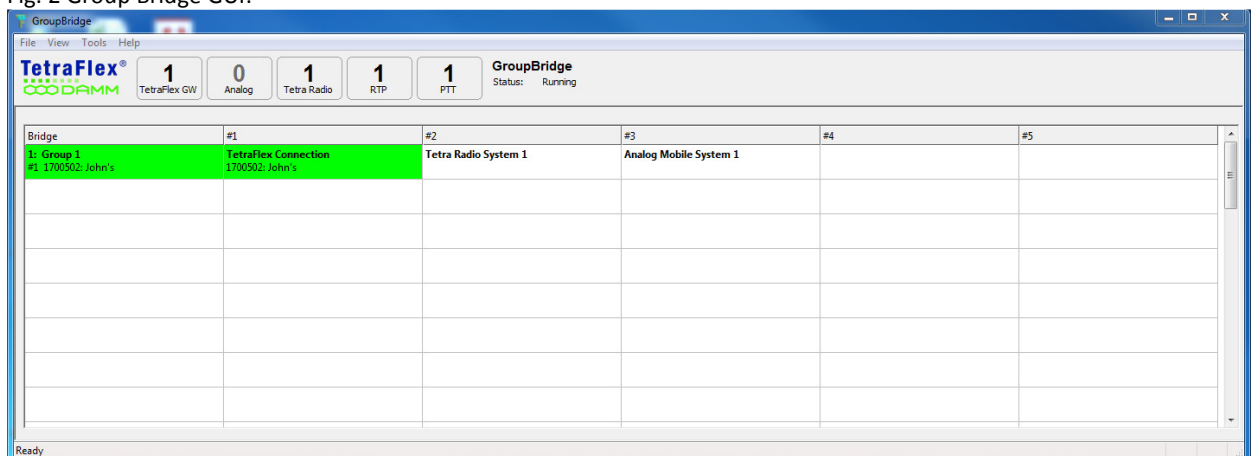
- Group calls to/from TetraFlex® systems
- Group calls to/from tetra systems
- Group calls to/from analogue systems
- Group SDS to/from TetraFlex® systems
- Group SDS to/from tetra systems

The software shall be executed on an external PC and can be configured with up to 32 simultaneous bridges and each bridge can be connected to up to 4 systems controlled by the dongle settings and Group Bridge configuration.

One group call in a TetraFlex® system can therefore be bridged to a group call in another TetraFlex® system and at the same time to a group call in a tetra system from another vendor and/or to a group call in an analogue system.

An examples of the bridge configuration is shown in Figure 2.

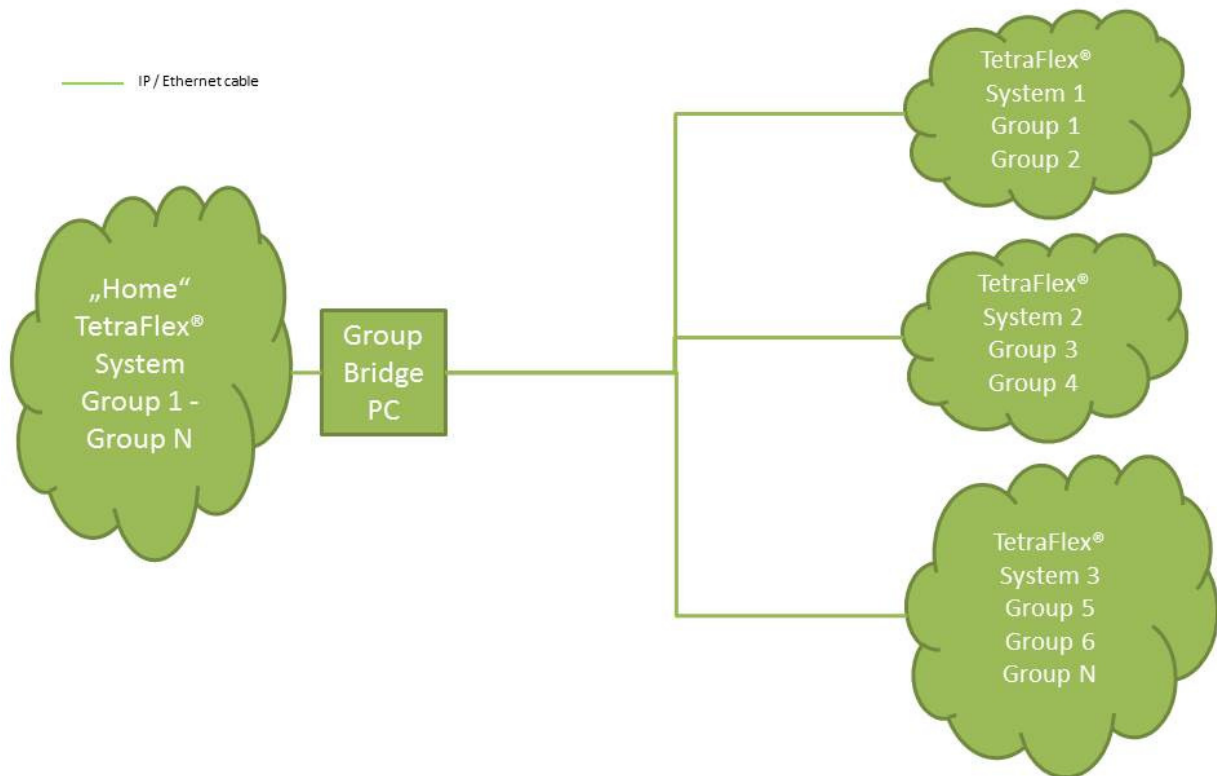
Fig. 2 Group Bridge GUI:



More than one PC executing TetraFlex® Group Bridge software can be established in a TetraFlex® system offering more than 32 simultaneous bridges.

The interconnection from the “Home” TetraFlex® system to the PC, executing the TetraFlex® Group Bridge software, is an IP connection to the WAN interface on one node, just as the interconnection from the PC to the other TetraFlex® system.

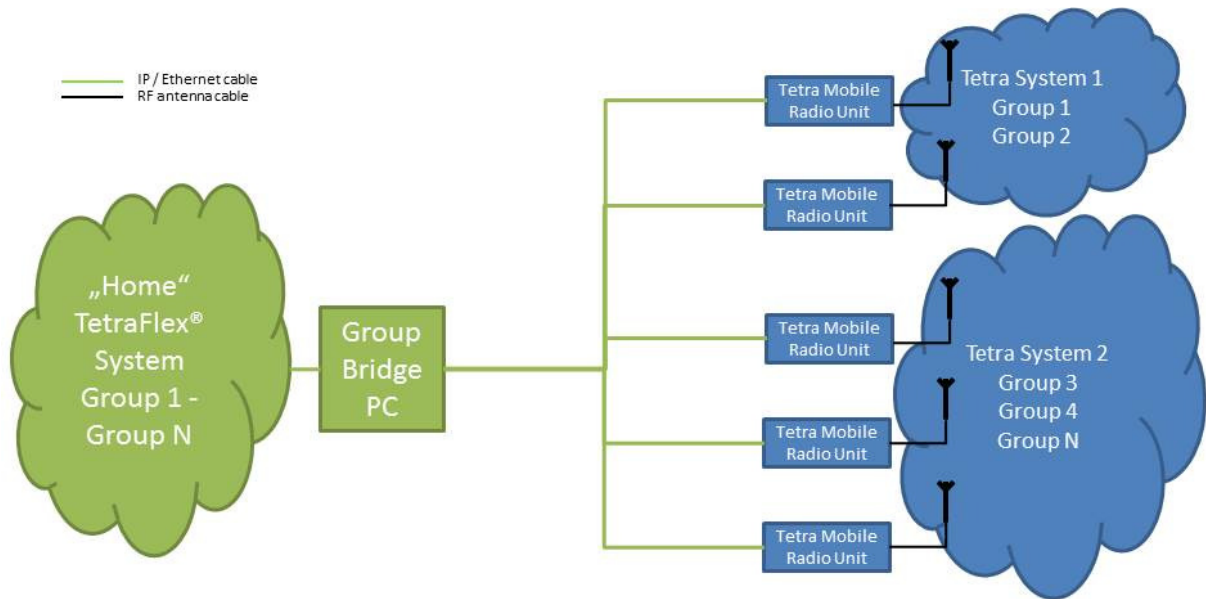
The Node dongles programmed for Terminal GW and located in the “Home” TetraFlex® system have to be programmed with the appropriate number of ports for the Terminal GW.



 Damm Cellular Systems A/S, Denmark	Doc. No. TF-DL-GB-REF	Rev. 1.03	Date 2014-01-14
	TetraFlex® Group Bridge		

The interconnection from the PC, executing the Group Bridge software, to another tetra system is an IP connection to a Piciorgros DVI-100 at the frequency band required by the foreign system. The DVI-100 shall be physical located within the coverage area of the foreign Tetra system.

The Node dongles programmed for Terminal GW and located in the “Home” TetraFlex® system have to be programmed with the appropriate number of ports for the Terminal GW.

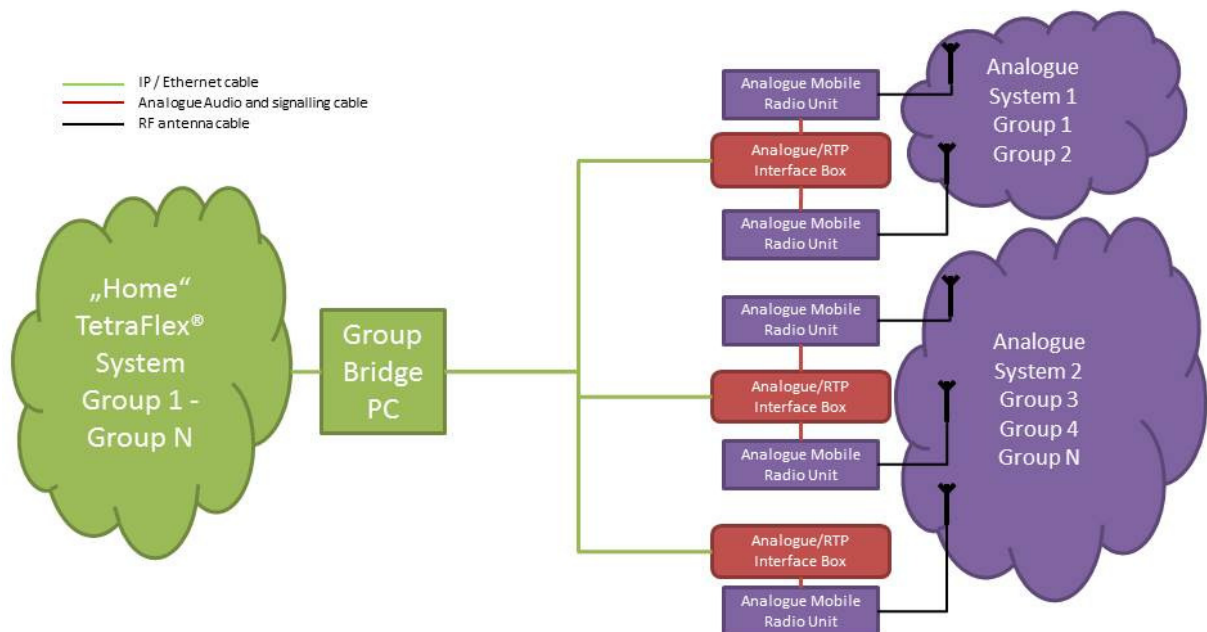


 Damm Cellular Systems A/S, Denmark	Doc. No. TF-DL-GB-REF	Rev. 1.03	Date 2014-01-14
	TetraFlex® Group Bridge		

The interconnection from the PC, executing the TetraFlex® Group Bridge software, to an analogue system is an IP connection to the IPR110+. From the this IPR110+ gateway to a radio the interconnection is analogue audio and signalling cables and should therefore be kept as short as possible. The IPR110+ radio shall be physical located within the coverage area of the foreign analogue system.

The Node dongles programmed for Terminal GW and located in the “Home” TetraFlex® system have to be programmed with the appropriate number of ports for the Terminal GW.

The IPR110+ gateway has a port which has in/out connectors to a radio but also supplies audio in/out, PTT and squelch, making it possible to connect analogue radio units from other vendors.

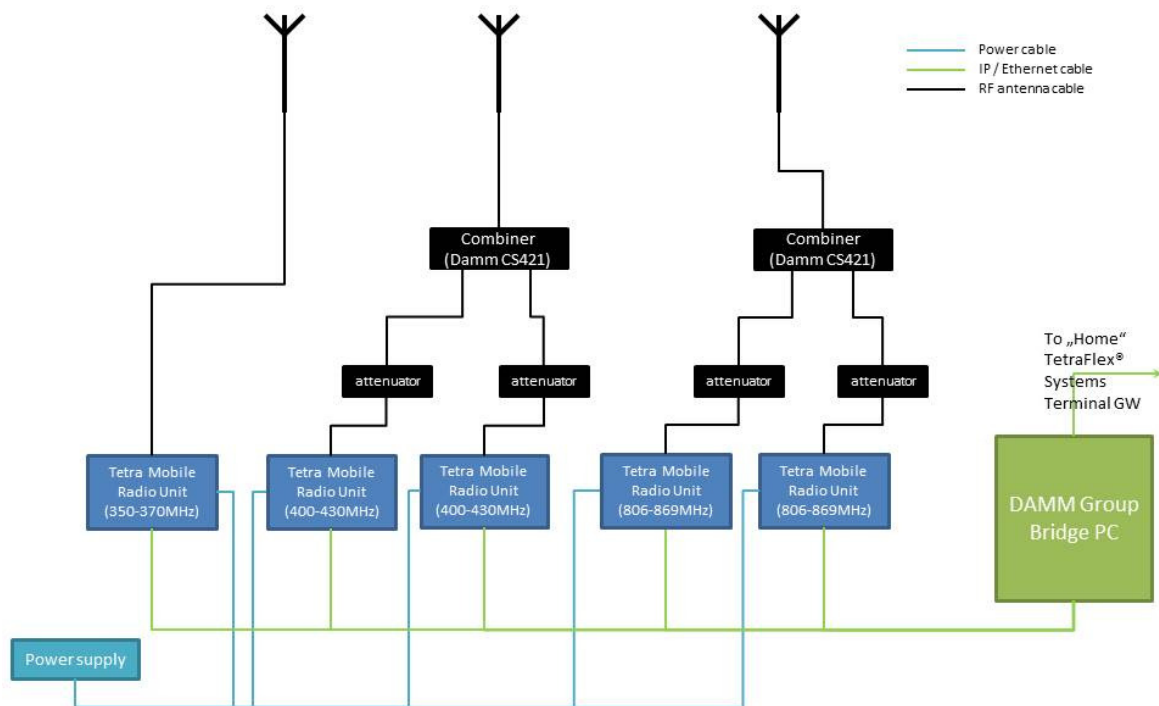


The Piciorgros DVI-100, the IPR110+ Gateway and some radio units have been tested, approved and can be supported by DAMM. To avoid misconfiguration they should be ordered from DAMM.

Instead of using the ICOM professional IP based long haul solution it is possible to order an analogue kit from DAMM which offers up to 4 audio in-outputs to be connected to analogue terminals.

 Damm Cellular Systems A/S, Denmark	Doc. No. TF-DL-GB-REF	Rev. 1.03	Date 2014-01-14
	TetraFlex® Group Bridge		

If more than one bridge shall be establishes to another system, more Mobile Radio units shall be set into operation in coverage area of the foreign systems, several antennas for the radio units are required. It is possible by means of the DAMM CS421 2 way Combiner/Splitter and suitable attenuators to combine these antennas in order to save antenna locations. Please note that the RX signal to each radio unit shall be attenuated to avoid interference or blocking.



DAMM has developed a TetraFlex® Group Bridge Planner which beside given assistance to set up the configuration, it also forms an Order draft. This is available on the www.damm.dk - > extranet, commercial

 Damm Cellular Systems A/S, Denmark	Doc. No. TF-DL-GB-REF	Rev. 1.03	Date 2014-01-14
	TetraFlex® Group Bridge		

Usage Cases

1. With the TetraFlex® Group Bridge solution, you can easily migrate from an existing analogue radio system solution step by step to fully digital TetraFlex® solution. This migration can last either temporarily over a period of time or both systems can permanently run in parallel until the old system reaches its end of life time.
2. For short term events or events that occurs suddenly without warning (e.g. catastrophes, supply and training camps, etc.), TetraFlex® Group Bridge can be used to efficiently link the existing communication system of the participating parties.
3. TetraFlex® Group Bridge can also be used as an intersystem interface (ISI) workaround for group calls and group SDS.

Note: Please consider the TetraFlex® Dynamic Subscriber Assignment feature (DSA) to automate subscriber handling.

4. At Oil platforms and harbors TetraFlex® Group Bridge allows visiting ships or helicopters with any kind of radio technology on board to be part of groups in the establish TetraFlex® system. Also a specific group could be allocated to announcements via the PA system.

Requirement

TetraFlex® Group Bridge	Requirement
TetraFlex® Group Bridge Application	Group Bridge Client Dongle
Min. Hardware and Software platform for running the TetraFlex® Group bridge application on a PC.	A PC running Windows XP or Windows 7. Min. requirement: 4Gbyte RAM, free disk storage 4 GByte, 2 USB ports, 1 Ethernet 10M /100Mbyte Ethernet card. i5 processor.
Programming of one or more TetraFlex® Node dongles for Terminal GW licenses	In accordance with Configuration from Group Planner
Tetra Mobile Radio unit	Digital Voice Interface
Analogue/RTP Interface Box, 1 ports	IPR110+
Analogue Mobile Radio unit	Icom-F5022, F6022 or A110Euro *
Analogue/Voice-PTT Interface Box, 4 ports	Damm Item number 105670 interface kit with interface box, USB switch and 4 Sound cards

*) Please note: Item numbers for different frequency band can be seen in TetraFlex® Group Bridge planner

 Damm Cellular Systems A/S, Denmark	Doc. No. TF-DL-GB-REF	Rev. 1.03	Date 2014-01-14
	TetraFlex® Group Bridge		

Specification

TetraFlex® Group Bridge data	Value
Numbers of Bridges	Dongle setting 1 to 32
Numbers of connections pr. Bridge	Dongle setting 1 to 5
TetraFlex® Group Bridges pr. Node	max. 200*
Tetra Radio Connections	Dongle setting max. 32
RTP Mobile Radio Connections	Dongle setting max. 32
Voice-PTT Radio Connections (USB / Voice card)	Dongle setting max. 32

*) Depending of the number of TetraFlex® Terminal Gateway setting in the node dongle used for other applications.

Ordering

Please use the TetraFlex® Group Bridge Planner to configure and make your order draft

Description	Item Number
Group Bridge App. 1 Bridge, incl. dongle	TF-DL-GB3-1
Group Bridge Application, additional Bridges	TF-DL-GB3-EXT
TetraFlex® Gateway Connection	TF-DL-GB4-TGW
Terminal GW license	TF-DL-N10-TERM GW
Tetra Radio Connection	TF-DL-GB5-TRDO
RTP/IP Mobile Radio Connection	TF-DL-GB7-RTP
USB Mobile Radio Connection	TF-DL-GB6-ANA

Optional

Description	Item Number
Tetra Mobile Radio Unit, (DVI-100)	10567101-Tetra Mobile Radio Unit - 350-370MHz 10567102-Tetra Mobile Radio Unit - 370-400MHz 10567103-Tetra Mobile Radio Unit - 400-430MHz 10567104-Tetra Mobile Radio Unit - 450-470MHz 10567105-Tetra Mobile Radio Unit - 806-869MHz
RTP/IP Interface Box, 1 ports, IPR110+	105673 - RTP/IP Interface Box -1 ports
Analogue Mobile Radio VHF/VHF-air/UHF, Incl. Cable,	10567201-Analogue Mobile Radio VHF - Incl. Cable 10567202-Analogue Mobile Radio UHF - Incl. Cable 10567203-Analogue Mobile Radio VHF/air- incl.Cable
Analogue USB Interface Box, 4 ports	105670
CS421 2-way Combiner/Splitter 380-470MHz	105911
CS421 2-way Combiner/Splitter 805-870MHz	105912
Reprogramming of RF dongle for Terminal GW licenses in existing system	TF-DL-DONG-REP