



Resilient, Fast, and Flexible

For an Infrastructure with Uncompromising Performance

ProGrid is a premium audio and signal transport solution, offering high performance and resilience as well as fast and flexible deployment. ProGrid is both scalable and modular to expand or adapt as your infrastructure changes. It is an ideal solution for fixed and portable applications in live sound, live events, broadcast, recording studios and commercial installations.



Based on the open AES3 and AES10 (MADI) standards, ProGrid is designed for ultra-fast transport, distribution, and routing of audio, intercom, video signals* and control data using the OPTOCORE® (Optical Fiber) and SANE (Synchronous Audio Network + Ethernet) platform. All serial data, word clock sync, analog, AES, MADI audio with timecode, and all major brand intercom signals are transmitted synchronously at extremely low latency and across long distances over ProGrid.

The scalable and distributed ProGrid system, along with non-blocking routing, offer a much more flexible, centrally-managed and cost-effective alternative for overcoming complex cabling requirements typically experienced with difficult copper cable runs or manual patching.

ProGrid offers redundancy, robustness and reliability for small to very large infrastructural requirements. ProGrid is capable of matrixing up to 1024 channels across short or long distances. Any incoming signal is capable of being routed to any output or multiple outputs as a continuous stream of data, without buffering, packaging or compression.

ProGrid devices are locally configurable and addressable, using 24 unique device IDs. Data flow between any two points in the network may be configured from any unit in the system offline as well as online.

The routing and naming of all input and output channels, channel activation, level metering of any channel as well as the storage and recall of the configuration is easily achieved from any point within the network by PC.

ROUTING TOPOLOGY AND CONNECTION OPTIONS

The ProGrid audio devices can be deployed as point to point links with redundant fiber connections or a multi node, de-centralized, non-blocking router with full software monitoring and control.

Topology Options

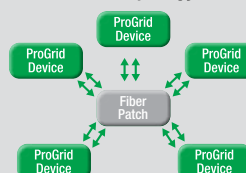
Point to Point Links



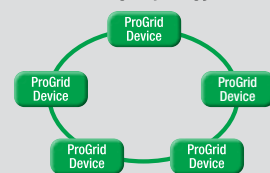
Daisy Chains



Star Topology



Ring Topology



*Composite video is available over the Optocore network using the PG2-MADI-FX and PG32-AES-FX units. HD SDI video is available through the use of the BroaMan MUX-22-CC.

All ProGrid devices are powered by the OPTOCORE® and SANE (Synchronous Audio Network + Ethernet) network technologies.

OPTOCORE (OPTICAL FIBER NETWORK)

OPTOCORE is an optical fiber-based network technology designed on an open standard platform, which sends MADI, AES/EBU, Ethernet and Serial data such as DMX, MIDI, RS485/422 and seamlessly through the network. It is also an open platform that cooperates with different ProAV manufactures to ensure ProGrid devices are fully compatible with industry-leading consoles and pro-audio devices.

Characteristics of OPTOCORE:

- **High channel capacity** – Up to 1024 audio input channels and unlimited number of outputs
- **Synchronous data transmission** – Static time slots guarantee Quality of Service and provide negligible latency and constant availability
- **Extremely low latency** – System latency of two samples is at 41.6µs. This value is fixed regardless of bandwidth and number of devices on the network.
- **Scalable systems** – Up to 24 ProGrid devices, expandable to 215 devices using SANE
- **Redundant and Resilient** – Dual redundant ring topology and auto-reroute which provide maximum resiliency



FX – The Optocore Fiber Network Module allows the converter to be used as a part of a 24 device ProGrid system.

- 4 Serial ports
- 2 LAN ports
- Sync
- 2 SANE/LAN ports

FXS – For use with Single mode fiber optic cables

FXM – For use with Multi-mode fiber optic cables



SANE (SYNCHRONOUS AUDIO NETWORK + ETHERNET)

The SANE technology protocol is a fully synchronous CAT5 network solution for streaming and transmitting data in real time. Offering a unique non-proprietary open standard transport platform, SANE is the perfect medium for transporting AES/EBU, MADI as well as Ethernet.

Via the SANE port, the network designer can become highly creative enabling him/her to add analog channels, further Ethernet and MADI devices to the network.

Characteristics of SANE:

- **Channel Capacity** – Up to 64 audio input and output channels
- **Fast Ethernet transport and switching** – Extremely low latency at a lower cost



TP – The SANE CAT5 Module allows the converter to be used as a stand alone converter or expansion device for ProGrid FX devices.

- 16 AES3 I/O
- 1 LAN port
- Word Clock I/O
- 2 SANE/LAN ports

The ProGrid family consists of several categories of devices: Analog Audio Converter Devices, Intercom Interface Devices, Digital MADI Interface Devices, AES/EBU Connectivity Devices, and Yamaha Interface Cards.

ANALOG AUDIO CONVERTER DEVICES

The PG-Audio devices are 1RU digital audio I/O interface devices for the ProGrid Signal Transport Solution. PG-Audio devices transport analog audio and data signals in a variety of ways that can be customized to fit user needs.

The PG16-Audio devices have four different rear types including microphone inputs, Line Level inputs and outputs, and dual microphone preamplifiers. The rears are available in seven different configurations that enable the conversion of signals: 16 inputs, 16 outputs, 8 inputs, 8 outputs and 8 dual microphone inputs with two independent adjustable gains.

The PG8-Audio devices have three different rear types that enable the conversion of signals: 8 microphone inputs, 8 line inputs or 8 line outputs.

Every PG-Audio-FX device can add and/or extract up to 1024 audio channels from the ProGrid Signal Transport Solution and 64 audio channels to/from the SANE network. A single PG-Audio-TP device can exchange up to 64 audio channels for the SANE Network and two AES/EBU ports, each capable of 16 channels.

Devices include dual power supplies with automatic switchover.



16 Ports "PG-AUDIO" Product Models	Connectivity Options	Network & Digital Connectivity Options
PG16-16MI PG16-16LI PG16-16LO PG16-8MI-8LI PG16-8MI-8LO PG16-8LI-8LO PG16-8DMPRE PG16-8AE PG16-8AE-SRC PG16-4AE-8MI PG16-4AE-8LI PG16-4AE-8LO	MI-Microphone Inputs DMPRE-Dual Microphone Inputs LI-Line Level Inputs LO-Line Level Outputs AE-AES3 I/O	FXS, FXM, and TP connectivity modules are available with all PG16- and PG8-Audio models.
8 Ports "PG8-AUDIO" Product Models		
PG8-8MI PG8-8LI PG8-8LO		

INTERCOM INTERFACES

The PG-INTERCOMs are 1RU digital intercom audio and data control I/O interface devices for the ProGrid Signal Transport Solution.

All PG-Intercom devices allow seamless integration of intercom audio and control data from Clear-Com and RTS/Telex intercom panels, interfaces and matrices. The PG-Intercom devices are available in two different hardware configurations, RS422 for Clear-Com and RS485 for RTS/Telex. The PG4-

Intercom devices offer four RJ45 4-wire intercom ports while the PG8-Intercom devices offer eight RJ45 4-wire intercom ports. The RJ45 ports are duplicated with reverse wiring so that half the ports are wired for connection to intercom panels or interfaces and half the ports are wired for connection to the intercom matrices. The devices can be used as a generic networked audio line level input and output converter. Devices include dual power supplies with automatic switchover.



"PG8-INTERCOM" Product Models 8-Port Intercom Inputs	Connectivity Options	Network & Digital Connectivity Options
PG8-INTERCOM-CC PG8-INTERCOM-485 PG8-INTERCOM-444	CC – Clear-Com four wire matrix ports with serial control 4 four wire Clear-Com matrix ports with line level and RS422 serial inputs and outputs for Clear-Com key panels, matrices and interfaces. 485 – RTS four wire intercom ports with serial control 4 four wire RTS matrix ports with line level and RS485 serial inputs and outputs for RTS key panels, matrices and interfaces.	FXS and FXM are available with these models.
"PG4-INTERCOM" Product Models 4-Port Intercom Inputs	444 – Line level inputs and outputs, GPIO and DC output 4 line level inputs and outputs with optically isolated general purpose inputs and relay switched general purpose outputs. Auxiliary DC outputs to power external circuits.	
PG4-INTERCOM-CC PG4-INTERCOM-485 PG4-INTERCOM-444		

DIGITAL MADI INTERFACE DEVICES

The PG2-MADI-C and PG2-MADI-F are 1RU digital audio I/O interface devices for the ProGrid Signal Transport Solution.

All PG2-MADI devices have two MADI input and two MADI output ports, allowing the transmission of up to 128 input and 128 output digital audio channels. Each MADI port can be adjusted to handle different formats according to AES10

standards. The PG2-MADI-C is equipped with coaxial MADI interfaces using standard BNC connectors. It is suitable for DiGiCo and AVID digital consoles. The PG2-MADI-F is equipped with duplex SC multi-mode optical interfaces. As an interface, it is possible to control ProGrid microphone preamps directly from Soundcraft, Studer, Lawo or SSL digital consoles. Devices include dual power supplies with automatic switchover.



"PG2-MADI" Product Models 2x 64 MADI In + 2x 64 MADI Out	Connectivity Options	Network & Digital Connectivity Options
PG2-MADI-F PG2-MADI-C	MADI-F – 2 Optical 64 Channel MADI Ports MADI-C – 2 Coaxial 64 Channel MADI Ports	FXS and FXM are available with these models.

AES/EBU AUDIO INTERFACE

The PG32-AES is a digital audio interface with AES/EBU ports for the ProGrid Signal Transport Solution.

The PG32-AES device offers four principal ports for connection and transport of a total of 32 AES/EBU digital audio channels, i.e. 64 mono channels. The 4 x DSub25 ports with eight channels can be assigned as AES/EBU inputs or AES/EBU outputs in groups of four. The PG32-AES can

be used as an interface to all microphone pre-amps with AES3 outputs. It serves as I/O to the converter devices to PG-Audio FX devices or via SANE to PG-Audio TP devices. Using ProGrid microphone preamps, the PG32-AES enables direct gain control of the preamps from most digital consoles, including Yamaha, DiGiCo, Soundcraft, Studer, Lawo or SSL digital consoles. Devices include dual power supplies with automatic switchover.



"PG32-AES" Product Models 4x 8 AES3 channels ports 32 AES3 (64 mono channels)	Connectivity Options	Network & Digital Connectivity Options
PG32-AES	AES pairs, switchable as I/O in blocks of 4 pairs.	FXS and FXM are available with these models.

INTERFACE CARDS

The ProGrid YG2 Interface Card allows direct connection of Yamaha consoles to the fiber links of any ProGrid Signal Transport Solution. The YG2 conforms to the Yamaha Mini-YGDAI standard of 16 IN/16 OUT audio channels through the console slot. The front panel offers two fiber connections,

one 10/100MBit Ethernet transport, RS232/USB for ProGrid Software and 2x RS422 for transporting of Yamaha Remote Protocol to Yamaha AD8HR microphone devices. Additional ProGrid YS2 daughter boards can be connected via CAT5 cables using the RJ45 SUB Port to enlarge the number of audio channels, up to 64 IN / 64 OUT (32 IN / 32 OUT at 96kHz). Maximum of 3 YS2 cards can be installed.

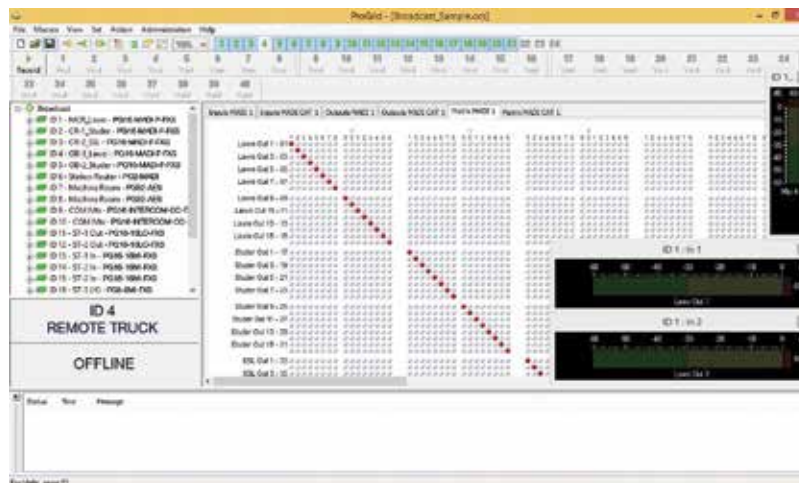
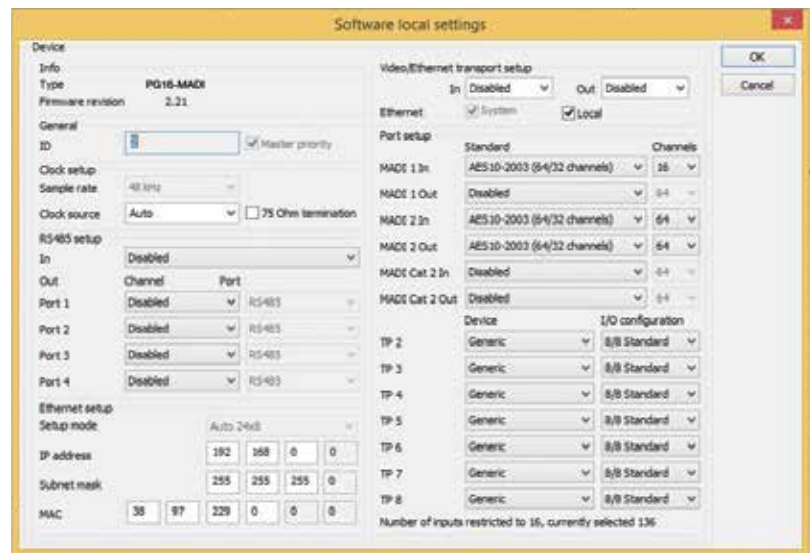
Product Models		
PG-YG2		PG-YG2 – 64/64 Yamaha Master Card / PG-YS2 – 16/16 Yamaha Slave Card The PG-YG2 and PG-YS2 Yamaha cards allow a redundant fiber connection of a Yamaha mixing console to a 1Gbit ProGrid network. The YG2 card is capable of 64 inputs and outputs and connection to multiple YS2 slave cards. Also capable of transporting and converting the Yamaha HA remote protocol and fast Ethernet.
PG-YS2		
PG-Y3R-TP		Yamaha General Digital Audio Interface I/O Card for SANE The PG-Y3R-TP card is capable of 16 inputs and outputs. Multiple cards can be daisy chained from a 64 channel input/ 64 channel output SANE port on a ProGrid FX device or used in a SANE network. Also capable of transporting and converting the Yamaha HA remote protocol and fast Ethernet.

All ProGrid devices are controlled by the CONTROL SOFTWARE. The software allows the configuration of and access to the:

- Complete audio/data network MATRIX
- Naming and gain setting of all inputs
- Configuration of the word clock settings
- Provision of phantom power for all mic inputs
- Storage and recall of the configuration setup
- Real time level display of the individual channels

Input-output, Matrix and Patch

Any input of the system can be routed to any output by means of the Matrix tab. One input can be routed to more than one output.



Supervising the Network

Working in ON-LINE mode, it is possible to have the complete network under control. The software advises the system manager of every significant event, such as input clipping, fiber/CAT5 disconnection, RS232/USB/LAN connection status. A log window will automatically pop up on event, if desired.



About Clear-Com®

Clear-Com, an HME company, is a trusted global provider of professional real-time communications solutions and services since 1968. We innovate market proven technologies that link people together through wired and wireless systems.

Clear-Com was first to market portable wired and wireless intercom systems for live performances. Since then, our history of technological advancements and innovations has delivered significant improvements to the way people collaborate in professional settings where real-time communication matters. For the markets we serve – broadcast, live performance, live events, sports, military, aerospace and government, our communication products have consistently met the demands for high quality audio, reliability, scalability and low latency, as well as addressed communication requirements of varying size and complexity. Our reputation in the industry is not only based on our product achievements, but also on our consistent level of customer engagement as well as continuous dedication in delivering the right solution for specialized applications and the expertise to make it work. Around the globe and across markets, Clear-Com innovations and solutions have received numerous awards and recognitions for our ingenuity and impact to customers.

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