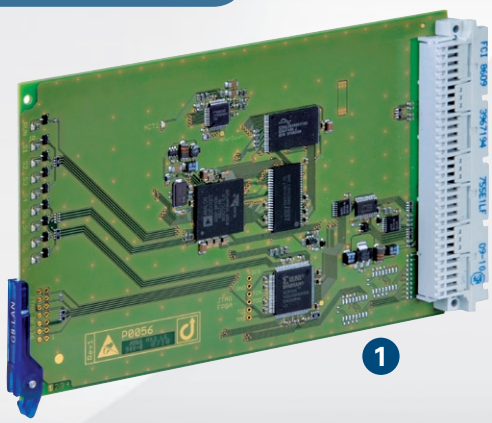
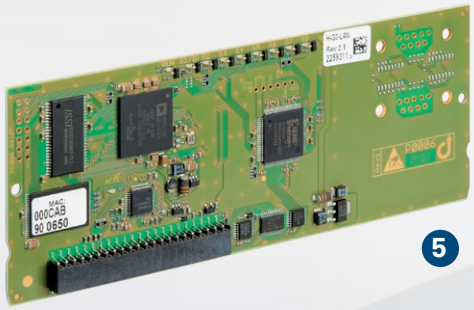
G8-LAN-8
G3-LAN-8





Ethernet-Network Card G8-LAN-8 | G3-LAN-8

The G8-LAN and G3-LAN network cards are the solution to the challenge of IoIP® - Intercom over IP: GE 300 and / or GE 800 Intercom Servers can be networked in IP-networks via Ethernet connections - the same as GE 200 and GE 700 Servers of the previous generation. In this way maximum backwards compatibility is achieved.

1. **G8-LAN-8**
   Interface card for networking of GE 300 and GE 800 Intercom servers via Ethernet (corresponding to IP protocol). All features available across the entire network without restrictions. Maintenance and configuration of the entire network from one central point. Up to 8 connections with G8-LAN-8
2. **L8-LAN-16 (licence)**
   Licence upgrade for G8-LAN-8 for 16 LAN-connections.
3. **L8-WAN-8 (licence)**
   Licence upgrade for G8-LAN-8 for 8 WAN-connections for supra-regional networking of Intercom Servers.
4. **L8-WAN-16 (licence)**
   Like L8-WAN-8 but with16 WAN-connections.
5. **G3-LAN-8**
   Like G8-LAN-8 but for GE 300 Intercom Servers.
6. **L3-LAN-16 (licence)**
   Licence upgrade for G3-LAN-8 for 16 LAN-connections.
7. **L3-WAN-4 (licence)**
   Licence upgrade for G3-LAN-8 for 4 WAN-connections for supra-regional networking of Intercom Servers.
8. **L3-WAN-8 (licence)**
   Like L3-WAN-4 but for 8 WAN-connections.
9. **L3-WAN-16 (licence)**
   Like L3-WAN-4 but for 16 WAN-connections.

COMMEND
SECURITY AND COMMUNICATION

Technical data – Benefits

TECHNICAL DATA

Operating temperature range:	0° C to +50° C (32° F to 122° F)
Storage temperature range:	–30° C to +60° C (–22° F to 140° F)
Relative Humidity:	20 % to 80 %
Plug:	G8-LAN-8: 96-way PC board connector according to DIN 41612 G3-LAN-8: 40-way socket
Power supply:	from Intercom Server
Emergency power consumption:	0.05 Ah
Number of connections between two Intercom Servers / regions:	GG8-LAN-8 / L8-WAN-8 / G3-LAN-8 / L3-WAN-8 / L3-WAN-4: up to 8 G8-LAN-16 / G8-WAN-16: up to16
Cabling:	CAT 5
Protocol:	IoIP® protocol (over UDP) + IP protocol
Data rate:	10 / 100 MBit/s
Measurements:	G8-LAN-8: 100 x 167 mm (3.94 x 6.58 inch) G3-LAN-8: 60 x 160 (2.36 x 6.30 in)
Weight including package:	G8-LAN-8: 180 g (0.4 lbs) G3-LAN-8: 140 g (0.3 lbs)

EXTENT OF SUPPLY

G8-LAN-8
1 network card including short reference
G3-LAN-8
1 network card including short reference
L8-LAN-16 / L8-WAN-8 / L8-WAN-16 / L3-WAN-4 / L3-WAN-8 / L3-WAN-16
1 licence key

BENEFITS G8-LAN, G3-LAN

- Networking of Intercom Servers via Ethernet (corresponding to IP-protocol).
- Excellent speech quality (audio bandwidth up to 16 kHz).
- For GE 800 and GE 300 Intercom Servers.
- When idle (no conversations) only a minor bandwidth in the network is required.
- Networking of up to 239 Intercom Servers possible (with more than 60 Intercom Servers a WAN-network is recommended).
- All features available across the entire network, configuration of the entire network via PC from one Intercom Server (after configuration of the LAN-connection).
- Designed for operation in Dedicated-Networks or in Networks with QoS (Quality of Service).
- GE 800, GE 700, GE 300 and GE 200 Intercom Servers can be used in the network as desired.
- Connection to up to 16 Intercom Servers per interface.
- Connection of modems with reduced bandwidth possible.
- No installation board required.

BENEFITS L8-WAN

- Networking of Intercom Servers via Ethernet/IP networks.
- GE 800, GE 700, GE 300 and GE 200 Intercom Servers can be used in the network as desired.
- Intercom system divided into regions.
- WAN networking over IP with up to 120 regions.
- Can be used to configure Intercom systems with up to 14,280 networked Intercom Servers.
- Up to 30,000 subscribers are able to communicate with each other within the entire WAN network.
- Regions with 8 digit numbering system.
- 1 to 4-digit prefix codes to identify different regions.
- Up to 32 conversations (7 or 16 kHz).
- Up to 16 music or radio channels (3.5 kHz).

COMMEND
SECURITY AND COMMUNICATION

Requirements

SYSTEM REQUIREMENTS

The following table shows all card versions and the corresponding minimum system requirements:

G8-LAN Rev. AA	
Intercom Server software:	min. PRO 800 1.0
Firmware:	min. 5.2
Configuration software CCT 800:	min. CCT 800 1.0
G3-LAN Rev. AA	
Intercom Server software:	min. PRO 800 1.0 B
Firmware:	min. 5.2
Configuration software CCT 800:	min. CCT 800 1.0
G8-LAN Rev. AB / G3-LAN Rev. AB	
Intercom Server software:	min. PRO 800 1.1
Firmware:	min. 5.3
Configuration software CCT 800:	min. CCT 800 1.1

Note: With the minimum system requirements it is not possible to use all functions. For full functionality please use:

all LAN cards and revisions	
Intercom Server software:	PRO 800 1.2
Firmware:	min. 5.3
Configuration software CCT 800:	min. CCT 800 1.2

Additional features with the software above:

- Up to 16 uncompressed conversations in perfect 16 kHz audio quality
- Licenses L3-LAN, L3-WAN, L8-WAN
- Combination of L3 licenses (up to 16 connections)

MAXIMUM NUMBER OF LAN / WAN CONVERSATIONS

Maximum number of GE 300 / GE 800 conversations with the minimum system requirements:

	compressed		
	3.5 kHz	7 kHz	16 kHz
Maximum LAN / WAN conversations	32	8	8

Maximum number of LAN / WAN conversation with:

	GE 800 / GE 300
Intercom Server software:	min. PRO 800 1.2
Firmware:	min. 5.3
Configuration software CCT 800:	min. CCT 800 1.2

	compressed			uncompressed *		
	3.5 kHz	7 kHz	16 kHz	3,5 kHz	7 kHz	16 kHz
maximum LAN / WAN conversations:	32	8	8	32	16	16

* For uncompressed conversations the function **16 / 32 uncompressed LAN / WAN calls** must be active (see Manual G8-LAN or Manual L8-WAN)
The function **16 / 32 uncompressed LAN / WAN calls** is not available with GE 300.

Network Requirement

REQUIRED BANDWIDTH

The required total-bandwidth is calculated by adding the number of audio connections (see below) and the signalling data.

TOTAL BANDWITH

Depending on the number of configured Trunk connections to other Intercom Servers, the amount of signalling data increases.

The following table shows the required minimum bandwidth for the network connection per Intercom Server location:

Audio quality	Number of Intercom Servers	Required total bandwidth (incl. 1 audio channel)	additional audio channels
3.5 or 7 kHz	< 5	128 kBps	see table "Audio Connections"
16 kHz	< 5	192 kBps	
3.5 or 7 kHz	< 20	384 kBps	
16 kHz	< 20	384 kBps	
3.5 or 7 kHz	< 60	768 kBps	
16 kHz	< 60	768 kBps	
3.5 or 7 kHz	< 100	1024 kBps	
16 kHz	< 100	1024 kBps	

Attention: If the network connection is shared with other applications:

- the available bandwidth must be increased accordingly, or
- a QoS mechanism must be used to insure the exclusive use of the required bandwidth.

AUDIO CONNECTIONS

Required Bandwidth incl. protocol overhead, for upload/download each:

Type of audio connection	Audio bandwidth	Compression	Required bandwidth per audio connection
Conversation, All Call, Radio Conference, Music	16 kHz	compressed (2 x G.722)	146 kBit/s
Conversation, All Call, Radio Conference, Music	7 kHz	compressed (1 x G.722)	82 kBit/s
Conversation, All Call, Radio Conference, Music	3,5 kHz	uncompressed (1 x G.711)	82 kBit/s
Conversation, All Call, Radio Conference, Music	3,5 kHz	uncompressed (1 x G.711)	82 kBit/s
Conversation, All Call, Radio Conference, Music	7 kHz	uncompressed (2 x G.711)	146 kBit/s
Conversation, All Call, Radio Conference, Music	16 kHz	uncompressed (2 x G.722)	146 kBit/s
At All Calls / Group Calls, radio conferences and music the listed bandwidth is only required in one direction.			

REQUIREMENTS OF THE NETWORK

IP-Addresses and Ports:

- Each G8-LAN/G3-LAN must have a fixed IP address
- The communication to the Intercom Server requires the following ports (configuration firewall/router):
  Standard Port 16384 (configurable - only one port for audio and signalling data)
- The communication between the Intercom Server and the configuration software CCT 800 requires the following port:
  Standard Port 17000 (configurable)

QoS Requirements:

- Maximum one-way-delay 100 ms
- Delay-Jitter not above 50 ms
- 0% packet loss for perfect audio quality

COMMEND SECURITY AND COMMUNICATION

Planning Information G8-WAN

MAXIMUM EXPANSION

- Up to 120 regions
- Up to 14,280 networked Intercom Servers
- Up to 30,000 subscribers are able to communicate with each other within the entire WAN network

1. CALCULATE THE NUMBER OF WAN-CLIENTS

The following counts as a WAN-client:

- Each intercom terminal, that initiates or receives conversations across a WAN-connection.
- Each input, that initiates an input message across a WAN-connection.
- Each output which is switched across a WAN-connection (via dialling or as attendant contact). Outputs which are switched via after dialling (e.g. door openers) do not count as WAN-client.
- Include a reserve of clients for future expansions!

2. NUMBER OF VIRTUAL SERVER-IDS PER REGION

- Virtual Server-IDs must be unique (only supra-regional, therefore multiple WAN-cards within a region Intercom Server can share a virtual number).
- Per 250 WAN-Clients one virtual Server-ID is required.
- The range for virtual Server-ID is 136 to 255. Therefore a maximum of 120 virtual Server-ID are available; each region requires a minimum of one virtual number so a maximum of 120 regions are possible.

3. MAXIMUM SERVER-ID 239

- Available Server-IDs: 1 to 119. Available virtual Server-IDs: 136 to 255.

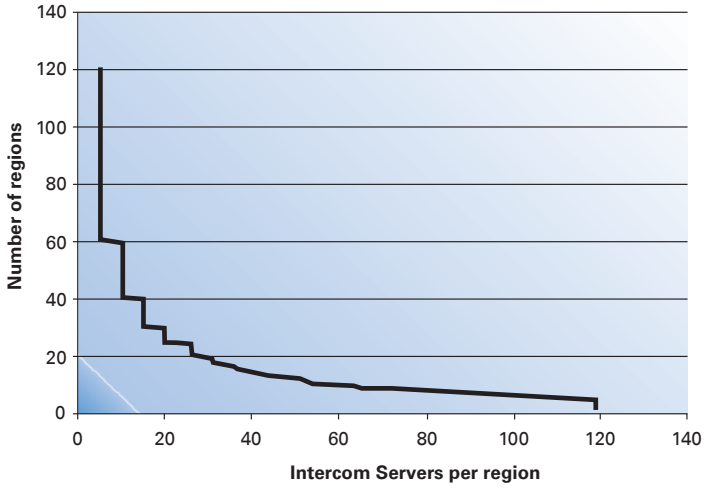
4. NUMBER OF G8-WAN (MAXIMUM OF 7 PER INTERCOM SERVER)

- Calculate the required amount of G8-WAN depending on the number of connections to the regions.
- A maximum of 116 connections per Intercom Server housing is possible (7 cards plus 4 connections via G8-NET). If more connections are required a second GE 800 can be used, however this housing needs a separate virtual Server-ID.
- Therefore, if all Intercom Servers need to communicate with each other a maximum of 116 regions can be realised.

EXAMPLE FOR INTERCOM SERVERS WITH 48 CLIENTS

Each region can talk with all other regions (complete network):

Regions:	Intercom Servers / Region:
120	5
60	10
40	15
30	20
24	26
20	31
17	36
15	41
13	46
12	52
10	62
9	67
8	78
7	88
6	104
5	119



Installation

INSTALLATION

G8-LAN-8

- For connection of the G8-LAN-8 the Ethernet ports of the G8-NET card are used.
- In a Intercom Server GE 800 the card can be installed in the slots 8 to 14.
- A maximum of 7 cards G8-LAN-8 per housing.

G3-LAN-8

- The G3-LAN-8 is connected to the network via the Ethernet port of the G3-GEM.
- A maximum of 1 G3-LAN-8 card per housing
  Limitation: Only one G3-LAN-8, one licence L3-LAN-4 or CNET-W/E1 cards may be used simultaneously.
  (as of PRO 800 1.2 it is possible to combine licenses for a total of up to 16 connections)

General

- It is not possible, to define two parallel LAN/WAN-cards between two Intercom Servers. It is also not possible, to establish a second connection over other Intercom Servers (e.g. like a ring).

PRECAUTIONS

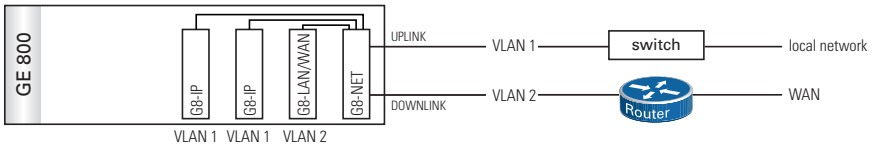
- ESD precautions must be observed.
- Cards may be exchanged only with voltage switched off.
- Mounting and installation of the Intercom Servers and of the equipment may be carried out by authorised service personnel only.

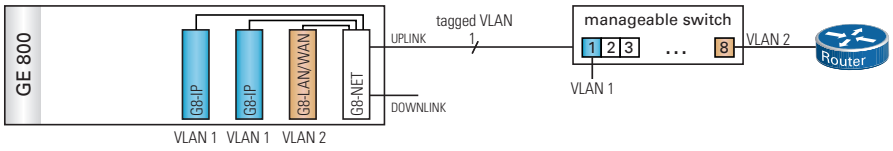
LEGAL NOTICE

The manufacturer guarantees the functionality of its products as described in the data sheets and / or technical documentation. For error-free operation of the Intercom system, faultless transmission paths are mandatory. The functionality of the transmission paths, in particular of IP-networks, exclusively is the responsibility of the operating company of the transmission path and therefore the manufacturer can not be responsible in any manner, for errors and problems, which result from problems or malfunctioning of the transmission path.

VLAN FUNCTIONALITY

With the VLAN functionality the networked Intercom Servers can be protected similar to a firewall.
In this way only the required services/cards can be allowed access to the WAN/internet.





QUALITY TESTED. RELIABLE. SMART.

COMMEND products are developed and manufactured by Commend International in Salzburg, Austria.

The development and manufacturing processes are certified in accordance with **EN ISO 9001:2015**.

A STRONG WORLDWIDE NETWORK

COMMEND is represented the world over by local Commend Partners and helps to improve security and communication with tailored solutions.

www.commend.com

SECURITY AND COMMUNICATION