



LAG-IP R20.2 TETRAPOL Line Access Gate-IP

The LAG-IP is the full IP interface (signalling and audio) to connect Control Centre to TETRAPOL IP radio networks.

The LAG-IP provides all the services required to interface TETRAPOL IP network to the Control Centre and iPBX : VoIP interface and signalling through IP (CC-API for CC and SIP for iPBX). TETRAPOL ciphering and vocoding are provided thanks to two specific MGEM boards embedded in the LAG-IP. Each MGEM board can manage up to 12 accesses. The LAG-IP is available with all the Tetrapol ciphers but also for unciphered networks.

There are four hardware configurations in Airbus DS portfolio, two in 110/220V AC (with or without hosted CC-API server or iPBX SW in a dedicated VM) and two in 48V DC. All these configurations are able to handle up to 24 Tetrapol Line Connected Accesses. The functional capacity is limited by software licenses (for CC or iPBX interface).

The voice interface is based on standard VoIP protocol (RTP of ED137b) when signalling is based on Airbus DS CC-API interface for the CC and SIP for iPBX. CC-API signalling interface was already used

in the former TDM or IP Tetrapol network releases, making easier the migration to LAG-IP. Even if a LAG-IP is mono RN, a CC-API server, if not embedded in the LAG-IP, can manage several LAG-IP that can belong or not to different RNs to reach Control Centre with more than 24 accesses. A LAG-IP can be shared between several organizations in the same RN.

For resiliency, the LAG-IP can be redundant.

LAG-IP V1.0 – TETRAPOL Line Access Gate - IP

Standard configuration

All the LAG-IPs are delivered with 24 Tetrapol accesses even if the number of functional accesses is defined by SW licenses. Depending on the customer expectation, it is possible to order a LAG-IP with a dedicated Virtual Machine to allow the customer to install himself the CC-API server or the iPBX related SW. Several LAG-IPs can be managed with an external CC-API server.

Component and interfaces

The LAG-IP is based on the KONTRON CG2300 server, which is a 19" high performance and resilience server, 2U high and 508mm depth (20"). The CG2300 configuration used for the LAG-IP includes a hot swappable redundant power supply AC or DC, Hard Disk Drives and fans.

Options to be ordered separately

The software licenses for CC or iPBX accesses (4, 8, 12, 16, 20 or 24) have to be ordered separately depending on the number of Tetrapol accesses the customer wants to manage with the LAG-IP. The licenses are stored in a global file in the Mediation Device and can be shared between all the LAG-IP available in the RN. iPBX accesses shall be declared in a dedicated LAG-IP (no mix with CC ones). A KLT (Key Loading Tool) is also mandatory to download the ciphering keys in the MGEM boards. One KLT can be used for several LAG-IPs. A CNIT (Core Network Installation Tool) is required to install the LAG-IP application on the server. When installed in a cabinet, the rear side connectors (Ethernet and USB) may be transferred in the front of the cabinet thanks to the front panel.

Technical specifications

Processor	16-Core Intel® Xeon® Processor E5-2600 V3 Family with Intel® Chipset
Connections	
Serial ports	RJ-45 serial connector in front
USB 2.0 ports	One front / 2 USB2 + 2 USB3 rear
Management ports	One RJ-45 connector (management through RDP)
Ethernet ports	2 rear and 2 or 4 additional RJ45 rear ports
Storage	
Type	2 2.5-inch hot-swap SAS redundant hard drives (up to 6, not tested)
Redundancy	HDD RAID 1
Memory	
Capacity	16GB DDR4 (non-mirrored mode with 16GB DIMMs) (up to 256 GB, not tested)
Physical	
H x W x D	87,6x435,3x508 mm (3.45"x17.14"x20")
Weight	18 kg
Power consumption	250W

Environmental specifications (IEC Standards)

Environmental	
Temperature	Operating: 5°C to 55°C (41°F to 131°F), Storage: -40°C to 70°C (-40°F to 158°F)
Humidity (operating)	5% to 85%
Humidity (non-operating)	95%, non-condensing at temperatures of 23°C (73°F) to 40°C (104°F)
Altitude	0 to 1,800 m (0 to 5,905 ft) @ 40° C
	1801 to 4,000 m (5909 to 13,123 ft) @ 30° C
Vibration (non-operating)	5 Hz @ 0.001g ² /Hz to 20 Hz @ 0.01g ² /Hz (slope up)*
	20 Hz to 500 Hz @ 0.01g ² /Hz (flat)*
	Input acceleration is 2.20g RMS*
	10 min per axis in all 3 axes on all samples* Random control limit tolerance in +/- 3dB*
Shock, operating	Half-sine 2 G, 11ms pulse, 100 pulses in each direction, on each of the 3 axes**
Shock, non-operating	Trapezoidal, 25 G, 205 inches/sec delta V, two drops in per face, (total 12 drops)**
Electrostatic Discharge (ESD)	Tested ESD levels up to 12 KV (kilovolts) air discharge and up to 8kV contact discharge without physical damage**
Acoustic	Sound power: 70dB max at ambient temperatures < 23 +/- 2° C**
RoHS	Complies with RoHS Directive 2011/65/EU and RoHS 6/6
* per Intel®'s 25-GS0009 Boards and Systems Environmental Standards Governing Spec ** per the K00158 CRMS Environmental Standards Specification	
Safety Compliance	
USA/Canada	UL 60950-1, 2 nd Edition/CSA 22.2 No.60950-1 2 nd Edition
Europe	Low Voltage Directive, 2006/95/EC
International	CB Certificate and Report to IEC60950-1, 2 nd Edition and all international deviations
Electromagnetic Compatibility	
Australia/New Zealand	EN55022, Class A Limit
Canada	IC ICES-003 Class A Limit
Europe	EMC Directive, 2004/108/EC;
	EN55022, Class A Limit, Radiated & Conducted Emissions;
	EN55024 Immunity Characteristics for ITE;
	EN61000-4-2 ESD Immunity;
	EN61000-4-3 Radiated Immunity;
	EN61000-4-4 Electrical Fast Transient;
	EN61000-4-5 Surge;
	EN61000-4-6 Conducted RF;
	EN61000-4-8 Power Frequency Magnetic Fields;
	EN61000-4-11 Voltage Fluctuations and Short Interrupts
	EN61000-3-2 Harmonic Currents;
	EN61000-3-3 Voltage Flicker
International	CISPR 22, Class A Limit, CISPR 24 Immunity
Japan	VCCI Class A ITE (CISPR 22, Class A Limit)
Korea	Kcc Approval, Class A
Russia	Gost Approval (EMC and safety)
Taiwan	BSMI Approval, CNS 13438, Class A and CNS 14336 Safety
USA	FCC 47 CFR Parts 15, Verified Class A Limit

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