



LAG-IP V1.0

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, meaning voice over IP interface, signalling through IP and TETRAPOL ciphering and vocoding thanks to specific daughter boards embedded in the LAG-IP.

There are four hardware configurations in Airbus DS portfolio, two in 110/220V AC and two in 48V DC. Both of them are able to handle up

to 24 Tetrapol Line Connected Accesses. The functional capacity is limited by software licenses. Among the configurations with the same voltage, the first one has to be used with an external CC-API server and the second one is foreseen to embed the CC-API server in the LAG-IP in a dedicated VM.

The voice interface is based on standard VoIP protocol (RTP of ED137b) when signalling is based on Airbus DS CC-API interface. 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.

TETRAPOL ciphering and vocoding are available on Airbus DS MGEM board (one board can manage up to 12 channels and two boards are plugged in a single LAG-IP HW). For security and resiliency reason, the LAG-IP can be redudned

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Standard configuration

All the LAG-IPs are delivered with 24 Tetrapol physical 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. Most of the time, the LAG-IP is used with an external CC-API server.

Component and interfaces

The LAG-IP is based on the KONTRON CG2300 server, which is a high performance and resilience server in a 19" rack, 2U high and 508mm depth (20"). The KONTRON 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 (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.

A KLT (Key Loading Tool) is also mandatory to download the ciphering keys in the MGEM boards of the LAG-IP. One KLT can be used for several LAG-IP.

A CNIT (Core Network Installation Tool) is required to install, backup or restore the LAG-IP on the CG2300 server.

When installed in a cabinet, some rear side connectors (Ethernet and USB) of the LAG-IP may not be reachable during operation. A front panel may be mandatory to make easier the maintenance operation transferring the connectors in the front side of the cabinet

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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