

PRELIMINARY

DATA SYSTEMS



ACQUIRE RECORD TELEMETRY & STREAM VISUALIZE & PROCESS

# LMA

## New Gen of COTS Data Acquisition Unit for Space Launch Vehicles



SPACE LAUNCH VEHICLE TELEMETRY

Heim

With its highly ruggedized design, LMA is an **ideal solution for data acquisitions in harsh space environments** with space radiation, vacuum, and high level of vibration and shocks.

Its ruggedized chassis has been designed for space radiative environment and insures a permanent supervision and management of potential SEL and SEE. **High modularity and versatility** is provided by the chassis thanks easy mounting/unmounting of acquisition modules by the user.

**Easy to integrate and to configure**, LMA can be tailored to your measurement plans.

The LMA allows for 2 configurations to achieve **the most cost-effective solution** according to radiation requirements of each stage of the launcher and is fully interoperable with the CMA product family.



Launch Vehicle



Space Orbital Module



Space Exploration

### DESIGNED FOR SPACE ENVIRONMENT

Radiation tolerant, shocks, vibration

### DISTRIBUTED ARCHITECTURE

Integrated system distributed among all stages of the launcher

### TAILORED TO APPLICATION

Users relatable acquisition modules

### INTEROPERABLE WITH THE CMA PRODUCT FAMILY

### COTS PRODUCT

Fully interoperable with the CMA product family

TECHNICAL SPECIFICATIONS

The LMA Core is the basic structure which receives the user modules for your acquisition, reconstruction and topology requirements. It is composed of 1 Central Processing Unit including 28V Power Supply and 32 discrete inputs.

LMA is available in two versions:  
 LMA-Small: 5 modules  
 LMA-Large: 10 modules

Chassis base functions

PCM Output .....	IRIG 106 Chapter 4 & Chapter 7
Other Links .....	Ethernet, RS-422, IEEE1553
Time Sync. Input .....	IRIG-B, PTP IEEE-1588
Time Sync. Output .....	PTP IEEE-1588
Discrete Acquisition .....	32 channels
LMA-CMA Link .....	Ethernet, RS-422

Radiation tolerant feature

SEL full protection  
 SEE detection and recovery in less than 1s. Max probability of 1 event per mission GTO+ (24 000s duration and 20 000km) per channel  
 Full characterized (P+ and Hion)

Mechanical characteristics

LMA-Small 5 modules

Dimensions .....	356 x 116 x 118mm
Weight .....	2.1 kg typ. (with 5 modules)
Max. Power .....	50 W

LMA-Large 10 modules

Dimensions .....	356 x 116 x 118mm
Weight .....	4 kg typ. (with 10 modules)
Max. Power .....	85 W

Interface

Power Supply .....	8 pin circular connector (AMPHENOL)
CPU and Application modules .....	2 circular connectors
.....	APMHENOL 37 pins and 20 pins
.....	SOURIAU P/N 8MC.N.H51.POL3
.....	55 pin circular connector for discrete inputs

Environmental conditions

Temperature Operating .....	-20°C to +75°C
Vibration, random .....	25 gRMS (20 -2000 Hz)
Pyroshock .....	100g / 100Hz to 12500g / 25kHz
ESD .....	8kV (contact) /15kV
Lightning .....	Level 2 (D0160)
Power Supply .....	24 to 32 VDC 100 µs power loss protection
EMI/EMC (Transient, conducted, or DO-160 inducted perturbation and protection)	
Compliant .....	MIL-STD461ED
Vacuum and Thermal Vacuum .....	10-5mbar
Quick depressurization .....	50mbar/s during 20 seconds

OPTIONAL MODULES

LMA ANA - Analog acquisition module

8 generic channels differential or single ended analog signal with or without excitation (current or voltage)  
 High bandwidth up to 20kHz metrological  
 High accuracy up to 0.05% FSR (±8mV - ±10.24V)  
 Thermocouples K, J, T, E, N with cold junction compensation  
 RTD linearisation (PT50, PT100, PT1000)  
 Full bridge strain gauges  
 ICP accelerometers

LMA HDA - High Density Analog acquisition module

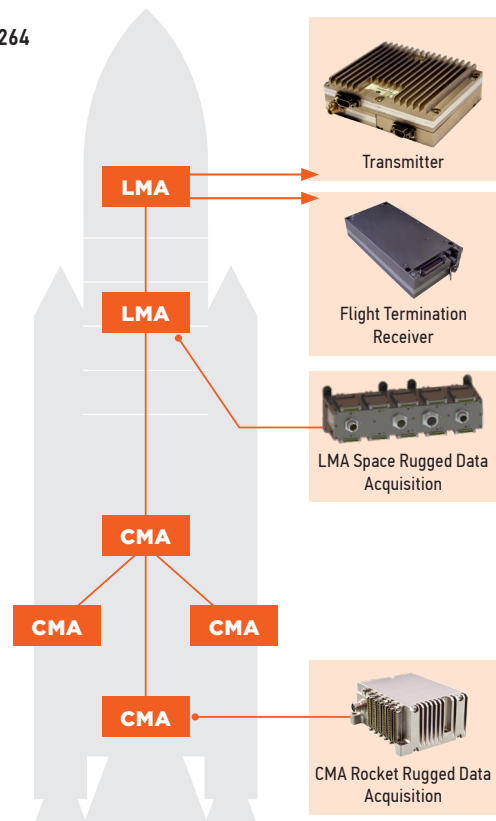
16 channels differential or single ended analog signal  
 High bandwidth up to 20kHz metrological  
 High accuracy up to 0.05% FSR (±8mV - ±10.24V)  
 Thermocouples K, J, T, E, N with cold junction compensation

LMA HDD- High Density Discrete module

40 discrete inputs

LMA VDA - Video Acquisition

2 video channels (Y/C, composite)  
 2 audio channels  
 PAL, NTSC  
 Encoding: H264



GLOBAL SALES

5, Avenue des Andes - CS 90101 - 91978 Courtaboeuf Cedex - FRANCE - Tel.: +33 1 69 82 78 00 - Email: sales.sdsy@safrangroup.com

USA

3005 Business Park Dr - Norcross, GA 30071 - USA - Tel.: +1 770 753 4017 - Email: sales@SafranDataSystemsUS.com