



**THE INDUSTRY'S FIRST 5 MSa/s 24-BIT DIGITIZER
FOR PYROSHOCK APPLICATIONS**



ALI²⁵

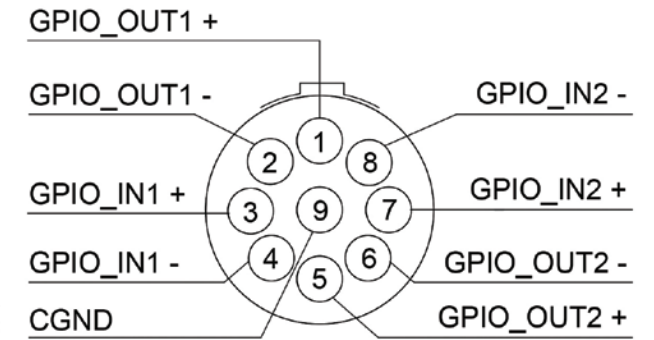
PRELIMINARY DATA SHEET

ALI²⁵

The industry's first 5 MSA/s 24-bit Digitizer for PyroShock Applications

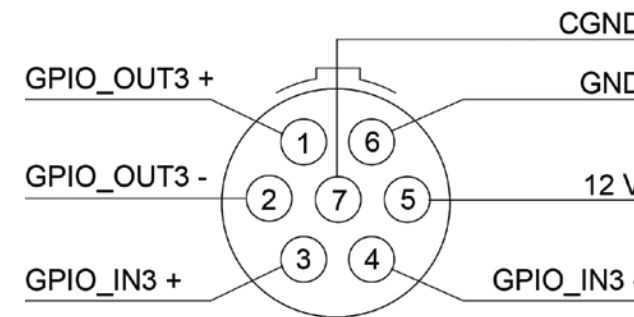
2 Channels supporting Bridge, ICP® and Voltage Inputs. Includes buffered analog output channels and advanced options for synchronization and triggering.

FRONT PANEL



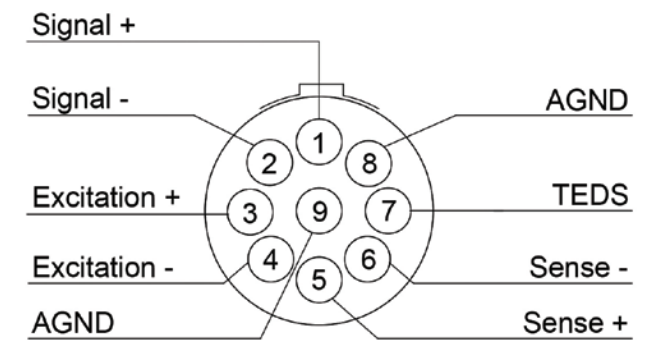
TRG: Digital Interface connector with LEMO® 9-way EHG.0B connector Module Pin Definition

* When looking into the front panel's connector or at the rear of the cable's connector



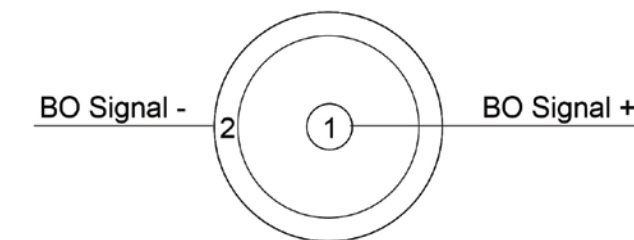
ISM: Intelligent subModule and Digital Interface connector with LEMO® 7-way EHG.0B connector Module Pin Definition

* When looking into the front panel's connector or at the rear of the cable's connector



Inx: Analog Input Channel connectors (1/2) with LEMO® 9-way EHG.0B connectors Module Pin Definition

* When looking into the front panel's connector or at the rear of the cable's connector



BOx: Buffered Analog Output connectors (1/2) with SMB connectors Module Pin Definition. Used to externally monitor the conditioned input signal

* When looking into the front panel's connector or at the rear of the cable's connector

MATLAB
PYTHON
KORNUCOPIA



PhoenixKnect is a touch-compliant software application designed for today's stringent data acquisition and traceability requirements. It is an intuitive solution for control, channel/signal validation, capture, analysis, and archiving of data. And supports simultaneous transient and streaming data capture using a combination of QuantusSeries and SD-VXI hardware. PhoenixKnect postprocessing incorporates your custom scripts in Python, Matlab, or Kornucopia.

IN PARTNERSHIP WITH



COMPUTER METHODS



The ALI²⁵ is a high-bandwidth Module designed for triggered/burst acquisition for Pyro-Shock / Mechanical Shock applications. Each channel includes bridge signal conditioning, a 24-bit 5 MSA/s ADC, and a 21 M sample data buffer. Systems can be configured with 2 to over 1000 channels.

Measurement Integrity and Sensor Status prior to an event is verified with continuous: pre-trigger monitoring, summarized signal information, and sensor fault detection.

Built-in Signal Conditioning for bridge-type transducers and voltage signals. Constant voltage or current excitation is programmable for each channel. Each input channel has a buffered low-noise output channel for monitoring or acquiring sensor data via a secondary system.

Measurements are triggerable by signal level and persistence, external events, data flow, or software command. This advanced set of triggering options supports multi-system synchronization and ensures event detection.

WHERE USED:

- Acquisition of Pyro-Shock / Mechanical Shock events related to impact / shock, ballistics, and explosives test.
- Bridge and Resistive Sensors that require 4-wire and 6-wire configurations.
- Functions such as shunt resistors across all bridge arms (available through ISM SubModule).
- High Voltage SubModule for external high-voltage signal conditioning used in power measurements.

ANALOG INPUT CHANNELS**OVERVIEW:**

2 channels

24-bit resolution, 5 MSa/s sampling rate per channel

Bandwidth:

- dc – 1.0 MHz ± 0.1 dB at 5 MSa/s
- dc – 2.375 MHz -3dB at 5 MSa/s

MODES OF OPERATION:

Voltage input mode

ICP[®] mode 4 mA to 20 mA with 30V compliance

Bridge Input Mode:

- 4-wire plus Shield, (Signal+, Signal-, Excitation+, Excitation-), targeting Pyro-Shock applications
- 6-wire plus Shield, (Signal+, Signal-, Excitation+, Excitation-, Sense+, Sense-)
- Additional bridge conditioning is possible through ISM & PSM (coming soon)

Input Ranges

- \pm (5, 2.5, 1.25) V, \pm (600, 300, 150, 75, 40, 20, 10) mV

Memory

- 21 M Samples per channel, 24-bit

Differential Input

- Input impedance 2 M Ω differential, 1 M Ω to GND

Coupling

- DC or AC coupled

CMRR

- dc – 100 Hz, > 90 dB

CM Voltage Range

- \pm 9 V including signal

Crosstalk

- > 90 dB isolation (channel to channel)

Sense ADC

- Continuous fault detection of the excitation lines to detect open / short circuits.
- The ALI²⁵ can support other applications that require more than the 4-wire Pyro-Shock applications. Other functions, such as shunt resistors across all bridge arms, are available with SubModules

Connectors

- 9-pin LEMO[®] 0B.309 (one input per channel)
- Signal+, Signal-, Excitation+, Excitation-, Sense+, Sense-. TEDS (Class 1 & 2), AGND (REF GND), CGND
- Separate shield through the housing or pin of the connector (DB15). 9 pin LEMO[®] to DB15 breakout cable

FUNCTIONS:

Offset Control using DAC, ± 2.5 V 16-bit resolution

Offset Zero

Software selectable Autozero routine sets ADC output to zero for a given input. Can use a combination of the offset null DAC and digital correction.

Bridge Balancing

- Current injection ± 0.25 mA
- Offset Nulling ± 2.5 V, 16-bit DAC
- Bridge balancing activation available through software command

Excitation Voltage and Current (16-bit DAC)

- Differential dc 0 to ± 10 V (20 V between Excitation+ & Excitation-), current monitored (limited to 90mA per channel)
- Bipolar Constant Current Excitation 0 to ± 30 mA Constant Current (Balanced), 4-wire & 2-wire mode

Bridge Voltage insertion, 10 k Ω resistor may be connected to either signal arm of the bridge and is driven by a 16-bit programmable DAC. Simulated shunt resistors.

- Shunt Calibration. Accomplished through ISM with additional bridge functions
- Gain Calibration. Accomplished using internal multiple precision voltage references
- Full path can be calibrated System to System including buffered output channel path
- External Calibration through DCAT ISO17025 certified system

Health Check and Calibration Options

- Programmable Internal Reference, 16-bit DAC voltage ± 10 V
- Calibrated Reference Ladder matched to input range

Sensing

- Local | Remote | None (Pyro-Shock 4-wire applications)

FILTERING:

Analog Anti-Aliasing filter with AA protection > 100 dB attenuation at ADC sampling frequency and any frequency that can alias

Digital FIR filtering to provide various output data rates (ODR)

ODR of (5, 2.5, 1.25) MSa/s, (500, 250, 125, 50, 25, 12.5) kSa/s

Stopband Attenuation > 115 dB

DIGITAL INTERFACE

GPIO_IN1, GPIO_IN2, GPIO_IN3, GPIO_OUT0, GPIO_OUT1, GPIO_OUT2, 12 V, PWR_IN, GND (non-isolated PWR)

6 x GPIO (3 x IN, 3 x OUT). Supports the following:

- 5 V compliant, 3.3 V operation
- Communication interface to SubModules
- Can be configured as TRIG input / output (different combinations possible)
- Can be used for SYNC input / output
- Can output a CLK signal
- Can support communication over long cables with a SubModule

12 V, PWR_IN, GND (non-isolated)

- PWR signals that can be used by ISM / PSM for processor and relay control
- Can be used with SubModule to convert / adapt Digital interface for various requirements
- ISM / PSM can be locally powered if far away from the main system
- ISM / PSM detection; if present communication can read back the ID to identify the type

Trigger Options

- Software Trigger, triggered by a software command
- Data Flow Trigger, programmable data trigger
- External Trigger, triggered by external pulse
- Real Time Trigger, trigger when analog input signal reached and remains above programmable limit
- Backplane Trigger (4 lines)
- Trigger Holdoff, Trigger Output, Latching Mode, System Triggering, Veto
- Synchronous snapshot monitoring of data blocks in parallel to RAM memory
- Synchronous monitoring across all channels while system is running

Connector

9-pin LEMO® 0B.309

BUFFERED ANALOG OUTPUT CHANNELS

2 channels

Buffered Analog Output Channel for each Analog Input Channel. Provides a conditioned analog output signal for monitoring with a secondary acquisition system.

±1.25 V into 50 Ω for a full-scale input signal

SMB (one connector per output channel)

ISM / PSM (BRIDGE FUNCTION)

Shunt Calibration

120 Ω, 350 Ω, 1000 Ω and user specified bridge completion options

TEDS

COMING SOON

Introducing the ALI²⁵



Compatible with other parameters
High speed. Strain. Bridge. Voltage.

EXAMPLE CONFIGURATIONS



DECAQ-04

FOR PYROSHOCK TESTING

- 12 channels Bridge/ICP®/Voltage at 5 MSa/s
- bandwidth response greater than 2 MHz



DECAQ-10

FOR LARGE MULTI CHANNEL MEASUREMENT

- 24 channels Bridge/ICP®/Voltage at 5 MSa/s
- 16 channels Bridge/ICP®/Voltage at 204.8 kSa/s
- 32 channels of Thermocouple/Pt100/Voltage at 6.4 kSa/s

TWO SYNCHRONIZED DECAQ-06 SYSTEMS

FOR PYROSHOCK TESTING OVER MULTIPLE SYSTEMS

- PTP switch for synchronization
- 36 channels Bridge/ICP®/Voltage at 5 MSa/s



DOWNLOAD
CATALOG

MECALC.com

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A DEMO

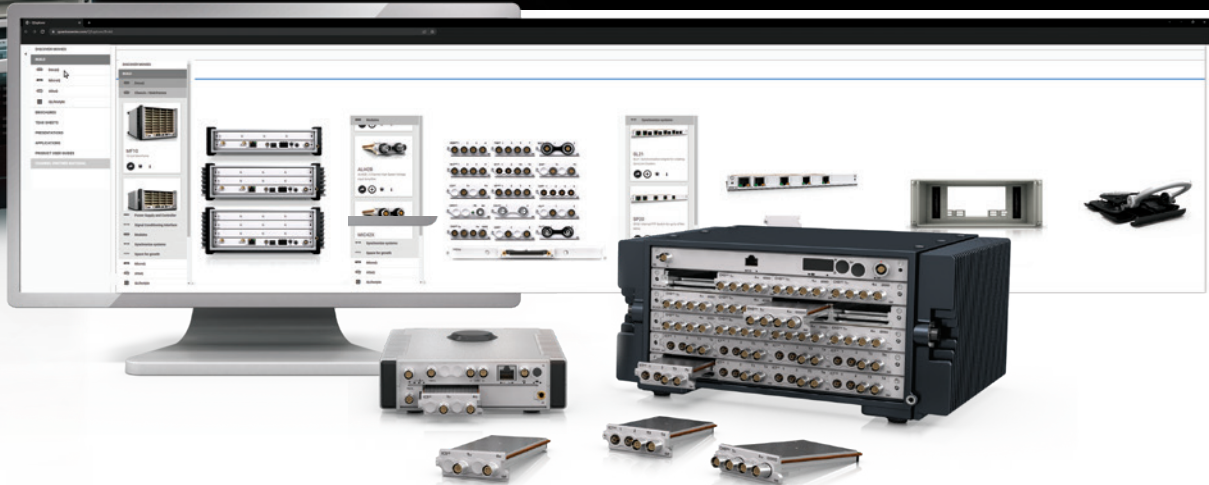


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Your Move

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ICP® voltage

Piezoelectric charge

Tacho

Temperature

High speed bridge and voltage

Microphone

Voltage output

Time and position

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Used to optimise noise, vibration and structural integrity in prototype or quality control testing, our **QuantusSeries** instrumentation is crucial to markets where exceptional development and production quality are essential.

CHARGED TO INNOVATE, we're inspired to create products for those who are as passionate about creating theirs.

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