ADS1500

Data Acquisition System (DAQ system)
Cost-effective efficiency and flexibility

- ¤ 08 universal analog inputs
- ¤ 16 bits A/D converter per channel
- ¤ Internal memory for recording (optional)
- ¤ CAN bus receive/transmit (optional)

Versatility

- ¤ The ADS1500 is a high performance data acquisition system with eight universal analog inputs individually configurable by software.
- ¤ Connect various types of transducers directly to the input terminals without the need for external accessories.
- ¤ It allows the installation of a distributed data acquisition system, which drastically reduces the cost of wiring, since the modules can be close to the measuring points.
- ¤ The ADS1500 compact enclosure allows the use in various applications, even those where space is a limiting factor.

Flexibility

- ¤ Analog inputs individually configurable for different types of sensors: thermocouples, Pt100, IEPE accelerometers (ICP®), strain gages in ½, ¼ and full-bridge circuits, among others. Configuration is performed by software.
- ¤ With screw terminals for easy field sensor connection.
- ¤ Powered by AC adapter (90 to 240 V_{AC}) or DC power (24 V_{DC}), ideal for onboard vehicle applications.
- ¤ Synchronism between ADS1500 using Lynx – TetraSync® technology: by internal clock and by Precision Time Protocol (IEEE 1588).
- ¤ Communication with the PC computer using a wired Ethernet (TCP/IP) or Wi-Fi® wireless communication, using external access point module (not included) [1].
- ¤ CAN bus measurement acquisition (optional).

High performance

- ¤ Maximum sampling rate of 8,000 samples/second.
- ¤ 16-bits A/D converter per channel.
- ¤ Ethernet interface (10Base-T/100Base-TX) for communication with a PC.

Ease of use

- ¤ Minimize channel configuration time using the "Click and Drag" of Lynx - ADS1500 Assistant, easy and intuitive program.
- ¤ Inputs with overvoltage and overcurrent protection.
- ¤ Outputs with short-circuit protection.
- ¤ Automatic discovery in the communication network using Lynx@Net® technology.
- ¤ Calibration by software and data acquisition using Lynx – AqDados and Lynx – SignalVista programs (optionals).
- ¤ Data visualization, processing and analysis using Lynx – AqDAnalysis program (optional).
- ¤ Drivers for MATLAB®, LabVIEW® and Phyton® .
- ¤ Internal shunt-cal resistor activated by software.
- ¤ DC excitation voltage for sensors.
- ¤ Internal self-test with extensive fault coverage.
- ¤ Recording data up to 200 samples/second, on internal memory (optional).

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Technical specifications

Analog inputs and A/D converter

Parameters	ADS1500
Analog inputs per module	08 channels with instrumentation amplifiers
Analog/Digital converter (A/D) and resolution	16-bits Delta-Sigma A/D converter per channel
Maximum sampling rate	8,000 samples/second per channel
Sampling rates	8k, 4k, 2k, 1k, 800, 500, 400, 250, 200, 100, 50, 25, 5 or 1 sample(s)/second
Measuring ranges	±10 V, ±3.33 V, ±1 V, ±333 mV±100 mV, ±33.3 mV, ±10 mV, ±3.33 mV or ±20 mA
Input types (software selectable)	☑ Direct voltage input (±10 mV to ± 10 V, input impedance of 100 kΩ) ☑ Input current (up to ±20 mA) ☑ Thermocouple temperature sensors (types B, E, J, K, N, R, S and T) ☑ Platinum resistance thermometers Pt100 ☑ Wheatstone resistive bridge sensors (full, ½ and ¼ bridge, 120 Ω, 350 Ω by internal jumper) ☑ Potentiometric transducers ☑ Accelerometers or microphones CCP type - *Constant Current Powered* (IEPE - *Integrated Electronics Piezo Electric*, ICP®, Isotron®, Deltatron®, Piezotron®), selected by internal jumper ☑ Electrical resistance (100 Ω to 10 MΩ), PTC, NTC, thermistors ☑ Rotary inductive sensors (magnetic pickup) ☑ Frequency or period measurement up to 200 kHz (only one channel at a time for measurement)
Anti-aliasing filter	Low Pass Filter, 2nd order, cut-off frequency in 11 kHz
Low-Pass Filter (LPF)	Digital, dependent on the selected sampling rate
Internal shunt calibration resistor	Yes: internal precision resistor (120.0 kΩ, 0.05%, 10 ppm/°C)
Balance bridge circuit	Yes: up to ±20 mV/V resistive bridge 120 Ω, controlled by software
Input connector sockets	VB - Terminal blocks with screw connection, SMKDS 1/ 5-3.81 model (PC, Phoenix Contact)

Auxiliary inputs and outputs

Pulse counter input [1]	Yes: 01 quadrature counter input up to 1 MHz, 32-*bits*, programmable as period, frequency or time counter, available at available on DB15C connector
Digital input	Yes: 01 input up to 30 V, isolated
Digital output	Yes: 01 output up to 30 V, isolated
Analog output	Not available
Excitation voltages for sensors per channel (selectable by software)	☑ Range DC: 2,5 V_{DC}, 5 V_{DC}, 10 V_{DC} or adjustable range from 2,5 V_{DC} to 12 V_{DC}, max. 45 mA
Auxiliary voltage output for sensor excitation	☑ +24 V_{DC}, available in E terminal, max. 50 mA (only when channel input is configured to current mode, selectable by software)
PWM digital output [1]	Yes: 01 output, frequency: 1 Hz to 12 kHz, duty cycle: 0.1% to 99.9%, available at R terminal
Cold Junction Compensation (CJC)	Yes: internal cold junction circuitry, when thermocouple sensors are used

Communication and Synchronism

CAN bus communication	Optional: 01 ISO11898 port, up to 1 Mbps; Receiving up to 48 signals (10000 readings/sec. max.); Transmitting up to 10 internal signals (100 readings/sec. per signal); support J1979 protocol
Communication with the PC	Ethernet interface 10/100 Mbits/s (10/100Base-T), TCP/IP protocol and RJ-45 type connector
Synchronism capability with a similar system	Yes: using *Lynx - TetraSync®* technology: trigger by internal clock or PTP Ethernet (IEEE-1588 PTPv2)

Physical characteristics and operating conditions

Supply voltage range	AC: 90 to 240 VAC (AC adapter included) or DC: 24 VDC, max. 1.0 A
Power consumption	15 W
Temperature range	operation: 0 to 55 °C │ storage: -10 to 70 °C
Relative humidity	10 to 80%, non condensing
Enclosure material	Extruded aluminum
Dimensions	35 x 140 x 205 (mm, height x length x width)
Weight	660 g (approx.)

[1] Inquiry Lynx engineering department for more product details. Revision: 0.1.09.2019.