

The TMI 1451.2-NA Network Node provides a simple, inexpensive way to build smart transducer networks based on the IEEE 1451.2 standard for connecting transducers to microprocessors. IEEE 1451.2 defines a Transducer Electronic Data Sheet (TEDS), as well as the digital interface for accessing that data sheet, reading sensors, and setting actuators. It provides transducer manufacturers and system integrators a network-independent way to build network-capable smart transducers.

The TMI 1451.2-NA RS-485 Network Node provides the functions of a Network Capable Application Processor (NCAP), and includes an RS-232 serial interface and software to permit using a personal computer (PC) to load and view TEDS, or to set and monitor transducers. Two RS-485 connector ports are provided to permit daisy chaining of nodes. Up to 255 TMI 1451.2-NA nodes can be connected into a single RS-485 network.

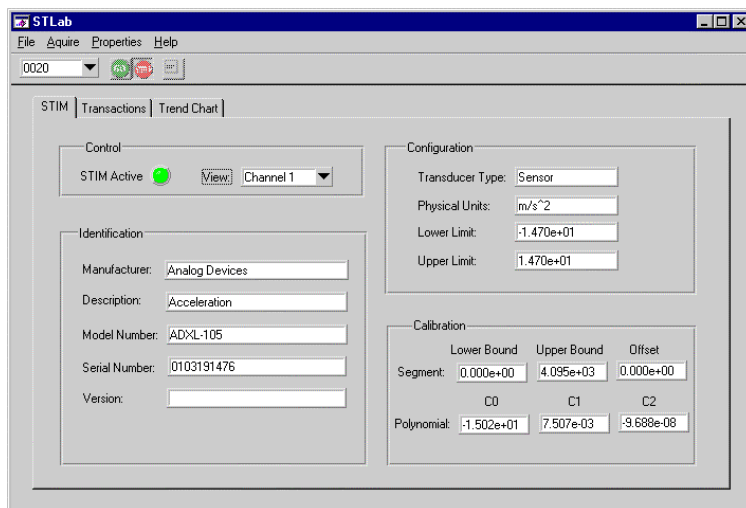
Each node contains its own electronic data sheet that includes the node model number, serial number, and a 32-bit unique identifier. For convenience, and to reduce the network overhead of transmitting long node numbers, the PC will automatically find each node and assign it an 8-bit network identifier at the time of initialization of the network. This 8-bit identifier is used for all communications with the nodes. The identification procedure will assign network identifiers in numerical order of the 32-bit unique identifiers.

The TMI 1451.2-NA will collect sensor data upon command, or it will stream data in response to a global trigger signal or command. Data streams from one or more nodes or channels may be plotted on the computer screen or may be written to a log file.



Highlights

- **Low-cost RS-485 IEEE 1451.2 NCAP (requires one PC per RS-485 chain)**
- **Up to 255 nodes can be daisy-chained together**
- **Global trigger signal for synchronized data sampling**
- **Includes RS-232 to RS-485 serial converter**
- **Includes STLab software for controlling transducers and viewing data**



An NCAP requires a Smart Transducer Interface Module (STIM) to provide the transducer data and TEDS information to be transmitted over the network. The TMI 1451.2-SA Smart Transducer Module can be used to convert existing transducers into STIMs.

Also available is the TMI 1451.2-KA kit which contains one TMI 1451.2-NA node and two TMI 1451.2-SA interface modules, one of which has been built into a fully functional accelerometer STIM. The second interface module is included so that manufacturers may build experimental IEEE 1451.2 STIMs using their own transducers.

Specifications

Mechanical

Housing (plastic - see drawing) 4.33 x 2.44 x 1.09 in.
 IEEE 1451.2 interface connector type female 15 pin Subminiature-D, shell size 1
 RS-232 serial adapter connector type female 9-pin Subminiature-D, shell size 1
 RS-485 connector type terminal block

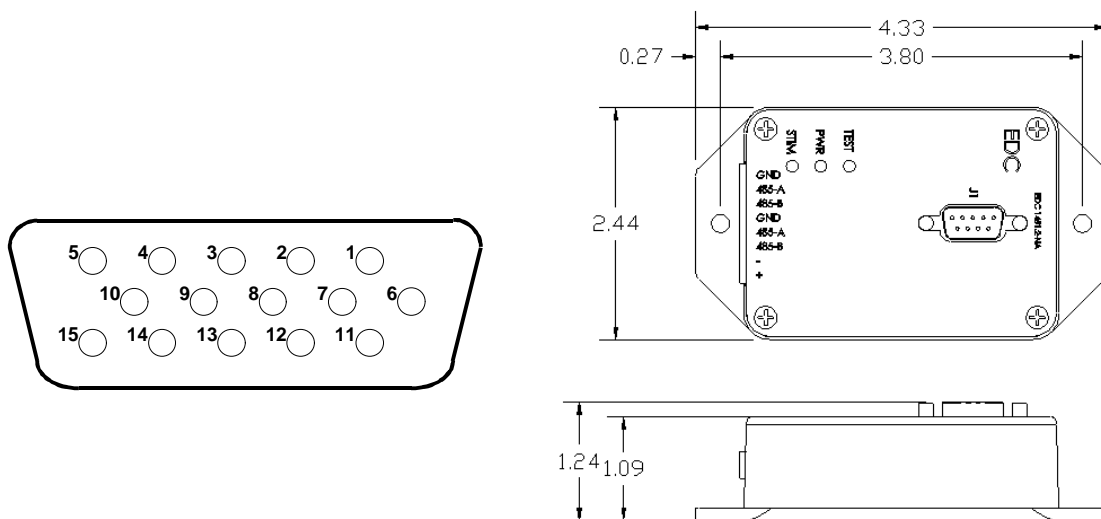
Electrical

Supply voltage 6 to 30 V
 Operating current (not including STIM power)..... 10 mA
 STIM power current capability 75 mA maximum

Performance

Maximum RS-485 communications rate (with RS-232 adapter)..... 115,200 bits/s
 Maximum RS-485 communications rate (with dedicated RS-485 adapter)..... 460,800 bits/s
 Typical streaming data sample rate (total of all nodes, 16-bit data, PC port)..... 600 Sa/s

IEEE 1451.2 Connector Configuration and Housing Dimensions



Pin number	Signal name	Direction for NCAP	Direction for STIM
1	DCLK	OUT	IN
2	DIN	OUT	IN
3	DOUT	IN	OUT
4	NTRACK	IN	OUT
5	COMMON (GROUND)	POWER	POWER
6	NIOE	OUT	IN
7	NIO_INT	IN	OUT
8	NTRIG	OUT	IN
9	POWER (+5 VDC)	POWER	POWER
10	NSDET	IN	OUT

These pin assignments are as recommended by IEEE 1451.2. Unspecified pins are not connected.