DATAIR-400/M3

HANDHELD ARINC 429 DATABUS TESTER

The updated **DATAIR-400/M3** new hardware and firmware provides an easy to use first line diagnostic tool for viewing and generating ARINC 429 data. It allows the user to connect to an ARINC 429 data bus and easily view the active ARINC 429 Labels on the bus or to setup a list of ARINC 429 labels to transmit onto a test data bus in order to simulate a specific test scenario.

The DATAIR-400/M3 ARINC 429 handheld Tester comprises of an 8 line by 21 character backlit LCD, an alphanumeric keypad, a microprocessor controlled ARINC 429 receiver and transmitter board and a detachable rechargeable battery pack.

Bus Monitor

Connect the receiver to an active ARINC 429 data bus, select the <RECEIVE> menu, press the ENT key and the user will be presented with a scrollable list of active ARINC 429 labels. The format of the list of labels can be toggled (by pressing SYM key) between a list of label names and a list of labels with their associated 32-bit values. This provides a very simple monitor involving just a single key press.

Using the ↑↓ keys, select a label of interest from the Bus list and press the ENT key to inspect the data value of the label. This Monitor screen will display in real time the Label number in octal, SSM, SDI, Binary and Hex values, state of Parity, Label transmission rate and the Bus bit rate. If a label has multiple values of SDI then the SDI filter can be scrolled to separate the individual labels. "SDI:XX" is don't care.

By pressing the ↓ key the user will be presented with a live engineering unit's value for this label (if a definition exists). The ARINC 429 decoder circuitry automatically adjusts to 12.5, 50 and 100 k/bps rates.
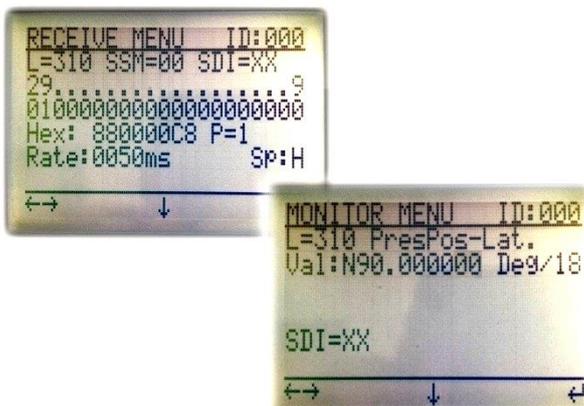
- ✈ An 8 line by 21 character backlit LCD.
- ✈ Automatic bus search and bit rate detection 12.5, 50, 100k/bps
- ✈ Standard and user definable ARINC 429 definitions
- ✈ User definable engineering units on unit or external PC SW
- ✈ ARINC 429 definitions selectable by Equipment ID.
- ✈ Opto-isolator inputs
- ✈ Rechargeable battery providing operation up to 8 hours
- ✈ Low Battery indication
- ✈ Alphanumeric keypad with navigation keys
- ✈ USB Firmware updates – Upgrade cable provided
- ✈ Standard D9 plug and test leads supplied
- ✈ External 6V DC power input.

ARINC 429 Transmitter

The ARINC 429 transmitter can transmit up to 256 labels at either 12.5, 50 or 100 kbps bit rates. Labels can be transmitted independently of each other at various interval rates between 10mS and 1000mS or in Single Shot mode. The firmware has a built-in data bandwidth checker that prevents any attempt to transmit more labels than the bus can accommodate (ie. Ten labels at 12.5kHz at an interval of 10mS will not fit!).

Standard Engineering units

The DATAIR-400/M3 contains standard ARINC 429 label definitions for transmission and for reception. These definitions are taken from the standard Equipment Identifiers (ID:00A etc.) as defined in the ARINC 429-16 specification. ARINC 429 labels can be selected for transmission by scrolling through the list of labels and "tagging" (shown with an '*') the labels required. Only Tagged labels will be transmitted.

Custom Engineering units

In addition to the standard labels definitions the user has the option to create customer specific labels or modified versions of the standard labels and saving them to non-volatile memory. Custom defined labels override standard label definitions where a duplicate exists. To differentiate between Custom and Standard definitions the Label names of Custom definitions are shown in UPPER CASE whereas Standard labels are shown in lower case. Custom Labels can be created, suspended or deleted. If a label is Suspended or Deleted then the Standard definition becomes active again.

Data Entry for transmitted Labels

Data can be entered in binary or hexadecimal format for any label. If a definition exists for the selected label then an engineering unit value can be entered. Current formats are Binary (BNR) and Binary Coded Decimal (BCD). Special BCD and BNR formats are supported for labels such as L260 (Date), L150 (Time), L011, L010, L310 and L311 that have special fields defined within the standard definition.

Fields that can be edited within a selected label are the data, SSM and SDI fields. The Parity is automatically created from the entered value and will be set to ODD. However, it is possible to edit the Parity value by writing to Bit-32 directly. Navigation of the screen is by use of the arrow keys.

User Profiles

Transmitter tag lists and engineering values entered into labels for transmission can be preserved between sessions by saving them to a Profile. Ten Profiles can be saved so that different test scenarios can be easily recalled without the need to set up the instrument each time it is powered on. Profiles can also be created, updated or deleted. Profiles can be backed up to a PC using the Label Definition Software package mentioned above.

Global settings

For configuring default states of the instrument to use Metric or Imperial units, transmitted Parity for Odd/Even or None and setting the default Inter-Word Gap (IWG) for transmitted labels.

## Firmware upgradable and customisation.

The firmware on the DATAIR-400/M3 can be upgraded by the customer via USB/RS232 link using the supplied cable. This means that features that we have in development can be added at a later date. It also means that if a customer requires the DATAIR-400/M3 to be customised in a certain way then we can produce a variant of the firmware specifically for them. There is no requirement to return the instrument to YED for upgrade.
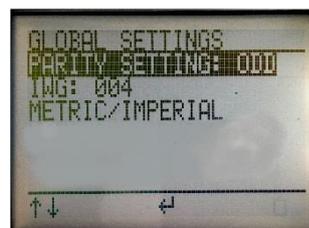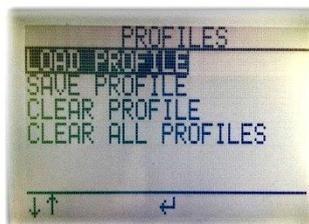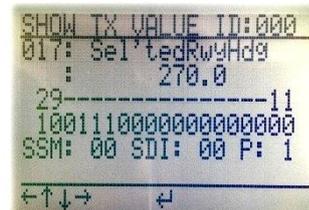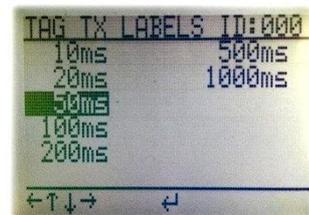
DATAIR-400/M3 Flite Case

The **DATAIR-400/M3** instrument and accessories are supplied in a flite case with the following features:

- Quality carry-case with pre-cut foam to hold the main instrument, user manual and all the accessories.
- Spare pockets for additional batteries, custom cables and test leads, etc.
- Rugged exterior and complies with carry-on baggage regulations.
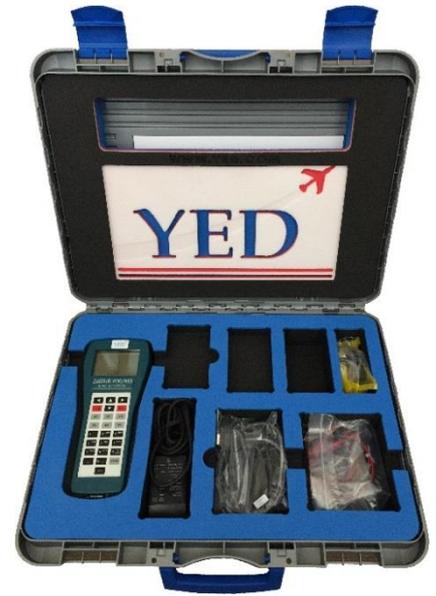
PC Label Definition Software

The DATAIR-400/M3 Label Definition software is a tool for defining custom labels on your PC for use on your DATAIR-400/M3. Although it is possible to define custom labels on the DATAIR-400/M3 directly, some customers prefer to do this on a PC and then download these definitions to their DATAIR-400/M3.

The software provides the following features:

- Offline mode for working on local configurations without DATAIR-400/M3 needing to be present.
- Download and back up any custom defined Labels created on the DATAIR-400/M3 to your PC.
- Delete/Update selected custom labels or add custom labels.
- Erase all custom labels on the DATAIR-400/M3.
- Master update sends all custom storage to the DATAIR-400/M3 for updating the internal custom label tables.
- Import/Export configurations to XML file on your PC.
- Adding/Updating/Deleting custom label storage.
- BNR/BCD and Rx/Tx modifications.

The DATAIR-400/M3 version 2.0 Label Definition software is compatible with Windows XP and higher, x86 and x64, with .NET framework 3.5. No installation is needed, just run it.

Technical Specification

ARINC 429 Receiver

Input:……………………………………………………………	Opto-isolator inputs
Voltage levels (Line A to B):………………………………	

	HI	+6 to 12V
	NULL	+2.5 to -2.5V
	LO	-6 to -12V

Bit rate: ……………………………………………………………	Low Speed:	8 to 18kbps
	Medium Speed:	45 to 55kbps
	High Speed:	80 to 125kbps

ARINC 429 Transmitter

Output:………………………………………………………	Industry standard line driver
Output impedance:………………………………………	75 ±5 Ω (Line A to B)
Voltage levels (Line A to B):………………………………	

	HI	+10V ±1V
	NULL	0.0 to ±0.5V
	LO	-10V ±1V

Bit rate: ……………………………………………………………	Low Speed:	12.5kbps ±0.5%
	Medium Speed:	50.0kbps ±0.5%
	High Speed:	100.0 kbps ±0.5%

Word rate:…………………………………………………	10 to 1000mS
Parity: …………………………………………………………	ODD / EVEN / NONE

Mass

Weight:…………………………………………………………	0.55kg
Dimensions:……………………………………………………	22.9H x 9.7W x 5.4D CM

Power requirements

Input: ……………………………………………………………..	6V DC external power OR
	4.8V @ 2200mAH NiMH battery
	Approximately 8 hours of use from full charge

Environmental

Operating temperature:……………………………………	0 to 50 °C (Indoor use only)
Relative Humidity:……………………………………………..	0% to 85%

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