

Robust Digital I/O Modules for USB

DT9817-R:

- 8 isolated digital input lines with an input voltage range of +/- 3V to +/- 32V and 8 isolated digital output lines capable of switching up to 30V at 400mA. Includes one 32-bit counter/timer.

DT9817-H:

- 28 programmable digital I/O lines with high drive capability to drive solid state relays and one 32-bit counter/timer.

DT9817:

- 28 programmable digital I/O lines with one 32-bit counter/timer.

- [Click here for specifications.](#)
- [Click here for pin assignments.](#)



Figure 1. The ECONseries of low-cost digital I/O modules provide a variety of options for the user in a shielded, rugged enclosure.

Simultaneous USB Series

Model Number	Applications	Digital I/O Lines	Counter/Timer	Isolation to 500V	Source	Sink	Output	Power Fully Loaded
DT9817-R	Mechanical Relay	16 (8 in/8 out)	1, 32-bit	Yes	—	—	30V @ 400 mA	<100mA
DT9817-H	Solid State Relay	28 programmable	1, 32-bit	No	15m	64mA		<150mA
DT9817	Logic	28 programmable	1, 32-bit	No	4.5mA	10mA		<150mA

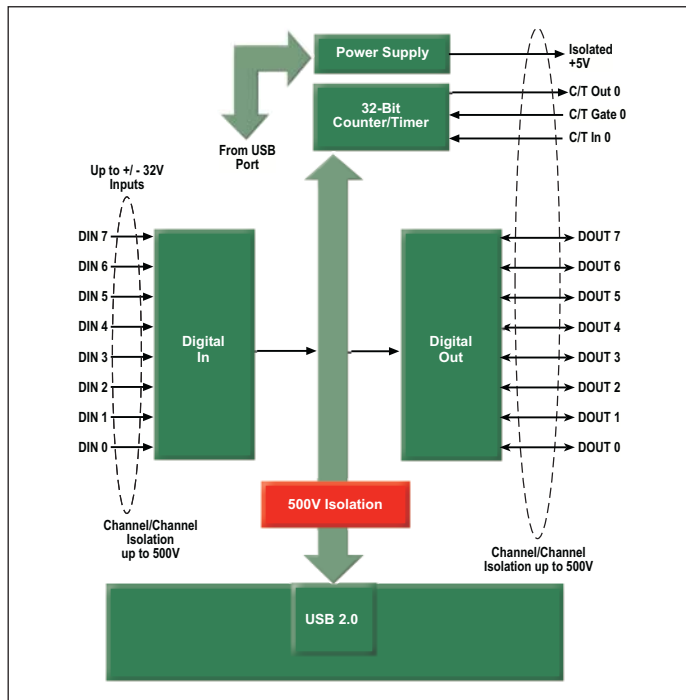


Figure 2. The DT9817-R offers 8 digital input lines and 8 digital output lines. The 8 outputs are capable of switching up to 30V @ 400mA.

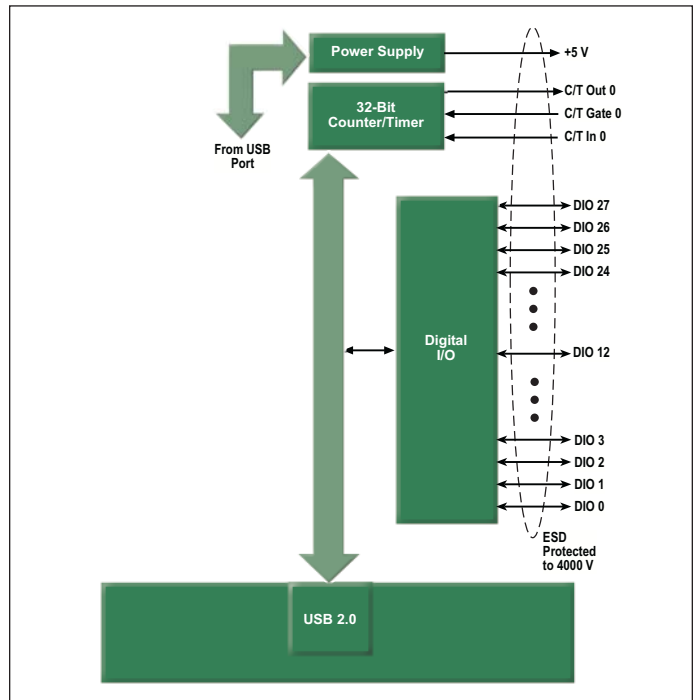


Figure 3. The DT9817 and DT9817-H offer 28 programmable digital I/O lines. The DT9817-H is perfect for driving solid state relays.

Overview

The DT9817-R, DT9817-H, and DT9817 are part of the ECONseries of mini-instruments that offer digital inputs, digital outputs, and 32-bit counter/timer functions.

DT9817-R

The DT9817-R is a low cost, isolated digital I/O module with 8 inputs and 8 outputs and channel to channel isolation up to 500V. The 8 digital inputs have an input voltage range of +/- 3V to +/- 32V and the 8 digital outputs are capable of switching up to 30V at 400mA. It has one 32-bit counter/timer.

DT9817-H

The DT9817-H is also a low cost, non-isolated digital I/O module with 28 programmable lines. These 28 lines are organized as three 8-bit ports and one 4-bit port. These ports can be configured as input, output, or any combination required. This module offers high drive capability that sinks 64mA and sources 15mA for driving solid state relays. It has one 32-bit counter/timer.

DT9817

The DT9817 is a low cost, non-isolated digital I/O module with 28 programmable lines. These 28 lines are organized as three 8-bit ports and one 4-bit port. These ports can be configured as input,

output, or any combination required. This module also offers one 32-bit counter/timer.

Counter/Timer Subsystem

The counter/timer subsystem on these modules can be run by an internal or external clock source.

- Internal clock - Through software the user can specify the frequency at which to pace the counter/timer operation. This frequency can range from 4 Hz to 12 MHz.
- External clock - The user connects an external clock source with a maximum frequency of 6 MHz and then uses a clock divider to specify the actual frequency to pace the counter/timer operation. This is useful when the user wants to pace counter/timer operations at rates not available with the internal clock or if uneven intervals are required.

The subsystem supports four separate operating modes:

- Event counting - This mode is used to count the number of falling edges that occur. The user can count up to 4,294,967,296 events before the counter rolls over to 0 and starts counting again.
- Frequency measurement - This mode allows the user to determine the frequency of the clock input using following equation:

■ Edge-to-edge measurement - This mode allows the user to measure the time interval between a specified start edge and a specified stop edge. The user can measure the pulse width, the period, and the frequency of the signal.

■ Rate generation - This mode allows users to generate square waves or modulated square waves with an output frequency from 4 Hz to 93 kHz by specifying the duty cycle.

Easy User Connections

All signals are brought out to on-board screw terminals for easy connections. High quality industrial Phoenix connectors are used to maintain signal integrity in harsh industrial environments.

USB 2.0 Compatibility

The Digital I/O series is fully compatible with USB 2.0 and USB 1.1. USB 2.0 is both forward and backward compatible with USB 1.1, resulting in a seamless transition process for the user. In fact, USB 2.0 uses the same cables and connectors as USB 1.1. No separate power supply is required, as the board derives its power directly from the USB bus connection.

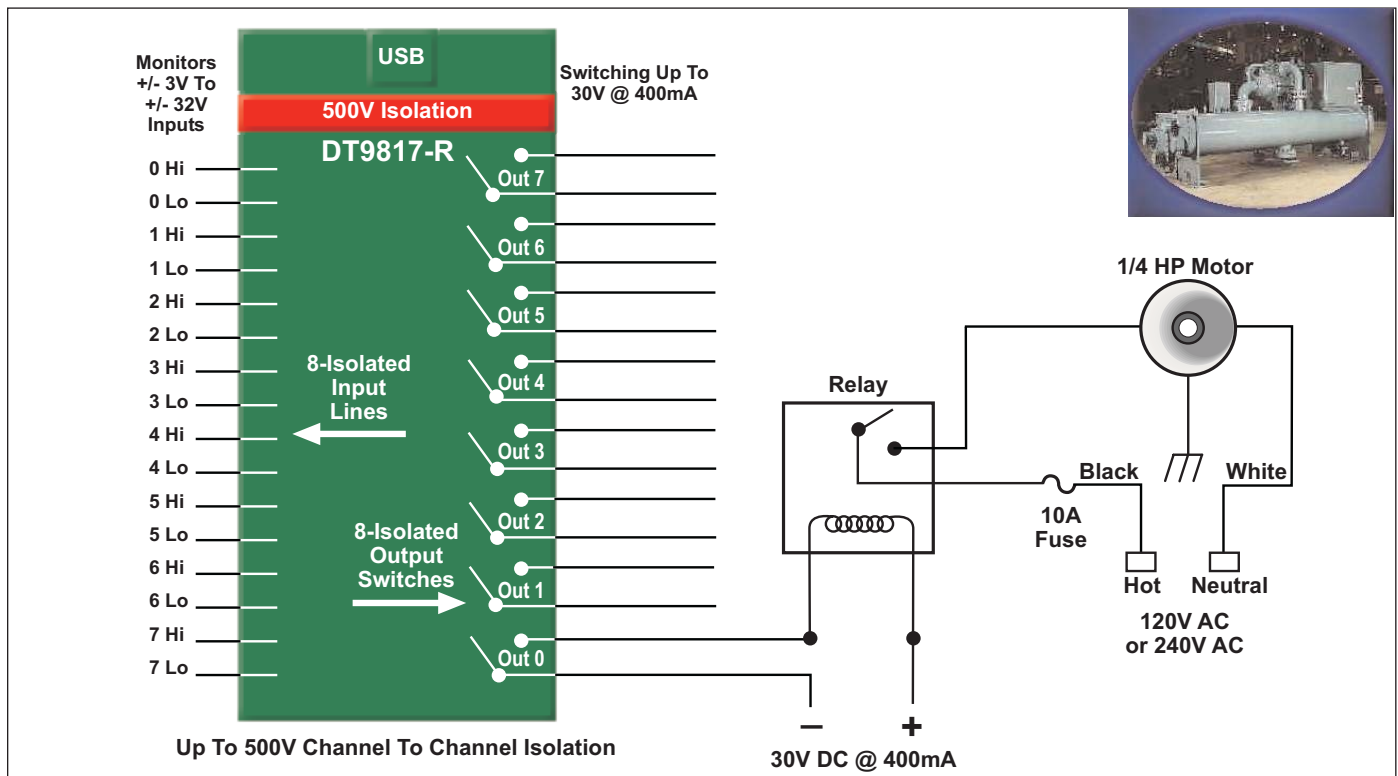


Figure 4. These modules are ideal for control and monitoring applications. Both the DT9817-H and the DT9817-R can be used to control solid state relays and the DT9817-R can be used for mechanical relays or high current electric motor control.

Creating Custom Applications

The **GO! application** provides an easy-to-use solution for measuring signals right out of the box! If, you'd rather create your own application, the ECONseries is fully DT-Open Layers-compliant, allowing users of all levels - from programmers to application users - the ability to create a program for the ECONseries. The following software choices are available:

Options for Solution Development

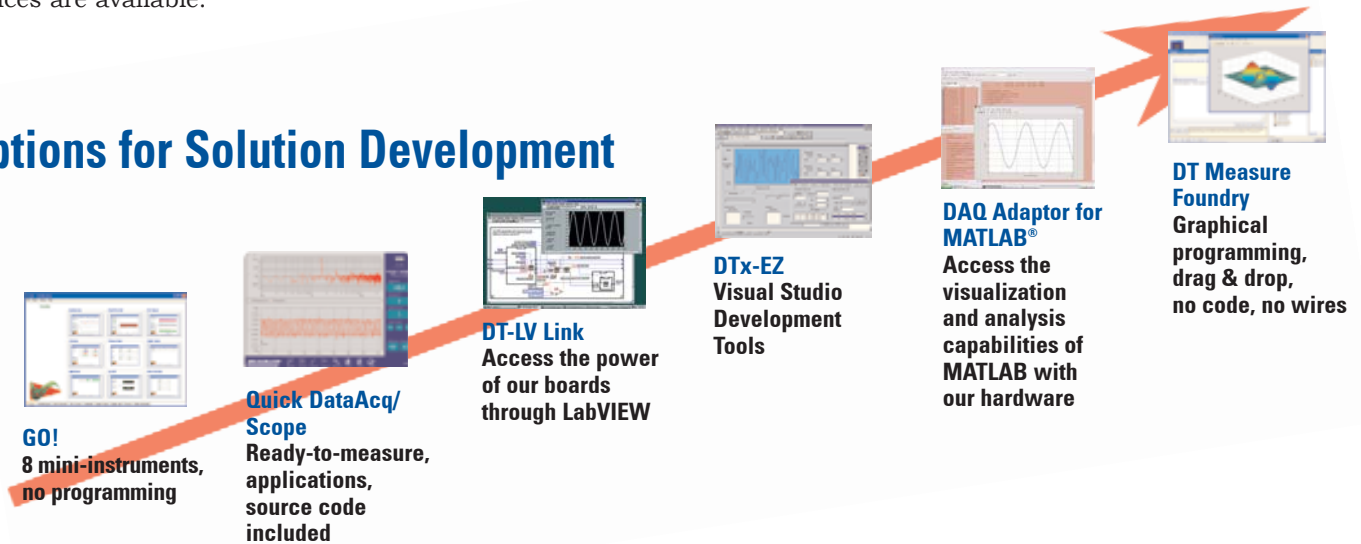


Figure 5. There are many software choices available for application development. Each option offers development capability at different levels. Choose from ready-to-measure applications to full graphical programming with DT Measure Foundry.

- **Quick Data Acq** allows you to collect your displays and save your data to disk. Source code included.
- Run the **Scope** application with any DT-Open Layers data acquisition board for chart recording, data logging, and multi-channel oscilloscope functions.
- For Microsoft® Visual Basic and Visual C++ programmers, **DTx-EZ** provides ActiveX controls that allow quick and easy development of test and measurement applications.
- For nonprogrammers, an evaluation version of **DT Measure Foundry** is available. DT Measure Foundry is a powerful visual software environment for creating test and measurement, control, and analysis applications. By dragging and dropping instrument-like components, called panels, on to your worksheet and configuring their property pages, you can develop powerful applications quickly. No programming or wiring is required!
- For access to the powerful visualization and analysis tools within MATLAB, the **DAQ Adaptor for MATLAB** supports all ECONseries boards.
- For LabVIEW programmers, **DT-LV Link** provides a collection of Virtual Instruments (VIs) that give you the ability to access the func-

tions of the ECONseries modules through LabVIEW.

Technical Support

As you develop your application, application engineers are available during normal business hours to discuss your requirements. Extensive information, including drivers, example code, pinouts, a searchable Knowledgebase, and much more, is available 24 hours a day on our web site at www.datatranslation.com. Support is also available from your point of purchase. Telephone support is free for the first 90 days; you can also request complimentary support via email or fax at anytime.

Cross-Series Compatibility Saves Programming Time, Protects Your Investment

Virtually all Data Translation data acquisition boards, including the ECONseries of digital I/O modules, are compatible with the DT Open-Layers software standard. This means that if your application was developed with one of Data Translation's software products, you can easily upgrade to a new Data Translation board, now or in the future. Little or no reprogramming is needed.

User's Manual

This manual is provided in electronic (PDF) format on the ECONseries CD-ROM provided with the board. You can also purchase a hard copy of this manual.

DIN-RAIL Mounting Kit for USB

This kit provides a simple, standard method for mounting equipment to walls, cabinets, or machinery. The kit contains everything you need to fit it directly on the back of the USB function module housing.

Ordering Summary

Software

The Omni CD includes:

- GO! Applications with mini-instruments
- DT-Open Layers device drivers for Windows 2000/XP
- Evaluation copy of DT Measure Foundry test and measurement application builder for Windows 2000/XP. SPI300-CD
- Quick DataAcq — ready-to-measure software application, source code included.

Free Software Downloads

Data Translation now offers free downloads on the Web for:

- DT-LV Link to access the power of our boards through LabVIEW.
- DTx-EZ to access visual programming tools for Microsoft Visual Basic and Visual C++.
- Scope — chart recording/oscilloscope function application.
- DAQ Adaptor for MATLAB® — software interface to MATLAB.

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