SOLUTIONS CUBED

ICON Adapter Data Sheet

Revision 2

September 23rd, 2002

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1. Revision Log – Electrical / Mechanical Specifications

Date	Rev	Description	By
12-03-01	1	Original Implementation	L. Glazner
03-26-02	2	Removed retail pricing in body of datasheet	L. Glazner
09-23-02	3	Added phone number to footer of datasheet	L. Glazner

2. Introduction

ICON Adapter
ICON Interface Module Test / Development Board

FEATURES
- RS232 translator for quick serial port connection
- Analog output via potentiometer
- Serial communication indicator LEDs
- In-circuit-serial-programming port (for use with Microchip DV164002)
- In-circuit-debugging port (for use with Microchip DV164002)
- Reset button
- Brake button
- Header for connecting serial TTL level lines

2.1 DESCRIPTION
The ICON Adapter is designed to simplify testing and development of projects using the ICON Interface Module and the ICON H-Bridge module. This board can be used in conjunction with the ICON Interface Software to quickly access and configure all capabilities available in both modules.

In addition to providing an RS232 serial interface to the ICON Interface Module the ICON Adapter can facilitate in-circuit-serial-programming, and in-circuit-debugging when used in conjunction with Microchip's DV164002 ICD module. An on-board modular jack provides direct connectivity to the DV164002. This allows custom firmware to be inserted into the ICON Interface Module for customer testing or applications.

A manual potentiometer, reset switch, and brake switch provide additional simplification in testing the ICON Interface Module and ICON H-Bridge. A 9-pin header provides access to various other ICON Interface Module pins including the TX and RX pins. These pins can be used to interface TTL level serial communication lines to the ICON Interface Module by placing a jumper on the "DATA SEL" jumper header.

The ICON Adapter board may be used with the ICON Interface Module Software (available at www.solutions-cubed.com) to act as a testing or programming platform for both the ICON Interface Module and the ICON H-Bridge.

Pricing in single unit quantities is $55.

3. Engineering Specifications

3.1 Absolute Maximum Ratings

These are stress ratings only. Stresses above those listed below may cause permanent damage and/or affect device reliability. The operational ratings should be used to determine applicable ranges of operation.

Storage Temperature	-55°C to +150°C
Operating Temperature	0°C to +70°C
Supply Voltage (+5VDC)	-0.3V to 5.5V
Voltage on EXV	-0.3V to 14V
Voltage on all other connections	-0.3V to 5.5V

3.2 DC Electrical Characteristics

At T_A = 25°C, +5VDC = +5V

Characteristic	Symbol	Min	Typ	Max	Unit	Notes
Adapter Board Voltage	+5VDC	4.5		5.5	V	
Supply Current	I_{CC}			20	mA	
EXV pin		10	12	14	V	VCC_EXT pin for ICON Interface Module
Low Level Input RX pin	V_{RXL}			0.5	V	
High Level Input RX pin	V_{RXH}	2.0			V	
Low Level Output TX pin	V_{TXL}			0.6	V	
High Level Output TX pin	V_{TXH}	3.8			V	
DV164002 Supply Current	I_{ICD}		50		mA	

note: “Typ” values are for design guidance only and are not guaranteed

3.3 Mechanical Dimensions

The ICON Adapter can be used to quickly interface the ICON Interface Module to a PC. The ICON Interface Module Software program is freeware available from Solutions Cubed, and may be used with the ICON Adapter board. This simplifies initial testing and programming of the ICON Interface Module as well as the ICON H-Bridge. The ICON Adapter board may also be used in conjunction with Microchip's DV164002 ICD module to program custom firmware into the PIC16F873 located on the ICON Interface Module. Solutions Cubed provides a free piece of firmware that facilitates a serial interface with the ICON H-Bridge. This piece of firmware may be downloaded from www.solutions-cubed.com and used as a foundation for custom applications built around the ICON Interface Module hardware.

Figure 1: Mechanical Dimensions

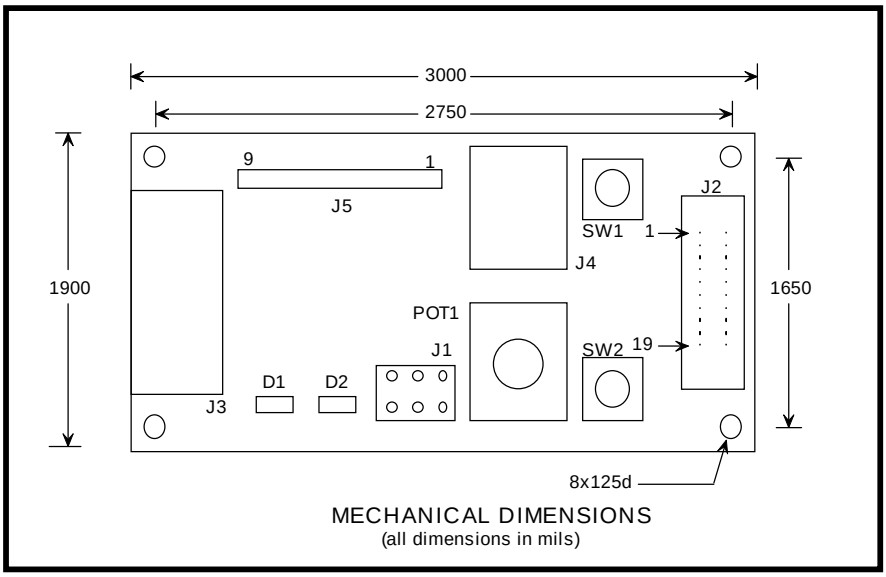


Figure 2: Mechanical Landmark Descriptions

Landmark	Type	Description
D1	LED – red	This LED is lit when serial data is transmitted **from** the ICON Interface Module.
D2	LED – red	This LED is lit when serial data is transmitted **to** the ICON Interface Module.
J1	2x3 header	Jumpers are used with this header to select between TTL and RS232 serial data and to connect the potentiometer to the ICON Interface Module's ANALOG_IN pin.
J2	20 pin 0.1" shrouded header	J2 is a Tyco-Amp part (PN: 103308-5) that can be used with CW Industries cable (PN: C3AAT-2006G). Both of these parts are available through Digi-Key (www.digi-key.com). This header is used to connect the ICON Adapter board to the ICON Interface Module header.
J3	DB9 Female	RS232 level serial data to PC serial port connector.
J4	6 pin modular jack receptacle	The modular jack receptacle is used with Microchip's DV164002 to perform in-circuit-serial-programming or in-circuit-debugging
J5	9x0.1" right angle header	This header allows for connectivity to the VCC_EXT, AMP_FLAG, COM_FLAG, TEMP_FLAG, +5VDC, GROUND, TX, and RX pins on J2.
POT1	10K potentiometer	The potentiometer is used to apply an analog control voltage to the ANALOG_IN pin of J2, when a jumper is placed on the ANA header at J1.
SW1	Momentary push-button switch	Pressing and releasing switch 1 forces the ICON Interface Module to perform a hardware based reset.
SW2	Momentary push-button switch	Pressing switch 2 asserts the braking function on the ICON Interface Module.

3.4 Connectivity

The schematic referenced here shows connectivity to J2 which mirrors the ICON Interface Module's 20 pin header.

Figure 3: ICON Adapter Board Schematic

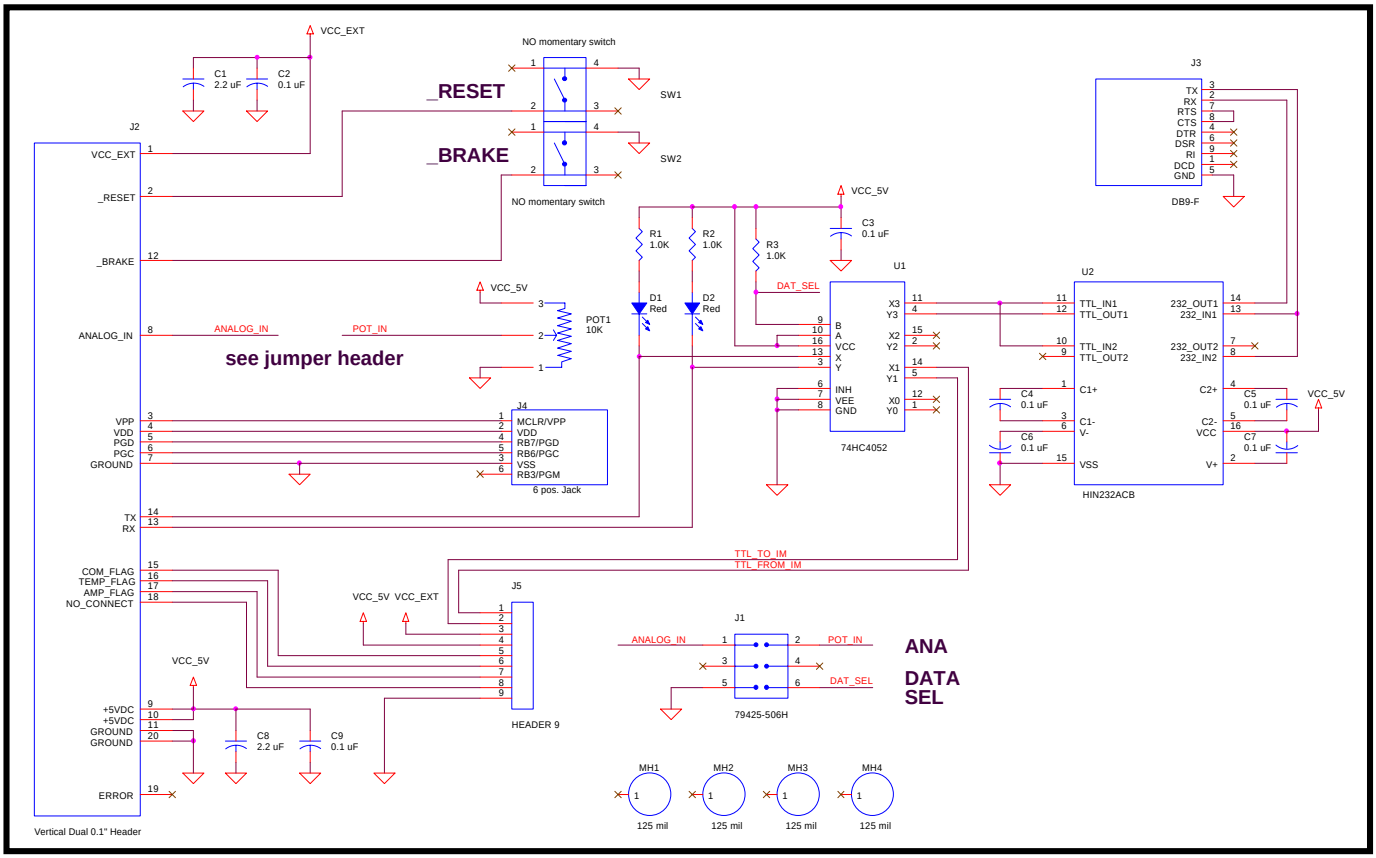
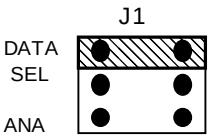
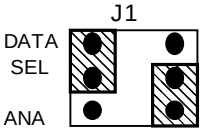
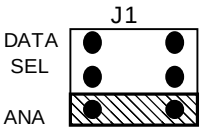


Figure 4: ICON Adapter Board Jumper Settings

ADAPTER BOARD JUMPER SETTINGS

JUMPER 1-2:	Selects between RS232 and TTL communication lines, jumper installed selects TTL level data (TX-RX at J5), jumper removed selects RS232 level data (TX-RX at J3)	
JUMPER 3-4:	Unused on ICON Adapter may be used to hold jumpers when not in use	
JUMPER 5-6:	Connects potentiometer to ANALOG_IN pin of J2	

4. Operating Information

4.1 Overview

The ICON Adapter board may be used to connect the ICON Interface Module to a PC for use with the ICON Interface Module Software posted at www.solutions-cubed.com. It may also be used with Microchip's DV164002 ICD module to program custom firmware into the PIC16F873 microcontroller that lies at the heart of the ICON Interface Module. Solutions Cubed provides free firmware that can be used as a foundation for custom applications based on the ICON Interface Module Hardware. This firmware may also be downloaded at www.solutions-cubed.com.

Figure 5: ICON Adapter Board with ICON Interface Module

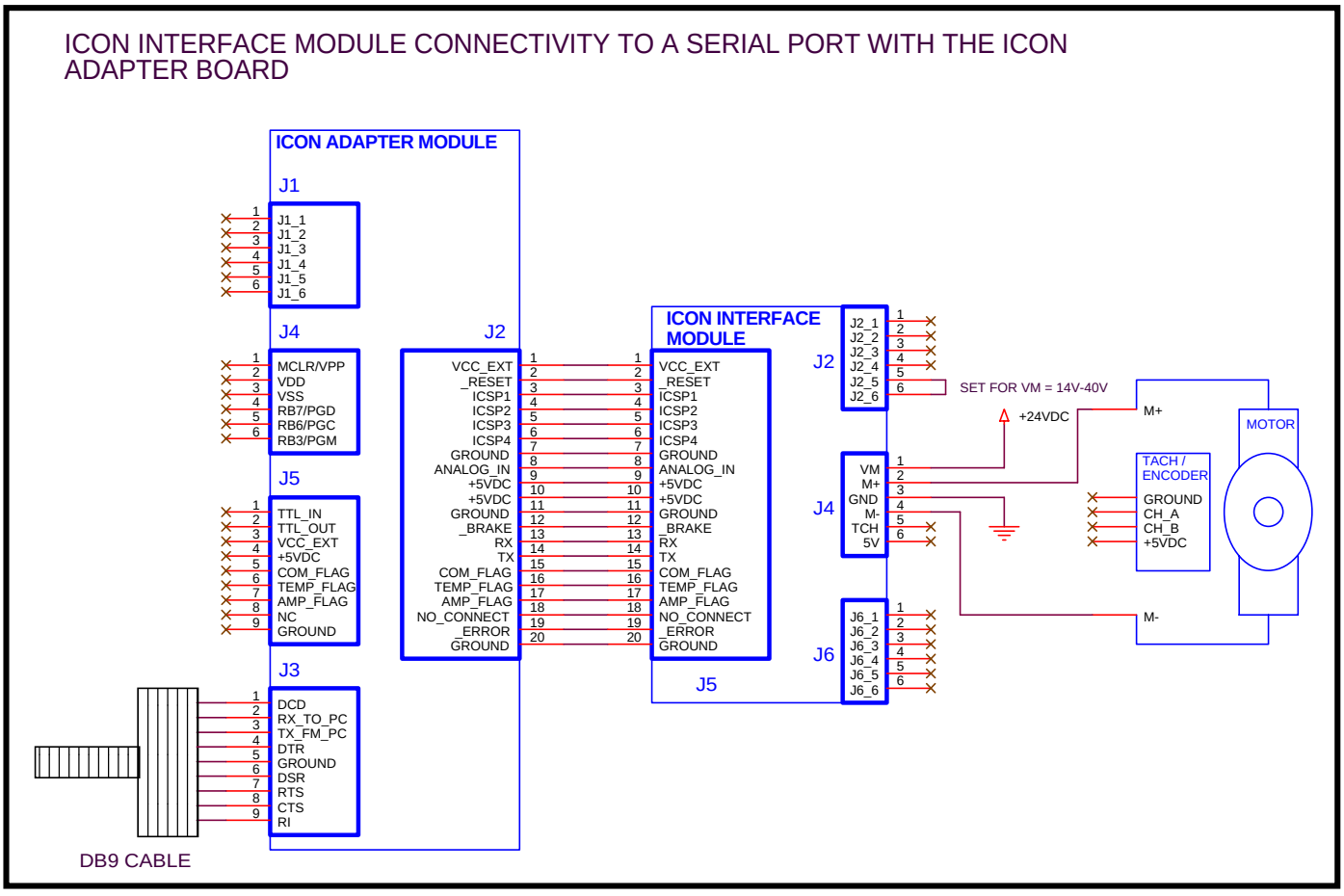
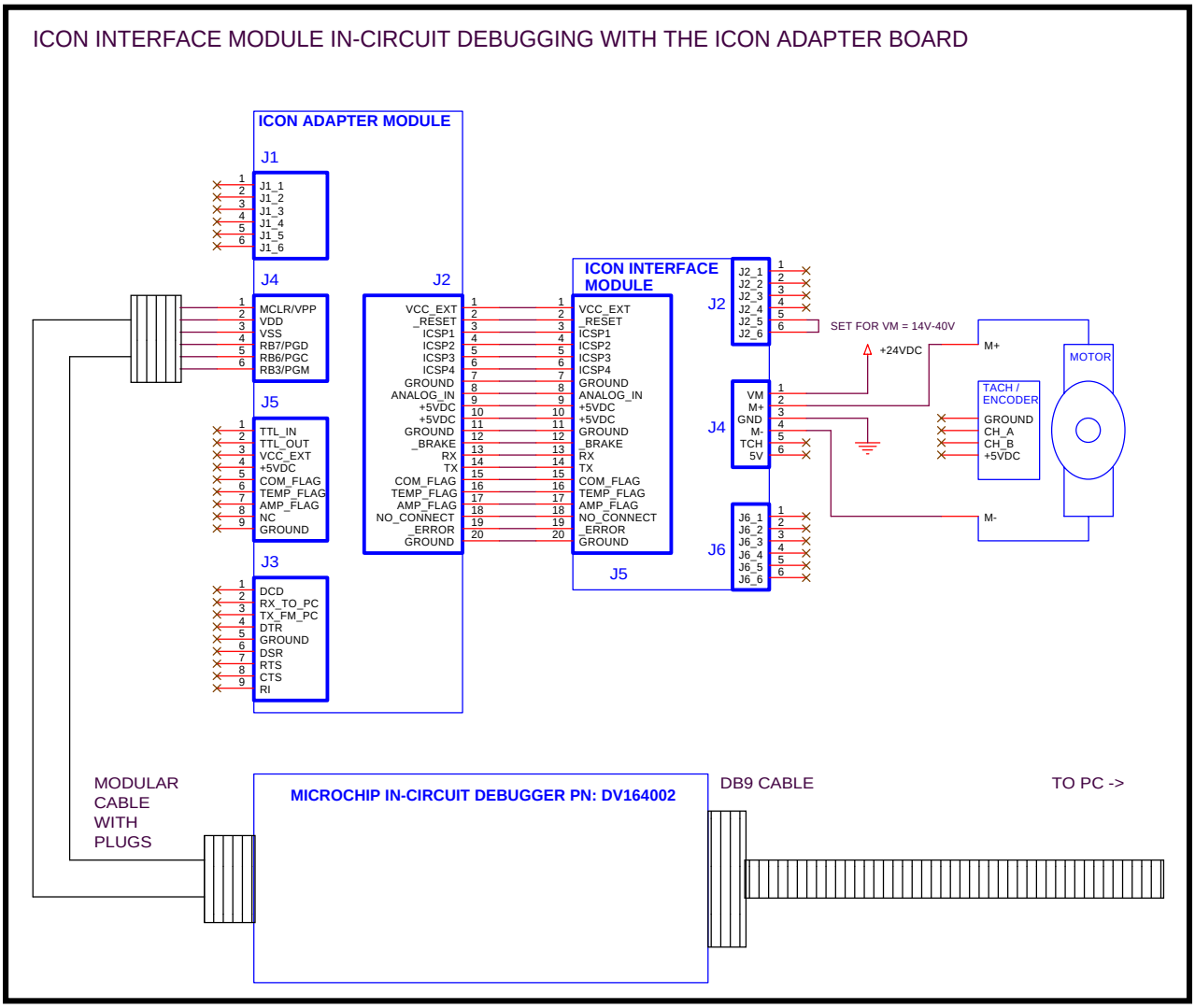


Figure 6: ICON Adapter Board with Microchip's DV164002 ICD



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Life Support Policy: Solutions Cubed does not authorize any Solutions Cubed product for use in life support devices and/or systems without express written approval from Solutions Cubed.

Warrantee: Solutions Cubed warrants all ICON DC Motor Control Modules against defects in materials and workmanship for a period of 90 days. If you discover a defect, we will, at our option, repair or replace your product or refund your purchase price. This warrantee does not cover products that have been physically abused or misused in any way.