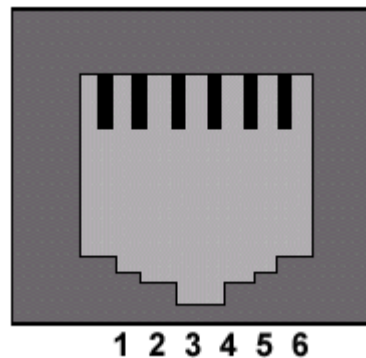


How do I connect the CCS ICD to my own hardware?

The ICD-S and ICD-U have an RJ12 connector, and provide an RJ12 cable to connect to prototyping boards. If you wish to add an RJ12 ICD connection to your target board, here is the pin-out:



ICD Socket	Target Socket	Target Pin
1	6	B3 on target PIC - This is optional, used for advance debugging
2	5	(ICSP clock) B6 on target PIC
3	4	(ICSP data) B7 on target PIC
4	3	Ground
5	2	+5V from target to ICD. The ICD-S40 is powered by this pin (5V) and the ICD-U40 uses it to pull up the signals (3V-5V).
6	1	MCLR - Connect to target PIC and pull up to +5V on target board with 47K resistor. The ICD will drive this with 13V during chip programming. No capacitor is desired on MCLR or it would cause programming problems with the ICD.

ICD Socket is the pinout on the ICD unit. Target Socket is the pinout of the target/prototype board; this pinout is applicable if using CCS's provided RJ12 cable.

Notes:

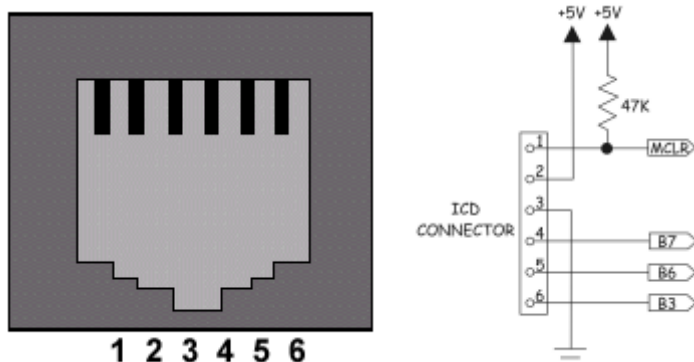
1. The ICD-U40 is powered by the USB.
2. The ICD-S40 requires mA. If the target power is not to be used, the connection from 5-2 may be cut and an external 5V power supply can be used. This technique may also be used to power both the ICD and the target through the ICD connectors.
3. To program and/or debug in-circuit, two I/O pins (B6,B7) are reserved. If debugging is not to be done, then these pins may also be used in the target circuit. However, take care to ensure the target circuit has high impedance during programming.
4. The ICD does not use the Low Voltage Programming mode. C programs should set

the NOLVP Fuse.

5. The target chip oscillator must be running for the ICD to work with a debugger. Programming can be done without an oscillator.

6. The B3 pin is optional and is not used for programming. However, the Monitor feature of the debugger does use B3. It is possible to program and debug (without monitor) and allocate B3 to the target hardware. In this case, do not connect B3 to the ICD connector. If the monitor feature is not used, userstream can be disabled in the configure tab and the connection from 1-6 does not matter. In the old version of the software, where you cannot disable the userstream using the configure tab, the pin needs to be pulled high at all times. Although B3 is recommended, any PIC pin can be used for this feature.

7. The MCLR pin is used for programming and debugging. Note that during programming the voltage is 13V. The 47K resistor to 5V is sufficient isolation for the 13V. However, if anything else is connected to the MCLR pin, be sure the 13V will not damage or interfere.



8. Note the ICD to target cable reverses the pins so the MCLR signal is ICD pin 6 and connects to the target pin 1.

Chips that do not use B6,B7

Chip	Instead of B6	Instead of B7
PIC12F629	GP1	GP0
PIC12F675	GP1	GP0
PIC12F683	GP1	GP0
PIC16F630	RA1	RA0
PIC16F676	RA1	RA0
PIC16F684	RA1	RA0
PIC16F688	RA1	RA0

The following chips do NOT have debugging capability in the standard version of the part. A specific ICD version of the chip is needed for debugging. The ICD chip will have more pins.

ICD-Chip	Pins
PIC12F629	14
PIC12F675	14
PIC12F683	14

PIC16F630	20
PIC16F676	20
PIC16F627A	28
PIC16F628A	28
PIC16F648A	28
PIC16F684	20
PIC16F688	20