

CB-ACC-73 CC DEBUGGER ADAPTER BOARD - USER GUIDE

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2 Related Documents

1. Texas Instruments CC Debugger User's Guide, <http://www.ti.com/lit/ug/swru197e/swru197e.pdf>
2. The [cB-OLP425 Development Kit Getting started](#) documentation contains important information about the electrical and mechanical characteristics of the cB-OLP425 hardware.
3. [cB-ACC-56 Platform Development Board - Electrical Mechanical Data Sheet](#).
4. [cB-OLP425 cB-OLS425 cB-OLS426 Electrical Mechanical Data Sheet](#) contains important information about the electrical and mechanical characteristics of the cB-OLP425/cB-OLS425/cB-OLS426 hardwares.
5. Texas Instruments [CC2540 Bluetooth Low Energy Developers Guide](#) (SWRU271B).
6. Demo application and drivers for the connectBlue cB-OLP425 development kit, [cB-OLP425 SDK](#).

3 Introduction

The CC Debugger Adapter Board (cB-ACC-73) is an adapter between the Texas Instruments CC Debugger [1] and connectBlue products based on the Texas Instruments (TI) CC2540 Bluetooth Low Energy radio modules e.g. the connectBlue Bluetooth Low Energy Platform cB-OLP425 [4]. The CC Debugger Adapter can also be used with modules based on the TI ZigBee radio CC2530. The CC Debugger is used for debugging and firmware download.

The purposes of this adapter are:

- To protect the CC Debugger from reverse voltage supply (if e.g. a cB-OLP425 module is powered from the host application or battery).
- Physical converter between the 2x5 pin socket (male) of the CC debugger and either the module JST debug connector or the cB-ACC-56 Platform Development Board 2x10 debug (JTAG) connector.

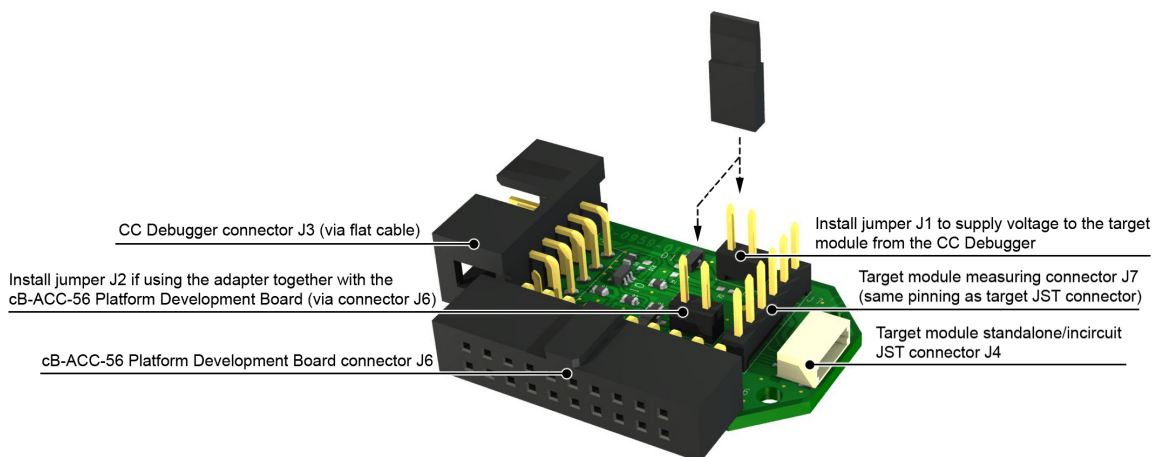


Figure 1: CC Debugger Adapter Board parts.

There are three main use cases described in this documentation how the TI CC Debugger is connected via the adapter:

1. The adapter is connected to a stand alone module via the JST connector.
2. The adapter is connected to an in-circuit module via the JST connector.
3. The adapter is connected via the debugger connector on the cB-ACC-56 Platform Development Board to the module.

A JST to JST cross-over cable to connect the CC Debugger Adapter Board to the JST connector on the cB-OLP425 module is available from connectBlue (order code cB-ACC-74). The cB-ACC-74 is included in the

cB-OLP425i-26-A development kit.

4 Use cases

4.1 The adapter is connected to a stand alone module via the JST connector

The TI CC Debugger is connected via the adapter and the JST connector interface to a module without voltage supply from another source. This could e.g. be the case when the user starts to develop on a stand alone cB-OLP425 that is not connected/mounted on a host. The module will be powered from the CC Debugger and NOT from a battery or other power source. The jumper J1 should be installed in this case and J2 should not be installed, see Figure 2.

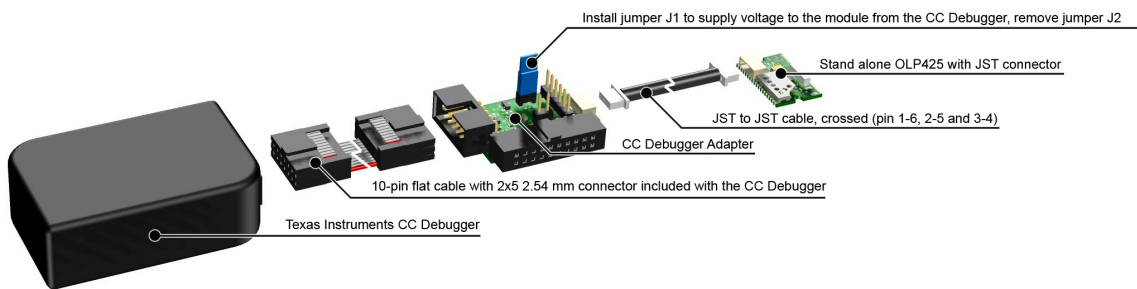


Figure 2: The adapter is connected to a stand alone module via the JST connector.

4.2 The adapter is connected to an in-circuit module via the JST connector

The TI CC Debugger is connected via the adapter and JST connector interface to a in-circuit installed module. This is e.g. the case when the module is connected/mounted on a host and the module is supplied with voltage from the host. The J1 and J2 jumpers should not be installed in this case.

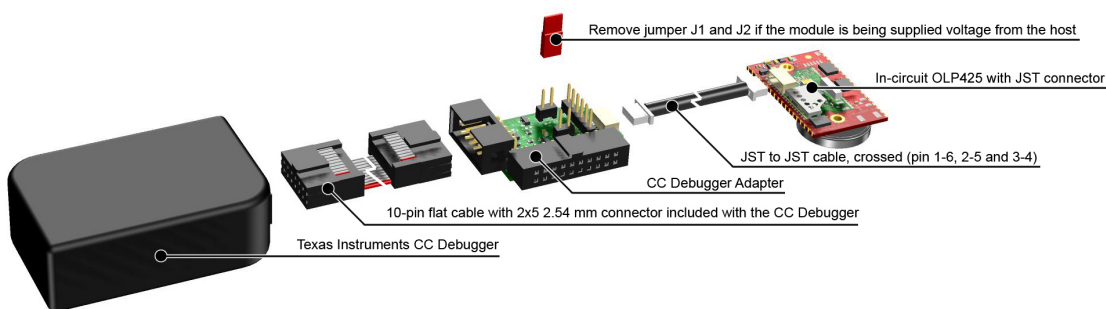


Figure 3: The adapter is connected to an in-circuit module via the JST connector.

4.3 The adapter is connected via the debugger connector on a cB-ACC-56 Platform Development Board to the module

The module is mounted on a cB-ACC-56 Platform Development Board. E.g. the cB-OLP425 module can't be directly mounted on the board-to-board connector of the development board. The module need to either be mounted on carrier board (cB-OLP426) or via a socket. The TI CC Debugger is connected via the adapter and the 2x10 debugger (JTAG) connector of the cB-ACC-56 Platform Development Board to the module. Make sure that the module is supplied from the development board with 3.3V (NOT 5V (Vin)). The J2 jumper should be installed in this case and the J1 jumper should not be installed.

Revision -03 or later of the cB-ACC-56 Platform Development Board PCB (cB-0940) must be used. The previous revision -02 can be modified to work, please contact connectBlue support if you need to make this modification.

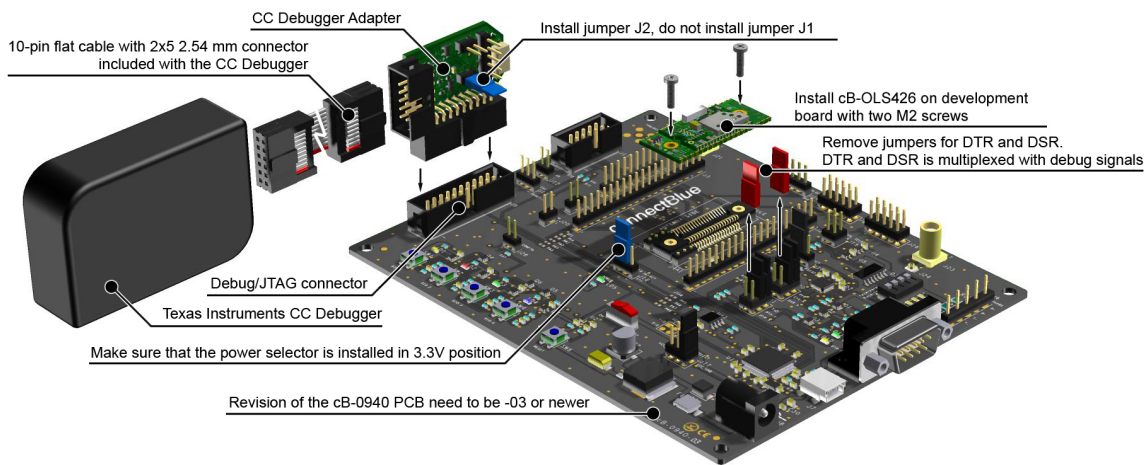


Figure 4: The adapter is connected via the debugger (JTAG) connector on a cB-ACC-56 Platform Development Board to the module.

5 Jumpers

5.1 J1

Jumper J1 is used to connect the 3.3 V voltage source available from the CC Debugger [\[1\]](#). The CC Debugger voltage should only be used to supply the module if the module isn't supplied voltage from another source, see [Use case 1: The adapter is connected to a stand alone module via the JST connector](#).

A Schottky diode is added in serial to prevent a two way voltage supply collision. The diode causes a forward voltage drop of 0.3-0.5 V depending on current drain.

5.2 J2

Jumper J2 is connecting the 3.3 V voltage source available from the CC Debugger to the target VCC sense (J3 pin 2) signal (via a Schottky diode). This Jumper can be installed if the module voltage isn't available e.g. on the debugger connector of the cB-ACC-56 Platform Development Board, see [Use case 3: The adapter is connected via the debugger \(JTAG\) connector on a cB-ACC-56 Platform Development Board to the module](#).

6 Connectors

6.1 Pin Numbering

Pin 1 is marked with a square pad on all connectors.

6.2 Pin Description

Table 1: CC Debugger Adapter Board signals and connector pin description.

Signal name	J3 Pin No	J7 Pin No	J4 Pin No	J6 Pin No	Description
GND	1	1	6	4,6,8,10,12,14,16,18,20	Ground
Target VCC Sense	2	2	5	NC	Sense signal of the module voltage supply, e.g. 3.2-2.7 V if the module is supplied from a CR1632 battery. CC debugger is using this sense signal to its internal level shifter buffer.
DC	3	3	4	9	Debug Clock.
DD	4	4	3	13	Debug Data.
Reset-n	7 (Push/pull)	5 (Open collector / 10k PU)	2	15 (Open collector / 10k PU)	Active low hardware reset. The reset signal from the CC Debugger is a push/pull (active low and high) design which can make problems if the target application has an active reset design. To prevent this an open collector with an 10k pull-up resistor has been added.
VCC CC Debugger	9	Connected to pin 2 via J1 and a Schottky diode.	Connected to pin 5 via J1 and a Schottky diode.	NC	3.3 V from the CC Debugger which can be used to supply the module if the module isn't supplied from another source, see Jumper J1 .
Target GPIO	NC	6	1	NC	Optional GPIO signal from module, e.g. CC2540-P0.0 on cB-OLP425 [4] .