

TI C2000 Toolbox Recommended Development Board Configuration

1. Introduction

This guide describes the recommended DIP switch and jumper settings for Texas Instruments C2000 development boards when used with the *TI C2000 Toolbox*. The toolbox targets two operating scenarios:

- **USB-connected debug/flash mode** – board powered exclusively from a USB cable; the on-board XDS emulator is active and the toolbox uploads firmware via a virtual COM port (SCI/UART) or JTAG.
- **Standalone flash boot** – board powered from an external 3.3 V (or 5 V) supply, USB cable disconnected; the device boots directly from internal flash.

For each device the following aspects are covered:

1. **USB power supply:** Which jumpers/shunts must be installed to power the board from USB only, with any external-supply pins disconnected.
2. **XDS emulator enable:** JTAG isolation switches that connect the on-board XDS debug probe to the MCU.
3. **SCI (UART) routing:** Switch/jumper positions define which GPIOs are routed to the USB virtual COM port.
4. **eQEP header routing:** Switch positions that connect eQEP encoder signals to the dedicated bottom-of-board headers J12 (eQEP1) and J13 (eQEP2).
5. **Boot mode – USB/debug:** DIP switch settings for flash-boot with the XDS emulator active (USB cable connected).
6. **Boot mode – standalone:** Switch and power changes required when booting from flash without USB.
7. **ADC references (on some devices).**

2. Device Overview

Device	Layout	On-board Debugger	USB Connector	User Guide
LaunchXL-F28379D	LaunchPad	XDS100v2	Mini-USB	SPRUI77C
LaunchXL-F28069M	LaunchPad	XDS100v2	Mini-USB	SPRUI11B
LaunchXL-F28P650DK9	LaunchPad	XDS110	USB Type-C	SPRUJ71
LaunchXL-F280049C	LaunchPad	XDS110	Micro-USB	SPRUJ7B
LaunchXL-F280039C	LaunchPad	XDS110	USB Type-C	SPRUJ31
LaunchXL-F280025C	LaunchPad	XDS110	Micro-USB	SPRUJW8
LaunchXL-F2800137	LaunchPad	XDS110	USB Type-C	SPRUJ32
TMDSCNCD28379D	controlCARD	XDS100v2 (Macro A)	Mini-USB	SPRUJ76B
TMDSCNCD28335	controlCARD	None (external) / embedded on HIL DSP Interface	Mini-USB (for debugger on HIL DSP Interface)	

3. Device-by-Device Configuration

3.1. LaunchXL-F28379D

[F28379D LaunchPad](#) with XDS100v2 on-board emulator and USB-mini connector. Boot mode is controlled by S1 (4-position DIP). SCI signals (GPIO42/GPIO43) are hardwired to the virtual COM port — no switch needed.

3.1.1. USB Power Supply Jumpers

Jumper	Setting	Function
JP1	INSTALL	Supply 3.3 V to the rest of the board
JP2	INSTALL	Supply GND to the rest of the board
JP3	INSTALL	Supply 5 V to the rest of the board

3.1.2. Additional Power Supply Jumpers

Jumper	Setting	Function
JP4	REMOVE	Remove to isolate 3.3V from the 2 nd BoosterPack site headers
JP5	REMOVE	Remove to isolate 5V from the 2 nd BoosterPack site headers
JP6	REMOVE	External 5 V boost input — leave open to avoid supply contention
J10	REMOVE	Extra connection points for 3.3V supply to be connected to the LaunchPad
J16	REMOVE	Extra connection points for 5V supply to be connected to the LaunchPad

If device is used in standalone flash mode (without USB), configuration of these jumpers is specified by the user requirements. Remove them if device is powered by USB to avoid contention.

3.1.3. XDS100v2 Enable

The XDS100v2 emulator is always connected when the mini-USB cable is plugged in. S1-3 (TRSTn) controls whether the emulator asserts JTAG control.

3.1.4. SCI Routing

GPIO42 (SCIA TX) and GPIO43 (SCIA RX) are hardwired to the FT2232H USB-UART chip; no switch is required. These are NOT the dedicated SCI-boot pins (boot-from-SCI uses GPIO84/GPIO85, which are not routed to any external connector on this LaunchPad). The toolbox uses GPIO42/GPIO43 for runtime serial communication only.

3.1.5. eQEP Header Routing

Header	Signals	Notes
J14	eQEP1A (GPIO20), eQEP1B (GPIO21), eQEP1I (GPIO99)	Permanently routed through 5V level-shifter — no switch required
J15	eQEP2A (GPIO54), eQEP2B (GPIO55), eQEP2I (GPIO57)	Permanently routed through 5V level-shifter — no switch required

3.1.6. Boot Mode — USB / Debug (Flash Boot with XDS Active)

Switch	Position	GPIO / Signal	Logic Level	Result
S1-1	UP (ON)	GPIO84	1 (pulled high)	Selects Flash boot mode bit
S1-2	UP (ON)	GPIO72	1 (pulled high)	Selects Flash boot mode bit
S1-3	UP (ON)	TRSTn → XDS100v2	High when XDS active	XDS100v2 controls emulation boot

With S1-3=UP the XDS100v2 drives TRSTn. When a CCS / toolbox debug session is open, TRSTn=1 and the device enters emulation mode (flash boot). When the USB cable is connected but no debug session is active, TRSTn=0 — the device boots standalone from the GPIO84/GPIO72 settings (flash).

3.1.7. Boot Mode — Standalone Flash (No USB)

Switch	Position	Notes
S1-1	UP (ON)	GPIO84=1 — flash boot
S1-2	UP (ON)	GPIO72=1 — flash boot
S1-3	DOWN (OFF)	TRSTn floats / pulled low — XDS100v2 isolated, standalone boot

Remove the USB cable. Supply 3.3 V on the BoosterPack 3.3 V pin or 5 V on J16 pin 1 (external regulator required). JP3 may be left installed if an external 5 V source is used and the USB cable is absent.

3.2. LaunchXL-F28069M

[F28069M LaunchPad](#) with XDS100v2 emulator uses USB-mini connector. SCI routing is controlled by JP6/JP7. **IMPORTANT:** eQEP1 signals are routed to the bottom eQEP header, while the eQEP2 signals are routed to the BP side header.

3.2.1. USB Power Supply Jumpers

Jumper	Setting	Function
JP1	INSTALL	Supply 3.3 V to the rest of the board
JP2	INSTALL	Supply GND to the rest of the board
JP3	INSTALL	Enable 5V supply from already supplied 3.3V

3.2.2. Additional Power Supply Jumpers

Jumper	Setting	Function
JP4	REMOVE	Remove to isolate 3.3V from the 2 nd BoosterPack site headers
JP5	REMOVE	Remove to isolate 5 V from the 2 nd BoosterPack site headers
J9	REMOVE	External 3.3V supply

If device is used in standalone flash mode (without USB), configuration of these jumpers is specified by the user requirements. Remove them if device is powered by USB to avoid contention.

3.2.3. XDS100v2 Enable

XDS100v2 is always active when mini-USB is connected. S1-3 routes TRSTn to the XDS100v2 when in UP (ON) position.

3.2.4. SCI Routing

Jumper	Setting	Function
JP7	INSTALL	MUX_SEL=1 — enables GPIO28/GPIO29 path through the USB-UART mux
JP6	REMOVE	CH_SEL=0 — selects the SCI channel (GPIO28/GPIO29) instead of the alternate channel

With JP7 installed and JP6 removed, GPIO28 (SCI-TX) and GPIO29 (SCI-RX) are connected to the XDS100v2 USB virtual COM port.

3.2.5. eQEP Header Routing

Signals	GPIO	Headers	Notes
eQEP1A/1B/1I	20/21/23	Bottom eQEP header	Permanently routed — no switch required
eQEP2A/2B/2I	24/25/26	J6	Permanently routed — no switch required

WARNING: eQEP2 signals are not routed to bottom eQEP header!

3.2.6. Boot Mode — USB / Debug (Flash Boot with XDS Active)

Switch	Position	GPIO / Signal	Logic Level	Result
S1-1	UP (ON)	GPIO34	1 (high)	Flash boot mode bit
S1-2	UP (ON)	GPIO37	1 (high)	Flash boot mode bit
S1-3	UP (ON)	TRSTn → XDS100v2	High (XDS active)	XDS emulation boot enabled

3.2.7. Boot Mode — Standalone Flash (No USB)

Switch	Position	Notes
S1-1	UP (ON)	GPIO34=1 — flash boot
S1-2	UP (ON)	GPIO37=1 — flash boot
S1-3	DOWN (OFF)	TRSTn isolated from XDS100v2 — standalone boot

Remove USB. Supply 3.3 V on the BoosterPack 3.3 V pin (J1 pin 1 / J2 pin 1).

3.2.8. Jumper for 5V supply

JP3 enables 5 V switcher (powered off 3.3 V supply of target device). Since there is no JP that supplies 5V from USB, **JP3** should remain **INSTALLED**.

3.3. LaunchXL-F28P650(DK9)

[F28P650DK9 LaunchPad](#) with XDS110 emulator and USB Type-C connector.

3.3.1. USB Power Supply

Connector / Jumper	Setting	Function
JP1 (both jumpers)	INSTALL	Connects +5V0 and GND from USB Type-C to the board power rails
J16	INSTALL	5 V to 3.3 V LDO enable — routes USB 5 V through on-board LDO
J17	REMOVE	Enables the on-board 3.3-V to 5-V BOOST regulator to convert the +3.3-V power rail to a +5-V power rail — leave open when using USB power

3.3.2. Additional Power Supply Jumpers

Jumper	Setting	Function
JP4 and JP6	REMOVE	Extra connection points for 3.3V supply to be connected to the LaunchPad
JP5 and JP7	REMOVE	Extra connection points for 5V supply to be connected to the LaunchPad
JP8	REMOVE	Remove to isolate 3.3 V and 5 V from the 2 nd BoosterPack site headers

If device is used in standalone flash mode (without USB), configuration of these jumpers is specified by the user requirements. Remove them if device is powered by USB to avoid contention.

3.3.3. XDS110 Enable

XDS110 is automatically enabled when the USB Type-C cable is connected. No isolation jumper is required for normal USB-powered operation.

3.3.4. SCI Routing (S2)

Switch	Position	Signal	Notes
S2-SEL1	DOWN (0)	GPIO42 (SCIA_TX)	Routes TX to XDS110 virtual COM port
S2-SEL2	DOWN (0)	GPIO43 (SCIA_RX)	Routes RX to XDS110 virtual COM port

Both SEL1 and SEL2 must be DOWN to route SCIA (GPIO42/GPIO43) to the USB virtual COM port.

3.3.5. eQEP Header Routing (S5)

Since this device is typically used with HIL TI LaunchPad Interface board, the device itself goes over and covers J11 and J12 headers for eQEP1 and eQEP2 on the interface board, the recommended S5 configuration is to route them to BP headers instead of J12/J13.

Switch	Position	Header	Signals
S5-QEP1 (LEFT)	UP (1)	BP	eQEP1: GPIO20 (A), GPIO21 (B), GPIO23 (I)
S5-QEP2 (RIGHT)	UP (1)	BP	eQEP2: GPIO24 (A), GPIO79 (B), GPIO103 (I)

3.3.6. Boot Mode — USB / Debug (Flash Boot with XDS Active)

Switch	Position	GPIO	Logic	Result
S3-GPIO72 (LEFT)	UP (1)	GPIO72	1	Flash boot mode
S3-GPIO84 (RIGHT)	UP (1)	GPIO84	1	Flash boot mode

Keep S4 in UP (BP) position to keep CAN signals on the BoosterPack headers and away from boot pins.

3.3.7. Boot Mode — Standalone Flash (No USB)

Item	Action	Notes
S3	No change (same as §3.3.5)	GPIO72=1, GPIO84=1 → flash boot
JP1	REMOVE both shunts	Disconnects USB 5 V from board power rails
J16/J17	Install J17, remove J16	If using external 3.3 V regulator; OR supply 5 V through J16 with J17 removed

Apply external 3.3 V to the BoosterPack 3.3 V pin, or 5 V to JP1/J16 with the USB cable absent.

3.3.8. CAN Header Routing (S4)

Switch	Position	Header	Result
S4-CAN	UP (off)	BP	Routes CAN signals for BP headers

WARNING: On some devices it is important to route CAN pins to BP headers since they are in conflict boot or ePWM pins.

3.3.9. ADC Reference

By default, the ADC is configured in external voltage reference mode. Thus, the shunt on **J15** must be **connected** to make use of the on-board 3.0 V high-precision voltage reference device.

3.4. LaunchXL-F280049C

[F280049C LaunchPad](#) with XDS110 emulator, micro-USB connector. Boot mode switch S2 is mounted UPSIDE DOWN on this board: switch position OFF = logic 1, ON = logic 0. Switches S6 and S8 are facing opposite directions.

3.4.1. USB Power Supply Jumpers

Jumper	Setting	Function
JP1	INSTALL	GND bridge — USB GND to MCU GND
JP2	INSTALL	3.3 V bridge — USB regulated 3.3 V to MCU 3.3 V rail
JP3	INSTALL	5 V bridge — USB 5 V to on-board LDO input

3.4.2. Additional Power Supply Jumpers

Jumper	Setting	Function
JP4 and JP6	REMOVE	Extra connection points for 3.3V supply to be connected to the LaunchPad
JP5 and JP7	REMOVE	Extra connection points for 5V supply to be connected to the LaunchPad
JP8	REMOVE	Remove to isolate 3.3 V and 5 V from the 2 nd BoosterPack site headers
JP9	REMOVE	Voltage regulator steps up 3.3 V to 5 V. REMOVE IF JP3 IS INSTALLED!

If device is used in standalone flash mode (without USB), configuration of these jumpers is specified by the user requirements. Remove them if device is powered by USB to avoid contention.

3.4.3. XDS110 Enable (J101)

Shunt	Setting	Function
J101-RXD	INSTALL	XDS110 UART RX connected to MCU TX (GPIO28)
J101-TXD	INSTALL	XDS110 UART TX connected to MCU RX (GPIO29)
J101-TMS	INSTALL	JTAG TMS connected to MCU
J101-TCK	INSTALL	JTAG TCK connected to MCU

All four J101 shunts must be installed for XDS110 JTAG and UART communication.

3.4.4. SCI Routing (S6, S8)

Switch	Position	Signal	Notes
S6	DOWN (0)	GPIO29 (SCI-RX) and GPIO28 (SCI-TX)	Route GPIO29 (SCI-RX) and GPIO28 (SCI-TX) to virtual COM port
S8	DOWN (0)	GPIO29 (SCI-RX) and GPIO28 (SCI-TX)	Select GPIO29 (SCI-RX) and GPIO28 (SCI-TX) for virtual COM port

WARNING: S6 and S8 are facing opposite directions!

3.4.5. eQEP Header Routing (S3, S4)

Switch	Position	Header	Signals
S3.1	DOWN (0)	J12	eQEP1: GPIO35 (A), GPIO37 (B), GPIO59 (I)
S3.2	DOWN (0)	J13	eQEP2: GPIO14 (A), GPIO15 (B), GPIO26 (I)
S4	UP (1)	J12	GPIO35 and GPIO37 routed to J12 (required in addition to S3.1)

Both S3.1 and S4 must be set for complete eQEP1 routing to J12.

3.4.6. Boot Mode — USB / Debug

WARNING: IMPORTANT: S2 on this board is mounted upside down — switch OFF = logic HIGH (1), ON = logic LOW (0).

Switch	Physical Position	GPIO	Logic Level	Result
S2-1	OFF(1)	GPIO32	1 (high)	Flash boot mode bit
S2-2	OFF(1)	GPIO24	1 (high)	Flash boot mode bit

S9 should remain UP (default) to keep CAN signals off the boot/GPIO pins.

3.4.7. Boot Mode — Standalone Flash (No USB)

Item	Action
S2	No change — S2-1=OFF, S2-2=OFF (GPIO32=1, GPIO24=1 → flash boot)
External power	Apply 3.3 V to BoosterPack 3.3 V pin; JP2/JP3 may remain installed if USB is absent

3.4.8. CAN Header Routing (S9)

Switch	Position	Header	Result
S9-CAN	DOWN (1)	BP	Routes CAN signals for BP headers

WARNING: On some devices it is important to route CAN pins to BP headers since they are in conflict boot or ePWM pins.

3.5. LaunchXL-F280039C

[F280039C LaunchPad](#) with XDS110 emulator, USB Type-C connector.

3.5.1. USB Power Supply

Jumper	Setting	Function
JP1 (both shunts)	INSTALL	Connects +5V0 and GND from USB Type-C
JP2 (both shunts)	INSTALL	Connects +5V0 to LDO and +3V3 to MCU rail

3.5.2. Additional Power Supply Jumpers

Jumper	Setting	Function
JP4 and JP6	REMOVE	Extra connection points for 3.3V supply to be connected to the LaunchPad
JP5 and JP7	REMOVE	Extra connection points for 5V supply to be connected to the LaunchPad
JP8	REMOVE	Remove to isolate 3.3 V and 5 V from the 2 nd BoosterPack site headers

If device is used in standalone flash mode (without USB), configuration of these jumpers is specified by the user requirements. Remove them if device is powered by USB to avoid contention.

3.5.3. XDS110 Enable (J101)

All six J101 shunts must be installed for XDS110 JTAG and UART communication.

3.5.4. SCI Routing (S2)

Switch	Position	Signal	Notes
S2-SEL1	DOWN (0)	GPIO28 (SCI-TX)/ GPIO29 (SCI-RX)	Routes TX to XDS110 virtual COM port
S2-SEL2	DOWN (0)	GPIO15; GPIO56	Routes GPIO15 and GPIO56 to BP headers

Route GPIO15 to BP header since it is used for ePWM.

3.5.5. eQEP Header Routing (S5)

Switch	Position	Header	Signals
S5-QEP1 (LEFT)	DOWN (0)	J12	eQEP1: GPIO40 (A), GPIO41 (B), GPIO59 (I)
S5-QEP2 (RIGHT)	DOWN (0)	J13	eQEP2: GPIO14 (A), GPIO55 (B), GPIO57 (I)

3.5.6. Boot Mode — USB / Debug (Flash Boot with XDS Active)

Switch	Position	GPIO	Logic	Result
S3-GPIO24 (LEFT)	UP (1)	GPIO24	1	Flash boot mode
S3-GPIO32 (RIGHT)	UP (1)	GPIO32	1	Flash boot mode

Keep S4=UP (BP) to route CAN signals to BoosterPack headers, not to MCU boot/GPIO pins.

3.5.7. Boot Mode — Standalone Flash (No USB)

Item	Action
S3	No change — GPIO24=1, GPIO32=1 → flash boot
JP1	REMOVE both shunts to disconnect USB 5 V
External power	Apply 3.3 V to BoosterPack 3.3 V pin

3.5.8. CAN Header Routing (S4)

Switch	Position	Header	Result
S4-CAN	UP (off)	BP	Routes CAN signals for BP headers

3.6. LaunchXL-F280025C

[F280025C LaunchPad](#) with XDS110 emulator, micro-USB connector. **IMPORTANT:** GPIO32 is shared between the boot mode pin and the CAN routing switch S4. S4 must remain in the UP (BP) position.

3.6.1. USB Power Supply Jumpers

Jumper	Setting	Function
JP1	INSTALL	GND bridge
JP2	INSTALL	3.3 V bridge
JP3	INSTALL	5 V from USB to LDO input

3.6.2. Additional Power Supply Jumpers

Jumper	Setting	Function
JP4 and JP6	REMOVE	Extra connection points for 3.3V supply to be connected to the LaunchPad
JP5 and JP7	REMOVE	Extra connection points for 5V supply to be connected to the LaunchPad
JP8	REMOVE	Remove to isolate 3.3 V and 5 V from the 2 nd BoosterPack site headers
JP9	REMOVE	Voltage regulator steps up 3.3 V to 5 V. REMOVE IF JP3 IS INSTALLED!

If device is used in standalone flash mode (without USB), configuration of these jumpers is specified by the user requirements. Remove them if device is powered by USB to avoid contention.

3.6.3. XDS110 Enable (J101)

Shunt	Setting	Function
J101-RXD	INSTALL	XDS110 UART RX connected to MCU TX (GPIO28)
J101-TXD	INSTALL	XDS110 UART TX connected to MCU RX (GPIO29)
J101-TMS	INSTALL	JTAG TMS connected to MCU
J101-TCK	INSTALL	JTAG TCK connected to MCU

All four J101 shunts must be installed for XDS110 JTAG and UART communication.

3.6.4. SCI Routing (S2)

Switch	Position	Signal	Notes
S2-SEL1	DOWN (0)	GPIO28 (SCI-TX)/ GPIO29 (SCI-RX)	Routes TX to XDS110 virtual COM port
S2-SEL2	DOWN (0)	GPIO16/GPIO17	Routes GPIO16 and GPIO17 to BP headers

3.6.5. eQEP Header Routing (S5)

Switch	Position	Header	Signals
S5-QEP1 (LEFT)	DOWN (0)	J12	eQEP1: GPIO44 (A), GPIO37 (B), GPIO43 (I)
S5-QEP2 (RIGHT)	DOWN (0)	J13	eQEP2: GPIO14 (A), GPIO25 (B), GPIO26 (I)

3.6.6. Boot Mode — USB / Debug (Flash Boot with XDS Active)

Switch	Position	GPIO	Logic	Result
S3-GPIO24 (LEFT)	UP (1)	GPIO24	1	Flash boot mode
S3-GPIO32 (RIGHT)	UP (1)	GPIO32	1	Flash boot mode

CRITICAL: S4 (CAN routing) *MUST* be in UP (BP) position. S4=DOWN connects an external CAN signal directly to GPIO32, which is also the boot mode pin. If S4=DOWN, GPIO32 may not reach logic 1 at reset and the boot mode will be incorrect.

3.6.7. Boot Mode — Standalone Flash (No USB)

Item	Action
S3	No change — GPIO24=1, GPIO32=1 → flash boot
S4	Keep UP (BP) — mandatory; see note above
External power	Apply 3.3 V to BoosterPack 3.3 V pin; remove USB cable

3.6.8. CAN Header Routing (S4)

Switch	Position	Header	Result
S4-CAN	UP (off)	BP	Routes CAN signals for BP headers

3.7. LaunchXL-F2800137

[F2800137 LaunchPad](#) with XDS110 emulator, USB Type-C connector. The F280013x series has only ONE eQEP module, so only J12 is populated. SCI routing uses a single-position switch S2 (SEL1 only).

3.7.1. USB Power Supply

Jumper	Setting	Function
JP1 (both shunts)	INSTALL	Connects +5V0 and GND from USB Type-C
JP2 (both shunts)	INSTALL	Connects +5V0 to LDO and +3V3 to MCU rail

3.7.2. Additional Power Supply Jumpers

Jumper	Setting	Function
JP4 and JP6	REMOVE	Extra connection points for 3.3V supply to be connected to the LaunchPad
JP5 and JP7	REMOVE	Extra connection points for 5V supply to be connected to the LaunchPad
JP8	REMOVE	Remove to isolate 3.3 V and 5 V from the 2 nd BoosterPack site headers

If device is used in standalone flash mode (without USB), configuration of these jumpers is specified by the user requirements. Remove them if device is powered by USB to avoid contention.

3.7.3. XDS110 Enable (J101)

All six J101 shunts must be installed for XDS110 JTAG and UART communication.

3.7.4. SCI Routing (S2)

Switch	Position	Signal	Notes
S2-SEL1	DOWN (0)	GPIO28/GPIO29 (SCI)	Routes SCI TX/RX to XDS110 virtual COM port

Only one switch position (SEL1) is used for SCI routing on this board.

3.7.5. eQEP Header Routing (S5)

Switch	Position	Header	Signals
S5-QEP1 (LEFT)	DOWN (0)	J12	eQEP1: GPIO40 (A), GPIO41 (B), GPIO39 (I)

The F280013x device has only one eQEP module. J13 is not populated / not used.

3.7.6. Boot Mode — USB / Debug (Flash Boot with XDS Active)

Switch	Position	GPIO	Logic	Result
S3-GPIO24 (LEFT)	UP (1)	GPIO24	1	Flash boot mode
S3-GPIO32 (RIGHT)	UP (1)	GPIO32	1	Flash boot mode

Keep S4=UP (BP) to route CAN signals to BoosterPack headers.

3.7.7. Boot Mode — Standalone Flash (No USB)

Item	Action
S3	No change — GPIO24=1, GPIO32=1 → flash boot
JP1	REMOVE both shunts to disconnect USB 5 V
External power	Apply 3.3 V to BoosterPack 3.3 V pin

3.7.8. CAN Header Routing (S4)

Switch	Position	Header	Result
S4-CAN	UP (off)	BP	Routes CAN signals for BP headers

WARNING: On some devices it is important to route CAN pins to BP headers since they are in conflict boot or ePWM pins.

3.8. TMDSCNCD28379D

[F28379D controlCARD](#) (HSEC 180-pin form factor). The card has two macro sections: Macro A (top) contains the XDS100v2 emulator with its own mini-USB port (A:J1); the MCU section carries the F28379D device. A baseboard is required (e.g., TMDSHSECDOCK or TMDSDOCK28379D). A:SW1 controls the JTAG isolation between the XDS100v2 and the MCU.

3.8.1. USB Connection

Connect a mini-USB cable to A:J1 (the upper USB connector on Macro A, NOT the MCU-side micro-USB if present). This cable powers the XDS100v2 emulator and the MCU simultaneously via the on-board power circuitry of the controlCARD.

3.8.2. XDS100v2 Enable (A:SW1)

Switch	Position	Function
A:SW1-1	ON	Enables JTAG connection between XDS100v2 and MCU JTAG header
A:SW1-2	ON	Enables ISO-UART (SCI) bridge: GPIO28/GPIO29 → XDS100v2 USB-UART

3.8.3. SCI Routing

With A:SW1-2=ON, GPIO28 (TX) and GPIO29 (RX) are bridged through the XDS100v2 ISO-UART to the USB virtual COM port on A:J1. No additional switch is required.

3.8.4. eQEP Routing

eQEP signals are routed through the 180-pin HSEC connector to the baseboard. Refer to the baseboard schematic for the physical header locations (typically J12/J13 on TMDSHSECDOCK-compatible baseboards).

3.8.5. Boot Mode — USB / Debug (Flash Boot with XDS Active)

Switch	Position	GPIO / Signal	Logic	Result
SW1-1	OFF (UP)	GPIO72	1	Flash boot mode bit (Get Mode)
SW1-2	ON (DOWN)	GPIO84	1	Flash boot mode bit (Get Mode)

SW1 here refers to the MCU boot-mode DIP switch on the main card body (not A:SW1 on Macro A).

3.8.6. Boot Mode — Standalone Flash (No USB)

Item	Action
A:SW1-1	OFF — disconnects JTAG between XDS100v2 and MCU
A:SW1-2	OFF — disconnects ISO-UART from MCU
SW1 (boot)	No change — SW1-1=OFF(UP), SW1-2=OFF(UP) → flash boot maintained
Power	Use baseboard external power supply (typically 5 V or 12 V depending on baseboard)

3.8.7. ADC reference

Jumpers	Setting	Function
SW2: A	right	ADC-A is configured to either use a precise 3.0 V voltage reference or an external voltage may be used as a reference. R59 and R60 determine which setting is used
SW2: B	right	ADC-B is configured to either use a precise 3.0 V voltage reference or an external voltage may be used as a reference. R59 and R60 determine which setting is used
SW3: C	right	ADC-C is configured to either use a precise 3.0 V voltage reference or an external voltage may be used as a reference. R59 and R60 determine which setting is used
SW3: D	right	ADC-D is configured to either use a precise 3.0 V voltage reference or an external voltage may be used as a reference. R59 and R60 determine which setting is used

Right positions are default.

3.9. TMDSCNCD28335

[F28335 controlCARD](#) (DIMM100 form factor). Unlike the other boards in this guide, the TMDSCNCD28335 has NO on-board XDS debug probe. An external JTAG debug probe (XDS100v2) is provided on [HIL DSP Interface](#) along with virtual COM port with USB-mini connector.

3.9.1. USB / Power Connection

Connection	Notes
External JTAG probe	Connect XDS100v2 to the HIL DSP Interface
FTDI USB-UART cable	Connect to GPIO28 (TX) and GPIO29 (RX) on the baseboard expansion header for serial comm
Baseboard power	Use the baseboard power supply (5 V recommended); the card draws 3.3 V from the baseboard

3.9.2. SCI Routing (SW1)

Switch	Position	Function
SW1	ON (towards the top of card)	SCI routing: GPIO28 (TX) / GPIO29 (RX) routed to virtual COM port of HIL DSP Interface

3.9.3. eQEP Routing

eQEP signals are routed through the DIMM100 connector to the baseboard expansion headers. Refer to the baseboard (TMDSDOCK28335) schematic for the exact header pin-out.

3.9.4. Boot Mode — Flash Boot (with external JTAG probe)

Switch	Position	Function
SW2-1	ON	Boot mode pin — selects Flash boot
SW2-2	ON	Boot mode pin — selects Flash boot
SW2-3	ON	Boot mode pin — selects Flash boot
SW2-4	ON	Boot mode pin — selects Flash boot

All SW2 switches ON sets the boot mode to "Boot from Flash" for the F28335. Connect the external debug probe before powering the board. The debug probe drives TRSTn to enable emulation mode on first power-up.

3.9.5. Boot Mode — Standalone Flash (No JTAG probe)

Item	Action
SW2	All ON — no change from §3.9.4 (flash boot)
SW1	OFF (towards bottom) — or change as needed for your application
Power	Supply via baseboard power connector; no USB cable or probe needed

4. Quick-Reference Configuration Summary

The table below summarizes the critical switch positions for each device.

Device	SCI Switch → COM Port	eQEP Switch → J12/J13	Boot Mode Switch (Flash)
LaunchXL-F28379D	Hardwired (no switch) GPIO42=TX, GPIO43=RX	J14: GPIO20(A)/21(B)/99(I) J15: GPIO54(A)/55(B)/57(I) (no switch, level-shifted 5V)	S1: 1=UP, 2=UP, 3=UP (USB+debug)
LaunchXL-F28069M	JP7=INSTALL, JP6=REMOVE	Hardwired (no switch)	S1: 1=UP, 2=UP, 3=UP (USB+debug)
LaunchXL-F28P650(DK9)	S2: SEL1=DOWN, SEL2=DOWN	S5: QEP1=UP, QEP2=UP	S3: GPIO72=UP, GPIO84=UP
LaunchXL-F280049C	J101: all 4 shunts IN S6=DOWN, S8=DOWN(inverted)	S3.1=DOWN, S4=UP (for J12) S3.2=DOWN (for J13)	S2: 1=OFF, 2=OFF [UPSIDE DOWN: OFF=logic 1]
LaunchXL-F280039C	S2: SEL1=DOWN, SEL2=DOWN	S5: QEP1=DOWN, QEP2=DOWN	S3: GPIO24=UP, GPIO32=UP
LaunchXL-F280025C	S2: SEL1=DOWN, SEL2=DOWN	S5: QEP1=DOWN, QEP2=DOWN	S3: GPIO24=UP, GPIO32=UP [Keep S4=UP! GPIO32 conflict]
LaunchXL-F2800137	S2: SEL1=DOWN	S5: QEP1=DOWN	S3: GPIO24=UP, GPIO32=UP
TMDSCNCD28379D	A:SW1-2=ON (ISO-UART) GPIO28=TX, GPIO29=RX → FTDI	Via HSEC baseboard	SW1: 1=OFF(UP), 2=ON(DOWN)
TMDSCNCD28335	SW1=ON(UP)	Via DIMM100 baseboard	SW2: all ON (flash boot) [Ext. JTAG probe required]