TVCC, SWIM, GND and SWIM-RST can be connected to a low-cost 2.54 mm pitch connector or to pin headers available on the target board.

4.2 Connection with STM32 applications

For STM32 developments, the ST-LINK/V2 needs to be connected to the application using the standard 20-pin JTAG flat ribbon provided.

Table 4 summarizes the signals names, functions, and target connection signals of the standard 20-pin JTAG flat ribbon.

Table 4. JTAG/SWD cable connections

Pin no.	ST-LINK/V2 connector (CN3)	ST-LINK/V2 function	Target connection (JTAG)	Target connection (SWD)
1	VAPP	Target VCC	MCU VDD(1)	MCU VDD(1)
2				
3	TRST	JTAG TRST	JNTRST	GND(2)
4	GND	GND	GND(3)	GND(3)
5	TDI	JTAG TDO	JTDI	GND(2)
6	GND	GND	GND(3)	GND(3)
7	TMS_SWDIO	JTAG TMS, SW IO	JTMS	SWDIO
8	GND	GND	GND(3)	GND(3)
9	TCK_SWCLK	JTAG TCK, SW CLK	JTCK	SWCLK
10	GND	GND	GND(3)	GND(3)
11	NC	Not connected	Not connected	Not connected
12	GND	GND	GND(3)	GND(3)
13	TDO_SWO	JTAG TDI, SWO	JTDO	TRACESWO(4)
14	GND	GND	GND(3)	GND(3)
15	NRST	NRST	NRST	NRST
16	GND	GND	GND(3)	GND(3)
17	NC	Not connected	Not connected	Not connected
18	GND	GND	GND(3)	GND(3)
19	VDD	VDD (3.3V)(5)	Not connected	Not connected
20	GND	GND	GND(3)	GND(3)

1. The power supply from the application board is connected to the ST-LINK/V2 debugging and programming board to ensure signal compatibility between both boards.
2. Connect to GND for noise reduction on the ribbon.
3. At least one of this pin must be connected to the ground for correct behavior (connecting all of them is recommended).
4. Optional: for Serial Wire Viewer (SWV) trace.
5. Available on ST-LINK/V2 only and not connected on ST-LINK/V2/OPTO.

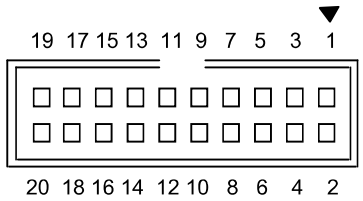
Figure 9 shows how to connect the ST-LINK/V2 to a target using the JTAG cable.

Figure 9. JTAG and SWD connection

1. A = Target application board with JTAG connector
2. B = JTAG/SWD 20-wire flat cable
3. C= STM32 JTAG and SWD target connector

The reference of the connector needed on the target application board is:
2x10C header wrapping 2x40C H3/9.5 (pitch 2.54) - HED20 SCOTT PHSD80.

Figure 10. JTAG debugging flat ribbon layout



Note: For low cost applications or when the standard 20-pins-2.54mm-pitch-connector footprint is too big, it is possible to implement the Tag-Connect solution to save cost and space on the application board. The Tag-Connect adapter and cable provide a simple reliable means of connecting ST-LINK/V2 or ST-LINK/V2-ISOL to the PCB without requiring a mating