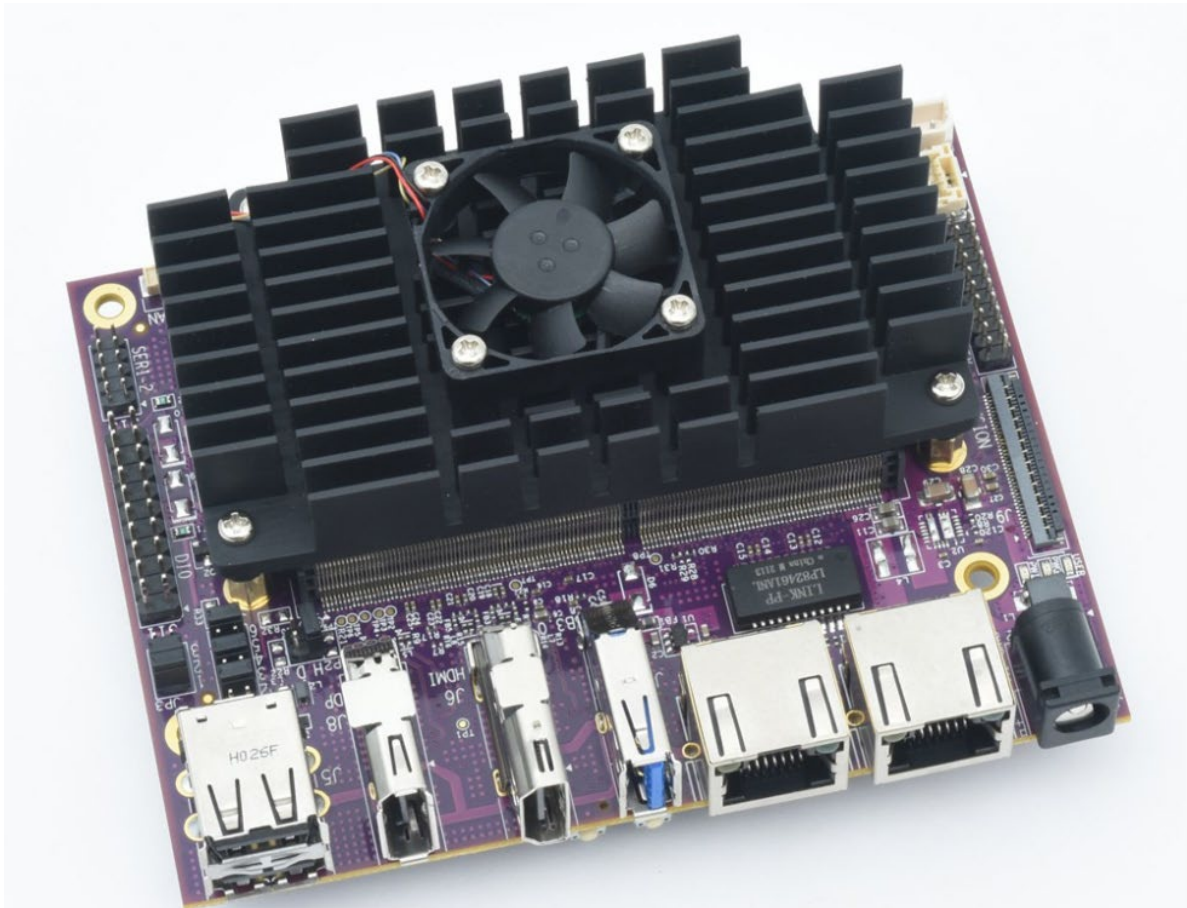# DIAMOND SYSTEMS FLOYD SC

CONVERTS JETSON NANO AND XAVIER NX INTO COMPLETE EMBEDDED SYSTEM

Introduction

The FLOYD SC compact carrier board converts the Nvidia Jetson Nano / TX2 NX / Xavier NX modules into complete embedded systems by providing interface circuitry, I/O connectors for all module features, camera interfaces, power supply, and additional I/O in a solution measuring only 4.3x3.3" / 110x85mm. A novel expansion I/O connector enables the connection of standard and custom daughterboards with additional I/O functionality to simplify the development of customized Jetson solutions.

Floyd SC features up to 3 CSI camera inputs, 2 Gigabit Ethernet ports, 2 USB 2.0 ports, 1 USB 3.0 port, 1 RS-232 and 1 RS-232/485 serial port, 16 GPIO, and HDMI + DP display support. With the NX module installed a second Ethernet port and a CAN port are available. An M.2 NVME socket supports both 2242 and 2280 size I/O and flash storage modules. Wide voltage input 7-24V provides adaptability to a range of power supplies.

Floyd SC is available in two configurations: a low-cost model with reduced features for Nano and a full-featured model with complete features supporting NX and TX2 NX.

Floyd SC is supported by a full Linux BSP based on Nvidia's Jetpack. This software is available as a free download from our support area.

Floyd SC is available as both a carrier board component and as an assembled subsystem including the selected Jetson module with Linux OS installed. Both heat sink and fan-sink cooling options are available.

Coming soon: JetBox-FloydSC, a compact complete system in a steel and aluminium enclosure supporting Floyd SC and optional daughterboard!

Product Configurations

Floyd SC is available in a cost-optimized configuration for the Nano module and a full-featured configuration for the TX2-NX and NX modules. The full-featured model can also work with the Nano, however, some features are unavailable due to not being present on the module.

	FLDSC-BB01	FLDSC-BB02
supported	Nano	Nano, **TX2 NX, NX**
thernet	1	**2 (with NX)**
	1	1
	2	2
rts	1 RS-232 + 1 RS-232/485	1 RS-232 + 1 RS-232/485
	1 HDMI	1 HDMI **+ 1 DP**

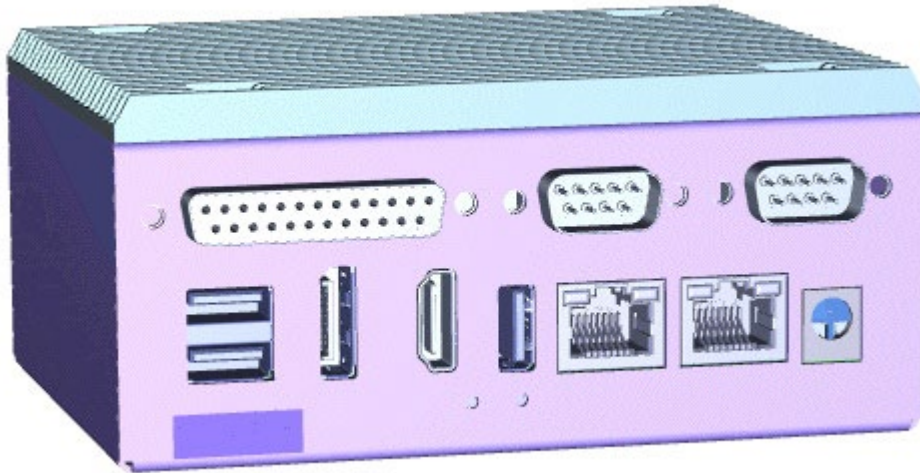|	3x 2-lane CSI Interface	3x 2-lane CSI Interface
Expansion socket	M.2 2242 / 2280 dual footprint	M.2 2242 / 2280 dual footprint
board expansion	N/A	**40-pin connector with PCIe + USB 3.0 connectivity to host module (NX only)**

I/O Expansion Connector

A flex cable connector on model BB02 enables additional I/O expansion with off the shelf or custom-developed daughterboards. The connector offers USB 3.0 and PCIe connectivity to the Jetson module, as well as power. Because an I/O daughterboard is much quicker and easier to design than a full-custom carrier board, Floyd SC makes it easy to design customized Jetson solutions with additional I/O. For example, additional USB 3.0 ports, additional Ethernet ports, an Ethernet switch, or even a PoE PD circuit can all easily be implemented on a daughterboard and directly connected to the Jetson module using a native high-speed I/O interface. Daughterboards typically are the same size as the mainboard and mount directly underneath the mainboard for convenient packaging.

Subassembly Options

Floyd SC is available as a complete computing board-level subsystem with a Jetson module, heat sink, and Linux OS installed. These subsystems save time by eliminating the assembly, programming, and testing effort.
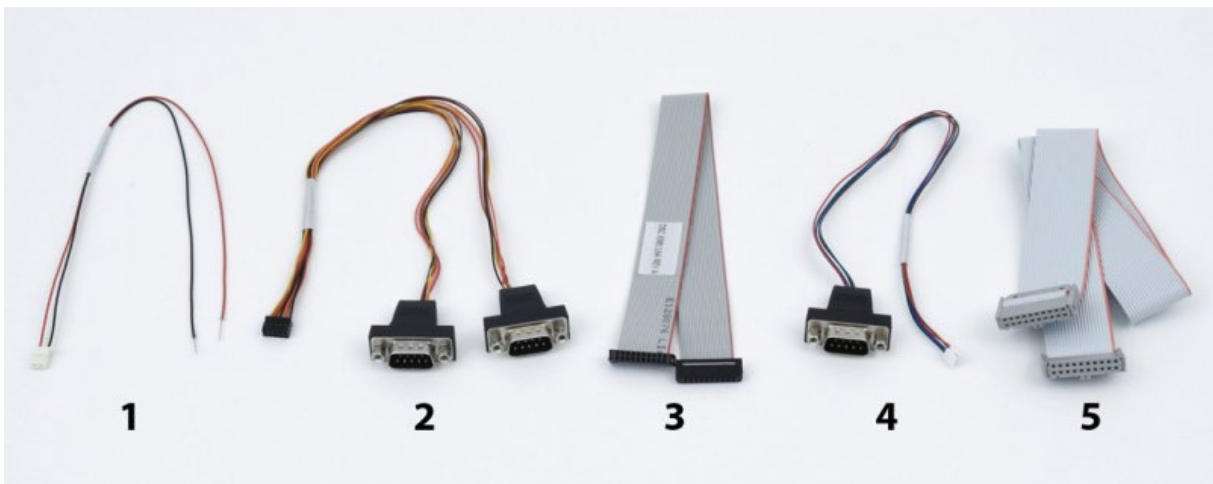
Complete Systems

Floyd SC is available as a JetBox™ system with Jetson module and Linux OS installed, ready to load your application and deploy. All main board I/O, including the I/O on the pin headers, is brought out to the front panel using familiar commercial connectors.

Cables

Most Floyd I/O other than the camera inputs is available using commercial connectors located along the front edge of the board. This arrangement simplifies the design of enclosures. The second serial port, GPIO signals, and CAN port (available with NX module only) do require cables.

All front-facing I/O cables for Floyd SC are industry standard, including Ethernet, HDMI, DisplayPort, and USB. Camera interface cables are generally included with the camera. Other I/O connections require custom cables. A cable kit is available with these custom cables:
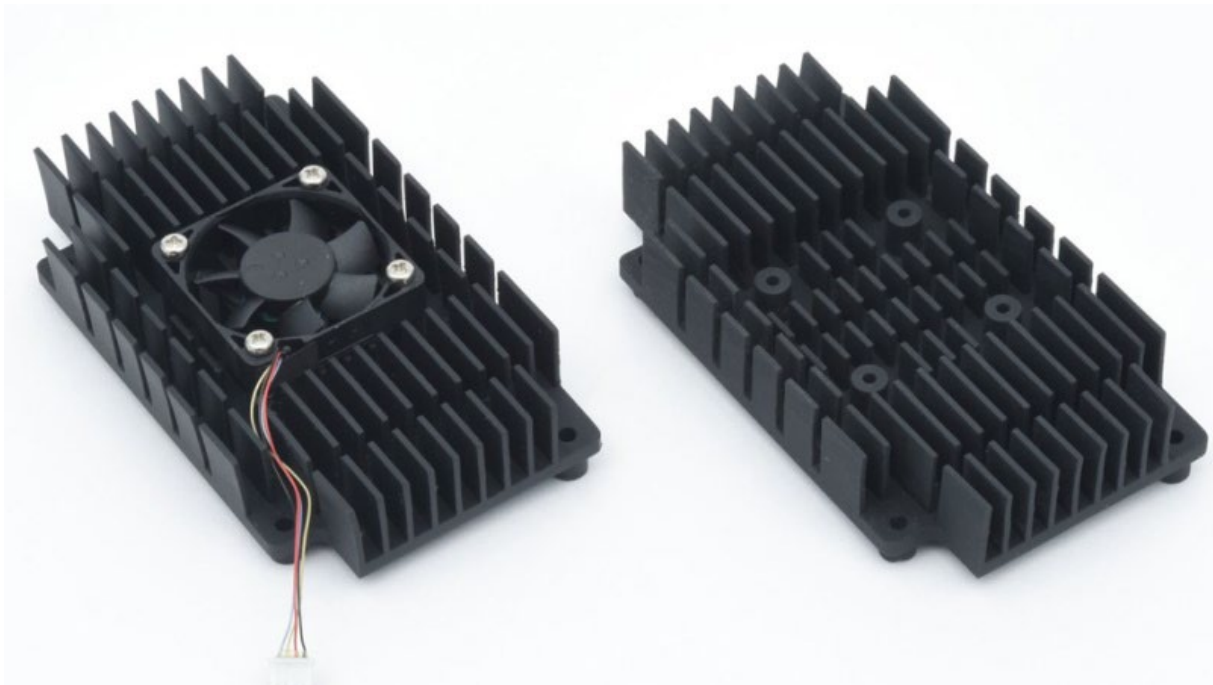

No.	Qty	Cable	Description
1	1	6980524	External battery cable, discrete wires

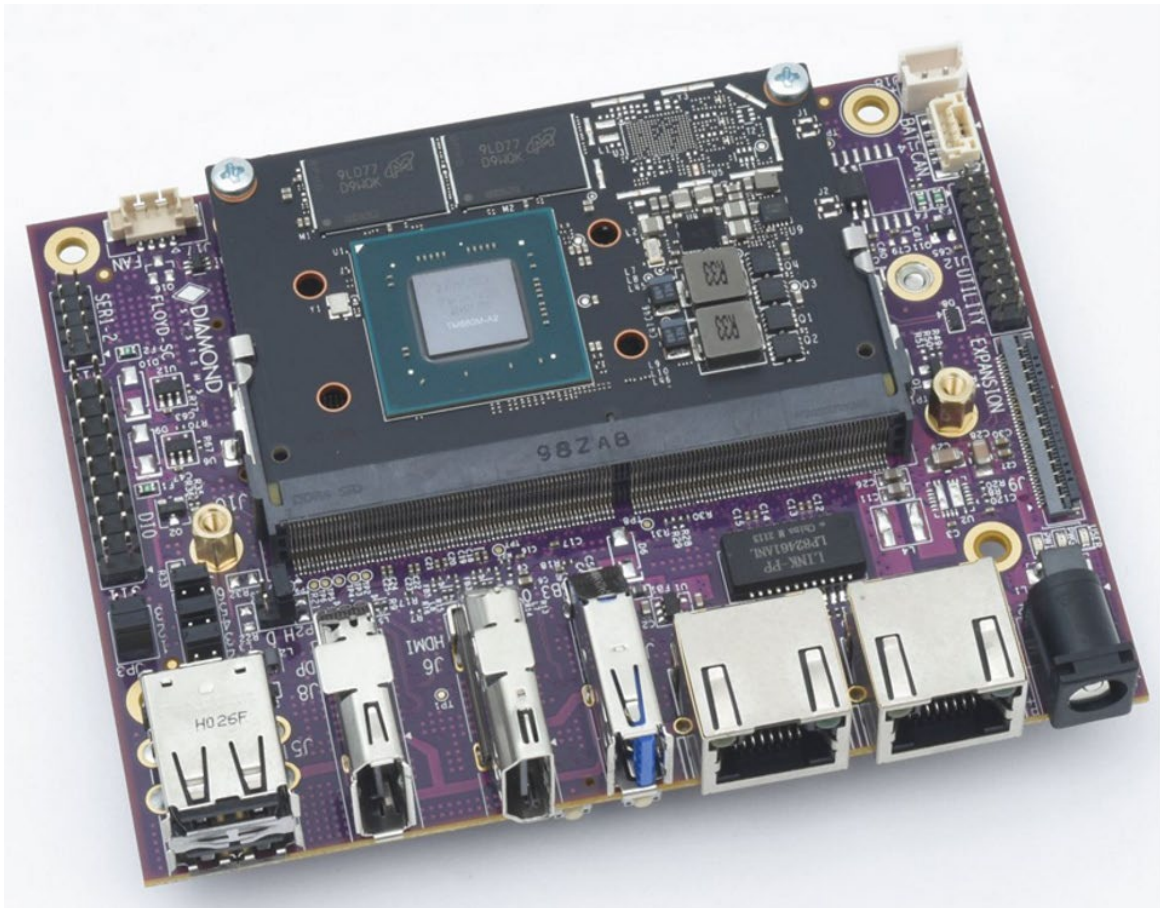| 2	1	6981075	Dual serial port DB9M
3	1	6981164	Ribbon cable for Opto-isolated GPIO
4	1	6981182	CANbus 2.0 dual-port cable
5	1	C-20-18	20-conductor ribbon cable, for utility connections including power and reset contacts

Heat Sink

The Jetson modules can consume significant power under heavy load and require cooling. Diamond Systems offers a passive heat sink and active fan-sink specifically designed for use on Floyd SC. The fan on the fan sink is controlled automatically by the Linux OS and also by a DSC-supplied utility program.

Power Input

Power is provided via a barrel jack with 5.5mm OD / 2.5mm ID dimensions. The input voltage range is 10.8-25.2VDC (supports 12V +/-10% and 24V +/-5% input voltages). A minimum 30W power supply is recommended to support peak power of the carrier, Jetson module, and attached I/O devices and provide a suitable safety margin. Diamond AC adapter PS-12V-03 provides 12V / 5A DC power with the required mating plug and an IEC 3 prong input power plug. A US AC power cord is included.

Key Features

- Supports all I/O features of Jetson Nano / NX / TX2 NX modules
- Compact size 4.3x3.3" / 110x85mm
- Single/dual gigabit Ethernet
- HDMI + DisplayPort
- 3x CSI dual lane camera inputs
- 2x serial ports: 1 RS-232 and 1 RS-232/485
- 16 GPIO with 3.3V / 5V compatibility
- 1 CAN port (with NX module)
- M.2 2242/2280 NVMe flash socket
- Heat sink / fan-sink cooling (orderable options)
- Expansion connector for use with standard and custom I/O expansion modules
- 12-24VDC power input
- Supports full temperature range of installed Jetson modules, -25 to +80C
- Available as carrier board, subassembly with installed Jetson module and software, or complete system

Adapter/Carrier	
Features	For NVIDIA Jetson Nano, NX / TX2 NX modules
Connections	See above

General

Electrical	Input voltage: 12-24V DC
Mechanical	110 x 85mm
Software	N/A
Temperature	Temperature range (operation): -25 to +80C
Warranty	2 Years
RoHS	Compliant

Ordering Details	
Board	**FLDSC-BB01** Floyd SC low-cost carrier for Jetson Nano
	FLDSC-BB02 Floyd SC full-featured carrier for Jetson NX / TX2 NX
	FLDSC-ASY-01-NAO Floyd SC assembly with Jetson Nano, Fan sink, and OS installed
	FLDSC-ASY-02-TNX Floyd SC assembly with Jetson TX2 NX, Fan sink, and OS installed
	FLDSC-ASY-02-XNX Floyd SC assembly with Jetson Xavier NX, Fan sink, and OS installed
Accessories	**PS-12V-03** AC adapter, 12V / 5A output
	CK-FLDSC-01 cable kit
	Cable kit contains:
	6980524 External battery cable, discrete wires
	6981075 Dual serial port DB9M
	6981164 Ribbon cable for Opto-isolated GPIO
	6981182 CANbus 2.0 dual-port cable
	C-20-18 20-conductor ribbon cable, for utility connections including power and reset contacts
	Cables are available individually but with a significant MOQ