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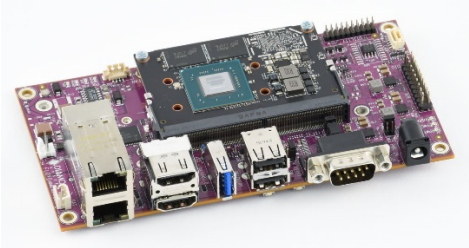
# Datasheet

# Diamond Systems

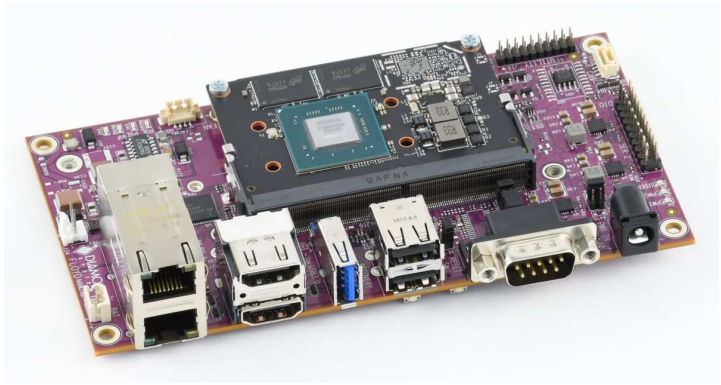
## FLOYD

**Compact Carrier Board for Nvidia Jetson Nano, Xavier NX, and TX2 NX**

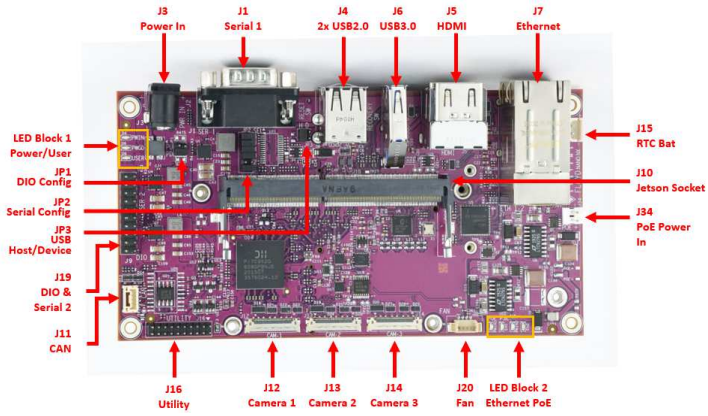


# FLOYD Carrier for Nano, Xavier NX, and TX2 NX

**Converts Jetson Nano and Xavier NX into complete embedded systems**



**Floyd model BB01 with Nano module installed**




**Floyd top side features**

## FEATURES

- 1 or 2 gigabit Ethernet ports
- Optional PoE+ support (with external power source)
- 2 HDMI 2.0a/b ports
- 1 USB 3.0 port with type A connector
- 2 USB 2.0 ports with type A connector; 1 port can serve as OTG
- 8 GPIO with 3.3V logic levels
- 2 serial ports with RS-232/422/485 (depending on model)
- 3 dual/quad lane MIPI/CSI camera ports
- 1 CAN port (NX module only)
- 1 Mini PCIe socket with PCIe and USB support
- 1 M.2 2280 PCIe x1 or x4 NVME socket
- Size: 5.8 x 3.0" / 147 x 76mm
- Input voltage: 12-24VDC

- -25 to +80ºC operating temperature (same as Jetson Nano / NX)

The FLOYD carrier board converts the Nvidia Jetson Nano and 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. Camera inputs include 2 PoE Gigabit Ethernet ports, 3 MIPI/CSI 2/4-lane connectors, and 1 USB 3.0 port. MiniCard, M.2, and Micro SD sockets support I/O expansion and storage. FLOYD + NVIDIA redefine possibility; the combination of Nvidia's performance/power efficiency and Diamond's I/O enables a new generation of high-compute, low-cost solutions.

Floyd's multiple camera inputs provide increased versatility for use in a wide variety of imaging applications, which make up a substantial portion all Jetson applications today. As with all Diamond products, Floyd is designed and built for reliable performance and extended operating temperature to meet the full capabilities of the Jetson modules.

With the Xavier NX module installed, Floyd offers 1 CAN 2.0B port. The standard configuration is non-isolated; isolation is available as special order.

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

## Carrier Board Configurations

Floyd is available in two configurations: FLD-BB01 offers the complete suite of I/O features, while FLD-BB02 targets lower-cost applications requiring less I/O. The BB02 model also omits the PCIe switch needed for the BB01 additional I/O, thereby enabling a full PCIe x4 link to the M.2 socket for potentially higher flash memory read/write speeds.

| Feature | FLD-BB01 | FLD-BB02 |
|---|---|---|
| Gigabit Ethernet | 2 | 1 |
| PoE | Both ports | No |
| HDMI | 2 | 1 |
| Camera CSI 4-lane | 3 | 3 |
| USB 3.0 | 1 | 1 |
| USB 2.0 | 2 | 2 |
| M.2 2280 socket | PCIe x1 | PCIe x4 |
| Minicard socket | Full size PCIe | No |
| SD card | Yes | Yes |
| GPIO 3.3V | 8 | 8 |
| Serial | 2x RS-232/422/485 | 1x RS-232<br>1x RS-232/485 |
| CAN 2.0 | 1 (NX only) | No |

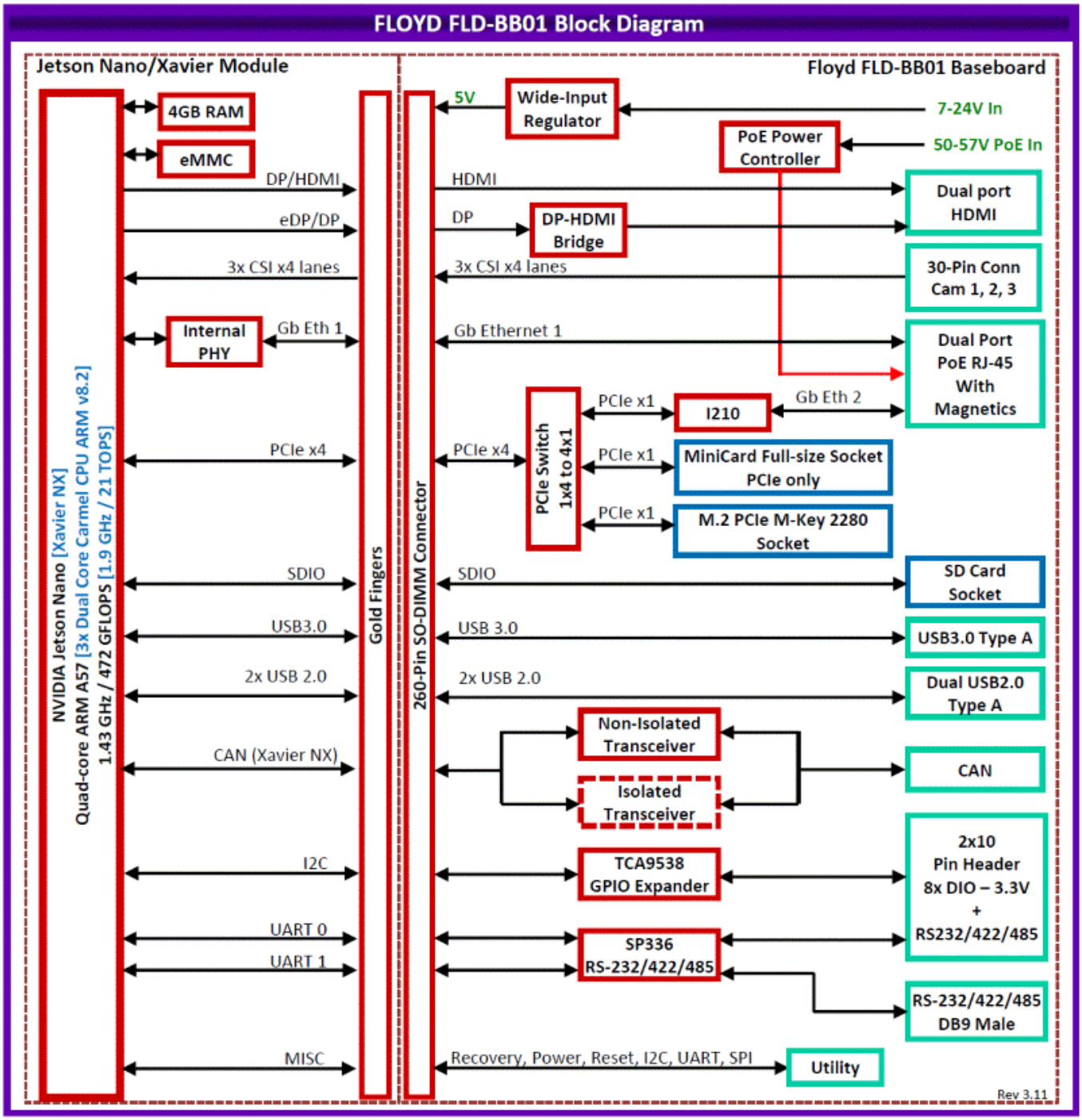
## Product Configurations

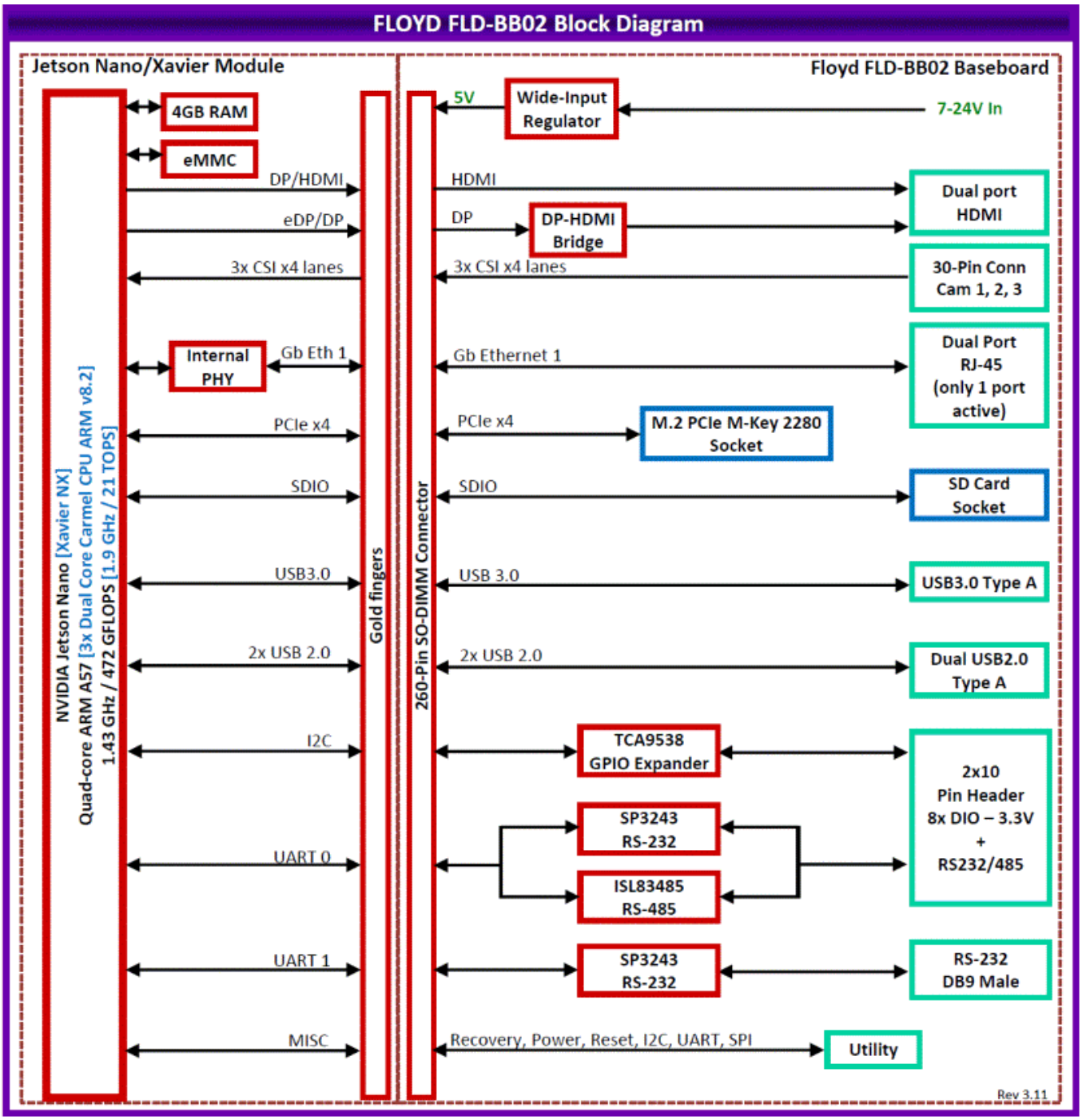
Floyd is available in four levels of integration to fit any project requirements:

| | |
|---|---|
| Carrier board | We provide just the carrier board. You provide the Nvidia module and packaging solution. You program the Linux OS into the module. Optional heat sink and fan sink accessories are available, see Accessories at the bottom of this page. |

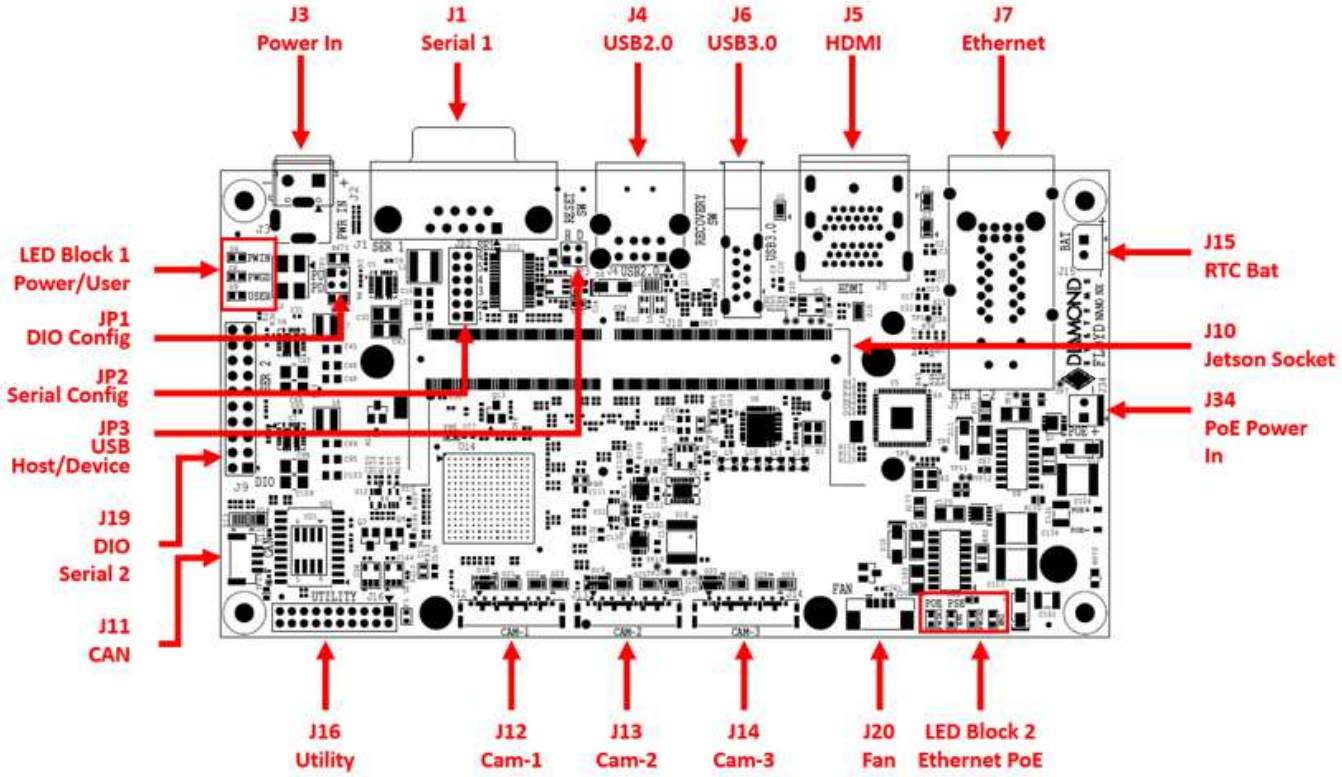
| | |
|---|---|
| Carrier board with Jetson module installed | We install the selected Jetson module (Nano, NX, TX2 NX) and load the Linux operating system. Heat sink / fan sink accessories are available. You provide the packaging solution. |
| System kit | We provide the carrier board and the complete packaging solution. You supply and install the Jetson module, program the OS, and assemble the system. |
| Complete system | We provide the carrier board with jetson module installed and programmed, fully assembled in the JetBox enclosure, including an AC adapter, ready for operation. |


## FLOYD Block Diagrams


FLOYD FLD-BB01 Block Diagram
Jetson Nano/Xavier Module
Floyd FLD-BB01 Baseboard
NVIDIA Jetson Nano [Xavier NX]
Quad-core ARM A57 [3x Dual Core Carmel CPU ARM v8.2]
1.43 GHz / 472 GFLOPS [1.9 GHz / 21 TOPS]
4GB RAM
eMMC
DP/HDMI
eDP/DP
3x CSI x4 lanes
Internal PHY
Gb Eth 1
PCIe x4
SDIO
USB3.0
2x USB 2.0
CAN (Xavier NX)
I2C
UART 0
UART 1
MISC
Gold Fingers
260-Pin SO-DIMM Connector
5V
Wide-Input Regulator
7-24V In
PoE Power Controller
50-57V PoE In
HDMI
Dual port HDMI
DP
DP-HDMI Bridge
3x CSI x4 lanes
30-Pin Conn Cam 1, 2, 3
Gb Ethernet 1
Dual Port PoE RJ-45 With Magnetics
PCIe x4
PCIe Switch 1x4 to 4x1
PCIe x1
I210
Gb Eth 2
PCIe x1
MiniCard Full-size Socket PCIe only
PCIe x1
M.2 PCIe M-Key 2280 Socket
SDIO
SD Card Socket
USB 3.0
USB3.0 Type A
2x USB 2.0
Dual USB2.0 Type A
Non-Isolated Transceiver
Isolated Transceiver
CAN
TCA9538 GPIO Expander
2x10 Pin Header 8x DIO – 3.3V + RS232/422/485
SP336 RS-232/422/485
RS-232/422/485 DB9 Male
Recovery, Power, Reset, I2C, UART, SPI
Utility
Rev 3.11




## Floyd Features




Note: Mini PCIe and M.2 2280 sockets are located on the bottom side.

## 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.

CK-FLD-01 includes the following cables:

| No. | Qty | Cable | Description | Drawing |
|---|---|---|---|---|
| 1 | 1 | 6980524 | External battery cable, discrete wires | **Show** |
| 2 | 1 | 6981016 | High-power input cable, 2 conductors | **Show** |
| 3 | 1 | 6981164 | Ribbon cable for Opto-isolated GPIO | **Show** |
| 4 | 1 | 6981182 | CANbus 2.0 dual port cable | **Show** |
| 5 | 1 | C-DB9M-18 | Function: Serial port 2, GPIO Description: 2x10 .1” pin header to dual DB9 male | - |

## Models and Accessories

### FLOYD Carrier for Nano, Xavier NX, and TX2 NX

**available models:**

| | |
|---|---|
| **FLD-NAO-FS-01** | Floyd subassembly, BB01 carrier board with Nano module installed and programmed, with fan sink |
| **FLD-NAO-FS-02** | Floyd subassembly, BB02 carrier board with Nano module installed and programmed, with fan sink |
| **FLD-XNX-FS-01** | Floyd subassembly, BB01 carrier board with NX module installed and programmed, with fan sink |
| **FLD-XNX-FS-02** | Floyd subassembly, BB02 carrier board with NX module installed and programmed, with fan sink |

**Please login or signup for an online quote request.**

### Cables and accessories

**available models:**

| | |
|---|---|
| **6882601** | Floyd fan sink, 100x50mm |
| **6882604** | Floyd heat sink, 100x50mm |
| **CK-FLD-01** | CK-FLD-01 cable kit |
| **6980524** | External battery cable, discrete wires |
| **6981016** | High-power input cable, 2 conductors |
| **6981164** | Ribbon cable for Opto-isolated GPIO |
| **6981182** | CANbus 2.0 dual port cable |
| **C-DB9M-18** | Function: Serial port 2, GPIO Description: 2x10 .1” pin header to dual DB9 male |

**Please login or signup for an online quote request.**

**www.diamondsystems.com** | **Sunnyvale, California USA** | **+1-650-810-2500** | **sales@diamondsystems.com**

Our company network supports you worldwide with offices in Germany, Austria, Switzerland, the UK and the USA. For more information please contact:

## Headquarters

**Germany**

**FORTEC Elektronik AG**
Augsburger Str. 2b
82110 Germering

Phone: +49 89 894450-0
E-Mail: info@fortecag.de
Internet: www.fortecag.de

## Fortec Group Members

**Austria**

**Distec GmbH Office Vienna**
Nuschinggasse 12
1230 Wien

Phone: +43 1 8673492-0
E-Mail: info@distec.de
Internet: www.distec.de

**Germany**

**Distec GmbH**
Augsburger Str. 2b
82110 Germering

Phone: +49 89 894363-0
E-Mail: info@distec.de
Internet: www.distec.de

**Switzerland**

**ALTRAC AG**
Bahnhofstraße 3
5436 Würenlos

Phone: +41 44 7446111
E-Mail: info@altrac.ch
Internet: www.altrac.ch

**United Kingdom**

**Display Technology Ltd.**
Osprey House, 1 Osprey Court
Hinchingbrooke Business Park
Huntingdon, Cambridgeshire, PE29 6FN

Phone: +44 1480 411600
E-Mail: info@displaytechnology.co.uk
Internet: www. displaytechnology.co.uk

**USA**

**Apollo Display Technologies, Corp.**
87 Raynor Avenue, Unit 1
Ronkonkoma, NY 11779

Phone: +1 631 5804360
E-Mail: info@apollodisplays.com
Internet: www.apollodisplays.com