

Manufacturer: **Hatteland Technology AS**  
 Product: **3U Rackmount Marine Server/Computer**  
 Typenumber: **HTS31470-iy-AC Axxxxxx**  
 Where "y" = CPU and "x" = Configurations

Last Revised: **05 Jul 2021**  
 Revision#: **05**

## 3U Rackmount Marine Server/Computer

### Overview:

The HTS31470 3U series industrial & marine certified 19" rack computers are designed with latest 10th generation architecture. A huge variety of I/O such as NMEA 0183 ports, serial interface, USB, Gigabit Ethernet ports, PCIe slots for extensions, High end Nvidia graphics, will fulfill a wide range of industrial and maritime applications. Rugged and ready for most critical and harsh installations.

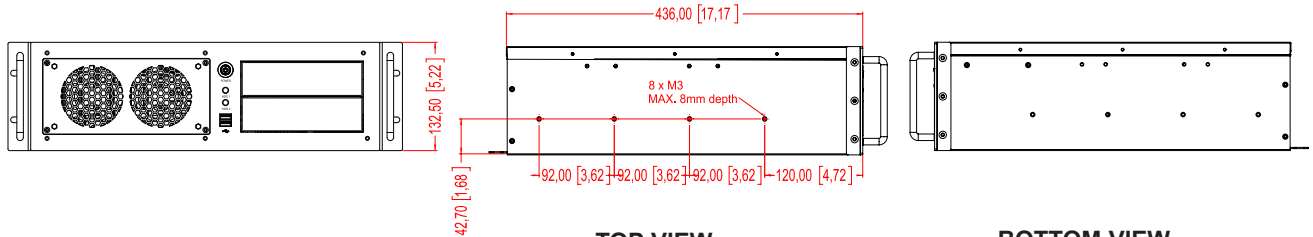
- High Performance Intel® 10 gen - i3-i5-i7 or i9 CPU
- Wide range of approved options for:  
Professional Nvidia Graphics Cards, Network, COM Ports (RS-422/485/232, CAN), Digital I/O and Storage
- Fully IEC 60945/IACS E10 tested, DNVGL-CG-0339, Type approvals ongoing



FRONT VIEW

SIDE VIEW

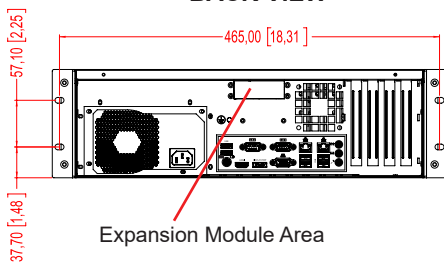
SIDE VIEW



TOP VIEW

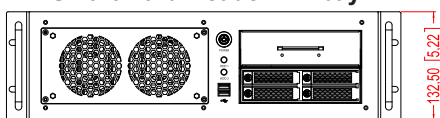
BOTTOM VIEW

BACK VIEW

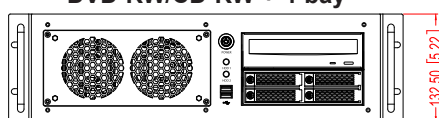


### Factory Options:

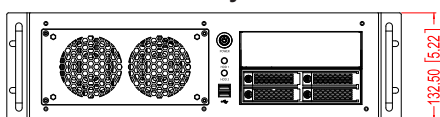
Smart Card Reader + 4-bay



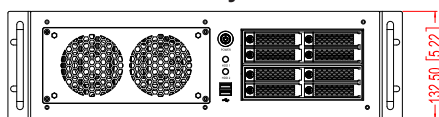
DVD-RW/CD-RW + 4-bay



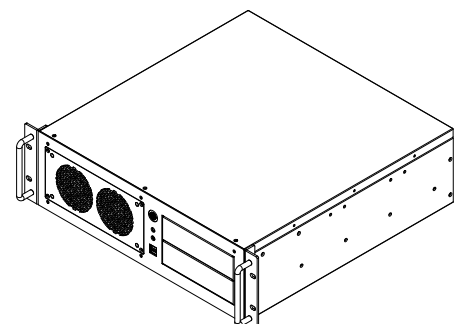
4-bay



8-bay



DIMETRIC VIEW



Dimensions might be shown with or without decimals and indicated as mm [inches]. Tolerance on drawings is +/- 1mm. For accurate measurements, check relevant DWG file.

## TECHNICAL DESCRIPTION

### Computer Specifications:

• Motherboard	: Intel® Q470E, Industrial long-life motherboard
• System Chipset	: Intel® Q470E
• Operating System	: See table below for options
• Processor	: See table below for options
• Memory/RAM	: See table below for options
• Storage Devices	: See table below for options
• PCIe Slots	: #1 PCIe 3.0 x16/x8/x4 #2 PCIe 3.0 x4 #3 PCIe 3.0 x8 (Shared PCIe with #1, when used #1 x8) #4 PCIe 3.0 x4
• Graphics Chipset Onboard	: Intel® UHD Graphics 630
• Graphics Card preinstalled	: See table below for options
• BIOS	: AMI UEFI
• Audio	: Realtek ALC887 HD, High Definition Audio. Line-In/ Line-Out/ Mic-In
• Ethernet Onboard	: 2 x Gb LAN LAN1: Intel® I225LM with 10/100/1000/2500 Mbps LAN2: Intel® I219LM with 10/100/1000 Mbps, support AMT/vPro
• Front USB Ports	: 2 x USB 3.2 (Gen1)
• Rear USB Ports	: 4 x USB 3.2 (Gen2), 2 x USB2.0
• Mouse/Keyboard Port	: YES
• Serial Ports	: 2 x COM (RS-232/422/485)
• Power Manager	: ACPI
• Watchdog Timer	: 256 Segments, 0, 1, 2...255 sec/min
• RTC	: YES
• H/W Status Mont.	: YES
• Battery	: YES
• TPM	: TPM 2.0

### External Connector Type:

1 x DP1.2 + 1 x VGA + 1 x HDMI2.0a
3 x 3.5mm MiniJack
1 x RJ-45
1 x RJ-45
2 x USB Type A
6 x USB Type A
1 x PS2
2 x DB9M

### Power Specifications:

#### Power Supply:

- Power 115-230VAC 50-60Hz : 1 x 700W - Autorange 1 x Std. IEC inlet
- Power Consumption: 135.4W (typ\*) - 875W (max)
- MIL-STD-1399 (SECTION 300B) Type 1 (115VAC). Section 5.3.7, Current waveform (emission) test - Oblique wave currents over 3% of basic load current: AH03: 26.31%, AH05: 5.22%

\*Power Consumption: Numbers are specified as the unit is delivered from factory. All additional installed equipment like USB, PCIe and similar loads have to be added to power consumption. Note that total extra load have to be multiplied by 1.5 to compensate for efficiency in internal power converters. Typical power consumption varies a lot with computer load. We measure with 25% of max computer load.

### Available Computer Configurations:

Type	Description	Size/Specification
CPU	1 x Intel® Core™ i3-10100E 1 x Intel® Core™ i5-10500E 1 x Intel® Core™ i7-10700E 1 x Intel® Core™ i9-10900E	4-Core 3.20GHz - 3.80GHz, 6MB Cache 6-Core 3.10GHz - 4.20GHz, 12MB Cache 8-Core 2.90GHz - 4.50GHz, 16MB Cache 10-Core 2.80GHz - 4.70GHz, 20MB Cache
Memory	DDR4 DIMM 260-pin	- Uses 4 slots, available sizes are: 2x16GB (32GB), 4x16GB (64GB), 4x32GB (128GB)
Storage	2.5"/M.2 SSD SATA	- 240GB (0.9PBW), 480GB (1.2PBW), 960GB (3.4PBW), 1.92TB (7.1PWB)
OS Option	Microsoft® Windows® Server 2016/2019 64bit, Windows® 10 IoT Enterprise 2019 LTSC (64bit).	

### Factory Mounted Options:

- CP-114EL-I ELEK KIT: 4 Ports COM Card, PCIe x1, 1xDB44F to 4xDB9M isolated, RS-232/422/485
- PNY NVIDIA Quadro RTX 4000: PCIe 3.0 x16, DisplayPort 1.4 (3)+VirtualLink, 8GB GDDR6\*\*
- PNY NVIDIA Quadro P2200: PCIe 3.0 x16, 4 x DP1.4, 5GB GDDR5
- PNY NVIDIA Quadro P620: PCIe 3.0 x16, 4 x mDP1.4, 2 GB GDDR5\*\*
- X710T2LBLK: Intel® Network Adapter (10GbE), 2 x RJ45
- X722DA2: Intel® Fiber Network Adapter (10GbE), 2 x SFP+
- I350T2V2BLK: Intel® Network Adapter (1GbE), 2 x RJ45
- I350F2BLK: Intel® Fiber Network Adapter (1GbE), 2 x LC Fiber Optic
- SX-118A: Parallel Port LPT, DB25F, Bi-Dir. ECP/EPP, PCIe x1 card
- Variations of Storage, RAM Memory and Operating System
- 1 x PCA100297-1: Digital IO Isolated, 4 IN + 4 OUT or 1 x PCA100298-1: LAN 10/100Mbps, 2 ports (RJ45) module or 1 x PCA100309-1: Dual Isolated RS-232, 2xDB9 module or 1 x ZIA0001310-B: CAN isolated, 2 channel module or 1 x ZIA0001310-SLCAN: Socket CAN isolated, 2 channel module or 1 x PCA200828-1: COM RS-422/485 isolated NMEA 4 channel, 5-pin T. Block 3.81

\*\* miniDP or USB-C to DP adapter not included. See Contents of package.

### Front configurations 2 x 5 1/4", tray Available options for each tray

- None, i.e. covered with blinds
- CST-US777AK9563, Smart card reader
- 90DD01Y0-B20010, DVD-RW/CD-RW
- MB9945K-1B, 4x2.5" SATA drive bay

### Available Accessories:

- HT 00225 OPT-A1: 2 x 26" ball bearing sliding rail & mounting kit for 19" Rack
- HT 00224 OPT-A1: 2 x 20" ball bearing sliding rail & mounting kit for 19" Rack
- JH C01MF A-A: 1 x USB Cable 1m, Type A-Chassis mount receptacle
- VSDDPVGA340 / HT DPM2VGAFA1: 1 x DP to VGA adapter
- RC3473 / HT DPM2DVI-DF-A1: 1 x DP to DVI adapter
- HT RET STD-A3: 1 x Cable/Retainer Kit
- HT 00300 MSOS: OS options -> [www.hattelandtechnology.com/os](http://www.hattelandtechnology.com/os)
- HT 00262 OPT-A1: 4 x RS-422/RS-485 isolated, USB ext. module
- HT 00263 OPT-A1: 4 x RS-232 COM non-isolated, USB ext. module
- HT 00264 OPT-A1: 1 x CAN isolated, 2 channel, USB ext. module
- HT 00264 OPT-A2: 1 x SLCAN isolated, 2 channel, USB ext. module
- HT 00274 OPT-A1: 2 x LAN 10/100Mbps, RJ45, USB ext. module
- HT 00273 OPT-A1: 4 x Digital IN/OUT isolated, USB ext. module
- HD 000TR SX1-A1: 1 x Removable Tray 2.5" Empty
- HD 000TR SX2-A3: 1 x Removable Tray 2.5" w/4xM3x4mm Phillips Countersunk Screws
- HD xxxxy SX1-z1: 1 x Removable Tray 2.5" w/Storage Device\*

\*Where xxx=Size of device. yy=GB,TB. z=S (SSD), z=H (HDD) - Choose Storage Device from table above.

## MECHANICAL DESCRIPTION

### Physical Specifications:

- W:465.70 [18.31"] x H:132.50 [5.22"] x D:436.00 [17.17"] mm [inch]
- Weight: Approx. 13kg / 28lbs
- Black (EP0301-4040627) Heavy-duty steel 3U Rackmount chassis with handles
- 2 x Internal Cooling fans in front (80x80mm)
- Easy Removable Front Air Filter (spare part accessory available)
- Power Button, Power LED, Activity LEDs SSD

### Environmental Considerations:

• Operating	: Temperature -15°C to +55°C
• Storage	: Temperature -20°C to +70°C
• Humidity	: Up to 95% (Operating / Storage)
• Compass Safe Distance	: Standard: 285.00 [112.2"] cm [inch] : Steering: 180.00 [70.8"] cm [inch]

#### Lifetime Considerations:

Even though the test conditions for bridge units provide for a maximum operating temperature of 55°C, continuous operation of all electronic components should, if possible, take place at ambient temperatures of only 25°C. This is a necessary prerequisite for long life and low service costs.

## APPROVALS & CERTIFICATES

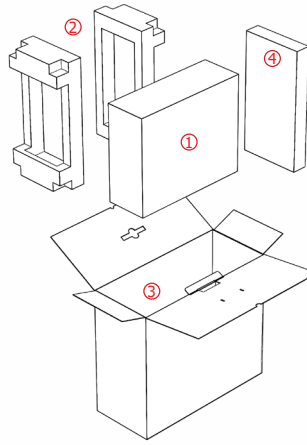
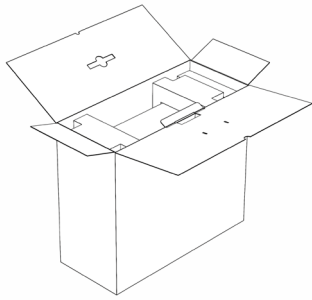
Tested / type approved by the following classification societies: \*=pending

IEC 60945 4th (EN 60945:2002)  
ABS - American Bureau of Shipping\*  
MIL-STD-1399, Section 300B






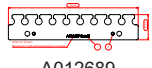
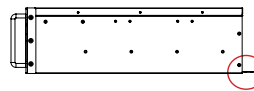
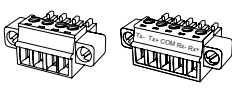



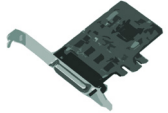
IACS E10  
CCS - China Classification Society

CE ClassNK - Nippon Kaiji Kyokai\*  
BV - Bureau Veritas\*

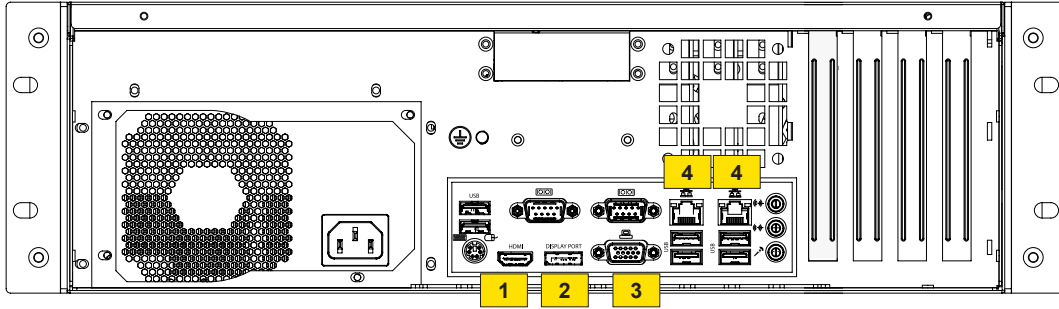
DNV - Det Norske Veritas\*  
EU RO MR - Mutual Recognition



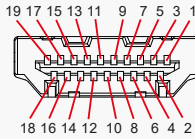
- ① 1 x HTS31470-i7-AC xxxxxxx
- ② 2 x HAA228 - Inner EPE Foam Packaging
- ③ 1 x HAA222 - Outer Box
- ④ 1 x HAA226 - Accessory Box
- ⑤ 1 x HAA223 - Sleeve

Item	Description	Illustration
 702002605	1 x Power Cable European Type F "Schuko" to IEC. Length 1.8m	EUR TYPE F 
 702002600	1 x Power Cable US Type B plug to IEC. Length 1.8m	US TYPE B 
	Test Reports papers: 1 pcs of Product Declaration 1 pcs of Computer Checklist 1 pcs of BurnInTest Certificate 1 pcs of IND10709-1_UserManual_HTS_31470	
 A012689	1 pcs Cable retainer bracket 2 pcs M3 x 4mm CSK Torx 1 pcs M6 Grounding Nut	
<b>Package may also include</b>		
 Terminal Block Connectors	Depending on factory mounted options, connector kit as follows: 2 x 4-pin Terminal Block 3.81 for CAN Interface (ZIA0001310-B / ZIA0001310-SLCAN) 4 x 5-pin Terminal Block 3.81 for RS-422 / RS-485 NMEA 4 Channel (PCA100828-1) 4 x 5-pin Terminal Block 3.81 for Digital Input/Output (PCA100297-1)	
 PNY Quadro RTX4000 accessories	1 x DP to DVI-D (SL) Adapter	
 PNY NVIDIA Quadro P2200	1 x Installation guide 1 x DP to DVI-D (SL) Adapter	
 PNY NVIDIA Quadro P620	1 x Installation guide 1 x DVD with drivers/support software 4 x mDP to DP adapter* or 4 x mDP to DVI (SL) adapter* *Depends on ordered configuration	
 CP114EL-I	1 x MOXA Cable with 4 ports	

## PINOUT ASSIGNMENTS COMMON CONNECTORS



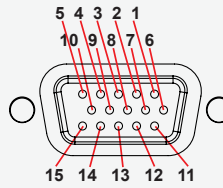
### 1 19-pin HDMI Female



PIN 01	TMDS Data2+
PIN 02	TMDS Data2 Shield
PIN 03	TMDS Data2-
PIN 04	TMDS Data1+
PIN 05	TMDS Data1 Shield
PIN 06	TMDS Data1-
PIN 07	TMDS Data0+
PIN 08	TMDS Data0 Shield
PIN 09	TMDS Data0-
PIN 10	TMDS Clock+
PIN 11	TMDS Clock Shield
PIN 12	TMDS Clock-
PIN 13	CEC
PIN 14	Reserved (HDMI 1.0–1.3a) Utility/HEAC+ (HDMI 1.4+, optional, HDMI Ethernet Channel and Audio Return Channel)
PIN 15	SCL (I <sup>2</sup> C Serial Clock for DDC)
PIN 16	SDA (I <sup>2</sup> C Serial Data for DDC)
PIN 17	Ground (for DDC, CEC, ARC and HEC)
PIN 18	+5 V (min. 0.055 A)
PIN 19	Hot Plug Detect (all versions) HEAC- (HDMI 1.4+, optional, HDMI Ethernet Channel and Audio Return Channel)

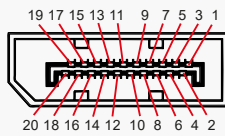
### 3 Analog RGB/VGA, 15-pin DSUB High Density Female

Onboard or via DVI-4 adapter



PIN 01	RED	Red, analog
PIN 02	GREEN	Green, analog
PIN 03	BLUE	Blue, analog
PIN 04	ID2/RES	Reserved for monitor ID bit 2 (grounded)
PIN 05	GND	Digital ground
PIN 06	RED_RTN	Analog ground red
PIN 07	GREEN_RTN	Analog ground green
PIN 08	BLUE_RTN	Analog ground blue
PIN 09	KEY/PWR	+5V power supply for DDC (optional)
PIN 10	GND	Digital ground
PIN 11	ID0/RES	Reserved for monitor ID bit 0 (grounded)
PIN 12	ID1/SDA	DDC serial data
PIN 13	HSYNC.	Horizontal sync or composite sync, input
PIN 14	VSYSNC.	Vertical sync, input
PIN 15	ID3/SCL	DDC serial clock

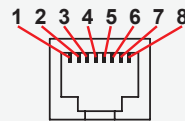
### 2 20-pin DisplayPort (DP) Female



PIN 01	ML Lane 0 (p) - Lane 0 (positive)
PIN 02	GND - Ground
PIN 03	ML Lane 0 (n) - Lane 0 (negative)
PIN 04	ML Lane 1 (p) - Lane 1 (positive)
PIN 05	GND - Ground
PIN 06	ML Lane 1 (n) - Lane 1 (negative)
PIN 07	ML Lane 2 (p) - Lane 2 (positive)
PIN 08	GND - Ground
PIN 09	ML Lane 2 (n) - Lane 2 (negative)
PIN 10	ML Lane 3 (p) - Lane 3 (positive)
PIN 11	GND - Ground
PIN 12	ML Lane 3 (n) - Lane 3 (negative)
PIN 13*	CONFIG1 - connected to Ground*
PIN 14*	CONFIG2 - connected to Ground*
PIN 15	AUX CH (p) - Auxiliary Channel (positive)
PIN 16	GND - Ground
PIN 17	AUX CH (n) - Auxiliary Channel (negative)
PIN 18	Hot Plug - Hot Plug Detect
PIN 19	Return - Return for Power
PIN 20	DP_PWR - Power for connector (3.3 V 500 mA)

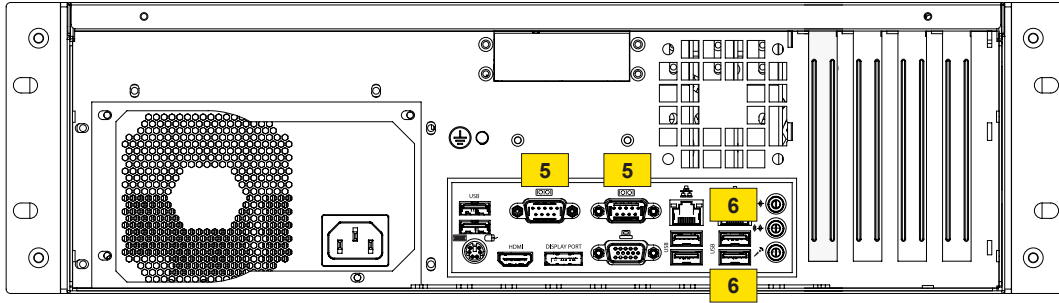
\*Pins 13 and 14 may either be directly connected to ground or connected to ground through a pull-down device. This is the pinout for source-side connector; the sink-side connector pinout will have lanes 0–3 reversed in order; i.e., lane 3 will be on pin 1(n) and 3(p) while lane 0 will be on pin 10(n) and 12(p).

### 4 8-pin RJ45 10/100/1000Mbps LAN/Ethernet



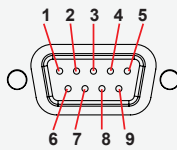
PIN 01	D0P+	Differential Pair 0 (Positive)
PIN 02	D0N-	Differential Pair 0 (Negative)
PIN 03	D1P+	Differential Pair 1 (Positive)
PIN 04	D2P+	Differential Pair 2 (Positive)
PIN 05	D2N-	Differential Pair 2 (Negative)
PIN 06	D1N-	Differential Pair 1 (Negative)
PIN 07	D3P+	Differential Pair 3 (Positive)
PIN 08	D3N-	Differential Pair 3 (Negative)

## PINOUT ASSIGNMENTS COMMON CONNECTORS



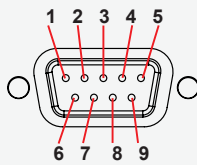
**5** **Serial COM, 9-pin Non-isolated, DSUB Male**  
Connector has 3 different modes. Change mode in BIOS.  
BIOS setup utility > Advanced Screen  
> Super IO Configuration:

**RS-232:**



PIN 01	DCD	Data Carrier Detect
PIN 02	RxD	Receive Data
PIN 03	TxD	Transmit Data
PIN 04	DTR	Data Terminal Ready
PIN 05	GND	Signal Ground
PIN 06	DSR	Data Set Ready
PIN 07	RTS	Request To Send
PIN 08	CTS	Clear To Send
PIN 09	PWR	+5V/+12V

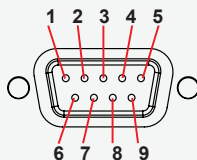
**RS-422: Full Duplex Mode**



PIN 01	Tx-	Transmit Data Negative
PIN 02	Rx+	Receive Data Positive
PIN 03	Tx+	Transmit Data Positive
PIN 04	Rx-	Receive Data Negative
PIN 05	GND	Signal Ground
PIN 06	N/C	No internal connection
PIN 07	N/C	No internal connection
PIN 08	N/C	No internal connection
PIN 09	PWR	+5V/+12V

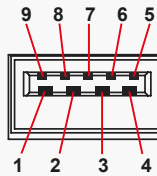
\*Master only. ECHO not supported.

**RS-485: Half Duplex Mode**



PIN 01	RTx-	Data Negative
PIN 02	N/C	No internal connection
PIN 03	RTx+	Data Positive
PIN 04	N/C	No internal connection
PIN 05	GND	Signal Ground
PIN 06	N/C	No internal connection
PIN 07	N/C	No internal connection
PIN 08	N/C	No internal connection
PIN 09	PWR	+5V/+12V

**6** **9-pin USB3.0/3.1/3.2 TYPE A**



PIN 01	VCC +5V	VBUS / Power
PIN 02	D-	Negative Data
PIN 03	D+	Positive Data
PIN 04	GND	Ground
PIN 05	StdA_SSRX-	SuperSpeed Receive Negative Data
PIN 06	StdA_SSRX+	SuperSpeed Receive Positive Data
PIN 07	GND DRAIN	Ground for signal return
PIN 08	StdA_SSTX-	SuperSpeed Transmit Negative Data
PIN 09	StdA_SSTX+	SuperSpeed Transmit Positive Data

## PINOUT ASSIGNMENTS COMMON CONNECTORS

