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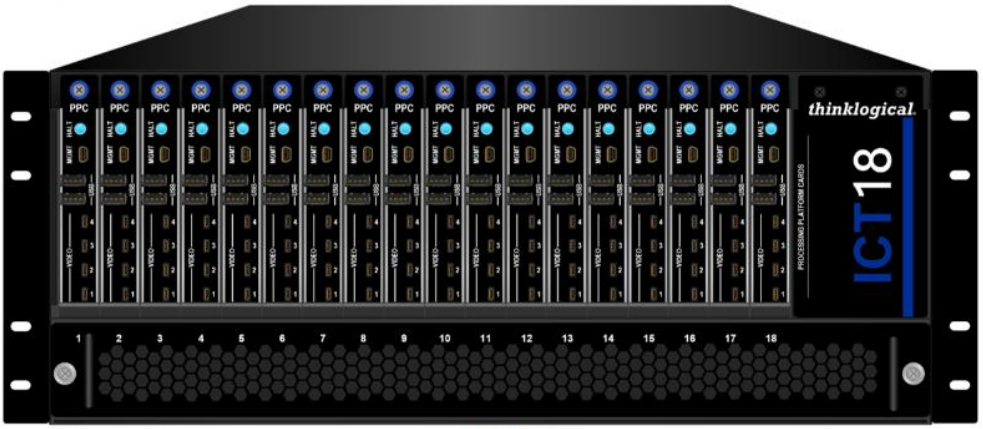
Revision B, August 2024

ICT18 INTEGRATED CLIENT TRANSMITTER

PRODUCT MANUAL

Includes the

18 slot, 4RU Integrated Client Transmitter Chassis



ICT 18

and the

4 slot, 1RU Integrated Client Transmitter Chassis

ICT18 1RU

Thinklogical, A BELDEN BRAND • 100 Washington Street • Milford, Connecticut 06460 U.S.A.

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ANAB ACCREDITED ISO/IEC 17021 MANAGEMENT SYSTEMS CERTIFICATION BODY

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About This Manual

Active Links

This document contains active cross-reference links in the *Table of Contents* and for referenced pages throughout, shown in this format: [18], and for external hyperlinks, shown in this format: hyperlink.format.

- For **.pdf**: *point/left click* → pg. [18] Left-click
- For **.doc**: *Ctrl/point/left click* → Ctrl + pg. [18] Left-click
- To **return to the front of the document:** *Ctrl/Home* → Ctrl + home

Note and Warning Symbols

Throughout this manual you will notice certain symbols that bring your attention to essential information. These are **Notes** and **Warnings**. *Please read this information thoroughly*. Examples are shown below.

Note: A Note is meant to call the reader's attention to helpful or valuable information at a point in the text that is relevant to the subject under discussion.

Warning! A Warning is meant to call the reader's attention to critical information at a point in the text that is relevant to the subject under discussion.

Other important notes:

! READ THE INSTRUCTIONS THOROUGHLY BEFORE STARTING ANY PROCEDURE! !

STOP WARNING! Do not attempt to open or disassemble this product. Please contact your dealer or *thinklogical* for qualified servicing. NO USER SERVICEABLE PARTS INSIDE !

CAUTION! DO NOT USE A SCREWDRIVER ON THUMB SCREWS! HAND TIGHTEN ONLY!

CAUTION! USE ONLY THE SUPPLIED AC LINE CORDS!

! CAUTION! REMOVE BOTH CORDS BEFORE SERVICING! ATTENTION! ENLEVER LES DEUX CORDONS AVANT L'ENTRETIEN! !

For any product support, technical issues or other questions not covered in this document, please feel free to contact us:

- **Email:** support@thinklogical.com
- **Telephone:** **1-203-647-8700** *or* **1-800-291-3211**
- **Website:** https://www.thinklogical.com **Chat live** with a Customer Service Representative.

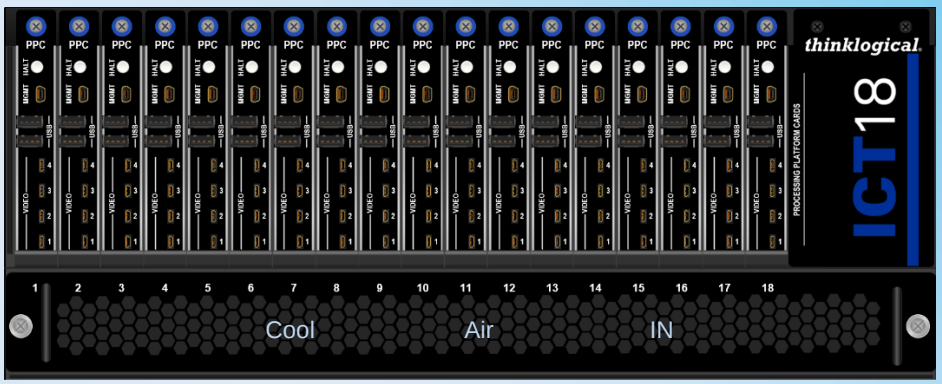
Introduction: ICT18 (4RU Chassis)

The innovative ICT18 is another of Thinklogical's® Integrated Client Transmitter solutions for uncompressed, high-resolution video and KVM systems over the fewest cables.
The ICT18 houses up to 18 Integrated Client Transmitters in a single 4RU Chassis.

This compact, all-in-one chassis eliminates the need for separate client devices in extended virtual desktop infrastructure (VDI) applications, increasing system security, reducing IT complexity, and using dramatically less rack space than traditional configurations.

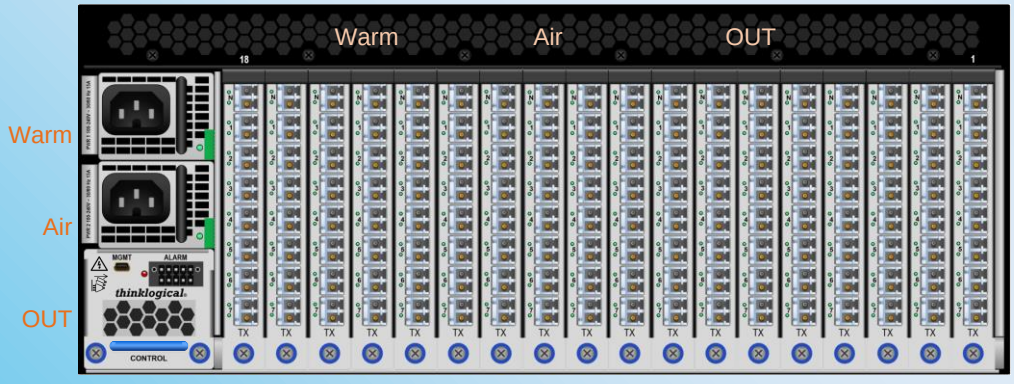
Each of Thinklogical's **Integrated Client Transmitters** hosts any standard VDI Client software and is compatible with most third-party accredited software images. Users can also boot and load the OS from servers on their own network. For more, see *Appendix C, Configuring the PPC for PXE Boot*, on pg. [54].

The ICT18 Integrated Client Transmitter Chassis



Front
(Processor side)

- **Up to 18 Processor Cards.**
  Each PPC serves as a zero, thin or full-featured thick client hosting any supported VDI client software or operating system using an 11th generation Intel® Core i7-1185G7E processor.
  Extend and switch:
  - USB HID/2.0, HD Digital Audio
  - Ports 1, 2 & 3: HDMI 2.0, Maximum Resolution: 3840x2160 @ 60Hz, 24bpp
  - Port 4: HDMI 1.4, Maximum Resolution: 3840x2160 @ 30Hz, 24bpp
- **Hot-swappable Fan Tray Assembly.**
- **Dramatically reduces system cabling** by eliminating the need for separate client devices.



Rear
(Transmitter side)

- **Up to 18 10Gb KVM Fiber-optic Transmitter Cards.**
  Each Card is a high-performance Keyboard/Video/Mouse, Network and USB Transmitter extending up to 4 video heads, audio, USB HID and/or USB 2.0.
- **Separate Control Module with system alarms.**
- **Compatible with all TLX Matrix Switches and Receivers.**

Introduction: ICT18 1RU

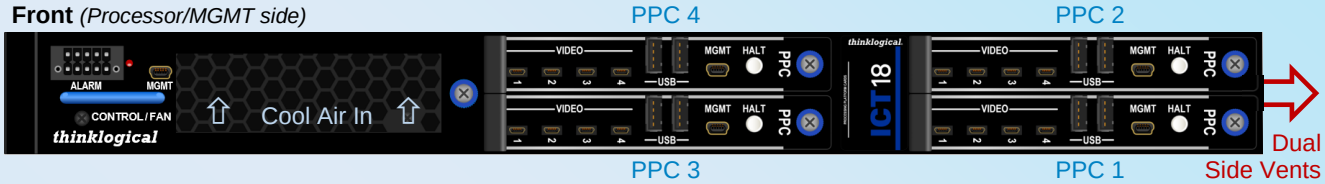
Introducing the ICT18 1RU, Thinklogical's® newest Integrated Client Transmitter solution for uncompressed, high-resolution video and KVM systems over the fewest cables, in a lighter, more compact chassis.

The ICT18 1RU houses up to 4 Integrated Client Transmitters in a single 1RU Chassis.

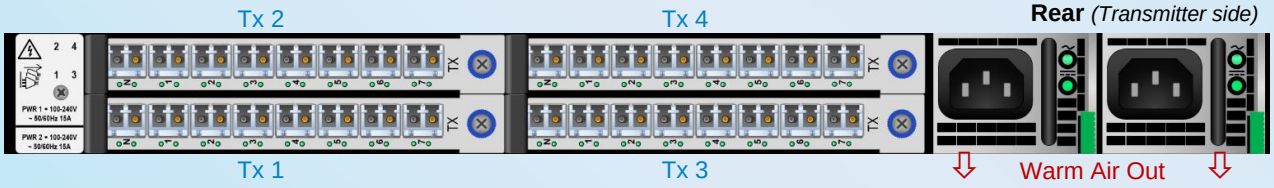
This compact, all-in-one chassis uses the same PPC and Transmitter Cards as used in the ICT18 4RU, with the same status and update features. A separate Control/Fan Module provides a MGMT Port, Alarms and Internal cooling fans.

Each of Thinklogical's **Integrated Client Transmitters** hosts any standard VDI Client software and is compatible with most third-party accredited software images. Users can also boot and load the OS from servers on their own network.*

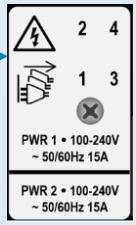
The ICT18 1RU Integrated Client Transmitter Chassis



- **Up to four Processing Platform Cards.**
  Each PPC serves as a zero, thin or full-featured thick client hosting any supported VDI client software or operating system using an 11th generation Intel® Core i7-1185G7E processor.
  Extend and switch:
  USB HID/2.0, HD Digital Audio
  Ports 1, 2 & 3: HDMI 2.0, Maximum Resolution: 3840x2160 @ 60Hz, 24bpp
  Port 4: HDMI 1.4, Maximum Resolution: 3840x2160 @ 30Hz, 24bpp
- **Hot-swappable Control/Fan Module** with system alarms and MGMT Port.
- **Dramatically reduces system cabling** by eliminating the need for separate client devices.



- **Up to four 10Gb KVM Fiber-optic Transmitter Cards.**
  Each Card is a high-performance Keyboard/Video/Mouse, Network and USB Transmitter extending up to 4 video heads, audio, USB HID and/or USB 2.0.
- **Card positions and AC input ratings are designated on the Rear Label.**
- **Compatible with all TLX Matrix Switches and Receivers.**



*For more, see *Appendix C, Configuring the PPC for PXE Boot*, on pg. [54].

The ICT18 Chassis Configuration

The **ITC18's 4RU Chassis** houses up to 18 **Processor Cards** (accessible from the front) connected through a **Mid-Plane** to up to 18 **KVM Transmitter Cards** (accessible from the rear).

ICT18 Chassis dimensions: Standard 19" rack-mount, 4RU – 17.47" **w** x 7.0" **h** x 27.75" **d**

The ICT18 1RU Chassis Configuration

The **ITC18 1RU's Chassis** houses up to 4 **Processing Platform Cards** (accessible from the front) connected through a **Mid-Plane** to up to four **KVM Transmitter Cards** (accessible from the rear).

ICT18 1RU Chassis dimensions: Standard 19" rack-mount, 1RU – 17.47" **w** x 1.74" **h** x 27.75" **d**

The Processing Platform Cards

Also referred to as a **Processor Card** or **PPC**, each module features:

- 11th generation Intel® Core i7-1185G7E
- 256GB to 2TB of NVME (SSD)
- 16GB to 64GB RAM (SODIMM)
- BIOS: Flash

HALT/Status button

The **MGMT** Port is a mini-USB to USB-A Update/Control/Status port.

USB 2.0 (x2)

HDMI 1.4 (Port 4):
Max. video resolution: 3840x2160 @ 30Hz, 24bpp

HDMI 2.0 (Ports 1, 2 & 3):
Max. video resolution: 3840x2160 @ 60Hz, 24bpp

These ports are typically used for initial set-up only.

The HALT Button

The HALT Button provides visual status of the CPU's operational state. During normal operation, the HALT button is continuously lit blue. When halted, it is lit red.

CPU Active
(HALT button is lit BLUE)

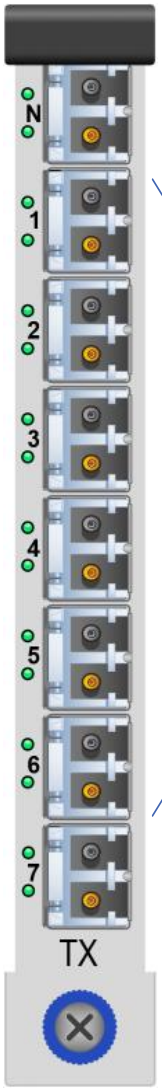
CPU Halted
(HALT button is lit RED)

The MGMT Port (Firmware Updates & Control / Status)

In addition to firmware updates, the **MGMT Port** provides Status and Configuration reports and can be used for set-up and de-bug. A USB mini-B to USB-A Cable is provided with each chassis. See pg. [30].

The KVM Transmitter Cards

The KVM Transmitter Cards are configured for 10G (TLX) and are available in several video options. Thinklogical's proprietary multiplexing technology combines video, audio and peripheral data on a single data stream for up to 80km over a single-mode fiber. *See the available configurations on pg.* [10]. Each hot-swappable card features:



- 1 SFP for **Network** (*Fiber-optic or Copper CATx*).
- Up to 6 SFP's for 4K/30 and/or 4K/60 **Video/Data**
- 1 SFP for optional **separate USB 2.0**

Pluggable SFP+ Modules

Each Transmitter Card contains SFP+ modules that serve as the fiber-optic couplers for the fiber cables to and from the Thinklogical transmitter and receiver extenders.
The SFP+ Optical Module is a 10Gbs Short-Wavelength Transceiver designed for use in bi-directional Fiber-Optic Channel links. The modules are hot-pluggable and operate on 3.3VDC. Arrows on the bale indicate input and output.

Always use **dust caps** to protect against dust and damage when a fiber-optic connector is not attached to a device. All Thinklogical Extender SFPs are fully populated with dust plugs upon shipment.

The Transmitter Card's Network Port SFP

Each Transmitter Card is available with either a fiber-optic or copper RJ45 SFP Network Module. The RJ45 SFP accepts a CATx cable. Either configuration connects the Transmitter to the external Control CPU. See pg. [46] for ordering details.

Note: It is good practice to immediately install dust plugs in unused SFP modules and on the ferrules of unconnected fiber-optic cables.

LC-Type Fiber-Optic Cables

On TLX Extenders and Matrix Switches, fiber-optic cables connect an SFP's output port (Transmit) to any other SFP's input port (Receive).

Requirements: Thinklogical recommends connecting the Transmitters, Receivers and Matrix Switch with OM3 (up to 300 meters) Fiber-optic Cable, 50 or 62.5 microns, terminated with LC-type connectors. Multi-mode fiber can extend up to 400 meters (1300 feet) and Single-mode fiber can extend up to 80km (50 miles).

Handling Fiber-Optic Cable: Unlike copper cabling, fiber-optic cable requires special handling. A small speck of dust or a scratch to the ferrule tip (the end of the connector) can attenuate the optical signal, rendering the cable inoperable.

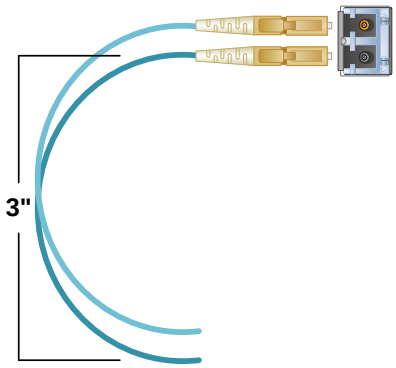
Warning! The ends of the connectors (the ferrule) should never contact any foreign object, including fingertips. Always install a dust cap immediately on the ferrule of any unused fiber to protect the tip.

Dust cap installed on the ferrule.

Warning! Minimum bend diameter must be no less than 3". Be careful not to kink or pinch the fiber when using ties.

Multi-Mode:	**Up to 33 meters with Type OM1**
	Up to 82 meters with Type OM2
	Up to 300 meters with Type OM3*
	Up to 400 meters with Type OM4
Single-Mode:	**Up to 80km with Type OS2 9/125**

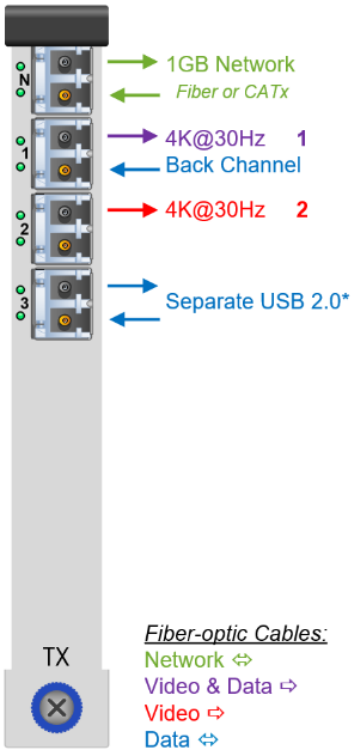
**Thinklogical recommends 50 or 62.5 micron, OM3 fiber-optic cables terminated with LC-type connectors.*



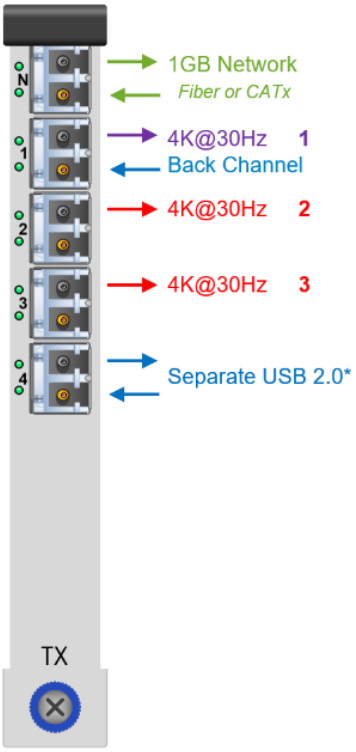
Transmitter Card SFP Configurations

ICT18 Transmitter Card SFPs are configured for the following video and USB options. *See the Ordering Guides, beginning on* pg. [46], *for all available options and applicable part numbers.*

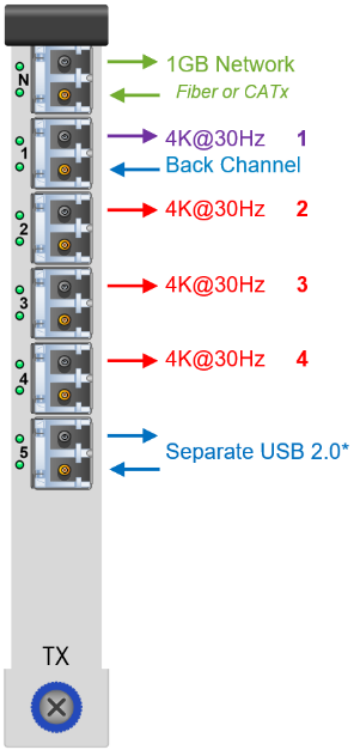
Dual 4K @ 30Hz



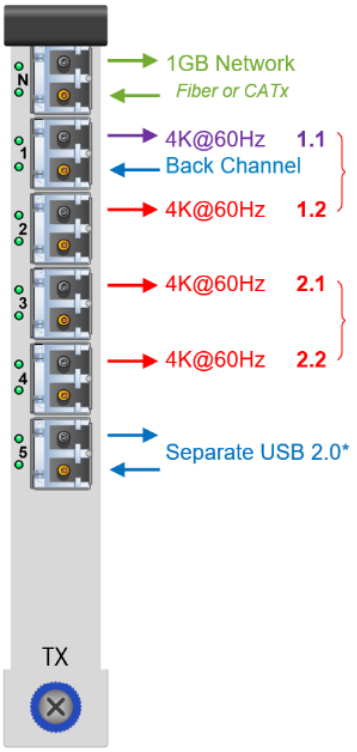
Triple 4K @ 30Hz



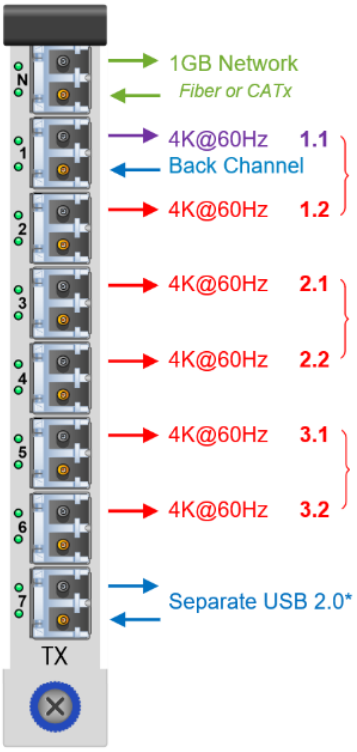
Quad 4K @ 30Hz



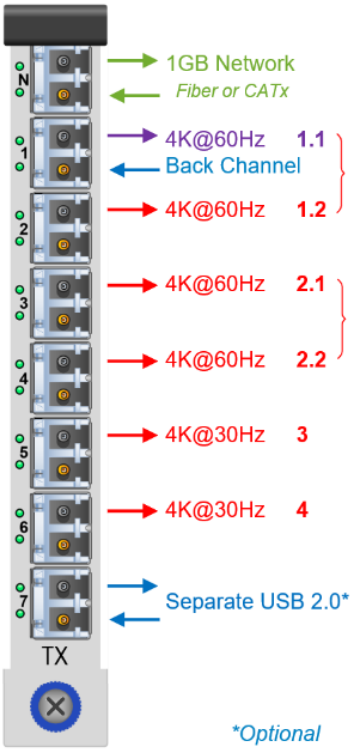
Dual 4K @ 60Hz



Triple 4K @ 60Hz



Dual 4K @ 60Hz
Dual 4K @ 30Hz



*Optional

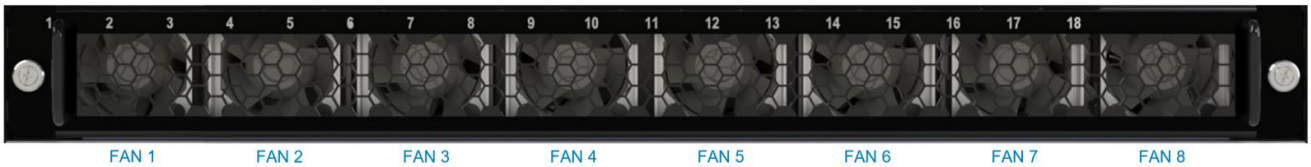
The ICT18 Modules

The Fan Tray

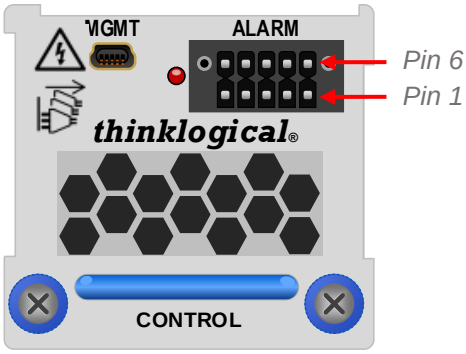
The 1RU, hot-swappable Fan Tray, accessible from the front of the chassis (Processor Card side), is located below the Processor Cards. It features 8 horizontally mounted fans to cool the Processor Cards and the Transmitter Cards. The Fan Tray is monitored by an alarm on the Control Module (below).

Warning! Do not operate the unit for more than 60 seconds without a Fan Tray installed.

FAN POSITIONS



The Control Module



The field-replaceable Control Module features:

MGMT mini-USB to USB-A: *Chassis Status/Update*

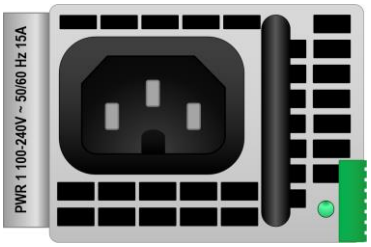
Alarm Relays for:

1	PS1	6	PPCs
2	PS2	7	Tx Cards
3	Fans	8	Or'd
4	Temp. Warning	9	Common
5	NA	10	GND

Ventilation output

See more about Alarms on pg. [29]

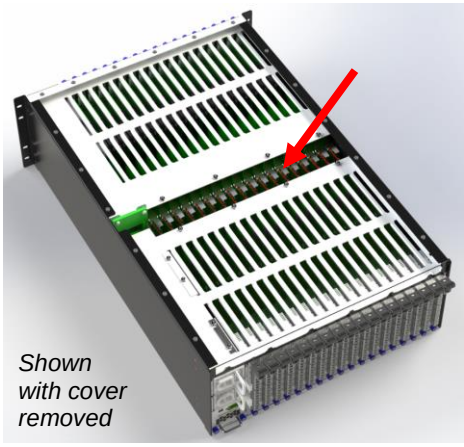
The ICT18 Power Supply Modules



The ICT18 Chassis features two redundant, current-sharing Power Supply Modules. *Both supplies are required during normal operation:*

- 100/240VAC, 15A, 50/60Hz input
- 12VDC Out –1400W
- Chassis Power – 116A @ 12V maximum
- Keyed AC receptacle. Use only supplied line cords.
- PS1 is the upper, PS2 is below

The ICT18 Chassis Midplane Assembly



WARNING! Do not attempt to open or disassemble this product. Please contact your dealer or *thinklogical* for qualified servicing.

NO USER SERVICEABLE PARTS INSIDE

The Chassis Midplane Assembly provides a pass-through mating platform for the Transmitter and Processor Cards, as well as connections for the Fan Tray, Control Module and redundant Power Supplies. The Midplane Assembly also provides alarm connections, power distribution, and card status.

The Chassis Midplane Assembly is not user serviceable. If you suspect an issue with the Midplane Assembly, contact the Thinklogical-authorized dealer where you purchased the product, or if you purchased directly, call Thinklogical at:

1-203-647-8700 or **1-800-291-3211**.

ICT18 Technical Specifications

CHASSIS	**18-Slot, Midplane Design**
Dimensions	Width: **17.47"** (443.7 mm) **- EIA 19"** Rack Height: **7.0"** (177.8 mm) **- 4 RU** Depth: **27.75"** (704.9 mm) Weight (chassis & fan tray only): **20.3 lbs.** (9.2 kg) Weight (max., fully loaded): **87.3 lbs.** (39.61 kg) Shipping Weight: **110.0 lbs.** (49.9 kg) max.
Fan Tray	Hot-swappable, 8 horizontal fans, 1RU, **3.71 lbs.** (1.6 kg). See pg. [10].
Control Module	Field-replaceable, Mini-USB Chassis Status/Update Port, 10 Alarm relays **.43 lbs.** (.195 kg) See pg. [11].
Supplied Cable	**CBL000105-002MR** USB A to mini-B, 2M
PROCESSING PLATFORM CARDS	Up to18 per chassis. See pg. [7].
Processor	11th generation Intel® Core i7-1185G7E 256GB to 2TB of non-volatile memory (SSD) 16GB to 64GB maximum (SODIMM)
PXE Boot	Boot and load an OS from servers on the user's network. See *Appendix C*, pg. [54]
Display Interfaces	HDMI 2.0 (4K, 60Hz, 24bpp) x3 HDMI 1.4 (4K, 30Hz, 24bpp) x1
USB	**HID** -1.5 Mbit/s (187 kB/s), **2.0** -480 Mbit/s (60 MB/s) x2
MGMT	Mini-USB to USB-A Update/Control/Status port. See pg. [30].
Supplied PPC Cables	**CBL000114-006FR** HDMI to Micro-HDMI, 6', x4
Weight	**1.32 lbs.** (.600 kg) **per card**
TRANSMITTERS	Up to18 per chassis. See pg. [8].
SFP Modules	Up to 8 per Transmitter Card, x18. See pg. [9].
Network SFP	1 Gigabit Ethernet SFP (fiber or copper). See pg. [9].
SFPs Options	Network at port N, Video/Data at ports 1-6, USB following video ports (3-7). See pg. [10].
Weight	**2.12 lbs.** (.962 kg) **max. per card** (with 8 SFP modules)
ENVIRONMENTAL	
Operating Temperature	Normal operating temperature: **32° to 122°F** (0° to 50°C) **ambient.** Temperature Warning Alarm: **194°F** (90°C) **upper limit.**
Humidity	Operating: **5% to 95%, non-condensing** Storage: **Unlimited**
Altitude	**Operating:** Thinklogical products are rated for operation to 1000m elevation without degradation of performance. Maximum operating temperature derates by 1% for every 110m above 1000m. **Storage:** Unlimited
ELECTRICAL	
Power Supplies	**PWR-000099-R** Redundant, current-sharing, x2 (PS1 top, PS2 bottom). See pg. [11]. • **In:** 100-240VAC, 50/60Hz • **Out:** 12VDC, 1400W • **Dimensions:** 2.15" x 1.57" x 12.65" • **Weight:** 2.53 lbs. (1.15 kg) per supply
Module Power	• **PPC** – 45W max. each (x18) • **Fan Tray** – 135W max. • **Tx Card** – 25W max. each (x18) • **Control Module** – 5W max.
Input Rating	**100-240VAC, 15A, 50-60Hz**
Thermal Load	**5118 BTU/Hr. max.**
AC Line Cord	**PWR-000102-R** 7.5' (2.3m) NEMA 5-15P to IEC 320-C15 SJT, x2
Alarm Relay Contacts	• **Maximum DC:** 1A at 30VDC • **Maximum AC:** 0.3A at 125VAC
WARRANTY	**One year from date of shipment. Extended warranties available.**

The ICT18 1RU Modules

The Control / Fan Module

The hot-swappable Control/Fan Module, accessible from the front of the chassis (Processor Card side), is located to the left of the Processor Cards. It features two horizontally mounted fans to cool the Processor Cards and the Transmitter Cards. The fans are monitored by an alarm, also located on the module. See pg. [26] for the *Remove and Replace* procedure.

Warning! Do not operate the unit for >60 seconds without a Control/Fan Module installed.

The field-replaceable, hot-swappable Control/Fan Module features:

- **MGMT Port** mini-USB to USB-A: *Chassis Status/Update*
- **Dual intake fans** for chassis ventilation
- **Alarm Relays** (pin 1 = top, left):

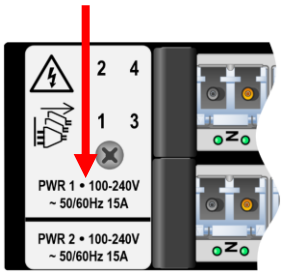
1 PS1	**2** PS2	**3** Fans	**4** Temp. Warning	**5** NA
6 PPCs	**7** Tx Cards	**8** Or	**9** Common	**10** GND

See more about Alarms on pg. [27].

The ICT18 1RU Power Supply Modules

The ICT18 1RU Chassis features two redundant, current-sharing Power Supply Modules. *Both supplies are required during normal operation.*

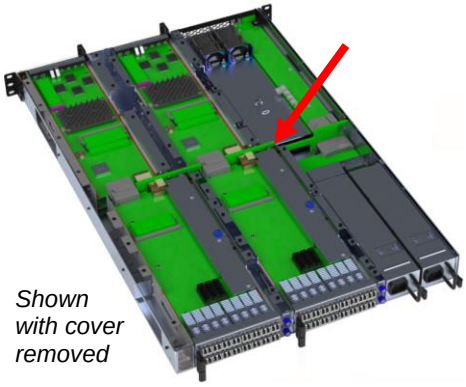
- Each Power Supply is a high-efficiency, 650-watt supply (100-240VAC, 50-60Hz input) with a **12V main output** and a **12V standby**. Each supply includes an internal cooling fan, status LEDs on the outer panel and over-current, over-voltage and over-temperature protection.
- The supplies are NOT hot pluggable. See pg. [26] for the *Remove and Replace* procedure.
- PS1 is on the left, PS2 is on the right (Tx side).
- The Power Supply input ratings are listed on the left side of the chassis.



INPUT LED: ∼
Green=OK
Blinking Green=OV/UV Warning
Off=Off

OUTPUT LED: ⎓
Green=Power OK
Blinking Green=Standby
Amber=Fault
Blinking Amber=Warning

The ICT18 1RU Chassis Midplane Assembly



Shown with cover removed

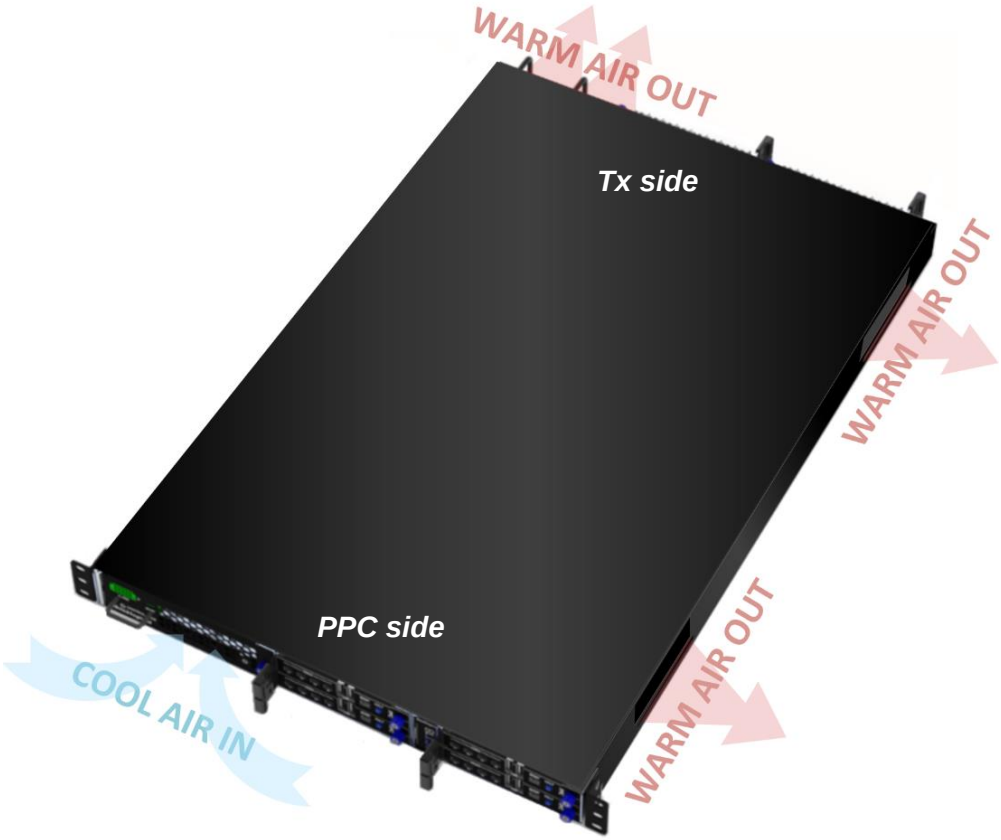
The Chassis Midplane Assembly provides a pass-through mating platform for the Transmitter and Processor Cards, as well as connections for the Control/Fan Module and redundant Power Supplies. The Midplane Assembly also provides alarm connections, power distribution, and card status.

The Chassis Midplane Assembly is not user serviceable. If you suspect an issue with the Midplane Assembly, contact the Thinklogical-authorized dealer where you purchased the product, or if you purchased directly, call Thinklogical at:

1-203-647-8700 or **1-800-291-3211**.

Chassis Ventilation

The Control/Fan Module cools the inner chassis by drawing in ambient room air with dual fans on the PPC side. On the Transmitter side, each of the two power supplies expels warm air using internal fans. Warm air is also forced out through two side vents. Be sure no input or output vent is obstructed when mounting the chassis.



<u>Note</u>: If mounting the chassis in a rack, ensure that air flow to the fans and vents is not restricted (minimum 2" of free space on all sides).

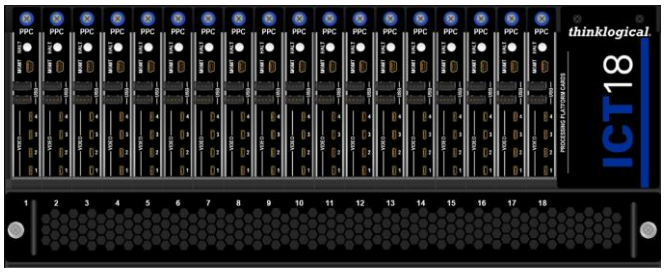
ICT18 1RU Technical Specifications

CHASSIS	**4-Slot, Midplane Design**
Dimensions	Width: **17.47"** (443.7 mm) **- EIA 19"** Rack Height: **1.74"** (177.8 mm) **- 1 RU** Depth: **27.75"** (704.9 mm) Weight (Chassis, 2 PS & Control/Fan Module only): **13.0 lbs.** (5.9 kg) Weight (max., fully loaded): **27.1 lbs.** (12.3 kg) Shipping Weight: **31.0 lbs.** (14.1 kg) max.
Control/Fan Module	Hot-swappable, Mini-USB Chassis Status/Update Port, 10 Alarm relays, 2 horizontal fans. **1.21 lbs.** (.549 kg). See pg. [13].
Supplied Cable	**CBL000105-002MR** USB A to mini-B, 2M
PROCESSING PLATFORM CARDS	Up to 4 per chassis. See pg. [7].
Processor	11th generation Intel® Core i7-1185G7E 256GB to 2TB of non-volatile memory (SSD) 16GB to 64GB maximum (SODIMM)
PXE Boot	Boot and load an OS from servers on the user's network. See *Appendix C*, pg. [54]
Display Interfaces	HDMI 2.0 (4K, 60Hz, 24bpp) x3 HDMI 1.4 (4K, 30Hz, 24bpp) x1
USB	**HID** -1.5 Mbit/s (187 kB/s), **2.0** -480 Mbit/s (60 MB/s) x2
MGMT	Mini-USB to USB-A Update/Control/Status port. See pg. [30].
Supplied PPC Cables	**CBL000114-006FR** HDMI to Micro-HDMI, 6', x4
Weight	**1.32 lbs.** (.600 kg) **per card**
TRANSMITTERS	Up to 4 per chassis. See pg. [8].
SFP Modules	Up to 8 per Transmitter Card, x4. See pg. [9].
Network SFP	1 Gigabit Ethernet SFP (fiber or copper). See pg. [9].
SFPs Options	Network at port N, Video/Data at ports 1-6, USB following video ports (3-7). See pg. [10].
Weight	**2.12 lbs.** (.962 kg) **max. per card** (with 8 SFP modules)
ENVIRONMENTAL	
Operating Temperature	Normal operating temperature: **32° to 122°F** (0° to 50°C) **ambient.** Temperature Warning Alarm: **194°F** (90°C) **upper limit.**
Humidity	Operating: **5% to 95%, non-condensing** Storage: **Unlimited**
Altitude	**Operating:** Thinklogical products are rated for operation to 1000m elevation without degradation of performance. Maximum operating temperature derates by 1% for every 110m above 1000m. **Storage:** Unlimited
ELECTRICAL	
Power Supplies	**PWR-000081-R** Redundant, current-sharing, x2 (PS1 left, PS2 right). See pg. [13]. • **In:** 100-240VAC, 15A, 50/60Hz • **Out:** 12VDC, 400W • **Dimensions:** 2.15" x 1.57" x 9.0" • **Weight:** 1.63 lbs. (0.74 kg) **per unit**
Module Power	• **PPC** – 45W max. each (x4) • **Control/Fan Module** – 40W • **Tx Card** – 25W max. each (x4)
Input Rating	**100-240VAC, 400W, 50-60Hz**
Thermal Load	**1364 BTU/Hr. max.**
AC Line Cord	**PWR-000006-R** 6.0' (1.83m) Domestic AC, x2
Alarm Relay Contacts	• **Maximum DC:** 1A at 30VDC • **Maximum AC:** 0.3A at 125VAC
WARRANTY	**One year from date of shipment. Extended warranties available.**

Set-Up & Installation

Contents, ICT18

The ICT18 is a four-rack-unit chassis designed to be mounted in a standard 19" EIA-310 compliant rack. All wiring connections to the product use industry-standard connectors. Non-supplied cables that may be needed are commercially available. Connections are found on both the front and the rear of the unit.



When you receive your Thinklogical® ICT18, you should find the following items in the quantities specified in your order:

- ICT18 High Density Chassis, *includes two Power Supply Modules, 1 Fan Tray, 1 Control Module with Alarm Terminal Plug, up to 18 PPCs and up to 18 Transmitter Cards (or filler cards.)*
- AC Line Cords – PWR-000102-R *(International connections may differ)* – 1 per power supply

Note: ICT18 power supplies have a keyed AC receptacle. Use only the supplied line cords.

Optional Spares

- Spare Control Module
- Spare Fan Tray
- Spare PPC and Tx Filler Cards
- Spare Processing Platform Card
- Spare Transmitter Card
- Rear Rack Supports - *Appendix F*[1], pg. [61].

The ICT18 is shipped configured to customer specifications.

Contents, ICT18 1RU

The ICT18 1RU is a one-rack-unit chassis designed to be mounted in a standard 19" EIA-310 compliant rack. All wiring connections to the product use industry-standard connectors. Non-supplied cables that may be needed are commercially available. Connections are found on both the front and the rear of the unit.

When you receive your Thinklogical® ICT18 1RU, you should find the following items in the quantities specified in your order:

- ICT18 1RU Chassis, *includes two Power Supply Modules, 1 Control/Fan Module with Alarm Terminal Plug and cooling fans, up to 4 PPCs and up to 4 Transmitter Cards (or filler cards.)*
- AC Line Cords – PWR-000006-R *(International connections may differ)* – 1 per power supply

Optional Spares

- Spare Control/Fan Module
- Spare Transmitter Card
- Power Supply Modules
- Spare Processing Platform Card
- Spare PPC and Tx Filler Cards – next page
- Rear Rack Supports - *Appendix F*[2], pg. [62]

The ICT18 1RU is shipped configured to customer specifications.

Unpacking the Unit

! READ THE INSTRUCTIONS THOROUGHLY BEFORE STARTING ANY PROCEDURE! !

1. Carefully inspect the shipping container to ensure the "Tamper Evident Shipping Tape" has not been compromised. Two types of tape are used to seal the shipping box containing the product.

One type looks like plain, blue tape until removed. A message will transfer onto the cardboard if the tape is removed, providing evidence of tampering. Also, this type of tape cannot be resealed.
The second type is red striped tape. This tape cannot be realigned once it has been opened.

Properly Sealed

Tamper Evidence

Tamper Evidence

Note: If evidence of tampering is detected, immediately contact the Thinklogical-authorized dealer where you purchased the device, or if you purchased directly, call Thinklogical at *1-203-647-8700* or *1-800-291-3211*.

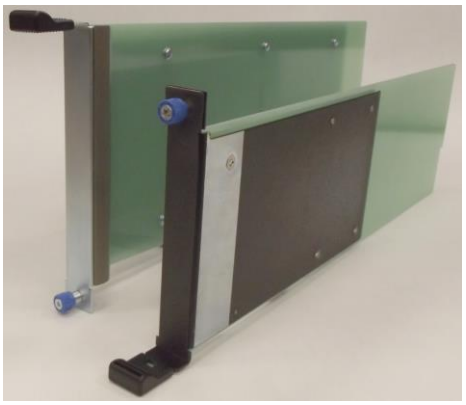
2. Carefully remove the unit from its shipping container. Carefully inspect the entire unit to make certain that no damage occurred during shipment.

3. The **PPC and Transmitter Cards** are installed at the factory to meet the customer's specified configuration. Ensure that the correct number of cards are properly seated in the unit and that all the SFP modules are sealed with a removable dust plug.

Unused module slots will have a blank filler card installed.

The PPC, Transmitter Cards and filler cards are held in place by thumb screws. **Ensure that all thumb screws are finger tight so that all modules are properly secured in the chassis.**

Note: Do NOT operate the unit with unfilled slots. *Always have a Module or Filler Card installed in all module ports.*



Tx & PPC Filler Cards

4. Verify that each **Power Supply** is fully seated in the chassis and that the retaining latch is secure.

5. Verify that the **Fan Tray** and **Control Modules** are fully seated in the chassis and that the thumb screws are secure.

6. When the unit has been inspected and found to be in suitable condition, the installation process can begin.

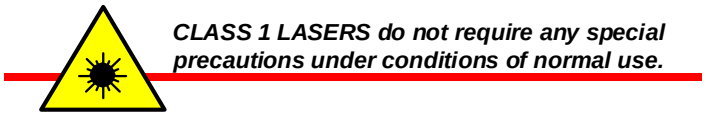
Note: If mounting the chassis in a rack, ensure that air flow to the fans is not restricted (minimum 2" of free space on all sides).

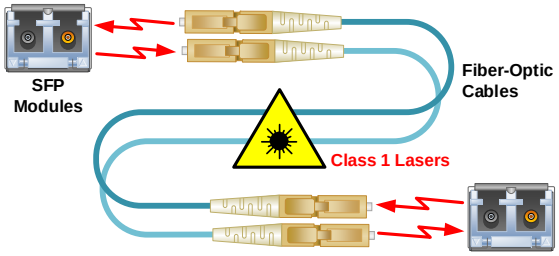
Product Serial Number

Thinklogical products have a unique serial number, which includes a date-code, printed on an adhesive label that is affixed to the unit. The format for the date-code is *2 digits for the month*, dash, *2 digits for the year*, plus *at least four digits for a unique unit number*. For example:
08-240093 indicates the unit was built in the **8**th month of 20**24** and is unit number **93**.

Class 1 Laser Information

TLX Extenders and Matrix Switches, like all Thinklogical fiber-optic products, are designed and identified as **Class 1 LASER products.** This means the maximum permissible exposure (MPE) cannot be exceeded when viewing the laser with the naked eye or with the aid of typical magnifying optics, such as a magnifying glass, eye loupe, etc.

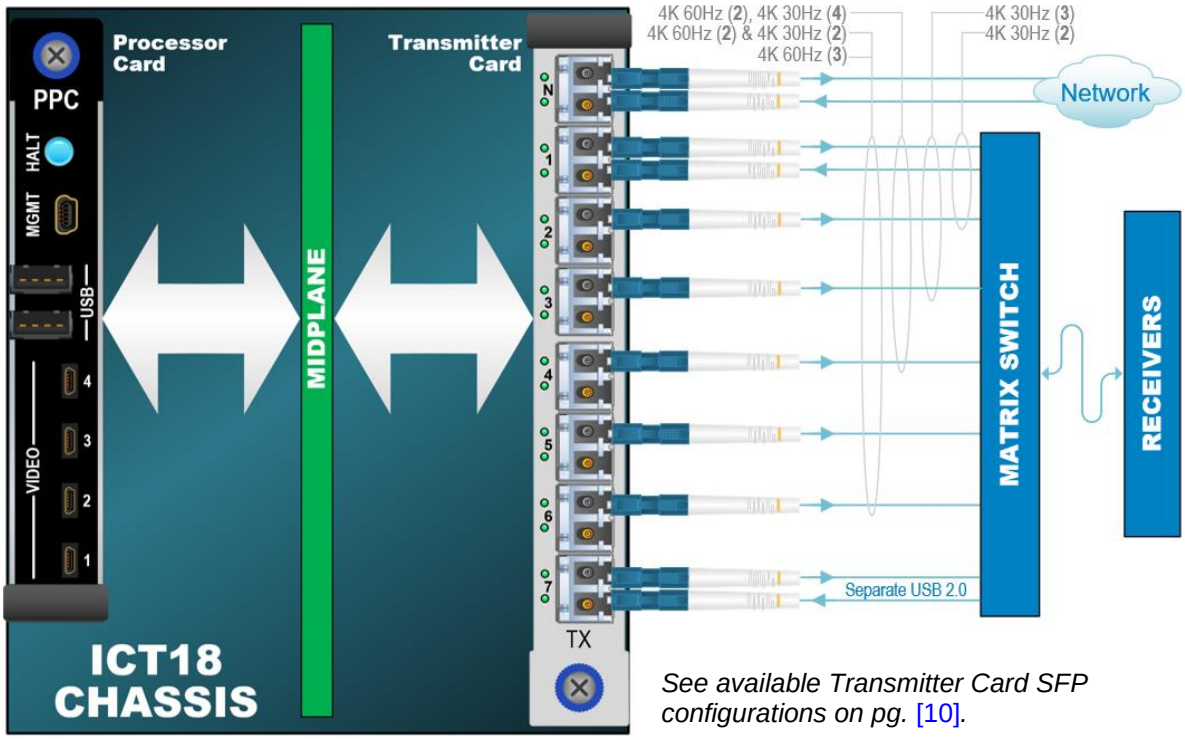




Connecting to the ICT18 and the ICT18 1RU

The KVM Transmitter Cards

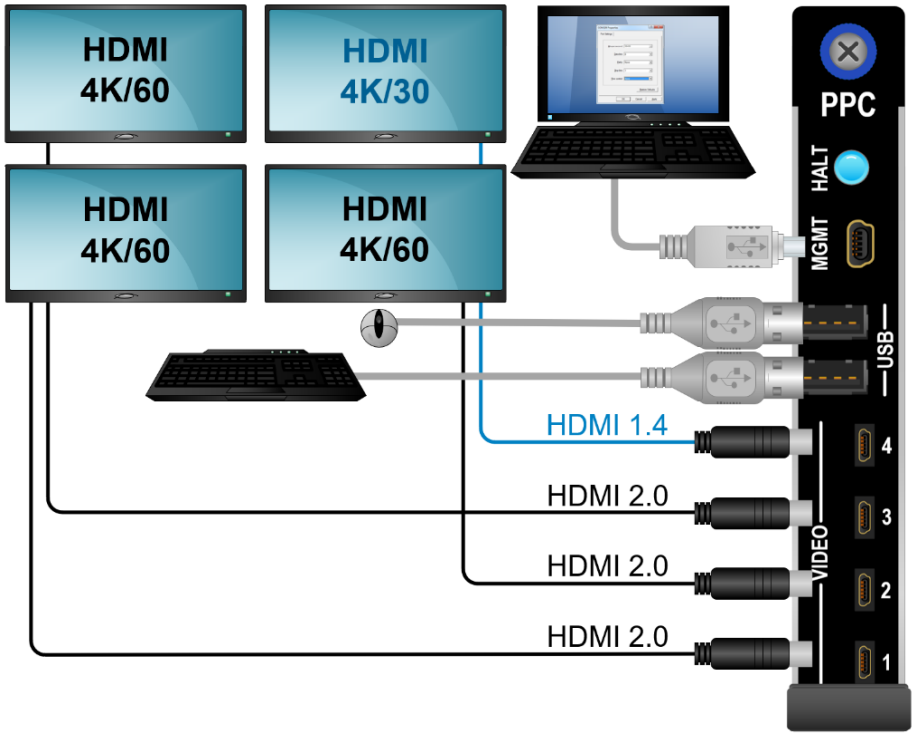
Each Transmitter Card connects to a corresponding Processor Card through a Chassis Midplane. Fiber-optic cables, in a variety of configurations, transmit and receive KVM, audio and USB to and from Receivers in remote locations. Fibers also connect to a Network and to Separate USB 2.0.



See available Transmitter Card SFP configurations on pg. [10].

The Processor Cards

Each Processor Card has USB, HDMI and MGMT ports for updates, control, status and local workstation access during set-up. Video Ports 1, 2 and 3 support HDMI 2.0 and Video Port 4 supports HDMI 1.4.



Powering-Up for the ICT18 First Time

After the unit has been successfully unpacked, inspected and installed in the desired location, it can be powered-up for the first time.

Connection to our Products

Connections and installation hardware for our products use industry-standard devices and methods. All wiring connections to the customer equipment are designed to minimize proprietary or customized connectors and cabling. An included *Terminal Plug* mates to the Control Module's *Alarm Terminal* for external alarm connections.
The ICT18's power supplies have keyed AC receptacles and require supplied AC Line Cords PWR-000102-R.

Compatible Products

Both ICT18s are compatible with Thinklogical's Single-Mode & Multi-Mode TLX 10G KVM and Video Extenders and Matrix Switches.

Pre Power-up Checklist

Upon meeting the following conditions, proceed with power-up of the chassis:

- The chassis is securely mounted and grounded in its desired location. The chassis is designed to fit into a standard 19" EIA-310 compliant rack. (**Rear Support Brackets** are available. Contact your sales representative or your Thinklogical-authorized dealer for details. See **Appendix F**[1], on pg. [61].)
- Adequate input power is available (AC line cords provided).
- Interface cables are connected.
- A PC with a terminal program (PuTTY or equivalent) is connected to the Control Module's MGMT Port with a (provided) USB cable.

Power-up Procedure

After meeting the requirements in the above checklist, follow the steps below to power-up the ICT18 and verify that it completes initialization and self-test. After completing this procedure, the unit is ready to be configured.

1. Plug each power supply into a standard AC source using the supplied AC line cords only.
2. Verify that the Alarm LED is unlit after power-up. Access and use of alarm menus begins in the *MGMT Port* section beginning on pg. [30].
3. Verify front and back panel LEDs are as described under **Initialization**, on the following page.

Refer to the **Quick Start Guide,** available as **Appendix A**[1], on pg. [51].

The Processing Platform Cards can be set to PXE (Pre-Execution Environment) to boot and load the OS from a server on the user's network, rather than from the SSD, as is typical. See **Appendix C: Configuring the PPC for PXE Boot**, on pg. [54].

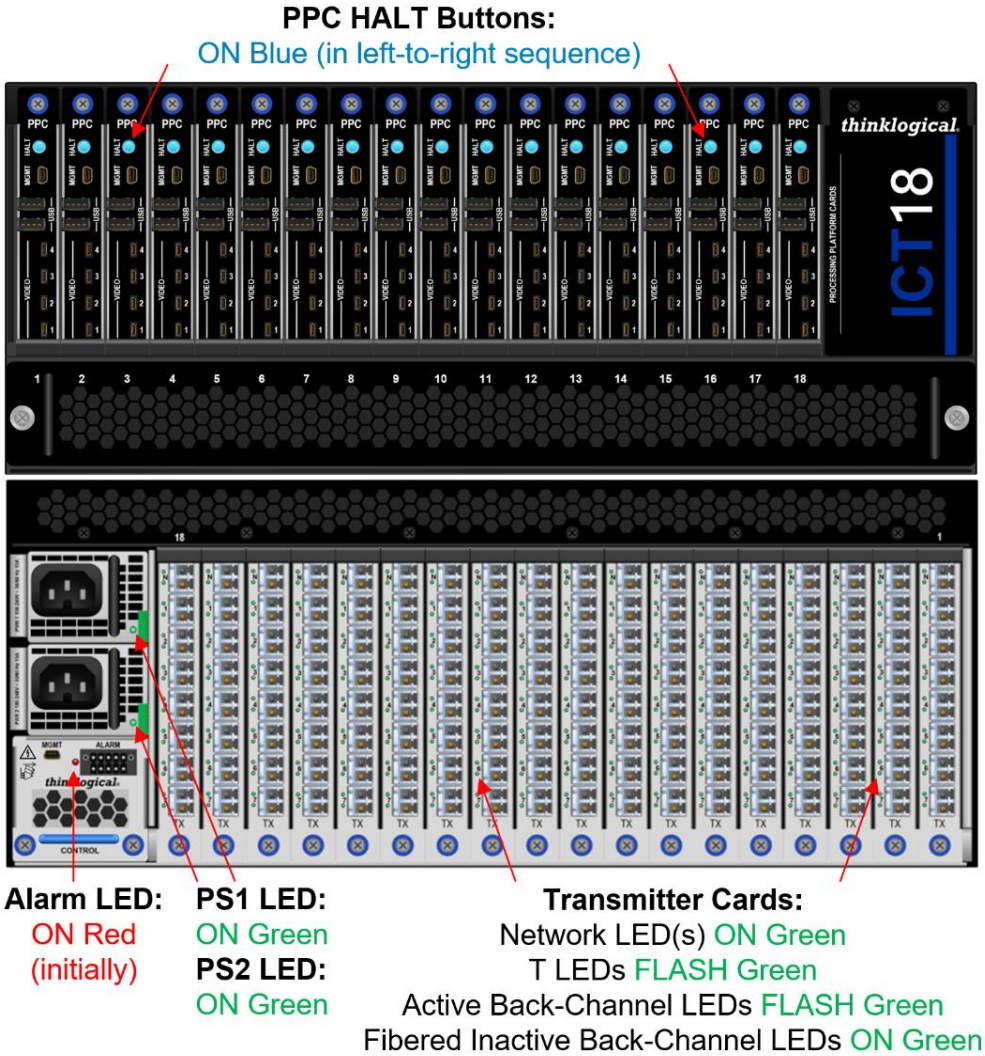
Note: The PPC is shipped with an SSD loaded with not-activated Windows11®. The default credentials for Windows11 at turn-on are `user/user`. See Appendix D, *Installing Windows 11 Drivers*, on pg. [57]**.**

Note: If any sensor detects an over-temperature condition, the Alarm LED will light red. For a detailed list of alarm functions, see pg. [29]: ***Alarm Descriptions for the ICT18*** **and pg.** [28]: ***Alarm Descriptions for the ICT18 1RU*****.**

Initialization, ICT18

Once the unit has been powered-up, look for the following between initialization and system-ready:

- The LEDs of each Power Supply will be lit green.
- The ALARM LED will be lit red until initialization is complete.
- On each Transmit Card, red and green LEDs will flash during initialization.
  - After initialization, the Network LED(s) will be lit green based on rate.
  - All active Transmit LEDs and the active Back-Channel LEDs will flash green in unison. (All cards need not flash in unison.)
  - Fibered inactive Back-Channel LEDs will be lit green.
- The HALT buttons on the PPCs will initially light blue in a left-to-right sequence, then remain on.



Alarm Condition

If there is a persistent alarm condition (ALARM LED illuminated), check the following:

- Ensure the fans are running at full speed and there is adequate ventilation around the chassis.
- Ensure all modules are fully seated and their thumb screws are secured.
- Check for PPC or Transmitter Card failures.

For a detailed list of the alarm functions, see *Alarm Descriptions for the ICT18* on pg. [29].

Powering-Up the ICT18 1RU for the First Time

After the ICT18 1RU has been successfully unpacked, inspected and installed in the desired location, it can be powered-up for the first time.

Connection to our Products

Connections and installation hardware for our products use industry-standard devices and methods. All wiring connections to the customer equipment are designed to minimize proprietary or customized connectors and cabling. Power connections are made with regionally appropriate power cords and approved methods. AC Line Cords PWR-000006-R are supplied.
An included *Terminal Plug* mates to the Control Module's *Alarm Terminal* for external alarm connections.

Compatible Products

The ICT18 1RU is compatible with Thinklogical's Single-Mode & Multi-Mode TLX 10G KVM and Video Extenders and Matrix Switches.

Pre Power-up Checklist

Upon meeting the following conditions, proceed with power-up of the ICT18 1RU:

- The chassis is securely mounted and grounded in its desired location. The ICT18 1RU is designed to fit into a standard 19" EIA-310 compliant rack.
  - ➢ **Rear Support Brackets** are available. Contact your sales representative or your Thinklogical-authorized dealer for details. See **Appendix F²**, pg. [62].
- Adequate input power is available (AC line cords provided).
- Copper interface cables and fiber-optic cables are connected in the proper configurations.
- A PC with a terminal program (PuTTY or equivalent) is connected to the Control Module's MGMT Port with a (provided) USB A to mini-B cable.

Power-up Procedure

After meeting the requirements in the above checklist, follow the steps below to power-up the ICT18 1RU and verify that it completes initialization and self-test. After completing this procedure, the unit is ready to be configured.

1. Plug each power supply into a standard AC source using the supplied AC line cords.
2. Verify that the Alarm LED is unlit after power-up. Access and use of alarm menus begins in *The MGMT Port* section on pg. [30].
3. Verify front and back panel LEDs are as described under **Initialization**, on the following page.

Refer to the **Quick Start Guide,** available as **Appendix A²** on pg. [52].

The Processing Platform Card can be set to PXE (Pre-Execution Environment) to boot and load the OS from a server on the user's network, rather than from the SSD, as is typical. See **Appendix C: Configuring the PPC for PXE Boot**, on pg. [54].

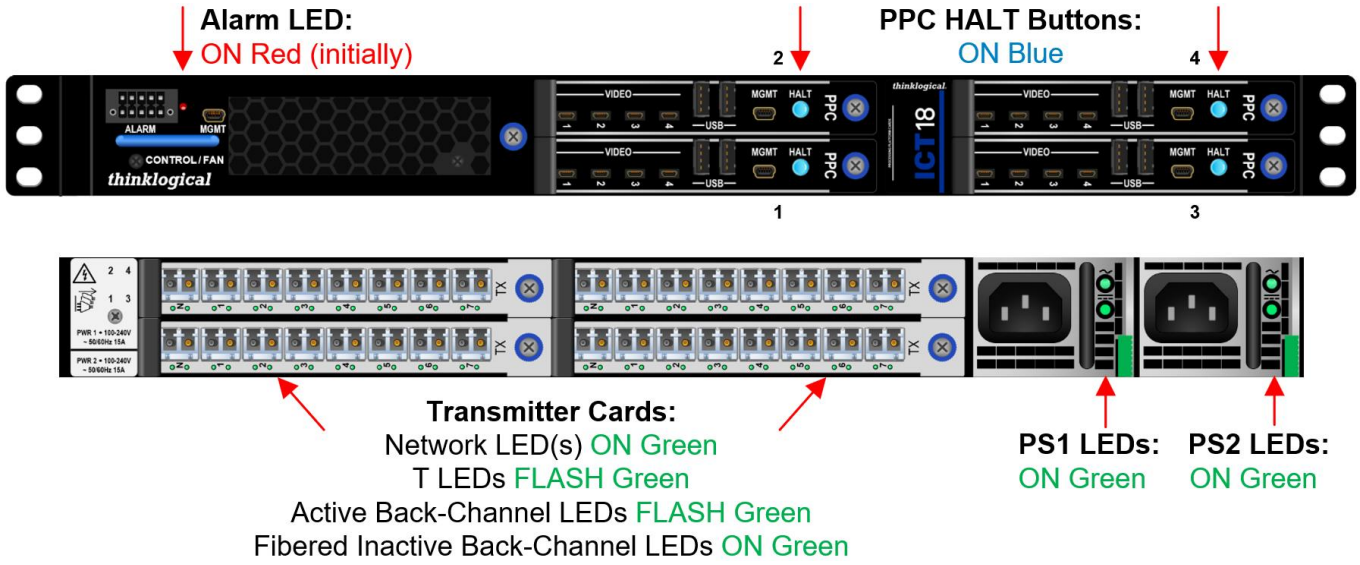
Note: The PPC is shipped with an SSD loaded with not-activated Windows11®. The default credentials for Windows11 at turn-on are `user/user`. See Appendix D, *Installing Windows 11 Drivers*, on pg. [57]**.**

Note: If any sensor detects an over-temperature condition, the Alarm LED will light red. For a detailed list of alarm functions, see pg. [28]: ***Alarm Descriptions for the ICT18 1RU*.**

Initialization, ICT18 1RU

Once the unit has been powered-up, look for the following between initialization and system-ready:

- The LEDs of each Power Supply will be lit green.
- The ALARM LED will be lit red until initialization is complete.
- On each Transmit Card, red and green LEDs will flash during initialization.
  - After initialization, the Network LED(s) will be lit green based on rate. See pg. [24].
  - All active Transmit LEDs and the active Back-Channel LEDs on each card will flash green in unison. (All cards need not flash in unison.)
  - Fibered inactive Back-Channel LEDs will be lit green.
- The HALT buttons on the PPCs will initially light blue in 1-through-4 sequence, then remain on.



Alarm Condition

If there is a persistent alarm condition (ALARM LED illuminated), check the following:

- Ensure the fans are running at full speed and there is adequate ventilation around the chassis.
- Ensure all modules are fully seated and their thumb screws are secured.
- Check for PPC or Transmitter Card failures.

For a detailed list of the alarm functions, see *Alarm Descriptions for the ICT18 1RU* on pg. [28].

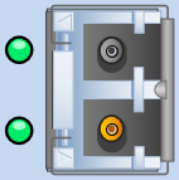
The Transmitter Card Status LEDs

Each Transmitter Card's SFP+ modules have helpful Status LEDs that allow users to asses the condition of each connection at a glance.

NETWORK LEDs*	
NORMAL CONDITIONS	
	Link up (1Gbs)
	Link up (100Mbs)
	Link up (10Mbs)
OTHER CONDITIONS	
	Link down
	SFP fault

TRANSMITTER CARD Status LEDs

** These LED color codes do not adhere to the typical industry standard codes for Ethernet interfaces.*



⇨ Transmit

⇦ Receive

ICT18 Transmitter Card SFP Status LEDs

FIBER STATUS	UPPER LED	LOWER LED	NORMAL CONDITION (with Back Channel)
T ACTIVE VIDEO/DATA OK	FLASH GREEN	N/A	T active and transmitting valid video/data
R ACTIVE DATA OK	N/A	FLASH GREEN	R locked onto link receiving data

FIBER STATUS	UPPER LED	LOWER LED	OTHER CONDITIONS
T ERROR	FLASH RED	N/A	Error if T is not active
R ERROR	N/A	FLASH RED	R receiving signal but cannot lock onto data
T ACTIVE NO VIDEO/DATA	FLASHING RED-GREEN	N/A	No video or data / Invalid video or data
R ACTIVE NO DATA	N/A	GREEN ON	R locked onto link. Inactive back channel.
R INACTIVE	N/A	OFF	No signal to R (no back channel)

MOD. STATUS	ALL LEDS	ALL LEDS	ALARM CONDITIONS
ALARM	FLASH RED	FLASH RED	Over temp or Fan fail

Updates and Maintenance

! READ THE INSTRUCTIONS THOROUGHLY BEFORE STARTING ANY PROCEDURE! !

How to Power-Down, Remove and Replace a Processor Card

There are several ways to power-down an operating Processor Card:

- A user may press an individual card's **HALT button** for >10 seconds to power-down that card.
- An i**ndividual PPC** can be powered down by connecting to the card's MGMT port and performing a standard, orderly shut-down from the control CPU. See pg. [30].
- **All PPCs** can be turned off at once by doing the same at the **Control Module**'s MGMT port.
- Either function, turning off individual PPCs or banks of PPCs, can also be done directly from the **Control Computer's operating system**.

*When the CPU shuts down, the HALT button will turn **red**. The card can now be removed.*

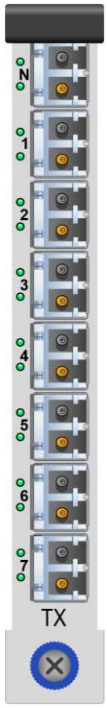
1. To remove the card, remove any external cables and turn the thumbscrew counterclockwise until it disengages from the chassis. Pull the card straight out using the handle. **Do not pull on the thumbscrew when removing the card. Use the handle.**

2. Hold the replacement card by the handle and place it into the slot vertically so that the HALT Button is at the top. The card should slide freely until it reaches the backplane connector. At this point, use just enough force to firmly engage the card with the mating connector. **If the card does not slide freely into the connector, do not force it. Re-seat the card and start over. *If the chassis is operating, the card will become active upon installation.***

3. Hand-tighten the thumbscrew. **Do not tighten the thumbscrew with a screwdriver.**

4. Reinstall external cables.

How to Remove and Replace a KVM Transmitter Card



It is not necessary to shut down the corresponding PPC before removing a Transmitter Card. To remove an operating Transmitter Card, first **remove all external cables from the Transmitter.** The card can now be removed from the chassis.

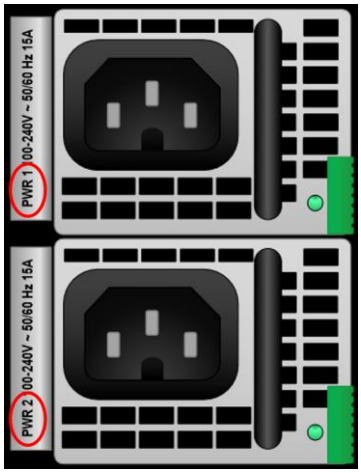
1. To remove the card, turn the thumb screw counterclockwise until it disengages from the chassis. Pull the card straight out using the handle. **Do not pull on the thumb screw when removing the card. Use the handle.**

2. Hold the replacement card by the handle and place it into the slot vertically so that the Network SFP (N) is at the top. The card should slide freely until it reaches the backplane connector. At this point, use just enough force to firmly engage the card with the mating connector. **If the card does not slide freely into the connector, do not force it. Re-seat the card and start over. *If the chassis is operating, the card will become active upon installation.***

3. Hand-tighten the thumb screw. **Do not tighten the thumb screw with a screwdriver.**

4. Install external cables.

How to Remove and Replace an ICT18 Power Supply



Note: The Power Supplies are redundant and current-sharing. When removing only one supply, shutdown IS NOT required.

Each Power Supply Module is universal input 100-240VAC, 15A, 50-60Hz. The receptacles are labeled PWR 1 (top) and PWR 2 (bottom). *Use only the AC line cords* (PWR-000102-R) *supplied with the unit.*

1. Remove the AC Line Cord from the supply to be removed.

Warning! Do not proceed to Step 2 until the AC line cord has been removed.

2. Press the green Latch Lever towards the handle, to release the locking mechanism.

3. While holding the lever open, **pull the Power Supply straight out** of the chassis by the handle.

4. Insert the new Power Supply into the chassis and slide it straight in until it reaches the backplane connectors. *At this point, use just enough force to firmly engage the module with the mating connector.* **If the module does not slide freely into the connector, do not force it. Re-seat it and start over.**

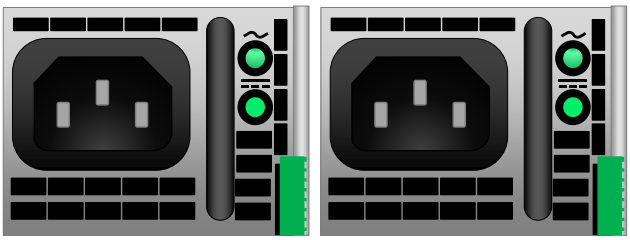
5. Ensure the Latch Lever is locked in place.

6. Install the supplied AC Line Cord to turn the power supply on.

How to Remove and Replace an ICT18 1RU Power Supply

Note: The Power Supplies are redundant and current-sharing. When removing only one supply, shutdown IS NOT required.

Each Power Supply Module (PWR-000081-R) is universal input 100-240VAC, 650W, 50-60Hz. The receptacles are labeled PWR 1 (left) and PWR 2 (right). *Use only the AC line cords* (PWR-000006-R) *supplied with the unit.*



PS1 PS2

1. Remove the AC Line Cord from the supply to be removed.

Warning! Do not proceed to Step 2 until the AC line cord has been removed.

2. Press the green Latch Lever towards the handle, to release the locking mechanism.

3. While holding the lever open, **pull the Power Supply straight out** of the chassis by the handle.

4. Insert the new Power Supply into the chassis and slide it straight in until it reaches the backplane connectors. *At this point, use just enough force to firmly engage the module with the mating connector.* **If the module does not slide freely into the connector, do not force it. Re-seat it and start over.**

5. Ensure the Latch Lever is locked in place.

6. Install the supplied AC Line Cord to turn the power supply on.

How to Remove and Replace the ICT18 Fan Tray

Note: No shutdown is required prior to replacing the Fan Tray.

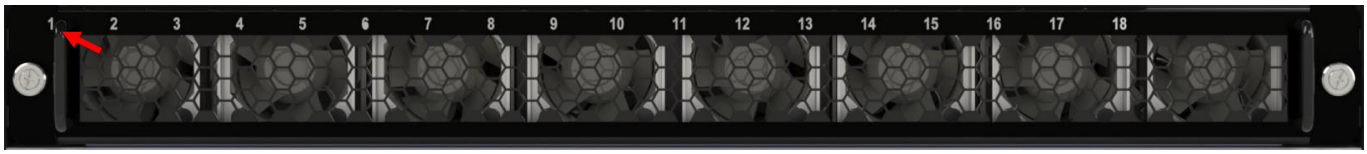
Warning! Do not operate the ICT18 for > 60 seconds without a Fan Tray installed.

The ICT18 uses 8 DC fans mounted in a single-unit, 1RU Fan Tray to move air vertically and horizontally through the enclosure. Be sure to not block the air vents on the front and rear of the Chassis. Leave at least 2" of space on both sides.

Note: Leave adequate ventilation space on both sides of the ICT18 Chassis (2" minimum), especially if devices are being mounted above or below the Chassis.

1. Loosen the two faceplate screws with a hand-held screwdriver until they disengage from the chassis.

2. Pull the Fan Tray module straight out using the two handles on either side.



3. Orient the new Fan Tray with **PPC label 1 on the left**. Hold the tray by the handles and slide the housing into the card guides until it reaches the backplane connector. At this point, use just enough force to firmly engage the tray with the mating connector. **If the tray does not slide freely into the connector, do not force it. Re-seat the tray and start over.** ***If the chassis is operating, the Fan Tray will become active upon installation.***

4. Tighten the faceplate screws with a hand-held screwdriver – approx. 5 in-lbs. **Do not over-tighten**.

How to Remove and Replace the ICT18 1RU Control/Fan Module

The Control/Fan Module is a field-replaceable unit that features a USB mini-B Update/Management Port and the System Alarms terminal. It also houses two DC fans to move air horizontally through the enclosure. Be sure to not block the air vents on the front and rear of the Chassis. Leave at least 2" of space on both sides.

Note: No shutdown is required prior to replacing the Control/Fan Module.

Warning! Do not operate the ICT18 1RU for > 60 seconds without a Control/Fan Module installed.

Note: Leave adequate ventilation space on both sides of the ICT18 1RU Chassis (2" minimum), especially if devices are being mounted above or below the Chassis.

1. Remove any external MGMT or Alarm Terminal cables.

2. Loosen the faceplate screw with a hand-held screwdriver until it disengages from the chassis.

3. Pull the module straight out of the chassis using the handle.

4. Orient the new module with the Alarm on the left. Hold it by the handle and align the interior tray with the card guides. Carefully slide the tray in until it reaches the backplane connector. At this point, use just enough force to firmly engage the module with the mating connector. **If the module does not slide freely into the connector, do not force it. Re-seat the module and start over.** ***If the chassis is operating, the fans will become active upon installation.***

5. Tighten the faceplate screw with a hand-held screwdriver – approx. 5 in-lbs. **Do not over-tighten**.

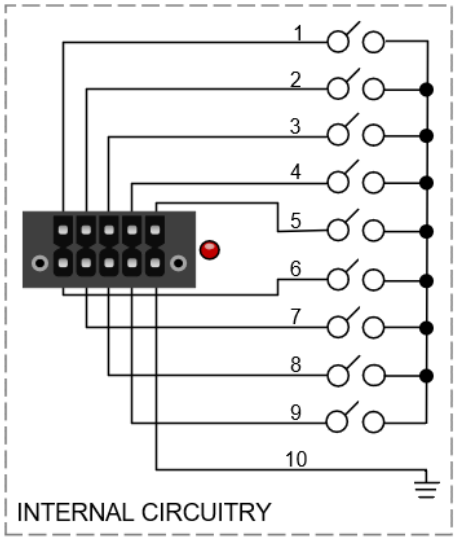
6. Install external cables.

The ICT18 1RU Alarm Terminal

The Control Module features a 10-pin terminal block for system alarm connections.

Alarms:

1 Pwr. Supply 1	**2** Pwr. Supply 2	**3** Fans	**4** Temp. Warning	**5** NA
6 PPCs	**7** Tx Cards	**8** Or	**9** Common	**10** GND



PS 1 (Left): *Fan fail, temp. spike, DCV-current range, AC PWR interrupt, module removed*

PS 2 (Right): *Fan fail, temp. spike, DCV-current range, AC PWR interrupt, module removed*

FANS: *Individual fan monitoring*

TEMPERATURE WARNING: *PPC/Tx over temperature, multiple sensors*

NA: *Not used*

PPCs: *Card failure*

TRANSMITTER CARDS: *SFP+ failure, laser output fault*

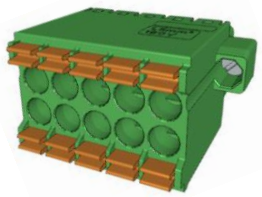
ANY OF THE ABOVE

COMMON

GROUND

Red LED *Lit for any alarm condition*

An included *Terminal Plug* **CON-441** mates to the Alarm Terminal for external connections.



All fan speeds are monitored and any that do not meet specification will cause an alarm condition.

The temperature in the chassis is continuously monitored for any anomalous conditions by internal sensors in the Power Supplies, Control/Fan Module, PPCs and the Transmitter Cards. The default **Temperature Warning** upper limit is **194°F** (90°C).

The Control/Fan Module, pg. [13]

How to Remove and Replace the ICT18 Control Module

The Control Module is a field-replaceable unit that features a USB mini-B Update/Management Port and the System Alarms terminal.

1. Remove any external cables (MGMT, Alarm Terminal).

2. To remove the module, turn the thumbscrews counterclockwise until they disengage from the chassis. Pull the module straight out using the handle. **Do not pull on the thumbscrews when removing the module. Use the handle.**

3. Hold the replacement module by the handle and place it into the slot with the Alarm terminal at the top. The module should slide freely until it reaches the backplane connector. At this point, use just enough force to firmly engage the module with the mating connector. **If the module does not slide freely into the connector, do not force it. Re-seat the module and start over.** ***If the chassis is operating, the Control Module will become active upon installation.***

4. Hand-tighten the thumbscrews. **Do not tighten the thumbscrews with a screwdriver.**

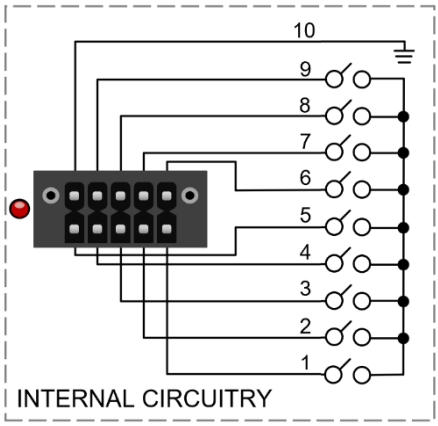
5. Reinstall external cables.

The ICT18 Alarm Terminal

The Control Module features a 10-pin terminal block for system alarm connections.

Alarms:

1 Pwr. Supply 1	**2** Pwr. Supply 2	**3** Fans	**4** Temp. Warning	**5** NA
6 PPCs	**7** Tx Cards	**8** Or	**9** Common	**10** GND



GROUND
COMMON
ANY OF THE ABOVE
TRANSMITTER CARDS: *SFP+ failure, laser output fault*
PPCs: *Card failure*
NA: *Not used*
TEMPERATURE WARNING: *PPC/Tx over temperature, multiple sensors*
FANS: *Individual fan monitoring*
PS 2 (Bottom): *Fan fail, temp. spike, DCV-current range, AC PWR interrupt, module removed*
PS 1 (Top): *Fan fail, temp. spike, DCV-current range, AC PWR interrupt, module removed*
Red LED *Lit for any alarm condition*

An included *Terminal Plug* **CON-441** mates to the Alarm Terminal for external connections.

All fan speeds are monitored and any that do not meet specification will cause an alarm condition.

The temperature in the chassis is continuously monitored for any anomalous conditions by internal sensors in the Power Supplies, Fan Tray, Control Module, PPCs and the Transmitter Cards. The default **Temperature Warning** upper limit is **194°F** (90°C).

The Control Module, pg. [11]

The MGMT Ports

The MGMT Ports are used for configuration, status reporting, troubleshooting and updating firmware & software.

Baud Rate: 115200, **Data Bits:** 8, **Parity:** None, **Stop Bits:** 1, **Flow Control:** None.

Control Module (ICT18) **and Control/Fan Module** (ICT18 1RU) **port** – Used for Chassis, Tx Card and PPC related functions. It includes settings that can be applied to all cards in the chassis simultaneously or one card individually. ***This is the connection most often used for such functions.*** This port is also used to update the Chassis FPGA Program Code. See pg. [44].

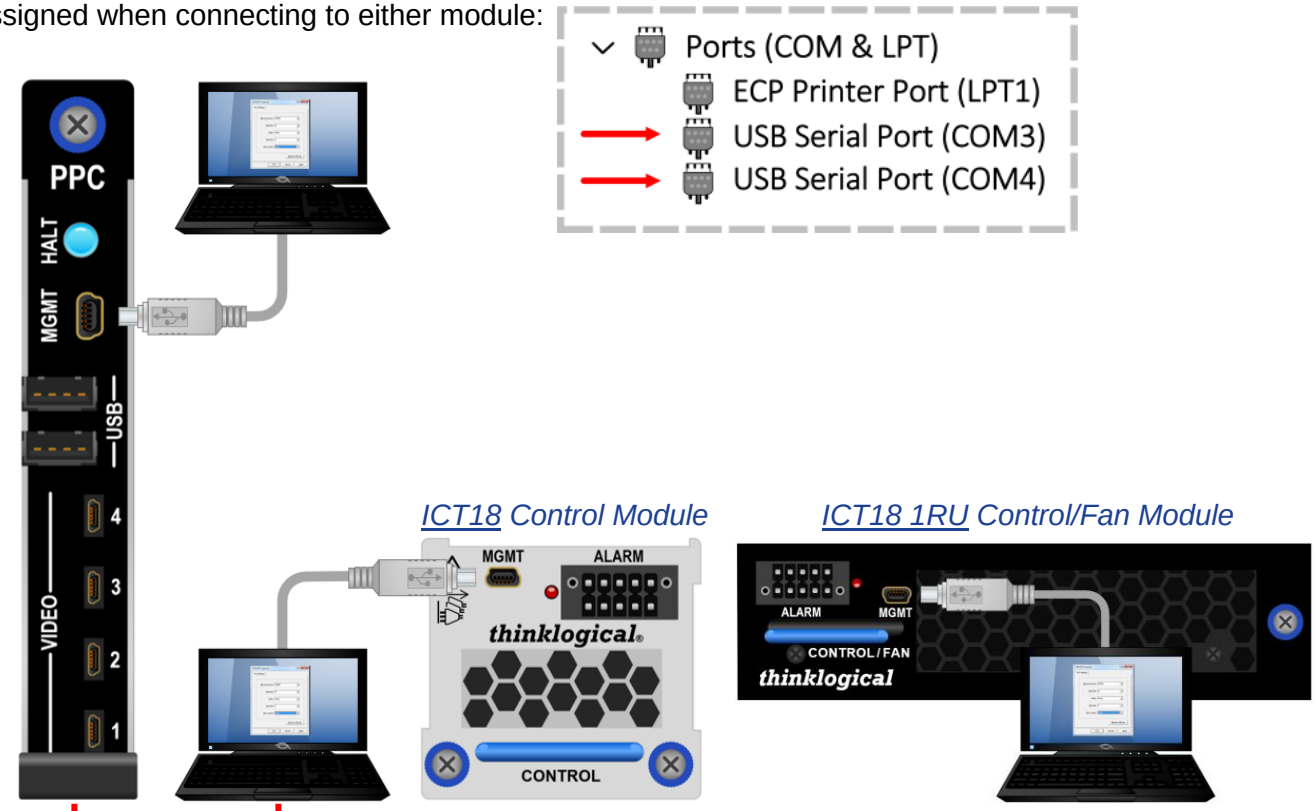
For example, to set the EDID table of a card or video port:

1. Connect to the Control Module MGMT Port.
2. Select 3: Processor Platform Cards.
3. Select 3: PPC EDID Parameters.

PPC port – Accesses both the PPC and the TX card. This port is used to update both cards' FPGA Program Codes (see pg. [45]) and for more detailed card-specific functions.

Open a terminal emulator and connect to either the PPC or Control Module's MGMT port with the USB mini-B cable.

Once the USB cable is connected, it will enumerate as a serial port. **Two new Serial Ports** will be assigned when connecting to either module:



- **Control Module connection** – One COM port will be used while the other is reserved and will not show a menu response.
- **PPC Card connection** – The PC enumeration operation will determine which COM port will be for the PPC and which will be for the TX Card.

Select **<enter>** to display a menu. Select "**m**" to get to the top (main) menu level. This will also confirm your connection.

Control Module Connection - Control Mod COM: Port*

Main Menu

```
--------------------------- ICT Controller Main Menu ---------------------------

1: Chassis                              2: Transmitter Cards
3: Processor Platform Cards
```

1: Chassis Menu

```
------------------------- ICT Controller Chassis Menu -------------------------

1: Chassis Information                  2: Chassis Parameters
3: Chassis Thermal Status               4: Power Supply Status
```

1: Chassis / 1: Chassis Info

```
--------------------------- ICT Controller Information --------------------------
    Controller Information
     Part Number:          TBD
     Software Revision:    1.16
     EEPROM Revision:      1
     Serial Number:        03-231103
     System Up Time:       11 Minutes, 36 Seconds
     PCB Temperature:      30 C
     PS1 Status:           AC power FAIL
     PS2 Status:           AC power OK
     Fan Tray Status:      Installed

    Alarm Status
     Fan:                   Off
     TX Blade:              Off
     PPC Blade:             Off
     Temperature Warning:   Off
     Power Supply1:         On
     Power Supply2:         Off
```

1: Chassis / 2: Chassis Parameters

```
-------------------- ICT Controller Chassis Parameters Menu --------------------

1: Fan PWM setting                      2: Fan Alarm Mask
3: TX Blade Alarm Mask                  4: PPC Blade Alarm Mask
5: Temp Warning Alarm Mask              6: Power Supply1 Alarm Mask
7: Power Supply2 Alarm Mask             8: Enable All Alarms
9: Mask All Alarms                      a: Load Default Configuration
b: Show Chassis Parameters
```

1: Chassis / 2: Chassis Parameters / 1: Fan PWM setting
Fan speed PWM (Pulse Width Modulation) range is 00h (off) to ffh (full on). Default is ffh.

```
Fan PWM value is ff hex. Change? (Y/N):
```

1: Chassis / 2: Chassis Parameters / 2: >> Through >> 9:
These are all enable/disable toggles, such as:

```
Fan Alarm is enabled. Mask? (Y/N):
```

*The examples shown are ICT18 *Control Module* menus. Some of the ICT18 1RU *Control/Fan Module* menus may vary, but functionality is the same.

1: Chassis / 2: Chassis Parameters / a: Load Default Configuration

```
Load factory default settings. Are you sure? (Y/N):
```

1: Chassis / 2: Chassis Parameters / b: Show Chassis Parameters

```
---------------------- ICT Controller Chassis Parameters ----------------------


                        Fan PWM Setting:        ffh
                        Fan Alarm:              Enabled
                        TX Blade Alarm:         Enabled
                        PPC Blade Alarm:        Enabled
                        Temp Warning Alarm:     Enabled
                        Power Supply1 Alarm:    Enabled
                        Power Supply2 Alarm:    Enabled
```

1: Chassis / 3: Chassis Thermal Status

```
-------------------- ICT Controller Chassis Thermal Status --------------------
            TX    TX                                          Ctrl
      PPC   PCB   FPGA  PPC   PPC   TX    TX                  Card  PS1   PS2
Slot  Temp  Temp  Temp  Vin   Iin   Vin   Iin   Fan RPM       Temp  Temp  Temp
 1    37C   54C   76C   11.9V 01.3A 11.9V 02.2A 1-P1: 6321    31C   NoAC  32C
 2     -     -     -     -     -     -     -    1-P2: 4514
 3    36C   51C   70C   11.9V 01.2A 11.9V 02.1A 2-P1: 6192
 4     -     -     -     -     -     -     -    2-P2: 4556
 5    37C   51C   71C   11.9V 01.2A 11.9V 02.0A 3-P1: 6414
 6     -     -     -     -     -     -     -    3-P2: 4463
 7    36C   50C   71C   11.9V 01.2A 11.9V 02.0A 4-P1: 6271
 8     -     -     -     -     -     -     -    4-P2: 4473
 9    38C   51C   72C   11.9V 01.2A 11.9V 02.1A 5-P1: 6261
 10    -     -     -     -     -     -     -    5-P2: 4383
 11   36C   51C   71C   11.9V 01.2A 11.9V 02.1A 6-P1: 6425
 12    -     -     -     -     -     -     -    6-P2: 4499
 13   36C   52C   73C   11.9V 01.2A 11.9V 02.1A 7-P1: 6221
 14    -     -     -     -     -     -     -    7-P2: 4483
 15   35C   52C   73C   11.9V 01.2A 11.9V 02.1A 8-P1: 6362
 16    -     -     -     -     -     -     -    8-P2: 4433
 17   35C   50C   67C   11.9V 01.2A 11.9V 01.9A
 18    -     -     -     -     -     -     -
```

1: Chassis / 4: Chassis Power Supply Status

```
---------------------- ICT Controller Power Supply Status ----------------------

Power Supply   Status   Temp   Flags   Vin   Iin   Vout   Iout
 PS1:          AC OK    0C     0000h   121V  1.0A  12.0V  0.0A
 PS2:          NO AC     -      -       -     -     -      -
```

Note: In this example, the PS2 power cord is not connected.

2: Transmitter Cards / Menu

```
------------------------- ICT Controller TX Blade Menu -------------------------

1: TX Card Information                2: TX Card Status
3: TX Card Video Status               4: TX Card SFP Status
5: TX Card HID Parameters
```

2: Transmitter Cards / 1: TX Card Information

---------- ICT Controller TX Blade Information ----------

Slot	Card Name	* Card ID	Card Serial#	FPGA Rev	NIOS Rev	PCB Rev
1	ICT18_TX	0185	LWT002	1.2.21	27.82	C
2	-	-	-	-	-	-
3	ICT18_TX	0185	LWT009	1.2.21	27.82	C
4	-	-	-	-	-	-
5	ICT18_TX	0185	LWT001	1.2.21	27.82	C
6	-	-	-	-	-	-
7	ICT18_TX	0185	LWT010	1.2.21	27.82	C
8	-	-	-	-	-	-
9	ICT18_TX	0185	LWT015	1.2.21	27.82	C
10	-	-	-	-	-	-
11	ICT18_TX	0185	LWT007	1.2.21	27.82	C
12	-	-	-	-	-	-
13	ICT18_TX	0185	LWT011	1.2.21	27.82	C
14	-	-	-	-	-	-
15	ICT18_TX	0185	LWT013	1.2.21	27.82	C
16	-	-	-	-	-	-
17	ICT18_TX	0185	LWT014	1.2.21	27.82	C
18	-	-	-	-	-	-

*`Card ID` = *Unique number assigned to Thinklogical cards.*

2: Transmitter Cards / 2: TX Card Status

---------- ICT Controller TX Blade Status ----------

Slot	Alarm State	FPGA Temp	PCB Temp	Input Volt	Input Cur	Power Status	Low-speed Connected
1	OK	81	57	11.9V	02.2A	OK	No
2	-	-	-	-	-	-	-
3	OK	74	54	11.9V	02.1A	OK	No
4	-	-	-	-	-	-	-
5	OK	74	53	11.9V	02.1A	OK	No
6	-	-	-	-	-	-	-
7	OK	75	54	11.9V	02.1A	OK	No
8	-	-	-	-	-	-	-
9	OK	76	54	11.9V	02.2A	OK	No
10	-	-	-	-	-	-	-
11	OK	75	54	11.9V	02.1A	OK	No
12	-	-	-	-	-	-	-
13	OK	78	55	11.9V	02.1A	OK	No
14	-	-	-	-	-	-	-
15	OK	77	55	11.9V	02.1A	OK	No
16	-	-	-	-	-	-	-
17	OK	70	52	11.9V	02.0A	OK	No
18	-	-	-	-	-	-	-

2: Transmitter Cards / 3: TX Card Video Status

ICT Controller TX Blade Video Status

SLOT	Head 1 Valid	Head 1 PClock	Head 2 Valid	Head 2 PClock	Head 3 Valid	Head 3 PClock	Head 4 Valid	Head 4 PClock
1	Yes	148.49	Yes	148.49	Yes	148.49	Yes	148.49
2	-	-	-	-	-	-	-	-
3	Yes	148.49	Yes	148.49	Yes	148.49	Yes	148.49
4	-	-	-	-	-	-	-	-
5	Yes	148.49	Yes	148.49	Yes	148.49	Yes	148.49
6	-	-	-	-	-	-	-	-
7	Yes	148.49	Yes	148.49	Yes	148.49	Yes	148.49
8	-	-	-	-	-	-	-	-
9	Yes	148.49	Yes	148.49	Yes	148.49	Yes	148.49
10	-	-	-	-	-	-	-	-
11	Yes	148.49	Yes	148.49	Yes	148.49	Yes	148.49
12	-	-	-	-	-	-	-	-
13	Yes	148.49	Yes	148.49	Yes	148.49	Yes	148.49
14	-	-	-	-	-	-	-	-
15	Yes	148.49	Yes	148.49	Yes	148.49	Yes	148.49
16	-	-	-	-	-	-	-	-
17	Yes	148.49	Yes	148.49	Yes	148.49	Yes	148.49
18	-	-	-	-	-	-	-	-

Note: The 8 columns above will always be displayed, regardless of the hardware/software configuration.

2: Transmitter Cards / 4: TX Card SFP Status

ICT Controller TX Blade SFP Status

SLOT	*SFP 1	SFP 2	SFP 3	SFP 4	SFP 5	SFP 6	SFP 7
1	FTLX8574	FTLX8571	FTLX8571	FTLX8571	FTLX8571	FTLX8574	FTLX8571
2	-	-	-	-	-	-	-
3	FTLX8571	FTLX8571	FTLX8571	FTLX8571	FTLX8571	FTLX8571	FTLX8574
4	-	-	-	-	-	-	-
5	FTLX8574	FTLX8574	FTLX8574	FTLX8574	FTLX8574	FTLX8574	FTLX8574
6	-	-	-	-	-	-	-
7	FTLX8571	FTLX8571	FTLX8571	FTLX8571	FTLX8571	FTLX8571	FTLX8574
8	-	-	-	-	-	-	-
9							
10	-	-	-	-	-	-	-
11	FTLX8571	FTLX8571	FTLX8571	FTLX8574	FTLX8571	FTLX8574	FTLX8571
12	-	-	-	-	-	-	-
13	FTLX8574	FTLX8571	FTLX8574	FTLX8574	FTLX8571	FTLX8574	FTLX8574
14	-	-	-	-	-	-	-
15	FTLX8574	FTLX8574	FTLX8574	FTLX8574	FTLX8574	FTLX8571	FTLX8571
16	-	-	-	-	-	-	-
17	FTLX8571	FTLX8574	FTLX8574	FTLX8571	FTLX8574	FTLX8571	FTLX8574
18	-	-	-	-	-	-	-

*`FTLX8574, etc.,` *are Finisar® SFP Part Numbers.*

2: Transmitter Cards / 5: TX Card HID Parameters

```
----------------------- ICT Controller TX Blade HID Menu -----------------------

1: Enable Intuitive Mouse              2: Disable Intuitive Mouse
3: Enable Server Auto Logout           4: Disable Server Auto Logout
5: Enable Reduced Mouse Descriptor     6: Disable Reduced Mouse Descriptor
7: Show HID Parameters
```

Selections 1-6 are enable/disable settings similar to INT Mouse below.

```
Enter slot number (1-18) or type 'a' for all slots:

Enable Intuitive Mouse on slot 12. Are you sure? (Y/N):
```

2: Transmitter Cards / 5: TX Card HID Parameters / 7: Show HID Parameters

```
-------------------- ICT Controller TX Blade HID Parameters --------------------
      Intuitive       Server Auto     Reduced Mouse
SLOT  Mouse           Logout          Descriptor
 1    Disabled        Disabled        Disabled
 2     -               -               -
 3    Disabled        Disabled        Disabled
 4     -               -               -
 5    Disabled        Disabled        Disabled
 6     -               -               -
 7    Disabled        Disabled        Disabled
 8     -               -               -
 9    Disabled        Disabled        Disabled
 10    -               -               -
 11   Disabled        Disabled        Disabled
 12    -               -               -
 13   Disabled        Disabled        Disabled
 14    -               -               -
 15   Disabled        Disabled        Disabled
 16    -               -               -
 17   Disabled        Disabled        Disabled
 18    -               -               -
```

3: Processor Platform Cards / Menu

```
----------------------- ICT Controller CPU Blade Menu -----------------------

1: PPC Information                     2: PPC Status
3: PPC EDID Parameters                 4: PPC EDID status
5: I7 Pushbutton Toggle                6: I7 Power On
7: I7 Power Down
```

3: Processor Platform Cards / 1: PPC Information

ICT Controller PPC Information

Slot	Card Name	*Card ID	Card Serial#	FPGA Rev	NIOS Rev	PCB Rev	*Network SFP Part#
1	ICT18_PP	0184	LWP001	1.1.9	62.0	B	FTLF8519
2	-	-	-	-	-	-	-
3	ICT18_PP	0184	LWP008	1.1.9	62.0	B	FTLF8519
4	-	-	-	-	-	-	-
5	ICT18_PP	0184	LWP004	1.1.9	62.0	B	FTLF8519
6	-	-	-	-	-	-	-
7	ICT18_PP	0184	LWP012	1.1.9	62.0	B	FTLF8519
8	-	-	-	-	-	-	-
9	ICT18_PP	0184	LWP009	1.1.9	62.0	B	FTLF8519
10	-	-	-	-	-	-	-
11	ICT18_PP	0184	LWP013	1.1.9	62.0	B	FTLF8519
12	-	-	-	-	-	-	-
13	ICT18_PP	0184	LWP020	1.1.9	62.0	B	FTLF8519
14	-	-	-	-	-	-	-
15	ICT18_PP	0184	LWP015	1.1.9	62.0	B	FTLF8519
16	-	-	-	-	-	-	-
17	ICT18_PP	0184	LWP014	1.1.9	62.0	B	FTLF8519
18	-	-	-	-	-	-	-

Card ID = Unique number assigned to Thinklogical cards.
Network SFP P/N = Finisar P/N

*`Card ID` = *Unique number assigned to Thinklogical cards.*

*`Network SFP Part#` = *Finisar® Part Number.*

3: Processor Platform Cards / 2: PPC Status

ICT Controller PPC Status

Slot	Proc State	Fan Alarm	Temp Alarm	Proc Alarm	PS Alarm	Input Volt	Input Cur	Temp Status	Network Status
1	On	Off	Off	Off	Off	11.9V	01.3A	39C	?
2	-	-	-	-	-	-	-	-	-
3	On	Off	Off	Off	Off	11.9V	01.2A	37C	?
4	-	-	-	-	-	-	-	-	-
5	On	Off	Off	Off	Off	11.9V	01.2A	40C	?
6	-	-	-	-	-	-	-	-	-
7	On	Off	Off	Off	Off	11.9V	01.2A	39C	?
8	-	-	-	-	-	-	-	-	-
9	On	Off	Off	Off	Off	11.9V	01.3A	40C	?
10	-	-	-	-	-	-	-	-	-
11	On	Off	Off	Off	Off	11.9V	01.3A	39C	?
12	-	-	-	-	-	-	-	-	-
13	On	Off	Off	Off	Off	11.9V	01.3A	38C	?
14	-	-	-	-	-	-	-	-	-
15	On	Off	Off	Off	Off	11.9V	01.3A	37C	?
16	-	-	-	-	-	-	-	-	-
17	On	Off	Off	Off	Off	11.9V	01.2A	38C	?
18	-	-	-	-	-	-	-	-	-

3: Processor Platform Cards / 3: PPC EDID Parameters

```
------------------- ICT Controller PPC EDID Parameters Menu -------------------

1: Load 1920x1080p                    2: Load 1920x1200
3: Load 2560x1440                     4: Load 3840x2160x30
5: Load 3840x2160x60                  6: Load 4096x2160x24
7: Load HDMI->DP 4K60                 8: Load DVI 1080p
```

Note: Keep in mind the transmitter card configuration when loading EDID parameters to ensure the transmitter is capable of the EDID setting.

For example, selecting 1: will yield:

```
Enter slot number (1-18) or type 'a' for all slots:
```

Then it will ask which port on that card to load the EDID:

```
Slot is 8. Enter port (1-4) or type 'a' for all ports:
```

3: Processor Platform Cards / 4: PPC EDID Status

```
------------------------- ICT Controller PPC EDID Status -------------------------
Slot   Head 1          Head 2          Head 3          Head 4
 1     1920x1080p      1920x1080p      1920x1080p      1920x1080p
 2      -               -               -               -
 3     1920x1080p      1920x1080p      1920x1080p      1920x1080p
 4      -               -               -               -
 5     1920x1080p      1920x1080p      1920x1080p      1920x1080p
 6      -               -               -               -
 7     1920x1080p      1920x1080p      1920x1080p      1920x1080p
 8      -               -               -               -
 9     1920x1080p      1920x1080p      1920x1080p      1920x1080p
 10     -               -               -               -
 11    1920x1080p      1920x1080p      1920x1080p      1920x1080p
 12     -               -               -               -
 13    1920x1080p      1920x1080p      1920x1080p      1920x1080p
 14     -               -               -               -
 15    1920x1080p      1920x1080p      1920x1080p      1920x1080p
 16     -               -               -               -
 17    1920x1080p      1920x1080p      1920x1080p      1920x1080p
 18     -               -               -               -
```

3: Processor Platform Cards / 5: I7 Pushbutton Toggle

```
Enter slot number (1-18) or type 'a' for all slots:

Toggle I7 Pushbutton.  Are you sure? (Y/N):
```

3: Processor Platform Cards / 6: I7 Power On

```
Enter slot number (1-18) or type 'a' for all slots:

Power-on I7 on slot 2.  Are you sure? (Y/N):
```

3: Processor Platform Cards / 7: I7 Power Down

```
Enter slot number (1-18) or type 'a' for all slots:

Power-down I7 on slot 2.  Are you sure? (Y/N):
```

PPC Card Connection - PPC COM: Port

Main menu

```
----------------------- Integrated Client PPC Main Menu -----------------------

1: System Information                  2: Enable/Disable Video Ports
3: Show TX Video Status                4: HALT/RUN CPU
c: Set Video Resolution                d: Show Current Resolutions
e: Ethernet SFP Parameters             f: N/A
```

1: System Information

```
------------------------------SYSTEM INFORMATION. ------------------------------

            Product Name:        ICT18_PP
            Product ID:          0x0184
            FPGA Revision:       0x1104
            Software Revision:   62.00. T33
            Board Revision:      B
            Serial Number:       LS13657-01
            Chassis Type:        ICT18
            System Up Time:      7 Minutes, 42 Seconds
            CPU Heatsink Temp:   30 degrees C
            Module Voltage:      12004 mV
            Module Current:      960 mA
            Module Slot ID:      12
            TX Module Detected:  Yes
```

2: Enable/Disable Video Ports

```
------------- Integrated Client PPC Enable/Disable Video Port Menu -------------

1: Disable Video Port 1                2: Enable Video Port 1
3: Disable Video Port 2                4: Enable Video Port 2
5: Disable Video Port 3                6: Enable Video Port 3
7: Disable Video Port 4                8: Enable Video Port 4



Video Port 1 Status = ON
Video Port 2 Status = OFF
Video Port 3 Status = OFF
Video Port 4 Status = OFF
```

2: Enable/Disable Video Ports / 1:, 3:, 5:, 7: Disable Video Port

```
Disabling Video Port 1 ....
0000605189:13:Video Head: 0, CPU HOTPLUG CHANGED TO 0
```

2: Enable/Disable Video Ports / 2:, 4:, 6:, 8: Enable Video Port

```
Enabling Video Port 1 ....
0002032694:13:Head 0: Resetting EP9162
0002032769:13:Video Head: 0, CPU HOTPLUG CHANGED TO 1
0002035741:13:Head 0: HDMI_INIT, going to HDMI_HOTPLUG
0002036166:13:Head 0: Rx link came on, frequency is 149MHz
0002036190:13:Head 0: Rx link came on, initializing RX analog registers for 149MHz,
0002036207:13:Head 0: HDMI_HOTPLUG, going to HDMI_RX_LINKED
0002036762:13:Head 0: Configuring TX Phy Registers
0002036802:13:Head 0: HDMI_RX_LINKED, rx port ok, going to HDMI_LINKED_OK
```

3: Show TX Video Status

```
SFP_abs_vid_support_ram   = 0x3F00
SFP_video_map_ram         = 0x3E50
EDID MODE 2 REGISTER      = 0xFFFF

TX Vid port 0 OE        = 1
TX Vid port 1 OE        = 1
TX Vid port 2 OE        = 1
TX Vid port 3 OE        = 1

TX HP 0                 = 1
TX HP 1                 = 1
TX_HP 2                 = 1
TX_HP 3                 = 1

PPC VID OE 0            = 1
PPC VID OE 1            = 1
PPC VID OE 2            = 1
PPC VID OE 2            = 1

EP9162 Vid Port OE Head 0 = 0x98
EP9162 Vid Port OE Head 1 = 0x98
EP9162 Vid Port OE Head 2 = 0x98
EP9162 Vid Port OE Head 3 = 0x98

HDMI20_VID1_ram  = 0
HDMI20_VID2_ram  = 0
```

4: HALT/RUN CPU

Halt CPU

```
------------------- Integrated Client PPC Halt/Run CPU Menu -------------------

1: HALT/RUN CPU





S5 = 1
S4 = 1
S3 = 1
Sus_Stat = 1
Slp_a = 1
```

```
HALT CPU....
0001101013:13:Video Head: 0, CPU HOTPLUG CHANGED TO 0

CPU State = Halt
S5 = 0
S4 = 0
S3 = 0
Sus_Stat = 1
Slp_a = 0
```

Run CPU

```
RUN CPU....

CPU State = Halt
S5 = 1
S4 = 1
S3 = 1
Sus_Stat = 1
Slp_a = 1

CPU State = Run
S5 = 1
S4 = 1
S3 = 1
Sus_Stat = 1
Slp_a = 1
0001208080:13:Head 0: Resetting EP9162
0001208158:13:Video Head: 0, CPU HOTPLUG CHANGED TO 1
0001211104:13:Head 0: HDMI_INIT, going to HDMI_HOTPLUG
0001212568:13:Head 0: Rx link came on, frequency is 149MHz
0001212594:13:Head 0: Rx link came on, initializing RX analog registers for 149MH
z,
0001212615:13:Head 0: HDMI_HOTPLUG, going to HDMI_RX_LINKED
0001212641:13:Head 0: Configuring TX Phy Registers
0001212683:13:Head 0: HDMI_RX_LINKED, rx port ok, going to HDMI_LINKED_OK
0001212725:13:Head 0: Mis-matched frequencies found
0001212738:13:Head 0: RX0: 149 RX1: 148 TX0: 25 TX1: 25
0001212754:13:ACTION:Head 0: In ep9162_check_and_fix_errors()
0001212769:13:ACTION:Head 0: Reconfiguring TX phy due to mis-matched frequencies
0001212789:13:Head 0: Configuring TX Phy Registers
```

c: Set Video Resolution

```
----------------- Integrated Client PPC Load EDID Tables Menu -----------------

0: 1920 x 1080 P60 HDMI              1: 1920 x 1200 P60 HDMI
2: 2560 x 1440 P60 HDMI              3: 3840 x 2160 P30 HDMI
4: 3840 x 2160 P60 HDMI              5: 1920 x 1080 P60 DVI
6: 4K P60 DISPLAY PORT               7: 4096 x 2160 P24 DP or HDMI





Port 0 Res is 3840 x 2160 @ 60
Port 1 Res is 3840 x 2160 @ 60
Port 2 Res is 1080P
Port 3 Res is 1080P
```

d: Show Current Resolutions

```
Select #, CR(refresh), m(Main menu), p(previous menu): d
Port 0 Res is 3840 x 2160 @ 60
Port 1 Res is 3840 x 2160 @ 60
Port 2 Res is 1080P
Port 3 Res is 1080P
```

e: Ethernet SFP Parameters

```
------------------- Integrated Client PPC Ethernet SFP Menu -------------------

1: Set Auto-Negotiation  ON           2: Set Auto-Negotiation OFF
3: Switch Hardware RESET              4: Restart Switch Negotiation

Ethernet SFP                 : Installed
Vendor Name                  : FINISAR CORP.
Vendor PartNum               : FCLF8521P2BTL
SFP Module Type              : Copper
SFP Link Status              : Linked
SFP Link Speed               : 1000 Mbps
SWITCH SFP Auto-Negotiation  : Enabled
SWITCH SFP Good Packets      : 195
SWITCH SFP Bad  Packets      : 001
SWITCH P2 Good Packets       : 028
SWITCH P2 Bad  Packets       : 000
SWITCH P2 PHY LINK           : Linked
SWITCH P2 PHY DETECTED       : YES
SWITCH P2 STATUS             : 0xBC9F
SWITCH P2 Physical Control   : 0x0007
```

PPC Card Connection - Transmitter COM: Port

Main Menu

```
----------------------------- ICT18 TX  Main Menu -----------------------------

1: System Information                 2: Video Information
3: SFP Parameters                     4: System Parameters
5: HID Parameters
```

1: System Information

```
------------------------- ICT18 TX SYSTEM INFORMATION -------------------------
    Product Description: TLX ICT18 TX Blade
    Part Number:         ICT18MTX
    Product ID:          0x0185
    FPGA Revision:       1.1.08
    Software Revision:   27.37
    Board Revision:      B
    Sticky Revision:     0114
    Bootloader Revision: 1.5
    Serial Number:       ---------------
    Local Control Name:  ICT18-TX
    Remote Control Name: NotFound
    Alarm Status:        Alarm(s) Not Active
    System Up Time:      2 Hours, 30 Minutes, 39 Seconds
    Temperature:         FPGA-59C, PCB-39C
    Power Monitor:       12.00V, 1.62A
    Low-speed connected: No
```

2: Video Information

```
------------------------- ICT18 TX HDMI VIDEO STATUS -------------------------

              Valid Video    Pixel Clock

    Head 0:   Yes            593.976 MHz
    Head 1:   Yes            593.976 MHz
    Head 2:   No             No CLK
    Head 3:   No             No CLK
```

3: SFP Parameters

```
--------------------------- ICT18 TX SFP INFORMATION ---------------------------

SFP #  Vendor ID       Vendor PN       Wlen  Temp  RxSig  RxPwr   TxPwr   TxBias
SFP 1: FINISAR CORP.   FTLX8574D3BCL   850   40C   OK     -2.68   -2.69   9.18
SFP 2: FINISAR CORP.   FTLX8574D3BCL   850   40C   No Sig -26.78  -2.68   9.14
SFP 3: FINISAR CORP.   FTLX8574D3BCL   850   40C   No Sig -26.78  -2.67   9.11
SFP 4: FINISAR CORP.   FTLX8574D3BCL   850   36C   No Sig -26.78  -2.20   8.74
SFP 5: Not installed
SFP 6: Not installed
SFP 7: Not installed
SFP 8: Not installed

Units:
Wlen in nM
Signal level in dBM
TX Bias in uA
```

4: System Parameters

```
----------------------- ICT18 TX  System Parameters Menu -----------------------

1: Change Local Control Name          2: Load Factory Default Settings
3: Debug Message Parameters
```

4: System Parameters / 1: Change Local Control Name

```
Local Control Name is ICT18-TX. Change? (Y/N):
```

4: System Parameters / 2: Load Factory Default Settings

```
Load factory default settings. Are you sure? (Y/N):
```

4: System Parameters / 3: Debug Message Parameters

```
-------------------------- ICT18 TX  Debug Zone Menu --------------------------

1: Set all on                         2: Set all off
3: N/A                                4: Set EDID
5: Set Stickies                       6: N/A
7: Set I2C                            8: Set CTRLUART
9: Set Special                        a: Set HDCP
b: N/A                                c: N/A
d: N/A                                e: N/A
f: Set HDMI                           g: N/A
h: Set Audio                          i: Set Video Data Path
j: N/A                                k: Set General
l: N/A                                m: Main menu
n: Set Max Loop Delay                 o: Set Temperature
p: Previous menu                      q: Set HID
r: Set DisplayPort Interrupt          s: Set Clock Recovery
t: Reserved                           u: Reserved
v: Reserved                           w: Reserved
x: Activate debug                     y: Show active zones
```

Note: The Debug menu and functions are for detailed troubleshooting with Thinklogical guidance and is not required for normal operation.

5: HID Parameters

```
------------------------------ ICT18 TX  HID Menu ------------------------------

1: Server Auto Logout                  2: Intuitive Mouse
3: Reduced Mouse Descriptor            4: Show HID Parameters
```

Items 1-3 are enable / disable toggles.

5: HID Parameters / 4: Show HID Parameters

```
--------------------------- ICT18 TX HID PARAMETERS ---------------------------


    Server Auto Logout:        Disabled
    Intuitive Mouse:           Disabled
    Reduced Mouse Descriptor:  Disabled
```

Firmware and Software Updating

Updates are performed using the same USB mini-B cable as used for configuration. Because these procedures do not use 'COM: ports,' any open 'COM: ports' must be closed before continuing.

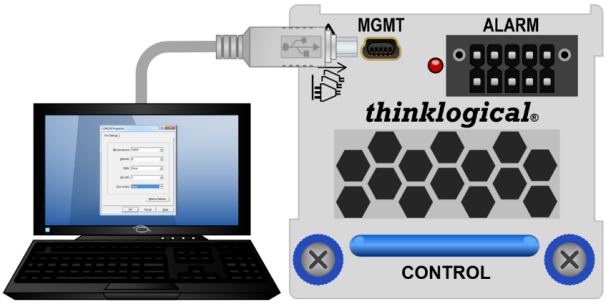
Note: Close any open 'COM: ports' before performing updates.

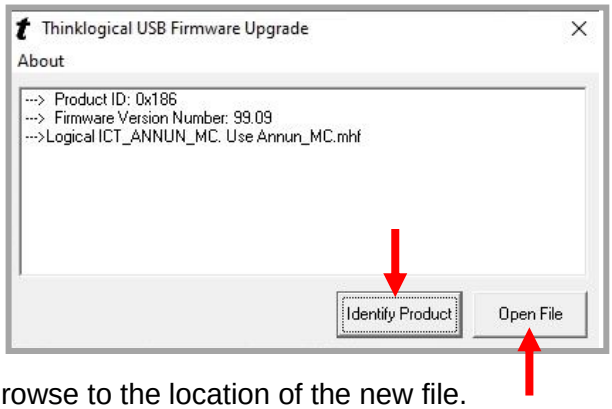
Also see *Appendix B, FPGA Program Code Update Procedure*, pg. [53].

Control Module Connection (ICT18 and ICT18 1RU)

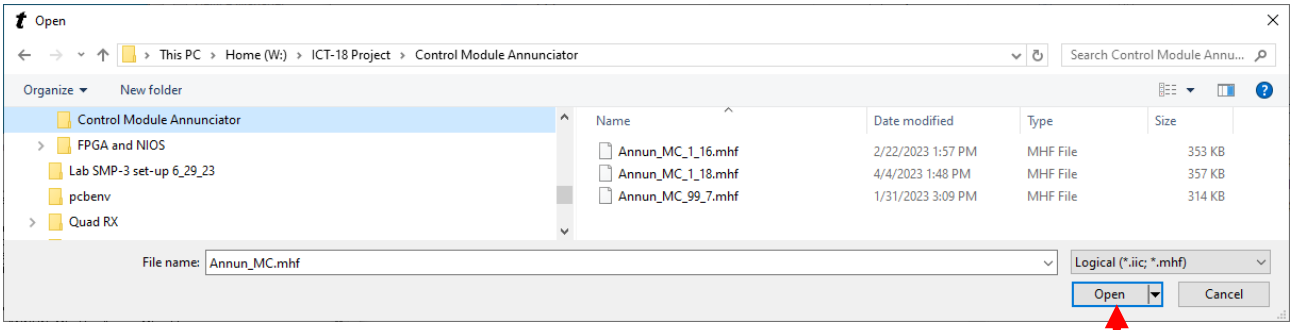
This requires the Thinklogical tool *KM_Download*, *version 7.7* or greater.

1. Connect the USB cable to the MGMT port and run the KM_Download tool. Select [**Identify Product**] to confirm the connection. The Control module is then reported.





2. Select [**Open File**] and browse to the location of the new file.

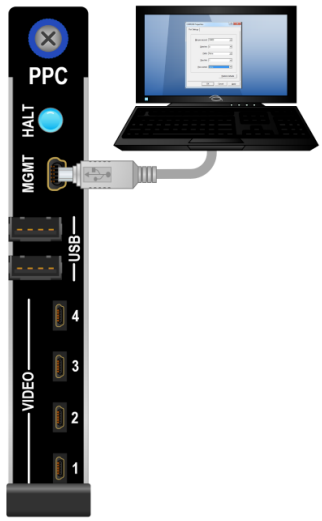


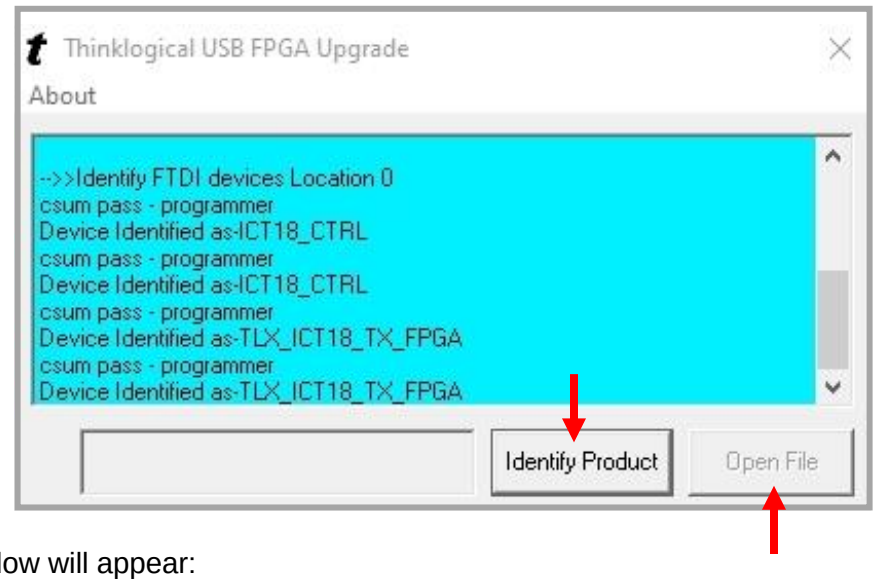
3. Select the file and click [**Open**] to begin the update.
4. Once the FPGA Program Code update is complete, disconnect the USB cable from the MGMT Port. **Power-cycle the chassis** to activate the new firmware.

PPC Connection

This requires the Thinklogical tool *FPGA_Download, version 4.70* or greater.

1. Connect the USB cable to the PPC MGMT port to be updated and run the FPGA_Download tool.
2. Select [**Identify Product**] to confirm the connection. The report will show several devices found. These are for the PPC itself and the corresponding Transmitter (TX) connected to it.





3. Select [Open File] and a new window will appear:

PPC FPGA & S/W NIOS

Tx FPGA

Tx S/W NIOS

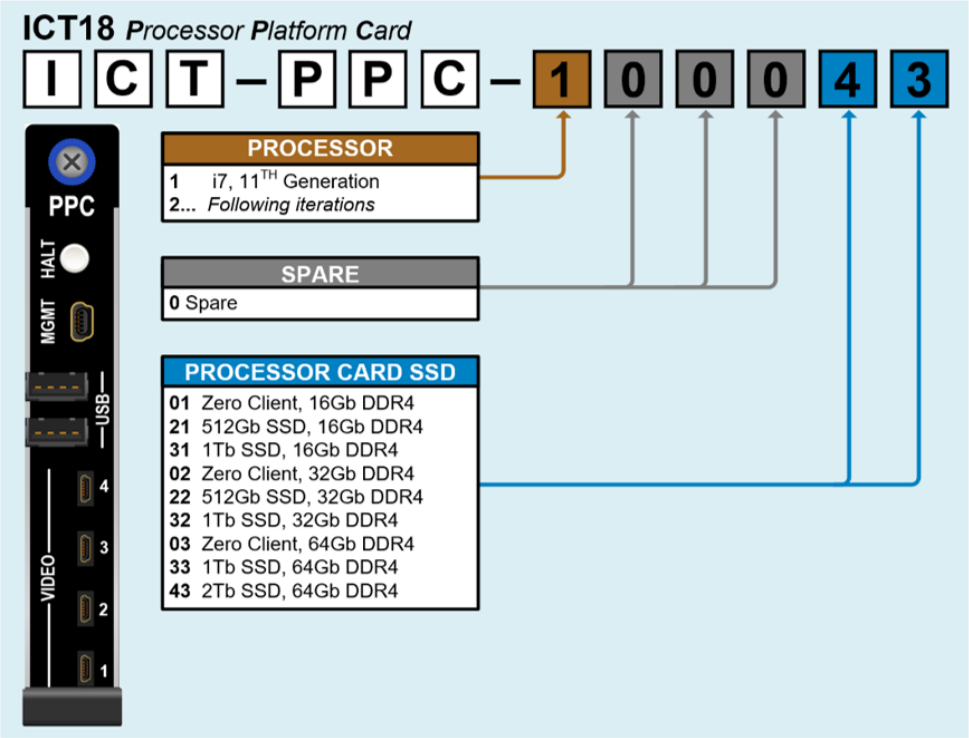
4. The selections are the PPC FPGA & S/W NIOS, the transmitter FPGA and the transmitter S/W NIOS codes. Select the code to update, browse to the file location, select the file, and the update will begin.
5. Repeat Step 4 for each code to update.
6. Once the FPGA Program Code update is complete, disconnect the USB cable from the MGMT Port. **Power-cycle the chassis** to activate the new firmware.

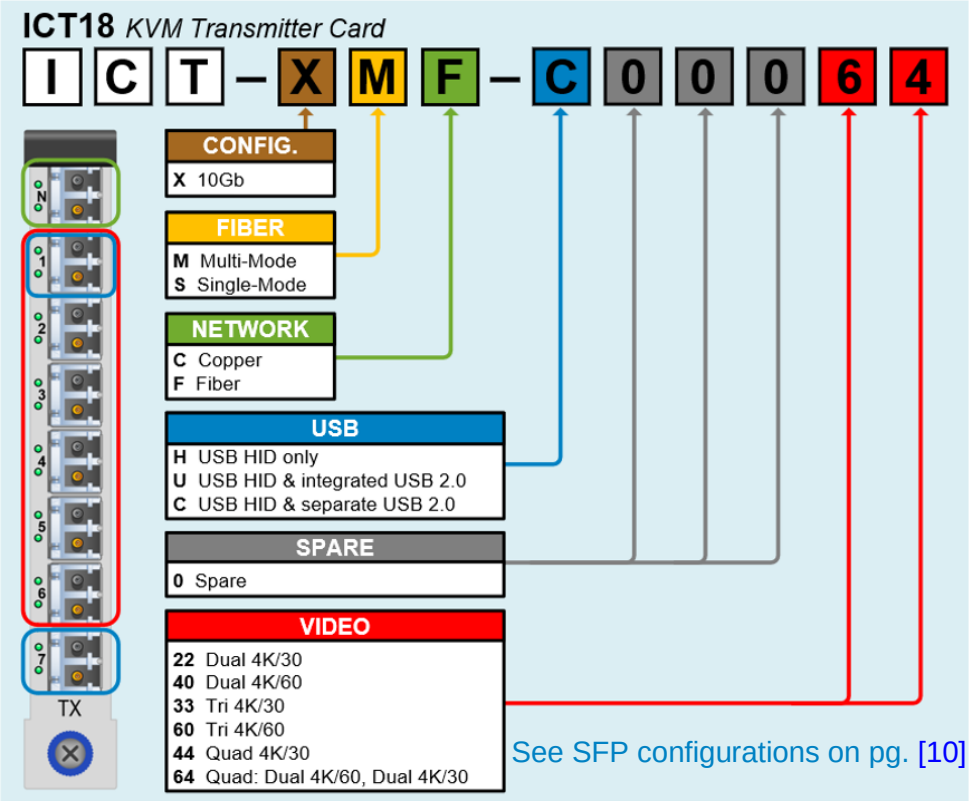
If you have any questions, please call *thinklogical* for help: 203-647-8700.

Ordering Information, ICT18

Part numbers for the various components of the ICT18 are as follows:

CHS-HD0018 *ICT18 High-Density Chassis, Fan Tray, Control Module, 2 Power Supplies*





See SFP configurations on pg. [10]

ICT18 Spare Modules

CHS-HDF018 *ICT18 Fan Tray*

CHS-HDC018 *ICT18 Control Module*

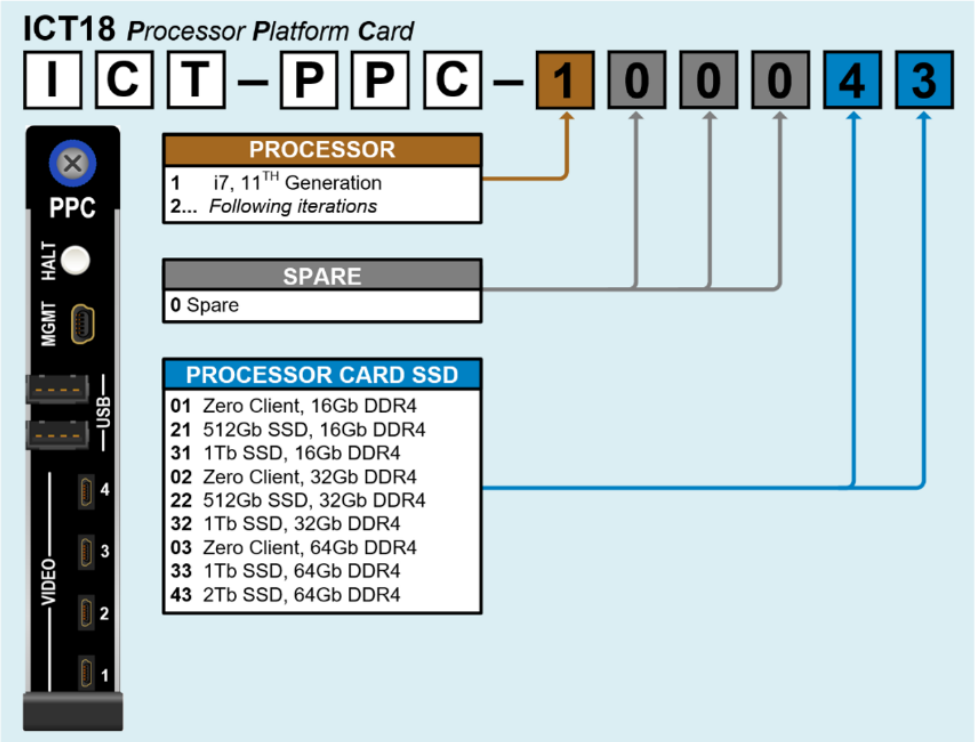
CHS-HDBK0P *ICT18 Blank Filler PPC*

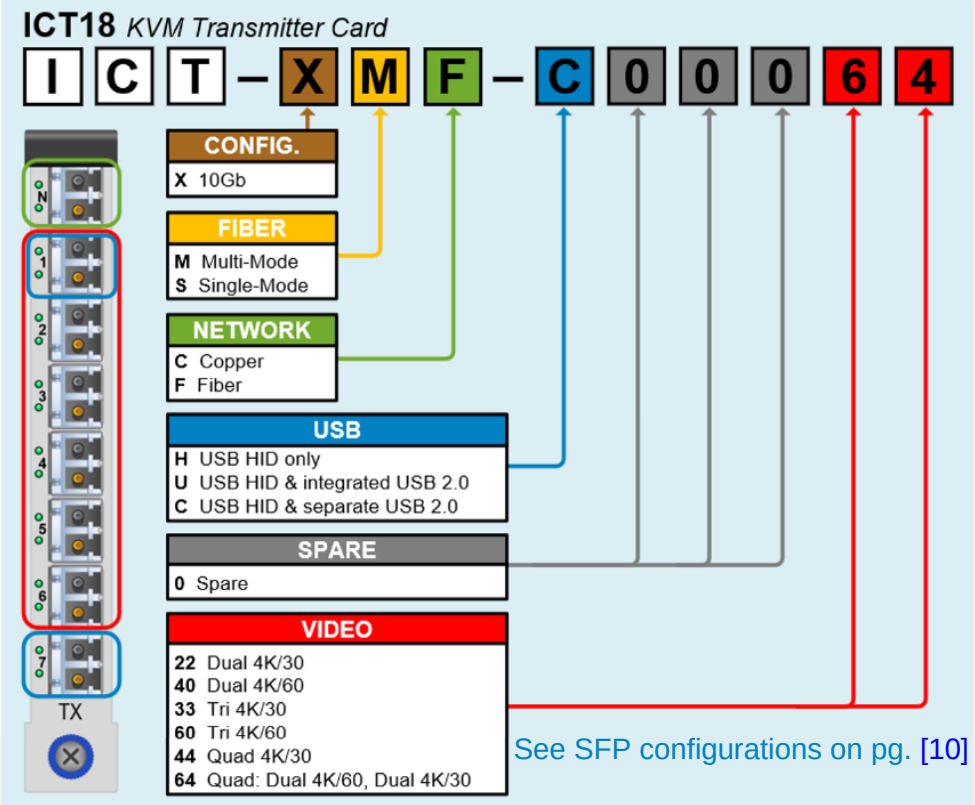
CHS-HDBK0T *ICT18 Blank Filler Tx*

Ordering Information, ICT18 1RU

Part numbers for the various components of the ICT18 1RU are as follows:

CHS-HD0004 *ICT18 1RU High-Density Chassis, Control/Fan Module, 2 Power Supplies*





See SFP configurations on pg. [10]

ICT18 1RU Spare Modules:

CHS-HDF004 *ICT18 1RU Control/Fan Tray*

CHS-HDP004 *ICT18 1RU Power Supply*

CHS-HDBK0P *ICT18 Blank Filler PPC*

CHS-HDBK0T *ICT18 Blank Filler Tx*

Compliance

Regulatory Compliance Symbols Found on Our Products

Markings and labels on our products follow industry-standard conventions. Regulatory markings found on our products comply with all required domestic and most international requirements.

Intertek
3072510

Regulatory Compliance

Thinklogical's® products are designed and made in the U.S.A. These products have been evaluated by a certified testing laboratory and found compliant with the following standards for both domestic USA and most international locations:

North America

Safety
UL 62368-1:2019 Ed.3+R:22 Oct 2021
CSA C22.2#62368-1:2019 Ed.3+U1

LASER Safety
CDRH 21 CFR 1040.10
Class 1 LASER Product
Canadian Radiation Emitting Devices Act, REDR C1370
IEC 60825-1:2014
Class 1 LASER Product

Electromagnetic Interference
FCC 47CFR Part 15 Subpart B: 2013 Class A
IC ICES-003:2020 Ed.7

Australia & New Zealand

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take corrective action.

European Union Declaration of Conformity

Manufacturer's Name & Address: **Thinklogical,** A BELDEN BRAND
100 Washington Street
Milford, Connecticut 06460 USA

Thinklogical's products comply with the requirements of the Low Voltage Directive 2014/35/EU, the EMC Directive 2014/30/EU, the RoHS Directive 2011/65/EU, the WEEE Directive 2012/19/EU and carry the CE marking accordingly.

Standards with Which This Product Complies

Safety

EN IEC 62368-1:2020+A11
BS EN IEC 62368-1:2020+A11
CB Scheme Certificate

Electromagnetic Emissions

CENELEC EN 55032:2015+A11

Electromagnetic Immunity

CENELEC EN 55035:2017+A11
BS EN 55035
EN 61000-3-2:2019+A1 Harmonics
EN 61000-3-3:2013+A1; A2 Flicker
EN 61000-4-2:2009 Electro-Static Discharge Test
EN 61000-4-3:2006 A1:2008, A2:2010 Radiated Immunity Field Test
EN 61000-4-4:2004 Electrical Fast Transient Test
EN 61000-4-5:2006 Power Supply Surge Test
EN 61000-4-6:2009 Conducted Immunity Test
EN 61000-4-11:2004 Voltage Dips & Interrupts Test

Supplementary Information

The following statements may be appropriate for certain geographical regions and might not apply to your location:

- This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. *Cet appareil numérique de la classe A respecte toutes les exigencies du Règlement sur le matérial brouilleur du Canada*.
- This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take corrective action.
- This equipment has been verification-tested and found compliant with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate, radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications in which case the user may be required to make adequate corrective measures at their own expense.
- This Class A digital apparatus complies with Canadian ICES-003 and has been verified as compliant within the Class A limits of the FCC Radio Frequency Device Rules (FCC Title 47, Part 15, Subpart B CLASS A), measured to CISPR 22:1993 limits and methods of measurement of Radio Disturbance Characteristics of Information Technology Equipment.
- The user may notice degraded audio performance in the presence of electro-magnetic fields.
- The customer shall verify that this product meets the appropriate national/regional requirements if those requirements for conducted/radiated electromagnetic emissions fall outside the scope of testing currently performed on this product.

Thinklogical Support

Customer Support

- **Website:** https://www.thinklogical.com/downloads/

Visit our website for current products, support documents and useful information about all the products and services we offer, including:

- **FPGA Update Guides**
- **Quick-Start Guides**
- **User Manuals** (for viewing online or for download)
- **Visio Stencils**
- **Chat Live** with a Technical Support Representative.

Technical Support

For product support, technical issues/questions, product repairs or request for Return Merchandise Authorization, use any of the following methods:

- **Email:** support@thinklogical.com – (preferred)
- **Telephone: 1-203-647-8700** or **1-800-291-3211 -** Monday-Friday, between 8:30am and 5:00pm, Eastern Time Zone.

Product Support

Warranty

Thinklogical warrants this product against defects in materials and workmanship for a period of one year from the date of delivery, with longer terms available at the time of purchase on most products. Thinklogical and its suppliers disclaim all other warranties. Please refer to your product invoice for the Warranty Terms & Conditions.

Defect remedy shall be the repair or replacement of the product, provided that the defective product is returned to the authorized dealer within a year from the date of delivery.

Return Merchandise Authorization

If you wish to return your device, contact the Thinklogical-authorized dealer where you purchased the device.

Or -

If you need to return a product to Thinklogical directly, please use the support email above. Support will need the device's serial number and a description of the issue. You will then be assigned a **R**eturn **M**erchandise **A**uthorization (RMA) number. Pack the device in its original box, if possible, and return it with the RMA number printed on the outside of the box. **Please DO NOT return a product to Thinklogical without a *Return Merchandise Authorization*.**

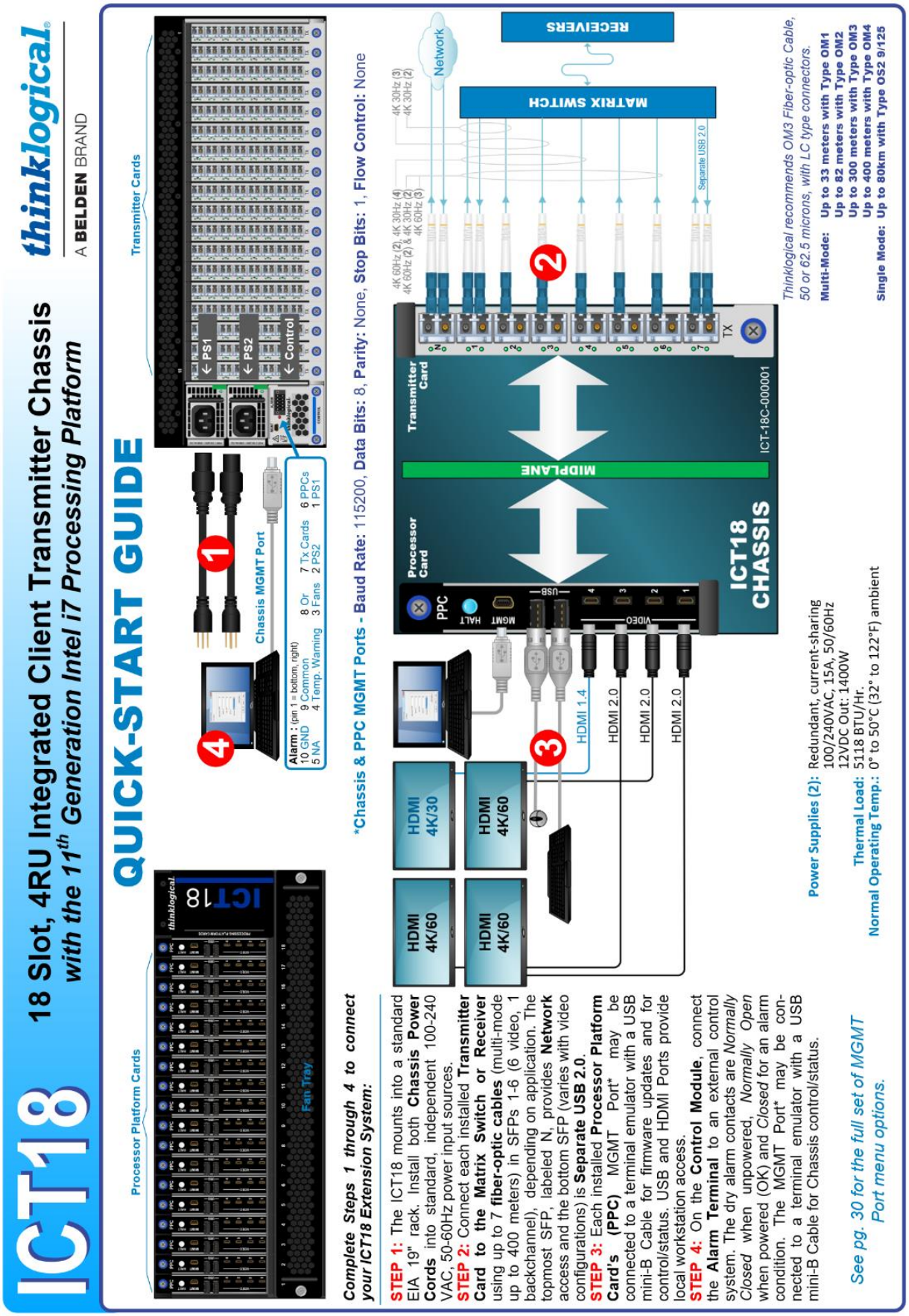
Our Address

If you need to write us or return a product, please use the following address:

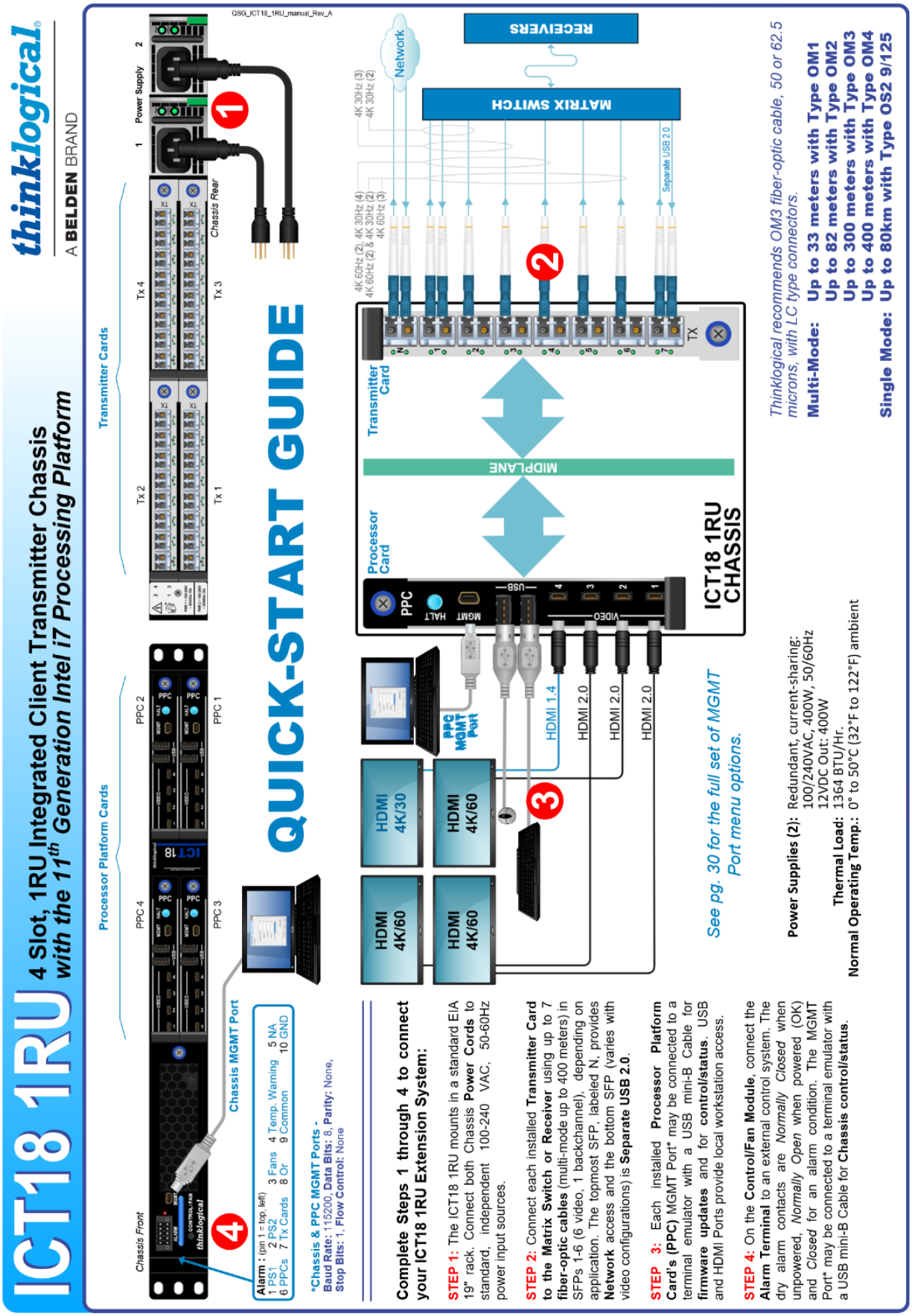
Thinklogical, A **BELDEN** BRAND
100 Washington Street
Milford, CT 06460 USA
Attn: *RMA#*

Please include the Return Merchandise Authorization number.

Appendix A[1]: ICT18 Quick Start Guide



Appendix A²: ICT18 1RU Quick Start Guide



Appendix B: ICT18 FPGA Program Code Update Procedure

FPGA ICT18 Integrated Client Transmitter Program Code Update Procedure

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A BELDEN BRAND

Complete Steps 1-5 to update the ICT18's FPGA Program Code:

The following procedure documents the process for updating the ICT18 and the ICT18 1RU FPGA Program Code, using a Windows based computer.

1 **STEP 1 FPGA Update Preparation:** Please contact your ***thinklogical*** Sales Representative or Customer Service (**1-203-647-8700**) for access to the FPGA Download Update application and firmware.

2 **STEP 2** Install the provided **FPGA Download Update application** on the system's CPU.

3 **STEP 3** Save the provided **FPGA Program Code Update file** to a known location on the CPU.

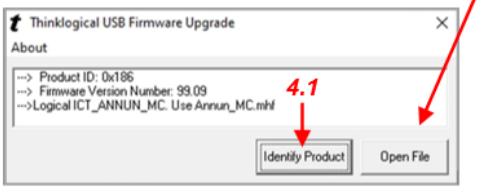
4 **STEP 4** Connect a **USB mini-B cable** from the **CPU** to *either* the **Control Module MGMT Port** *or* to a **PPC MGMT Port.** The **Control Module MGMT Port** (**4.1**) is used for Chassis FPGA updates. The **PPC MGMT Port** (**4.2**) accesses both the PPC and the TX Card for FPGA updates.

Note: Close any open "COM: ports" before proceeding.

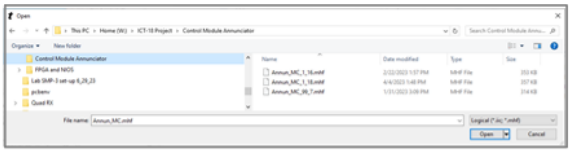
4.1

STEP 4.1 Connect a USB mini-B cable from the CPU to the **Control Module** or **Control/Fan Module MGMT Port.** (Requires *KM_Download*, version 7.7 or greater.) Run the Download tool and select [Identify Product] to report the controller device.

Baud Rate: 115200
Data Bits: 8
Parity: None
Stop Bits: 1
Flow Control: None

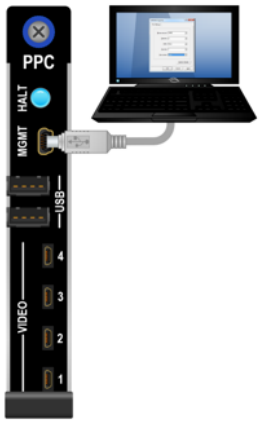


4.1.1 Select [Open File] and browse to the location of the new file.



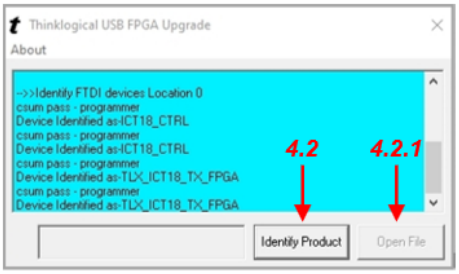
4.1.2 Select the file, then [Open] to begin the update.

4.2



STEP 4.2 Connect a USB mini-B cable from the CPU to the **PPC MGMT Port.** (Requires *KM_Download*, version 7.0 or greater.) Run the Download tool. Select [Identify Product]. The report will show the PPC itself and the Transmitter (TX) connected to it.

4.2.1 Select [Open File] to open the next window.



4.2.2 The selections are the **PPC FPGA & S/W NIOS**, the **Tx FPGA** and the **Tx S/W NIOS** codes. Select the item to update, then browse to the file location. Select the file and the update will begin.

4.2.3 Repeat Step 4.2.2 for each item to update.

5 **STEP 5** Disconnect the USB cable from the MGMT Port. **Power-cycle the chassis** to activate the new firmware.

If you have any questions, please call *thinklogical* for help: 203-647-8700

ICT18_FPGA_Update_Procedure_manual_Rev_A

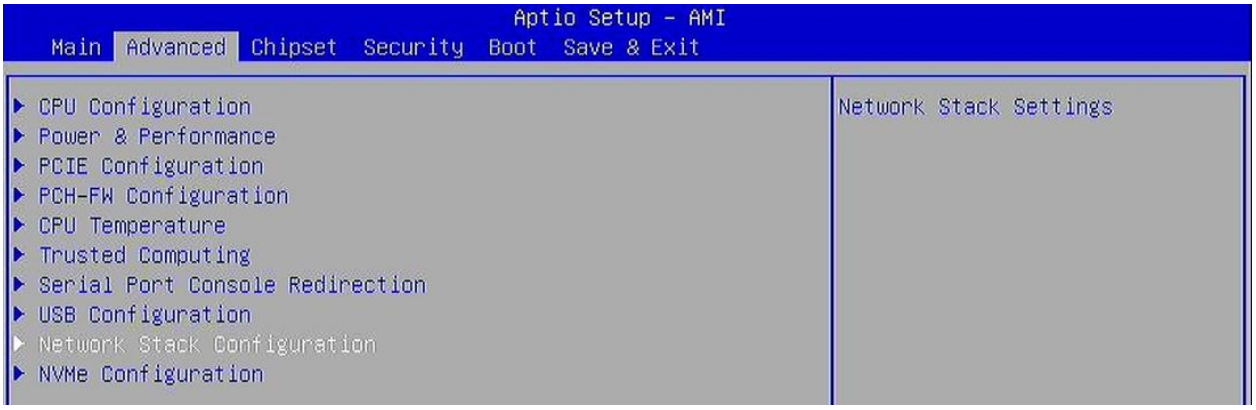
Appendix C: Configuring the PPC for PXE Boot

***PXE** = Pre-Execution Environment*

PPC BIOS Boot Settings

To get to the PPC BIOS Settings, select the **<Delete>** key *while the PPC is booting*.

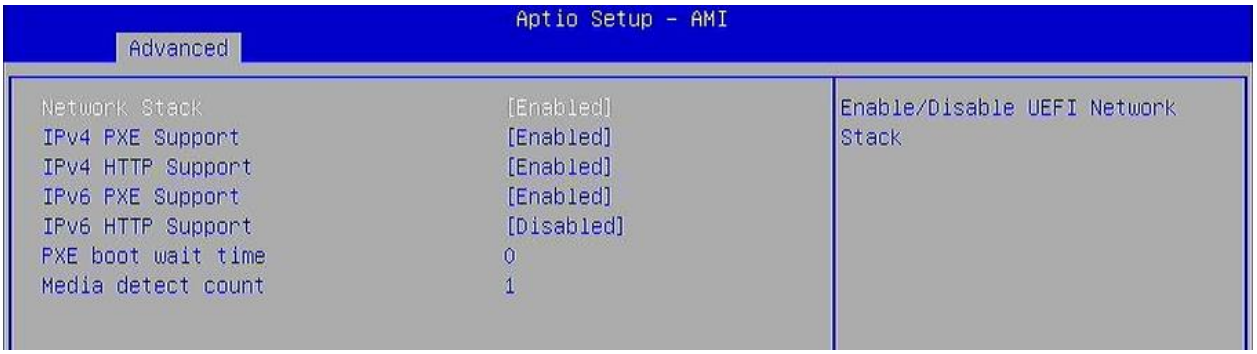
Navigate to: **`Advanced / Network Stack Configuration`**



The Default setting is **`[Disabled]`**

Enable each of the following:

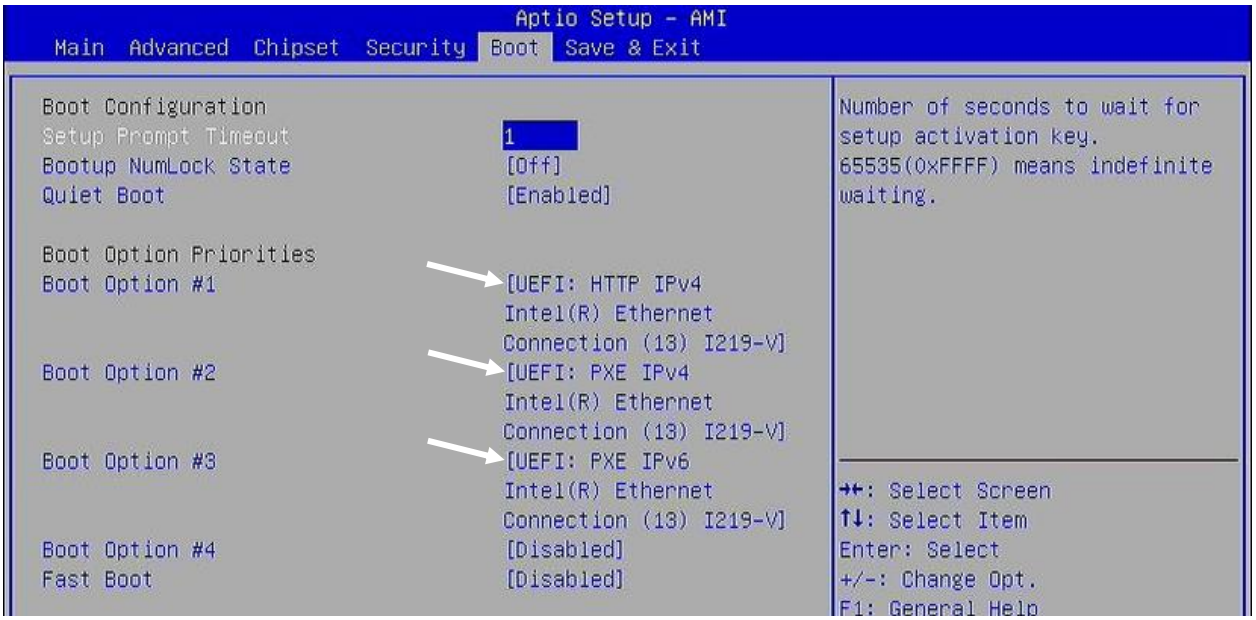
`Network Stack, IPv4 PXE Support, IPv4 HTTP Support` and **`IPv6 PXE Support`**.



Reboot the PPC and re-enter the BIOS settings.

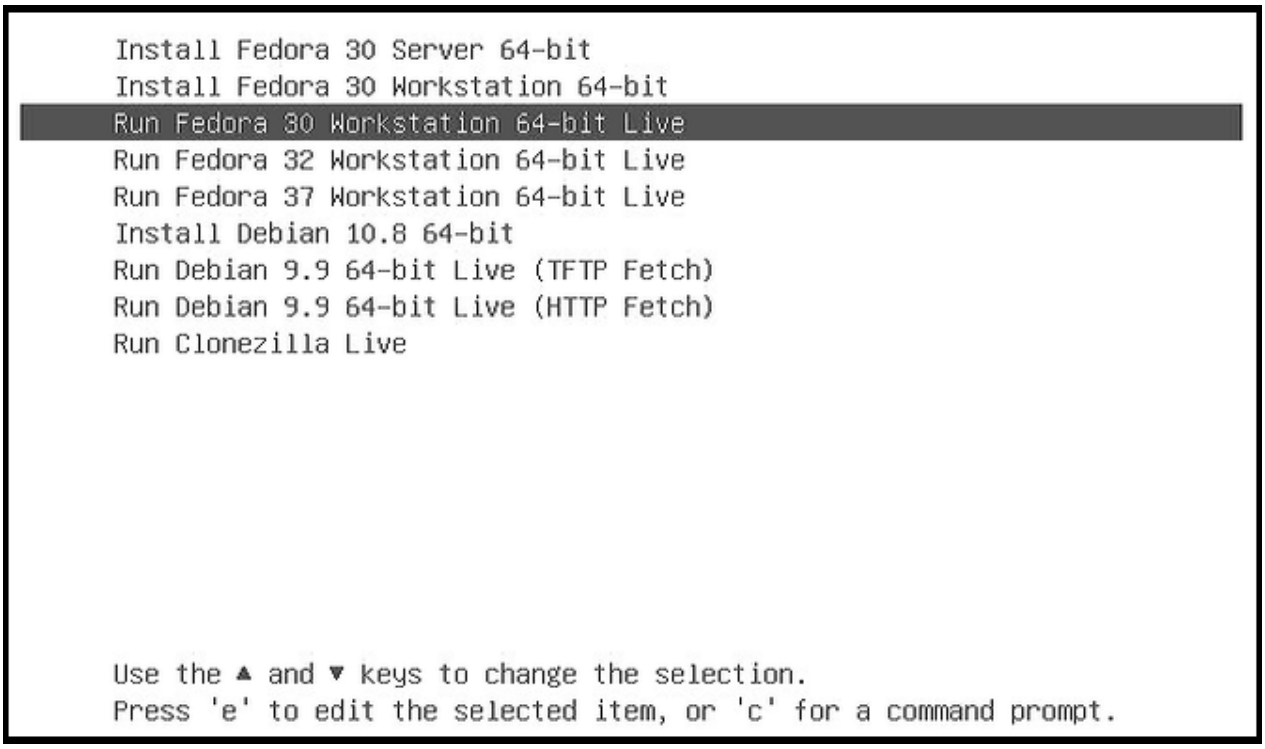
Navigate to the **Boot** menu and select:

Boot Option #1: [**UEFI: HTTP IPv4**
Boot Option #2: [**UEFI: PXE IPv4**
Boot Option #3: [**UEFI: PXE IPv6**



Select **F4** to *Save and Exit*. The PPC will now boot in PXE mode and connect to a local PXE server.

Example of a PXE server menu:

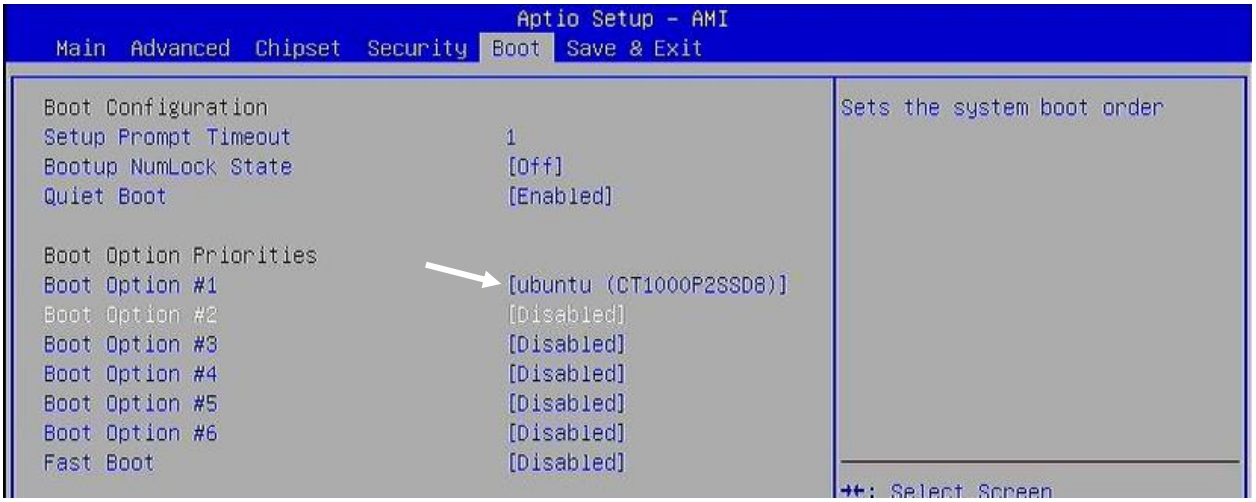


You may now choose to **Install** the image to the SSD or **Run** the image from RAM (zero client).

Revert to SSD Boot Settings

Reboot the unit and enter the BIOS settings.

Navigate to **`Boot`** and select the SSD for **`Boot Option #1`**:



Navigate to **`Advanced / Network Stack Configuration`**.

Disable the following options from the bottom up:

`IPv6 PXE, IPv4 HTTP, IPv4 PXE` and **`Network Stack`**.

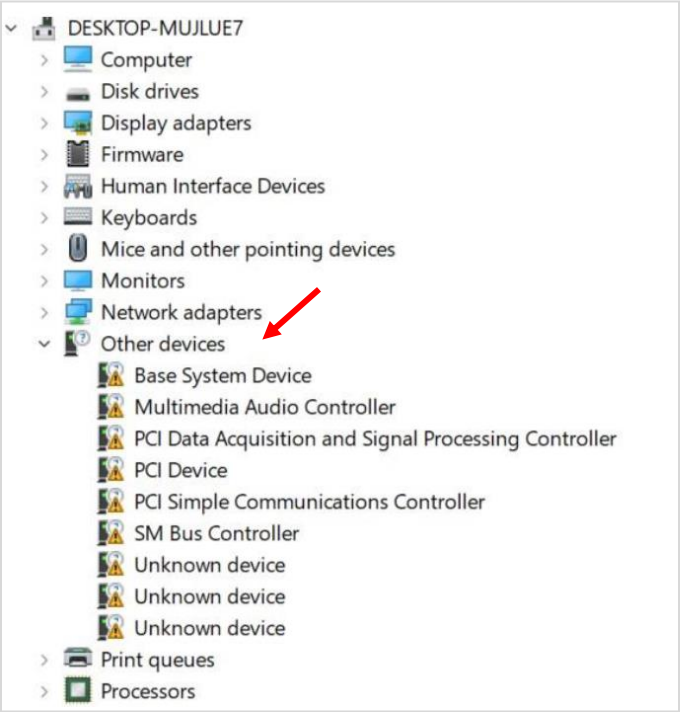
Select **F4** to *Save and Exit*.

The PPC will now boot from the SSD.

Appendix D: Installing Windows 11 Drivers

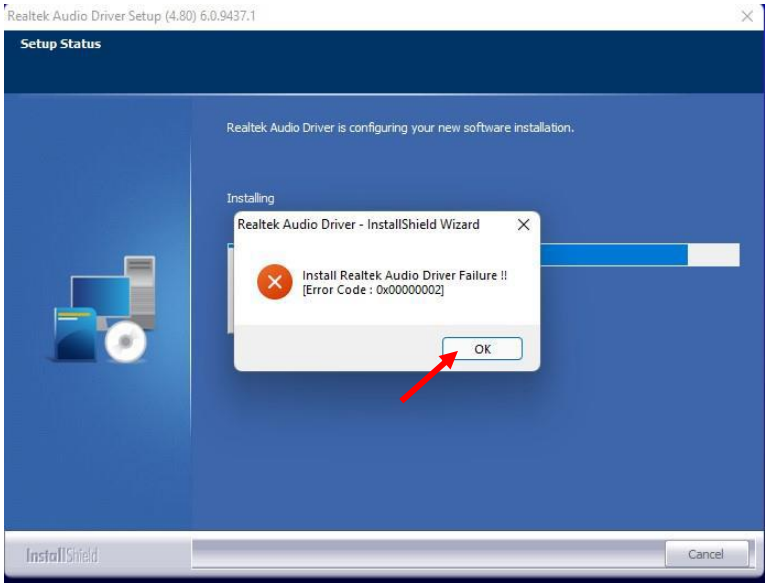
The PPC is shipped with an SSD loaded with not-activated Windows11®. The default credentials for Windows 11 at turn-on are **user/user**.

The not-activated Windows 11® will display a series of yellow 'bangs ⚠' to denote missing drivers, as shown below, under Other devices. *Without these drivers, audio and other functions will not work.*



The Audio requires two separate drivers and must be loaded first. The System Administrator can install the missing drivers and remove the bangs by following these 4 steps:

1. Run **AUD-Win10_Win11-6.0.9437.1_iSST_10.29.00.7767**. *This will show an error message when completed.*



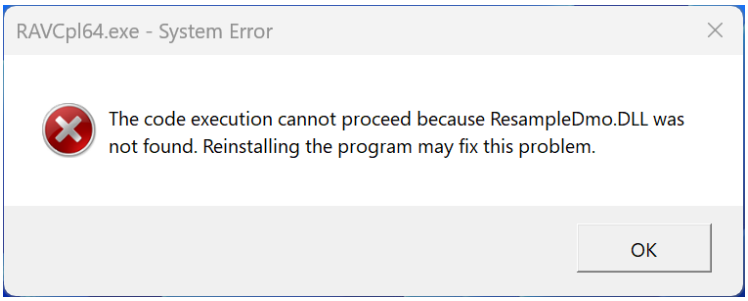
2. Click OK.
3. Run **0009-64bit_Win7_Win8_Win81_Win10_R282**. *A restart is required*. The two Audio drivers will then be loaded.

4. Install the remaining drivers in any order to clear the remaining bangs:
   - The **Intel_DTT_8.7.10700.22502** driver clears out PCI Data Acquisition and an Unknown device. *No restart required.*
   - The **SerialIO_30.100.2129.8_PV_TGL_PCH_Win11** driver clears out an Unknown device. *No restart required.*
   - The **Chipset-10.1.19013.8304-Public-MUP** driver will clear out Base System devices, SM Buss Controller and PCI Device. *A restart is required.*
   - The **HIDEventFilterDriver-2.2.1.386_RS5_19H1_20H1_21H2_Certified** driver clears out the last Unknown device. *A restart is required.*

Windows 11 N Versions

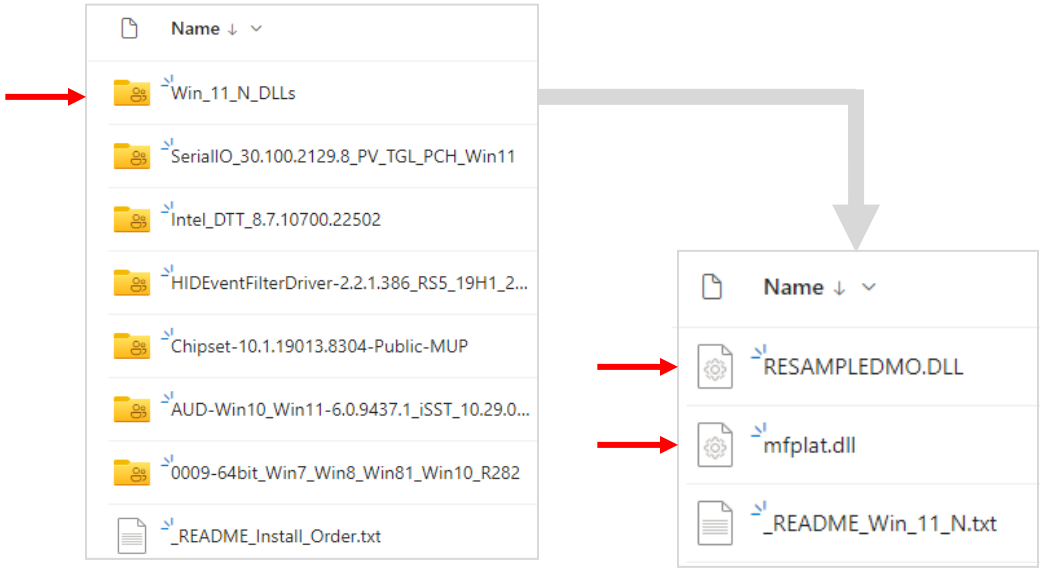
Windows 11 N® does not include media-related technologies such as *Windows Media Player, Movies & TV, Groove Music, Skype*, and *Voice Recorder*. This will display an error message when the two audio drivers from Steps 1 and 3 above, **AUD-Win10_Win11-6.0.9437.1_iSST_10.29.00.7767** and **0009-64bit_Win7_Win8_Win81_Win10_R282**, are installed and rebooted.

After rebooting for the second audio driver, this error message will appear:



To clear this, the System Administrator should do the following:

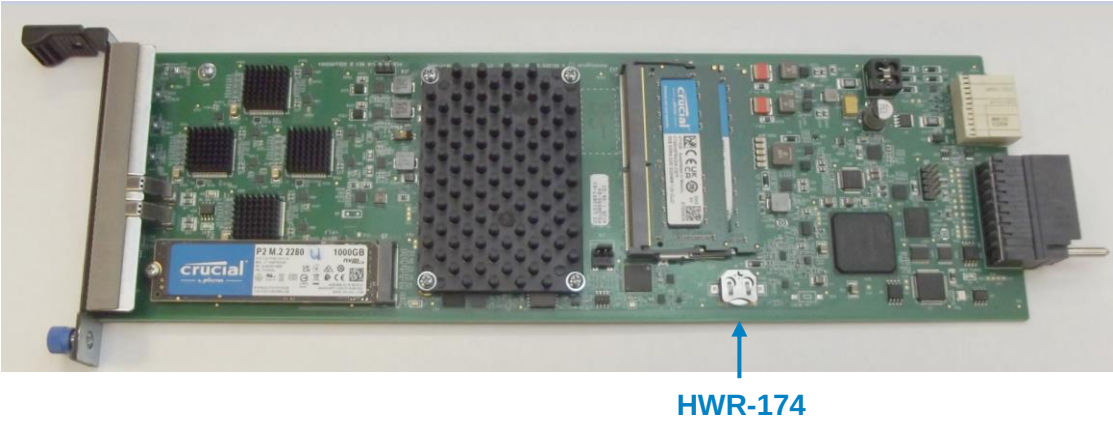
- From the **ICT_18_Win11_Drivers** folder, open the **Win_11_N_DLLs** folder.



- Open Windows to the system directory folder **C:\Windows\System32**.
- Place the two dll files **RESAMPLEDMO.DLL** and **mfplat.dll**, from the Win_11_N_DLLs folder, into the **System32** folder.
- Reboot. This will clear the error message.

Appendix E: RTC Battery Swap

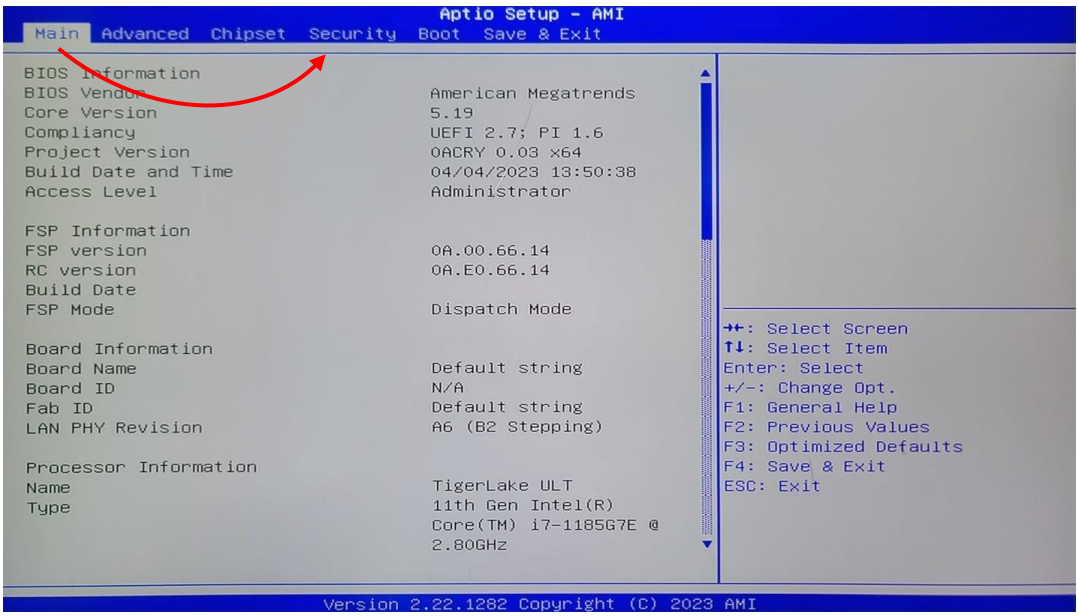
Each PPC has a 3V **Real Time Clock (RTC) Battery**, HWR-174, that may one day need replacement. A system reboot is required after a battery swap on any PPC. *This will typically result in a hang-up at the BIOS screen.* This procedure explains how to remedy the problem.



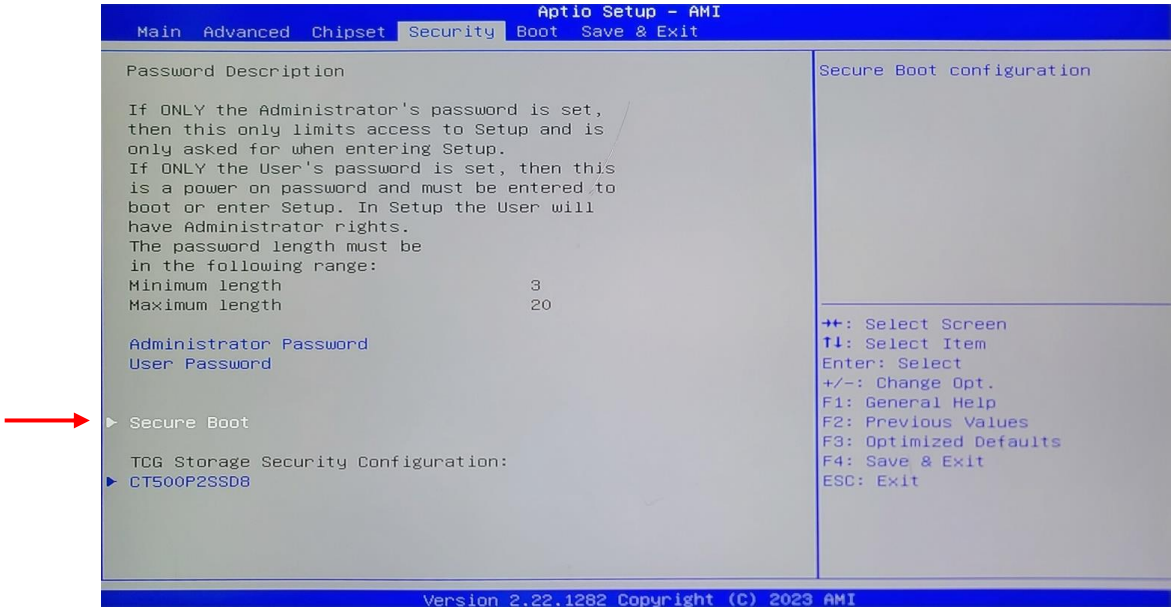
A battery can be replaced by first removing the PPC (see pg. [25] for PPC removal instructions). The battery can be removed by pressing the battery inward, into the spring-lock receptacle. The spent battery will eject and a fresh battery can be installed.

Once the battery has been replaced, the user must perform a system reboot. Typically, the BIOS screen will hang-up after reboot. To fix this, the user must restore the Factory Keys by doing the following:

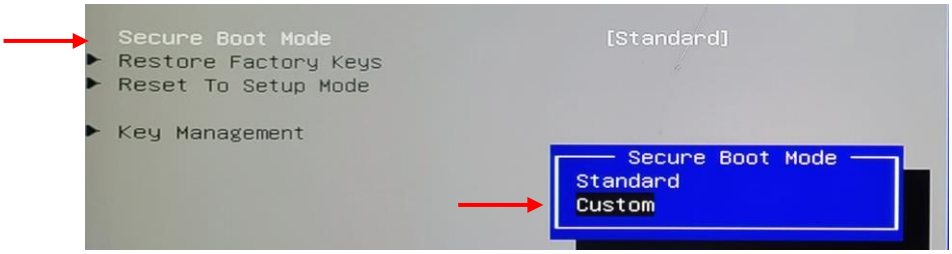
1. From the **`Main`** menu, toggle right to **`Security`**:



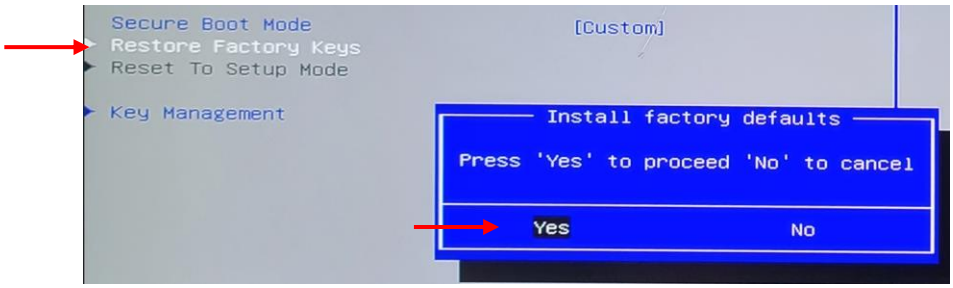
2. Scroll down and select **`Secure Boot`**.



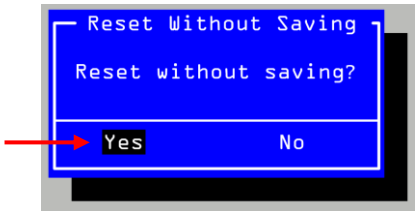
3. Select **`Secure Boot Mode`**, then **`Custom`**.



4. Select **`Restore Factory Keys`**, then **`Yes`** <enter> to **`Install factory defaults`**.

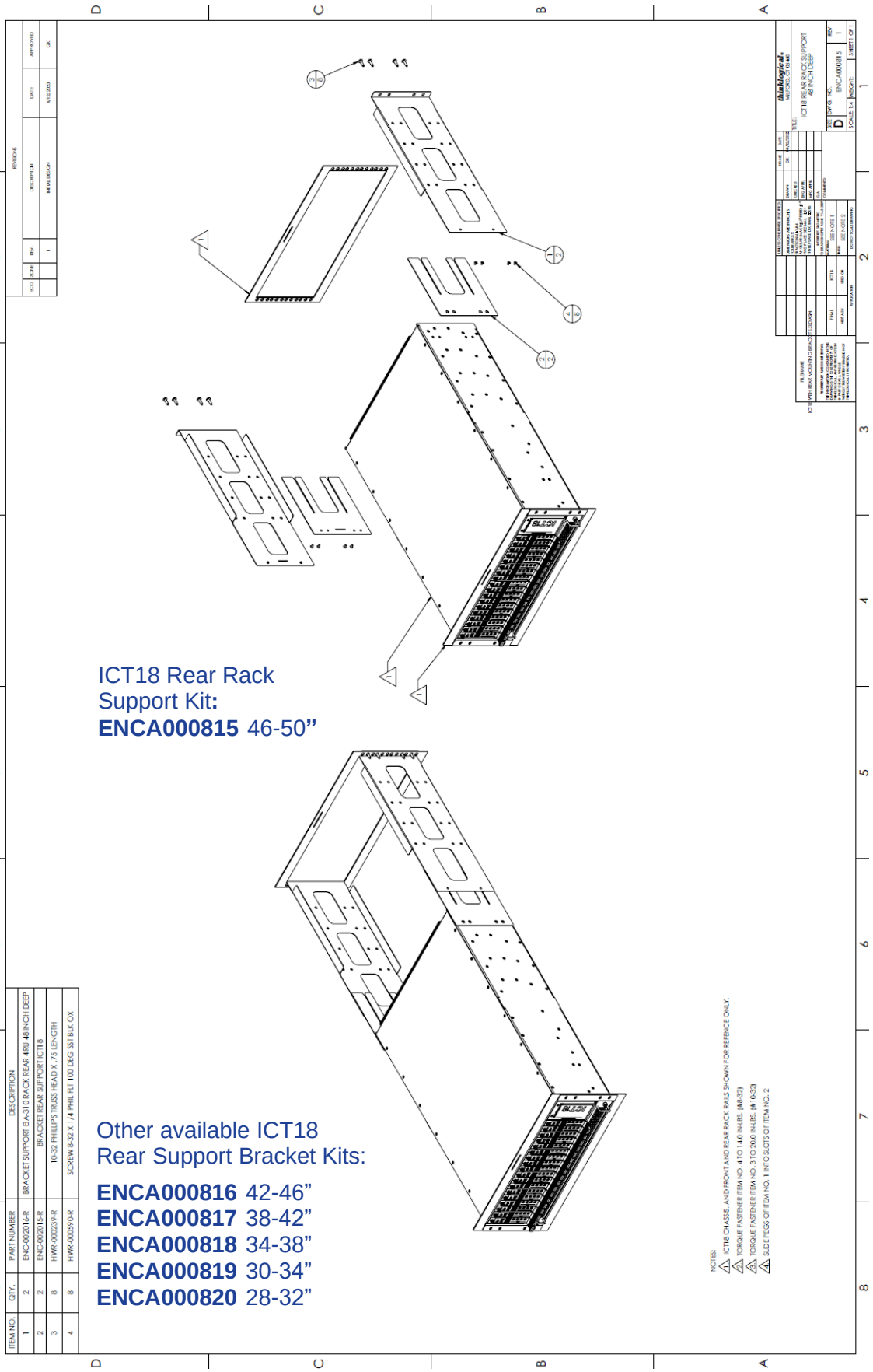


5. Select **Yes** <enter> to **Reset Without Saving**.

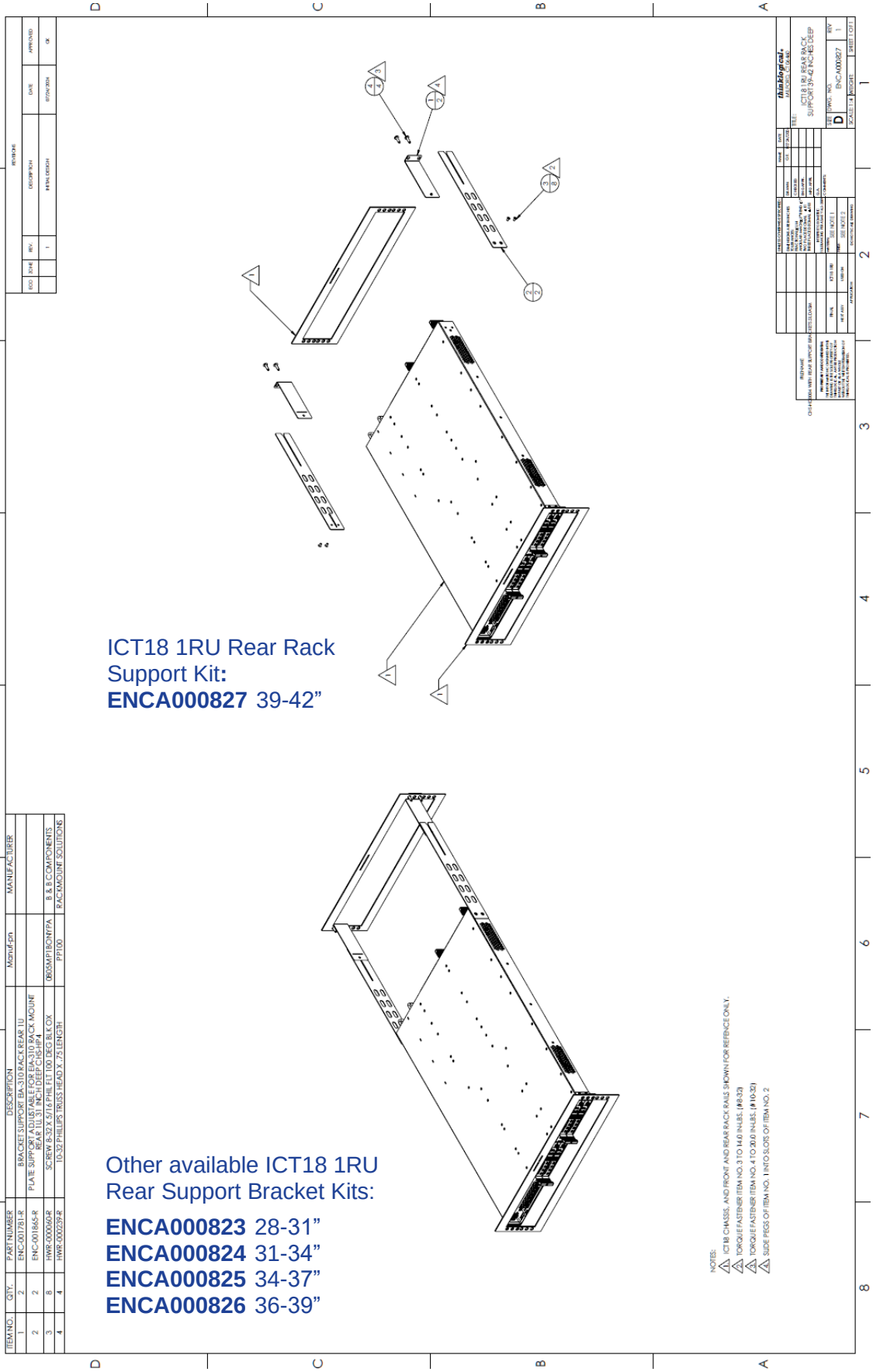


The ICT18 will now reboot and resume normal functionality.

Appendix F[1]: ICT18 Rear Rack Supports



Appendix F[2]: ICT18 1RU Rear Rack Supports



About *thinklogical* A BELDEN BRAND

thinklogical, A **BELDEN** BRAND
100 Washington St.
Milford, CT 06460

Thinklogical, a Belden Brand, is the leading manufacturer and provider of fiber-optic and CATx video, KVM, audio, and peripheral extension and switching solutions used in video-rich, big-data computing environments.

Thinklogical offers the only fiber-optic KVM Matrix Switches in the world that are accredited to the Common Criteria EAL4, TEMPEST SDIP 24 Level B, and NATO NIAPC Evaluation Scheme: GREEN and the U.S. DoD DISA JITC UCR 2013 APL information assurance standards. And Thinklogical Velocity products are the first system with both KVM and video matrix switching capabilities to be placed on the Unified Capabilities Approved Product List (UC APL) under the Video Distribution System (VDS) category.

Thinklogical products are designed and manufactured in the USA and are certified to the ISO 9001:2015 standard.

Thinklogical is headquartered in Milford, Connecticut and is owned by Belden, Inc., St. Louis, MO (http://www.belden.com). For more information about Thinklogical products and services, please visit https://www.thinklogical.com.

NOTES: