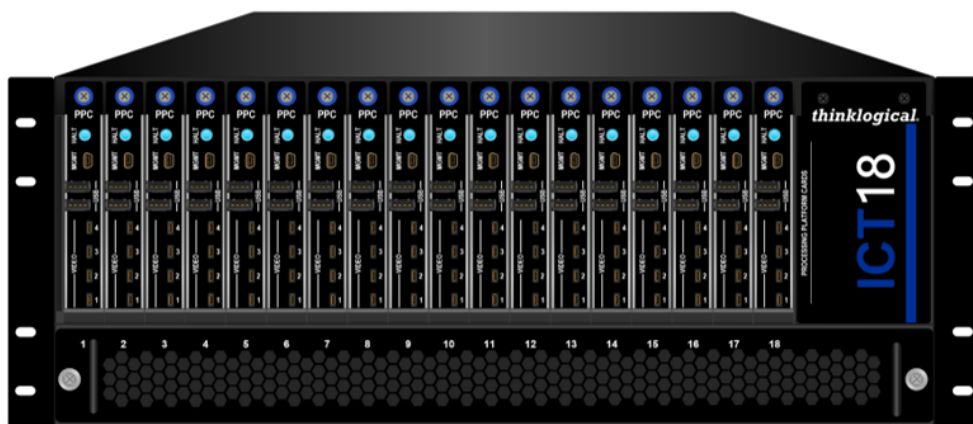# thinklogical.

A **BELDEN** BRAND

ICT18 INTEGRATED CLIENT TRANSMITTER

PRODUCT MANUAL

18 slot, 4RU Integrated Client Transmitter Chassis

Revision A, April 2023

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

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Copyright Notice

Subject: ICT18 Product Manual
Revision: A, April 2023 (initial release)

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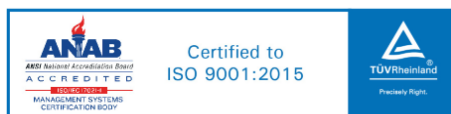
Preface

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.

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: link.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! ❗

🛑 **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 THUMBSCREWS! 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!** ❗

Introduction

Introducing the ICT18, Thinklogical's newest Integrated Client Transmitter solution 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 B, Configuring the PPC for PXE Boot*, on pg. [42].

The ICT18 Integrated Client Transmitter Chassis
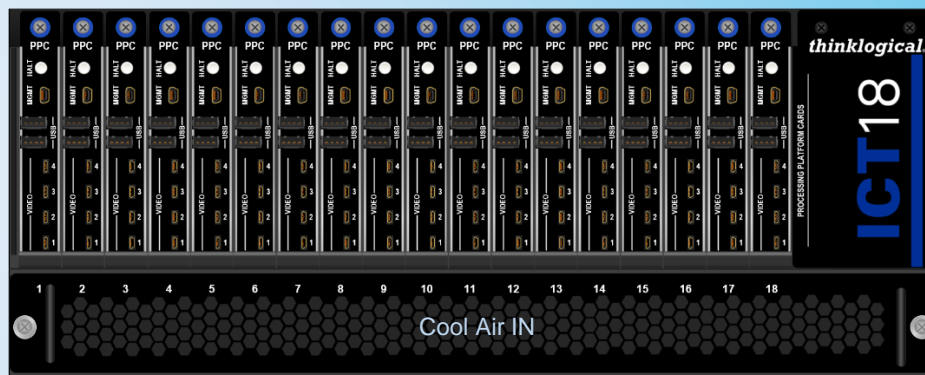
Front
(Processor side)

- **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.
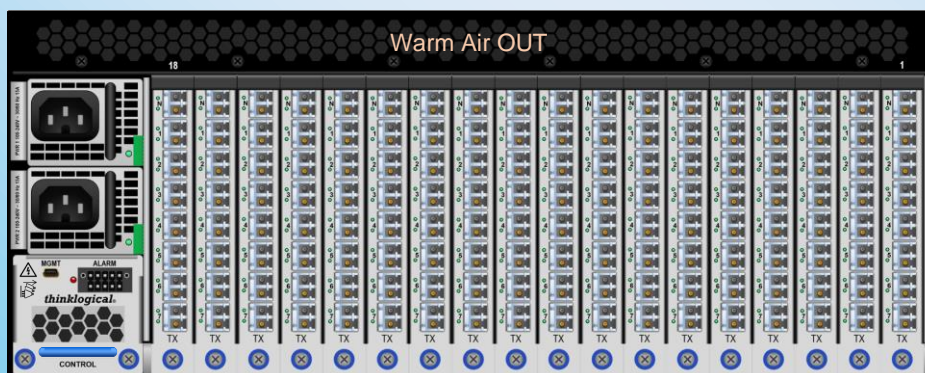
Rear
(Transmitter side)

- **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.**

Product Overview

The Chassis

The ITC18's 4RU Chassis houses six assembly types; Up to 18 **Processor Cards** (accessible from the front of the unit) connected through a **Mid-Plane** to up to 18 **KVM Transmitter Cards** (accessible from the rear), a hot-swappable **Fan Tray**, a **Control Module** with system alarms, and two redundant, current-sharing **Power Supplies**.

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

The Processing Platform Cards

Also referred to as a **Processor Card** or **PPC**, each module (up to 18) 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)
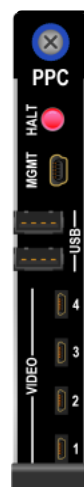
CPU Halted
(HALT button is lit RED)

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. [22].
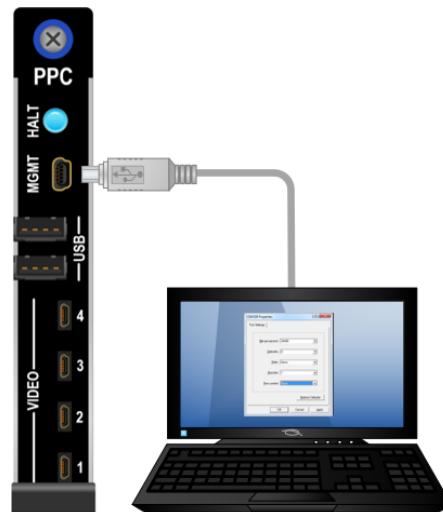
The KVM Transmitter Cards

Up to 18 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 the following page.* Each hot-swappable card features:
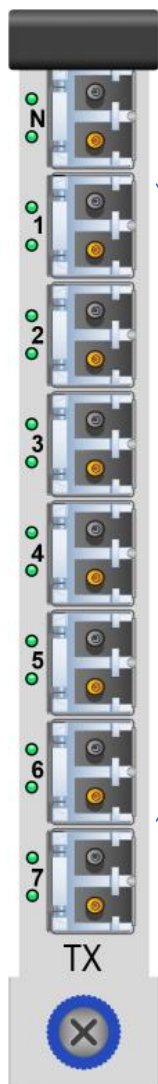
- 1 SFP for **Network** (*Fiber-optic or Copper CATx*).

- Up to 6 SFP's for 4K/30 and/or 4K/60 **Video/Data**

- 1 SFP for optional **separate USB 2.0**

Transmitter Card SFP Configurations

ICT18 Transmitter Card SFPs are configured for the following video and USB options. *See the Ordering Guide on* pg. [37] *for all available options and applicable part numbers.*

Dual 4K @ 30Hz

→ 1GB Network
← *Fiber or CATx*

→ 4K@30Hz   1
← Back Channel

→ 4K@30Hz   2

→ Separate USB 2.0*
←

Fiber-optic Cables:
Network ⇔
Video & Data ⇨
Video ⇨
Data ⇔

TX

Triple 4K @ 30Hz

→ 1GB Network
← *Fiber or CATx*

→ 4K@30Hz   1
← Back Channel

→ 4K@30Hz   2

→ 4K@30Hz   3

→ Separate USB 2.0*
←

TX

Quad 4K @ 30Hz

→ 1GB Network
← *Fiber or CATx*

→ 4K@30Hz   1
← Back Channel

→ 4K@30Hz   2

→ 4K@30Hz   3

→ 4K@30Hz   4

→ Separate USB 2.0*
←

TX

Dual 4K @ 60Hz

→ 1GB Network
← *Fiber or CATx*

→ 4K@60Hz   1.1
← Back Channel

→ 4K@60Hz   1.2

→ 4K@60Hz   2.1

→ 4K@60Hz   2.2

→ Separate USB 2.0*
←

TX

Triple 4K @ 60Hz

→ 1GB Network
← *Fiber or CATx*

→ 4K@60Hz   1.1
← Back Channel

→ 4K@60Hz   1.2

→ 4K@60Hz   2.1

→ 4K@60Hz   2.2

→ 4K@60Hz   3.1

→ 4K@60Hz   3.2

→ Separate USB 2.0*
←

TX

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

→ 1GB Network
← *Fiber or CATx*

→ 4K@60Hz   1.1
← Back Channel

→ 4K@60Hz   1.2

→ 4K@60Hz   2.1

→ 4K@60Hz   2.2

→ 4K@30Hz   3

→ 4K@30Hz   4

→ Separate USB 2.0*
←

TX

*Optional

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. [37] 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).

OPTICAL OUTPUT PORT (Transmit)
OPTICAL 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).

T R   ◄Receive   ◄Transmit   T R

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.

3"
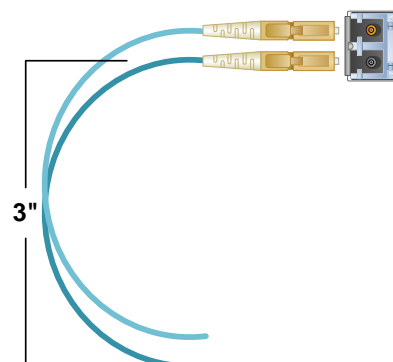
The Fan Tray

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).

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

FAN POSITIONS
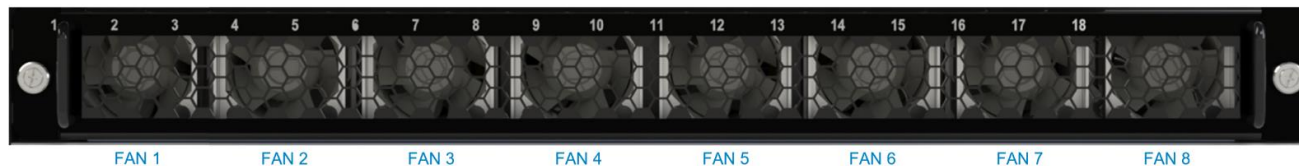
The Control Module
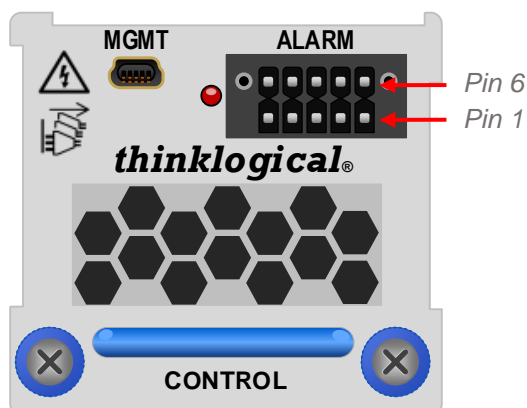
The field-replaceable Control Module features:

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. [21]

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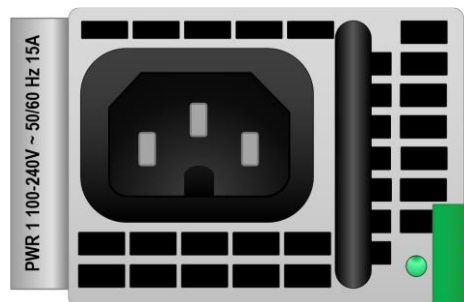
The ICT18 Chassis features two redundant, current-sharing Power Supply Modules. *Both supplies are required during normal operation:*

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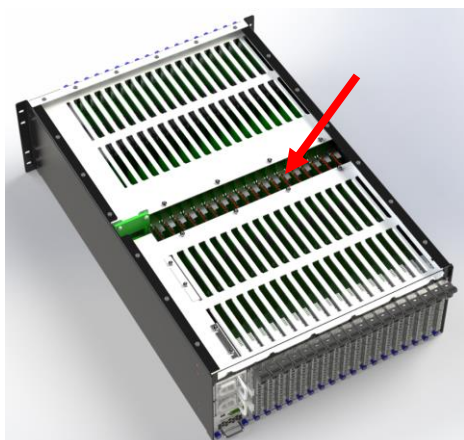
STOP WARNING! Do not attempt to open or disassemble this product. Please contact your dealer or *thinklogical* for qualified servicing. | NO USER SERVICEABLE PARTS INSIDE

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 annunciator connections, power distribution, and blade status.

The Chassis Midplane Assembly is not user serviceable. If you suspect a problem 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**.

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)
Control Module	Field-replaceable, Mini-USB Chassis Status/Update Port, 10 Alarm relays **.43 lbs.** (.195 kg)
Supplied Cable	**CBL000105-002MR** USB A to mini-B, 2M
PROCESSING PLATFORM CARDS	Up to18 per chassis
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. Appendix B, pg. [42]
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
Supplied PPC Cables	**CBL000114-006FR** HDMI to Micro-HDMI, 6', x4
Weight	**1.32 lbs.** (.600 kg) **per card**
TRANSMITTERS	Up to18 per chassis
SFP Modules	Up to 8 per Transmitter Card, x18
SFPs Options	Network at port N, Video/Data at ports 1-6, USB following video ports (3-7). See pg. [9].
Network SFP	1 Gigabit Ethernet SFP (fiber or copper). 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	Redundant, current-sharing power supplies, x2 (PS1 top, PS2 bottom) • **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** – 40W max. • **Tx Card** – 25W max. each (x18) • **Control Module** – 5W max.
Input Rating	**100-240VAC, 15A, 50-60Hz**
DC Pwr. Consumption	**116A @ 12V maximum, 1400W**
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.**

Set-Up & Installation

Contents

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 KVM Transmitter Cards)*
- AC Line Cords – 1 per power supply – PWR-000102-R *(International connections may differ)*

⚠️ **Note: The 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

The ICT18 ships configured to customer specifications.

Unpacking the ICT18

The ICT18 is a four-rack-unit chassis designed to be mounted in a standard 19" EIA-310 compliant rack. All physical 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.

> **! 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 ICT18 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 panel installed.

The PPC, Transmitter Cards and filler panels 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 Panel installed in all module ports.*
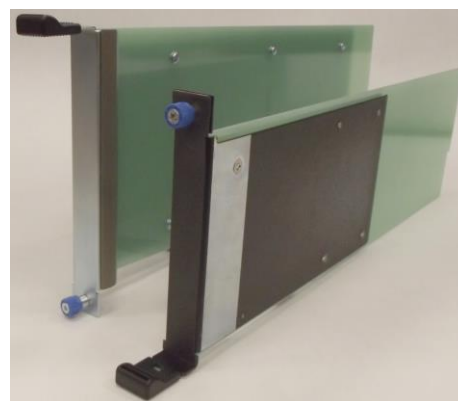
Tx & PPC Filler Panels

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 ICT18 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: **04-230016** indicates the unit was built in the **4**th month of 20**23** and is unit number **16**.

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.

CLASS 1 LASERS do not require any special precautions under conditions of normal use.

SFP Modules

Fiber-Optic Cables

Class 1 Lasers
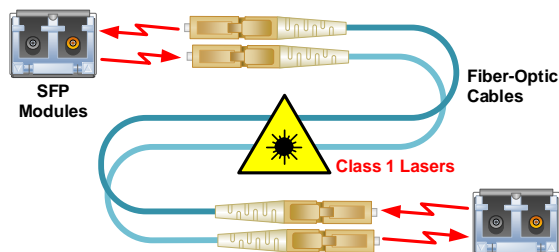
Connecting to the ICT18

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. [9].
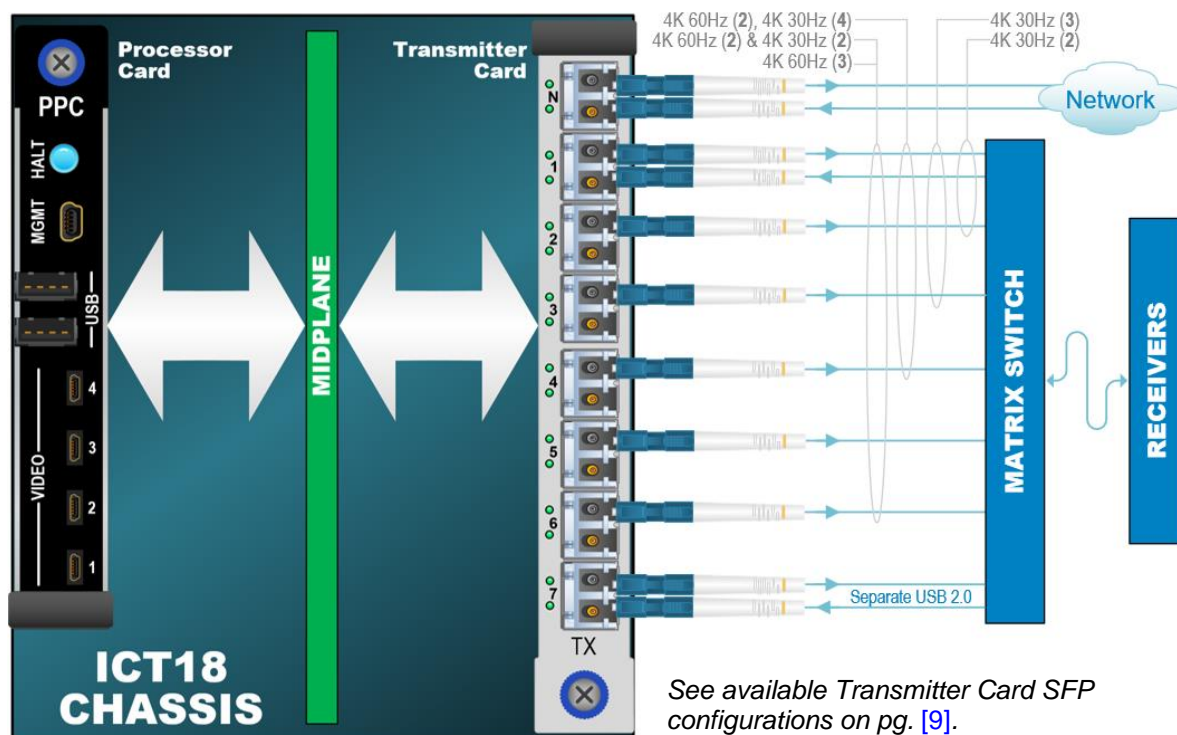
The Processor Cards

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.
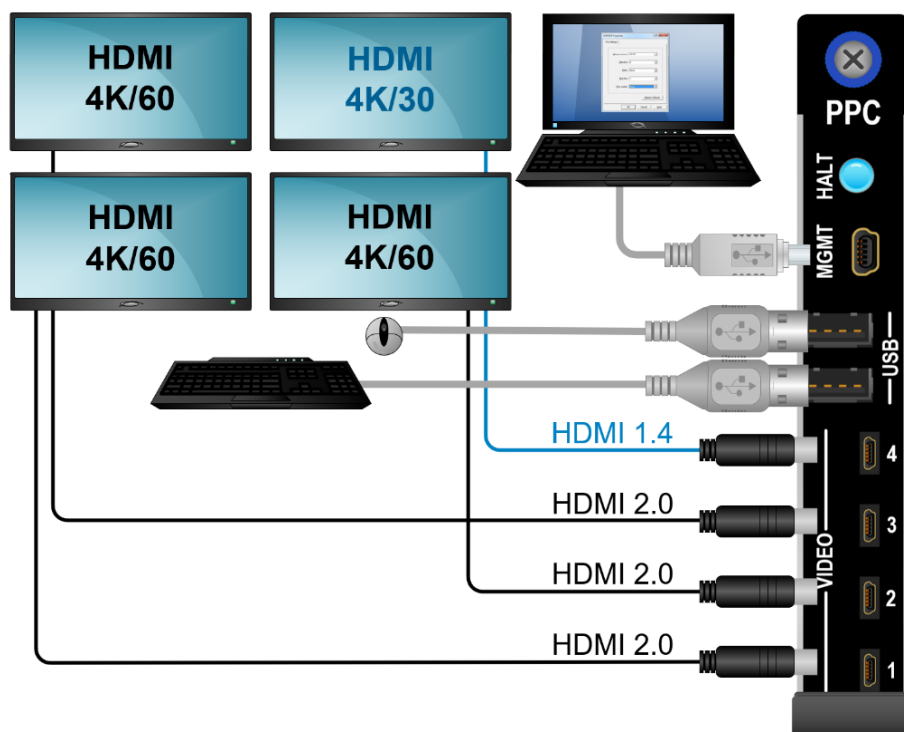
Powering-Up the ICT18 for the First Time

After the ICT18 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. An included *Terminal Plug* mates to the Control Module's *Alarm Terminal* for external alarm connections.

Compatible Products

The ICT18 is compatible with Thinklogical's Single- & 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:

- The chassis is securely mounted and grounded in its desired location. The ICT18 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 C**, pg. [45].)
- 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. [22].

3. Verify front and back panel LEDs are as described under **Initialization**, on the following page.

Refer to the **Quick Start Guide** included with your product for detailed instructions. The **ICT18 Quick Start Guide** is also available in **Appendix A** on pg. [41].

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 B: Configuring the PPC for PXE Boot**, on pg. [42].

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

⚠️ **Note: If any sensor detects an over-temperature condition, the Alarm LED will light red. For a detailed list of alarm functions, see pg.** [21]: ***Alarm Descriptions for the ICT18.***

Initialization

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 light blue in a left-to-right sequence.

PPC HALT Buttons:
ON Blue (in left-to-right sequence)

Alarm LED: ON Red (initially)
PS1 LED: ON Green
PS2 LED: ON Green
Transmitter Cards:
Network LED(s) ON Green
T LEDs FLASH Green
Active Back-Channel LEDs FLASH Green
Fibered Inactive Back-Channel LEDs ON Green
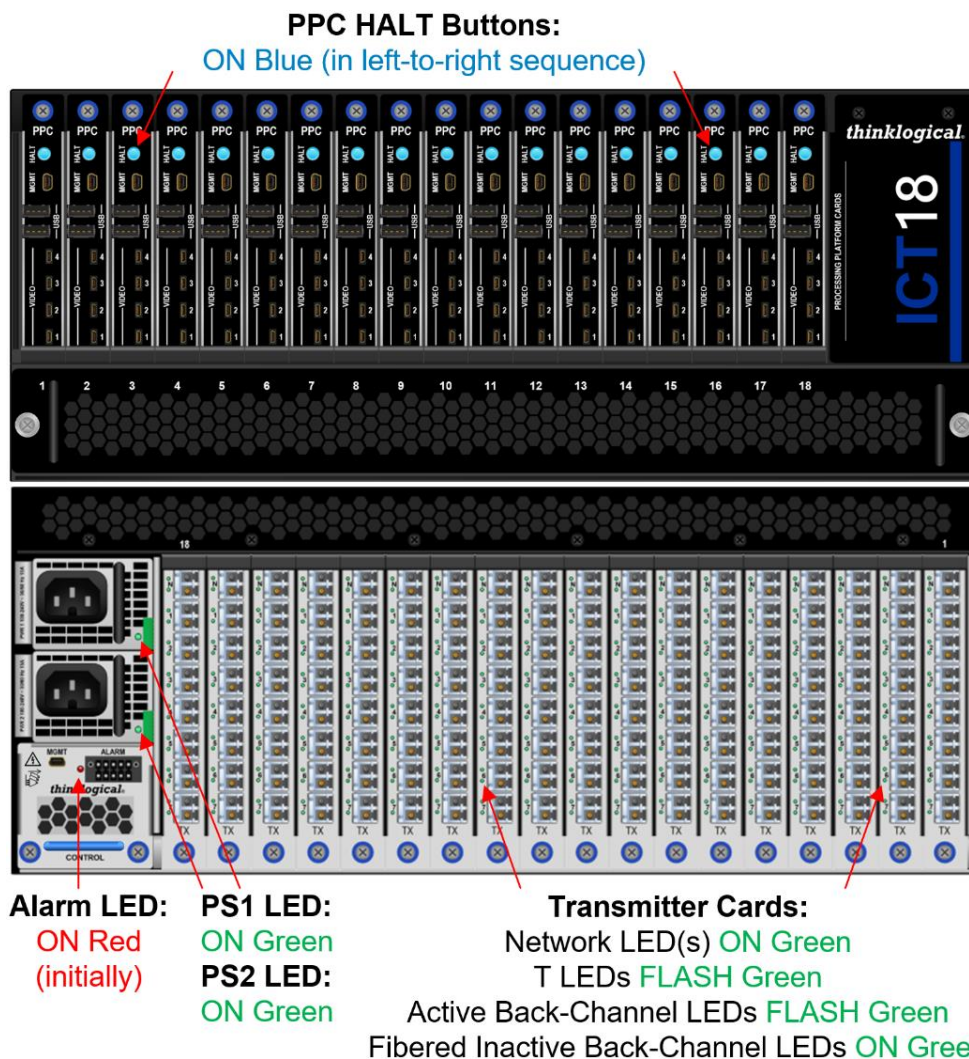
Alarm Condition

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. [21].

The Transmitter Card Status LEDs

Each ICT18 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

TX

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. [22].
- **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 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.

Latch Lever
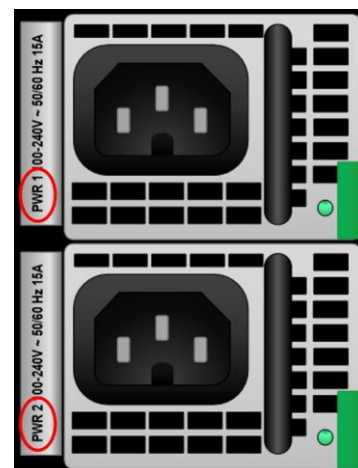
How to Remove and Replace a KVM Transmitter Card

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 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 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 thumbscrew. **Do not tighten the thumbscrew with a screwdriver.**

4. Install external cables.
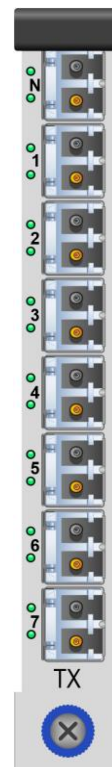
How to Remove and Replace the Fan Tray

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

🛑 **Warning! Do not operate the ICT18 for more than 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 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 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
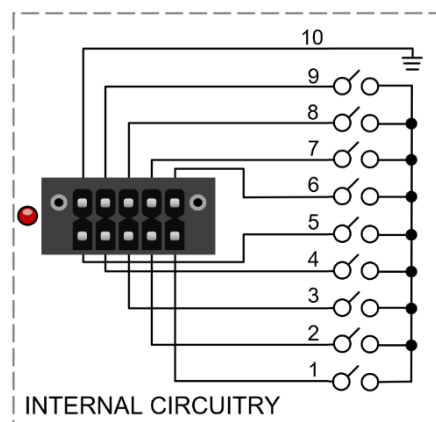
GROUND

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*

INTERNAL CIRCUITRY

An included *Terminal Plug* **CON-441** mates to the Alarm Terminal for external connections.
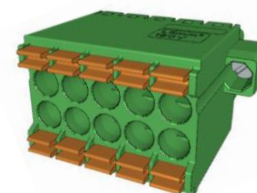
All fan speeds are monitored and any that do not meet specification will cause an alarm condition.

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.

Control Module 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.***

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 connection will be used for more detailed card specific information.***

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

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

Once the USB cable is connected, it will enumerate as a serial port. ***Two*** new serial ports will be assigned when connecting to either card:
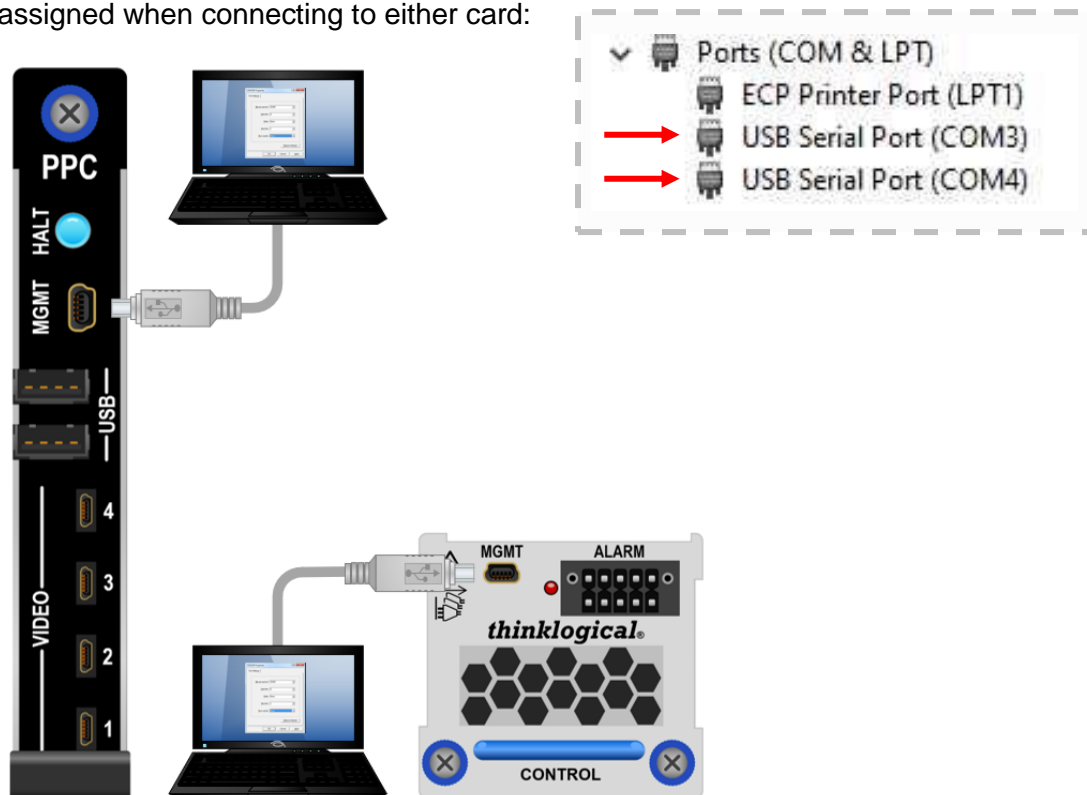
Control Module connection – One COM port will be used while the other is reserved and will not show a menu response.

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.

Once connected, 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):
```

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 ----------------------
        Card    * Card  Card       FPGA       NIOS    PCB
Slot    Name      ID    Serial#    Rev        Rev     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 ----------------------
        Alarm  FPGA   PCB    Input   Input   Power    Low-speed
Slot    State  Temp   Temp   Volt    Cur     Status   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 ---------------------
       Head 1    Head 1    Head 2    Head 2    Head 3    Head 3    Head 4    Head 4
SLOT   Valid     PClock    Valid     PClock    Valid     PClock    Valid     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  FTLX8571
8     -         -         -         -         -         -         -
9     *FTLX8574, etc., are Finisar® SFP Part Numbers.
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 -------------------------
        Card      * Card   Card         FPGA      NIOS    PCB   * Network
Slot    Name        ID     Serial#      Rev       Rev     Rev     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                                  62.0    B
18      -                                         -       -
```

Card ID = Unique number assigned to Thinklogical cards.

Network SFP Part# = Finisar® Part Number.

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

3: Processor Platform Cards / 2: PPC Status

```
------------------------- ICT Controller PPC Status -------------------------
        Proc   Fan    Temp   Proc   PS     Input  Input  Temp    Network
Slot    State  Alarm  Alarm  Alarm  Alarm  Volt   Cur    Status  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 & 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.
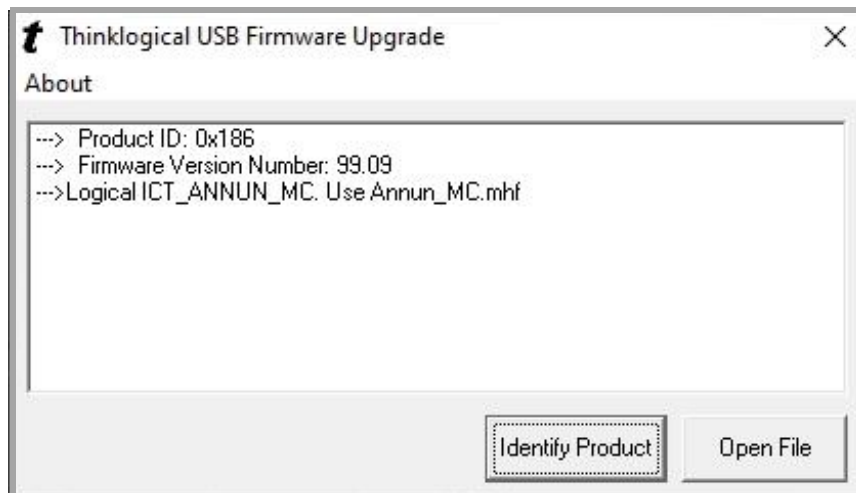
⚠ **Note: Close any open 'COM: ports' before performing updates.**

Control Module Connection

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

Connect the USB cable to the MGMT port and run the KM_Download tool. Select [Identify Product] to confirm the connection. The controller device will then be reported.

```
Thinklogical USB Firmware Upgrade                          ×
About

---> Product ID: 0x186
---> Firmware Version Number: 99.09
--->Logical ICT_ANNUN_MC. Use Annun_MC.mhf




                                    [Identify Product]   [Open File]
```

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

```
File name:  Annun_MC.mhf              ∨    Logical (*.iic; *.mhf)    ∨
```

PPC Connection

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

Connect the USB cable to the MGMT port and run the FPGA_Download tool. 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.
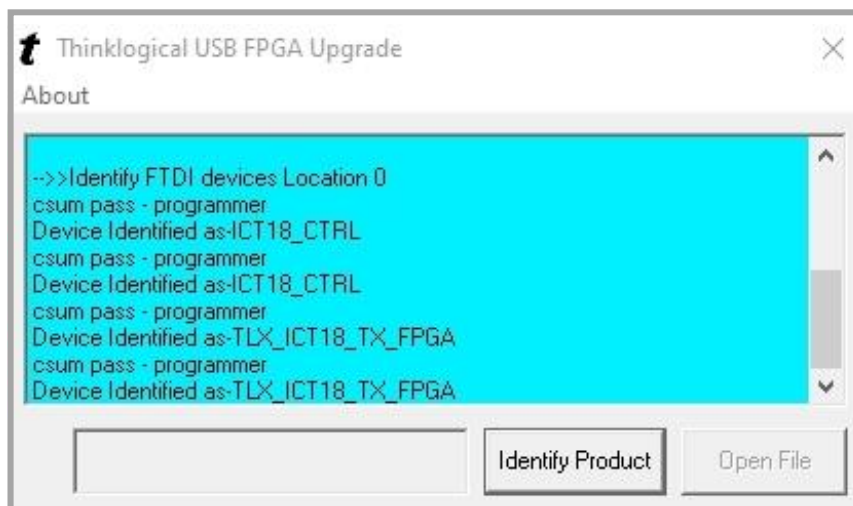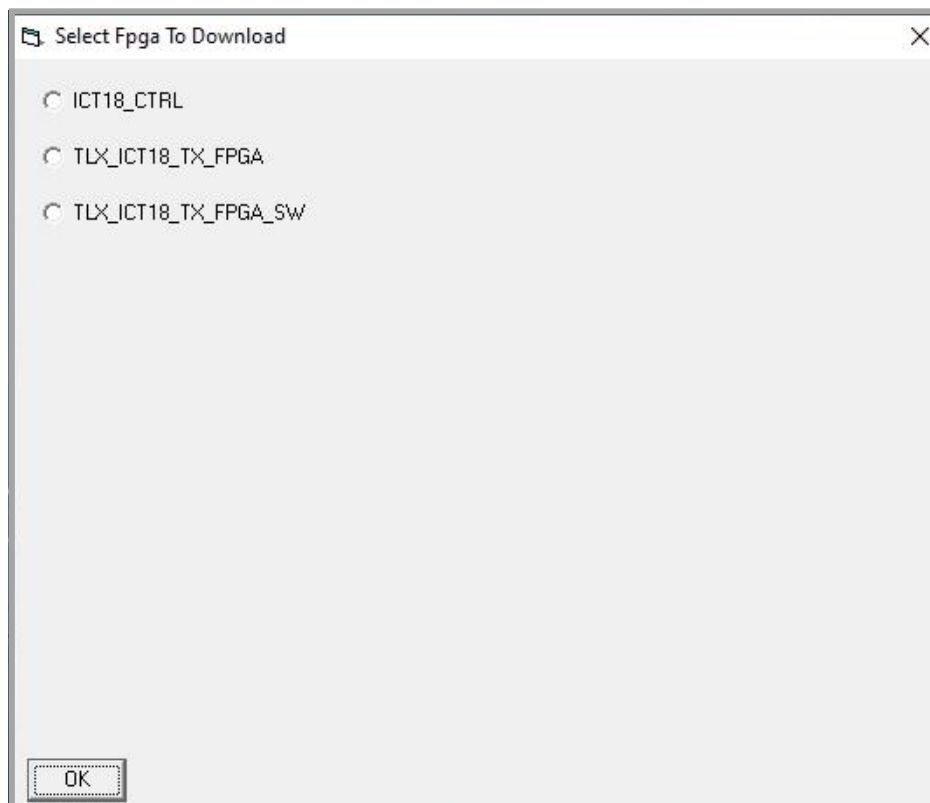

Next, select [**Open File**] and a new window will appear:

PPC FPGA & S/W NIOS

Tx FPGA

Tx S/W NIOS

The first selection is the PPC FPGA & S/W NIOS. Next are the transmitter FPGA and S/W NIOS codes. Select the item to update, then browse to the file location, select the file, and the update will begin.

Ordering Information

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*

ICT18 *Processor Platform Card*

ICT-PPC-100043

PROCESSOR
1 i7, 11TH Generation
2... *Following iterations*

SPARE
0 Spare

PROCESSOR CARD SSD
01 Zero Client, 16Gb DDR4
21 512Gb SSD, 16Gb DDR4
31 1Tb SSD, 16Gb DDR4
02 Zero Client, 32Gb DDR4
22 512Gb SSD, 32Gb DDR4
32 1Tb SSD, 32Gb DDR4
03 Zero Client, 64Gb DDR4
33 1Tb SSD, 64Gb DDR4
43 2Tb SSD, 64Gb DDR4

ICT18 *KVM Transmitter Card*

ICT-XMF-C00064

CONFIG.
X 10Gb

FIBER
M Multi-Mode
S Single-Mode

NETWORK
C Copper
F Fiber

USB
H USB HID only
U USB HID & integrated USB 2.0
C USB HID & separate USB 2.0

SPARE
0 Spare

VIDEO
22 Dual 4K/30
40 Dual 4K/60
33 Tri 4K/30
60 Tri 4K/60
44 Quad 4K/30
64 Quad: Dual 4K/60, Dual 4K/30

See SFP configurations on pg. [9]

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*

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.
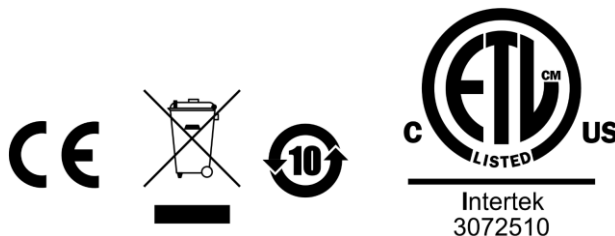
Regulatory Compliance

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 matériel 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

Sales Support

Please contact our expert sales staff in Milford, CT **Monday-Friday from 8:30am to 5:00pm**, Eastern Time Zone. If leaving a voice message, please provide a preferred time to call back.

- **Telephone: 1-203-647-8700** *or* **1-800-291-3211**
- **Fax: 1-203-783-9949**

Customer Support

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

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

- **Technical Specification Sheets**
- **Quick-Start Guides**
- **Product Manuals** (for viewing online or for download)
- **Chat live** with a Customer Service 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
- **Telephone: 1-203-647-8700** *or* **1-800-291-3211**
- **Fax: 1-203-783-9949**
  Please specify the issue on your fax cover sheet and please provide contact information.
- **Website:** https://www.thinklogical.com **Chat live** with a Customer Service Representative.

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.

The remedy for defects 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.

If you wish to return your device, 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**.

Return Authorization

If you must return a product to Thinklogical directly, please call us and let us know. Customer Support will ask you to describe the issue and will provide you with a **R**eturn **M**erchandise **A**uthorization **number** (RMA#). Pack the device in its original box, if possible, and return it with the RMA# printed on the outside of the box. **DO NOT return a product to Thinklogical without a *Return Merchandise Authorization*.**

Our Address

For any product issues or questions, or for technical assistance, please call us and let us help. If you need to write us or return a product, please use the following address:

Please include the Return Merchandise Authorization number: **Thinklogical,** A **BELDEN** BRAND
100 Washington Street
Milford, CT 06460 USA
Attn: *RMA#*

Appendix A: ICT18 Quick Start Guide

thinklogical®
A **BELDEN** BRAND

ICT18
18 Slot, 4RU Integrated Client Transmitter Chassis
with the 11th Generation Intel i7 Processing Platform

QUICK-START GUIDE

Transmitter Cards

Processor Platform Cards

Fan Tray

RECEIVERS

Network

MATRIX SWITCH

4K 30Hz (3)
4K 30Hz (2)

4K 60Hz (2), 4K 30Hz (4)
4K 60Hz (2) & 4K 30Hz (2)
4K 60Hz (3)

Separate USB 2.0

Transmitter Card

TX

N 0 1 2 3 4 5 6 7

ICT-18C-000001

MIDPLANE

Processor Card

PPC HALT MGMT USB 4 3 2 1 VIDEO

ICT18 CHASSIS

HDMI 1.4
HDMI 2.0
HDMI 2.0
HDMI 2.0

HDMI 4K/30
HDMI 4K/60
HDMI 4K/60
HDMI 4K/60

Chassis MGMT Port

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

*Chassis & PPC MGMT Ports - **Baud Rate:** 115200, **Data Bits:** 8, **Parity:** None, **Stop Bits:** 1, **Flow Control:** None

Complete Steps 1 through 4 to connect your ICT18 Extension System:

STEP 1: The ICT18 mounts into a standard EIA 19" rack. Install both **Chassis Power Cords** into standard, independent 100-240 VAC, 50-60Hz power input sources.

STEP 2: Connect each installed **Transmitter Card to the Matrix Switch or Receiver** using up to 6 **fiber-optic cable pairs** in SFPs 1-6 (multi-mode up to 400 meters) depending on application requirements. The topmost SFP, labeled N provides **Network** access and the bottom SFP (varies with video configurations) provides **Separate USB 2.0**.

STEP 3: Each installed **Processor Platform Card's (PPC)** MGMT Port* may be connected to a terminal emulator with a USB mini-B Cable for firmware updates and for control/status. USB and HDMI Ports provide local workstation access.

STEP 4: On the **Control Module**, connect the **Alarm Terminal** to an external control system. The dry alarm contacts are *Normally Closed* when unpowered, *Normally Open* when powered (OK) and *Closed* for an alarm condition. The MGMT Port* may be connected to a terminal emulator with a USB mini-B Cable for Chassis control/status.

See pg. 23 for the full set of MGMT Port menu options.

Power Supplies (2): Redundant, current-sharing 100/240VAC, 15A, 50/60Hz
12VDC Out: 1400W
Max. DC Power Consumption: 116A @ 12v max.
Thermal Load: 5118 BTU/Hr.
Normal Operating Temp.:: 0° to 50°C (32° to 122°F) ambient

Thinklogical recommends OM3 Fiber-optic Cable, 50 or 62.5 microns, with LC type connectors.

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
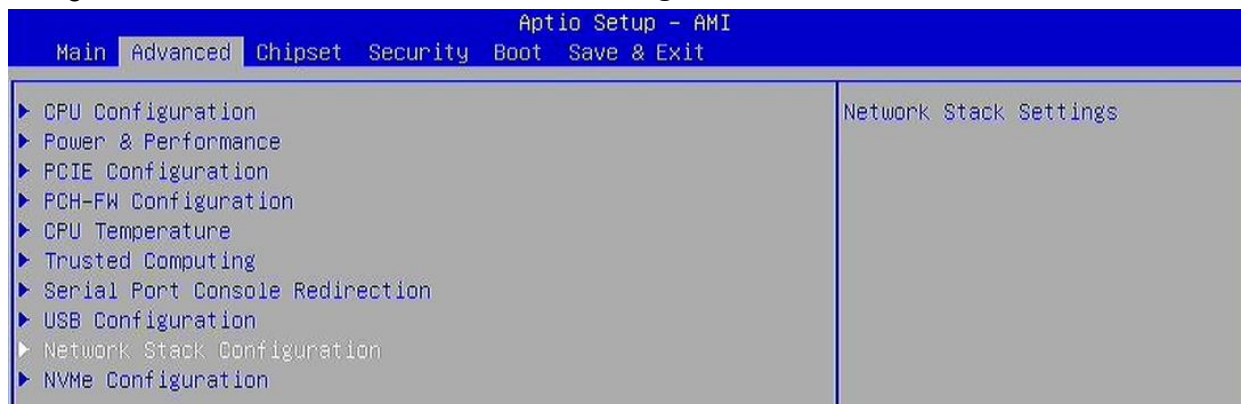**Single Mode:** Up to 80km with Type OS2 9/125

Appendix B: 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*.
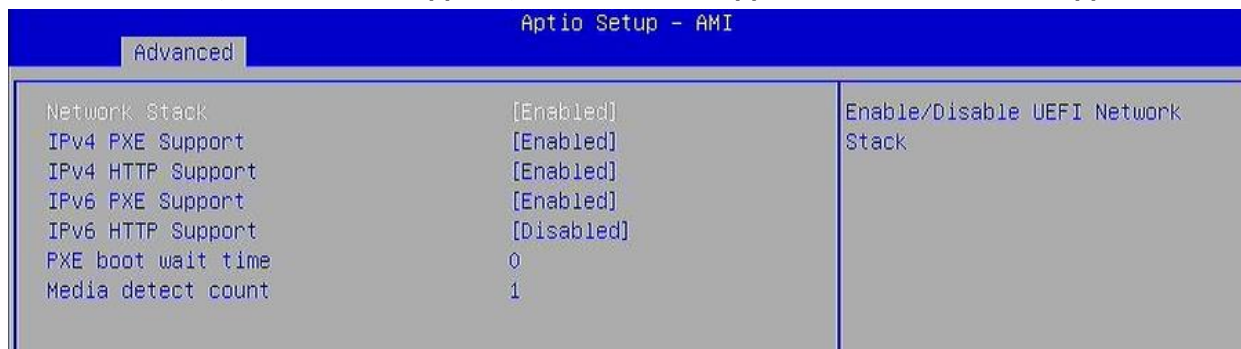
Navigate to: **Advanced / Network Stack Configuration**

```
                          Aptio Setup - AMI
    Main  Advanced  Chipset  Security  Boot  Save & Exit

  ▶ CPU Configuration                            Network Stack Settings
  ▶ Power & Performance
  ▶ PCIE Configuration
  ▶ PCH-FW Configuration
  ▶ CPU Temperature
  ▶ Trusted Computing
  ▶ Serial Port Console Redirection
  ▶ USB Configuration
  ▶ Network Stack Configuration
  ▶ NVMe Configuration
```

The Default setting is **[Disabled]**

```
                          Aptio Setup - AMI
           Advanced

    Network Stack               [Disabled]       Enable/Disable UEFI Network
                                                 Stack
```

Enable each of the following:
Network Stack, IPv4 PXE Support, IPv4 HTTP Support and **IPv6 PXE Support**.

```
                          Aptio Setup - AMI
            Advanced

    Network Stack               [Enabled]        Enable/Disable UEFI Network
    IPv4 PXE Support            [Enabled]         Stack
    IPv4 HTTP Support           [Enabled]
    IPv6 PXE Support            [Enabled]
    IPv6 HTTP Support           [Disabled]
    PXE boot wait time          0
    Media detect count          1
```
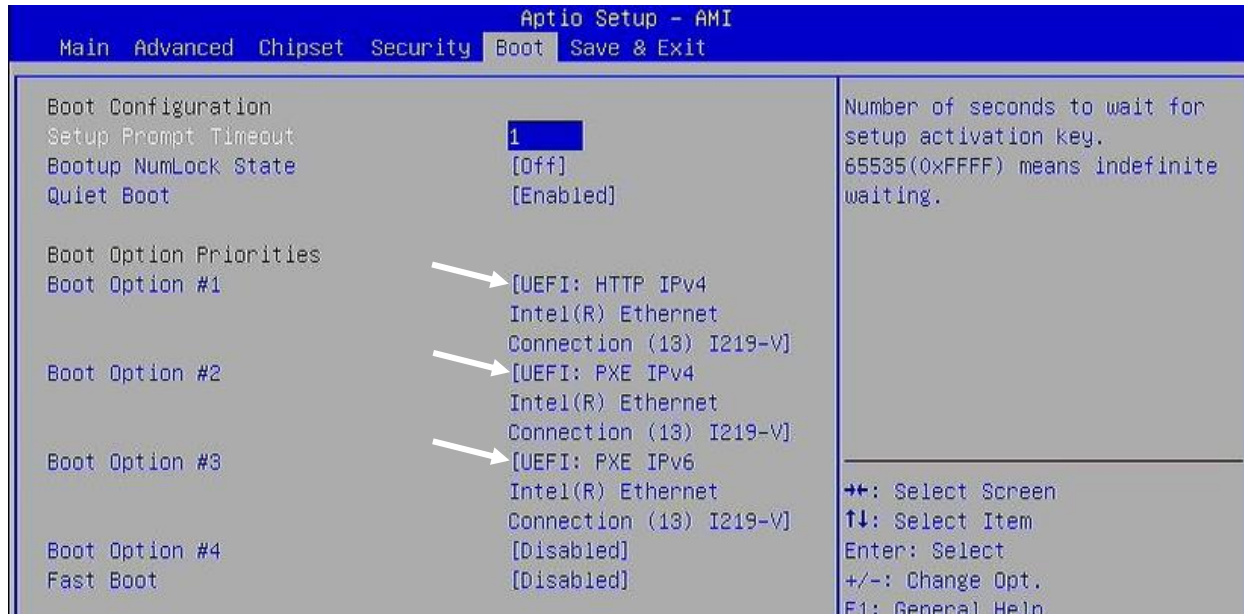
Reboot the PPC and re-enter the BIOS settings.

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

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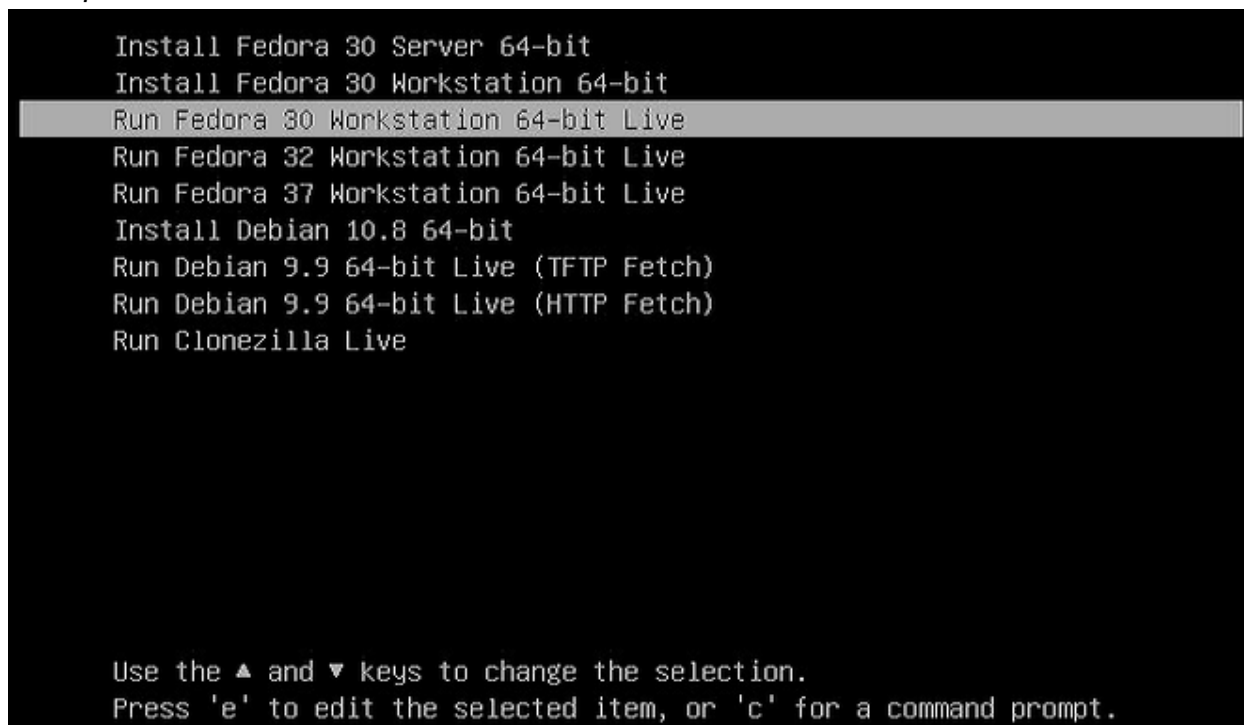> **Boot Option #2**: [**UEFI: PXE IPv4**
> **Boot Option #3**: [**UEFI: PXE IPv6**

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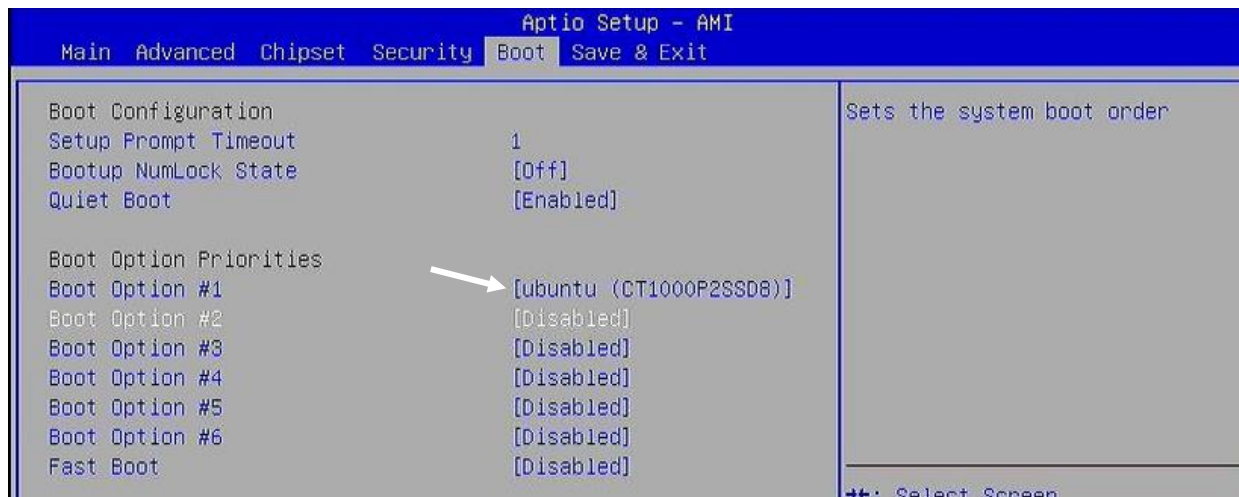
Example of a PXE server menu:

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`.
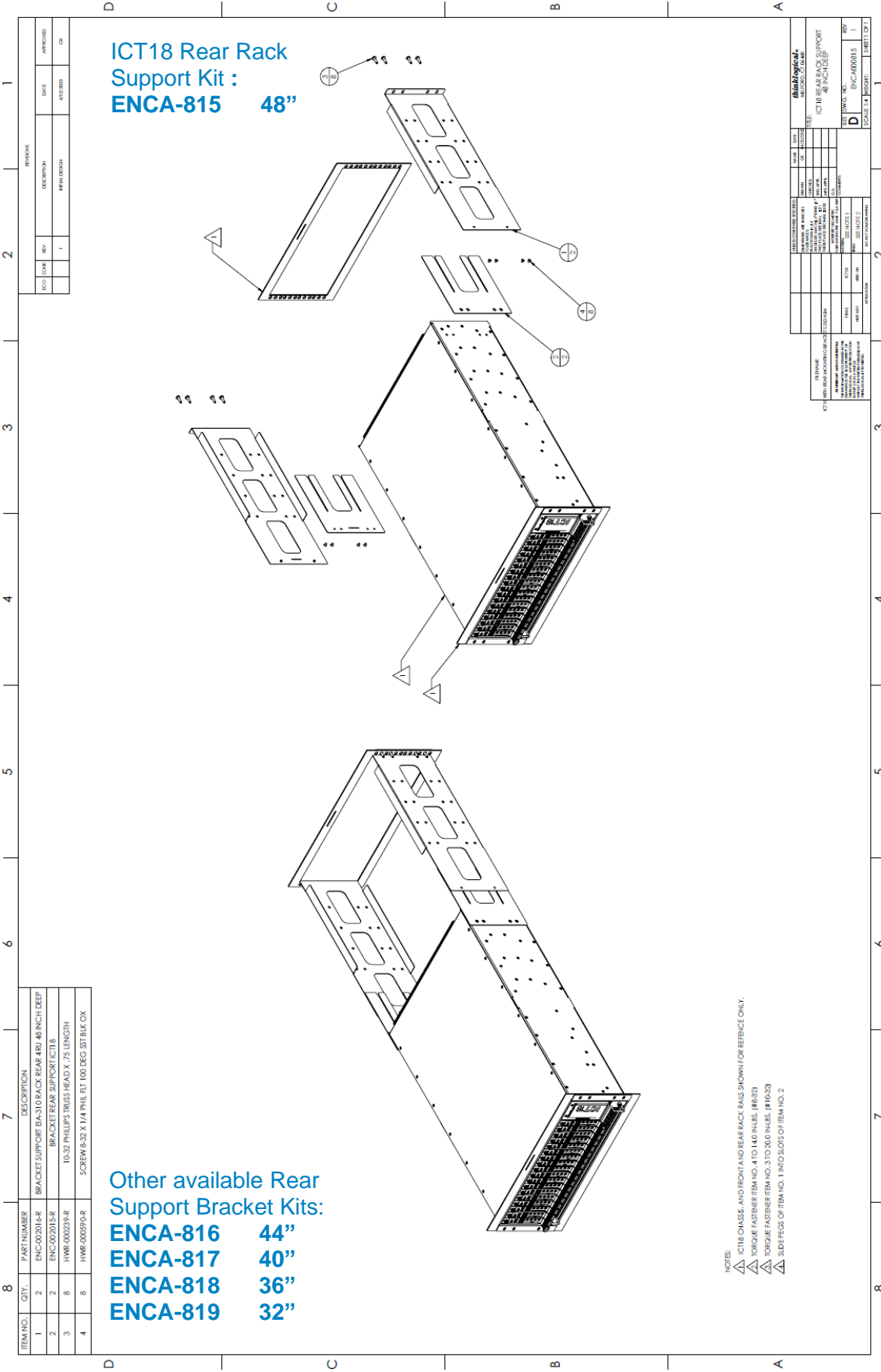
Disable the following options from the bottom up:

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

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

The PPC will now boot from the SSD.

ICT18 Rear Rack
Support Kit :
ENCA-815   48"

Other available Rear
Support Bracket Kits:
ENCA-816   44"
ENCA-817   40"
ENCA-818   36"
ENCA-819   32"

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	2	ENC-002016-R	BRACKET SUPPORT EIA-310 RACK REAR 4RU 48 INCH DEEP
2	2	ENC-002015-R	BRACKET REAR SUPPORT ICT18
3	8	HWR-000239-R	10-32 PHILLIPS TRUSS HEAD X .75 LENGTH
4	8	HWR-000590-R	SCREW 8-32 X 1/4 PHIL FLT 100 DEG SST BLK OX

NOTES:
1. ICT18 CHASSIS, AND FRONT AND REAR RACK RAILS SHOWN FOR REFERENCE ONLY.
2. TORQUE FASTENER ITEM NO. 4 TO 14.0 IN-LBS. (#8-32)
3. TORQUE FASTENER ITEM NO. 3 TO 20.0 IN-LBS. (#10-32)
4. SLIDE PEGS OF ITEM NO. 1 INTO SLOTS OF ITEM NO. 2

NOTES: