ONLOGIC

Tacton TC401 All-in-One Panel PC
Product Manual
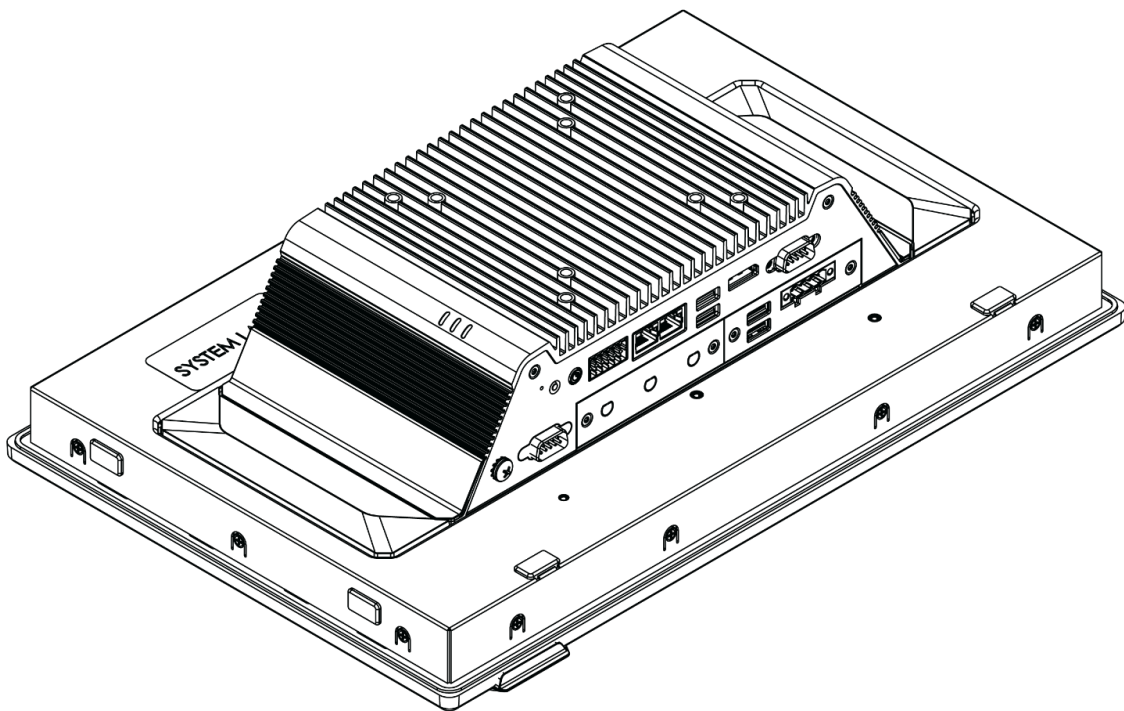
Revision History

Revision History	Date
First Release of Tacton TC401 Manual	3/28/2024

Table of Contents

Safety Precautions, Safeguards & Information

Do not open and modify the device! The device complies with various national and international Safety, EMC and Environmental requirements per various standards.

Modification of the device may void certifications, warranty and/or cause possible injury to the user.

Safe use and installation instructions

1. Care must be taken handling the device to prevent injury to self or possibility of damaging the unit.
2. Read the entire manual before using the product.
3. Install the device securely per users manual instructions.
4. Panel mounting requires use of OnLogic mounting kit.
5. VESA mounting device should use 4x M4x0.7mm L=10mm screws to VESA arm or mount to threaded holes on rear of chassis. Screws should be a minimum length of 6mm. Add 1mm of

screw length for every mm of additional thickness of plate or bracket beyond 1.5mm.

6. **Caution, Hot Surface!** It is normal for the unit to heat up and be hot to touch. **<u>Do not touch</u>** the heatsink area or back enclosure during operation and up to 30 minutes after shutdown allowing the unit to cool down.

7. Ambient operating temperature must be between -20 to 70°C or 0 to 60°C with a non-condensing relative humidity of 0-90%. <u>Please refer to the Panel temperature range.</u>

8. The device can be stored at temperatures between -10 °C to 85 °C. Note: Unit must be stabilized within operating temperature before use, minimum 3HR.

9. Keep the device away from liquids and flammable materials. Not to be installed in a hazardous environment. Please read installation instructions and limitations carefully for IP66/69K applications.

10. Do not clean the rear of the device with liquids. Screen area only may be cleaned with approved chemicals. Please refer to Appendix 6.9 - Approved Cleaning Agents. The rear chassis can be cleaned with a dry cloth or duster only. To prevent injury to self and/or damage to the device the unit must be powered down and all connecting power and other peripherals shall be disconnected prior to cleaning.

11. Allow adequate space around all sides of the device for proper cooling and to not exceed its maximum operating temperature limit. If the device is mounted to a vertical surface then recommended device orientation is such that heatsink fins allow air to rise unobstructed.

12. When not panel mounted, this device is intended for indoor operation only.

13. **Caution, Risk of Electric Shock!** The unit is powered by low voltage DC (Direct Current) only! Do not connect AC (Alternating Current) into the device!

14. To power the device use only UL ITE Listed external power supplies with DC output of 12-24VDC or 12-48VDC, see specs for details.

15. Install the device only with shielded network cables.

16. The installer should be experienced in aftermarket installation and familiar with general practices for installing electronics.

17. Service and repair of the device must be done by qualified skilled service personnel. This includes, but is not limited to, replacement of the CMOS battery. Replacement CMOS battery must be UL recognized and with minimum requirements as the original.

18. Proper disposal of the CMOS battery must comply with local governance.

19. Radio device is not intended for emergency service use.

20. To protect against excessive RF exposure, maintain at least 20cm from any user and the RF antennas. Only use provided dual band PIFA antennas with 2dBi/2dBi gain (2.4 and 5Ghz) for Wifi/BT.

21. This equipment is not suitable for use in locations where children are likely to be present.

WARNING: There is danger of explosion if the CMOS battery is replaced incorrectly. Disposal of battery into fire or a hot oven, or mechanically crushing or cutting of a battery can result in an explosion.

Précautions de sécurité, sauvegardes et informations

Ne pas ouvrir et modifier l'appareil ! L'appareil est conforme à diverses exigences nationales et internationales en matière de sécurité, de CEM et d'environnement selon diverses normes.

La modification de l'appareil peut annuler les certifications, la garantie et/ou causer des blessures à l'utilisateur.

Instructions d'utilisation et d'installation en toute sécurité

1. Des précautions doivent être prises lors de la manipulation de l'appareil pour éviter de se blesser ou d'endommager l'appareil.
2. Lisez l'intégralité du manuel avant d'utiliser le produit.
3. Installez l'appareil en toute sécurité selon les instructions du manuel de l'utilisateur..
4. Le dispositif de montage au mur ou au plafond nécessite l'utilisation d'une plaque de montage ou d'un support OnLogic.
5. Le dispositif de montage VESA doit utiliser 4 vis M4x0,7 mm L = 10 mm sur le bras VESA ou être monté sur des trous filetés à l'arrière du châssis. Les vis doivent avoir une longueur minimale de 6 mm. Ajoutez 1 mm de longueur de vis pour chaque mm d'épaisseur supplémentaire de plaque ou de support au-delà de 1,5 mm.
6. **Attention, surface chaude!** Il est normal pour les unités de se réchauffer et de devenir chaude au toucher. Évitez de toucher les surfaces de dissipation de chaleur ou le boîtier pendant l'utilisation ou jusqu'à 30 minutes après l'arrêt pour permettre à l'unité de se refroidir.
7. La température ambiante de fonctionnement doit être comprise entre -20 et 70 °C ou entre 0 et 60 °C avec une humidité relative sans condensation de 0 à 90 %. Veuillez vous référer à la plage de température du panneau.
8. L'appareil peut être stocké à des températures comprises entre -10 °C et 85 °C. Remarque : L'unité doit être stabilisée à la température de fonctionnement avant utilisation, minimum 3 heures.
9. Gardez l'appareil à l'écart des liquides et des matériaux inflammables. Ne pas installer dans un environnement dangereux. Veuillez lire attentivement les instructions d'installation et les limitations pour les applications IP66/69K.
10. Ne nettoyez pas l'arrière de l'appareil avec des liquides. Seule la zone de l'écran peut être nettoyée avec des produits chimiques approuvés. Veuillez vous référer à l'Annexe 6.9 - Agents de nettoyage approuvés. Le châssis arrière peut être nettoyé uniquement avec un chiffon sec ou un plumeau. Pour éviter de vous blesser et/ou d'endommager l'appareil, l'appareil doit être mis hors tension et toute l'alimentation de connexion et les autres périphériques doivent être déconnectés avant le nettoyage.
11. Prévoyez un espace suffisant autour de tous les côtés de l'appareil pour un refroidissement correct et pour ne pas dépasser sa limite de température de fonctionnement maximale. Si l'appareil est installé sur une surface verticale, l'orientation recommandée de l'appareil est telle que les ailettes du dissipateur thermique permettent à l'air de monter sans obstruction. Des orientations alternatives peuvent entraîner une plage de températures de fonctionnement réduite.

12. Lorsqu'il n'est pas monté sur panneau, cet appareil est destiné à un fonctionnement en intérieur uniquement.
13. **Avertissement! Risque de choc électrique !** L'unité est alimentée uniquement par une basse tension CC (courant continu) ! Ne connectez pas le courant alternatif (courant alternatif) à l'appareil !
14. Pour alimenter l' appareil, utilisez uniquement des alimentations externes homologuées UL ITE avec une sortie CC de 12-24 VCC ou 12-48 VCC, voir les spécifications pour plus de détails.
15. Installez l'appareil uniquement avec des câbles réseau blindés.
16. L'installateur doit avoir de l'expérience dans l'installation du marché secondaire et être familiarisé avec les pratiques générales d'installation de l'électronique.
17. L'entretien et la réparation de l'appareil doivent être effectués par un personnel d'entretien qualifié et qualifié. Cela inclut, mais sans s'y limiter, le remplacement de la batterie CMOS. La batterie CMOS de remplacement doit être reconnue UL et d'un type similaire à l'original.
18. L'élimination appropriée de la batterie CMOS doit être conforme à la gouvernance locale
19. L'appareil radio n'est pas destiné aux services d'urgence..
20. Pour vous protéger contre une exposition RF excessive, maintenez au moins 20 cm de tout utilisateur et des antennes RF. Utilisez uniquement les antennes PIFA double bande fournies avec un gain de 2 dBi/2 dBi (2,4 et 5 Ghz) pour le Wifi/BT.
21. Cet équipement n'est pas adapté à une utilisation dans des endroits où des enfants sont susceptibles d'être présents.

AVERTISSEMENT : Il existe un risque d'explosion si la pile CMOS n'est pas remplacée correctement. L'élimination de la batterie dans le feu ou dans un four chaud, ou l'écrasement ou le découpage mécanique d'une batterie peut entraîner une explosion.

1 - System Overview

1.1 - System Introduction

The Tacton 401 (TC401) harnesses the enhanced power and capabilities of Intel "Alder Lake N" Atom and Core i processors, in a low profile fanless system built for the challenges of the IoT edge. With support for an additional Industrial Panel or independent 4K display, a -20°C to 70°C operating temperature range (Panel Option Dependent), and a wealth of ModBay™ configuration options, the Tacton 401 was engineered with versatility in mind. The systems also feature compliance testing for IT Equipment EMC and Safety and pre-compliance testing for IEC 60601-1-2 (4th edition) medical immunity.
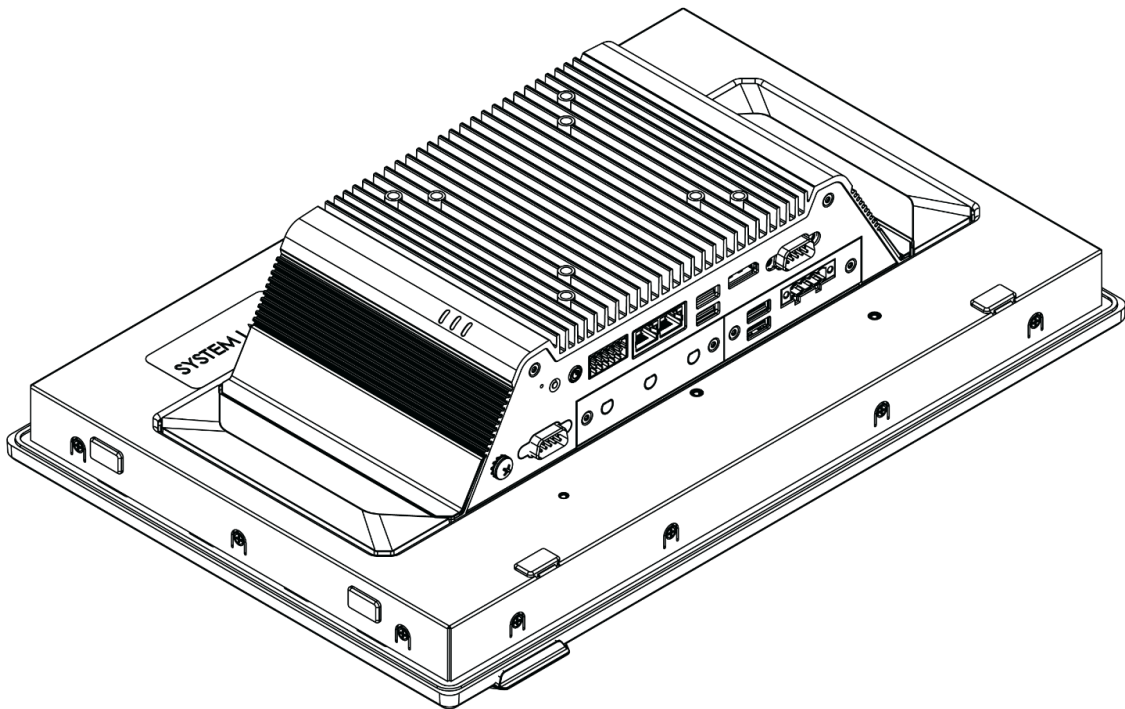
1.2 - Accessories

If you purchased additional items such as mounting brackets, power supplies or terminal block connectors, they will be located in the system box or within the outer shipping carton.

All drivers and product guides can be found on the corresponding product page. For more information on accessories and additional features, visit the Tacton Product pages.

TC401 Product Page: https://www.onlogic.com/tc401

Tacton Series Page: https://www.onlogic.com/computers/panel-pc/tacton

1.3 - Product Specifications

OnLogic TC400 Series	
Processor	Intel 12th Gen Alder Lake-N Intel Processor N97 Intel Processor N200 Intel Core i3-N305 Intel Atom x7425E
Memory	1x DDR5-4800 SO-DIMM up to 16GB total (In-Band ECC)
Integrated Graphics	Intel® UHD Graphics for 12th Gen Intel® Processors up to 32EU
Compute I/O	1x Power Button 2x USB2.0 2x USB 3.2 Gen 2 2x 2.5Gbe LAN 1x DB9 COM RS-232/422/485 1x Full size DisplayPort 1.4a 1x Intel HD Audio Out + Mic-In 1x Terminal Block DIO (4 In / Out) w/ Remote Power Switch
Panel Display Options	12.1" 1920x800 (WXGA) 16:10 15.6" 1920x1080 (Full HD) 16:9 21.5" 1920x1080 (Full HD) 16:9 Standard Brightness (350-600 nits), High Brightness (1000 nits), Resistive & PCAP (Optically Bonded) touch options Viewing angle 160 H°/ 160 V° (min)
Panel Display Integrated Peripherals	1x Camera & Mic (optional): 2MP CMOS sensor supports 1080p and 720p @30fps 1x Proximity Sensor
Expansion & Storage	1x M.2 2280/2260 M-key (PCIe Gen 3 x 1/ SATA III) 1x M.2 2280/3042/3052 B-Key (PCIe Gen 3 x1/USB 3.2,USB2.0) 1x M.2 2230 E-key (Wi-Fi) (PCIe x1/ USB 2.0) 3FF-Sim slot (Mapped to the B-Key)
Optional 1 slot ModBay Expansion	4x1 GbE LAN 4x USB3.2 Gen1 3x M12 2x RS232
Optional 1 DB9 I/O Expansion	1x DB9 COM RS-232/422/485 1x DB9 Dual CAN2.0 port (not yet supported).

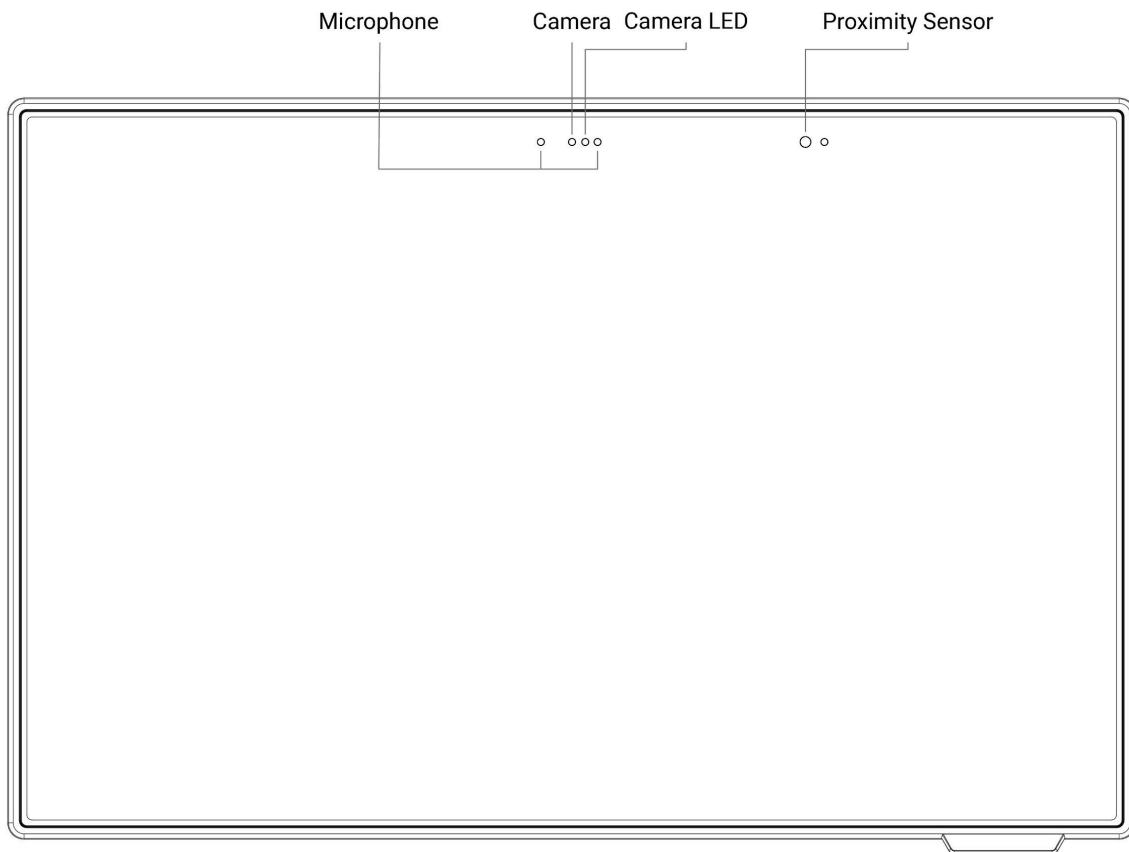|	
Onboard Headers & Connectors	1x Serial Header, RS 232/422/485 2x USB 2.0 (1x4 header) on Power board 24 Pin input for Terminal Block Power board
Special Features	Watchdog timer RTC Onboard TPM - Infineon SLB9672 BIOS option for auto power-on
Operating Systems	Windows 11 Pro 64 Bit* Windows 10 IoT Enterprise 2021 LSC Value Ubuntu 22.04 Desktop / Server IOT *Limited support - Refer to support.onlogic.com/documentation/onlogic-and-intel-collaboration/
LAN controller	2x Intel I226-IT (w/ Intel TSN support)
Optional Voltage Input	Terminal block with 12~48VDC (Including Ignition sensing) or Terminal Block with 12-24VDC
Power Input	5-pin Terminal Block support 12-48V (+/- 10%) (includes Ignition Sensing) 4-pin Terminal Block support 12-24V (+/- 10%)
Power Protections	12~48VDC with Rugged Protections (Includes Ignition Sensing) 12~24VDC with Industrial Protections
Dimensions	12.1": 309.0 mm x 225.4 mm x 94mm (W x H x D) 15.6" : 394.8 mm x 259.4 mm x 96mm (W x H x D) 21.5" : 528.2 mm x 335.3 mm x 99mm (W x H x D)
Mounting Hole Size	12.1": 296.0±1.5 mm x 212.0±1.5 mm (W x H) 15.6" : 381.5±1.5 mm x 246.0±1.5 mm (W x H) 21.5" : 515.0±1.5 mm x 322.0±1.5 mm (W x H)
Weight	System with 12.1" panel: ~3.6 kg / 8.0 lbs System with 15.6" panel: ~5.0 kg / 11.1 lbs System with 21.5" panel: ~ 8.2 kg / 18 lbs
Motherboard Dimensions	142 x 117 x 24mm max
Mounting Options	Panel VESA
Environmental	System Operating Temperature: -20-70C with selected panel. Please refer to Appendix H Storage Temperature: -30-85C panel dependant Please refer to Appendix H Operating Humidity: 0% - 90%
Radio Specifications when equipped with INT-9260 Wifi/BT (device for indoor use)	
Frequency Bands	2.4GHz and 5GHz bands
Operating Frequency	2400 - 2485 MHz 5150 - 5250 MHz, 5250 - 5350 MHz 5470 - 5725 MHz, 5725 - 5878 MHz

Channel spacing / Bandwidth	2.4GHz: 802.11b/g/n; 5 MHz / BT: 1MHz Bandwidth: 20 MHz / 40 MHz 5 GHz: 802.11a/n/ac: 20, 40, 80, 160 MHz
RF output power	20dBm (2400-2485 MHz) IEEE 802.11b/g/n& BT 10dBm (2400-2485 MHz) BLE 23dBm (5150-5725 MHz) IEEE 802.11a/n/ac 13.98 dBm (5725-5875MHz) IEEE 802.11a/n/ac
Type of Modulation	2.4GHz: DSSS/OFDM/FHSS 5 GHz: OFDM
Antenna Specifications	ANT200 - PIFA type with 2dBi/2dBi gain on 2.4 & 5 GHz
Modes of operation	Duplex (Tx/Rx)
Duty cycle (access protocol)	As In: IEEE 802.11 a/b/g/n/ac
Version of firmware /software	Software Intel PROSet/Wireless WiFi Software 20..x and following versions for WIFI/BT

1.4 - Exterior Features and Dimensions

1.4.1 - TC401 Front Panel

The TC401 Front Panel view.

Microphone   Camera Camera LED   Proximity Sensor

1.4.2 - Back of Panel - Compute I/O

The TC401 pictured with the optional DB9 module.

2x 2.5Gbe LAN

1x Full size
DisplayPort 1.4a

1x Intel® HD
Audio Out + Mic-in

2x USB 3.2

Power Button

RTC Reset

1x DB9 COM
RS-232/422/485

Optional DB9
I/O expansion

1x Terminal Block DIO
(4 In /Out)
w/ Remote Power Switch

Mod Bay

2x USB 2.0

Terminal Block
& Ignition Sensing
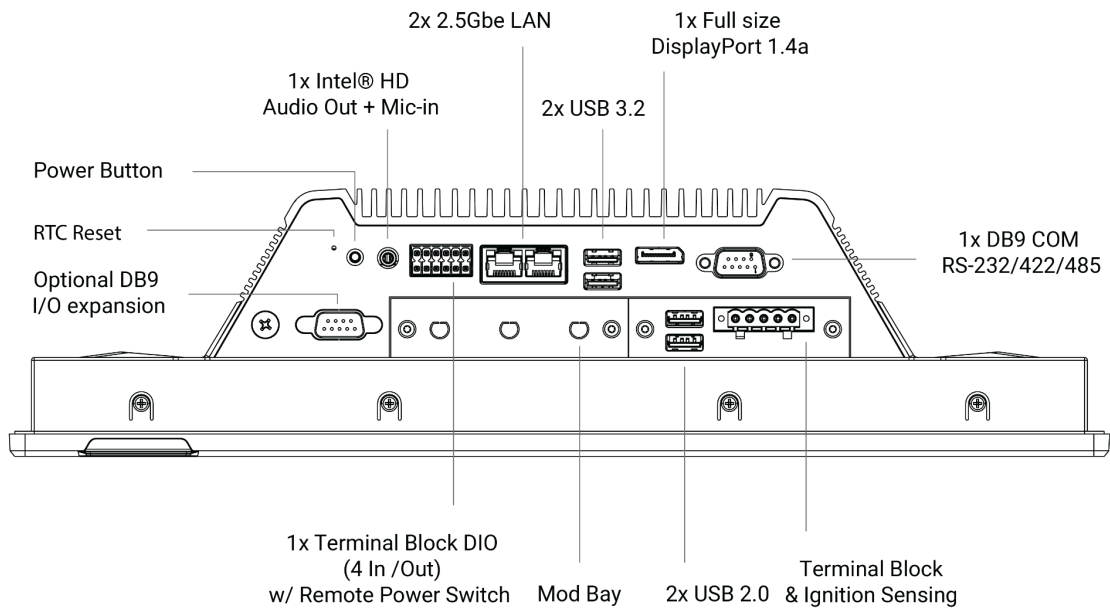
1.4.3 - Tacton 401 (TC401) Dimensions

Panel sizes

1. 12.1 inch
2. 15.6 inch
3. 21.5 inch

1. 94 mm
2. 96 mm
3. 99 mm

1. 309.0 mm
2. 394.8 mm
3. 528.2 mm

1. 225.4 mm
2. 259.4 mm
3. 335.3 mm
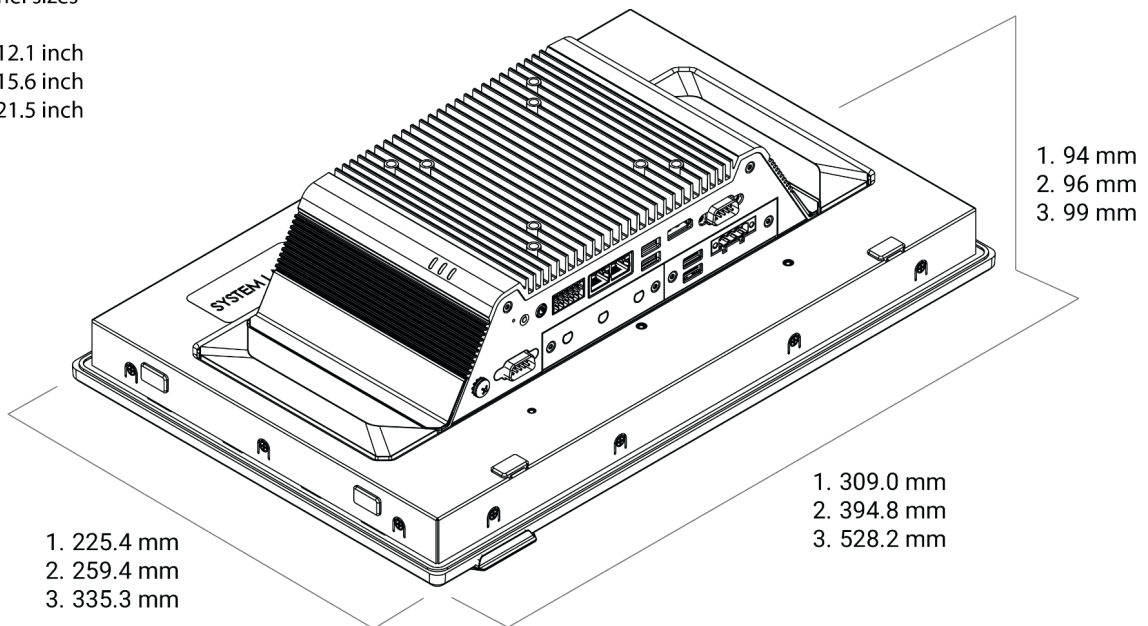
1.5 - System Block Diagram

12"/15"/21 Panel

Cable

I/O

12-14V / 12-48V

Input Power Module

Compute board

RS232/422/485

DP

2xUSB3

2x2.5Gbps LAN

DIO

Audio

RS232/422/485

USB2.0

CAN2.0

Modbay 4xLAN

Modbay 3XM12 LAN

Modbay 4xUSB3

Modbay 2xCOM
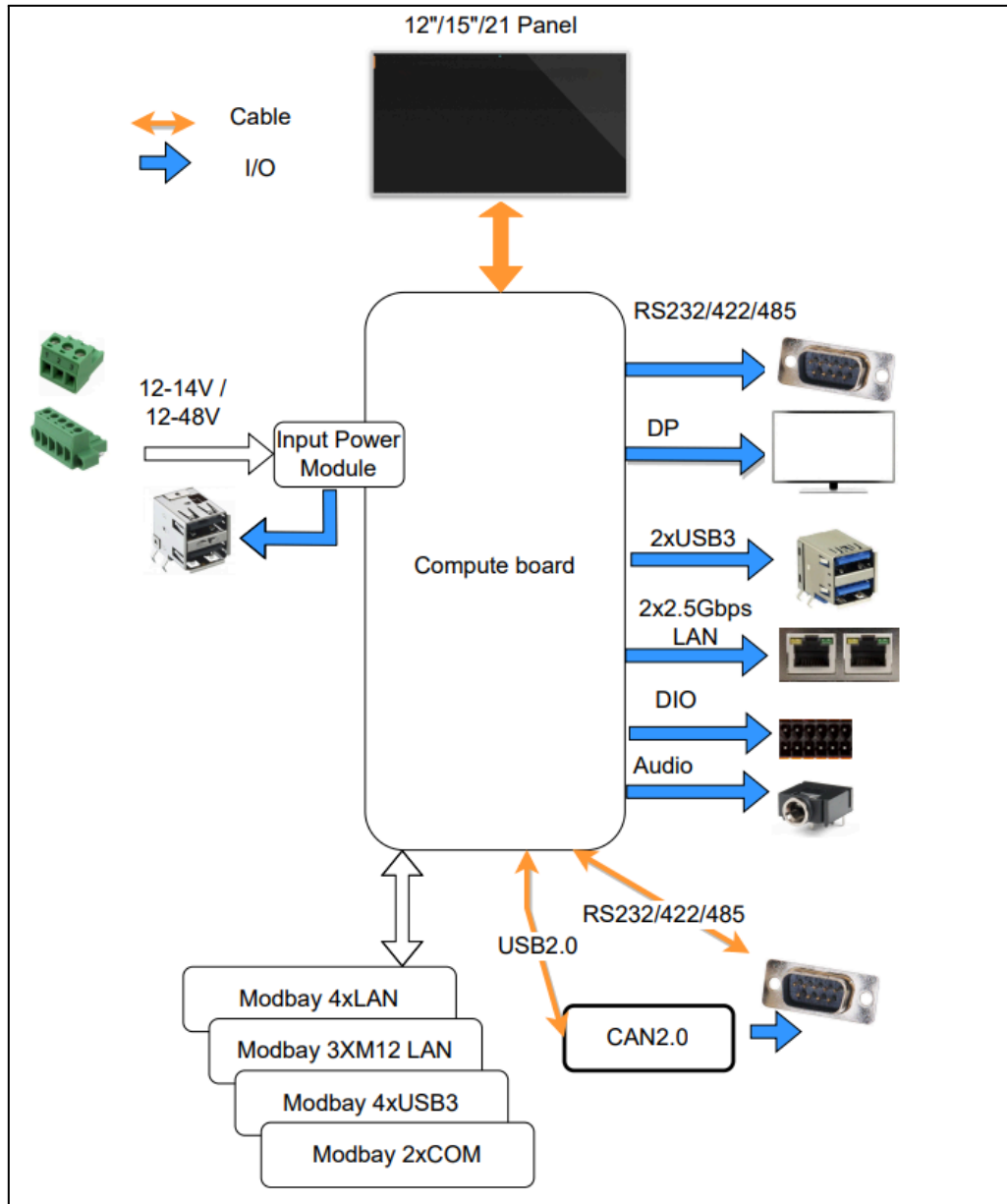
1.6 - System Circuit Block Diagram

High-level block diagram for motherboard

Narrow Voltage (12-24V) Industrial Power Board High-level block diagram

Wide Voltage (12-48V) Rugged Power Board High-level block diagram
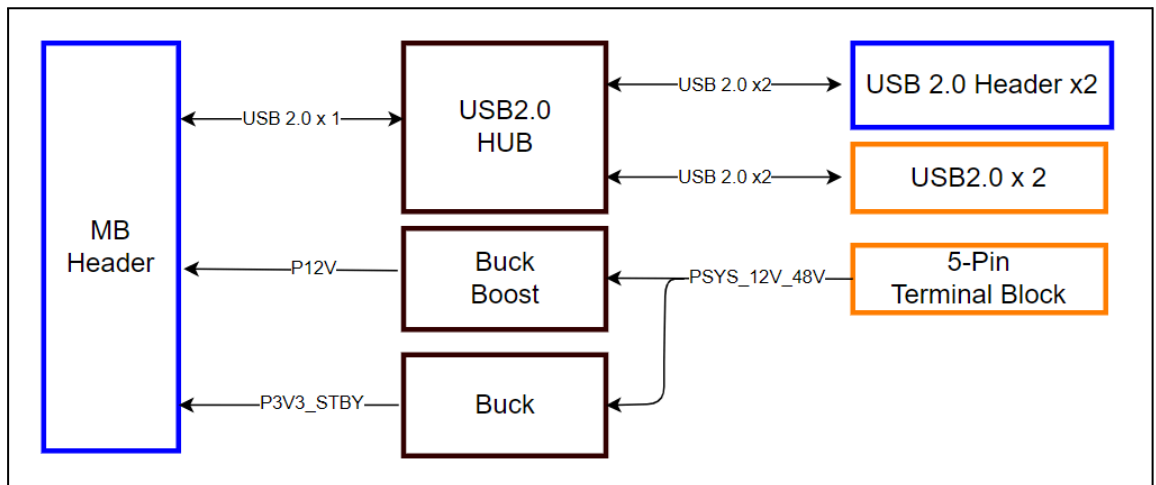
2 - I/O Definitions

2.1 - Front Panel View

Microphone   Camera Camera LED   Proximity Sensor
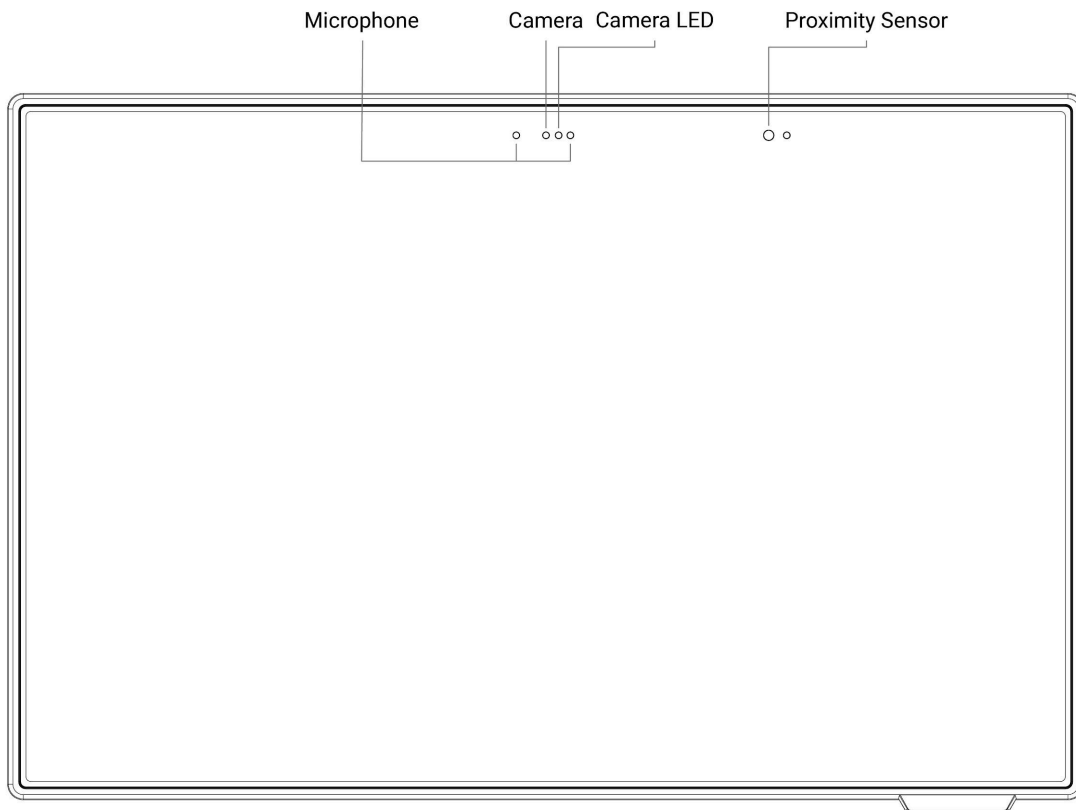
Type of Panel

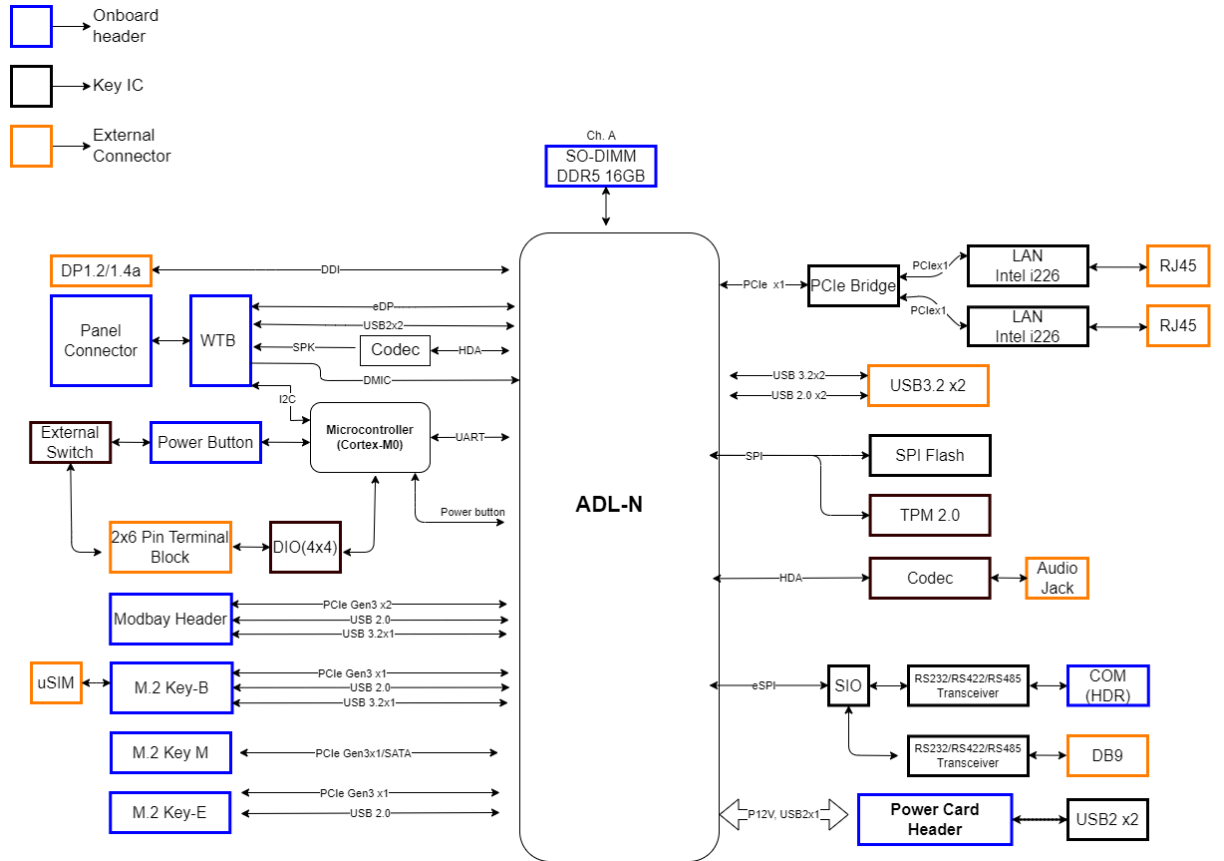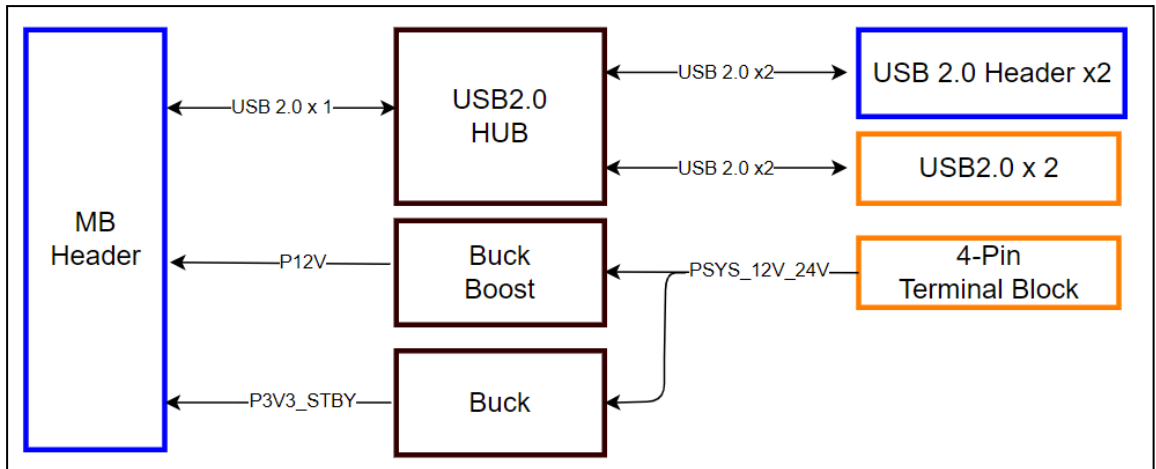Standard Brightness, High Brightness, Resistive & PCAP (Optically Bonded) touch options.

Note: Tacton PCAP screens have the ability to have wet touch tracking when water is on the screen, because of this some interactions may seem slower than when the screen is dry

Proximity Sensor

The built-in proximity sensor inside the panel can wake up the system upon object detection within a range of 35 - 70 cm.

Camera and Microphone (Optional based on Panel selection)

The camera is 2MP FHD USB with built-in microphone.

2.2 - Back Panel - LED Definition

Error LED
Activity LED
Power LED
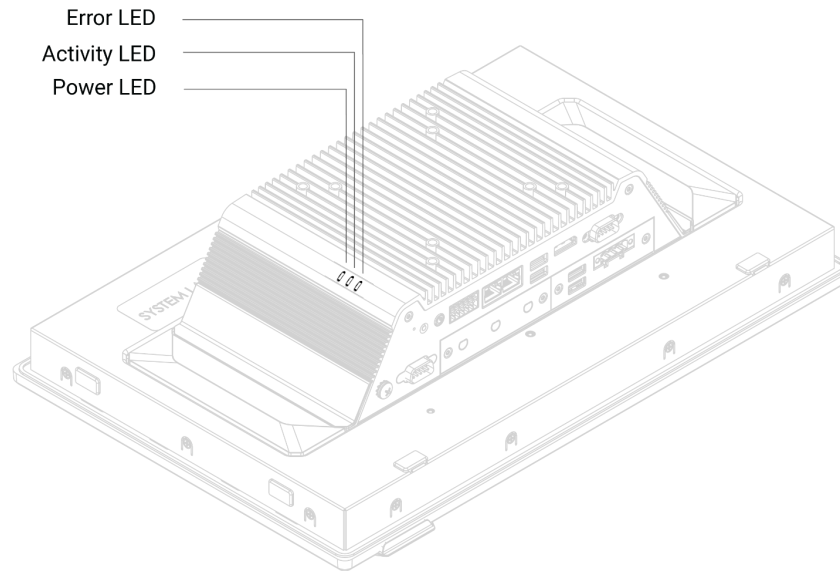
LED Indicator

LED	Color	Indicator
Error	Orange	• Solid ON = No DIMMs installed • Slow blinking = Boot issue • Fast blinking = Voltage fault • 2 fast blinking followed by 1 slow blinking = Panel installation issue (Enable LED indicator in the BIOS setup)
Activity	White	• Blink = There is a read/write activity
Power	Blue	• ON = System in S0 • Blink = System in standby mode (S3) • OFF = S5 or Power OFF

2.3 - Bottom Panel - Compute I/O Definition

The TC401 with the DIO option is pictured.

2x 2.5Gbe LAN

1x Full size DisplayPort 1.4a

1x Intel® HD Audio Out + Mic-in

2x USB 3.2

Power Button

RTC Reset

1x DB9 COM RS-232/422/485

Optional DB9 I/O expansion

1x Terminal Block DIO (4 In /Out) w/ Remote Power Switch

Mod Bay

2x USB 2.0

Terminal Block & Ignition Sensing
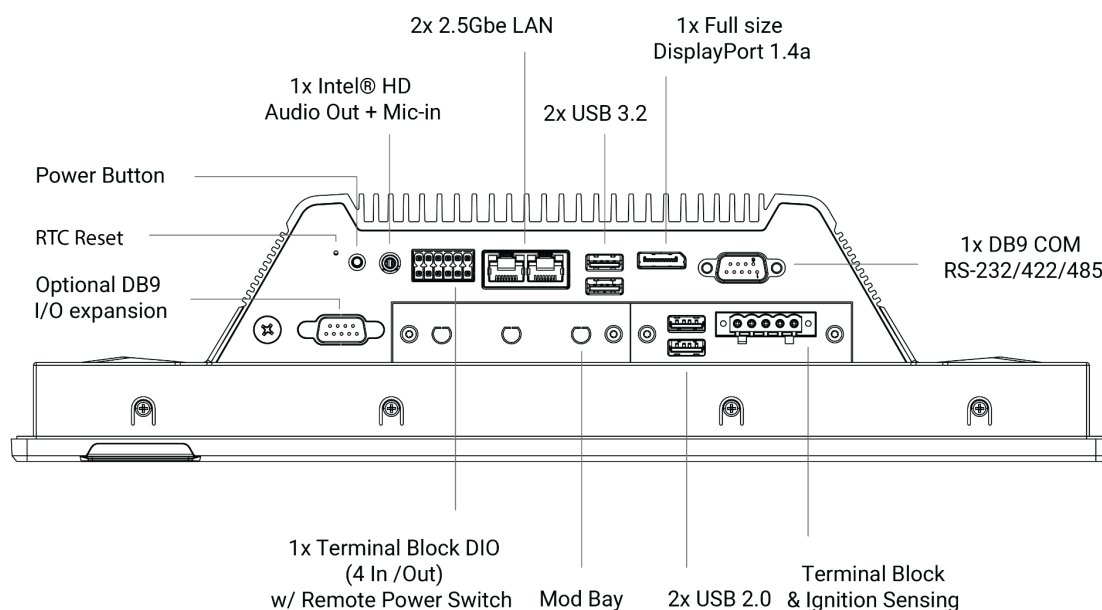
Power Button / Power LED

The power button can be used to turn on and off the Tacton system. The power button is a momentary contact button with a blue LED backlight used to display the status of the system. A single press while the system is on will initiate a graceful shutdown operation from the OS. Pressing and holding the button for 4 seconds while the system is running will cause a hard reset of the system. The system can be woken by a single press of the power button from any state.

The LED on the chassis will indicate the system status. A solid blue light indicates that the system is powered in the S0 state. A flashing blue light indicates the system is in the sleep state. The LED is off in S5 and deep sleep states.

USB 3.2

There are two dual stack USB 3.2 Gen 2 ports on the Tacton mainboard. Each port is capable of linking at 10Gb/s transfer rates.

USB 2.0

There are two USB 2.0 headers on the Tacton System. Each USB 2.0 port is capable of linking at 480 Mb/s transfer rates.

1x 3.5mm Audio

Audio input and output is provided by way of a 3.5mm CTIA standard (mic-in/line-out) audio jack on the panel of the Tacton platform. A pinout is provided below. The audio codec used is a Realtek ALC888. Proper drivers must be installed.

Left Channel
Right Channel
Ground Line
Microphone

CTIA Pinout
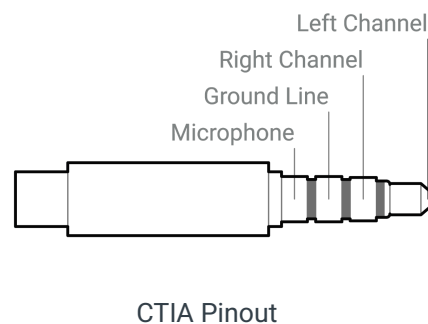
DIO, Remote Power Switch

Tacton 401 provides the following: an 8-bit (4-in, 4-out) Digital Input Output (DIO) or General Purpose Input Output (GPIO) with optically isolated terminals, and an optional external power switch connection.

The DIO is optically isolated, meaning that the terminal is separated from other motherboard features for protection. The DIO terminal requires external power from a 5~48V DC source through Pin 12 with GND to Pin 11 in order to function.

When the intrusion feature is enabled, DIO In0 is preserved as the intrusion detection pin, and a falling edge on DIO In0 is seen as an intrusion event.

For a complete explanation of features, operating voltages, and safety information, please refer to the DIO expansion manual on the OnLogic support site.

https://support.onlogic.com/documentation/tacton-technical-resources/#dio

Pin	Definition	Pin	Definition
1	SW+	2	GND
3	In0	4	Out0
5	In1	6	Out1
7	In2	8	Out2
9	In3	10	Out3
11	V_DIO-	12	V_DIO+
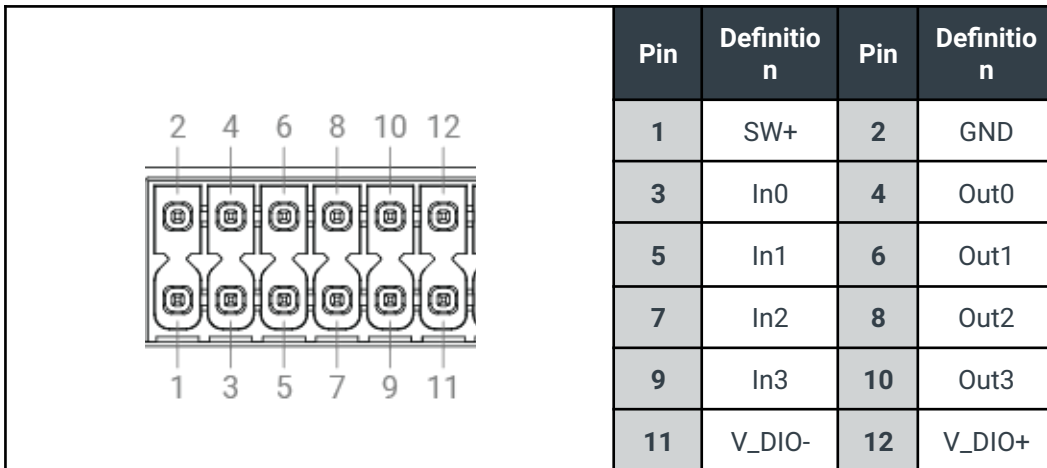
DIO and Remote Switch connection Diagram

Remote Switch
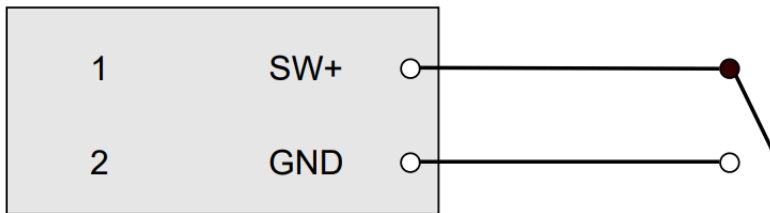
Digital IN
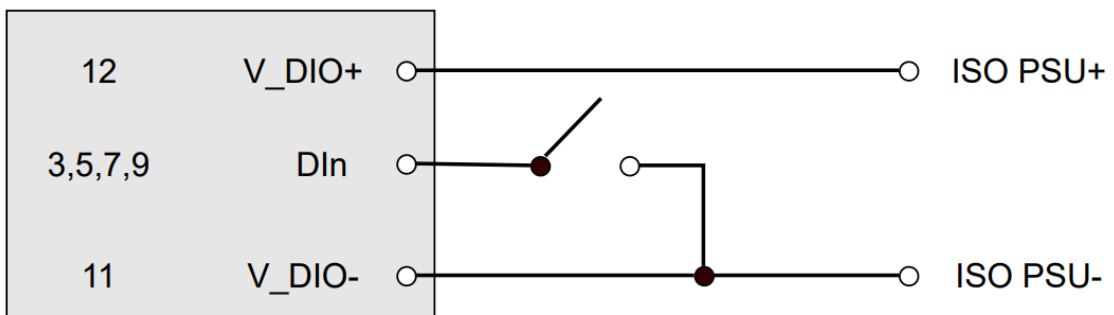
Digital Out
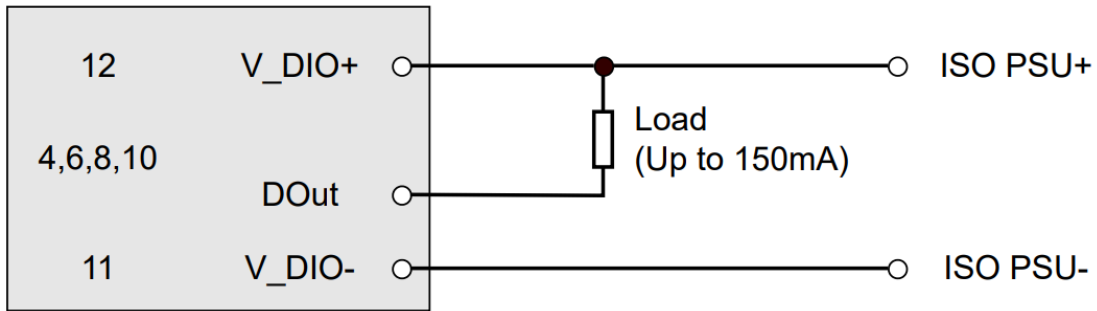
DisplayPort 1.4a
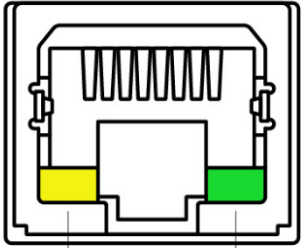
Tacton utilizes Intel's Integrated Gen 12 processor graphics that power the onboard DisplayPort 1.4a. This means resolutions up to 4096x2160 @ 60Hz are supported on outputs. The DisplayPort supports Multi-Stream Transport (MST).

LAN1- Intel I226-IT

Tacton utilizes Intel's I225 LAN controller and supports up to 2.5Gbps link speeds over standard shielded CAT5e or CAT6 cables. The connector is the industry standard RJ45 connector. The LAN link state is shown by the two LEDs enclosed in the port. The description is included below.

LAN2 - Intel I226-IT

Tacton utilizes Intel's I225 LAN controller and supports up to 2.5Gbps link speeds over standard shielded CAT5e or CAT6 cables. The connector is the industry standard RJ45 connector. The LAN link state is shown by the two LEDs enclosed in the port. The description is included below.

LED	Color	State	Function
Link	-	Off	LAN link is not established
	Yellow	On	LAN link is established
		Blinking	LAN activity occurring
Speed	-	Off	10 Mb/s 100Mb/s data rate
	Orange	On	1 Gb/s data rate
	Green	On	2.5 Gb/s data rate

Link LED (Yellow)　　Speed LED (Green/Orange)

LAN activity light description

COM DB9 Option

The serial port mode and voltage between Off/5V on Pin 9 on Tacton can be selected in the BIOS configuration. The serial ports support RS-232, RS-422, and RS-485 configurations. Refer to the BIOS manual in Appendix C for configuration instructions.

Pin	RS-232	RS-422	RS-485
1	DCD	**TX-**	**TX-/RX-**
2	RX	**TX+**	**TX+/RX+**
3	TX	**RX+**	**NC**
4	DTR	**RX-**	**NC**
5	GND	**NC**	**NC**
6	DSR	**NC**	**NC**
7	RTS	**NC**	**NC**
8	CTS	**NC**	**NC**
9	RI/PWR	NC/PWR	NC/PWR

COM DB9 pinout

CAN DB9 option
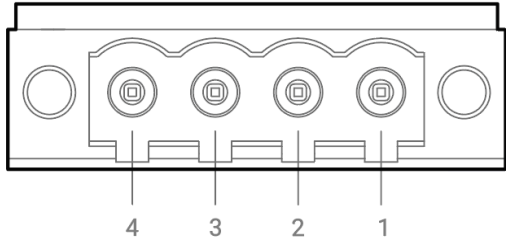
The CAN port on Tacton supports CAN2.0 A/B at baud rates from 100-1000 kbaud. The system CAN port is not internally terminated, and a properly terminated (120 Ohms, typical) cable should be used. The communication protocol used to send and receive messages is detailed on the [support website](#).

Pin	Signal
1	CAN_2_L
2	CAN_1_L
3	GND
4	NC
5	NC
6	GND
7	CAN_1_H
8	CAN_2_H
9	NC
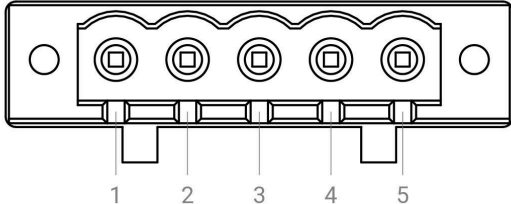
COM DB9 pinout

Terminal Block Power Input

There are two variants of power distribution board, targeting rugged and industrial applications. The system is operational from 12V~24V using the industrial power board, and 12V~48V using the rugged power board. The maximum rated current of the connector is 15A per pin. Use a wire gauge that is rated for the operational current. Cables should be properly terminated with wire ferrules. Do not use the terminal block with tinned wire ends or solid core wire. See below for the connector pinout which is also indicated on the terminal block mounting panel adjacent to the connector. Installation of DC Mains connection shall only be performed by skilled personnel and in accordance with your local and national electrical code (Example: NEC, CEC).

Pin	Function
1	12~24V DC Input
2	GND
3	GND
4	12~24V DC Input

Industrial Power Board Terminal Block Pinout

Pin	Definition
1	12~48V DC Ignition
2	12~48V DC Input
3	12~48V DC Input
4	GND
5	GND

Rugged Power Board Terminal Block Pinout

The rugged power board with 5-pin power input terminal offers automotive ignition sensing. The ignition sensing timing for power on and off delays can be modified through OnLogic's microcontroller (MCU) using serial commands. These commands can be used to enable or disable the ignition sensing feature, to set the timing delay for system startup after ignition is detected, and to set the timing delay for system soft and hard shutdown after ignition is lost. For more information on ignition power sensing, and instructions on how to use the serial commands from Windows or Linux.

Visit OnLogic's support site: support.onlogic.com/documentation/tacton-technical-resources/
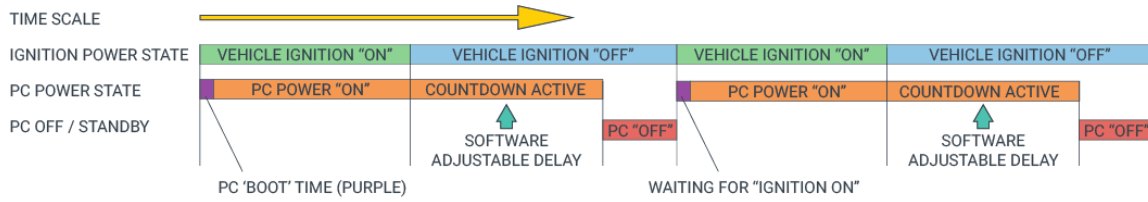
2.3 - Motherboard Connectors

The motherboard top view of the TC401.
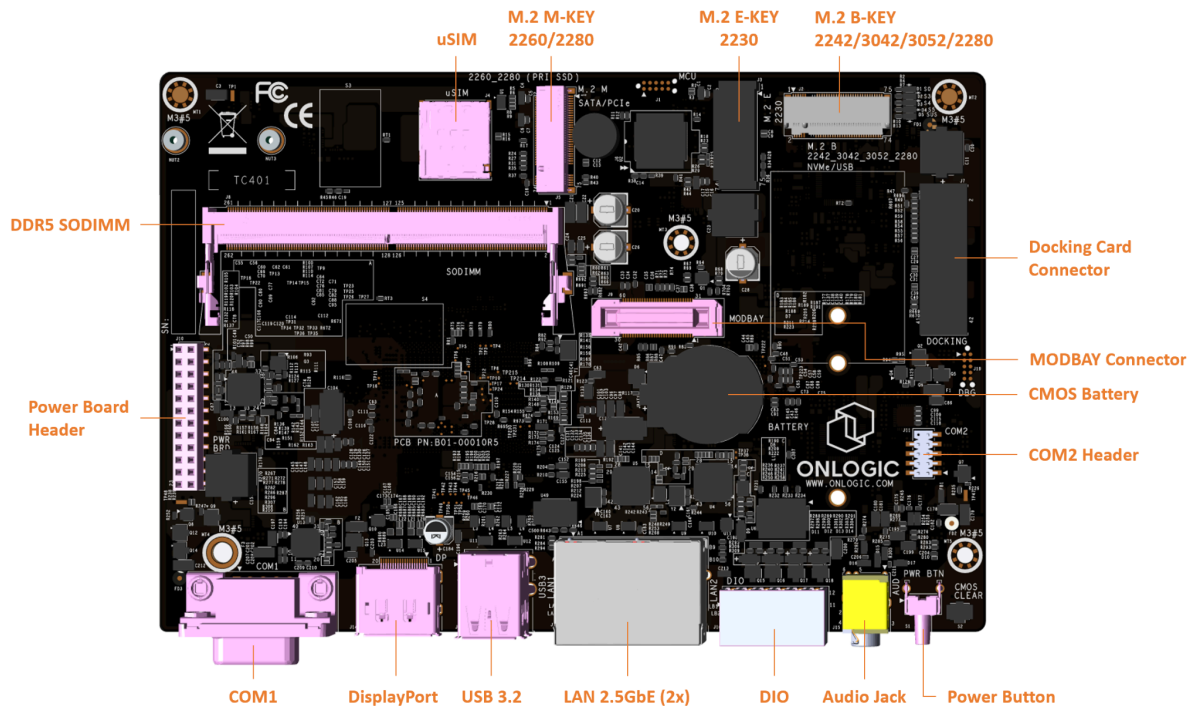
M.2 B-Key

An M.2 B-Key port is present on the Tacton motherboard to allow support for B-Key form-factor expansion cards. Supported cards include 3042, 2242, 3052, 2280 form-factors. The B-Key connector on the Tacton platform supports PCIe Gen 3 x1, USB 3.2 10Gb/s, USB 2.0 devices.

The 3FF Micro SIM card slot is available for OnLogic 4G modules.

 A full pinout table for this expansion slot is provided in **Appendix F**.

M.2 E-Key

An M.2 E-Key port is present on the Tacton motherboard to allow support for E-Key form-factor wireless expansion cards. Only 2230 form-factor cards are supported. The E-Key connector on the Tacton platform supports PCIe Gen 3 x1 and USB 2.0.

A full pinout table for this expansion slot is provided in **Appendix F**.

M.2 M-Key

An M.2 M-Key port is present on the Tacton motherboard to allow support for M-Key form-factor expansion cards. 2260 and 2280 form-factor cards are supported. The M-Key connector on the Tacton platform includes support for PCIe Gen3 x1/ SATA |||

A full pinout table for this expansion slot is provided in **Appendix F**.

SO-DIMM1

The Tacton platform has one onboard DDR5 SO-DIMM Slots. Below find the specifications of the the SO-DIMM Slots:

- Maximum Capacity: DDR5-4800 16GB with a single SO-DIMM Module
- Channel configuration: 1DIMM Per Channel (DPC)
- Only Intel In-Band ECC Support no ECC RAM supported

SIM Card

A 3FF Subscriber Identity Module (SIM) card slot is present on the motherboard of the TC401 allowing native support for OnLogic 4G LTE modules. The SIM signals are connected to the M.2 B-Key internal expansion slot.

The SIM slot is a Push-Push type receptacle. To insert or remove the SIM card under M.2 Key B in the Tacton platform, please use a small implement to push the card into the slot until it clicks. To remove the card, push with a small implement until the card clicks, then pull on the free end of the card to remove it.

COM2

The on-board COM2 headers utilize standard 9-pin 2.00mm pitch male pin headers with the pin configuration in the chart below. These serial ports support RS-232, RS-422 Full-Duplex, and RS-485 half-Duplex configurations. The serial port communication mode can be selected in the BIOS configuration. In addition, 5V power can be enabled on pin 9 in the same BIOS menu. Pin 9 is rated to provide 150mA of current. Refer to the BIOS manual (**Appendix C**) for configuration instructions.

Pin	RS-232	RS-422	RS-485
1	DCD	TX-	TX-/RX-
2	RX	TX+	TX+/RX+
3	TX	RX+	NC
4	DTR	RX-	NC
5	GND	NC	NC
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI/PWR	NC/PWR	NC/PWR
10	(KEY)	(KEY)	(KEY)

Motherboard Serial header pinout

BIOS EEPROM

If the BIOS needs to be updated, please refer to **Appendix C** for reflashing instructions.

ATX (Auto Power ON)

Auto Power ON selection made via BIOS Menu

RTC Reset Button

Tacton features an RTC reset button that can be accessed using a paperclip or SIM card removal tool. Be sure the system is powered off and unplugged before resetting with the button. The RTC reset button is found next to the power button.

RTC Battery Holder

The RTC coin-cell battery on the Tacton platform is used to retain BIOS CMOS settings and maintain the real-time clock for the system. If the RTC battery is low, CMOS settings will not be retained and you may receive an alert in the operating system. The RTC coin-cell battery should be replaced with a Murata CR2032W (or UL listed equivalent).

ModBay Connector

The TC401 model features one ModBay expansion slot. The Modbay slot supports PCIe Gen 3 x2, USB 3.1 Gen 2, and USB 2.0. OnLogic offers a variety of ModBay cards including RJ45 LAN, M12 LAN, USB3, and RS232.

USB 2.0 Header

The on-board USB 2.0 header provides a single USB 2.0 signal. It utilizes a WR-WTB 4-pin 1.25mm pitch male pin connector with the pin configuration in the chart below. The 5V power pin (Pin 1) can provide up to 1A of current.

Pin	Function
1	5V
2	D0-
3	D0+
4	GND
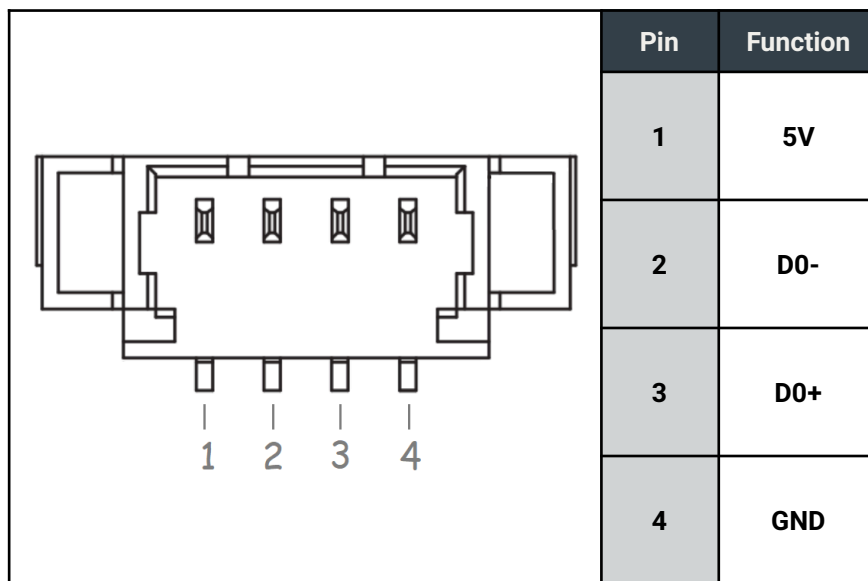
USB 2.0 header pinout

Power Board Header

Mainboard power is applied by the power board through the power board header. The power board will take in the main input power, and convert it to the voltage needed by the mainboard. See below for connector pinout.

Pin	Function
1,2	USB
3,4,5,6, 7,8,18	GND
9,10,11, 12,14,16	12V
13	(Key)
15	5V
17,19,20, 21,22,23	Control Signals
24	3.3V

Power board header pinout

2.4 - CPU

Four Intel Gen12 N-Series CPU options are available for the Tacton TC401.

CPU	Onlogic SKU	CPU configuration
N97	TC401-MB-N97	4 CORE, 12W
N200	TC401-MB-N200	4 CORE, 6W
i3-N305	TC401-MB-N305	8 CORE, 15W
Atom x7425E	TC401-MB-X7425E	4 CORE, 12W

2.5 - TSN and Intel TCC

- TSN (Time-Sensitive Networking)
  - TSN is supported by I226-IT Ethernet controllers on the Motherboard
- Intel TCC (Time Coordinated Computing)
  - TCC is only supported in Intel Embedded CPU SKU - x7425E
    - N97: TCC is not supported
    - N200: TCC is not supported
    - i3-N305: TCC is not supported
    - x7425E: TCC is supported

3 - Mounting Instructions

3.1 - Panel Mount
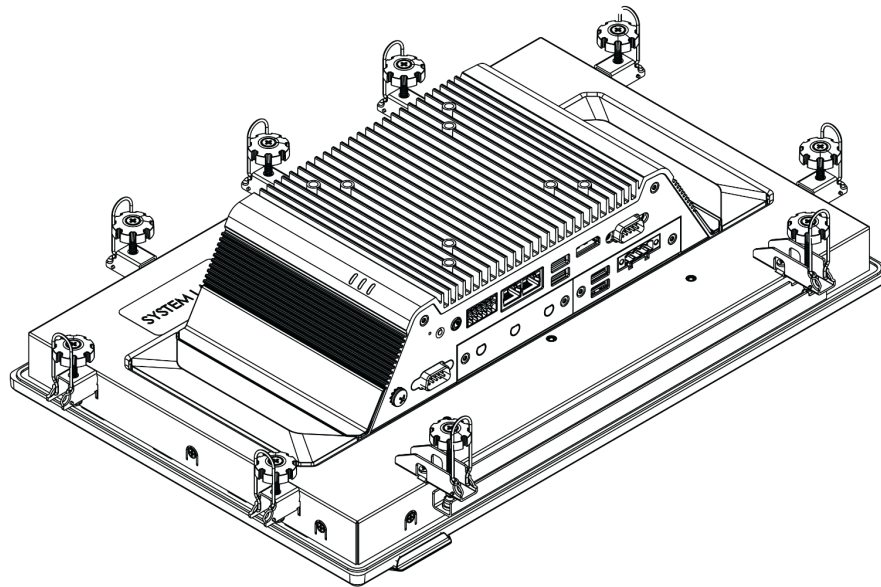
Step 1: Prepare the cutout for the surface. Edges must be smooth and free of burrs or debris.

515 ±1.5

381.5 ±1.5

296 ±1.5

322 ±1.5

246 ±1.5

212 ±1.5

12.1" PANEL CUTOUT

15.6" PANEL CUTOUT

21.5" PANEL CUTOUT
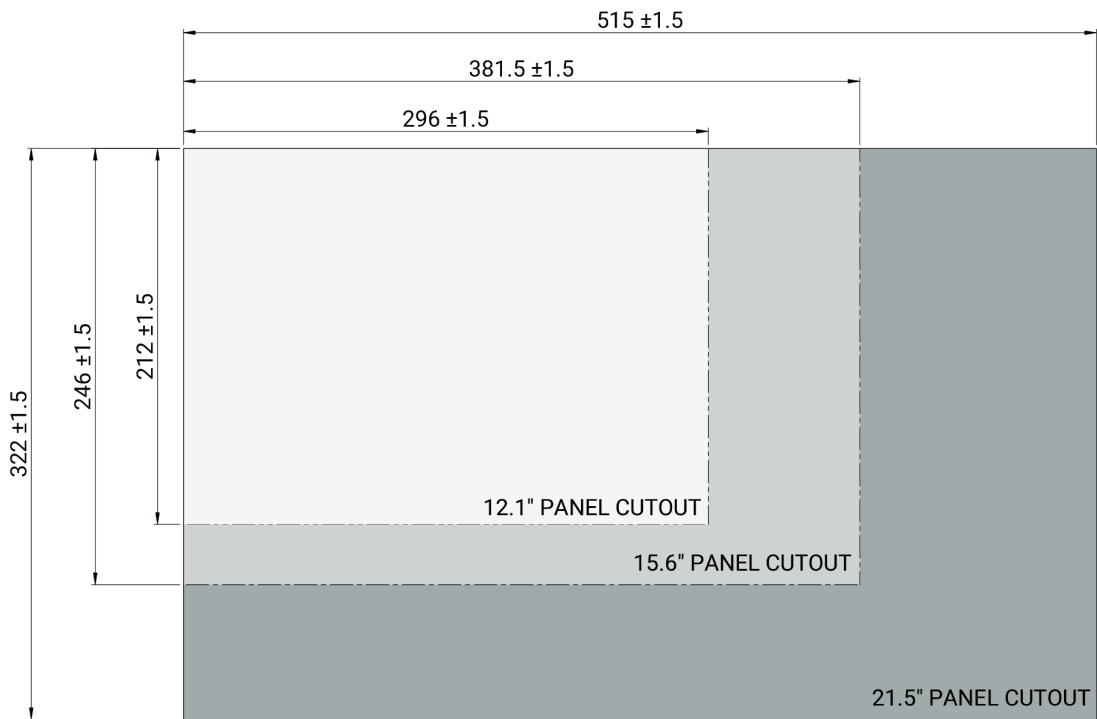
Step 2: Remove dust plugs from Mounting Clamp holes on the rear of the panel.

ASSEMBLY STEP 2 - REMOVE DUST PLUGS
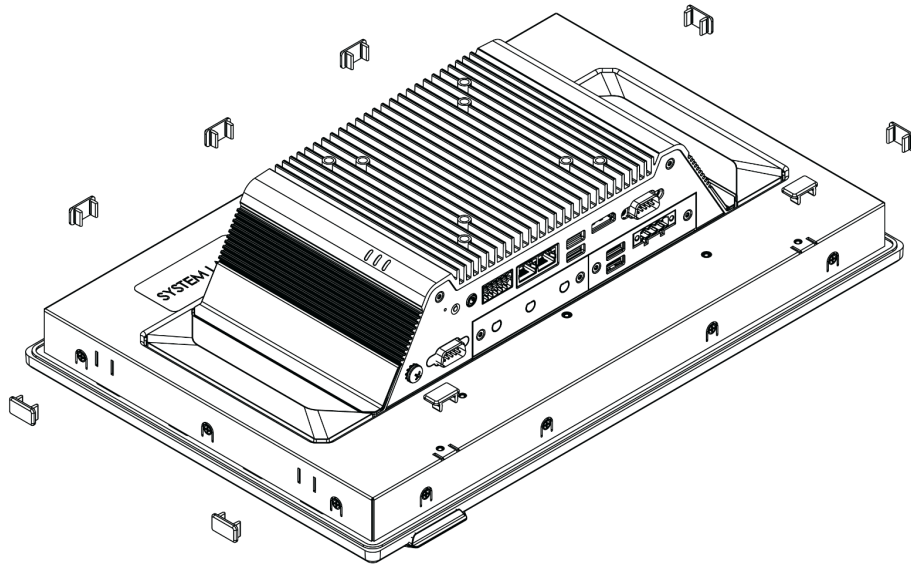
Step 3: Attach Mounting Bar MTW111 to the rear of the panel. Adjust clamp distance so that it is only slightly greater than mounting surface thickness.

ASSEMBLY STEP 3 - INSTALL MOUNTING BAR MTW111
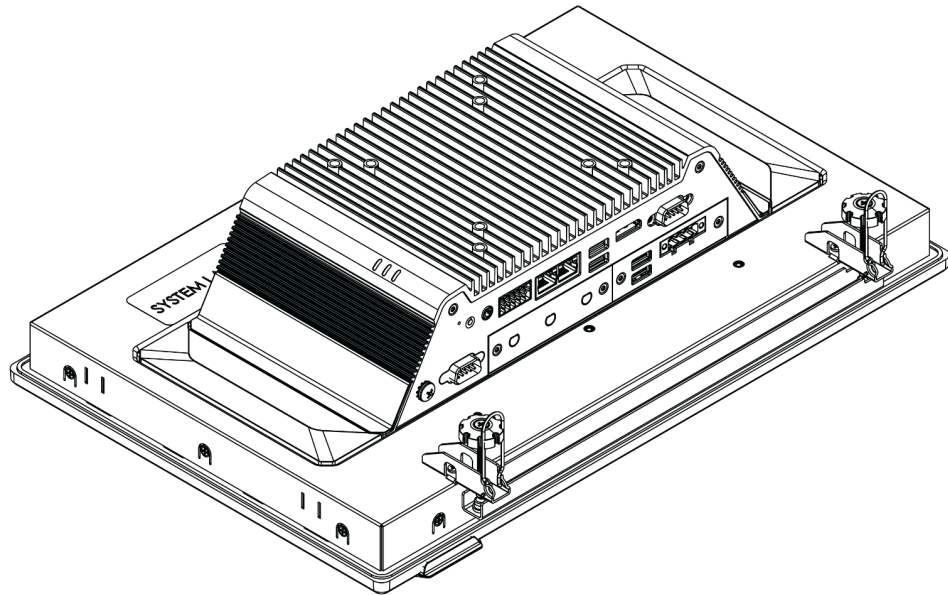
Step 4: Holding the panel at an angle, insert the panel into the hole.

ASSEMBLY STEP 4 - ANGLE PANEL AND INSERT INTO HOLE
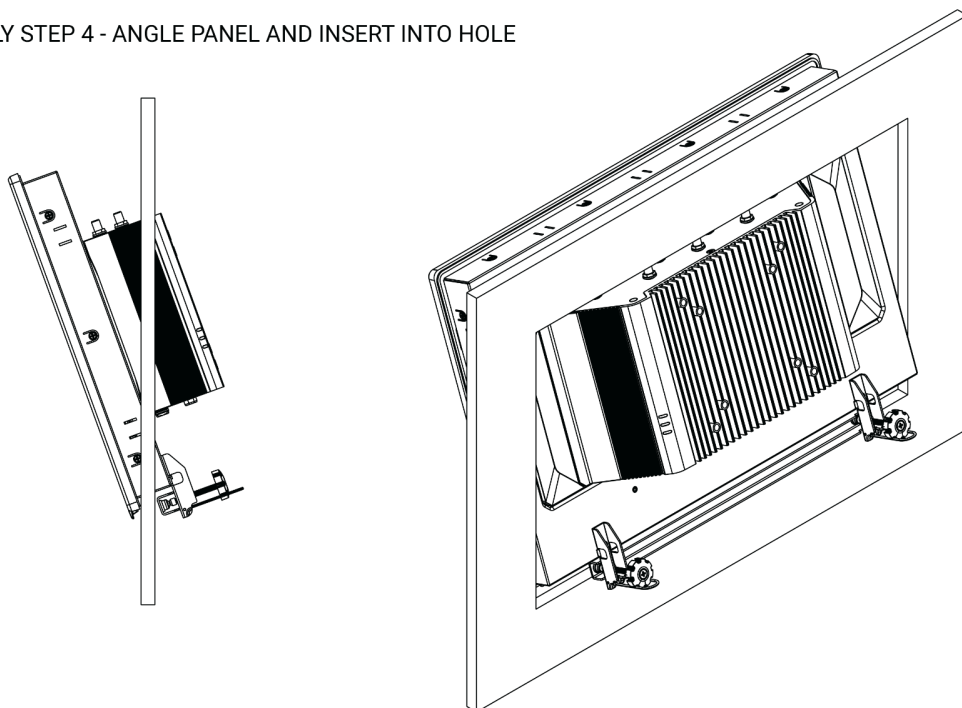
Step 5: On the rear side of the panel, install and tighten the Mounting Clamp MTW110. To ensure even clamping force, tighten clamps on opposite edges following a diagonal pattern across the panel. Example tightening order indicated below. Continue tightening until the gasket is no longer visible on the panel side.

ASSEMBLY STEP 5 -TIGHTENING SEQUENCE
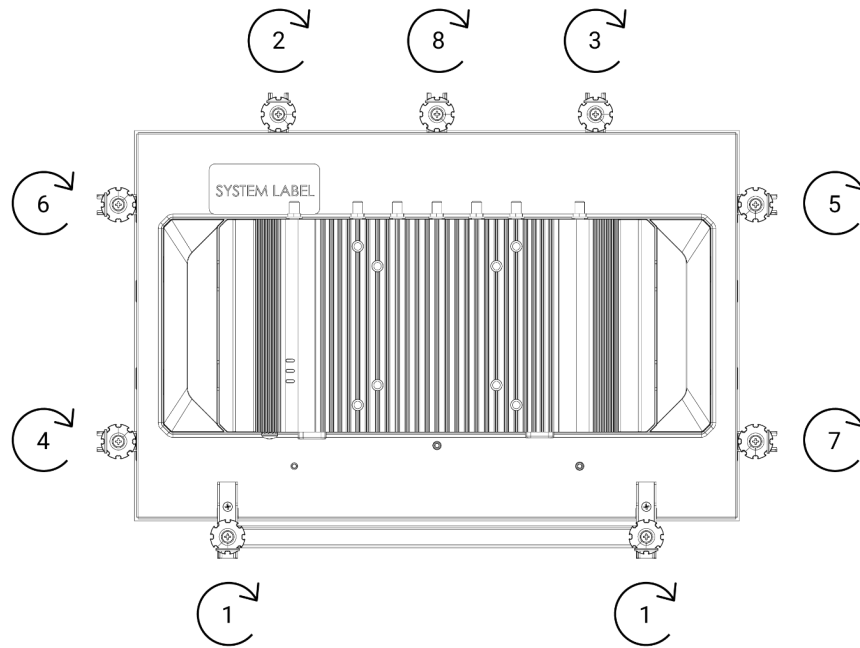
Note: The surface is required to support 4x the hanging weight of the system.

3.2 - VESA Mounting
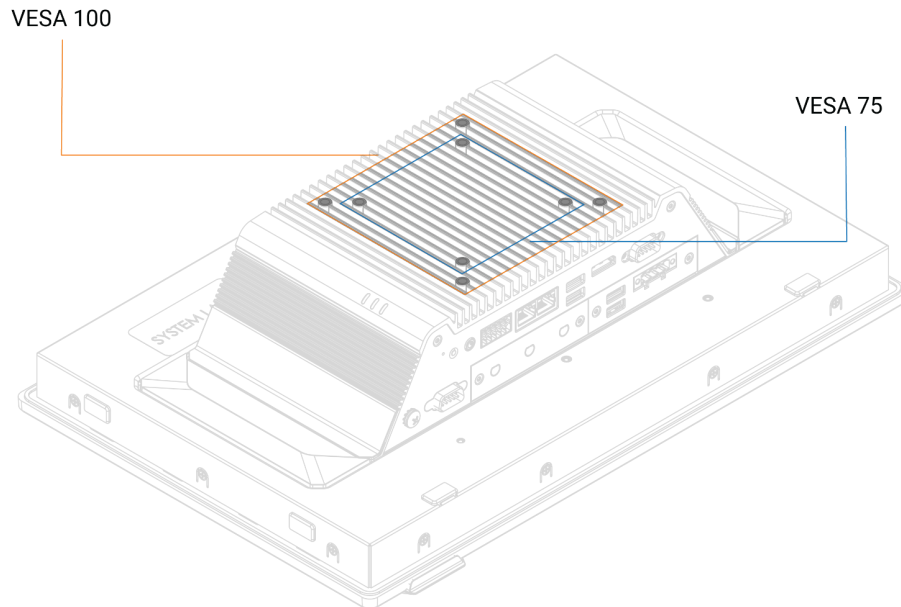
VESA 100

VESA 75

Step 1: Locate the threaded holes for the VESA 75 and VESA 100 Mounting on the heatsink of the system.

Step 2: Install the system to VESA 75 or VESA 100 mounting pattern on the heatsink using provided VESA Mount screws.

4 - Power Management

4.1 - Wake-Up Events

The Tacton platform supports multiple power states. The wake-up events can be configured in the BIOS. This section describes the supported power management functions and gives information on protection circuitry for power adapters. Low power shutdown is an additional option in the BIOS. See **Appendix C** for more information.

Wake-Up Event	From ACPI State	Comments

Power Button	Ultra-low Power shutdown, DS5, S5, S3	
Ignition	Ultra-low Power shutdown, DS5, S5, S3	Must be enabled in MCU
LAN	S5, S3	Must be enabled in BIOS
USB	S3	
RTC Wake set by BIOS	S5	Must be enabled in BIOS
RTC Wake set by OS	S3	

4.2 - Protection Circuitry

Parameter	Value
Nominal operating voltage (Rated DC value of input)	12~24V (+/-10%)

These DC levels specified are the absolute max values for the pins for function and safety of the system. The protection circuitry allows for brief transient voltages above these levels without the system turning off or being damaged. A transient voltage suppressor on the power input allows momentary excursions above stated limits. For input power consumption and current see **Appendix A.**

5 - Regulatory Compliance

5.1 - CE

This device has been tested to the relevant EMC and Safety standards. Modifications by the user may invalidate certifications. Testing included EN 55032, EN 55035, EN 60601-1-2, EN 62368-1, IEC 60945 Ed. 4, and many others, please see specifications for details.

5.2 - FCC Statement

This device complies with part 15 of the FCC rules as a Class A device. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

5.3 - ISED (Innovation, Science and Economic Development Canada)

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

CAN ICES-003(A) / NMB-003(A)

5.4 - UKCA

The computer system was evaluated for medical, IT equipment, automotive, maritime and railway EMC standards as a class A device. The computer complies with the relevant IT equipment directives for the UKCA mark.

5.5 - VCCI

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI). If this equipment is used in a domestic environment, radio interference may occur, in which case the user may be required to take corrective actions.

この装置は、クラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI-A

6 - Appendices

6.1 - Appendix A: Power consumption

The power consumption of the TC401 system was measured for various system configurations, workloads, and power states at both 12V and 24V system input voltages. Tests were performed using Burnintest v9.0 build 1012 to stress system components with and without graphics enabled. The build configurations and power consumption are listed in the tables below.

*The configurations below are using representative samples of internal devices, the specific components mentioned below may vary from the devices provided by OnLogic. The power consumption for each system configuration is recorded below.

System Component	Config 1 TC401-MB-N200	Config 2 TC401-MB-X7425E	Config 3 TC401-MB-N97	Config 4 TC401-MB-N305
CPU	Intel N200 (6W TDP)	Intel X7425E (12W TDP)	Intel N97 (12W TDP)	Intel i3-N305 (15W TDP)
Memory	Innodisk SO-DIMM DDR5 4800 8GB M5SV-8GMYZC0P-A	Innodisk SO-DIMM DDR5 4800 8GB M5SV-8GMYZC0P-A	Transcend SO-DIMM DDR5 4800 16GB TS2GSA64V8E	Transcend SO-DIMM DDR5 4800 16GB TS2GSA64V8E
LAN	1Port	1Port	2 Port	2 Port
Storage #1 M.2 M-Key	Transcend 2TB TS2TMTE712A	Transcend 2TB TS2TMTE712A	Transcend 2TB TS2TMTE712A	Transcend 2TB TS2TMTE712A
M.2 B-Key	-	-	-	AMIT M.2 MDG200 Module(Idle)
M.2 E key	-	-	Intel Embedded M.2 2230 802.11ac Wi-Fi Bluetooth 5.1 Card INT-9260-NGWGIE (Idle)	Intel Embedded M.2 2230 802.11ac Wi-Fi Bluetooth 5.1 Card INT-9260-NGWGIE (Idle)
COM1	Onboard only(Idle	Onboard only(Idle	Onboard only(Idle	Onboard only(Idle)
CAN	-	-	-	ADP123 card (idle)
USB	Wireless Mouse	Wireless Mouse	Wireless Mouse	Wireless Mouse
DisplayPort	No	No	Yes	Yes
ModBay	-	-	4 x USB	4 x USB
OS	Win 11	Win 11	Win 11	Win 11
Power Plan	Power Saver	Power Saver	High Performance	High Performance
BIOS Version	1.36	1.36	1.36	1.36
Input Voltage	24V	24V	24V	24V
Brightness Level	100%	100%	100%	100%

Config 1 TC401-MB-N200						
Power Consumption 24V (avg W)	12.1" Screen		15.6" Screen		21.5" Screen	
	121-P-NB-C (Normal)	**121-P-HB-C (High Brightness)**	**156-P-NB-C (Normal)**	**156-P-HB-C (High Brightness)**	**215-P-NB-C (Normal)**	**215-P-HB-C (High Brightness)**
Pseudo G3	0.1	0.1	0.1	0.1	0.1	0.1
Deep S5	0.1	0.1	0.1	0.1	0.1	0.1
S5	3.5	3.5	3.3	3.4	3.3	3.4
S3	4.1	4.0	3.8	3.9	4.0	4.0
Windows Idle	24.3	22.0	27.0	36.5	26.1	43.8
CPU Stress	28.5	25.7	30.6	39.9	29.4	47.3
CPU, RAM, SSD, Graphics Stress	30.2	27.7	32.8	42.0	31.6	49.7
CPU Stress with graphics and all USB ports max loaded	45.0	42.4	47.9	57.1	47.1	65.0

Config 2 TC401-MB-X7425E						
Power Consumption 24V (avg W)	12.1" Screen		15.6" Screen		21.5" Screen	
	121-P-NB-C (Normal)	**121-P-HB-C (High Brightness)**	**156-P-NB-C (Normal)**	**156-P-HB-C (High Brightness)**	**215-P-NB-C (Normal)**	**215-P-HB-C (High Brightness)**
Pseudo G3	0.1	0.1	0.1	0.1	0.1	0.1
Deep S5	0.1	0.1	0.1	0.1	0.1	0.1
S5	3.4	3.4	3.3	3.4	3.5	3.8
S3	4.0	3.9	3.8	3.9	4.1	3.8
Windows Idle	24.3	21.9	27.4	35.9	26.8	43.7
CPU Stress	32.8	30.3	36.0	44.5	35.2	51.2
CPU Stress with graphics	38.5	35.0	40.4	48.8	39.0	55.8
CPU Stress with graphics and all USB ports max loaded	53.3	50.0	55.0	65.1	54.7	72.5

Config 3 TC401-MB-N97						
Power Consumption 24V (avg W)	**12.1" Screen**		**15.6" Screen**		**21.5" Screen**	
	121-P-NB-C (Normal)	**121-P-HB-C (High Brightness)**	**156-P-NB-C (Normal)**	**156-P-HB-C (High Brightness)**	**215-P-NB-C (Normal)**	**215-P-HB-C (High Brightness)**
Pseudo G3	0.1	0.1	0.1	0.1	0.1	0.1
Deep S5	0.1	0.1	0.1	0.1	0.1	0.1
S5	3.6	3.6	3.4	3.6	3.5	3.5
S3	4.3	4.4	4.1	4.4	4.6	4.3
Windows Idle	25.7	25.5	29.9	38.8	28.1	46.4
CPU Stress	36.4	33.6	39.7	48.5	37.5	56.1
CPU Stress with graphics	40.1	37.5	43.2	51.8	41.4	58.9
CPU Stress with graphics and all USB ports max loaded	77.2	74.3	80.0	89.7	78.8	97.3

Config 4 TC401-MB-N305						
Power Consumption 24V (avg W)	**12.1" Screen**		**15.6" Screen**		**21.5" Screen**	
	121-P-NB-C (Normal)	**121-P-HB-C (High Brightness)**	**156-P-NB-C (Normal)**	**156-P-HB-C (High Brightness)**	**215-P-NB-C (Normal)**	**215-P-HB-C (High Brightness)**
Pseudo G3	0.1	0.1	0.1	0.1	0.1	0.1
Deep S5	0.1	0.1	0.1	0.1	0.1	0.1
S5	3.8	3.7	3.6	3.7	3.9	3.7
S3	4.9	4.7	4.8	4.8	5.0	4.8
Windows Idle	28.3	25.5	30.4	39.5	30.0	47.1
CPU Stress	44.4	39.5	45.5	55.8	44.5	61.5
CPU Stress with graphics	46.4	44.0	48.5	59.0	48.4	65.9
CPU Stress with graphics and all USB ports max loaded	86.2	83.9	90.1	98.7	87.6	106.8

6.2 - Appendix B: Isolated DIO guide

Additional information for the Isolated DIO can be found on the OnLogic support site. Please refer to the link below for additional information.

https://support.onlogic.com/documentation/tacton-technical-resources/#dio

6.3 - Appendix C: BIOS manual

For a detailed overview of the BIOS screens and individual settings, please refer to the OnLogic support site. Instructions for updating the BIOS can also be found on the support site. Please refer to the link below for detailed instructions.

https://static.onlogic.com/resources/manuals/OnLogic-TC401-BIOS-Manual.pdf

6.4 - Appendix D: CAN user guide

Additional information for using the on-board CAN transceiver can be found on the OnLogic support site. Please refer to the link below for additional information.

https://support.onlogic.com/documentation/tacton-technical-resources/#can-bus

6.5 - Appendix E: System thermal results

6.5.1 Test Conditions

- Temperature Range: -20ºC to 70°C
- Step size: 5°C
- i3-N305 Processor, 1TB PCIe Gen3 x4 SSD, and 16GB RAM loaded @ 80% with BurnInTest 10.1

6.5.2 Test Results
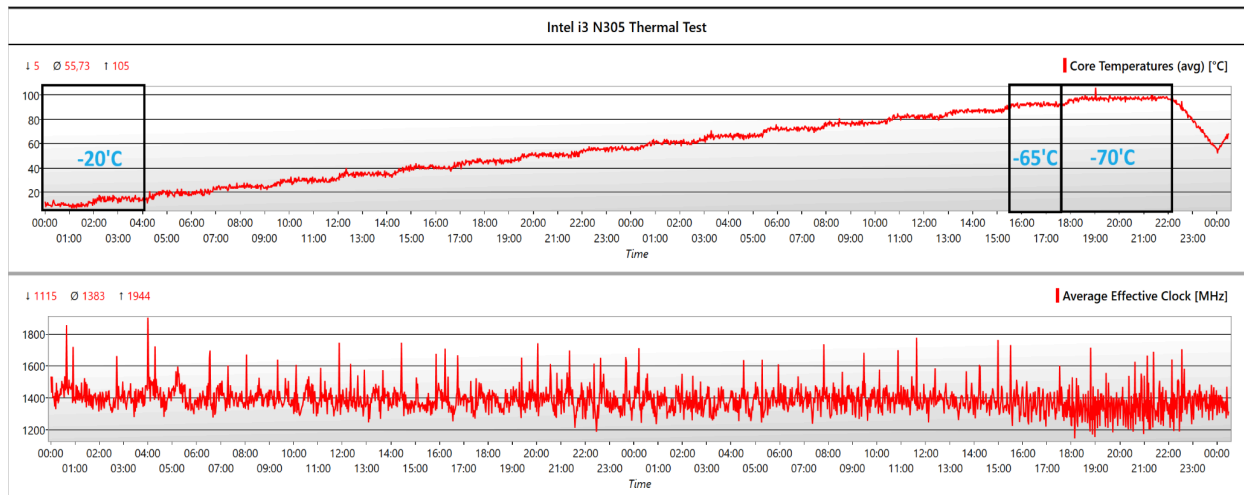
6.5.3 Test Result Summary

The TC401 with i3-N305 operated upwards of 80% of its rated base clock speeds on the CPU cores while sustaining significant processor, memory and storage stress loads in an ambient temperature of 50ºC.

6.6 - Appendix F: Expansion port pinout

6.6.1 - M.2 B-Key

Pin	Function	Function	Pin
1	CONFIG_3	3.3V	2
3	GND	3.3V	4
5	GND	FULL_CARD_POWER_OFF#	6
7	USB 2.0 D+	W_DISABLE1#	8
9	USB 2.0 D-	LED_1#	10
11	GND	KEY	
	KEY	KEY	
	KEY	KEY	
	KEY	KEY	
	KEY	NC	20
21	CONFIG_0	NC	22
23	NC	NC	24
25	NC	W_DISABLE2#	26
27	GND	NC	28

29	USB3.1-Rx-	UIM-RESET	30
31	USB3.1-Rx+	UIM_CLK	32
33	GND	UIM_DATA	34
35	USB3.1-Tx-	UIM_PWR	36
37	USB3.1-Tx+	NC	38
39	GND	NC	40
41	PERn0	NC	42
43	PERp0	NC	44
45	GND	NC	46
47	PETn0	NC	48
49	PETp0	PERST#	50
51	GND	CLKREQ#	52
53	REFCLKn	PEWAKE#	54
55	REFCLKp	NC	56
57	GND	NC	58
59	NC	NC	60
61	NC	NC	62
63	NC	NC	64
65	NC	SIM_DETECT	66
67	RESET_N	SUSCLK	68
69	CONFIG_1	3.3V	70
71	GND	3.3V	72
73	GND	3.3V	74
75	CONFIG_2		

6.6.2 - M.2 E-Key

Pin	Function	Function	Pin
1	GND	3.3 V	2
3	USB_D+	3.3 V	4
5	USB_D-	NC	6
7	GND	NC	8
9	NC	NC	10
11	NC	NC	12
13	NC	NC	14

15	NC	NC	16
17	NC	GND	18
19	NC	NC	20
21	NC	NC	22
23	NC	KEY	
	KEY	KEY	
	KEY	KEY	
	KEY	KEY	
	KEY	NC	32
33	GND	NC	34
35	PETp0	NC	36
37	PETn0	NC	38
39	GND	NC	40
41	PERp0	NC	42
43	PERn0	NC	44
45	GND	NC	46
47	REFCLKp0	NC	48
49	REFCLKn0	SUSCLK(32kHz)	50
51	GND	PERST0#	52
53	CLKREQ0#	W_DISABLE2#	54
55	PEWAKE0#	W_DISABLE1#	56
57	GND	NC	58
59	NC	NC	60
61	NC	NC	62
63	GND	NC	64
65	NC	NC	66
67	NC	NC	68
69	GND	NC	70
71	NC	3.3V	72
73	NC	3.3V	74
75	GND		

6.6.3 - M.2 M-Key

Pin	Function	Function	Pin
1	GND	3.3 V	2
3	GND	3.3 V	4
5	NC	NC	6
7	NC	NC	8
9	GND	LED_1#	10
11	NC	3.3 V	12
13	NC	3.3 V	14
15	GND	3.3 V	16
17	NC	3.3 V	18
19	NC	NC	20
21	GND	NC	22
23	NC	NC	24
25	NC	NC	26
27	GND	NC	28
29	NC	NC	30
31	NC	NC	32
33	GND	NC	34
35	NC	NC	36
37	NC	DEVSLP	38
39	GND	NC	40
41	PERn0/SATA-B+	NC	42
43	PERp0/SATA-B-	NC	44
45	GND	NC	46
47	PETn0/SATA-A-	NC	48
49	PETp0/SATA-A+	PERST#	50
51	GND	CLKREQ#	52
53	REFCLKn	PEWAKE#	54
55	REFCLKp	NC	56
57	GND	NC	58
	CONNECTOR Key M	CONNECTOR Key M	
	CONNECTOR Key M	CONNECTOR Key M	
	CONNECTOR Key M	CONNECTOR Key M	
	CONNECTOR Key M	CONNECTOR Key M	

67	NC	SUSCLK(32kHz)	68
69	PEDET (NC-PCIe/GND-SATA)	3.3 V	70
71	GND	3.3 V	72
73	GND	3.3 V	74
75	GND		

6.7 - Appendix G: Panel (Screen) Brightness Control

6.7.1 - Brightness Control via Windows 10/11

The panel backlight is able to be controlled via the native EDP function. In Win10/Win11, the backlight is adjustable by the Brightness control bar under the System -> Display settings, the setting is also available under the Windows Action Center.
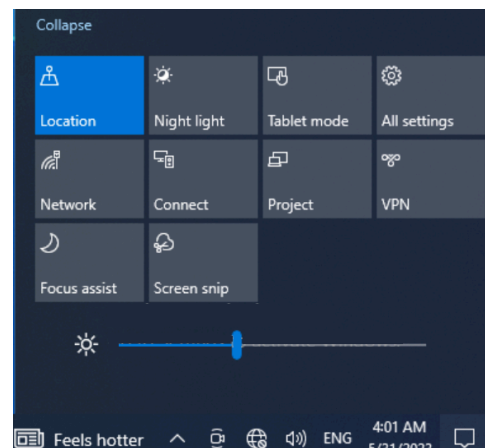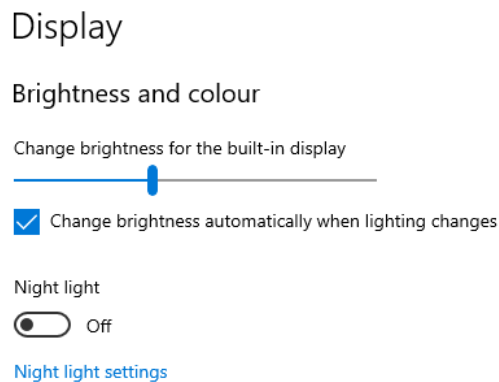
6.7.2 - Brightness Control via Ubuntu

The brightness control bar is also available inUbuntu

It is under the system menu on the right side of the top bar.
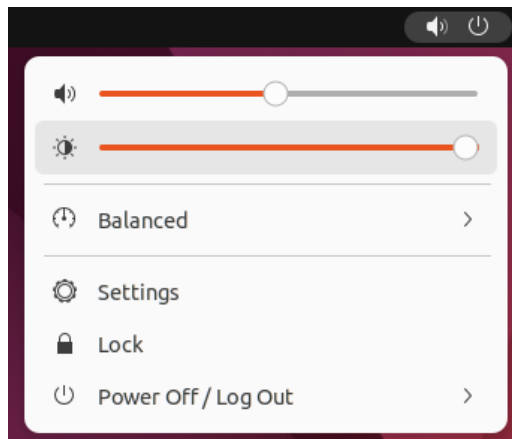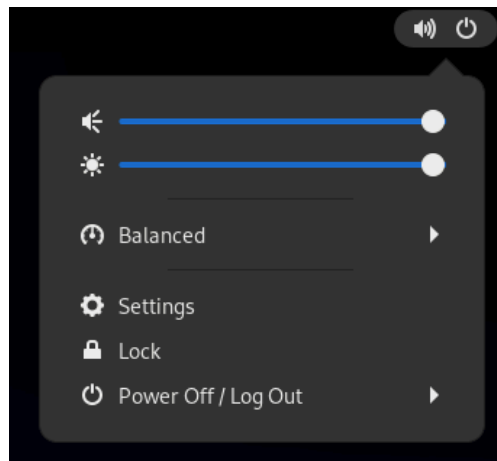
6.7.3 - Brightness Control via Redhat

6.8 - Appendix H: Panel Operating Temperatures, Brightness, and IP Ratings

Camera: 2MP FHD USB camera supports: 1080p (1920x1080), 720p (1280x720), VGA (640x480), QVGA(320x240), QQVGA (160x120)

DISPLAY	SKU	Operating Temp	Storage Temp	Touch Type	Camera	Typical Brightness (Nits)	Ingress Protection Rating (IP)
12.1"	121-R-NB	-20 to 70C	-30 to 85C	Resistive		600	IP66
12.1"	121-P-NB	-20 to 70C	-30 to 85C	Projected Capacitive		600	IP69K
12.1"	121-P-NB-C	-20 to 70C	-30 to 85C	Projected Capacitive	Yes	600	IP66
12.1"	121-R-HB	-20 to 70C	-30 to 85C	Resistive		1000	IP66
12.1"	121-P-HB	-20 to 70C	-30 to 85C	Projected Capacitive		1000	IP69K
12.1"	121-P-HB-C	-20 to 70C	-30 to 85C	Projected Capacitive	Yes	1000	IP66
15.6"	156-R-NB	-20 to 70C	-30 to 85C	Resistive		450	IP66
15.6"	156-P-NB	-20 to 70C	-30 to 85C	Projected Capacitive		450	IP69K
15.6"	156-P-NB-C	-20 to 70C	-30 to 85C	Projected Capacitive	Yes	450	IP66
15.6"	156-R-HB	-20 to 70C	-30 to 85C	Resistive		1000	IP66
15.6"	156-P-HB	-20 to 70C	-30 to 85C	Projected Capacitive		1000	IP69K
15.6"	156-P-HB-C	-20 to 70C	-30 to 85C	Projected Capacitive	Yes	1000	IP66
21.5"	215-R-NB	**0 to 60C**	-20 to 60C	Resistive		350	IP66
21.5"	215-P-NB	**0 to 60C**	-20 to 60C	Projected Capacitive		350	IP69K
21.5"	215-P-NB-C	**0 to 60C**	-20 to 60C	Projected Capacitive	Yes	350	IP66
21.5"	215-R-HB	-10 to 70C	-10 to 80C	Resistive		1000	IP66
21.5"	215-P-HB	-10 to 70C	-10 to 80C	Projected Capacitive		1000	IP69K
21.5"	215-P-HB-C	-10 to 70C	-10 to 80C	Projected Capacitive	Yes	1000	IP66

6.9 - Appendix I: Approved Cleaning Agents

6.9.1 - Resistive Touch Chemical Resistance

Testing condition		Tt※ [%]	Haze※ [%]	Color difference※				Tape adhesion		Pencil Hardness	SteelWool abration
				L*	a*	b*	⊿E*	HC Side	LSAN Side	HC Side	HC Side
Before test		89.3	7.6	94.6	-0.5	3.0	-	100/100	100/100	3H	No Scratch
10%CaOH	2hr	89.9	19.9	90.3	0.2	4.8	4.7	100/100	100/100	3H	No Scratch
10%NaOH	2hr	90.0	14.8	92.1	0.0	4.5	3.0	100/100	100/100	3H	Scratch
Acetic anhydride	2hr	89.5	7.4	94.7	-0.5	3.0	0.1	100/100	100/100	3H	No Scratch
Acetone	2hr	89.5	7.4	94.7	-0.5	3.0	0.1	100/100	100/100	3H	No Scratch
Hexan	2hr	89.4	7.6	94.6	-0.5	3.0	0.0	100/100	100/100	3H	No Scratch
Glycerine	2hr	89.4	7.5	94.6	-0.5	3.0	0.0	100/100	100/100	3H	No Scratch
Nitrobenzene	2hr	89.4	7.5	94.7	-0.5	3.0	0.1	100/100	100/100	3H	No Scratch
Benzene	2hr	89.4	7.6	94.6	-0.5	3.0	0.0	100/100	100/100	3H	No Scratch
Kerosene	2hr	89.4	7.6	94.6	-0.5	3.0	0.0	100/100	100/100	3H	No Scratch
Engine lubricating oil	2hr	89.4	7.5	94.6	-0.5	3.0	0.1	100/100	100/100	3H	No Scratch
Diesel oil	2hr	89.4	7.5	94.6	-0.5	3.0	0.0	100/100	100/100	3H	No Scratch
Lubricant	2hr	89.4	7.5	94.6	-0.5	3.0	0.0	100/100	100/100	3H	No Scratch

※We measured by the light entering from the HC surface.

6.9.2 - Capacitive Touch Chemical Resistance

NO.	Reagents	Glass				Surface Differences
		R(%) 380~780nm		T(%) 380~780nm		
		before	after	before	after	
No.1	Acetic acid	6.12	5.89	91.17	91.15	No abnormality
No.2	Phosphoric acid (< 30%) (25%)	6.05	5.88	91.14	91.19	No abnormality
No.3	Hydrochloric acid (< 10%) (10%)	5.98	5.88	91.19	91.17	No abnormality
No.4	Nitric acid (< 10%) (10%)	5.91	5.69	91.18	91.16	No abnormality
No.5	Ammonia (< 2%) (2%)	5.81	5.73	91.18	91.19	No abnormality
No.6	Sodium hydroxide solution (< 2%) (2%)	5.76	6.09	91.19	91.17	No abnormality
No.7	Alkali carbonates (2%)	6.07	6.02	91.11	91.51	No abnormality
No.8	Ethanol	6.00	6.07	91.21	91.23	No abnormality
No.9	Ethylene glycol	5.99	6.04	91.14	91.20	No abnormality
No.10	Glycerol	5.90	6.04	91.12	91.23	No abnormality
No.11	Isopropyl alcohol	5.90	5.96	91.29	91.25	No abnormality
No.12	Methanol	5.86	6.06	91.11	91.21	No abnormality
No.13	Formaldehyde	6.09	6.09	91.18	91.22	No abnormality
No.14	Ethyl acetate	6.16	6.07	91.15	91.21	No abnormality
No.15	Toluene	6.11	6.04	91.18	91.19	No abnormality
No.16	Ether	6.10	6.04	91.15	91.22	No abnormality
No.17	Detergent solutions(Windex)	6.13	6.05	91.13	91.21	No abnormality
No.18	Cutting oil	6.08	6.05	91.18	91.26	No abnormality
No.19	Diesel oil	6.12	6.06	91.15	91.22	No abnormality
No.20	Silicone oil	6.10	6.01	91.19	91.36	No abnormality
No.21	Pine fragrance	6.10	6.08	91.17	91.19	No abnormality
No.22	Water (<100°C)	6.09	6.23	91.14	91.21	No abnormality
No.23	Hydrogen peroxide (3%)	6.16	6.19	91.17	91.20	No abnormality

The red mark represents the actual concentration of the agent

6.10 - Appendix J: Errata/known issues

6.10.1 - Digital Mic on Panel (DMIC)

Please be informed that Digital Microphone on Panel (DMIC) only works in Windows based operating systems. The Ubuntu and Redhat OSes are not supported and pending resolution.

6.10.2 - CAN BUS

Please be informed that the optional feature CAN BUS add-in card is not yet supported

6.10.2 - 2X RS 232 COM ModBay Kit

Please be informed that the RX 232 COM ModBay Kit is not supported on Redhat (8.7,8.8,9.1 and 9.2)

6.11 - Appendix K: Known Behavior

6.11.1 - Error LED: Boot Issue

Please be informed that in certain cases where external intervention is required for TC401 to proceed with the boot process into operating systems, TC401 will indicate 'Boot Issue' by slowly blinking the Status LED. Such cases could be caused by swapping the original bootable device to another, quality issues existing in the original bootable device, etc.