



TEK3-IMX6UL BOX PC PRODUCT MANUAL
(TEK3-IMX6UL)

VER. 1.00

January 25, 2019

REVISION HISTORY

Revision	Date	Originator	Notes
1.00	January 25, 2019	TechNexion	First public release

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1. Introduction

1.1. General Care and Maintenance

Your device is a product of superior design and craftsmanship and should be treated with care.

The following suggestions will help you.

- Keep the device dry. Precipitation, humidity, and all types of liquids or moisture can contain minerals that will corrode electronic circuits. If your device does get wet, allow it to dry completely.
- Do not use or store the device in dusty or dirty areas. Its parts and electronic components can be damaged.
- Do not store the device in hot areas. High temperatures can shorten the life of electronic devices, damage batteries, and warp or melt certain plastics.
- Do not store the device in cold areas. When the device returns to its normal temperature, moisture can form inside the device and damage electronic circuit boards.
- Do not open the device while power is on. Otherwise electrical shock may result.
- Do not drop, knock, or shake the device. Rough handling can break internal circuit boards and fine mechanics.
- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the device.
- Do not paint the device. Paint can clog the parts and prevent proper operation.
- Unauthorized modifications or attachments could damage the device and may violate regulations governing radio devices.

These suggestions apply equally to your device, battery, charger, or any enhancement. If any device is not working properly, take it to the nearest authorized service facility for service.

Regulatory information



Disposal of Waste Equipment by Users in Private Household in the European Union
This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment

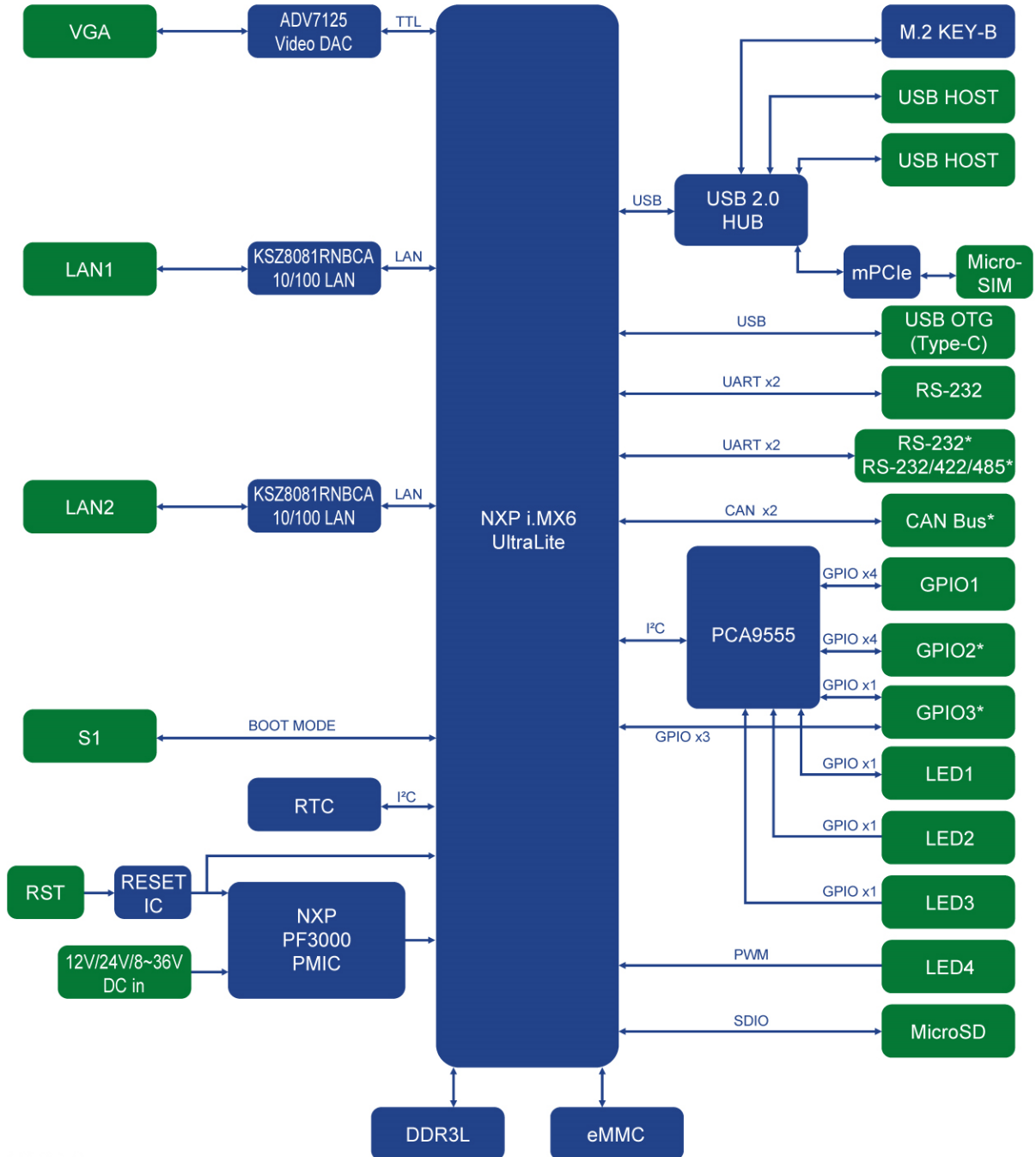
for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.



We hereby declare that the product is in compliance with the essential requirements and other relevant provisions of European Directive 2014/53/EU (Directive on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC).

2. TEK3-IMX6UL Product Overview

2.1. Functional Block Diagram

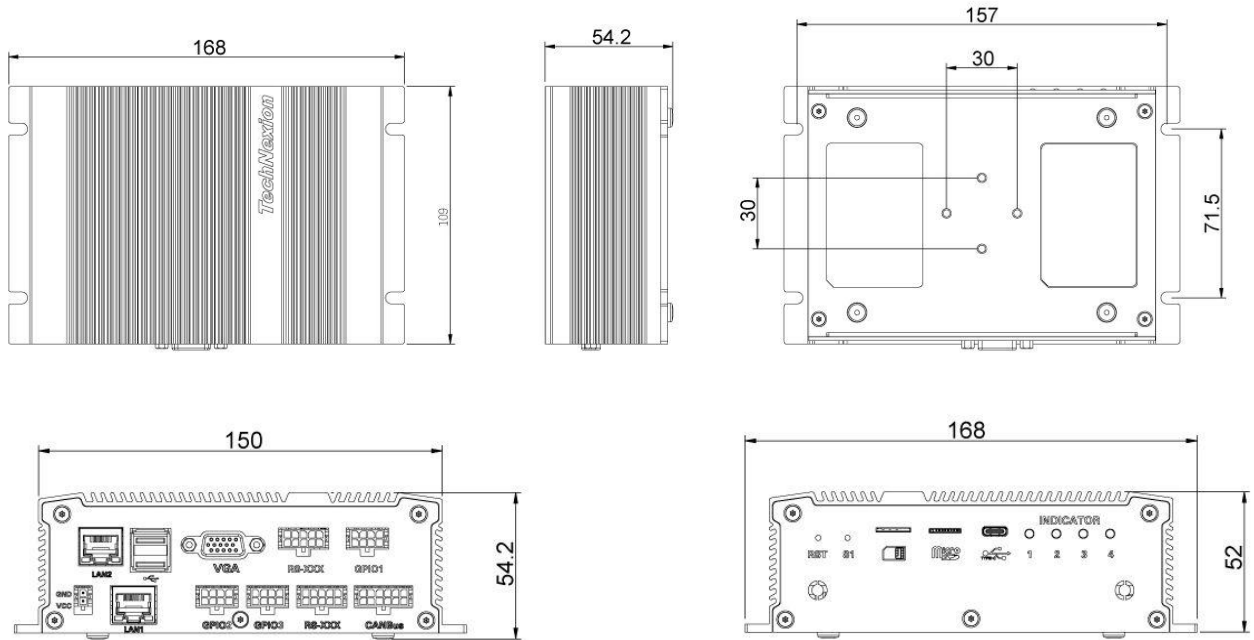


LEGEND:

■ External I/O ■ Optional

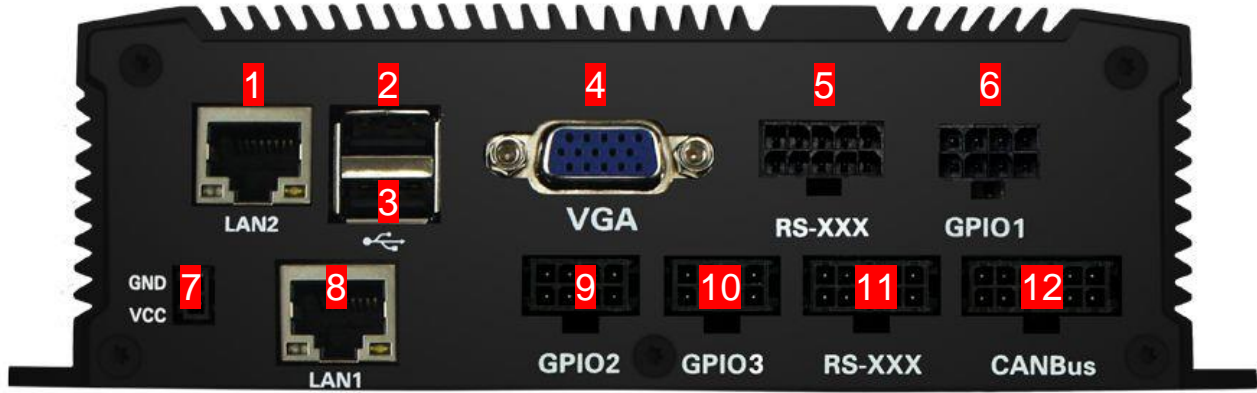
2.2. Dimensions

The following figure shows the TEK3-IMX6UL dimensions (unit: mm):



2.3. External Connectors

The TEK3-IMX6UL has a number of external connectors.
Front view:



Rear view:



External Connectors:

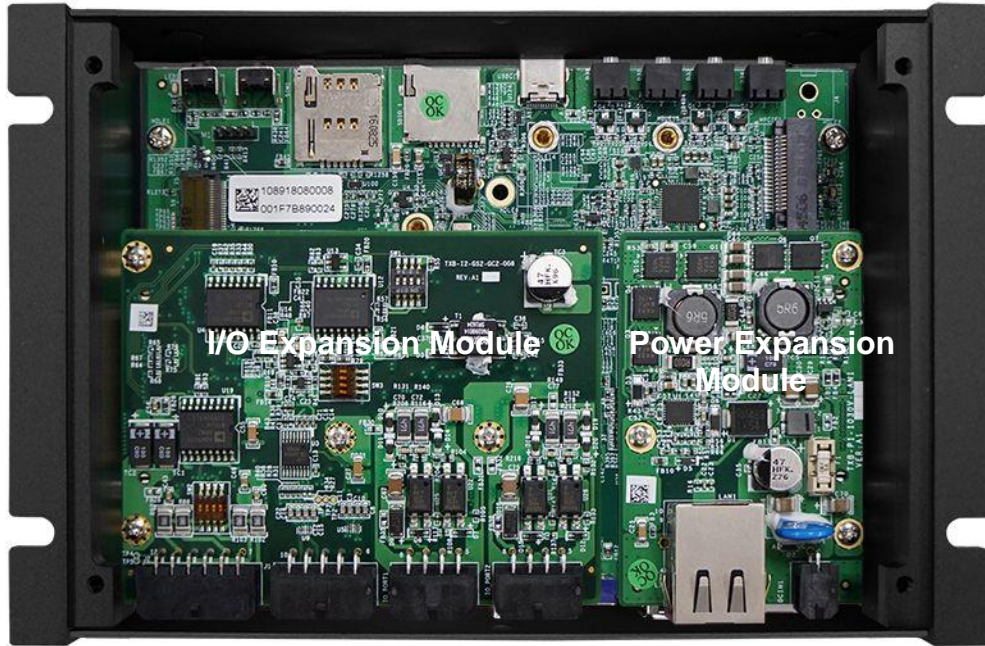
No.	Description	No.	Description
1	LAN2 RJ45 connector	13	RST (Reset) button
2	USB Host connector	14	S1 (Boot Select) button
3	USB Host connector	15	Micro-SIM card slot
4	VGA (15-pin D-SUB) connector	16	MicroSD card slot
5	RS-XXX (Serial Port) connector (optional)	17	USB OTG (Type-C) connector
6	GPIO1 connector (optional)	18	LED Light 1 indicator
7	Power Input connector	19	LED Light 2 indicator
8	LAN1 RJ45 connector	20	LED Light 3 indicator
9	GPIO2 connector (optional)	21	LED Light 4 indicator
10	GPIO3 connector (optional)	22	Antenna hole
11	RS-XXX (Serial Port) connector (optional)	23	Antenna hole
12	CAN Bus connector (optional)		

2.4. Internal Board Connectors

The TEK3-IMX6UL has several connectors, switches and internal expansion options.

2.4.1. Galvanic Isolated (TEK3-IMX6G-05-Rxx-Exx-x-Lxxx-XG20-xx-xxxx)

Rear view (opened device) with the galvanic isolated I/O Expansion and Power Expansion modules:



NOTE: Internal connectors and switches are accessible only after removing the I/O Expansion and Power Expansion modules.

2.4.2. Non-Galvanic Isolated (TEK3-IMX6G-05-Rxx-Exx-x-Lxxx-**XS20**-xx-xxxx)

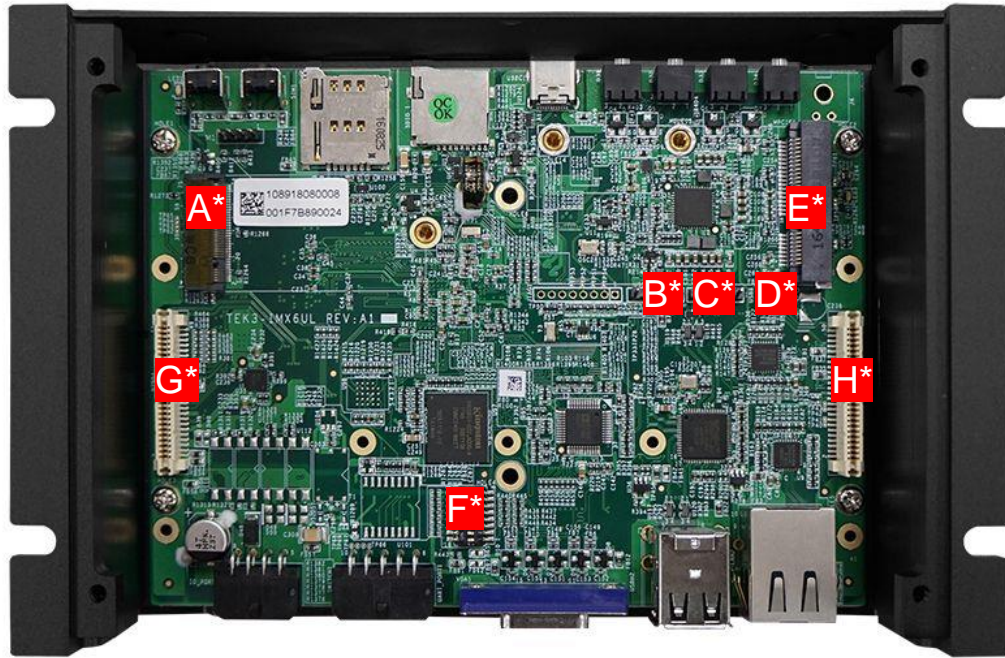
Rear view (opened device) with the non-galvanic isolated I/O Expansion and Power Expansion modules:



NOTE: Internal connectors and switches are accessible only after removing the I/O Expansion and Power Expansion modules.

2.4.3. Board View Without the Power and I/O Expansion Modules

Rear view (opened device) without the I/O Expansion and Power Expansion modules:



Internal Connectors and Switches:

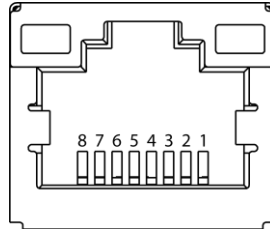
No.	Description	No.	Description
A*	M.2 KEY-B slot (USB)	E*	mini-PCle connector (USB)
B*	USB7 port header	F*	Boot Mode DIP switch for S1 button
C*	USB6 port header	G*	I/O Expansion module connector
D*	RTC Battery connector	H*	Power Expansion module connector

NOTE: Items marked with * are accessible only after removing the I/O Expansion and Power Expansion modules.

3. External Connectors

3.1. Fast Ethernet Interface

The TEP-0500-IMX6UL by default comes with two Fast Ethernet RJ45 connectors. LAN1 connector can support 802.3at Power over Ethernet functionality if configured with the PoE power option (TEK3-IMX6G-05-Rxx-Exx-x-**LPOE**-xxxx-xx-xxxx) by connecting it to an 802.3at compliant PoE switch or power injector.



LAN1 / LAN2:

Pin #	100 Mbps	10 Mbps
1	Transmit Data+	Transmit Data+
2	Transmit Data-	Transmit Data-
3	Receive Data+	Receive Data+
4		
5		
6	Receive Data-	Receive Data-
7		
8		

3.2. USB Host Connectors

The TEK3-IMX6UL has two USB Host connectors (USB 2.0 signals only) to connect to a USB peripheral such as a keyboard, mouse, USB storage device or USB hub.

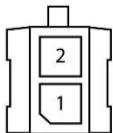
3.3. VGA (15-pin D-SUB) Connector

The VGA interface available on the TEK3-IMX6UL can be configured to support a secondary display.

3.4. Power Input Connector

The TEK3-IMX6UL can be powered either over the DC INPUT connector or PoE (optional) over the RJ45 LAN port.

NOTE: Do not power the unit by DC input when you apply power over the Power over Ethernet (RJ45)!



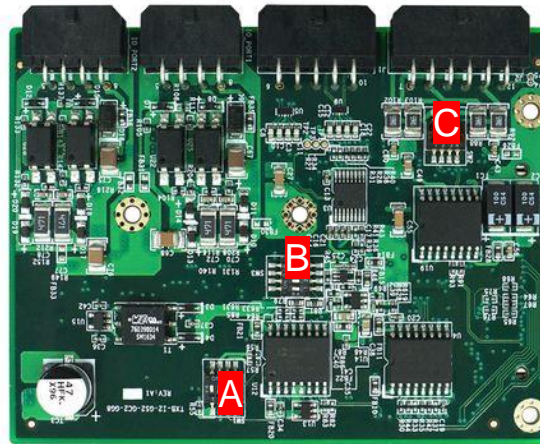
Pin #	Signal	Description
1	GND	Ground
2	VCC	DC Voltage input (12V/24V/8~36VDC)

Header on TEK3-IMX6UL: Molex 43045-0200 (2-pin Micro-Fit 3.0).
 Cable receptacle: Molex 43025-0200 (2-pin Micro-Fit 3.0) plug with crimp contact Molex 43030-0007.

3.5. Galvanic Isolated Connectors (TEK3-IMX6G-05-Rxx-Exx-G-Lxxx-XG20-xx-xxxx)

This product is available with two obligatory: GPIO1, RS-XXX and four optional connectors: GPIO2, GPIO3, RS-XXX and CAN Bus that can be ordered in either galvanic isolated or non-galvanic isolated versions. The TEK3-IMX6G-05-Rxx-Exx-G-Lxxx--xx-xxxx has two galvanic isolated connectors: GPIO1, and RS-XXX. The TEK3-IMX6G-05-Rxx-Exx-G-Lxxx-XG20-xx-xxxx has six galvanic isolated connectors: GPIO1, GPIO2, GPIO3, two RS-XXX and one CAN Bus.

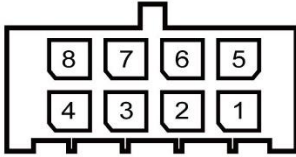
Top view of the galvanic isolated I/O Expansion module (TXB-I2-GS2-GC2-GG8):



No.	Description	No.	Description
A	SW1 DIP switch	C	SW2 Terminator Resistor DIP switch
B	SW3 Terminator Resistor DIP switch		

3.5.1. Galvanic Isolated Digital I/O Connector (GPIO1)

The galvanic isolated GPIO Expansion header has the following pinout:



GPIO1:

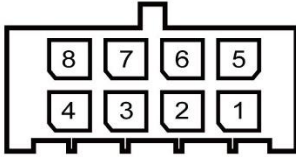
Pin #	Signal	Description	Voltage			Current Max.	GPIO Kernel	GPIO Bank/IO
			Min.	Typ.	Max.			
1	GPIO1A	DIG_IN1			6V	1A	GPIO 511	pca9555 _15
2	GPIO1B	DIG_IN2			6V	1A	GPIO 510	pca9555 _14
3	GND_DIO	Ground for digital I/O						
4	GND	Common Ground						
5	GPIO1C	DIG_OUT5			16V	1.7A	GPIO 508	pca9555 _12
6	GPIO1D	DIG_OUT6			16V	1.7A	GPIO 509	pca9555 _13
7	VCC_DIO	Supply input for digital I/O			16V			
8	VCC	Supply output		12V				

Header on TEK3-IMX6UL: Molex 43045-0800 (8-pin Micro-Fit 3.0).

Cable receptacle: Molex 43025-0800 (8-pin Micro-Fit 3.0) plug with crimp contact Molex 43030-0007.

3.5.2. Galvanic Isolated Digital I/O Connectors (GPIO2/GPIO3) (optional)

The galvanic isolated GPIO Expansion headers have the following pinout:



GPIO2:

Pin #	Signal	Description	Voltage			Current Max.	GPIO Kernel	GPIO Bank/I/O
			Min.	Typ.	Max.			
1	GPIO2A	DIG_IN1			6V	1A	GPIO 504	pca9555_8
2	GPIO2B	DIG_IN2			6V	1A	GPIO 503	pca9555_7
3	GND_DIO	Ground for digital I/O						
4	GND	Common Ground						
5	GPIO2C	DIG_OUT5			16V	1.7A	GPIO 501	pca9555_5
6	GPIO2D	DIG_OUT6			16V	1.7A	GPIO 502	pca9555_6
7	VCC_DIO	Supply input for digital I/O			16V			
8	VCC	Supply output		12V				

GPIO3:

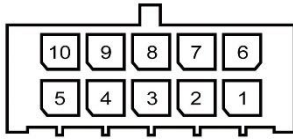
Pin #	Signal	Description	Voltage			Current Max.	GPIO Kernel	GPIO Bank/I/O
			Min.	Typ.	Max.			
1	GPIO3A	DIG_IN1			6V	1A	GPIO 500	pca9555_4
2	GPIO3B	DIG_IN2			6V	1A	GPIO 112	4_16
3	GND_DIO	Ground for digital I/O						
4	GND	Common Ground						
5	GPIO3C	DIG_OUT5			16V	1.7A	GPIO 4	1_4
6	GPIO3D	DIG_OUT6			16V	1.7A	GPIO 5	1_5
7	VCC_DIO	Supply input for digital I/O			16V			
8	VCC	Supply output		12V				

Header on TEK3-IMX6UL: Molex 43045-0800 (8-pin Micro-Fit 3.0).

Cable receptacle: Molex 43025-0800 (8-pin Micro-Fit 3.0) plug with crimp contact Molex 43030-0007.

3.5.3. Galvanic Isolated Serial Port (RS-XXX)

The dual 2-wire galvanic isolated serial port is configured as follows: the primary and the secondary serial port can only be used as a standard RS-232.



RS-232 + RS-232:

Pin #	Signal	Description	Device
1	GND	Ground	
2	SERIAL1A_TXD	Port#1A Transmit data (output)	ttymxc4
3	SERIAL1A_RXD	Port#1A Receive data (input)	ttymxc4
4	NC		
5	NC		
6	GND	Ground	
7	SERIAL1B_TXD	Port#1B Transmit data (output)	ttymxc3
8	SERIAL1B_RXD	Port#1B Receive data (input)	ttymxc3
9	NC		
10	NC		

Header on TEK3-IMX6UL: Molex 43045-1000 (10-pin Micro-Fit 3.0).

Cable receptacle: Molex 43025-1000 (10-pin Micro-Fit 3.0) plug with crimp contact Molex 43030-0007.

3.5.4. Galvanic Isolated Serial Port (RS-XXX) (optional)

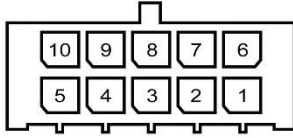
The optional dual 4-wire galvanic isolated serial port can be configured as follows: the primary serial port can only be used as a standard RS-232. The secondary port can be configured either as RS-232, or RS-422 or RS-485. This serial port is set by default as RS-232. Setting the TEK3-IMX6UL in other mode will require to open the device and adjust the internal SW1 DIP and SW3 Terminator Resistor DIP switch settings on the TEP I/O Expansion board. The SW1 DIP switch can be found at location “A” and SW3 DIP switch at location “B” in chapter [3.5. Galvanic Isolated Connectors \(TEK3-IMX6G-05-Rxx-Exx-G-Lxxx-XG20-xx-xxxx\)](#) of this manual.

SW1:

Pin #	RS-232 (default)	RS-422	RS-485
1-8	ON	OFF	OFF
2-7	OFF	ON	OFF
3-6	OFF	OFF	ON
4-5	-	-	-

SW3:

Pin #	ON	OFF
1-8	Enable RS-485 Terminator Resistor	Disable RS-485 Terminator Resistor
2-7	Enable RS-422 Terminator Resistor	Disable RS-422 Terminator Resistor
3-6	-	-
4-5	-	-



RS-232 + RS-232 (default setup):

Pin #	Signal	Description	Device
1	GND	Ground	
2	SERIAL2A_TXD	Port#2A Transmit data (output)	ttymxc5
3	SERIAL2A_RXD	Port#2A Receive data (input)	ttymxc5
4	SERIAL2A_RTS	Port#2A Request-to-send (output)	ttymxc5
5	SERIAL2A_CTS	Port#2A Clear-to-send (input)	ttymxc5
6	GND	Ground	
7	SERIAL2B_TXD	Port#2B Transmit data (output)	ttymxc1
8	SERIAL2B_RXD	Port#2B Receive data (input)	ttymxc1
9	SERIAL2B_RTS	Port#2B Request-to-send (output)	ttymxc1
10	SERIAL2B_CTS	Port#2B Clear-to-send (input)	ttymxc1

RS-232 + RS-422:

Pin #	Signal	Description	Device
1~5	SERIAL2A	Identical as above	ttymxc5
6	GND	Ground	
7	SERIAL2B_TXD+	RS-422 Transmit positive data signal (output)	ttymxc1
8	SERIAL2B_RXD-	RS-422 Receive negative data signal (input)	ttymxc1
9	SERIAL2B_RXD+	RS-422 Receive positive data signal (input)	ttymxc1
10	SERIAL2B_TXD-	RS-422 Transmit negative data signal (output)	ttymxc1

RS-232 + RS-485:

Pin #	Signal	Description	Device
1~5	SERIAL2A	Identical as above	ttymxc5
6	GND	Ground	
7	SERIAL2B+	RS-485 positive data signal	ttymxc1
8	NC		
9	NC		
10	SERIAL2B-	RS-485 negative data signal	ttymxc1

Header on TEK3-IMX6UL: Molex 43045-1000 (10-pin Micro-Fit 3.0).

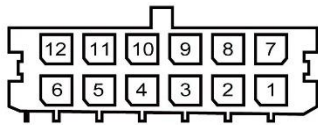
Cable receptacle: Molex 43025-1000 (10-pin Micro-Fit 3.0) plug with crimp contact Molex 43030-0007.

3.5.5. Galvanic Isolated CAN Bus Connector (CANBus) (optional)

The galvanic isolated CAN Bus interfaces can be configured as follows: enabling or disabling of CAN Bus terminator resistor will require to open the device and adjust the internal SW2 Terminator Resistor DIP switch settings on the TEP I/O Expansion board. The SW2 DIP switch can be found at location “C” in chapter [3.5.Galvanic Isolated Connectors \(TEK3-IMX6G-05-Rxx-Exx-G-Lxxx-XG20-xx-xxxx\)](#) of this manual.

SW2:

Pin #	ON	OFF (default)
1-8	Enable CAN1A Terminator Resistor	Disable CAN1A Terminator Resistor
2-7	Enable CAN1A Terminator Resistor	Disable CAN1A Terminator Resistor
3-6	Enable CAN1B Terminator Resistor	Disable CAN1B Terminator Resistor
4-5	Enable CAN1B Terminator Resistor	Disable CAN1B Terminator Resistor



CANBus:

Pin #	Signal	Description	Interface
1	GND_CAN	Ground for CAN	
2	CAN1A_TERM_N	To enable CAN1A Termination, bridge with CAN1A_N	can1
3	CAN1A_P	CAN Bus 1A high (-24~+24V)	can1
4	CAN1A_N	CAN Bus 1A low (-24~+24V)	can1
5	CAN1A_TERM_P	To enable CAN1A Termination, bridge with CAN1A_P	can1
6	NC		
7	GND_CAN	Ground for CAN	
8	CAN1B_TERM_N	To enable CAN1B Termination, bridge with CAN1B_N	can2
9	CAN1B_P	CAN Bus 1B high (-24~+24V)	can2
10	CAN1B_N	CAN Bus 1B low (-24~+24V)	can2
11	CAN1B_TERM_P	To enable CAN1B Termination, bridge with CAN1B_P	can2
12	NC		

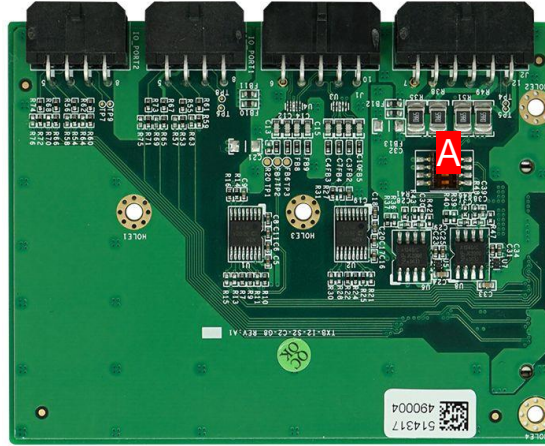
Header on TEK3-IMX6UL: Molex 43045-1200 (12-pin Micro-Fit 3.0).

Cable receptacle: Molex 43025-1200 (12-pin Micro-Fit 3.0) plug with crimp contact Molex 43030-0007.

3.6. Non-Galvanic Isolated Connectors (TEK3-IMX6G-05-Rxx-Exx--Lxxx-**XS20**-xx-xxxx)

This product is available with two obligatory: GPIO1, RS-XXX and four optional connectors: GPIO2, GPIO3, RS-XXX and CAN Bus that can be ordered in either galvanic isolated or non-galvanic isolated versions. The TEK3-IMX6G-05-Rxx-Exx--Lxxx--xx-xxxx has two non-galvanic isolated connectors: GPIO1 and RS-XXX. The TEK3-IMX6G-05-Rxx-Exx--Lxxx-**XS20**-xx-xxxx has six non-galvanic isolated connectors: GPIO1, GPIO2, GPIO3, two RS-XXX and one CAN Bus.

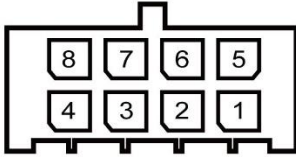
Top view of the non-galvanic isolated I/O Expansion module (TXB-I2-S2-C2-G8):



No.	Description	No.	Description
A	SW1 Terminator Resistor DIP switch		

3.6.1. Non-Galvanic Isolated Digital I/O Connector (GPIO1)

The non-galvanic isolated GPIO Expansion header has the following pinout:



GPIO1:

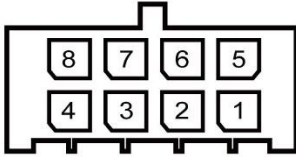
Pin #	Signal	Description	Voltage			Current Max.	GPIO Kernel	GPIO Bank/IO
			Min.	Typ.	Max.			
1	GPIO1A	DIG_IN1/OUT1	1.65V	3.3V	3.6V	0.33mA	GPIO 511	pca9555 _15
2	GPIO1B	DIG_IN2/OUT2	1.65V	3.3V	3.6V	0.33mA	GPIO 510	pca9555 _14
3	NC							
4	GND	Common Ground						
5	GPIO1C	DIG_IN5/OUT5	1.65V	3.3V	3.6V	0.33mA	GPIO 508	pca9555 _12
6	GPIO1D	DIG_IN5/OUT6	1.65V	3.3V	3.6V	0.33mA	GPIO 509	pca9555 _13
7	NC							
8	VCC	Supply output		12V				

Header on TEK3-IMX6UL: Molex 43045-0800 (8-pin Micro-Fit 3.0).

Cable receptacle: Molex 43025-0800 (8-pin Micro-Fit 3.0) plug with crimp contact Molex 43030-0007.

3.6.2. Non-Galvanic Isolated Digital I/O Connectors (GPIO2/GPIO3) (optional)

The non-galvanic isolated GPIO Expansion headers have the following pinout:



GPIO2:

Pin #	Signal	Description	Voltage			Current Max.	GPIO Kernel	GPIO Bank/IO
			Min.	Typ.	Max.			
1	GPIO2A	DIG_IN1/OUT1	1.65V	3.3V	3.6V	0.33mA	GPIO 504	pca9555_8
2	GPIO2B	DIG_IN2/OUT2	1.65V	3.3V	3.6V	0.33mA	GPIO 503	pca9555_7
3	NC							
4	GND	Common Ground						
5	GPIO2C	DIG_IN5/OUT5	1.65V	3.3V	3.6V	0.33mA	GPIO 501	pca9555_5
6	GPIO2D	DIG_IN5/OUT6	1.65V	3.3V	3.6V	0.33mA	GPIO 502	pca9555_6
7	NC							
8	VCC	Supply output		12V				

GPIO3:

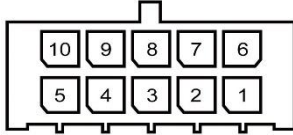
Pin #	Signal	Description	Voltage			Current Max.	GPIO Kernel	GPIO Bank/IO
			Min.	Typ.	Max.			
1	GPIO3A	DIG_IN1/OUT1	1.65V	3.3V	3.6V	0.33mA	GPIO 500	pca9555_4
2	GPIO3B	DIG_IN2/OUT2	1.65V	3.3V	3.6V	0.33mA	GPIO 112	4_16
3	NC							
4	GND	Common Ground						
5	GPIO3C	DIG_IN5/OUT5	1.65V	3.3V	3.6V	0.33mA	GPIO 4	1_4
6	GPIO3D	DIG_IN5/OUT6	1.65V	3.3V	3.6V	0.33mA	GPIO 5	1_5
7	NC							
8	VCC	Supply output		12V				

Header on TEK3-IMX6UL: Molex 43045-0800 (8-pin Micro-Fit 3.0).

Cable receptacle: Molex 43025-0800 (8-pin Micro-Fit 3.0) plug with crimp contact Molex 43030-0007.

3.6.3. Non-Galvanic Isolated Serial Port (RS-XXX)

The dual 2-wire non-galvanic isolated serial ports are configured as follows: the primary and the secondary serial port can only be used as a standard RS-232.



RS-232 + RS-232:

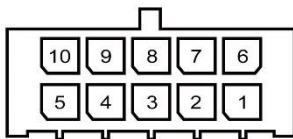
Pin #	Signal	Description	Device
1	GND	Ground	
2	SERIAL1A_TXD	Port#1A Transmit data (output)	ttymxc4
3	SERIAL1A_RXD	Port#1A Receive data (input)	ttymxc4
4	NC		
5	NC		
6	GND	Ground	
7	SERIAL1B_TXD	Port#1B Transmit data (output)	ttymxc3
8	SERIAL1B_RXD	Port#1B Receive data (input)	ttymxc3
9	NC		
10	NC		

Header on TEK3-IMX6UL: Molex 43045-1000 (10-pin Micro-Fit 3.0).

Cable receptacle: Molex 43025-1000 (10-pin Micro-Fit 3.0) plug with crimp contact Molex 43030-0007.

3.6.4. Non-Galvanic Isolated Serial Port (RS-XXX) (optional)

The optional dual 4-wire non-galvanic isolated serial ports are configured as follows: the primary and the secondary serial port can only be used as a standard RS-232.



RS-232 + RS-232:

Pin #	Signal	Description	Device
1	GND	Ground	
2	SERIAL2A_TXD	Port#2A Transmit data (output)	ttymxc5
3	SERIAL2A_RXD	Port#2A Receive data (input)	ttymxc5
4	SERIAL2A_RTS	Port#2A Request-to-send (output)	ttymxc5
5	SERIAL2A_CTS	Port#2A Clear-to-send (input)	ttymxc5
6	GND	Ground	
7	SERIAL2B_TXD	Port#2B Transmit data (output)	ttymxc1
8	SERIAL2B_RXD	Port#2B Receive data (input)	ttymxc1
9	SERIAL2B_RTS	Port#2B Request-to-send (output)	ttymxc1
10	SERIAL2B_CTS	Port#2B Clear-to-send (input)	ttymxc1

Header on TEK3-IMX6UL: Molex 43045-1000 (10-pin Micro-Fit 3.0).

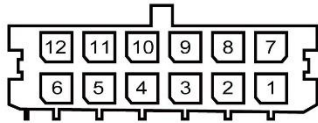
Cable receptacle: Molex 43025-1000 (10-pin Micro-Fit 3.0) plug with crimp contact Molex 43030-0007.

3.6.5. Non-Galvanic Isolated CAN Bus Connector (CANBus) (optional)

The non-galvanic isolated CAN Bus interfaces can be configured as follows: enabling or disabling of CAN Bus terminator resistor will require to open the device and adjust the internal SW1 Terminator Resistor DIP switch settings on the TEP I/O Expansion board. The SW1 DIP switch can be found at location “A” in chapter [3.6.Non-Galvanic Isolated Connectors \(TEK3-IMX6G-05-Rxx-Exx---Lxxx-XS20-xx-xxxx\)](#) of this manual.

SW1:

Pin #	ON	OFF (default)
1-8	Enable CAN1A Terminator Resistor	Disable CAN1A Terminator Resistor
2-7	Enable CAN1A Terminator Resistor	Disable CAN1A Terminator Resistor
3-6	Enable CAN1B Terminator Resistor	Disable CAN1B Terminator Resistor
4-5	Enable CAN1B Terminator Resistor	Disable CAN1B Terminator Resistor



CANBus:

Pin #	Signal	Description	Interface
1	GND_CAN	Ground for CAN	
2	CAN1A_TERM_N	To enable CAN1A Termination, bridge with CAN1A_N	can1
3	CAN1A_P	CAN Bus 1A high (-24~+24V)	can1
4	CAN1A_N	CAN Bus 1A low (-24~+24V)	can1
5	CAN1A_TERM_P	To enable CAN1A Termination, bridge with CAN1A_P	can1
6	NC		
7	GND_CAN	Ground for CAN	
8	CAN1B_TERM_N	To enable CAN1B Termination, bridge with CAN1B_N	can2
9	CAN1B_P	CAN Bus 1B high (-24~+24V)	can2
10	CAN1B_N	CAN Bus 1B low (-24~+24V)	can2
11	CAN1B_TERM_P	To enable CAN1B Termination, bridge with CAN1B_P	can2
12	NC		

Header on TEK3-IMX6UL: Molex 43045-1200 (12-pin Micro-Fit 3.0).

Cable receptacle: Molex 43025-1200 (12-pin Micro-Fit 3.0) plug with crimp contact Molex 43030-0007.

3.7. RST Button

The TEK3-IMX6UL features a “RST” button for system reset.

3.8. S1 Button

The TEK3-IMX6UL by default boots the unit from internal flash storage (eMMC). By pressing the “S1” button before applying power to the unit and keeping the button pressed for 10 seconds, the unit will boot from an alternative boot media, such as a microSD card. The primary and alternative boot media are determined by internal DIP switch settings. Please see section [4.5. Default Boot Mode DIP Switch](#) for more details.

3.9. Micro-SIM Card Slot

The TEK3-IMX6UL features an external Micro-SIM card slot for use by 3G/4G/LTE wireless module.

NOTE: This card slot can be only used by a mini-PCIe 3G/4G/LTE module installed into the MPCIE1 connector. The MPCIE1 connector can be found at location “E” in chapter [4. Internal Connectors and Expansion Options](#) of this manual. No mini-PCIe 3G/4G LTE module is included in this device (must be purchased separately, not sold by TechNexion).

3.10. MicroSD Card Slot

The TEK3-IMX6UL features a standard microSD card slot which is connected to the NXP i.MX6UltraLite integrated “Ultra Secured Digital Host Controller” (uSDHC).

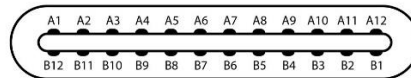
The following main features are supported by uSDHC:

- Compatible with the MMC System Specification version 4.2/4.3/4.4/4.41/5.0.
- Conforms to the SD Host Controller Standard Specification version 3.0.
- Compatible with the SD Memory Card Specification version 3.0 and supports the “Extended Capacity SD Memory Card”.
- Compatible with the SDIO Card Specification version 3.0.
- Supports 1-bit / 4-bit SD and SDIO modes

The MMC/SD/SDIO host controller can support a single MMC / SD / SDIO card or device.

3.11. USB OTG (Type-C) Connector

The TEK3-IMX6UL has one USB Type-C connector (USB 2.0 signals only) that can be used to connect a host computer to the unit for programming and update purposes.



Pin #	Signal	Description	Pin #	Signal	Description
A1	GND	Ground	B1	GND	Ground
A2	NC		B2	NC	
A3	NC		B3	NC	
A4	VBUS	5V Universal Serial Bus Power	B4	VBUSD	5V Universal Serial Bus Power
A5	CC1	OTG detection signal	B5	CC2D	OTG detection signal
A6	USB_D+	USB differential pair signal port 1	B6	USB_D+	USB differential pair signal port 2
A7	USB_D-		B7	USB_D-	
A8	NC		B8	NC	
A9	VBUS	5V Universal Serial Bus Power	B9	VBUSD	5V Universal Serial Bus Power
A10	NC		B10	NC	
A11	NC		B11	NC	
A12	GND	Ground	B12	GND	Ground

3.12. LED Light Indicators

The TEK3-IMX6UL has four programmable LED Light indicators.

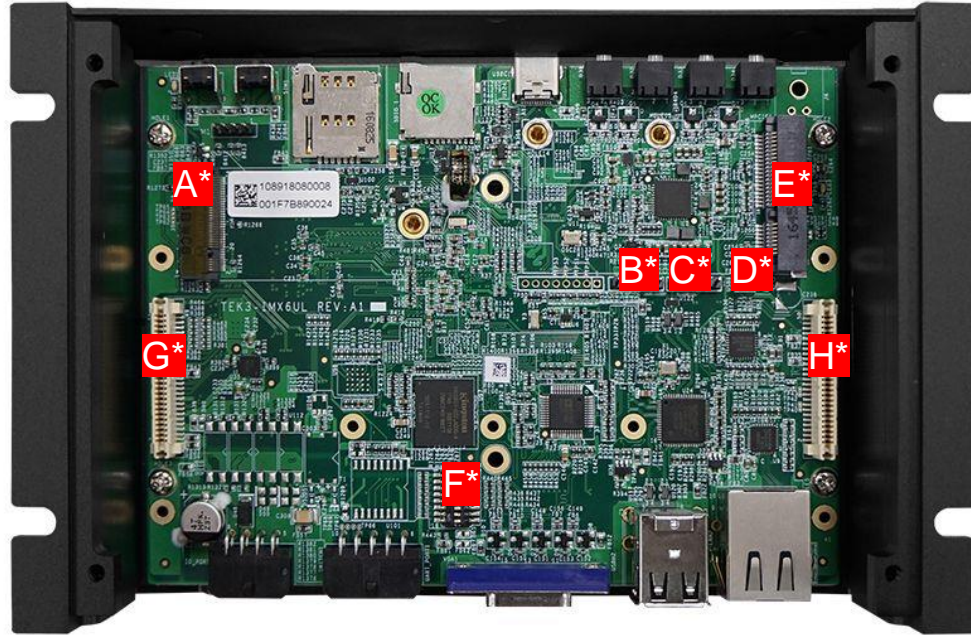
LED #	Color	GPIO Kernel	GPIO Bank/IO
1	Green	GPIO 505	pca9555_9
2	Green	GPIO 506	pca9555_10
3	Green	GPIO 507	pca9555_11
4	Green	PWM1 9	1_9

3.13. Antenna Holes

There are two antenna holes available (on the rear side). They come fitted with breakaway metal tabs. In order to utilize them, the tabs must be removed by carefully using pincers or pliers.

4. Internal Connectors and Expansion Options

Rear view (opened device) without the I/O Expansion and Power Expansion modules:



Internal Connectors and Switches:

No.	Description	No.	Description
A*	M.2 KEY-B slot (USB)	E*	mini-PCle connector (USB)
B*	USB7 port header	F*	Boot Mode DIP switch for S1 button
C*	USB6 port header	G*	I/O Expansion module connector
D*	RTC Battery connector	H*	Power Expansion module connector

NOTE: Items marked with * are accessible only after removing the I/O Expansion and Power Expansion modules.

4.1. M.2 KEY-B Slot

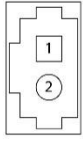
The TEK3-IMX6UL has an internal M.2 connector (Marked A). It supports USB signals only. Only M.2 cards in the M.2 KEY-B 2242 (22 x 42 mm) form factor are supported.

4.2. Mini-PCle Connector

The TEK3-IMX6UL has an internal mini-PCle connector for full or half size cards (Marked E). It supports USB signals only. Only mini-PCle full size (30 x 50.95 mm) or half size (30 x 26.8 mm) cards are supported.

4.3. RTC Battery Connector

The TEK3-IMX6UL features an internal RTC backup battery connector (Marked D).



Pin #	Signal	Description
1	RTC_VCC	3V (connect to standard CR2032 battery)
2	GND	Ground

Header on TEK3-IMX6UL: Molex 53047-0210 (1.25mm Pitch PicoBlade Wire-to-Board Header).
 Cable receptacle: Molex 051021-8602 (1.25mm Pitch PicoBlade Wire-to-Wire and Wire-to-Board Housing) plug with crimp contact Molex 50058-8000.
 Battery P/N: KTS BCR2032H14.0AM1XB.

4.4. USB Headers

The TEK3-IMX6UL has two internal USB (1 port each) headers (USB 2.0 signals only) (Marked B and C).

USB6 / USB7:

Pin #	Signal	Description
1	VBUS	5V Universal Serial Bus Power
2	USB_D-	Universal Serial Bus differential pair signal port 1 / port 2
3	USB_D+	
4	GND	Ground
5	GND	Ground

4.5. Default Boot Mode DIP Switch

The TEK3-IMX6UL has an internal Default Boot Mode DIP switch (Marked F) for S1 boot select button.

Pin #	eMMC	microSD (default)
1-16	OFF	OFF
2-15	ON	ON
3-14	ON	OFF
4-13	OFF	ON
5-12	ON	OFF
6-11	OFF	ON
7-10	OFF	OFF
8-9	ON	OFF

5. Mounting

This section describes the mounting procedures for the TEK3-IMX6UL. The material in area of the mounting must provide sufficient strength for safe mounting of this device.

5.1. Surface Mounting

There are 4 mounting holes (M5) on the front side of the device required for surface mounting. Four M4 or M5 screws with at least 8mm head-to-tip length are required to secure this device to the surface.

Top view:



5.2. DIN Mounting

The device can be mounted on a DIN rail by using a DIN-rail bracket. There are four mounting holes (M3) on the rear side of the device required for DIN bracket mounting (30mm DIN rail standard). Secure the DIN bracket to the back of this device by using two M3 screws with at least 5mm head-to-tip length.

Bottom view:



6. Ordering Information

The TEK3-IMX6UL is available in several configurations. Please contact your TechNexion sales contact window or distributor for options and availability details.

6.1. Custom Part Number Rule

The TEK3-IMX6UL can be ordered in custom tailored configuration to meet special application requirements and conditions according to the following custom part number creation rules. Custom part numbers carry minimum order quantities (MOQ). Please connect with your TechNexion distributor or account manager for conditions and availability. Part number format:

TEK3-IMX6G-05-Rxx-Exx-x-Lxxx-xxxx-xx-xxxx

Interface	Code	Description
Processor	IMX6G	NXP i.MX6UltraLite
Processor Speed	05	528MHz
Memory	R02	256MB DDR3L
	R05	512MB DDR3L
	R10	1GB DDR3L
Storage	E04	eMMC 4GB
	E08	eMMC 8GB
	EXX	eMMC other capacity
Electrical Isolation	-	-
	G	Galvanic Isolated
Power Expansion	L112	TXR-P1-12V-LAN1 (12V 3A)
	L130	TXR-P1-1030V-LAN1 (8-36V 5A)
	LPOE	TXR-P1-12V-POE1 (12V 3A) or (PoE 802.3at)
I/O Expansion	-	-
	XS20	2x RS-232 + 2x CAN + 8x GPIO
	XG20	2x RS-232 + 2x CAN + 8x GPIO (Galvanic Isolated)
Temperature Range	-	Commercial Temperature Range (0° to 50° C)
Custom ID	XXXX	Custom Part number ID for customized software loader and special component (BOM)

6.2. Standard Package Contents



Item	Partnumber	Description
1	TEK3-IMX6UL	Fanless box PC computing system with NXP i.MX6UL
2	Accessoires	1x hexagonal bolt
		1x M3 screw (for M.2 card)
		1x M2 screw (for mini-PCIe card)
		1x plastic washer (for M.2 card)
		1x rubber feet pad set
		1x DC power latch cable (2-pin Micro-Fit 3.0)

NOTE: Pack contents might vary depending on your ordered configuration.

7. Important Notice

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