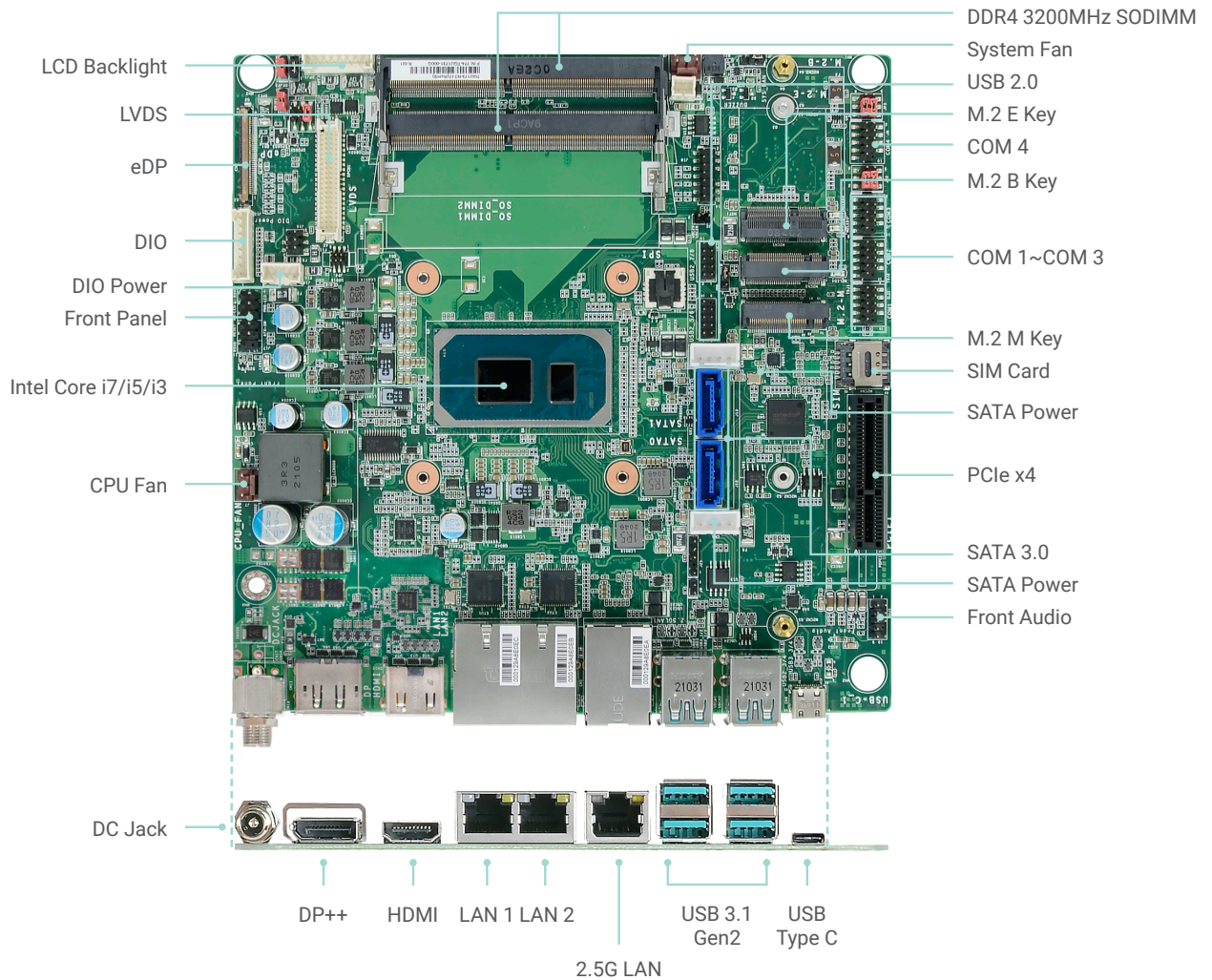


# TGU171/TGU173

11 Gen Intel® Core™  
mini-ITX



## KEY FEATURES



### DDR4

2 DDR4 SODIMM up to 64GB



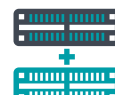
### 4K High Resolution

Supports 4K/ 2K resolution



### 4 Independent Displays

1 LVDS, 1 eDP, 1 DP++, 1 HDMI, 1 USB Type C



### Multiple Expansion

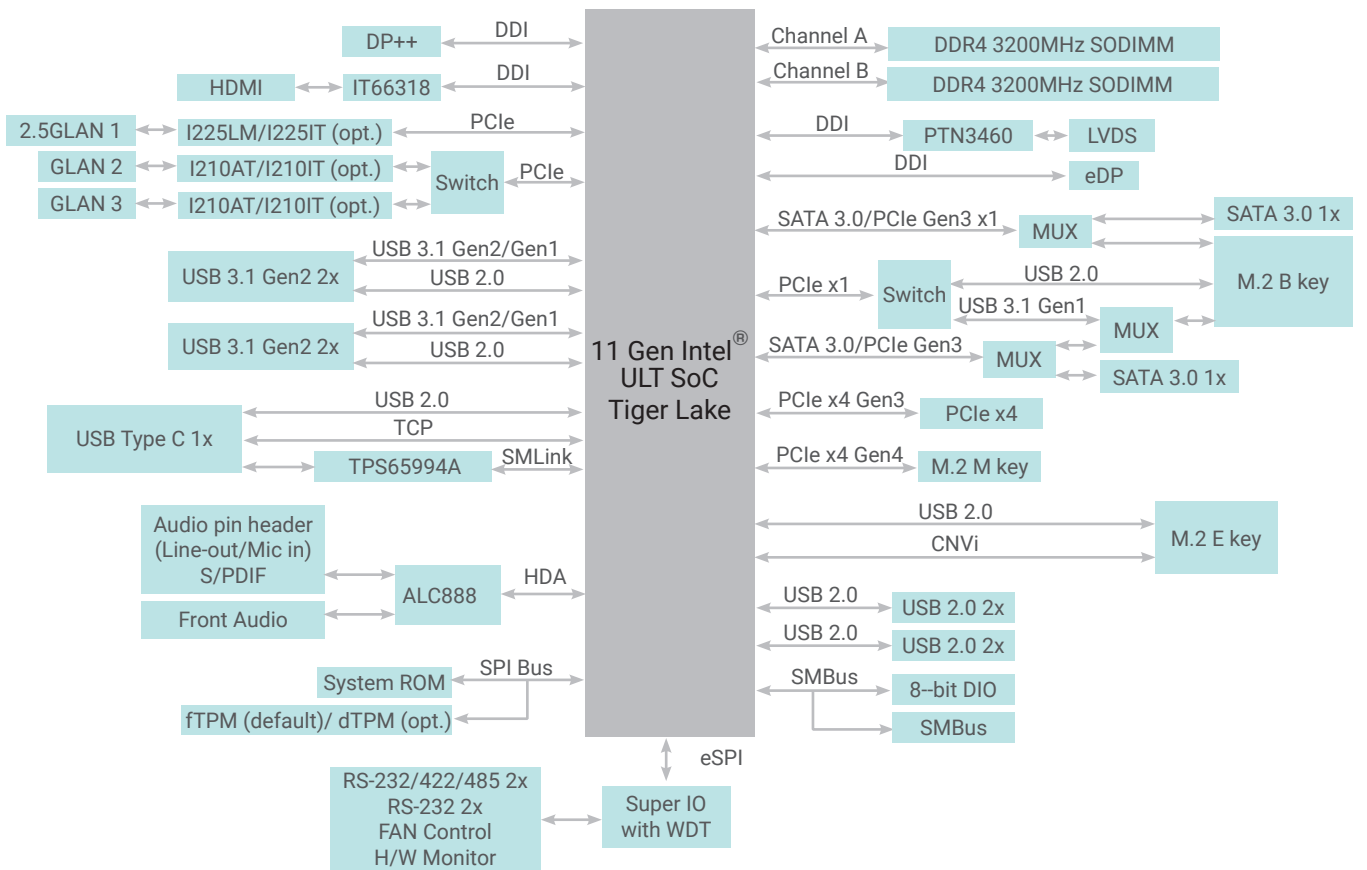
1 M.2 M Key, 1 M.2 B Key, 1 M.2 E Key, 1 PCIe x4



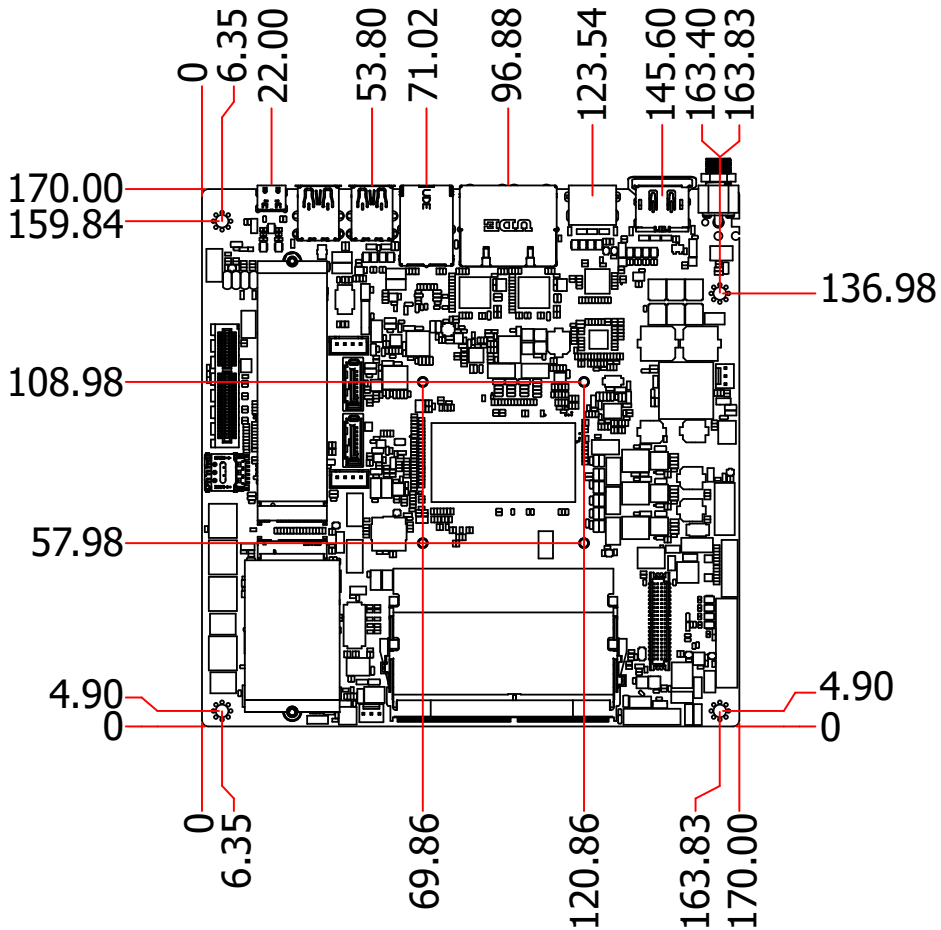
### Rich I/O

2 Intel GbE, 1 Intel 2.5GbE, 1 USB Type C, 4 USB 3.1 Gen2, 4 USB 2.0, 4 COM

## BLOCK DIAGRAM



## MECHANICAL DRAWING



## SPECIFICATION

Model Name		TGU171	TGU173
SYSTEM	Processor	11th Generation Intel® Core™ Processors Intel® Core™ i7-1185GRE, Quad Core, 12M Cache, 1.8GHz (4.4GHz), 15~28W Intel® Core™ i5-1145GRE, Quad Core, 8M Cache, 1.5GHz (4.1GHz), 15~28W Intel® Core™ i3-1115GRE, Dual Core, 6M Cache, 2.2GHz (3.9GHz), 15~28W Intel® Celeron® 6305E, Dual Core, 4M Cache, 1.8GHz (1.8GHz), 15W	
	Memory	2 x 260-pin SO-DIMM up to 64GB (32GB per slot) Dual channel DDR4 up to 3200MHz (Support in-band ECC)	2 x 260-pin SO-DIMM up to 64GB (32GB per slot) Dual channel DDR4 up to 3200MHz (Support in-band ECC)
	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit
GRAPHICS	Controller	Intel® Iris® Xe Graphics for i7/i5 Processors Intel® UHD Graphics for i3/Celeron Processors	Intel® Iris® Xe Graphics for i7/i5 Processors Intel® UHD Graphics for i3/Celeron Processors
	Feature	OpenGL 4.5, DirectX 12, OpenCL 2.1 <b>HW Decode:</b> WMV9, AVC/H264, JPEG/MJPEG, HEVC/H265, VP9, AV1 <b>HW Encode:</b> AVC/H264, JPEG, HEVC/H265, VP9	OpenGL 4.5, DirectX 12, OpenCL 2.1 <b>HW Decode:</b> WMV9, AVC/H264, JPEG/MJPEG, HEVC/H265, VP9, AV1 <b>HW Encode:</b> AVC/H264, JPEG, HEVC/H265, VP9
	Display	1 x LVDS 1 x eDP 1 x DP++ 1 x HDMI 1 x USB Type C (DP alt-mode/USB3.2 Gen2/PD 15W) <b>LVDS:</b> resolution up to 1920x1200 @60Hz <b>eDP:</b> resolution up to 3840x2160 @60Hz <b>DP:</b> resolution up to 3840x2160 @60Hz <b>HDMI:</b> resolution up to 3840x2160 @60Hz <b>USB Type C:</b> resolution up to 3840x2160 @60Hz	1 x LVDS 1 x eDP 1 x DP++ 1 x HDMI 1 x USB Type C (DP alt-mode/USB3.2 Gen2/PD 15W) <b>LVDS:</b> resolution up to 1920x1200 @60Hz <b>eDP:</b> resolution up to 3840x2160 @60Hz <b>DP:</b> resolution up to 3840x2160 @60Hz <b>HDMI:</b> resolution up to 3840x2160 @60Hz <b>USB Type C:</b> resolution up to 3840x2160 @60Hz
	Quad Displays	LVDS + eDP + DP++ + HDMI + USB Type C (DP alt-mode/USB3.2 Gen2/PD 15W)	LVDS + eDP + DP++ + HDMI + USB Type C (DP alt-mode/USB3.2 Gen2/PD 15W)
EXPANSION	Interface	1 x PCIe x4 (PCIe Gen 3 x4) 1 x M.2 2242/2280 M Key (PCIe Gen4 x4) (Support NVMe and Intel® Optane memory) (Support DFI proprietary expansion module) 1 x M.2 2242/3042/3052 B Key (PCIe Gen3 x1/ SATA/USB 3.1 Gen1) (Support 4G/5G and storage module) (Opt.: PCIe Gen3 x2) 1 x M.2 2230 E Key (USB2.0) (Support Intel® CNVi module only and Intel® vPro) 1 x Nano-SIM Socket (Connect to M.2 Key B for 4G/5G module) <b>*Note:</b> Intel CNVi module Support List: AX201 & AC-9560	1 x PCIe x4 (PCIe Gen 3 x4) 1 x M.2 2242/2280 M Key (PCIe Gen4 x4) (Support NVMe and Intel® Optane memory) (Support DFI proprietary expansion module) 1 x M.2 2242/3042/3052 B Key (PCIe Gen3 x1/ SATA/USB 3.1 Gen1) (Support 4G/5G and storage module) (Opt.: PCIe Gen3 x2) 1 x M.2 2230 E Key (USB2.0) (Support Intel® CNVi module only and Intel® vPro) 1 x Nano-SIM Socket (Connect to M.2 Key B for 4G/5G module) <b>*Note:</b> Intel CNVi module Support List: AX201 & AC-9560
AUDIO	Audio Codec	Realtek ALC888	Realtek ALC888
ETHERNET	Controller	2 x Intel® I211AT/I210IT PCIe (10/100/1000Mbps) 1 x Intel® I225LM/I225IT PCIe (10/100/1000Mbps/2.5Gbps)	2 x Intel® I211AT/I210IT PCIe (10/100/1000Mbps) 1 x Intel® I225LM/I225IT PCIe (10/100/1000Mbps/2.5Gbps)
REAR I/O	Ethernet	2 x GbE 1 x 2.5GbE	2 x GbE 1 x 2.5GbE
	USB	4 x USB 3.1 Gen2 (Type-A) 1 x USB Type C (DP alt-mode/USB3.2 Gen2/ PD 15W)	4 x USB 3.1 Gen2 (Type-A) 1 x USB Type C (DP alt-mode/USB3.2 Gen2/ PD 15W)
	Display	1 x DP++ 1 x HDMI	1 x DP++ 1 x HDMI
INTERNAL I/O	Serial	2 x RS-232/422/485 (2.0mm pitch) 2 x RS-232 (2.0mm pitch) (RS-232 w/ power)	2 x RS-232/422/485 (2.0mm pitch) 2 x RS-232 (2.0mm pitch) (RS-232 w/ power)
	USB	4 x USB 2.0 (2.0mm pitch)	4 x USB 2.0 (2.0mm pitch)
	Display	1 x LVDS 1 x eDP	1 x LVDS 1 x eDP
	Audio	1 x Front Audio (2.0mm pitch)	1 x Front Audio (2.0mm pitch)
	SATA	2 x SATA 3.0 (up to 6Gb/s) (RAID 0/1) 2 x SATA Power	2 x SATA 3.0 (up to 6Gb/s) (RAID 0/1) 2 x SATA Power
	DIO	1 x 8-bit DIO 1 x DIO Power	1 x 8-bit DIO 1 x DIO Power
	Cooling	1 x CPU fan 1 x System fan	1 x CPU fan 1 x System fan
WATCHDOG TIMER	Output & Interval	System Reset, Programmable via Software from 1 to 255 Seconds	System Reset, Programmable via Software from 1 to 255 Seconds
SECURITY	TPM	fTPM (default) / dTPM (option)	fTPM (default) / dTPM (option)
POWER	Type	Single 12V +/-5% DC	Wide Range 9~36V

## SPECIFICATION

Model Name		TGU171	TGU173
POWER	Connector	DC-in Jack Right Angle Connector (4-pin) (available upon request) Straightl Type Connector (4-pin) (available upon request)	DC-in Jack Right Angle Connector (4-pin) (available upon request) Straightl Type Connector (4-pin) (available upon request)
	Consumption	<b>Idle:</b> TGU173-IE-1185GRE 15W: 12V@ 1.12A (13.44W) <b>Max:</b> TGU173-IE-1185GRE 15W: 12V@ 6.26A (75.12W)	<b>Idle:</b> TGU173-IE-1185GRE 15W: 12V@ 1.12A (13.44W) <b>Max:</b> TGU173-IE-1185GRE 15W: 12V@ 6.26A (75.12W)
	RTC Battery	CR2032 Coin Cell	CR2032 Coin Cell
OS SUPPORT	Microsoft	Windows 10 IoT Enterprise 64-bit Windows 11 GAC	Windows 10 IoT Enterprise 64-bit Windows 11 GAC
	Linux	Linux	Linux
ENVIRONMENT	Temperature	<b>Operating:</b> -5 to 65°C / -20 to 70°C <b>Storage:</b> -40 to 85°C	<b>Operating:</b> -5 to 65°C / -20 to 70°C <b>Storage:</b> -40 to 85°C
	Humidity	<b>Operating:</b> 5 to 90% RH <b>Storage:</b> 5 to 90% RH	<b>Operating:</b> 5 to 90% RH <b>Storage:</b> 5 to 90% RH
	MTBF	TGU171-IE-1185GRE 414,291 hrs @ 25°C; 254,601 hrs @ 45°C; 166,963 hrs @ 60°; 124,264 hrs @ 70°C; TGU173-IE-1185GRE 397,863 hrs @ 25°C; 244,099 hrs @ 45°C; 160,483 hrs @ 60°; 119,765 hrs @ 70°C; <b>Calculation model:</b> Telcordia Issue 4 <b>Environment:</b> GB, GC – Ground Benign, Controlled	TGU171-IE-1185GRE 414,291 hrs @ 25°C; 254,601 hrs @ 45°C; 166,963 hrs @ 60°; 124,264 hrs @ 70°C; TGU173-IE-1185GRE 397,863 hrs @ 25°C; 244,099 hrs @ 45°C; 160,483 hrs @ 60°; 119,765 hrs @ 70°C; <b>Calculation model:</b> Telcordia Issue 4 <b>Environment:</b> GB, GC – Ground Benign, Controlled
MECHANICAL	Dimensions	Mini-ITX Form Factor 170mm (6.7") x 170mm (6.7")	Mini-ITX Form Factor 170mm (6.7") x 170mm (6.7")
	Height	<b>PCB:</b> 1.6mm <b>Top Side:</b> 16.5mm <b>Bottom Side:</b> 3.5mm	<b>PCB:</b> 1.6mm <b>Top Side:</b> 16.5mm <b>Bottom Side:</b> 3.5mm
CERTIFICATIONS	Certifications	CE, FCC, RoHS, UKCA	CE, FCC, RoHS, UKCA

## ORDERING INFORMATION

Model Name	P/N	CPU	Memory	Display	LAN	RS-232	RS-232/ 422/485	USB-C	USB 3.1 Gen2	USB 2.0	Power	Operating Temp.
TGU171-IE-1185GRE	770-TGU1711-000G	i7-1185GRE	2 DDR4 SODIMM	1 DP++, 1 HDMI	3	2	2	1	4	4	12V DC	-20 to 70°C
TGU171-IE-1145GRE	770-TGU1711-100G	i5-1145GRE									12V DC	-20 to 70°C
TGU171-IB-1115G4E	770-TGU1711-200G	i3-1115G4E									12V DC	-5 to 65°C
TGU171-IB-6305E	770-TGU1711-300G	6305E									12V DC	-5 to 65°C
TGU173-IE-1185GRE	770-TGU1731-000G	i7-1185GRE									9~36V DC	-20 to 70°C
TGU173-IE-1145GRE	770-TGU1731-100G	i5-1145GRE									9~36V DC	-20 to 70°C
TGU173-IB-1115G4E	770-TGU1731-200G	i3-1115G4E									9~36V DC	-5 to 65°C
TGU173-IB-6305E	770-TGU1731-300G	6305E									9~36V DC	-5 to 65°C

## PACKING LIST

• 1 TGU171/TGU173 motherboard	
• 1 COM port cable (Length: 250mm, 1 x COM ports)	A81-015011-001G
• 1 Serial ATA data with power cable (Length: 300mm)	A81-002013-000G
• 1 Heat sink	
- (Wide/Normal Temp. -Cooler for 28W)(Default)	A71-108158-000G
- (Normal Temp. Fanless HS for 15W)(By request)	A71-008162-020G
- (Wide Temp. Fanless for 15W)(By request)	A71-008162-030G

\*The items are subject to change in the developing stage.

## OPTIONAL ITEMS

• COM port cable (Length: 250mm, 1 x COM ports)	A81-015011-001G
• USB port cable (Length: 200mm)	A81-001032-016G
• Serial ATA data cable (Length: 500mm)	332-553001-005G
• Serial ATA power cable (Length: 300mm)	A81-002044-016G