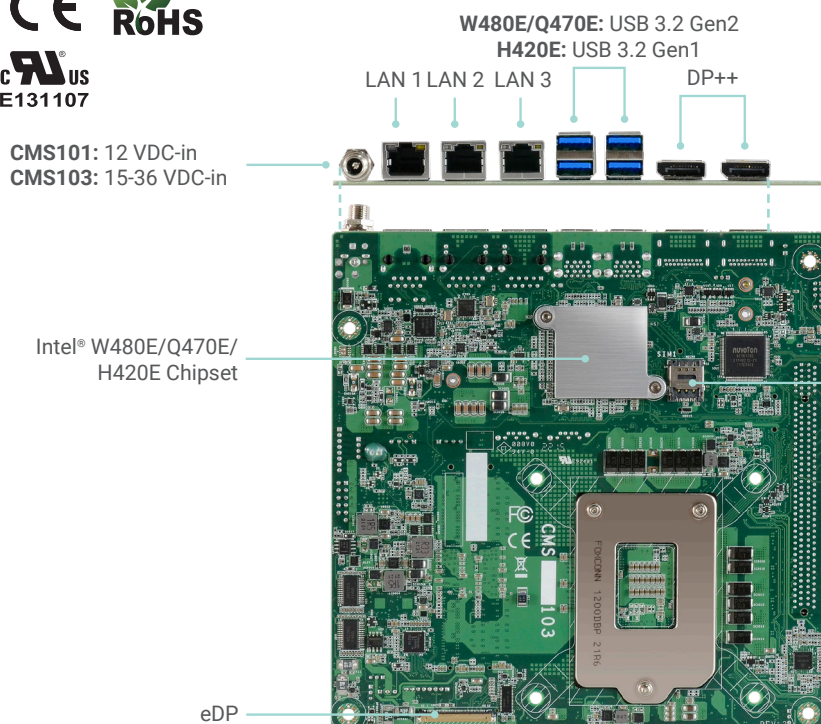


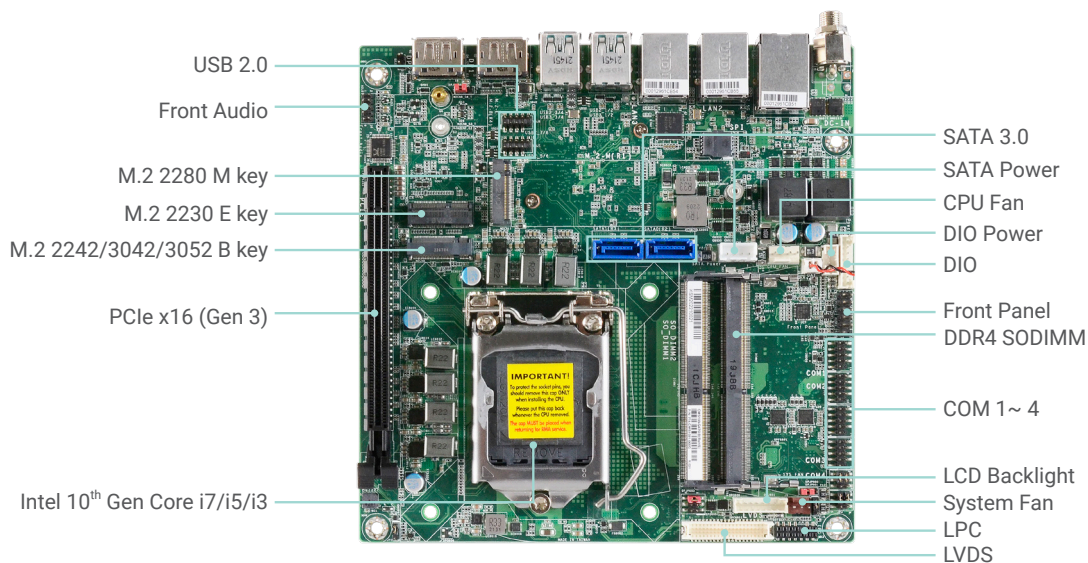
# CMS101/CMS103-W480E CMS101/CMS103-Q470E CMS101/CMS103-H420E

10th Gen Intel® Core™  
Thin Mini-ITX

Desktop



Bottom View



Top View

## KEY FEATURES



### DDR4

2 DDR4 SODIMM up to 64GB



### 4K High Resolution

Supports 4K/ 2K resolution



### Triple Displays

2 DP++, 1 LVDS/eDP



### Multiple Expansion

1 x PCIe x16,  
1 x M.2 2230 E Key,  
1 x M.2 2280 M Key,  
1 x M.2 2242/3042/  
3052 B Key

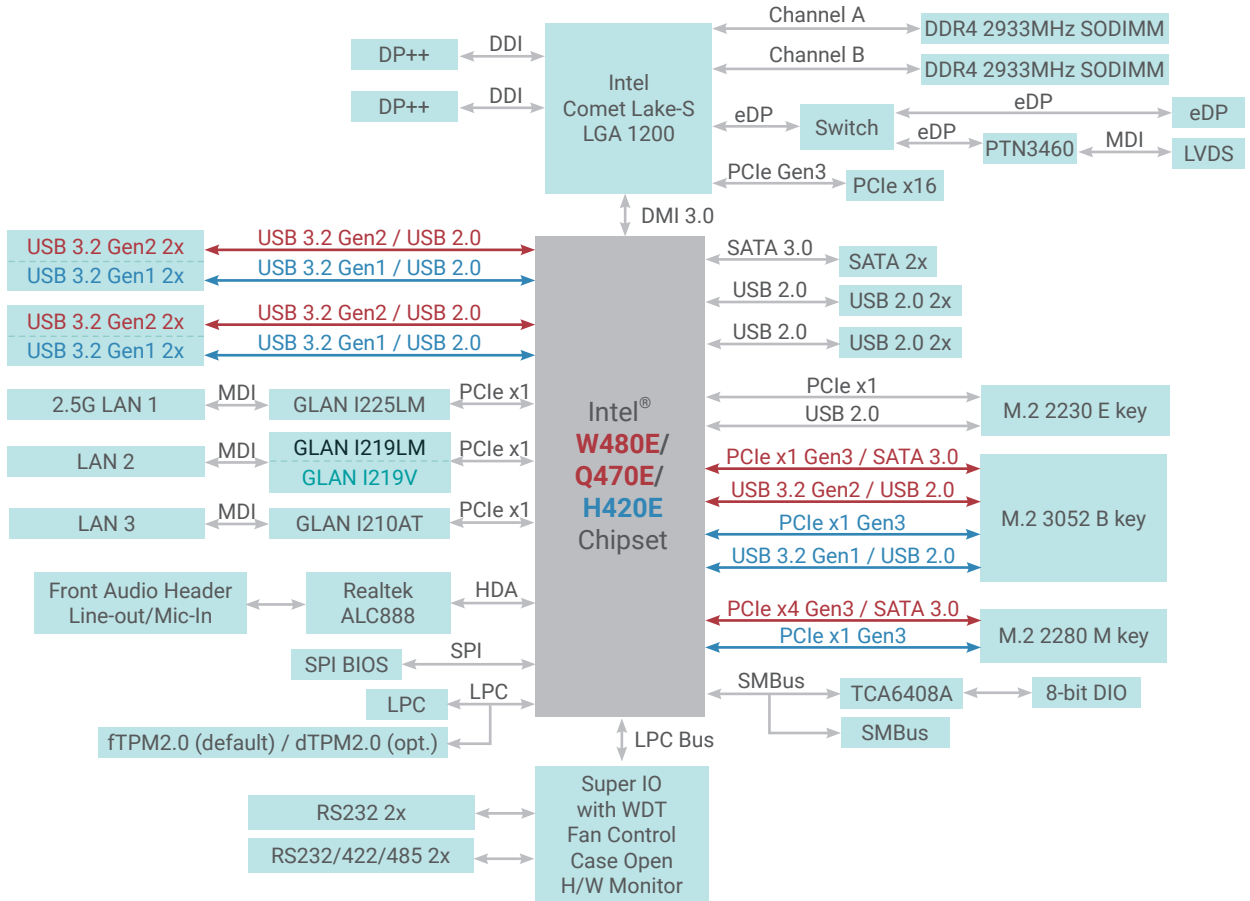


### Rich I/O

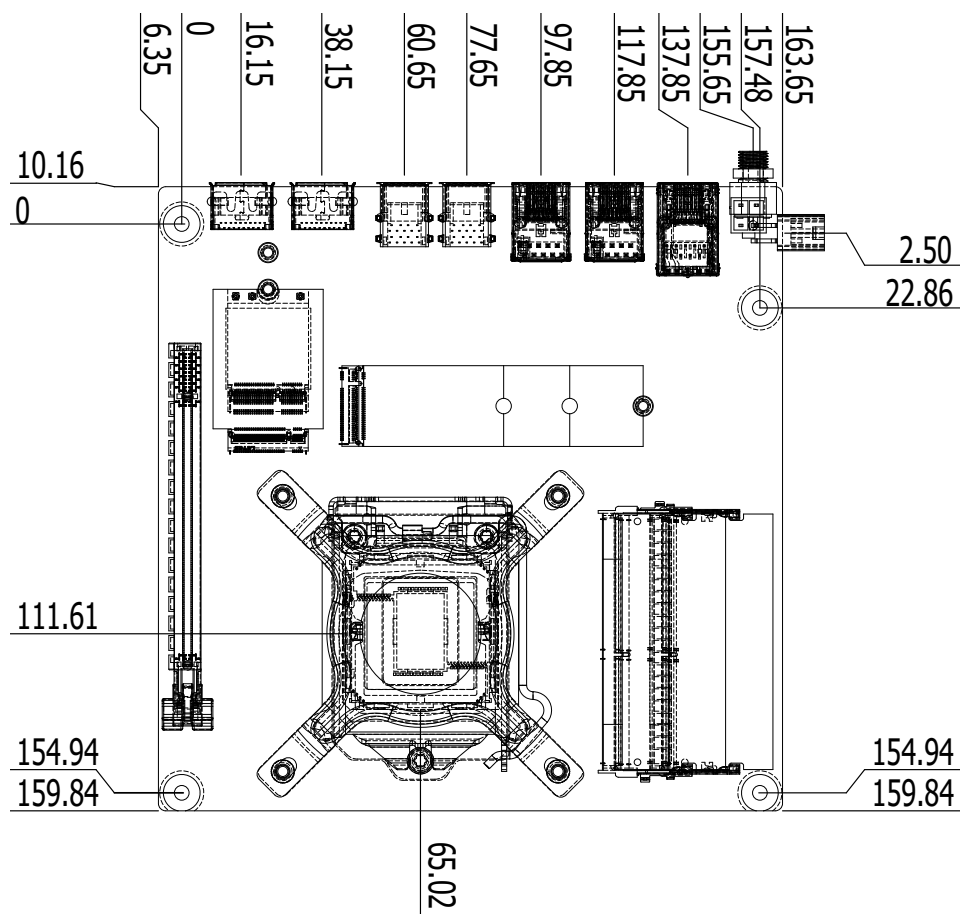
1 Intel 2.5GbE, 2 Intel GbE, 4 COM, 4 USB 2.0, W480/Q470: 4 USB 3.2 Gen2, H420: 4 USB 3.2 Gen1

# BLOCK DIAGRAM

● W480E/Q470E Only  
 ● H420E Only



# MECHANICAL DRAWING



# SPECIFICATION

Model Name	CMS101/CMS103-W480E	CMS101/CMS103-Q470E	CMS101/CMS103-H420E	
SYSTEM	Processor	10th Gen Intel® Xeon/Core™/Pentium/Celeron Processors, LGA 1200 Socket Intel® Xeon W-1290TE Processor (Core 10; Max speed 4.5GHz; TDP 35W) <b>(W480E only)</b> Intel® Xeon W-1270TE Processor (Core 8; Max speed 4.4GHz; TDP 35W) <b>(W480E only)</b> Intel® Xeon W-1250TE Processor (Core 6; Max speed 3.8GHz; TDP 35W) <b>(W480E only)</b> Intel® Core i9-10900E Processor (Core 10; Max speed 4.7GHz; TDP 65W) Intel® Core i9-10900TE Processor (Core 10; Max speed 4.5GHz; TDP 35W) Intel® Core i7-10700E Processor (Core 8; Max speed 4.5GHz; TDP 65W) Intel® Core i7-10700TE Processor (Core 8; Max speed 4.4GHz; TDP 35W) Intel® Core i5-10500E Processor (Core 6; Max speed 4.2GHz; TDP 65W) Intel® Core i5-10500TE Processor (Core 6; Max speed 3.7GHz; TDP 35W) Intel® Core i3-10100E Processor (Core 4; Max speed 3.8GHz; TDP 65W) Intel® Core i3-10100TE Processor (Core 4; Max speed 3.6GHz; TDP 35W) Intel® Pentium G6400E Processor (Core 2; Max speed 3.8GHz; TDP 65W) Intel® Pentium G6400TE Processor (Core 2; Max speed 3.2GHz; TDP 35W) Intel® Celeron G5900E Processor (Core 2; Max speed 3.2GHz; TDP 65W) Intel® Celeron G5900TE Processor (Core 2; Max speed 3.0GHz; TDP 35W)		
	Chipset	Intel® W480E Chipset	Intel® Q470E Chipset	Intel® H420E Chipset
	Memory	Two 260-pin SODIMM up to 64GB Dual Channel DDR4 2933MHz	Two 260-pin SODIMM up to 64GB Dual Channel DDR4 2933MHz	Two 260-pin SODIMM up to 64GB Dual Channel DDR4 2933MHz
	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit	AMI SPI 256Mbit
GRAPHICS	Controller	Intel® UHD Graphics 630 (only Pentium G5400/Celeron G4900 support 610 )	Intel® UHD Graphics 630 (only Pentium G5400/Celeron G4900 support 610 )	Intel® UHD Graphics 630 (only Pentium G5400/Celeron G4900 support 610 )
	Feature	OpenGL 4.5, DirectX 12, OpenCL 2.1 <b>HW Decode:</b> AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 <b>HW Encode:</b> AVC/H.264, MPEG2, JPEG, HEVC/H265, VP8, VP9	OpenGL 4.5, DirectX 12, OpenCL 2.1 <b>HW Decode:</b> AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 <b>HW Encode:</b> AVC/H.264, MPEG2, JPEG, HEVC/H265, VP8, VP9	OpenGL 4.5, DirectX 12, OpenCL 2.1 <b>HW Decode:</b> AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 <b>HW Encode:</b> AVC/H.264, MPEG2, JPEG, HEVC/H265, VP8, VP9
	Display	2 x DP++ 1 x LVDS/eDP <b>DP++:</b> Resolution up to 4096x2304 @ 60Hz <b>LVDS:</b> resolution up to 1920x1200 @ 60Hz <b>eDP:</b> resolution up to 4096x2160 @ 60Hz	2 x DP++ 1 x LVDS/eDP <b>DP++:</b> Resolution up to 4096x2304 @ 60Hz <b>LVDS:</b> resolution up to 1920x1200 @ 60Hz <b>eDP:</b> resolution up to 4096x2160 @ 60Hz	2 x DP++ 1 x LVDS/eDP <b>DP++:</b> Resolution up to 4096x2304 @ 60Hz <b>LVDS:</b> resolution up to 1920x1200 @ 60Hz <b>eDP:</b> resolution up to 4096x2160 @ 60Hz
	Triple Displays	DP++ + DP++ + LVDS/eDP	DP++ + DP++ + LVDS/eDP	DP++ + DP++ + LVDS/eDP
EXPANSION	Interface	1 x PCIe x16 (Gen 3) (Max. 75W) 1 x M.2 2230 E Key (USB/PCIe x1) 1 x M.2 2280 M Key (PCIe x4 Gen3/SATA) 1 x M.2 2242/3042/3052 B Key (PCIe x1 Gen3/USB 3.2 Gen2/USB 2.0/SATA)	1 x PCIe x16 (Gen 3) (Max. 75W) 1 x M.2 2230 E Key (USB/PCIe x1) 1 x M.2 2280 M Key (PCIe x4 Gen3/SATA) 1 x M.2 2242/3042/3052 B Key (PCIe x1 Gen3/USB 3.2 Gen2/USB 2.0/SATA)	1 x PCIe x16 (Gen 3) (Max. 75W) 1 x M.2 2230 E Key (USB/PCIe x1) 1 x M.2 2280 M Key (PCIe x1 Gen3) 1 x M.2 2242/3042/3052 B Key (PCIe x1 Gen3/USB 3.2 Gen1/USB 2.0)
AUDIO	Audio Codec	Realtek ALC888/887	Realtek ALC888/887	Realtek ALC888/887
ETHERNET	Controller	1 x Intel® I225LM PCIe (10/100/1000/2.5G speeds) 1 x Intel® I219LM PHY (10/100/1000 speeds), support vPro/AMT 1 x Intel® I210AT PCIe (10/100/1000 speeds)	1 x Intel® I225LM PCIe (10/100/1000/2.5G speeds) 1 x Intel® I219LM PHY (10/100/1000 speeds), support vPro/AMT 1 x Intel® I210AT PCIe (10/100/1000 speeds)	1 x Intel® I225LM PCIe (10/100/1000/2.5G speeds) 1 x Intel® I219LM PHY (10/100/1000 speeds), support vPro/AMT 1 x Intel® I210AT PCIe (10/100/1000 speeds)
REAR I/O	Ethernet	1 x 2.5GbE (RJ-45) 2 x GbE (RJ-45)	1 x 2.5GbE (RJ-45) 2 x GbE (RJ-45)	1 x 2.5GbE (RJ-45) 2 x GbE (RJ-45)
	USB	4 x USB 3.2 Gen2 (dual type-A connector)	4 x USB 3.2 Gen2 (dual type-A connector)	4 x USB 3.2 Gen1 (dual type-A connector)
	Display	2 x DP++	2 x DP++	2 x DP++
INTERNAL I/O	Serial	2 x RS-232/422/485 (2.0mm pitch) 2 x RS-232 (2.0mm pitch)	2 x RS-232/422/485 (2.0mm pitch) 2 x RS-232 (2.0mm pitch)	2 x RS-232/422/485 (2.0mm pitch) 2 x RS-232 (2.0mm pitch)
	USB	4 x USB 2.0 (2.0mm pitch)	4 x USB 2.0 (2.0mm pitch)	4 x USB 2.0 (2.0mm pitch)
	Display	1 x LVDS header 1 x eDP connector	1 x LVDS header 1 x eDP connector	1 x LVDS header 1 x eDP connector
	Audio	1 x Front Audio (2.0mm pitch)	1 x Front Audio (2.0mm pitch)	1 x Front Audio (2.0mm pitch)
	SATA	2 x SATA 3.0 (up to 6Gb/s) 1 x SATA Power RAID 0/1/5/10 (w/ M.2 M/B Key + 2 SATA Conn.)	2 x SATA 3.0 (up to 6Gb/s) 1 x SATA Power RAID 0/1/5/10 (w/ M.2 M/B Key + 2 SATA Conn.)	2 x SATA 3.0 (up to 6Gb/s) 1 x SATA Power
	DIO	1 x 8-bit DIO 1 x DIO Power	1 x 8-bit DIO 1 x DIO Power	1 x 8-bit DIO 1 x DIO Power
LPC	1 x LPC	1 x LPC	1 x LPC	

## SPECIFICATION

Model Name		CMS101/CMS103-W480E	CMS101/CMS103-Q470E	CMS101/CMS103-H420E
INTERNAL I/O	SMBus	1 x SMBus	1 x SMBus	1 x SMBus
WATCHDOG TIMER	Output & Interval	System Reset, Programmable via Software from 1 to 255 Seconds	System Reset, Programmable via Software from 1 to 255 Seconds	System Reset, Programmable via Software from 1 to 255 Seconds
SECURITY	TPM	fTPM (default) dTPM2.0 (opt.)	fTPM (default) dTPM2.0 (opt.)	fTPM (default) dTPM2.0 (opt.)
POWER	Type	<b>CMS101:</b> Single 12V +/-10% DC <b>CMS103:</b> Wide Range 15~36V	<b>CMS101:</b> Single 12V +/-10% DC <b>CMS103:</b> Wide Range 15~36V	<b>CMS101:</b> Single 12V +/-10% DC <b>CMS103:</b> Wide Range 15~36V
	Connector	DC-in Jack Right Angle Connector (4-pin) (available upon request) Straight Type Connector (4-pin) (available upon request)	DC-in Jack Right Angle Connector (4-pin) (available upon request) Straight Type Connector (4-pin) (available upon request)	DC-in Jack Right Angle Connector (4-pin) (available upon request) Straight Type Connector (4-pin) (available upon request)
	Consumption	<b>Idle:</b> i9-10900E 65W: 20V@ 0.82A (16.4W) <b>Max:</b> i9-10900E 65W: 20V@ 9.02A (180.4W)	<b>Idle:</b> i9-10900E 65W: 20V@ 0.82A (16.4W) <b>Max:</b> i9-10900E 65W: 20V@ 9.02A (180.4W)	<b>Idle:</b> i9-10900E 65W: 20V@ 0.82A (16.4W) <b>Max:</b> i9-10900E 65W: 20V@ 9.02A (180.4W)
	RTC Battery	CR2032 Coin Cell	CR2032 Coin Cell	CR2032 Coin Cell
OS SUPPORT	Microsoft	Windows 10 IoT Enterprise 64-bit	Windows 10 IoT Enterprise 64-bit	Windows 10 IoT Enterprise 64-bit
	Linux	Linux	Linux	Linux
ENVIRONMENT	Temperature	<b>Operating:</b> -5 to 65°C <b>Storage:</b> -40 to 85°C	<b>Operating:</b> -5 to 65°C <b>Storage:</b> -40 to 85°C	<b>Operating:</b> -5 to 65°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	<b>Operating:</b> 5 to 90% RH <b>Storage:</b> 5 to 90% RH
	MTBF	CMS103-W480IB 554,497 hrs @ 25°C; 325,039 hrs @ 45°C; 208,771 hrs @ 60°C; <b>Calculation model:</b> Telcordia Issue 4 <b>Environment:</b> GB, GC – Ground Benign, Controlled	CMS103-W480IB 554,497 hrs @ 25°C; 325,039 hrs @ 45°C; 208,771 hrs @ 60°C; <b>Calculation model:</b> Telcordia Issue 4 <b>Environment:</b> GB, GC – Ground Benign, Controlled	CMS103-W480IB 554,497 hrs @ 25°C; 325,039 hrs @ 45°C; 208,771 hrs @ 60°C; <b>Calculation model:</b> Telcordia Issue 4 <b>Environment:</b> GB, GC – Ground Benign, Controlled
MECHANISM	Dimensions	Mini-ITX Form Factor 170mm (6.7") x 170mm (6.7")	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> 16.3mm <b>Bottom side:</b> 4.4mm	<b>PCB:</b> 1.6mm <b>Top side:</b> 16.3mm <b>Bottom side:</b> 4.4mm	<b>PCB:</b> 1.6mm <b>Top side:</b> 16.3mm <b>Bottom side:</b> 4.4mm
CERTIFICATION	Certification	CE, FCC, RoHS, UKCA, UL, CB	CE, FCC, RoHS, UKCA, UL, CB	CE, FCC, RoHS, UKCA, UL, CB

## ORDERING INFORMATION

Model Name	P/N	Memory	Rear I/O				Internal I/O			Power	Operating Temp.
			Display	2.5 GbE	GbE	USB	M.2	USB	TPM		
CMS101-Q470IB	770-CMS1011-000G	2 DDR4	2 DP++	1	2	4 USB 3.2 Gen2	M.2 M/B/E Key	4 USB 2.0	W/O TPM	12V DC-Jack	-5 to 65°C
CMS101-W480IB	770-CMS1011-100G					4 USB 3.2 Gen2				12V DC-Jack	
CMS101-H420IB	770-CMS1011-200G					4 USB 3.2 Gen1				12V DC-Jack	
CMS103-Q470IB	770-CMS1031-000G					4 USB 3.2 Gen2				15~36V DC-Jack	
CMS103-W480IB	770-CMS1031-100G					4 USB 3.2 Gen2				15~36V DC-Jack	
CMS103-H420IB	770-CMS1031-200G					4 USB 3.2 Gen1				15~36V DC-Jack	

## PACKING LIST

• 1 CMS101/CMS103 motherboard	
• 1 Serial ATA data & power cable w/lock (Length: 300mm)	A81-002101-016G
• 1 COM port cable (Length: 250mm, 1 x COM port)	A81-015011-001G
• 1 I/O shield w/ icon	A49-CMS101-010G

## OPTIONAL ITEMS

• COM port cable (Length: 250mm, 1 x COM ports)	A81-015011-001G
• Serial ATA data & power cable w/lock (Length: 300mm)	A81-002101-016G
• Thermal solution (For 35W, Height: 29.4mm)	A71-103004-000G
• Thermal solution (For 65W, Height: 45mm)	A71-103005-000G
• DT122 Chassis	761-DT1220-200G