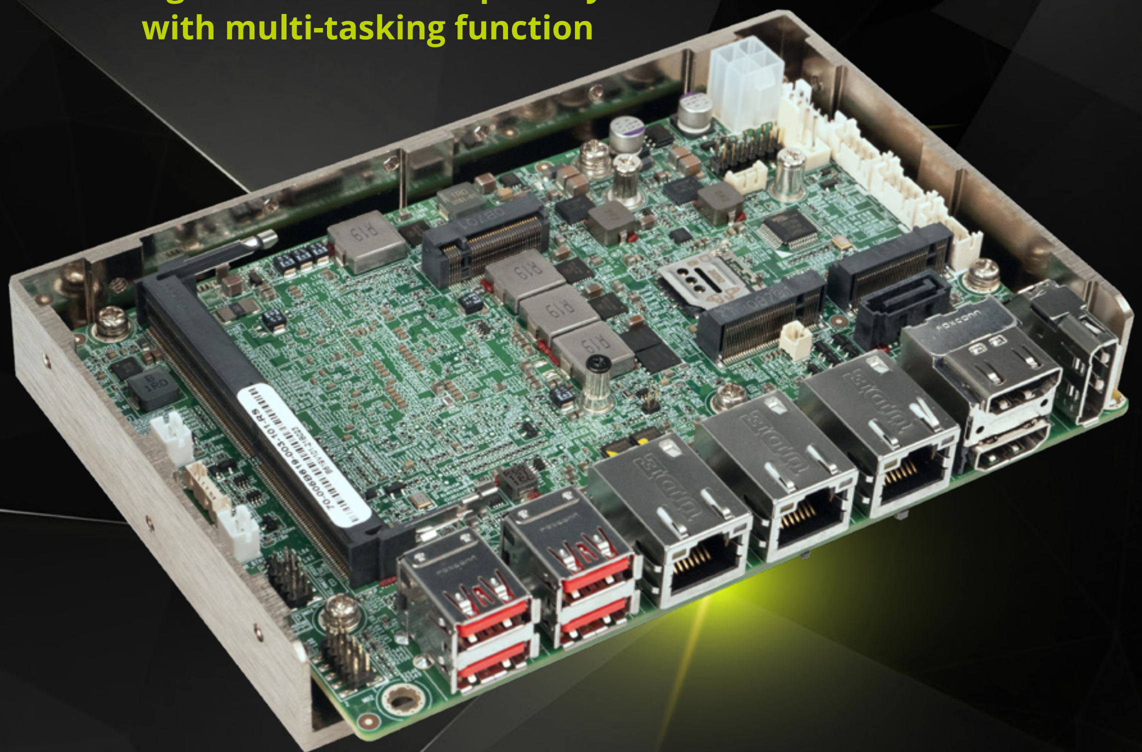
WAFER-TGL-U

Intel® Tiger Lake powered 3.5" embedded board, equipped with Intel® 11th Gen. Core™ i7/i5/i3, Celeron® UP3 processor

- Support four independent displays with 2 x HDMI 1.4, 1 x DP 1.4, 1 x IEI iDPM module.
- Support 4 x USB 3.2 gen2 (10Gb/s), 2 x USB 2.0, 1 x SATA 6Gb/s, 1 x RS-232, 2 x RS-232/422/485
- Support triple Intel® I225V 2.5GbE LAN
- Support M.2 A Key, B key expansions

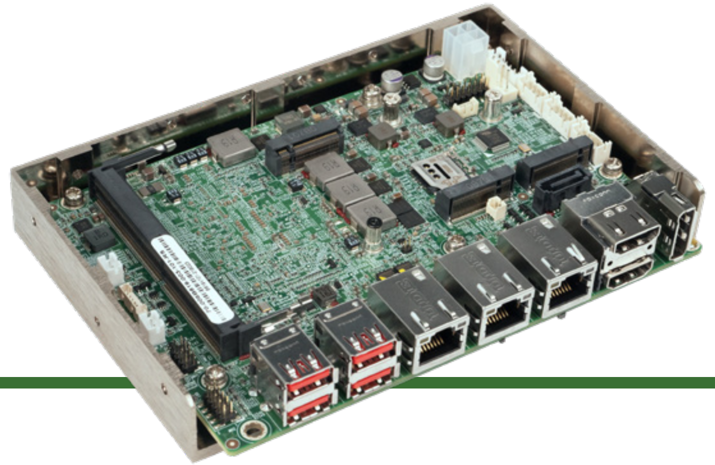
High Performance Capability with multi-tasking function

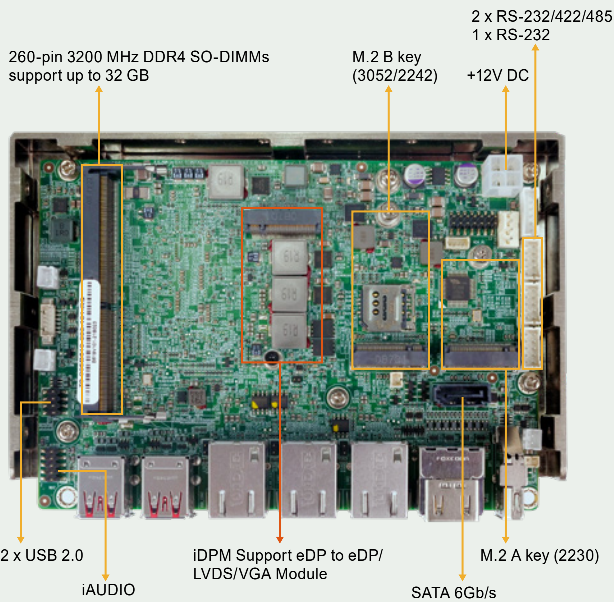


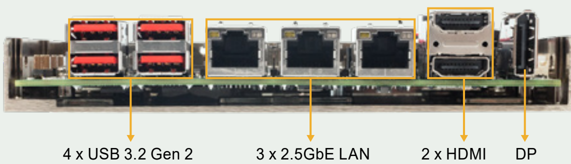
www.ieiworld.com

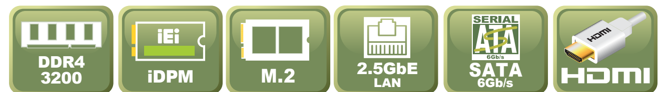
WAFER-TGL-U

3.5" SBC with 10nm 11th Gen. Intel® Tiger Lake-UP3 Core™ i7/i5/i3 and Celeron® on-board SoC with HDMI, DP, iDPM, triple 2.5 GbE LAN , USB 3.2 Gen 2, M.2, SATA 6Gb/s, COM, iAUDIO, 0°C ~60°C and RoHS



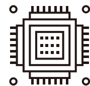






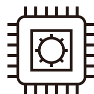
Support Intel® Tiger Lake-UP3 Processors

Equipped with 11th Gen. Intel® Core™ i7/i5/i3, Celeron® UP3 processor, the WAFER-TGL features high performance, and can handle multitasking efficiently.



Support Intel® I225V 2.5GbE Network Controller

Three RJ45 network ports are provided via Intel® I225V/LM 2.5GbE network controller to achieve up to 2.5GbE network transmission rate.

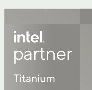


Support USB 3.2 / Gen 2 up to 10Gb/s

The design of the motherboard is based on USB 3.2 protocol. Four USB 3.2 Gen 2 (10Gb/s) are provided through external I/O for efficient data transfer rate. The WAFER-TGL also supports two internal USB 2.0 ports for additional wiring options.

IEI-specific iDPM Interface

IEI uniquely designs a iDPM interface that can connect to display modules, enabling users to add LVDS/eDP/VGA display interface upon requirements.

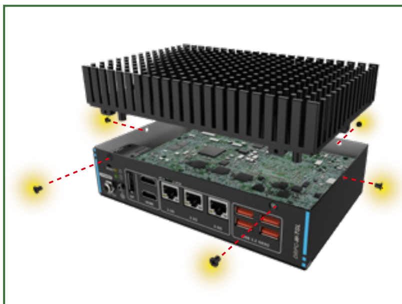


Structure Solution

IEI Heat Conduction Casing (IHCC)

IEI has developed a highly efficient thermal solution for the 3.5" motherboard - IEI Heat Conduction Casing (IHCC). With its well-design structure, the IHCC can effectively improve heat transfer performance and cut time-to-market.

Completely joint with CPU for better heat transfer in 0ºC~60ºC operating temperature with the active cooling (PN:CM-WAFER-WF-R10), and in 0°C~45°C operating temperature with the passive cooling (PN:CM-WAFER-WOF-R10).



DRPC-W-TGL-R10

The DRPC-W-TGL-R10 is a compact embedded system and designed for 3.5" single board computers . With the two-dimensional heat conduction and low wind resistance design on the surfaced which means you don’t need extra thermal solution to form the heat dissipation part. You can get higher hardness, and benefit from the reduced production cost resulting from shortening manufacturing time .Furthermore, the height of aluminum extrusion can therefore be downsized to make the product light weight.

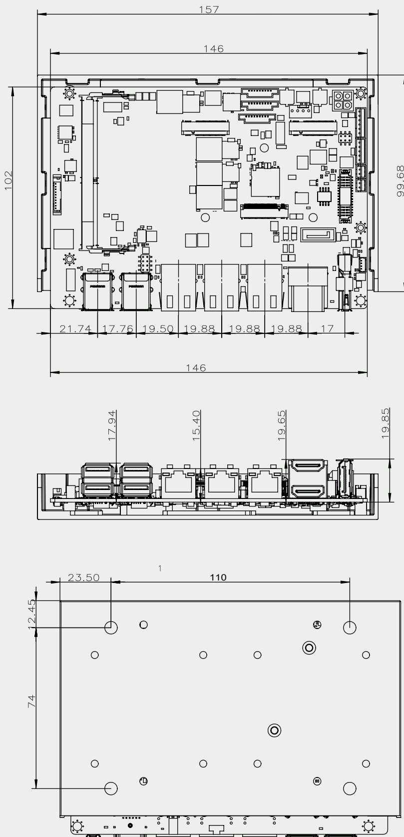
WAFER-TGL Block Diagram

Intel® Tiger Lake

Interface	Connected to
DDI-A	1 x IEI iDPM 3040 slot (only for IEI eDP/LVDS/VGA module)
DDI-B	2 x HDMI 1.4 (up to 4096 x 2160@30Hz)
DDI-C	DP 1.4a (up to 4096 x 2160@60Hz)
PCIe Gen3 x1	Intel® I225V (LM) 2.5GbE → 1 x RJ-45
PCIe Gen3 x1	Intel® I225V 2.5GbE → 1 x RJ-45
PCIe Gen3 x1	Intel® I225V 2.5GbE → 1 x RJ-45
PCIe Gen3 x2, USB2.0	1 x M.2 B Key (2242/3052)
PCIe Gen3 x1, USB2.0	1 x M.2 A Key (2230)
SATA 6Gbs	1 x SATA
SPI	BIOS
Channel A	1 x DDR4-3200 MHz SO-DIMM
USB3.2 Gen 2	4 x USB3.2 Gen2
HDA	1 x iAUDIO (2x5 pin) Support IEI AC-KIT-888S kit
eSPI	Fintek F85227N

- Fintek F85227N —LPC→ Fintek F81804U
  - 1 x RS-232 pin header
  - 2 x RS-232/422/485 Pin Header
- Fintek F85227N → SIO IT5571E
  - AT/ATX
  - I2C CONN
  - SYS_FAN
  - 12-bit DIO

Dimensions



Optional accessories

Specifications

Model	WAFER-TGL-U
SOC	11th Gen. Intel® mobile Tiger Lake-UP3 SoC Intel® Core™ i7-1185G7E (up to 4.4GHz, quad-core, 12M Cache, TDP=28/15/12W) Intel® Core™ i5-1145G7E (up to 4.1GHz, quad-core, 8M Cache, TDP=28/15/12W) Intel® Core™ i3-1115G4E (up to 3.9GHz, dual-core, 6M Cache, TDP=28/15/12W) Intel® Celeron® 6305 (up to 1.8GHz, dual-core, 4M Cache, TDP=15W) Intel® Celeron® 6305E (up to 1.8GHz, dual-core, 4M Cache, TDP=15W)
BIOS	AMI UEFI BIOS
Memory	1 x 260-pin 3200 MHz DDR4 SO-DIMMs support up to 32 GB
Graphics Engine	Intel® Gen11 UHD Graphics for Core™ i3-1115G4E and Celeron® 6305E, Intel® Iris® Xe Graphics for i5-1145G7E and i7-1185G7E
Display Output	Four Independent Displays 2 x HDMI 1.4 (up to 4096 x 2160@30Hz) 1 x DP 1.4 (up to 4096 x 2160 @60Hz) 1 x IEI iDPM 3040 slot (only for IEI eDP/LVDS/VGA module)
Ethernet	LAN1: Intel® I225V 2.5GbE (I225-LM for i5/i7 SKU) LAN2: Intel® I225V 2.5GbE LAN3: Intel® I225V 2.5GbE
External I/O	4 x USB 3.2 Gen 2 (10Gb/s)
Internal I/O	1 x SATA 6Gb/s 2 x USB 2.0 pin header (P=2.0) 2 x RS-232/422/485 (2x5 pin, P=2.0) 1 x RS-232 (2x5 pin, P=2.0)
I²C	1 x I²C (1x4 pin)
Audio	1 x iAUDIO (2x5 pin) supporting IEI AC-KIT-888S kit
Front Panel	1 x Power LED & HDD LED (1x6 pin P=2.0) 1 x Power button (1x2 pin P=2.0) 1 x Reset button (1x2 pin P=2.0)
LAN LED	3 x LAN LED (1x2 pin)
Expansion	1 x M.2 A key for Wi-Fi & BT (2230) (PCIe Gen3 x1/USB 2.0 signal) 1 x M.2 B key (3052/2242) w/ SIM holder (PCIe Gen3 x2/USB 2.0 signal)
Digital I/O	1 x 12-bit digital I/O (2x7pin)
TPM	Intel® PTT (TPM 2.0)
Fan Connector	1 x System fan connector (1x4 pin)
Chassis Open	1 x Chassis intrusion (1x2 pin)
Power Supply	+12V DC input power (AT/ATX mode)
Watchdog Timer	Software Programmable support 1~255 sec. System reset
Power Consumption	12V@4.0A (11th Gen Intel® Core™ i5-1145G7E 2.6GHz with 8GB 3200MHz DDR4 memory and EUP enabled)
Operating Temperature	0°C ~ 60°C
Storage Temperature	-20°C ~ 70°C
Operating Humidity	5% ~95%, non-condensing
Dimension	146mm x 102mm
Weight	GW: 850g / NW: 350g
Certification	CE/FCC Compliant

Packing List

1 x WAFER-TGL-U single board computer	1 x SATA with power cable kit
1 x Power cable for P4	1 x QIG

Ordering Information

WAFER-TGL-U-CE-R10	3.5" SBC with Intel® Tiger Lake-UP3 Celeron 6305E Proccessor,DDR4 SO-DIMM,12V DC input,Quad Display,Triple M.2 with A/B key, Triple Intel® 2.5 GbE, SATA, USB3.2, SoC, RoHS
WAFER-TGL-U-C-R10	3.5" SBC with Intel® Tiger Lake-UP3 Celeron® 6305 Proccessor, DDR4 SODIMM, 12V DC input, quad display, triple Intel® 2.5 GbE, SATA, USB 3.2, M.2, SoC, RoHS
WAFER-TGL-U-i3-R10	3.5" SBC with Intel® Tiger Lake-UP3 Core™ i3-1115G4E Proccessor, DDR4 SO-DIMM, 12V DC input, quad display, triple M.2 A/B key, triple Intel® 2.5 GbE, SATA, USB 3.2, SoC, RoHS
WAFER-TGL-U-i5-R10	3.5" SBC with Intel® Tiger Lake-UP3 Core™ i5-1145G7E Proccessor, DDR4 SO-DIMM, 12V DC input, quad display, triple M.2 A/B key, triple Intel® 2.5 GbE, SATA, USB 3.2, SoC, RoHS
WAFER-TGL-U-i7-R10	3.5" SBC with Intel® Tiger Lake-UP3 Core™ i7-1185G7E Proccessor, DDR4 SO-DIMM, 12V DC input, quad display, triple M.2 A/B key, triple Intel® 2.5 GbE, SATA, USB 3.2, SoC, RoHS

Optional Accessories

CB-USB02A-RS	Dual port USB cable with bracket, 300mm, P=2.00
AC-KIT-888S-R10	Realtek ALC888S 7.1 Channel HD Audio peripheral board, RoHS
32205-002700-200-RS	RS-232/422/485, 200mm, P=2.0
CM-WAFER-WF-R10	Cooler Module (W/FAN); Mechanical; for 3.5" WAFER series, RoHS
CM-WAFER-WOF-R10	Cooler Module (W/O FAN); Mechanical; for 3.5" WAFER series, RoHS
iDPM-eDP-R10	eDP to eDP converter board (for IEI iDPM connector)
iDPM-LVDS-R10	eDP to LVDS converter board (for IEI iDPM connector)