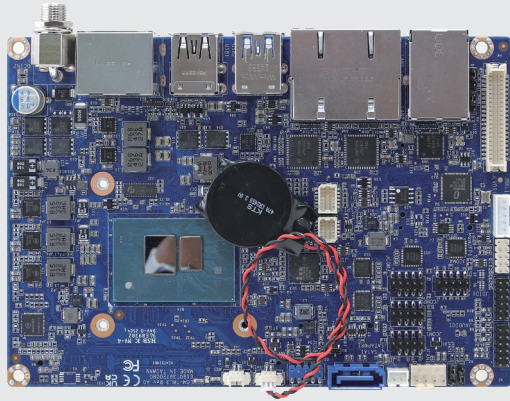


ECM-TWL3

Intel® Processor N150, N250, & Intel® Core™ 3 Processor N355 3.5" Micro Module



Features

- Onboard Intel® Processor N150, N250, & Intel® Core™ 3 Processor N355
- Top Layer Soldered Processor
- Triple Display, DP 1.4a, HDMI 2.0b, 1 x 2CH LVDS/eDP
- 2 x Intel® I210AT Gigabit Ethernet, 1 x Intel® I226V 2.5 Gigabit Ethernet
- Triple Expansion Slot, M.2 Key-B, M.2 Key-E, M.2 Key-M
- DC in +9V ~ +36V



HDMI



DP++



DDR5
SODIMM



USB 3.2



RS232/422/485

Specifications

System Information

Processor	Onboard Intel® Processor N150, N250, & Intel® Core™ 3 Processor N355
System Memory	1 x 262-pin DDR5 4800MHz SODIMM socket, supports up to 16GB Max.
I/O Chipset	EC iTE IT5782VG
Watchdog Timer	H/W Reset, 1sec. ~ 65535sec and 1sec. or 1min./step
BIOS	AMI BIOS, 256Mbit SPI Flash ROM
H/W Status Monitor	CPU temperature monitoring Voltages monitoring CPU fan speed control
TPM	Onboard NuvoTon_NPCT760AABYX, co-lay Infineon_SLB9670VQ2.0
Board	3.5"

Expansion

Expansion	1 x M.2 Key B 3042/3052, BOM Optional PCIe x1 or USB3.2 Gen1 + USB2.0 (default USB3.2), support 5G (3.3V & 3.8V), 1 x SIM card slot, support WWAN+GNSS or SSD 1 x M.2 Key E 2230 support WiFi (1 x PCIe x1, USB2.0 Signal), CNVi, not support Twin Lake & Amston Lake, only support Alder Lake processor 1 x M.2 Key M 2242/2280 (1 x PCIe Gen3 x1 / SATA auto detection)
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Storage

Storage	1 x M.2 (Key M, 2280) 1 x M.2 (Key B, 3042/3052/2242) 1 x SATA III
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Display

Graphic Chipset	Intel® UHD Graphics
Spec. & Resolution	HDMI 2.0b Max resolution 4096 x 2160@60Hz DP 1.4 Max resolution 4096 x 2160@60Hz LVDS 1920 x 1080 Dual channel 18/24-bits or eDP 1920 x 1080@60Hz (2 Lanes)
Multiple Display	Triple Display
LVDS	1 x LVDS: 1920 x 1080 Dual channel 18/24-bits LVDS

Audio

Audio Codec	Realtek ALC888S HD Audio Decoding Controller
Audio Interface	Line-out, Line-in, Mic-in

Ethernet

LAN Chipset	2 x Intel® I210AT 1 x Intel® I226V
Ethernet Interface	10/100/1000/2.5G Base-Tx GbE compatible
LAN Port	3 x RJ-45

Power Requirement

Power Mode	AT/ATX (Default Setting: AT)
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Software Support

OS	Windows 11, Linux
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Certification

Certification Information CE, FCC, RoHS Compliant

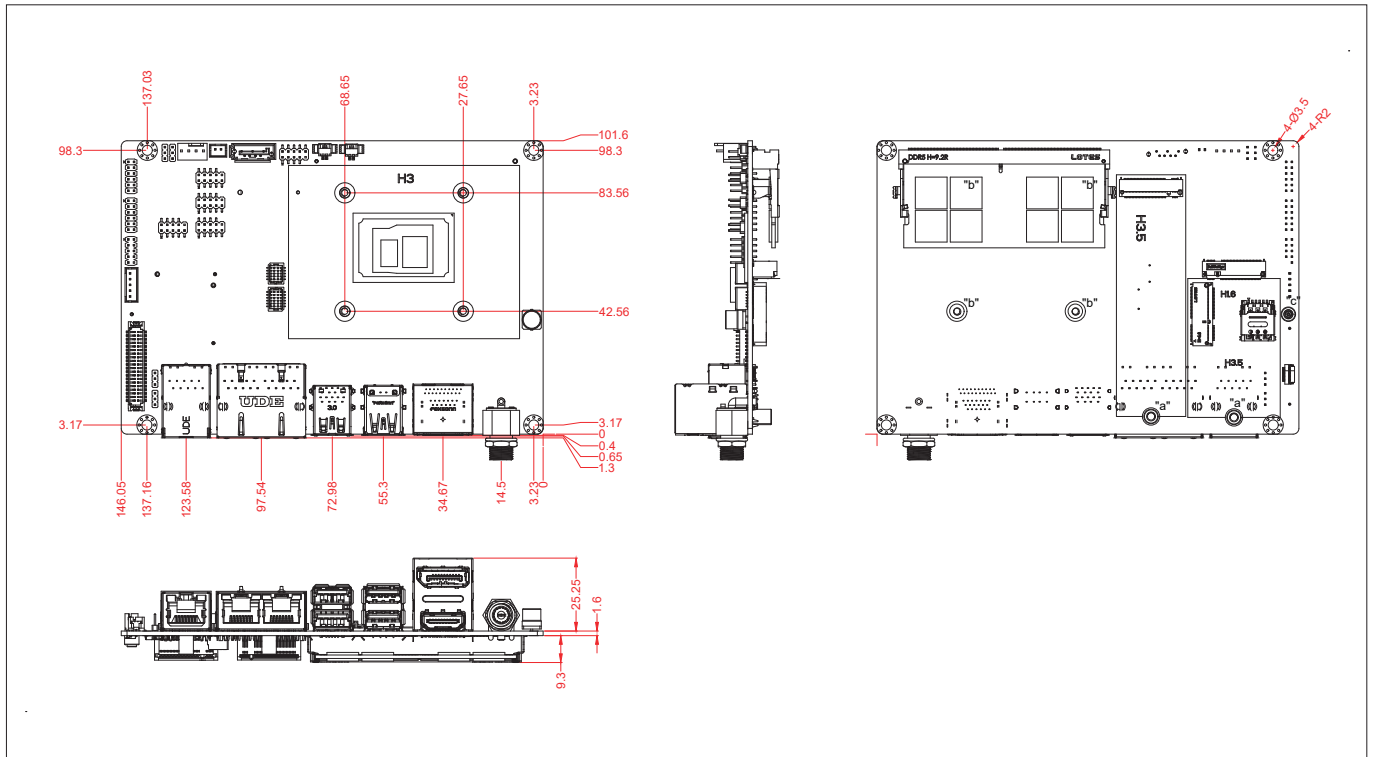
I/O

USB	3 x USB3.2 Gen2, 1 x USB2.0 at I/O 2 x USB2.0 by pin header
COM Port	2 x RS-232/RS422/RS485 2 x RS-232
SATA	1 x SATA III
DIO	1 x 8-bit GPIO
MIO	2 x 6 pin for eSPI 1 x SIM Card Slot

Mechanical & Environmental

Operating Temp.	0°C ~ 60°C (-4 ~ 140°F) with 0.5m/s Air Flow
Storage Temp.	-40°C ~ 85°C (-40°F ~ 185°F)
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing
Weight	0.44lbs (0.2kg)
Power Requirement	DC in +9V ~ +36V
Dimension (L x W)	5.7" x 4" (146mm x 101mm)

Mechanical Drawing



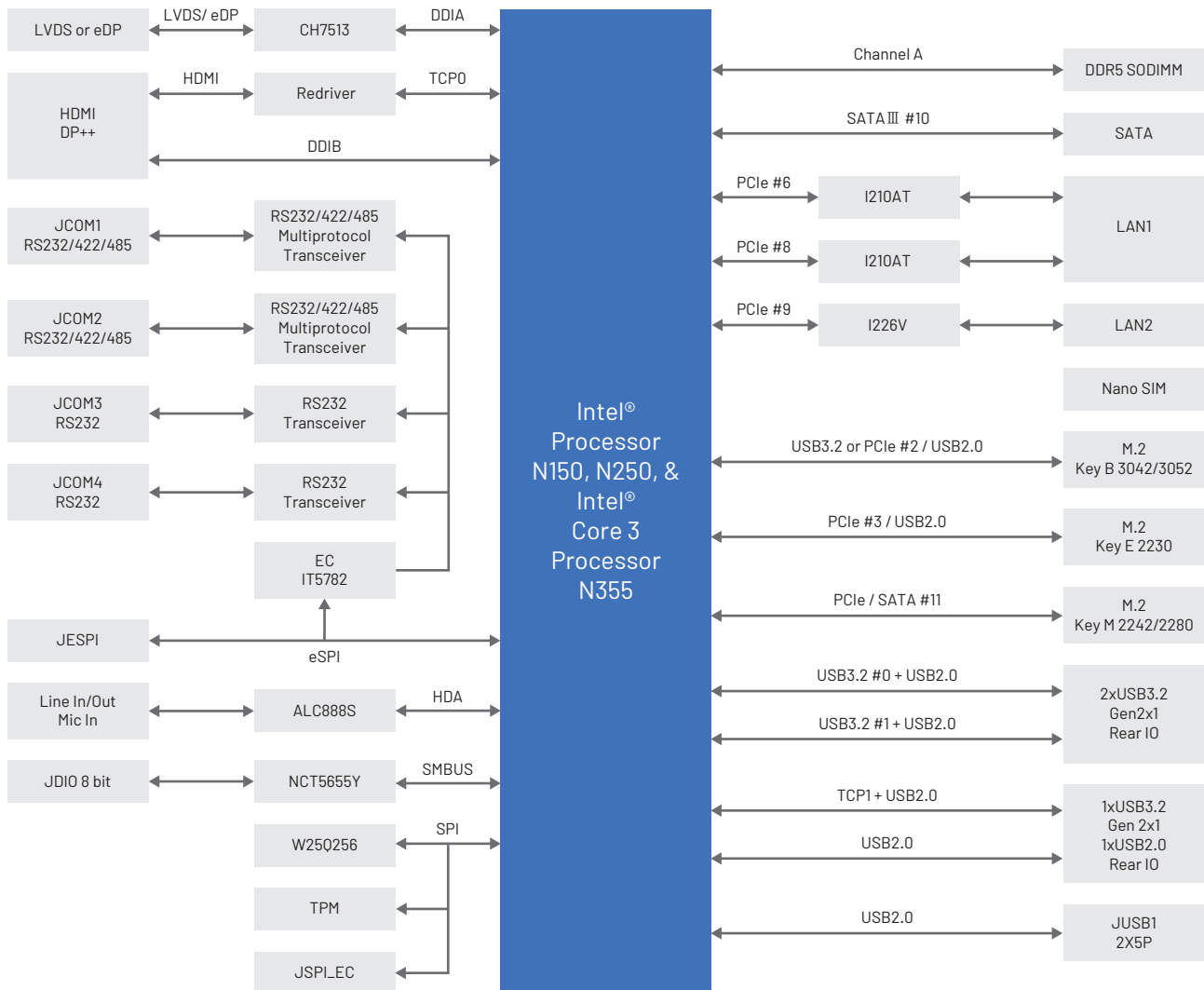
Ordering Information

P/N	Processor	Chipset	LAN	USB	COM	PCIe Slot	Power Input	Temp.	Note
ECM-TWL3-N150-A1R	Intel® Processor N150	NA	3	6	4	0	+9~36V DC	0°C ~ 60°C (32°F ~ 140°F)	NA
ECM-TWL3-N250-A1R	Intel® Processor N250	NA	3	6	4	0	+9~36V DC	0°C ~ 60°C (32°F ~ 140°F)	NA
ECM-TWL3-N355-A1R	Intel® Core™ 3 N355	NA	3	6	4	0	+9~36V DC	0°C ~ 60°C (32°F ~ 140°F)	NA

Packing List

Item	Quantity
Serial ATA cable (7-pin, standard)	1
Wire SATA power cable (15-pin, 2P/2.0mm)	1
Flat cable 9P (M)-PHD 10P/2.0mm	1
CPU Heatsink	1
M.2 Module mounting bracket screw set	1

Block Diagram



I/O Overview

