

UP board family



UP



UP²



UP^{core}



UP^{core PLUS}



UP^{Xtreme}

System	UP	UP Squared	UP Core	UP Core Plus	UP Xtreme
Processor	Intel® Atom™ x5-z8350 (up to 1.92 GHz)	Intel® Celeron™ N3350 (up to 2.4 GHz) Intel® Pentium™ N4200 (up to 2.5 GHz) Intel® Atom™ x5-E3940 (up to 1.8GHz) Intel® Atom™ x7-E3950 (up to 2.0GHz)	Intel® Atom™ x5-z8350 (up to 1.92 GHz)	Intel® Atom™ x5-E3930 (up to 1.8 GHz) Intel® Atom™ x5-E3940 (up to 1.8 GHz) Intel® Atom™ x7-E3950 (up to 2.0 GHz)	Intel® Core™ i7-8665UE (up to 4.4 GHz) Intel® Core™ i5-8365UE (up to 4.1 GHz) Intel® Core™ i3-8145UE (up to 3.9 GHz) Intel® Celeron 4305UE (up to 2.0 Ghz)
Number of cores	Quad Core	N3350-Dual Core N4200/E3940/E3950-Quad Core	Quad Core	E3930-Dual Core E3940/E3950-Quad Core	i3-8145UE/ Celeron 4305UE-Dual Core i7-8665UE/i5-8365UE-Quad Core
Graphics	Intel® HD 400 Graphics	Intel® HD Graphics 500-N3350/E3940 Intel® HD Graphics 505-N4200/E3950	Intel® HD 400 Graphics	Intel® HD Graphics 500-E3930/E3940 Intel® HD Graphics 505-E3950	Intel® UHD Graphics 610-Celeron 4305UE Intel® UHD Graphics 620
VPU	-	optional (via mPCIe)	-	-	optional (via M.2 2280, mPCIe, 100-pin)
FPGA	Intel® FPGA Altera Max V for 40-pin GP-bus	Intel® FPGA Altera MAX 10	Intel® FPGA Altera MAX 10	Intel® FPGA Altera MAX 10	Intel® FPGA Altera MAX 5
MCU	-	-	-	-	STM32
System memory	1GB / 2GB / 4GB	2GB / 4GB / 8GB	1GB / 2GB / 4GB	2GB / 4GB / 8GB	4GB / 8GB / 16GB
Storage capacity	16GB / 32GB / 64GB	16GB / 32GB / 64GB / 128GB	16GB / 32GB / 64GB	32GB / 64GB / 128GB	64GB
Compatible OS	Microsoft Windows 10 full version, Linux (ubilinux, Ubuntu, Yocto), Android				
Pre-installed OS	Optional Windows 10	Optional Windows 10	Optional Windows 10	Optional Windows 10	Optional Windows 10
Power requirement	5V DC-in @ 4A 5.5/2.1mm jack	5V DC-in @ 6A 5.5/2.1mm jack	5V DC-in @ 4A 5.5/2.1mm jack	12V DC-in @ 4A -6A 5.5/2.1mm jack	12~60V DC-IN (lockable connector)
Power consumption	13W	18W	13W	18W	26W
Dimension (Lx W)	85.6 x 56.5mm	90 x 91mm	56.50 x 66 mm	56 x 90mm	120 x 122mm
Operating temperature	0°C ~ 60°C				-20°C ~ 70°C
Storage temperature	-40°C ~ 80°C				
Operating humidity	0% ~ 90% relative humidity, non-condensing				
MTBF (hours)	270,599 Hours	173,446 hours	327,838 Hours	252,491 Hours	TBA
Certification	CE, FCC Class A				

Display

HDMI	1 (HDMI 1.4a)	1 (HDMI 1.4b)	1 (HDMI 1.4a)	-	1 (HDMI 2.0)
DP	-	1 (DP 1.2) 4K @ 60 hz	-	1 (DP 1.2) 4K @ 60 hz	1 (DP 1.2) 4K @ 60 hz
MIPI DSI/ eDP	MIPI DSI/eDP	1 x eDP	1 x eDP	1 x eDP	1 x eDP

I/O

Audio	I2S audio port	I2S audio port	I2S audio port	I2S audio port	ALC887 for Audio Out/Mic In, I2S
USB port	4 x USB2.0 port Type A 2x USB2.0 pin header 1 x USB 3.0 OTG Micro B	2 x USB2.0 Type A 2 x USB2.0 pin header 3 x USB3.0 Type A 1 x USB 3.0 OTG Micro B	1 x USB3.0 Type A 2 x USB2.0 pin header	2 x USB 2.0 pin header 1 x USB 3.0 Type A 1 x USB 3.0 OTG Micro B	1 x USB 2.0 pin header 4x USB3.0 (type A)
UART	2 x UART (Tx/Rx) debug port (pin header)				
HDD interface	-	1 x SATA 3.0	-	-	1 x SATA 3.0
Expansion Slot	-	1 x mPCIe 1 x M.2 2230 E key 1 x 60-pin EXHAT	-	-	1x M.2 2280 B+M key 1x M.2 2230 E key 1x mPCIe
AIO/DIO	-	-	-	-	via GP-bus
40-pin GP-Bus	1	1	-	-	1
100-pin GP Bus	-	-	1	2	1
MIPI-CSI	1x MIPI-CSI 2 lane	1x MIPI-CSI 2 lane 1x MIPI-CSI 4 lane			-
Others	-	-	-	-	STM32 pin header, SIM Slot, 2x RS232/422/485

Connectivity

Ethernet	1 x GbLAN (Realtek RTL8111G-CG)	2 x GbLAN (Realtek RTL8111G-CG)	-	-	2 x GbLAN (1x Intel i210, 1x Intel i219)
WiFi	optional WiFi kit	optional (via, M.2 2230)	WiFi 802.11 b/g/n @ 2.4 GHz (AMPAK,AP6214A)	WiFi 802.11 ac/a/b/g/n (AMPAK,AP6355SD)	optional (via, M.2 2230)
Bluetooth	optional BT kit	optional (via, M.2 2230)	Bluetooth 4.0 (BLE)	Bluetooth 4.2 (BLE)	optional (via, M.2 2230)
LTE/4G	optional via expansion module	optional (via, mPCIe)	-	-	optional (via, mPCIe)
Cooling	fanless				active

UP Carrier board expansions

UP board / UP Squared



UPS HAT
with LiPo battery support



Audio Expansion
with 2x speaker and buzzer



mPCI-e Expansion
with micro SIM, RS323 wafer box



PoE Expansion
with RJ-45 in/out



Monarco HAT
with 4x DIO, 2x analog in/out

UP Core



Low speed carrier board

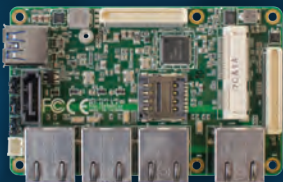
Max10 for HAT 40 pin setting
1x USB to RS232
1x jumper for RS-232/422/485
1x Power LED (bottom side)
1x RS-232/422/485 Connector (DB9)
1x 12-24V Power input (+/-10%)
1x 30 pin for HAT 40 IO pins
1x 20 pin for FPGA MAX10



High speed carrier board

1x 2-channel PCIe Switch
1x HSIC to USB to 3x USB
1x Minicard
1x uSIM Card Reader
1x Power LED
1x RJ45 Ethernet port
2x USB 2.0x1 Connector
1x SD Card

UP Core Plus / UP Xtreme



Net Plus carrier board *

4x Intel I211-AT
1x EEPROM on I2C0 4Kb
1x mPCI-e / Mini card, mSATA
1x uSIM Card Reader
1x SATA (vertical)
2x Docking connector
1x Docking connector
4x RJ45 Gigabit Ethernet port
1x USB3.0



AI Plus carrier board *

Intel® Cyclone™ 10GX F672
MAX 10 V36 PWR Sequence
1 GB DDR3 Single Channel x32
1x SPI-Flash 512 Mb
1x Gb Ethernet (Realtek 8111G)
1x HDMI IN, 1x DP IN, 1x LVDS IN
1x MIPI-CSI (4 lanes)
1x USB 3.0 Type A, 1x USB 3.1 Type C
1x Mini card full-size SATA-PCI-e colay
2x Docking connector 100-pin

UP AI Accelerators with Intel® Movidius™ Myriad™ X VPU 2485



AI Core X
mPci-E with 1x VPU



AI Core XM
m.2 2280 B+M with 2x VPU



Vision Plus *
100-pin with 3x VPU
for UP core Plus & UP Xtreme



AI Core XP4 / XP8
PCI-E x4 with 4 / 8 VPU