EN01 Series

EDGE COMPUTING

PROCESSOR	Intel® Apollo Lake Celeron J3355/Pentium J4205/Atom x5-E3940	
MEMORY	LPDDR4 2400 MHz, 8 GB (Pentium/Atom CPU) / 4 GB (Celeron CPU)	
VIDEO GRAPHICS	Intel Ultra HD Graphics 500/505	
VIDEO OUTPUT	HDMI 1.4 x 1 (3840 x 2160 resolution, 30 Hz)	
NETWORK	Realtek Gigabit LAN (RTL8119I-CG) Optional POE-PD or POE-PSE	
LTE	Optional LTE antenna kit (PLA01) for 4G/LTE connection	
STORAGE	64 GB eMMC storage (embedded), expandable with Micro SD card SATA 6 GB/s	
FRONT PANEL	(2) 4G external antenna hole (optional)	
BACK PANEL	(1) HDMI-in port (optional) (2) USB 3.2 Gen 1 port (1) Micro USB 2.0 port (1) LAN port	(1) Power LED (1) HDMI 1.4 (1) Recovery Button (for NVIDIA Jetson TX2) (1) LAN port with PoE (optional)
SIDE PANEL	(1) SD Card Reader (1) 2 - pin DC-in jack	(1) 4G external antenna hole (optional) (1) Kensington Lock
EXPANSION	(1) Realtek Gigabit LAN port (1) Nano SIM slot	(1) M.2 3042 B key slot supports SATA/PCI-E x 1/USB 3.2 Gen 1
DIMENSIONS	3.6(L) x 2.1(W) x 3.5(H) inches	
INPUT VOLTAGE	External +12V to +19V	
ACCESSORIES	Quick Guide Driver DVD DC-in cable	VESA mount (75/100 mm) and screws Din Rail kit (bracket and screws) 2-pin Phoenix connector and cable
OPERATING TEMPERATURE	0 - 50°C (Celeron J3355 or Pentium J4205 cpu) -20 - 60°C (Atom E3940 cpu)	
OS SUPPORT	Windows 10, Linux 64 bit	

BIOS DOWNLOADS: http://global.shuttle.com/products/productsDownload?productId=2441

SUPPORT LIST: http://global.shuttle.com/products/productsSupportList?productId=2441

FAQ LIST: http://global.shuttle.com/support/faq

PRODUCT WARRANTY: https://us.shuttle.com/support/

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CHASSIS	Black aluminum and steel IP20 protection rating Kensington lock slot on side Dimensions: 3.6 (L) x 2.1 (W) x 3.5 (H) inches Weight: 1.05 LBS (net) / 2.27 LBS (gross)
POWER SUPPLY	12V - 19V DC in (by 2 pin Euroblock connector) Included adapter cable allows for power adapter with 5.5/2.5 mm DC plug The recommended minimum output wattage for the power adapter is: -40 W (if PSE01 accessory isn't used) -65 W (if PSE01 accessory is used) PoE function can be added with the optional PD01 accessory [2]* The power sourcing equipment (ie PoE switch/injector) should be capable of delivering at least 48V DC / 0.65A)
OPERATING SYSTEM	The system comes without an operating system installed. Compatibility: Windows 10, Linux 64 bit
PROCESSOR SUPPORT	Intel® Celeron J3355/Pentium J4205/Atom x5-E3940 options 14 nm structure, Apollo Lake platform CPU cores/threads: 4/4 CPU clock frequency: 2.0 GHz max (Celeron), 1.5 GHz max (Pentium), 1.6 GHz max (Atom) Max supported processor power consumption (TDP): 9.5W Supports x86-64, AES-NI, VT-x (EPT), VT-d System on chip processor (SoC) with integrated graphics processor, no chipset required
COOLING	Fanless, large aluminum heatsink Passive cooling through convective heat transfer
MEMORY	Celeron: 4 GB LPDDR4 RAM (2400 MHz), soldered Pentium: 8 GB LPDDR4 RAM (2400 MHz), soldered Atom: 8 GB LPDDR4 RAM (2400 MHz), soldered
M.2 SLOT	M.2 3042 B Key expansion slot provides the following interfaces: -PCI-Express Gen 2.0 X1 -SATA v3.0 (6 GB/s) -USB 3.2 Gen 1 The following components can be used in this slot: -Optional HDMI capture card MCAP01 [3]* -Optional LTE/4G module [4]* -Optional WLAN module [5]* -M.2 2242 SSDs with SATA interface (B+M key) or NVMe interface (M Key)* *Please set the M.2 device in the Advanced tab of the BIOS setup (according to the type of M.2 card used)
MOUNTING OPTIONS	-Mounted on a DIN Rail (ie for equipment racks) -Vertical (ie VESA mounted on monitor) -Standing as a desktop PC
WIRED NETWORK	RJ45 connector supports Gigabit LAN at 10/100/1000 MB/s, Supports Wake on LAN Realtek RTL81191-CG Ethernet controller Supports Wake-on-LAN
GRAPHICS	Integrated in the processor Intel® HD Graphics 500 (Intel Gen 9), graphics frequency: 400~600 MHz Supports DirectX 12, Intel Quick Sync Video, Intel Clear Video (HD), Shared Memory Execution Units (EU): 12
24/7 OPERATION	Approved for 24/7 permanent operation (requires free air around device for circulation) This device comes without a power-on button, the boot process starts as soon as the power is applied. [1]*
UEFI FIRMWARE	16 MB Flash ROM with AMI UEFI BIOS firmware Supports Wake-on-LAN from S3, S4, S5 ACPI states Supports boot up from external flash memory cards (USB or SD card) Embedded firmware TPM v2.0 (can be activated in BIOS setup) Supports Hardware Monitoring and Watch Dog functionality (fixed timer)

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EDGE COMPUTING

MICRO SD CARD READER	Integrated card reader supports Micro SD, Micro SDHC, Micro SDXC memory flash cards Supports boot up from SD card
SIM EXPANSION SLOT	A nano SIM card installed in the appropriate slot on the mainboard can be used in combination with an optional LTE/4G module (installed in the M.2 30242 slot). [4]*
STORAGE	64GB eMMC flash memory Expandable via Micro SD card
FRONT/SIDE PANEL	Optional 6.5 mm antenna holes x 4 Kensington Lock Micro SD Card Reader DC input (2-pin Euroblock)
BACK PANEL	Power LED [1]* Micro USB 2.0 port USB 3.2 Gen 1 ports x 2 Optional HDMI port [3]* RJ45 LAN port Optional LAN port (with PoE) [2]* HDMI 1.4b port (video/audio)
INCLUDED ACCESSORIES	User Guide Bracket for VESA and DIN Rail mounting and screws Driver DVD 2-pin Phoenix connector VESA mount and screws DC adapter cable (connects Phoenix connector to 2.5/5.5 coaxial DC DIN Rail clip and screws plug of a power adapter)
ENVIRONMENTAL CRITERIA	Operating temperature: Humidity: 10 - 90% (non-condensing) 0 - 50°C (Celeron/Pentium CPU) -20 - 60°C (Atom CPU)
CERTIFICATIONS	EMI: FCC, CE, BSMI, VCCI, RCM Other: RoHS, Energy Star, ErP Safety: ETL, CB, BSMI, IP20 This model is classed as a technical information equipment (ITE) in class B and is intended for use in living rooms and offices. The CE mark approves conformity by the EU directives: (1) 2014/30/EC relating to electromagnetic compatibility (EMC) (2) 2014/35/EC relating to Electrical Equipment designed for use within certain voltage limits (LVD) (3) 2009/125/EC relating to eco-design requirements for energy related products (ErP) (4) 2014/53/EC related to Radio Equipment Directive (RED)

[1] NON-STOP OPERATION

This device comes without a power-on button and the boot process starts as soon as power is applied. Another option is to switch off the system by shutting down the operating system into Soft-Off mode (S5). There are three ways to switch it on again:

-Interrupting the power supply

-Wake-on-LAN by sending a Wake-Up signal to the LAN port

-Connecting an external power button (normally open) to the internal 34-pin header "J4" (refer to quick guide). The button has to be connected to pin 11 and 12 and Always-On function has to be disabled by removing the jumper from pin 29/30

[2] SECOND LAN PORT WITH POE FUNCTION (OPTIONAL)

The optional accessories PD01 and PSE01 are daughterboards to provide additional functions to this device. The PD01 accessory allows the EN01 to be powered over a LAN cable and the PSE01 accessory allows the EN01 to act as Power Sourcing Equipment (PSE) to carry both data and voltage to a connected network device.

[3] HDMI CAPTURE CARD (MCAP01)

The optional accessory MCAP01 includes a M.2 capture card and adapter cable for an additional HDMI port (HDMI video signals can be recorded and processed from an external source).

[4] OPTIONAL LTE/4G FUNCTION

The EN01 can be enhanced to support mobile internet with the following components: LTE/4G module in M.2 3042 format, activated Nano SIM card, or our WWN01 accessory with two LTE/4G antennas and cables

[5] OPTIONAL WLAN FUNCTION

The following accessories are required to upgrade the EN01 with a WLAN function:

-WLN-M (kit with WLAN card in M.2 2230 format and two external antennas and cables; supports WLAN ac 2.4 GHz/5GHz and Bluetooth 4.0)

-LN007 (M.2 adapter board; the EN01 M.2 slot is BM key, WLAN card is AE key)

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EN01 Series

EDGE COMPUTING

Front and Side View

1	Heatsink	**A**	SD Card Reader
2	4G antenna hole (optional)	**B**	4G antenna hole (optional)
		C	2-pin DC-in jack
		D	Kensington Lock

Back View

1	Power LED	**A**	Pilot hole for wire
2	USB 3.2 Gen 1 x 2	**B**	4G antenna hole (optional)
3	HDMI-in port (optional)		
4	LAN port		
5	HDMI 1.4 port		
6	Micro USB 2.0 port		
7	PoE LAN port (optional)		

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EN01 Series

EDGE COMPUTING

POWER ADAPTER CABLE

The 2-pin Euroblock with Phoenix connector allows for a DC cable to be connected via terminal strip.*

*12-19V DC input voltage supported. 2-pin connector and power adapter cable is included.

DIN RAIL POWER SUPPLY

With the 2-pin Euroblock with Phoenix connector, a DC cable can be connected to the DIN rail power supply.

Recommended minimum output wattage for the power adapter:
- 40W, if PSE01 accessory is not installed
- 65W, if PSE01 accessory is installed

POWER ADAPTER

With the 2-pin Euroblock with Phoenix connector, a DC cable can be connected to a 90W power adapter.

The included adapter cable allows a power adapter with a 5.5/2.5 mm DC plug to be connected.

POWER OVER ETHERNET

With our optional PD01 daughterboard installed, a second LAN port with PoE function is provided. This will enable the EN01 to receive power over the same network cable that transfers data. The power source can be from a PoE enabled Ethernet switch or from a power injector (48V, 0.65A).

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EN01 Series

EDGE COMPUTING

APOLLO LAKE PROCESSOR

Powered by an Intel® Apollo Lake Celeron, Pentium, or Atom SoC processor, integrated Intel® HD 500 series graphics and native support for USB 3.2 Gen 1 provides powerful performance*.

*J3355 (Celeron)/J4205 (Pentium)/E3940 (Atom) CPU options

OPTIONAL FHD CAPTURE CARD

A capture card accessory kit (MCAP01) includes an M.2 capture card with HDMI-in cable to connect with a HDMI camera for a full HD media edge computer, suitable for traffic surveillance, recording, medical video transmission and more.

WIDE OPERATING TEMPERATURE RANGE

With a passive thermal cooling system, the EN01 has low power consumption and is approved for 24/7 operation for commercial applications.*

*Operating temperatures:
0 - 50°C (Celeron J3355 or Pentium J4205)

DIN RAIL/VESA MOUNTING

With the VESA or DIN rail mounting kit, the EN01 is small enough to be mounted in nearly any AIoT scenario - in a cabinet, vehicle, vending machine, or behind a display or on a wall.

OPTIONAL LTE ANTENNA KIT

A built-in 3042 Type B expansion slot supports a 4G/LTE module (PLA01), making network connections easier for commercial and IoT applications in outdoor environments.*
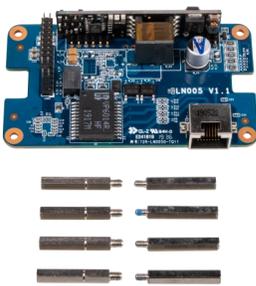
*4G/LTE module is not included

EN01 Series

EDGE COMPUTING

ACCESSORY	MCAP01
DESCRIPTION	A capture card accessory kit that includes a M.2 capture card with HDMI-in cable. Using the MCAP01 kit with an HDMI camera allows the EN01 series to be used as a full HD media edge computer.
SPECIFICATIONS	FHD (1920 x 1080) capture card M.2 2242 B key
COMPATIBILITY	Windows 10 64 bit, Linux

ACCESSORY	PD01
DESCRIPTION	The LAN port on this optional board has a PoE function, allowing the EN01 series to serve as a powered device to supply power over a network cable.
SPECIFICATIONS	PoE Input: 48 Vdc / 0.5A 1 x Realtek Gigabit LAN (RTL819I) Supports IEEE 802.3x

ACCESSORY	PLA01
DESCRIPTION	LTE antenna kit supported by the built-in 3042 Type B expansion slot to add a 4G network connection to the EN01 series.
SPECIFICATIONS	4G/LTE internal cable, dipole antenna -External dipole antenna (2dBi gain) x 2 -Internal cable x 2

ACCESSORY	PSE01
DESCRIPTION	The LAN port on this optional board is PSE (Power Sourcing Equipment) and can transmit power to other devices such as an IP camera.
SPECIFICATIONS	Output: 48 Vdc / 0.5A 1 x Realtek Gigabit LAN (RTL819I) Supports IEEE 802.3x

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EDGE COMPUTING

ACCESSORY	DIN RAIL KIT
DESCRIPTION	For installing EN01 series on a standard DIN rail
SPECIFICATIONS	DIN rail bracket x 1, DIN rail clip x 1, screws x 4
REMARKS	See quick guide for installation details.

ACCESSORY	VESA MOUNT
DESCRIPTION	For mounting on monitors, arm or wall mounts. For VESA standards 75 x 75 or 100 x 100 mm
SPECIFICATIONS	VESA mount x 1, screws x 4
REMARKS	Bracket from DIN rail kit is used to attach unit to this mount. See quick guide for details.

ACCESSORY	2-PIN PHOENIX CONNECTOR
DESCRIPTION	Enables a DC cable to be connected via terminal strip (supports 12 - 19V DC input)
REMARKS	See quick guide for details.

ACCESSORY	POWER ADAPTER CABLE
DESCRIPTION	Connects the 2-pin Phoenix connector with a power adapter. Recommended output wattage: 40W (w/o PSE01 accessory installed) 65W (w/ PSE01 accessory installed) Fits 2.5/5.5 mm DC plug for power adapter
REMARKS	See quick guide for details.

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