Industrial IoT Gateway
IOT-GATE-APL (Fitlet2)

Datasheet v.1.0

IOT-GATE-APL (Fitlet2) is a powerful Industrial IoT Gateway PC powered by the latest generation Intel IOT Apollo Lake processors and designed for industrial control, data/video monitoring and processing.

IOT-GATE-APL (Fitlet2) provides an extremely customisable design in terms of connectivity, size and mounting. Whilst the standard model already packs a lot of connectivity, the use of its various Function And Connectivity T-cards (or FACET cards) provide further customisation options to meet your application requirements and enable seamless integration into the housing. It also supports various mounting and enclosure options including performance, low power and industrial housing or SBC model. With its fanless design in aluminum, this impressive Gateway PC has an extended temperature range of -40°C to +80°C and a wide input voltage range of 9V to 36V making it ideal for diverse industrial applications and harsh environments.

Key Features:

- Latest generation Intel IOT Apollo Lake Atom SoC
- Extensive wireless and wired connectivity
- Expansion via FACETs for added functionalities
- Flexibility on size and mounting
- Industrial build quality and reliability
- Miniature fanless design, only 112 x 84 x 34 mm

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CPU Core, Memory and Network

Feature	Specification
CPU	Intel Atom® x7-E3950 Processor, Quad Core, 1.6GHz to 2.0GHz, 12W Intel Atom® x5-E3930 Processor, Dual Core, 1.3GHz to 1.8GHz, 6.5W Intel Celeron® J3455Processor, Quad Core, 1.5GHz to 2.3GHz, 10W
RAM	SO-DIMM slot supporting DDR3L up to 16 GB
Storage	M.2 slot supporting 2260/2242 cards up to 250 GB Optional slot for 2.5" HDD/SSD
Display	Dual head, 1x HDMI 1.4 (UHD @ 30 Hz), 1x Mini-Display Port 1.2 (UHD @ 60 Hz)
LAN	Up to 4x Gbit Ethernet ports (Intel i211), 2 GbE ports on-board + 2 additional ports on optional FC-LAN FACET card
Wireless LAN	802.11ac dual antenna / BT 4.2 (optional)
Cellular communication	3G/4G cellular modem (optional)

I/O

USB	2x USB 3.0, 2x USB 2.0 4x USB 2.0 on optional FACET module
Serial	RS232 serial port
Audio	Realtek ALC1150 (7.1), 3.5mm jack, S/PDIF, HDMI & DP audio

Electrical, Mechanical and Environmental Specifications

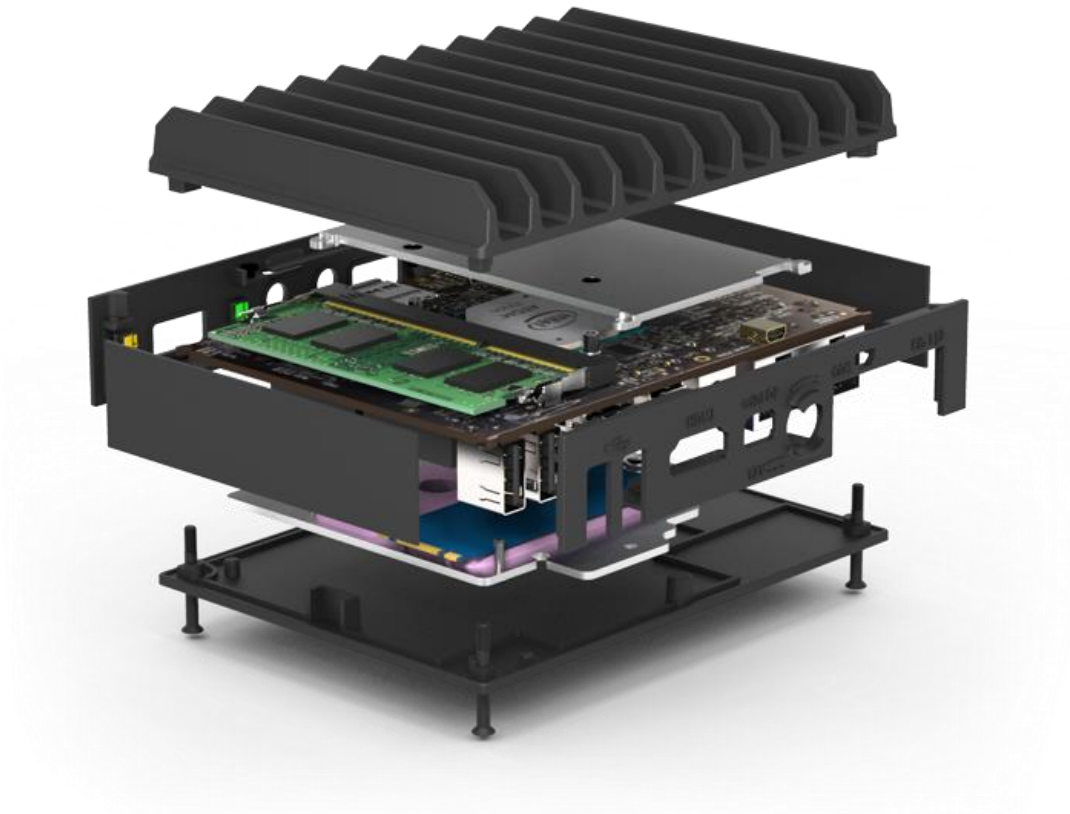|	
Supply Voltage	9V to 36V
Power Consuption	5W - 15W
Dimensions	112 x 84 x 34 mm (Performance Housing) 112 x 84 x 25 mm (Low Power Housing) 112 x 112 x 25 mm (Industrial Housing)
Enclosure Material	Aluminum housing
Cooling	Passive cooling, fanless design
Weight	350 gram
Operating temperature	Commercial: 0° to 70° C Industrial: -40° to 80° C
Storage temperature	-40° to 85° C
Relative humidity	05% – 95% non-condensing

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Software

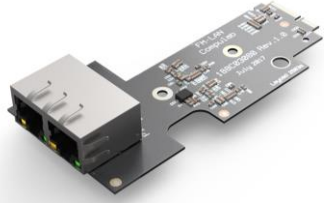| OS Support	Windows 10 or Windows 10 IoT Enterprise LTSB Linux Mint and other Linux derivatives

Seamless Customisation

IOT-GATE-APL (Fitlet2) comes with a complex yet easily customisable metal 3D design with interlocking parts. The standard model already packs a lot of connectivity. On top of that, the Function And Connectivity T-card (or FACET card) provides further customisation and seamless integration into the housing.
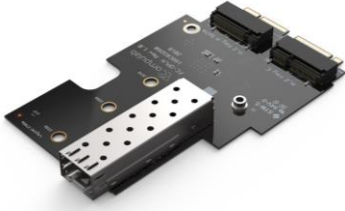
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Expansion via FACETs

On top of the standard connectivity, the Function And Connectivity T-card (or FACET card) provides additional customisation choices.

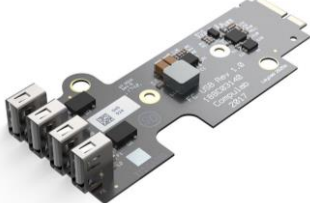| FACET	Description	Application	Appearance
FC-CEM FACET-Card (M.2 + SIM for 3G/4G modem)	FC-CEM adds B-Key M.2 socket 3042 (with connected SIM-card socket) + E-Key M.2 socket 2230 + M-Key M.2 socket 2280/2260. Note: FC-CEM occupies both M.2 sockets of the SBC so it is not possible to install two storage devices or two WiFi cards.	Ideal for remote / outdoor locations connectivity and positioning applications.	**FACET module:** **FACET module on Fitlet2:**
FC-M2LAN FACET-Card (2x Gbit Ethernet)	FC-MDLAN adds dual Gbit Ethernet ports to IOT-GATE-APL for a total of 4 ports. Ethernet controllers: Intel ID11. Note: FC-MDLAN does not affect M.2 SSD (M.2 SSD 2260 can be installed with FC-M2LAN) Cannot be installed together with internal WiFi. If WiFi is needed please consider WiFi USB dongle.	Ideal for networking applications.	**FACET module:** **FACET module on Fitlet2:**

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FACET	Description	Application	Appearance
FC-OPLN FACET-Card (Optical LAN)	FC-OPLN includes an SFP+ fiber optic socket for 1000BASE-X IEEE 802.3z Gigabit Ethernet using Intel I210-IS GbE controller. FC-OPLN is a wide FACET occupying both M.2 sockets and provides M.2 sockets of its own: - M.2 M-key 2260 | 2280 for SATA SSD; - M.2 E-key 2230 (usually used for WiFi adapter) Note: FC-OPLN requires deep bottom cover.	Ideal for security network and long-distance communications.	**FACET module:**
FC-PCI FACET-Card (miniPCIe + SIM for 3G/4G modem)	FC-PCI offers mini-PCIe socket (with connected SIM-card socket) + E-Key M.2 socket + M-Key M.2 socket 2280/2260. If you are looking for M.2 modem please consider FC-CEM. Note: FC-PCI occupies both M.2 sockets of the SBC so it is not possible to install two storage devices or two WiFi cards.	Ideal for remote / outdoor locations connectivity and positioning applications.	**FACET module:** **FACET module on Fitlet2:**

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FACET	Description	Application	Appearance
FC-POED FACET-Card (PoE Device)	FC-POED allows powering from a POE source while providing a 3rd Gbit Ethernet port. This facet occupies both M.2 sockets and provides M.2 sockets of its own: - M.2 M-key 2260 | 2280 for SATA SSD - M.2 E-key 2230 (usually used for WiFi adapter)	Ideal for security, indoor positioning, access points and IoT.	**FACET module:** **FACET module on Fitlet2:**
FC-SCG FACET-Card (CANBus + RS232/RS485 + GPIOs)	FC-SCG Enables Serial communication and data acquisition by adding GPIO, CANbus and RS232/RS485 serial port. This is is a Narrow FACET-Card and includes the M.2 E-key 2230 socket (usually used for WiFi adapter). Note: - CANbus and serial connectors are RJ45. Cables are not included. - CANbus and GPIO cannot be operated simultaneously. - Selection of RS232/RS485 is by DIP switch.	Ideal for Building Control and Networking, HVAC and IoT applications.	**FACET module:**

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FACET	Description	Ideal Application	Appearance
FC-USB FACET-Card (4x USB)	FC-USB adds 4 USB2 ports for a total of 8 ports (2x USB3 + 6x USB2, all type-A connector) FC-USB has an M.2 key-E socket, normally used for a Wi-Fi adapter. Note: Does not affect M.2 SSD (M.2 SSD 2260 can be installed with FC-M2LAN)	Ideal for intensive USB devices connection.	**FACET module:** **FACET module on Fitlet2:**

Flexibility in Sizes and Mounting

With a maximum size of 112 mm x 84 mm x 34 mm (heatsink integrated), IOT-GATE-APL (Fitlet2) is one of the smallest fully-featured IOT Gateways on the market. All enclosures are full metal housing and ensure a passively cooled system.
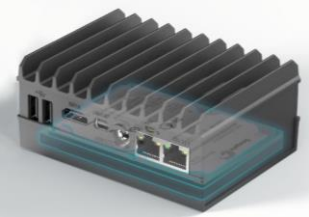
1) Top Cover and sizes options

Housing	Size	Description and application	Appearance
Performance housing	112 x 84 x 34 mm	The standard top cover provides optimal convection cooling for high processing applications.	
Low power housing	112 x 84 x 25 mm	The low-profile top is recommended only where the smallest footprint is a must, such as in low processing applications. Due to reduced heat dissipation it is recommended not to exceed 8W system power, unless forced airflow is applied to the housing.	

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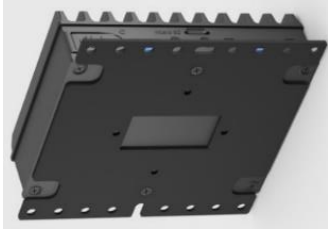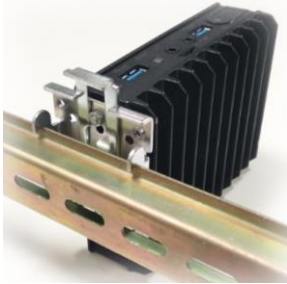| Housing	Size	Description and application	Appearance
Industrial housing	112 x 112 x 25 mm	The industrial top cover enables direct mounting onto a metal chassis and provides conductive thermal coupling. It is compatible to VESA. Optimal design for enclosed applications.	
SBC model	105 x 84 x 23 mm	Recommended design for embedded integration because of its smaller footprint.	

2) Bottom Cover Options

Housing	Size	Description and application	Appearance
Standard bottom cover	112 x 84 x 34 mm	The standard bottom cover provides optimal enclosing system and enables VESA mounting.	
Deep bottom cover	112 x 84 x 25 mm	The deep bottom cover adds 1.5cm housing in the bottom of the Fitlet2 creating additional storage space. This can be used when using different storage options (such as Hard Drives instead of M.2) or using other PCB and custom FACETs. It is compatible with Fitlet2 mounting brackets and all types of top covers. The kit includes 2x blank side panels and 1x side panel with WiFi (SMA) openings. Note: This kit does not include adapter for hard disk. For that see FITLET2-PARTS-HD0.	

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3) Mounting Options

Mounting	Description	Appearance
VESA Mounting Bracket	Steel bracket mounted on the bottom of Fitlet2 enabling direct installation on surfaces.	
Industrial Top Cover	Die cast-aluminum cover replacing the standard top cover and enabling direct mounting onto a metal chassis. It provides conductive thermal coupling. Mounted on the top of Fitlet2 (CPU Side).	
Din Rail	Steel DIN-Rail mounting bracket with easy snap-on onto DIN-rail. Ideal for industrial application with DIN RAILs. Fasteners included. Note: requires Fitlet2 mounting bracket	
Din Rail for side mounting	Steel DIN-Rail side mounting bracket with easy snap-on onto DIN-rail for additional flexibility on industrial applications with DIN RAILs. Occupies a space ofonly 45mm on the DIN rail, blocking either the right or left side panel. Note: - If you are using WiFi it will block the left FACET-Card side panel. - If you are using a FACET-Card with connectivity it will block the right WiFi-antenna panel. - If you need both sides, please consider fitlet2 DIN-rail bracket for bottom mounting	

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Front Panel

micro SD

Power button USB 3.0 Line-in Line-out LED 1 USB 3.0 LED 2

Rear panels

RS232

USB 2.0 HDMI mini DP DC IN LAN 1 LAN 2