

MBOX600 Pro Industrial Controller



Specifications

Change History

Document Version	Release Date	Description
V1.0.2	2024-09-02	<ul style="list-style-type: none"> • Added certifications. • Updated the Update the dimension drawings. • Added notes and cautions.
V1.0.1	2024-07-08	<ul style="list-style-type: none"> • Updated the introduction. • Updated the feature descriptions. • Updated the descriptions for the buttons and connectors. • Updated the dimensional diagram. • Updated the specifications.
V1.0.0	2024-06-07	First release

Introduction

The MBOX600 Pro is an LED display controller created by NovaStar. It integrates an industrial PC and the sending capability. This controller is capable of monitoring and managing the SNMP system, offering professional system monitoring and operation management services for specialized advertising media display users.

The MBOX600 Pro is managed via a web application that provides users with versatile control and ease of use in every scenario. This solution boasts comprehensive scalability, delivering a robust server to unlock the full potential of the system. It is designed to meet users' diverse secondary development and innovation needs.

The MBOX600 Pro can be widely applied in unattended scenarios, such as outdoor fixed screens.

Certifications

CE, RoHS, FCC, IC, UL, RCM, SRRC, CB

If the product does not have the relevant certifications required by the countries or regions where it is to be sold, please contact NovaStar to confirm or address the problem. Otherwise, the customer shall be responsible for the legal risks caused or NovaStar has the right to claim compensation.

Features

Input and Output

- 4x Gigabit Ethernet outputs and pixel capacity up to 2,600,000
- 1x HDMI 1.3 output
- 1x HDMI 1.3 input

- Output scaling
 - The pixel width ranges from 64 to 4096.
 - The pixel height ranges from 64 to 1920.
 - Total pixel capacity cannot exceed 2,600,000.
- Common resolutions supported: 1366×768, 1440×900, 1600×900, 1920×1080, 2048×1152
- 1x Stereo audio output
- 2x Sensor connectors allowing light sensors to be connected

System Features

Powerful processing capacity

- Intel® Processor N97, 4 cores and 4 threads, maximum turbo frequency: 3.6 GHz
- RAM: 4 GB/8 GB
- SSD: 128 GB/256 GB

Control

- 2x USB 2.0 ports and 2x USB 3.0 ports connecting to peripherals such as a mouse, keyboard and USB drive
- 2x Gigabit Ethernet ports
 - TCP/IP supported
 - One for communication and the other for remote management of device networking
- Support for 4G/5G modules

The MBOX600 Pro ships without a 4G/5G module. Users have to purchase 4G/5G modules separately if needed.


- Support for Wi-Fi networks

The MBOX600 Pro can access the Internet by connecting to a Wi-Fi network.

Appearance

Front Panel



Name	Description
	<p>Power button</p> <ul style="list-style-type: none"> • Short press: Power on/off • Long press: Force to power off
RESET	<p>Factory reset button</p> <p>Press and hold this button for 10 seconds to reset the product to its factory settings.</p> <p>Note: Reset all the data configurations for the sending card on the web application without affecting the data on the industrial PC.</p>
USB 2.0	2x USB 2.0 ports connecting to peripherals that support the USB protocol, such as a mouse, keyboard, and USB drive
SIM	<p>SIM card slot</p> <p>Capable of preventing users from inserting a SIM card in the wrong orientation.</p>
SOURCE	Switches between the internal source and HDMI 1.3 source.
FN 1	Custom button (to be implemented in future updates)
FN 2	Custom button (to be implemented in future updates)
CONFIG	Ethernet port for device debugging (default IP address: 192.168.0.10)

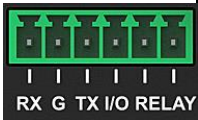
Note:


For the descriptions of the LED indicators, see [Indicators](#).

Rear Panel



Connector Type	Connector	Description
Input	HDMI IN	<p>1x HDMI 1.3 input</p> <ul style="list-style-type: none"> • Maximum resolution: 2048×1152@60Hz • Minimum resolution: 800×600@60Hz • Supported custom resolutions: <ul style="list-style-type: none"> – Pixel width: 800 to 2048 – Pixel height: 600 to 1920

Connector Type	Connector	Description
		<ul style="list-style-type: none"> - Pixel clock: 25 MHz to 160 MHz • Supported frame frequencies: 24/25/30/48/50/60/72/75/85/100/120 Hz • No support for interlaced signal input • HDCP 1.4, backward compatible
Output	LED OUT	4x Gigabit Ethernet outputs <ul style="list-style-type: none"> • Maximum pixel capacity: 2,600,000 • When scaling is enabled, the maximum capacity is 2,600,000 pixels. (The pixel width ranges from 64 to 4096 and the pixel height ranges from 64 to 1920.)
	AUDIO OUT	3.5 mm audio output Note: This audio connector supports 3-conductor headphone output but does not support headphone input.
	HDMI OUT	1x HDMI 1.3 output
Control	SENSOR 1 & SENSOR 2	Light sensor connectors Note: Light sensors from NovaStar are recommended.
	USB 3.0	2x USB 3.0 ports connecting to peripherals that support the USB protocol, such as a mouse, keyboard, and USB drive
	ETHERNET	Gigabit Ethernet port connecting to the control computer, or connecting to a LAN or public network for content publishing and screen control
		<ul style="list-style-type: none"> • 1x RS232 (to be implemented in future updates) <ul style="list-style-type: none"> - 1x RX - 1x G - 1x TX • 1x I/O (to be implemented in future updates) • 2x RELAY (to be implemented in future updates) <ul style="list-style-type: none"> - Connecting to relays for controlling the power on and off of the connected devices. - Voltage: DC 30 V, Maximum current: 3 A
Antenna	WIFI	Wi-Fi antenna connector
	4G/5G	4G/5G antenna connector

Connector Type	Connector	Description
Power Connector		DC 12 V±10%

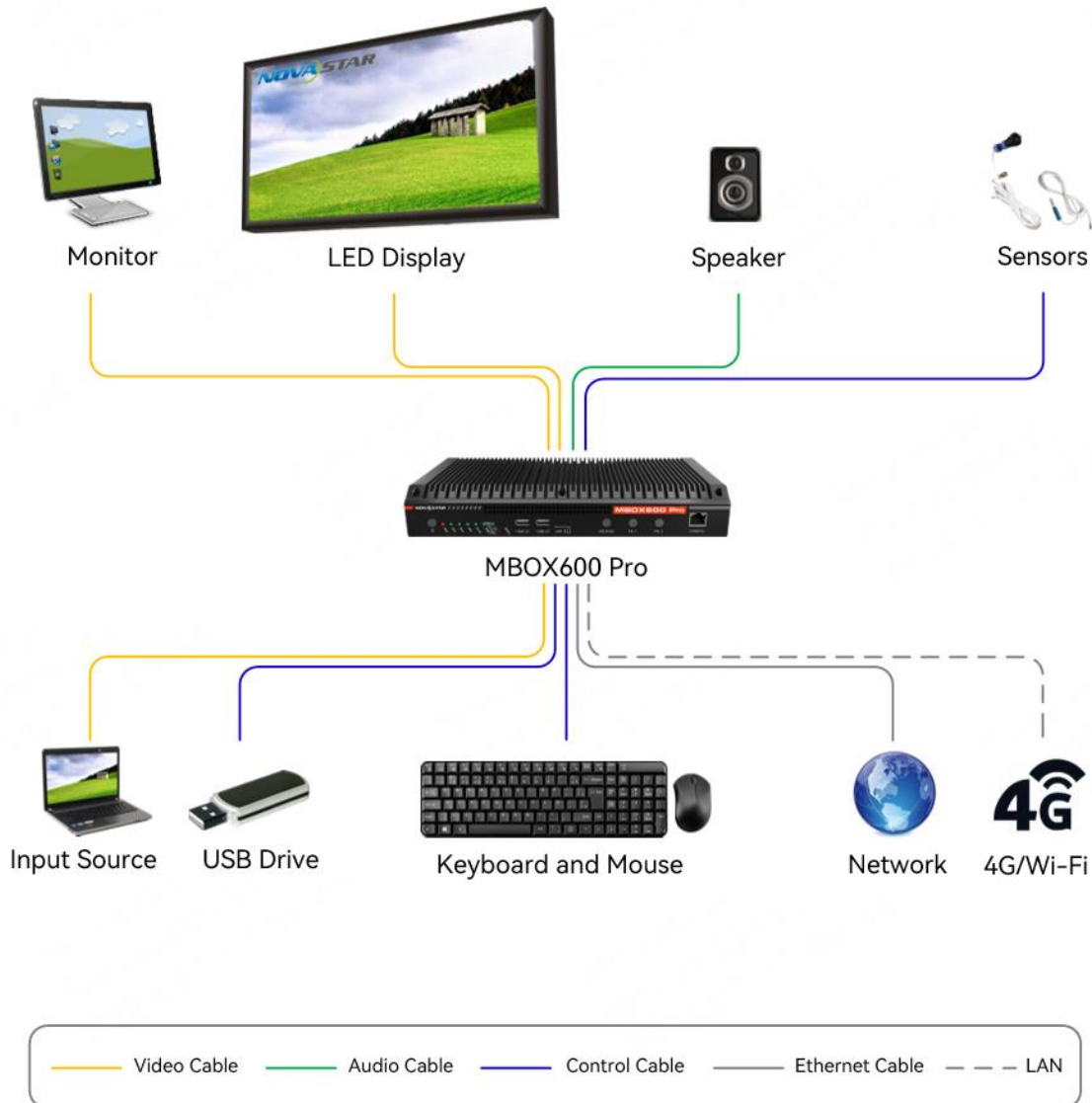
Indicators

Indicator	Color	Status	Description
PWR (Power indicator)	Red	Staying on	The system is powered on.
		Off	No power supply or powered off
HDD (SSD indicator) Note: The Hard disk drive is a SATA SSD and “HDD” is only used as the indicator name.	Green	Flashing	The SSD is functioning normally.
		Off	Powered off
RUN (FPGA indicator)	Green	Staying on/off	FPGA failed
		Flashing 2 times every second	Video source accessed
		Flashing once every 2s	No video source
		Flashing 4 times every second	The primary Ethernet port fails and the backup port is currently in use.
WIFI (Wi-Fi network indicator)	Green	Staying on	Wi-Fi network connection normal
		Off	No Wi-Fi network connection
4G/5G (4G/5G network indicator)	Green	Staying on	Network normal
		Flashing 4 times every second	4G/5G module detected but network abnormal
		Off	No 4G/5G module detected
HDMI (External source indicator)	Green	Staying on	Video source selected but abnormal
		Flashing 2 times every second	Video source selected and accessed
		Off	Video source not selected
IPC	Green	Staying on	Video source selected but abnormal

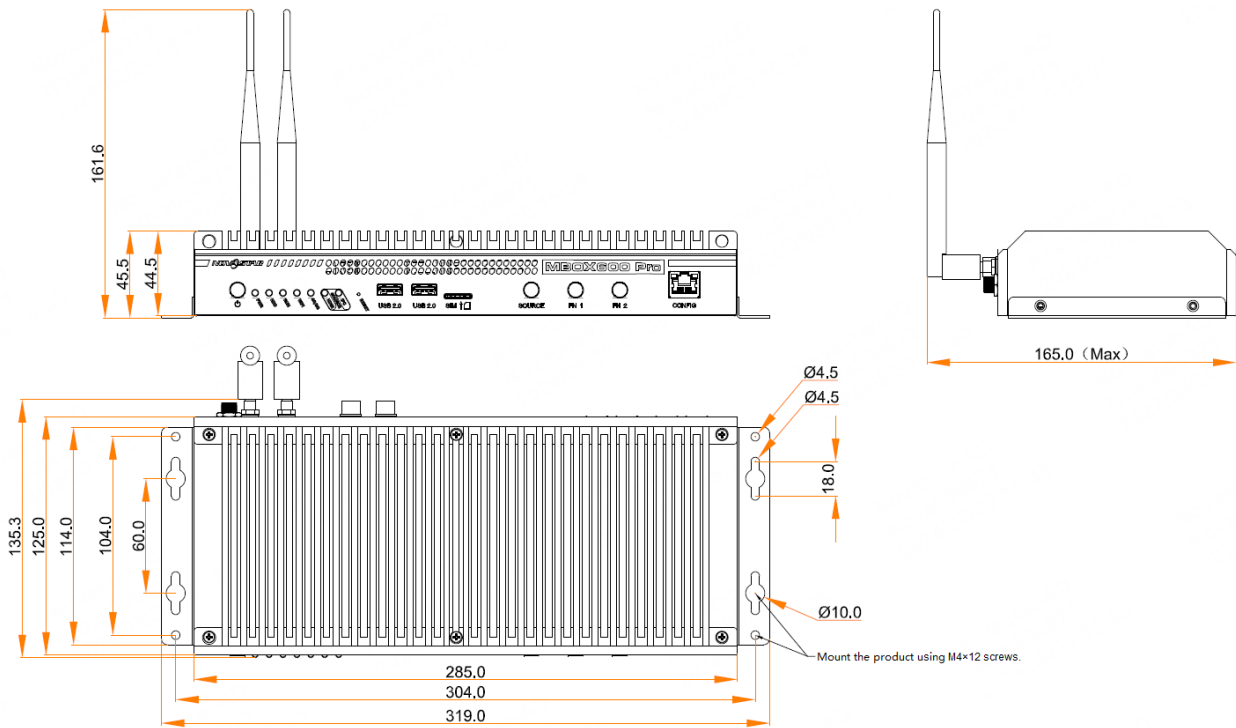
(Internal source indicator)	Flashing 2 times every second	Video source selected and accessed
	Off	Video source not selected

Applications

The HDMI 1.3 can be connected to a monitor to check the playback on an LED display, as well as to install software and configure the product.



Dimensions



Tolerance: ±0.3 Unit: mm

Specifications

Electrical Parameters	Input Voltage	DC 12 V, 3 A Power supply polarity: The outer is negative and inner is positive. (Power adapter input)
	Rated Power Consumption	34 W
Performance	CPU	Intel® Processor N97, 4 cores and 4 threads, a maximum turbo frequency of 3.6 GHz, 6 MB of cache, 12 W TDP, and 24 EU integrated graphics
	RAM	4 GB/8 GB
	SSD	128 GB/256 GB
Operating Environment	Temperature	-20°C to +60°C
	Humidity	0% RH to 80% RH, non-condensing
Storage Environment	Temperature	-40°C to +80°C

	Humidity	0% RH to 95% RH, non-condensing
Physical Specifications	Dimensions	319.0 mm × 135.3 mm × 45.5 mm
	Net weight	1778.0 g
	Gross weight	3436.8 g
Packing Information	Dimensions (L×W×H)	387.0 mm × 359.0 mm × 173.0 mm
	List	<ul style="list-style-type: none"> • 1x MBOX600 Pro • 2x Antennas • 1x Power adapter • 1x AC power cable • 3x M2.5*4 screws • 5x M3*8 countersunk screws • 2x Racks • 1x Certificate of Approval

The amount of power consumption may vary depending on various factors such as product settings, usage, and environment.

Models

CPU: 9U denotes N97.

RAM: 4A denotes 4 GB and 8A denotes 8 GB.

SSD: 3 denotes 128 GB and 4 denotes 256 GB.

Operating System	Model	CPU	RAM	SSD
Linux	MBOX600 Pro (9U4A3) [WIN10] (Chinese Standards)	N97	4 GB	128 GB
Windows 10	MBOX600 Pro (9U8A4) [WIN10] (Chinese Standards)	N97	8 GB	256 GB
Windows 11	MBOX600 Pro (9U8A4) [WIN10] (British Standards)	N97	8 GB	256 GB
	MBOX600 Pro (9U8A4) [WIN10] (American Standards)	N97	8 GB	256 GB
	MBOX600 Pro (9U8A4) [WIN10] (European Standards)	N97	8 GB	256 GB
	MBOX600 Pro (9U8A4) [WIN10] (Australian Standards)	N97	8 GB	256 GB
	MBOX600 Pro(9U8A4) [WIN11] (American Standards)	N97	8GB	256GB
	MBOX600 Pro(9U8A4) [Linux] (American Standards)	N97	8GB	256GB

Operating System	Model	CPU	RAM	SSD
	MBOX600 Pro(9U8A4) [Linux] (Chinese Standards)	N97	8GB	256GB

Notes and Cautions

Notes for Installation

When the product needs to be installed on the wall, 2 screws at least M4*12 should be used to fix it. The screws shall bear at least 10kg weight.

Cautions

This is Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

IC Statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions: (1) This device may not cause interference. (2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes : 1) L'appareil ne doit pas produire de brouillage; 2)

L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This equipment complies with Industry Canada radiation exposure limits set forth for an uncontrolled environment.

Cet équipement est conforme à l'exposition aux rayonnements Industry Canada limites établies pour un environnement non contrôlé.

Radiation Exposure Statement

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Cet équipement est conforme Canada limites d'exposition aux radiations dans un environnement non contrôlé.

Cet équipement doit être installé et utilisé à distance minimum de 20cm entre le radiateur et votre corps.

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