

# User Manual

## mTV-100 Startup Guide



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## 1 Specification

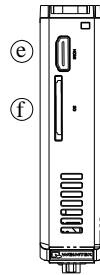


### Features

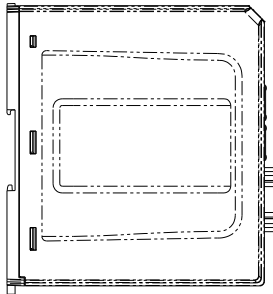
- HD 720p High Resolution HDMI Output
- Compact Design and DIN-rail Mountable
- Fan-less Cooling System
- Built-in 256 MB Flash Memory
- SD Card Slot for Extension of Storage
- One USB Host Port
- One Gigabit Ethernet Port
- Supports MPI 187.5K
- Built-in Power Isolator

<b>Memory</b>	Flash	256 MB
	RAM	256 MB
<b>Processor</b>		32 bits RISC Cortex-A8 600MHz
<b>I/O Port</b>	SD Card Slot	SD/SDHC
	USB Host	USB 2.0 x 1
	USB Client	N/A
	Ethernet	10/100/1000 Base-T x 1
	COM Port	COM1: RS-232, COM2: RS-485 2W/4W, COM3: RS-485 2W
	RS-485 Dual Isolation	N/A
	CAN Bus	N/A
	HDMI	Resolution 1280 x 720
	Audio Output	HDMI Audio Output
	Video Input	N/A
<b>RTC</b>		Built-in
<b>Power</b>	Input Power	24±20%VDC
	Power Isolation	Built In
	Power Consumption	230mA@24VDC
	Voltage Resistance	500VAC (1 min.)
	Isolation Resistance	Exceed 50MΩ at 500VDC
	Vibration Endurance	10 to 25Hz (X, Y, Z direction 2G 30 minutes)
<b>Specification</b>	PCB Coating	Yes
	Enclosure	Plastic
	Dimensions WxHxD	27 x 130 x 115 mm
	Weight	Approx. 0.18 kg
	Mount	35mm DIN rail mounting
<b>Environment</b>	Protection Structure	IP20
	Storage Temperature	-20° ~ 70°C (-4° ~ 158°F)
	Operating Temperature	-20° ~ 55°C (-4° ~ 131°F)
	Relative Humidity	10% ~ 90% (non-condensing)
<b>Certificate</b>	CE	CE marked
	UL	cULus Listed
<b>Software</b>		EasyBuilder Pro V3.00.02 or later versions

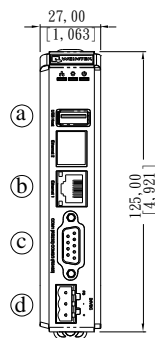
## 1.1 Dimensions



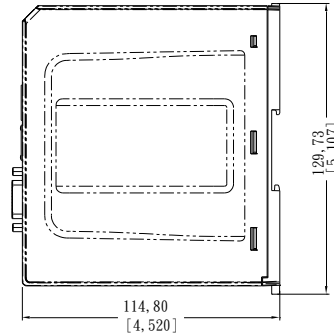
**Top View**



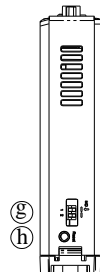
**Side View**



**Front View**



**Side View**



**Bottom View**

<b>a</b>	USB Host Port	<b>e</b>	HDMI
<b>b</b>	Ethernet Port	<b>f</b>	SD Card Slot
<b>c</b>	COM1 RS-232, COM2 RS-485 2W/4W, COM3 RS-485 2W	<b>g</b>	DIP Switch
<b>d</b>	Power Connector	<b>h</b>	Reset Button

## 1.2 Connector pin designations

PIN#	Symbol	COM1 RS-232	COM2 RS-485		COM3 RS-485
			2W	4W	
1	Data+				Data+
2	RxD	Received Data			
3	TxD	Transmitted Data			
4	Data-				Data-
5	GND	Signal Ground			
6	RX+		Data+	RX+	
7	RX-		Data-	RX-	
8	TX+			TX+	
9	TX-			TX-	

## 1.3 USB Host port and SD card slot

USB 2.0 full speed host interface supports USB mouse devices, keyboards, printers, barcode scanners, and USB disk. While using external hard drive, use external power supply. Do not use USB port to charge external device. Insert SD card to be the extension of storage.

## 1.4 Ethernet port

The unit has one 10/100/1G Ethernet port.

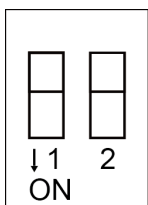
The LED indicators on the Ethernet port indicate:

Orange LED: LAN link status

Green LED: Active status

## 1.5 DIP switch

Each HMI is equipped with a reset button and a DIP switch. When using DIP switch to change modes, the corresponding functions will be triggered.



SW1	SW2	Mode
OFF	OFF	Normal mode
ON	OFF	Hide HMI System Setting Bar
OFF	ON	Boot loader mode
ON	ON	Restore factory default

**Note:** Reboot HMI after adjusting DIP switches to start the corresponding mode.

## 1.6 LED indicator

LED indicators show the operation status of HMI.

Power (Orange)	Indicates power status.
CPU (Green)	Indicates CPU status.
Communication (Blue)	Indicates communication status, blinks during communication. When communication is good, it may stay on.

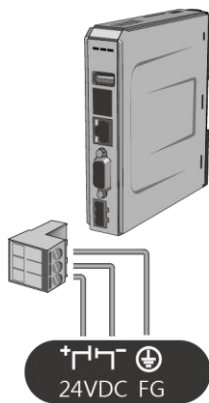
## 1.7 Lithium battery

An mTV-100 Series HMI requires a CR1225/CR1220 coin type lithium battery to keep the RTC running. Due to the difference in manufacturing time, the battery type can either be CR1225 or CR1220 3V lithium battery. To change the battery, please choose the type depending on the model you use.

## 1.8 Power connection

**Power:** The unit can be powered by DC power only, voltage range:  $24 \pm 20\%$  Volts DC, compatible with most controller DC systems. The power conditioning circuitry inside the unit is accomplished by a switching power supply. The peak starting current can be as high as 500mA.

**Connection:** To make a connection, strip about  $\frac{3}{8}$ " of insulation off the end of the wire, turn the connector screw counterclockwise until the gap is wide open, insert the wire all the way in, and turn the screw clockwise until it is tight.

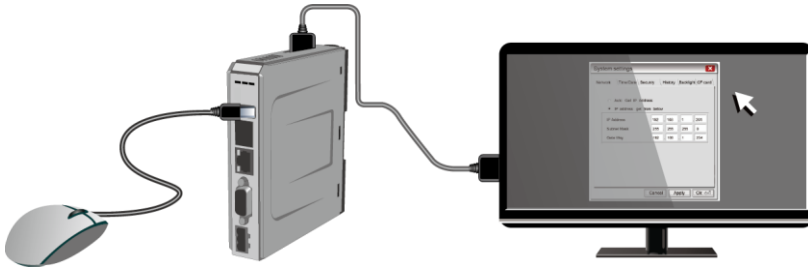


**Note:** Connect positive DC line to the '+' terminal and the DC ground to the '-' terminal.

### 1.9 HDMI Output

Supports 1280 × 720 high resolution HDMI output. Displays image via HDMI or DVI interface LED / LCD.

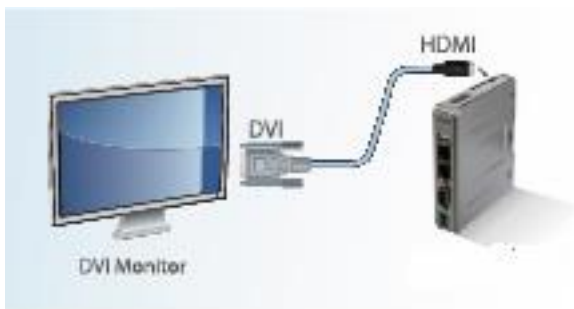
**Note:** When mTV-100 enters backlight saver mode, an external keyboard or mouse is needed to turn on the backlight. Since TD2220 Touch Display is in standby mode when the backlight is off, touching the screen has no effect. To turn on the backlight again and enable touch screen, connect an external keyboard or mouse to operate.



The following part shows different ways to connect HDMI.

Connect to DVI monitor.

Use HDMI-to-DVI converter to connect the monitor.



**Note:** mTV-100 supports resolution 1280x720p, please use DVI monitor / converter.

Directly connect to HDMI monitor.



Use HDMI splitter to connect multiple HDMI monitors.



Use HDMI switch to connect two mTV-100 with one HDMI monitor.



**Note:** If not connecting a repeater, the maximum length of HDMI cable allowed is 15m. To reach a longer distance, please use CAT6 cable or a repeater. HDMI converter is used to detect the monitor and correctly output.



## 2 System Settings

For the first time operating the unit, please complete the following system settings. When finished, the project files designed using EasyBuilder can be used on HMI.

### 2.1 System Toolbar

After rebooting HMI, users can set the system with [System Toolbar] at the bottom of the screen. Normally, this bar is hidden automatically. Only by touching the target at the bottom-right corner of the screen will the System Toolbar pop up.

Text and number keyboard



Number keyboard



#### How to hide HMI System Setting Toolbar

When [DIP Switch 1] is set ON, the system setting toolbar is disabled. When set OFF; the system setting toolbar is enabled. Please restart HMI to enable/disable the toolbar.

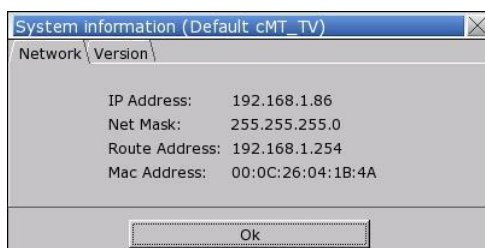
System register [LB-9020] can also enable/disable system setting toolbar

When [LB-9020] is set ON, the toolbar is displayed, and set OFF to hide the toolbar.

### 2.2 System Information

**Network:** Displays network information & HMI IP address.

**Version:** Displays HMI system version.



## 2.3 System Setting

Set or modify system parameters.

Confirm password for security.

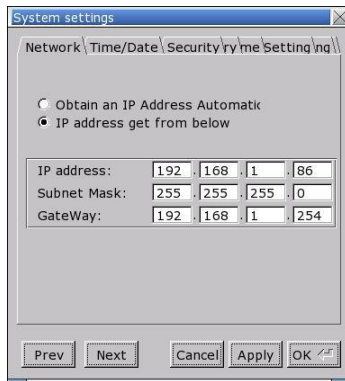


### ■ Network

Download project to HMI via Ethernet.

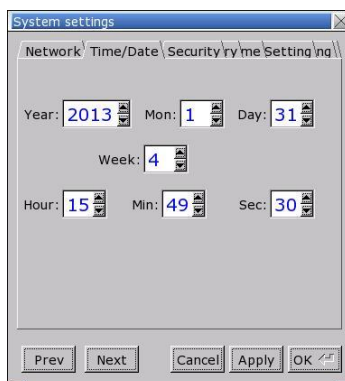
Confirm IP address of target HMI.

Select to obtain IP address automatically or specify an IP address.



### ■ Time/Date

Sets HMI local time/date.



### ■ Security

Password protection, the default is 111111.



[Password for entering system]

[Password for uploading project]

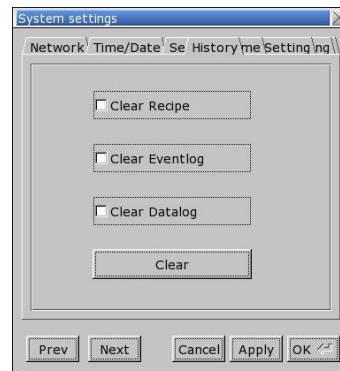
[Password for downloading project]

[Password for uploading history data]

### ■ History

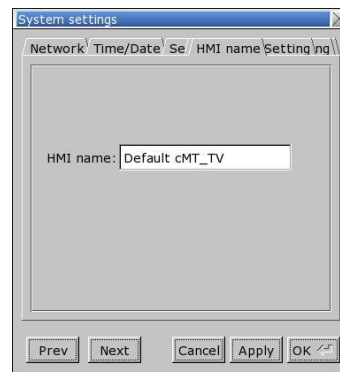
Clears history data in HMI.

[Recipe] / [Eventlog] / [Datalog]



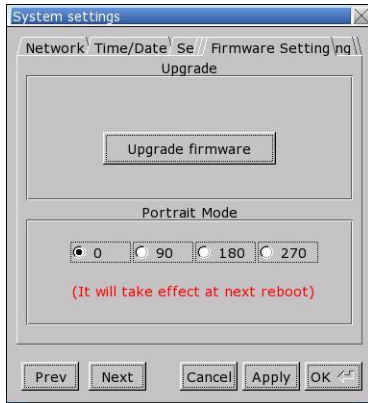
### ■ HMI name

Sets HMI name to identify HMI during download/upload process and avoid remembering each HMI IP address.



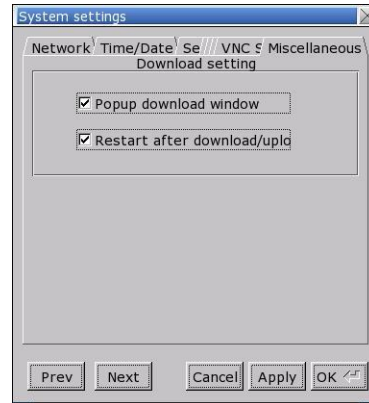
### ■ Firmware setting

Upgrade firmware or set screen orientation mode. After changing the screen orientation mode, reconnect HMI to power supply, for the setting to take effect. That is, disconnect all power from HMI, and then connect again. If portrait mode is used (90 or 270 degree), the project must be designed for portrait mode, otherwise it cannot be correctly displayed.



### ■ Miscellaneous

Settings relevant to download process.



## 2.4 Upgrade firmware

Follow the steps to upgrade firmware.

1. Save the NK.bin file to SD card or USB disk.
2. Open **System Settings \ Firmware Setting** tab, press [Upgrade firmware] and select the directory to store NK.bin.
3. Please do not turn off or unplug HMI during OS upgrade process.
4. After OS upgrade, the project screen opens on HMI.

