WISENET

MOBILE VIDEO RECORDER

Product Specification Manual



Mobile Video Recorder

Product Specification Manual

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- Design and specifications are subject to change without prior notice.
 You can download the latest version from the Hanwha Techwin web site. (www.hanwha-security.com)
- The initial administrator ID is "admin" and the password should be set when logging in for the first time.
 Please change your password every three months to safely protect personal information and to prevent the damage of the information theft.

Please, take note that it's a user's responsibility for the security and any other problems caused by mismanaging a password.



IMPORTANT SAFETY INSTRUCTIONS

Read these operating instructions carefully before using the unit.

Follow all the safety instructions listed below.

Keep these operating instructions handy for future reference.

- 1) Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean the contaminated area on the product surface with a soft, dry cloth or a damp cloth. (Do not use a detergent or cosmetic products that contain alcohol, solvents or surfactants or oil constituents as they may deform or cause damage to the product.)
- Do not block any ventilation openings, Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. if the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11) Only use attachments/accessories specified by the manufacturer.
- 12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over.
- 13) Unplug this apparatus during lightning storms or when unused for long periods of
- 14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Standards Approvals







Any changes or modifications in construction of this device which are 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.
- 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.

BEFORE START

This manual provides operational information necessary for using the product and contains a description about each component part and its function as well as menu or network settings. You have to keep in mind the following notices:

- Hanwha Techwin retains the copyright on this manual
- This manual cannot be copied without Hanwha Techwin's prior written approval.
- We are not liable for any or all losses to the product incurred by your use of non-standard product or violation of instructions mentioned in this manual.
- Prior to opening the case, please consult a qualified technician first. Whenever this is needed power must be removed from the unit.
- Before adding a hard disk drive or external storage (USB memory, USB HDD, etc), check if it is compliant with this product. For the compatibility list, contact the retailer.

Warning

Battery

The following are the specifications of the battery you are using now.

• Normal capacity: 3mAh

Continuous standard load: 0.015mA

• Operating temperature : -40°C ~ 85°C (-40°F ~ +176°F)

CALIFORNIA USA ONLY

This Perchlorate warning applies only to primary CR (Manganese Dioxide) Lithium coin cells in the product sold or distributed ONLY in California USA. "Perchlorate Material - special handling may apply, See www.dtsc.ca.gov/hazardouswaste/perchlorate.

Caution

- Connect the power cord into a grounded outlet.
- The Mains plug is used as a disconnect device and shall stay readily operable at any time.
- Batteries shall not be exposed to excessive heat such as sunshine, fire or the like.
- · Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions.

overview



System Shutdown

Turning off the power while the product is in operation, or undertaking improper actions may cause damage or malfunction to the hard drive or the product.

To safely power off, select Exit from the menu and click < OK> on the pop-up screen, then unplug the power cable.

You may want to install a UPS system for safe operation in order to prevent damage caused by an unexpected power stoppage. (Any questions concerning UPS, consult your UPS retailer.)



If powered off abnormally, restarting may take more time for restoring data from hard disk drive for proper operation.

Operating Temperature

If left unused for an extended period of time at low temperatures of -40°C to 70°C (-40°F \sim 158°F), (TRM-1610S/1610M) / -25°C \sim 55°C (-13°F \sim 131°F), (TRM-810S/810M/410S) (when an industrial SSD is used), the heater operation time will increase.

As the operating temperature of the hard disk is 5° C to 55° C(41°F ~ 131° F), be careful to avoid using the product in low temperature conditions as it may cause HDD damage.

Ethernet Port

This equipment is in door use and all the communication wirings are limited to inside of the building.

Security Precautions

The initial administrator ID is "admin" and the password should be set when logging in for the first time. Please change your password every three months to safely protect personal information and to prevent the damage of the information theft.

Please, take note that it's a user's responsibility for the security and any other problems caused by mismanaging a password.

NVR products supporting each feature

Function	Products	
Fan	TRM-810S, TRM-810M, TRM-410S	
RAID	TRM-1610S, TRM-1610M, TRM-810S, TRM-810M	
PoE	TRM-1610S, TRM-1610M, TRM-810S, TRM-810M, TRM-410S	
Extended monitor	TRM-1610S, TRM-1610M	

overview



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FEATURES

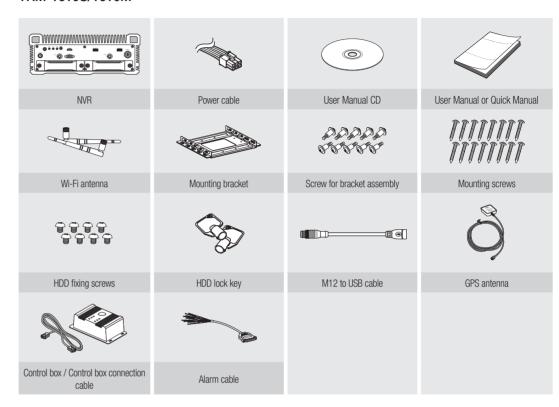
The product records video and audio from network cameras to a hard disk, and enables playback from the hard disk. It also provides remote monitoring environment for video and audio over the network using a remote computer.

- User-friendly UI
- 4K camera resolution support
- Outputs a 4K high definition image using HDMI
- Record and play video
- Record and play audio
- Supports ONVIF Profile S standard and RTP / RTSP protocols
- Display the HDD operation status by HDD SMART
- HDD overwrite enabled
- Backup using USB 2.0, 3.0 (TRM-1610S/1610M) protocols and external HDD
- Simultaneous playback of all channels
- Various Search Modes (Time, Event, Smart Search)
- Various Recording Modes (Normal, Event, Scheduled Recording, Emergency recording)
- Alarm Input / Output
- Remote Monitoring function by Windows Network Viewer
- Live monitoring of the network camera
- Installation Wizard Function (Easy Setup, Quick Setup)
- Wi-Fi Backup feature support
- RAID feature (TRM-1610S, TRM-1610M, TRM-810S, TRM-810M)

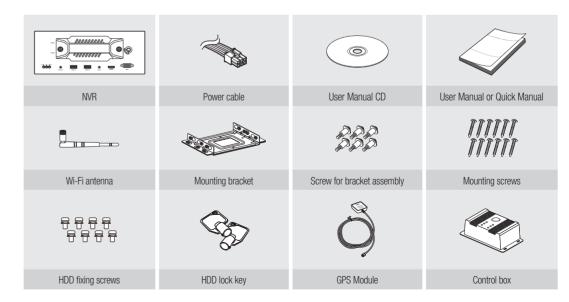
Package Contents

Please unwrap the product, and place the product on a flat place or in the place to be installed. Please check the following contents are included in addition to the main unit.

TRM-1610S/1610M



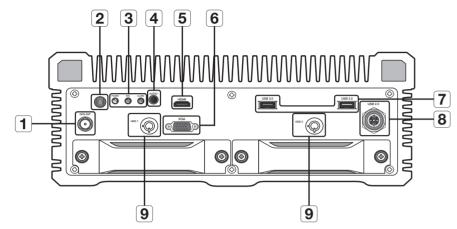
TRM-410S/810S/810M



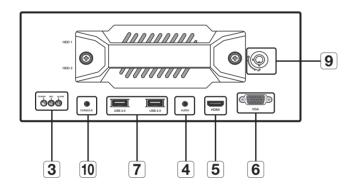


PART NAMES AND FUNCTIONS (FRONT)

TRM-1610S/1610M



TRM-410S/810S/810M

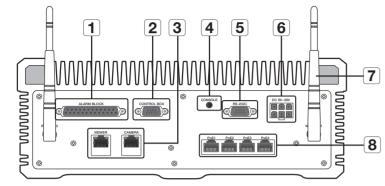


	Part Names	Functions	
1	GPS ANT	Connects the GPS antenna.	
As the switch is a push type, it is turned off when it is pushed. While it is on, if it is held for 5 seconds, the system will stabilize and then turn off automatically. (Maxim If the ACC yellow line on the power cable is not connected to the power or to the terminal, the power will not turn on.			
		POWER: Shows the power On/Off status.	
3	LED lamp	REC: Turned on when recording is in progress.	
		ALARM : Turned on when an event occurs.	
4	AUDIO	This is the audio output jack. TRM-1610S/1610M: RCA TRM-410S/810S/810M: 3.5 mm stereo mini jack	
5	5 HDMI HDMI video output terminal.		
6	VGA	VGA video output terminal.	
7	USB	Used to connect a USB type device. (USB 2.0, USB 3.0)	
8	8 USB 2.0 This is an M12 type, and is connected with a USB device.		
9	HDD lock	This is a lock device to restrict access to the hard disk. Use the key that was provided with the product.	
10	CONSOLE	Console is designed for the service repair purpose only.	

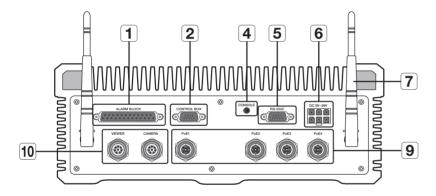


PART NAMES AND FUNCTIONS (REAR)

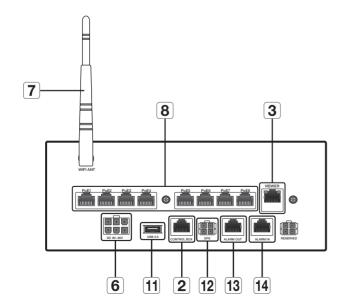
TRM-1610S



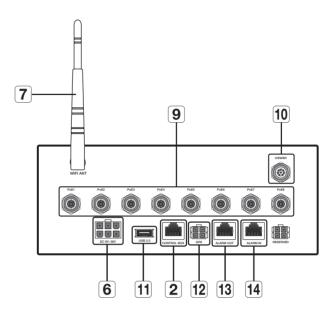
TRM-1610M



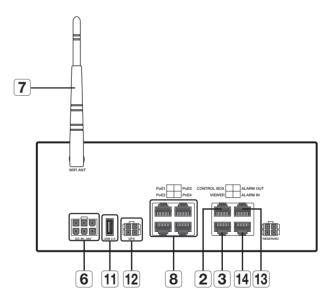
TRM-810S



TRM-810M



TRM-410S

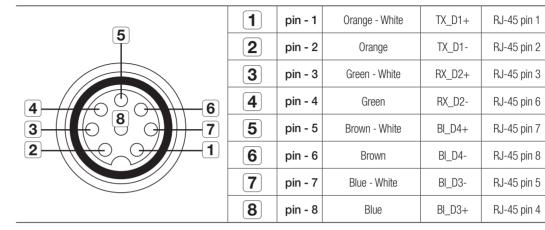




	Part Names	Functions
1	ALARM BLOCK	Alarm input/output terminal. The Alarm Block consists of six inputs and six outputs, and is connected externally via the supplied alarm cable. Each output consists of an open collector circuit.
2	CONTROL BOX	Terminal to connect control box.
	NETWORK	VIEWER: Port recommended for connection with a network, web viewer.
3	NETWORK	CAMERA: Port recommended for camera connection, which receives an image from the camera.
4	CONSOLE	Console is designed for the service repair purpose only.
5	RS-232C	Cable terminal for serial communication.
6	DC 9V~36V	Terminal to connect power. Use the power cable that was provided with the product.
7	Wi-Fi Antenna	Antenna for Wi-Fi use. Connect and use the antenna that was provided with the product.
8	РоЕ	Power supply port to connect camera. The maximum power supply of PoE1 - PoE4 is 32W. Please connect/install the camera in a manner that ensures that 32W is not exceeded. When 32W is exceeded, the power of the last connected PoE is turned off. If the power consumption of cameras connected to the set (eg., PoE1 - PoE4) is less than 24W, PoE cameras can be connected to the powered-off port. For TRM-810S/810M, PoE5 to 8 are equivalently treated as PoE1 to 4.
9	M12 PoE	This is an M12 type port, and is a power supply port for connection to a camera.
		This is an M12 type port, and is a terminal to connect to the network.
10	M12 Network	CAMERA: Port recommended for camera connection, which receives an image from the camera.
		VIEWER: Port recommended for connection with a network, web viewer.
11	USB 2.0	Used to connect a USB type device.
12	GPS	This is a terminal connecting with the GPS module.
13	ALARM OUT	This is an alarm output terminal.
14	ALARM IN	This is an alarm input terminal.

HOW TO CHECK M12 TERMINAL PINS

Gigabit Ethernet (M12 8pin A-Code Pinout)

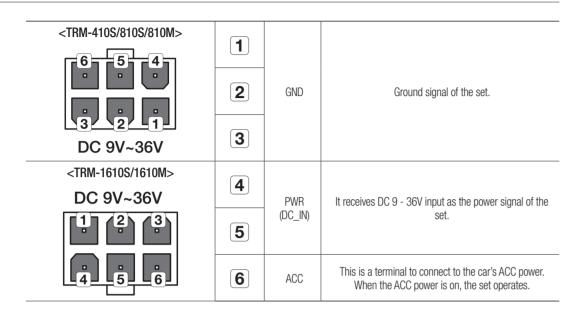


PoE (M12 4pin D-Code Pinout)





DC POWER CONNECTOR WIRING DIAGRAM

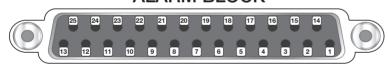


If the ACC yellow line on the power cable is not connected to the power or the car's ACC terminal, the power will not turn on.

ALARM INPUT/OUTPUT WIRING DIAGRAM

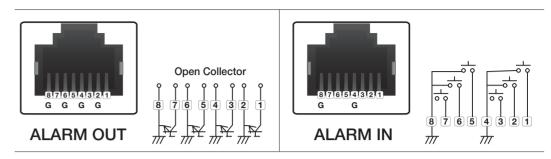
TRM-1610S/1610M

ALARM BLOCK



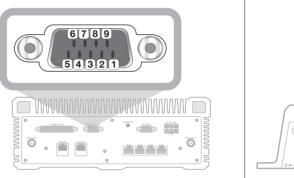
1	Alarm In 1	8	Alarm In 8	15	Alarm In 14	22	Alarm Out 4
2	Alarm In 2	9	Alarm In 9	16	Alarm In 15	23	Alarm Out 5
3	Alarm In 3	10	Alarm In 10	17	Alarm In 16	24	Alarm Out 6
4	Alarm In 4	11	Alarm In 11	18	GND	25	GND
5	Alarm In 5	12	Alarm In 12	19	Alarm Out 1		
6	Alarm In 6	13	Alarm In 13	20	Alarm Out 2		
7	Alarm In 7	14	GND	21	Alarm Out 3		

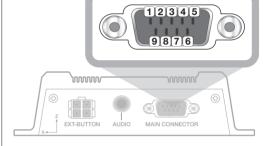
TRM-410S/810S/810M



CONTROL BOX CONNECTION TERMINAL WIRING DIAGRAM

TRM-1610S/1610M





TRM-1610S/1610M Based on the TRM-1610S model.

D-SUB, 9pin, Male

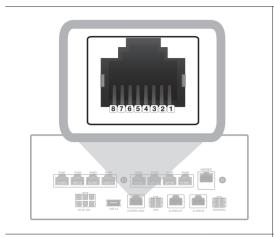
D-SUB, 9pin, Male

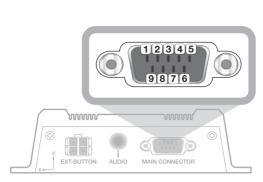
Control box

	D-30B, Spiri, Male		D-30B, 9pin, Male		
Number	Name	Wire Co	nnection	Number	Name
1	CABLE DETECT			1	CABLE DETECT
2	RS-232_RXD			2	RS-232_RXD
3	RS-232_TXD			3	RS-232_TXD
4	AUDIO			4	AUDIO
5	GND			5	GND
6	GND			6	GND
7				7	
8	DETECT			8	DETECT
9	VCC_5V			9	VCC_5V



TRM-410S/810S/810M





TRM-410S/810S/810M

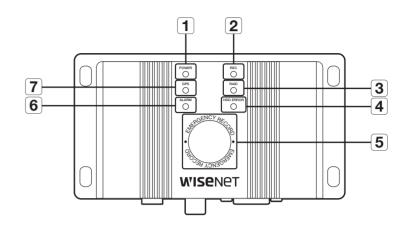
Based on the TRM-810S model.

Control box

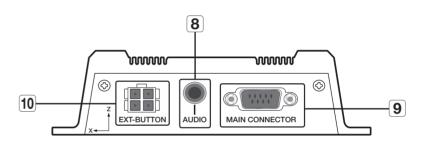
	RJ-45, 8pin		D-SUB, 9pin, Male		
Number	Name	Wire Connection		Number	Name
1	VCC_5V			1	CABLE DETECT
2	CABLE DETECT			2	RS-232_RXD
3	DETECT			3	RS-232_TXD
4	RS-232_TXD			4	AUDIO
5	RS-232_RXD			5	GND
6	GND			6	GND
7	AUDIO			7	
8	GND			8	DETECT
				9	VCC_5V

CONTROL BOX NAME AND FUNCTION

Front



Rear

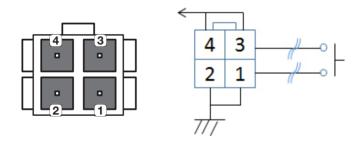


	Part Names	Functions			
1 POWER		Shows the power status. In a delayed boot state, the LED blinks until the system starts up.			
2	REC	Shows the REC status. ■ LED blinks during emergency recording.			
Shows the RAID status. (For models with RAID support only) When the RAID is OK, the LED is on. The LED blinks when RAID is in a Degraded of state. The LED is off when RAID is unused or in RAID Fail.		When the RAID is OK, the LED is on. The LED blinks when RAID is in a Degraded or Rebuilding			
4	HDD ERROR	Shows HDD error. When HDD is checked, replaced, or there is RAID Fail, the LED illuminates.			



	Part Names	Functions
5 EMERGENCY • The REC that eme		Performs emergency recording. The REC LED blinks when recording is in progress. You can set an alarm occurrence to indicate that emergency recording is on/off. To set the emergency recording buzzer, see "Settings" on the Product User Manual.
6	ALARM	Shows the alarm status.
7 GPS The LED is off be		Shows GPS reception status. The LED is off before GPS reception is active. If the GPS reception is good, the LED illuminates. If the GPS reception is poor, the LED blinks.
8	AUDIO	Outputs audio to the RCA jack.
MAIN CONNECTOR Connected to the main unit via the control box connecting cable.		Connected to the main unit via the control box connecting cable.
10	EXT-BUTTON	Connect a separate external switch for emergency recording.

EXT-BUTTON WIRING DIAGRAM





Please take note of the followings before using this product.

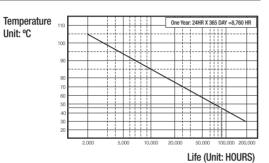
- Do not use the product outdoor.
- Do not spill water or liquid in the connection part of the product.
- Do not impose the system to excessive shock or force.
- Do not pull out the power plug forcefully.
- Do not disassemble the product on your own.
- Do not exceed the rated input/output range.
- Use a certified power cord only.
- For the product with an input ground, use a grounded power plug.
- Do not move the product using the HDD bracket handle on the front of the product as it may cause damage to the

Unit: ℃

CHECKING THE INSTALLATION ENVIRONMENT

This product is a top-notch security device that is equipped with a high-capacity HDD and other key circuit boards.

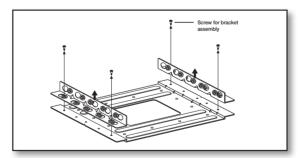
Note that an excessive internal temperature of the product may cause a system failure or a shortened product life (see the right figure). Keep in mind the following instructions before installing the product.



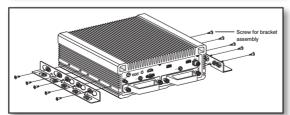
HOW TO INSTALL THE PRODUCT

The following figures are based on Model TRM-1610S.

1. Remove the mounting bracket and side brackets.



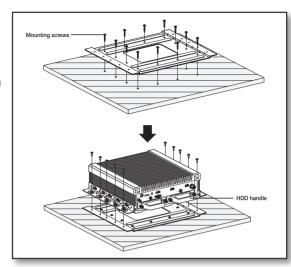
2. Tighten the side brackets to the body.



- 3. Install the mounting bracket at the installation site.
- 4. Install the main body with the side brackets in the bracket installed in Step 3.

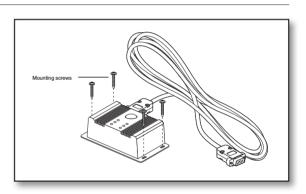


- Be sure to observe the work procedure (1 4) when installing the product, and pay attention to potential accidents caused by the product falling.
- When moving the set, do not move it while holding the HDD handle.



HOW TO INSTALL THE CONTROL BOX

Assemble mounting screws and install the camera on a wall/floor/ceiling as shown in the figure.

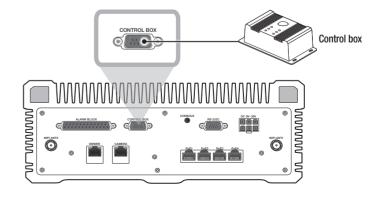


HOW TO CONNECT THE CONTROL BOX

Connect to the main unit via the control box connection cable.



The following figures are based on Model TRM-1610S.





HDD ADDITION

Make sure to unplug the power cord from the wall outlet to prevent possible electric shock, injury or product damage. Please consult your provider for further information on HDD installation since improper installation or settings may damage the product.

- Number of HDDs supported : Up to 2 HDDs supported
- Make sure to unplug the power cord from the wall outlet before proceeding with the installation.



Cautions for data loss (HDD care)

Please pay attention so that the data inside the HDD is not damaged.

Before adding a HDD, please check the compatibility with this product.

HDD is vulnerable to malfunction due to its sensitive nature especially against shock when operating.

Please ensure that the HDD is free from such shock.

We are not liable for any damage to the HDD incurred by user's carelessness or miss use.

Cases might cause damage to HDD or recorded data

To minimize the risk of data loss from a damaged HDD, please backup data as often as possible. If exposed to shock when disassembling or installing, data stored in the hard disk may be damaged. A sudden power failure or turning off the product while in HDD operation may damage the hard disk drive. HDD or files stored inside may be damaged if the main body is moved or impacted during the HDD operation.

Cautions when installing a HDD

- 1. Do not apply excessive force to the HDD.
- 2. Pay attention so as not to lose the disassembly screws or accessories.
 - If the screws or accessories are not put together correctly, the product may breakdown or not operate properly.
- 3. Please check the HDD compatibility before adding a HDD.
 - Please contact your nearest dealer to obtain the list of compatible devices.

Installing the HDD

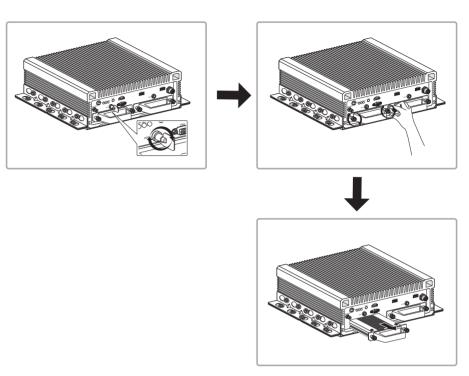


If you are adding a new or previously used HDD to this product in addition to the HDD(s) originally installed, format the new HDD manually in the set before use.

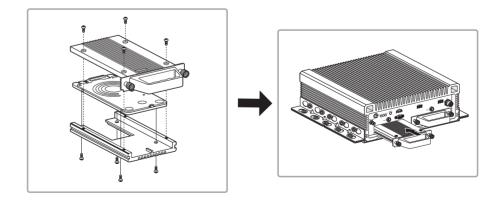
For information on how to format, see "Device/Format" on the user manual.

When mounting HDD to TRM-1610S/1610M

- 1. Unscrew the HDD bracket fixing screws on the front of the set and pull it to the front to separate the HDD.
 - If the lock on the front is locked, open the lock using the key that was provided when you purchased the product.



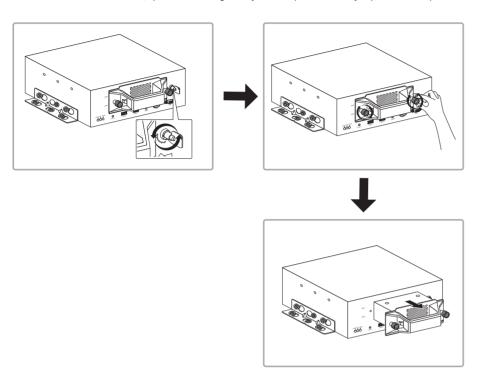
- 2. Loosen the screws on the front/rear of the bracket and separate the bracket.
- 3. After replacing/installing the HDD, fix the HDD and bracket with screws.
- 4. Slide the bracket with the HDD into the main body, and tighten the screws to fix it.



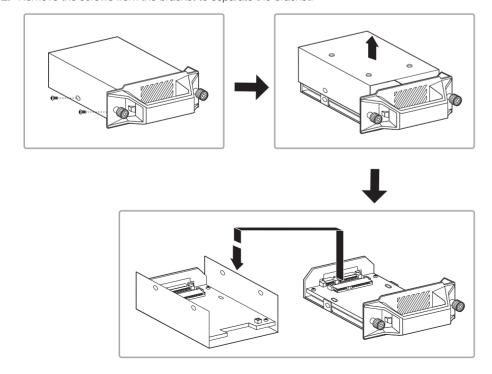


When mounting HDD to TRM-410S/810S/810M

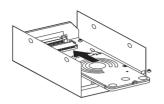
- 1. Unscrew the HDD bracket fixing screws on the front of the set and pull it to the front to separate the HDD.
 - If the lock on the front is locked, open the lock using the key that was provided when you purchased the product.

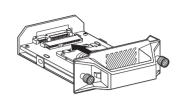


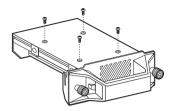
2. Remove the screws from the bracket to separate the bracket.



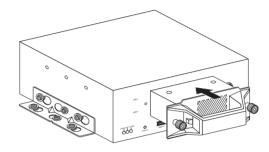
3. After replacing/installing the HDD, fix the HDD and bracket with screws.







4. Slide the bracket with the HDD into the main body, and tighten the screws to fix it.



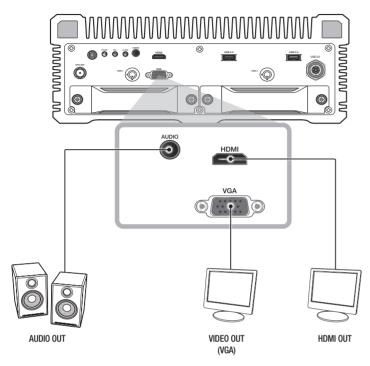
Make sure to properly place the fan connector when installing HDD.



CONNECTING TO AN EXTERNAL DEVICE



■ The following figures are based on Model TRM-1610S.



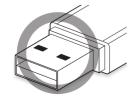
Unrated or improper power source may cause damage to the system. Ensure that you use only the rated power source before pressing the POWER button.

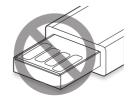
CONNECTING THE USB

- 1. On the front of the product, there is a USB port.
- 2. You can connect a USB HDD, USB memory or mouse to the USB port.
- If a USB HDD is connected to the system, recognition and settings are available in "Menu > Device > Storage Device".
- **4.** The product supports hot plugging function that enables connecting/disconnecting USB devices while in operating the system.



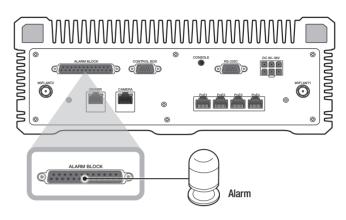
- If you use the USB device for Backup purposes, format it with FAT32 on PC if it is not formatted on the NVR.
- Some USB devices may fail to function properly due to compatibility issue, please check the device before using.
- Only USB storage devices that comply with the standards (having a metal cover) are guaranteed for data transfer.
- In case if the USB device's electric contacts have been worn out, data transfer between the devices may not properly function.





CONNECTING THE ALARM INPUT/OUTPUT

The Alarm In/Out port at the back is composed of the following.



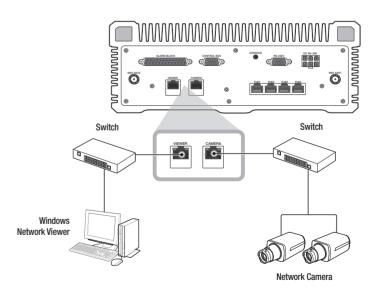
- ALARM IN 1 ~ 16 : Alarm Input Port
- ALARM OUT 1 ~ 6 : Alarm Output Port

CONNECTING THE NETWORK



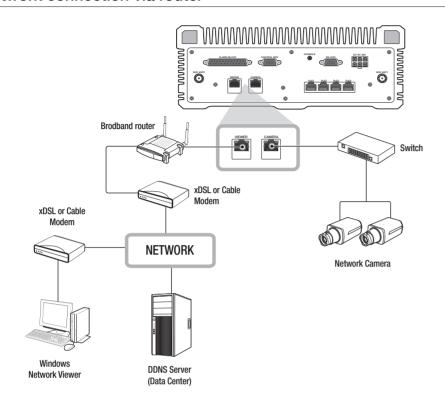
- For more information about network connection, see "Network Configuration" in the Wisenet NVR User Manual.
- The following figures are based on Model TRM-1610S.

Network connection via Ethernet (10/100/1000BaseT)

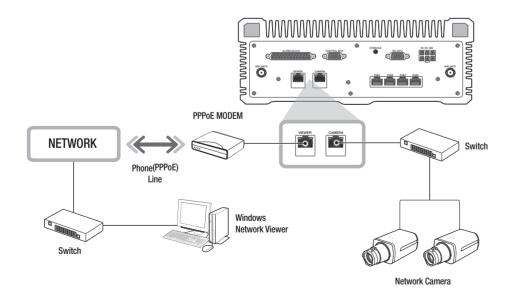




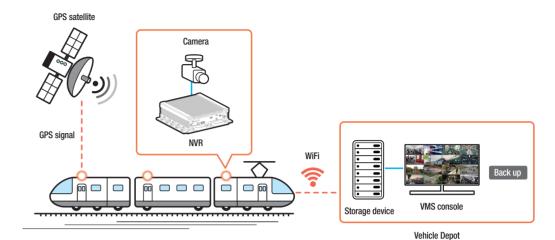
Network connection via router



Connecting to Internet through PPPoE



How to back up via Wi-Fi





• TRM-1610S/1610M

	ltom		Details			
	Item	TRM-1610S	TRM-1610M			
Display						
	Inputs	Max. 16CH (4 PoE,RJ-45)	Max. 16CH (4 PoE, M12)			
Network Camera	Resolution	CIF ~ 12MP				
	Protocols	SUNAPI, ONVIF				
	Local Display	HDMI / VGA				
Live	Multi-Channel Display		Local Monitor: 1/2V/3V/4/6/8/9/13/16/Auto sequence Web: 1/4/9/16/Auto sequence			
	Performance	[Local Monitor] - 12M (30fps) - 8.3M(120fps) - 1080p(480fps)				
Performance						
Operating System	Embedded	Linux				
	Compression	H.265, H.264, MJPEG, WiseStre	am(H.265, H.264)			
	Recording Bandwidth	Max. 128Mbps				
	Resolution	CIF ~ 12MP				
Record	Туре	Normal, Schedule(Continuous/Ev	rent), Event (Pre/Post), Emergency			
	Retention	Retention per channel (1~400 d	ays)			
	Event Trigger	Alarm Input (16), Video Loss, Car Defocus Camera)	mera Event(Sensor, MD, Video Analytics,			
	Event Action	e-Mail, Alarm Out, Buzzer, Monitor Out, VMS transmission				

ltem -		Details			
Ite	;;;;;	TRM-1610S	TRM-1610M		
	Playback Bandwidth	32Mbps(16ch simultaneously)			
	User	Max. 4 Users (Local 1, Remote 3)			
Search & Play	Mode	Date & Time(Calendar)/Event Log list, Smart Search(Virtual Line w/direction, Enter/Exit)			
	Simultaneous playback	Max. 16 channels(Local Monitor, CM	S)		
	Resolution	CIF ~ 12MP			
Search & Play	Fisheye Dewarping	Web / CMS			
	Playback Control	Fast/Slow Forward/Backward, Move one step up/down			
	Built-In	OTB ~ 4TB (2TB 2EA)			
Storage	Internal HDD	2 SATA(Front-Swap) - Max. 2TB(HDD, Non-RAID Mode) - Max. 4TB(SSD, Non-RAID Mode)			
	RAID	RAID-1			
	File backup	Exe(GUI), JPG/AVI(excluding GPS information)(Network)			
Daylore	Function	Multi channel(Upto 16CH) Play, Date-Time/Title/GPS display			
Backup	Туре	Auto(Wifi), Manual(HDD)			
	Wifi Backup Performance	MAX. 150Mbps (IEEE802.11ac)			
Sensor	1/0	16/6			
	Input	16 channels (network)			
Audio	Compression	G.711, G.726, AAC(16/48KHz)			
	Audio Communication	2-Way			



		Details			
lte	em	TRM-1610S	TRM-1610M		
Network					
Interface		RJ-45 (Gigabit Ethernet x2)	M12 (Gigabit Ethernet x2)		
Protocol		TCP/IP, UDP/IP, RTP (UDP), RTP (TCP Client), PPPoE, SMTP, ICMP, IGMP, A SNMP, ONVIF (Profile-S), SUNAPI(Sel	RP, DNS, DDNS, uPnP, HTTPS,		
DDNS		Hanwha DDNS			
Transmission Bandwidth	Wired (LAN)	MAX. 256Mbps			
Max Remote Users		Search(3) / Live unicast(10) / Multica	ast(20)		
IP Version		IPv4			
Security		User access Log, IP Filtering, 802.1)	ς, Encryption		
	Wi-Fi	Internal (802.11 n(2.4G)/ac(5G), Dual antenna(MIMO)			
Wireless	4G/3G	Support external 4G/3G router (Ethernet)			
Language	Language		English, French, German, Italian, Spanish, Russian, Turkish, Polish, Dutch, Swedish, Czech, Portuguese, Danish, Rumanian, Serbian, Croatian, Hungarian, Greek, Norwegian, Finnish, Korean, Chinese, Japanese, Thai		
OS		Window 7, 8, 10, Mac OS X(10.8 or	above)		
Web Browser		MS IE, Google Chrome, Mac Safari			
V 0 . ft	Туре	SSM TR, Webviewer, Wisenet mobile	viewer		
Viewer Software	CMS Support	Support SDK/CGI(SUNAPI) for integra	ation to 3'rd party VMS(eg. Genetec)		
Functions					
	Register	Auto, Manual			
Camera Setup	Setup Items	IP address, Add profile edit, Bitrate, Camera video setup (Simple focus, E WDR, D&N, SSNR, Shutter, SSDR, Di Hallway View Setup, Camera Webpa Wisestream On/Off	Brightness/Contrast, Flip/Mirror, IRIS, S), Fisheye Dewarping Mode,		

H		Details	Details		
	Item	TRM-1610S	TRM-1610M		
	PoE Power Control	Monitor PoE/PoE+ power consumption, On/Off control for PoE+ camera, Remote reset for each PoE/PoE+ camera	r each PoE/		
Camera Control	Time Sync.	NVR time protocol for PoE/PoE+ camera (Tim time), GPS time sync	e sync based on NVR		
		GPS time sync			
DT-7	Control	Via GUI, Webviewer			
PTZ	Preset	300 Presets			
	Support Model	Android, iOS			
Smart phone	Protocol Support	RTP, RTSP, HTTP, CGI(SUNAPI)			
	Control	Live(16ch): Multi-Profile Support Playback(1ch)			
	Max. Remote Users	Search(3) / Live unicast(10) / Live Multicast(20)			
System Control		Mouse, Web	Mouse, Web		
Remote Management		GPS, Speed(GPS) Internal Metadata: Transport company, vehicle license number / driver name	Internal Metadata: Transport company, vehicle type / car number /		
(SSM-TR, ISV)	Metadata TX	Health Check (Status, Rec, Event,)			
		Support Vehicle ID, Driver Name			
Indicator/Interface					
	Indicator	3 LED status indicators : Power 1, Alarm 1, R	ecord 1		
	Power Switch	1 EA			
Front	HDMI / VGA	2 (Live screen is supported up to 16-div. mode, clone) HDMI: Ma 4K (3840 x 2160), VGA: maximum 1080p			
	USB	3 (1 x M12, 2 x USB-A), except for M12 with	built-in LTE module		
	GPS/GNSS	1EA (SMA, F)			
	HDD Key Lock	2 EA			



Home		Details	
	Item	TRM-1610S TRM-1610M	
	Audio	Out(1EA, Line)	
Connectors	Ethernet	LAN / WAN : 2ea (1Gbps, RJ-45) PoE Camera Input : PoE Camera Input : 4ea(100Mbps, RJ-45) LAN / WAN : 2ea (1Gbps, M12) PoE Camera Input : 4ea(100Mbps, M12)	
	Control I/O	DB15 1ea (External Control Box) (1) Status LED <power alarm="" error="" gps="" hdd="" raid="" rec=""> (2) Impact Sensor (3) Emergency Recording button (4) Power Switch (5) Audio Out</power>	
	Alarm	DB25 1ea (1) In(16EA) (2) Out(6EA)	
	Serial	Reserved	
	Wi-Fi	2EA (RP-SMA)	
	Reset	Switch(1EA, PW Clear)	
	Power Cord	One 6-pin connector	
System			
	Chutdayin Dalay	Omin ~ 72Hrs (User selectable)	
Power Management	Shutdown Delay	Support CGI shutdown	
	Startup Delay	O(default) min ~ 10 min (User selectable)	
Log	Log List	Max. 20,000 (System Log, Event Log each)	
Environmental			
Operating Temperature / Humidity		TX compliant (-25 °C to +55 °C, -13 °F to +131 °F, HDD in use) TX compliant (-40 °C to +70 °C, -40 °F to +158 °F, Industrial SSD in the complex of the comp	
Humidity		20% ~ 85% RH	

ltem -		Details		
'	em	TRM-1610S	TRM-1610M	
Electrical				
		9 ~ 36V DC		
Power	Power		er Limit Setup	
Power Consumption		Low temperature at start: 144W, Low temperature in use: 93W, Room temperature: 67W (maximum)		
PoE Budget		Max. 32W		
Mechanical				
Color / Material	Color / Material		Black / Aluminium	
Dimension (WxHxD)	Dimension (WxHxD)		250mm x 99mm x 303mm (9.84" x 3.89" x 11.92")	
Weight		Approx. 7.5Kg(16.5lb, without HDD)		
	Basic	CE, FCC, cUL, KC		
	EMC	EN-55022		
	Safety	UL-60950-1		
	Shock/Vibration	MIL STD-810F(SSD Terms of Use)		
Standard Approvals	Rail(Temp,Humid,shock, vib)	EN-50155		
	Rail(EMC)	EN-50121-3-2		
	Rail(EMI)	EN-50121-4		
	Rail(Shock, vib)	EN-61373		
	Vehicle(EU)	e-Mark		



• TRM-410S/810S/810M

ltem -		Details	
It	iteili		TRM-810S/810M
Display			
Network Camera	Inputs	Max. 4CH (4 PoE, RJ-45)	Max. 8CH (8 PoE) TRM-810S: Max. 8CH (8 PoE, RJ-45) TRM-810M: Max. 8CH (8 PoE, M12 D-Code)
	Resolution	CIF ~ 8MP	
	Protocols	Wisenet(SUNAPI), ONVIF	
	Local Display	HDMI / VGA	
Live	Multi-Channel Display	[Local Monitor] 1 / 2H / 2V / 3V / 4 / Auto sequence [Web] 4 / Auto sequence	[Local Monitor] 1 / 2H / 2V / 3V / 4 / 6 / 8 / 9 / Auto sequence [Web] 1 / 4 / 9 / 1+5 / 1+7 / 2H / 2V / 3V / 6 / 12 / Auto sequence
	Performance	[Local Monitor] 8MP(60fps), 5MP(90fps), 3MP(120fps), 2MP(120fps), 720p(120fps), D1(120fps)	Ofps)
Performance			
Operating System	Embedded	Linux	
	Compression	H.265, H.264, MJPEG, WiseStream(H.265, H.264)	
	Recording Bandwidth	Max. 50Mbps	Max. 80Mbps
	Resolution	CIF ~ 8MP	
Record	Туре	Normal, Schedule(Continuous/Event), Event (Pre/Post), Emergency	
	Retention	Retention per channel (1~400 days)	
	Event Trigger	Alarm Input (6), Video Loss, Camera Event(Sensor, MD, Video Analytics, Defocus Camera), G-Sensor(3 Axis)	
	Event Action	e-Mail, Alarm Out, Buzzer, Monitor C	Out

Item		Details	
		TRM-410S	TRM-810S/810M
	Playback Bandwidth	32Mbps(4ch simultaneously)	32Mbps(8ch simultaneously)
	User	Max. 4 Users (Local 1, Remote 3)	
Search & Play	Mode	Date & Time(Calendar)/Event Log list, Smart Search(Virtual Line w/ direction, Enter/Exit)	
	Simultaneous playback	Max. 4 channels(Local Monitor, CMS)	Max. 8 channels(Local Monitor, CMS)
	Resolution	CIF ~ 8MP	
Search & Play	Fisheye Dewarping	Web / CMS	
	Playback Control	Fast/Slow Forward/Backward, Move one step up/down	
	Built-In	No HDD (supporting the installation of 2 HDDs per tray)	
Storage	Internal HDD	2 SATA(Front-Swap) - Max. 2TB(HDD, Non-RAID Mode) - Max. 4TB(SSD, Non-RAID Mode)	
	RAID	-	RAID-1
	File backup	Exe(GUI), JPG/AVI(excluding GPS information)(Network)	
Backup	Function	Multi channel(Upto 4CH) Play, Date-Time/Title/GPS display	Multi channel(Upto 8CH) Play, Date-Time/Title/GPS display
·	Туре	Auto(Wi-Fi), Manual(HDD/SSD)	
	Wifi Backup Performance	MAX. 50Mbps	MAX. 80Mbps
Sensor	1/0	6/4	
	Input	4 channels (network)	8 channels (network)
Audio	Compression	G.711, G.726, AAC(16/48KHz)	
	Audio Communication	2-Way	



14.	ltem		Details	
ILGIII		TRM-410S	TRM-810S/810M	
Network				
Interface		RJ-45 (Fast Ethernet x1)	TRM-810S: RJ-45 (Gigabit Ethernet x1) TRM-810M: M12 A-Code (Gigabit Ethernet x1)	
Protocol		TCP/IP, UDP/IP, RTP (UDP), RTP (TCP), RTSP, NTP, HTTP, DHCP (Server, Client), PPPoE, SMTP, ICMP, IGMP, ARP, DNS, DDNS, uPnP, HTTPS, SNMP, ONVIF (Profile-S), SUNAPI(Server, Client)		
DDNS		Hanwha DDNS		
Transmission Bandwidth	Wired (LAN)	MAX. 50Mbps	MAX. 80Mbps	
Max Remote Users		Search(3) / Live unicast(10) / Multicast(20)		
IP Version		IPv4/v6		
Security		User access Log, IP Filtering, 802.1x, Encryption		
Mindon	Wi-Fi	Internal (802.11 ac(5G), 1T1R		
Wireless	4G/3G	Support external 4G/3G router (Ethernet)		
Language		English, French, German, Italian, Spanish, Russian, Turkish, Polish, Dutch, Swedish, Czech, Portuguese, Danish, Rumanian, Serbian, Croatian, Hungarian, Greek, Norwegian, Finnish, Korean, Chinese, Japanese, Thai		
OS		Window 7, 8, 10, Mac OS X(10.8 or above)		
Web Browser		MS IE, Google Chrome, Mac Safari		
V5 O - F	Туре	SSM Transportation, Webviewer		
Viewer Software	CMS Support	Support SDK/CGI(SUNAPI) for integration to 3'rd party VMS		

ltem -		Details	
		TRM-410S	TRM-810S/810M
Functions			
	Register	Auto, Manual	
Camera Setup	Setup Items	IP address, Add profile edit, Bitrate, Compression, Camera MD setup Camera video setup (Simple focus, Brightness/Contrast, Flip/Mirror, IRIS, WDR, D&N, SSNR, Shutter, SSDR, DIS), Fisheye Dewarping Mode, Hallway View Setup, Camera Webpage, Wisestream On/Off	
	Pot /Pot+ Power Control		ion, On/Off control for each PoE/ h PoE/PoE+ camera
Camera Control	Time Sync.	NVR time protocol for PoE/PoE+ car	nera (Time sync based on NVR time)
		GPS time sync	
DT7	Control	Via GUI, Webviewer	
PTZ	Preset	300 Presets	
System Control	System Control		
Indicator/Interface			
	Indicator	3 LED status indicators : Power 1, A	larm 1, Record 1
	Power Switch	-	
	Audio	OUT(1EA, Line)	
Front	HDMI / VGA	2 (Live screen is supported up to 9-0 HDMI : Maximum 4K (3840 x 2160)	
	USB	3EA (Front 2, Rear 1)	
	GPS/GNSS	4-pin Micro Fit	
	HDD Key Lock	1 EA	



ltem -		De	Details	
		TRM-410S	TRM-810S/810M	
	Ethernet	VIEWER: 1 ea (100Mbps, RJ-45) PoE Camera Input: 4 ea (100Mbps, RJ-45)	VIEWER: 1 ea (1000Mbps, RJ-45) PoE Camera Input: 8 ea (100Mbps, RJ-45)	
Connectors	Control I/O	RJ-45 1ea (External Control Box) (1) Status LED (2) G-Sensor(3 Axises) (3) Emergency Recording button (4) Power Switch (5) Audio Out	(1) Status LED(2) G-Sensor(3 Axises)(3) Emergency Recording button(4) Power Switch	
	Alarm	(1) In(6EA) (2) Out(4EA)		
	Serial	1 RS-232C(Reserved)	1 RS-232C(Reserved)	
	Wi-Fi	1EA (RP-SMA, F)	1EA (RP-SMA, F)	
	Reset	Switch(1EA, PW Clear)	Switch(1EA, PW Clear)	
	Power Cord	One 6-pin connector	One 6-pin connector	
System				
	Chutdown Dolov	Max 72 hrs (User selectable)		
Power Management	Shutdown Delay	Support CGI shutdown	Support CGI shutdown	
	Startup Delay	0(Default) sec ~ 10 Min (User selec	O(Default) sec ~ 10 Min (User selectable)	
Log	Log List	Max. 20,000 (System Log, Event Lo	Max. 20,000 (System Log, Event Log each)	
Environmental				
Operating Temperature -2		-25 °C to +55 °C(-13 °F to +131 °	-25 °C to +55 °C(-13 °F to +131 °F) : HDD installed	
Humidity	20% ~ 85% RH			

ll	Details	
Item	TRM-410S	TRM-810S/810M
Electrical		
Power	9 ~ 36V DC	
rowei	Battery Power Detection & Low Power Limit Setup	
Power Consumption	DC : Max. 83W	DC : Max. 122W
PoE Budget	Max. 32W	Max. 64W
Mechanical		
Color / Material	Black / STEEL	
Dimension (WxHxD)	210mm x 80mm x 250mm (8.27" x 3.15" x 9.84")	
Weight	Approx. 3.4Kg (7.5lb, without HDD)	
Standard Approvals		
General	CE, FCC, UL	
Special	EN-50155 (Rail Shock/Vib) EN-50121-3 (Railway EMC) EN-61373 (Railway Safety)	



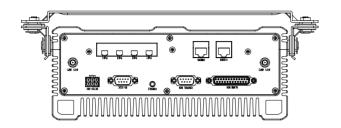
Control Box

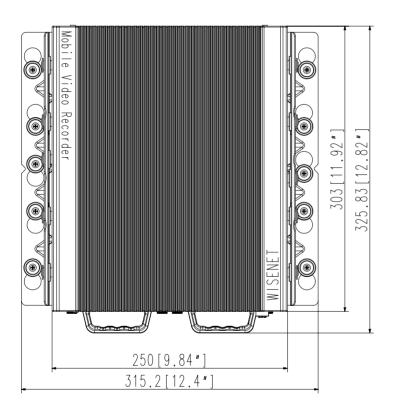
Item		Details
Indicator/Interface		
Front	Indicator	LED(Status indicator) : 6EA - Power(1), Alarm(1), Record(1), GPS(1), RAID(1), HDD Error(1)
	Emergency Button	1 EA
	Audio	Out (1EA, RCA, Line)
Ormanakiana	Power Switch	-
Connections	EXT Switch Connector	1 EA (4pin Micro-Fit)
	Main I/O	1EA (DB9)
Mechanical		
Color / Material		Black / Aluminium
Dimension (WxHxD)		Approx. 118 x 29.2 x 70mm (4.64" x 1.15" x 2.75")
Weight		Approx. 0.2Kg (0.4lb)

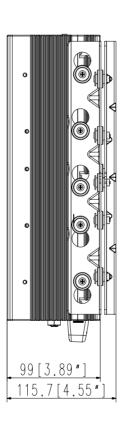


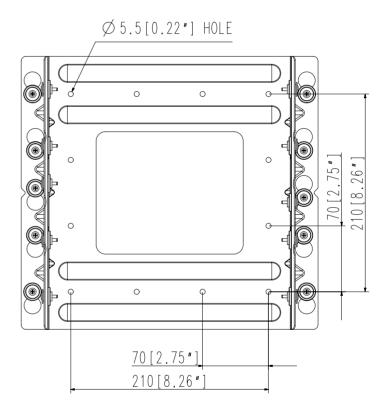
• TRM-1610S

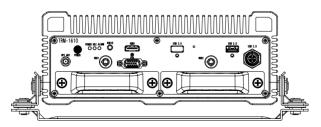
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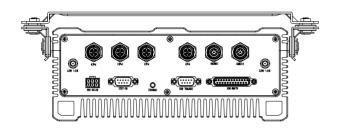


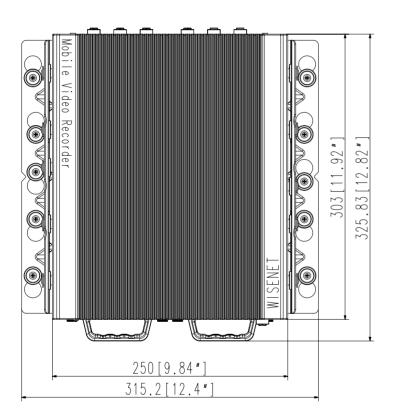


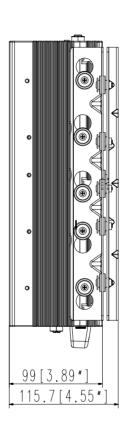


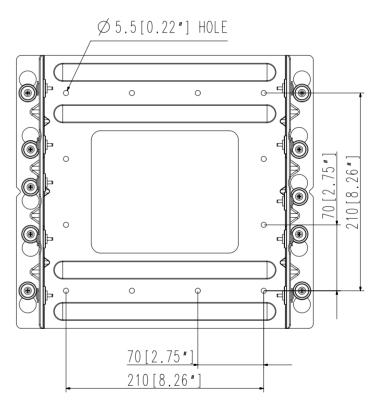
• TRM-1610M

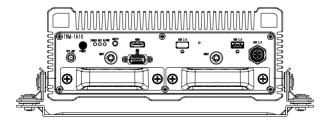
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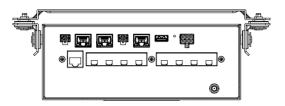


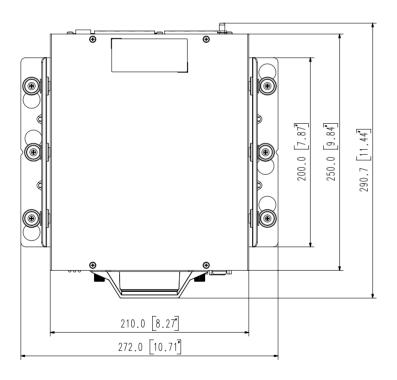


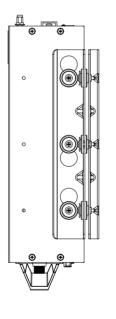


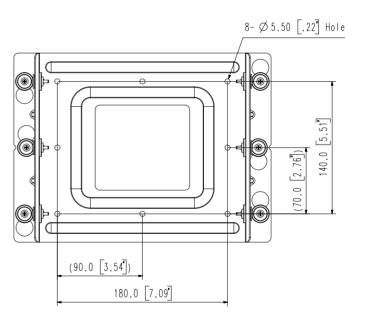
• TRM-810S

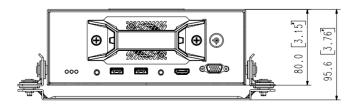
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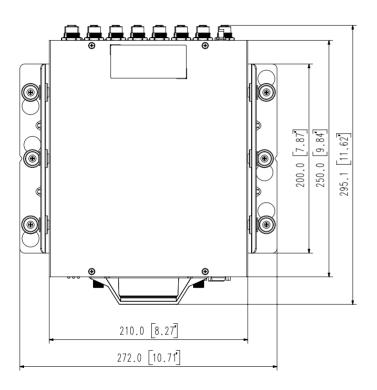


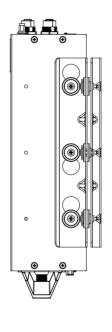


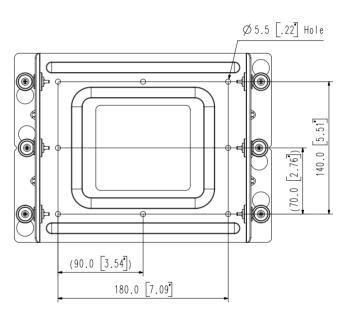
• TRM-810M

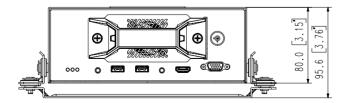
unit: mm (inches)







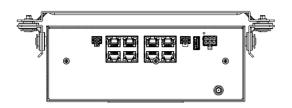


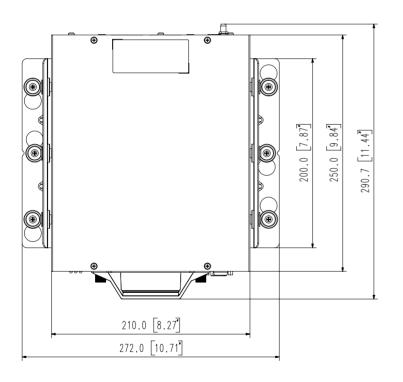


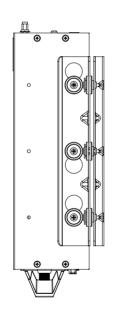


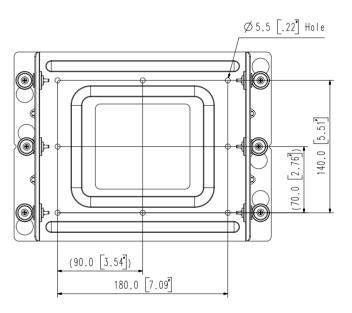
• TRM-410S

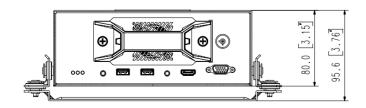
unit: mm (inches)







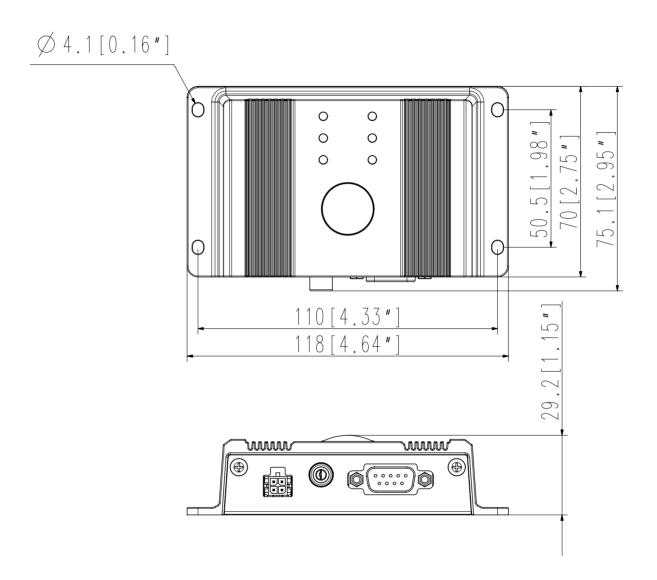






Control Box

unit: mm (inches)



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[sheepb.ipg] "Clone me," says Dolly sheepishly

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- 4. [5]Michael Barone <michael,barone@Imco.com> GPSVME fixes
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- 12. [13] Sven Dietrich <sven_dietrich@trimble.com> Palisade reference clock driver, NT adj. residuals, integrated Greg's Winnt port.
- 13. [14] John A. Dundas III <dundas@salt.jpl.nasa.gov> Apple A/UX port
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- 26. [29]George Lindholm < lindholm@ucs.ubc.ca> SunOS 5.1 port
- 27. [30]Louis A. Mamakos <louie@ni.umd.edu> MD5-based authentication
- 28. [31]Lars H. Mathiesen <thorinn@diku.dk> adaptation of foundation code for Version 3 as specified in RFC-1305
- [32]David L. Mills <mills@udel.edu> Version 4 foundation: clock discipline, authentication, precision kernel; clock drivers: Spectracom, Austron, Arbiter, Heath, ATOM, ACTS, KSI/Odetics; audio clock drivers: CHU, WWV/H, IRIG
- 30. [33] Wolfgang Moeller < moeller@gwdgv1.dnet.gwdg.de> VMS port
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- 34. [37]Derek Mulcahy <derek@toybox.demon.co.uk> and [38]Damon Hart-Davis <d@hd.org> ARCRON MSF clock driver
- 35. [39]Rainer Pruy <Rainer.Pruy@informatik.uni-erlangen.de>monitoring/trap scripts, statistics file handling
- 36. [40]Dirce Richards <dirce@zk3.dec.com> Digital UNIX V4.0 port
- 37. [41]Wilfredo Sánchez <wsanchez@apple.com> added support for Natinfo
- 38. [42]Nick Sayer <mrapple@quack.kfu.com> SunOS streams modules
- 39. [43] Jack Sasportas < jack@innovativeinternet.com> Saved a Lot of space on the stuff in the html/pic/ subdirectory
- 40. [44] Ray Schnitzler < schnitz@unipress.com > Unixware1 port
- 41. [45]Michael Shields <shields@tembel.org> USNO clock driver
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- 43. [47]Harlan Stenn harlan@pfcs.com> GNU automake/ autoconfigure makeover, various other bits (see the ChangeLog)
- 44. [48]Kenneth Stone <ken@sdd.hp.com> HP-UX port
- 45. [49]Ajit Thyagarajan <ajit@ee.udel.edu>IP multicast/anycast support
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- 47. [51]Paul A Vixie <vixie@vix.com> TrueTime GPS driver, generic TrueTime clock driver

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