

Transit Peripheral Devices

GPS module, wireless adaptor, onboard microphone, and system status module for bus and light rail applications



For customers who want to augment their transit security and operational efficiency, the March Networks® portfolio of transit peripheral devices integrates with other onboard vehicle systems such as Computer Aided Dispatch (CAD), Automatic Vehicle Location (AVL) and Automatic Vehicle Monitoring (AVM) systems. These peripherals connect to, interface with, and are powered by the March Networks RideSafe™ Series of recorders.

Key Benefits

- ▼ **Integrate video with vehicle location.** View video from a vehicle and simultaneously track the vehicle's progress on a map, including speed and direction.
- ▼ **Fast and cost-effective wireless connectivity.** 802.11 b/g/n hot spots at transit terminals or depots accelerate and automate the collection of video from buses and trains. This wireless connectivity also allows software updates and configuration changes to be uploaded, and equipment diagnostics to be captured — all automatically.
- ▼ **Tag video during an incident.** Dashboard-mounted module allows vehicle operators to tag video during an incident so it is automatically downloaded when the vehicle approaches a wireless hot spot. An impact sensor is available to tag video in the event of a collision.
- ▼ **Record audio onboard the vehicle.** This provides transit authorities with valuable information that can be used in an investigation.
- ▼ **Faster download times.** A one-hour clip from six cameras recorded at 4fps (CIF) takes less than five minutes to download, thanks to the exceptional video compression and wireless data management technology.

Enhance security and increase situational awareness onboard and around the vehicle by capturing, recording and automatically downloading critical data, video and audio.

Mobile Peripherals

GPS Module and Antenna

March Networks supplies the industry-leading Garmin GPS 16X receiver, featuring an integrated antenna and rugged, waterproof design ideal for mobile applications. The 12-channel receiver continuously tracks satellites and reports precise vehicle positioning and speed. Location can typically be determined within three meters, even without an external differential GPS beacon receiver.

Receiver	12-channel GPS receiver
GPS position accuracy	<3 m (10 ft) for WAAS-enabled Differential GPS; Typically 3 – 5 m (10 – 16 ft) 95% of the time; max < 15 m (50 ft) for Standard Positioning Service (SPS)
GPS velocity accuracy	0.1 knot RMS steady state (1 knot = 1.152 mph or 1.843 km/h)
Voltage	12 VDC
Power consumption	1.25 W (104 mA)
Connector	Molex 4 pin with housing and strain relief
Weight	0.5 lb; 0.2 kg
W x H x D	4.6 x 1.7 x 4.6 in / 11.7 x 4.3 x 11.7 cm

The GPS Module is equipped with a mounting plate designed for easy installation on the roof of a vehicle. The module receives GPS signals in NMEA 0183 format and transmits them to the NVR via an RS-232 serial interface. Vehicle location and speed data are stored on the mobile NVR hard drive. March Networks Command for Transit synchronizes the GPS data with mapping applications and displays the vehicle location, speed, time and coordinates on the map display.

802.11 b/g/n Wireless Adaptor/Antenna

Advanced wireless technology stands out as a key differentiator for March Networks' mobile video surveillance system. Our RideSafe NVR supports an optional 802.11b/g/n long-range USB adaptor, ensuring fast download times and efficient fleet management.

Frequency response	2400-2500 MHz frequency range
Encryption	Wireless data encryption with 64/128-bit WEP, WPA and AES functions
Connector	N type female
Operating Voltage	5VDC (\pm 5%)
Connector	USB 1.0/1.1/2.0

The vehicle 802.11g antenna is fitted with an N-type connector for direct attachment via an RF cable to the NVR. The antenna is equipped with a mounting plate that allows easy installation on the vehicle roof.

Video tagged by the vehicle operator or scheduled for downloading is automatically transmitted to the transit authority's corporate network as soon as the vehicle approaches the depot Wi-Fi access point network. NVRs may also be equipped with cellular 3G/4G LTE wireless USB modems for high-speed connectivity to enable remote access to live video from a transit vehicle while it is in service. This allows security personnel to observe an incident in progress and co-ordinate a response with law enforcement authorities.



FEATURES

- High-performance GPS module and antenna
- Accurate location, speed and time data
- Direct connection to mobile NVRs
- Roof-mount ready



FEATURES

- 2400 - 2500 MHz frequency range
- Receiver Sensitivity (IEEE): 802.11n: -73dBm @ HT20, -70dBm @ HT40, IEEE 802.11g: -76dBm @ 54Mbps, IEEE 802.11b: -92dBm @ 11Mbps
- N connector for direct mobile DVR transmission
- Optional USB 802.11 b/g/n adaptor
- Data Rates: IEEE 802.11g 54Mbps, IEEE 802.11b 11Mbps, IEEE 802.11n 150Mbps
- Roof-mount ready

Microphone

The March Networks Vehicle Microphone records audio onboard a bus or train, providing transit authorities with valuable information that can be used in an investigation. The low-noise unit is designed for the transit environment. It can be mounted on the vehicle wall or ceiling using a supplied mounting plate.

Frequency response	80 Hz to 20 kHz
Power sensitivity	+8 dBm/Pa
S/N ratio	68 dB at 94 dB SPL
Impedance	75 Ω , balanced
Voltage	12 VDC
Power consumption	1.44 W (120 mA)
Connector	Molex 6 pin with housing and strain relief
Weight	0.2 lb; 0.1 kg
W x H x D	4.5 x 1.5 x 2.8 in / 11.4 x 3.8 x 7.1 cm

March Networks NVRs support two independent audio channels, allowing for the installation of two microphones per vehicle. Standard dual installations include one microphone at the driver's station and another over the rear door.

For two-channel audio operation, a Y audio cable is attached to the audio input connector that is part of the NVR harness.

Status LED and Tag Module

The Status LED/Tag Module is typically mounted on the driver's instrument panel to display the health of the video recording system. The driver can engage the tagging and alarm function by pressing the button on the unit anytime an incident occurs. A short-term flashing LED confirms an operator-tagged event, while an LED off indicates a camera obstruction or system fault.

Pushbutton	Normally Closed (NC)
LED	Green
Voltage	12 VDC
Power	0.53 W (44 mA)
Connector	Molex 4-pin with housing and strain relief
Weight	0.2 lb; 0.1 kg
W x H x D	3.0 x 1.25 x 1.5 in / 7.6 x 3.2 x 3.8 cm

Tagged video is automatically downloaded when a vehicle approaches a wireless hot spot, and is marked for rapid search and review. The unit is available with the LED only as a Status Display Module, as a Tag Button Module only, or as a Status/Tag Module combination.



FEATURES

- 20Hz – 20kHz frequency range
- Impedance 75 Ω balanced
- Two microphone inputs per mobile DVR
- Ceiling or wall mount



FEATURES

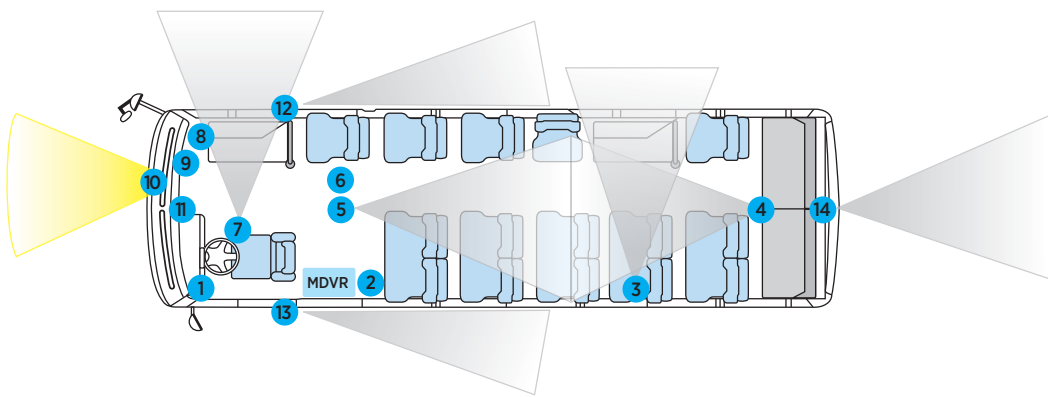
- Continuous green LED indicates system recording status
- LED off indicates camera obstruction or system fault
- Tag/alarm button marks video segment for download

Typical Camera and Peripheral Deployment

A typical eight-camera bus configuration, providing external forward and rear-facing coverage, curbside and roadside views, as well as interior views of passengers and front and rear doors.

For more information on March Networks' line of Mobile cameras, refer to the individual data sheets.

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|---|--|----|------------------|
| 1 | Status LED and tag module | 8 | GPS antenna |
| 2 | System interface ¹ | 9 | Wireless antenna |
| 3 | Rear door camera | 10 | Forward camera |
| 4 | Rear to front camera | 11 | Microphone |
| 5 | Front to rear camera | 12 | Curbside camera |
| 6 | Video monitor and in-vehicle advertising | 13 | Roadside camera |
| 7 | Front door camera | 14 | Rear camera |



NOTES: ¹ March Networks' mobile video surveillance equipment integrates with other onboard vehicle systems through a J1939/CANBus interface. Vehicle data on brakes, turn signals, speed and door open/close status, are commonly recorded. Computer Aided Dispatch (CAD), Automatic Vehicle Location (AVL) and Automatic Vehicle Monitoring (AVM) systems enable integration via J1939/CANBus.