



CMVTC HD CrossSafe School Bus Camera System Installation

Cheat Sheet Rev 6.5β

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- The DVR is typically velcrowed to the bus; however you can use screws if you choose. Cameras use screws to mount the camera base to the bus. Cameras have the Microphones built-in.
- All cables, cable looms, connectors and such may not be required for all installations. This depends on the bus make and model.
- The Sensor wires are passive and only listen to the power condition of the port. There is no power draw from these sensor wires, i.e. Yellow Run/Acc, White Amber and White Stop Sign. Be sure to use a Fuse on the Bus Side of the wire.
- Mount the IPC LP camera on the outside of the bus in front of the Stop Sign and under the Drivers window (see image below for location)
- All wire connections are made with the solder/seal system.
- Cable Loom is used for exposed wire and rubber hole grommets are used to cable penetration holes in metal walls. All hole drilled are 78mm or 3/4" for best grommet fit.
- You may have to fish the camera wire from the camera location to the cable trough, use caution.

Installation

1. Unpack all items.
2. Locate space on the bus for the DVR (usually in overhead driver compartment or driver side bulkhead)
3. Remove access panels to bus power console area (accessed from outside panel or under driver control panel)
4. Remove cable access panels to rear-most camera locations.
5. Run aviation cables from DVR location to camera locations via cable trough and front panels. Run 10M Aviation Environment Camera cable to Environment camera location (if installed) .
6. Run the 5M RJ45 Cat5 Network cable for License Plate to the camera location in front of stop sign under Driver's side window on the electrical access panel door. If this is Dual License Plate camera system, run a 5M Aviation to the same location.
7. Run Red, Black, Yellow wire (or Green, Black, White is using Grey cable harness) from DVR to Bus Power location. If using Grey wire harness; confirm wires colours with bus Power harness colours & DOCUMENT. DVR side wires must be connected as Red = +12VDC Hot Battery power, Black = Ground, Yellow = Run/Acc. Grey Cable side; Green = +12VDC, Black = Ground, White = Run/Acc.



8. Blue Bird DVR Power Harness: **White: Ground Wire, Black: Constant Power. Pink/Black Tracer: Accessory or Key on.**
9. Run a length of White wire from DVR location to each of the bus sensor inputs locations.
10. White wires on Bus Side are connected to Amber Loading Lights, Red Loading Lights, Brake Signal, Stop Arm Activation. **Mark each wire at the DVR side with notation on the wire to identify the wire to be connected to each sensor, ie. Sensor for Ambers with 2 marks, Sensor wire for Reds with 3 marks, Sensor for Brakes with 4 marks and Sensor for Stop Sign activation with 5 marks.**
11. Run 2 White wires from the Event Button location to the DVR.
12. Attach housed fuse link to each connection to the Bus End wires. DO NOT ATTACH WIRES to bus. Connect the Black wire directly to bus Ground. **Note White wire Ground on BlueBird bus.**
13. At the DVR, attach DVR Red to Red(Green), DVR Black to Black & DVR Yellow to Yellow (White) using the solder/seal butt connectors. **NOTE; Connect the Event Button wire to the +12VDC with a fuse link as described below.**
14. **Connect one end of the Event Button wire to the Event Button and to DVR Sensor Wire 1 Input. Connect the other white wire to the Event Button and the DVR side to the Red +12VDC wire at the DVR with a Fuse Link. This will allow for +12VDC to activate Sensor 1 to mark the event when the Driver presses the button when they see an illegal drive-by.**
15. Connect the DVR Aviation cables to the DVR (See users manual for details)
16. Temporarily connect the cameras to the DVR using the aviation cables
17. Attach the Sensor wires at the DVR end to Sensor input wires as listed; Sensor input wire 2 to Ambers, Sensor input wire 3 to Reds, Sensor input wire 4 to Brake Lights and Sensor input wire 5 to Stop Sign Activation. **Note; When you run the sensor wires, note the wire identification from above.**
18. Connect the fused wires to Bus +12VDC and Run/Acc
19. Attach included monitor screen the DVR Video Out Port on the front of the DVR using the included Video/Audio/Power adapter.
20. Turn bus key to ACC or Run position, DVR, DVR should power up and cameras will display on monitor
 - a. If cameras display, turn bus key to off. **Note the IPC may need to be re-discovered by DVR Login, Record, IPC, Add, Search. See below for Login details**
21. Attach LP cameras to bus;
 - a. Outside front facing camera with RJ45 Cat 5 cable is located in front of the stop sign on the electrical access door or similar area.
 - b. Outside Rear facing camera with Aviation connector (if installed) is located behind the front facing camera.
 - c. Environment camera with Aviation cable(if installed) is located above windows about 1/3 of the bus back (near clearance lights)
22. Attach GPS to GPS port cable on DVR (See users manual for details)
23. Turn bus key to Run/ACC and confirm camera & GPS operation.
24. GPS sensor information will display on the screen



25. Tie wrap (clip tie wrap ends) the camera cables, the power cables, the sensor wires.
Clean any residual cable overlap and close access panels.
26. With Bus powered up, sight in all cameras and confirm all settings;
 - a. Front camera should be aimed with license plate in center of image with vehicle is 30' away from bus (final sighting is done outside). Aiming may require fine tuning in real time depending on bus size and operating environment.
 - b. Rear camera (if installed) should be aimed with license plate in center of image with vehicle is 30' away from bus (final sighting is done outside). Aiming may require fine tuning in real time depending on bus size and operating environment.
 - c. Environment camera is aimed with Extended Stop Sign in upper portion of view.
 - i. On DVR, verify the following
 1. Camera are shown on the DVR in the following order: Cam 1: Windshield or Driver Compartment, Cam 2: Front row of seats or MidShip, Cam 4: Rear, Environment or Rear LP camera, Cam 5: Front LP IP camera.
 2. Event button is noted with I/O 1:H
 3. Ambers is noted with I/O 2:H
 4. Reds is noted with I/O 3:H
 5. Brakes is noted with I/O 41:H
 6. Stop Sign activation is noted with I/O 5:H
 7. Speed is noted with Speed: 0km/h
 8. GPS is noted with GPS: Long/Lat (or none if in bus garage with lose of GPS Satellite signal)
 - ii. If cameras are not in the above listed position, move the Aviation cables on the DVR side end.
27. Program DVR to your configuration (Line for Bus number, Power off timer, GPS recording, Video recording settings etc). We can perform a training webinar and cover all the settings for a fully customized configuration.
 - a. Program the DVR & WIFI Bridge Network configuration as stated in users manuals.
28. Attach the DVR to the bus and tidy all cables. Clean ALL trash and leave nothing behind.
29. Fine Tune license plate cameras outside with a vehicle with a standard height license plate. The LP cameras are center point rotated, to adjust, loosen screws and rotate camera accordingly.



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- You can use the rubber grommets to protect the camera cables from any holes in the bus. All camera cables require a 3/4" hole for the grommet to work. Cut the grommet for easier cable run.
- The plastic hole plugs are spare.
- Contact us for any support, installation or maintenance issues.
- DVR is configured for the following;
 - 15 Minute shutdown after Key Off
 - LP Camera(s) Record quality highest, 30 FPS, no audio, Network ON
 - Time Zone & Time set
 - GPS set to record OSD, time synced with GPS, OSD set to School Division
 - All OSD Information on connected Monitor, Selected Info on Recorded Video

Thank you for purchasing the MJGT School Bus HD
DVR Camera Systems



