rosco
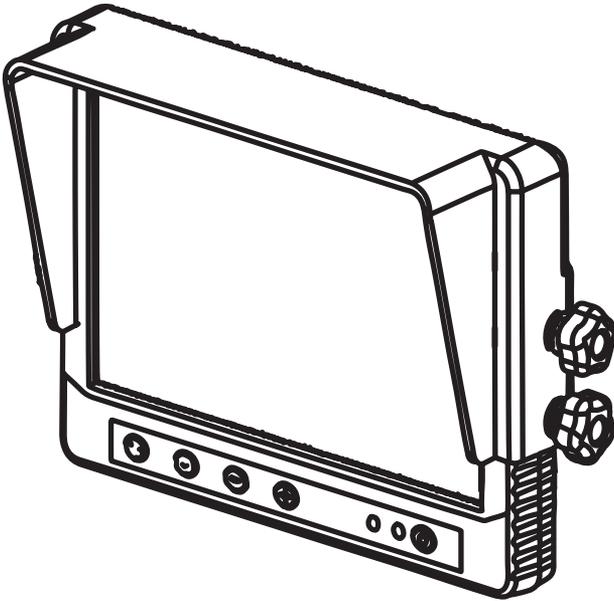## VISION
SAFE -T-SCOPE®
BACKUP CAMERA SYSTEMS

STSM351
7" 2 CHANNEL AHD MONITOR
INSTALLATION/USER MANUAL

TABLE OF CONTENTS

STSM351 SAFE-T-SCOPE® 7" AHD LCD 2 CHANNEL MONITOR KIT

Rosco Vision introduces true HD 1080P video in camera systems for commercial vehicles. The new Safe-T-Scope® system utilizes the STSM351 7" inch LCD monitor to display 1080P quality video from up to 2 AHD (Analog HD) cameras with custom triggering options. The monitor is also backwards-compatible with the NTSC 960H camera format.

This monitor allows the driver to see obstructions behind the vehicle as well as any other location based on the positioning of the cameras for added convenience and safety. The monitor auto adjusts the switches between day and night modes based on ambient light. Moreover, it complies with the latest FCC(USA) & guidelines when installed properly.

⚠️ **Caution**

•   To prevent electric shock, DO NOT OPEN THE MONITOR CASE. The components inside the monitor are carrying high voltage. There are no user serviceable parts.

•   Avoid exposing monitor to water, rain, moisture etc. The monitor is not waterproof. Any moisture inside the monitor can cause extensive damage.

•   The driver is always responsible for the safe operation of the vehicle at all times. Rosco camera systems do not replace the need for a skilled, alert, professional driver, observing appropriately, and using safe driving practices. The driver shall conform with district or company backing policy at all times.
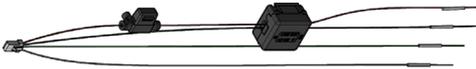
COMPONENT LIST AND DESCRIPTION

| PART NO.	DESCRIPTION
STSM351MO	7" AHD LCD 2 Channel Monitor
STSM351PHAR	SAFE-T-SCOPE, 7" LCD MONITOR KIT, AHD, 4PIN/ 2 INPUT
BAS4515	Monitor Sun Shield
WAS2221	Washer, use only with Thumb Screw & U-Bracket, not needed when sun shield is used
STSDF1000	Duck-foot Mount (Mounting Option- 1 of 2)
SCR9026	Monitor Angle Adjustment Thumb Screw, use only with U Bracket and/ or sun shield
STSU1005	U-Bracket (Mounting Option- 2 of 2)

MONITOR INSTALLATION

Find a mounting location inside the vehicle cabin that is convenient to the driver, and complies with federal regulations (e.g. center of the dashboard, above the windshield on the ceiling, near the rear view mirror etc). Installer needs to ensure he/she can drill a hole for the monitor pigtail, and that he/she can stow the excess cable under a surface near the monitor (under the dash, headliner,etc). The STSM351 Monitor Kit offers 2 options for monitor installation:

DUCK FOOT MOUNT INSTALLATION

*   The mounting surface should be large enough to accommodate the duck foot mount, which is roughly 3x4 inches in size. Note that the duck foot is designed to bend and flex slightly in order to fit smoothly curved surfaces.
*   Attach the "duck foot" bracket to the dashboard or to the headline using self tapping screws and/or adhesive pad.
*   Slide the monitor to the "duck foot" mounting tip and secure the monitor using the locking ring on the mount. Adjust the monitor angle for optimum driver viewing comfort and tighten the knob to fix the monitor angle in place**.**
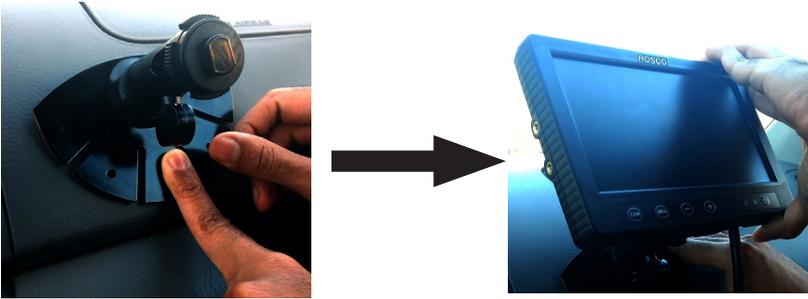
U-BRACKET MOUNT INSTALLATION

*   Attach the optional sunshade kit.
*   Drill a hole for the monitor pigtail and ensure it lines up with the large hole in the center of the U-bracket. The hole diameter should not be more than 1 inch. Be sure to clear any obstacles before drilling holes. This hole will be the access point for the power harness.
*   Attach the "U" bracket to the dashboard or to the headliner using #8 screws/ hardware appropriate for the mounting surface material (hardware not provided).
*   Fasten monitor to the U-bracket using the provided plastic thumb screws and adjust mounting angle to allow optimum driver viewing comfort. Firmly secure the viewing angle using the plastic thumb screws.

Attaching Sunshade
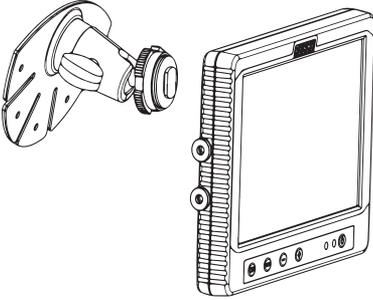
Attaching U bracket to vehicle.

Attaching monitor to U bracket using thumb screw

MONITOR INSTALLATION

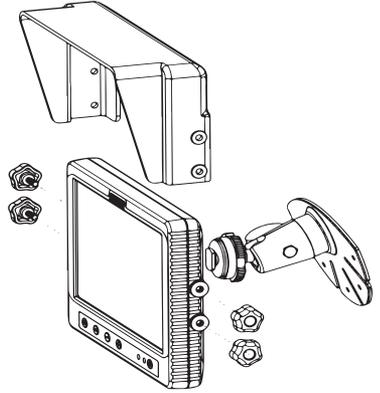**DIFFERENT CONFIGURATIONS OF MONITOR INSTALLATION**

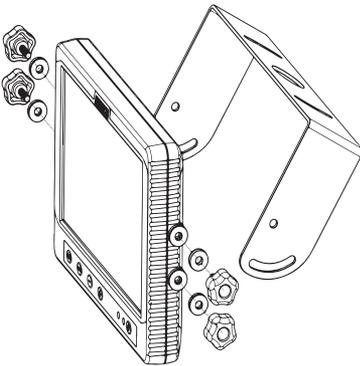**• Mounting Option 1: Duck Foot Mount**

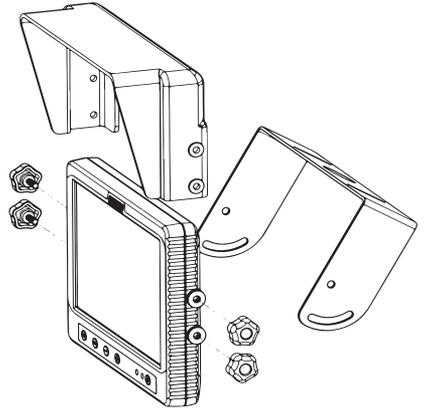**fig. 1**   **Monitor with the Duck Foot Mount**

fig. 2   **Monitor along with optional sun-shade kit & Duck Foot Mount**

• Mounting Option 2: U Bracket Mount

fig. 3   **Monitor with U Bracket Mount**
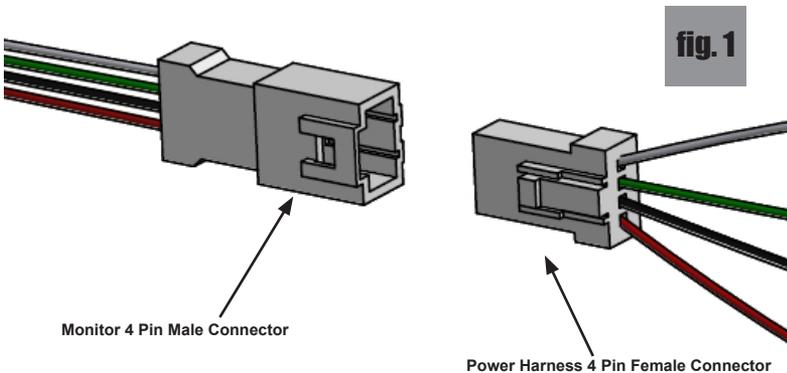

fig. 4   **Monitor along with optional sun-shade kit & U Bracket Mount**

POWER HARNESS INSTALLATION

• Once the monitor is mounted, if necessary, drill a hole on the monitor mounting surface near the monitor in which to pass through the monitor pigtail. The hole should be no larger than 1" in diameter. Be sure to clear any obstacles before drilling holes.

• Connect the black wire of the power harness to chassis ground. See wiring diagram on page 7 for connections.

• Connect the red wire to an ignition switched accessory (ex. radio) power source and ensure that the power source can provide operating current above 2A.

• In order to automatically display the rear camera view when shifting into reverse using a backup camera setup, connect the green trigger wire to the vehicle's reverse light circuit. Ensure the backup camera is connected to port C1 on the power harness. Similarly, the trigger wires can be connected to the vehicle's left or right turn signal circuit to get the view of the blind spot while turning left/right.

• Connect the monitor 4 pin female power connector to the power harness 4 pin male connector.

• The power harness should be completely hidden from the vehicle operators and tied/clamped to a rigid structure or rigid existing vehicle harness.

• Adhere to a 2 inch bend radius for all cables to prevent damage.

FUEL TANKERS & OTHER SPECIALTY VEHICLES:

• All electrical equipment fitted to petroleum vehicles must be connected via battery master switch and must be isolated from the battery while the vehicles are loading and unloading. For other specialty vehicles, please check applicable code and regulations prior to installation.

• Always consult your dealer when fitting any electrical or electronic equipment to a vehicle fitted with a CAN-bus multiplex system.

fig. 1

Monitor 4 Pin Male Connector

Power Harness 4 Pin Female Connector

STSM351

Wiring Diagram

U-BRACKET
(Mounting Options
 2 of 2)

MONITOR SUN
SHIELD

DUCK-FOOT
MOUNT
(Mounting Options
1 of 2)

7" AHD
MONITOR

CAMERA 2

CAMERA 1

POWER HARNESS

BLADE FUSE 2A

FILTER BOX

GREEN: TRIGGER 1

WHITE: TRIGGER 2

RED: +12/24 V DC
ACC POWER

BLACK: GROUND
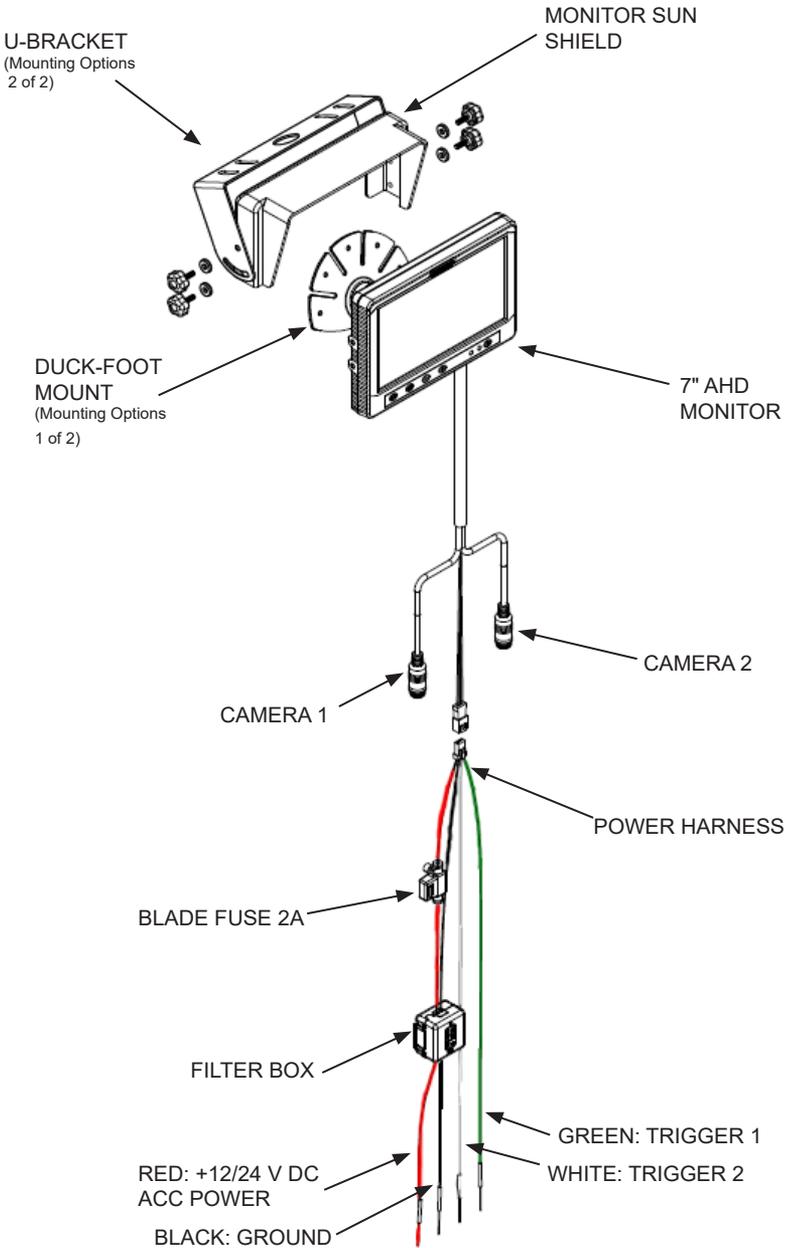
MONITOR FUNCTIONS AND OPERATIONS

i NOTE: The monitor buttons do not function while the vehicle is in reverse. It is recommended that the buttons are ONLY used in park/neutral.

POWER ON/OFF
Turns the LCD on or off. The monitor, however, is always fully on and functional when receiving power, whether or not the power button is used.

LIGHT SENSOR (LEFT)   **POWER LED (RIGHT)**
Used to adjust screen brightness automatically.   Green when LCD ON, Red when LCD OFF

+/-   VOLUME/MENU SETTING ADJUST BUTTONS
Decrease/Increase audio volume when no menu is open.
Decrease/increase the value for a particular menu parameter.

MENU SETTING AND PAGE TOGGLE
Brings up the monitor settings menu. Press the button again to scroll through the various settings and to access the camera settings menu page (see following page).

CAMERA CHANNEL TOGGLE
Toggles between different split screen views. If no camera is connected, the display will be black.
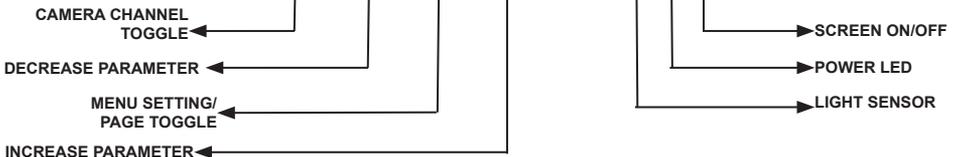
CAMERA CHANNEL TOGGLE

DECREASE PARAMETER

MENU SETTING/ PAGE TOGGLE

INCREASE PARAMETER

SCREEN ON/OFF

POWER LED

LIGHT SENSOR

MONITOR SETTINGS AND MENU

i NOTE: Press MENU button to enter the menu and press the MENU button to change pages. The menu cannot be accessed when any trigger is activated. Volume can still be adjusted with +/- if triggers are activated. The menu is closed after 10 sec without any operation.

MENU SETTINGS PAGE 1:

"PICTURE SETTINGS"

Press the MENU button (see preceding page) to access this menu. Press the MENU button again to scroll through the settings:

Parameter	Options
BRIGHTNESS	1~100 (DEFAULT 50 DAYTIME, DEFAULT 35 NIGHT TIME. THIS BRIGHTNESS SETTING CAN BE ADJUSTED FOR DAY AND NIGHT MODE INDIVIDUALLY TO ACHIEVE THE DESIRED BRIGHTNESS IN BOTH MODES.)
CONTRAST	1~100(DEFAULT 50)
COLOR	1~100(DEFAULT 50)
TINT	1~100(DEFAULT 50)
RESET	(Resets all settings back to factory default)
VERSION	Displays current monitor firmware version

MONITOR SETTINGS AND MENU

i NOTE: Press MENU button to enter the menu and press the MENU button to change pages. The menu cannot be accessed when any trigger is activated. Volume can still be adjusted with +/- if triggers are activated. The menu is closed after 10 sec. without any operation.

MENU SETTINGS PAGE 2:

"CAMERA MENU"

This menu allows the user to adjust the mirroring for each camera. Each camera can be mirrored both vertically and horizontally. Keep pressing the menu button to access page 3 of the settings:

Parameter	Options
CAM1-HORIZ	NORMAL/MIRROR (DEFAULT NORMAL)
CAM2-HORIZ	NORMAL/MIRROR (DEFAULT NORMAL)
CAM1-VERT	NORMAL/FLIPPED (DEFAULT NORMAL)*
CAM2-VERT	NORMAL/FLIPPED (DEFAULT NORMAL)*
DIMMING	DAY/NIGHT/AUTO(DEFAULT AUTO) AUTO= The monitor will switch between Night mode and Day mode brightness by detecting the amount of ambient light using the light sensor. DAY= Manually sets the monitor to day mode. Night= Manually sets the monitor to night mode
SCALE	OFF/STYLE 1/STYLE 2/STYLE 3/ STYLE 4/ STYLE 5 (DEFAULT OFF) This option enables or disables the back up grid, and also selects the style of back up grid (pictured left).

CAMERA SETTINGS
CAM1-HORIZ   NORMAL
CAM2-HORIZ   MIRROR
CAM1-VERT   NORMAL
CAM2-VERT   NORMAL
DIMMING   AUTO
SCALE   OFF

STYLE 1	
STYLE 2	
STYLE 3	
STYLE 4	
STYLE 5	

*The MIRROR option rotates the camera 180 degrees.
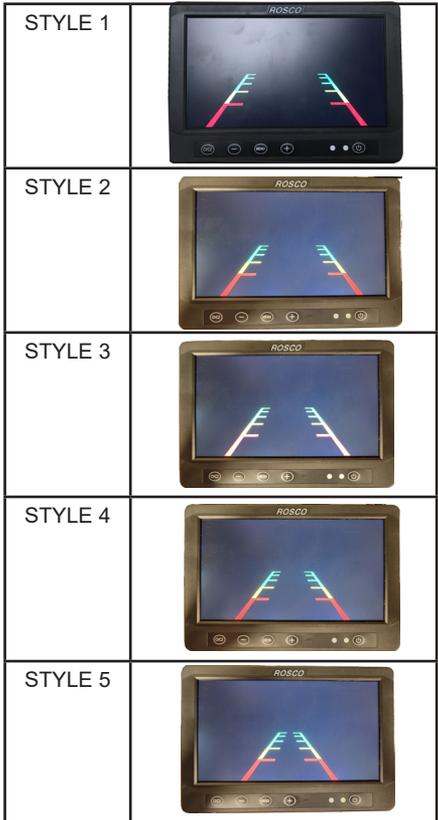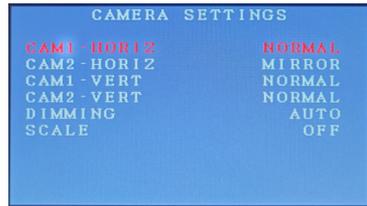
MONITOR SETTINGS AND MENU

i NOTE: Press MENU button to enter the menu and press MENU button again to change pages. The menu cannot be accessed when any trigger is activated. Volume can still be adjusted with +/- if triggers are activated. The menu is closed after 10 sec. without any operation.

MENU SETTINGS PAGE 3:

"TRIGGER DELAY OFF TIME"

This menu allows the user to configure the delay before the monitor returns to standby after power is removed from either of the trigger wires.

C1 OFF TIME	0 – 15
C2 OFF TIME	0 – 15

```
        SYSTEM SETTINGS
C1  OFF  TIME                    2
C2  OFF  TIME                    2
```

PRACTICAL EXAMPLE:

A delay-off is useful when using turn signal triggers to activate a blind spot camera. Most vehicles automatically deactivate the turn signal half-way through a turn. The delay-off allows the driver to see the blind spot camera through the entire turn.

⚠️ **WARNING**

• To prevent electrical shock, DO NOT OPEN MONITOR CASE.

• Avoid exposing monitor to water, rain, moisture etc.

• Do not disassemble the camera. This voids the warranty.

NOTE

• Please read this manual carefully before using the product.

• This system is intended as an aid to safe driving operation.

• Drivers must always use extreme caution when operating a vehicle.

• Specifications subject to change without prior notice.

• Keep all cables AWAY from rotating and electrically noisy components.

• Make sure all cables are fastened properly so that you can prevent wire chafing, kinks, cuts, etc.

• Always consult your dealer when fitting any electrical or electronic equipment to a vehicle fitted with a CAN-bus or multiplex system.

APPENDIX

1.1 EXAMPLE CAMERA INSTALLATION

Safe-T-Scope 7" AHD Monitor can accommodate up to 2 cameras. These cameras can be installed at the rear of the vehicle, left/right side of the vehicle or any other location according to user's wish. An example of camera installation is given here using the STSC201 Rosco Backup Camera.

INSTALL MOUNTING BRACKET

- Select a high and centered location at the rear of the vehicle and close to the rear marker lights to mount the STSC201 camera. This installation location will ensure that the image transmitted by the camera will show the rear bumper and area behind the vehicle.
- We do not recommend mounting the camera near the lower area of the vehicle (eg. the bumper). This reduces the view of the camera and increases the chance of physical damage to the camera.
- Using the camera mounting bracket as a guide, drill four pilot screw holes into the vehicle. Be sure to clear any obstacles(e.g. electrical wiring), etc. before drilling holes. Use a 3/4 drill bit to drill a camera cable hole into the vehicle close to camera mounting bracket.
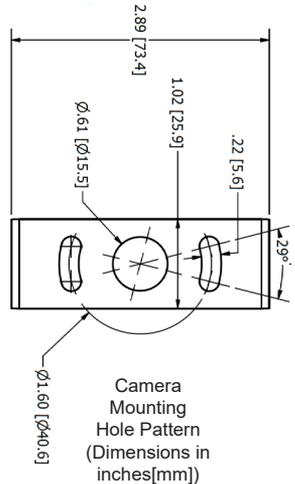
INSTALL CAMERA

- Install the camera mounting bracket (vehicle mounting screws not provided. Use 3/16 sized hardware appropriate for the mounting surface) Mount the camera and sunshade onto the bracket using the provided screws. Insert the camera cable into the vehicle through the hole and install the cable grommet on the hole.
- Connect the camera cable to the male-pinned connector of the camera extension cable . Hand-tighten the coupling ring on the camera cable to ensure a secure connection, and slide the environmental boot over the connection.

ROUTE EXTENSION CABLE

- Route the extension cable to the vehicle cabin at the front of the vehicle and keep the cable away from hot, rotating, or electrically noisy components.
- Tuck the cable out of sight and secure/clamp the cable at as many spots as possible to prevent accidental snagging or damage to the cable.
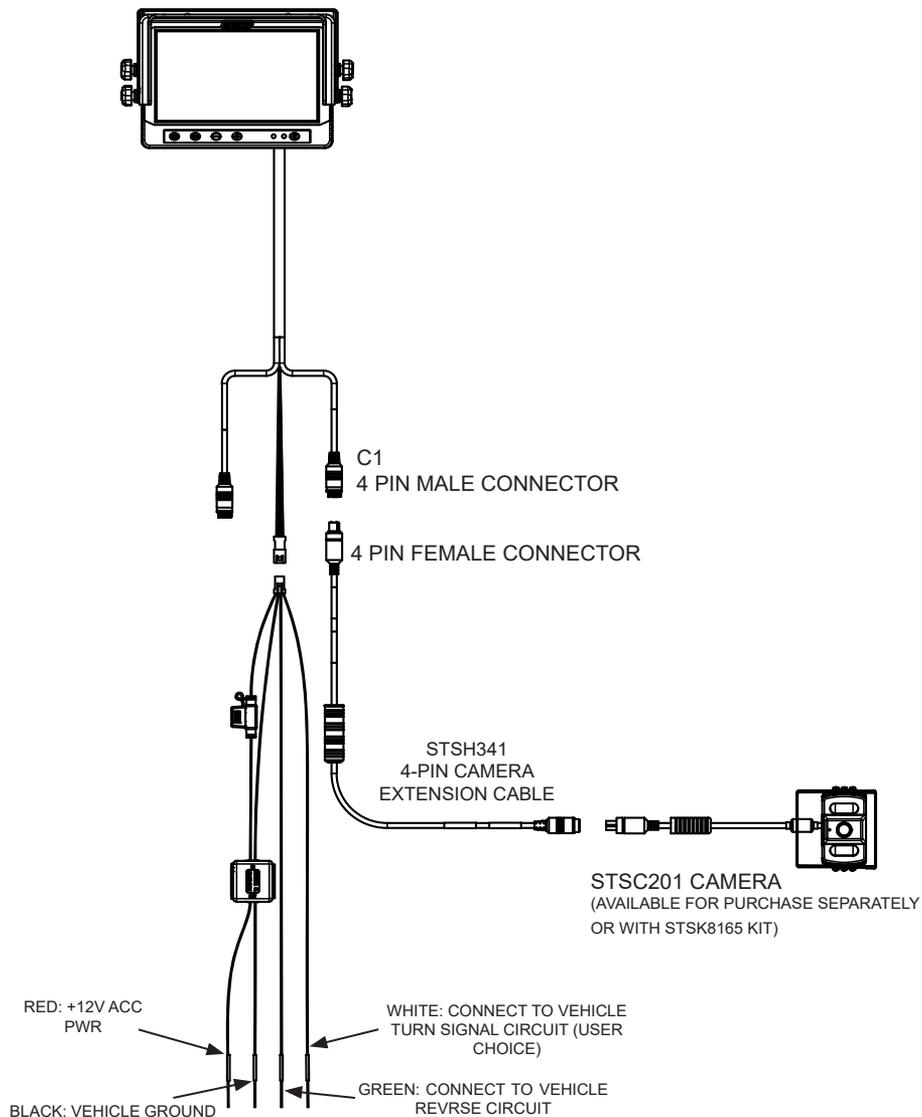

NOTE: STSC201 CAMERA AVAILABLE FOR PURCHASE SEPARATELY OR AS PART OF STSK7165B KIT

Mounting Location: Rear of the vehicle

Camera Mounting Hole Pattern (Dimensions in inches[mm])

Typical Monitor Image from a properly installed camera

APPENDIX

1.2 CAMERA WIRING EXAMPLE

C1
4 PIN MALE CONNECTOR

4 PIN FEMALE CONNECTOR

STSH341
4-PIN CAMERA
EXTENSION CABLE

STSC201 CAMERA
(AVAILABLE FOR PURCHASE SEPARATELY
OR WITH STSK8165 KIT)

RED: +12V ACC
PWR

WHITE: CONNECT TO VEHICLE
TURN SIGNAL CIRCUIT (USER
CHOICE)

GREEN: CONNECT TO VEHICLE
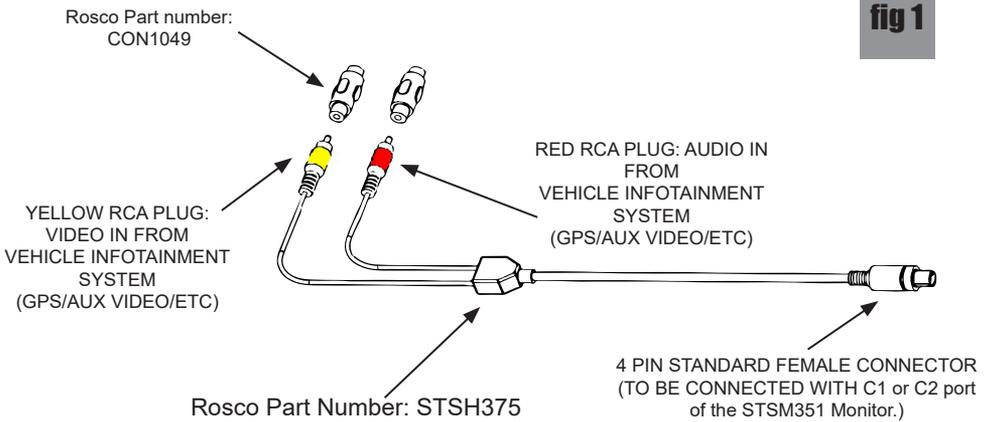REVRSE CIRCUIT

BLACK: VEHICLE GROUND

APPENDIX

2.1 Connection With Vehicle Infotainment

The Safe-T-Scope 7" 2 Channel AHD Monitor is compatible with most vehicle infotainment systems as long as the vehicle provides RCA connectivity. Using the proper Rosco adapter harnesses, video can be sent to the Rosco monitor and vehicle infotainment system..

The output (GPS, Auxiliary Video etc) from the vehicle Infotainment System can be transmitted to the 7" AHD Monitor (fig.-1).

Rosco Part number:
CON1049

fig 1

RED RCA PLUG: AUDIO IN
FROM
VEHICLE INFOTAINMENT
SYSTEM
(GPS/AUX VIDEO/ETC)

YELLOW RCA PLUG:
VIDEO IN FROM
VEHICLE INFOTAINMENT
SYSTEM
(GPS/AUX VIDEO/ETC)

4 PIN STANDARD FEMALE CONNECTOR
(TO BE CONNECTED WITH C1 or C2 port
of the STSM351 Monitor.)

Rosco Part Number: STSH375

APPENDIX

STSM351
Technical specification

PARAMETER	VALUE
Operating Voltage Range	9V~36V DC
Max Current Draw	=< 1000mA
Screen Size	7" Diagonal
Screen Ratio	16:9
Accepted Video Input Format	AHD 1080p, AHD 720p, NTSC
Speaker	Yes
Operating Temperature Range	-20°C to + 65°C (-4°F to +149°F)
Screen Brightness	≥500cd/m^2
LCD Resolution	1024*600

rosco
VISION

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RoHS FC