SD-300

HD Series

3 Channel Mobile Recorder

Hardware User Manual
Hardware Installation Manual

Radio Engineering Industries, Inc.
640548 – Rev A – 5/28/20

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Introduction

All of us at REI would like to thank you for purchasing an SD-300 Mobile Recording System. This manual is intended to provide the user with the information required for proper installation, initial setup, and explanation of the individual programming options. If you have any questions, or need assistance, please call:

24 HOUR SERVICE HOT LINE
USA & CANADA
1-877-726-4617 Toll Free
1-402-339-2200

The SD-300 is a cost effective, fanless Mobile Recording solution supporting up to 3 camera inputs. This system features a unique compact rugged design engineered to meet the demands of harsh mobile environments. The SD-300 features the latest technologies including H.264/MPEG-4 Advanced Compression, dual streaming technology, and all solid-state construction.

Features

- Ultra-compact extruded aluminum housing, low weight, high temperature and vibration resistant
- Low-voltage, low-current architecture designed for harsh mobile environments
- Removable SD memory with tamper-resistant lock and secure controls
- 3 channels for image input, full-motion (30 FPS / camera) continuous recording and display. Those channels are designed for high-fidelity, digitally recorded, independent synchronized audio channels matched to independent image channels, secure, constant recording while system is powered with event bookmarks for easy event searching
- Utilizes H.264/MPEG-4 Advanced Compression for high quality, low storage requirements, and long record times
- User-selectable settings for quality and audio enable/disable for each channel
- Password protection for settings, playback, remote access, and more
- Integrated and filtered power supply for cameras, sensors, relays, and other accessories
- Selectable idle frame rate with event-triggered burst recording speeds up to 30fps
- Multiple alarm inputs with selectable pre-alarm and post-alarm recording
- Full event logging of every operation controlled by the Recorder
- TV output channel for recorded and live images

Image Viewing

- DVD-quality steaming
- Convenient USB media updating and status file downloading

Retrieval and Archiving

- USB 3.0 (2.0 compatible) port on the front panel for easy image retrieval on the vehicle with a notebook computer or USB flash drives
- Easy to use PC-based software application for playback, file transfer, archiving management, and image file format conversion
- Vehicle management PC software interprets audio, images, and vehicle data for driver and vehicle use assessment
- Event search software allows intelligent searching of images based on event information

Supplemental Data and Driver Management Modules

- External GPS antenna module for embedded digital information of GPS location, speed, heading, and time
- External 3-axis inertia sensor for embedded digital information or trigger of image-matched motion events for accident reconstruction

System Overview

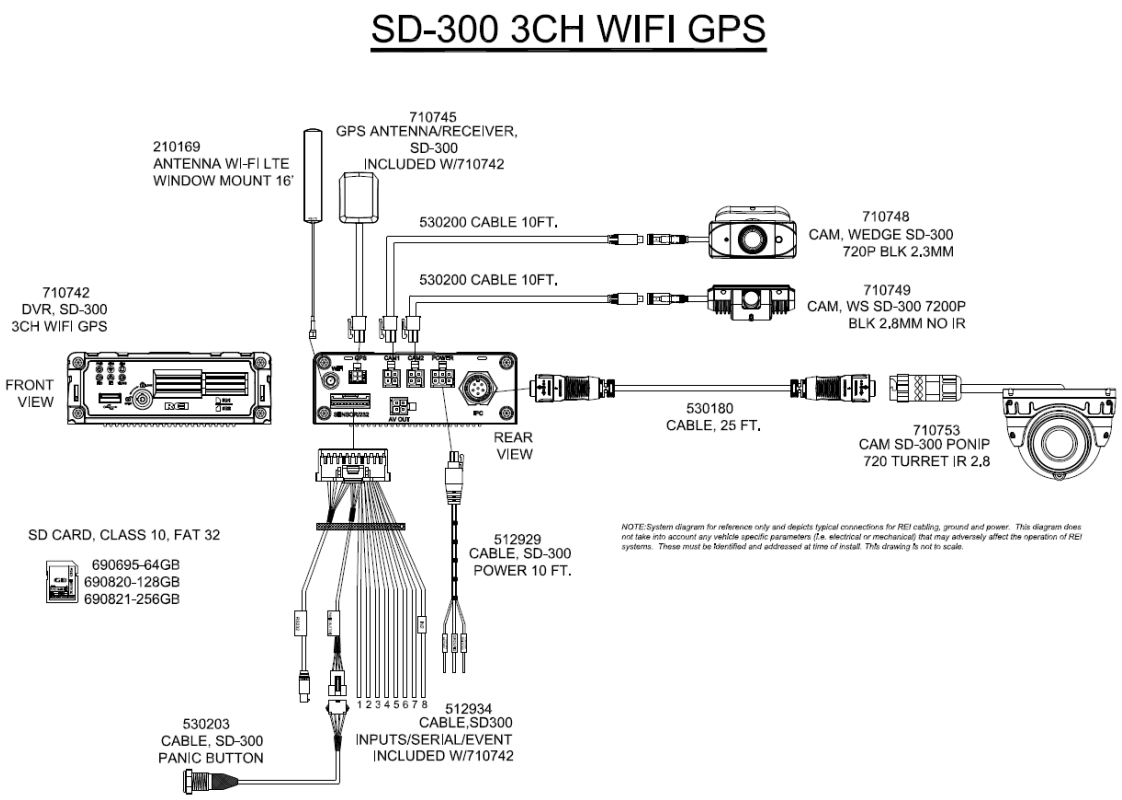
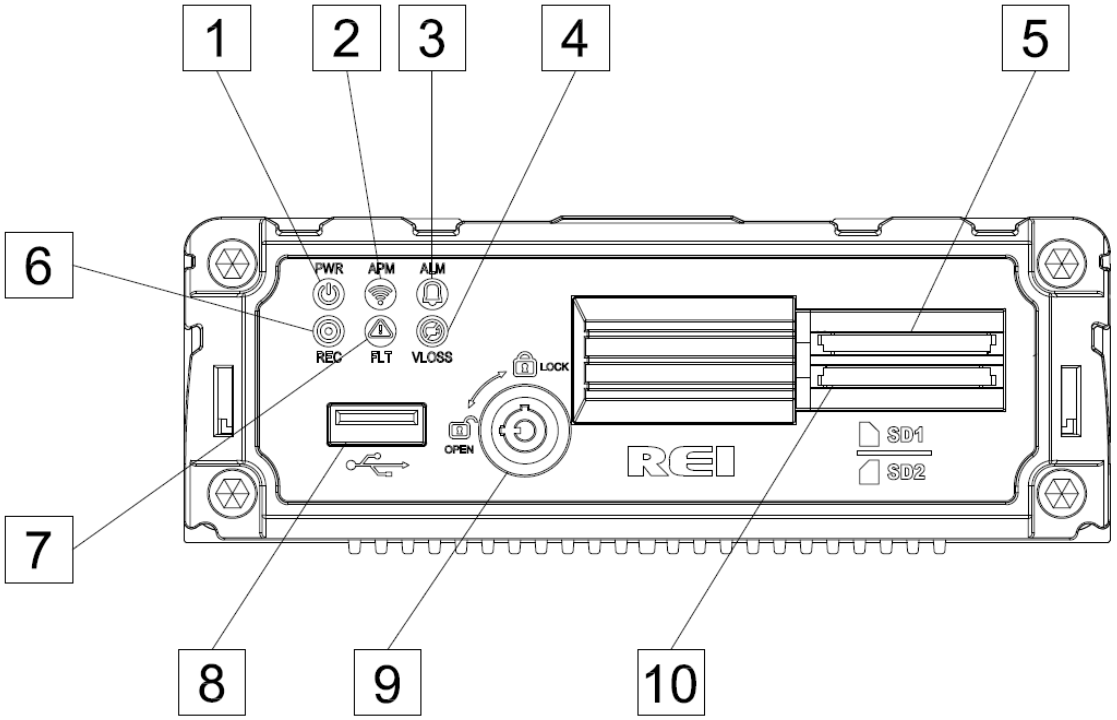


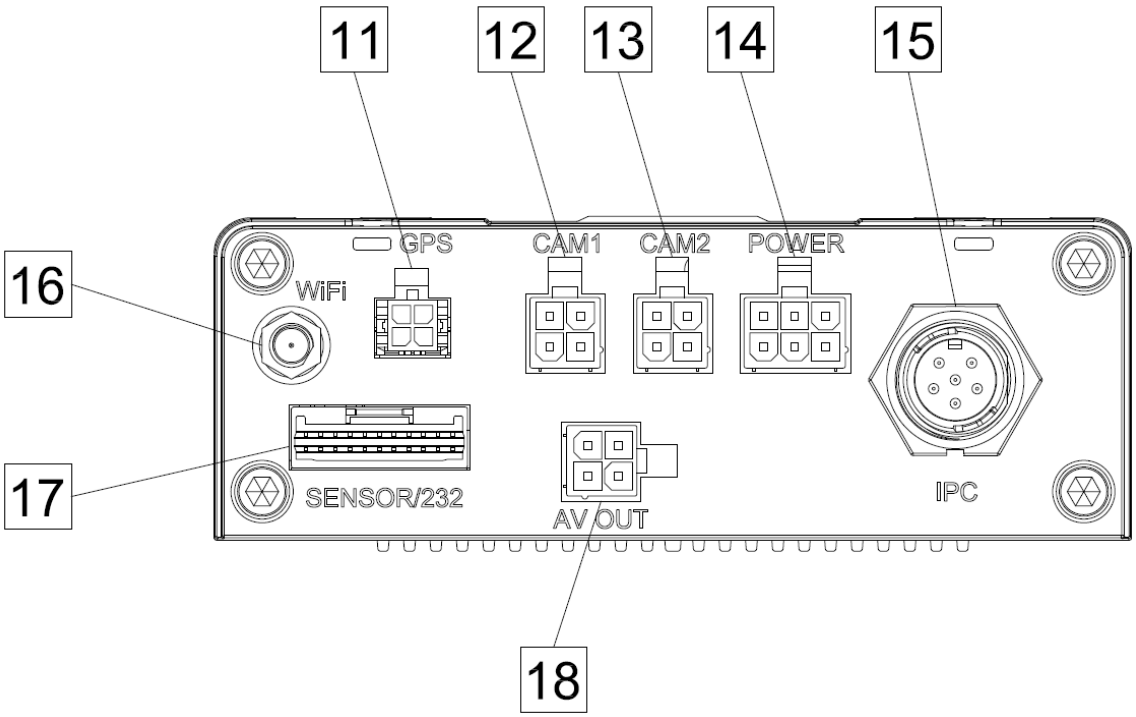
Figure 1: SD-300 Series System Diagram

Front and Back Panels



1	**Power Indicator Light**	**6**	**Recording Indicator Light**
2	**Wireless Access Point Active Light**	**7**	**Fault Light**
3	**Alarm Active Indicator Light**	**8**	**USB 3.0 Port (2.0 capable)**
4	**Image Loss Indicator**	**9**	**Secure Faceplate Lock for SD Cards**
5	**SD Card Slot 1 (512GB max)**	**10**	**SD Card Slot 2 (512GB max)**

Figure 2: Front Panel Layout



11	**GPS Module Serial Port**	**15**	**Network Port – IP Camera or 4G Modem**
12	**AHD Camera Serial Port (Primary)**	**16**	**WiFi Antenna Mini Coax Port**
13	**AHD Camera Serial Port**	**17**	**Event Marker Port – 7 Sensors**
14	**Power Serial Adaptor Port**	**18**	**Video Out for Live View**

Figure 3: Rear Panel Layout

Live View:

The default view in live view mode on the 3-channel recorder is to display all channels in matrix view. Double Left clicking a USB mouse while in matrix view displays the images from that window into full screen. Double Left clicking the mouse returns the display to matrix view.

Initial Set Up

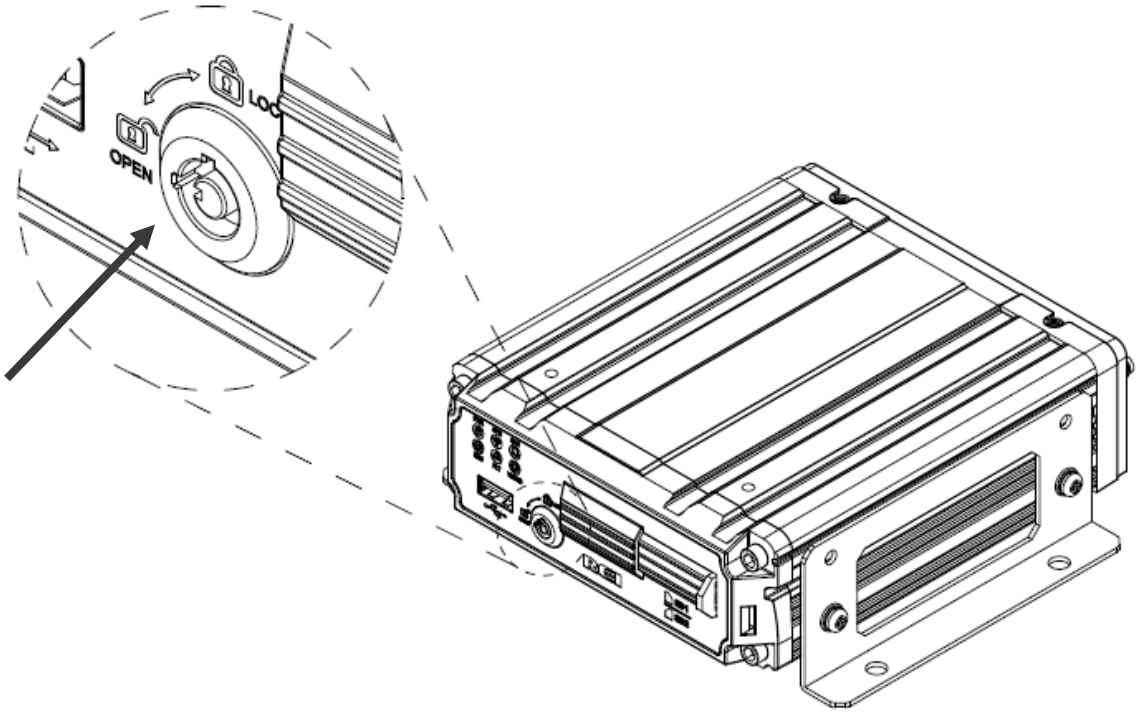
The Digital SD-300 will operate prior to any user setup with the default settings. However, it may not show the correct time and date (factory set to Central Standard Time). To set the correct date and time, and program the system operation to your requirements, please refer to the ***Menu Configuration*** section of this manual.

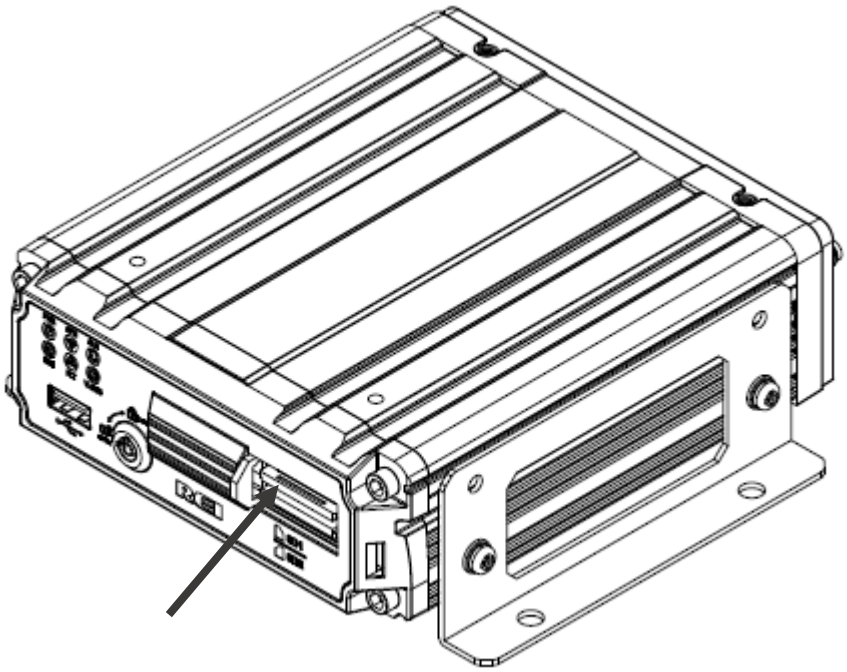
When accessing the menu, it is necessary to connect a windows laptop (with REI VMS loaded on the laptop) to the network port of the unit (utilizing CAT5 cable and adapter cable SD-300 Network Adaptor #512936), or restart the SD-300 and connect wirelessly with a mobile device to the system default access point (remains on for 3 min after reboot), or utilizing the REI wireless dongle with SD reader (710610) and connecting wirelessly.

SD Card

SD Card Loading and Unloading

Accessing SD Cards: To access the SD card slots on the recorder, simply utilize your security key. Insert the key until firmly in place and turn counter clockwise to unlock the SD card slots and slide open the security door.





Loading SD Card: To install your SD cards, the SD cards will only easily insert into the SD Card Slots when faced the right direction. Slide the SD card into the slot until it clicks into place.

Unloading SD Card: To remove SD card Simply press on the card and the card should partially eject from the slot. Once the card is loose in the slot, gently remove the SD card.

Record Time Estimator

To help estimate record times please visit our website http://radioeng.info/rte/

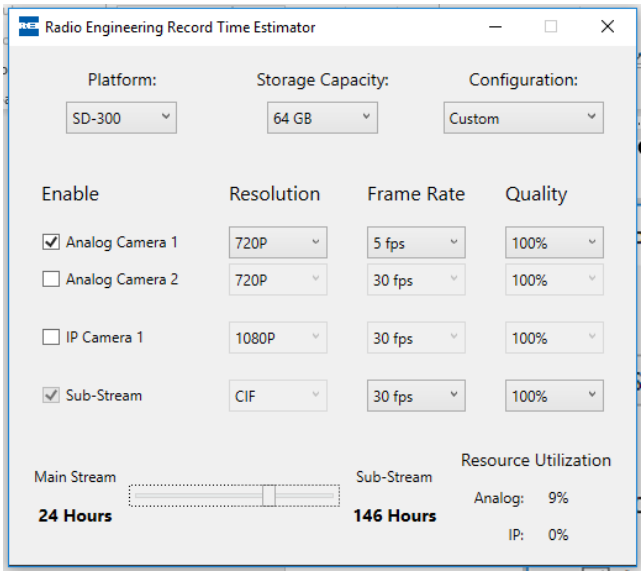


Figure 4: Estimator for Record Times

Long Term Storage

Although the SD-300 Series Mobile Recorder system draws very little current in the stand-by mode, if the systems are installed but not used for an extended period of time (longer than 2 weeks) it is recommended that the power be disconnected from the Mobile Recorder to avoid draining the vehicle battery. The internal clock will hold time and date for up to 10 years sitting on a shelf, and the daylight-saving time functions will kick in upon re-initialization when power is applied.

Installation

WARNING

DISCONNECT VEHICLE BATTERY VOLTAGE BEFORE INSTALLING System WIRING

WARNING

DISCONNECT POWER TO THE DIGITAL SD-300 Series Mobile Recorder BEFORE JUMP STARTING VEHICLE

System Wiring – Power and Camera Cables

Note: *All cables should be hidden from view.*

For the basic system there are five (5) cables, one (1) power cable (P/N 512929) 10 Feet, one (1) camera cable 10 Feet (P/N 512931 or any different length cable),One (1) record indicator / event mark button harness (P/N 530203) for external record indication and alarm/event marking, One (1) GPS harness (P/N 710745) used for satellite location and movement information, and one (1) vehicle sensor options harness (P/N 512934)..

Connect the camera(s) using cable P/N 512931, or equivalent. If multiple types of cameras are installed in a single system, be careful to note which cameras are located where. Use lenses with more magnification (4mm) to bring objects closer. Use lenses with less magnification (2.4mm) for wide angle viewing.

Connect power using cable P/N 512929, or equivalent. The black wire connects to the negative terminal of the battery. The white wire (labeled 12V Battery) connects directly to the positive terminal of the battery. **The white wire should be fused at 10 Amps**.

If the System operates in the Manual Record Mode, connect the red wire (labeled 12V SW), to the switched side of the ignition switch. The red wire should be fused at 1 A. The red wire does not need to be connected if the system is in Timer Record Mode, however, best practices should include this connection in case configuration is changed in the future.

Event Marker Button - Harness Connection

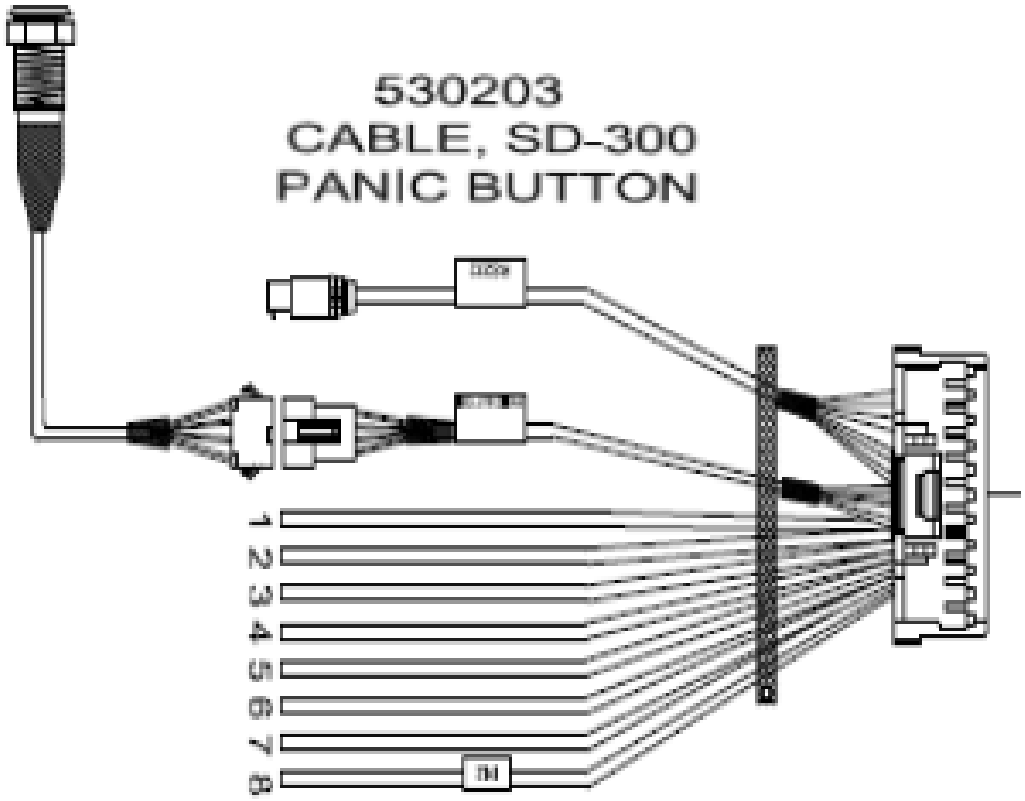


Figure 5: Event Marker Button – Harness Connection

The optional Digital SD-300 Series Event Marker Button (part# 530203) plugs into the connection labeled Event Marker (or Panic Button) on the SD-300 Vehicle Sensor Harness (part# 512934). The Event Marker has a threaded round back and an easy to tighten bolt for secure installation. The back light on the button is also used as a dashboard indicator light providing status of the recording. A solid light indicates the SD-300 is recording, a slow blinking indicates that an event has been triggered, and a fast blinking back light means a system fault has triggered and the SD-300 needs service.

GPS Antenna Module Harness

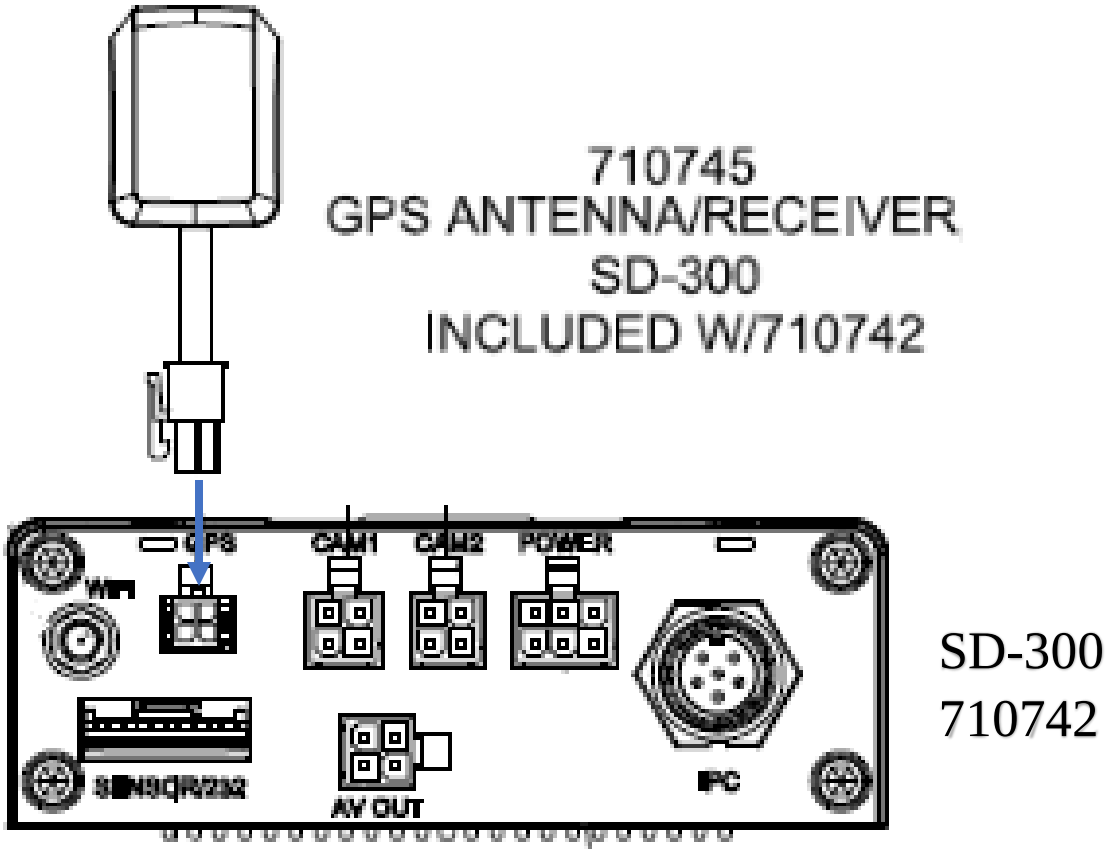
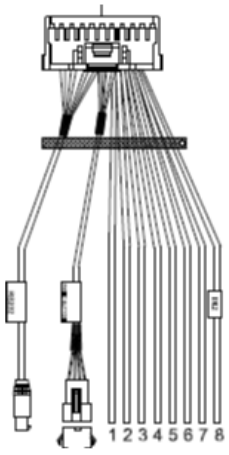


Figure 6: GPS Antenna Module Harness Connection

The GPS antenna module harness (710745) plugs into the back of the SD-300 as shown above. This module will track up to twelve satellites at a time while providing one-second navigation updates at low power consumption. The GPS antenna module is housed in a black, water-resistant case and designed to withstand rugged operating conditions. Information provided to the SD-300 includes longitude, latitude, speed, heading, date, and time. Internal memory backup allows the GPS antenna module to retain critical data such as satellite orbital parameters, last position, date, and time, to reduce valid data acquisition time.

Vehicle Sensor Harness



512934
CABLE,SD300
INPUTS/SERIAL/EVENT
INCLUDED W/710742

		Connection		
	Wire Color	Taxi	Limo	Van
Sensor Input 1	Black	Ignition	Ignition	Ignition
Sensor Input 2	Brown	Right Turn Signal	Right Turn Signal	Right Turn Signal
Sensor Input 3	Red	Left Turn Signal	Left Turn Signal	Left Turn Signal
Sensor Input 4	Orange	Brakes	Brakes	Brakes
Sensor Input 5	Yellow	Taxi Meter	Privacy Shield	Side Door
Sensor Input 6	Green	In Service Lamp	Rear Door	Rear Door
Sensor Input 7	Blue	Door Open	Door Open	Door Open
Sensor Output 8	White			
RS232 (G-force)	Black	Accelerometer	Accelerometer	Accelerometer
Incident Button	Black	Event Button	Event Button	Event Button

Figure 7: Vehicle Sensor Harness Connection

The SD-300 Vehicle Sensor Harness connects to various locations in the vehicle to provide on-screen information regarding vehicle performance. Vehicles have different sets of signals that can be monitored. Three levels of on-screen displays are available to the installer application: Taxi, Limousine, and Fleet.

The Fleet vehicle sensor option allows for most other situations. The letters that appear on the screen are settable through the menu system. The default settings are blank.

When using these options, the DEFAULT condition is that the Digital SD-300 considers a low voltage (or ground) in the OFF state. A high voltage (5-15 VDC) is interpreted as the ON state. To switch the polarity of these signals, reference the Vehicle Sensor Levels Options menu.

On-Screen Information with SD-300 Sensor Harness

The Digital SD-300 Series Mobile Recorder, when equipped with the SD-300 Series Mobile Recorder Sensor Harness, will display information on-screen in the Installers Mode when the vehicle's monitored switches are activated and signals are applied to the monitored sensors.

ACTIVE SWITCH OR SIGNAL	ON-SCREEN DISPLAY
Door Open	DO
Right Turn Signal	RT
Left Turn Signal	LT
Brakes	BK
In Service Lamp	IS

Taxi Meter	TM
FRONT DOOR OPEN	**FD**
REAR DOOR OPEN	**RD**
SPEEDOMETER (SEE NOTE 1)	**XX MPH**

NOTE:

1. The XXs represent the vehicle speed (i.e. 35).

Accelerometer Module Harness

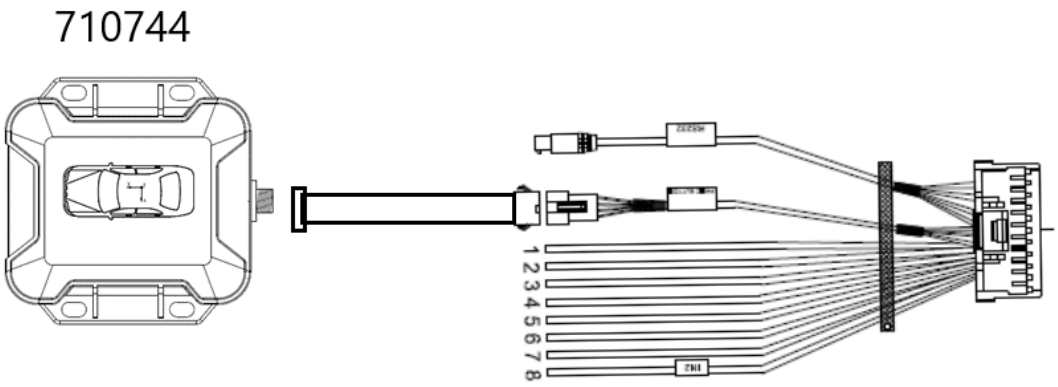


Figure 8: Accelerometer Module Harness Connection

The optional external Accelerometer, or Inertia Sensor, must be hard mounted to the vehicle floor, frame, or some other non-dampened part of the vehicle (non-vibrating flat surface). The reason for this is so that if external dampening is used for SD-300, it will not throw off the Accelerometer readings.

To properly install the Accelerometer Module, the user must align the device with the picture on top of the module as shown in Figure 9 below. The X axis is drawn from the back to the front of the vehicle, the Y axis is drawn from the side of the vehicle to the other side of the vehicle, and the Z axis is drawn from the bottom to the top of the vehicle. The Accelerometer Module then needs to be calibrated.

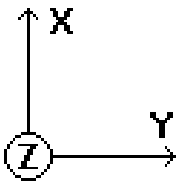


Figure 9: 3 Axis Inertia Sensor Directions

Physical Mounting Requirements

L Bracket Mounting

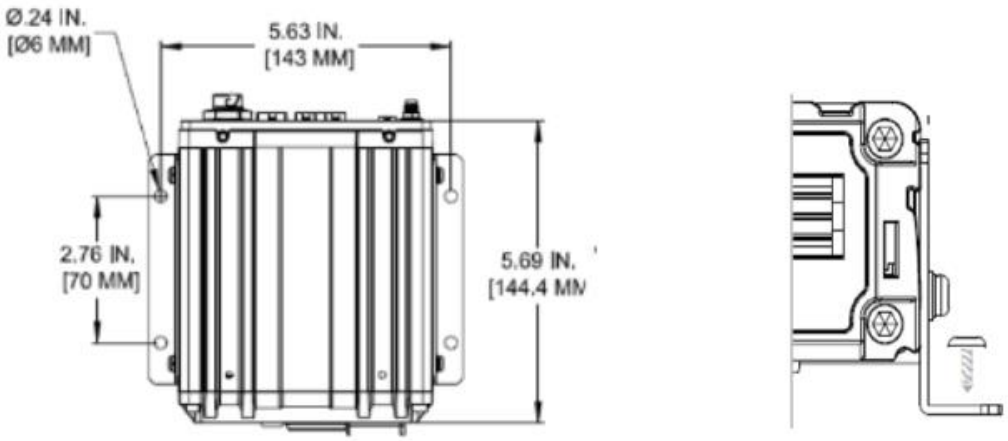


Figure 10: L Bracket Mounting

The SD-300 has two mounting brackets on the sides for easy mounting, as shown above. This type of installation is recommended for mounting behind the dash, in the trunk, or in a secure location in the vehicle.

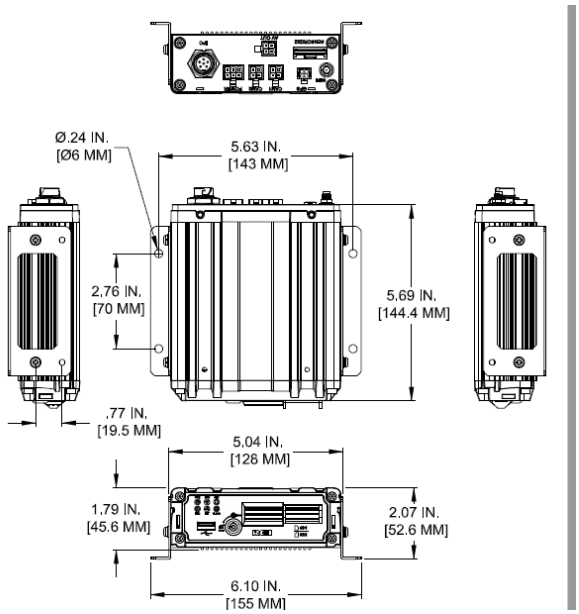


Figure 11: SD 300 Dimensions

Security Cover Mounting

There may be installations that require the back of the SD-300 get enclosed in its own protective enclosure. Security covers can be installed to protect the back connections on the SD-300.

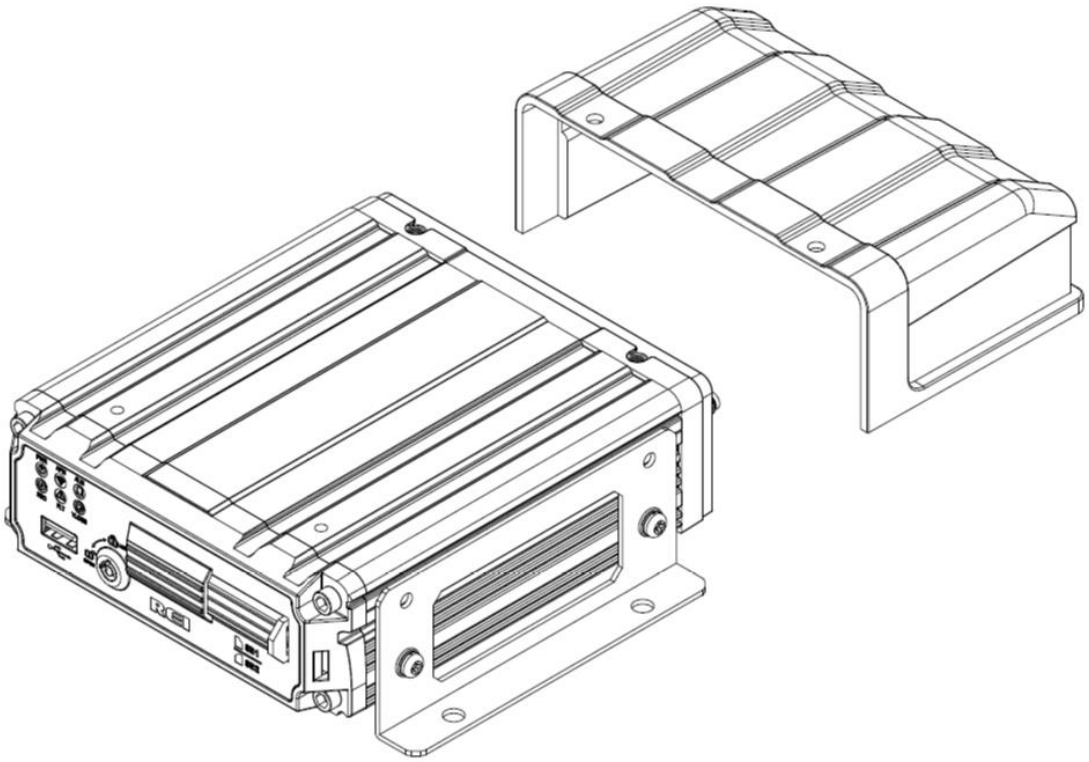


Figure 12: Security Cover Mounting

IMPORTANT:

Check local, state, and federal guidelines as to modification of the existing structures within the vehicle.

Camera Placement

The SD-300 cameras can be mounted anywhere in the vehicle, as long as you have a stable mount that won't vibrate excessively. The suggested mounting locations are to the right or just below of the rear-view mirror for the inward facing camera (710748 or 710751). The forward-facing camera (710749 and 710752) could be mounted behind the rear-view mirror when not causing any functionality issues with the mirror, otherwise it can be mounted just below the mirror. The rear facing camera or lift camera (710753) can be mounted in the lower center of the rear window or just above the window/door of a van or bus.

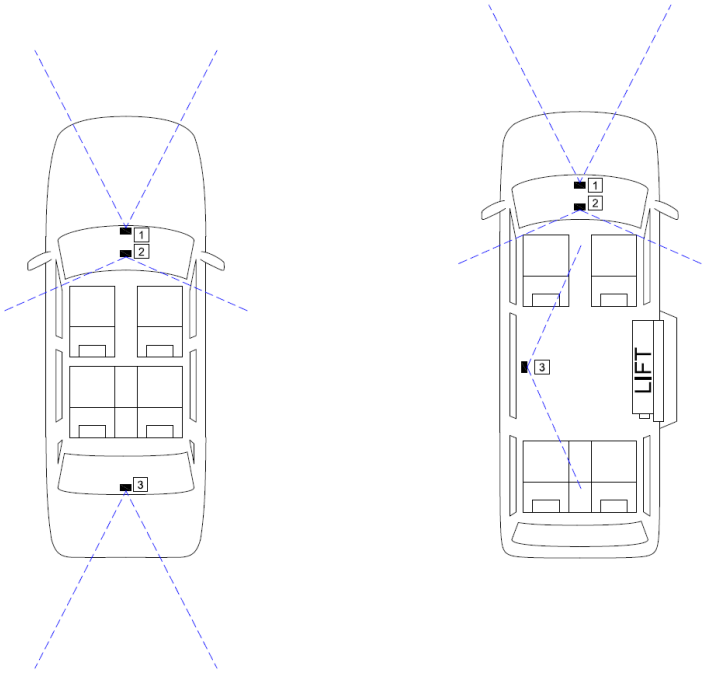


Figure 13: Potential Camera Placement Options

Recording & Playback

System Start-Up

To start the recording process, place the *system switch* in the ON position (this will be done automatically if the *system switch* is connected to the ignition switch and the ignition switch is in the ON position). Upon turning the system switch ON, the Digital SD-300 will commence recording.

System Shut-Down

To stop the recording process, turn the ignition in the OFF position. If the OFF DELAY option is enabled in the Setup menu, the Digital SD-300 Series Mobile Recorder will continue to record for the prescribed number of minutes. When the off-delay expires, the camera and Digital SD-300 Series shut off.

Playback Options

There are many ways to view the recorded images: through the TV Video Outputs, through the SD card, through the PC USB Port, and with a mobile device such as a cell phone or a tablet.

TV Video Outputs

Using a TV Monitor and a USB mouse, the user can access recorded files by Date and Time or by Event. After selecting the appropriate file, the user can review the images using Play, Stop, Pause, Fast Forward, Fast Rewind, Slow Forward, Slow Rewind, Frame Forward, and Frame Reverse.

SD Card

Using the REI VMS PC Software, the user can access the files by connecting SD card to the computer directly

PC Network Connection

Using the REI VMS PC Software, the user can access the files by connecting the computer to the SD-300 through the network port and SD-300 Ethernet Adapter (512936).

Figure 14: Connecting to the SD-300 with a Computer through the Network Port

SD-300 Default Settings:

IP Address: 192.168.0.200

Net Mask: 255.255.255.0

Gateway: 192.168.0.254

Username: admin

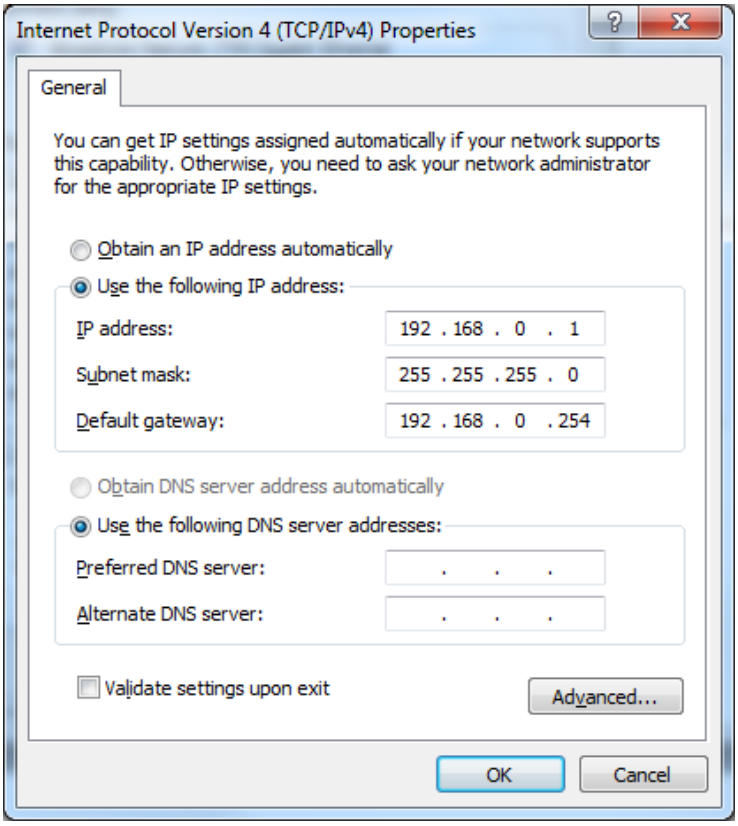
Password: 11111111

In order to access the SD-300 from a computer, the TCP/IP network settings on the computer need to be set up accordingly to match the settings in the SD-300 to insure both devices are in the same network.

IP Address: 192.168.0.x (x being any number but different from SD-300 IP address)

Net Mask: 255.255.255.0 (Net Mask)

Gateway: 192.168.0.254 (Gateway) - optional



Once the computer is set up, open a web browser and type in the IP address of the SD-300 in the web address bar. In some cases, the web browser may ask to install add-on software in order to access the SD-300 Web UI. Before displaying the Web UI, the web browser will prompt for username and password for the SD-300. After entering username and password, the web browser will open up the Web UI. Refer to Web UI section for more information.

Menu Configuration

Main Menu Page

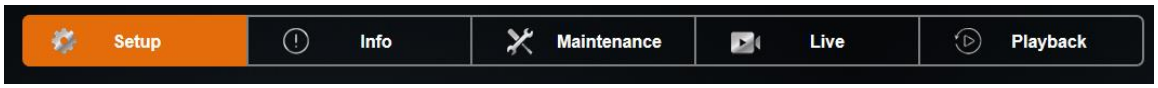


Figure 15: Main Menu

SD-300 Main Menu can be accessed by using any standard USB mouse or REI offers a Handheld USB Trackball Mouse; part number 690896. Then the user can access recorded images and customize the settings on the SD-300.

Setup allows the user to customize the SD-300.

System you can give the vehicle a name, set the time and date, set when the SD-300 starts recording, set fault indicators, fault beepers, external record indicator, standby mode display and set a password for the SD-300.

Video here you can enable or disable the channels you want and set up the camera configuration. Setup amount of time you want to record before and after alarms. Configure the system to record to SD card for alarms. Configure your sub-stream settings. Change the settings for your image. Setup motion detect and motion alarms and configure the OSD.

Input Setup is where you change the settings for speed, inputs, Accel alarms and GPS port.

Network here you can configure the SD-300 to connect to your network. It has inputs for WAN/LAN settings, server, WIFI, Cellular connections and Routes.

Info is where the user can setup active channels, change what inputs the user would like, view active alarms, view system information, check WAN/Cell and WIFI connections, view what version you have and look at the logs.

Maintenance allows you to upgrade your firmware, import or export your configuration or reset it to the defaults. Under storage you can format the SD card or the USB.

Live allows the user to view any camera or all cameras live.

Playback is where the recorded images can be accessed. It allows users to search by Time/Date and Alarm. Playback also allows users to backup images using the USB port onto external storage.

Advanced Setup Menu

This section describes where all of the various record configuration settings can be viewed or set using a video monitor and a USB mouse.

Figure 16: Advanced Setup Menu

The Setup section of the Menu is subdivided into four main categories: System Setup, Video Setup, Input Setup, Network.

System Setup Menu

Figure 17: System Setup

The System section of the System Setup Sub-Menu is subdivided into five subcategories: Vehicle I.D., Time & Date, Start Up, Faults and Password.

Vehicle I.D. Menu

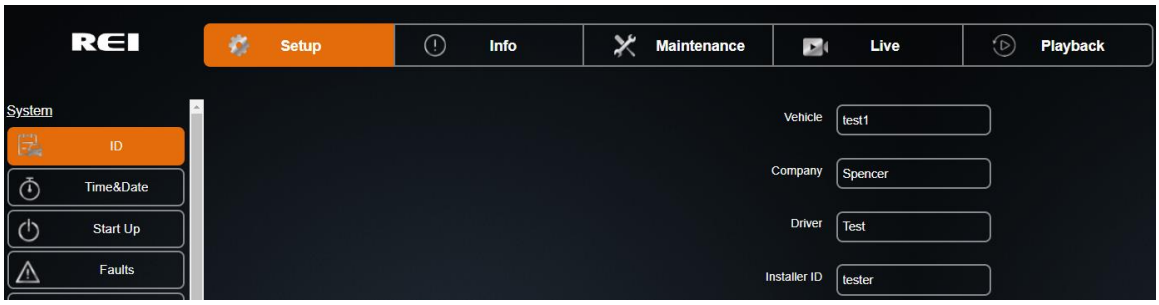


Figure 18: Vehicle I.D.

Vehicle I.D Menu allows the user to enter Vehicle I.D., Company name, Driver information, and an Installer ID.

Vehicle I.D.: allows custom information to identify the SD-300s, such as medallion number.

Company Name: allows the user to enter company name utilizing the SD-300

Driver: allows user to enter a driver's name. If there is a requirement for technician/installer information to be displayed or tracked this would be a good place to enter that information as well

Installer ID: allows for the admin to add an Installer ID to the SD-300. This can not be changed by the installer if they are using an installer password. This is normally used in situations where an installer needs to be tracked or known by city officials such as by inspectors or transit authorities.

Time & Date Menu

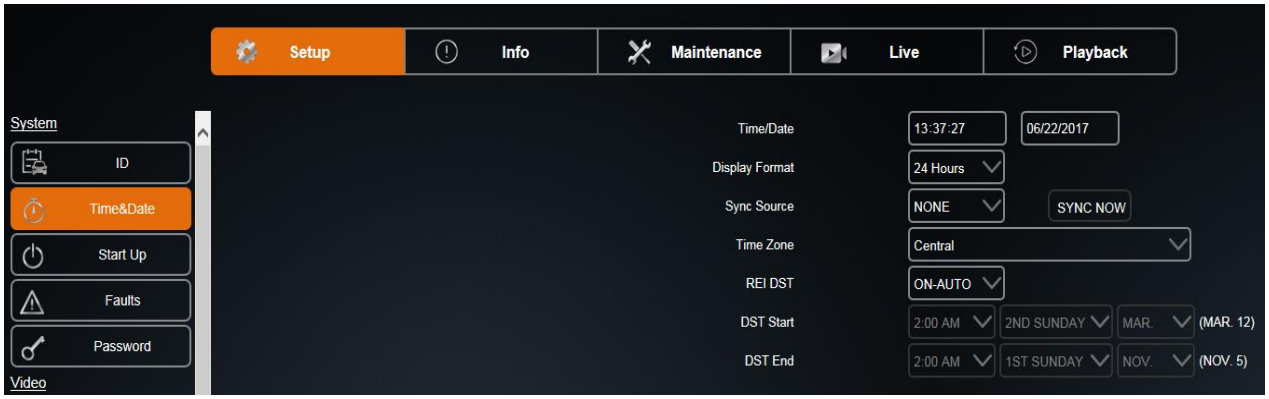


Figure 19: Time & Date

Time & Date menu allows the user to configure options for setting the Date and the Time. The SD-300 uses high accuracy, extended temperature range Real Time Clocks with

10-year internal battery backup for consistent and reliable time keeping over the life of the SD-300 system.

Time/Date shows the current date and time, allowing the user to change the date and time.

Display Format allows user to select between 12-hour or 24-hour display format.

Sync Source allows the SD-300 to synchronize to a time synchronization service, either GPS (Global Positioning System), or NTP (Network Time Server), or None. When Time Sync Source is selected except None, press Sync Now button to synchronize the time immediately, or the SD-300 will synchronize time automatically at mid night.

Time Zone is for use with the GPS and Sync Time, as GPS satellite time comes in as GMT and needs to be offset for your time zone for proper automatic time synchronization.

Day Light Savings Time, when set to On-Auto, will make the system clock change automatically with Daylight Saving Time. If your region does not use Daylight Saving Time, setting this item to OFF disables the Daylight-Saving Time function.

Day Light Savings Time can be changed from Auto to Custom. The Energy Policy Act of 2005 changed the time change dates for Daylight Saving Time in the U.S. DST begins on the second Sunday of March and ends the first Sunday of November. Because Congress retains the right to revert Daylight Saving Time back to the 1986 time schedule, certain real-time clock embedded systems need to have the ability to be changed. The DST Mode can be set from 'On-Auto' to 'On-Manual'. When the DST Mode is set to 'On-Auto', the Daylight-Saving Time triggers will conform to the EPA of '05 rules. When the DST Mode is set to 'On-Manual', the Daylight-Saving Time triggers can be changed to any of the first, second, third, fourth, or last week of any month, not overlapping, as shown below.

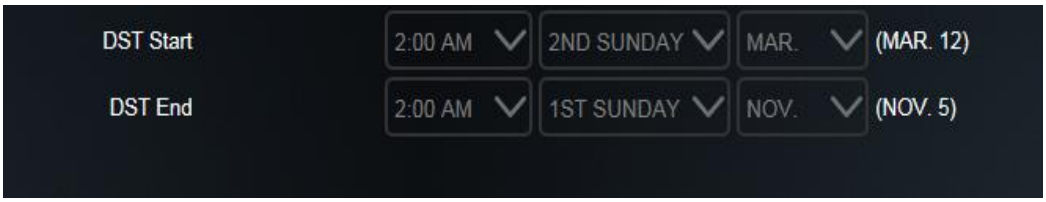


Figure 20: Custom DST Triggers

Operating Mode Menu

The Start Up Menu allows the user to choose when the SD-300 starts/stops recording, how long the SD-300 stays on after shutting off the ignition.

Start Up Mode lets user to choose when the SD-300 starts recording. There are three settings for user to choose: Ignition, Schedule, Either Ignition or Schedule.

Ignition: SD-300 starts recording as long as ignition signal stays on.

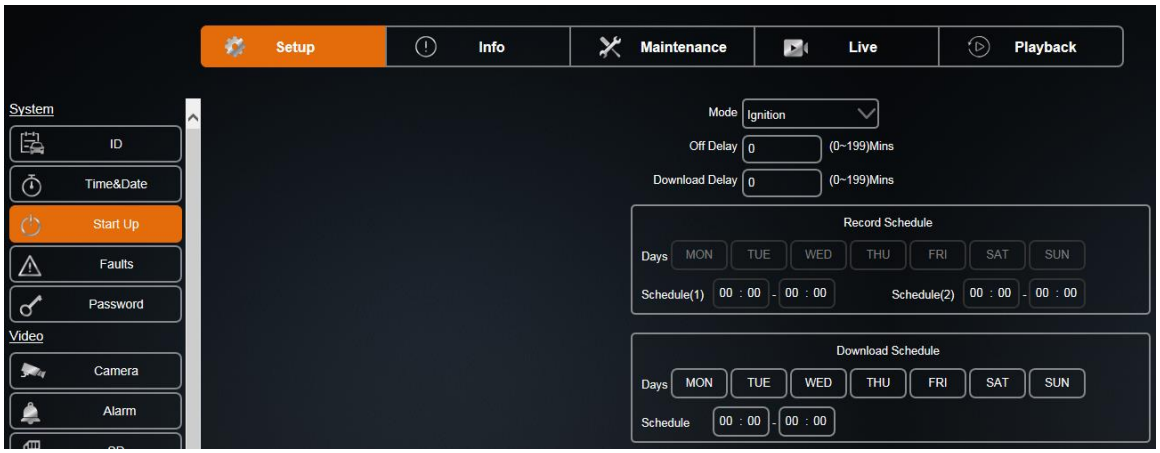


Figure 21: Ignition Start Up Menu

Schedule: SD-300 starts recording only by schedule regardless ignition signal.

Figure 22: Schedule Start Up Menu

Either Ignition or Schedule: SD-300 starts recording by schedule and when ignition is on at the same time.

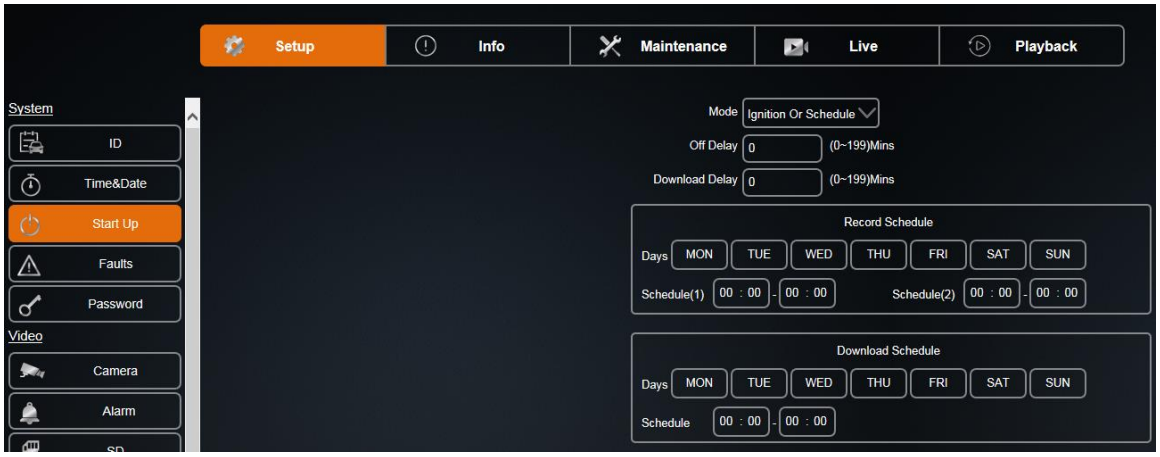


Figure 23: Ignition or Schedule Start Up

Schedule section of the menu is where the user can set the date and times that the SD-300 will automatically turn on and shut off.

Record Schedule: Mon, Tue, Wed, Thu, Fri, Sat, Sun. Options for schedule 1 and schedule 2, both have start and stop times.

Download Schedule: Mon, Tue, Wed, Thu, Fri, Sat, Sun. Allowing to set the start/stop under schedule.

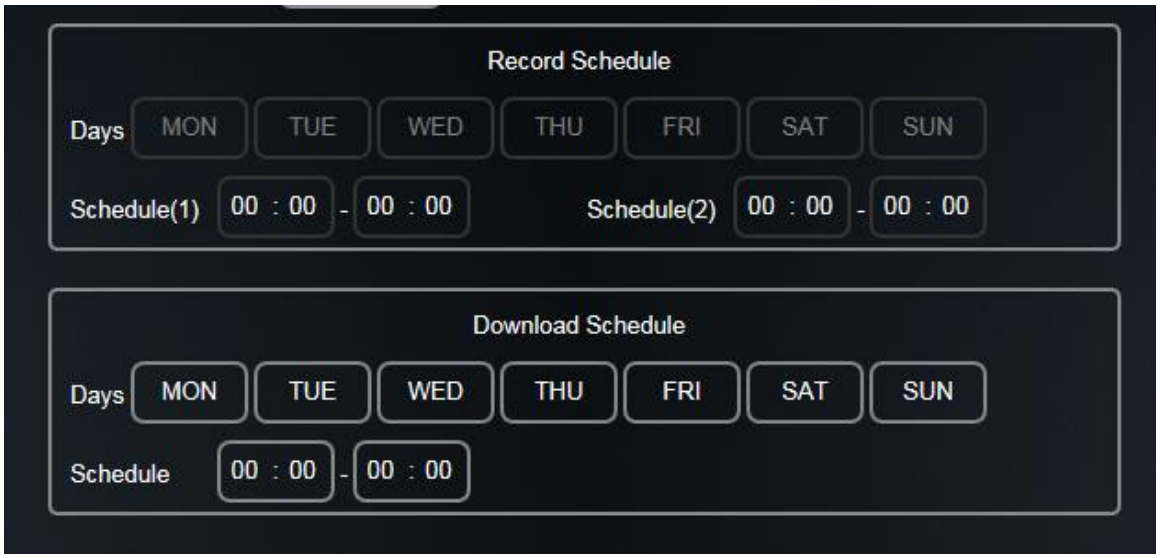


Figure 24: Record Schedule Menu

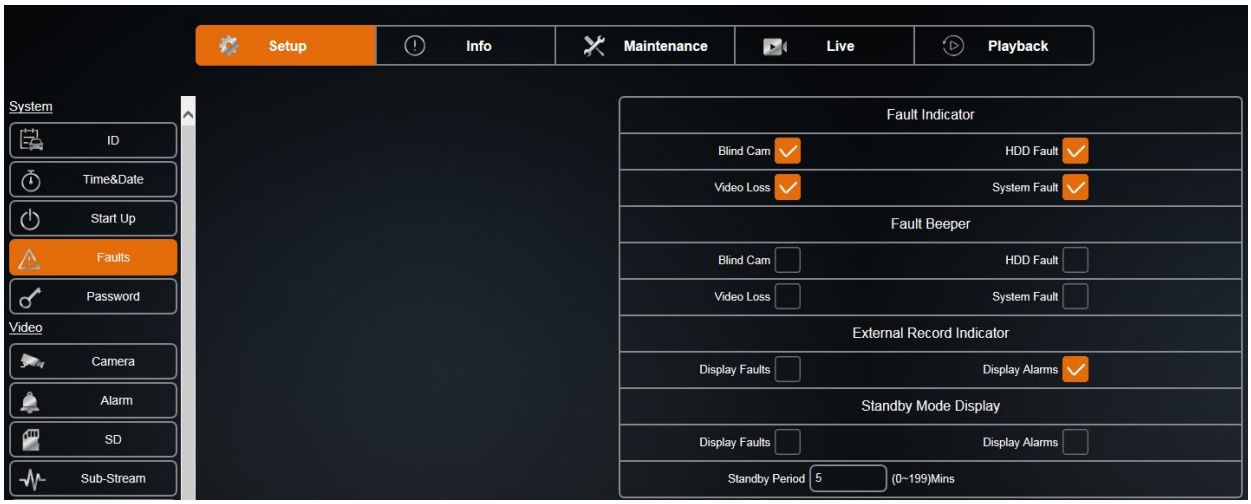


Figure 25: Faults

Audio/Visual Setup menu allows SD-300 to display Audio/Visual alert if the SD-300 is experiencing an alert condition.

Fault Indicator: the types of alerts that the user can select for visual/audio alert.

Blind Camera: Camera blocked by objects.

Image Loss: not receiving camera images.

SD Fault: not able to record onto SD Card.

System Fault: experiencing problems such as voltage too high or too low.

Fault Beeper: the types of alerts that the user can select for visual/audio alert.

Blind Camera: Camera blocked by objects.

Image Loss: not receiving camera feed.

SD Fault: not able to record onto SD Card.

System Fault: SD-300 experiencing problems such as voltage too high or too low.

External Record Indicator: allow SD-300 to display alarm on external record indicator.

Display Faults: allows SD-300 to display faults.

Display Alarms: allows SD-300 to display alarms.

Standby Mode Display: allows SD-300 to display faults and alarms in standby mode.

Display Faults: allows SD-300 to display faults in standby mode.

Display Alarms: allows SD-300 to display alarms in standby mode.

Standby Period: allows user to how many minutes for the standby period.

Password

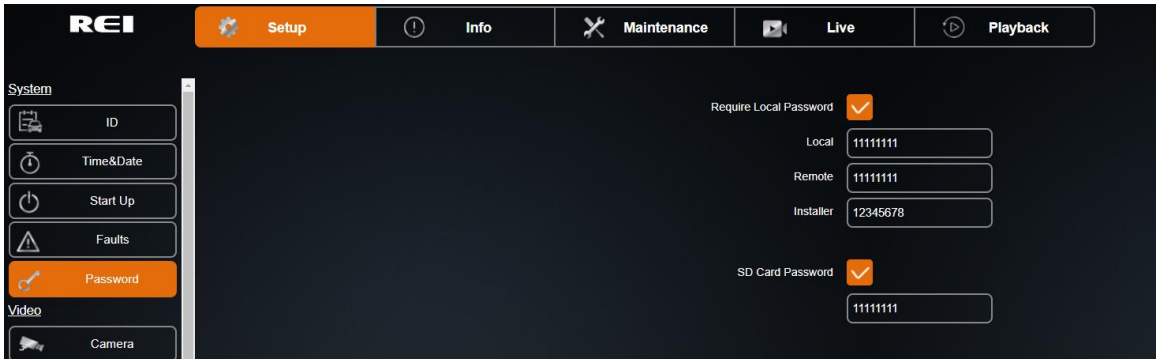


Figure 26: Password

The Password Menu gives user the ability to secure the SD-300 and it's SD memory cards with a password. On the SD-300 there are 4 password options to access the system. A local password for direct connection to the SD-300, a Remote password for connecting through an IP port or through a wireless network, an Installer password that limits the abilities to access settings and secure or confidential information and an SD Card Password that is typically set up by local authorities where cameras are mandated.

Local Password: when set to On, a password is required when entering the setup menu. This is considered your admin password. Whomever has this password can access all settings and data stored on the SD-300.

Remote Password: This password is for anyone who might access the SD-300 through the network IP port or through a wireless connection. Typically, this is set to the same password as Local, but can be different if required.

Installer Password: This password is for someone that might need access during installation to label the ID field on the SD-300 Vehicle title, Company name or Driver fields, but will not allow access to change settings on the SD-300 or review stored footage in the Playback Tab

SD Card Password: password to access images directly from the SD memory card. For example; if the driver of the car was robbed or assaulted the police may want to pull the SD memory card(s) for evidence. Only an authorized agent will be able to access the images and audio on that card. This helps with providing a legal evidence chain and can help prevent any footage tampering.

Video Setup

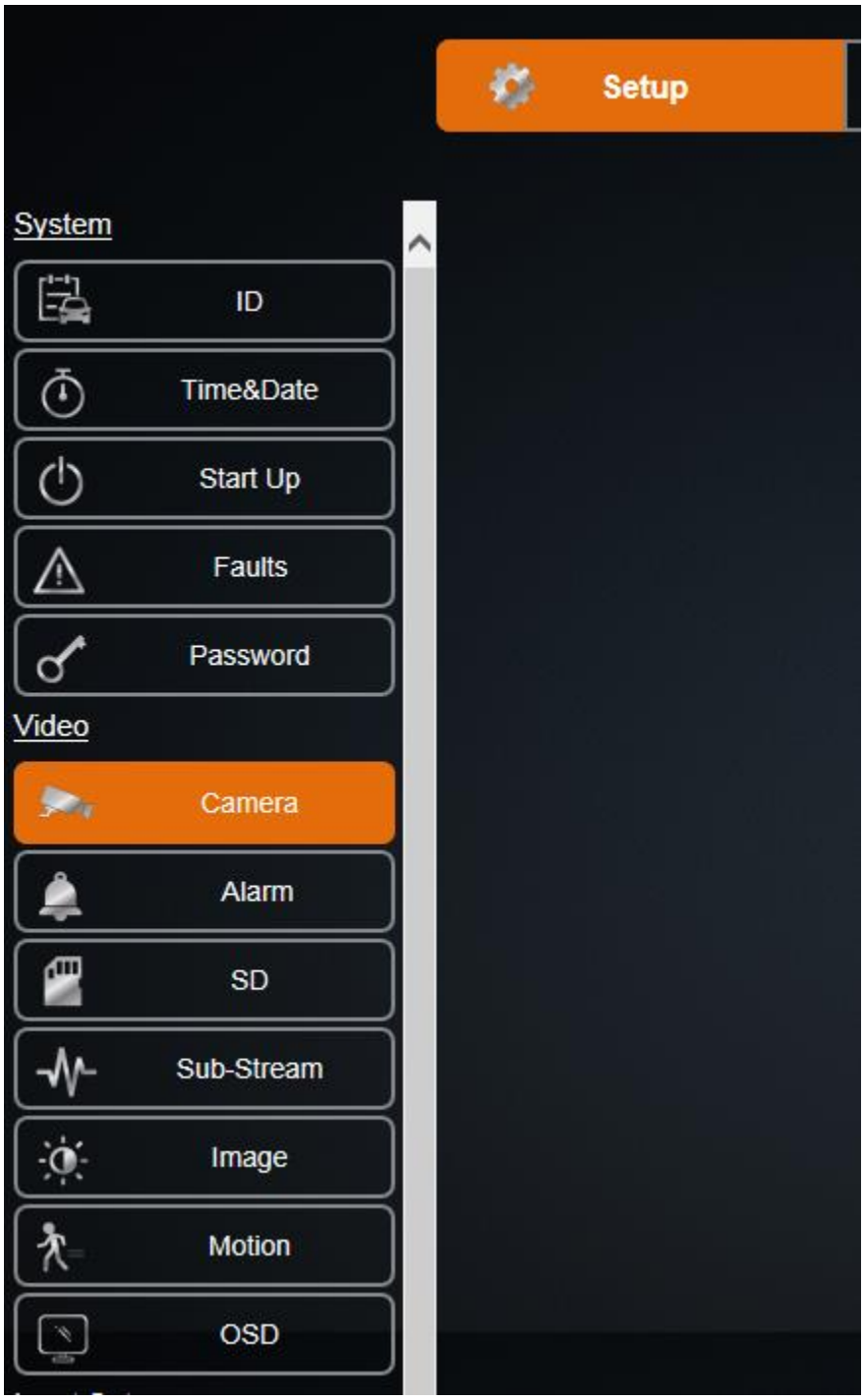


Figure 27: Video Setup

The Video Setup section of the menu is subdivided into seven main categories, Camera Setup, Alarm, SD, Sub-Stream, Image, Motion and OSD.

Camera Setup

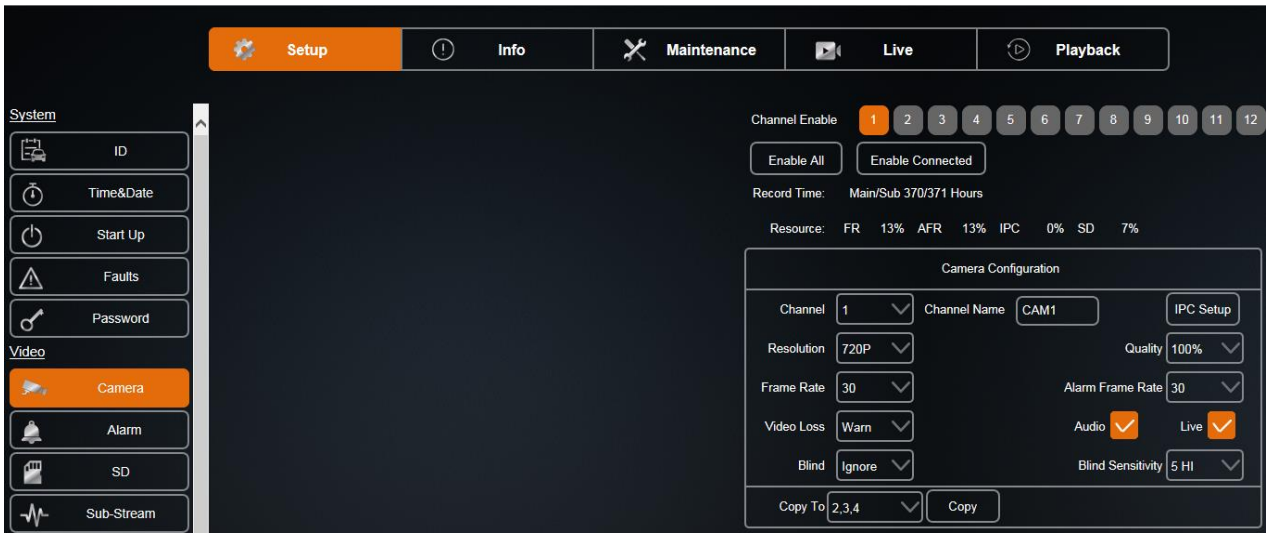


Figure 28: Camera – Camera Setup

The Camera Setup subsection of the Video Setup section allows the user to change all the related camera record settings, such as number of cameras, resolution, frame rate, etc.

Custom Configuration: Custom record setting for each camera.

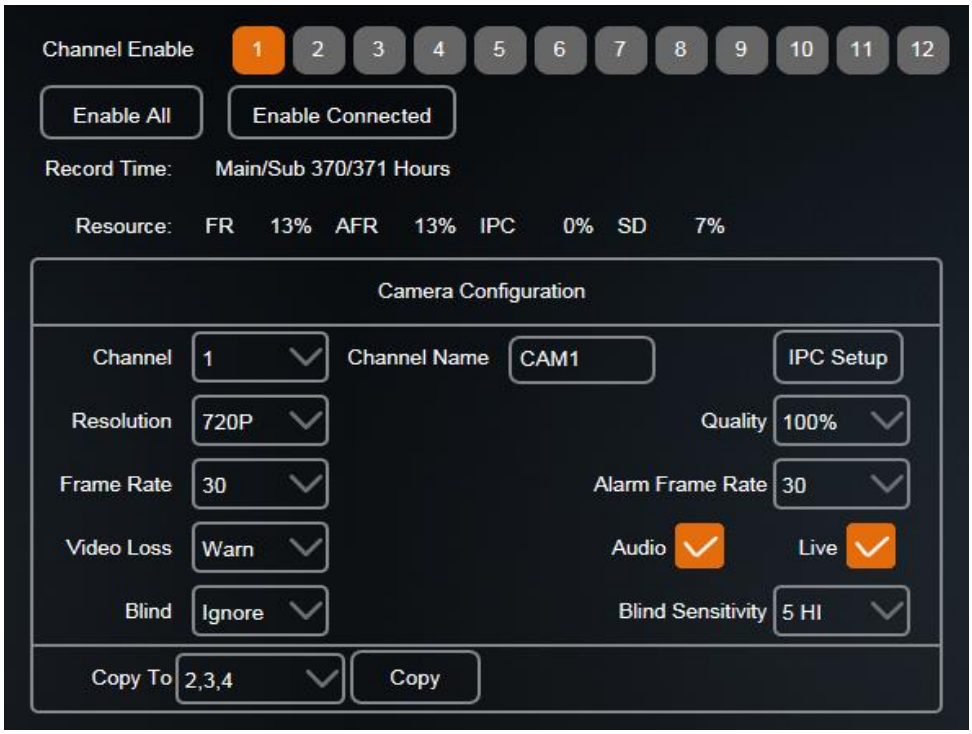


Figure 29: Custom Record Settings

The Custom Record setting allows user to customize record setting to each individual camera.

Channel: Enable channel to display on screen when selected. Note: When Live is selected but Rec is not selected, SD-300 only displays that camera image but does NOT record it.

Res: Record resolution. (Camera dependent, up to 1080p)

Fr: Frame rate during non-alarm recording: can select any number between 1 and 30.

VL: User can select one of three options. Ignore, Warn and alarm.

Blind: User can choose between three options. Ignore, Warn, and alarm.

Quality: Image quality. 100% being highest taking up more SD storage space; 10% being lowest taking up less SD storage space.

Alarm FR: Frame rate during alarm recording: can select any number between 1 and 30.

Audio: Record camera audio if selected.

Live: Displays live view of cameras.

Blind Sensitivity: User can choose between 1 – LO and up to 5 – HI.

Copy to: User can select the cameras they wish to copy the settings to.

Record Capacity: For how long the SD card can record under current camera setup.

FR/AFR: Non-alarm and Alarm Frame rate percentage at current camera setup.

Alarm

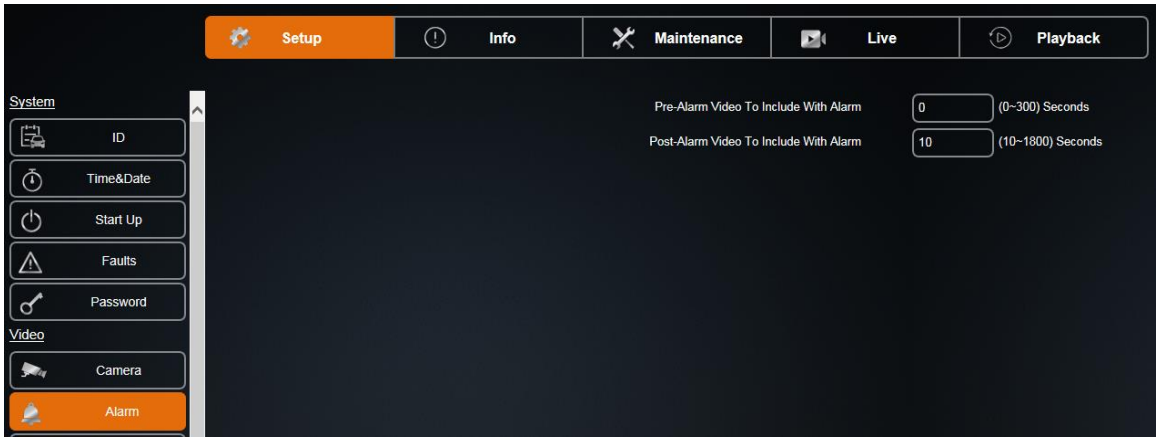


Figure 30: Alarm Set Up

Pre-Alarm images to include with Alarm: user can select between 0-300 seconds of record time.

Post-Alarm images to Include with Alarm: user can select between 10-1800 seconds of record time.

SD Card

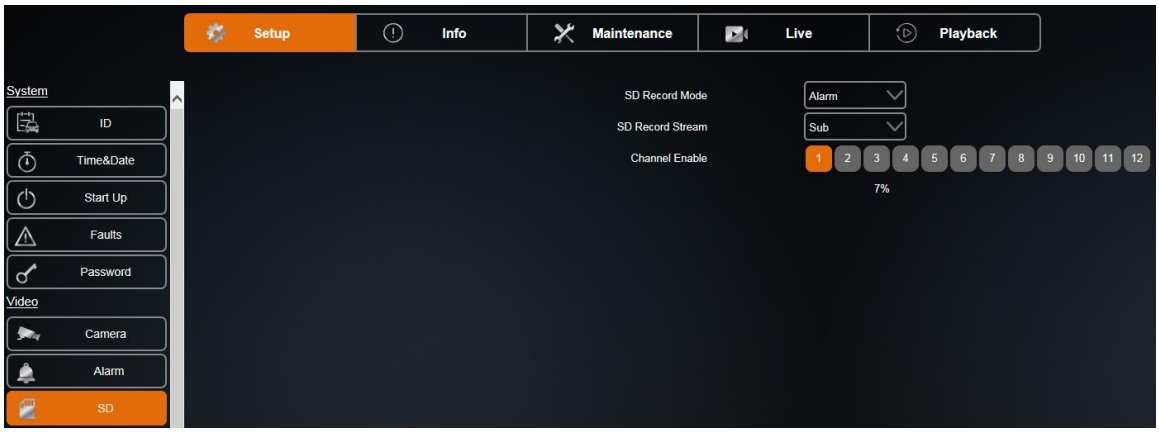


Figure 31: SD Set Up

SD Record Mode: Alarm or Mirror

Alarm SD Record Mode: Records only during alarm to the SD card.

Mirror SD Record Mode: Mirrors the settings for the image recorded to the main hard drive.

SD Record Stream: Main or Sub

Main SD Record Stream: Primary stream that has a direct effect on your record quality. You can make changes to this under Camera section.

Sub SD Record Stream: This allows the user to record in a lower quality and can be changed under the Camera section.

Channel Enable: Here you can select which cameras you want to be affected by the settings you have chosen.

Sub-Stream

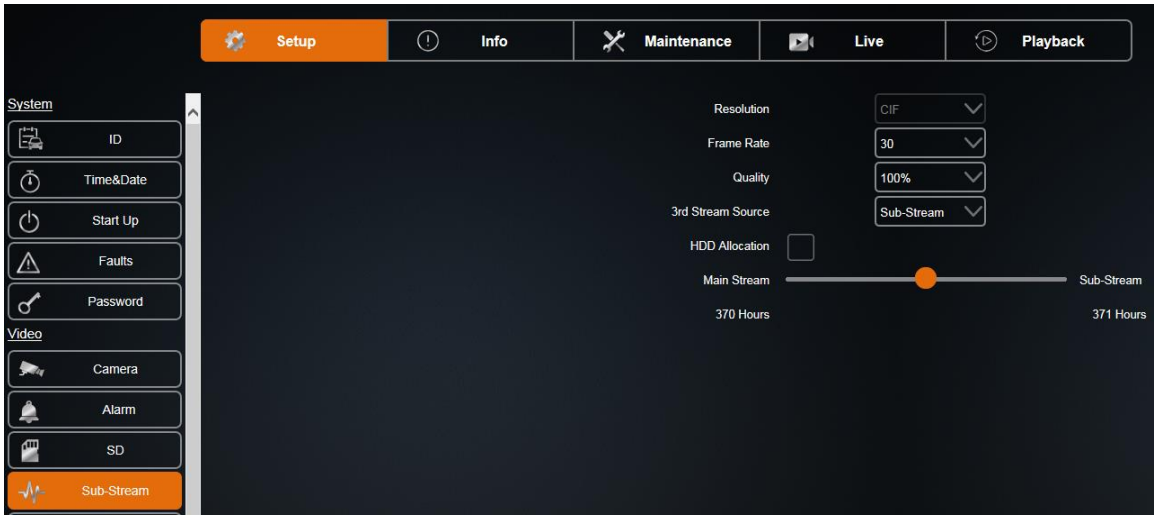


Figure 32: Sub-Stream Set Up

Resolution: User can choose what image quality you would like to record in, such as 720P or CIF.

Frame Rate: Can select between 1 being the lowest and 30 being the highest.

Quality: Can select between 10% being the lowest and 100% being the highest.

Image

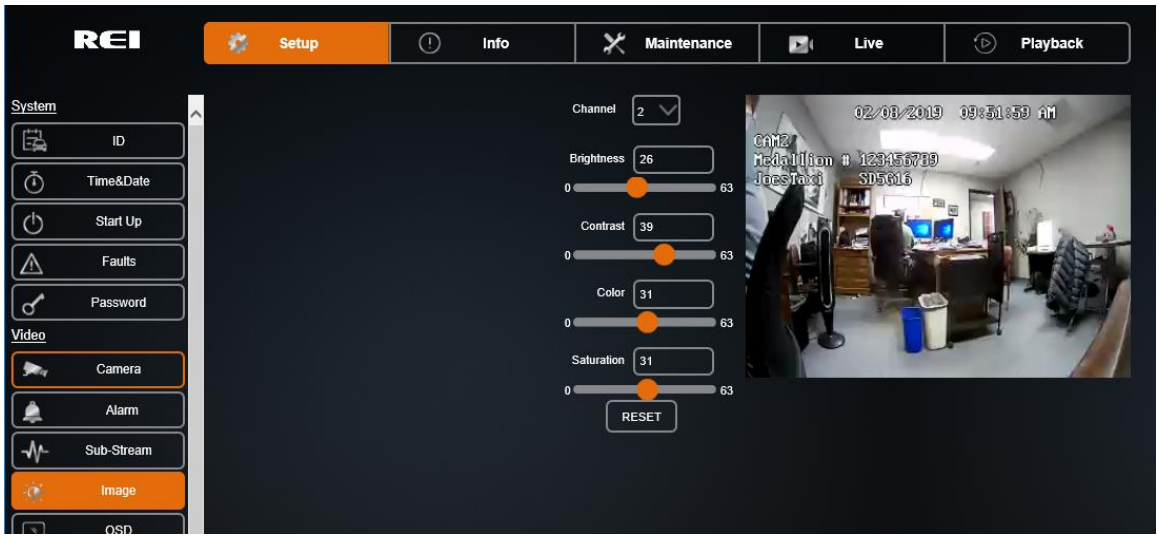


Figure 33: Image Set Up

The user can customize all the settings for each camera individually. You can choose between four options: Brightness, Contrast, Color, and Saturation. Each having a range between 0 to 63.

OSD (On Screen Display)

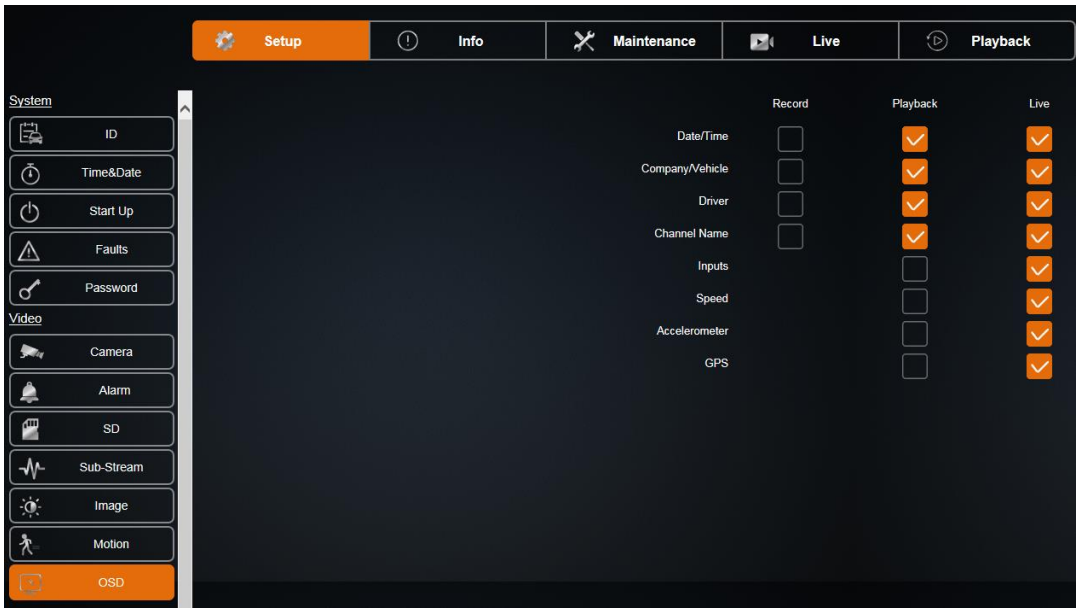


Figure 34: OSD (On Screen Display) Set Up

OSD: On Screen Display – is divided into three subcategories Record, Playback, and Live. Playback and Live have eight options you can turn on and off, and Record has four options you can turn on and off.

Export Configuration Menu

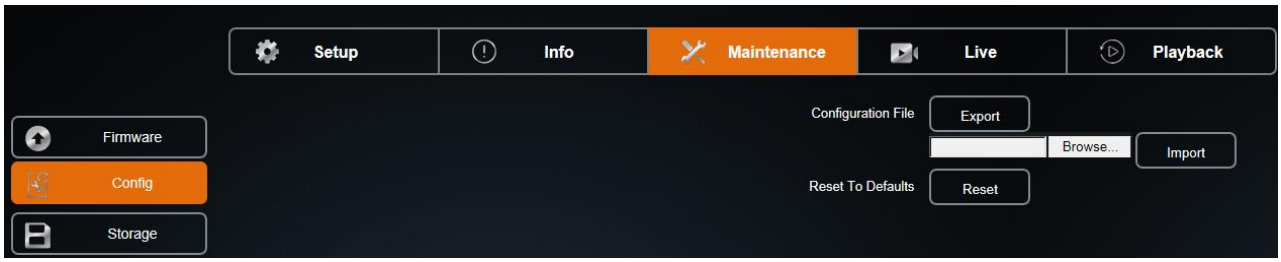


Figure 35: Export Configuration

Export Configuration Menu allows user to export current SD-300 settings onto an external storage for quick multiple SD-300 installation.

Upgrade Firmware

Figure 36: Upgrade Firmware

Upgrade Firmware allows user to upgrade the SD-300's Main and MCU firmware to the latest version. Select Main Firmware to upgrade only the Main firmware. Select MCU Firmware to upgrade only the MCU firmware. Select Both to upgrade both Main and MCU firmware.

Reset to Defaults

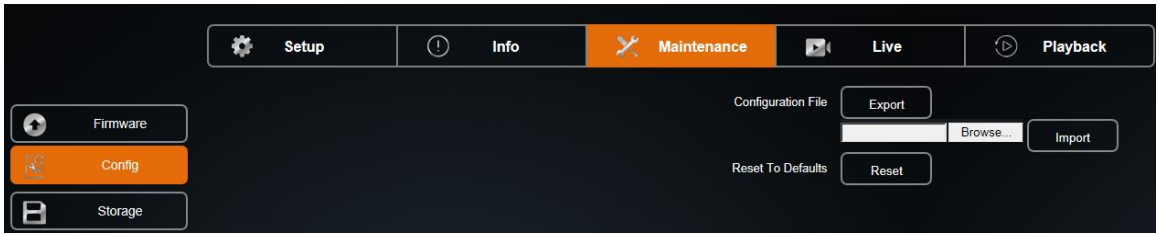


Figure 37: Reset to Defaults

Reset to Default changes all settings to factory configuration in case of user experiencing problems caused by inappropriate settings.

Camera Names

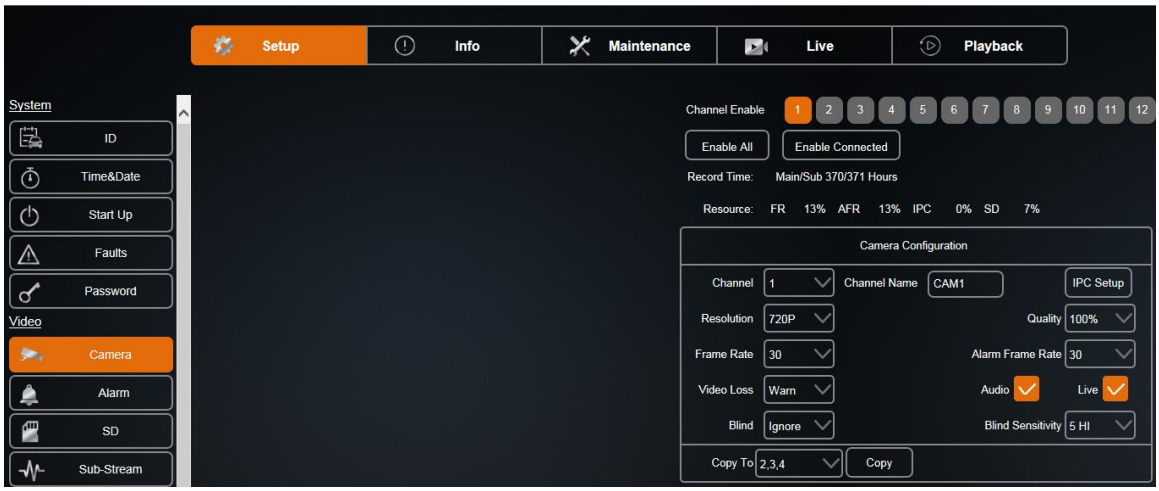


Figure 38: Camera Names

Camera Names Menu allows user to set camera name individually. Each camera name is displayed on the screen inside each window. Use on-screen keyboard to enter names.

USB Config Download Setup

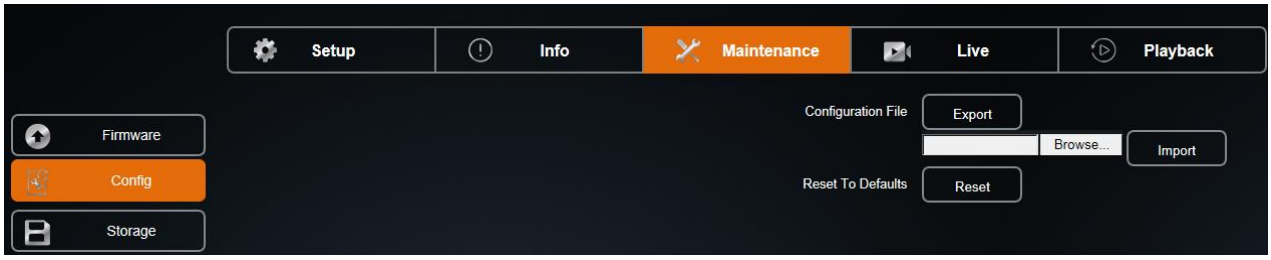


Figure 39: Export and Import Configuration

The Config tab under Maintenance is where you can import a certain configuration for a company or local mandated standard. Your configuration can be saved to a USB storage device by plugging it into the front USB slot on the SD-300 and selecting that storage drive by clicking the Browse button and then hitting the Export button. The same works for importing a configuration to the SD-300. Pick the drive or file location the configuration is saved and then click the Import button.

Input Setup

Figure 40: Input Set Up

The Input Setup Menu contains all the settings to configure SD-300's inputs including: Speed, Input, Accel, and GPS Port Setup.

Speedometer Setup

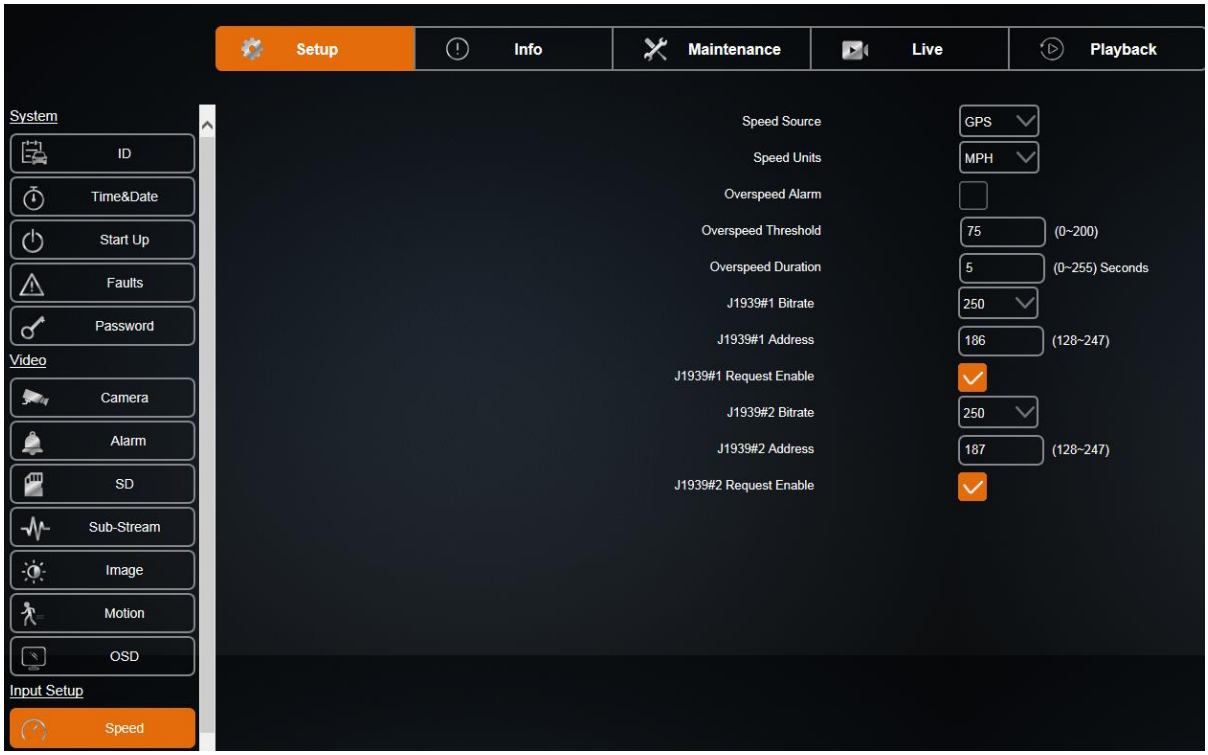


Figure 41: Speedometer Set Up

Speedometer Setup Menu contains settings to change speedometer source, speed unit, speedometer calibration, and high-speed alarm.

Speed Source: the source that the SD-300 is reading speed from GPS.

Speed Unit: SD-300 supports MPH and KMH speed units.

Overspeed Alarm: when select On, if speedometer reading is higher than threshold value, SD-300 records images as high-speed alarm for the duration that you set.

Input Setup

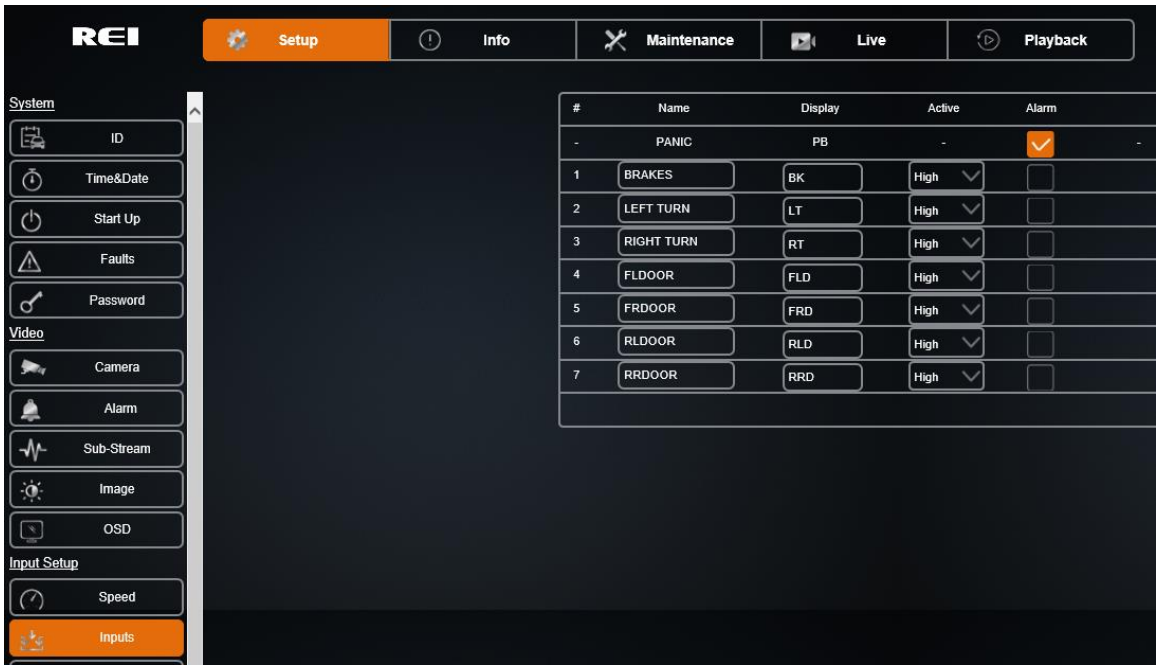


Figure 42: Input Set Up

The Input Setup shows all the available inputs on the SD-300. Each signal can be renamed, adjusted to active high/low, and set to trigger alarms when activated. Each field is editable and can be labeled to a customer's preference.

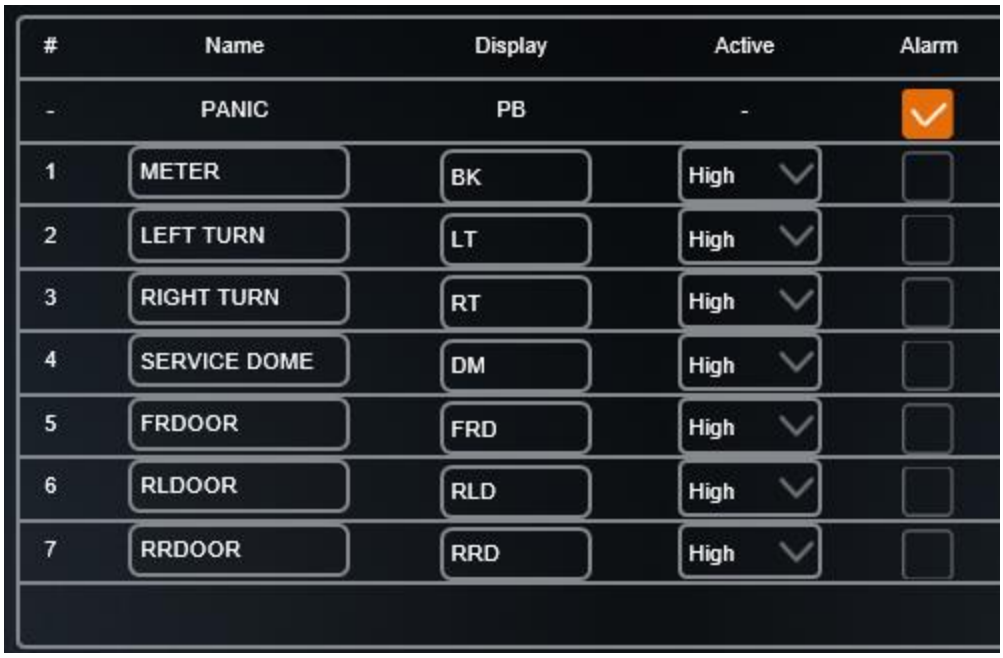


Figure 43: Input Set Up - Custom

Input #: the input numbers correspond to pin number of the SD-300 input.

Panic: name of the signal.

PB: OSD abbreviation.

Input When Activate: set to High if signal is high (positive) when activated; set to Low if signal is low (ground or negative) when activated.

Alarm When Activate: when set to On, SD-300 triggers an alarm when the particular input is activated.

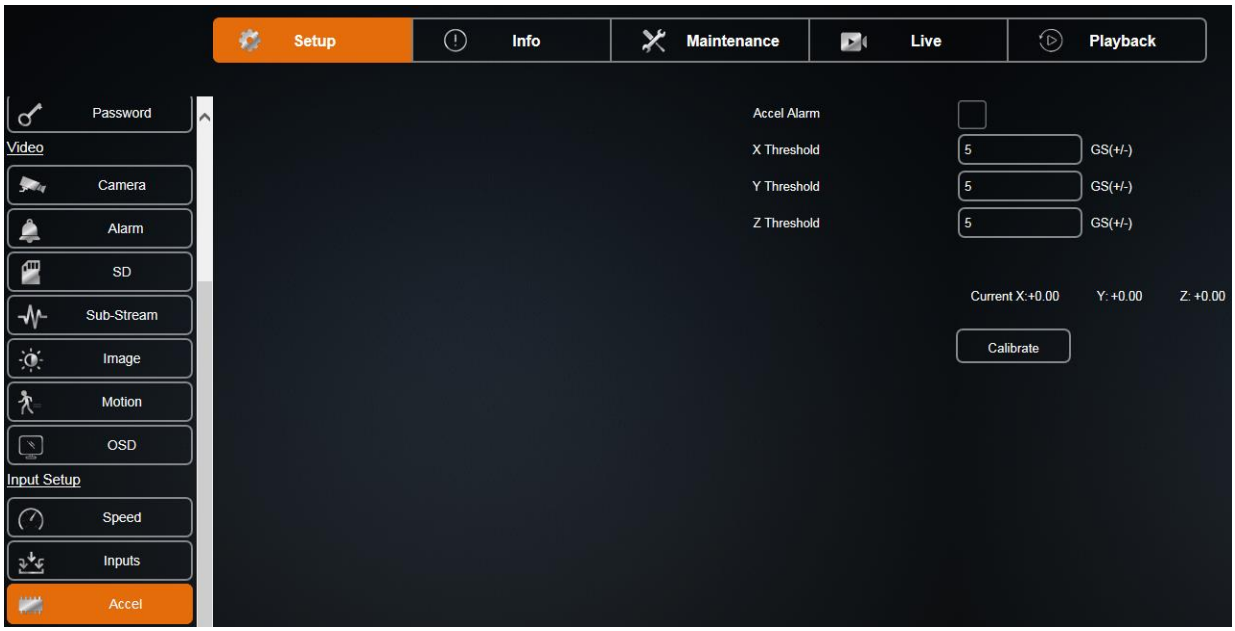


Figure 44: Accelerometer Set Up

The Accelerometer Setup Menu gives user options to configure accelerometer.

Calibrate Accelerometer: accelerometer must be calibrated after installation. Select Calibrate to calibrate accelerometer.

Current Values: current acceleration readings from the accelerometer.

Accel Alarm Sensitivity: SD-300 gives three options to configure how the accelerometer triggers alarm.

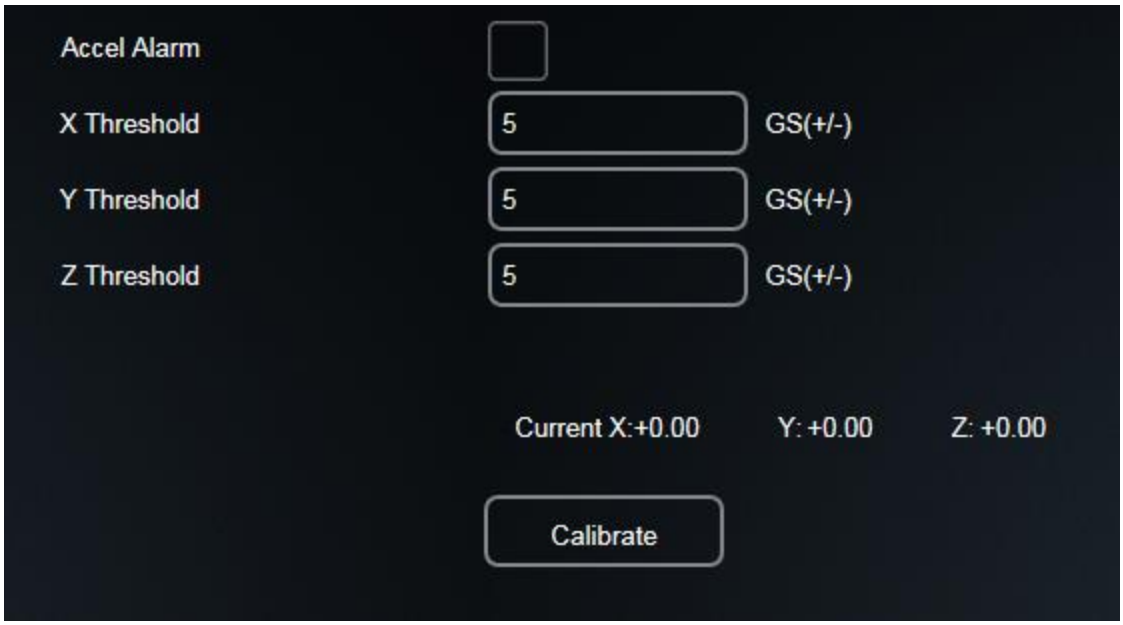


Figure 45: Accelerometer Sensitivity

When set to Manual, SD-300 allows user to enter threshold values on each axis.

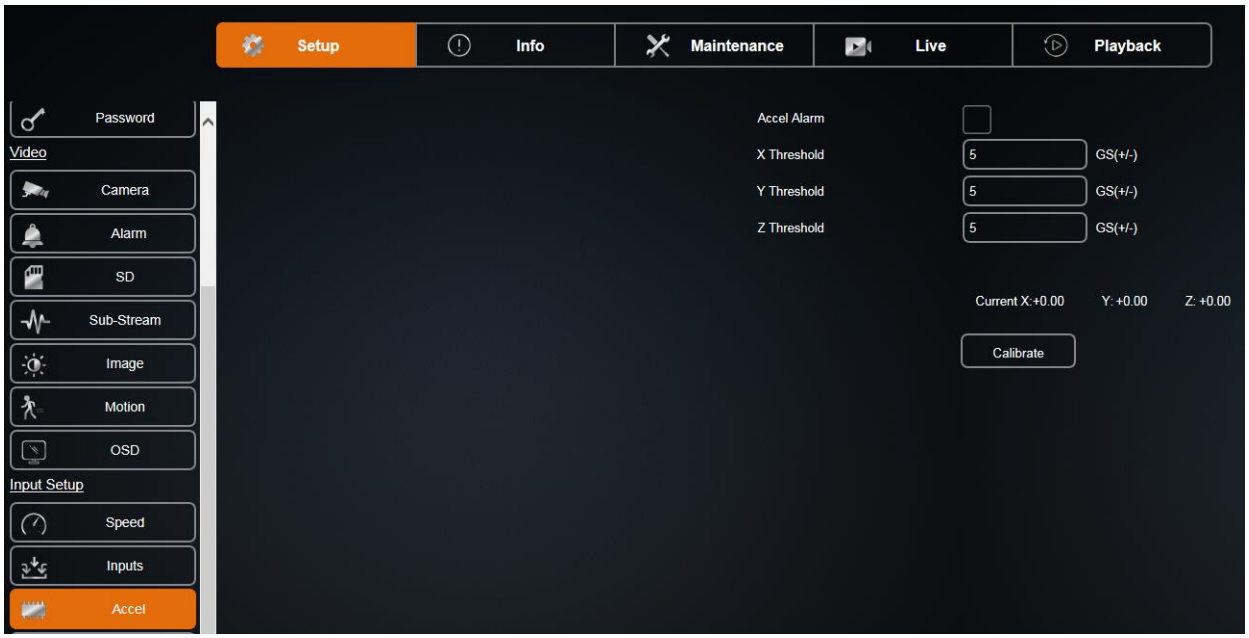


Figure 46: Accelerometer Threshold

Network Setup

Figure 47: Network Set Up

The Network Setup Menu contains three subsections: LAN, Server and WIFI

General Network Setup

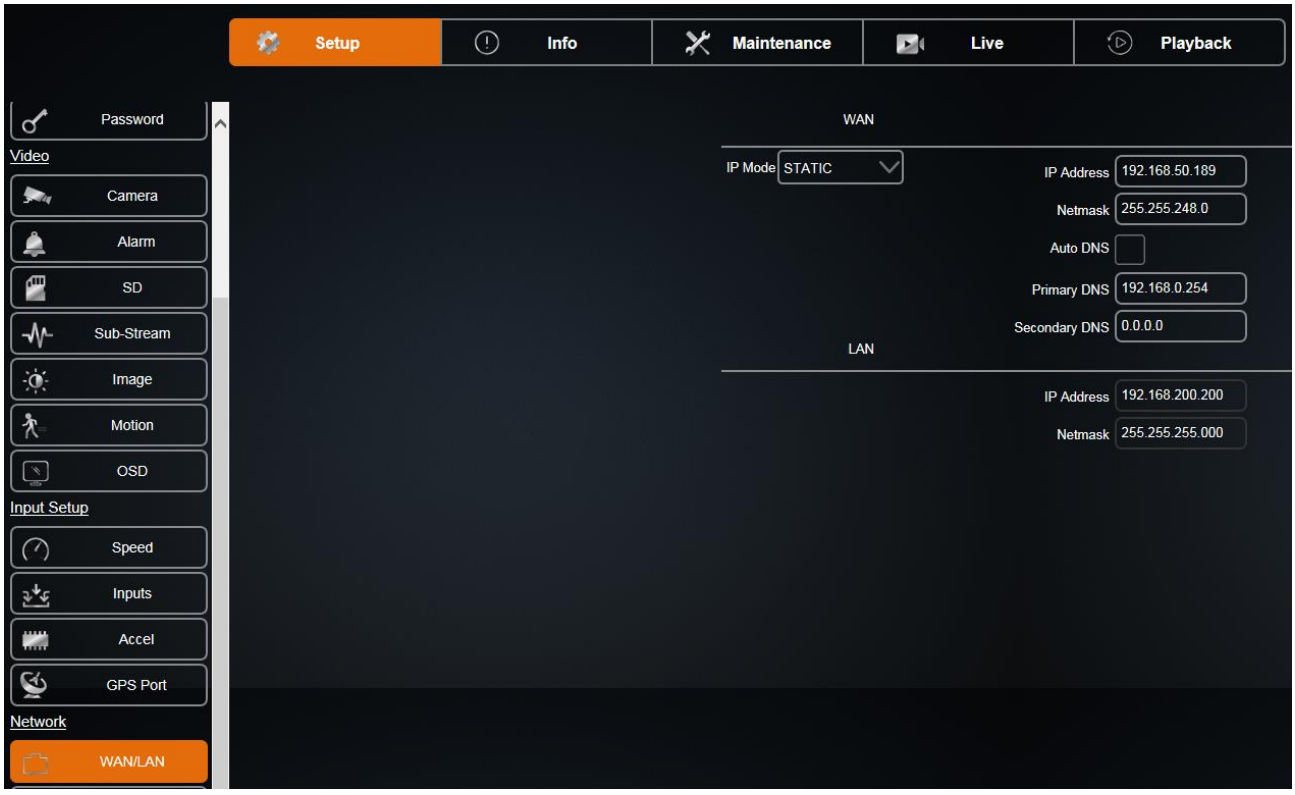


Figure 48: General Network Set Up

General Network Setup is where the user set up the network configurations if using SD-300's wireless access point feature.

IP Mode: SD-300 can be set to Dynamic if network supports DHCP function or Static if static network setting is needed.

IP Address: The IP address needs to be set up differently for each SD-300 in the same network. The IP address contains four three-digit numbers from 0 to 255. The first three numbers need to be the same as the local gateway IP address in order to have access to the SD-300. The last number must be set up independently on each SD-300. The user can set this for both the WAN and the LAN.

Net Mask: A mask address is to use with the IP address as a pair. The default setting is 255.255.255.000. Depending on how the network is set up, the user needs to change it to work with the network. The user can set this for both the WAN and the LAN.

DNS Server IP Address: DNS Server IP is needed when SD-300 tries to access non-IP internet addresses.

Server Network

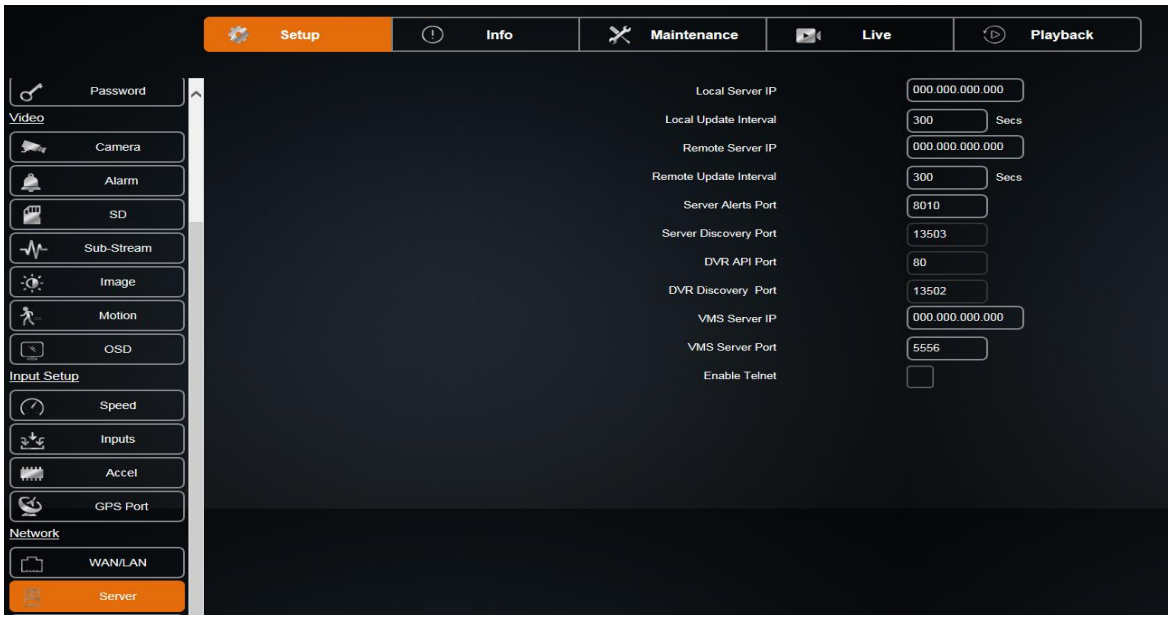


Figure 49: Server Set Up

Please contact your IT specialists to configure this page.

Wireless Network

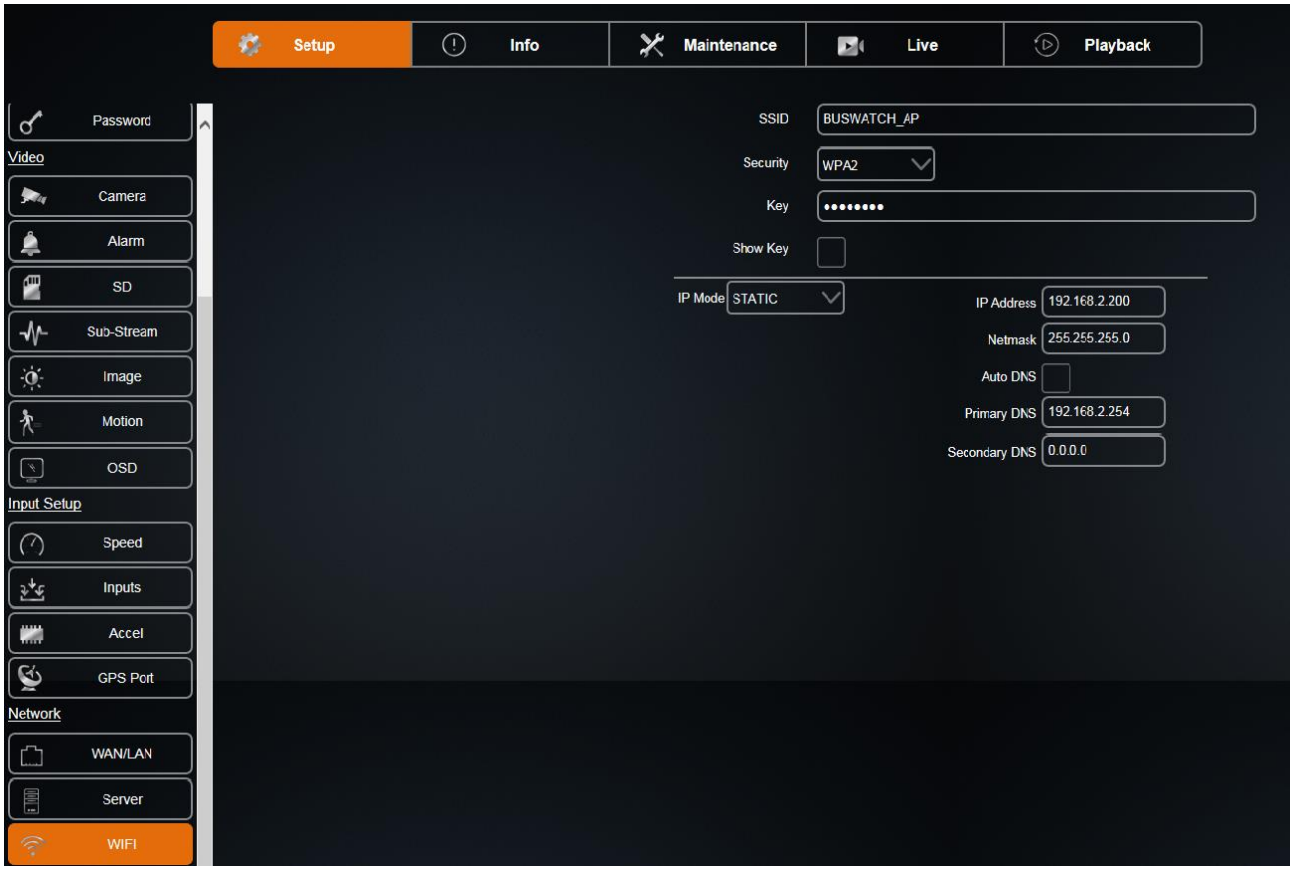


Figure 50: Wireless Network

The Wireless Network settings allow the SD-300 to be connected wirelessly. It also supports Auto IP detection for easy set up.

SSID: In order for the SD-300 to find the wireless access point, it needs to know the correct wireless network name for it to connect to. Enter the Access Point SSID.

IP Mode: When set to Dynamic, the SD-300 automatically finds an available network set up from the wireless access point. The access point DHCP function will assign the SD-300 an IP automatically. When set to Static, it allows the user to enter the network settings manually.

IP Address: The IP address needs to be set up differently for each SD-300. The IP address contains four three digit numbers from 0 to 255. The first three numbers need to be the same as the local gateway IP address in order to have access to the SD-300. The last number must be set up independently on each SD-300.

Net Mask: A mask address is to use with the IP address as a pair. The default setting is 255.255.255.000. Depending on how the network is set up, the user needs to change it to work with the network.

Authentication: when connecting to an access point with network security settings, SD-300 needs to know the correct authentication to be able to connect to the network. The SD-300 supports NONE and WPA2 type authentication. Select accordingly.

Security: in addition to Authentication, user needs to select the appropriate Encryption type for the SD-300 to connect to the wireless network.

Key: If the wireless network has a password, the SD-300 needs to know it in order to use the network. Enter using the on-screen keyboard.

DNS Server IP Address: DNS Server IP is needed when SD-300 tries to access non-IP internet addresses.

Start Up Schedule

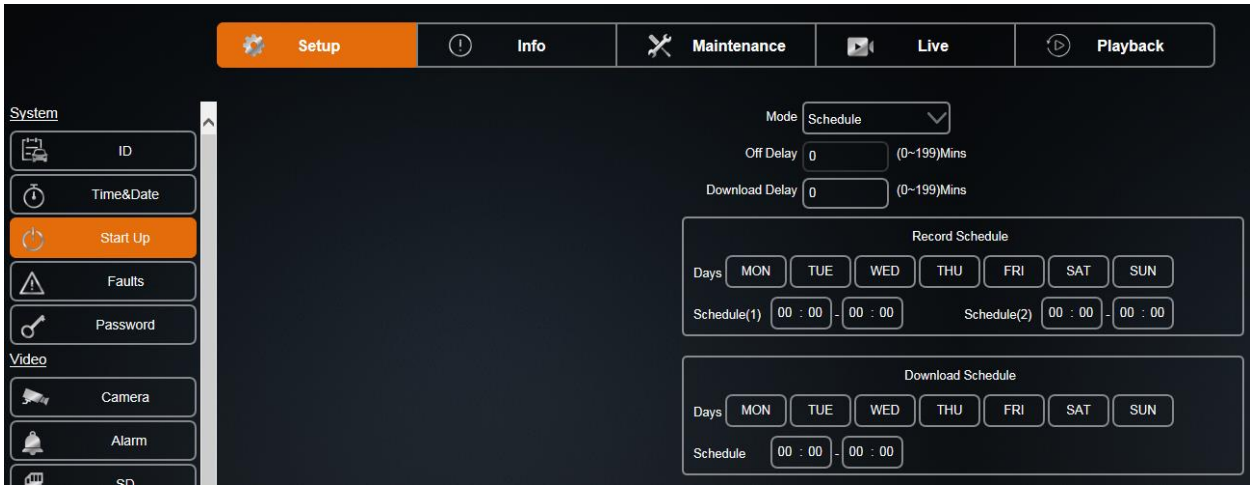


Figure 51: Network Schedule

User can choose Ignition, Schedule, and Ignition or Schedule. User also can select for how long the SD-300 stays up after off delay expires for the server to download alarm images.

Off Delay: for how long the SD-300 stays on after off delay mode expires.

Download Delay:

Record Schedule: the user can specify certain days and times to record image, even if the vehicle is off.

Download Schedule: the user can specify certain days and times to download images.

System Information

Figure 52: System Information

System Information Menu contains eight subsections: Camera, Inputs, Alarms, System, WAN/Cell, WIFI, Versions, and Log. All the SD-300 system information, such as temperature and voltage can be found here.

System Status

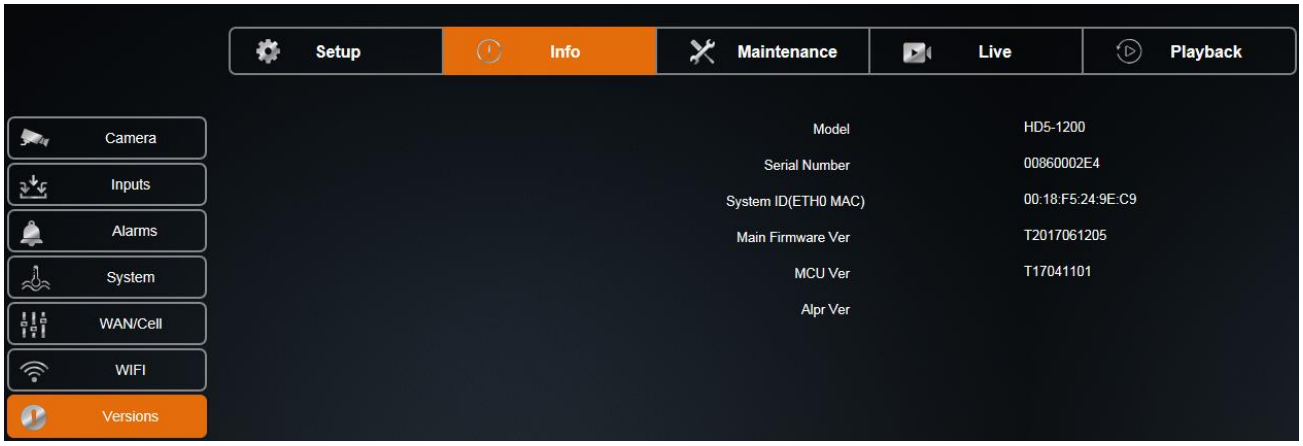


Figure 53: Versions

Versions contains the Main/MCU Firmware version, Serial Number, System ID, Model, MCU Ver, and Alpr Ver.

System History

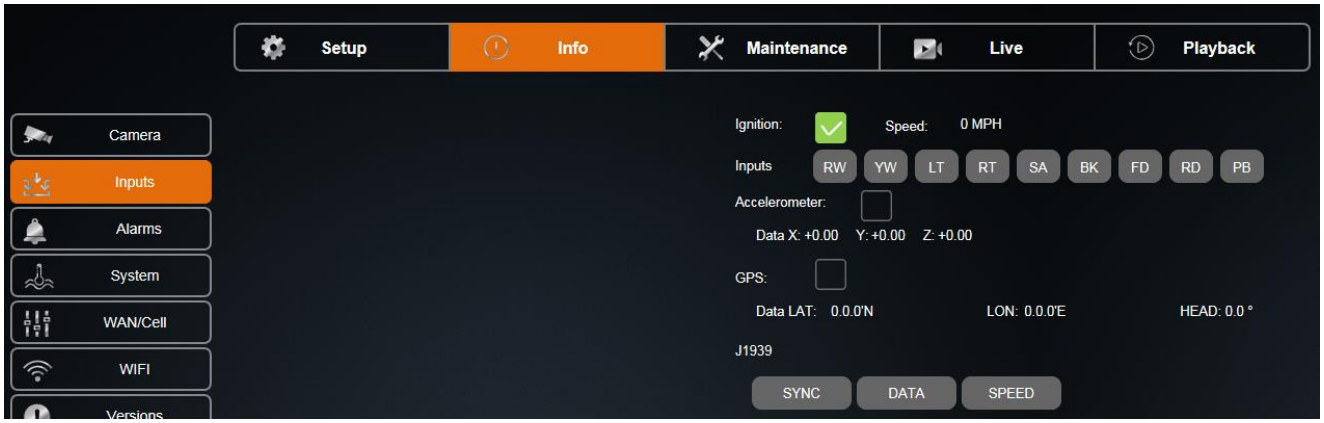


Figure 54: Inputs

Inputs contains maximum and the minimum readings as well as when it happened from various of sensors, including Accelerometer Readings, GPS, Inputs, and J1939 data.

System Log

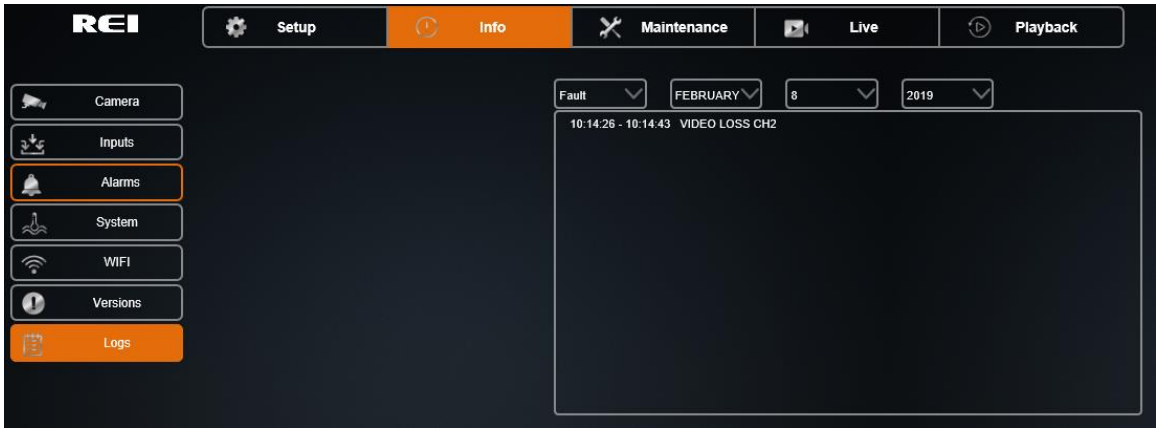


Figure 55: System Log

System Log contains all the logs that the SD-300 generates in order to diagnose if there is a problem with the SD-300. To navigate the logs, highlight the Date/Time/Type bar and press Enter, use up/down arrows to go up and down entry by entry or use left/right arrows to go forward/backward page by page.

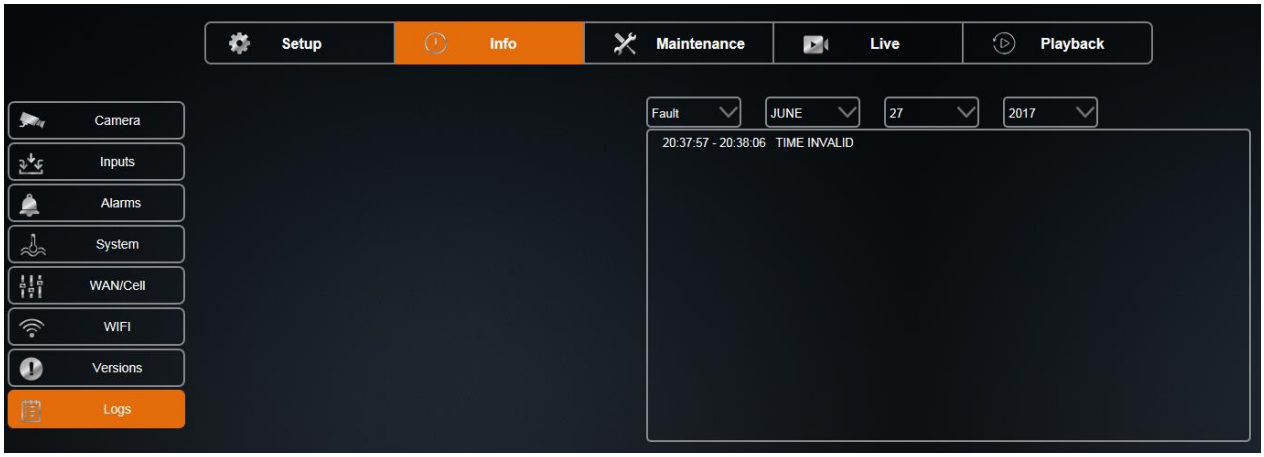


Figure 56: System Log - Search

Search function allow user to search logs by event types, start date, start time, end date, and end time .

Play Back

Figure 57: Playback

Images recorded on the SD card can be fully accessed from the Play Back menu. User can search images by using the Time/Date Search function, and the Alarm Search function.

Time/Date Search

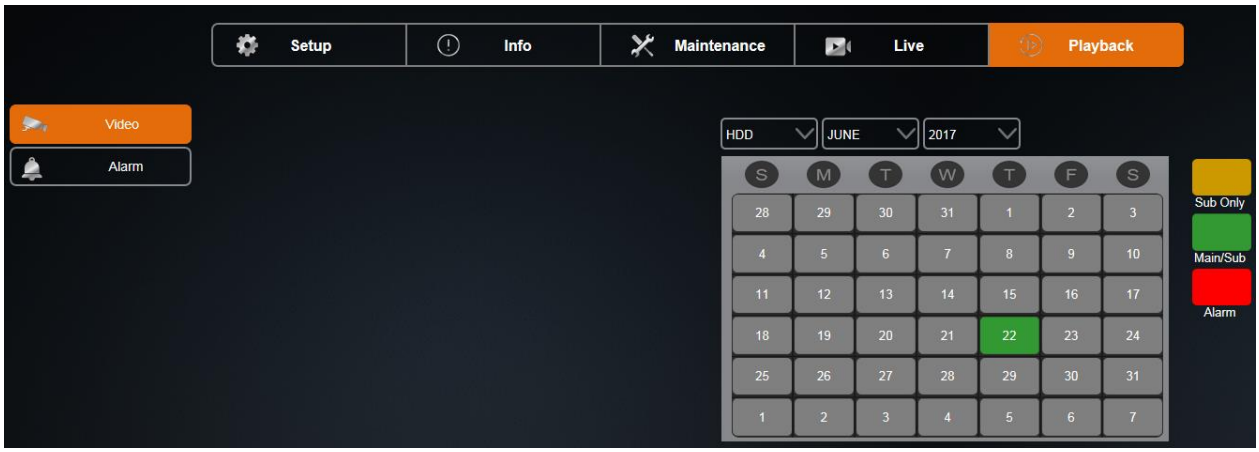


Figure 58: Time/Date Search – Date

The Time/Date Search function gives user the ability to search images by choosing the Time and Date.

The screen shows a calendar of days that contain images. If the day is green, it means there is no alarm event on that day. If there is an alarm event, the day will appear yellow. Use the left and right arrows on the top of the screen to select month and year. Once month and year is selected, select the date.

Alarm Search

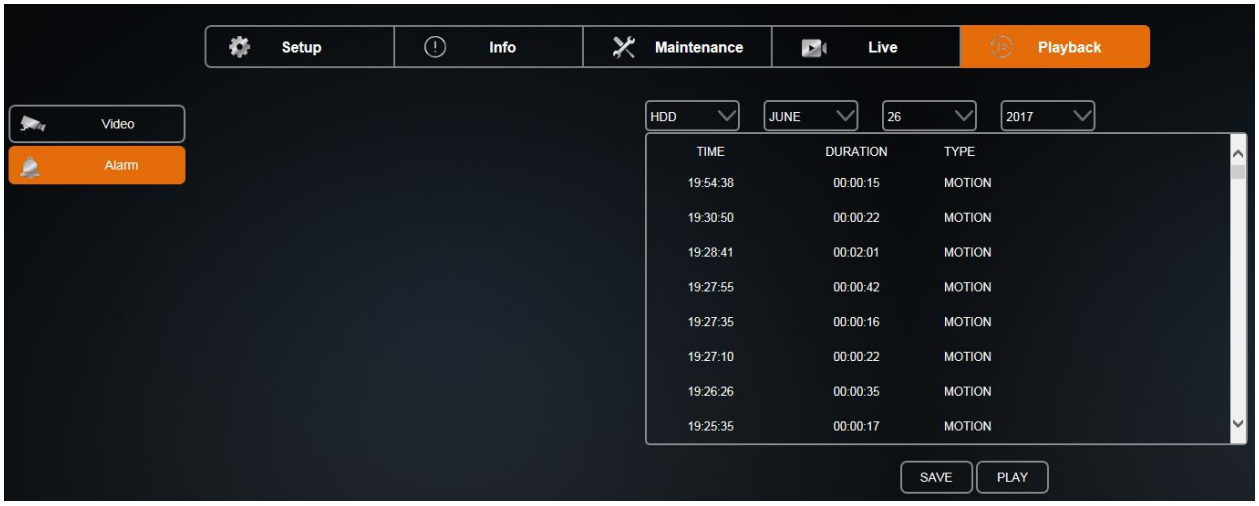


Figure 59: Alarm Search

Alarm Search allows user to quickly search for alarm images. It offers the ability to search for specific images using the Search function. Images will be displayed in a form of log, and user can use the USB mouse to navigate.

Playback: start play back alarm images from the beginning.
Search: search alarm image by alarm type, start time/date, and end time/date.

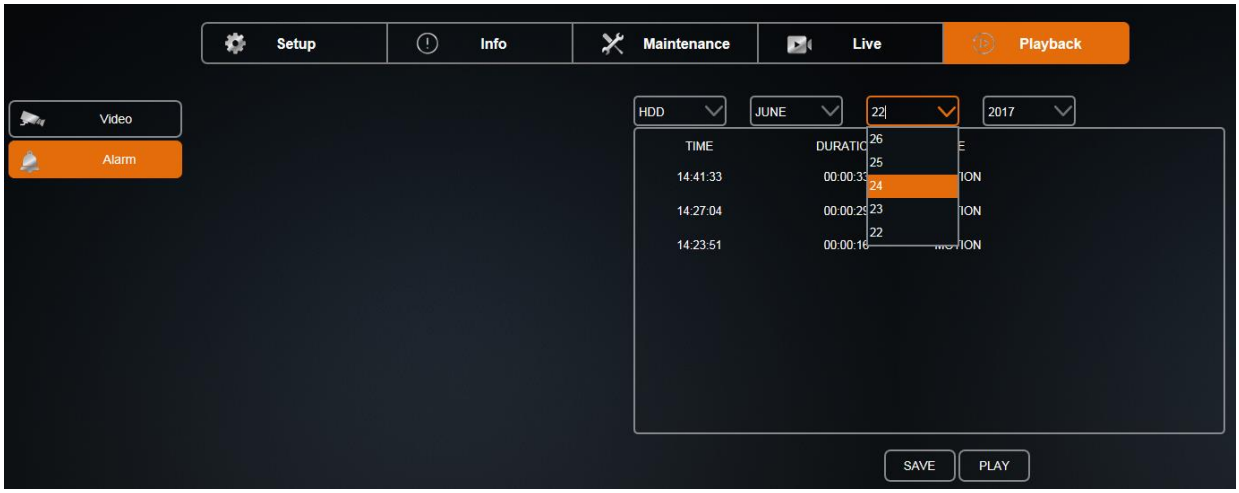


Figure 60: Alarm Search - Search

USB Backup

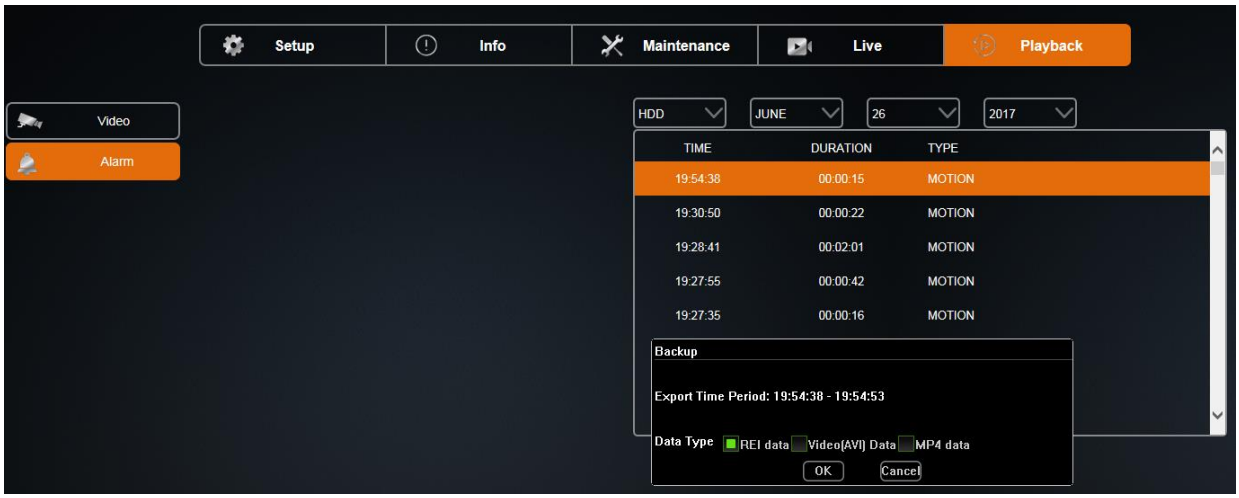


Figure 61: USB Backup

The USB backup function allows user to back up image files onto an external USB storage. User can select the image type, start time/date, end time/day. In addition, user can select to include player that allows to playback SD images on the computer.

Hosted Web User Interface

The Web UI provides the ability for users to remotely monitor cameras, play back images, and access the SD-300 settings. Before using the Web UI, the SD-300 network setting needs to be set up. Please refer to PC Network Connection and Network Setup sections.

Once the network is correctly set up, open a web browser, and enter the SD-300 IP address to access the Web UI. Username and password are required, and the browser may ask to install add-on software for the Web UI. After that, the Web UI should appear.

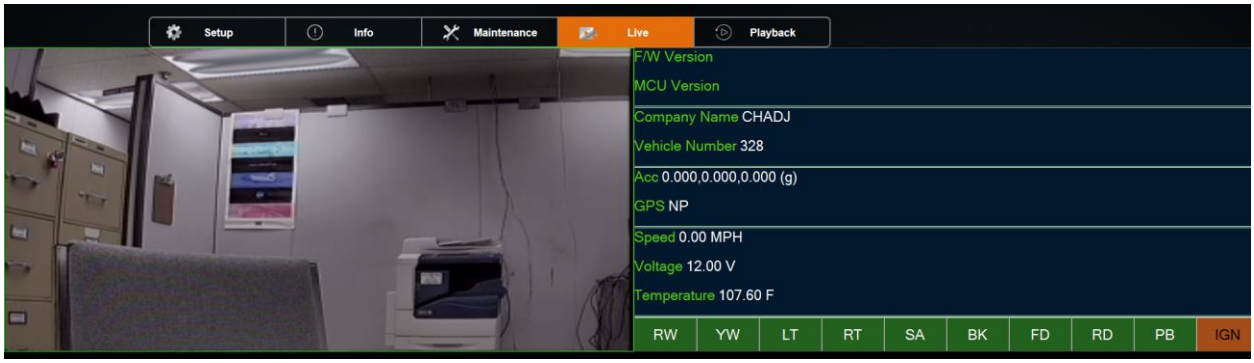


Figure 62: Web UI - Live

Specifications

SD-300

- Recording Medium: SD Card – 32GB up to 512GB per SD Slot
- Display Capability: On Screen Display and embedded stream data
- GPS: Time Synchronization, Latitude, Longitude, Speed, Heading & Mapping
- Input: 2: 720P AHD Channel Inputs, 1:1080P IP Input, 1V p-p / 75 ohm
- Image Output: 1 x Composite Video, WiFi, and 1 x USB 3.0
- Image Resolution: AHD channels 720 (H) x 480 (V) maximum
- Image Compression: H.264 (8 quality settings)
- Frame Rate: 1 to 30fps Selectable
- Audio Input : 3 independent channel inputs
- Recording Modes: Continuous, Ignition, Scheduled & Event Triggered
- Playback: Search by Alarm, Date, Time & Camera
- Image Loss Detection

Input / Output

- 1 x USB 3.0 Port
- 7 x Vehicle Sensor Inputs
- 1 x External GPS
- 1 x Accelerometer Input
- 1 x Transmission Pulse Speedometer Input

Environment

- Relative Humidity: 10%~95% at 40.C, Non-Condensing
- Operating Temp.: -40C ~ +65C
- Shock: 225Gs 2ms (Operating) / 900Gs 1 ms (Storage / Transit)
- Vibration: 1.0G, 5 ~ 500Hz (Operating), 5.0G, 5 ~ 500Hz (Storage / Transit)
- Power Requirement: 12VDC @ 2A / 24VDC @ 1A
- Power Consumption: 24W Maximum
- EMC and Safety: CE, FCC