

The Click 513 monitors interval data from a SmartSensor HD by polling the SmartSensor HD to retrieve vehicle speed, volume, and occupancy data from the latest interval for up to 4 approaches.



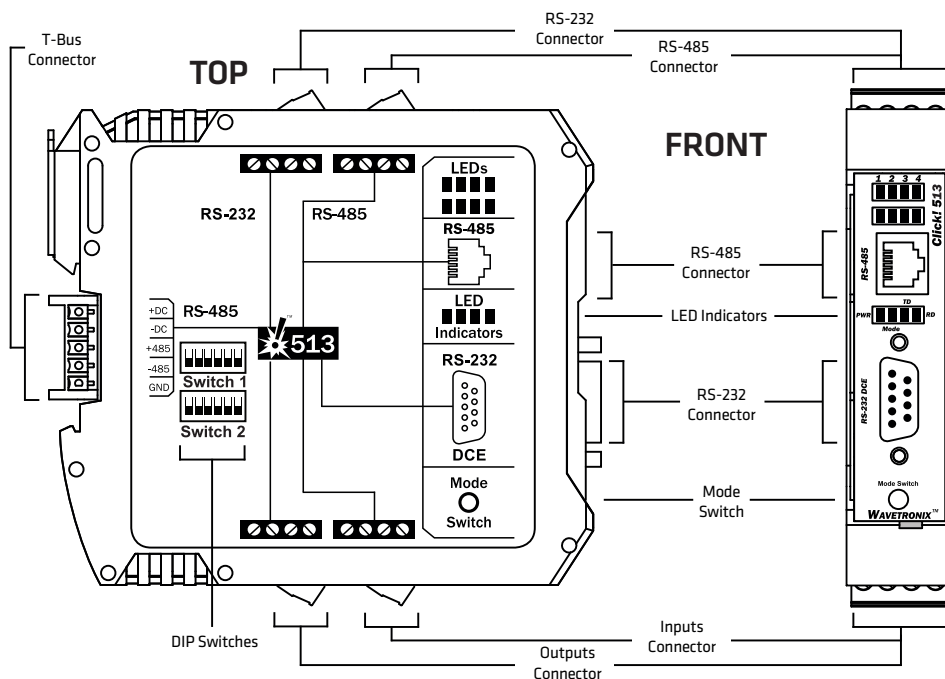
The Click 513 compares the detected interval data to a set of predetermined speed, volume, and occupancy threshold values and activates a digital output when the data exceeds these threshold values.

A possible application for the Click 513 is to alert traffic control operators of a congested exit ramp. If the interval data polled from the SmartSensor HD exceeds the threshold value(s), the Click 513 will send an alert so that adjustments can be made to help clear the congested roadway, such as keeping the traffic light green so cars can clear the exit ramp, or displaying a message for drivers on a dynamic message sign (DMS).

The Click 513 utilizes the Click Supervisor software for user configuration of vehicle speed, volume, and occupancy thresholds. Communication between the Click 513 and Click Supervisor is easy to set up and use.

Physical Features

The Click 513 is based upon the Click 500 platform, so it has the same physical features as the Click 500. The physical features are used for easy installation and configuration.



Communication Ports

The Click 513 has four communication ports:

- RS-485 T-bus connection port
- RS-232 front DB-9 connection port
- RS-232 top screw terminal connection port
- RS-485 top screw terminal connection / front RJ-11 jack connection port

The back of the Click 513 features a 5-position connector that plugs into a T-bus connector and provides power and RS-485 communication to the device. It also passes RS-485 communication to all other devices on the T-bus. Usually, the RS-485 T-bus connection port is the primary connection to the SmartSensor HD.

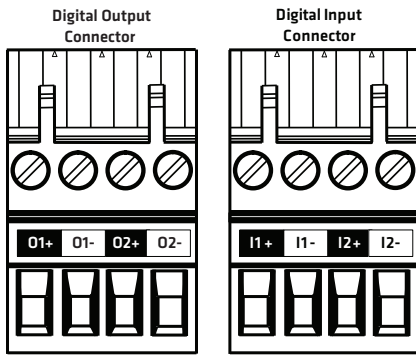
The RS-232 DB-9 port on the front of the module is used when interacting with a computer. This can be when using Click Supervisor or when connecting to a serial terminal program such as Windows HyperTerminal.

Warning. With older versions of the Click 500 series module, it is necessary to remove pin 4 from the serial cable to prevent the device from going into Program mode. If it enters Program mode, all of the faceplate LEDs will turn off, and power will need to be cycled on the device.

The other two communication ports can be accessed via the screw terminal blocks on the top of the device. However, in many Click 513 applications these ports are unused. The first block has -485, +485 and two ground screw terminals for wiring RS-485 communication. These ports are used to talk to a Click 172 or 174. The RS-485 communication lines of this block are physically connected to the RJ-11 jack on the front of the module, so a connection can be made with the RJ-11 jack or by wiring the RS-485. The second block has a -232, +232 and two ground screw terminals for wiring RS-232 communication.

Note. The Click 513 operates at a baud rate of 9600 bps.

There are digital I/O ports on the bottom of the module that allow you to interact with contact closure and digital I/O systems (see the figure below).



In the standard Click513 application, these ports have the following functions:

- **Digital output port 1** – Used to connect to contact closure device, DMS or other digital I/O systems. This is the default output for approach 1.
- **Digital output port 2** – For use with multiple Click 513 devices connected to one DMS. This is the default output for approach 2.
- **Digital input port 1** – For use with multiple Click 513 devices connected to one DMS.
- **Digital input port 2** – For use with multiple Click 513 devices connected to one DMS. Not used in the standard Click 513 application.

The Click 513 also has two DIP switches on the left side of the module for programming or reprogramming the unit. For all standard Click 513 applications, the rest of the DIP switches are unused.

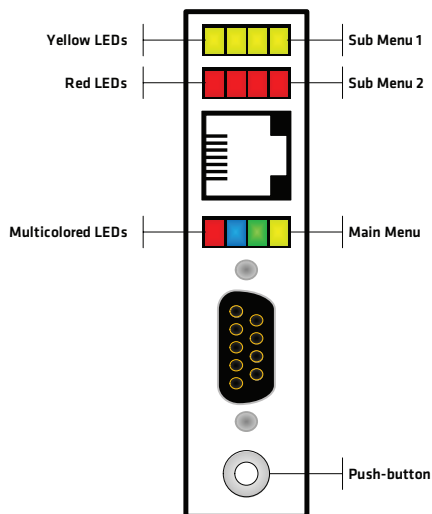
Warning. *The sixth switch of DIP switch 1 controls the mode of the device. Make sure that this switch is in the OFF position. If it gets turned on, the device will enter Program mode and all of the faceplate LEDs will turn off when a serial connection is made. To exit Program mode, power will need to be cycled on the device.*

Configuration Features

There are three banks of LEDs located on the front of the Click 513.

The yellow and red banks of LEDs display submenu selections. See the Operating Modes section of this document for more information.

The system LEDs (multicolored bank in the middle of the module) have dual functions: they are activity indicators, reporting system status information, and they are also used in selecting operation modes from the main menu.



The blue LED does not have an activity-indicating function. The other three LEDs indicate system status as follows:

- PWR (red) lights up when the device has power.
- TD (green) lights up when the device is transmitting data.
- RD (yellow) lights up when the device is receiving data.

If the Click 513 receives data via one port it may forward (transmit) the data to the other ports. However, only the RD (yellow) light will flicker in this case. The TD (green) light is reserved for data originating from the Click 513.

Located on the front of the module below the DB-9 connector is a push-button labeled Mode Switch. This push-button allows you to make selections from the menu. See the Operating Modes section of this document for more information.

Installation

Make sure that the Click 513 is installed on a T-bus with active power and RS-485 communication.

When using multiple Click 513 modules for one DMS, the devices can be wired together so that only one Click 513 will be sending an output to the DMS at a time. See knowledge base articles on the Wavetronix website to learn how to use relays to do this.

If you are going to use your Click 513 in conjunction with a computer serial port and terminal program, the RS-232 DB-9 port on the front of the device can be used to make a connection between the Click 513 and the computer.

Obtain the desired serial terminal program and follow the distributor's instructions for installation.

Operating Modes

The Click 513 has two operating modes: Run mode and Device Setup mode. These modes are accessed through the mode selection menu, which is controlled via the push-button; the system (multicolored) LEDs light up to show which mode you are currently on. The table below shows the LED color and state associated with each operating mode or task.

Operating Mode/Task	Selection LED State	Operating LED State
Run	Blue solid	Blue solid
Device Setup	Green solid	Green solid
Reset	Red flashing	—

The LED state during the mode selection process can be either flashing or solid. If the current mode is a flashing mode, the corresponding LED will flash during mode selection. However, after a flashing mode is selected, the selected mode LED will not flash—the red LED will flash instead.

Navigating the Menu via the Push-Button

The menu is navigated via the push-button using hold and press actions:

- **Hold** – Pressing and then holding for at least 1½ seconds allows you to enter the Click 513 mode selection process.
- **Press** – Pressing and then quickly releasing the push-button allows you to make a selection in the menu.

The menu is used to select and run an application's operating modes. Select a mode by navigating through the main menu (multicolored LEDs) and the submenus (yellow and red LEDs) as described below:

1. Enter the main menu by holding the push-button down. Continue holding the push-button to cycle through the entire menu.
2. Release the push-button once the cycle reaches the desired mode (see the table above).
3. Press the push-button again to select the mode. Once the mode is selected it will start running. If you selected to reset the device, the submenu of yellow LEDs will start (the first LED will light up).
4. Hold the push-button to cycle through the options of the submenu.
5. Release the push-button once the desired option is displayed.
6. Press the push-button again to select the option. The mode will now start running.

Run Mode (blue solid)

Run mode is the first mode presented in the mode selection process, but usually the second one to be used. It will first be necessary (at least the first time the device is used) to use Device Setup mode. When the device is in Device Setup mode, Click Supervisor can be used to configure the device (see the Device Setup Mode section below). Once that is completed, use the push-button to select **Run** mode (blue solid).

While in Run mode the Click 513 will poll the SmartSensor HD for data from the first and second approaches, and if the configured conditions are met an output will be triggered.

When you are using a Click 112 or 114 contact closure device, each time the Click 513 triggers an alert on either approach the corresponding digital output is closed. The top/front RS-485 port of the Click 513 then sends a message to the attached Click 112 or 114 to close the first or second contact.

For data verification purposes the event-data messages pushed by SmartSensor HD are translated into readable text strings. This information is forwarded as ASCII text messages over the RS-232 ports of the Click 513. The following illustrates an interval detection entry in a terminal program:

```
Timestamp:2012:08:10,23:32:00.000 Approach Number:01 Interval Duration:00010
Volume:000000
Average Speed:0060.0
Average Occupancy:0000.0%
The Number of Qualified Intervals Needed to Trigger an Alert:02
The Current Number of Qualified Intervals/The Number of Monitored Intervals used to Determine the Alert Status: = 1/3

Timestamp:2012:08:10,23:32:00.000 Approach Number:02 Interval Duration:00010
Volume:000000
Average Speed:0060.0
Average Occupancy:0000.0%
The Number of Qualified Intervals Needed to Trigger an Alert:02
The Current Number of Qualified Intervals/The Number of Monitored Intervals used to Determine the Alert Status: = 1/3
```

Device Setup Mode (green solid)

Device Setup mode is the second mode presented in the mode selection process. This mode allows you to configure threshold variables and set up communications with the Click 112 or 114.

First put the device in Device Setup mode (solid green). Once in Device Setup mode, use submenu 1 (yellow LEDs) to select which connection you will use to connect Click Supervisor:

- **First LED solid** – This is the primary mode for connection and will be the option you select most often. You can connect to Click Supervisor over the serial RS-232 port and do necessary troubleshooting.
- **Second LED solid** – The second mode is a backup mode if there are no other means to connect to the device. You can connect to Click Supervisor over the RS-485 port. This mode will not forward information correctly to the Click #104#; after the Click Supervisor configuration, the device will need to be changed to submode 1.

The Click 513 is then configured using the Click Supervisor software. See the knowledge base article *0514 Installing and Using Click Supervisor* for instruction on how to download and install Click Supervisor and how to connect to your device using the software.

How to use Click Supervisor to work with your device will be covered in the Computer Configuration section of this document.

Next, connect the Click 104/112/114 device via the RS-485 top/front port. When using a Click 104, you will need to use a gray T-bus to isolate communications sent from the RS-485 top/front port (so they do not collide with communications on the Click 513 RS-485 T-bus port). When using a Click 112/114, patch across using an RJ-11 jumper cable.

Once the Click 104/112/114 device is connected, you will need to autobaud it and then put it in Actuation mode. This can only be done when the Click 513 is in the Device Setup Mode.

Reset (red flashing)

The red flashing mode resets the Click 513 to factory defaults. If a device is not responding and not communicating, resetting the device may fix the problem. Once in reset mode, use submenu 1 (yellow LEDs) to select which level of settings should be reset:

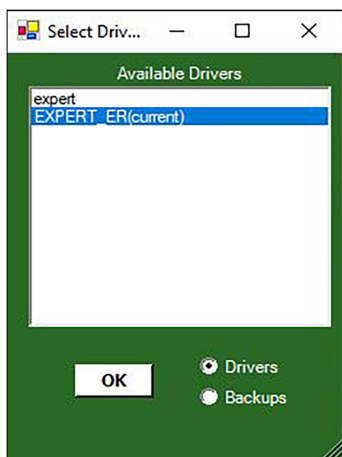
- **First LED solid** – Reset all settings except serial number and XML variable map.
- **Second LED solid** – Reset all settings except serial number.

After being reset, the Click 513 will return to the last mode that it was in.

Computer Configuration

The Click 513 must be configured using the Click Supervisor software. See the knowledge base article *0514 Installing and Using Click Supervisor* for instructions on how to download and install Click Supervisor and how to connect to your device using the software.

The Click 513 can be configured using the Expert driver (see the figure below).



After you have made configuration changes on a driver and saved it to the Click device, the word “current” will appear after that driver to indicate the driver that is currently loaded onto the device.

Note. Changing any of the settings on any driver and saving them to the Click device will change those settings on all drivers.

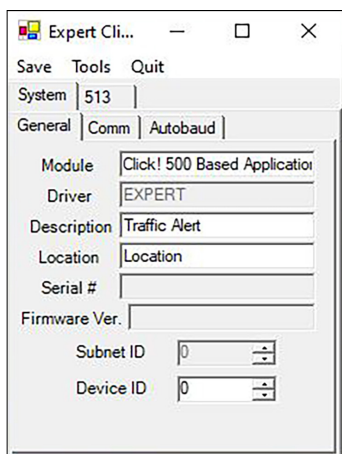
The Backups option can be used to read configurations that have previously been saved to file.

Expert

The Expert driver allows you to configure the Click 513. The driver is divided into two tabs, **System** and **513**.

The **System** tab is divided into three subtabs: **General**, **Comm**, and **Autobaud**.

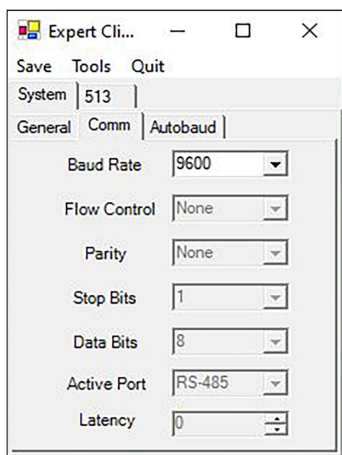
The **General** subtab contains information about the device (see the figure and table below).



Setting	Description
Module	Shows the name of the Click device.
Driver	Names the driver you are currently working with.
Description	Shows a description of the device being configured. This is only for your information and does not affect the operation of the device.
Location	Displays the location of the device being configured. This is only for your information and does not affect the operation of the device.
Serial Number	Displays the serial number of your device.

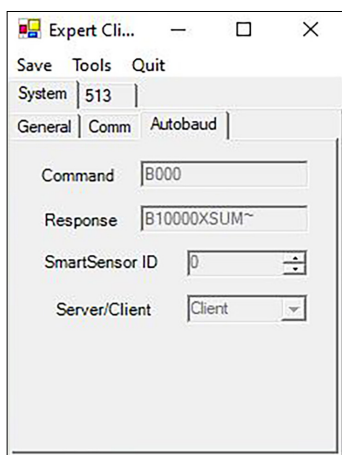
Firmware Version	Shows the version of firmware your device currently has installed. If Click Supervisor detects a discrepancy between this version and the most current version it currently has access to, you will be prompted to upgrade when you connect to the device.
Subnet ID	Shows the subnet ID number. This option is currently not available.
Device ID	Gives the ID number of the device being configured, which is used to identify the device when you are connecting to it. By default, this number is the last five digits of the serial number, which can be found under the About tab or on the barcode sticker on the bottom of the device. It is recommended that you do not change this number unless another device on the network has the same ID number.

The **Comm** subtab allows you to configure how the Click device communicates (see the figure and table below).



Setting	Description
Baud Rate	Allows you to change the baud rate at which the device connects to the sensor.
Flow Control	Is used for configuring hardware handshaking. This option is currently not available.
Parity	Allows you to set parity error checking. This option is currently not available.
Stop Bits	Allows you to set the number of stop bits. This option is currently not available.
Data Bits	Shows you the number of data bits being sent. This option cannot be changed.
Active Port	Indicates on which port you are communicating with the sensor. This option cannot be changed.
Latency	Indicates the latency between the sensor and the Click device. This option cannot be changed.

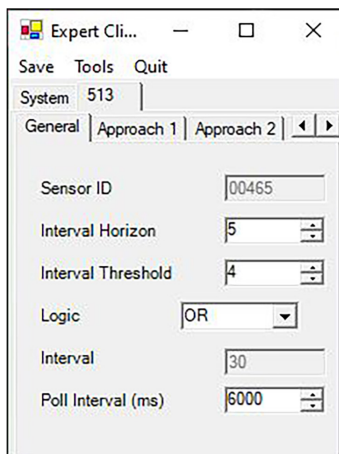
The **Autobaud** subtab allows you to configure how the device autobauds (see the figure and table below). As none of these options can currently be changed, you would only use this tab if you needed to look at how the device's autobaud function is currently set up.



Setting	Description
Command	Allows you to set the command sent from the device during the autobaud process. This option is currently not available.
Response	Shows the response the device is expecting from the above command. This option is currently not available.
SmartSensor ID	Shows the ID number of the sensor with which the Click device is currently communicating. This option is currently not available.
Server/Client	Allows you to set whether the device is a server or client in a point to multipoint setup (this option is not related to device autobauding). This option is currently not available.

The other tab is the **513** tab. If you click on it, you will see tabs labeled **General**, **Approaches**, **Lanes**, and **Output**.

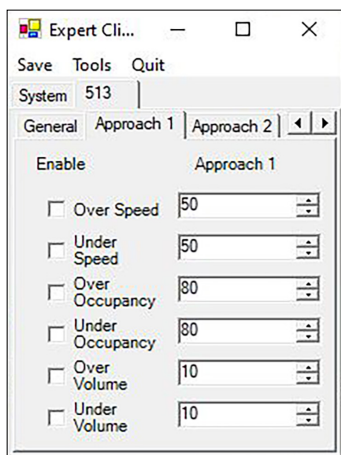
The **513 > General** tab allows you to configure general settings for the Click 513 (see the figure and table below).



Setting	Description
Sensor ID	The sensor ID number for the SmartSensor HD connected to the Click 513.
Sensor Interval	This is the number of seconds that the sensor stores Interval data. This field is read only.
Alert On Time (Multiple of Sensor Interval)	Allows you to enter the number of intervals the Click 513 will use to determine alert status.
Alert Off Time (Multiple of Sensor Interval)	Sets the minimum number of qualified intervals needed (out of the monitored intervals) to turn off an alert. Example. If Alert On Time = 1 and Alert Off Time = 2, an alert will turn on when one interval meets the requirements and will turn off when those requirements are not met for two intervals.
Logic	Allows you to select the logic used to qualify an interval (AND requires all enabled conditions to be true; OR requires only one enabled condition to be true).
Poll Interval (ms)	Allows you to enter the number of milliseconds you want the Click 513 to wait before it polls for Interval Data. The longer the interval the bigger this number can be. This field is currently Ready only.

The **513 > Approach** (Approach 1, 2, 3, and 4) tabs allow you to set the threshold values for the interval data (see the figure and table below for examples.)

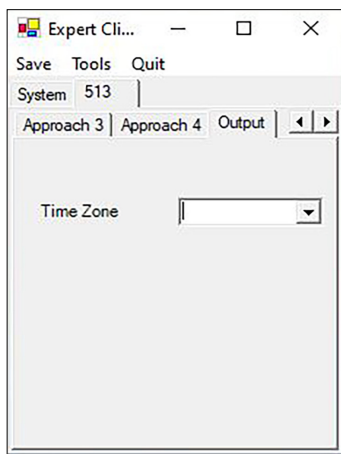
Note. Values in Click Supervisor will be displayed according to the units (English or metric) selected in SSMHD.



Setting	Description
Over Speed	If enabled, will qualify* an interval if the average speed is above the set threshold
Under Speed	If enabled, will qualify* an interval if the average speed is below the set threshold
Over Volume	If enabled, will qualify* an interval if the total volume is above the set threshold
Under Volume	If enabled, will qualify* an interval if the total volume is below the set threshold
Over Occupancy	If enabled, will qualify* an interval if the percentage of occupancy is above the set threshold
Under Occupancy	If enabled, will qualify* an interval if the percentage of occupancy is below the set threshold

*When AND logic is used, intervals do not qualify until ALL enabled criteria are met.

The **513 > Output** tab contains information about which time zone is configured for the Click 513 and when alerts will be scheduled to trigger. (see the figure and table below).



Setting	Description
Time Zone	Allows you to select the appropriate time zone
Morning Start/Stop Time	Beginning and end times that the alerts will operate to turn on/off during the morning hours
Afternoon Start/Stop Time	Beginning and end times that the alerts will operate to turn on/off during the afternoon hours

Once you have finished, use the menu bar at the top of the screen to save your settings, return to the Select Driver screen, and more.

- The **Save** menu allows you to save your settings. Select **Save to File** to save your settings to a file. Selecting this will open a directory box, allowing you to name your settings file. This file will always be saved in the Wavetronix

folder created when you installed Click Supervisor, under Wavetronix > ClickHome > Drivers > 513 > User. You can also select **Save to Device** to save your settings to your Click 513.

Note. *If you do not save your settings to your Click 513, they will be lost the next time you power the device down.*

- The **Tools** menu contains five options for working with your device. **Reset > System** power cycles your device, while **Reset > Factory Default** restores your device to the settings with which it was shipped. **Restore** will restore the driver to the settings currently saved on the Click 513, erasing any unsaved changes. **Upgrade** can be used to manually upgrade to the most current firmware for your device. **Hex View** changes the view of certain settings in the driver to hexadecimal.
- Clicking the **Quit** menu exits the driver and returns you to the Click Supervisor main page.