

ATLaS

Advanced Tracking,
Logging and Sensitivity



Your Safety...Our Commitment

9030 Monroe Rd
Houston, TX 77061

www.heathus.com
info@heathus.com

Contact Information:
HOUSTON FACTORY SERVICE
ENGINEERING/TECH SUPPORT
9030 Monroe Road
Houston, TX 77061
713-844-1300
fsc@heathus.com
www.heathus.com



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INTRODUCTION

ATLaS is Advanced Tracking, Locating and Sensitivity for vehicle mounted mobile methane detection instrumentation. ATLaS works with many Heath Consultants' instruments including Optical Methane Detector (OMD), Detecto Pak-Infrared (DP-IR) and the Remote Methane Leak Detector (RMLD).

ATLaS provides data logs, GPS tracking and leak detections using advanced Digital Methane Detection (DMD) algorithms. ATLaS also seamlessly integrates with Leak Survey Analytics, a cloud-based data capture, retention, access, analysis and traceability service for natural gas leak detection.

It is simple and easy to use, displaying live incoming methane detection as well as real-time GPS breadcrumb logging trail and the location of any natural gas leak indications. ATLaS data outputs a variety of .csv files including a file with all incoming data as well as a file solely comprised of natural gas leak indication locations and information. ATLaS outputs a .kml file, compatible with most GIS software, displaying blue arrows indicating locating trail and directionality as well as red circles for all leak indications.

ATLaS includes an integrated WiFi/modem and GPS designed for public transportation and emergency vehicles capable of using multiple SIM cards which is powered by a vehicle 12V power socket. The GPS antenna is IPV6 waterproof and weather rated and magnetically mounts to the vehicle roof. ATLaS hardware can be installed in under 30 minutes.

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ICON GUIDE

The quick click icons are located along the left side of the primary ATLaS interface, more details will be given on each icons use throughout this manual.



Instrument configuration screen toggle



Configure



Connect all instruments



Disconnect all instruments



Start/stop logging



Reset statistics



Center map at current position



Mark leak

QUICK START GUIDE

Starting the software:

1. Open the ATLaS software
2. Enter a valid email into the ID box
3. Click proceed

Connecting instrumentation:

1. Click the green "Connect All Instruments" quick click icon.
2. Data will stream in upper area and map will snap to current GPS location.

Start data logging:

1. Click the green "Start Logging" quick click icon.
2. A pop-up box will appear confirming the file name and save location for this logging file.
3. Once a log ID is entered, the "Create" button will highlight and be enabled.
4. Click "Create" to start logging ATLaS data.

Stop data logging:

1. Click the red "Stop Logging" button on the left-hand side. The data is automatically saved.

PRIMARY ATLaS INTERFACE

The primary ATLaS interface has four main components:

1. Bar at the top of the window
2. Quick click icons (see page 1) on the left-side of the window
3. Incoming data plot on the middle center of the window
4. Map in the bottom center of the window

Additional points of interest on the interface include:

1. Alarm level settings
2. Distance marker settings

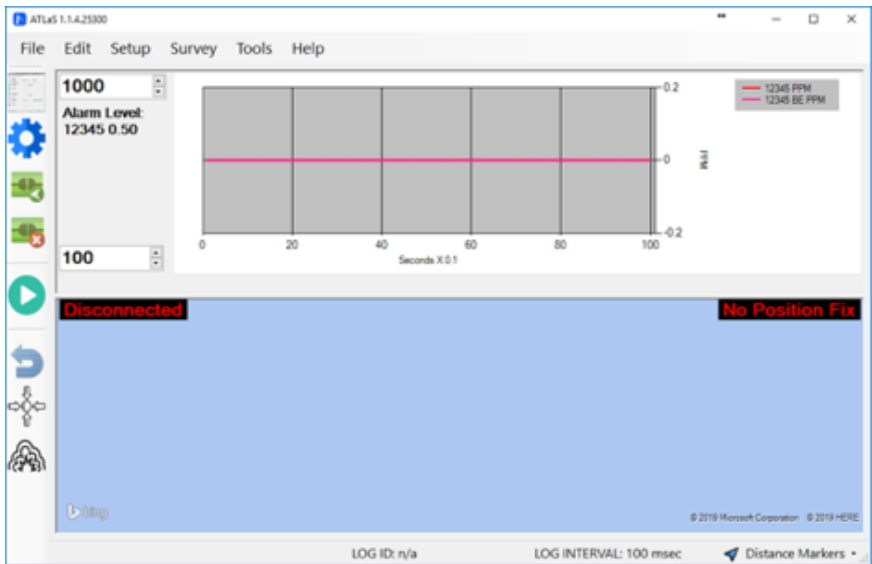


Figure 1: Primary ATLaS Interface

INSTRUMENT CONFIGURATION SCREEN

The instrument configuration screen quick click icon opens a window which displays the four Connected Gas Instruments (CGI) COM ports as well as incoming data; GPS connectivity settings and its incoming data; wind measurements and its incoming data (not yet implemented).

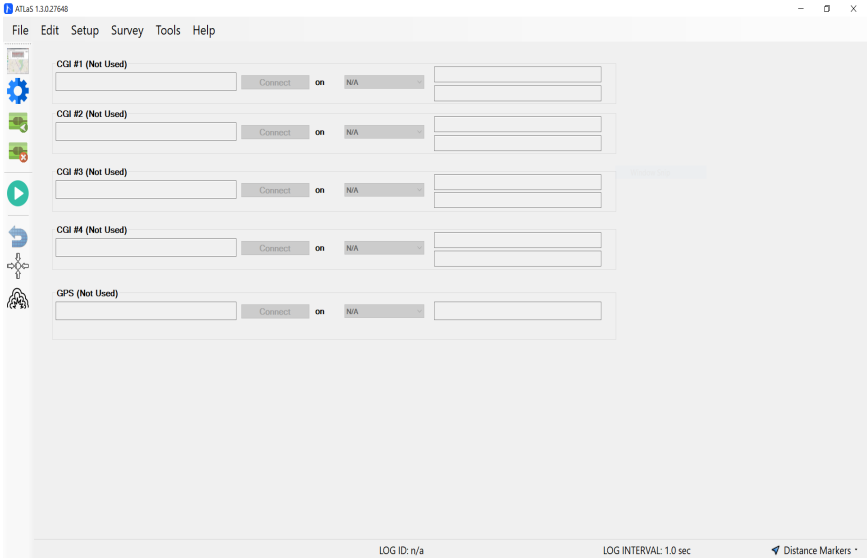


Figure 2: Instrument configuration screen with instruments disconnected

Connected Gas Instruments (CGI) Configuration and Connectivity

For each CGI, select which COM port it utilizes. In the example below, once the highlighted blue "Connect" is selected CGI #1 will connect the OMD to ATLaS through its COM port 5.

When a CGI is properly connected and communicating with its instru-

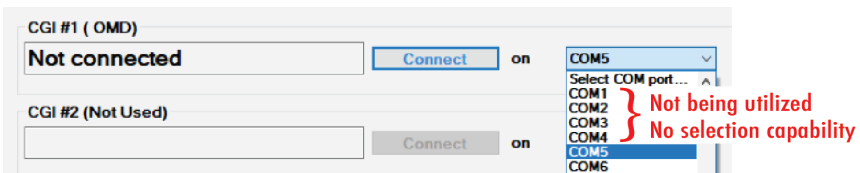


Figure 3: CGI COM port selection

ment, the CGI dialog box will display "Sending Data" and data will stream in the previously blank boxes on the right-hand side.

If a CGI is improperly connected and cannot communicate with its instrument, the CGI dialog box will display "Can't open COM" and no

data will stream in the boxes on the right-hand side.

This is typically due to incorrect COM port selection or loose cables between the instrument and the computer.

GPS (IBR600) Configuration and Connectivity

The default GPS connectivity settings for all CradlePoint IBR models are port 1234 and GPS server 192.168.0.1. Click "Connect" to individually connect the ATLaS software with the GPS.

The GPS is properly connected and communicating with ATLaS when the GPS dialog box displays "Sending Fixes" and data will stream in the previously blank box on the right-hand side.

When the GPS is improperly connected and cannot communicate with ATLaS, the GPS dialog box will display either "IBR600 Timeout Error" or "IBR600 Read Error" and no data will stream in the box on the right-hand side. This is typically due to the incorrect WiFi connection, GPS still acquiring satellite signal, or loose cables between the GPS antenna and the CradlePoint.

CONFIGURE

The Configure quick click icon opens a pop-up dialog box which can be used to configure the various instruments, alarm parameters and algorithm parameters.

CGI #1		ID: 12345	
CGI #2	None	ID:	
CGI #3	None	ID:	
CGI #4	None	ID:	
GPS	Cradlepoint IBR600		
Logging Interval	0.1 Sec		

ALARM PARAMETERS			
	RMLD	OMD	DPIR
Statistics Buffer Size	50	50	10
BE Change Limit	2.0	2.0	2.0
DMD Alarm Level	0.5	3.0	
Window Size	3	1	1
Alarm Count	3	1	1

OK CANCEL

Figure 4: Configuration pop-up dialog window

Connected Gas Instruments (CGI) Settings

Up to four CGIs can be activated and controlled via ATLaS. The options available are RMLD, OMD and DP-IR. Using the drop-down menu, select the appropriate instrument. The default menu option is "Not Used". Enter the instrument serial number into the ID box.

GPS Setting

To maximize the wireless network and mapping options, GPS should be set to "CradlePoint IBR600".

Logging Interval

The logging interval determines how often data is logged and analyzed. 0.1 seconds is the default and recommended value.

Alarm Parameters

Statistics Buffer Size - indicates the amount of methane concentration samples utilized for algorithmic analysis. The default and recommended values are 10 for DP-IR, 50 for both RMLD and OMD.

BE Change Limit - is a component of the background estimation of methane concentration and controls which values are added to the background estimate. The default and recommended values are 2.0 PPM for both OMD and DP-IR.

DMD Alarm Level - sets the methane concentration peak rise above the baseline which will create an alarm point. Digital Methane Detection (DMD) is Heath Consultants' proprietary methane concentration analysis algorithm. The default and recommended values are 0.5 PPM above background for OMD and 3.0 PPM above background for DP-IR.

Window Size - the number of most recent methane concentration samples utilized in the alarm parameters of the DMD algorithm. The default and recommended values are 3 for RMLD and 1 for both OMD and DP-IR.

Alarm Count - the minimum number of methane concentration samples which meet the alarm criteria and therefore create an indication. When Window Size and Alarm Count methane concentration sample values are equal, ATLaS operates in an instantaneous alarm mode. The default and recommended values are 3 for RMLD and 1 for both OMD and DP-IR.

CONNECT ALL INSTRUMENTS

The Connect All Instruments quick click icon automatically attempts to connect all connected gas instruments and GPS.

CGI and GPS Connected

When connected gas instrumentation is connected, the data will stream in the incoming data plot and the map area will snap to your current location.

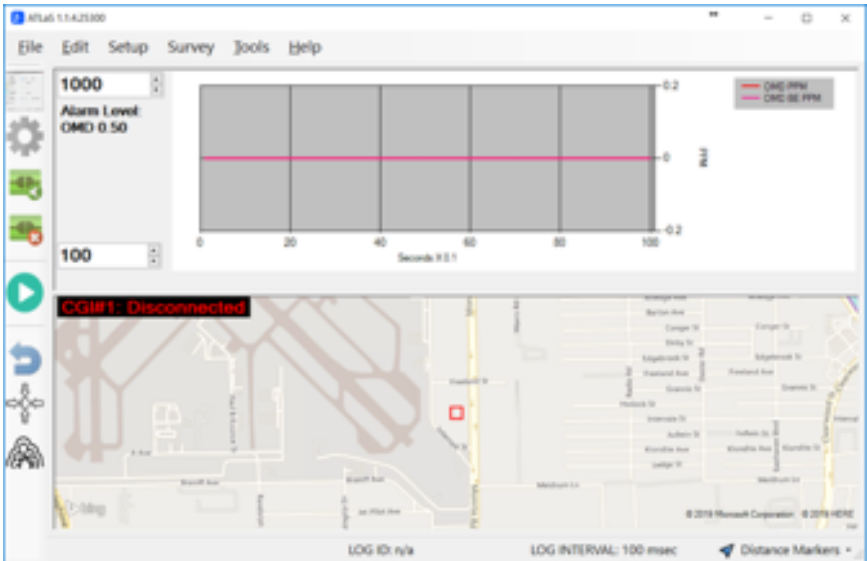


Figure 5: CGI and GPS connected

CGI and GPS Not Connected

When no CGI instrumentation is connected, a red “Disconnected” warning label appears in the upper left of the map screen, to the left of the Stop/Start Quick Click icon.

When CGI instrumentation and GPS are properly configured but not connected, the red “Disconnected” warning changes and displays which components are not properly connected. This updated and component specific warning appear in the upper left of the map screen, to the left of the Stop/Start Quick Click icon.

When no GPS is connected, a red “No Position Fix” warning label appears in the upper right of the map screen.

DISCONNECT ALL INSTRUMENTS

The Disconnect All Instruments quick click icon automatically disconnects all connected gas instruments and GPS.

START/STOP LOGGING

The Start/Stop Logging quick click icon begins or completes data acquisition and analysis.

Upon starting the data logging process, a pop up dialog window will appear allowing changes to the log file directory location and name.

Log File Directory

The current log file directory location will display in the Log ID pop up dialog window. The default log file directory location is C:\Users\Public\Documents\Heath Consultants\ATLaS\Data Files

Click the “Change” button to modify the file location where ATLaS data log files are saved.

Log File ID Creation

A Log ID is required. Once a file name is entered into the Log ID field, the “Create” button will become enabled.

Log File ID Continuation

ATLaS data collection and analysis may be stopped and restarted. Once a distinct and unique Log ID name is saved, additional ATLaS data collection and analysis can be added to the original log file. To continue with a previously used Log ID, enter the desired Log ID file name. Once the repeat file name is entered into the Log ID field, both the “Append” and “Replace” buttons will become enabled. “Append” adds new data to the original ATLaS data set. “Replace” overwrites the original ATLaS data set.

Starting and Stopping Data Acquisition

After starting ATLaS data acquisition, the Start/Stop Logging quick click icon will turn from an aqua-colored circle with an interior white triangle into a red circle with an interior white square.

Upon completion of ATLaS data acquisition, the Start/Stop Logging Quick Click icon will turn back into the aqua-colored circle with an interior white triangle.

RESET STATISTICS

The Reset Statistics quick click icon resets the current DMD analysis window and related statistical values.

CENTER MAP AT CURRENT POSITION

The Center Map at Current Position quick click icon snaps the map view to the current GPS location.

MARK LEAK

The Mark Leak quick click icon opens a window which allows user entry and tracking of indications. The Enter Leak Count pop up dialog window allows 0-99 leak indications at a specific geographic location. Leaks found at this location values of 1-99 will create 1-99 leak indications in

the leak.csv file as well as corresponding red leak marks in the KML files.

A leak found at this location value of 0 will create a leak indication in the leak.csv file as well as a corresponding yellow leak mark in the KML files.

INCOMING DATA PLOT

The incoming data plot displays live methane values as well as background methane estimation for all connected instruments. The incoming data plot auto-adjusts the displayed methane PPM axis based upon actual values. Data remains within the incoming data plot for 120 seconds.

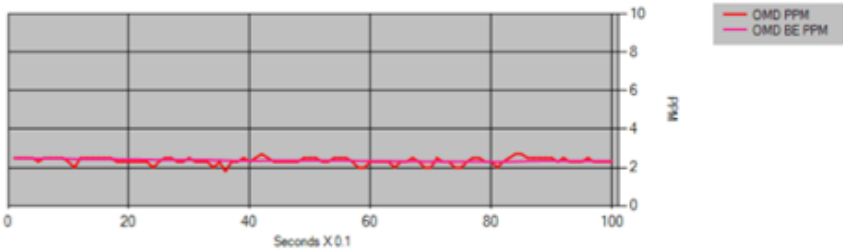


Figure 6: Incoming data plot

MAP

Upon establishing the GPS connection, the map area defaults to centering on your current location. A red square continuously outlines your current position. Blue arrows indicate the route being driven. Red circles will automatically populate on the map when leak indications are detected.

DISTANCE MARKER SETTINGS

The Distance Markers setting is in the lower right corner of the ATLaS software window, under the map area. Distance markers control how close or far apart the GPS breadcrumb logging blue arrow markers are displayed.

Distance markers display in both the active map within ATLaS as well as the saved KML files compatible with most GIS software, including Google Earth. ATLaS GPS is sensitive enough to detect multiple pathways and driving directionality. Options range from every 20' to 1000' with a default of 50'. Markers can be changed during ATLaS operation.

OUTPUT FILES

ATLaS creates five types of files upon saving a drive:

1. `.alarm CSV`
2. `.index CSV`
3. `.leak CSV`
4. `.log CSV`
5. `.meta text document`

Users can prompt ATLaS to create a KML file.

The user provided name for a particular survey drive is appended with these different file extensions. A single survey automatically creates four CSV files and one text document.

.alarm CSV file

The `.alarm CSV` is a snapshot for each alarm location with all pertinent information to dispatch a field surveyor including timestamp, latitude, longitude, and measure methane values.

.index CSV file

The `.index CSV` file is an intermediate file produced during the algorithmic analysis of the detected methane values.

.leak CSV file

The `.leak CSV` file can correlate latitude, longitude, and the number of leaks found.

.log CSV file

The `.log CSV` file contains all the incoming data from the connected CGI instrument(s) including methane measurement values, GPS latitude and longitude, and time stamps.

.meta text document

The `.meta text document` file contains ATLaS survey configuration parameters including survey name, surveyor, instrumentation, and algorithm analysis parameters.

KML file

The KML file is compatible with GIS software and contains blue arrows representing vehicle directionality and red circles for leak indications. Distance Markers setting is in the lower right corner of the ATLaS software window, under the map area. Distance markers control how close or far apart the GPS breadcrumb logging blue arrow markers are displayed.

OPTICAL METHANE DETECTOR (OMD) CONNECTION

The Optical Methane Detector (OMD) connects to the computer via a USB cable.