



OdaLog G20 and G20 RTX

User Manual

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Models

Table 1 shows the units covered in this User manual. The Gas Loggers are portable gas monitoring devices capable of logging poisonous gases in the most harsh environments.

Table 1. Applicable Models

Model	Range	Part Number	Resolution	Communications
Odalog™ G20 Gas Logger	0-200 ppm	Odalog-G20-H2S-200	0.1 ppm	Modbus and Bluetooth
	0-2000 ppm	Odalog-G20-H2S-2000	1 ppm	Modbus and Bluetooth
Odalog™ G20 RTX Wireless Gas Logger	0-200 ppm	Odalog-G20-RTX H2S-200	0.1 ppm	Modbus, Bluetooth, 4G
	0-2000 ppm	Odalog-G20 RTX-H2S-2000	1 ppm	Modbus, Bluetooth, 4G



MODEL OdaLog® G20



IECEx ExTC 21.0014X
 Ex ia IIB T4 Ga IP66/68
 -20 °C ≤ Ta ≤ 50 °C

EX ia IIB T4 IP66/68
 II 2 G

WARNINGS

- ◆ FOR SAFETY REASONS THIS EQUIPMENT MUST BE OPERATED AND SERVICED BY QUALIFIED PERSONNEL ONLY. READ INSTRUCTION MANUAL, UNDERSTAND AND ADHERE TO MANUFACTURER'S LIVE MAINTENANCE PROCEDURES BEFORE OPERATING OR SERVICING.
- ◆ POTENTIAL ELECTROSTATIC CHARGING HAZARD, ONLY USE DAMP CLOTH TO CLEAN OR WIPE - SEE USER MANUAL.
- ◆ SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.






MODEL OdaLog® G20 RTX



IECEx ExTC 21.0014X
 Ex ic IIB T4 Gc IP66/68
 -20 °C ≤ Ta ≤ 50 °C

EX ic IIB T4 IP66/68
 II 2 G

Contain FCC ID: R17LE910CXNF

WARNINGS

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- ◆ POTENTIAL ELECTROSTATIC CHARGING HAZARD, ONLY USE DAMP CLOTH TO CLEAN OR WIPE - SEE USER MANUAL.
- ◆ SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.




Safety Precautions

FCC

This device complies with Part 15 of the FCC Rules and with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference; and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.



WARNING: Any changes or modifications not expressly approved by the grantee could void the user's authority to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

EMC

ICES-003 statement: Class A CAN ICES-003 (A) / NMB-003 (A)

This equipment complies with the FCC and ICSED Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and all persons during normal operation.

Odalog G20 Gas Logger

As the user of the product, it is your responsibility to understand the proper function and operational characteristics of the loggers. This User manual should be thoroughly read and all operators given adequate training before attempting to place the loggers in service. Awareness of the stated cautions and warnings, and compliance with recommended operating parameters together with maintenance requirements are important for safe and satisfactory operation. The unit should be used for its intended application; alterations or modifications will void the Warranty.

Alert Signals



Do not use solvents to clean the Odalog gas logger. (a damp cloth will suffice)



Do not insert objects (including finger) into gas inlet as the filter may be damaged.



Do not attempt to disassemble sensors as they are potentially corrosive.



The use of lithium batteries other than the lithium batteries listed in **Table 4** will invalidate the intrinsic safety approval.



Before each day's use, sensitivity must be tested on a known concentration of test gas (to match the sensor type) equivalent to 20-50 percent of full-scale concentration. Accuracy must be within $\pm 10\%$ of actual concentration or $\pm 5\%$ of full scale. accuracy may be corrected by calibration as described in the "calibrating the Odalog" section.



The Odalog gas logger is not designed to operate as a safety device. When entering confined spaces and toxic hazard environments all appropriate regulations and occupational health and safety precautions should be strictly adhered to. If unsure of potential hazards or safety standards, seek advice from your workplace occupation health and safety department or government regulatory body.



The ambient temperature range that the apparatus is suitable for is -20°C to $+50^{\circ}\text{C}$.



“EX” CERTIFICATION is valid only to 21% VOL oxygen. The Odialog gas logger should not be used in oxygen enriched atmospheres.



Battery shall not be removed or replaced by user for any maintenance. Contact manufacturer / authorized distributor.



Only touch the instrument with an insulating object.



To avoid build-up of electrostatic charge, the instrument shall be used or placed where it will be protected from inadvertent rubbing and shall only be cleaned or wiped with a damp cloth when used in explosive atmospheres.



Only use the micro-SD card that is provided or recommended by the manufacturer.



The enclosure shall only be disassembled in the non-hazardous area.



The following parameters shall be taken into account during interconnection in a system:

Odialog G20 Entity Parameters at Connector CN6

U_o 3.9 V

I_o 275 mA

L_o 55.77 μH

C_o 22 μF

U_i 3.7 V

P_i 206 mW

C_i 181 μF

L_i 20.2 μH



The maximum external capacitance and maximum external inductance of the circuits connected at CN6 have been additionally assessed for spark ignition compliance with resistive current limiting circuits at elevated voltages and currents and found to be compliant as follows:

U 7.6 V

I 480 mA

C_o 203 μF

L_o 75.9 μH

Odalog G20 RTX Gas Logger-Alert Signals



This instrument transmits radio frequencies (2 g/3 g/wifi*), ensure all safety precautions are observed (depending on model). A separation distance of at least 20 cm must be maintained between the modem transmitter's antenna and the body of the user or nearby persons.



Disable communications when instrument is being transported via aeroplane.



LITHIUM BATTERY SAFETY:

- a. This instrument uses lithium battery. All safety and handling precautions must be observed (lithium contained = approx. 3.9 grams per D-size LSH20 high current battery). If dangerous good transport may apply in your locality, remove the battery for transport if dangerous.
(goods suitable for shipping methods are not available)
- b. Avoid moisture contact with lithium batteries, may cause damage/explosion.
- c. Do not attempt to disassemble instrument that shows signs of battery damage inside instrument.
- d. Only use with manufacturer approved lithium battery types.
(see 'instrument specifications' for list of approved batteries)
- e. Observe battery manufacturer's guidance on disposal.
- f. Battery handling/shipping, safety and disposal information is available from manufacture or contact distributor for information.



This instrument is not 'intrinsically safe' and should not be used in potentially flammable or oxygen enriched atmospheres.



Do not use solvents to clean the instrument. (a damp cloth will suffice).



The apparatus is suitable for ambient temperature range of -20°C to +50°C.



Install and secure wiring (and excess wiring) attached to this instrument in accordance with workplace health and safety regulations of the installation site.



It is recommended that the instrument be installed out of direct sunlight. (sheltered)



Service and/or repair work on this instrument must only be carried out by authorized service technicians. Return instrument to authorized service agent/distributor for any internal maintenance (other than changing SD card and Sim card).



If using a custom external antenna, ensure manufactures safety precautions are adhered to.



Long-term exposure to temperature or humidity levels outside the instrument range may result in damage to the sensor and inaccurate data.



The Odalog gas logger is not designed to operate as a safety device, and should not be used for confined space entry or hazardous area monitoring.



Do not insert objects (including finger) into gas inlet as the filter may be damaged.



Do not attempt to disassemble sensors as they are potentially corrosive.



Before each deployment, sensitivity must be tested on a known concentration of test gas (to match the sensor type) equivalent to 20-50 percent of full-scale concentration. Accuracy must be within $\pm 10\%$ of actual concentration or $\pm 5\%$ of full scale. Accuracy may be corrected by calibration (refer to user manual for calibration). It is recommended that a gas check be performed after deployment as well, so that accuracy of logged data can be checked.
(and corrected if necessary in the software.)



Battery shall not be removed or replaced by user for any maintenance. Contact manufacturer / authorized distributor.



Only touch the instrument with an insulating object.



To avoid build-up of electrostatic charge, the instrument shall be used or placed where it will be protected from inadvertent rubbing and shall only be cleaned or wiped with a damp cloth when used in explosive atmospheres.



Only use the micro-SD card that is provided or recommended by the manufacturer.



The enclosure shall only be disassembled in the non-hazardous area.



The following parameters shall be taken into account during interconnection in a system:
OdaLog G20 RTX Entity Parameters at Connector

CN6:

Uo 3.9 V

Io 275 mA

Lo 55.77 μ H

Co 22 μ F

Ui 3.7 V

Pi 206 mW

Ci 181 μ F

Li 17 μ H



The maximum external capacitance and maximum external inductance of the circuits connected at CN6 have been additionally assessed for spark ignition compliance with resistive current limiting circuits at elevated voltages and currents and found to be compliant as follows:

U 7.6 V

I 518 mA

Co 203 μ F

Lo 73 μ H

Unpacking

At delivery, examine the exterior for physical damage while the carrier's representative is present. If exterior damage is present, carefully unpack and inspect the unit and all accessories for damage.

If there is no exterior damage, unpack and inspect the equipment within five days of delivery. If you find any damage, keep the packing materials and immediately report the damage to the carrier.

Do not return goods to the manufacturer without written authorization.

When submitting a claim for shipping damage, request that the carrier inspect the shipping container and equipment.

Packing List

Along with the unit, following things will be packed:

- Antenna-RTX only
- USB cable
- Grease (1 bottle)
- Magnetic Hex Screwdriver
- Calibration Adapter

Introduction

The OdaLog is a compact portable gas data-logger designed for harsh environments, such as the waste water industry. With superior sealing and use of heavy duty materials, this instrument is corrosion-resistant, durable and reliable.

OdaLog G20 Gas Logger

OdaLog G20 is low power logger which is coupled with a long-life lithium cell power-source and battery life is exceeded 12 months in most cases.

New and faster Bluetooth and wireless communication, as well as Modbus communication enables the OdaLog to be easily calibrated, configured and the download of logged data without the need for any disassembly.

The extra large, easy to read LCD makes the OdaLog simple to use and interpret instrument data and settings on-site. The instrument main features can be viewed on-screen, such as: gas readings, temperature, humidity, % of memory used, logging mode and time intervals, as well as a battery level indicator.

OdaLog interfaces with, easy to use software package that brings logged data into the office environment in a user-friendly format.



Figure 1. OdaLog G20 Gas Logger

OdaLog G20 RTX Gas Logger

The new generation OdaLog G20 RTX design is based upon the acclaimed OdaLog G20, and takes all the features from its respected predecessor, adding new wireless data transmission and extended battery life to its already-impressive repertoire. With low power consumption coupled with a long-life Lithium D-cell power-source, battery life will exceed 12 months in most cases.

Wireless communication (Bluetooth, 4G Modem, Modbus), as well as magnetic switches enables the OdaLog to be easily calibrated, configured and the download of logged data without the need for any disassembly. The extra large, easy to read LCD makes the OdaLog simple to use and interpret instrument data and settings on-site. The instrument main features can be viewed on-screen, such as: gas readings, temperature, humidity, % of memory used, logging mode and time intervals, as well as a battery level indicator.

The OdaLog G20 RTX gas monitoring system utilizes a GSM / GPRS Modem to transmit real time gas concentration data to a dedicated Internet (FTPS) server that is remotely accessible using a PC based software application (Odastat NX).

The new OdaLog G20 RTX instruments are able to be fitted with a range of gas sensors and are programmed to transmit gas concentration, battery voltage and temperature measurements at time intervals selectable by the user and main settings can be changed remotely.

The transmitted data is stored on the FTPS server in coded binary files that can be downloaded using a PC based application, Odastat NX.



Figure 2. OdaLog G20 RTX Gas Logger

General Specifications

Storage of the Odialog instrument, with sensors fitted, should be limited to the temperature range of 0°C (32°F) to 25°C (75°F), and between 20% to 80% RH.

Table 2. General Product Specifications

Specification	Odialog G20	Odialog G20 RTX
Operating temperature	-20°C (-4°F) to 50°C (122°F)	
Instrument Relative Humidity Range	5-95% RH	
Ingress Protection	IP66/68 (1 m / 2 hr)	
External Dimensions (DxH)	76.5 mm (3.01") x 175 mm (6.89")	
Instrument Weight		
Power Supply(s)	Primary D-Size Lithium Battery (see Table 4)	
Battery Life/ Run Time	Greater than 12 months (for life of Lithium battery)	Greater than 8 months (depends on signal strength and server transmission interval)
Data Logging Capacity	More than 10 million data points	
Memory	Micro SD card 8 GB Scandisk (SDSDQAF3-008G-XI)	
Logging Interval	Selectable from 1 minute to 1 hour	
Transmission Interval	N/A	Selectable from 30 min to 24 hr
Communication Module	USB, Bluetooth, Modbus	USB, Bluetooth, Modbus, 4G
Tri-Band Antenna	N/A	Water-proof (IP68) Antenna specs Frequency: 698-960 MHz / 1710-2710 MHz / 2500-2700 MHz Dimensions: 163 mm (6.41") X 21.5 mm (0.85")

Note: STP = Standard Temperature and Pressure: 20°C (68°F) @ absolute pressure 101.3 kPa (14.7 psi).

Table 3. Calibration Gas & Flow Times for G20 and G20 RTX loggers

Gas	Model / Range	Recommended gas level	Minimum Flow Rate (ml/min)	Gas flow time
Hydrogen Sulphide (H2S)	0-200 ppm	50 ppm	250-500	15 min.
Hydrogen Sulphide (H2S)	0-2000 ppm	100 ppm	250-500	15 min.

Table 4. Battery Specifications

Model	Battery Type	Size	Quantity	Model
G20 RTX	Lithium	D	1	LSH20
G20	Lithium	D	1	LS33600

Note: Only the battery types in **Table 4** can be used.

Table 5. Technical Specifications-Digital Sensor

Measurement	Value
Operating Principle	Electrochemical
Target Gas	H ₂ S
Accuracy	±5% of measuring value
T50* Response Time	<15 seconds
T90* Response Time	<30 seconds
Output	ppm compensated for temperature
Sensor Warm Up Time	20 seconds
Overload (maximum concentration that can be reached before damaging the sensor)	1000 ppm
Recovery Time from 200 ppm to < 4 ppm	<180 seconds
Linearity*	Linear (±5% from linear, up to 200 ppm)
Measurement Interval	1 min
Resolution	0.1 ppm
Baseline Offset*	<±0.5 ppm H ₂ S equivalent
Equilibrium Baseline Shift from -40°C to +60°C	<±3 ppm
Repeatability*	±5% of measured value
Orientation Sensitivity	None
Serial Communication	USB with Chip Select

Operation

Odalog G20 screens

This section describes a brief operating procedure for the Odalog instrument G20, covering the basics of all major functionality.

Switching On

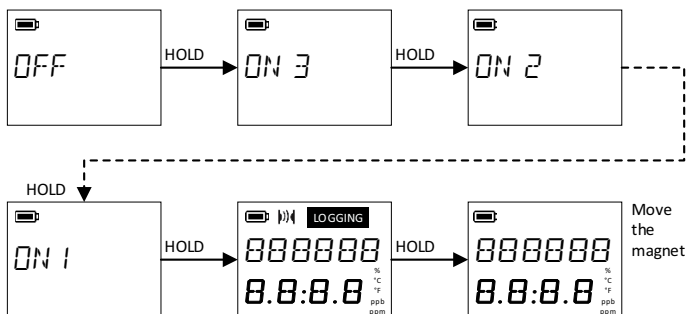


Figure 3. Switching On

Hold the Magnet next to the Menu. “OFF” will count down to ON 3-2-1. Remove the magnet when the “display” screen appears.

LCD Layout Overview

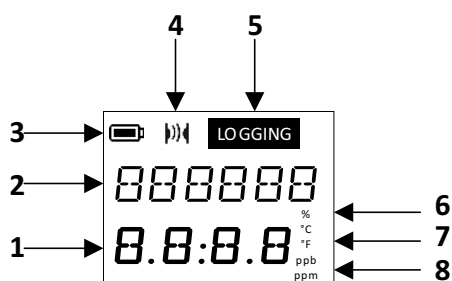


Figure 4. LCD Layout Display

Following are the different parameters displayed on the LCD of the Odalog loggers:

1. **Lower 7-segment characters:** Displays gas readings and status values which are usually numerical digits, some supplemental menu headings and prompts.
2. **Upper 14-segment characters:** Displays menu headings, prompts and other visual feedback which are

usually alphabetic characters, some numerical values displayed on some screens.

3. **Battery Level Indicator** – Displays the battery levels, 4 Stage Depletion.

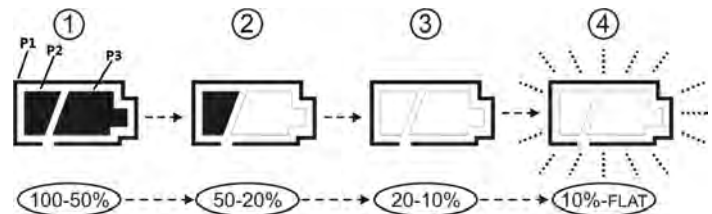


Figure 5. 4 Battery Stage Depletion

P1, P2, P3 are the Segments to display the battery percentage as shown in **Figure 5**. Displaying battery percentage is common for all screens.

4. **Communications Symbol** - This symbol indicates if the instrument is successfully connected and transferring data.
 - **On the INST screen:** Symbol indicates the approximate “signal strength” of the last transmission to the internet server.
5. **Logging Symbol** – This symbol flashing indicates that the instrument is Logging.
Note: Flashing interval does not indicate logging interval.
6. **%** - This symbol is used to show any units or screens that display units as a percentage (e.g. Memory usage, some gas types are displayed % Volume).
7. **Temperature units** – These symbols indicate the temperature readings on screen in degrees Centigrade or Fahrenheit, depending on the setting chosen in the Odastat NX software package [Default = ° C].
8. **Gas Reading units** – These symbols indicate if gas readings shown are in “parts per million” or “parts per billion”. [‘ppb’ is disabled in Odalog Logger G20 and G20 RTX series instruments].

Main Menu

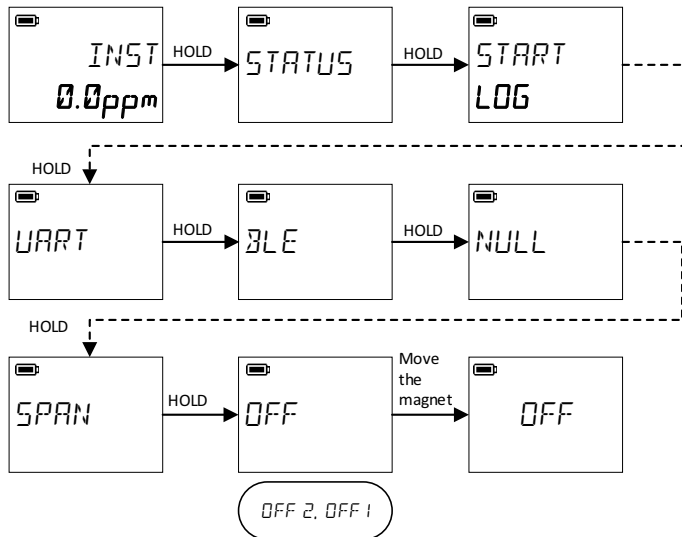


Figure 6. Main Menu Screens

- **INST:** This screen displays the instantaneous gas reading in ppm (parts per million) units. If the Transmit mode is ON, this screen indicates whether the data is logging or not. It will display transmitting symbol  to indicate that the transmit mode is ON.
- **STATUS:** This screen scrolls through overview of Instrument data.
- **START LOG:** This screen enables logging the data. This is confirmed by LOGGING symbol  which flashes on screen.
- **USB:** This screen enables USB (Universal Asynchronous Receiver-Transmitter) link for communicating with the Odalog instrument.
- **Bluetooth:** This screen enables Bluetooth Low Energy (BLE) link for communicating with the Odalog instrument.
- **NULL:** This screen is used to reset the device to “NULL” during calibration. Transmit Mode should be turned off prior to calibration, as any transmissions to the server will cause any NULL or SPAN screens to be cancelled.
- **SPAN:** This screen tests the sensor with gas.
- **OFF:** This screen enables turning off the instrument. Hold the Magnet next to the Menu and wait until the display counts down from “OFF2” to “OFF”. Then, release button.
When the button is correctly released to turn the instrument off, the OFF title will shift 1 character to the right to confirm that the instrument is now in the off state.

Start / Stop Log

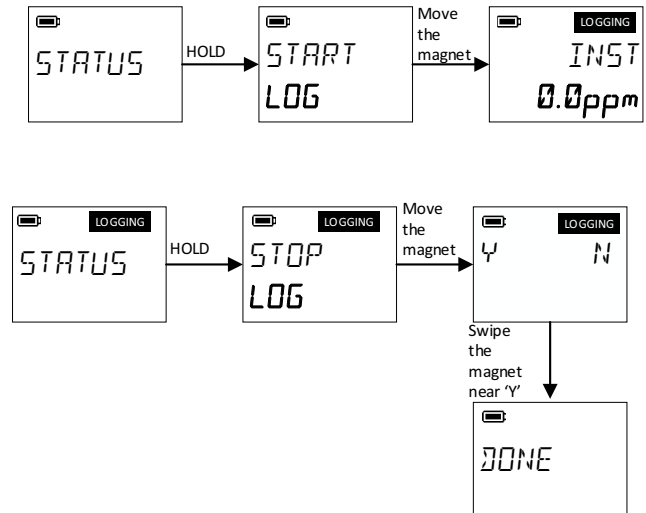


Figure 7. Start / Stop Log Screens

Start / Stop Log functions are used to enable / disable the instrument to log the data.

Hold the Magnet next to the Menu and remove the magnet when the “START LOG” screen appears. The LOGGING symbol  on screen will now start flashing.

Hold the Magnet next to the Menu and remove the magnet when the “STOP LOG” screen appears. Use the magnet tool near ‘Y’ to stop logging the data.

Clear Log

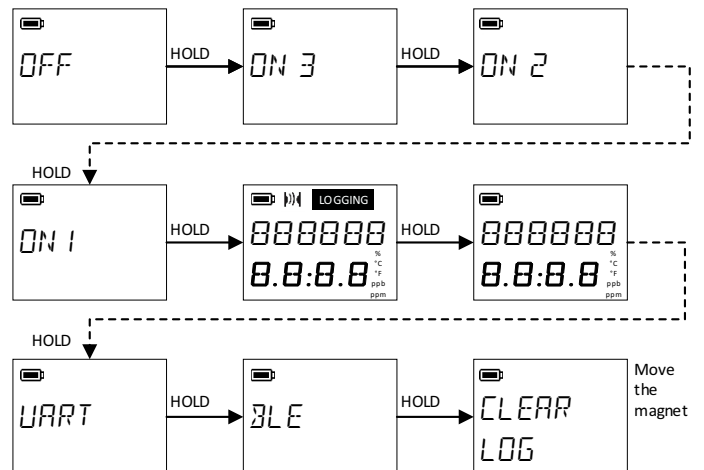


Figure 8. Clear Log Screen

Hold the Magnet next to the Menu until “CLEAR LOG” is displayed and then release. Use the magnet tool near ‘Y’ to turn off the transmission.

Status

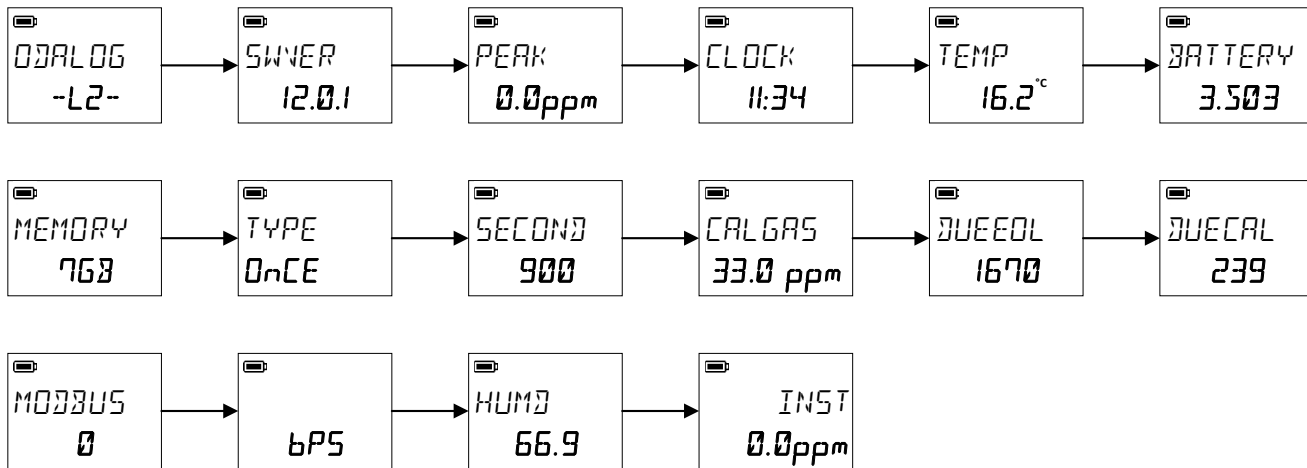


Figure 9. Status Screens

- **Odalog L2:** This screen displays the variant (G20 or G20 RTX) of OdaLog G20 series.
- **SWVER:** This screen displays the Firmware version number.
- **PEAK:** This screen displays gas level in ppm after Start Log function.
- **CLOCK:** This screen displays (shown in 24-hour) time. If clock is not set, this value may be incorrect on screen and in instrument log – This must be set in the Odastat NX Software.
- **TEMP:** This screen displays temperature (in Degrees Fahrenheit / Celsius – depending on default units selected in software).
- **BATTERY:** This screen displays battery level of the Instrument.
- **MEMORY:** This screen displays the amount of local memory available in GB.
- **TYPE OnCE:** This screen displays the type of logging data.
- **SECOND:** This screen displays the logging interval i.e. time between gas readings displayed as “SECONDS” (set in the Odastat NX software).
- **CALGAS:** This screen displays the Calibration Gas Level in ppm as set via the Odastat NX software package.
- **DUEEOL:** This screen displays No of days for sensor end of life.
- **DUECAL:** This screen displays No of days for sensor recalibration.
- **MODBUS:** This screen displays the status of the communication. It is 0 when the instrument is not connected to the software and 1 when the instrument is connected through ModBus.
- **BPS:** This screen displays the data transmission speed from the instrument to the Odastat NX software calculated in bits per second.
- **HUMD:** This screen displays the internal humidity level when the instrument is in the field.

Bluetooth On / Off

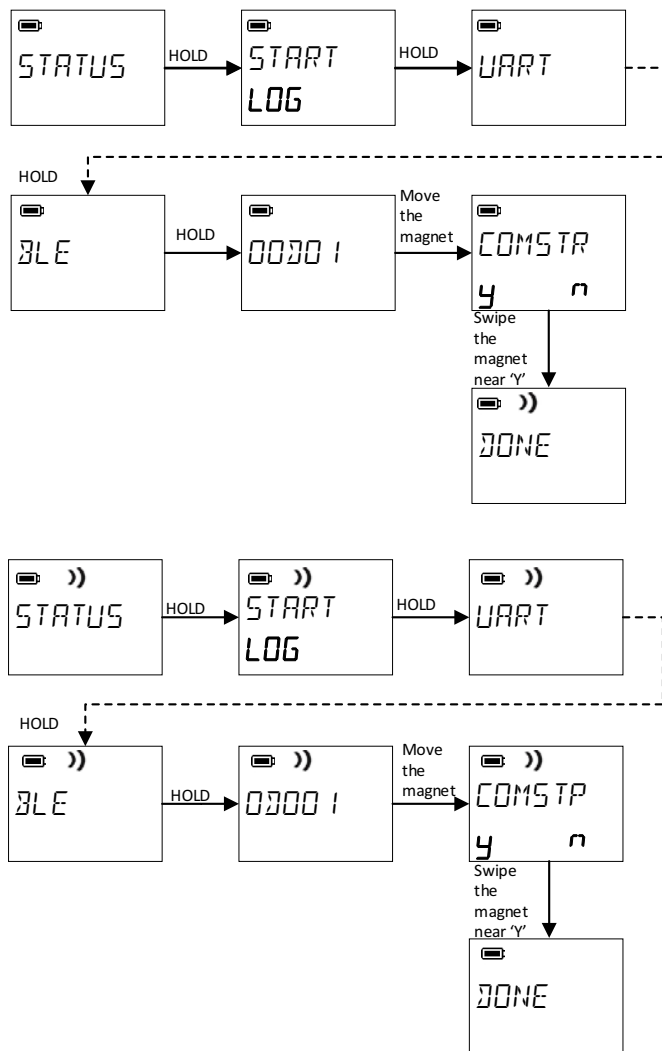


Figure 10. Bluetooth On / Off Screens

Bluetooth Low Energy (BLE) is a low power wireless communication technology that can be used over a short distance to enable smart devices to communicate. In Odalog G20, it enables instrument to communicate with the Odastat NX software.

Hold the Magnet next to the Menu and remove the magnet when the “BLE” screen appears. Use the magnet tool near for ‘Y’ in the “COMSTR (Communication Start)” screen to turn on the transmission through Bluetooth.

The symbol **))** flashes on the screen indicating communication through Bluetooth is on.

Hold the Magnet next to the Menu and remove the magnet when the “BLE” screen appears. Use the magnet tool near ‘Y’ in the “COMSTP (Communication Stop)” screen to turn off the transmission.

USB On / Off

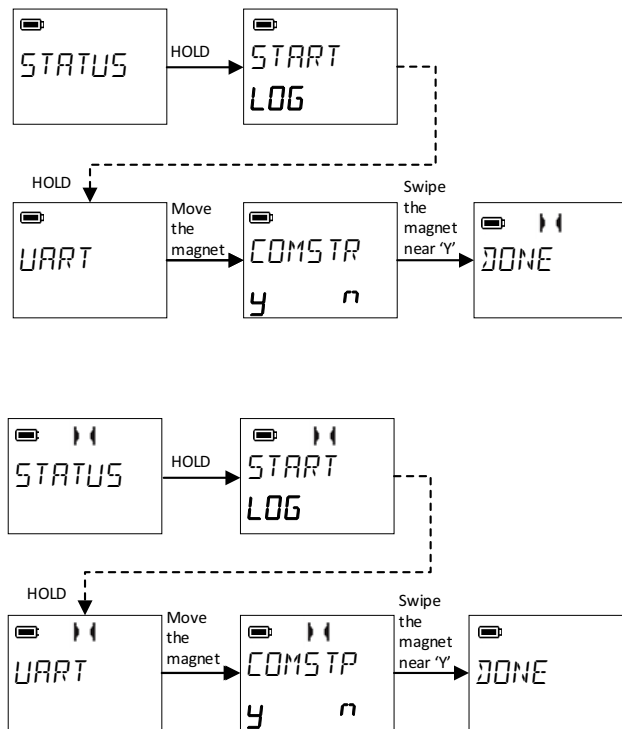


Figure 11. USB On / Off Screens

Universal Serial Bus (USB) is an industry standard that establishes communication and power supply (interfacing) between computers, peripherals and other computers. In Odalog G20, it transfers data between the instrument and the Odastat NX software. The device is the transmission line and the software is the receiving line.

Hold the Magnet next to the Menu and remove the magnet when the “USB” screen appears. Use the magnet tool near ‘Y’ in the “COMSTR (Communication Start)” screen to turn on the transmission through USB. The symbol **))** flashes on the screen indicating communication through USB is on.

Hold the Magnet next to the Menu and remove the magnet when the “USB” screen appears. Use the magnet tool near ‘Y’ in the “COMSTP (Communication Stop)” screen to turn off the transmission.

NULL On / Off

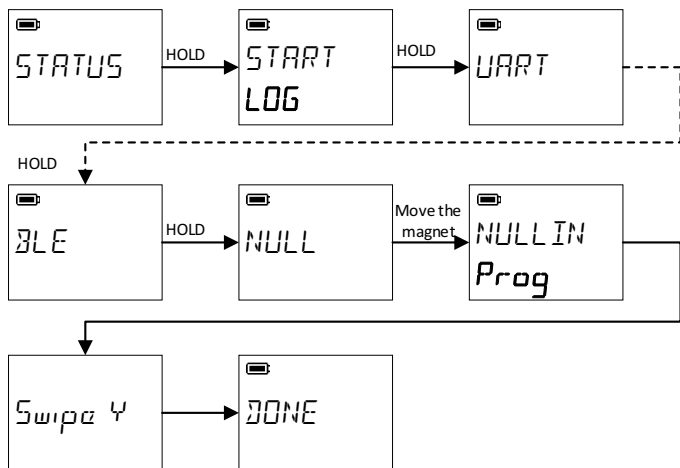


Figure 12. NULL Screen

Ensuring the Odialog is in Clean Air, hold the magnet next to the Menu until display progresses to “NULL” and then release button. “NULL IN Prog” will appear to indicate the instrument is in Null mode. Use the magnet tool near ‘Y’. “DONE” will appear briefly on the screen.

Span

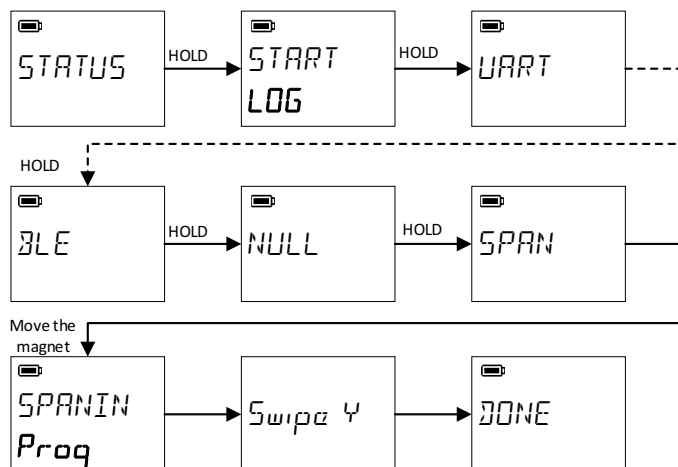


Figure 13. Span Screen

Hold the Magnet next to the Menu until display progresses to “SPAN” and then release button. “SPAN IN Prog” will appear to indicate the instrument is in Span mode. Use the magnet tool near ‘Y’. “DONE” will appear briefly and the LCD will return to the “INST” screen.

Odalog G20 RTX screens

This section describes a brief operating procedure for the Odalog instrument G20 RTX, covering the basics of all major functionality.

Switching On

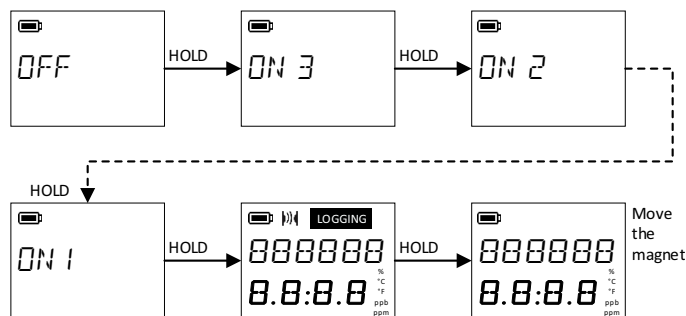


Figure 14. Switching On

Hold the Magnet next to the Menu Button. “OFF” will count down to ON 3-2-1. Remove the magnet when the “display” screen appears.

Main Menu

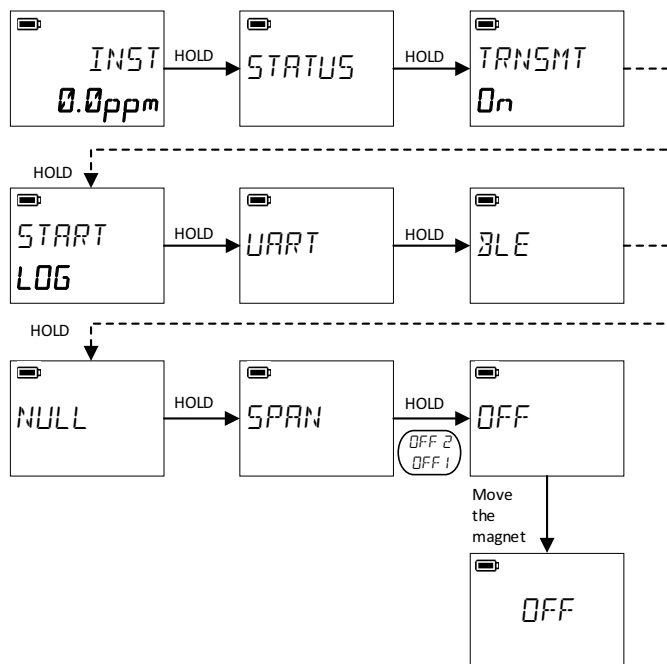


Figure 15. Main Menu Screens

- **INST:** This screen displays the instantaneous gas reading in ppm (parts per million) units. If the Transmit mode is ON, this screen indicates whether the data is logging or not. It will display transmitting symbol  to indicate that the transmit mode is ON.
- **STATUS:** This screen scrolls through overview of Instrument data.
- **TRNSMT On:** This screen enables wireless transmission. Hold the Magnet next to the Menu until “TRNSMT On” is displayed and then release. The Instrument will then attempt to connect to the Internet server every 5 minutes for the first 15 minutes to ensure ongoing transmission. “TRNSMT On” mode automatically enables logging.
- **START LOG:** This screen enables logging the data. This is confirmed by LOGGING symbol  flashing on screen).
- **USB:** This screen enables USB (Universal Asynchronous Receiver-Transmitter) link for communicating with the Odalog instrument.
- **Bluetooth:** This screen enables Bluetooth Low Energy link for communicating with the Odalog instrument.
- **NULL:** This screen is used to reset the device to “NULL” during calibration. Transmit Mode should be Turned OFF prior to calibration, as any transmissions to the server will cause any NULL or SPAN screens to be cancelled.
- **SPAN:** This screen tests the sensor with gas.
- **OFF:** This screen enables turning off the instrument. Hold the Magnet next to the Menu and wait until the display counts down from “OFF2” to “OFF”. Then, release button.

When the button is correctly released to turn the instrument off, the OFF title will shift 1 character to the right to confirm that the instrument is now in the off state.

Start / Stop Log

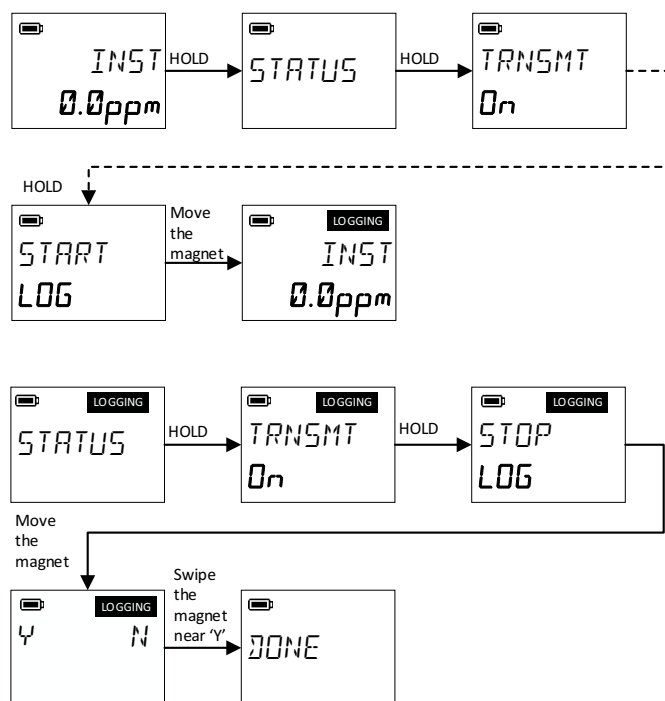


Figure 16. Start / Stop Log Screens

Start / Stop Log functions are used to enable / disable the instrument to log the data.

Hold the Magnet next to the Menu and remove the magnet when the “START LOG” screen appears. The LOGGING symbol **LOGGING** on screen will now start flashing.

Hold the Magnet next to the Menu and remove the magnet when the “STOP LOG” screen appears. Use the magnet tool near ‘Y’ to stop logging the data.

Transmit On / Off

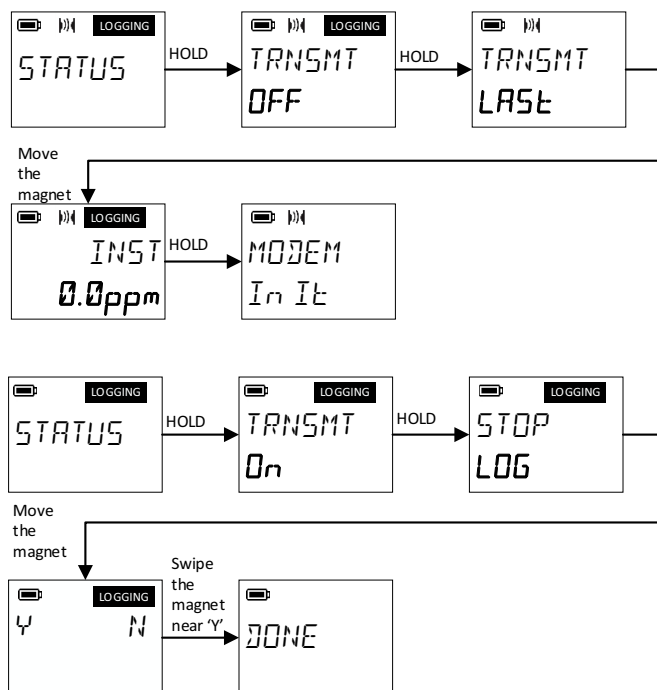


Figure 17. Transmit On / Off Screens

- **TRNSMT OFF:** This screen exits “Transmit Mode”, disabling wireless transmission.
- **TRNSMT LAST:** Hold the Magnet next to the Menu until “TRNSMT Last” is displayed and then release.
- **MODEM In It:** This screen displays the Instrument powering up the modem.

Instrument will return to the INST screen. The LOGGING symbol on screen should now be flashing.

Hold the Magnet next to the Menu until “TRNSMT OFF” is displayed and then release. “Transmit OFF” will automatically “Stop Log”. Use the magnet tool near ‘Y’ to turn off the transmission.

Status

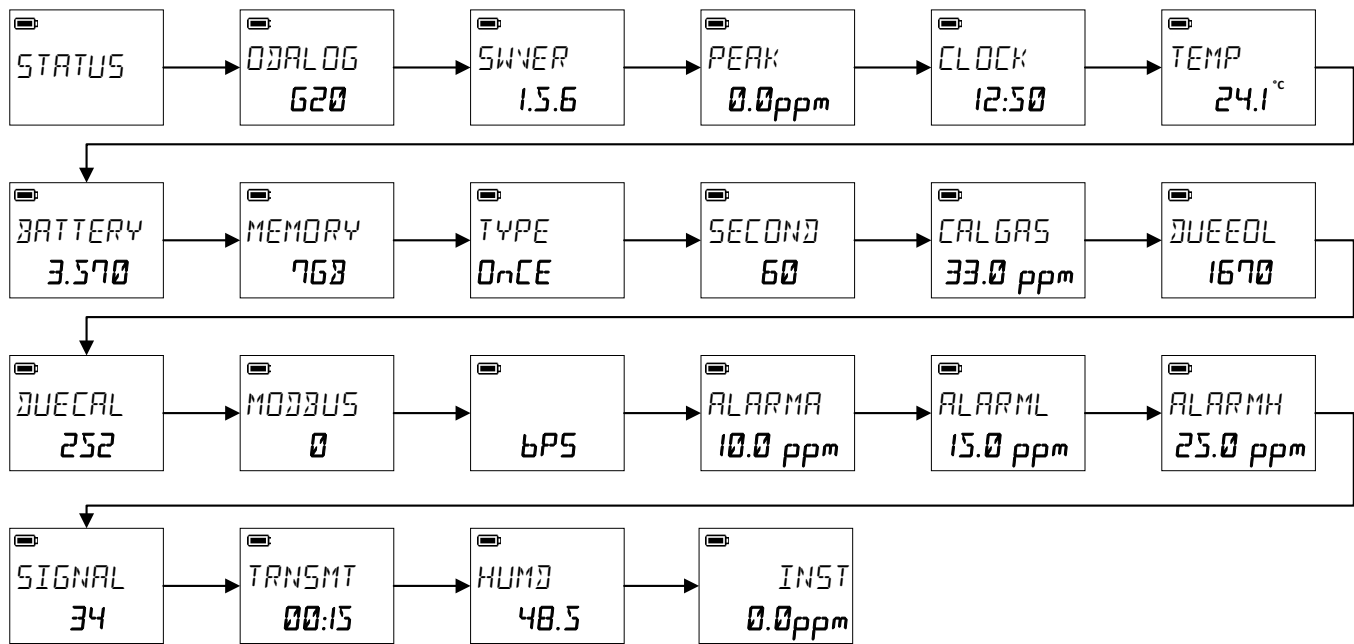


Figure 18. Status Screens

- **STATUS:** This screen scrolls through overview of Instrument data.
- **O2alog G20:** This screen displays the variant (G20 or G20 RTX) of O2alog G20 series.
- **SWVER:** This screen displays the Firmware version number.
- **PEAK:** This screen displays gas level in ppm after Start Log function.
- **CLOCK:** This screen displays (shown in 24-hour) time. If clock is not set, this value may be incorrect on screen and in instrument log. This must be set in the Odastat NX Software.
- **TEMP:** This screen displays temperature (in Degrees Fahrenheit / Celsius – depending on default units selected in software).
- **BATTERY:** This screen displays battery level of the Instrument.
- **MEMORY:** This screen displays the amount of local memory available in GB.
- **TYPE OnCE:** This screen displays the type of logging data.
- **SECOND:** This screen displays the logging interval i.e. time between gas readings displayed as “SECONDS” (set in the Odastat NX software).
- **CALGAS:** This screen displays the Calibration Gas Level in ppm as set via the Odastat NX software package.
- **DUEEOL:** This screen displays No of days for sensor end of life.
- **DUECAL:** This screen displays No of days for sensor recalibration.
- **MODBUS:** This screen displays the status of the communication. It is 0 when the instrument is not connected to the software and 1 when the instrument is connected through ModBus.
- **BPS:** This screen displays the data transmission speed from the instrument to the Odastat NX software calculated in bits per second.
- **ALARMS**
 - **ALARMA:** Alarm Average – This screen displays the high gas level alert from data averaged over a 12 hour rolling window.
 - **ALARML:** Alarm Low – This screen displays the high gas level alert, reaching the lower peak value set in software.
 - **ALARMH:** Alarm High – This screen displays the high gas level alert, reaching the higher peak value set in software.
- **SIGNAL:** This screen displays the GSM signal strength of the last successful transmission to the FTP server.
- **TRNSMT:** This screen displays the transmission interval set in the configuration (How often the data being pushed to the server).
- **HUMD:** This screen displays the internal humidity level when the instrument is in the field.

Bluetooth On / Off

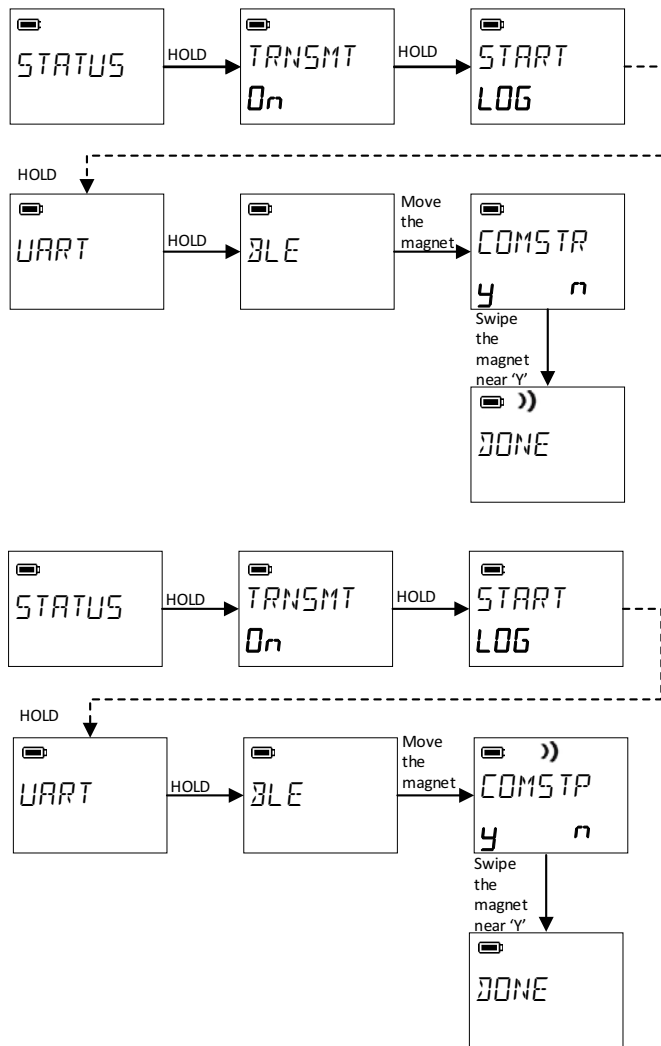


Figure 19. Bluetooth On / Off Screens

Bluetooth Low Energy (BLE) is a low power wireless communication technology that can be used over a short distance to enable smart devices to communicate. In OdaLog G20 RTX, it enables instrument to communicate with the Odastat NX software.

Hold the Magnet next to the Menu and remove the magnet when the “BLE” screen appears. Use the magnet tool near for ‘Y’ in the “COMSTR (Communication Start)” screen to turn on the transmission through Bluetooth.

The symbol  flashes on the screen indicating communication through USB is on.

Hold the Magnet next to the Menu and remove the magnet when the “BLE” screen appears. Use the magnet tool near ‘Y’ in the “COMSTP (Communication Stop)” screen to turn off the transmission.

USB On / Off

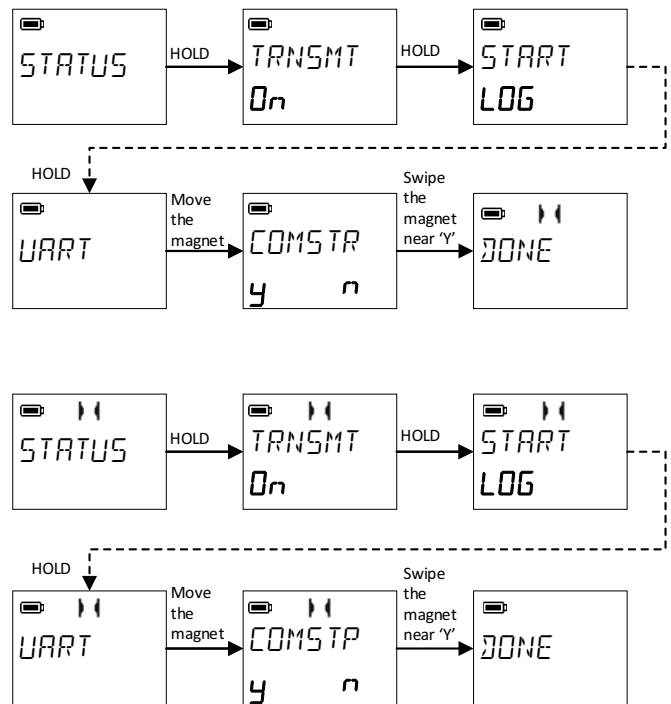


Figure 20. USB On / Off Screens

Universal Serial Bus (USB) is an industry standard that establishes communication and power supply (interfacing) between computers, peripherals and other computers. In OdaLog G20 RTX, it transfers data between the instrument and the Odastat NX software. The device is the transmission line and the software is the receiving line.

Hold the Magnet next to the Menu and remove the magnet when the “USB” screen appears. Use the magnet tool near ‘Y’ in the “COMSTR (Communication Start)” screen to turn on the transmission through USB. The symbol  flashes on the screen indicating communication through USB is on.

Hold the Magnet next to the Menu and remove the magnet when the “USB” screen appears. Use the magnet tool near ‘Y’ in the “COMSTP (Communication Stop)” screen to turn off the transmission.

Null

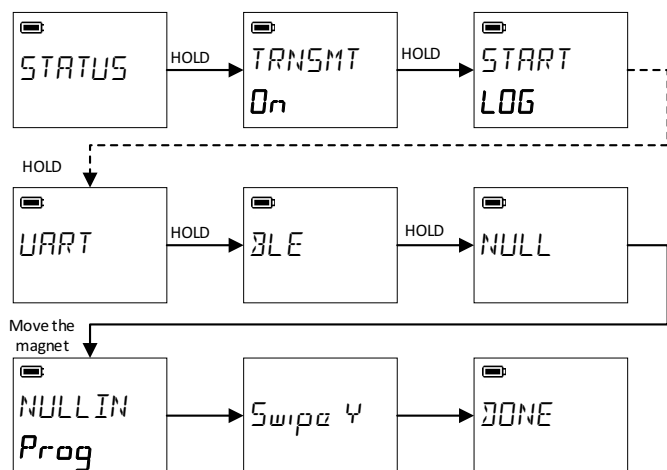


Figure 21. NULL Screen

Ensuring the Odialog is in Clean Air, Hold the Magnet next to the Menu until display progresses to “NULL” and then release button. “NULL IN Prog” will appear to indicate the instrument is in Null mode. Use the magnet tool near ‘Y’. “DONE” will appear briefly on the screen.

Span

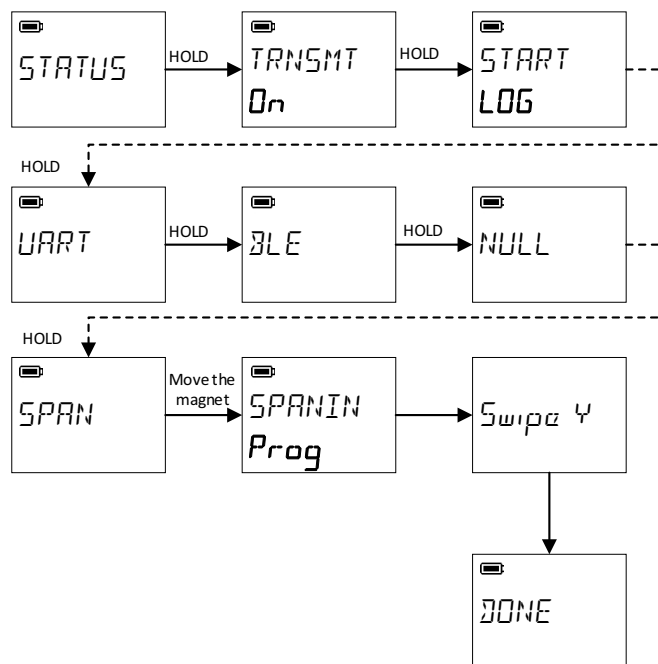


Figure 22. Span Screen

Hold the Magnet next to the Menu until display progresses to “SPAN” and then release button. “SPAN IN Prog” will appear to indicate the instrument is in Span mode. Use the magnet tool near ‘Y’. “DONE” will appear briefly and the LCD will return to the “INST” screen.

Modem and SMS

The Modem used in instrument has added support for FTPS server Explicit Mode on Port 21.

Table 6.

Modem Specifications
Explicit Connection on Port 21
Should support TLS 1.2
AES 265SHA

A Test SMS will be sent when the unit initializes. The SMS is sent during the initialization stage instead of sending an SMS every 5 minutes during an installation.

The SMS sent from the unit for different events are:

Table 7.

Test SMS:	12345,SITE#ID,BATT#100%,EOL#1664,CALDUE#95,AVAMEM#14GB
Alarm Average	SERIAL#12345,SITE#ID
High Gas Alert #1,	SERIAL#12345,SITE#ID
High Gas Alert #2	SERIAL#12345,SITE#ID
Alarm Restored	SERIAL#12345,SITE#ID
Fail Alarm	SERIAL#12345,SITE#ID
Sensor Bad #1	SERIAL#12345,SITE#ID
Sensor Bad #2	SERIAL#12345,SITE#ID
Low Battery Alarm	SERIAL#12345,SITE#ID
MEMORY LOW ALARM	SERIAL#12345,SITE#ID
REPLACE_SENSOR_WITH_IN_10Days	SERIAL#12345,SITE#ID
CALIB_SENSOR_WITH_IN_10Days	SERIAL#12345,SITE#ID

PC Software-Odastat NX

Home Screen

The main functions of Odastat NX software are easily accessible on the Start screen. See **Figure 23** for reference.

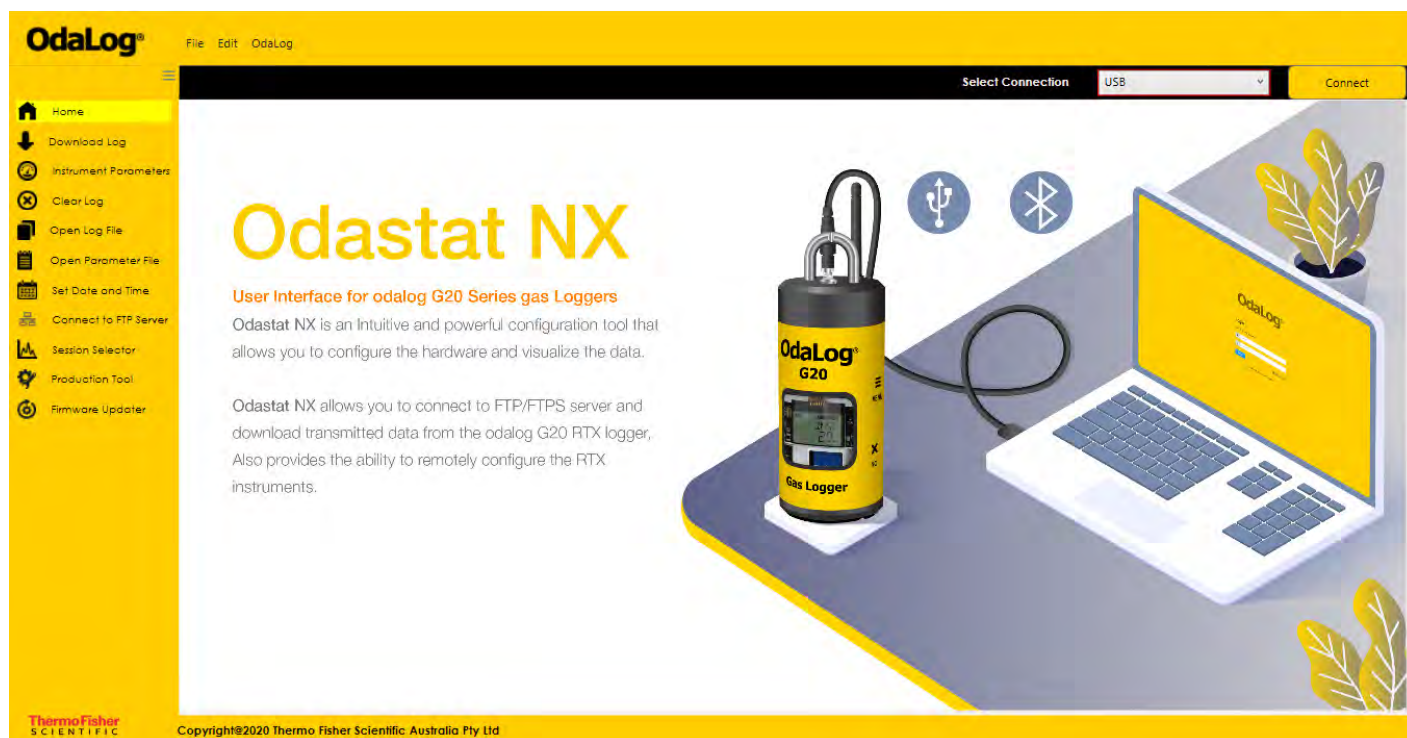


Figure 23. Odastat NX User Interface

Select Connection Screen

- “Select Connection” tab is present at the top right of the display screen. The user can choose an option from the drop down and Click on “Connect” to connect to the device. User can configure the device and download the data using an USB or Bluetooth.

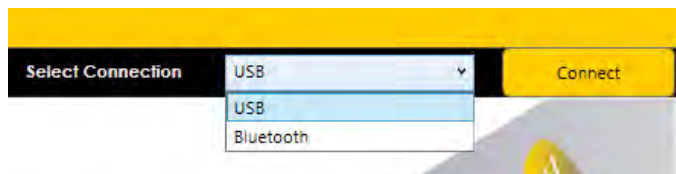


Figure 24. Select Connection Screen

- Select the relevant “Communication Port” and “Baud Rate” from the “Device Connection Settings”. The default Baud rate is 57600 and cant be changed at this stage.

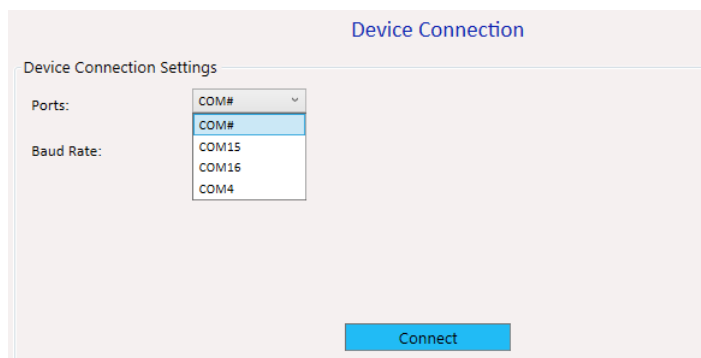


Figure 25. USB Connection-Port

- Click Connect to login to the application.

- Display shows “Successfully Connected”. Click OK. This will take you to the Login Screen.

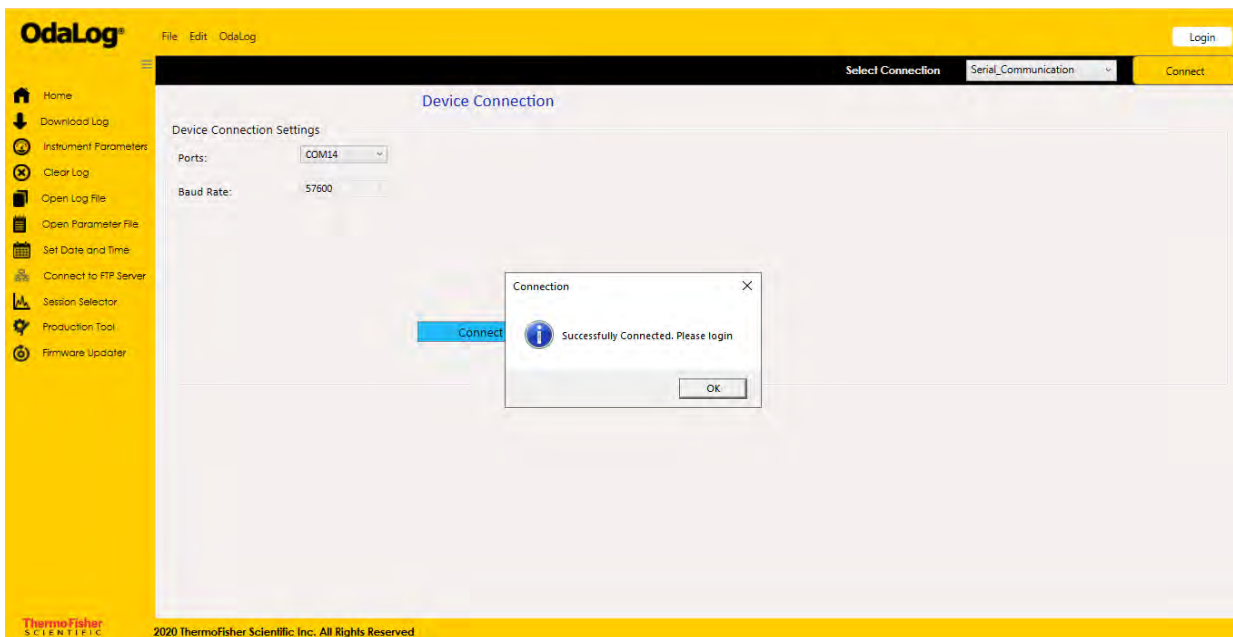


Figure 26. USB Configuration-Successful Login

Bluetooth Communication screen

Select the “Bluetooth Communication” screen from the “Select Connection” tab at the top right end of the screen. Click “Connect” button.

Pair the instrument if you are connecting for the first time, alternatively select the instrument from the paired devices.

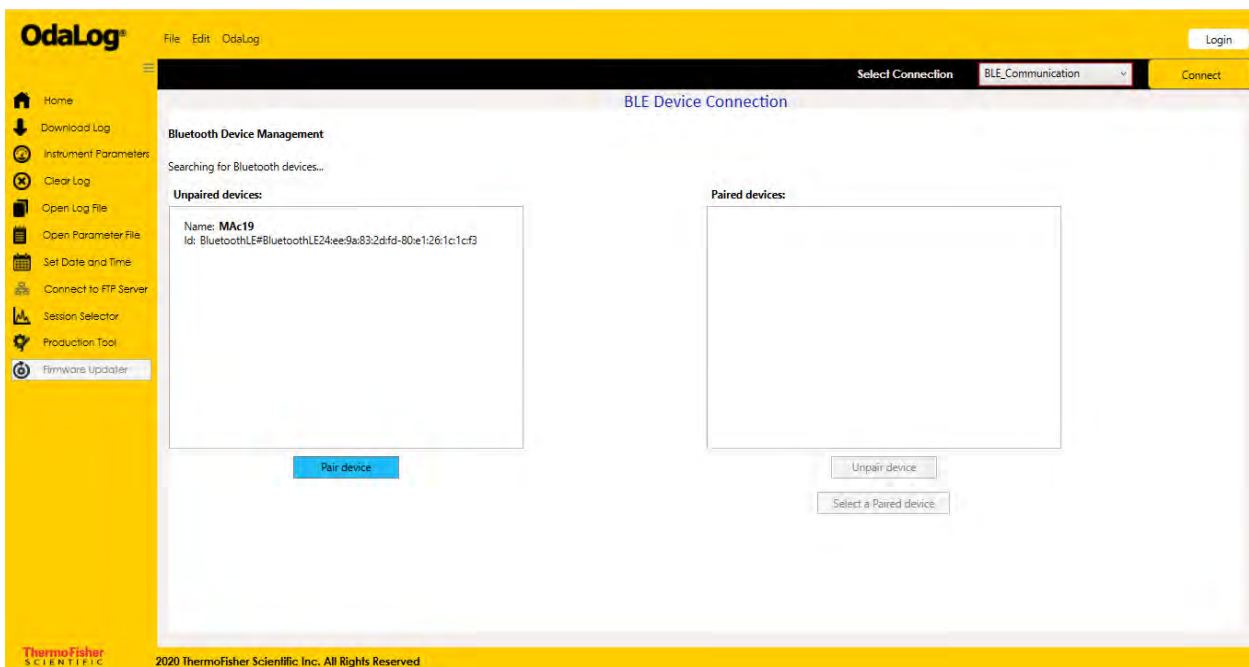


Figure 27. Bluetooth Communication

Click “Pair Device” as shown in **Figure 27**. User gets a Paired message as shown in **Figure 28** after the device is successfully paired.

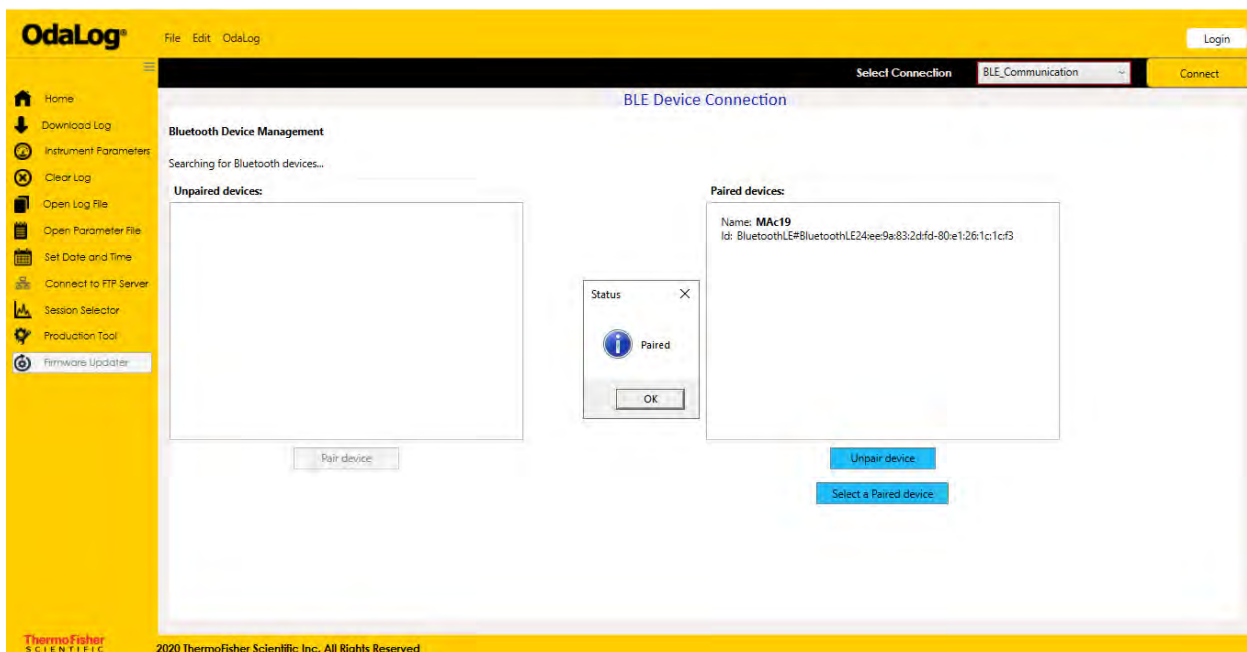


Figure 28. Bluetooth Communication-Device Paired

User get a “Successfully Connected and Paired” message as shown in **Figure 29** after the device is successfully connected.

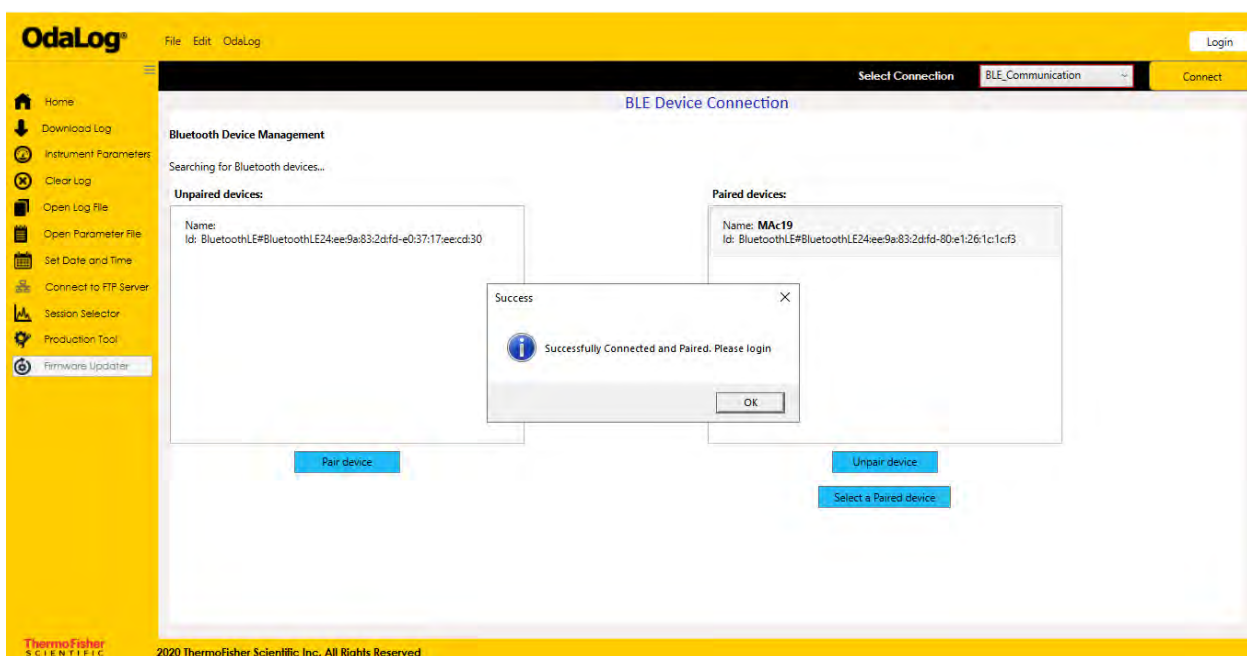


Figure 29. Bluetooth Communication-Successfully Connection

Once connected, Login and using the UI user can configure the unit and download the data.

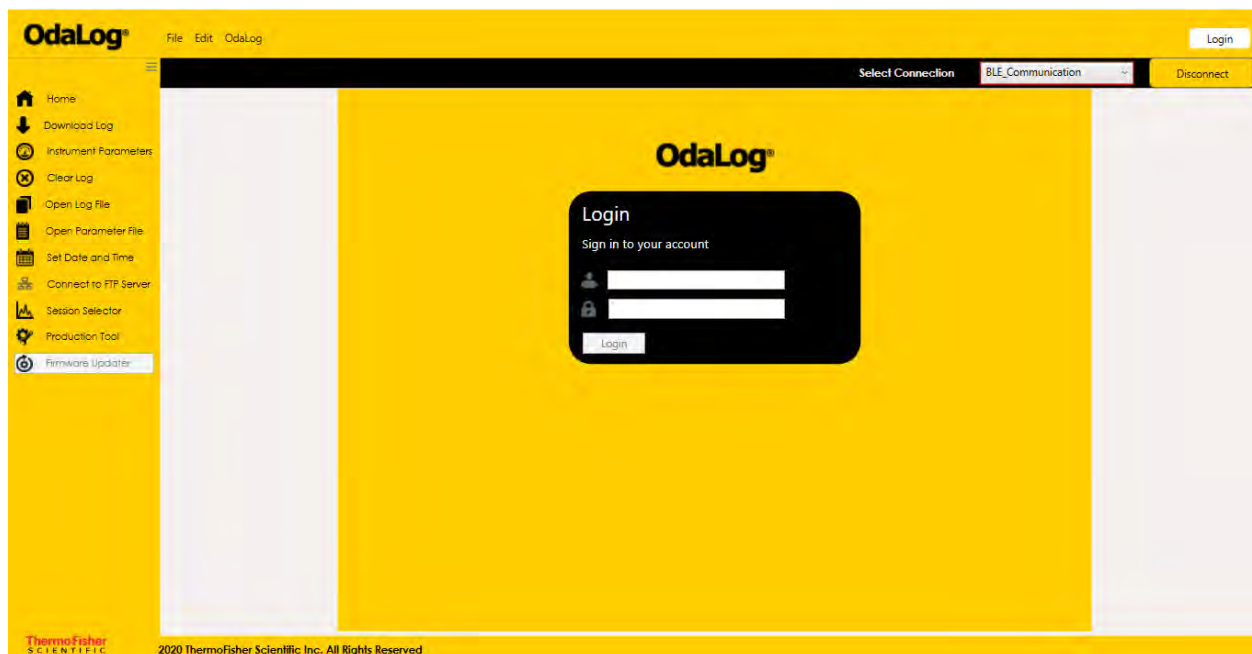


Figure 30. Bluetooth Communication-Login Screen

After Login, user can set the date and time from the “Set Date and Time”.

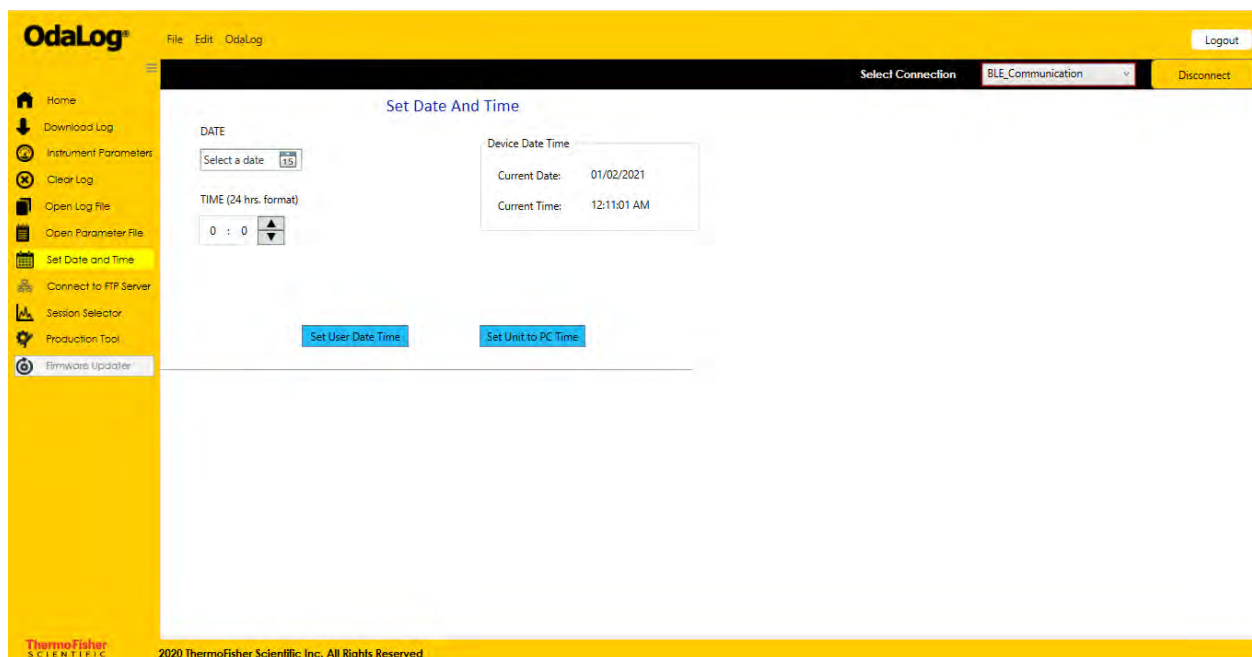


Figure 31. Bluetooth Communication-Date and Time Screen

Login Screen

Enter your Username and Password to Login into your OdaLog account.

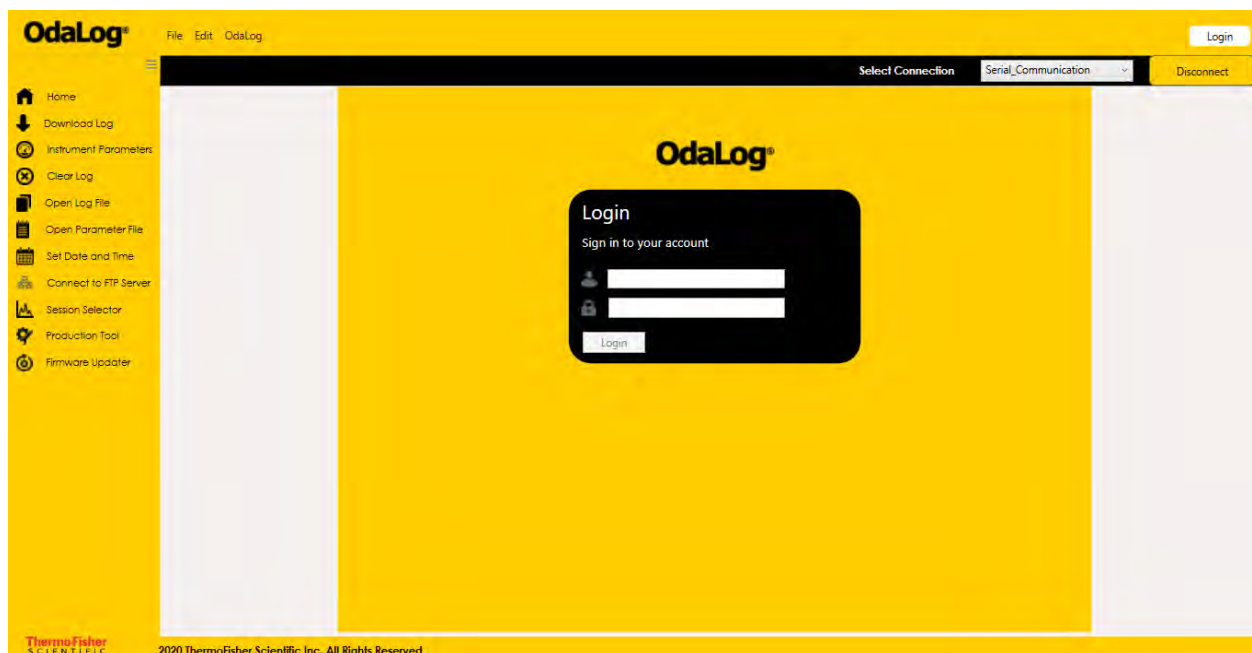


Figure 32. OdaLog Login Screen

If the Username and password are correct, then a “Successfully logged in” message appears on the screen.

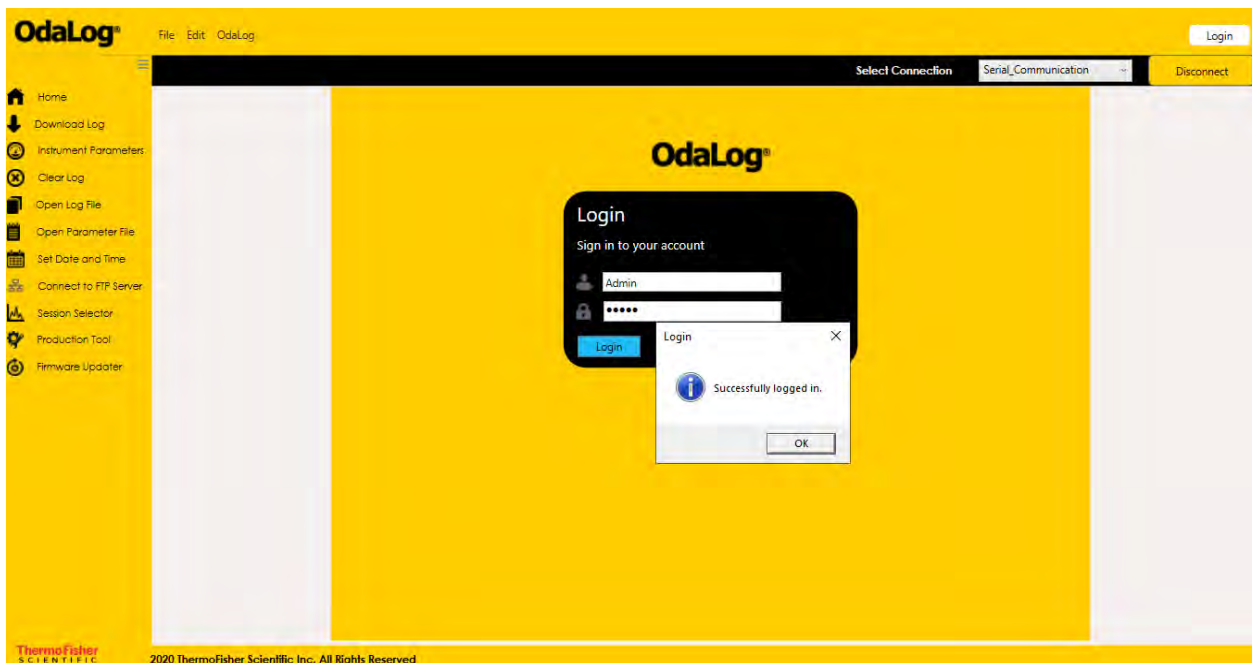


Figure 33. OdaLog Successful Login Screen

Set Date and Time Screen

- Ensure that the OdaLog unit is connected to the PC.
- Select the date from “Set Date and Time” screen from the OdaLog main menu.
- Select the time from “Set Date and Time” screen from the OdaLog main menu.

- Note:**
- User needs to set the unit time every-time they replace the battery.
 - If the Instrument time doesn't match with the PC time it will be automatically take the User to Set Date and Time Screen so that user can update the time.

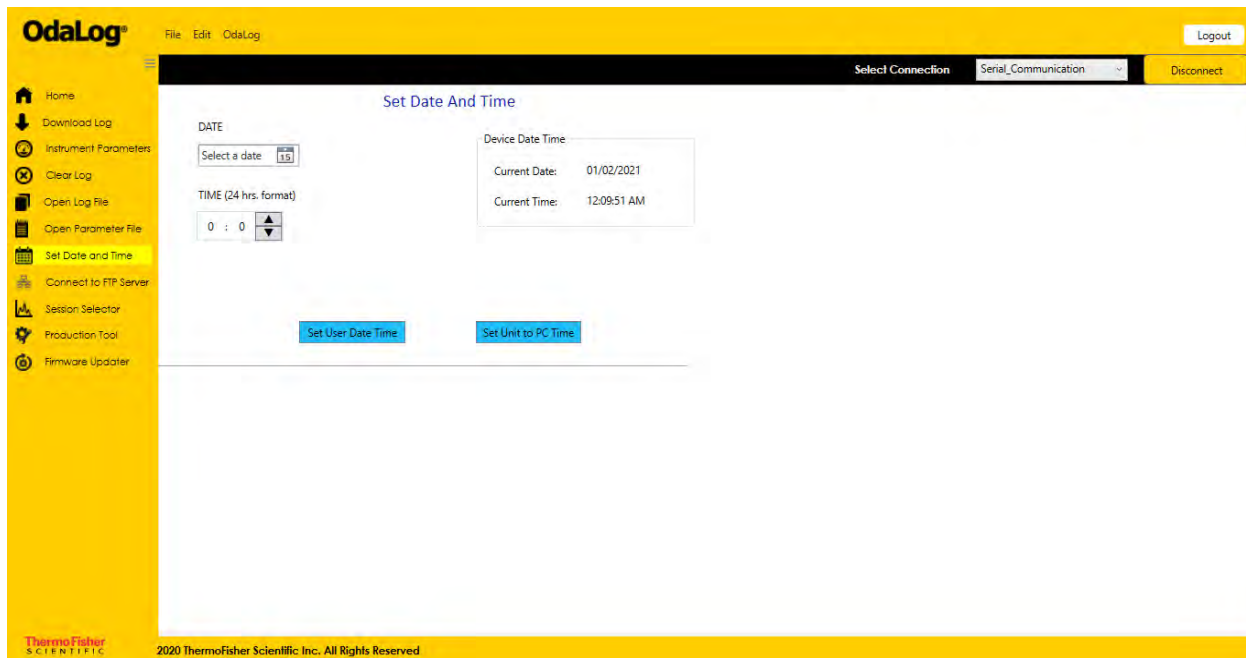


Figure 34. Date and Time Screen

Instrument Parameters

The screenshot shows the OdaLog software interface. The top bar includes the OdaLog logo, menu options (File, Edit, OdaLog), a Logout button, and a connection status bar (Select Connection, Serial_Communication, Disconnect). The left sidebar contains navigation icons and labels: Home, Download Log, Instrument Parameters, Clear Log, Open Log File, Open Parameter File, Set Date and Time, Connect to FTP Server, Session Selector, Production Tool, and Firmware Updater. The main window displays the 'User Configuration' tab. It features several input fields and checkboxes for configuring the instrument. The 'Site ID' field contains 'MArch19'. The 'Logging Setup' section includes 'WakeUp Time Interval' (1 min, 0 sec), checkboxes for 'Log H2S Gas', 'Log Humidity', 'Log Battery Voltage', 'Log SensorDiag', and 'Auto Log'. The 'Instrument Setup' section includes 'Calibration Gas Value' (50), 'Average Alarm' (60), 'Low Alarm' (9), and 'High Alarm' (110). The 'BLE Settings' section includes 'BLE Name' (MArch19) and 'BLE Wakeup Interval (in min)' (5). The 'Temperature Setup' section includes radio buttons for 'Celsius' and 'Fahrenheit', and a checkbox for 'Log Temperature'. The 'RTX Communication Setting' section includes checkboxes for '4G Modem' and 'Modbus'. The bottom section includes 'Register Start Address' (2), 'Device ID (1-255)' (9), and 'Baud Rate' (19200). At the bottom of the main window are three buttons: 'Save to File', 'Load From File', and 'Configure Device'. The footer of the software shows the ThermoFisher Scientific logo and the text '2020 ThermoFisher Scientific Inc. All Rights Reserved'.

Figure 35. Instrument Parameters-Main Tab

From the OdaLog main menu click the “Instrument Parameters” tab to set the below parameters.

Site ID - This User ID is to identify the instrument and where its deployed.

Logging Setup

- **WakeUp Time Interval** - Time interval in minutes and seconds between the collection of each data sample by the OdaLog.
- Check the boxes for the parameters you want to log.

Instrument Setup

- **Calibration Gas Value** - Enter the gas value in this box.
- **Alarm Settings** - These controls allow the user of the instrument to set low average and high gas concentration threshold values. When these values are exceeded, the instrument will notify the user via email and/or sms to a cellular phone.

Bluetooth Settings

- **Bluetooth Name** - Enter the name in this box. The Bluetooth name is limited to 5 Alpha numeric characters.
- **Bluetooth Wakeup Interval** - Set the time interval for the Bluetooth to wakeup.

Temperature Setup - Select the temperature to be logged in either Celsius or Fahrenheit.

G20 RTX Communication Setup - The “Instrument Parameters” that can be accessed are dependent on the type of G20 RTX communication setting. The communication with the device can be done with either Modbus or 4G Modem.

The parameters are available only as shown in **Figure 36** when the User selects the Modbus option. Enabling the checkbox in the **RTX Communication Setting** displays the options.

OdaLog G20 supports Modbus RTU functionality. User can send data and device status via Modbus to a central system.

Figure 36. Instrument Parameters-Modbus

Before the user requests the instrument to send data via Modbus to a Modbus Master, the following parameters are to be filled:

Instrument Parameters-ModBus

- **Register Start Address**
- **Device ID**
- **Baud Rate** - OdaLog G20 supports following baud rates
 - 9600
 - 19200
 - 57600
 - 115200

Table 8.

Connector Pin	Signals	Wire
5	Ex_VCC	Red
6	DEUG_TX	Yellow
7	DEUG_RX	White
8	GND	Black

WARNING:



Modbus communication is over serial (USB cable), user has to connect an intrinsic safety barrier if the cable and Modbus Master has to be outside the intrinsic environment.

ModBus Connection

Table 8.

Connector Pin	Signals	Wire
1	Modbus_TX_P	Violet
2	Modbus_TX_N	Orange
3	Modbus_RX_P	Green
4	Modbus_TX_N	Blue

The highlighted parameters are only visible when the User enables the 4G Modem checkbox in the **RTX Communication Setting** as seen in **Figure 37**.

The screenshot shows the OdaLog software interface. The 'User Configuration' tab is active. The 'RTX Communication Setting' section has the '4G Modem' checkbox checked. Below this, a black box highlights the following fields: 'Modem Signal Strength', 'Modem Wakeup Interval' (0 hrs, 0 min), 'Mobile Number1', 'Mobile Number2', 'Mobile Number3', 'Current SIM Pin', 'FTP Server' (radio button), 'FTP Server Link', 'FTP User Name', 'SFTP Port Number' (0), 'FTP Password', 'FTP File Path', 'APN Setting', 'APN User Name', and 'APN Password'. At the bottom of the highlighted area are buttons for 'Save to File', 'Load From File', and 'Configure Device'.

Figure 37. Instrument Parameters-4G Modem

Modem Signal Strength - This is the strength of signal transmitted by the cable modem. Enter the relevant value.

Modem Wakeup Interval - This is time interval for data Transmission. Enter the relevant value.

Mobile Number - Enter the mobile number to get the alerts.

FTP - Enter the relevant Server Link, File Path, User Name and Password to get the Alarm notifications and alerts from the instruments.

APN - Enter the relevant Setting, User Name and Password to connect the device through Access Point Name.



Note: User has to create a folder they have specified in the path for Save to File and Load from File function.

Manufacturing Tab

Click the “Manufacturing” tab from the “Instruments Parameters” menu to find Device Details. The screen displays “Model, Firmware version, Sensor Selection and the Serial Number” of OdaLog.

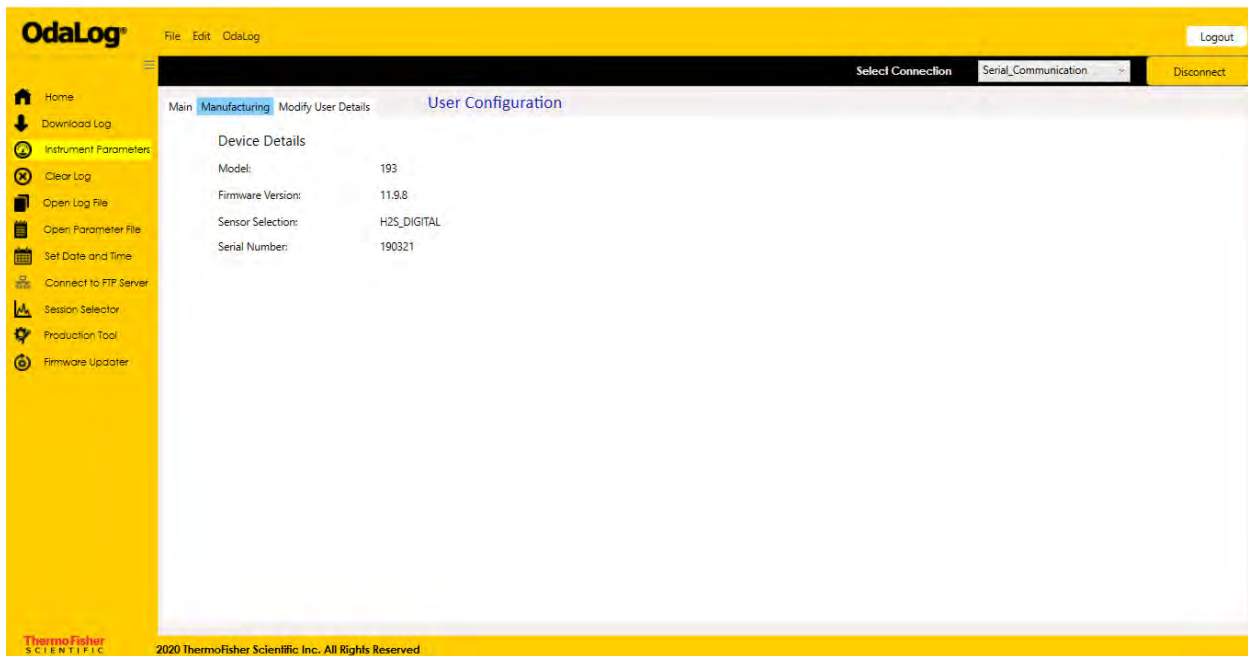


Figure 38. Instrument Parameters-Manufacturing

Modify User Details

Click the “Modify User Details” tab from the “Instruments Parameters” menu to change the “User Name” and “Password”.

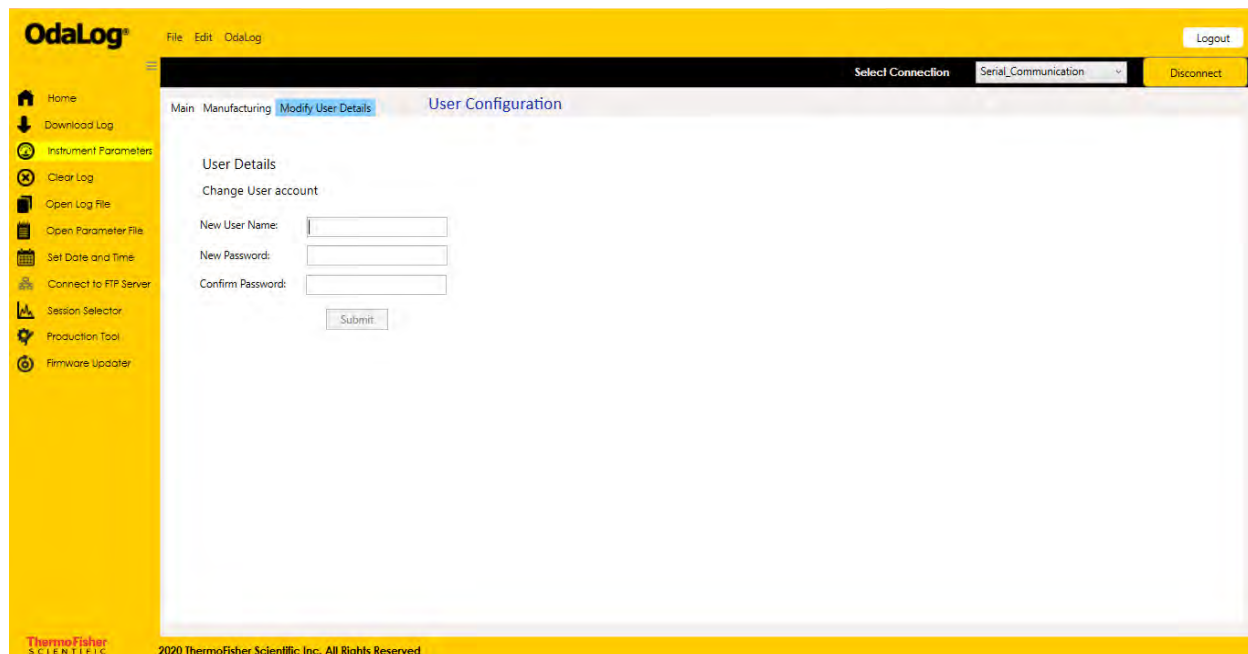


Figure 39. Instrument Parameters-Modify User Details

Open Parameter File

From the Instrument Parameters main tab, the OdaLog parameters for ModBus and 4G Modem are saved as configuration files. These can be opened as shown in **Figure 40**.

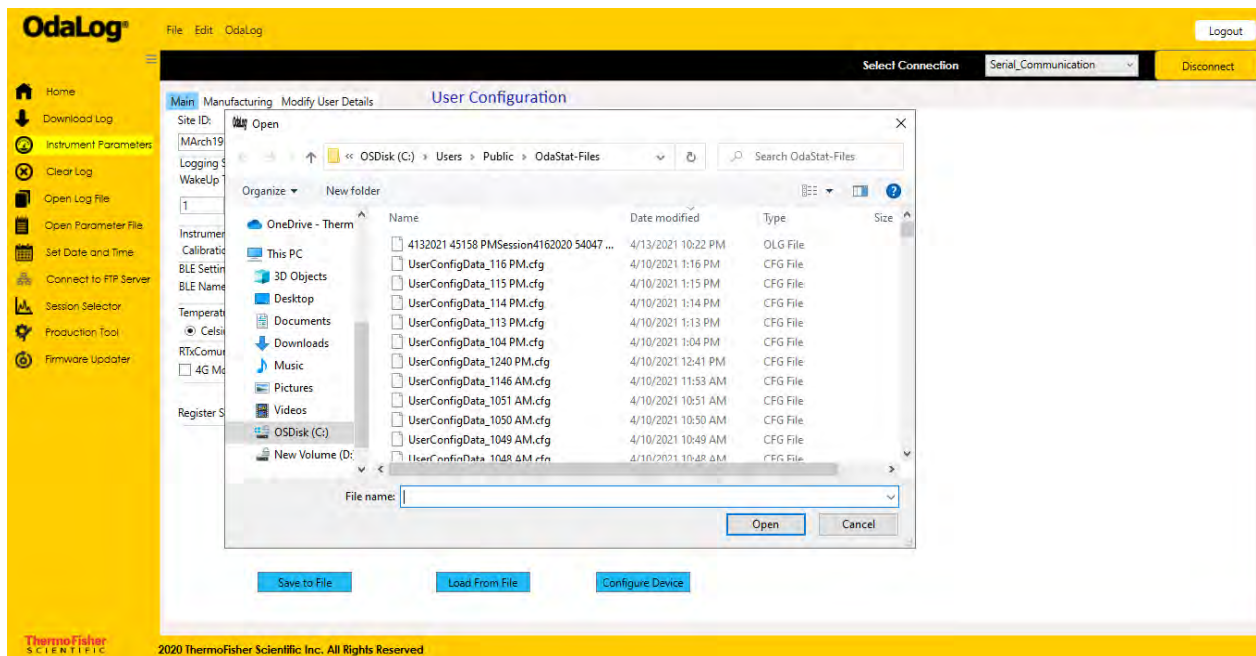


Figure 40. Open Parameter File

Download Log Screen

After successfully connection, select “Download Log” from the OdaLog main menu. The program will immediately start to download the currently connected OdaLog's logged data. While the instrument is downloading, user may still navigate and use OdaStat NX's non-communication functions e.g. viewing a graph. However options such as Setting Date and Time and Instrument Parameters will be disabled.

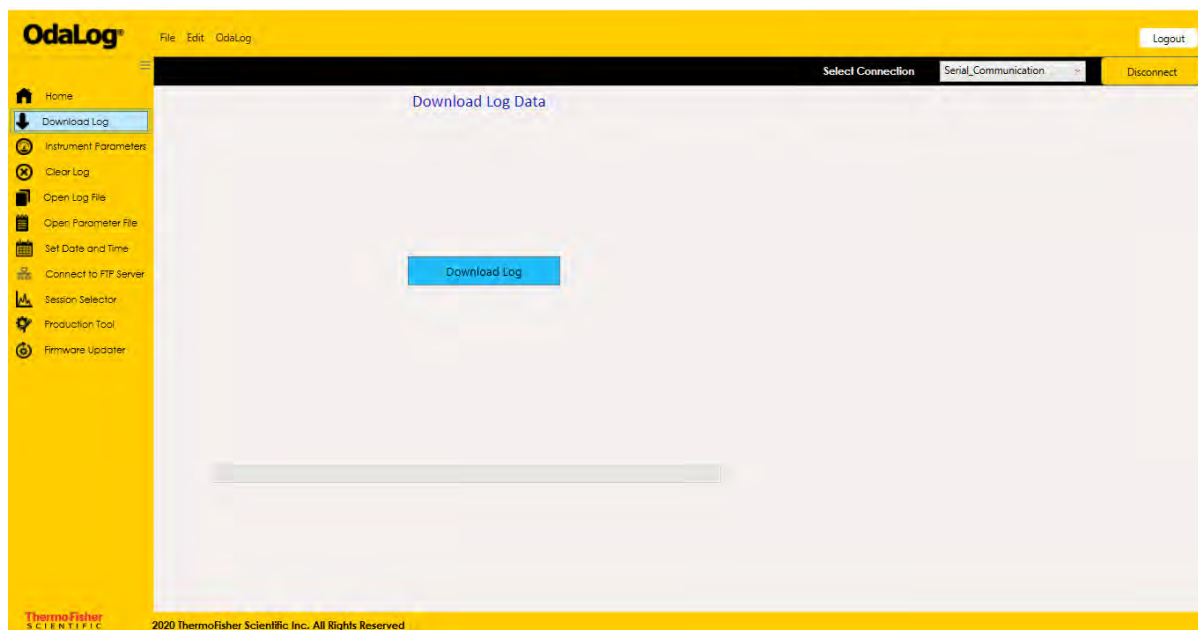


Figure 41. Download Log Data

When the instrument has finished downloading, user will receive the message that the data is saved.

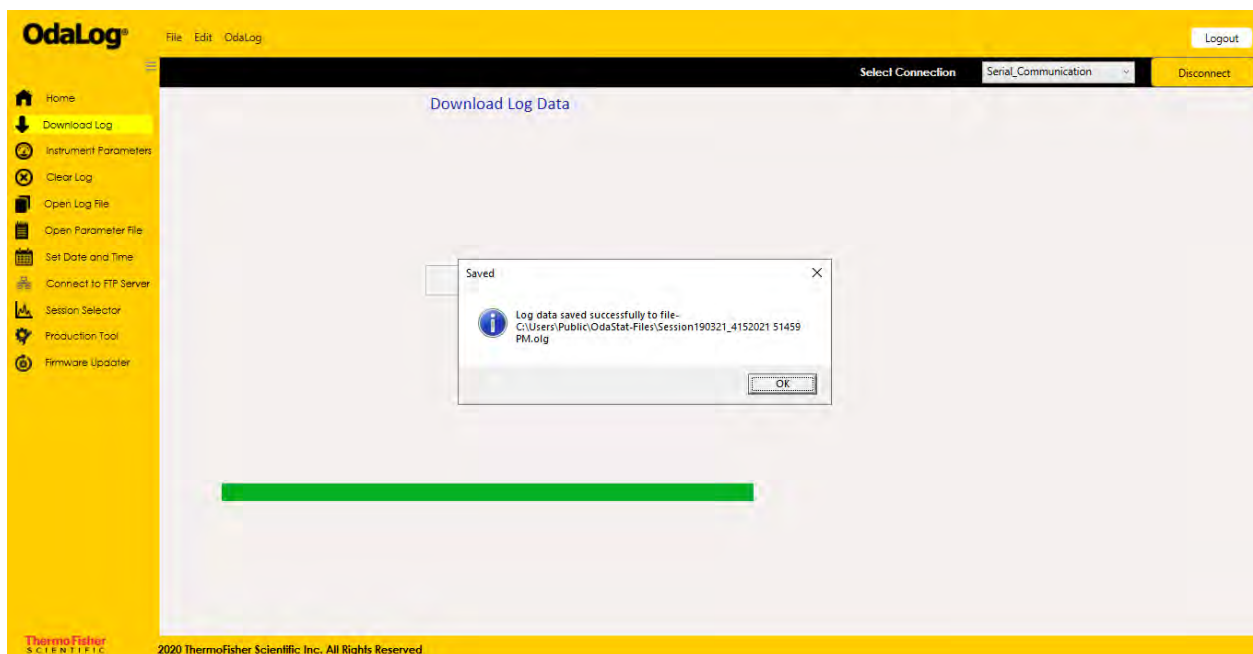


Figure 42. After Downloading data

Clear Log

This sends a signal to the OdaLog instrument to clear the entire log. Operation is only allowed when an OdaLog unit is connected.

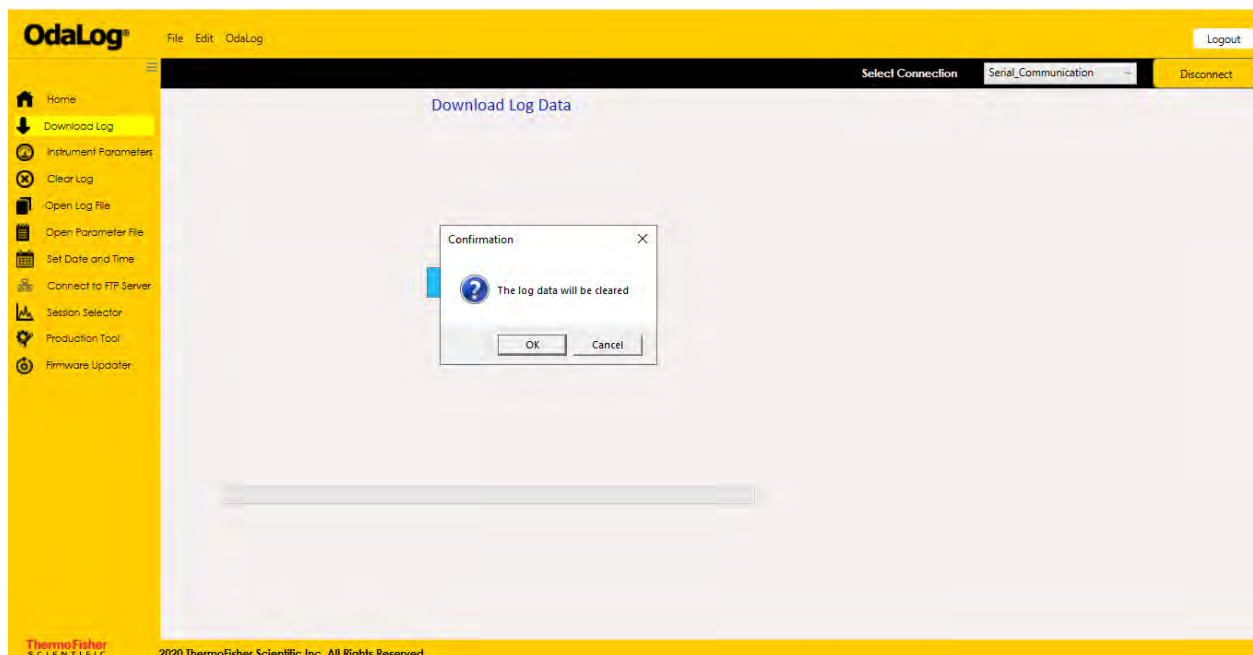


Figure 43. Clear Log

Open Log File

Opening a previously saved Log File can be performed by clicking on the “Open Log File” button as shown in **Figure 44**. After clicking the button the Open File Selector will be displayed. This open dialog is unique to Odastat NX and allows the user to see information about the logged files without opening them.

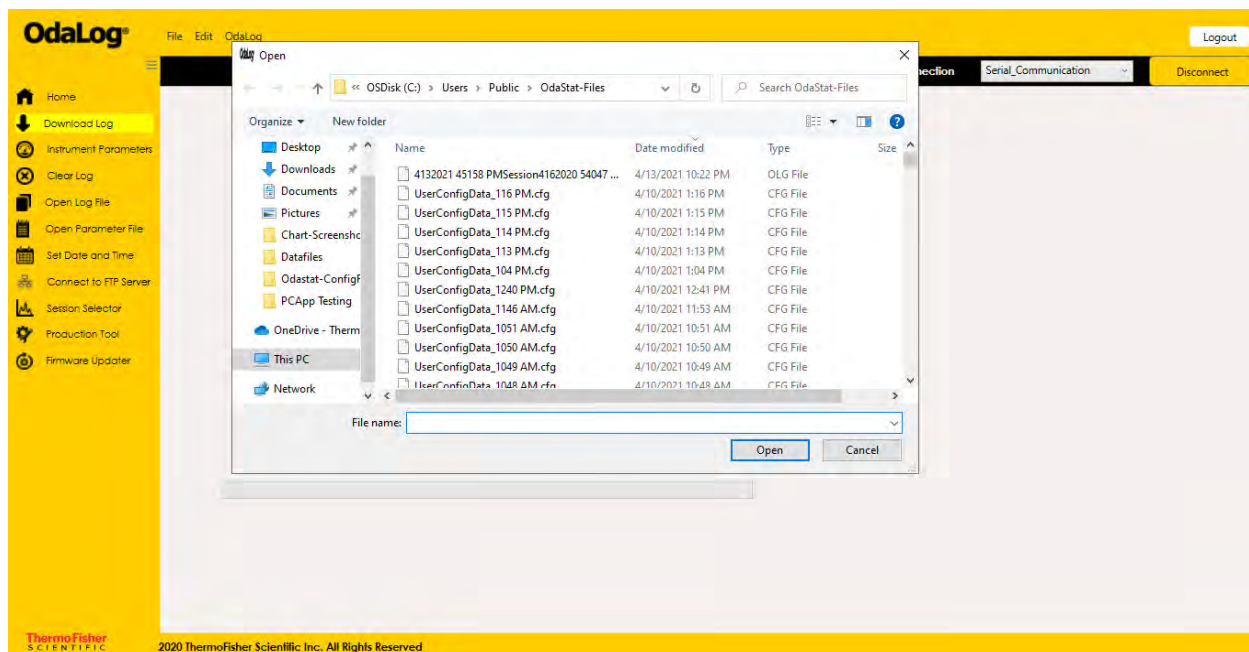


Figure 44. Open Log File

Session Selector Screen

After downloading the data, user can choose which sessions to view from the “Session Selector” screen.

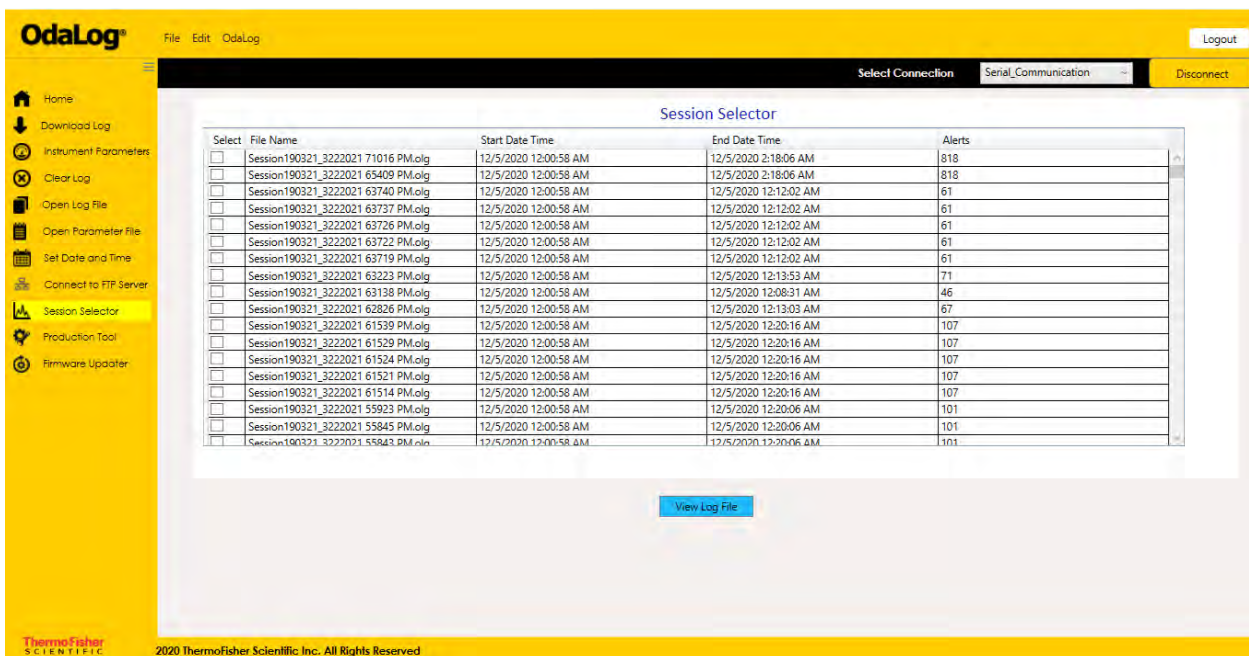


Figure 45. Session Selector Screen

Select by clicking in the corresponding check boxes to view the sessions. Then click the “View Log File” button. Odastat NX will then open this file as a Graph.

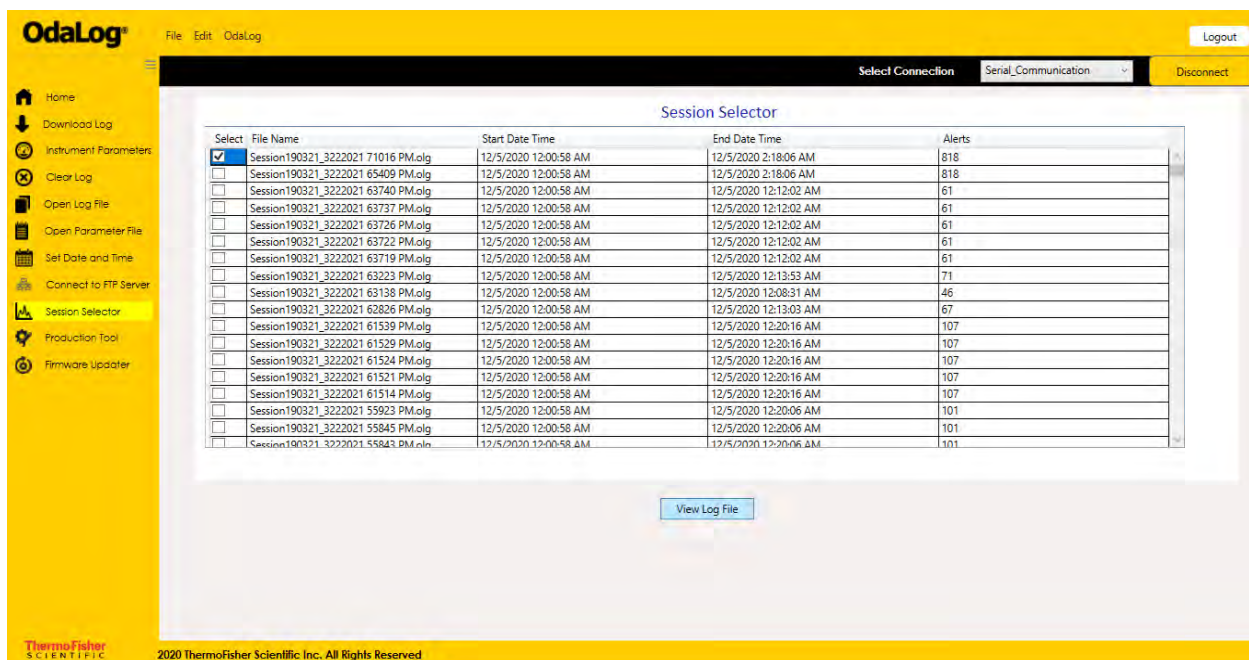


Figure 46. Session File Selection

Chart Screen

When a previously stored log file is opened, it can be displayed in a Graph Format. Selected sessions of data collected from different devices or time periods can be joined together and displayed on a single graph by clicking on the “Join Sessions” button in the “Session Selector” dialog box.

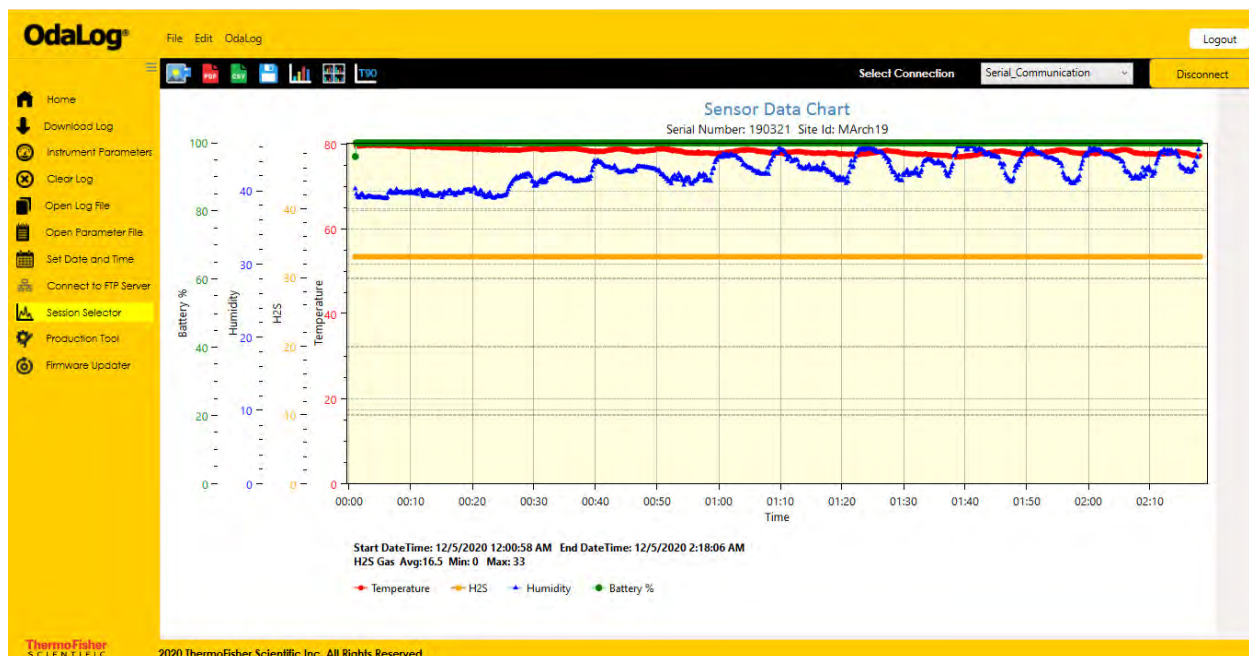


Figure 47. Sensor Data Chart-December

Figure 47 and Figure 48 show sessions of data collected from different time periods.

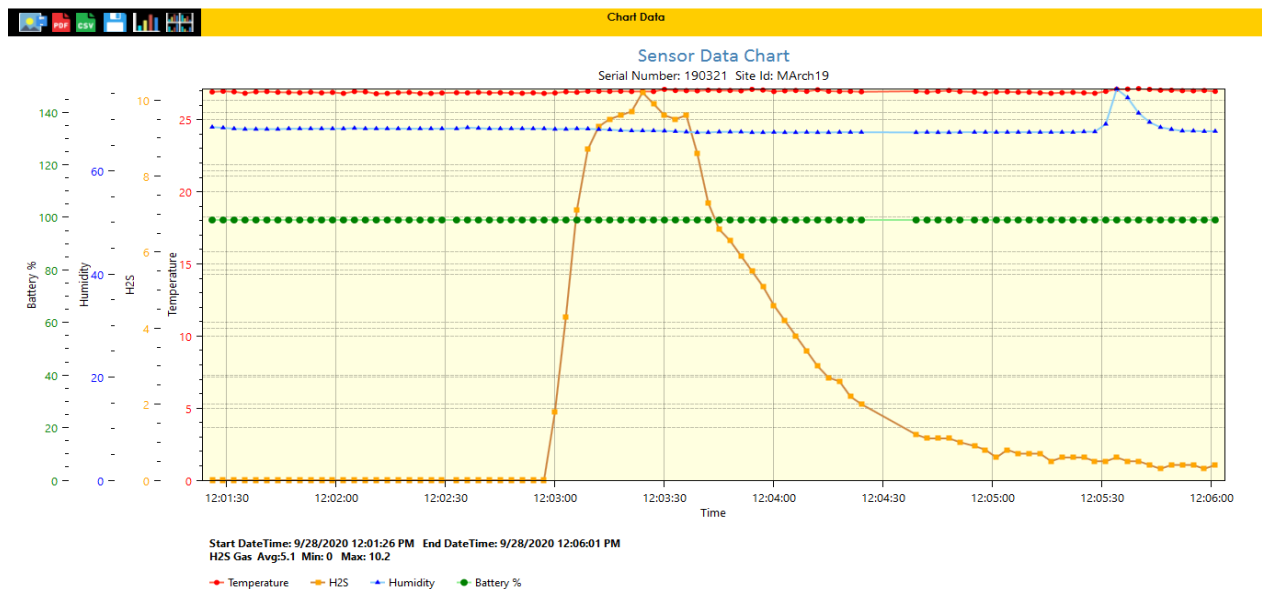


Figure 48. Sensor Data Chart-September

The parameters in the graph can also be displayed in a Seperate Mode as shown in Figure 49.

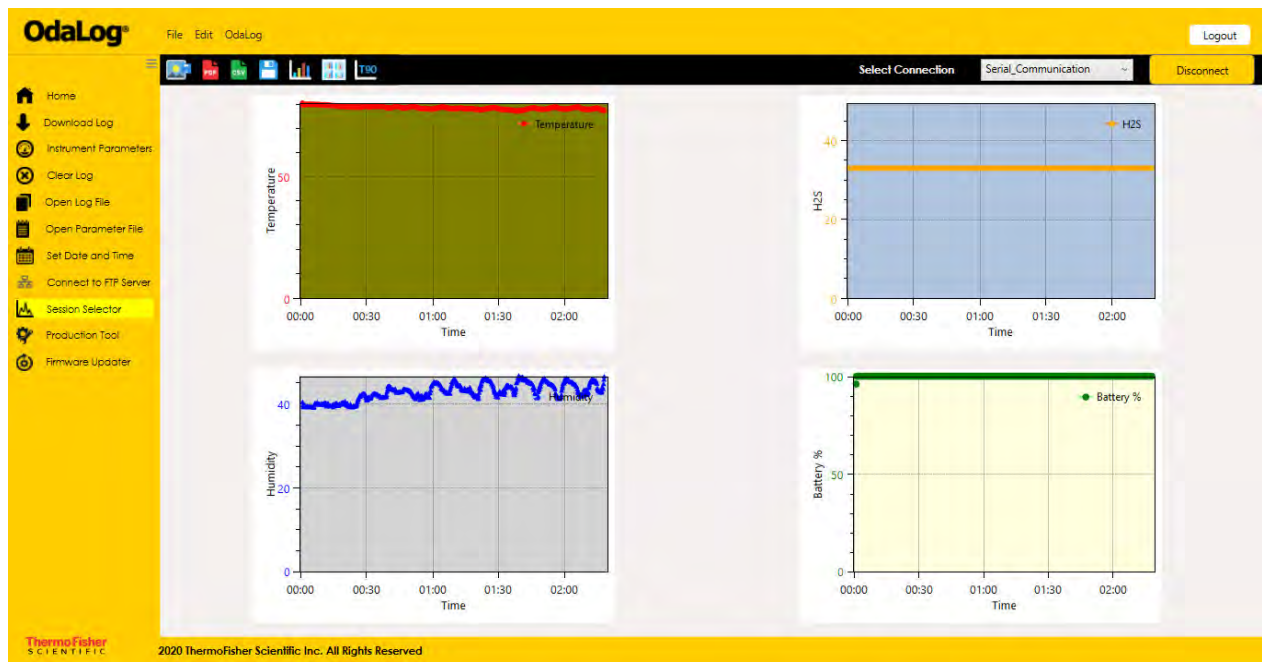


Figure 49. Chart Screen-Seperate Mode

Connect to FTP server

In order to set “**Instrument Parameters**” or “**Download Log**” data, communications link between the PC software and the OdaLog instrument is to be established. OdaLog G20 RTX communicates with the software through internet using File Transfer Protocol.

- To establish communication with the instrument (G20 or G20 RTX) use the “**Connect to FTP Server**” screen.
- Display appears as shown in **Figure 50**.

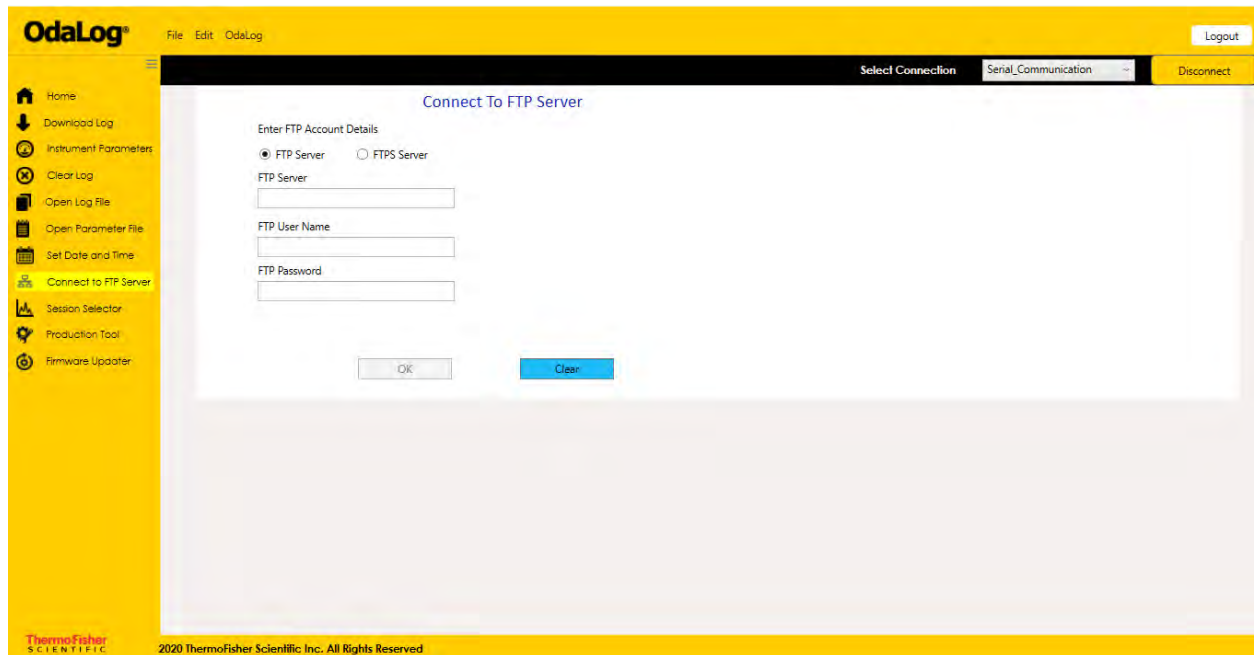


Figure 50. Connect to FTP Server

Enter the FTP Server, User Name and Password as shown in **Figure 51**.

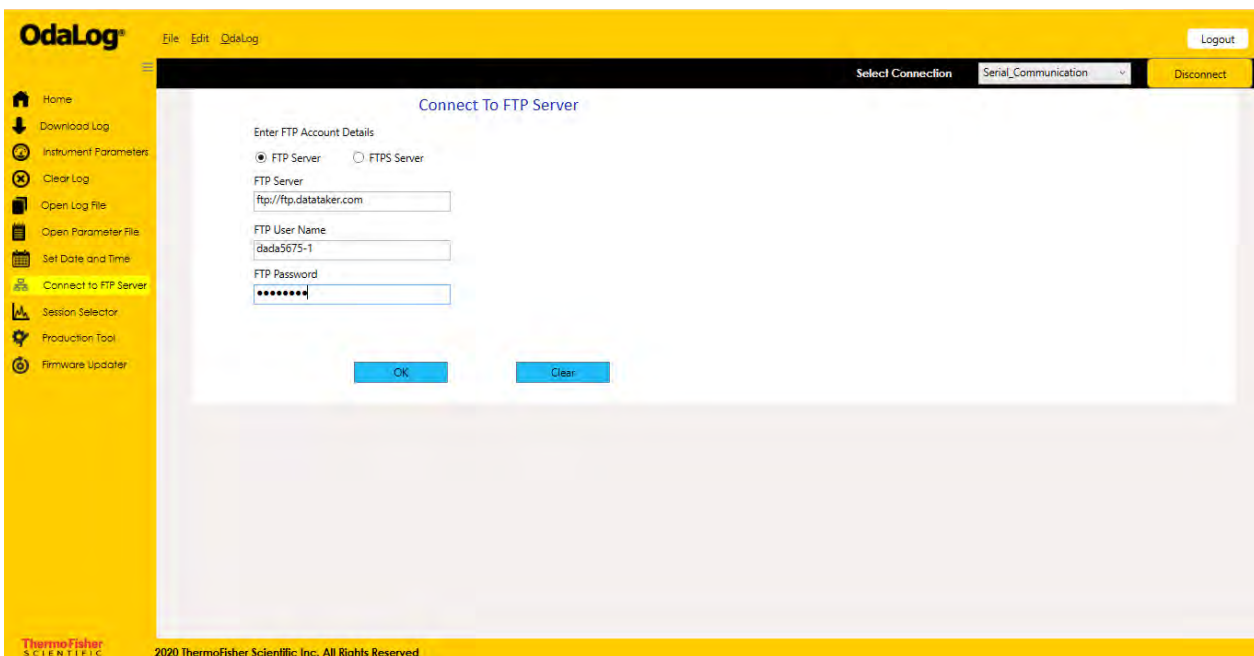


Figure 51. FTP Server Credentials

After entering the username and password, another dialog box will appear to allow the customer to select a folder containing data transmitted by each OdaLog G20 RTX.

Select the respective OdaLog folder. See **Figure 52**.

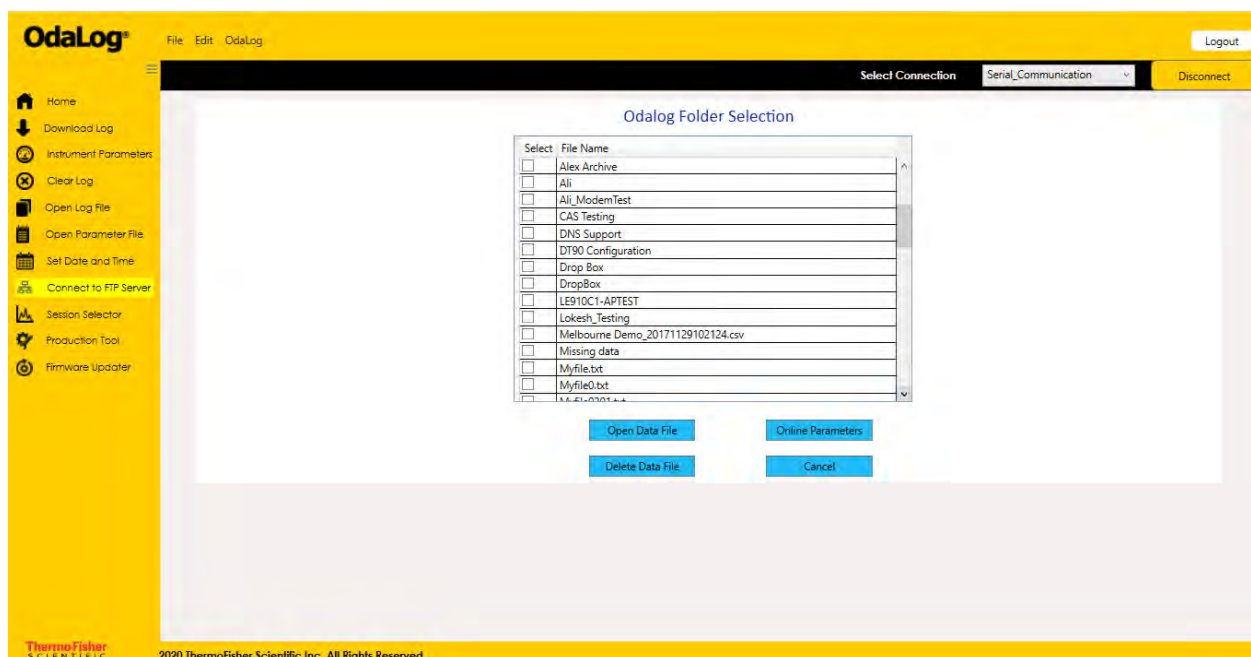


Figure 52. OdaLog Folder Selection

- Choose the appropriate folder, click “Open Data File” button to open the file.
- Click "Delete Data File" button to delete the file.

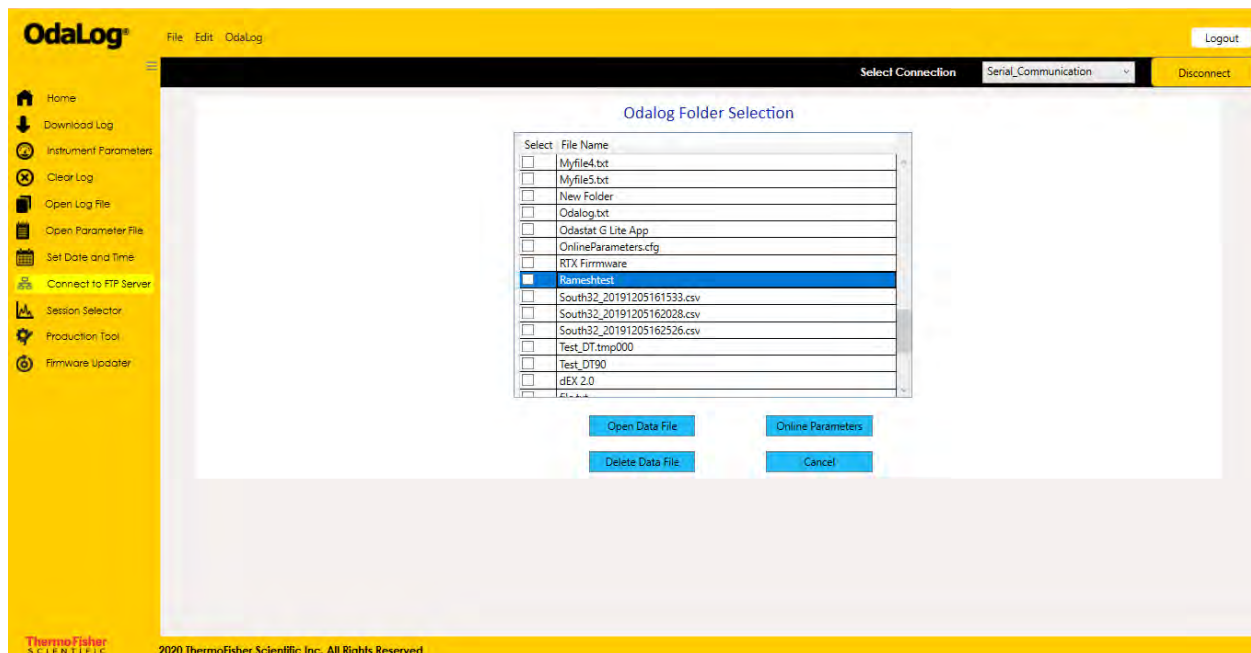


Figure 53. OdaLog Folder Selection-Open

Online Parameters

The Parameters of the OdaLog software can be changed from “Online Parameters” screen as shown in **Figure 54**.

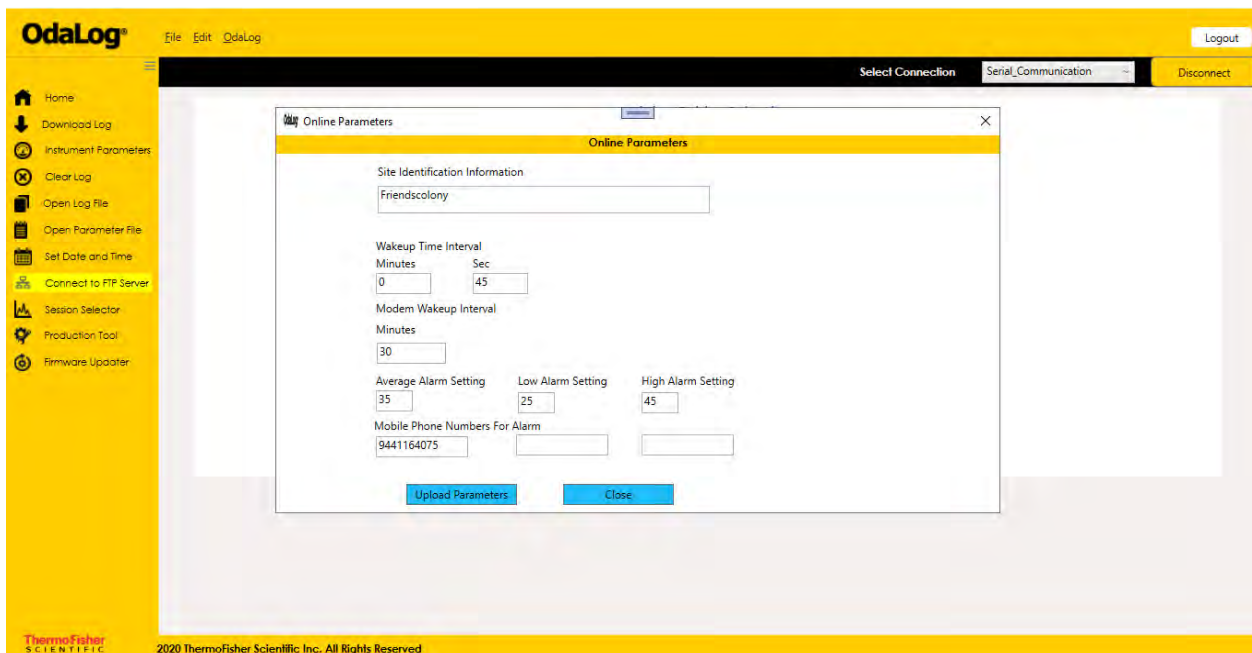


Figure 54. Online Parameters

File Preferences

The “File Preferences” are used to change default settings of the file save destination directories that OdaStat will use to save files as shown in **Figure 55**. Click on the File drop down menu on the OdaStat NX Start Page.

The Upload Certificate button is used by the customer to browse and upload the FTP certification key

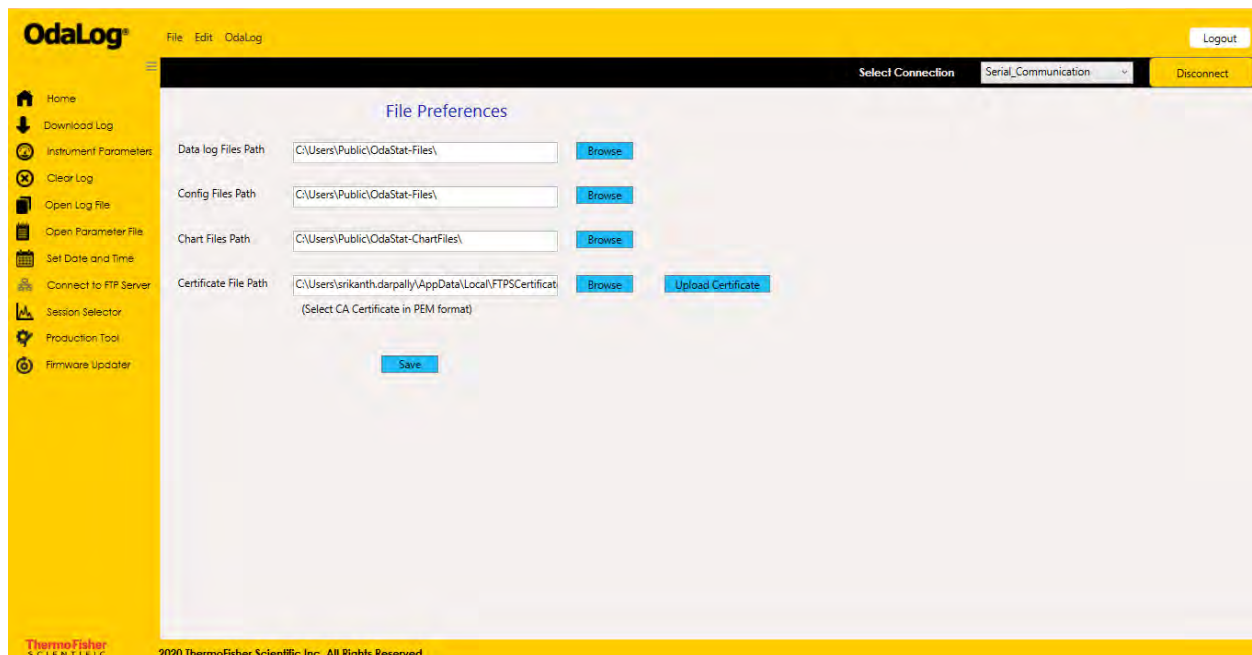


Figure 55. File Preferences

Firmware Updater

The admin or the user can update the firmware in the “Firmware Updater” screen.

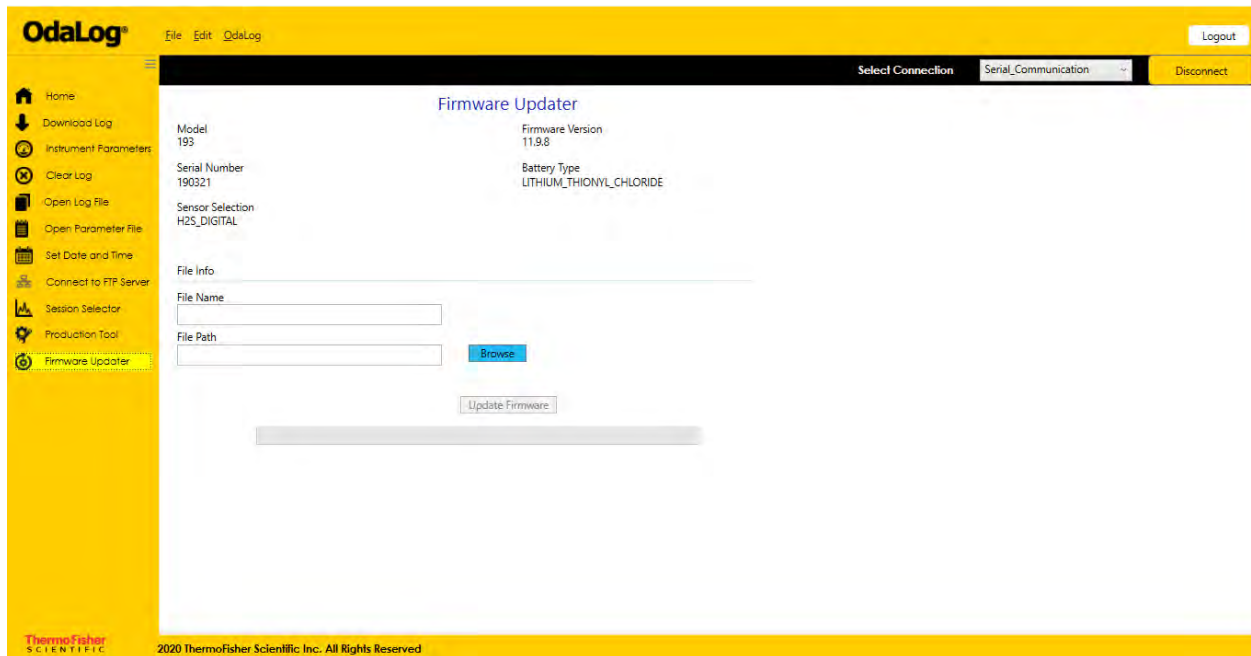


Figure 56. Firmware Updater

Change Admin Password

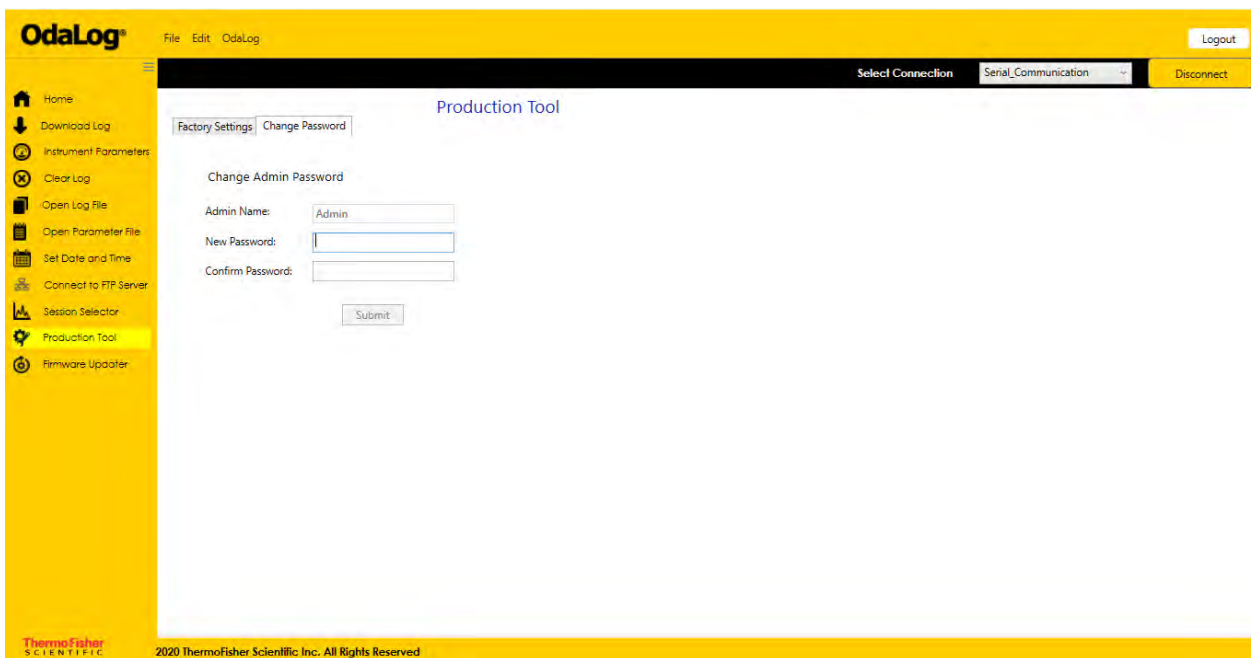


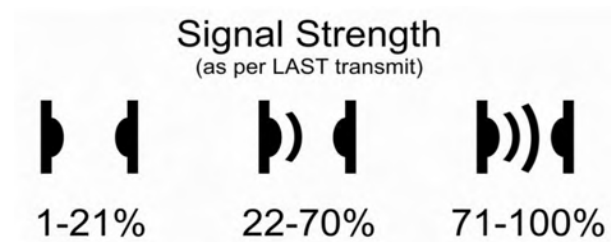
Figure 57. Production Tool Screen-Change Admin Password

Recommended Deployment

- Position the loggers in a shady/sheltered area where possible. This helps to avoid the elements affecting the accuracy of your data.
- It's a good idea to chain and padlock your instrument in place if it's situated in a publicly-accessible area.
- If used in a wet-well situation, ensure the instrument is situated above the 'high-water' mark, the instrument is not meant to be submerged.
- Consider the nature of the gas being measured, some gases are 'heavy' and will naturally accumulate close to the floor/ground of the area being logged.
- The amount of air movement in the deployment area can affect the accuracy of gas reading measurements taken. Ensure that there is sufficient air flow to allow natural diffusion of target gas to where the instrument is taking readings. Too much air flow may mean target gas passes too quickly over the sensor for the sensor to respond.
- It's common for the Odialog to be placed into areas covered by thick concrete and/or metal covers. It is important however that the signal can still transmit when deployed. Ensure reliable communication continues during 'start-up' mode when all covers/lids are closed on the area. It should be noted that if the open-air signal is poor, it is likely the signal will be noticeably less or unable to connect when placed into a shielded deployment area.
- The Odialog G20 RTX uses wireless transmission to connect to the internet server, communication can sometimes be disrupted by other similar devices and electrical interferences by nearby equipment. Ensure the Odialog is not placed near high voltage cables or electrical machinery (e.g. pumps).

Signal Strength

The signal strength (as per the last transmission, NOT real-time), will be displayed in the STATUS screens as a number "%" under the SIGNAL heading. The symbol on the INST screen will also give an approximation of signal strength by the number of segments present:



The above figure displays the different segments of the Signal Strength.

Maintenance

Routine maintenance of the Odialog instrument is an extremely important factor affecting the reliability of the instrument. Optimum instrument performance and reliable operation will only be achieved if a dedicated maintenance program is followed.

To ensure reliable measurements, the Odialog should be checked at regular intervals with test gas as described in the Calibration Section of the user manual.

Before you use the Odialog, inspect the instrument for signs of misuse or damage, as well as cracks or missing parts. Do not use the Odialog instrument if it is damaged. Please contact your closest authorized Thermo Fisher service centre if the instrument is damaged or missing parts.

To ensure that Ex certifications and performance approvals are not invalidated, any service, repair or overhaul should only be performed by accredited workshops with full instructions and drawings from the certificate holder. To ensure that any service, repairs or overhaul are carried out in such a manner it is preferable that the Odialog instrument be sent to the closest authorized Thermo Fisher service centre.

Do not attempt to disassemble or carry out maintenance on the Odialog unless instructions for that live maintenance procedure are contained in the manual and the part is listed as a replacement part. Only use Thermo Fisher International replacement parts.

The Odialog should be switched off when not in use and stored in a clean and dry environment as usually found in a normal office.

Ensure the Odialog exterior is kept clean with a soft damp cloth. Do not use solvents, soaps or polishes.

It is recommended that Odialog instruments are returned to an authorized Thermo Fisher service centre every 6 months for calibration and service.

Filter Replacement for G20 and G20 RTX



CAUTION: Ensure the following procedure is only carried out in a non-hazardous, dirt and grease free area.

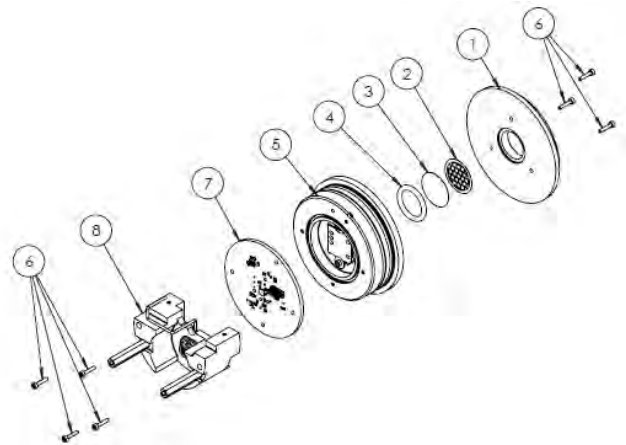


Figure 58. Filter Replacement

1. Ensure Odialog is off.
2. Using the Allen Tool [Part No. 11-0000] remove the three retaining screws from the filter housing assembly. (See **Figure 58**)
3. Carefully remove filter housing assembly.
4. Remove and retain o-ring.



Note: Ensure hands are free of dirt and grease prior to handling new filter.

5. Remove filter.
6. Remove, clean and replace stainless filter grill (if fitted).
7. Replace filter with 'shiny' side facing outwards.
8. Replace o-ring. DO NOT GREASE O-RING.
9. Replace filter housing assembly on Odialog body. (aligning screw holes).
10. Replace three end cap-retaining screws. DO NOT OVERTIGHTEN.



Note: Filter orientation is important. Ensure that the replacement filter is correctly placed with the 'shiny' side facing outward.



Note: Some sensor filters are fitted with stainless wire gauze protection. If fitted, this should be cleaned and dried prior to fitting of new filter.

Sensor Calibration

Null Mode

TRANSMIT MODE should be TURNED OFF prior to calibration, as the wireless transmissions can interfere with the sensor readings. If transmit mode is turned ON during calibration – any transmissions to the server will cause any NULL or SPAN screens to be cancelled. If a log of the calibration is required, its recommended to turn the logging and transmission off before performing calibration. This may be useful for automatically calculation of sensor response and accuracy.

Span Mode

Insert the calibration fitting over the sensor in the bottom of the instrument, as shown in **Figure 59**.

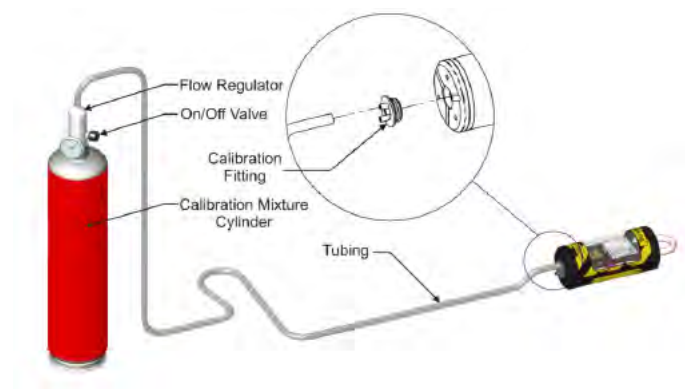


Figure 59. Calibration Mixture Connections

Attach regulator to gas cylinder and fit plastic tubing over an inlet on the calibration adaptor. (**Figure 59**).

Open regulator and allow gas to pass over the sensor at the flow rate and for the flow time as detailed in **Table 3**.

After waiting for the time shown in **Table 3**, the gas reading on screen should have stabilised and calibration can be performed. Ensure gas is still flowing over sensor. “DONE” will appear briefly on the LCD screen and it will return to the “INST” screen indicating a successful calibration.

“bAd1” or “bAd2” or “bAd3” or “bAd4” or “bAd5” will appear indicating the span value saved will be inaccurate due to different reasons mentioned in **Table 9**.

“FAILED” calibration (sensor will not save Span value). LCD will return to “INST” screen. Ensure that instantaneous display reads the same as shown on cylinder before turning off gas regulator and removing calibration fitting. Ensure that reading returns to close to zero within 5 minutes in clean air and re-zero if necessary.

Calibrating the Odialog

Digital Sensor Error Log

The Odialog-G20 series use an pre calibrated digital sensor to detect levels of a specific gas in ppm (parts per million).

Table 9. Error Log- Digital Sensor
Table 10.

Error Code	
SENSOR bAd1	Error code 103=Electrolyte dry-out
SENSOR bAd2	Error code 113=Waterlogged
SENSOR bAd3	Error code 109=Span Calibration is due
SENSOR bAd4	Error code 104=End of life
SENSOR bAd5	Error code 001=Diagnostic electrode failure
	Error code 101=Sensor lost PCBa contact
	Error code 102=Reference electrode failure
	Error code 105=Counter electrode failure
	Error code 106=Broken bead or short circuit
	Error code 110=Bump test is due
	Error code 111=Not valid User Factor
	Error code 112=Operational temp out of range



Contact Information

In Australia:

For customer service, call 1300-735-292

To fax an order, use 1800-067-639

To email an order, ordersau@thermofisher.com

In New Zealand:

For customer service, call 0800-933-966

To fax an order, use 0800-329-246

To email an order, ordersnz@thermofisher.com

Find out more at www.thermofisher.com

