Instruction Manual

Model 8021

(Micro-1000)
Multi-Channel Datalogger

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1. OVERVIEW

The MICRO-1000 Datalogger is designed to support the reading of a large number of Geokon Vibrating Wire Instruments for various unattended data collection applications through the use of Geokon's Model 8032 Multiplexers. Weatherproof packaging allows the unit to be installed in field environments where inhospitable conditions prevail. The Nema 4X enclosure also has a provision for locking to limit access to responsible field personnel.

A basic datalogging system consists of the MICRO-1000 Datalogger and a multiplexer. Multiplexers expand the system by increments of 16 or 32 channels depending on the instrument type and configuration. The standard Micro-1000 Datalogger can support up to six multiplexers. Upon request, modifications to the standard unit can be made to support up to eight multiplexers.

2. HARDWARE

The controller portion of the MICRO-1000 Datalogger consists of a Campbell Scientific CR1000 Measurement and Control Datalogger. To gain an understanding on the workings and capabilities of the CR1000 it is necessary to read the Overview section of the CR1000 Operator's Manual. The CR1000 Operator's Manual is available as a pdf file on the Campbell Scientific Resource CD supplied with the datalogger.

A Campbell Scientific AVW200 Vibrating Wire Interface provides the required excitation and signal processing for the vibrating wire sensors connected to the Datalogger. The AVW200 uses spectral analysis to find the resonant frequency of the Vibrating Wire Gage. The AVW200 is also used to measure the thermistor used in Geokon's vibrating wire instruments. For complete specifications of the AVW200 see the AVW200 Instruction Manual on the Campbell Scientific Resource CD.

A dual-mode battery charging circuit board is used to provide the charging voltage for proper maintenance of the installed lead acid battery. The circuit board contains fused terminal blocks used to provide a nominal 12VDC supply for devices such as the AVW200 interface and the CR1000. In some cases a Solar Charge Regulator may be used in place of the dual-mode charger.

The Model 8032 Multiplexer expands the number of channels that can be read by the MICRO-1000 Datalogger. The channel switching is accomplished by mechanical relays mounted on the underside of the circuit board and the transducer connections are accomplished by friction locking terminals. Power, reset and clocking for the multiplexer are supplied by the MICRO-1000. The Model 8032 multiplexer can be configured for 16x4 or 32x2 channels depending on application. Please see the Model 8032 Instruction Manual for more information and specifications.

A 12V – 7Ah lead acid battery is used to provide power for the Datalogger. The battery is provided to support operating power for a limited period of time should the AC or solar power, used to maintain the battery, be interrupted. Under normal operating conditions and proper maintenance, the life expectancy of the battery is approximately five years.

3. INSTALLATION

The recommended method of installation involves attaching the various enclosures (MICRO-1000 and multiplexers) to a fixed structure, such as a wall, in an upright position (Figure 1). Mounting dimensions shown in inches.
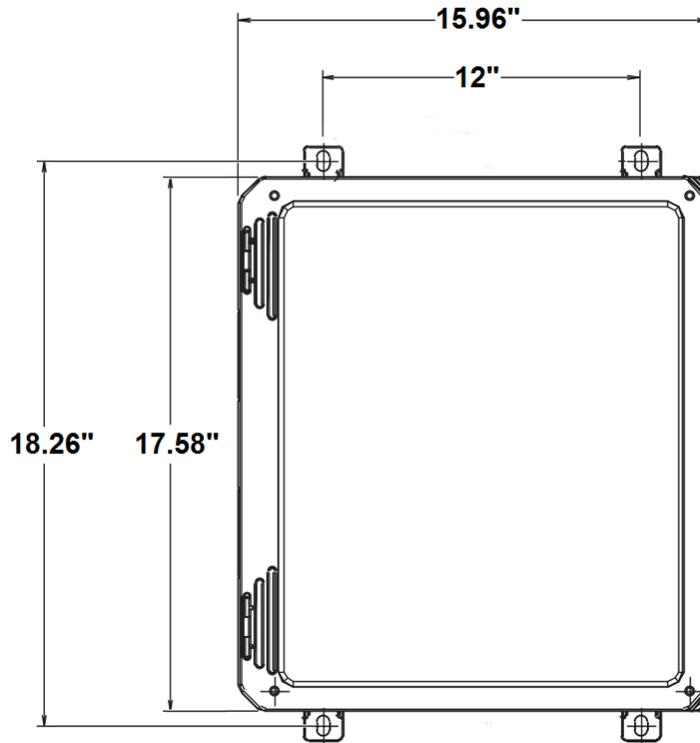
Figure 1 - Dimensions

3.1 Turning on Power

After the Datalogger is installed the charger can be plugged into the AC mains and the On/Off switch S1 on the Charge Regulation circuit board switched to the "On" position (Figure 2). It is recommended that the charger be left plugged in at all times (Section 5.1).
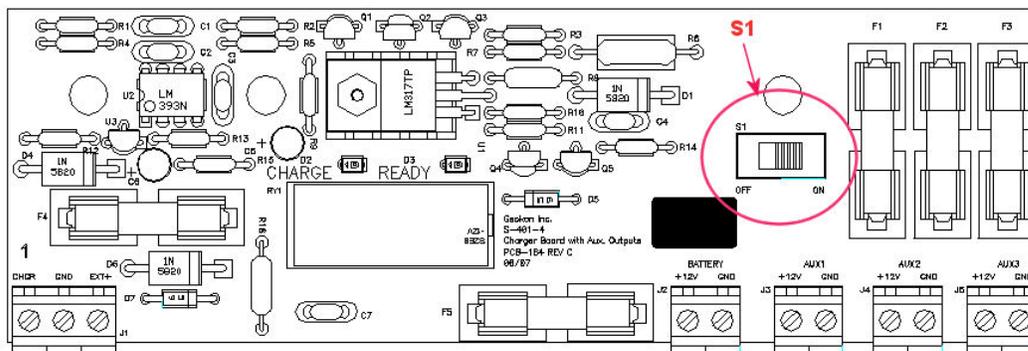
Figure 2 - Charge Regulation Circuit Board

3.2 Earth Ground

An earth grounding lug is supplied on the exterior of the Micro-1000 enclosure to connect the system to earth ground (Figure 3). A grounding rod can be driven (or other suitable attachment to earth utilized) to ground the system and provide a path to earth for protection against a lightning strike or other transient voltage. A six to eight foot copper grounding rod connected to the Dataloggers grounding lug with a large gauge wire (12 AWG or larger) is recommended. The earth ground connection should be made as close to the Datalogger as possible.

3.3 Gages

At this time the vibrating wire sensors can be connected to the multiplexers. Please refer to the Multiplexer instruction manual for the appropriate connection description.

3.4 Multiplexers

Following sensor and installation, connections between the Datalogger and multiplexers can be made using the multiplexer cable provided with each multiplexer. Each multiplexer employed is connected to the appropriate multiplexer port (Figure 3).

3.5 Communications

Standard communications with the Datalogger is established by connecting the supplied serial cable to the RS-232 port (Figure 3) and the COM port on a computer, or a USB port on the computer by using the provided USB to Serial converter cable.
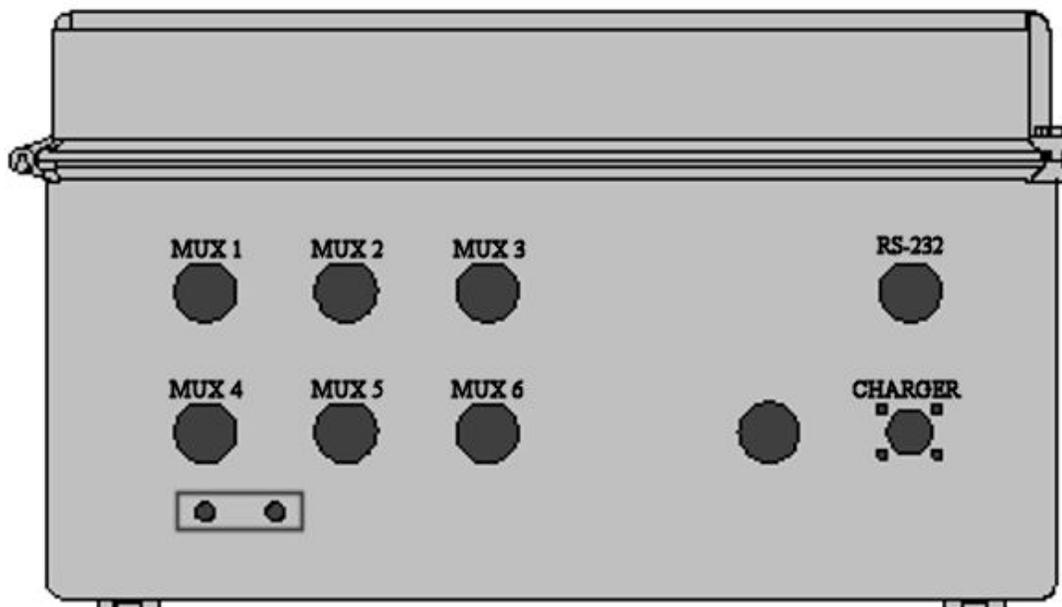
Figure 3 - Datalogger Connections

4. SOFTWARE

The Micro-1000 Datalogger is operated by a download file that is generated by a software program. The software package the MICRO-1000 Datalogger may be supplied with is either MultiLogger software (developed by Canary Systems, Inc., New London, NH) or LoggerNet software (developed by Campbell Scientific, Logan, Utah). Please refer to the manual supplied with the software for instructions on installing the software and creating required download file Datalogger operation.

5. BATTERY MAINTENANCE

5.1 AC Power

The MICRO-1000 is supplied with an external AC to DC power supply for maintaining the charge of the battery and providing power to the Datalogger and peripherals. It is imperative that the power supply remain connected to the Datalogger as the battery installed in the Datalogger is only provided as a temporary source of power should the power supply be disconnected or mains power interrupted. Actual run time solely on battery power will vary for each datalogging system, depending on the hardware configuration and sensor scan interval. If the battery voltage drops below 9.6 volts operation of the Datalogger will become erratic as evidenced by communication problems and possible improper measurements.

5.2 Solar Power

If AC mains power is not available, a properly sized solar panel can be used to provide power to maintain the charge state of the battery and provide power to the Datalogger and peripherals. The size of the solar panel is determined by geographic location of the Datalogger, hardware configuration, and the sensor scan interval.

5.3 External Battery

Additionally, a large external battery, such as a deep cycle marine battery, may be connected to the Datalogger via the supplied external power cable to provide power to the Datalogger and peripherals. When this type of battery is connected to the Datalogger the internal Datalogger battery is automatically disconnected from the system to prevent parasitic drain on the external battery.

5.4 Battery Replacement

If the internal Lead Acid Battery has failed it is recommend that the unit be returned to the factory for service by Geokon personnel. However, with skilled personnel and appropriate tools, it is possible for the user to replace the battery. **Consult the factory for information.**

5.5 Fuses

There are five fuses on the dual mode charger board of the MICRO-1000 (Figure 2). Once removed and with the power switch off, a fuse can be checked visually and with an ohmmeter. A gap may be evident (with some discoloration) if the fuse needs replacing. This can be verified by a high resistance measurement (megaohms) with an ohmmeter. If fuse needs replacing, insert one of the supplied replacement fuses. If there are no replacement fuses available, consult the factory or they can be purchased from an electrical supply house. All five fuses are two amp SLO-BLO 5x20mm. Consult Appendix D.7 for fuse assignments.

6. TROUBLESHOOTING

This section will NOT attempt to cover all possible problems that could be encountered in the course of Datalogger operations. Consult the factory if other problems arise or remain unresolved.

- **Cannot communicate with the Datalogger.**

Suggestions:
1. The wrong communication cables are being used or the cables in use are defective. Consult Appendix D.3 to verify cable pinout. Consult the factory for interfacing information.

2. The internal battery could be dead. Charge overnight and try again. If it still doesn't work check the voltage across the terminals of the battery. If the voltage is still below 10 volts the battery may need to be replaced.

3. The wrong communication port is being used on the host computer (default is COM1). Consult the appropriate software manual for instructions on changing the communication port.

4. The communication port on the host computer is defective. Verify the functioning and configuration of the COM port by using it with another RS-232 device, such as a modem or serial printer.

5. The Datalogger Auxiliary Fuse on the Dual-Mode Charger board is blown. Refer to Appendix D.7 for proper fuse replacement.

- **The system battery voltage and panel temperature read odd numbers.**

Suggestions:
1. The system battery could be low. Charge and check again (see previous section).

2. A disruptive current loop may be operating as a result of improper grounding or excessive noise. Consult the factory for more information.

- **The internal battery measurement does not increase and charging LED (Yellow = Charging and Green = Charged) does not light when the AC adaptor is plugged in.**

Suggestions:
1. The adaptor may be damaged. Check the output pins of the adaptor with a voltmeter.

2. The charger fuse is blown. Consult Section 5.5 for checking and/or replacement.

3. The internal battery is no good. Consult the factory.

- **The Datalogger will not operate on external power.**

Suggestions:
1. The external voltage supply is below operating limits. If the external source is a battery, charge it. If it's a power supply, check the output with a voltmeter.

2. The external power or battery fuse is blown (Section 5.5).

- **Loss of CR1000 program and/or data.**

Suggestions:
1.   The system has experienced a voltage dropout or surge which disrupted operations.

2.   The surge originated as a result of lightning. Install appropriate grounding. Install lightning protection devices on all incoming and outgoing lines (consult factory).

- **Sensor readings show -99999 or are unstable.**

Suggestions:
1.   The wrong sensor type has been selected. Check the model number of the sensor against the software setting (Appendix E.1).

2.   The cable(s) to the sensor(s) have been damaged permitting moisture and debris to enter the jacket. Wires may be shorted together. Inspect the cable.

3.   If all sensors on a particular multiplexer are erratic or returning "-99999" perhaps the multiplexer or cable has been damaged. Inspect the cable. Try another cable to verify proper functioning.

4.   The sensor(s) have been damaged. For example, overrange on a vibrating wire sensor can cause erratic readings.

5.   There is an electrical noise source nearby. Move the sensor, cables, and Datalogger away from the noise source. Install grounding devices. Consult the factory.

- **The sensor readings show OVERRANGE all the time.**

    Suggestions
1.   The "Sensor Type" selected for that particular channel is "None". This is applicable for users of MultiLogger (Appendix E.1). Please refer to the MultiLogger manual.

2.   A scan has not been initiated yet because of the "Start Time" setting (MultiLogger users only).

3.   "Update" has not been run (MultiLogger users only).

APPENDIX A. SPECIFICATIONS

A.1 CR1000 Measurement and Control Module

Power requirements: 9.6 to 16 VDC
Analog measurement current drain: 27.6 mA
Processing current drain: 16.2 mA
Quiescent current drain: .6 mA
Operating temperature: -25° to +50° C
Processor: Hitachi H8S 2322
Memory: 2Mb ROM, 4Mb RAM
Storage capacity: 2,000,000 Final Storage Locations
Real time clock accuracy: ±3 minutes per year
Expansion capability: up to eight 32 channel multiplexers (single ended)
System battery: 12 V, 7 Ahr lead acid
Communication: RS-232 115200 baud, eight data bits, no parity, one stop bit

A.1.1 Analog Inputs

Configuration: Eight differential or 16 single-ended
Voltage measurement accuracy: 0.06% of FSR for 0° to 40 °C
Voltage measurement ranges and resolution:

Range	Resolution
±5.0 V	1330 µV
±2.5 V	667 µV
±250 mV	66.7 µV
±25 mV	6.7 µV
±7.5 mV	2 µV
±2.5 mV	.67 µV

Common mode range: ±5 VDC
DC common mode rejection (CMRR): >100 dB
Maximum input voltage: 16 VDC

A.1.2 Excitation Outputs

Configuration: Three switched output channels
Excitation range: ±2.5 V
Excitation resolution: 0.67 mV
Excitation accuracy: 0.06% of FSR for 0°C to 40°C
Output current: 25 mA @ 2.5 VDC

A.1.3 Pulse Inputs

Configuration: two 24 bit
Maximum count rate: 16.7×10^6
Maximum input voltage: ±20 VDC
Modes: Switch closure, high frequency pulse, low level AC

A.1.4 Control Ports

Configuration: Eight digital I/O ports
Input/output resistance: 100kΩ/330Ω, respectively
Input "high" level: 3.8 V to 5.3 V
Input "low" level: -0.3 V to 1.2 V
Output "high" level: 5 V ±0.1 V
Output "low" level: <0.1 V

A.2 AVW200 Vibrating Wire Interface (See AVW200 Manual for Complete Specifications)

Power requirements: 9.6-16 VDC
Vibrating Wire measurement current: 25 mA
Quiescent current: .3 mA

A.3 Model 8032 Multiplexer (See the Multiplexer Manual for Complete Specifications)

APPENDIX B. SHIP LIST

The following equipment is included with the system:

- External Power cable
- DB-9 to 10 pin Bendix RS-232 Cable
- USB to RS-232 Adapter
- Small regular screwdriver
- Five spare two amp slo-blo fuses
- AC Adaptor (110 VAC or 220 VAC)

The following manuals are included:

- MICRO-1000 Instruction Manual
- Campbell Scientific Resource disk
- 8032 Multiplexer Instruction Manual (if multiplexers provided)

Optional accessories:

- COM220 Landline Phone Modem with manual (access Datalogger via phone line)
- Cellular Phone Modem with manual
- Short Haul Modems with manual (current loop communication device)
- MD485 RS-485 Multidrop Interface with manual (Datalogger networking)
- Solar Panel with mounting hardware, charger, and manuals
- RF Modem with manuals (wireless Datalogger communication)

Consult the factory for additional information on any of the optional accessories.

APPENDIX C. DATA STORAGE

C.1 Input Locations

Default explanations for the Input/Final Storage location usage in MultiLogger unless user configured;

Input Storage #	Label	Explanation
1	Logger ID	Datalogger ID 1-9999
2	Year	Year when last readings taken
3	JulianDay	Julian Day (1-365) when last readings taken
4	Time-HHMM	Time (24 hour) when last readings taken
5	Seconds	Seconds when last readings taken
6	DecimlDay	Decimal Day when last readings taken
7	ElapsdHr	Elapsed Hours from "Start" (if "Log" selected as "Scan Interval")
8	ElapsdMin	Elapsed Minutes from "Start" (if"Log" selected as "Scan Interval")
9	ElapsdSec	Elapsed Seconds from "Start" (if "Log" selected as "Scan Interval")
10	Battery	Datalogger battery voltage
11	PanelTemp	Datalogger panel temperature (°C)
47-78	Mx1	Readings from Gages on Mux #1
79-110	Mx2	Readings from Gages on Mux #2
111-142	Mx3	Readings from Gages on Mux #3
143-174	Mx4	Readings from Gages on Mux #4
175-206	Mx5	Readings from Gages on Mux #5
207-238	Mx6	Readings from Gages on Mux #6

C.2 Data Storage

Total Arrays of Data that can be stored per 16 Channel Multiplexer. Each array contains all Data stored at each read interval.

	Total Arrays
1 Multiplexer Array Storage	20,700
2 Multiplexer Array Storage	12,257
3 Multiplexer Array Storage	8,686
4 Multiplexer Array Storage	6,701
5 Multiplexer Array Storage	5,457
6 Multiplexer Array Storage	4,593

C.3 Data Storage Example

If data is stored once a minute:

	Minutes	Hours	Days	Total Arrays
1 Multiplexer Overwrite Time:	20,685	344.8	14.4	20,700
2 Multiplexer Overwrite Time:	12,244	204.1	8.5	12,257
3 Multiplexer Overwrite Time:	8,722	145.4	6.1	8,686
4 Multiplexer Overwrite Time:	7,633	127.2	5.3	6,701
5 Multiplexer Overwrite Time:	5,450	90.8	3.8	5,457
6 Multiplexer Overwrite Time:	4,586	76.4	3.2	4,593

If data is stored once an hour:

	Minutes	Hours	Days	Total Arrays
1 Multiplexer Overwrite Time:	1,241,454	20,690.9	862.1	20,700
2 Multiplexer Overwrite Time:	735,407	12,256.8	510.7	12,257
3 Multiplexer Overwrite Time:	521,196	8,686.6	361.9	8,686
4 Multiplexer Overwrite Time:	403,022	6,717.0	279.9	6,701
5 Multiplexer Overwrite Time:	327,413	5,456.9	227.4	5,457
6 Multiplexer Overwrite Time:	275,573	4,592.9	191.4	4,593

If data is stored once a day:

	Minutes	Hours	Days	Total Arrays
1 Multiplexer Overwrite Time:	29,795,034	496,583.9	20,691.0	20,700
2 Multiplexer Overwrite Time:	17,650,067	294,167.8	12,257.0	12,257
3 Multiplexer Overwrite Time:	12,507,876	208,464.6	8,686.0	8,686
4 Multiplexer Overwrite Time:	9,651,092	160,851.5	6,702.1	6,701
5 Multiplexer Overwrite Time:	7,858,073	130,967.9	5,457.0	5,457
6 Multiplexer Overwrite Time:	6,613,913	110,231.9	4,593.0	4,593

APPENDIX D. SYSTEM WIRING

D.1 CR1000 Wiring

CR1000 Connections	Color	MUX Interface Ribbon Cable	MUX Enable Ribbon Cable	SDI-12 Comm Cable	CR1000 Power Cable	Description
C1	Brown	NC	Conductor 1	NC	NC	MUX Enable 1
C2	Red	NC	Conductor 2	NC	NC	MUX Enable 2
C3	Orange	NC	Conductor 3	NC	NC	MUX Enable 3
C4	Yellow	NC	Conductor 4	NC	NC	MUX Enable 4
C5	Green	NC	Conductor 5	NC	NC	MUX Enable 5
C6	Blue	NC	Conductor 6	NC	NC	MUX Enable 6
C7	Blue	NC	NC	Blue	NC	SDI-12 Comms
C8	White	Conductor 9	NC	NC	NC	MUX Clock
12V	Blue	Conductor 6	NC	NC	NC	MUX 12 VDC
G	Violet & Blue's Black	Conductor 7 and 10	NC	Black	NC	Ground
AG	Black & Green	Conductor 5	NC	NC	NC	Analog Ground
PWR IN 12V	Red	NC	NC	NC	Red	CR1000 12 VDC
PWR IN G	Black	NC	NC	NC	Black	CR1000 Power Ground

D.2 AVW200 Wiring

AVW200 Connections	Color	MUX Interface Ribbon Cable	CR1000 Datalogger	Description
1V +	Brown	Conductor 1	NC	Vibrating Wire +
1V -	Red	Conductor 2	NC	Vibrating Wire -
1T+	Orange	Conductor 3	NC	Thermistor +
1T-	Yellow	Conductor 4	NC	Thermistor -
SCI12	Blue	NC	C3	SDI-12 Communications
G	Blue's Black	NC	G	Ground
12V	Red	NC	12V	+12VDC Power
G	Red's Black	NC	G	Ground

D.3 RS-232 Connector Wiring

10-Pin Bendix	Color	Description
A	White	Ground
B	Green	Transmit
C	Orange	Receive
D	Yellow	RTS
E	Blue	CTS
G	Violet	DTR

D.4 Charger Wiring

Pin	Description	Wire Color
A	Charger + (14-22 VDC Input)	Grey
B	Ground	Blue
C	Battery + (12 VDC Output)	Violet

D.5 Multiplexer Connector Wiring

10-Pin Bendix	Color	Description
A	Brown	Vibrating Wire +
B	Red	Vibrating Wire -
C	Orange	Thermistor +
D	Yellow	Thermistor -
E	Green	Analog Ground
F	Blue	+12 VDC
G	Violet	Ground
H	Grey	MUX Reset
J	White	MUX Clock
K	Black	Analog Ground

D.6 Cables

D.6.1 AC Charger (110VAC/220VAC)

Pin	Description	Condor - Wire Color
A	Charger + (14-22 VDC Input)	Black with White Stripe
B	Ground	Black

D.6.2 External Power Cable

Pin	Description	Wire Color	Clip
A	No Connection	No Connection	No Connection
B	Ground	Black	Black
C	Battery + (12 VDC)	Red	Red

D.7 Fuses

Fuse	Description
S1	12VDC Auxiliary 1
S2	12VDC Auxiliary 2
S3	12VDC Auxiliary 3
S4	External Battery
S5	Battery

APPENDIX E. LOGGERNET QUICK START GUIDE

E.1 Overview

Campbell Scientific's LoggerNet Software is used to communicate with the Datalogger, program user specific settings and collect Data stored in the Datalogger memory. LoggerNet is designed to be used with Geokon Micro-1000 and Micro-800 Dataloggers reading Vibrating Wire and MEMS tilt sensors; other configurations and sensor outputs are available upon request. Geokon provides the user with a generic Start Program to simplify acquiring Data without the need to be proficient in Campbell Scientific CRBasic programming code. The Start Program(s) will be pre-configured with a default Scan Interval and will store Raw Units by default. Each Start Program will have two associated files on the factory supplied USB flash drive. The first is the Main CRBasic program (.CR1/.CR8) and includes all programming code required to read and store Data according to the Datalogger configuration. The Main CRBasic program does not require modification by the user in most cases. The second file is the Include (.DLD) text file and is used by the Main program to import user specific parameters. The Include File allows program parameters such as the Scan Interval, Zero Readings, Linear Gage Factors, Data File Header Labels and Temperature Correction factors to be modified by the user.

E.2 Getting Started

E.2.1 Program Files

After installing LoggerNet, the CRBasic program files are located on the Geokon USB Thumb Drive. The file types are ".DLD" and ".CR1"/".CR8.", these files should first be copied to the end users computer in C:\Campbellsci\CRBasicEditor.

E.2.2 Connection Setup

The Launch Menu provides a drop-down list of all the categories on the LoggerNet toolbar. Hovering over a category will display a list of applications related to that category.

With the Launch Menu open, hover over "Main" and press "Setup" from the resulting list of applications.
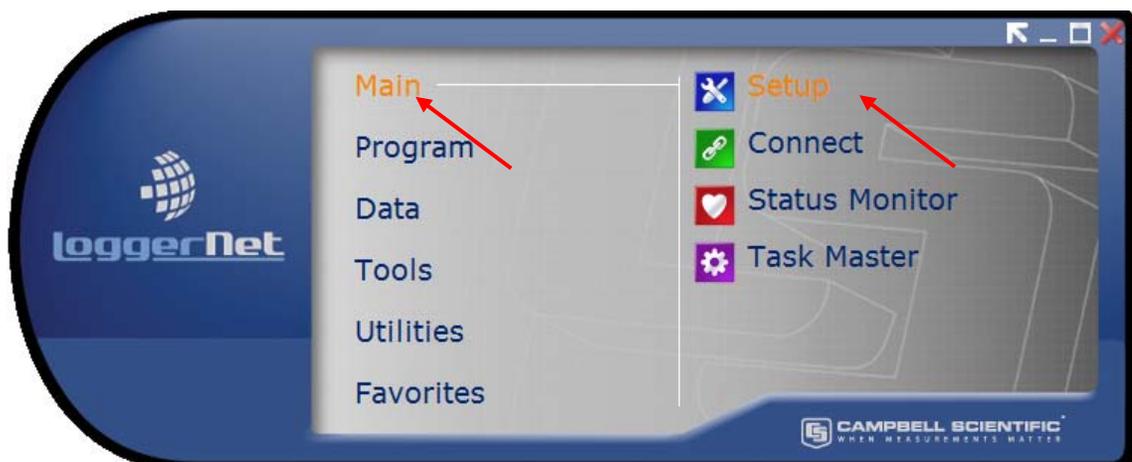
By default, the EZ View of the Setup Screen is displayed. To change the viewing method press the "Std View" icon at the top right of the Setup Screen. This Quick Start will show the "Std View" of the Setup Screen. To add a communication port, press "Add Root" button.

Each Datalogger will communicate via RS232. Select connection type "ComPort", "PakBusPort (Other Loggers)", "CR1000" or "CR800Series" and press "Close".
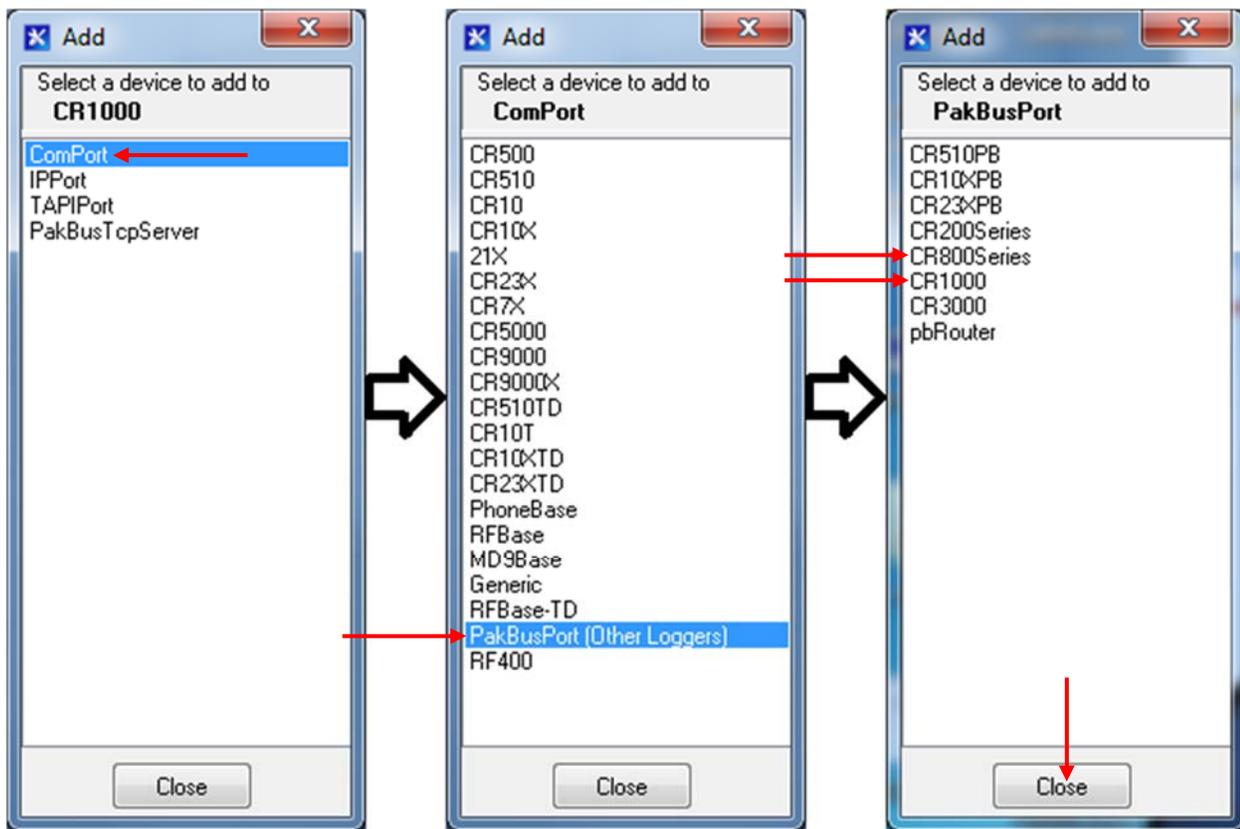
Select "ComPort" under the "Network Map", select the communications port to connect to the Datalogger in "ComPort Connection".
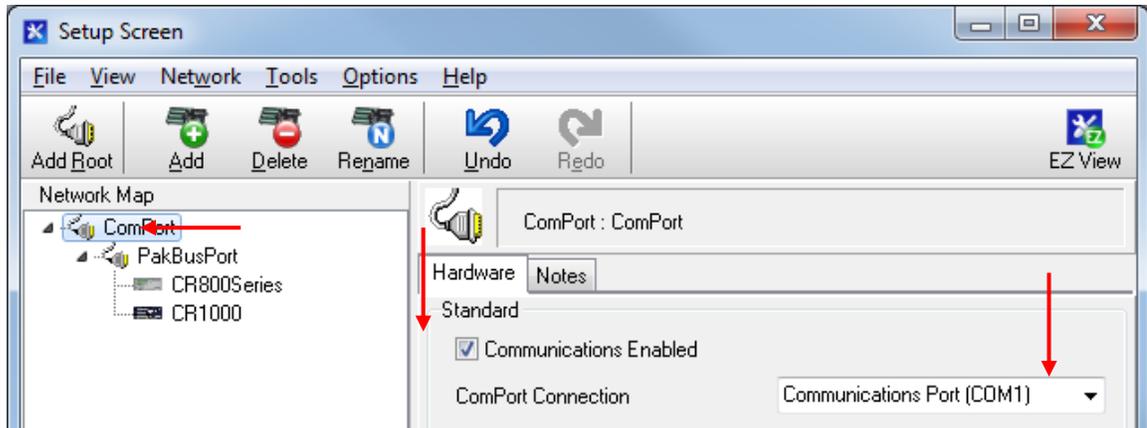
COM NUMBERS VARY WITH COMPUTER , USB DEVICES AND SERIAL ADAPTERS. REFER TO THE COMPUTER DEVICE MANAGER IF UNSURE OF WHICH COM NUMBER TO USE.

Select "PakBusPort" under the "Network Map", in "Maximum Baud Rate" for direct connection to the Datalogger select "115200".
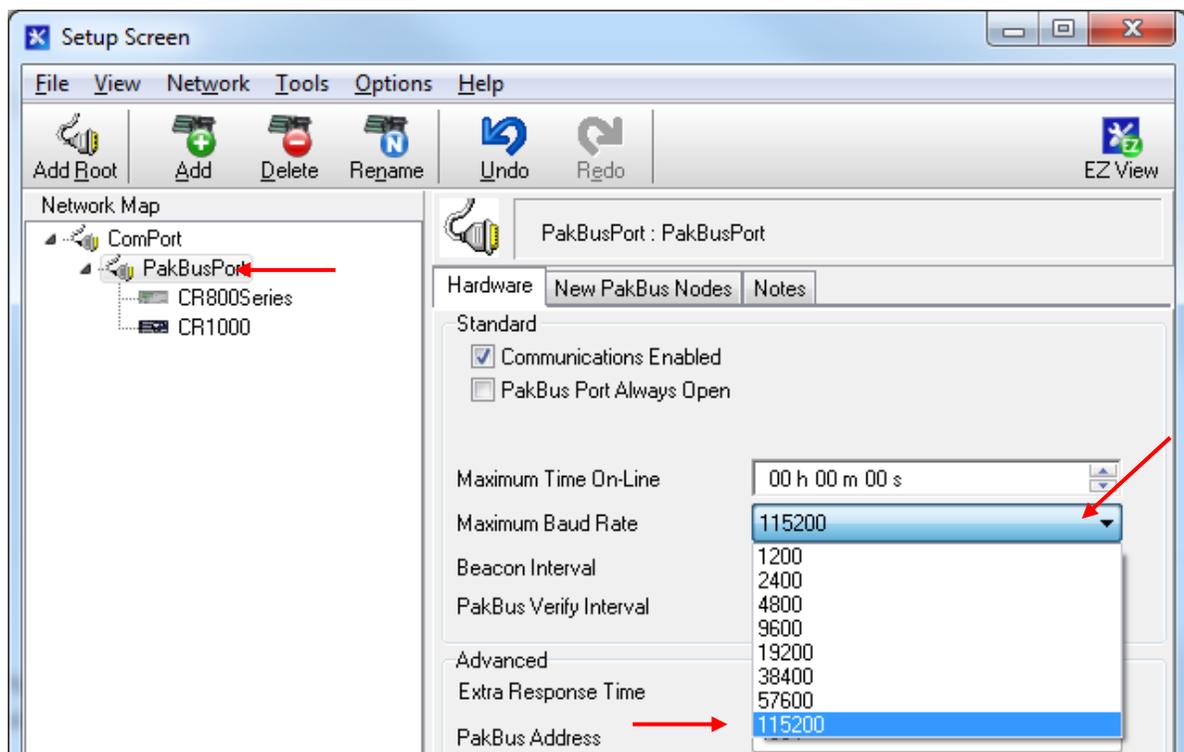
WHEN FINISHED, PRESS THE "APPLY" BUTTON AT THE BOTTOM LEFT OF THE SETUP SCREEN TO SAVE ALL SETTINGS.

E.2.3 Connecting to the Datalogger

With the LoggerNet Launch Menu open, hover over "Main" and press "Connect".
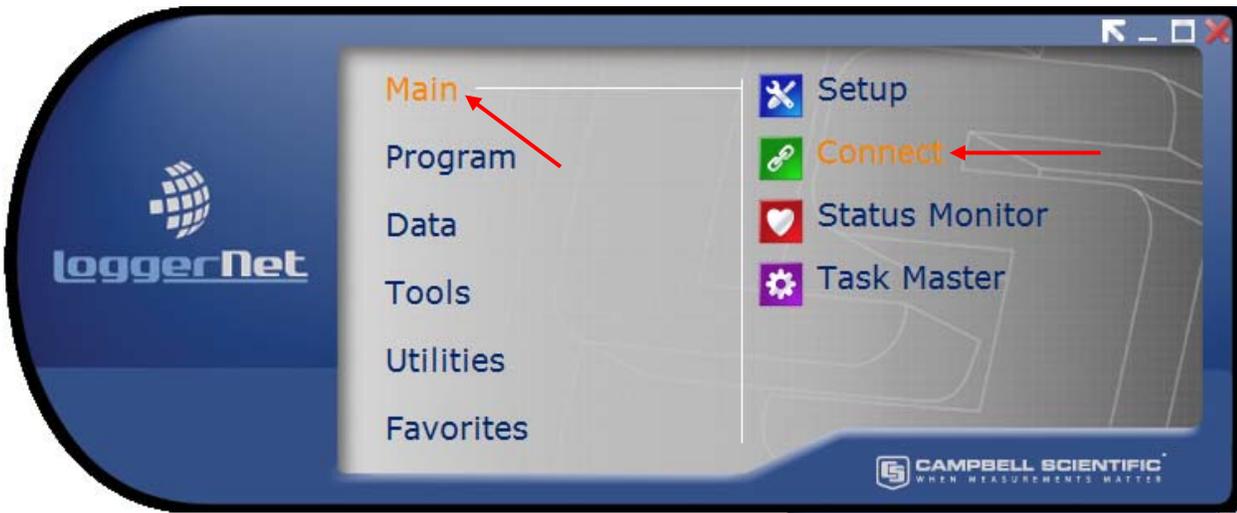
Select the Datalogger to communicate with under "Stations" and press the "Connect" button.
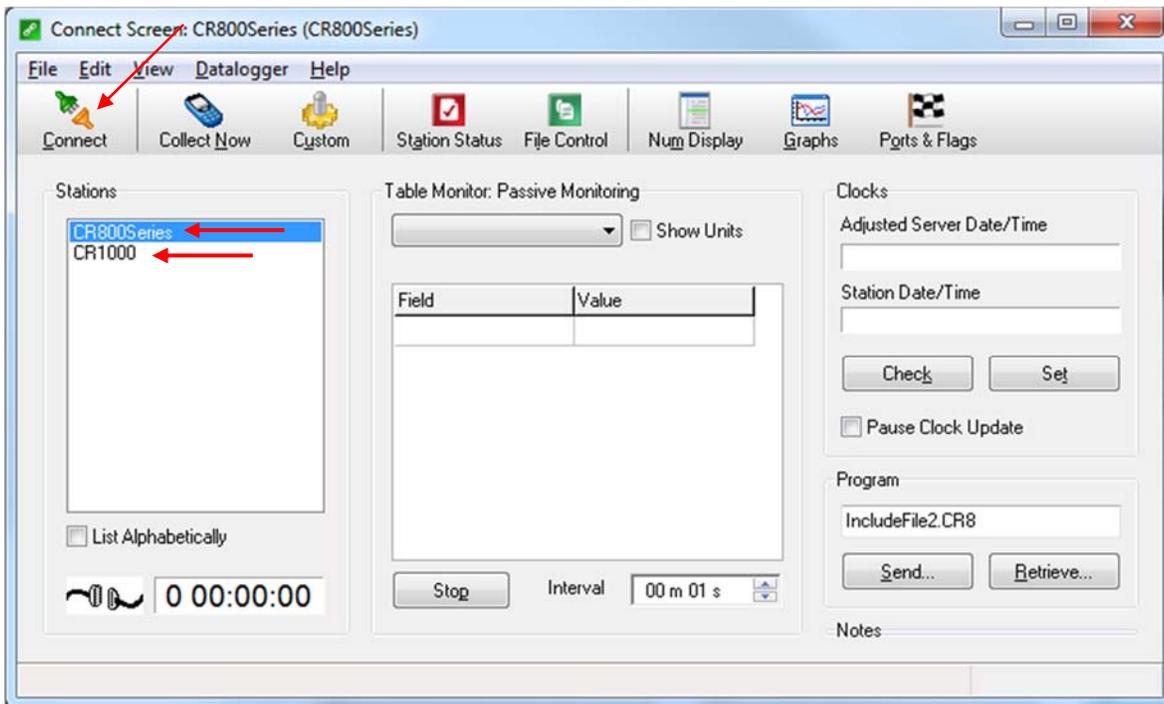
E.3 Modifying the Datalogger Program

Navigate to the Include(.DLD) file on the end user's computer C:\Campbellsci\CRBasicEditor.
Optional changes to Scan Interval, Zero Readings, Gage Factors and Alias names can be made
by opening the Include(.DLD) file with Notepad. Each Datalogger configuration has a unique
Include(.DLD) file.

WARNING: ONLY CHANGE VALUES AFTER THE "=" SIGN.

E.3.1 Editing the CRBasic Program

Scan Interval:
The number entered in the Scan Interval section determines how often the Datalogger
will read the gages and store data. The Scan Interval is in seconds.
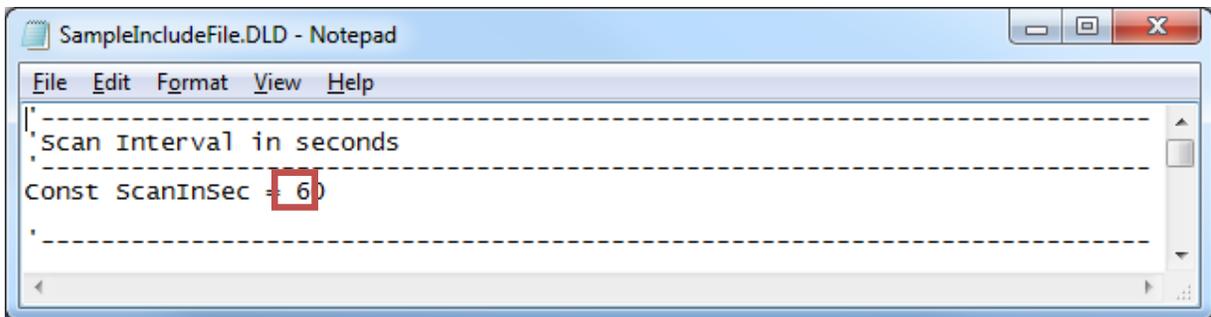
Zero Readings & Gage Factors:
Default values for Zero Readings are 0 and Linear Gage Factors are 1. The default
settings read in Digits for Vibrating Wire sensors and Volts for MEMS tilt sensors. Zero
Readings and Gage Factors can be added if the user requires the Datalogger to store
engineering units.
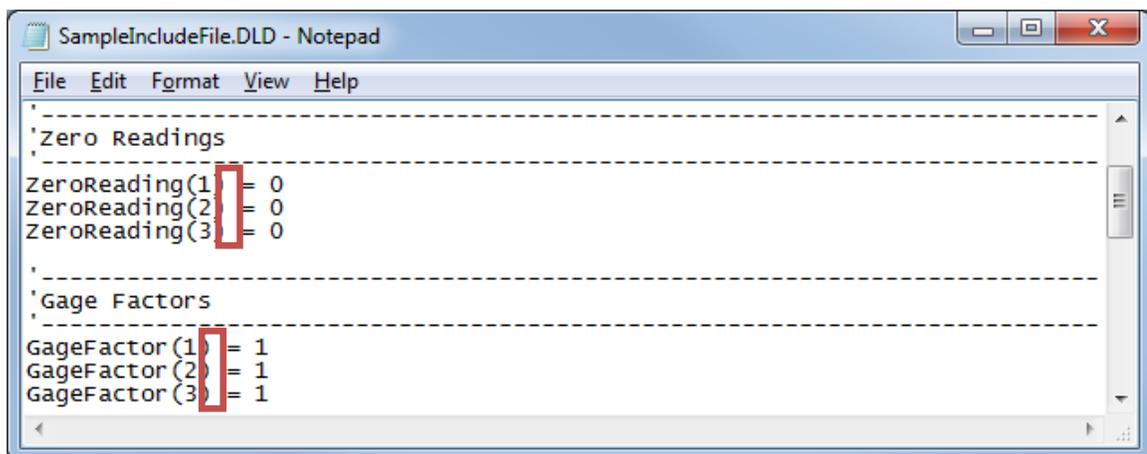
Temperature Zero Readings & Thermal Factors:

NOTE: TEMPERATURE ZERO AND THERMAL FACTORS ARE USED FOR TEMPERATURE CORRECTION. TEMPERATURE CORRECTION MAY BE USED TO COMPENSATE FOR CHANGES IN A GAGE'S READINGS DUE TO TEMPERATURE CHANGE. TEMPERATURE EFFECT ON READINGS VARIES ON DIFFERENT MODELS OF GAGES AND TEMPERATURE CORRECTION IS OFTEN NOT REQUIRED. DEPENDING ON THE GAGE MODEL TEMPERATURE CORRECTION MAY NOT BE AVAILABLE AND SOME GAGE MODELS REQUIRE A DIFFERENT FORMULA TO COMPENSATE. TEMPERATURE CORRECTION IS COMMENTED OUT IN THE MAIN PROGRAM FILE BY DEFAULT.

Default values for Temperature Zero Readings and Thermal Factors are 0. Temperature Zero Readings and Thermal Factors can be added if the user requires the Datalogger to use temperature compensation.
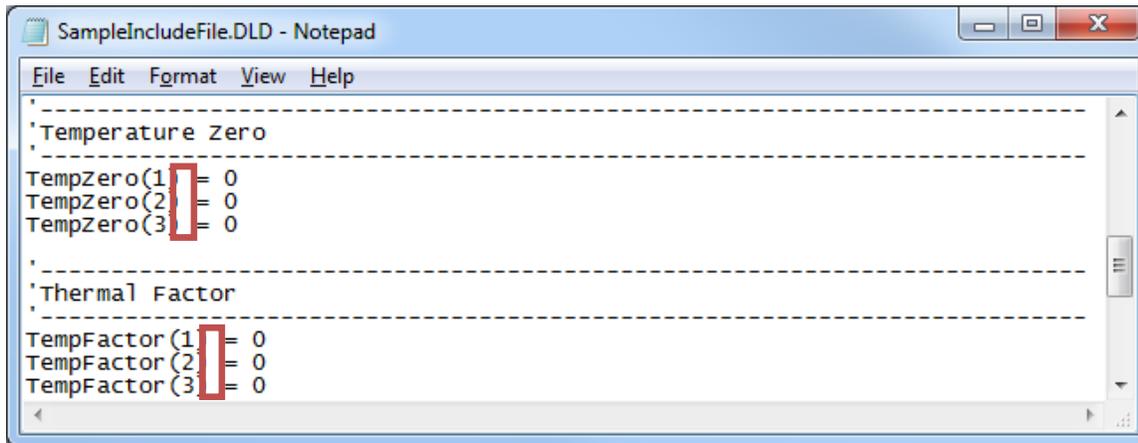
Navigate to the Main(.CR8/.CR1) file C:\Campbellsci\CRBasicEditor. Open the Main(.CR8/.CR1) file with notepad and uncomment the line specified in the code for all model gages that temperature correction is required.
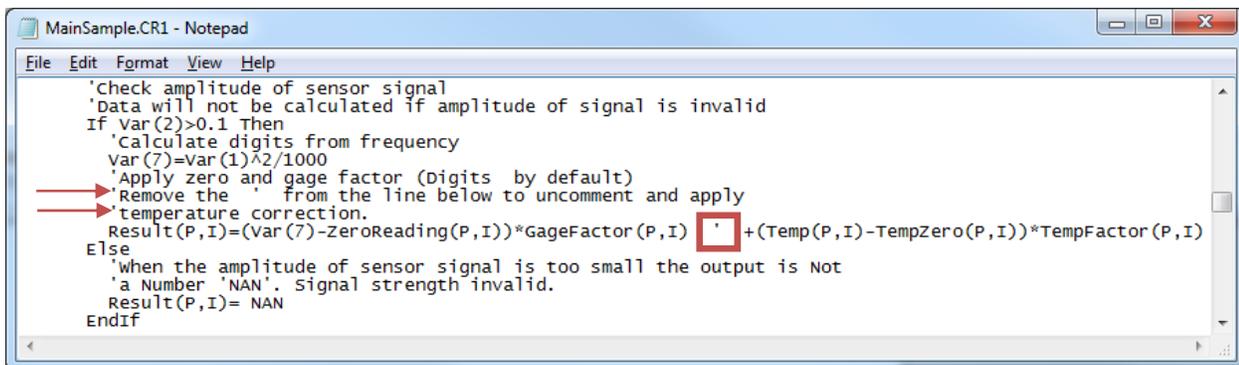
Output Labels:

Default Alias names correspond with the Direct or Multiplexer channel for each specific gage. Alias names get displayed in the Header of the Data file, and can be modified by the user.

WARNINGS: ALIAS NAMES CANNOT BE MORE THAN 35 CHARACTERS LONG AND MUST ONLY CONTAIN ALPHANUMERIC VALUES AND UNDERSCORES (NO SPACES OR SYMBOLS). THIS VALUE MUST BEGIN WITH AN ALPHA CHARACTER.

SAVE THE INCLUDE FILE IF MODIFIED.

E.3.2 Uploading Files

The Include.DLD file must be saved when modified. After modification, the Include.DLD must be sent to the Datalogger using the File Control Menu in the LoggerNet Connect Screen. The Main (.CR8/.CR1) program file must be sent to the Datalogger each time the Include.DLD file is updated.

Sending the Include file (.DLD):
From the "Connect Screen" press "File Control" and press "Send" to transfer the I nclude(.DLD) file to the Datalogger.

NOTE: EACH DATALOGGER HAS A UNIQUE INCLUDE(.DLD) AND MAIN(.CR8/.CR1) FILE
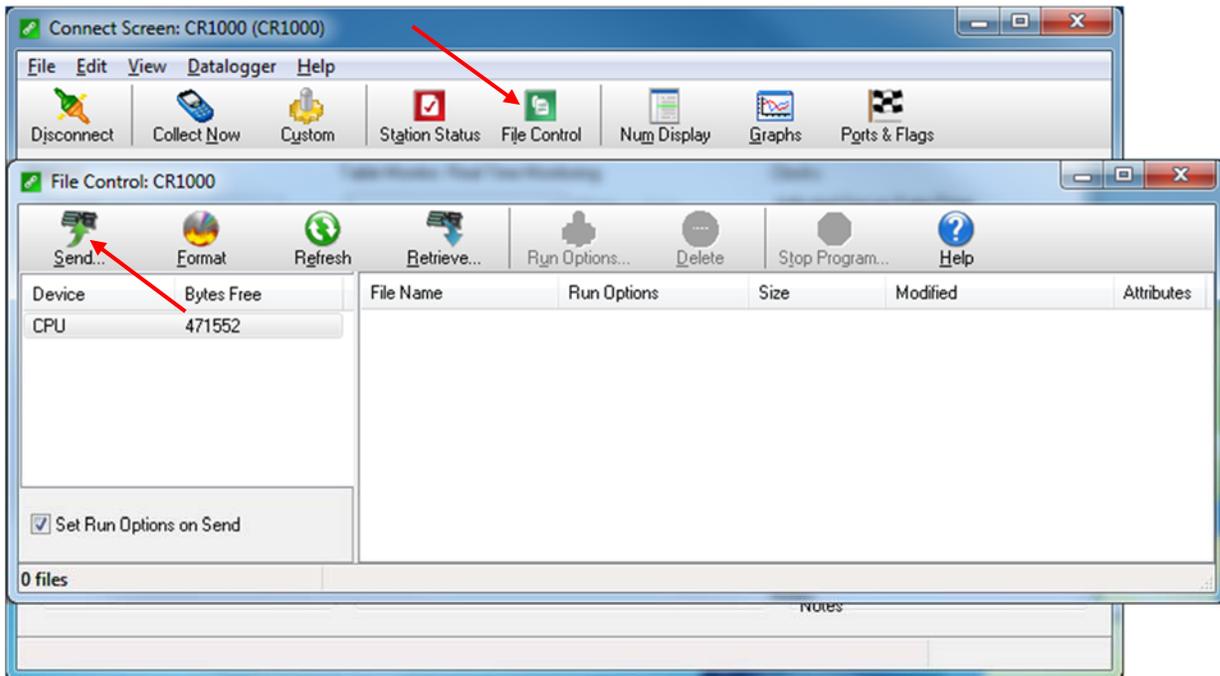
Select DLD file type to make the Include(.DLD) file visible in
C:\Campbellsci\CRBasicEditor.
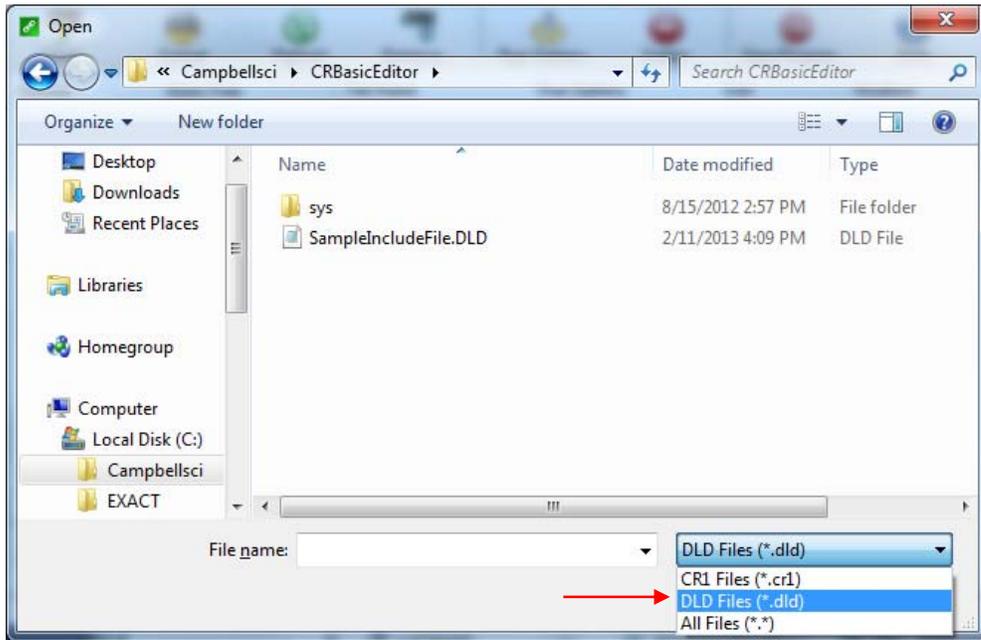
Uncheck "Run Now", the Include(.DLD) file cannot run the Datalogger.
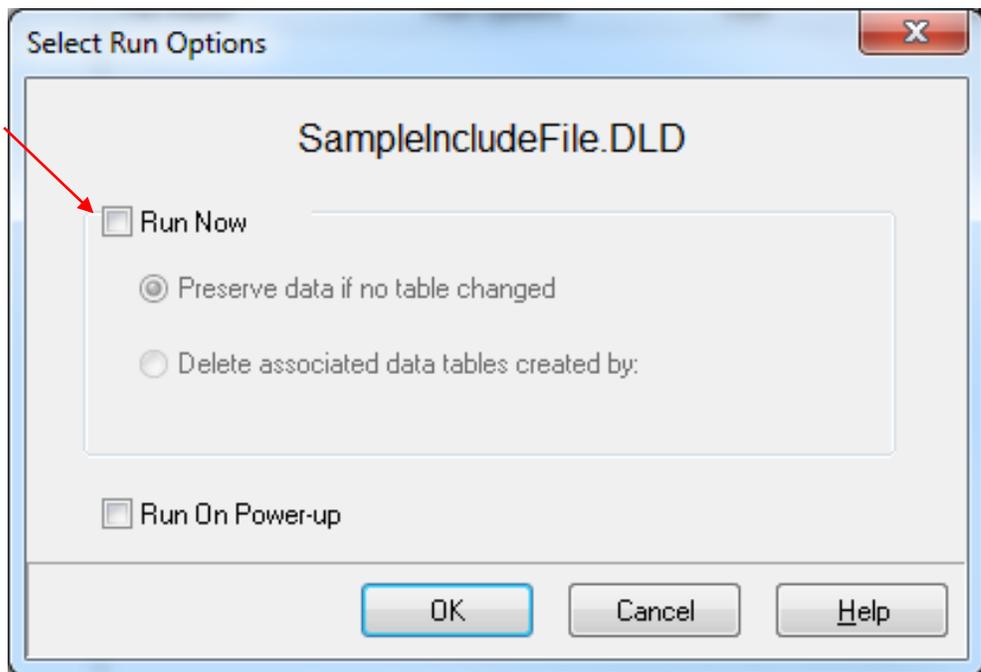
Sending the Main program file (.CR8/CR1):
To send the Main(.CR8/CR1) CRBasic Program from the "Connect Screen" press "Send" and select the Main(.CR8/CR1) program file in C:\Campbellsci\CRBasicEditor.

NOTE: EACH DATALOGGER HAS A UNIQUE INCLUDE(.DLD) AND MAIN(.CR8/CR1) FILE
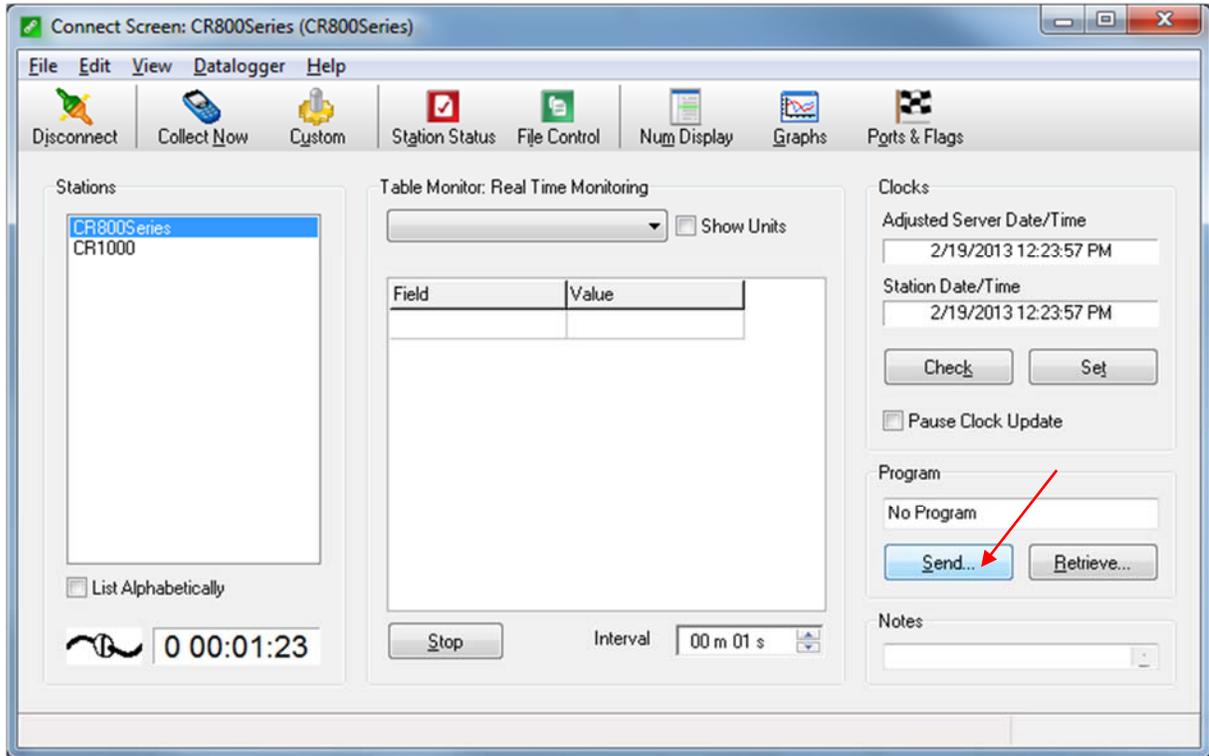
When sending the Main(.CR8/CR1) program file through the "Connect Screen" the program runs automatically.

E.4 Data Handling

E.4.1 Data Collection Configuration

With the Launch Menu open, hover over "Main" and press "Setup" from the resulting list of applications.
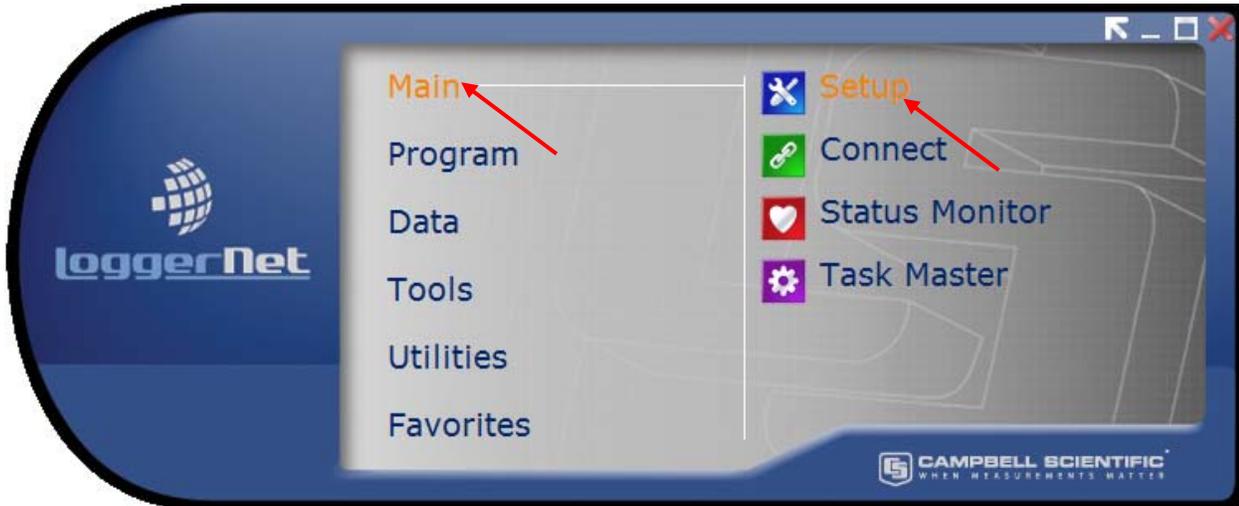
Select the Datalogger "CR1000"/"CR8000Series", "Data Files" tab then select "Table1". Dataloggers can be renamed by pressing "Rename" button. Renaming the Datalogger affects the name of the Data file. "Output File Name" option allows changing the file name, where to collect and store the Data file. "File Output Option" determines whether new Data collected is appended into one file, overwrites old Data, or creates a new file every time Data is collected.

COLLECTED DATA TABLES ARE SIGNIFIED WITH A GREEN CHECK MARK.
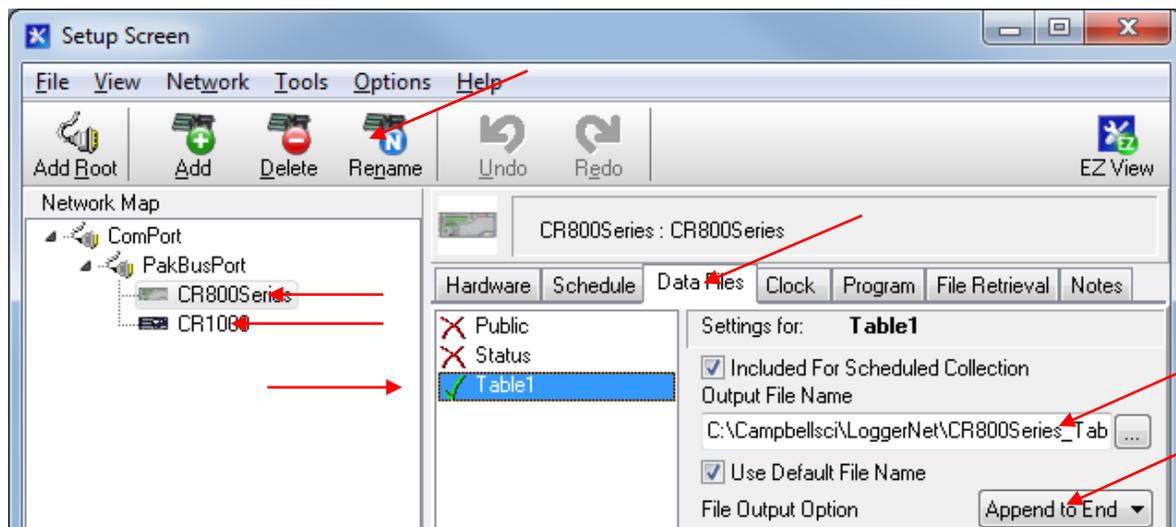
WHEN FINISHED, PRESS THE "APPLY" BUTTON AT THE BOTT OM LEFT OF THE SETUP SCREEN TO SAVE ALL SETTINGS.

E.4.2 Live Monitoring

With the LoggerNet Launch Menu open, hover over "Main" and press "Connect".
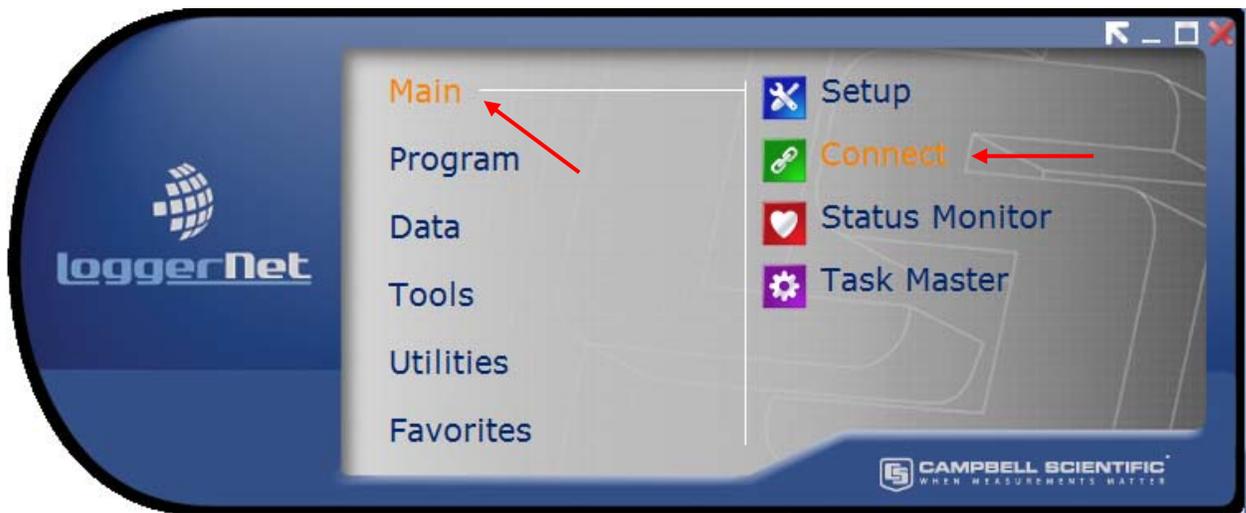
Once the program is running, most current readings can be viewed under "Table1" of the "Table Monitor" and "Num Display". "Graphs" can also be used to view live and historical Data.

CONDITIONAL NOTE: IT MAY BE NECESSARY TO START MONITORING BY PRESSING "START".
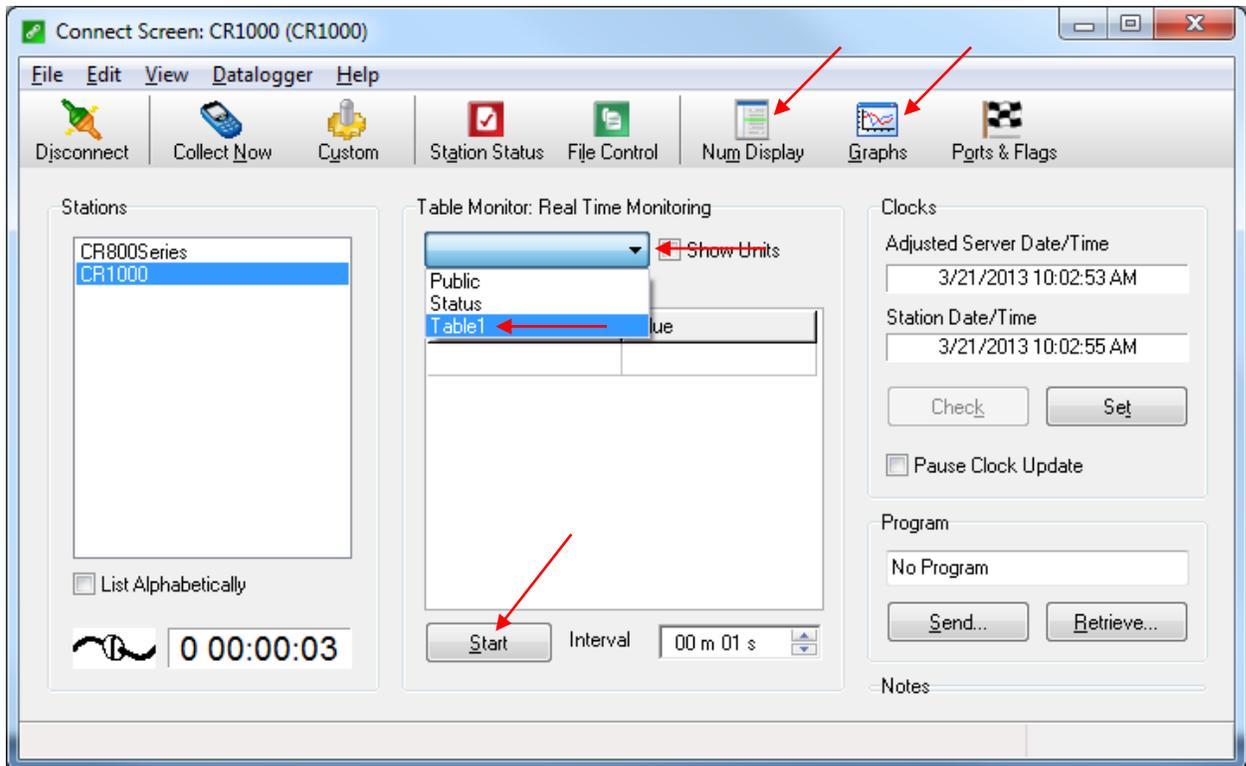
E.4.3 Collecting Data

Pressing "Collect Now" collects and stores Data on the computer. After collecting Data a "Data Collection Results" screen will open.
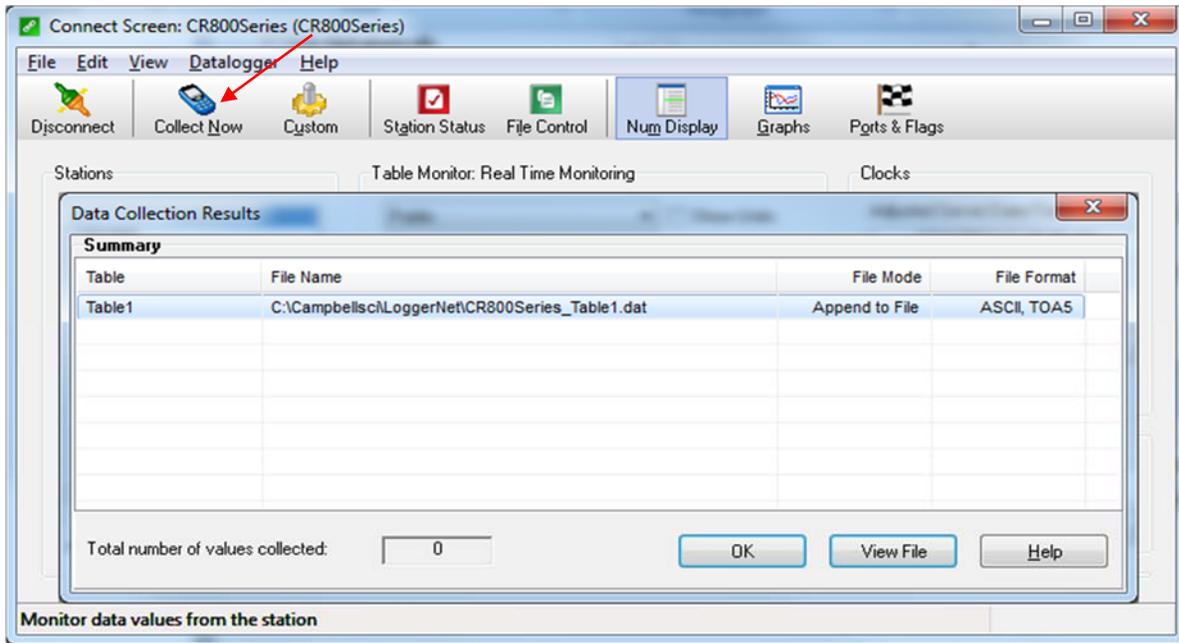
PLEASE SEE LOGGERNET MANUAL FOR MORE SPECIFIC DETAILS REGARDING USE OF THE SOFTWARE.