Logging Eddy Covariance Data Sets to the LI-7550

This quick start guide will show you how to configure the LI-7500A or LI-7200 with an optional LI-7700 (GHG-1 or GHG-2) to log high-speed eddy covariance data sets to the LI-7550 USB drive. Some benefits of this configuration include:

• Logged data seamlessly imports into EddyPro™ eddy covariance flux calculation software,
• Logged data includes all the required site and meta information to compute fluxes, and
• Automated data transfer from the LI-7550 to a computer.

1 Configure the Sonic Anemometer

Choose settings that are suitable for your anemometer, research site, and objectives. The settings below are suitable for Gill WindMaster™ and WindMaster™ Pro anemometers. Configure other anemometer brands similarly.

• Analog outputs: On
• Analog output voltage range: ±5 V
• Output rate: The recommended setting is twice the "Update Rate" set in Step 7 (also called "Acquisition Frequency")
• Flow distortion correction: On (if available)

• DAC channel 1: U, -30 to 30 m/s
• DAC channel 2: V, -30 to 30 m/s
• DAC channel 3: W, -5 to 5 m/s
• DAC channel 4: T_s: -40 to 70 ˚C

2 Connect the Cables and Arrange the Instruments

Data cables for common anemometer models are available directly from LI-COR:

Sonic Anemometer	Cable Part #
Gill WindMaster™/Pro	9975-033
Campbell® Scientific, Inc. CSAT3	9975-035
Other Makes and Models	392-10109
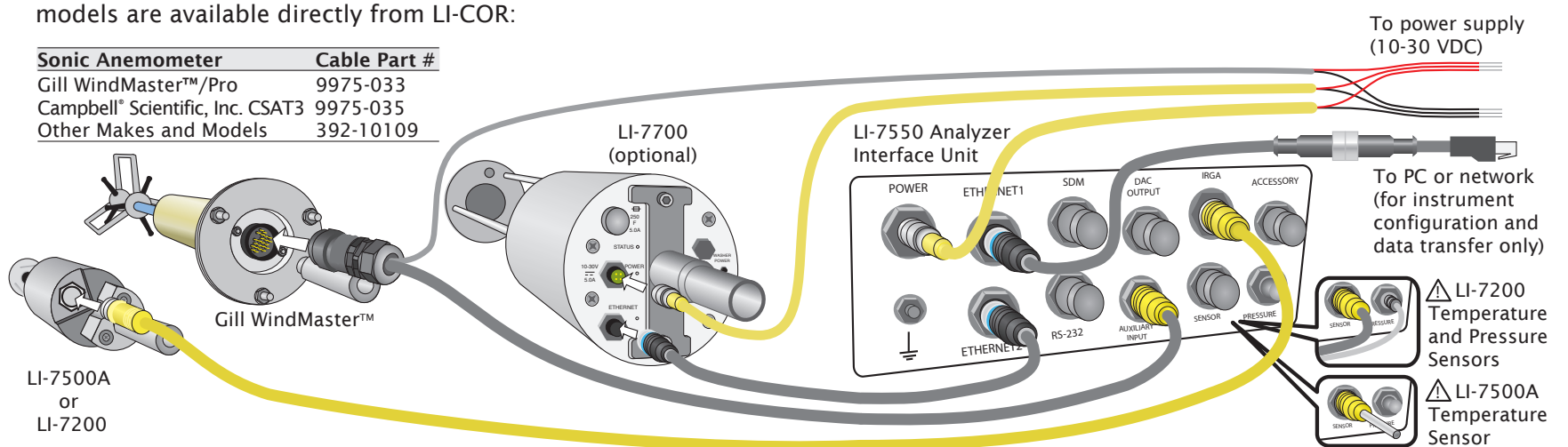
3 Collect Metadata

You will enter this metadata into the LI-7550 software in Step 7. This will make it possible to compute fluxes in a few simple steps using EddyPro eddy covariance software (www.licor.com/eddypro). See the EddyPro help system for more information.

Site Information:
• Altitude (m)
• Canopy height (m)
• Displacement height (m, optional)
• Roughness length (m, optional)
• Geographic location (latitude and longitude in WGS84 DMS or decimal degrees)

Anemometer Information:
• Manufacturer
• Model
• North alignment (spar or transducer, if applicable)
• Wind data format (U, V, W; polar, W; or axis velocities)
• North Offset (˚)
• Height (m)

Gas Analyzer Information:
• Analyzer model(s)
• Height (m)
• Northward separation (cm)
• Eastward separation (cm)
• Vertical separation (cm)
• Tube length (cm, LI-7200 only)
• Tube diameter (mm, LI-7200 only)

4 Configure LI-7700 Time Settings (only if using an LI-7700)

Install the LI-7700 Software on your computer (Windows® XP, Vista, or 7).

Launch the application.

Select the LI-7700 from the menu.

Connect with the LI-7700.

Configure the LI-7700 settings.
PTP: Automatic
Instrument Date: *Ignore this field*
Instrument Time: *Ignore this field*
Time Zone: *Ignore this field*
Output Rate: 10 Hz or as desired

Click "OK."

5 Configure LI-7550 Analog Inputs

Insert the LI-7200/LI-7500A Software CD into your computer's optical drive and install the following applications:
• LI-7200/LI-7500A 5.0 or higher
• GHG File Transfer
• LI-7x00 File Viewer

Launch the LI-7200/ LI-7500A application.

Connect with the LI-7200/ LI–7500A.

Connect
Select connection type:
Ethernet | Serial (RS232) | Run Disconnected
Connect to: ABU-0288
Address (IPv4): 172.24.81.159
Address (IPv6): fe80::21c:94ff:fe04:43d
Update Rate (Hz): 10.0
Connect
Exit

Click "Inputs."

LI-7200/LI-7500A CO2/H2O Analyzer
Disconnect | Config Files | Inputs | Outputs | Logging | Calibration | Charting | Settings | Diagnostics | Help
CO2 (µmol/mol)

Configure the Analog Inputs (Aux1 - Aux4).
• Type: U, V, W, and T_s (or SOS), respectively
• Units: m/s or C
• m: slope
• b: offset

Inputs
Temperature Source
○ Measured

Auxiliary Inputs
Aux1 | Aux2 | Aux3 | Aux4
Type: U
Units: m/s
Label: U
m: 6
b: 0
$y = m * x + b$
OK | Cancel | Apply

Click "OK."

Hint: To simplify data analysis, convert analog voltages to anemometric units before logging data. With the CSAT3, log U, V, W, and SOS.

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6 Configure LI-7550 Settings

Under the Time tab, configure the LI-7550 settings.
Clock Sync (PTP): Preferred
Date: Current date
Time: Current time
Time Zone: Set as required

Click "Settings."

LI-7200/LI-7500A CO2/H2O Analyzer
Calibration | Charting | Settings | Diagnostics | Help

Settings
Time | Network | Manual | Advanced | Flow Module | Integration | LI-7700
Time and Date
Clock Sync (PTP): Preferred
Date: 2011/02/24 YYYY/MM/DD
Time: 11:51:14 HH:MM:SS
Time Zone: US/Central
OK | Cancel | Apply

Settings
Time | Network | Manual | Advanced | Flow Module | Integration | LI-7700
Connection Status
Head: TG1-0XXX
Connection: Connected
Connect an LI-7550 to an LI-7700:
LI-7700 Instrument | Version | IPV4 Address
TG1-0XXX | 1.0.14 | 172.24.81.52
LI-7700 Hostname:
Connect | Disconnect
OK | Cancel | Apply

If you are using an LI-7700, select it under the LI-7700 tab.

Click "Connect."

Click "OK."

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7 Configure LI-7550 Data Logging

Click "Logging."

LI-7200/LI-7500A CO2/H2O Analyzer
Disconnect | Config Files | Inputs | Outputs | Logging | Calibration
CO2 (µmol/mol) | H2O (mmol/mol)
CO2 (mmol/m³)

Connected to:
Instrument type: LI-7200/LI-7500A Disconnected
Serial number: ------
Embedded Version: ------
Output rate: 0 Hz
USB Logging: ------
PC Logging:

Set the "File Duration" to 30 minutes or your desired file length.

Data Logging
Instrument (USB) | PC
File Options
Update Rate (Hz): 10.0
File Duration: 30 Minutes
☑ Compress files (.ghg)
When out of space:
○ Stop logging
○ Delete the oldest files from Archive
○ Delete oldest files from Archive and then from Data
☑ Log site information: Update Site Info...
Logging
Start | Stop | Eject
Status: Drive present, not logging
OK | Cancel | Apply

Select the CO2/H2O variables you want to log.

Select the CH4 variables you want to log (optional).

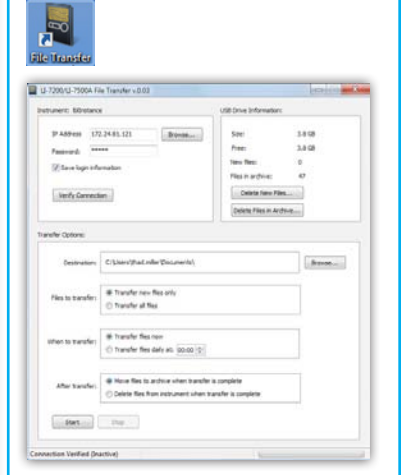Set the "Update Rate" to 10 Hz or your desired rate.

Check the "Compress files" box. The LI-7550 will now log compressed files with the .ghg extension.

Check the "Log site information" box. The LI-7550 will now include site metadata in the compressed .ghg files.

CO2/H2O | CH4
☑ Time
☑ Date
☑ Sequence Number
☑ CO2 (mmol/m³)
☑ CO2 Absorptance
☑ CO2 (µmol/mol)
☑ CO2 dry (µmol/mol)
☑ H2O (mmol/m³)
☑ H2O Absorptance
☑ H2O (mmol/mol)
☑ H2O dry (mmol/mol)
☑ Dew Point (°C)
☑ Cell Temperature (°C)
☑ Temperature In (°C)
☑ Temperature Out (°C)
☑ Block Temperature (°C)
☑ Total Pressure (kPa)
☑ Box Pressure (kPa)
☑ Head Pressure (kPa)
☑ Cooler Voltage (v)
☑ Diagnostic Value
☑ AGC
☑ 7550 Auxiliary Input 1
Select All | Select None
OK | Cancel | Apply

Click "Update Site Info" and enter Metadata from Step 3.

Update Site Info...

Site Information
Site | Anemometer | Gas Analyzers
Site Information
Site name: Landfill
Station name: Tower 1
Altitude (m): 390
Canopy height (m): 0.5
Displacement height (m): (Optional)
Roughness length (m): (Optional)
GPS format (WGS84): DDD MM.MMM
Latitude: 040° __.___ N
Longitude: 096° __.___ E

Site Information
Site | Anemometer | Gas Analyzers
Anemometer Settings
Manufacturer: Gill
Model: Windmaster
Wind data format: $U_x V_y W$
North offset (°): 0
Height (m): 2.75

Site Information
Site | Anemometer | Gas Analyzers
CO2 Analyzer | CH4 Analyzer
Analyzer model: LI-7500A | Analyzer model: LI-7700
Height (m): 2.75 | Height (m): 2.75
Northward separation (cm): 0 | Northward separation (cm): 0
Eastward separation (cm): 20 | Eastward separation (cm): -20
Vertical separation (cm): 0 | Vertical separation (cm): 0.0
Tube length (cm): 100.0
Tube diameter (mm): 9.017
OK | Apply | Cancel

Hint: Use the LI-COR file transfer utility to transfer data from the LI-7550 to your computer at any time or at scheduled intervals.

LI-7200/LI-7500A File Transfer v2.03
Instrument: IBInstance | USB Drive Information:
IP Address: 172.24.81.121 | Browse...
Password: ******
☑ Save login information
Verify Connection
Transfer Options
Destination: C:\Users\Paul.miller\Documents\
Files to transfer: ○ Transfer new files only
○ Transfer all files
When to transfer: ○ Transfer files now
○ Transfer files daily at: 00:00
After transfer: ○ Move files to archive when transfer is complete
○ Delete files from instrument when transfer is complete
Start | Stop
Connection Verified (Inactive)

Hint: Use the LI-7x00 File Viewer (for LI-7200, LI-7500A, and LI-7700) to quickly evaluate your GHG data for spikes and trends and to convert GHG files to text or TOB1 files, if desired.
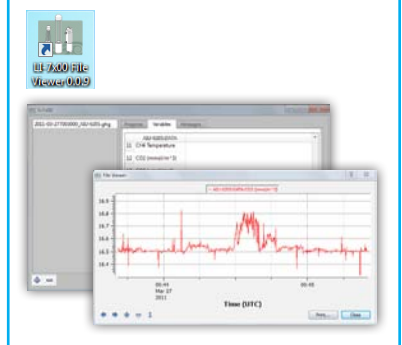
Data logging will begin automatically:
• When a suitable USB drive is inserted into the LI-7550 USB port (the instruments must be running), or
• Following start up (a USB drive must be in the port).

Click "OK" in each of the open windows, and save the configuration file.

Logged eddy covariance data can be processed easily in EddyPro™ software, which is available for download from www.licor.com/eddypro.