Operations requiring a continuous data flow from the C3 and C6P should use the Integrator Firmware. A detailed description of this firmware is below. Instructions on how to load this firmware can be found on the Turner Designs website:
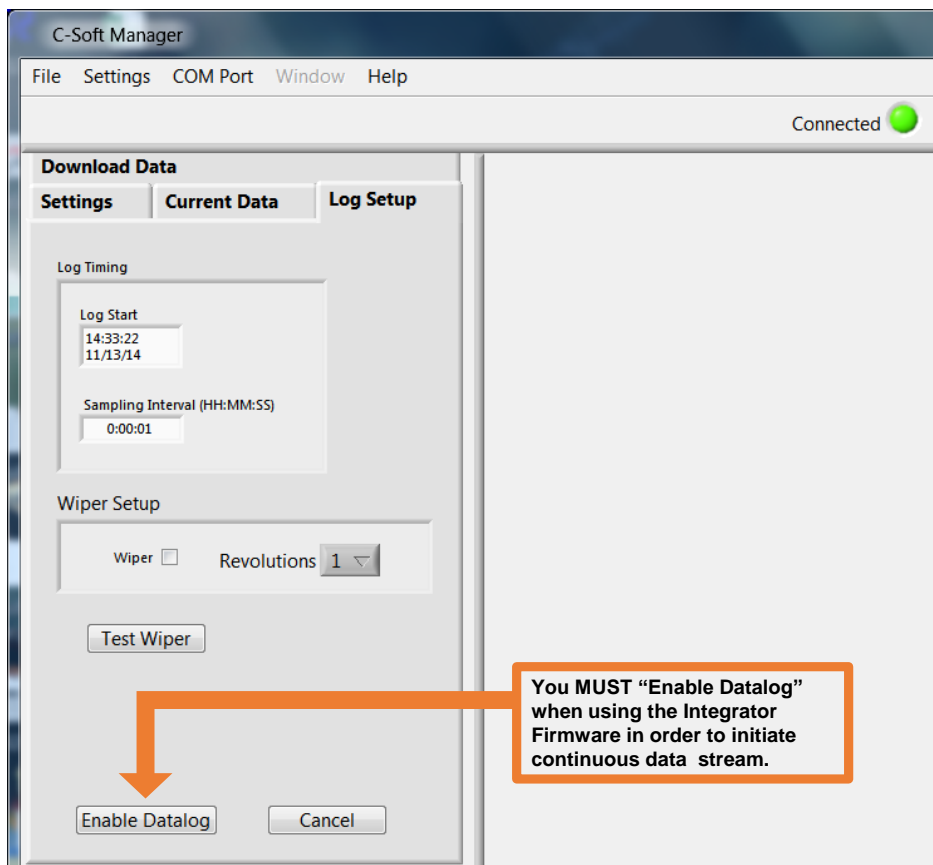
http://www.turnerdesigns.com/customer-care/software-a-firmware

Integrator Firmware

Turner Designs Integrator Firmware is designed for use by customers that are integrating their C3 or C6P with an external datalogger, CTD or similar system. The Integrator Firmware is different from the standard C3/C6 firmware and has some features that users need to consider before installing:

1) Internal datalogging is **NOT** possible with this version of firmware. The Integrator Firmware is intended for data output only.

2) The data output rate defined by this Integrator Firmware is 1 second and cannot be changed.

3) Once power is applied there is a 15 second delay before data output starts at a 1 second interval.

4) If the wiper is enabled, it will rotate the set number of rotations upon powering the instrument and every 5 minutes as long as power is continuously supplied.

5) Sleep mode is disabled; therefore as long as power is continuously supplied the instrument will continue to stream data at a 1 second interval.

It is very important to enable the Data Logging function of the C3 and/or C6P prior to deployment. This is accomplished by connecting the C3 or C6P to C-Soft and selecting "Enable Datalog" on the Log Setup tab as shown below. If the integrator firmware is loaded, the fluorometer will automatically default to a one second interval output despite the interval chosen in the Sample Interval setting box. Make sure the start time and date are not set to a point in the future or you will not get output. Once this is configured and you exit out of C-Soft the unit will be ready for deployment or integration.

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You MUST "Enable Datalog" when using the Integrator Firmware in order to initiate continuous data stream.

Making your connections

The Standard Interface Cable P/N 2200-150 that is supplied with the C3 and C6P is used to program and communicate with the fluorometer using C-Soft and provide real-time data view. It can also be used for changing the firmware. This cable is **NOT** recommended for serial data output. Either the Continuous Data Cable P/N 2200-160 or Pigtail Cable with Locking Sleeve P/N 2200-170 should be used for serial data output dependent on your specific application needs.

2200-150

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The Continuous Data Cable P/N 2200-160 is the recommended accessory for serial data output as it prevents interruptions in the data transmission to the PC. This cable is identified by yellow heat shrink around the body of the cable. The only pins in use on the DB9 connector of this cable are 2, 3 and 5. This cable can **NOT** be used to program the C3 and C6P in C-Soft.
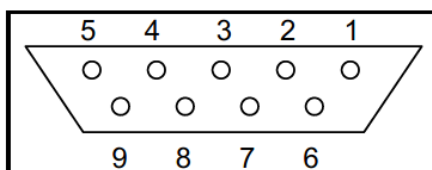
2200-160

Once datalog has been enabled in C-Soft and the fluorometer is ready to stream data, do NOT connect pins 6, 7 or 8 on the DB9 connector. Signals on these pins can inadvertently stop data transmission to the Data Logger or parent collection system.
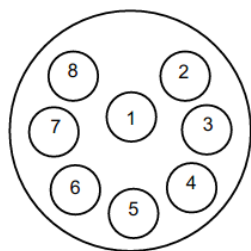
DB9 Connector

Wire Guide

Pin Out	Color	Function	Corresponding DB9 Connector Pin
1	Black	V BATT (+)	Power Connector Cable – Center Pin (+)
2	White	V BATT (-)	Power Connector Cable – Housing (-)
3	Red	GND	PIN 5
4	Green	RX	PIN 2
5	Blue	TX	PIN 3
6	Brown	DTR & DSR	PIN 4, 6
7	Yellow	RTS & CTS	PIN 7, 8
8	Orange	N/A	N/A

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The Pigtail Cable with Locking Sleeve P/N 2200-170 is an optional accessory for the C3 and C6P. It can be used to connect the C3 and C6P to a datalogger and/or external power source that the user must wire themselves, replacing the standard interface and integration cables. Extra care should be taken with this cable to make sure all wiring specifications are strictly followed.

| Pin	Color	Function
1	Black	V BATT (+)
2	White	V BATT (-)*
3	Red	GND*
4	Green	RX
5	Blue	TX
6	Brown	N/A
7	Yellow	N/A
8	Orange	N/A

2200-170

*Power ground and V BATT (-) are not common
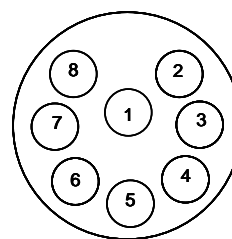
Data Stream ASCII Format

Configure your Com port for the following settings to capture ASCII data from the C3 and C6P:

Bits per second: 9600
Data bits: 8
Parity: None
Stop bits: 1
Flow control: Hardware
Click **Apply** and **OK**

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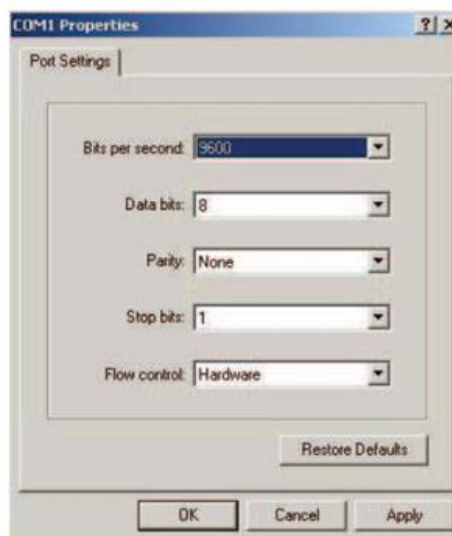
Here is an example of the ASCII data output of the C3 and C6P:

```
File   Edit   Format   View   Help
Date       Time      Chlorophyll      CDOM        oil   Depth Temp C
 6/18/08   9:50:00         39.20       52.80       0.00   10.07  22.06
 6/18/08   9:50:01         39.20       52.80       0.00   10.07  22.06
 6/18/08   9:50:02         39.20       52.80       0.00    9.99  22.06
 6/18/08   9:50:03         39.20       52.80       0.00    9.99  22.06
 6/18/08   9:50:04         39.20       52.80       0.00   10.07  22.06
 6/18/08   9:50:05          9.96        4.48       0.12   10.07  22.06
 6/18/08   9:50:06          5.88        5.40       0.00   10.07  22.06
 6/18/08   9:50:07          5.60        4.76       0.16    9.99  22.06
 6/18/08   9:50:08          7.60        4.16       0.52   10.07  22.06
 6/18/08   9:50:09          6.24        3.20       0.00    9.99  22.06
 6/18/08   9:50:10          7.24        4.08       0.00   10.07  22.06
 6/18/08   9:50:11          6.08        6.12       0.00   10.07  22.06
 6/18/08   9:50:12          8.24        5.68       0.00    9.99  22.06
 6/18/08   9:50:13          7.08        5.40       0.00    9.99  22.06
 6/18/08   9:50:14          3.92        5.32       0.00   10.07  22.07
 6/18/08   9:50:15          4.44        5.48       0.00   10.07  22.06
 6/18/08   9:50:16          5.88        6.28       0.00    9.99  22.06
 6/18/08   9:50:17          7.12        7.76       0.00   10.07  22.05
 6/18/08   9:50:18          6.28        8.04       0.00    9.99  22.05
 6/18/08   9:50:19          7.12        6.28       0.40    9.99  22.05
```

If the fluorometer is set to output RFU or RFUB, the maximum numeric value is approximately 65,500.00. Each line of the output ends with a carriage return (character 013, hex 0D) and line feed (character 010, hex 0A) (see bytes 191 and 192)

Carriage return
Line Feed
Date - 8 characters: MM/DD/YY
1 space
Time - 8 characters: HH:MM:SS
2 spaces (NOTE the extra space here!)
Channel 1 - 9 characters
1 space
Channel 2 - 9 characters
1 space
Channel 3 - 9 characters
1 space
Depth - 6 characters
1 space
Temperature - 6 characters

Reply		
Byte	Char	Hex
180	0	30
181	.	2E
182	0	30
183	0	30
184		20
185		20
186	1	31
187	9	39
188	.	2E
189	6	36
190	5	35
191	013	0D
192	010	0A
193		20
194	2	32
195	/	2F

Note: Fields for channels 1, 2, and 3, depth and temperature are padded with leading spaces in the case that they don't occupy the entire 9 character field width.

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