

Data streaming has multiple benefits and is typically the preferred way of viewing and analyzing data for many researchers who are doing *in situ* work whether it's profiling, moored, or towed applications. However, instrument deployments at depths greater than 10 meters have trouble streaming digital ASCII data due to the fact that RS232 fails to transmit at long distances (> 10 meters). Turner Designs' Digital Converter Kit P/N 2200-905 enables long distance transmission of data by converting the ASCII string output to RS422, which can be transmitted over very long distances (> 600 meters). Tested at just over 50 meters, the Digital Converter Kit provides the same data streaming functions as the previous booster with added benefits such as Direct USB connection to your PC, Bracket for securing Digital Converter, and 1 Converter required instead of 2.

NOTE: *If using the Digital Converter with the SMART Protocol and setup, refer to the sections on setting up the Toughbook and towed deployment using the C-Ray.*

Previous Booster Set



Digital Converter Kit P/N 2200-905 Includes



Digital Converter Kit P/N 2200-905 Installation for RS232 Digital Data Streaming

The Digital Converter Kit is easily installed onto our submersible fluorometers that have digital data streaming capabilities. Prior to installation, you must ensure the instruments are set up for data streaming using the appropriate software which can be downloaded from our website: <https://www.turnerdesigns.com>

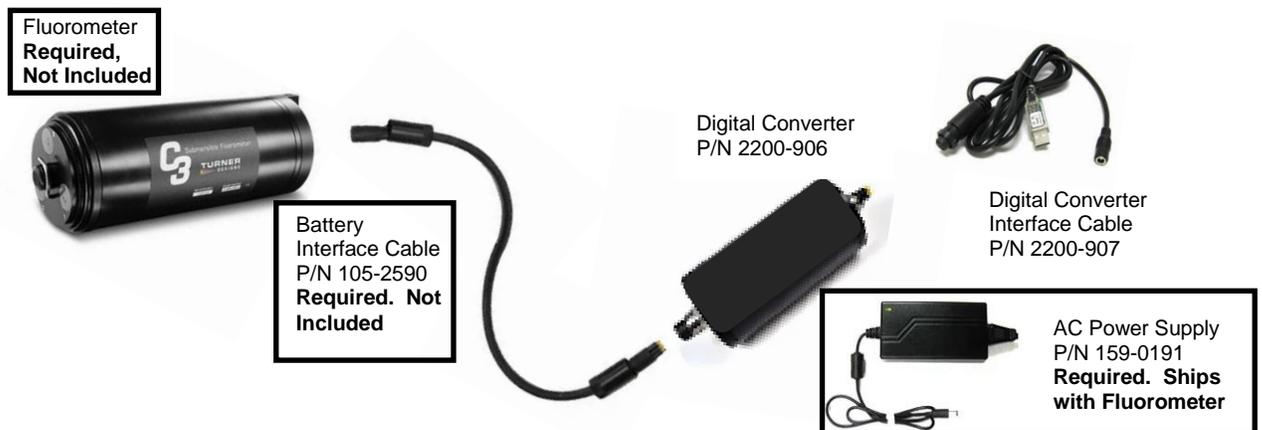
Please follow instructions in your instrument's manual on how to set the instrument for data streaming mode. Once the instrument has been configured for data streaming.:

- 1) Install the battery bracket onto your instrument (see [battery bracket installation instructions](#)).
- 2) Install the Digital Converter P/N 2200-906 by sliding it through the battery bracket opening and mating the female end of the Converter to the male bulkhead connector on the fluorometer then secure the connection using the locking sleeve.
- 3) Tighten the hex screw on the battery bracket's locking ring to ensure the Digital Converter is securely held in place.
- 4) Plug your underwater rated cable's (> 10 meters) female connector to the Converter's male bulkhead connector and secure it using the locking sleeve.
- 5) Plug the underwater rated cable's male connector to the Digital Converter Interface Cable P/N 2200-907.

- 6) Plug the USB into an available port on your PC.
- 7) Open any terminal program that will accept and display digital ASCII data string. *See Appendix E of either the C3 and C6P or PhytoFind manual for instructions.*
- 8) Connect the power plug of the Digital Converter Interface Cable into our standard AC power supply that was supplied with your instrument.
- 9) Wait for data to begin streaming at the interval that was set when data streaming was being configured.
- 10) The instrument can now be deployed.

Digital Converter Kit P/N 2200-905 Installation for Towed Applications Using C-ray

The Digital Converter Kit can also be used for towed applications that use the C-ray. This installation does not require a battery bracket, rather a cable connection using a Battery Interface Cable P/N 105-2590 that connects the C3 to the Digital Converter as pictured below. Please follow instructions in the C3 and C6P manual, *page 19; Section 3.5* on how to “Enable Data Output Ready State” (i.e. data streaming). Once the instrument has been set up.:



- 1) Follow the C-ray Towed Deployment Body Instructions to properly install your C3 into the C-ray.
NOTE: C-ray instructions can be downloaded from the C-ray's product page on Turner Designs' website www.turnerdesigns.com; type "C-ray" into the search field to find its product page.
- 2) Plug the Battery Interface Cable's female connector to the C3's bulkhead male connector and secure it using the locking sleeve.
- 3) Plug the other end of the Battery Interface Cable to the Digital Converter's female bulkhead connector and secure it using the locking sleeve.
- 4) Plug your underwater rated cable's (> 10 meters) female connector to the Converter's male bulkhead connector and secure it using the locking sleeve.
- 5) Plug the underwater rated cable's male connector to the Digital Converter Interface Cable P/N 2200-907.
- 6) Plug the USB into an available port on your PC.
- 7) Open any terminal program that will accept and display digital ASCII data string. *See Appendix E of the C3 and C6P manual for instructions.*

- 8) Connect the power plug of the Digital Converter Interface Cable into our standard AC power supply that was supplied with your C3.
- 9) Wait for data to begin streaming at the interval that was set during Enable Data Output Ready State.
- 10) The C-ray can now be deployed and towed.

Using Digital Converters with Toughbook for the SMART Protocol

When running the SMART protocol, you will need to configure the Toughbook to read data from the Digital Converter. Please follow instructions below to set up or configure your Panasonic Toughbook to read RS232 data from the Digital Converters via the USB port instead of the RS232 serial 9-pin port that was used with our old style boosters.

- 1) Make sure you are connected to the internet, either wired or wireless.
- 2) Plug the Digital Converter's Interface Cable (P/N 2200-907) USB connector into the available USB port on your Panasonic Toughbook.
- 3) Wait for the drivers and all updates to install.
- 4) Open the Device Manager window.
- 5) Click on the Ports header to see what COM ports have been assigned.
- 6) Find the COM port value that was assigned to your USB cable; you can do this by unplugging and then plugging the cable back into your USB port as this action will remove the COM value from the display when the cable is unplugged and display the COM value when the USB cable is plugged in.
- 7) Note the COM port value.
- 8) Close the Device Manager window.
- 9) Go to "C:/Windmill/Setups".
- 10) Locate the "C-3.imd" file and right click on that file.
- 11) Select "Open With" and click "More Apps" if Notepad is not already displayed as one of the Apps available.
- 12) Select Notepad to open C-3.imd file as a Notepad file.
- 13) At the top of the screen there is a value assigned to "Port".
- 14) Delete that value and enter the COM port value noted in step 7.

NOTE: It is very important you do not change any other parameter or character in that file.

- 15) Press Ctrl-S to save the file and close it.
- 16) Restart the Toughbook.
- 17) Windmill will now look for the COM port value for that specific Digital Converter Interface Cable when trying to display C3 data.

If you ever use a different Digital Converter Interface Cable than the one that was initially setup for the Toughbook, repeat all the steps above as each Digital Converter Interface Cable will be assigned a new COM port value when it is plugged into your computer for the first time.