Campbell
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FluoreSENS 10

Sun-Induced Chlorophyll Fluorescence (SIF) System

Document Part Number: 41805
Revision Date: October 2023

Info Link

IMPORTANT NOTE: *This Quick Deploy Guide is meant to be a general reference to give the installer an overview of the steps required to make this system operational. The product manuals are the definitive source for detailed installation instructions and information.*
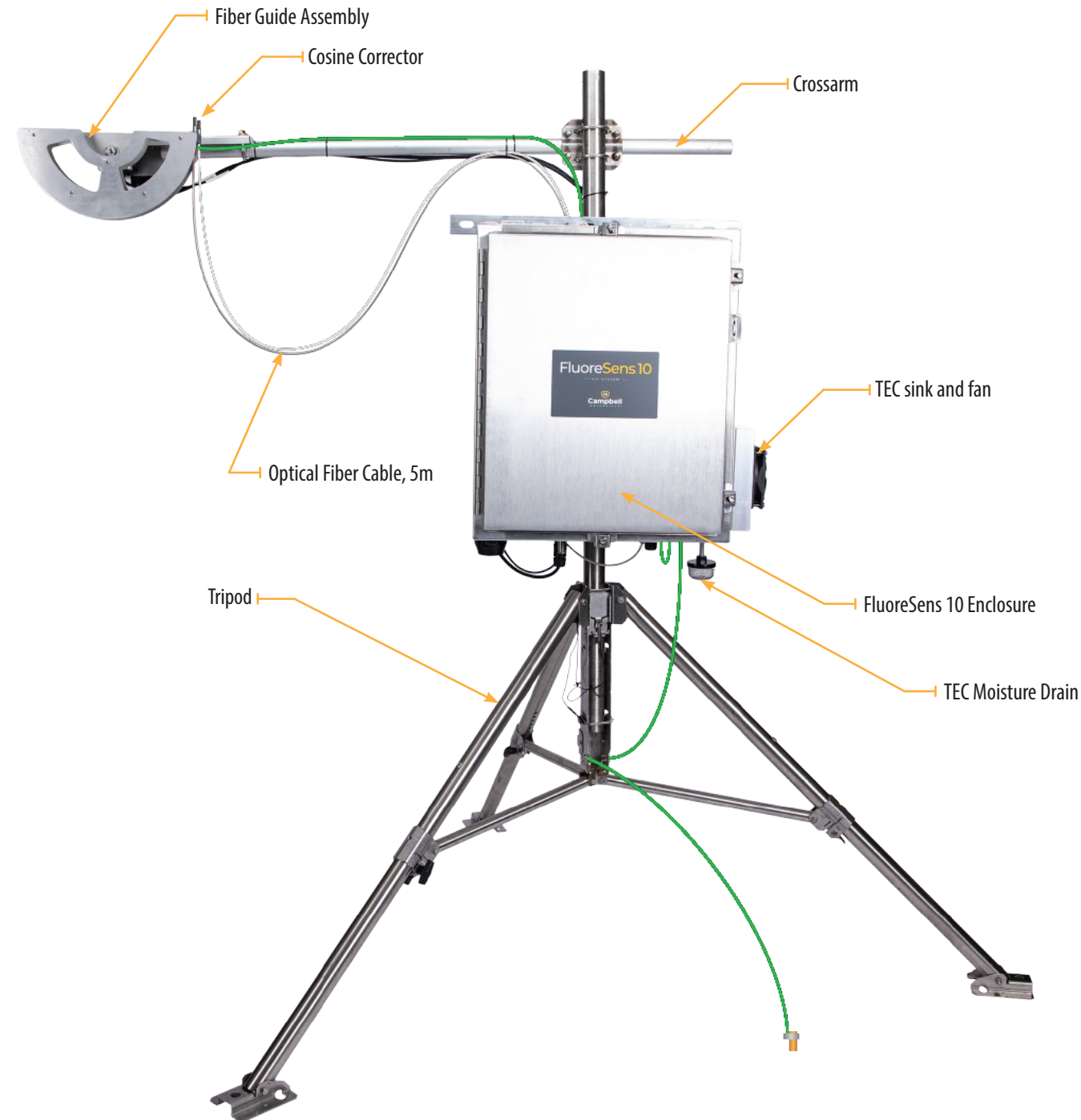
1 ⚠ Caution!

- Read the precaution section of the manual to prevent any electrical and mechanical hazards.
- Do not connect or disconnect the spectrometer(s) or other sensors while the system is powered. Doing so can result in damage to the instrument.
- Grounding electrical components in the measurement system is critical. Proper earth (chassis) grounding will ensure maximum electrostatic discharge (ESD) protection and higher measurement accuracy.
- Do not bend the optical fibers below a radius of 8 cm. A lower radius will alter the calibration, and a narrow bending can break the fiber.

FluoreSENS 10 System Diagram

- Fiber Guide Assembly
- Cosine Corrector
- Crossarm
- TEC sink and fan
- Optical Fiber Cable, 5m
- Tripod
- FluoreSens 10 Enclosure
- TEC Moisture Drain

Software

The heart of the FluoreSENS 10 system lies in its customizable data logging software known as IMACSS, short for Integrated Measurement And Control System for SIF. IMACSS serves as a software component responsible for controlling and executing all the functions of the spectrometer(s).

IMACSS is equipped to handle errors, including power outages or communication disruptions with the spectrometer.

IMACSS is responsible for controlling the operating temperature, managing the buffer size for spectral data transfer and storage, setting spectral integration times, opening and closing the internal shutter, starting or stopping spectral sampling, and checking the spectrometer status.

Due to licensing constraints, IMACSS will be encrypted, rendering it unmodifiable by end-users.

2 Required Tools

The following tools are required to install the SIF system in the field. Additional tools may be required for a user-supplied tripod, tower or crossarm.

1. 9/16-in open end wrench
2. 1/2-in open end wrench
3. 9/64-in hex key
4. Adjustable wrench
5. Sledgehammer (to drive grounding rod into the ground)
6. Small, flat-tip screwdriver
7. Large, flat-tip screwdriver

3 Physical Deployment

1. Set up the tripod and mount enclosure.

2. Attach the CM20X crossarm to the tripod mast.

3. Mount the fiber guide assembly to the cross arm using two U-bolts, nuts, and washers. The fiber guide assembly must be mounted parallel to the ground, not the crossarm. See the manual for more information.


Nut
Washer
U-bolt

4. Mount the FluoreSENS 10 enclosure. Attach the first strap/clamp to the pole. Slide the curved side of the slotted strut to the edge of the strap and secure it by tightening the strap's screws for a stable and secure hold. Fasten the upper end of enclosure to the strut using two screws and nuts. Attach the second strut, adjust its position as needed and then tighten the screw. Finally, attach the lower end of the enclosure to the second strut.

Mast
Enclosure Mounting Strut
Clamp
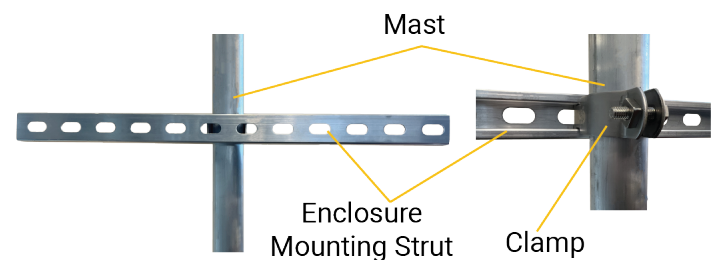
5. Ground the fiber guide assembly and enclosure. Connect grounding wire between the grounding lug located underneath of fiber guide and bottom of the enclosure and both to earth ground. **Do not attach the fiber optic cables until step 10.**

Enclosure Mounting Strut
Ground Terminal
Ground Wire
Ground Rod
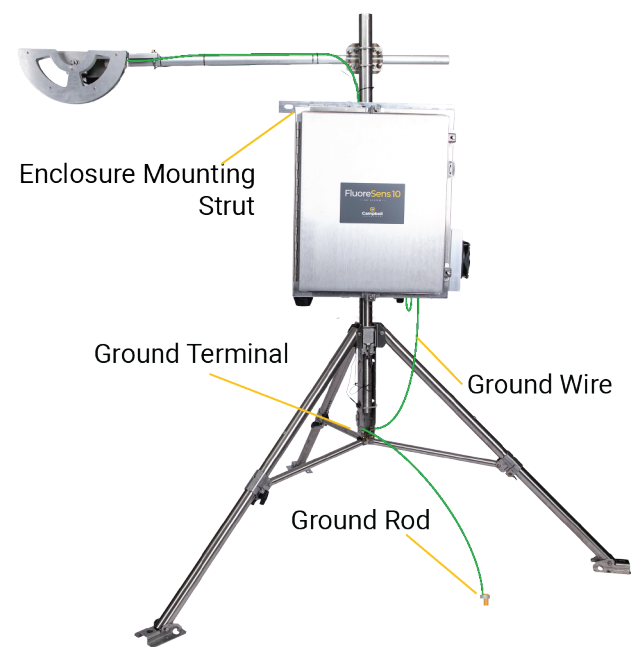
6. Connect the motor power cable (thick cable) connector and encoder cable connector to the mating connectors on the bottom of the enclosure. Power the system so that the fiber guide can find home position without damaging fiber optic guide.

Ground
AC Power
Motor Power Cable
Encoder Cable
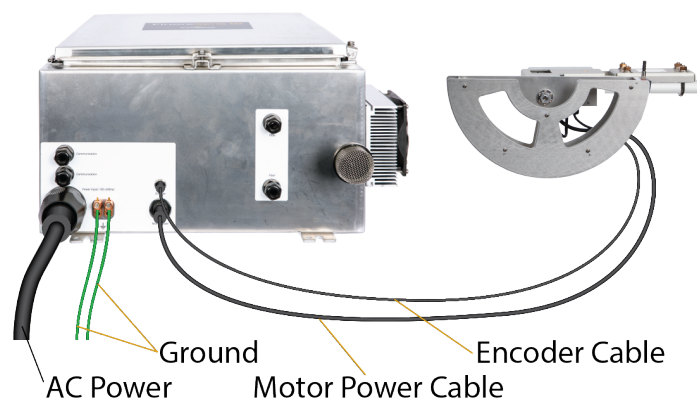
7. Insert the QE Pro fiber optic cable through port A (and the Flame fiber optic cable through port B) on the bottom of the enclosure and connect to the SMA connector(s) of the spectrometer (s). Then, connect the other end to cosine corrector and insert it into the light source of the lamp.

Fiber Optic Port A   Port B

B
A
SMA Connector
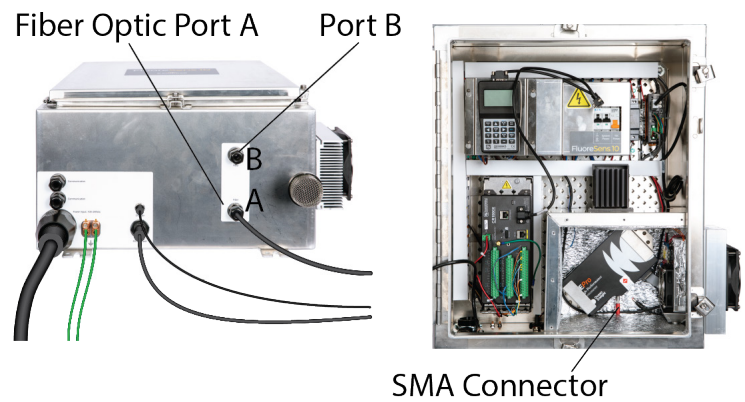
8. Place the drip pan below the Thermo electric cooler (TEC) fan inside of the enclosure, insert the pipe from the bottom of enclosure and screw on to the drip pan. Screw the screen strainer onto the end of the pipe.

TEC Fan
Bottom of Enclosure
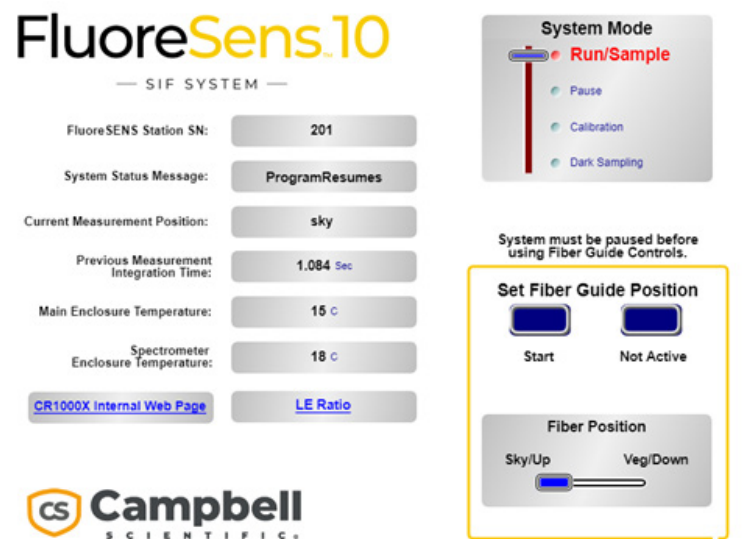Screen Strainer
Pipe
Drip Pan
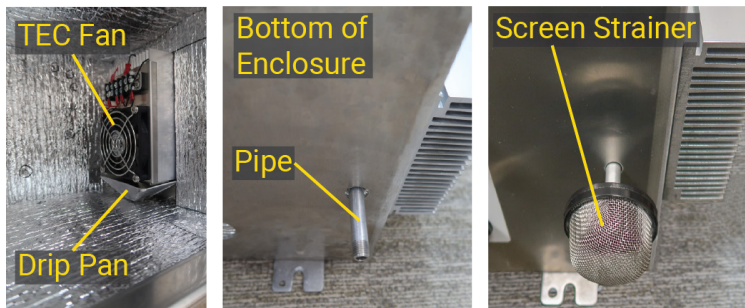
9. Perform Absolute irradiance calibration with known light source. Refer to absolute irradiance calibration section in the FluoreSENS 10 manual. (Skip this step if calibration is performed during bench test in laboratory before deployment.)

HL-3P- Cal Lamp
Fiber Optic Cable
Cosine Corrector
USB Cable
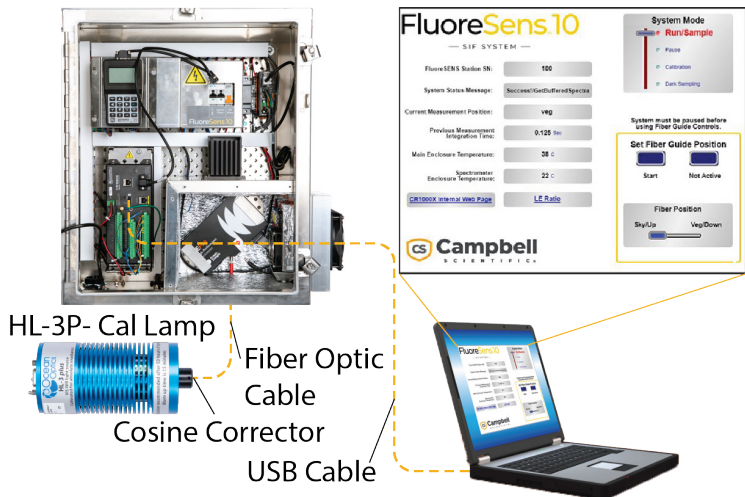
10. After absolute irradiance calibration, Pause the system (**RTMC**) and connect fiber optic cable(s) with cosine corrector to the fiber guide.
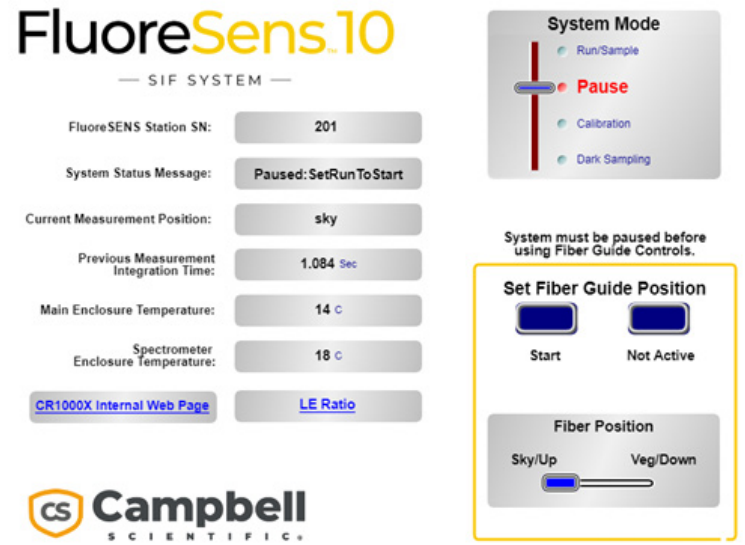
11. Switch to **Run/Sample** to start making measurements.