CAMPBELL SCIENTIFIC

QUICK DEPLOY GUIDE

CPEC310

Closed-Path Eddy-Covariance System

Document Part Number: 34054
Revision Date: September 2018

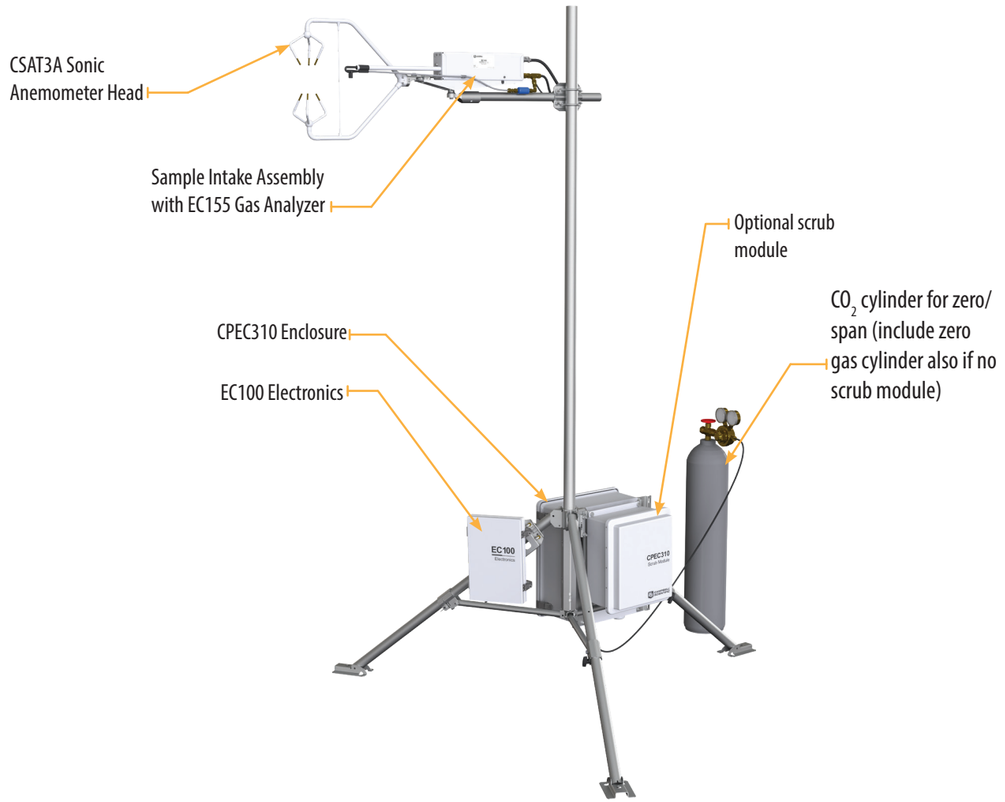
Info Link

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 Owner's Manual is the definitive source for detailed installation instructions and information.*

1 Caution!

- Do not connect or disconnect the EC155 gas analyzer head or the CSAT3A sonic anemometer head from the EC100 electronics while the EC100 is powered. Doing so can result in unpredictable performance of the system or damage to the instrument head.
- Grounding electrical components in the measurement system is critical. Proper earth (chassis) grounding will ensure maximum electrostatic discharge (ESD) protection and higher measurement accuracy.
- Use care when connecting and disconnecting tube fittings to avoid introducing dust or other contaminants.
- Do not overtighten the tube fittings. Consult the manual for information on proper connection.
- The CPEC310 power source should be designed thoughtfully to ensure uninterrupted power. If needed, contact Campbell Scientific for assistance.
- Retain all spare caps and plugs as these are required when shipping or storing the CPEC310 system.

CPEC310 System Diagram



Using the CR1000KD keypad to configure settings and zero/span on a deployed system

When not using datalogger support software such as *Loggernet*, turn on the +12 Vdc power supply and use the CR1000KD keypad to configure the settings and zero/span.

1. Press **Enter** to activate the display. Press **Enter** again to display the *System Control* menu.
2. Select *Initial Configuratn*. Press **Enter**.

```
System Control
Initial Configuratn  >
Site Var Settings    >
Run Station          >
Attendant Zero/Span  >
Const Table          >
System Menu          >
```

3. Select *CO2 Spn Gas*. Press **Enter**.

```
Initial Configuratn  >
Change Press Source  >
Shadow Correction    >
CO2 Spn Gas :400.000
H2O Span TDP:10.0000
Sample Flw  :8.00000
Zro/Spn Flw :1.00000
Zero Span Coeffs     >
```

4. Enter the CO2 span gas concentration of the cylinder and press **Enter**. Press **Esc** to return to the main menu.

```
Modify Value        NUM
 CO2 Spn Gas

   Current Value:
     400.000
   New Value:
     XXX.XX
```

5. On the *System Control* menu, select **Site Var Settings** to customize site specific variables.
6. Enter site-specific variables. Press **Esc** when complete to return to the main menu.

```
Site Var Settings:
Meas height    :2.00000
Pck Surf typ   :  GRASS
Canopy hght    :0.50000
d, 0 = auto    :0.00000
Z0,0 = auto    :0:00000
GPS height     :2.00000
Bulk density   :1300.00
```

7. On the *System Control* menu, select **Run Station**.
8. Set *Auto Z/S on* to **True** to automate zero and span. Press **Esc** to return to the main menu.

```
Run Station :
Pump Tmpr Ok:      True
Pump Tmpr   :    30.0000
Pump flow   :    8.00000
System diag :          0
Auto Z/S on        True
pump off    :  FLD_MEA
EC155 PW on :      True
```

9. On the *System Control* menu, select **Const Table** to modify sensor information.
10. Add and remove sensors by selecting **-1** for *true* and **0** for *false*. Once the changes are completed, select **Apply and Restart** at the bottom of the screen. Select **Yes** to save the changes. The device will then restart.

```
NMBR_HFP      :          4
HFP_SNSTVT_1 :   62.0000
HFP_SNSTVT_2 :   62.0000
HFP_SNSTVT_3 :   62.0000
HFP_SNSTVT_4 :   62.0000
CAL_INTV      :       1440
Apply and Restart
```

2 Required Gear

The following tools are required to install the CPEC310 system in the field. Additional tools may be required for a user-supplied tripod or tower.

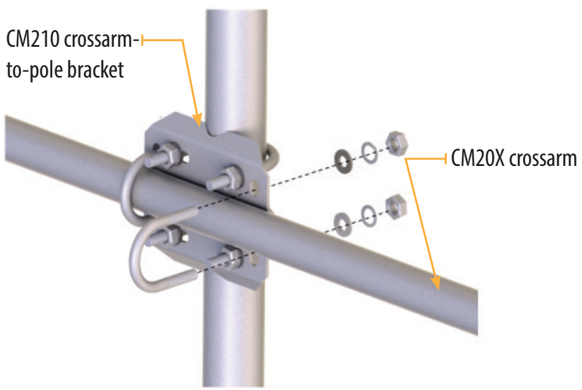
1. 9/16-in, open-end wrench
2. 1/2-in, open-end wrench
3. 11/16-in, open-end wrench
4. Adjustable wrench
5. Small, flat-tip screwdriver
6. Large, flat-tip screwdriver
7. Sledgehammer (to drive grounding rod into the ground)
8. 3/16-in hex-key wrench

3 Physical Deployment

1. Set up the tripod and crossarm pole.

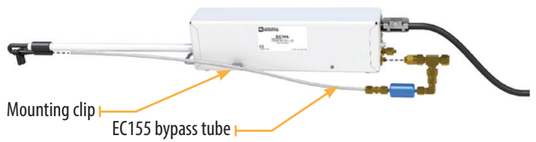
   Secure the tripod to the ground.

Attach the horizontal crossarm pole to the desired height on the tripod.

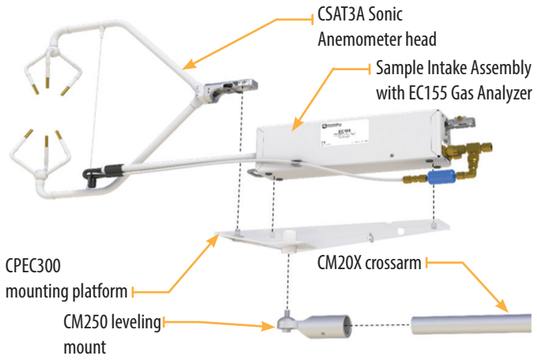


2. Setup and mount sensors

Mount the EC155 bypass tube.

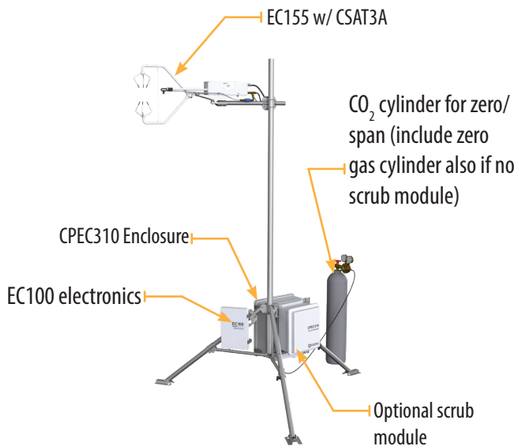


Connect the CM250 mount to the crossarm and then connect the sensors mounted on the CPEC300-Series Mounting Platform, as shown. Use the bubble level on the CSAT3A to level the platform.

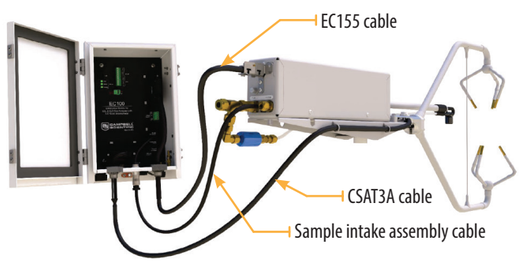


3. Mount the enclosures.

Mount the enclosures on the legs of the tripod as shown. The CPEC310 enclosure and optional scrub module are mounted back to back on the same leg.

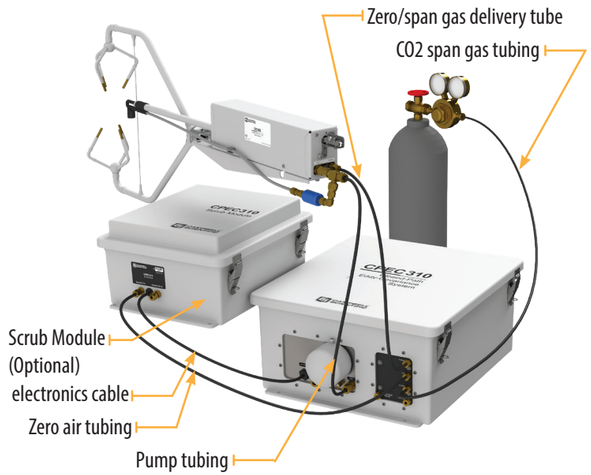


4. Connect the sensor head to the measurement electronics.



5. Ground the tripod and the enclosures.

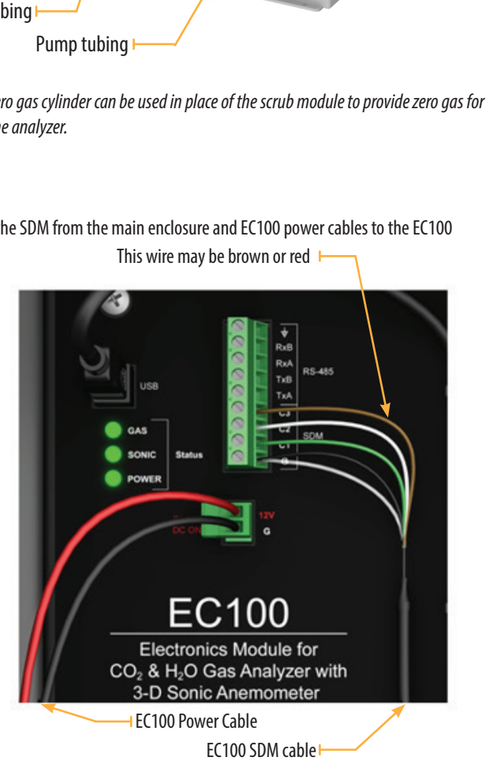
6. Connect the system plumbing.

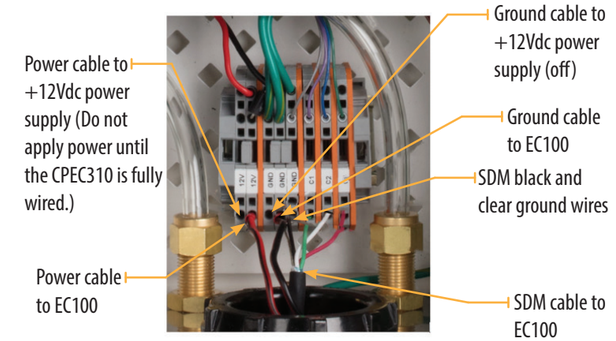


Note: A zero gas cylinder can be used in place of the scrub module to provide zero gas for zeroing the analyzer.

7. Wiring.

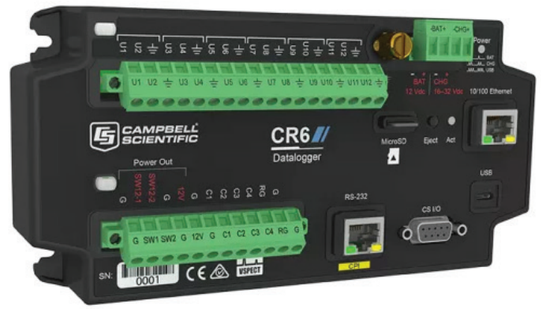
Connect the SDM from the main enclosure and EC100 power cables to the EC100 electronics.
Draw the EC100 power cable and EC100 SDM cable through the feedthrough at the bottom of the CPEC310 enclosure and connect them to the DINrail.





8. Datalogger

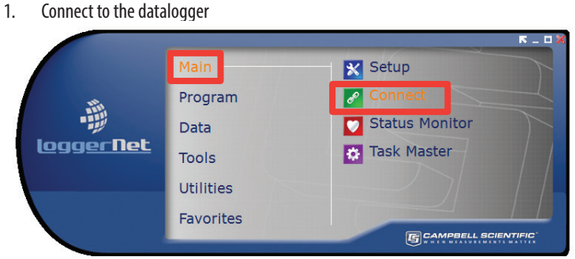
Insert a MicroSD card into the datalogger and connect power.



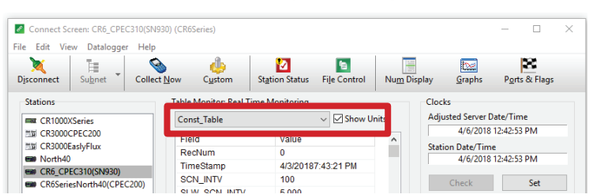
4 Configuring with LoggerNet/PC200W or PC400

Turn on the +12 Vdc power supply and use either **LoggerNet**, **PC200W**, or **PC400** on your laptop to configure settings and zero/span. If using the CR1000KD keypad, use the instructions on the front page of this quick deploy guide.

1. Connect to the datalogger



2. Go to the **Const_Table** within the **EasyFlux™ DL** program.



3. Set the variables listed below to enable auto zero and span. *-1* indicates *true* and *0* indicates *false*. **ZRO_SPN_INVT** is the number of days between zero and span and **ZRO_SPN_OFST** is the minutes after the auto zero and span begins

CPEC310SCRUB	-1
ZRO_SPN_INTV	1
ZRO_SPN_OFST	30
TIME_ZRO_SPN	60
CHECK_ZERO	-1
SET_ZERO	-1
CHECK_CO2SPN	-1
SET_CO2SPN	-1
CHECK_H2OSPN	-1
SET_H2OSPN	0

4. Confirm all the sensors used at the site are set to **-1**. To change a value in this table, right-click on the current value and select **View/Modify** from the pop-up menu. Press **Apply** once the new value has been entered.

Once all of the sensors and constant settings are correct, scroll to the bottom and set **ApplyAndRestart** to *true*.

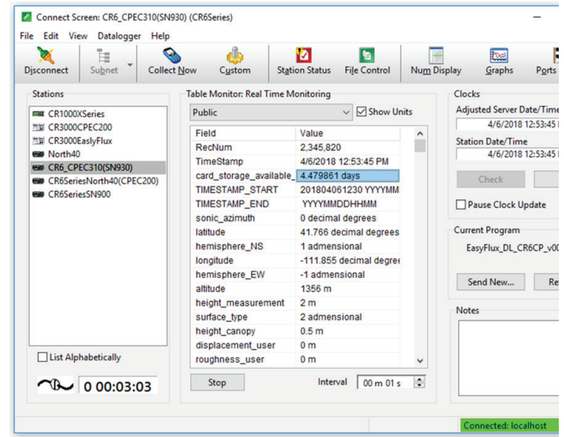
Table Monitor: Real Time Monitoring

Const_Table — Show Units

Field	Value
SENSOR_LI200	0
SENSOR_LI190	0
SENSOR_SI111	0
SENSOR_NR01	0
SENSOR_CNR4	0
SENSOR_TE525	0
SENSOR_TCAV	0
SENSOR_CS65X	-1
NMBR_CS65X	1
CSSDI12_ADR1	3
SENSOR_HFP01	0
SENSOR_HFPSC	-1
NMBR_HFP	1
HFP_SNSTVT_1	62
CAL_INTV	1,440
ApplyAndRestart	true

Stop — Interval 00 m 01 s

5. Review the Public table and confirm that site specific variables are set appropriately. Note: Setting these variables does not require an **ApplyAndRestart**.



6. Set **prfrm_auto_zero_span_flg** to **true** to automate the zero and span funtions.

Table Monitor: Real Time Monitoring

Public — Show Units

Field	Value
do_H2O_span_flg	false
reset_coeff_flg	false
prfrm_auto_zero_span_flg	true
alpha	-3.048299 decimal degr
beta_5min	0 decimal degrees
gamma_5min	298.2208 decimal degre

Stop — Interval 00 m 01 s

7. Set **CO2_span_gas** to match the CO2 concentration of the CO_2 span gas tank.

Table Monitor: Real Time Monitoring

Public — Show Units

Field	Value
sec_on_site	44526.9
CO2_span_gas	384 umolCO2 mol-1
Td_span_gas	10 deg C
H2O_span_gas	15.65283 mmolH2O mc
e_span_gas	1.232174 kPa

Stop — Interval 00 m 01 s