Met One Instruments

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Quick Start Guide

C-12 Portable Black Carbon Monitor

*Note: This guide is designed to be used with the **Operators Manual C-12-9805**.*

Unpacking

Remove all equipment and accessories from their respective packaging.

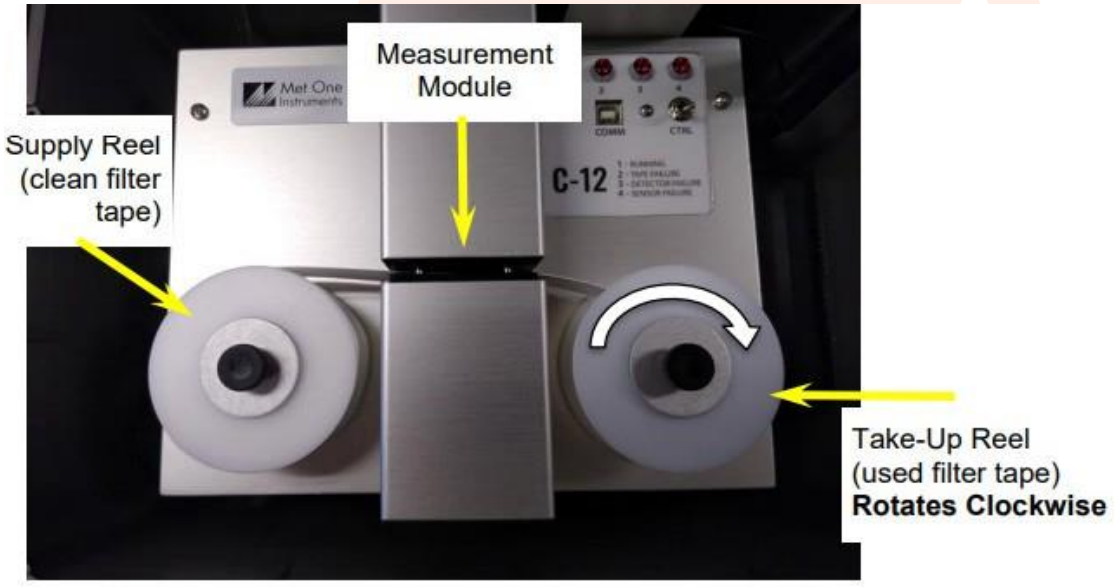
C-12 Setup

Step 1 **Insert the inlet tube**: Pull out the lanyard-connected fitting from the inlet mount on the top of the C-12 and insert the inlet tube.

Step 2 **Connect the TSP Inlet to the inlet tube**: Slide the TSP inlet onto the top of the inlet tube. Be certain the TSP inlet and inlet tube are fully seated onto the inlet tube and into the inlet mount, respectively.

Step 3 **Install Cell antennas:** Remove the shipping covers from the antenna mounts at the top of the instrument. Thread on the Cell Antennas (finger tight, do not overtighten). Mount the grey antenna cover tubes and press into place over the O-ring seals, line up the screw holes and install the thumbscrew to secure it in place. (Thumbscrew is attached to the C-12 enclosure via a lanyard).

Step 4 **Connect power:** Once the instrument is mounted, connect power to the instrument. If this C-12 is to be used with a Solar Power source, connect a regulated +12 V DC Solar Panel to the provided input power cable, Red to +12 V DC, Black to ground. If your C-12 utilizes AC power, plug the provided power cord into an AC power source.



Installing Filter Tape

Step 1 Apply power to turn the instrument ON. The C-12 will start the automatic sampling routine. When the measurement module is OPEN (this happens as part of the automatic sampling routine), remove power.

Step 2 Loosen and remove the two black tape reel knobs.

Step 3 Install the new filter tape roll onto the left (Supply) reel, with the tape coming off the top side of the roll. Route the tape exactly as shown in the photo through the slot in the measurement module and then to the Take-up reel on the right side of the instrument. During this step, install the retainer screw for the take-up spool, but don't tighten it fully. Fasten the loose end of the tape to the right edge of an empty spool installed on the Take-up reel, with cellophane adhesive tape. After the tape is fastened to the empty spool, hold the tape so it doesn't slip and rotate the take-up spool at least 1 full turn and tighten the retainer thumb screw.

Step 4 The tape should now be correctly installed and tense. If there is slack in the tape, gently rotate the supply reel counterclockwise to tension it. The tape is fragile so do not apply too much tension.

Step 5 Apply power to turn the instrument ON. The C-12 will start the automatic sampling routine.

Setting the Internal Clock to Local Time

Setting the Internal Clock to Local Time is critical for successful data upload via Cellular.

We recommend using the “Remote Control” option button within COMET to execute this procedure.

A Silicon Labs CP210x USB driver must be installed on the host computer before connecting it to the C-12 USB Type B port.

Step 1 Stop Measurement (if this is not done, the clock setting changes will not be saved).

Step 2 SETUP MENU

Step 3 CLOCK

Step 4 Press ENTER to enter the Edit mode.

Step 5 Navigate to the clock and set it to local time.

Step 6 Press ENTER to exit the Edit mode.

Step 7 Press SET to synchronize the clock with a reference clock.

Step 8 Verify or Set the Time Zone Offset (0 offset is UTC).

Step 9 Press ESCAPE three (3) times to return to the “Operate” screen and verify the clock settings have been saved, and the time is correct.

Accessing the Data

Refer to Manual, Section 4 for detailed instructions on data access.

Basic C-12 Using COMET software is the tool of choice (see Manual, Section 4 for instructions on COMET use).

Cellular C-12 Follow the instructions below to set up and commission your cellular data plan, and your C-12 instrument.

Establishing Cellular Service for "C-12 CELLULAR"

IMPORTANT: A Silicon Labs CP210X driver must be installed on the host computer before connecting it to the C-12 USB Type B port. Before using the USB Type B port, ensure nothing is connected to the RS-232 port located on the bottom panel.

Driver download weblink: https://metone.com/software

Step 1 **Data plan:** Contact your cellular provider's Business Division rather than a local store and choose an **IOT/M2M** (Internet of Things/Machine to Machine) data plan (minimum of 100MB/month for the C-12), which includes a "Dynamic IP" option.

Note for the US: Verizon Plan 53913 4G Custom FWA Public Safety MBB Unlimited with MBP and AT&T IOT Services and Connected Solutions Plan have been used successfully.

Step 2 **IMEI Number:** Some cellular carriers may require an IMEI Number. The IMEI number is located on the C-12 CELLULAR Web Address Data sheet, that is provided in the large yellow envelope with the instrument and is unique to each unit. When the IMEI number is required the micro-SIM card must be kept with its mated unit.

Step 3 **SIM card:** A micro-SIM (3FF) card is required and should be procured by your cellular provider business division. This is being used in an LTE Cat 4 Embedded Modem with 3G fallback via a SIM Card extender that accepts the micro-SIM (3FF) card. Modem make/model: MTSMC-L4G1.R1A

Step 4 **Access Point Name (APN):** Make sure you get the complete APN from your data plan provider. This must be programmed into your device via the USB Type B serial interface port located on the front panel of the instrument using a terminal emulator (e.g. COMET, HyperTerminal, Putty, etc.).

Step 5 **Connect to the instrument:** Power on the instrument, connect your computer with the C-12 USB Type B port, and launch a terminal emulator program (e.g. COMET, HyperTerminal, Putty, etc.). By default, the USB RS-232 port communication protocol is: **115200 Baud, 8 data bits, no parity, one stop bit, and no flow control**. The terminal program baud rate must match the C-12 baud setting. Once connected, the terminal connection window should now be open. Rapidly press the Enter key three times. The window should respond with an asterisk (*) indicating that the program has established communication with the C-12.

Establishing Cellular Service for "C-12 CELLULAR" (continued)

Step 6 **Enter the APN:** Program the APN into the system prior to installing the SIM card into the front panel. Send the APN command followed by a space, followed by the given APN exactly as it is provided from your data provider. Example: APN iot.aer.net

Step 7 **Installing the SIM card:** Power the instrument off. Remove the dust cap to access the SIM card slot (Fig. 1). Install the SIM card into the SIM card slot on the front panel of the C-12 (Fig. 2) orienting the SIM card as shown in Fig. 3 below (**notch facing right and SIM contacts facing down**). Press the card all the way into the slot (Fig. 4) until you feel a spring engage and lock the card into the fully engaged position (Fig. 5). If the SIM card is not installed correctly, the modem will not work.

Fig. 1

Fig. 2

Fig. 3

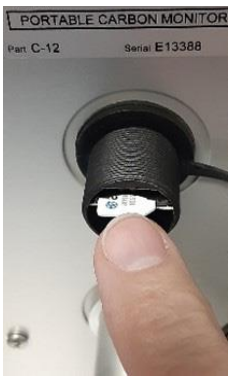


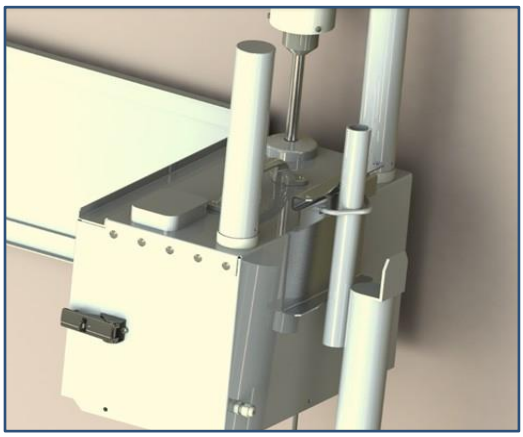
Fig. 4

Fig. 5

Step 8 Thread the dust cap back on the SIM card holder. If you experience any trouble setting up your device, please contact the Met One service department by email (service.moi@acoem.com) or by phone (+1 541-471-7111).

Mounting the C-12

Below is the typical mounting convention using the EX-905 Tripod. The mounting bracket at the rear of the instrument is designed to accept the U-bolt provided or a customer supplied hose clamp if desired. It also has holes to use for mounting directly to a wall.



Packing List - Standard Accessories

The instrument is supplied with one of each of the following:

- TSP Inlet (P/N 9441)
- Inlet Tube (P/N 83799)
- USB Cable, A-B male (P/N 500784)
- Span Check Membrane (P/N 83011)
- Leak Test Assembly (P/N 80356)
- Filter Tape, two rolls (P/N 83599)
- Nozzle Sealing Tool (80206)
- Operation Manual (P/N C-12-9805)
- Serial Cable (P/N 83245)
- Grounding Cable (P/N 9035)
- U-Bolt Kit (P/N 9104-1)
- Software Placard (P/N 82984)

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