CG50 WeatherTrak Installation Guide

Introduction

Irradiance and temperature monitoring can be added to a SolarVu™ energy portal with the CG50 WeatherTrak option. A separate NEMA 4X enclosure, mounted near the solar panels, is provided including one irradiance sensor, an ambient temperature sensor and a panel temperature sensor. With this option installed, SolarVu displays an additional Analyzer screen that graphically tracks irradiance and panel temperature with system power output. This is a useful tool for troubleshooting equipment problems and monitoring system performance under actual conditions.

An additional K135 gateway which continuously transfers data from the CG50 WeatherTrak to the remote SolarVu servers is required. This guide explains how to connect the CG50 WeatherTrak option to a SolarVu system. Consult separate instructions for the inverters used for connection the SolarVu system.   Several steps are required:

1* Connect the K135 gateway to the inverter(s).
2* Connect the K135 gateways to the building LAN for internet access
3* Enter inverter communications settings from the front panel
   * See separate SolarVu installation instructions

4) Mount CG50 enclosure near solar panels. Connect sensors.
5) Connect CG50 WeatherTrak to the SolarVu enclosure
6) Access SolarVu from a browser. Configure the energy portal

Site Preparation

SolarVu is accessed from a browser, the inverters and the CG50 WeatherTrak communicate serially with a Cachelan K135 gateway connected to the site network as shown in fig 1. The K135 connects to the CG50 WeatherTrak over RS485 using shielded twisted pair wire. 24Vdc control power can be connected in the same cat5e cable as the serial communications up to 1000 feet. The LAN must have persistent high speed internet service to an ISP to provide access to the internet. The K135 RJ45 ethernet jack plugs into an RJ45 LAN router or wall jack using a standard Cat5e patch cable of convenient length. 120VAC control power for the gateway power dongle is required.

Installation

Sensors: Mount the CG50 WeatherTrak NEMA 4x enclosure next to the solar panels within 6' of the irradiance sensor. Panel temperature sensors can be up to 100 feet away. Attach the irradiance sensor to the panel frame oriented with the sensor at the same angle as the panels. Observe correct polarity shown in Fig 2 with the brown wire connected to the positive. Due to low signal levels, do not add an extension to the wire provided. Glue or strap the panel temperature sensor to the back of one of the solar panels. The ambient temperature sensor can be left inside the enclosure or externally mounted in a shaded location. Temperature sensors are not polarity sensitive. Mount optional additional sensors T1 and T2 noting their location for naming in the SolarVu display screen and connect as shown in fig 2.   Connect Cat5e outdoor grade CMX cable from the CG50 WeatherTrak enclosure to the SolarVu enclosure being careful to match wire colors as shown in Fig 2.

Power Supply: 24Vdc control power for the weather sensors is provided from the SolarVu enclosure through the orange wire pair in the Cat5e that is also connecting the communication signal.   Due to the low current draw, up to 1000' of #24 AWG wire in the Cat5e cable is capable of delivering sufficient voltage eliminating the need for an additional wire pair.

RS485 Serial: The serial ModBus address and baud rate have been factory set at time of shipment. No further setup is required. Pay
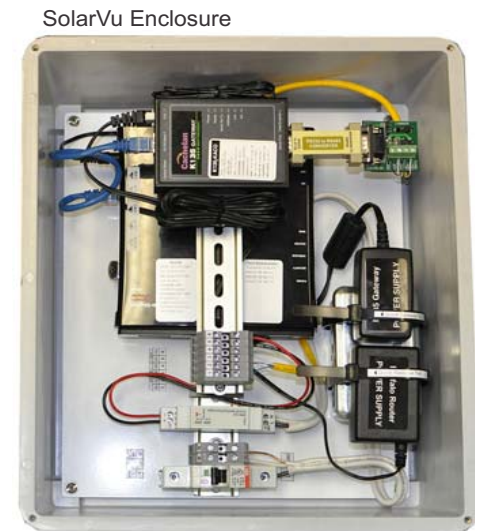
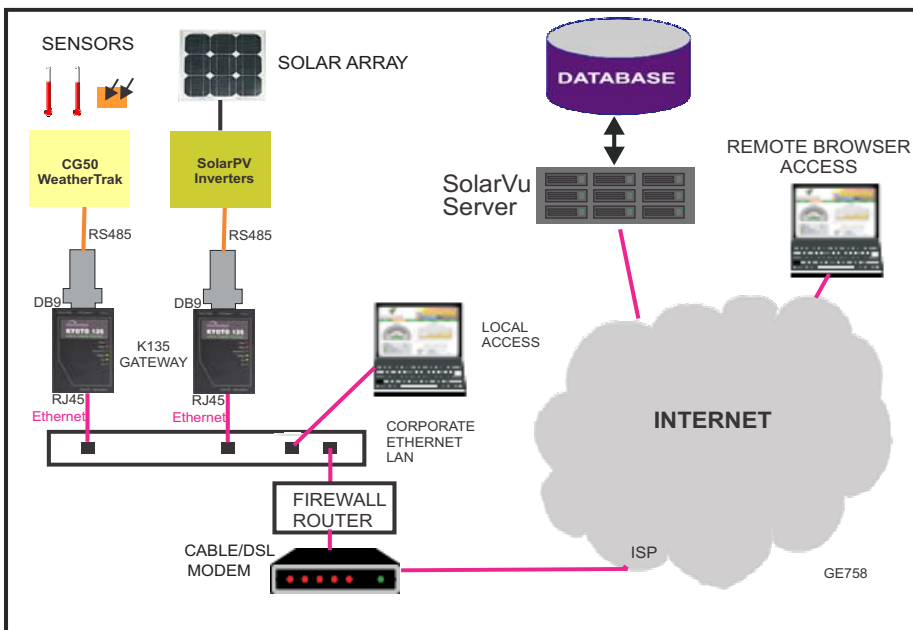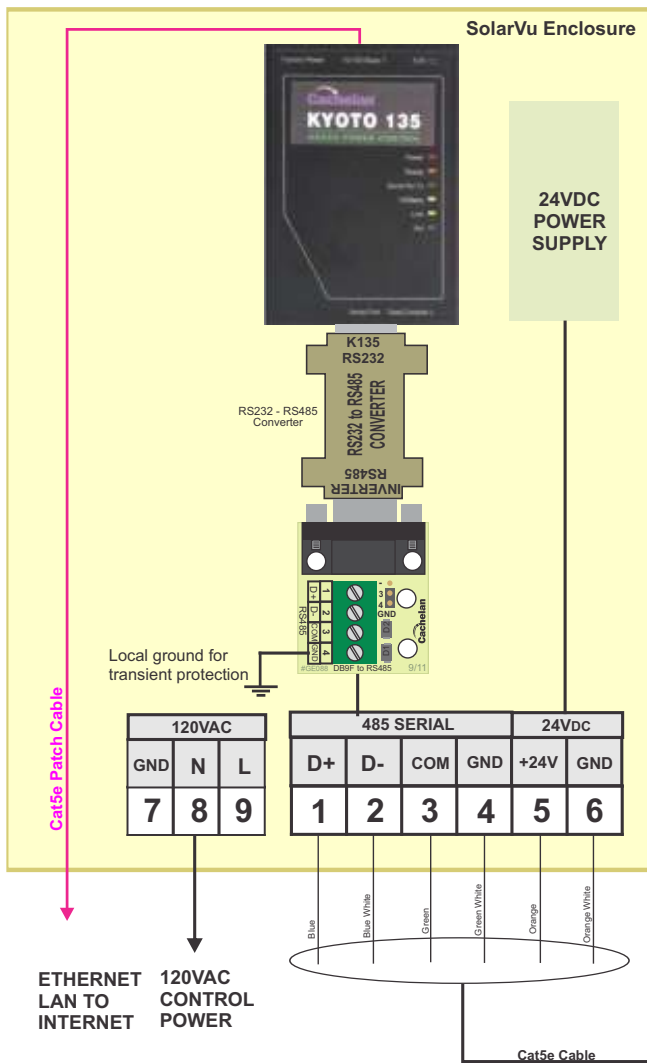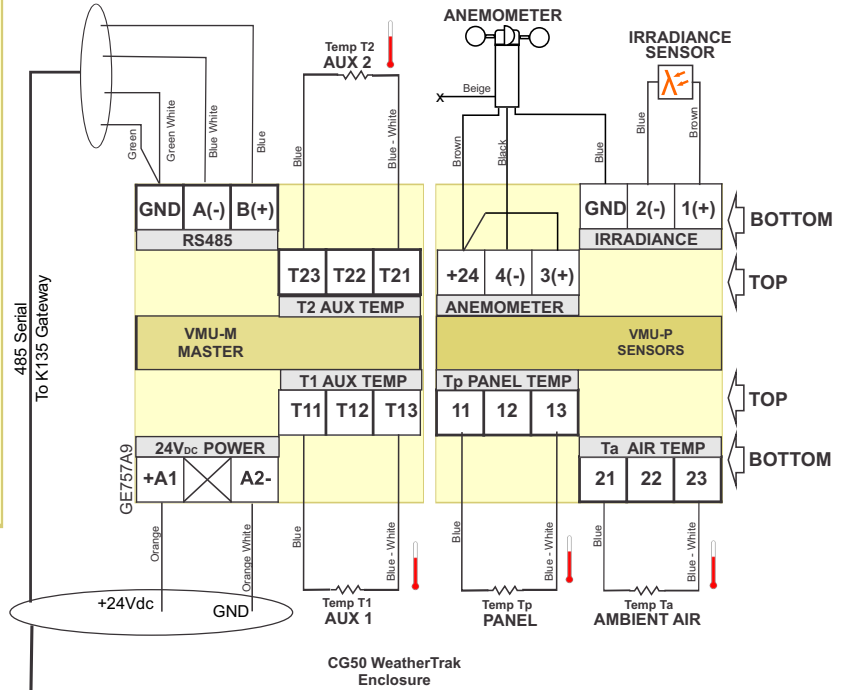*Fig 1 Internet Connection for CG50 WeatherTrak*

Fig 2 CG50 WeatherTrak Typical Wiring

Fig 2 CG50 WeatherTrak Typical Wiring

SolarVu Enclosure

KYOTO 135

CG50
WeatherTrak Enclosure

24VDC
POWER
SUPPLY

K135
RS232

RS232 - RS485
Converter

RS232 to RS485
CONVERTER

INVERTER
RS485

Local ground for
transient protection

Cat5e Patch Cable

120VAC		
GND	N	L
7	8	9

485 SERIAL				24VDC	
D+	D-	COM	GND	+24V	GND
1	2	3	4	5	6

ETHERNET
LAN TO
INTERNET

120VAC
CONTROL
POWER

Blue / Blue White / Green / Green White / Orange / Orange White

Cat5e Cable

485 Serial
To K135 Gateway

Green / Green White / Blue White / Blue

GND	A(-)	B(+)
RS485		

Temp T2
AUX 2

ANEMOMETER

IRRADIANCE
SENSOR

Beige / Brown / Black / Blue / Blue / Brown

	GND	2(-)	1(+)
	IRRADIANCE		

BOTTOM

T23	T22	T21
T2 AUX TEMP		

+24	4(-)	3(+)
ANEMOMETER		

TOP

VMU-M
MASTER

VMU-P
SENSORS

T11	T12	T13
T1 AUX TEMP		

11	12	13
Tp PANEL TEMP		

TOP

24VDC POWER	
+A1	A2-

GE757A9

21	22	23
Ta AIR TEMP		

BOTTOM

Orange / Orange White

+24Vdc   GND

Temp T1
AUX 1

Blue / Blue - White

Temp Tp
PANEL

Blue / Blue - White
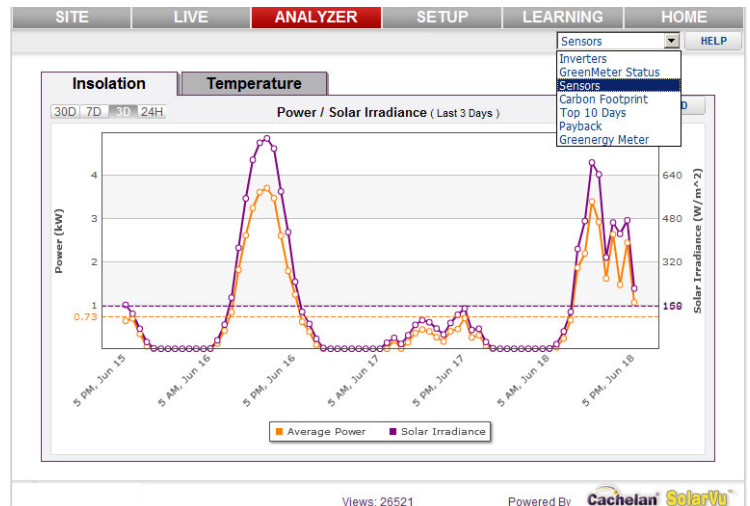
Temp Ta
AMBIENT AIR

Blue / Blue - White

CG50 WeatherTrak
Enclosure

Irradiance, panel and ambient temperature
sensors are standard. 2 additional temperature
sensors T1 and T2 shown and the anemometer
can be ordered as options. Temperature sensors
are interchangable 1000Pt and not polarity
sensitive.

WeatherTrak SolarVu screens

Once all connections are complete and SolarVu can be
successfully accessed over the internet, view WeatherTrak by
clicking ANALYZER --> Sensors as shown in Fig 3. Irradiance
and system power output should track each other unless there
is a problem.

Fig 3 SolarVu WeatherTrak Analyzer screen

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