



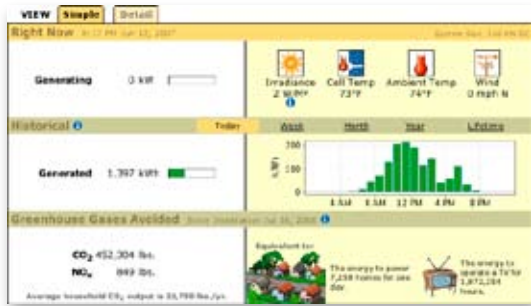
Residential Monitoring System and Service Datasheet

For basic residential solar electric systems with inverter-direct monitoring (non-revenue grade), we provide three types of core packages: Indoor, Outdoor, and Outdoor with Basic Weather Station. For systems rated <20kW DC.

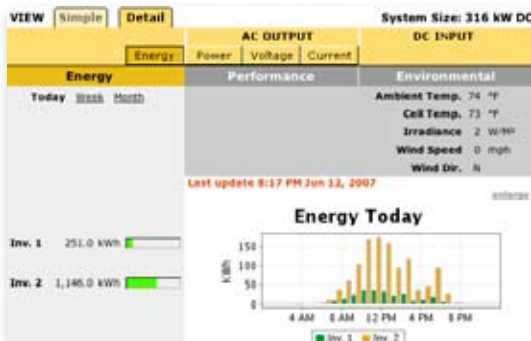
Key to SKU's for specific inverter vendors:
 21xx: for SMA inverter (SMA RS485 card required from manufacturer)
 31xx: for Xantrex inverter (single inverter only)
 45xx: for Fronius inverter (Fronius Data Logger, Com Card and Interface Box required from manufacturer*)



Simple Web view of Basic Residential Monitoring Services showing current and historical power generated along with greenhouse gases avoided. On the right is a link to local weather. Beneath it is a chart showing power generated in kWh by the hour.



Simple Web view showing current and historical power generated along with greenhouse gases avoided. On the top right is the optional Full Weather Station data: irradiance, cell temperature, ambient temperature, wind speed and wind direction.



Detail Web view showing AC power output generated from inverter. On the top right is data from the Weather Station showing ambient temperature, cell temperature, irradiance, wind speed and wind direction. Beneath that is a chart showing the system's energy production for each inverter.

Basic Residential Monitoring Systems and Services - <20kW

1 Indoor	<p>SKU # 2150 SKU # 3150 SKU # 4550</p>	<p>Basic Features - Inverter-Direct Monitoring</p> <ul style="list-style-type: none"> • Simple Web-based view • For use with one inverter using direct monitoring • To support additional inverters, order #7800 • Meets California PUC <10kW EPBB metering requirement • Includes communications gateway • Includes 5 years of monitoring service <p>Note:</p> <ul style="list-style-type: none"> • NOT designed to meet California PUC PBI metering requirement • No enclosure
2 Outdoor	<p>SKU # 2151 SKU # 3151 SKU # 4551</p>	<p>Includes Basic Features Plus...</p> <ul style="list-style-type: none"> • Conduit-ready power (120Vac wiring required) • Outdoor-rated enclosure (NEMA 3, 3R, 3S, 4, 4X) <p>Note:</p> <ul style="list-style-type: none"> • NOT designed to meet California PUC PBI metering requirement
3 Outdoor with Basic Weather Station	<p>SKU # 2151W SKU # 3151W SKU # 4551W</p>	<p>Includes Basic Features Plus...</p> <ul style="list-style-type: none"> • Includes all features of Outdoor system above, plus these Basic Weather Station for monitoring of: <ul style="list-style-type: none"> Irradiance (pyranometer) Module temperature Ambient air temperature

Basic Inverter-Direct Monitoring Options

SKU# 7700	Detail Web view and Alerts - License
SKU# 7800	Monitoring service for ONE additional inverter** - License
SKU# 7750	Adds 5 more years of monitoring service if purchased with core packages - License <i>(For Basic Indoor and Outdoor packages)</i>
SKU# 7760	Adds 5 more years of Fat Spaniel Gateway warranty, parts only - License <i>(For Basic Indoor and Outdoor packages)</i>
SKU# 7770	Add 5 more years of Fat Spaniel Gateway warranty, parts only - License <i>(For Outdoor with Basic Weather Station package)</i>
SKU# 9041	Cellular modem add-on (cellular service NOT included; customer provides SIM chip) for Internet access
SKU# 1760	Residential system installer portal (see more info below) <ul style="list-style-type: none"> • Web-based aggregated view of data from all of an installer's end-user systems • Access to Web views for each individual installed system • Access to system status info and to data downloads

Notes:
 * Fronius inverter requires Fronius ComCard, Data Logger and Interface Box UNLESS it is a single inverter that was manufactured after April 15th, 2007 and the serial number is higher than 1715, in which case you may use the Fronius EZ Card instead of the Data Logger and Interface Box

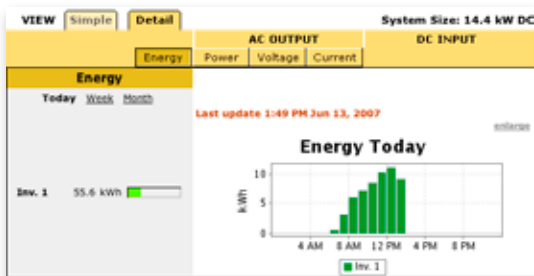
** Except Xantrex, which is one inverter per Fat Spaniel gateway

For independently monitored residential solar electric systems, rated <20kW DC (STC) with revenue grade metering, we provide five types of core packages:

- 1) Revenue Grade Metering: 15Amp, 240Vac
- 2) Revenue Grade Metering: 60Amp, 240Vac
- 3) Revenue Grade Metering: For current and voltage other than 15Amp, 240Vac and 60Amp, 240Vac (call for quote)
- 4) Building Demand (3-wire) and Revenue Grade Metering (2-wire)
- 5) Advanced: Building Demand (3-wire) and Revenue Grade Metering (2-wire) plus full Weather Station



View of enclosure (without its cover) and components including communications gateway and revenue-grade meter.



Detail Web view of Independent Revenue-Grade Monitoring showing AC output generated from inverter. To the right is a chart showing the system's energy production.

Independent Revenue-Grade Monitoring for Residential Systems <20kW

1 With Revenue Grade Metering: 15 Amp, 240Vac

SKU # 1272-15-240

Core Independent Monitoring Features

- Simple and detail Web-based views
- Alerts include inverter-off and communications failures
- Includes ANSI standard Revenue Grade Meter (2%)
- Meets metering & reporting requirements of California EPBB & PBI programs and of all states requiring revenue-grade meters
- Use with 2-wire 120Vac inverter or 2-wire 240Vac inverter, single phase
- Conduit-ready power (120Vac wiring required)
- Includes outdoor-rated enclosure (NEMA 3, 3R, 3S, 4, 4X)
- Includes communications gateway
- **Includes 5 years of monitoring service**

Additional Features

- One solid core 3/4" ID mA output CT 15Amp, 240Vac

2 With Revenue Grade Metering: 60 Amp, 240Vac

SKU # 1272-60-240

Includes Core Independent Monitoring Features Plus...

- One solid core 3/4" ID mA output CT 60Amp, 240Vac

3 With Revenue Grade Metering: For Current and Voltage Other Than 15 Amp-240Vac And 60amp-240Vac

SKU # 1272-xx-xxx

Includes Core Independent Monitoring Features Plus...

- Call for quote for non-standard current and voltage ratings

4 With meter for 3-wire building demand and 2-wire revenue-grade metering

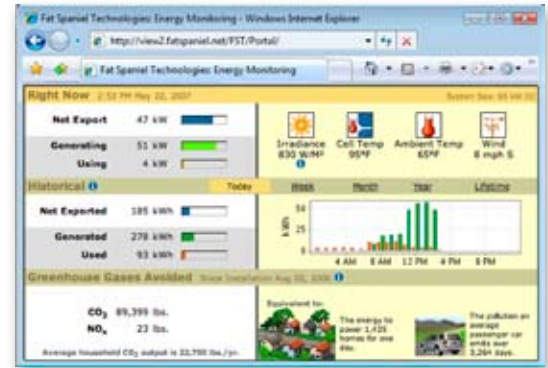
SKU # 1235

Includes Core Independent Monitoring Features Plus...

- Three solid core 3/4" ID 5A output CTs up to 300A
- Use with 2-wire 120Vac or 240Vac inverter and 3-wire split phase building demand (typical residential)
- Meets metering & reporting requirements of California EPBB & PBI programs and of all states requiring revenue-grade meters

Note:
Split core CTs or oversize CTs must be special-ordered separately at additional cost.

<p>5 Advanced Independent Monitoring with meter for 3-wire Building Demand and 2-wire Revenue Grade Metering plus Full Weather Station</p>	<ul style="list-style-type: none"> • Includes Core Independent Monitoring Features Plus... • Weather Station for temperature, sunlight and wind monitoring • Three solid core 3/4" ID 5A output CTs up to 300A. • Use with 2-wire single phase inverter(s) mounted on the same leg (typical) and 3-wire split phase building demand (typical residential)
<p>SKU # 1235W</p>	<p><i>Note:</i> Split core CTs or oversize CTs must be special-ordered separately at additional cost.</p>



Simple Web view showing real-time and historical net energy export, production and usage. Data also shows greenhouse gases avoided. A Full Weather Station monitors irradiance, module (cell) and ambient temperature as well as wind speed and wind direction.

Independent Revenue-Grade Monitoring Options	
<p>SKU # 7750</p>	<p>Adds 5 more years of monitoring service if purchased with Core products (xx50, xx51, xx51W, 12xx) - License</p> <ul style="list-style-type: none"> • This product consists of a license certificate which authorizes this service
<p>SKU # 7770</p>	<p>Adds 5 more years to Fat Spaniel Gateway warranty, parts only, for xx51W and 12xx -- License</p> <ul style="list-style-type: none"> • This product consists of a license certificate which authorizes enabling this service.
<p>SKU # 8205</p>	<p>Basic Weather Station with temperature and sunlight monitoring</p> <ul style="list-style-type: none"> • Irradiance (pyranometer) • Module temperature • Ambient air temperature • Includes enclosure
<p>SKU # 8295</p>	<p>Full Weather Station with temperature, sunlight and wind monitoring:</p> <ul style="list-style-type: none"> • Irradiance (pyranometer) • Module temperature • Ambient air temperature • Wind speed • Wind direction • Includes enclosure
<p>SKU # 9041</p>	<p>Cellular Modem add-on (cellular service NOT included)</p> <ul style="list-style-type: none"> • Provides Internet access for Fat Spaniel monitoring system • Requires purchase of cellular service from a communications service provider (not Fat Spaniel) • This is an alternative to the typical deployment which would use a local network connection to the Internet (via the homeowner's DSL router or cable modem, for example)
<p>SKU #1760</p>	<p>Residential System Installer Portal</p> <ul style="list-style-type: none"> • Web-based aggregated view of data from all of an installer's end-user systems • Access to views for each individual installed system • Access to system status info and to data downloads

Residential Basic and Independent Monitoring System Specifications

Gateway

- Operating Temperature: 10 to 60°C (14 to 140°F)
- Relative Humidity: 5 to 95%
- Storage Temperature: -20 to 85°C (-4 to 185°F)
- Power Consumption: 340mA @12Vdc

System Enclosure

- Dimensions
 - 6 x 6 x 4 (xx51W)
 - 12 x 10 x 4 (xx51, xx51W, 1235)
 - 12 x 10 x 6 (1272-xx, 1235, 9041)
- Material: Polycarbonate
- Rating: NEMA 3, 3R, 3S, 4, 4X

Enclosure Assembly (with Fat Spaniel Gateway and Independent meter)

- Certifications: TÜV, IEC 61010-1, FCC Part 15 Class B, meets ANSI C12

Inverter-Direct

- SMA Accuracy: +/- 5%
- Xantrex Accuracy: +/- 5%
- Fronius Accuracy: +/- 5%

Inverter-Indirect Meter (Elkor)

- AC Voltage Error: +/- 0.5%
- AC Current Accuracy: +/- 0.5%
- Power Accuracy: +/- 0.5%
- Power Consumption: 100mA max
- Certifications: meets ANSI C12

Weather Station

- Irradiance
 - Type: Silicon Pyranometer
 - Directional Accuracy: +/- 5%
 - Sensitivity change per year: < 2%
- Ambient Temperature
 - Type: K-type thermistor
 - Accuracy: +/- 2° C
- Module Temperature
 - Type: K-type thermistor
 - Accuracy: +/- 2° C
- Wind speed
 - Type: Direction & Speed Anemometer
 - Range: 3 - 175 mph
 - Accuracy: +/- 5%
- Wind direction
 - Accuracy: +/- 7°

Cellular Wireless Modem

- Operating Temperature: -30° to 70°C (-22° to 158°F)
- Modem Type: GSM / GPRS Class 10
- SIM Connector: Standard 3V SIM receptacle

Specifications for Fat Spaniel Gateway for MorningStar TriStar Charge Controller

Gateway

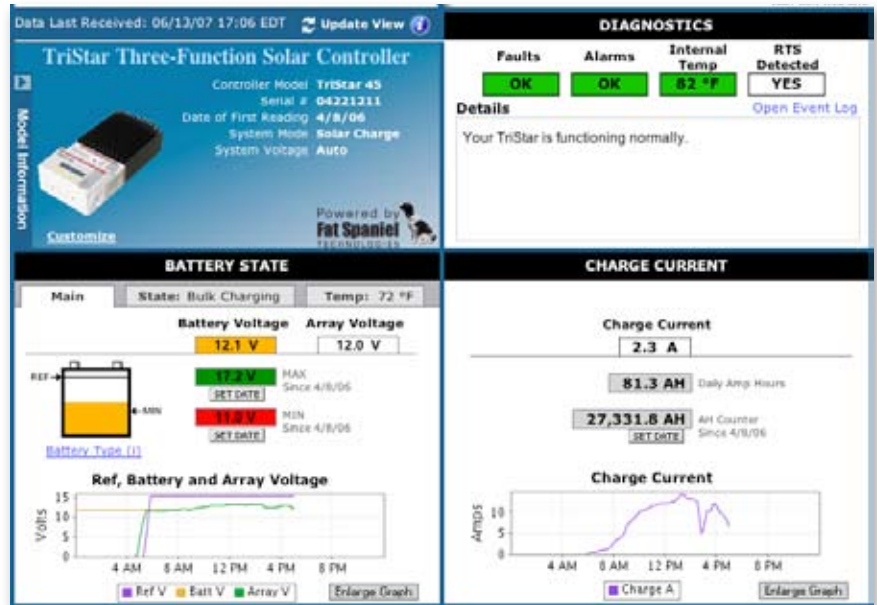
- Operating Temperature: 10 to 60°C (14 to 140°F)
- Relative Humidity: 5 to 95%
- Storage Temperature: -20 to 85°C (-4 to 185°F)
- Power Consumption: 340mA @12Vdc

Morningstar TriStar Web View

Morningstar and Fat Spaniel Technologies have partnered to provide you with an OFF-GRID monitoring solution. This fully integrated product provides a turn-key solution for managing remote systems that otherwise take hours to reach.

The Web view solution includes:

- Gateway for charge controller direct monitoring plus cable and power supply
- 5 years of monitoring service for TriStar Web view



This Web view of the MorningStar TriStar charge controller shows the state of battery charge, the fault status, the charge current and the temperature of the battery.

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Morningstar TriStar Options	
SKU # 4701-12	<p>OFF-GRID Monitoring System: Web view solution for Morningstar TriStar charge controller, for 12V system</p> <ul style="list-style-type: none"> • Includes gateway for inverter-direct monitoring, plus cable and power supply • No enclosure • Includes 5 years of monitoring service for TriStar
SKU # 4701-24	<p>OFF-GRID Monitoring System: Web view solution for Morningstar TriStar charge controller, for 24V system</p> <ul style="list-style-type: none"> • Includes gateway for inverter-direct monitoring, plus cable and power supply • No enclosure • Includes 5 years of monitoring service for TriStar
SKU # 4701-48	<p>OFF-GRID Monitoring System: Web view solution for Morningstar TriStar charge controller, for 48V system</p> <ul style="list-style-type: none"> • Includes gateway for inverter-direct monitoring, plus cable and power supply • No enclosure • Includes 5 years of monitoring service for TriStar
SKU # 7752	<p>Adds 5 more years of monitoring service for TriStar Web view</p> <ul style="list-style-type: none"> • This SKU consists of a certificate which authorizes enabling this service