

BFM 136

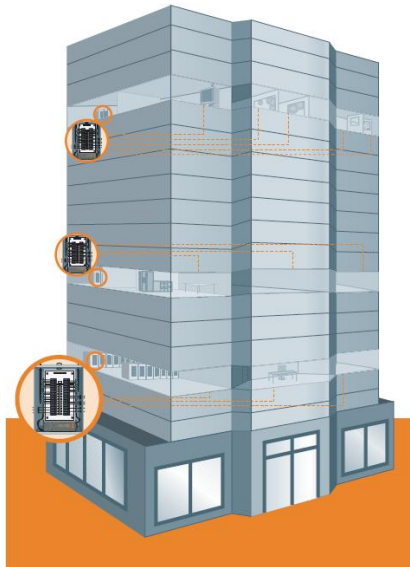
SATEC's Branch-Feeder-Monitor™ (BFM) is our new generation energy management meter designed for energy and demand monitoring, load profiling, and multi-tariff (TOU), multi-client billing applications. Each BFM monitors up to 12 three-phase circuits, 18 two-phase circuits, 36 single-phase circuits, or any combination thereof. This flexibility makes the BFM especially suitable for multi-tenant facilities such as residential and office buildings, shopping malls, hotels, hospitals, universities, supermarkets and data centers.

Ideal for both new and retrofit projects, the BFM's compact size is designed to easily fit into existing panel boards, thus eliminating expensive retrofitting costs or allocating extra space for the instrument. The BFM provides the ideal solution for sub-metering applications and is designed to answer the monitoring and billing needs of multi-tenant facilities.

The BFM monitors up to 36 current inputs via external sensors. Each sensor measures and reports the current and power consumed by each of the branch circuits at the panel board. For billing purposes, one can define single or multiple circuits for each customer. This flexibility allows one to simply reassign circuit groups to changing customers without complicated wiring changes. Further, the building owner saves time and effort by monitoring up to 36 circuits directly at the main panel board or load center.

The BFM's programmable alarm system enables one to take preventive maintenance steps to avoid unnecessary outages. SATEC also provides split-core current transformers and wireless communication options to simplify installation.

- ❑ Class 1 Accuracy - including CTs
- ❑ 64 samples per cycle
- ❑ 3 Voltage Inputs (up to 480VAC panels)
- ❑ 36 Current Inputs
- ❑ Measuring range up to 400A
- ❑ Split Core CT (100A & 400A)
- ❑ Time-of-Use (TOU) metering
- ❑ Harmonics and Vectors
- ❑ Integrates with eXpertManager system and eXpertPower service
- ❑ Multi-circuit energy reading
- ❑ 8 MB Flash data storage
- ❑ Event Log
- ❑ 120-day daily load profile
- ❑ Real-time Clock
- ❑ Built-in RS485 (COM 1)
- ❑ Optional COM 2 Ethernet, modem, RS485, external 900 MHz or 2.4 GHz RF wireless
- ❑ Compact Design

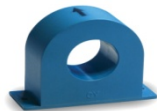


FEATURES & BENEFITS

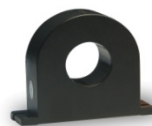
- ANSI C12.16 and IEC 62053-21 compliance
- Provides the complete set of energy and demand data for billing purposes
- Easy installation into existing electric panel boards thanks to its compact design
- Multi-point energy and demand load profiling
- Communications Ports: standard RS485, optional second RS232, RS485, Ethernet, wireless RF Modem (ZIGBEE) or 56K Modem
- Communications Protocols: Modbus TCP/RTU/ASCII
- Flash memory data storage requires no battery backup
- Interval data and Time-of-Use (TOU) capability
- Advanced and user friendly options for data access:
 - ◆ Optional LCD display for local data access
 - ◆ PAS: free configuration software support
 - ◆ eXpertManager PQ SCADA system access, or eXpertPower™: Internet access to data, from anywhere, anytime, featuring highly advanced features for total energy management and billing
- Real-time waveform monitor feature allows for quick and easy installation verification



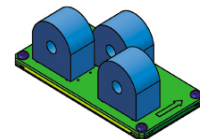
Model CT126
Single CT 100A, 600V
Inner Diameter 12 mm
Cable length 2.5 meters



Model CT236
Single CT 100A, 600V Large Hole
Inner Diameter 23 mm
Cable length 2.5 meters



Model CT4A6
Single CT 400A, 600 V
Inner Diameter 26 mm
Cable length 2.5 meters



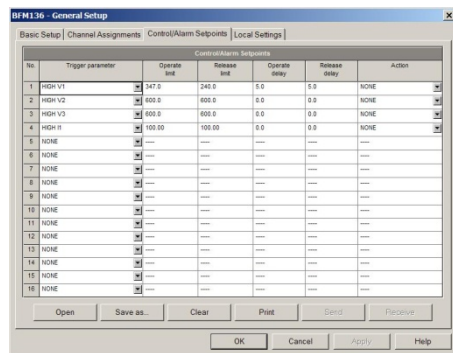
Model CT3CT
3CT Strip 100A, 600V
Up to 12 units per BFM
Cable length 2.5 meters

Load Profile and Event Log

- 8MB of non-volatile memory
- 1 Event Log
- 120-day daily load profile
- Daily energy profile for each tariff and total
- Daily maximum demand profile for each tariff and total
- Daily summary profile of all tariffs
- Separate for each sub-meter

User Defined Setpoint Alarms

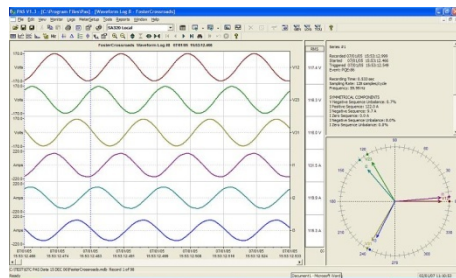
- 4 setpoints per sub-meter
 - ◆ Over / Under Voltage
 - ◆ Over / Under Current
 - ◆ Over / Under Frequency
 - ◆ Over kW Imp
 - ◆ Over kVA



Setpoints System

Power Quality

- Real-time waveform monitor
- Installation and wiring verification
- Harmonics and Phasor analysis for V, I and Power via PAS
- Separate for each sub-meter



Real-time Waveform Monitor

Front Panel Display (BFM136)

- 2 x 16 character backlit LCD display
- Auto-scroll feature
- 4 push buttons



Model CTSC400
400A Split core CT, 600V
Up to 36 units per BFM
Cable length 6 feet - JAN 09



Model CTSC100
100A Split core CT, 600V
Up to 36 units per BFM
Cable length 6 feet



Model TRIO JR900-00-001-E00
900 MHz ISM Band
1 Watt, Half Duplex

Communications

2 independent and simultaneous connections

- Unique "Assignable Register Map"
- Firmware upgrade via communications, eliminating chip replacement

COM1

- Optically isolated RS485 port
- Isolation: 2000VAC (IEC1010-1)
- Selectable baud rate to max. 115,200
- Protocols supported: Modbus RTU/ASCII

COM2

- Optional RS232 port
 - Isolation: 2000V RMS
 - Selectable baud rate to max. 115,200
 - Protocol supported: Modbus RTU/ASCII
- Optional RS485 port
 - Isolation: 2000V RMS
 - Selectable baud rate to max. 115,200
 - Protocol supported: Modbus RTU/ASCII
- Optional Ethernet
 - Transformer-isolated 10/100BaseT
 - Connector: RJ45
 - Protocol supported: Modbus TCP
- Optional Dial-up Modem
 - Transformer-isolated 56KB modem
 - Connector: RJ11
 - Protocol supported: Modbus RTU/ASCII
- Optional RS485 port with eXternal Trio unit
 - 900 MHz, 1 Watt RF
 - Protocol supported: Modbus RTU

Real-time clock

- Accuracy: 1 minute per month @ 25°C
- Time retained for a minimum of 24 hours, 1 week typical upon loss of power

Accuracy

- Voltage: 0.3% reading + 0.05% F.S.
Range: 0 to 600V
- Current: 0.5% reading + 0.05% F.S.
(1% to 100% F.S.)
Range: 0 to CT Primary
Starting Current: 0.1% F.S.
- Frequency: 0.02% reading (50 or 60 Hz)
- PF: 1.0% F.S. (|PF| ≥ 0.5)
- Watts: 1.0% reading + 0.02% F.S.
(|PF| ≥ 0.5)
-120.00 to +120.00 kW
- VARs: 1.0% reading + 0.02% F.S.
(|PF| ≤ 0.9)
-120.00 to +120.00 kVAR
- VAs: 1.0% reading + 0.02% F.S.
(|PF| ≥ 0.5)
0 to 120.00 kVA
- Wh: Class 1S as per IEC 62053-21: 2003
0 to +99,999,999.9 kWh
- VARh: Class 1S as per IEC 62053-21:2003
0 to +99,999,999.9 kVARh
- VAh: Class 1S as per IEC 62053-21: 2003
0 to 99,999,999.9 kVAh

INPUT SPECIFICATIONS

Voltage:

- Direct Input: 120 / 240 / 480 VAC
- Max. Voltage: 320 VLN / 544 VLL
- PT Ratio: 1.0
- Range: 0-600 VAC
- Burden: < 1.5W per phase
- Overload: 1000 VAC continuous
2000 VAC for 1 second
- Isolation: 2.5kV RMS, 60Hz, 1 min.
- Leakage current: < 0.005A per circuit
- Impulse: 1.2/50uS 6kV
- Wire size: 10 AWG max.

Current:

- Input ratings: 50A nominal/100A max.
- Test current: 15A
- Overload: 3000A for ½ cycle @ 60Hz
- Burden: < 1VA per phase
- Isolation: 2.5kV RMS, 60 Hz, 1 min.
- CT Ratio: 1-100
- Range: 0-10000A

Standards of Compliance:

- UL Approved
- CE EMC: 89/336/EEC as amended by 92/31/EEC and 93/68/EEC
LVD: 73/23/EEC as amended by 93/68/EEC and 93/465/EEC
- EN Harmonized standards to which conformity is declared:
EN55011: 1991; EN 50082-1: 1992; EN61010-1: 1993; A2/1995
EN50081-2: 1994 Generic Emission Standard - Industrial Environment
EN50082-2: 1995 Generic Immunity Standard - Industrial Environment
EN55022:1994 Class A
EN61000-4-2: 1995 Electrostatic Discharge
EN61000-4-4: 1995 Electrical Fast Transient
EN61000-4-8: 1993 Radio Frequency Electromagnetic Field, Amplitude Modulated.
ENV50140: 1995 (200Hz) Radio Frequency Electromagnetic Field, Pulse Modulated
ENV50204: 1995 (900MHz)
ENV50141: 1993 Radio Frequency Common Mode, Amplitude Modulated
- ANSI C12.2 1998
- IEC 62053-21 Class 1S

MISCELLANEOUS

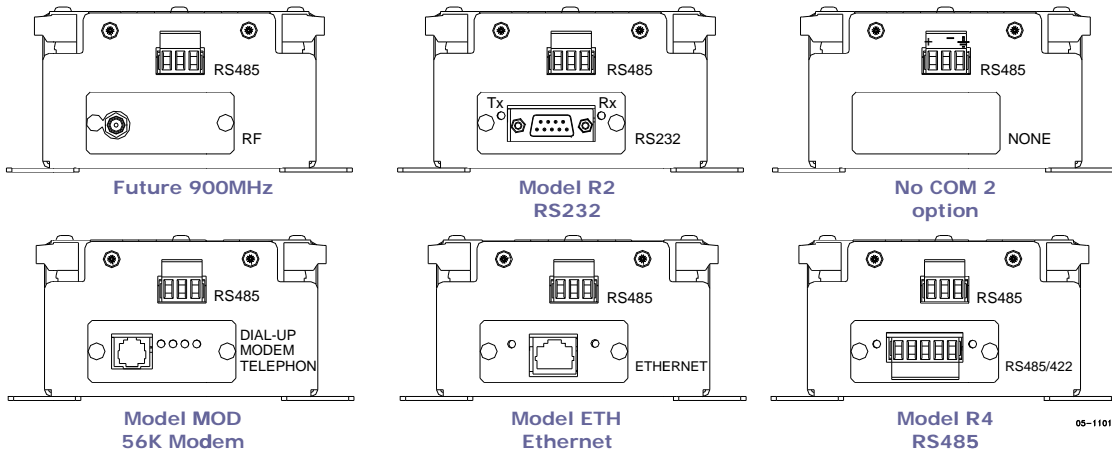
Warranty:

3-Year limited warranty

Environmental Conditions

- Operating Temp.: -20 to +60°C (-4 to 140°F)
- Storage Temp.: -25 to +80°C (-13 to 176°F)
- Humidity: 0 to 95% non-condensing

Optional COM 2 Communication add on port



BFM Branch-Feeder-Monitor™

BFM136

Options:

CALIBRATION

50 50Hz

60 60Hz

COM2 – second COM port

0 None

R2 RS232

R4 RS485

MOD 56K modem

ETH Ethernet

RFM RF Modem (future)

MOUNTING

0 Wall mount

D DIN

ACCESSORIES*

CT126 Single CT 100A, 12 mm; QTY: 1-36

CT236T Single CT 100A, 23 mm; QTY: 1-36

CT4A6 Single CT 400A, 26 mm; QTY: 1-36

CTSC100 Single Split Core CT 100A, 0.6 in.; Qty: 1-36

CT3CT 3 CT Strip 1" (25mm) between CT centers. QTY 1-12

CTSC400 Single Split Core CT 400A, 1 x 1.85 inches; Qty: 1-36

*The CT assembly includes a 6-foot (2 meters) long color-coded wire cables with snap connector on one end for easy connection.

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