

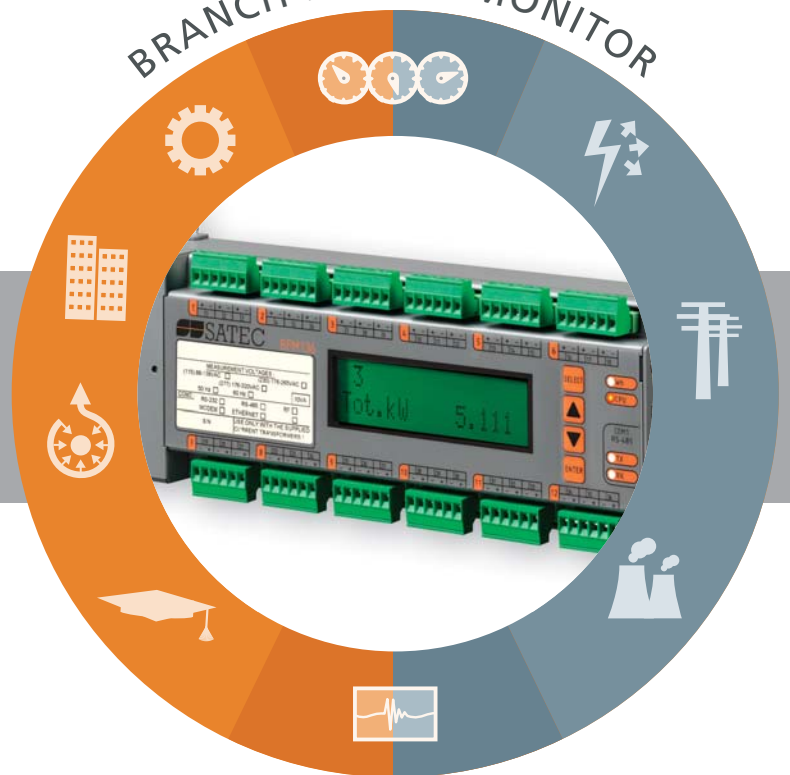
BFM136

BRANCH FEEDER MONITOR



**The Perfect Solution
For Multi-Circuit,
Multi-Client Metering**

- ▶ Multi-client billing
- ▶ Multi-circuit energy reading
- ▶ Built-in communication platforms
- ▶ Time-of-Use (TOU) metering



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BFM136

Branch Feeder Monitor™

SATEC's BFM136 Branch Feeder Monitor™ is the next generation in energy management metering for multi-point power solutions. Ideal for both new and retrofit projects, the BFM136 automatically provides metering, demand and energy readings, logging and multi-tariff (TOU) data.

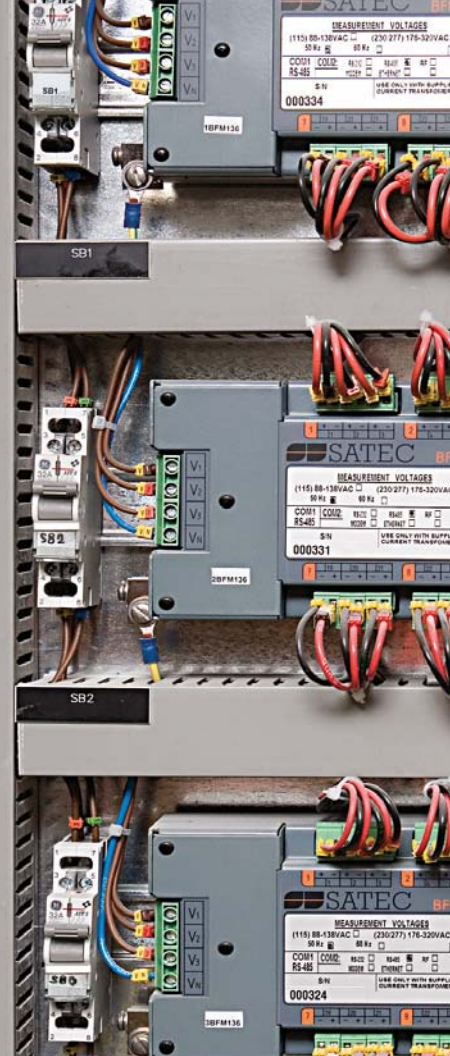


The BFM136 monitors up to 12 three phase circuits, 18 two phase or 36 single phase circuits, or any combination of single, two or three phase circuits. This flexibility makes the BFM136 perfect for multi-tenant facilities such as residential projects, office buildings and shopping malls. The compact BFM136 is designed to easily fit into existing panel boards or be flush mounted nearby, thus eliminating the need for expensive retrofit projects or for allocating extra space for the device.

The BFM136 monitors up to 36 currents via external Current Transformers (CTs). Each CT measures and reports the current consumed by each of the branch circuits at the panel board. For billing purposes, single or multiple circuits can be defined for each customer. This flexibility allows a simple reassignment of circuit groups without wiring changes, and allows for easy changes when tenants move in and out. Main panel board or load center

installation makes for a valuable saving of both time and money.

The BFM136's user-defined and easily configured alarm system enables users to take predictive maintenance action in order to avoid unnecessary outages.



Features &

- ▶ **Multi-point power, energy and demand data logging.**
- ▶ **Data storage:**
 - Real Time Clock (RTC) and Flash memory for data and event logger.
 - TOU (Time of Use): The TOU function stores energy consumption data according to the programmed time schedule.
 - Daily energy tariff profile and maximum demands programmable interval for load profile.
- ▶ **Logging** for any type of parameters, for all profiles.
- ▶ **Local LCD display** providing up to 36 channels of consumption readings for each tenant.
- ▶ **Cost effective, space-saving compact design** for easy installation into existing electric panelboards.
- ▶ **Automatic installation verification:** The BFM136 performs automatic synchronization between voltages and currents per phase.





Measurement Parameters

Alarms
Communication
Local Display

Energy Measurements (per submeter)	
Import active energy total	■ ■
Import reactive energy total	■ ■
Apparent energy total	■ ■
Active, reactive, apparent energy TOU system (6 tariffs)	■ ■
Average Measured Values	
L-N voltage per phase	■ ■ ■
L-L voltage per line	■ ■ ■
Current per phase	■ ■ ■
Voltage & current angles per phase	■ ■
kW per phase	■
kW total per submeter	■ ■ ■
kVAr per phase	■
kVAr total per submeter	■ ■ ■
Power factor per phase	■
Power factor total per submeter	■ ■
kVA per phase	■
kVA total per submeter	■ ■ ■
Frequency	■ ■ ■
Neutral current for 3-phase submeter	■

Present Demand	
Volts per phase	■
Amperes per phase	■
Total kW per submeter	■
Total kVAr per submeter	■
Total kVA per submeter	■

Maximum Demand	
Volts per phase	■ ■
Amperes per phase	■ ■
Total kW per submeter	■ ■
Total kVAr per submeter	■ ■
Total kVA per submeter	■ ■
kW, kVAr, kVA per tariff (6 tariffs) per submeter	■ ■

Service	
Self-diagnostic test	■ ■
Password per meter	■ ■
Device serial no.	■ ■
Software version	■ ■
Com1 & Com2 ID	■ ■
Current direction	■

1. More measured parameters available
Contact **SATEC Sales** for more information
2. Available wiring mode 4LN3 only

Benefits

- ▶ **Standard Communication Platforms:**
Protocols:
 Modbus RTU, Modbus TCP/IP, Modbus ASCII
Ports:
 Standard: RS485 port
 Optional: Ethernet TCP/IP, dial-up modem, RS232, additional RS485/422 port, wireless RF modem, GPRS
- ▶ **High accuracy 0.5S**
- ▶ **Input**
 - Current inputs: 36 per device.
 - Measured currents, per phase: with unique Remote CTs rating from 100A to 1200A
 - Voltage Input: wide range 88-136V AC (115) or 176-320V AC (230/277).
 - Self power supply: 3-phase + N fed from the measured voltages.
- ▶ **Alarm Configuration**
 Over/under voltage, over current, over kW, over kVA, over/under frequency.
- ▶ **Three-year warranty.**



Manage Your

MONITORING & DATA STORAGE

SATEC's Branch Feeder Monitor™ collects and stores data, accessible in real-time. The **BFM136** stores energy usage data in two formats, fixed-price and Time of Use (TOU). The **BFM136** collects a variety of physical data such as: kVA, kW, kVAR, current and voltage max. demands; and energies: kVAh, kWh and kVArh. The **BFM136** automatically transfers the information to a remote computer for display and analysis. The data can also be viewed locally on the **BFM136's** LCD display.

APPLICATIONS

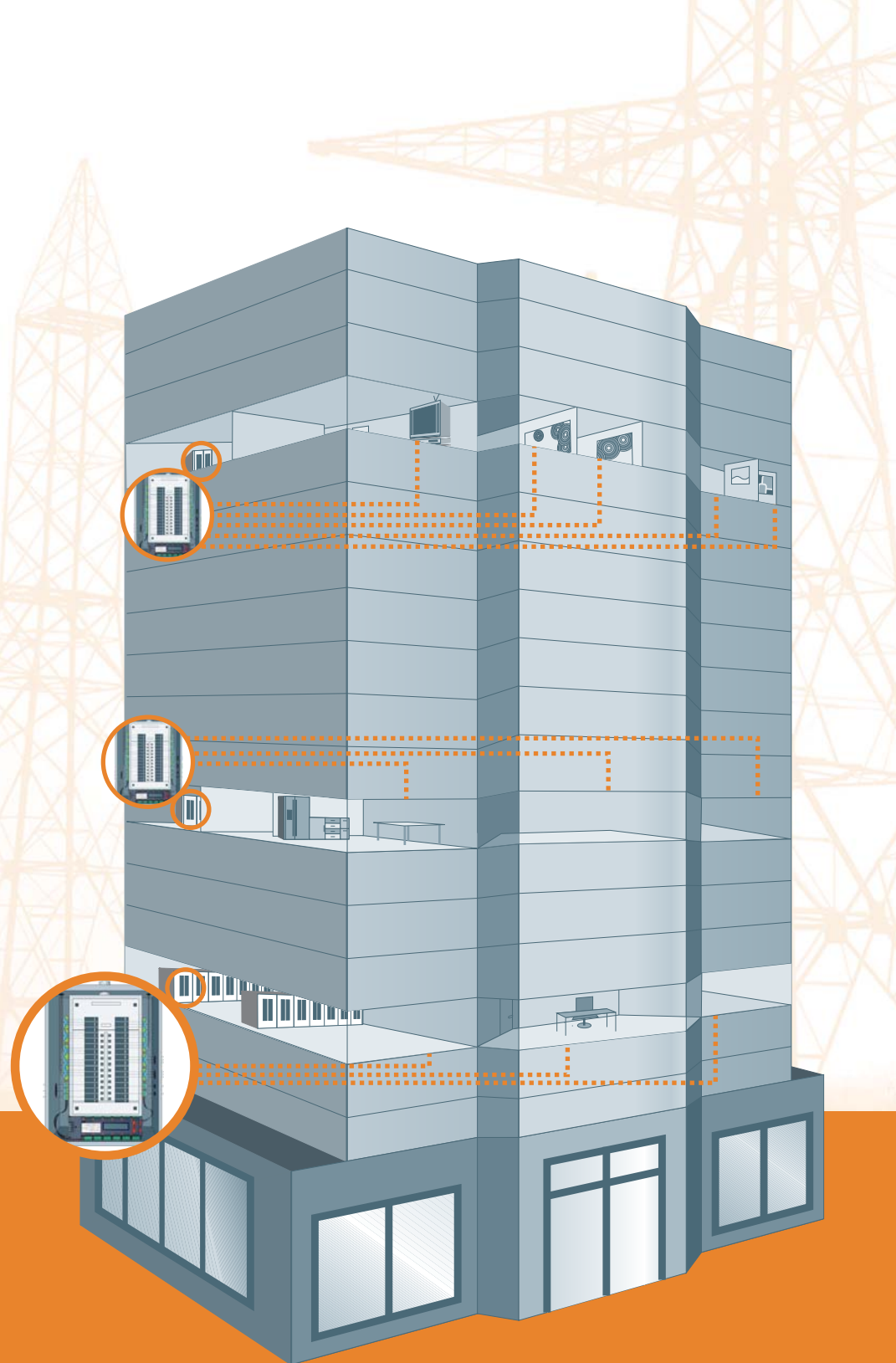
PAS

For remote reading and control, the **BFM136** is supported by **SATEC PAS** software, designed for remote setup and data viewing and analysis.

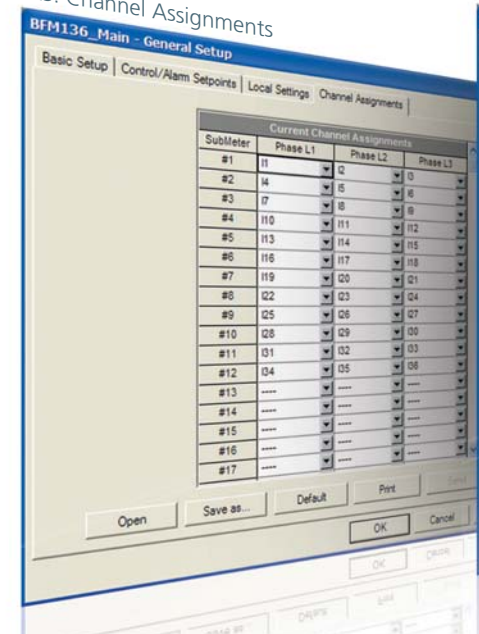
PAS provides real-time access to data.

Building Management Systems

With the open Modbus protocol, the **BFM136** can interface any system, such as Building Management, HMI and more.



PAS: Channel Assignments



Energy System

BILLING (TOU)

Tariffs vary according to different criteria, such as the type of consumer—whether private home accounts in multi-tenant buildings, businesses or industry. The **BFM136** provides data for TOU billing in compliance with the rates set by the local electricity supplier.

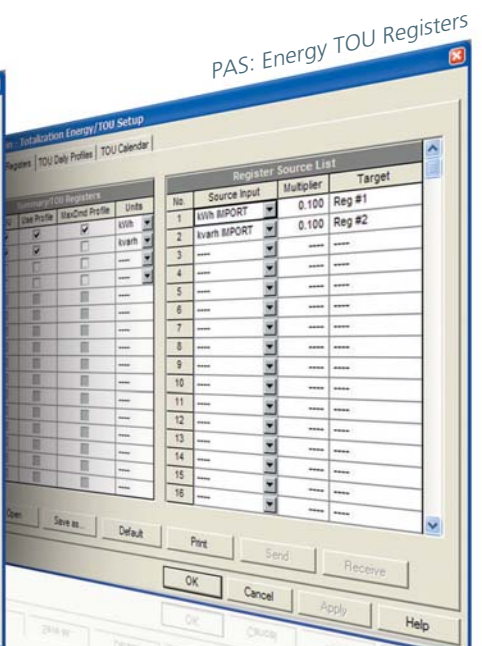
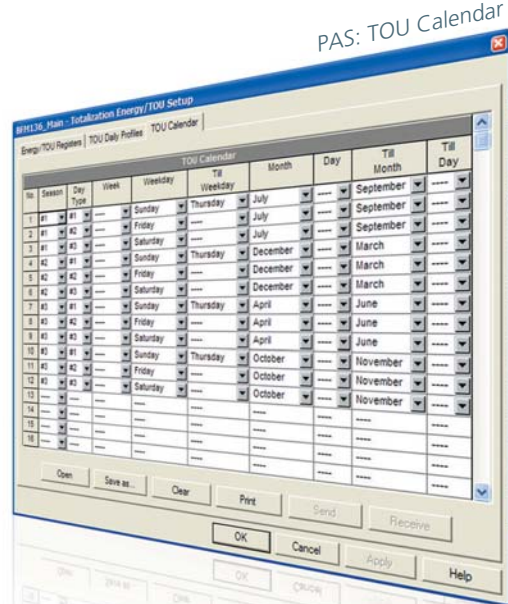
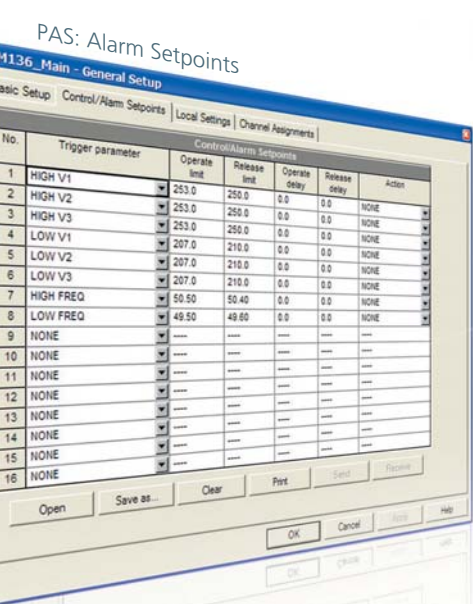
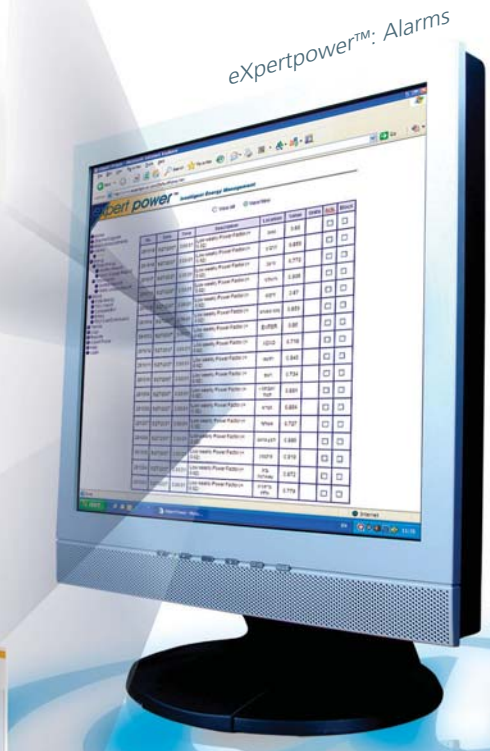
The system also provides information on peak demands and allows for the assessment of penalty if the power factor falls below the level defined by the local electricity suppliers.

eXpertpower™

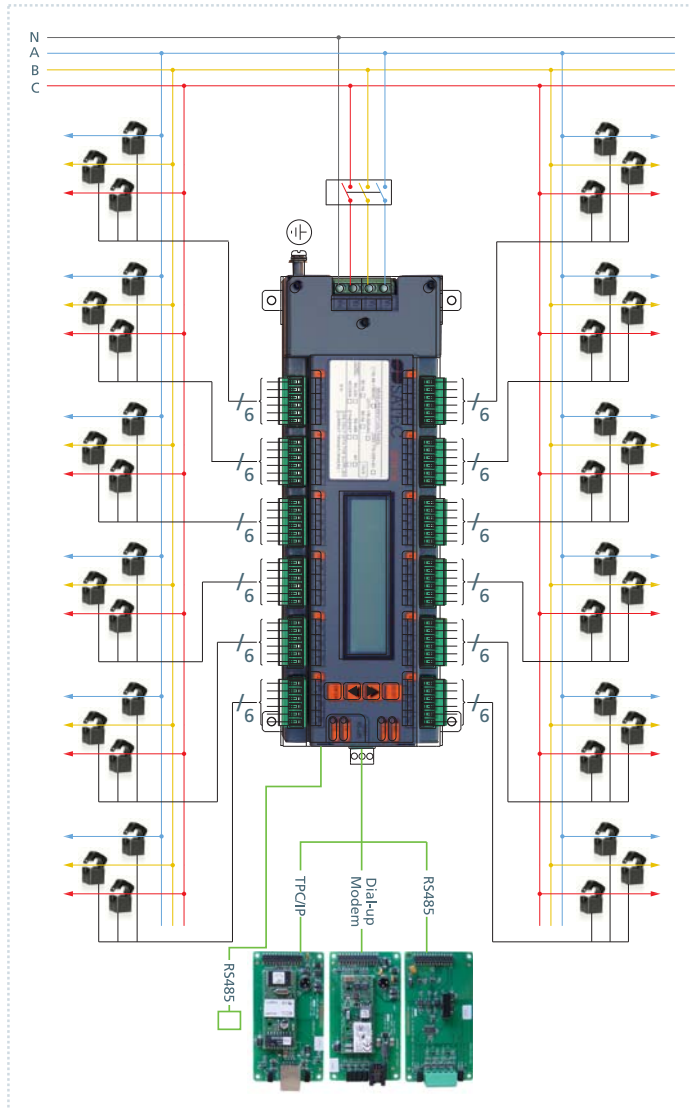
For automated monitoring, complete billing service, and more advanced analysis options, **SATEC** offers **eXpertpower™**, the web-based Energy Management e-Service.

This service provides automatic monitoring, billing and analysis for electric power systems. **eXpertpower™** delivers total visibility for entire power systems via the Internet, providing alarms, power diagrams, power profiles and demands, events logging, history and graphs.

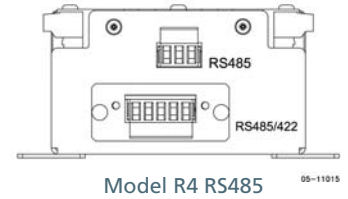
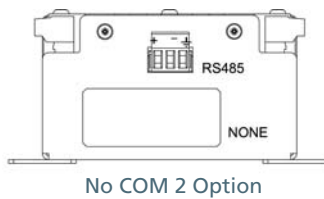
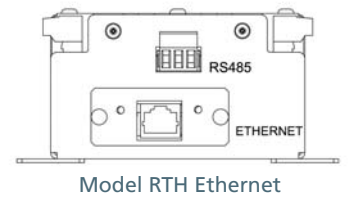
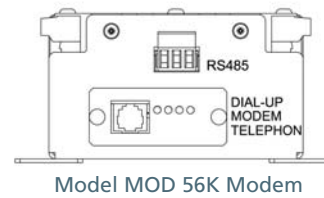
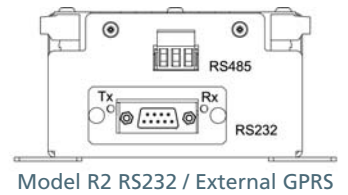
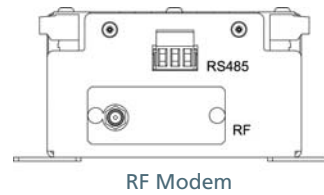
For more information on our e-Service, see **SATEC eXpertpower™** brochure.



Diagrams & Dimensions



Optional COM 2 Communication Add-On Port



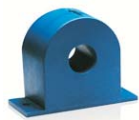
Dimensions

4.2x13x2.3" / 107x331x58mm (HxWxD)

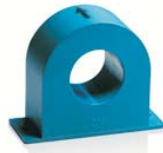
Current Transformers Options



100A Split Core CT
Ø 16mm/0.63"



100A Solid Core CT
Ø 12mm/0.47"



100A Solid Core CT
Ø 23mm/0.9"



400A Solid Core CT
Ø 26mm / 1.02"



400A Split core CT
Ø 30.5mm / 1.2"



800A Split Core CT
Opening:
81x50mm / 3.2x2"



1200A Split Core CT
Opening:
121x80mm / 4.7x3.1"

Measurement Specifications

Parameter	Full Scale@Input Range	Accuracy ⁽¹⁾			Range
		% Reading	%FS	Conditions	
Voltage	V _L =230V	0.3	0.05	184 to 260V	0 to V _{max} =600 V
Line current	Instrument current transformer CTs I _L =100%	0.5	0.05	1 to 100% FS	0 to CT primary current. Starting current: 0.1% FS
Active power	2 x V _{max} x I _L /1000, kW	0.5/1 ⁽²⁾	0.02	PF ≥ 0.5 ⁽³⁾	-120,000 to 120,000 kW
Reactive power	2 x V _{max} x I _L /1000, kvar	0.5/1 ⁽²⁾	0.02	PF ≤ 0.9 ⁽³⁾	-120,000 to 120,000 kVA _r
Apparent power	2 x V _{max} x I _L /1000, kVA	0.5/1 ⁽²⁾	0.02	PF ≥ 0.5 ⁽³⁾	0 to 120,000 kVA
Power factor	1.0	-	1.0	PF ≥ 0.5, I ≥ 2% FSI	-0.999 to +1.000
Frequency		0.02	-	50 Hz: 39.00 to 65.00 Hz 60 Hz: 45.00 to 70.00 Hz	39 Hz up to 70 Hz
Active energy import		Class 0.5 under conditions as per IEC 62053-22:2003			0 to 99,999,999.9 kWh
Reactive energy import/export		Class 1.0 under conditions as per IEC 62053-22:2003, PF ≤ 0.9			0 to 99,999,999.9 kvar
Apparent energy		Class 1.0 under conditions as per ANSI 1220-1998			0 to 99,999,999.9 kVAh

Notes

(1) Accuracy is expressed as (percentage of reading + percentage of full scale) +/- 1 digit. This does not include inaccuracies introduced by the user's potential and current

transformers. Accuracy calculated at 1-second average.

► Specifications assume: voltage and current waveforms with THD ≤ 5% for kvar, kVA and PF; reference operating temperature: 20°C - 26°C.

► Measurement error is typically less than the maximum error indicated here.

(2) Class 0.5S accuracy with solid core CTs or class 1 with split core CTs

(3) @ 80% to 115% of voltage FS and 1% to 100% of current FS
FSV - voltage full scale
FSI - current full scale

Technical Specifications

Input Ratings

Parameter	Value
Nominal frequency	50/60 Hz
AC Voltage	4 wires: 3 phases + neutral
Nominal voltage	115/230/277V AC
Maximum Line to Neutral voltage	320 V
Maximum Line to Line voltage	544 V
Burden per phase	<1.5 W
Isolation	2.5 kV RMS, 60Hz, 1 min Impulse 6kV
PT ratio	1-6500
AC Current	36 current circuits
Nominal current	50 A
Maximum input direct current	100 A
Maximum momentary overcurrent	3000 A
Burden per phase	< 0.1 VA
Isolation	2.5 kV RMS, 60Hz, 1 min
Primary current	1-10000A
Hardware	
LCD display	2 Rows, 16 digits in each
Push buttons	4
Non-Volatile Memory storage life	20 years
RTC storage upon loss of power	24 Hours minimum 1 Week typical
Voltage inputs terminal	10 AWG Max.
Weight	1.850 Kg

Environmental Conditions

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

Standards Compliance

IEC 62053-22: 2003 Class 0.5S

ANSI C12.20-1998 Class 0.5

IEC 62052-11: 2003

EN 61000-3-2: 2000

EN 61000-3-3: 1995

IEC 61000-4-2: 1995

IEC 61000-4-3: 2002

IEC 61000-4-4: 1995

IEC 61000-4-5: 1995

IEC 61000-4-6: 1996

IEC 61000-4-11: 1994

Safety

UL 61010-1-2003

Authorized Labs—Approvals

UL: Listed for the US & Canada

CE

ISO

VNIIMS

BFM136 ORDER STRING

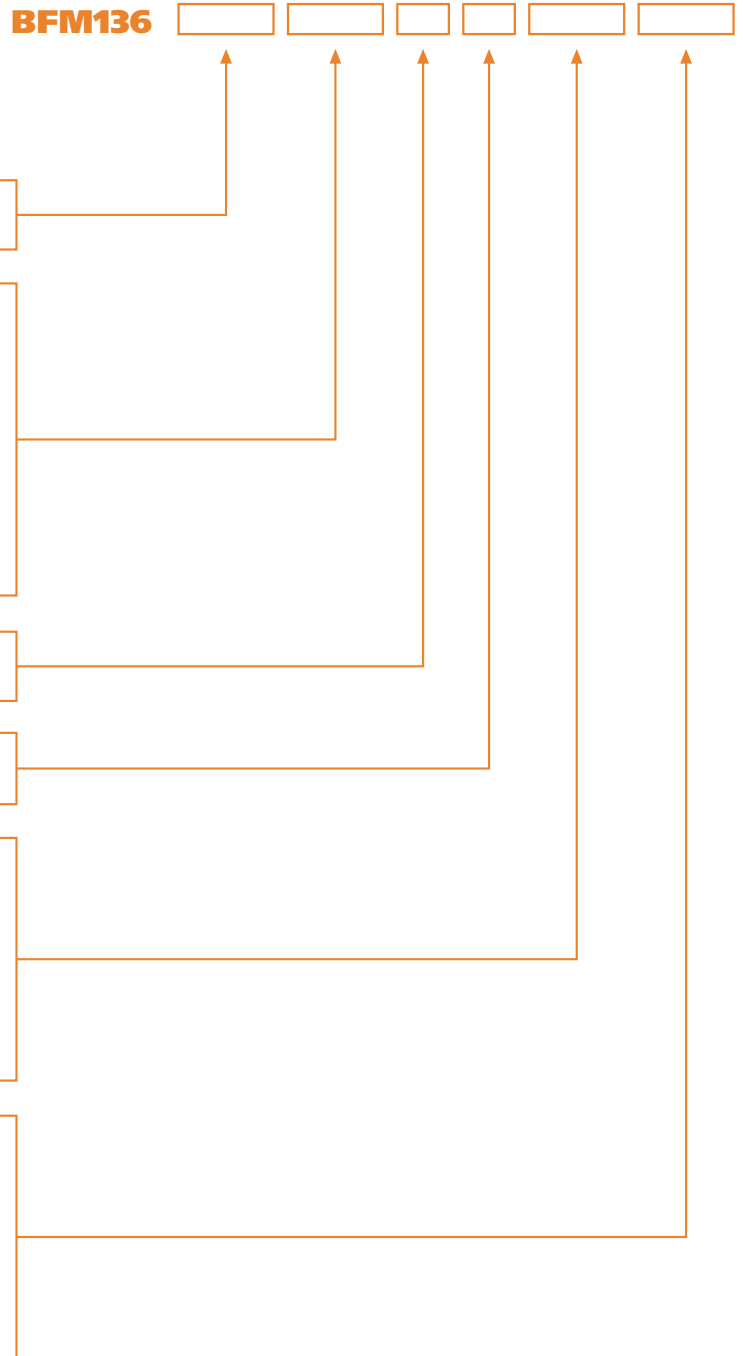
MODEL

BFM136 Branch Feeder Monitor™ **BFM136**

OPTIONS

FREQUENCY	
50 Hz	50HZ
60 Hz	60HZ
COM2 SECOND COMMUNICATION PORT	
None	-
RS232	R2
RS485	R4
Dial-up Modem	MOD
Ethernet (TCP/IP)	ETH
RF Basic—ROW (see note)	RFROW
RF Extension (group 0)—ROW (see note)	RF0
RF Extension (group 1)—ROW (see note)	RF1
GPRS External Module	GPRS
MOUNTING	
Wall-mount (standard)	-
DIN Rail Mounting	D
SEAL	
No Terminal Seal (Standard)	-
With Terminal Seal	S
RF Accessories (see note)	
Concentrator—ROW	CON-ROW
Concentrator External for 2 x ETC2002	CON-EXT
Repeater	REP
Antenna 1: Without cable (module or concentrator)	AN-1
Antenna 2: With 2M cable (module or concentrator)	AN-2
Antenna 3: External for concentrator only	AN-3
Antenna 4: External for module or concentrator	AN-4
Current Transformers (max. 36 per device)	
Remote CT: 100A, 12mm hole, solid core	CT1
Remote CT: 100A, 23mm hole, solid core	CT1L
Remote CT: 100A, 16mm hole, split core	CT1S
Remote CT: 400A, 26mm hole, solid core	CT4
Remote CT: 400A, 30.5mm hole, split core	CT4S
Remote CT: 800A, 80x50mm hole, split core	CT8S
Remote CT: 1200A, 180x120mm hole, split core	CT12S

Note: RF module and accessories are available in certain regions only. Please consult your local supplier



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