

BFM ORDER STRING

MODELS

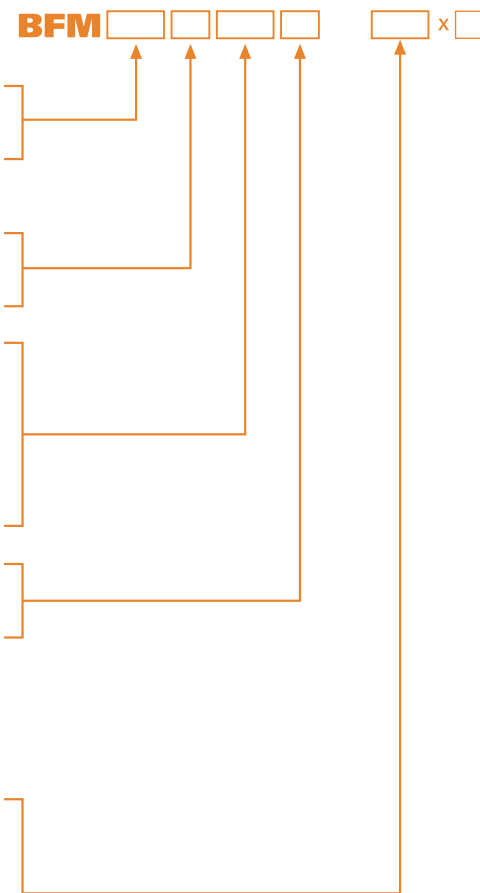
BFM036 Branch Feeder Monitor™ without display	036
BFM136 Branch Feeder Monitor™ with LCD display	136

OPTIONS

FREQUENCY	
50 Hz	50
60 Hz	60
SECOND COMMUNICATION PORT	
None	0
RS232	R2
RS485	R4
Dial-up Modem	MOD
Ethernet (TCP/IP)	ETH
MOUNTING	
Wall-mount (standard)	0
DIN	D

CURRENT TRANSFORMERS ORDER STRING

3 CT Strip 1"	B3CT
QTY: up to 12 units per BFM	
9 CT Strip 1"	C9CT
QTY: up to 4 units per BFM	
Single CT: SET OF 3	D1CT
QTY: up to 12 sets per BFM	(set of 3)



BFM136 BFM036

Branch Feeder Monitor™



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The Perfect Solution For Multi-Client Metering

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



www.satec.co.il

BFM136

BFM036

Branch Feeder Monitor™

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

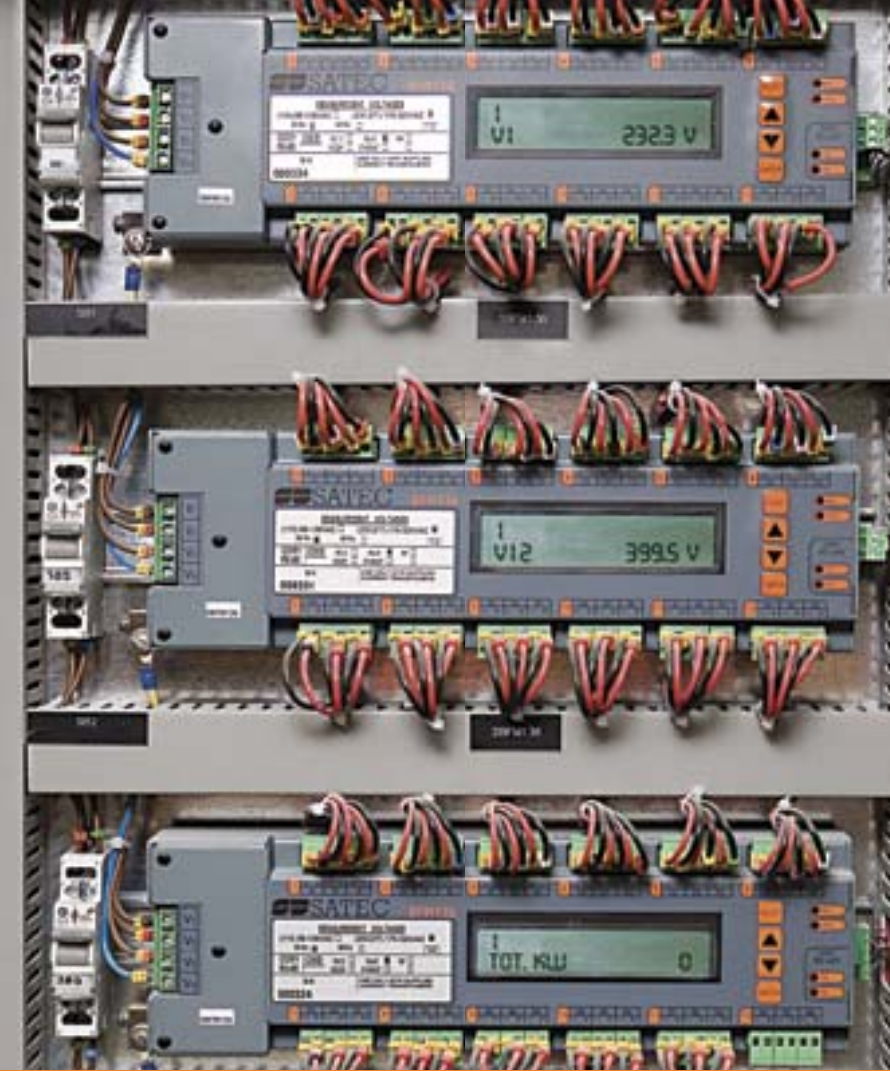


The BFM monitors up to 12 three phase circuits or 36 single phase circuits, or any combination of single or three phase circuits. This flexibility makes the BFM perfect for multi-tenant facilities such as residential projects, office buildings and shopping malls.

The compact BFM is designed to easily fit into existing panel boards or flush mounts nearby, thus eliminating the need for expensive retrofit projects or for allocating extra space for the device.

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



Features & Benefits

- ▶ **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 (BFM136 only)** providing up to 36 channels of consumption readings for each tenant.
- ▶ **Cost effective, space-saving compact design** for easy installation into existing electric paneboards.
- ▶ **Automatic installation verification:** The BFM performs automatic synchronization between voltage and current lines for each phase (on single phase).
- ▶ **Standard Communication Platforms: Protocols:**
 - Modbus RTU
 - Modbus TCP/IP
- ▶ **Ports:**
 - Standard: RS485 port
 - Optional: Ethernet TCP/IP, dial-up modem, RS232, additional RS485/422 port
- ▶ **High accuracy**
- ▶ **Input**
 - Current inputs: 36 per device.
 - Maximum measured currents: Conventional transformer with 5-10 secondary, and up to 5000A primary configurable; or direct 100 Amp.
 - Voltage Input: wide range 88-138 VAC (115) or 176-265 VAC (400/230).
 - 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.**

Measurement Parameters

	Local Display	Communication	Alarm	Service
Energy Measurements				
Import active energy per phase and total for each feeder	■	■		
Reactive energy per phase and total for each feeder	■	■		
Apparent energy per phase and total for each feeder	■	■		
Simple active energy TOU system (8 tariffs) for each feeder	■	■		
Average Measured Values				
L-N voltage per phase	■	■	■	
L-L voltage per phase	■	■	■	
Current per phase and per each feeder	■	■	■	
kW per phase and total for each feeder	■	■	■	(total)
kvar	■	■	■	
Power factor per phase and total for each feeder	■	■		
kVA per phase and total for each feeder	■	■	■	
Frequency 39-70 Hz	■	■	■	
Present Demand				
Phase RMS amperes			■	
Total kW			■	
Total kvar			■	
Total kVA			■	
Neutral current for three phase feeders			■	
Volts (minimum)	■	■		
Maximum demand				
Volts			■	■
Amperes per phase			■	■
Total kW			■	■
Total kvar			■	■
Total VA			■	■
Neutral current for three phase feeders only			■	
Service				
Self-diagnostic test			■	■
Password per each feeder			■	■
Device serial no.			■	■
Software version			■	■
Com1 & Com2 ID			■	■
Phase rotation			■	
More measured parameters available				
Contact us for more information				

BFM Models

BFM136

Local operation panel including LCD display—(16 characters x 2 rows) and 4 pushbuttons.



BFM036

Remote access via computer communications, without display.



Manage Your Energy System

MONITORING & DATA STORAGE

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

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 BFM 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.

APPLICATIONS

PAS

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

Both PAS and eXpertpower™ provide real-time access to data.

Building Management Systems

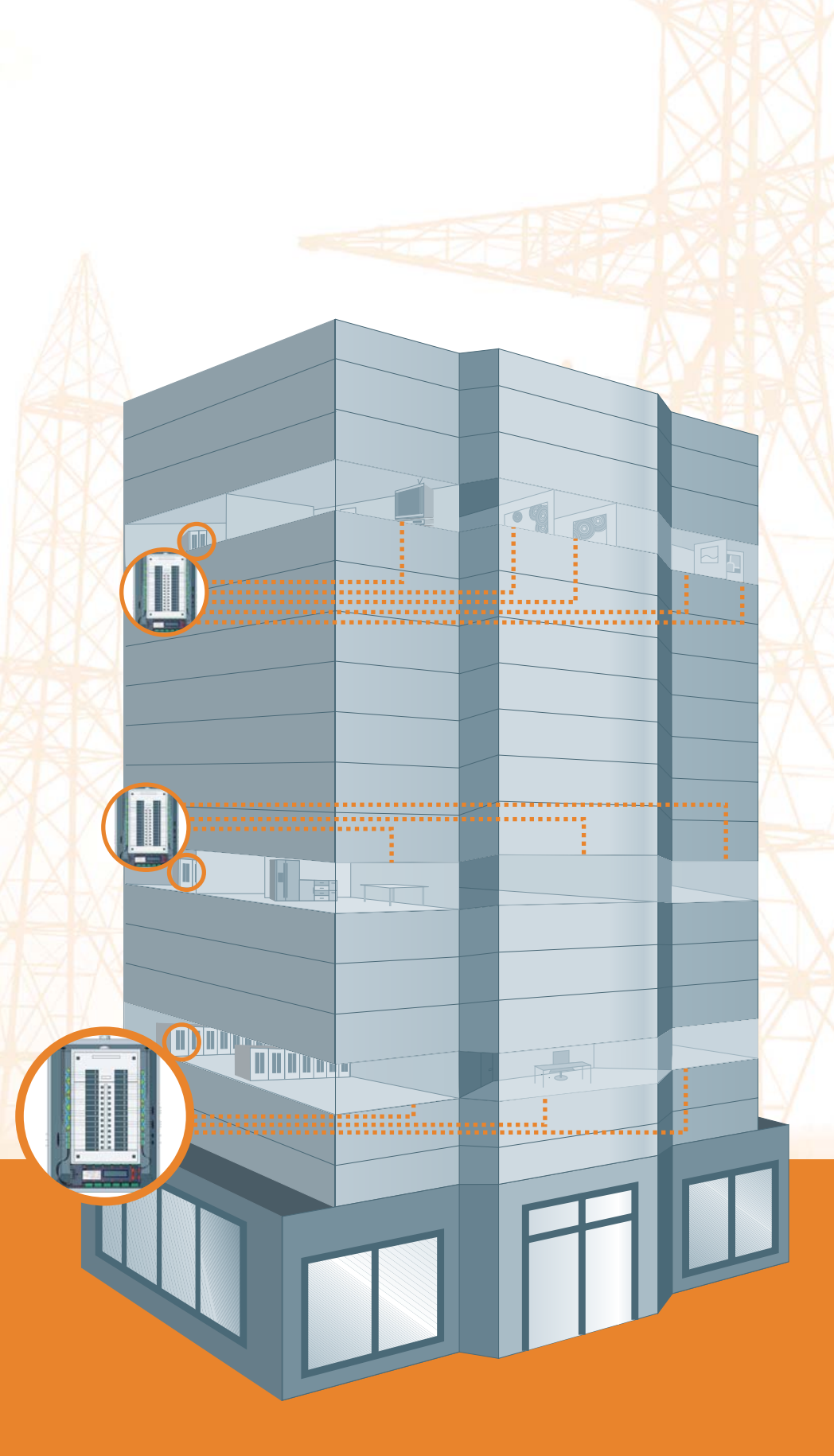
With the open Modbus protocol, the BFM can interface any system, such as Building Management, HMI and more.

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 analyses 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 our eXpertpower™ brochure.



PAS: Channel Assignments

Submeter	Phase L1	Phase L2	Phase L3
#1	11	12	13
#2	14	15	16
#3	17	18	19
#4	110	111	112
#5	113	114	115
#6	116	117	118
#7	119	120	121
#8	122	123	124
#9	125	126	127
#10	128	129	130
#11	131	132	133
#12	134	135	136
#13			
#14			
#15			
#16			
#17			

PAS: Alarm Setpoints

No.	Trigger parameter	Operate limit	Release limit	Operate delay	Release delay	Action
1	HIGH V1	253.0	250.0	0.0	0.0	NONE
2	HIGH V2	253.0	250.0	0.0	0.0	NONE
3	HIGH V3	253.0	250.0	0.0	0.0	NONE
4	LOW V1	207.0	210.0	0.0	0.0	NONE
5	LOW V2	207.0	210.0	0.0	0.0	NONE
6	LOW V3	207.0	210.0	0.0	0.0	NONE
7	HIGH FREQ	50.50	50.40	0.0	0.0	NONE
8	LOW FREQ	49.50	49.60	0.0	0.0	NONE
9	NONE					
10	NONE					
11	NONE					
12	NONE					
13	NONE					
14	NONE					
15	NONE					
16	NONE					

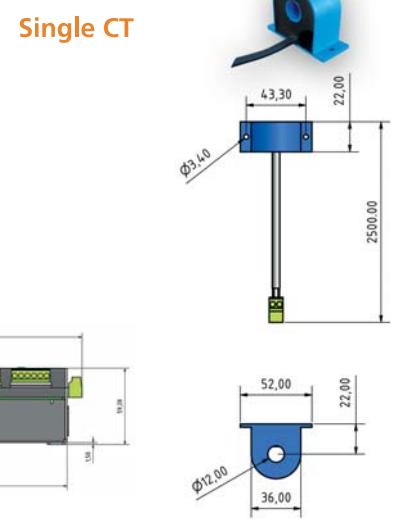
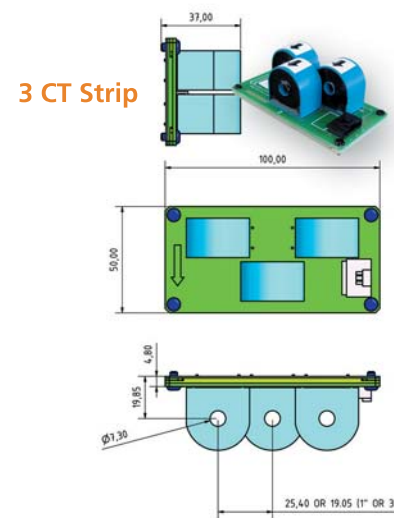
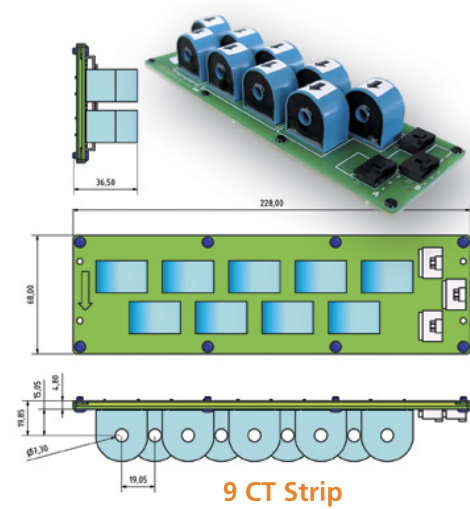
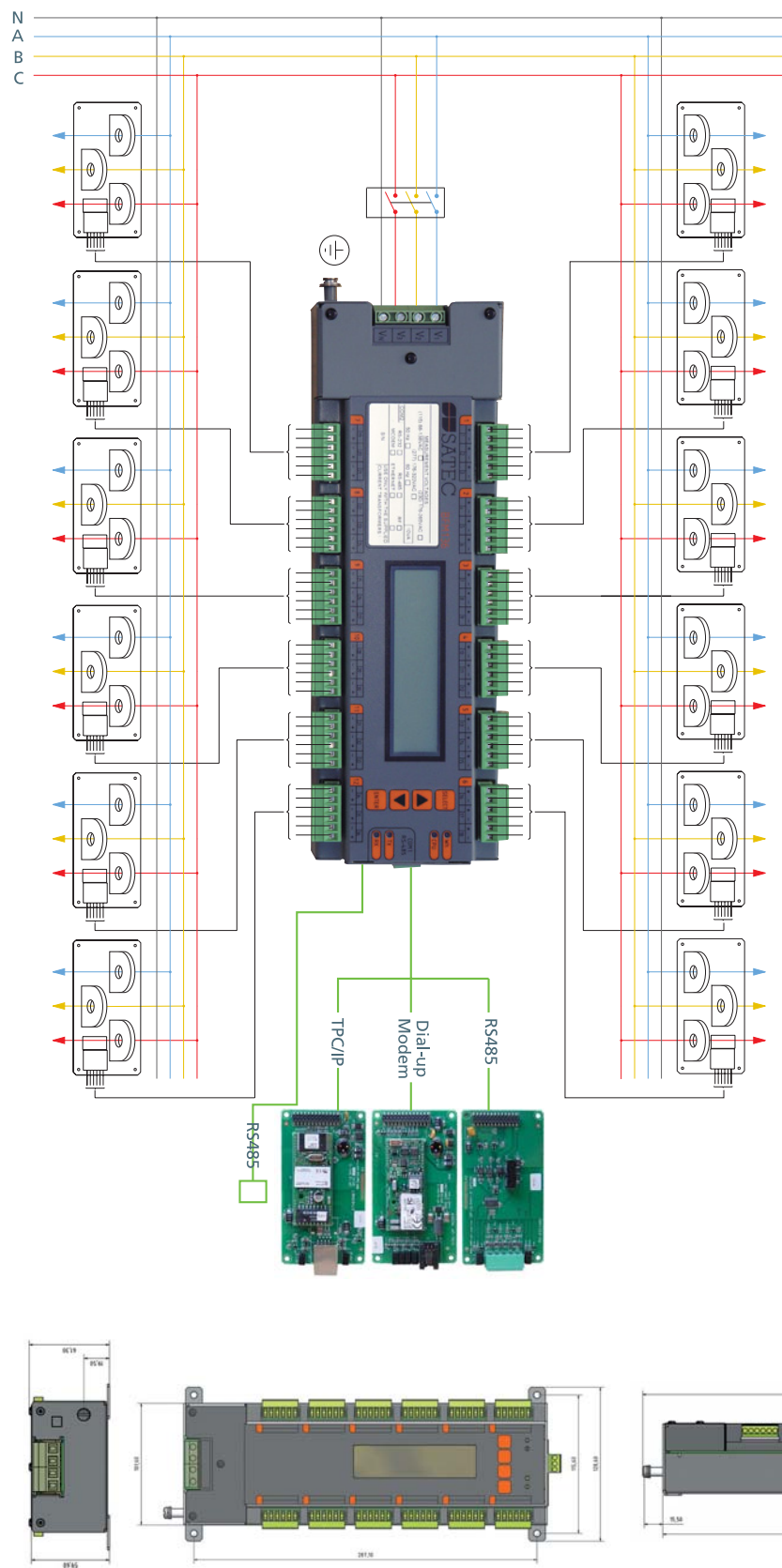
PAS: TOU Calendar

No	Season	Day Type	Week	Weekday	Til	Month	Day	Til Month	Til Day
1	#1	---	Sunday	Thursday	July	---	September	---	---
2	#1	---	Friday	---	July	---	September	---	---
3	#1	---	Saturday	---	July	---	September	---	---
4	#2	---	Sunday	Thursday	December	---	March	---	---
5	#2	---	Friday	---	December	---	March	---	---
6	#2	---	Saturday	---	December	---	March	---	---
7	#3	---	Sunday	Thursday	April	---	June	---	---
8	#3	---	Friday	---	April	---	June	---	---
9	#3	---	Saturday	---	April	---	June	---	---
10	#4	---	Sunday	Thursday	October	---	November	---	---
11	#4	---	Friday	---	October	---	November	---	---
12	#4	---	Saturday	---	October	---	November	---	---
13	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---

PAS: Energy TOU Registers

No.	Source Input	Multiplier	Target
1	Wh IMPORT	0.100	Reg #1
2	kvarh IMPORT	0.100	Reg #2
3	---	---	---
4	---	---	---
5	---	---	---
6	---	---	---
7	---	---	---
8	---	---	---
9	---	---	---
10	---	---	---
11	---	---	---
12	---	---	---
13	---	---	---
14	---	---	---
15	---	---	---
16	---	---	---

Diagrams & Dimensions



Measurement Specifications

Parameter	Accuracy % Reading	Range
Voltage	0.3	0 to Vmax=599 V
Line current	0.5	0 to CT primary current Starting current: 0.1% FS
Active power	0.5	-120.000 to 120.000 kW
Reactive power	1	-120.000 to 120.000 kvar
Apparent power	1	0 to 120.000 kVA
Power factor	1.0	-0.999 to +1.000
Frequency	0.02	39 Hz up to 70 Hz
Active energy import	Class 0.5S 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 62053-21:2003	0 to 99,999,999.9 Mvarh
Apparent energy	Class 1.0 under conditions as per IEC 62053-21:2003	0 to 99,999,999.9 MVAh

Technical Specifications

Input Ratings

Parameter	Value
Nominal frequency	50/60 Hz
AC Voltage	4 wires: 3 phases + neutral
Nominal voltage	120/240/277 VAC
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
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 (model 136 only)	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.

Standards Compliance

- IEC 62053-22:2003
- IEC 62053-21:2003
- ANSI C12.20-1998
- EN50081-2 Generic Emission Standard—Industrial Environment
- EN50082-2 Generic Immunity Standard—Industrial Environment
- EN55022: 1994 Class A
- EN61000-4-2
- EN50140:1983
- ENV50204: 1995 (900MHz)
- ENV50141: 1993
- EN6100-4-4:1995
- EN61000-4-8:1993

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

