

AcuRev 2000

Multi-Circuit Power and Energy Meter



ISO9001 Certified





- Comply to IEC 62053-21 Measurement Standard
- Support up to 18 Individual Channels for Energy Measurement
- Multifunction Power Metering, Monitoring and System Analysis
- Data Logging and Load Status Recording
- Multiple Communication Ports
- Modular Design
- Extended Power Supply (100 - 415 Vac)
- Data (Pulse) Collection from Water and Gas Meter

DESCRIPTION

The AcuRev 2000 Series is the next generation multifunction energy meter developed and manufactured by Accuenergy. It performs real-time metering, measures energy consumption and monitors power quality for up to 18 single phase circuits (or 6 three phase circuits) in one unit. AcuRev 2000 series meter is ideal for multi-tenants submetering applications such as in commercial facilities, residential apartments and industrial environments. Communication options include infrared, RS485 serial communication and Ethernet. There are also multiple I/O options which can support pulse counting from water and gas meters as well as provide a kWh pulse output. Due to its communication capability, compact size and ease of use, the AuRev 2000 series is a simple, intelligent and cost effective solution for any energy management system.

APPLICATIONS

- Commercial Complex and Malls
- Schools, Colleges and Universities
- Public Services and Establishments
- Hotels and Office Buildings
- Intelligent Distribution Systems
- Condominium and Apartment Complexes
- Energy Management Systems
- Utilities and Industrial Applications
- Power and Load Monitoring Systems
- Railway and Subway Systems

AcuRev 2000 Series Meter

Functions and measuring parameters for the two AcuRev 2000 series meters (AcuRev 2010 - kWh meter only; AcuRev 2020 - multifunction energy meter) are listed below:

Function		Parameter	AcuRev2010	AcuRev2020
ENERGY	Energy	Ep	•	•
	Reactive Energy	Eq		•
	Apparent Energy	Es		•
TIME OF USE	4 Tarrifs, 14 Schedules	TOU	•	•
POWER DEMAND	Power Demand	Demand_P	•	•
	Peak Power Demand	Demand_P_max	•	•
CURRENT DEMAND	Current Demand	Total and each circuit		•
	Peak Current Demand	Total and each circuit		•
REAL TIME METERING	Phase Voltage	V1,V2,V3		•
	Line Voltage	V12,V23,V31		•
	Current	Total and each circuit		•
	Power	Total and each circuit	•	•
	Reactive Power	Total and each circuit		•
	Apparent Power	Total and each circuit		•
	Power Factor	Total and each circuit		•
	Frequency	F		•
POWER QUALITY	Total Harmonic Distortion	THD		•
	Individual Harmonics	2nd ~ 31st (Voltage and Current)		•
	Current K Factor	KF		•
	Voltage Crest Factor	CF		•
	Voltage Unbalance	U_unbl		•
	Current Unbalance	I_unbl		•
TIME	Real Time Clock (Year, Month, Date, Hour, Minute, Second)		•	•
ALARMING	Over/Under Limit Alarming		•	•
DATA LOGGING	Up to 4MB memory storage		•	•
COMMUNICATION PORT	Infrared		•	•
	RS485		•	•
	Ethernet		Option	Option
COMMUNICATION PROTOCOL	MODBUS-RTU Protocol		•	•
I/O OPTION	2 Channel Pulse Output, Second Pulse, Demand Cycle		•	•
	8 Channel Digital Input with 15Vdc Power Supply		Option	Option

FEATURES

Metering

- Voltage: Phase voltage V1, V2, V3; line voltage V12, V23, V31
- Current: Total current and current for each circuit
- Power and Power Factor: P, Q, S and PF for total and each circuit
- Frequency: System frequency F
- Demand: Power and current demand for total and each circuit

Time of Use (TOU)

TOU can be used according to different regional billing requirements. AcuRev 2000 series supports up to 4 tariffs, 14 schedules, 14 segments, weekend and holiday programming as well as energy (kWh) pulse output.

Statistics

The AcuRev 2000 series has a built in self-check and validation function. Upon various conditions (such as energy and demand resetting, system parameter updates or alarming) the meter will record the event and time stamp it into the statistical log. Relay outputs can also then be triggered when any of the conditions are met.

Over/Under Limit Alarming

Over/under limit alarming parameters can be set according to user's preference. If an indicated parameter is over/under its setting limit and persists over the specified time interval, an alarm signal will be activated via its relay output ports. Alarm records and time stamps are stored in the memory.

Data Logging

With 4MB of onboard memory, AcuRev 2000 series can log real-time metering parameters, I/O status, and energy measurement. This information can be used for historical trending and system analysis.

Display and Installation

The AcuRev 2000 Series has a scrolling display LCD screen for multi-circuits parameter readout. The display module is factory installed together with the base unit or can be ordered as a remote panel mountable display. To provide easy installation and to cut costs, an internal current transformer option is also available. This allows 20A to 80A current to be directly connected to the meter, therefore eliminating the need for external CT's. However the use of external CT's is another available configuration to allow for retrofit or higher current applications.

Power Quality Analysis

Power quality parameters such as voltage and current THD, individual voltage and current harmonics, voltage crest factor, current K factor, voltage and current unbalance, etc. will be monitored.

I/O Option

I/O ports from the AcuRev 2000 series expands the capability and functionality of the energy meter. Standard output ports provide energy (kWh) pulse output and time pulse output; digital inputs (DI) provide pulse counting from water, electricity and gas meter, and monitor switch status; relay outputs (RO) react upon alarming conditions.

Communication

The AcuRev 2000 series supports multiple communication options including:

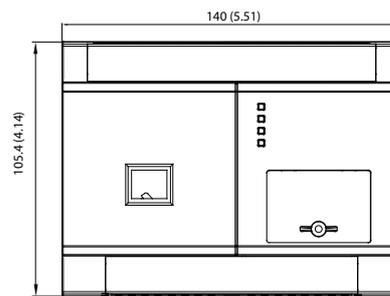
- Modbus-RTU via RS485 serial port
- Modbus-TCP, SMTP and HTTP via Ethernet
- Infrared data port

DIMENSIONS

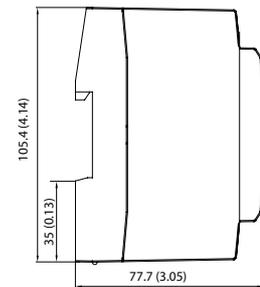
The AcuRev 2000 series base unit and modules are designed to be mounted on a 35mm DIN rail (EN 50022 standard).

Type	Dimension
Base Unit	L x W x H 140x105.4x77.7mm
EM Module	L x W x H 67x105.4x77.7mm
DM Module	L x W x H 153x105.4x77.7mm
External Display Module	L x W x H 72x72x26.5mm

Meter Base



Front view



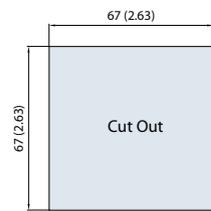
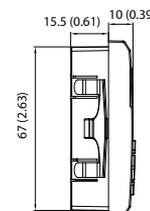
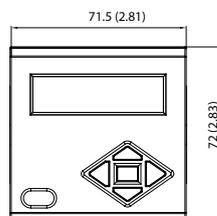
Side view

Unit: mm (inch)

Display Module

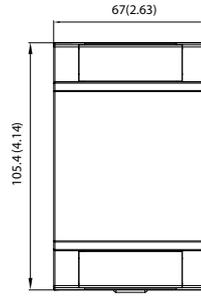
Display Module is designed with flexibility in mind, it can be installed together with the base unit or can be mounted on a panel.*

* (when ordered as a separate module. Please see ordering information for details).

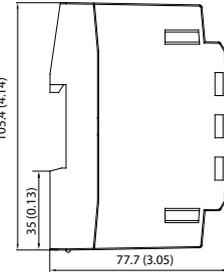


Unit: mm (inch)

EM Module



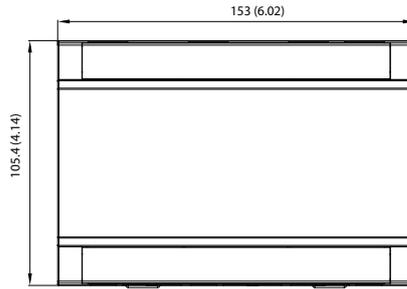
Front view



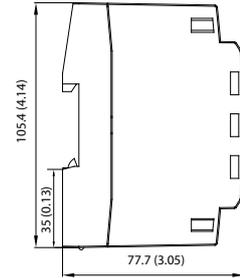
Side view

Unit: mm (inch)

DM Module



Front view



Side view

Unit: mm (inch)

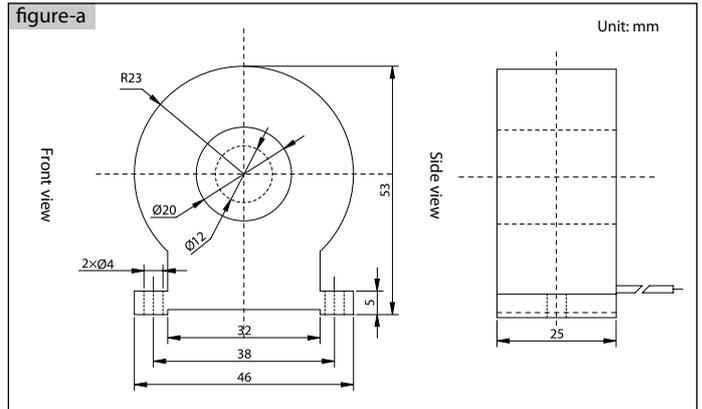
Current Transformer



CCT-20/CCT-80

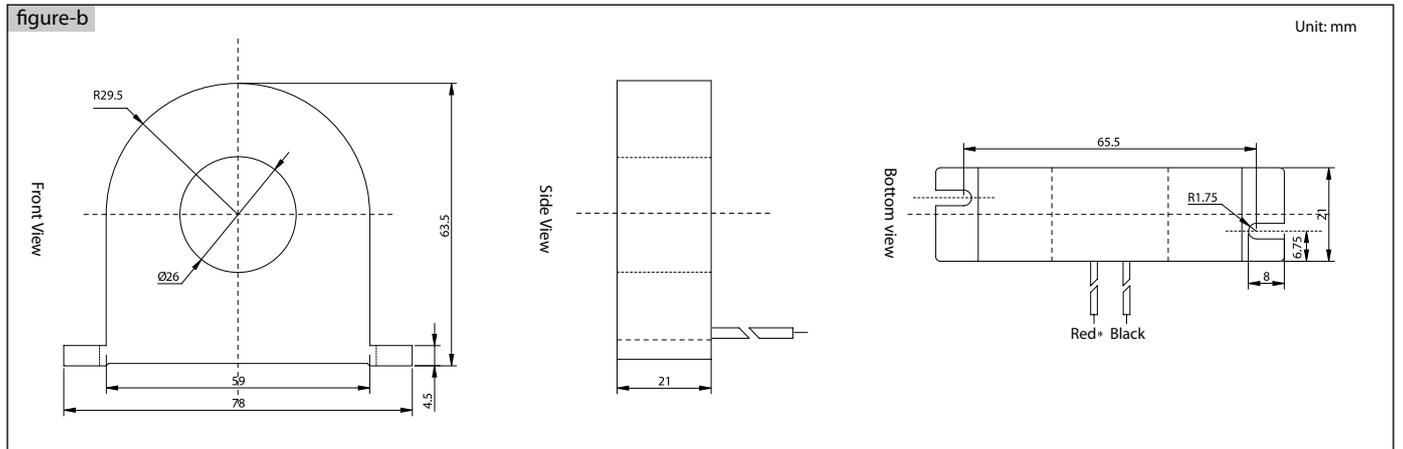


CCT-150/CCT-200



Unit: mm

figure-b

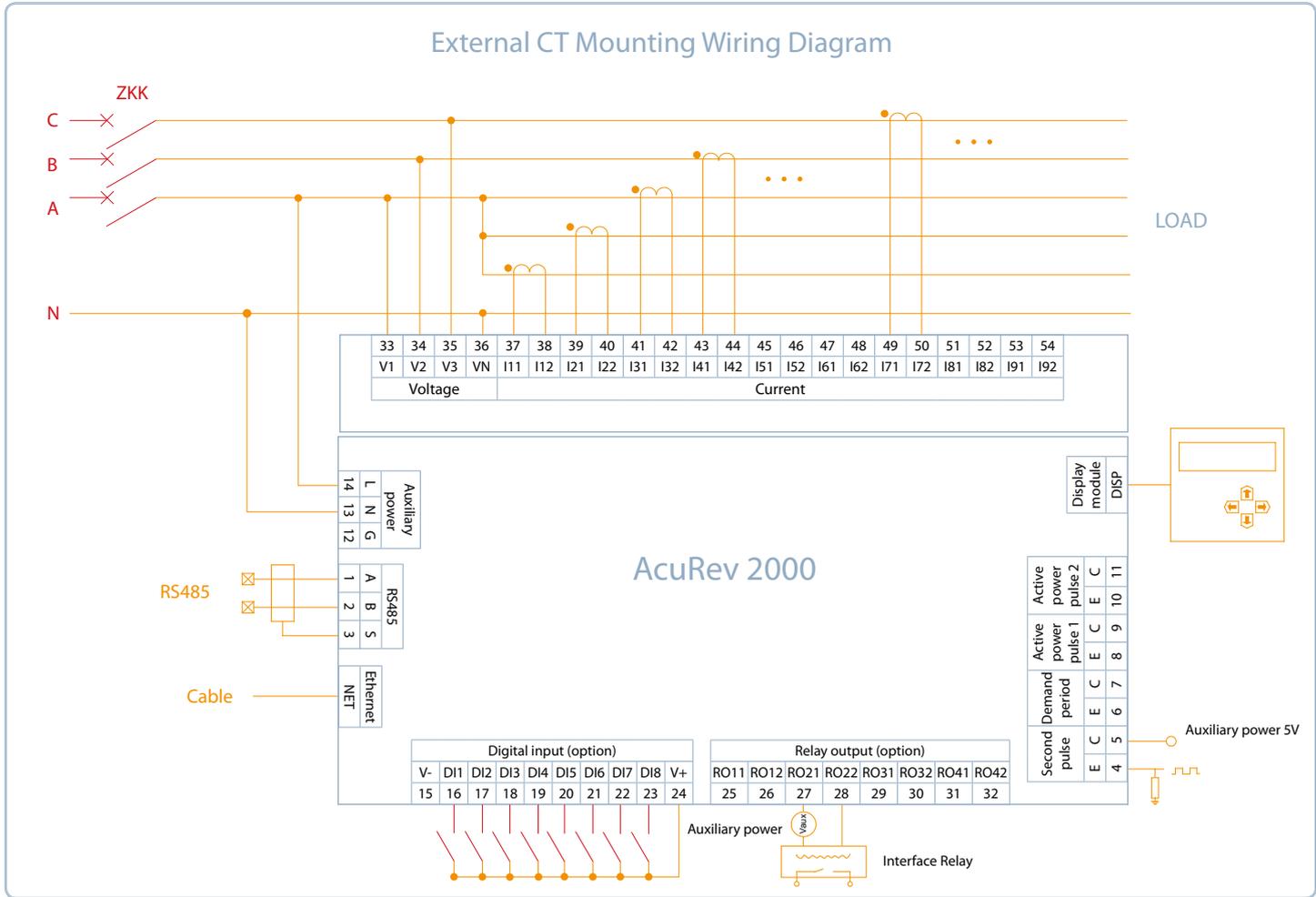


Unit: mm

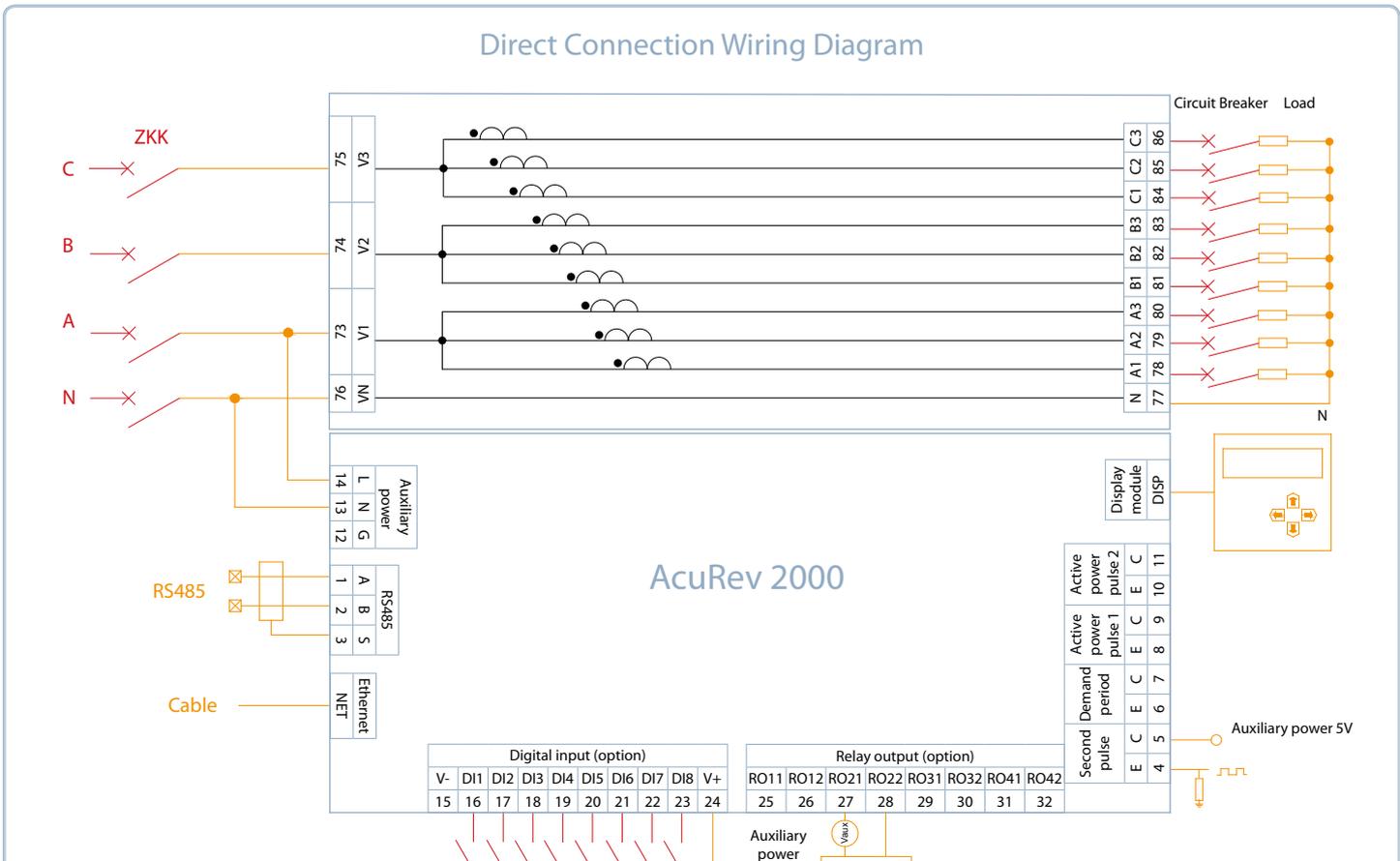
Type	Ø	Height (mm)	Width (mm)	Thickness (mm)	Figure
CCT-20	12	53	46	25	figure-a
CCT-80	20	53	46	25	
CCT-150	26	63.5	78	21	figure-b
CCT-200	26	63.5	78	21	

TYPICAL WIRING

External CT Mounting Wiring Diagram



Direct Connection Wiring Diagram



SPECIFICATIONS

MEASURE		
Parameter	Accuracy ± (%rdg)	Range
kWh	1%	0~999999.9kwh
V	0.5%	10~400V
I	0.5%	5mA~10000A
P	1%	4000.0kW
Q	1%	4000.0kvar
S	1%	4000.0kVA
PF	1%	-1.000~1.000
Freq	0.2%	45~65Hz
Activepower Demand	1%	4000.0kW
Current Demand	0.5%	5mA~10000A
Harmonic	2%	0~100%
Unbalance	1%	0~100%
Meter Running Time		0~999999.9 hours

INPUT	
Voltage Input	
Nominal Full Scale	400Vac L-N, 690Vac L-L
Withstand	1500Vac continuous, 2500Vac, 50/60Hz for 1 minute
Input Impedance	2Mohm per phase
Metering Frequency	45Hz~65Hz
PT Burden	<0.2VA

Current Input (wired directly or through CT)	
Through CT	See ordering information.
Directly	Each loop current limit: 20A-80A

POWER SUPPLY	
Operating Range	100-415Vac, 50-60Hz; 100-300Vdc
Burden	10VA

IO	
Digital Input (DI)	
Input Style	Dry node
Input Current (MAX)	2mA
Input Voltage Range	15~30V
Start Voltage	12V
Stop Voltage	10V
Pulse Frequency (MAX)	100Hz, 50% Duty cycle
SOE Resolution	2ms

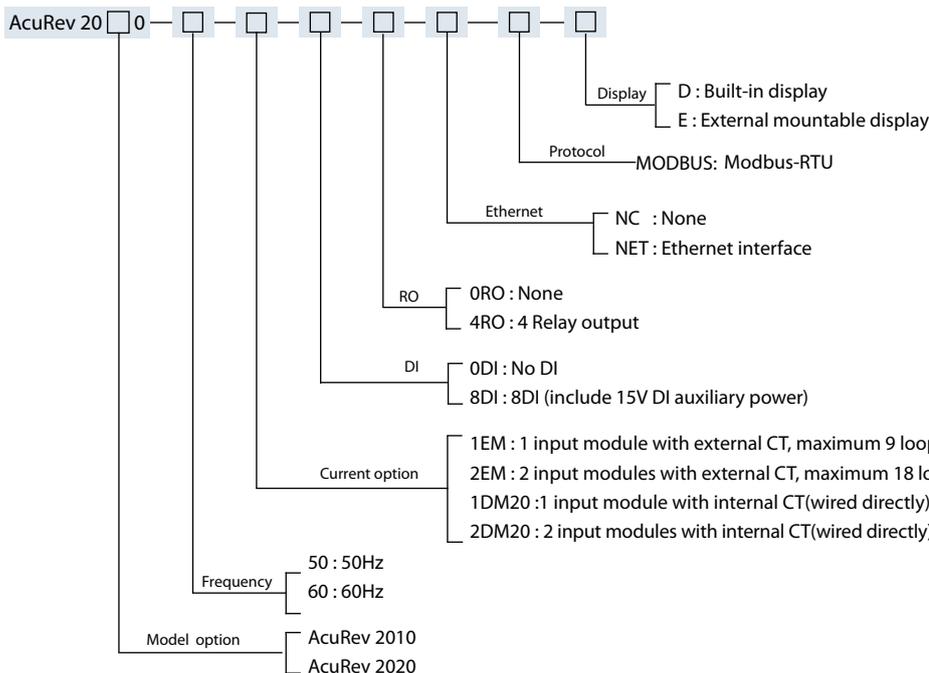
Auxiliary Power of DI	
Output Voltage	24VDC
Rated Power	1W

Relay Output (RO)	
Switching Voltage(MAX)	250Vac, 30Vdc
Load Current	3A
Set Time	10ms (MAX)
Contact Resistance	100mΩ (MAX)
Isolation Voltage	2500V
Mechanical Life	1.5x10 ⁷

OPERATING ENVIRONMENT	
Operation temperature	-25°C~ 70°C
Storage temperature	-40°C~ 85°C
Humidity	5%~95% non-condensing
Altitude	3000m

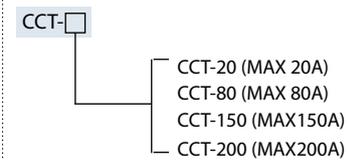
MEASUREMENT STANDARD	
Measurement Standard	
IEC62053-21	Static meters for active energy (classes 1)
Environment Standard	IEC 60068-2
Safety Standard	IEC 61010-1

ORDERING INFORMATION



CT Ordering Information

Solid Core design (can not open, install CT first when wiring)



Specification: length of secondary line is about 1.5m



Accuenergy Corporation
 Los Angeles-Toronto-Beijing
 North America Toll Free: 1-877-721-8908
 Web: www.accuenergy.com
 Email: marketing@accuenergy.com

Revision Date: Apr., 2012
 Document # 2012E1105