MEASURE **TODAY.** ENSURE **TOMORROW**

ePrime Series 101E/103E

SMART ELECTRICITY METER

FEATURES

- Smart electricity meter for reliable energy measurement in single phase(220-230VAC) or three phase(230/400VAC) circuit
- Designed for metering residential and commercial energy consumers in distribution networks
- Class 1 accuracy
- Very low starting current
- Manufactured in accordance with the relevant DIN / IEC and MID standards
- Ready for AMR with Pulse/M-Bus/MODBUS/BACnet/ Wireless interface
- SpireCapture AMR/AMI and Billing solutions
- Compatible with Spire Metering's split core current transformer
- Ideal economic solution for electricity consumption monitoring and billing purpose

SPIRE METERING TECHNOLOGY

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ePrime Series 101E/103E

SMART ELECTRICITY METER

Single-Phase Meter

The 101E is a new addition to Spire Metering's ePrime Series smart meter product family. It is a rail-mount type two-wire single phase electric meter.

The 101E utilizes state-of-the-art technology within the electronic kWh metering industry. It offers all the measurement capabilities required to accurately monitor electricity in residential and commercial buildings.

Features

- Class 1 (CI…B) accuracy
- Excellent long term stability
- 4 modules (72mm) casing, rail-mount style. Designed for DIN, IEN and EN standards
- Meet MID B&D standard. Billing grade
- Baud Rate selectable among 300, 2400, 9600
- M-Bus, MODBUS RTU, Pulse, BACnet ,RF Wireless and other communication protocols available
- Very low starting current. Exceptionally suited for photovoltaic energy systems and general use
- For connection current up to 100A. Or, connection with CT 1.5(6)A
- User friendly reading, setting and programming tool

Meter Specifications

General	
Frequency (Hz)	50/60
Frequency range	±5%
Operating humidity	≤ 75%
Storage humidity	≤ 95%
Operating temperature	-10°C - +50°C
Storage temperature	-30°C - +70°C
International standard	EN50470-1, EN50470-3
Accuracy class	1
Enclosure Protection	IP51 (other grade is available)

Insulating encased meter of protective class II

Voltage(v)	
Nominal voltage AC	1×220-230VAC
Voltage range	0.7-1.3Un
Insulation capabilities:	
- AC voltage withstand	2KV for 1 minute
- Impulse voltage withstand	6kV-1.2μS waveform

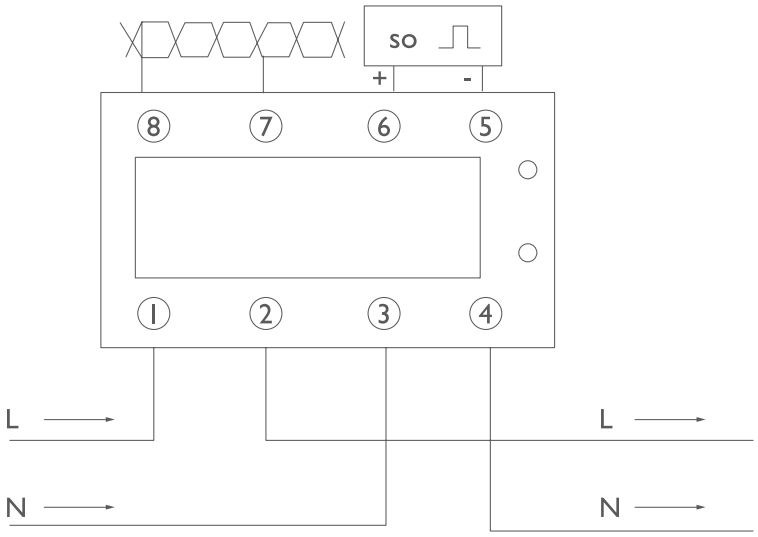
Current(A)	
Imin	0.5
Itr	1
Iref(Ib)	10
Imax	100
Ist	40mA

Standards	
MID standard according to	EN50470-1,EN50470-3
International standard according to	IEC62053-11,IEC62053-21
Over current withstand	30Imax for 0.01s
Operational frequency range	50-60Hz ±10%
Internal power consumption	≤2W / 10VA
Test output flash rate (RED LED)	1600imp/kWh
Pulse output rate (pins 5 & 6)	1600imp/kWh
Reverse indicator (RED LED)	Current reverse
Consumption indicator (RED LED)	Flashing at load running
Communication indicator(GREEN LDE)	Flashing at communication running
Data communication port	M-Bus, MODBUS, BACnet, Wireless or Pulse . Please contact support@spiremt.com for interface specs.

Basic errors		
0.05Ib	Cosφ = 1	±1.5%
0.1Ib	Cosφ = 0.5L	±1.5%
	Cosφ = 0.8C	±1.5%
0.1Ib - Imax	Cosφ = 1	±1.0%
0.2Ib - Imax	Cosφ = 0.5L	±1.0%
	Cosφ = 0.8C	±1.0%

Enclosure	
Standard	IP51 protection
Enhanced	Available upon request
Front panel	PC inflammable retarding
Cover	ABS inflammable retarding
Base	ABS inflammable retarding

Wiring Diagram



Terminal#	Function
1	Line (In)
2	Line (Out)
3	Neutral (In)
4	Neutral (Out)
5	Pulse (-)
6	Pulse (+)
7	485B/MBUS1
8	485A/MBUS2

Three-Phase Meter

The 103E is a DIN rail four wire three phase smart energy meter. It is a new addition to Spire Metering's ePrime Series smart meter product family. It utilizes state-of-the-art technology within the electronic kWh metering industry.

103E offers all the measurement capabilities required to accurately monitor electricity consumption. All three phases can be monitored at the same time.

Features

- Class 1 (CI…B) accuracy
- Excellent long term stability
- 7 modules (126mm) casing, rail-mount style. Designed for DIN, IEN and EN standards
- Meet MID B&D standard. Billing grade
- Baud Rate selectable among 300, 2400, 9600
- M-Bus, MODBUS RTU, Pulse, BACnet ,RF Wireless and other communication protocols available
- Very low starting current. Exceptionally suited for photovoltaic energy systems and general use
- For connection current up to 100A. Or, connection with CT 1.5(6)A. 27 CT changing ratios to choose
- User friendly reading, setting and programming tool

Meter Specifications

General	
Operating humidity	≤ 75%
Storage humidity	≤ 95%
Operating temperature	-10°C - +50°C
Storage temperature	-30°C - +70°C
International standard	IEC 62053-21
Accuracy class	1
Enclosure protection	IP51
Insulating encased meter of protective class II	

Meter specifications	
Nominal voltage (Un)	230/400V AC (3~)
Operational voltage	161/279 – 300/520V AC (3~)
Insulation capabilities:	
- AC voltage withstand	2KV for 1 minute
- Impulse voltage withstand	6KV – 1.2μS waveform
Basic current (Ib):	
CT type	1.5A
Directly connect	10A
Maximum rated current (Imax):	
CT type	6A
Directly connect	100A
Operational current range	0.4% Ib- Imax
Over current withstand	30Imax for 0.01s
Operational frequency range	50Hz ±10%
Internal power consumption	≤2W / 10VA per phase
Test output flash rate (PULSE LED)	
CT type	1600imp/kWh
Directly connect	400imp/kWh
Test pulse output rate (pins 8 & 9):	
CT type	1600imp/kWh
Directly connect	400imp/kWh
CT Changing-Ratio	27 ratios to choose
Power supply indicator	Yes
Consumption indicator	Flashing when load running
Communication indicator	Flashing when communicating
Data communication port	M-bus, MODBUS, BACnet, Wireless or Pulse . Please contact support@spiremt.com for interface specs.

M-bus communication specifications

Baud rate	300, 2400(default), or, 9600
Allowable cable range	≤380m 250PCS ≤3600m 64PCS
Downlink signal	Master to slave,Voltage modulation
Uplink signal	Slave to master, Current modulation
Cable	JYSTY (n×2×0.8)
Protocol	EN13757-3

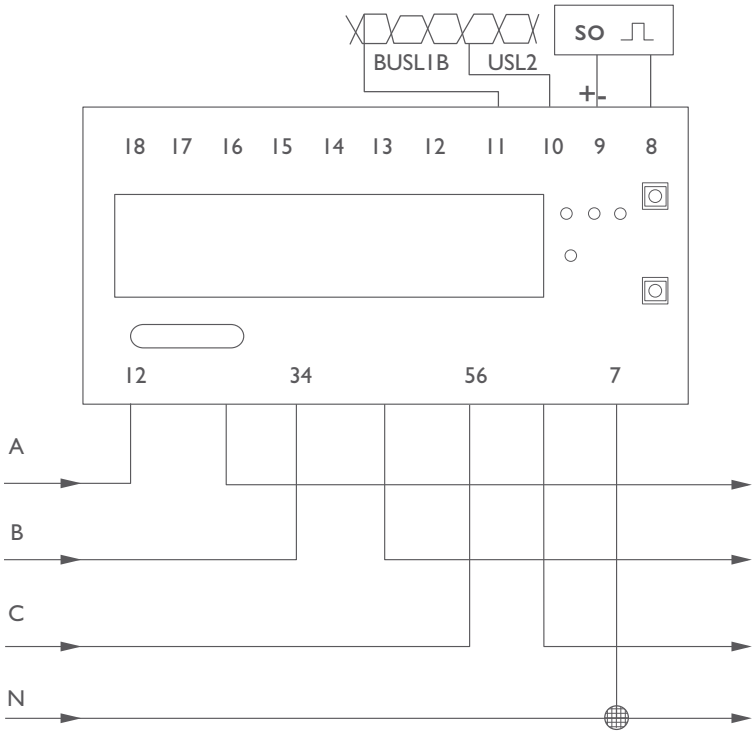
Basic errors

-With balanced loads:		
0.05Ib	Cosφ = 1	±1.5%
0.1Ib	Cosφ = 0.5L	±1.5%
	Cosφ = 0.8C	±1.5%
0.1Ib - Imax	Cosφ = 1	±1.0%
0.2Ib - Imax	Cosφ = 0.5L	±1.0%
	Cosφ = 0.8C	±1.0%
-With single phase loads:		
0.1Ib - Imax	Cosφ = 1	±2.0%
0.2Ib - Imax	Cosφ = 0.5L	±2.0%

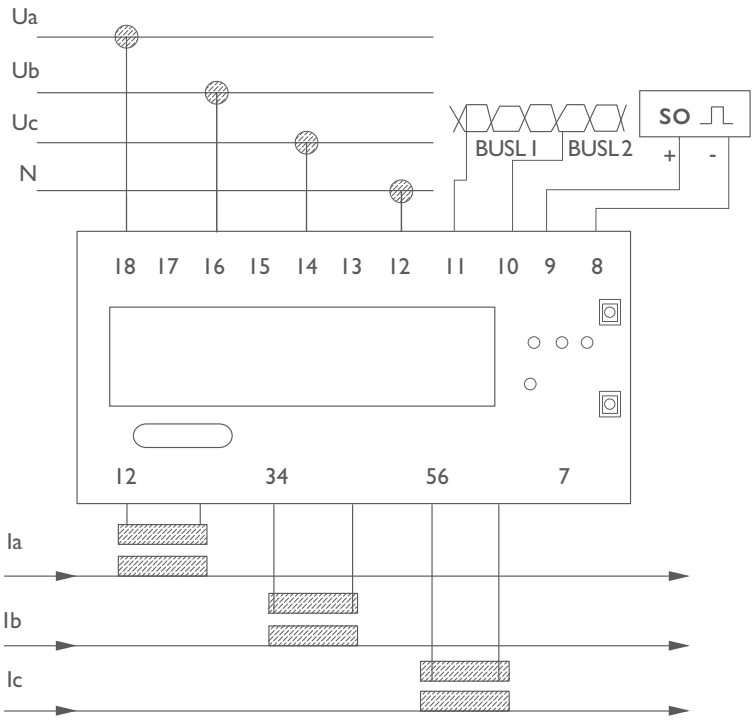
Enclosure

Standard	IP51 protection
Enhanced	Available upon request
Front panel	PC inflammable retarding
Cover	ABS inflammable retarding
Base	ABS inflammable retarding

Wiring Diagram



Terminal#	Function
1/2	Ia (In/Out)
3/4	Ib (In/Out)
5/6	Ic (In/Out)
7	Neutral
8	Pulse (-)
9	Pulse (+)
10	485B/MBUS1
11	485A/MBUS2



Terminal#	Function
1/2	Ia (In/Out)
3/4	Ib (In/Out)
5/6	Ic (In/Out)
7	Neutral
8	Pulse (-)
9	Pulse (+)
10	485B/MBUS1
11	485A/MBUS2
18/16/14/12	Phase A/B/C/N

Split Core Current Transformer

The ePrime Series current transformers, model TP-xxx, are specially designed to facilitate the installation in new or existing networks. They may be installed without opening any cable or bus bar circuit.

Conventional current transformers usually require the interruption of the primary side circuit to pass cables or bus bars through the transformer core to connect such cables to the primary terminals. The TP-xxx transformer has a unique core which can be easily opened and re-installed without any supply interruption, thus, it saves time and installation cost

Features

- Small size
- Easy mount
- Wide inner window, allowing clamping of bus cables or bus bars
- Wide range of sizes to accommodate all the existing installations
- High accuracy and reliability
- Compatible with ePrime Series electricity meters
- For residential and commercial buildings

Technical Specifications

Primary Current	Ia (In/Out)
Secondary Current	Ib (In/Out)
Standard Approval	Ic (In/Out)
Maximum Voltage	Neutral
Frequency	Pulse (-)
Rated Load	Pulse (+)
Accuracy Class	485B/MBUS1
Short-time Thermal Current	485A/MBUS2
Rated Security Coefficient	

How to Order

Single phase

101E - □ - □

Output Interface		
Pulse		0
M-Bus		1
RS485/Modbus		2
RF433MHz	(With OMS-wMBus Module SC-TR433)	3
RF470MHz	(With Long-Range Module SC-TR470)	4
RF868MHz	(With OMS-wMBus Module SC-TR868)	5

Max Rated Current	
40A	1
100A	2
200A	3
400A	4

Note:

* Transformer (split core CT) will be automatically included in the quote if the Max Rated Current is above 100A unless instructed differently.

** It is recommended to select the meter with a rated current higher than the actual maximum load current. For example, if your load current is about 95A~100A, it is better to select a 200A meter.

How to Order

Three phase

103E - ☐ - ☐

Output Interface		
Pulse		0
M-Bus		1
RS485/Modbus		2
RF433MHz	(With OMS-wMBus Module SC-TR433)	3
RF470MHz	(With Long-Range Module SC-TR470)	4
RF868MHz	(With OMS-wMBus Module SC-TR868)	5

Max Rated Current	
40A	1
100A	2
200A	3
400A	4
800A	5
1000A	6
1500A	7
2000A	8
3000A	9
4000A	10
5000A	11

Note:

* Transformers (split core CT) will be automatically included in the quote if the Max Rated Current is above 100A unless instructed differently.

** It is recommended to select the meter with a rated current higher than the actual maximum load current. For example, if your load current is about 95A~100A, it is better to select a 200A meter.

About Spire Metering Technology

Formerly Shenitech, Spire Metering is a global leader in flow and energy management solutions. Through continuous innovation, we transform complex cutting-edge technologies into affordable, reliable solutions for accurate flow and energy measurement. Spire Metering offers water, heat, electricity and gas meters as well as AMR/AMI solutions. To find out how we can help today, please tell us about your application.