



SMART TTC CO., LTD.

Smart Meter

Smart TTC



TIS 1030-2552
TIS 2543-2555
TIS 2544-2555



ISO 9001 : 2015



สถาบันไฟฟ้าและอิเล็กทรอนิกส์
ELECTRICAL AND ELECTRONICS INSTITUTE



Version : 082020

COMPANY PROFILE



Thai Tele-Container Company Limited was established on July 28th, 1994 and has spearheaded the manufacturing of container box for telecommunication equipment used as mobile-base station for mobile signals. Formerly, the company worked in collaboration with TOT Corporation Public Company Limited to create the prototype which has later come into widespread use today.

Later on, the company has extended the manufacturing line to include watt-hour meter for both Metropolitan Electricity Authority and Provincial Electricity Authority of Thailand to respond to the growth of national development and the arrival of the digital world. This expansion aims to embrace the Thailand 4.0, the latest National Economic and Social Development Plan which requires technological innovation to elevate the country to a Smart Life. The company, consequently, has reinvented the meter into a digital model called the Smart Meter and has given itself a new name as Smart TTC Company Limited to catch up with the moving world.

MAIN FUNCTION SMART METER

MAIN FUNCTION SMART METER	TECHNICAL FEATURES	
METER READING	METERING DATA	<ul style="list-style-type: none"> . 4 quadrant measurement active and reactive energy . Instantaneous measurement of U,I,PF . Average measurement P,Q and power factor
	LOCAL METER READING	<ul style="list-style-type: none"> . Optical port for meter configuration using Viewer software
CURRENT LIMIT	CURRENT LIMITING	<ul style="list-style-type: none"> . Overcurrent disconnect and reconnect . Event log
REMOTE CONNECT/DISCONNECT	REMOTE COMMUNICATION	<ul style="list-style-type: none"> . Remote disconnect and reconnect . Event log
TAMPER DETECTION	TAMPER DETECTION	<ul style="list-style-type: none"> . Terminal cover detection . Battery cover opening detection . Open module detection
PREPAYMENT	PREPAYMENT FUNCTION	<ul style="list-style-type: none"> . Recharge bill . Allowed to overdraft . Overdraft time threshold
OUTAGE MONITORING	OUTAGE MONITORING	<ul style="list-style-type: none"> . Power outage . Power restoration . Event log
RECORDING	RECORDING	<ul style="list-style-type: none"> . Non-volatile memory . Load profile . Event log . 2 multitask groups
POWER QUALITY MONITORING	POWER QUALITY MONITORING	<ul style="list-style-type: none"> . Phase loss voltage . Sag- swell voltage . Voltage unbalance . Power outage . Over current . Over maximum demand . Event log
FUNCTION SELF-CHECKING	FUNCTION SELF-CHECKING	<ul style="list-style-type: none"> . Low Battery . Internal failures such as clock fail, memory fail . Disconnect and reconnect switch fail
DEMAND RESPONSE	DEMAND RESPONSE	<ul style="list-style-type: none"> . Maximum demand kw . Maximum demand kvar . Import and export



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MAIN FUNCTION SMART METER

MAIN FUNCTION SMART METER	TECHNICAL FEATURES	
SUPPORT TOU	TARIFF MANAGEMENT	<ul style="list-style-type: none"> . Real -time clock with super cap back-up . Tariff structure 4 tariff 8 tier . Minimum interval 1-15 min register for energy . Programmable load profile up to 60 days
UPGRADE FIRMWARE	UPGRADE FIRMWARE	<ul style="list-style-type: none"> . Optical local communication port . RS 485 port . Remote communication upgrade
SECURITY	SECURITY SYSTEM	<ul style="list-style-type: none"> . 3 Groups of accessible password . Administrators . Programmers . Readers
IN HOME DISPLAY (IHD)	IN HOME DISPLAY (IHD) EVENT LOG OPTION	<ul style="list-style-type: none"> . Support in home display (IHD) . Tamper detection . Power Outage and power restoration . Phase Loss . Under voltage . Over voltage . Sag- swell voltage . Voltage unbalance . Over current . Over maximum demand . Communication module . Battery and memory fail . Relay Disconnect/reconnect . Date and Time change . Password change . Login user . Plug & Play technology . Optical port . RS 485 port

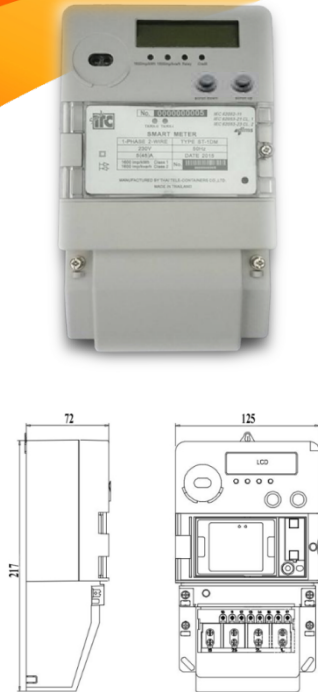


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SMART METER

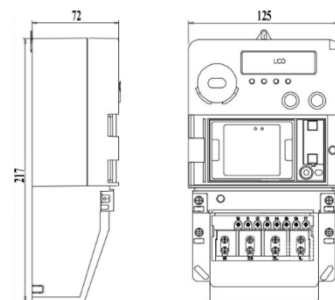
TECHNICAL FEATURES: ST-1DM



MODEL	ST-1DM
PHASE	SINGLE PHASE 2 WIRE
CONNECTION MODEL	DIRECT CONNECT
INSTALLATION TYPE	SUSPENSION INDOOR/OUTDOOR
IMPULSE VOLTAGE	6 KV
OPERATEING VOLTAGE	230 \pm 10% VAC
CURRENT RATING ,Ib(I _{max})	5(45) A
FREQUENCY	50 Hz \pm 2.5%
OPERATING TEMPERATURE	- 20 C to +70 C
MAX HUMIDITY	95 %
PROTECTION	2 LEVEL
PROTECTIVE	IP54
DISPLAY MODE	LCD
POWER CONSUMTION	<2 W and <4 VA
START CURRENT	0.004 Ib
IMPUSE CONSTANT	1600/kWh/kvarh
ACTIVE ENERGY	CLASS 1
REACTIVE ENERGY	CLASS 2
COMMUNICATION/PROTOCOL	DLMS/COSEM
BATTERY	1/2 AA 3.6V (SUPERCAP)
METERIAL OF CASE	POLYCARBONATE
CONDUCTOR DIAMETER	7.0 MM.
OVERALL DIAMETER	10.0 MM.
SIZE	125X72X217 MM.
WEIGH	1 KG
STANDARD	IEC62052-11 IEC62053-21 IEC62053-23:2003 TIS 1030-2552 TIS 2543-2555 ISO9001:2015
CERTIFICATE	

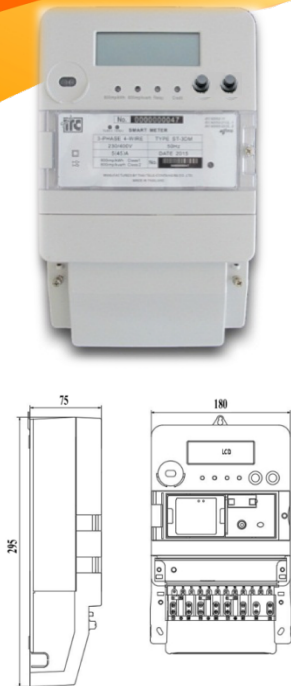
TECHNICAL FEATURES: ST-1DH

MODEL	ST-1DH
PHASE	SINGLE PHASE 2 WIRE
CONNECTION MODEL	DIRECT CONNECT
INSTALLATION TYPE	SUSPENSION INDOOR/OUTDOOR
IMPULSE VOLTAGE	6 KV
OPERATEING VOLTAGE	230 \pm 10% VAC
CURRENT RATING ,Ib(I _{max})	5(100) A
FREQUENCY	50 Hz \pm 2.5%
OPERATING TEMPERATURE	- 20 C to +70 C
MAX HUMIDITY	95 %
PROTECTION	2 LEVEL
PROTECTIVE	IP54
DISPLAY MODE	LCD
POWER CONSUMTION	<2 W and <4 VA
START CURRENT	0.004 Ib
IMPUSE CONSTANT	1600/kWh/kvarh
ACTIVE ENERGY	CLASS 1
REACTIVE ENERGY	CLASS 2
COMMUNICATION/PROTOCOL	DLMS/COSEM
BATTERY	1/2AA 3.6V (SUPERCAP)
METERIAL OF CASE	POLYCARBONATE
CONDUCTOR DIAMETER	9.2 MM.
OVERALL DIAMETER	12.5 MM.
SIZE	125X72X217 MM.
WEIGH	1.5 KG
STANDARD	IEC62052-11 IEC62053-21 IEC62053-23:2003 TIS 1030-2552 TIS 2543-2555 ISO9001:2015
CERTIFICATE	



SMART METER

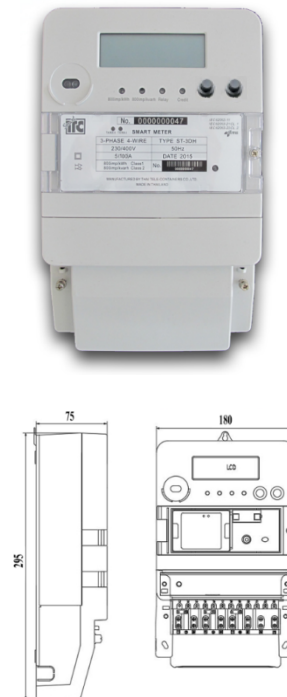
TECHNICAL FEATURES: ST-3DM



MODEL	ST-3DM
PHASE	3 PHASE , 4 WIRES
CONNECTION MODEL	DIRECT CONNECT
INSTALLATION TYPE	SUSPENSION INDOOR/OUTDOOR
IMPULSE VOLTAGE	6 KV
OPERATEING VOLTAGE	230/400 \pm 10% VAC
CURRENT RATING ,Ib(I _{max})	5(45) A
FREQUENCY	50 Hz \pm 2.5%
OPERATING TEMPERATURE	- 20 C to + 70 C
MAX HUMIDITY	95 %
PROTECTION	2 LEVEL
PROTECTIVE	IP54
DISPLAY MODE	LCD
POWER CONSUMTION	<2 W and <4 VA
START CURRENT	0.004 Ib
IMPUSE CONSTANT	800/kWh/kvarh
ACTIVE ENERGY	CLASS 1
REACTIVE ENERGY	CLASS 2
COMMUNICATION/PROTOCOL	DLMS/COSEM
BATTERY	1/2AA 3.6V (SUPERCAP)
METERIAL OF CASE	POLYCARBONATE
CONDUCTOR DIAMETER	7.0 MM.
OVERALL DIAMETER	10.0 MM.
SIZE	180X75X295 MM.
WEIGH	2 KG
STANDARD	IEC62052-11 IEC62053-21 IEC62053-23:2003 TIS 1030-2552 TIS 2543-2555 ISO9001:2015
CERTIFICATE	

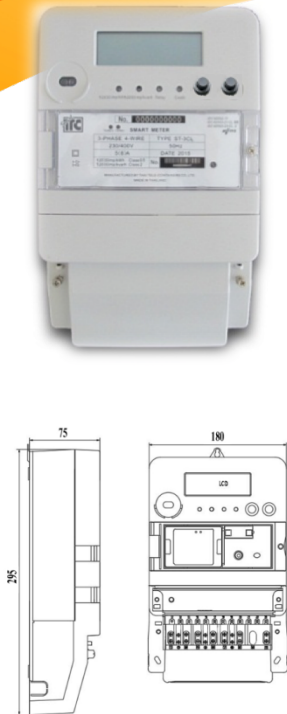
TECHNICAL FEATURES: ST-3DH

MODEL	ST-3DH
PHASE	3 PHASE , 4 WIRES
CONNECTION MODEL	DIRECT CONNECT
INSTALLATION TYPE	SUSPENSION INDOOR/OUTDOOR
IMPULSE VOLTAGE	6 KV
OPERATEING VOLTAGE	230/400 \pm 10% VAC
CURRENT RATING ,Ib(I _{max})	5(100) A
FREQUENCY	50 Hz \pm 2.5%
OPERATING TEMPERATURE	- 20 C to + 70 C
MAX HUMIDITY	95 %
PROTECTION	2 LEVEL
PROTECTIVE	IP54
DISPLAY MODE	LCD
POWER CONSUMTION	<2 W and <4 VA
START CURRENT	0.004 Ib
IMPUSE CONSTANT	800/kWh/kvarh
ACTIVE ENERGY	CLASS 1
REACTIVE ENERGY	CLASS 2
COMMUNICATION/PROTOCOL	DLMS/COSEM
BATTERY	1/2AA 3.6V (SUPERCAP)
METERIAL OF CASE	POLYCARBONATE
CONDUCTOR DIAMETER	9.2 MM.
OVERALL DIAMETER	12.5 MM.
SIZE	180X75X295 MM.
WEIGH	2.5 KG
STANDARD	IEC62052-11 IEC62053-21 IEC62053-23:2003 TIS 1030-2552 TIS 2543-2555 ISO9001:2015
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SMART METER

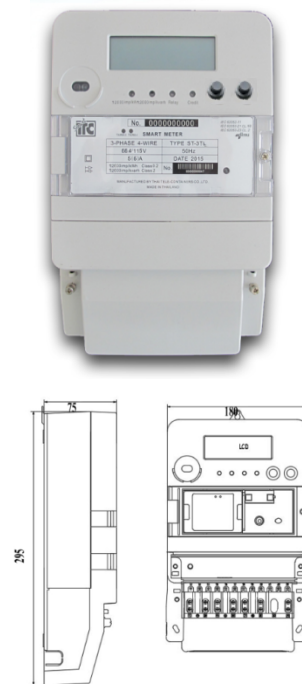
TECHNICAL FEATURES: ST-3CL



MODEL	ST-3CL
PHASE	3 PHASE , 4 WIRES
CONNECTION MODEL	CONNECT CT
INSTALLATION TYPE	SUSPENSION INDOOR/OUTDOOR
IMPULSE VOLTAGE	6 KV
OPERATEING VOLTAGE	230/400 \pm 10% VAC
CURRENT RATING ,In(I _{max})	5(6) A
FREQUENCY	50 Hz \pm 2.5%
OPERATING TEMPERATURE	- 40 C to + 70 C
MAX HUMIDITY	95 %
PROTECTION	2 LEVEL
PROTECTIVE	IP54
DISPLAY MODE	LCD
POWER CONSUMTION	<2 W and <4 VA
START CURRENT	0.003 Ib
IMPUSE CONSTANT	12,000/kWh/kVarh
ACTIVE ENERGY	CLASS 0.5s
REACTIVE ENERGY	CLASS 2
COMMUNICATION/PROTOCOL	DLMS/COSEM
BATTERY	1/2AA 3.6V (SUPERCAP)
METERIAL OF CASE	POLYCARBONATE
CONDUCTOR DIAMETER	4.90 MM.
OVERALL DIAMETER	10.45 MM.
SIZE	180X75X255 MM.
WEIGH	2 KG
STANDARD	IEC62052-11 IEC62053-22 IEC62053-23:2003 TIS 1030-2552 TIS 2544-2555 ISO9001:2015
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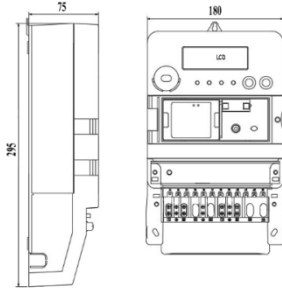
TECHNICAL FEATURES: ST-3TL

MODEL	ST-3TL
PHASE	3 PHASE , 4 WIRES
CONNECTION MODEL	CONNECT VT
INSTALLATION TYPE	SUSPENSION INDOOR/OUTDOOR
IMPULSE VOLTAGE	6 KV
OPERATEING VOLTAGE	66.4/115 \pm 10% VAC
CURRENT RATING ,In(I _{max})	5(6) A
FREQUENCY	50 Hz \pm 2.5%
OPERATING TEMPERATURE	- 40 C to + 70 C
MAX HUMIDITY	95 %
PROTECTION	2 LEVEL
PROTECTIVE	IP54
DISPLAY MODE	LCD
POWER CONSUMTION	<2 W and <4 VA
START CURRENT	0.003 Ib
IMPUSE CONSTANT	12,000/kWh/kVarh
ACTIVE ENERGY	CLASS 0.2s
REACTIVE ENERGY	CLASS 2
COMMUNICATION/PROTOCOL	DLMS/COSEM
BATTERY	1/2AA 3.6V (SUPERCAP)
METERIAL OF CASE	POLYCARBONATE
CONDUCTOR DIAMETER	4.90 MM.
OVERALL DIAMETER	10.45 MM.
SIZE	180X75X295 MM.
WEIGH	2 KG
STANDARD	IEC62052-11 IEC62053-22 IEC62053-23:2003 TIS 1030-2552 TIS 2544-2555 ISO9001:2015
CERTIFICATE	



SMART METER

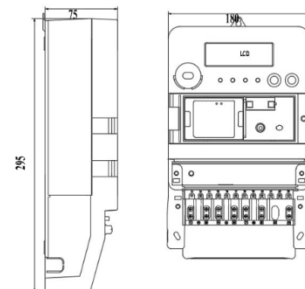
TECHNICAL FEATURES: ST-33TL



MODEL	ST-33TL
PHASE	3 PHASE , 3 WIRES
CONNECTION MODEL	CONNECT CT AND VT
INSTALLATION TYPE	SUSPENSION INDOOR/OUTDOOR
IMPULSE VOLTAGE	6 KV
OPERATEING VOLTAGE	3 X 110 \pm 10% VAC
CURRENT RATING ,In(I _{max})	5(6) A
FREQUENCY	50 Hz \pm 2.5%
OPERATING TEMPERATURE	- 40 C to + 70 C
MAX HUMIDITY	95 %
PROTECTION	2 LEVEL
PROTECTIVE	IP54
DISPLAY MODE	LCD
POWER CONSUMTION	<2 W and <4 VA
START CURRENT	0.003 I _b
IMPUSE CONSTANT	12,000/kWh/kVarh
ACTIVE ENERGY	CLASS 0.5s
REACTIVE ENERGY	CLASS 2
COMMUNICATION/PROTOCOL	DLMS/COSEM
BATTERY	1/2AA 3.6V (SUPERCAP)
METERIAL OF CASE	POLYCARBONATE
CONDUCTOR DIAMETER	4.90 MM.
OVERALL DIAMETER	10.45 MM.
SIZE	180X75X255 MM.
WEIGH	2 KG
STANDARD	IEC62052-11 IEC62053-22 IEC62053-23:2003 TIS 1030-2552 TIS 2544-2555 ISO9001:2015
CERTIFICATE	

TECHNICAL FEATURES: ST-3CL 3 ELEMENT

MODEL	ST-3CL 3 Element
PHASE	3 PHASE , 4 WIRES
CONNECTION MODEL	CONNECT CT/VT
INSTALLATION TYPE	SUSPENSION INDOOR/OUTDOOR
IMPULSE VOLTAGE	6 KV
OPERATEING VOLTAGE	110 - 230/400 \pm 10% VAC
CURRENT RATING ,In(I _{max})	5(6) A
FREQUENCY	50 Hz \pm 2.5%
OPERATING TEMPERATURE	- 40 C to + 70 C
MAX HUMIDITY	95 %
PROTECTION	2 LEVEL
PROTECTIVE	IP54
DISPLAY MODE	LCD
POWER CONSUMTION	<2 W and <4 VA
START CURRENT	0.003 I _n
IMPUSE CONSTANT	12,000/kWh/kVarh
ACTIVE ENERGY	CLASS 0.5s
REACTIVE ENERGY	CLASS 2
COMMUNICATION/PROTOCOL	DLMS/COSEM
BATTERY	1/2AA 3.6V (SUPERCAP)
METERIAL OF CASE	POLYCARBONATE
CONDUCTOR DIAMETER	4.90 MM.
OVERALL DIAMETER	10.45 MM.
SIZE	180X75X255 MM.
WEIGH	2 KG
STANDARD	IEC62052-11 IEC62053-22 IEC62053-23:2003 TIS 1030-2552 TIS 2544-2555 ISO9001:2015
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MAIN FUNCTION ELECTRONIC ENERGY METER

Support TOU

- Real-time clock with battery and super cap back up
- Tariff structure 4 tariff 8 tier
- Interval 1 to 15 min register for energy and demand
- Programmable load profile up to 90 days

Recording

- Non - volatile memory
- Load profile
- Up to 90 days

Billing data

- Auto billing
- Manual billing

Event log

- Tamper detection
- Terminal cover detection
- Missing neutral (0.5 A)
- Reverse phase
- Power outage
- Power restoration
- Load return
- Current bypass
- Over voltage
- Over current
- Over maximum demand
- Function self-checking
- Low battery
- Internal failures such as clock fail
- Memory fail

SPECIFICATIONS WIRELESS COMMUNICATION (Bluetooth)

Model	ST-BLE-EM
Technology	Bluetooth 4.2 Ver.
Frequency bands	2.400 ~ 2.4835 GHz
Baud rate	11520 bps.
Supply voltage	3.3 VDC
Specified operating range	- 40°C to + 85°C
Storage range limit	- 40°C to + 105°C
Relative humidity	Up to 90% at 40°C
Standard	DLMS/COSEM
Dimension	50 x 70 mm.
Weight	5g



ELECTRONIC ENERGY METER

TECHNICAL FEATURES: SE-1EMH



MODEL	SE-1EMH
PHASE	1 PHASE, 2 WIRES
CONNECTION MODEL	DIRECT CONNECT
INSTALLATION TYPE	SUSPENSION INDOOR/OUTDOOR
IMPULSE VOLTAGE	6 KV
OPERATEING VOLTAGE	230 ± 10% VAC
CURRENT RATING ,Ib(I _{max})	5(100) A
FREQUENCY	50 Hz ± 2.5%
OPERATING TEMPERATURE	-20 C° up to +70 C°
MAX HUMIDITY	95 %
PROTECTION	2 LEVEL
PROTECTIVE	IP54
DISPLAY MODE	LCD
POWER CONSUMTION	<2 W and <4 VA
START CURRENT	0.004 Ib
IMPUSE CONSTANT	1,600/kWh/kVarh
ACTIVE ENERGY	CLASS 1
REACTIVE ENERGY	CLASS 2
COMMUNICATION/PROTOCOL	DLMS/COSEM
BATTERY	1/2AA 3.6V (SUPERCAP)
METERIAL OF CASE	POLYCARBONATE
CONDUCTOR DIAMETER	9.2 MM.
OVERALL DIAMETER	12.5 MM.
SIZE	117X50X155 MM.
WEIGH	0.5 KG
STANDARD	IEC62052-11 IEC62053-21 IEC62053-23:2003 TIS 1030-2552 TIS 2543-2555 ISO9001:2015
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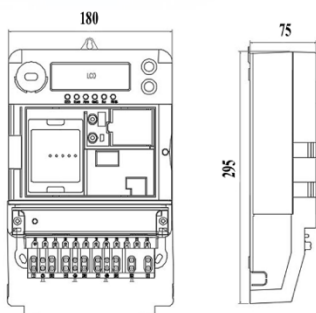
TECHNICAL FEATURES: SE-3EMH



MODEL	ST-3EMH
PHASE	3 PHASE , 4 WIRES
CONNECTION MODEL	DIRECT CONNECT
INSTALLATION TYPE	SUSPENSION INDOOR/OUTDOOR
IMPULSE VOLTAGE	6 KV
OPERATEING VOLTAGE	230 ± 10% VAC
CURRENT RATING ,Ib(I _{max})	5(100) A
FREQUENCY	50 Hz ± 2.5%
OPERATING TEMPERATURE	-20 C° up to +70 C°
MAX HUMIDITY	95 %
PROTECTION	2 LEVEL
PROTECTIVE	IP54
DISPLAY MODE	LCD
POWER CONSUMTION	<2 W and <4 VA
START CURRENT	0.004 Ib
IMPUSE CONSTANT	800/kWh/kVarh
ACTIVE ENERGY	CLASS 1
REACTIVE ENERGY	CLASS 2
COMMUNICATION/PROTOCOL	DLMS/COSEM
BATTERY	1/2AA 3.6V
METERIAL OF CASE	POLYCARBONATE
CONDUCTOR DIAMETER	9.2 MM.
OVERALL DIAMETER	12.5 MM.
SIZE	170X230X60 MM.
WEIGH	1 KG
STANDARD	IEC62052-11 IEC62053-21 IEC62053-23:2003 TIS 1030-2552 TIS 2543-2555 ISO9001:2015
CERTIFICATE	

DATA CONCENTRATOR UNIT

TECHNICAL FEATURES: ST-DPLC



MODEL	ST-DCU-PLC
PHASE	3 PHASE 4 WIRE OR 1PHASE 2 WIRE
CONNECTION MODEL	DIRECT CONNECT
INSTALLATION TYPE	SUSPENSION INDOOR/OUTDOOR
IMPULSE VOLTAGE	6 KV
OPERATEING VOLTAGE	230/400 ± 10% VAC
FREQUENCY	50 Hz ± 2.5%
OPERATING TEMPERATURE	- 20 °C UP TO +70 °C
MAX HUMIDITY	95 %
PROTECTION	2 LEVEL
PROTECTIVE	IP54
DISPLAY MODE	LCD
POWER CONSUMPTION	<10 W (Static) and <20 W (Dynamic)
COMMUNICATION/PROTOCOL	DLMS/COSEM
BATTERY	2xCR123A 3V (1550mAH)
MEMORY	NON-VOLATILE MEMORY STORAGE ALL DATA UP TO 500 METER NOT LESS THAN 45 DAYS
METERIAL OF CASE	POLYCARBONATE
CONDUCTOR DIAMETER	4.8 MM
OVERALL DIAMETER	10.5 MM
SIZE	180X75X295 MM
WEIGH	2 KG
STANDARD	DLMS, PEA Specification No.M-10/2016
CERTIFICATE	ISO9001:2015

COMMUNICATION MODULE

Power line communication (PLC)

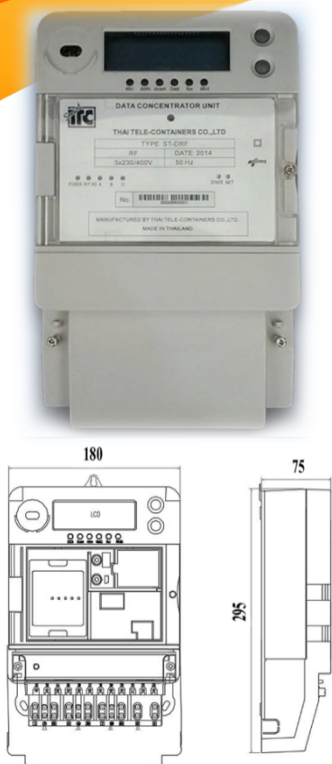
Model	: ST-PLC-G3
Technology	: G3 (based OFDM)
Frequency bands	: between 150Khz ~500Khz compliant to FCC band
Minimum effective data rate	: 2.4 kbps (at normal mode)
Maximum data rate	: 4.2-152kbps
Max transmitting power	: 120dBuV, 120dBuV
Baud rate	: 9600 bps.
Communication range	: up to 1,000
Supply voltage	: 7-14 VDC
Power consumption	: 22 mA. (Standby Mode) 800 mA. (Operate Mode)
Specified operating range	: -20°C to +70°C
Storage range limit	: -30°C to +85°C
Relative humidity	: Up to 90% at 40°C
State	: LED indicator
Micro-Fit™	: 16 -pin data cable connector
Connected	: Automatic register
Standard	: DLMS/COSEM
Protocol support	: support embedded TCP/IP stack
Development development	: Open AT C/C++
Dimension	: 50 x 70 mm.
Weight	: 65g

System via cellular network

Module	: ST-CLU-3G Plus
Technology	: UTMS and HSPA
Frequency bands	: 850,900,1800,1900,2100 MHz
Data rates	: UL 384 kbps DL 3.6 Mbps
Antenna Gain	: 5 dBi
Antenna Type	: FME male connector
Supply voltage	: 3.3 – 5 VDC
Power consumption	: 1.3 mA. (Standby Mode) 360 mA. (Operate Mode)
Specified operating range	: -20°C to +70°C
Storage range limit	: -30°C to +85°C
Relative humidity	: Up to 90% at 40°C
State	: LED indicator
Micro-Fit™	: 12 -pin data cable connector
SIM card interface	: SIM holder (1.8V/3V)
RF Power (Max)	: 0.25 W
Baud rate	: up to 115,200 bps.
Protocol support	: support embedded TCP/IP stack
Operating command	: Control via AT commands according to 3GPP
Operating mode	: data and SMS
Development	: Open AT C/C++ development
Dimension	: 50 x 70 mm.
Weight	: 65g

DATA CONCENTRATOR UNIT

TECHNICAL FEATURES: ST-DRF



MODEL	ST-DRF
PHASE	3 PHASE 4 WIRE OR 1PHASE 2 WIRE
CONNECTION MODEL	DIRECT CONNECT
INSTALLATION TYPE	SUSPENSION INDOOR/OUTDOOR
IMPULSE VOLTAGE	6 KV
OPERATEING VOLTAGE	230/400 ± 10% VAC
FREQUENCY	50 Hz ± 2.5%
OPERATING TEMPERATURE	- 20 °C UP TO +70 °C
MAX HUMIDITY	95 %
PROTECTION	2 LEVEL
PROTECTIVE	IP54
DISPLAY MODE	LCD
POWER CONSUMPTION	<10 W (Static) and <20 W (Dynamic)
COMMUNICATION/PROTOCOL	DLMS/COSEM
BATTERY	2xCR123A 3V.(1550MAH)
MEMORY	NON-VOLATILE MEMORY STORAGE ALL DATA UP TO 500 METER NOT LESS THAN 45 DAY
METERIAL OF CASE	POLYCARBONATE
CONDUCTOR DIAMETER	4.8 MM.
OVERALL DIAMETER	10.5 MM.
SIZE	180X75X295 MM.
WEIGH	2 KG
STANDARD	DLMS, PEA Specification No.M-10/2016
CERTIFICATE	ISO9001:2015

COMMUNICATION MODULE

Radio frequency (RF)

Model	: ST-ZIB-24
Technology	: IEEE 802.15.4 (Zigbee network)
Frequency bands	: 2400~2483.5 MHZ
Chanel	: 16
Channal spacing	: 5 MHz
Maximum data rate	: 250Kbps
Baud rate	: 9600 bps. up to 115,200 bps.
Power Transmitting	: -32 to +23 dBm
Receiving sensitivity	: -104 dBm
Communication range	: up to 2000m (Line of sight)
Supply voltage	: 7-14 VDC
Power consumption	: 170 mA. (Transmit) 36 mA. (Receive)
Standby mode	: 0.4 mA.
Specified operating range	: -20°C to +70°C
Storage range limit	: -30°C to +85°C
Relative humidity	: Up to 90% at 40°C
State	: LED indicator
Micro-Fit™	: 16 -pin data cable connector
Connected	: Automatic register
Standard	: DLMS/COSEM
Protocol support	: support TCP/IP
Development	: Open AT C/C++ development
Dimension	: 50 x 70 mm.
Weight	: 65g

System via cellular network

Module	: ST-CLU-3G Plus
Technology	: UTMS and HSPA
Frequency bands	: 850,900,1800,1900,2100 MHz
Data rates	: UL 384 kbps DL 3.6 Mbps
Antenna Gain	: 5 dBi
Antenna Type	: FME male connector
Supply voltage	: 3.3 – 5 VDC
Power consumption	: 1.3 mA. (Standby Mode) 360 mA. (Operate Mode)
Specified operating range	: -20°C to +70°C
Storage range limit	: -30°C to +85°C
Relative humidity	: Up to 90% at 40°C
State	: LED indicator
Micro-Fit™	: 12 -pin data cable connector
SIM card interface	: SIM holder (1.8V/3V)
RF Power (Max)	: 0.25 W
Baud rate	: up to 115,200 bps.
Protocol support	: support embedded TCP/IP stack
Operating command	: Control via AT commands according to 3GPP
Operating mode	: data and SMS
Development	: Open AT C/C++ development
Dimension	: 50 x 70 mm.
Weight	: 65g

COMMUNICATION MODULE

MODULE METER-PLC



Power line communication (PLC)

Model	: ST-PLC-G3
Technology	: G3 (based OFDM)
Frequency bands	: between 150Khz ~500Khz compliant to FCC band
Minimum effective data rate	: 2.4 kbps (at normal mode)
Maximum data rate	: 4.2-152kbps
Max transmitting power	: 120dBuV, 120dBuV
Baud rate	: 9600 bps.
Communication range	: up to 1,000
Supply voltage	: 7-14 VDC
Power consumption	: 22 mA. (Standby Mode) 800 mA. (Operate Mode)
Specified operating range	: -20°C to +70°C
Storage range limit	: -30°C to +85°C
Relative humidity	: Up to 90% at 40°C
State	: LED indicator
Micro-Fit™	: 16 -pin data cable connector
Connected	: Automatic register
Standard	: DLMS/COSEM
Protocol support	: support embedded TCP/IP stack
Development	: Open AT C/C++ development
Dimension	: 50 x 70 mm.
Weight	: 65g

MODULE METER-ZIGBEE



Radio frequency(RF)

Model	: ST-ZIB-24
Technology	: IEEE 802.15.4 (Zigbee network)
Frequency bands	: 2400~2483.5 MHZ
Chanel	: 16
Channel spacing	: 5 MHz
Maximum data rate	: 250Kbps
Baud rate	: 9600 bps. up to 115,200 bps.
Power Transmitting	: -32 to +23 dBm
Receiving sensitivity	: -104 dBm
Communication range	: up to 2000m (Line of sight)
Supply voltage	: 7-14 VDC
Power consumption	: 170 mA. (Transmit) 36 mA. (Receive)
Standby mode	: 0.4 mA.
Specified operating range	: -20°C to +70°C
Storage range limit	: -30°C to +85°C
Relative humidity	: Up to 90% at 40°C
State	: LED indicator
Micro-Fit™	: 16 -pin data cable connector
Connected	: Automatic register
Standard	: DLMS/COSEM
Protocol support	: support TCP/IP
Development	: Open AT C/C++ development
Dimension	: 50 x 70 mm.
Weight	: 65g

COMMUNICATION MODULE

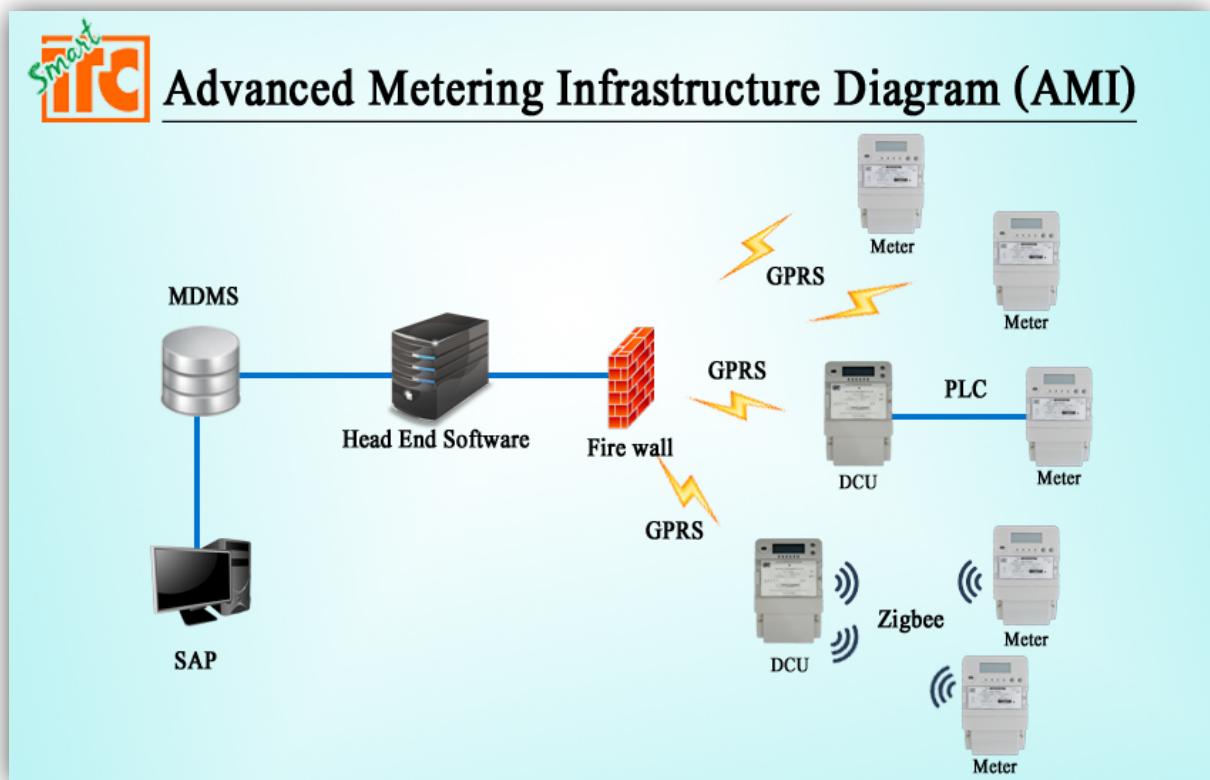
MODULE METER-GSM/GPRS



System via cellular network

Module	: ST-CUL-3G
Technology	: GSM
Frequency bands	: 850,900,1800,1900 MHz
Data rates	: UL 85.6 kbps DL 85.6 Mbps
Antenna Gain	: 5 dBi
Antenna Type	: FME male connector
Supply voltage	: 3.3 – 4.6 VDC
Power consumption	: 1.3 mA. (Standby Mode) 300 mA. (Operate Mode)
Specified operating range	: -20°C to +70°C
Storage range limit	: -30°C to +85°C
Relative humidity	: Up to 90% at 40°C
State	: LED indicator
Micro-Fit™	: 12 -pin data cable connector
SIM card interface	: SIM holder (1.8V/3V)
RF Power (Max)	: Class 4 GSM 850 and EGSM 900 2W
RF Power (Max)	: Class 1 DCS 1800 and PCS 1900 1W
Baud rate	: up to 115,200 bps.
Protocol support	: support embedded TCP/IP stack
Operating command	: Control via AT commands according to 3GPP
Operating mode	: data and SMS
Development	: Open AT C/C++ development
Dimension	: 50 x 70 mm.
Weight	: 65g

Electric Energy AMI Smart meter system Diagram



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