

# TESSERACT

3 Phase Ultra-Smart Energy Meter (DC)

## Powerful

The first industrial sensor to boast 32bit computing power and vast amount of onboard memory, the Tesseract easily outperforms the most powerful smart meters and controllers currently available in the market.

## Flexible

Tesseract gives you access to an ever-growing eco-system of smart energy applications, allowing you to deploy the device as a simple energy meter, sophisticated power analyzer, demand response controller, sustainability sensor, and much more, all at once!

## Future Proof

Equipped with the latest interface technologies, the Tesseract can adapt to a wide range of IoT environments.

The DLMS protocol allows it to be upgraded in-situ, thus future-proofing your smart energy investments!

## User-friendly

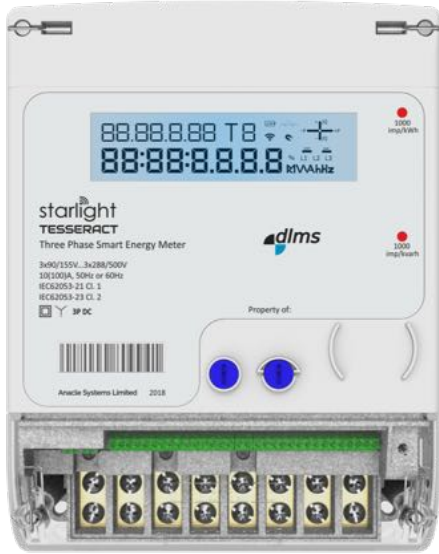
With an elegant LCD display, Tesseract promises you an unparalleled user experience.



## One Device Infinite Possibilities

The patent pending Tesseract is the next generation platform for smart energy management.

Tesseract is the only device you will ever need.



**Front Profile**



**Bottom Profile**

**Energy Values**

- Active, reactive inductive, reactive capacitive, apparent energy
- Import, export, net and total energy
- Per phase and total energy
- Programmable decimal places

**Demand Calculations**

- Current (Irms) on any phase
- Active, reactive and apparent power
- Interval calculation - block interval / sliding window
- RTC synchronize

**Demand Control**

- Programmable threshold (current & power)

**Power Quality Parameters**

- Harmonic distortion - voltage and current
- Individual harmonics 63
- Over current, unbalance, low voltage, over voltage
- Supports three phase four wire systems

**Data Recording**

- Over current, no load, reverse current
- Finer measurement resolution
- Configuration change, device access
- Profiling (15 parameters, 1-60mins)

**Memory Capacity**

- FeRAM (kilo bytes) 128
- Data storage memory (kilo bytes) 1024
- Program memory (kilo bytes) 512
- RAM (kilo bytes) 38

**Input / Output**

- Digital inputs 4
- Display (LCD with backlight) Yes
- Relay output (275Vac, 5A) 2

**Load Control**

- Internal 3 phase latch relay 100A



Side Profile



Back Profile

**Electrical Specifications**

Measurement type	True RMS / 200 samples per cycle
<b>Measurement accuracy</b>	
Current & voltage	0.2%
Active power	0.2%
Frequency	0.5%
Power factor	0.5%
Active energy	Class 1
Reactive energy	Class 2
Data update rate	1 second
Input voltage range	0V to 300Vac
Operating voltage	90V to 270V L-N
Reference voltage (Vref)	3x220V, 3x230V, 3x240V
Operating frequency range	45Hz to 65Hz
Input current range	
- Basic current (I <sub>b</sub> )	10A
- Maximum current (I <sub>max</sub> )	100A
- Operating range of current	0A to 100A
Burden	< 1VA
Maximum overload - non recurring	3000A for 0.5 mains cycle
Power supply	Self powered
Withstanding voltage interruptions	20ms interruption
Withstanding voltage dips	50%

**Mechanical Specifications**

Weight	<2kg
IP degree of protection	IP51/4
Dimensions	240mm (height) x 179mm (width) x 90mm (depth)
Terminal cover	Extended (40mm) or short

**Environmental Conditions**

Operating temperature	0°C to 70°C
Storage temperature	-10°C to 80°C
Humidity rating	5% to 95% non condensing

## Firmware Characteristics

Harmonic distortion	Up to 63rd harmonic for voltage, current, power, energy
Instantaneous parameters	Voltage, current, frequency, power factor, active, reactive, apparent power
Load profiling	Programmable interval time
Demand control	Programmable control mode based on current or power
Firmware upgrade	Remotely through communication ports

## Display and Front End Specifications

Display type	LCD with backlight
Menu functions	Instantaneous, power, energy, demand control, history data, harmonics
Sealing provision	Meter cover, modem cover, terminal cover hardware sealing

## Standard Compliance

Metrology	IEC62052-11, IEC62053-21, IEC 62053-23
Communication	IEC62056

## Ordering Guide (\*)

LCD with Relay	TSLIT0R3PDC01
LCD without Relay	TSLIT0N3PDC01
LCD with Relay 3G	TSLITGR3PDC01
LCD without Relay NBloT	TSLITNN3PDC01
LCD with Relay NBloT	TSLITNR3PDC01

\*As our products are developed and upgraded from time to time, please contact us for the latest information.

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## Features

### Installation Options and Configuration

- Flexible and easy installation
- Easy setup through software

### Display and Front Panel

- Easy to read LCD display
- Simple intuitive push button navigation
- Auto-ranging and auto scaling

### Communications Interfaces

- NBLoT/3G/4G/RS485
- LVTTTL RS232 adaptable to Silver Spring Network or Trilliant RF and 3G/NBLoT modules
- Supports standard DLMS / COSEM protocol
- Simultaneous communication on ports
- Programmable speed options on RS485 (2400 - 38400bps)
- Daisy chain support, up to 31 serial Modbus devices
- Password protected access to configuration parameters

### Alarms

- Meter cover, modem cover, terminal cover removal detection
- Magnetic field detection
- Battery low detection
- Load disconnect / reconnect

### Real Time Clock

- Temperature compensated real time clock of <5ppm error
- Synchronization with time server

### Scalability

- Multiple features can run simultaneously and perform variety of functions
- Default applications include - line parameters, Time of Use, Event logging, demand control, load profiling
- FRAM data storage supports > trillion write cycles

### Standard Input / Output

- One digital output (KY) energy pulse output programmable for active or reactive energy
- One programmable potential free relay output.
- Two digital inputs for water and gas meter interface

## Specifications

### General

Use on low voltage	Yes
RMS current accuracy	0.2% of reading
RMS voltage accuracy	0.2% of reading
Active energy accuracy	Class 1
Reactive energy accuracy	Class 2
Number of samples / cycle	200
Four quadrant measurement	<input checked="" type="checkbox"/>

### Instantaneous Values

Voltage, current, power factor, phase angle	<input checked="" type="checkbox"/>
Frequency	<input checked="" type="checkbox"/>
Active, reactive (ind.), reactive (cap.), apparent power total & per phase	<input checked="" type="checkbox"/>