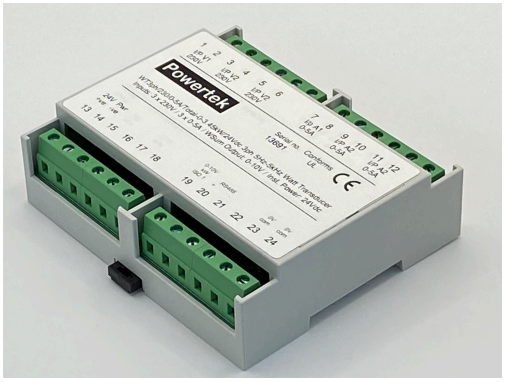
WT3ph ‹1/5A CT, 80A direct›

WT3ph multifunction three-phase power analyzing meter

- Fully bi-directional four quadrants measurements for all energies and powers
- Main electrical parameters measured and displayed for consumption analysis
- Version for 1 or 5A CT
- Possibility to connect by PT/ YT
- Up to 8 MB for data recording option
- Possibility to record all energy counters and registers
- Up to 24 parameters selectable among real time measurements for MIN/ AVG/MAX recording
- MODBUS RTU/ASCII communication by RS485 port or MODBUS TCP communication by Ethernet port
- Possibility to manage the instrument in remote mode by WTcomm software or by Web interface



» General features

The WT3ph is versatile, measuring from DC-50KHz. An innovative instrument for measurement and recording of complex electrical parameters. It is particularly suitable for consumption analysis and control.

WT3ph is the ideal instrument to establish energy control and analysis.

The instrument can communicate through the RS485 serial port by MODBUS RTU/ASCII protocol or through Ethernet port by MODBUS TCP protocol.

WTcomm software allows for instrument remote management. Web interface is also available over its Ethernet port: a very useful function that gives the possibility to manage the instrument from a PC connected on the network.

» Benefits

- WT3ph provides a full and accurate analysis of the load in the measurement point and it allows to calculate the costs of the energy consumption.
- Data read by PC allows to generate consumption profiles, recorded values trend, alarms/events report and costs calculation as well as critical values identification.
- Accurate with any waveshape
- Wide band analysis of all power frequencies

» Applications

- Energy audit and power analysis.
- Monitoring system and energy control.
- Individual machine load monitoring.
- Peak power control.
- Switchboards, gensets, motor control centers, etc.
- Remote metering and cost allocation.
- Surge, overcurrent and inrush events

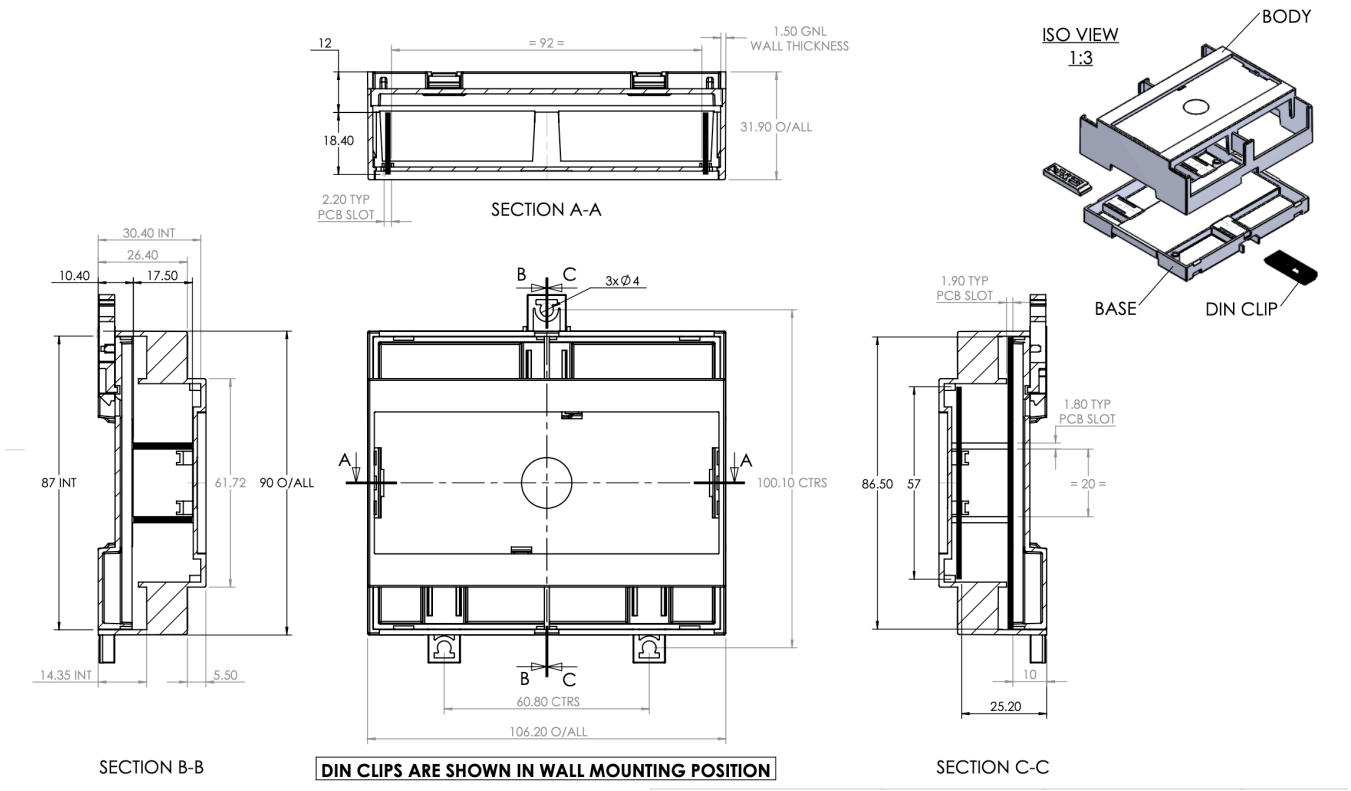
» Related Products

- WTcomm

» Available configurations

CURRENT INPUTS (make one choice only)	For 1/5A CT, 0.333V, 0-5V
AUXILIARY POWER SUPPLY	85...265 VAC/110 VDC ±15%
COMMUNICATION PORT (make one choice only)	RS485 for MODBUS RTU/ASCII communication
	Ethernet for HTTP, MODBUS TCP communication
INSTRUMENT REMOTE MANAGEMENT	WTcomm
	Web server (only for instrument with Ethernet port)
SIGN REPRESENTATION IN MODBUS PROTOCOL (make one choice only)	Sign bit
	2's complement
DIGITAL OUTPUT (only for instrument with RS485 port)	For alarm events or pulse emissions
DMD VALUE CALCULATION MODE	Fixed window, auto averaging
	Fixed or Variable window
MEMORY	1 MB
	8 MB
RECORDINGS	Active and reactive power AVG values
	Real time params MIN/AVG/MAX values (up to 24 params programmable)
	Energy counters
WIRING MODES	Three phase, 4 wires, 3 currents (3.4.3)
	Three phase, 3 wires, 3 currents (3.3.3)
	Three phase, 3 wires, 2 currents (3.3.2)
	Single phase (1ph)
THD & HARMONICS	Voltage and current THD values
	Voltage and current harmonics up to 15th
APPARENT ENERGY COUNTERS (make one choice only)	Total counters
	Separated Inductive&Capacitive counters

» Technical drawing



» Measurements & recordings

INSTANTANEOUS VALUES		WT3ph	WT3ph+
VOLTAGE	V_{L1-N} - V_{L2-N} - V_{L3-N} - V_{L1-L2} - V_{L2-L3} - V_{L3-L1} - V_{Σ} [V]	●	● MAM
CURRENT (+/-)	I_{L1} - I_{L2} - I_{L3} - I_{N} - I_{Σ} [A]	●	● MAM
ACTIVE POWER (+/-)	P_{L1} - P_{L2} - P_{L3} - P_{Σ} [W]	● AVG	● MAM
REACTIVE POWER (+/-)	Q_{L1} - Q_{L2} - Q_{L3} - Q_{Σ} [var]	● AVG	● MAM
APPARENT POWER (+/-)	S_{L1} - S_{L2} - S_{L3} - S_{Σ} [VA]	●	● MAM
POWER FACTOR (ind&cap)	PF_{L1} - PF_{L2} - PF_{L3} - PF_{Σ}	●	● MAM
DPF (+/-)	DPF_{L1} - DPF_{L2} - DPF_{L3}		● MAM
TANGENT Ø (+/-)	$TANØ_{L1}$ - $TANØ_{L2}$ - $TANØ_{L3}$ - $TANØ_{\Sigma}$	●	● MAM
VOLTAGE THD	$THDV_{L1}$ - $THDV_{L2}$ - $THDV_{L3}$ - $THDV_{L1-L2}$ - $THDV_{L2-L3}$ - $THDV_{L3-L1}$ [V]	●	● MAM
CURRENT THD	$THDA_{L1}$ - $THDA_{L2}$ - $THDA_{L3}$ - $THDA_{N}$ [A]	●	● MAM
FREQUENCY	f [Hz]	●	● MAM
PHASE ORDER	Ph	●	●
DEMAND VALUES (DMD)			
DMD CURRENT (abs)	I_{L1DMD} - I_{L2DMD} - I_{L3DMD} - I_{NDMD} - $I_{\Sigma DMD}$ [A]		●
DMD ACTIVE POWER (imp&exp)	P_{L1DMD} - P_{L2DMD} - P_{L3DMD} - $P_{\Sigma DMD}$ [W]	●	●
BALANCE OF DMD SYSTEM ACTIVE POWER (+/-)	$P_{\Sigma DMDBAL}$ [W]		●
DMD REACTIVE POWER (imp&exp)	Q_{L1DMD} - Q_{L2DMD} - Q_{L3DMD} - $Q_{\Sigma DMD}$ [var]	●	●
BALANCE OF DMD SYSTEM REACTIVE POWER (+/-)	$Q_{\Sigma DMDBAL}$ [var]		●
DMD APPARENT POWER (imp&exp)	S_{L1DMD} - S_{L2DMD} - S_{L3DMD} - $S_{\Sigma DMD}$ [VA]		●
BALANCE OF DMD SYSTEM APPARENT POWER (+/-)	$S_{\Sigma DMDBAL}$ [VA]		●
DMD POWER FACTOR (imp&exp)	PF_{L1DMD} - PF_{L2DMD} - PF_{L3DMD} - $PF_{\Sigma DMD}$		●
MAX VALUES			
MAX VOLTAGE	$V_{L1-NMAX}$ - $V_{L2-NMAX}$ - $V_{L3-NMAX}$ - $V_{L1-L2MAX}$ - $V_{L2-L3MAX}$ - $V_{L3-L1MAX}$ - $V_{\Sigma MAX}$ [V]	●	●
MAX CURRENT (abs)	I_{L1MAX} - I_{L2MAX} - I_{L3MAX} - I_{NMAX} - $I_{\Sigma MAX}$ [A]	●	●
MAX ACTIVE POWER (imp&exp)	P_{L1MAX} - P_{L2MAX} - P_{L3MAX} - $P_{\Sigma MAX}$ [W]		●
MAX REACTIVE POWER (imp&exp)	Q_{L1MAX} - Q_{L2MAX} - Q_{L3MAX} - $Q_{\Sigma MAX}$ [var]		●
MAX APPARENT POWER (imp&exp)	S_{L1MAX} - S_{L2MAX} - S_{L3MAX} - $S_{\Sigma MAX}$ [VA]		●
MAX POWER FACTOR (imp&exp)	PF_{L1MAX} - PF_{L2MAX} - PF_{L3MAX} - $PF_{\Sigma MAX}$		●
MAX TANGENT Ø (imp&exp)	$TANØ_{L1MAX}$ - $TANØ_{L2MAX}$ - $TANØ_{L3MAX}$ - $TANØ_{\Sigma MAX}$		●
MAX VOLTAGE THD	$THDV_{L1MAX}$ - $THDV_{L2MAX}$ - $THDV_{L3MAX}$ - $THDV_{L1-L2MAX}$ - $THDV_{L2-L3MAX}$ - $THDV_{L3-L1MAX}$ [V]		●
MAX CURRENT THD	$THDA_{L1MAX}$ - $THDA_{L2MAX}$ - $THDA_{L3MAX}$ - $THDA_{NMAX}$ [A]		●
MAX DMD CURRENT	$I_{L1MAXDMD}$ - $I_{L2MAXDMD}$ - $I_{L3MAXDMD}$ - $I_{\Sigma MAXDMD}$ [A]		●
MAX DMD ACTIVE POWER (imp&exp)	$P_{L1MAXDMD}$ - $P_{L2MAXDMD}$ - $P_{L3MAXDMD}$ - $P_{\Sigma MAXDMD}$ [W]	●	●
MAX DMD REACTIVE POWER (imp&exp)	$Q_{L1MAXDMD}$ - $Q_{L2MAXDMD}$ - $Q_{L3MAXDMD}$ - $Q_{\Sigma MAXDMD}$ [var]	●	●
MAX DMD APPARENT POWER (imp&exp)	$S_{L1MAXDMD}$ - $S_{L2MAXDMD}$ - $S_{L3MAXDMD}$ - $S_{\Sigma MAXDMD}$ [VA]		●
MIN VALUES			
MIN SYSTEM ACTIVE POWER	$P_{\Sigma MIN}$ [W]	●	●
MIN SYSTEM REACTIVE POWER	$Q_{\Sigma MIN}$ [var]	●	●
MIN SYSTEM APPARENT POWER	$S_{\Sigma MIN}$ [VA]	●	●
COUNTERS AND ACCUMULATION			
ACTIVE ENERGY (imp&exp)	kWh_{L1} - kWh_{L2} - kWh_{L3} - kWh_{Σ} [Wh]	●	● EC
BALANCE OF SYSTEM ACTIVE ENERGY	$kWh_{\Sigma BAL}$ [Wh]	●	● EC
REACTIVE ENERGY (imp&exp) (ind&cap)	$kvarh_{L1}$ - $kvarh_{L2}$ - $kvarh_{L3}$ - $kvarh_{\Sigma}$ [varh]	●	● EC
BALANCE OF SYSTEM REACTIVE ENERGY (ind&cap)	$kvarh_{\Sigma BAL}$ [varh]	●	● EC
APPARENT ENERGY (imp&exp) *(ind&cap on request)*	$kVAh_{L1}$ - $kVAh_{L2}$ - $kVAh_{L3}$ - $kVAh_{\Sigma}$ [VAh]	●	● EC
BALANCE OF SYSTEM APPARENT ENERGY *(ind&cap on request)*	$kVAh_{\Sigma BAL}$ [VAh]	●	● EC
INSTALLATION HOUR COUNTER	HRCNTi [h]		●
MEASUREMENT HOUR COUNTER	HRCNTm [h]		●
HARMONIC ANALYSIS UP TO 21st			
VOLTAGE HARMONICS	V_{L1-N} - V_{L2-N} - V_{L3-N} - V_{L1-L2} - V_{L2-L3} - V_{L3-L1} [V]		● MAM
CURRENT HARMONICS	I_{L1} - I_{L2} - I_{L3} - I_{N} [A]		● MAM

LEGEND

● = Standard

AVG = Parameters for AVG recording (fixed)
MAM = Parameters for MIN/AVG/MAX recording (up to 24 params programmable)
EC = Parameters for Energy counter recording (fixed)

+/- = Signed value
imp&exp = Values splitted in imported and exported
abs = Absolute value
ind&cap = Values splitted in inductive and capacitive

DMDBAL = Difference between the positive and negative demand value: [DMD+] - [DMD-]
BAL = Difference between the imported and exported value: [imp] - [exp]

» Specifications

POWER SUPPLY	
Voltage range:	85 ... 265 VAC/110 VDC ±15%, 24Vdc (9-36V)
Safety:	300 V CAT III
Maximum consumption:	Instrument with RS485 port: 1.6 VA - 1 W
	Instrument with Ethernet port: 4.5 VA - 1.6 W
Frequency:	50/60 Hz
VOLTAGE INPUTS	
Voltage range:	3x10/17 ... 3x285/495 VAC
Safety:	300 V CAT III
Minimum voltage for FFT calculation:	20/35 VAC (multiplied by PT ratio in case of PT use) with direct connection
CURRENT INPUTS	
Maximum value:	1/5A CT model: 6A
	80A model: 80A
Starting current (I_{st}):	1/5A CT model: 2 mA
	80A model: 20 mA
CT burden:	1/5A CT model: 0.04 VA
Minimum current for FFT calculation:	1/5A CT model: 100 mA * CT ratio
	80A model: 200 mA
TYPICAL ACCURACY	
Voltage:	±0.2% reading in 10% FS...FS range (FS=Full Scale value)
Current:	±0.2% reading in 5% FS...FS range
Power:	±0.5% reading ±0.1% FS (PF=1)
Frequency:	±0.1% reading ±1 digit in 45...65 Hz range
Active energy:	Class 1 according to IEC/EN 62053-21
Reactive energy:	Class 2 according to IEC/EN 62053-23
DISPLAY & KEYBOARD	
Display:	Option - Backlighted LCD, 43x29 mm
	3 rows, 4 digits + symbols
Keyboard:	Via WTcomm
COMMUNICATION PORT	
Type:	RS485 optoisolated or Ethernet (RJ45)
Protocols:	MODBUS RTU/ASCII in case of RS485 port
	HTTP, NTP, DHCP, MODBUS TCP in case of Ethernet port
Baud rate:	300 ... 57600 bps in case of RS485 port
	10/100 Mbps in case of Ethernet port
DIGITAL OUTPUT (DO)	
Type:	Passive optoisolated
Maximum values (according to IEC/EN 62053-31):	27 VDC - 27 mA
Energy pulse length (only for DO in pulse mode):	50 ±2ms ON time
Maximum output reaction time (only for DO in alarm mode):	1 s
WIRE DIAMETER FOR TERMINALS	
Measuring terminals (A & V):	1/5A CT model: 1.5 ... 6 mm^2
	80A model: 1.5 ... 35 mm^2
Terminals for digital output, AUX input, RS485 port:	0.14 ... 2.5 mm^2
SIZE & WEIGHT	
LxHxP, W:	72x90x65 mm, max 436 g
ENVIRONMENTAL CONDITIONS	
Operating temperature:	-25°C ... +55°C (3K6)
Storage temperature:	-25°C ... +75°C (2K3)
Max humidity (without condensation):	80%
Sinusoidal vibration amplitude:	50 Hz ±0.075 mm
Protection degree - frontal part:	IP51 (granted only in case of installation in a cabinet with at least IP51 protection degree)
Protection degree - terminals:	IP20
Pollution degree:	2
Installation and use:	Internal
STANDARD COMPLIANCE (for the parts applicable for the instrument)	
Directives:	2014/30/EU, 2014/35/EU
Safety:	EN 61010-1, EN 61010-2-030, EN 61010-2-032
EMC:	EN 61326-1, EN 55011, EN 61000-4-2, EN61000-4-3, EN61000-4-4,
	EN61000-4-5, EN61000-4-6, EN61000-4-11, EN61000-6-2

Ordering Information

WT3ph Watt Transducer order codes
WT3ph / Voltage range / Current range / Scaling / output type / instrument power

WT3ph / Voltage range / Current range / Scaling / output type / instrument power

WX-3ph / Voltage range / Current range / Scaling / output type / instrument power

Order code examples:
WT3ph / 120V / 500A-CT / 500:5 / Std / 4-20 / 24Vdc
120Vac input, 500/5A input, CT type 500:5, 4-20mA output with 24Vdc aux power input

Powertek UK Ltd.
13b Southview Park,
Marsack Street,
Reading
RG4 5AF
United Kingdom

Tel: +44 (0)118 370 2004

Email: info@powertekuk.com
Website: https://www.powertekuk.com

NOTE: Subject to change without notice