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Triplen Power Distribution Unit

TPDU 10 – 1600kVA

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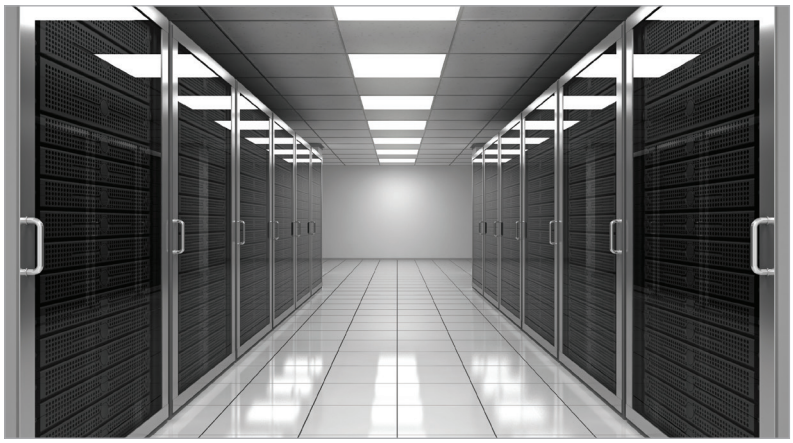
Concept

The Thycon Triplen Power Distribution Unit (TPDU) is designed to correct any third harmonic content on the current waveform while providing electrical isolation, voltage transformation and extensive monitoring of the load.

TPDU Features and benefits

- 24/7 detailed monitoring of individual branch circuits
- treading and load profiling for effective management and planning
- local and remote monitoring
- optimised power utilisation
- optimised availability
- 3rd harmonic elimination
- single point grounding
- high efficiency
- high reliability
- low maintenance cost
- compact, modular construction
- Australian made

TPDU 500



Network Server Room

Principle of operation

The Triplen PDU is a self-contained power conditioning system that provides reliable computer grade power and single point grounding, while simultaneously trapping system harmonic currents and providing extensive monitoring of the load.

Harmonic currents are produced by any non-linear load, and especially by switch-mode power supplies as are used in computers. These currents add arithmetically in the neutral cable of the building power supply to 240% or more of the rated phase-current value. The neutral cable is frequently rated to the same value as the phase cables at best, and as the cable losses are proportional to the square of the current, the additional losses in the neutral conductor can be five times greater than the conductor rating. Since neutral cables are not normally fused or otherwise protected against overloads, thermal cable destruction and electrical fire can result.

On a balanced three-phase system, the Triplen PDU harmonic current limiter reduces the third harmonic currents (which typically constitute 80% of the total content) and consequently the neutral currents to near zero. The removal of the third harmonic current means that all other harmonic currents that are a multiple of three are also cancelled.

Other generated harmonics are many times smaller than the third and can frequently be disregarded. Optional filters, or a Thycon APR, can be fitted to the Triplen PDU to reduce these harmonics if required.

In addition to the elimination of harmonics, the Triplen PDU restores voltage to computer grade quality, provides galvanic isolation between the building power supply and computers and blocks RFI, EMI, common-mode noise and spikes.

The Triplen PDU monitors the 3-phase supply voltage and each of the individual output branch line currents.

Reliability and maintenance requirements

The PDU provides clean, reliable computer room power by the elimination of Triplen harmonics through a harmonic isolation transformer and allows for the safe connection, disconnection and reconfiguration of outgoing circuits with no disruption to unaffected circuits.

A maintenance bypass facility can be provided for the harmonic isolation transformer to allow for maintenance. This maintenance bypass switch is a non-interlocked make before break rotary switch.

A soft start facility is provided to limit the transformer and load inrush currents to a maximum of 1.5 times the current rating of the transformer.

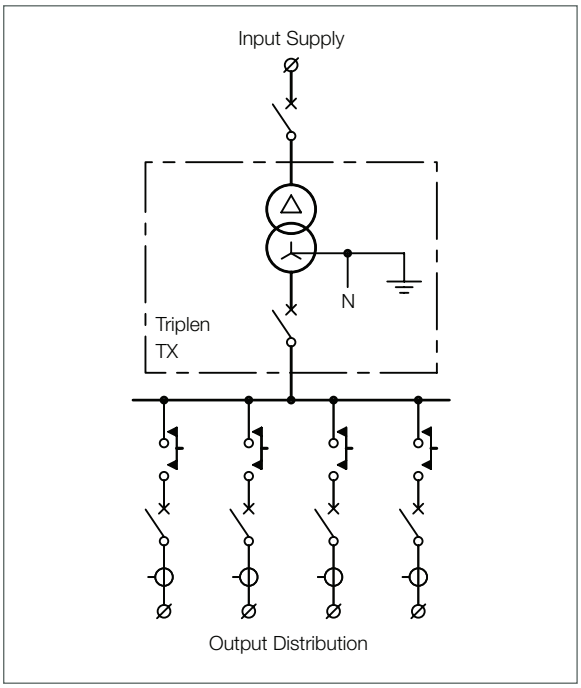
Monitoring

The Triplen PDU is fitted with LEDs indicating Power Available, On-Line and Emergency Shutdown.

The optional Multi Circuit Monitor is a smart LCD panel featuring a simple and effective user interface that incorporates advanced monitoring facilities enabling immediate access to overall input and individual output circuit monitoring.

The Triplen PDU system components use the MODBUS TCP/IP protocol over Ethernet to communicate requests and parameter passing.

Multi Circuit Monitor Display



The following parameters are available via the Multi Circuit Monitor and the high level interface:

Instantaneous values

- Voltages (L-L and L-N)
- Line current
- Real power (1 and 3-phase as appropriate)
- Apparent power (1 and 3-phase as appropriate)
- Power factor, including lead/lag indication
- Voltage distortion (both THD and individual harmonics to the 25th harmonic)
- Current distortion (both THD and individual harmonics to the 25th harmonic)

Peak demand values

- Voltages (L-L and L-N)
- Line current
- Real power (1 and 3-phase as appropriate)
- Apparent power (1 and 3-phase as appropriate)

Energy values

- kWh
- kVAh

Control and protection

The Triplen PDU is fitted with Emergency Shutdown facility.

Peak demand values and energy values are able to be reset through the front panel.

The Triplen PDU is fitted with surge diverters and appropriate protection fuses complete with visual status indication and voltage free status indication for connection to a BMS.

All outgoing circuits include neutral switching in conjunction with the active switching.

The design of the outgoing chassis ensures that the outgoing circuits can be configured for both 1 and 3-phase circuits without loss of poles and that all 3-phases can be loaded evenly.

Training and support

Training and support can be provided to on-site personnel to ensure that they are fully versed in the operation, maintenance and fault rectification of the Thycon TPDU.

Technical data 400kVA - 800kVA

(see MCM brochure for PDU Monitoring specification)

	TPDU400	*TPDU500*	*TPDU600*	*TPDU800*
Input *- three phase, three wire*				
Voltage	415 V	415 V	415 V	415 V
Voltage tolerance	+10% - 15%	+10% - 15%	+10% - 15%	+10% - 15%
Frequency	50 Hz ± 5%	50 Hz ± 5%	50 Hz ± 5%	50 Hz ± 5%
Phase current	600 A RMS	750 A RMS	900 A RMS	1200 A RMS
Inrush current (maximum)	<1200 Apeak	<1500 Apeak	<1800 Apeak	<2400 Apeak
Output *- three phase, four wire*				
Voltage	415/240V	415/240V	415/240V	415/240V
Rating	400kVA	500kVA	600kVA	800kVA
Phase current	800 A RMS	1000 A RMS	1200 A RMS	1600 A RMS
Output impedance	<1.5%	<1.5%	<1.5%	<1.5%
Noise attenuation: (electrical at 10kHz) Common mode Common/transverse mode	 >55dB >80dB	 >55dB >80dB	 >55dB >80dB	 >55dB >80dB
Transient suppression (minimum energy absorption):	200 joules	200 joules	200 joules	200 joules
Filters (optional) 5th and 7th harmonic	200A RMS	250A RMS	300A RMS	400A RMS
Ambient audible noise at 1 metre	<60dB	<60dB	<60dB	<60dB
Ambient temperature	<35degC	<35degC	<35degC	<35degC
Dimensions w x d x h (mm)	 1200 x 1000 x 1800	 1200 x 1000 x 1800	 1400 x 1000 x 1800	 1400 x 1000 x 1800

Specifications are subject to change without notice

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