

## DS POWER M

150-300kVA

**MIL-STD 461G**

**IGBT Rectifier**

**DSP Control**



Tescom DS Power M Online UPS, manufactured in accordance with military standards (MIL-STD 461G), can work in harsh terrain and site conditions. It is designed to work the desired conditions in terms of appropriate and Electromagnetic Compatibility (EMC) at the maximum level. It has the latest DSP technology that can be programmed to suit a wide variety of electrical environments without impeding its performance.

Tescom continues to offer reliable solutions to the needs of our country, especially the defense industry, with its exemplary projects.

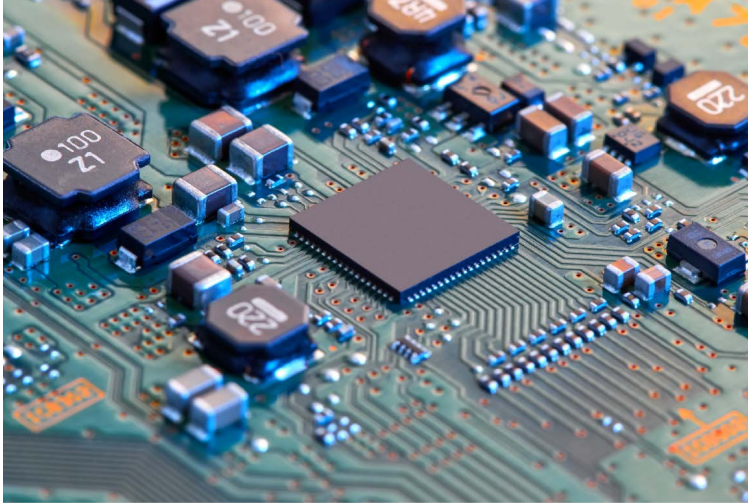


## GENERAL SPECIFICATIONS

- Transformerless UPS Technology
- 3 DSP controlled modular structure
- Separate main control board advantage for rectifier and inverter
- Unmatched power density (220kW/m<sup>3</sup>) with its compact design
- Less electronic components and SMD technology
- Low input current total harmonic distortion (THDi)
- High input power factor
- High efficiency up to %95
- Selectable input/output voltage/frequency range
- Static and maintenance by-pass switch
- High charge current capacity
- Eco Mode operation (optional)
- Split by-pass input (dual input)
- Minimum electromagnetic emission and susceptibility
- Advanced TFT front panel
- Optional 0.8 and 1.0 output power factor (PF)
- Optional inbuilt inverter transformer
- Optional input/output isolation transformer
- Compliant with IEC EN62040 directive
- Conforms to CE, TSE and GOST standards
- Compliant with MIL-STD 461G standard
- ISO9001, ISO14001 compliant production
- Advanced control at the input
- 3 level battery protection
- Output current limitation
- Output DC leakage protection
- Output short circuit and overload protection
- External REPO input
- 512 events memory (46.000 alarm)
- Clock and calendar (battery supported)
- Automatic battery test, remaining battery time indicator
- 2 RS232 serial ports and 4 programmable dry contact outputs
- Optional 12 dry contact outputs
- Optional SNMP, MODBUS and Remote Monitoring Panel
- Viewing device operating parameters and advanced diagnostics
- Advanced remote control features
- User and central service password-protected security

## DSP CONTROL

Modular system flexibility is provided by using 3 separate DSP processors developed with full digital control. With DSP control, efficiency is ensured by minimizing losses such as temperature and switching, and your grid is protected by minimizing the noise on your system. With advanced control algorithms, the security of your device and loads has been increased to the upper level. By using a separate control card for the rectifier and inverter parts, the risk of malfunction and service costs are reduced.



## POWER WALK IN AND ACTIVE POWER FACTOR CORRECTION

Thanks to IGBT and DSP controlled rectifier, input and output contactor structure and start delay, energy is transferred gradually and proceeds on the device step by step. With the soft start feature, high breakdown costs are avoided in case of a possible malfunction.

With the benefits of the active power factor correction in each phase, the input power factor gets closer to 1 (>99%) and the reactive power cost is eliminated, and compensation needs are minimized.

## ADVANCE DISPLAY AND COMMUNICATION

With the benefits of the advanced TFT screen, the device offers ease of use in displaying operating modes and measurement parameters. UPS operation information can be viewed, it provides serviceability by allowing setting configuration for service intervention.

Multiple applications are possible with 2 x RS232 serial communication ports available as standard, and all kinds of status information can be assigned as contact outputs with 4 programmable dry contact cards. With the optional dry contact card, the number of dry contact outputs can be increased up to 12.

It also works in full compliance with the SNMP/MODBUS (RTU-TCP) protocol. The built-in SNMP option does not use the RS232 port, providing flexibility to use for a different application.

Real-time 512 event and 46000 alarm records and advanced diagnostic coding system provide ease of service in fault diagnosis and shorten system mean time to repair value (MTTR).

## REMOTE MONITORING AND CONTROL

With T-MON Server/ T-MON Admin or compatible SNMP remote monitoring software, status, measurements and alarm records of your UPS can be monitored via computer/mobile. When an alarm occurs (black outs or low battery, etc.), it can be followed from the warning messages that appear on the screen, and status messages can be sent to the desired users via e-mail and SMS.

## RELIABLE, EFFICIENT AND FLEXIBLE DESIGN

It can be configured in the field in accordance with customer needs, with settings such as output voltage, frequency and battery charging currents adjustable from the front panel.

It has the feature of working as a frequency converter at 50/60Hz.

DS Power series can work in parallel with up to 8 units for power expanding or N+1, N+X redundant operating modes. By allowing the parallel system to work with a common battery group, your total cost of ownership (TCO) and maintenance costs are reduced.

With its efficiency reaching 95%, it consumes less energy and provides high savings in a short time. Due to the low heat losses, your cooling needs and energy costs are reduced.



- TFT PANEL
- INPUT, BYPASS VE BATTERY BREKAERS
- ADVANCED COMMUNICATION
- INTERNAL SNMP
- RS232 PORT
- DRY CONTACT CARD

## BATTERY APPLICATIONS

There are battery options and battery cabinets and solutions suitable for all kinds of backup times. Battery number options suitable for  $\pm 360$ VDC value are offered for GEL and Ni Cad battery applications, especially VRLA batteries. Thanks to intelligent battery management such as 3-level battery protection and heat compensation, the life expectancy of the batteries increases. Optionally, system can be projected with different battery number and voltage options.

## MIL-STD 461G STANDARDS AND ELECTROMAGNETIC COMPATIBILITY (EMC)

The MIL-STD-461 standard establishes the baseline standard for military electromagnetic compatibility testing at the device and subsystem level.

Electromagnetic Compatibility (EMC) is defined as the ability of a device, equipment or system unit to operate in its own electromagnetic environment without causing out-of-tolerance electromagnetic disturbances and being affected by electromagnetic disturbances at a certain level.

EMC is one of the most important features that must be provided for military devices. For this reason, systems to be used for military purposes should reduce electromagnetic traces and signals, which are the basic elements of Electronic Warfare requirements, and systems should not be affected by ambient conditions, interference and deteriorations.

For this reason, radiation and sensitivity and conductivity, emission and sensitivity tests of these systems are carried out during the certification process. Our devices go through suitable chassis manufacturing, insulation and extensive testing processes for this. The tests performed within the scope of certification are shown in the table below.

MIL-STD 461G:2015		
CE102	Conducted Emissions, radio frequency potential, power leads	10 kHz - 10 MHz, Basic Curve +12dB Relaxation
RE102	Radiated Emissions, electric field	2 MHz-18 GHz, Navy Fixed & Air Force
CS101	Conducted Susceptibility, power leads	100 Hz- 150 kHz, Curve 1
CS114	Conducted Susceptibility, bulk cable injection	10 kHz- 200 MHz, Curve 2
CS115	Conducted Susceptibility, bulk cable injection, impulse excitation	30 ns, 5A, 30 Hz
CS116	Conducted Susceptibility, damped sinusoid transients, cables and power leads	10 kHz- 100 MHz, I <sub>max</sub> 10A
RS103	Radiated Susceptibility, electric field	30 MHz- 1 GHz, 10 V/m, Navy Fixed & Air Force 1 GHz- 18 GHz, 50 V/m

## R&D AND EXPERIENCE MORE THAN 42 YEARS

Tescom, with its 42 years of experience in power electronics, offers uninterrupted power solutions to the needs of defense industry in many areas.

Now, we are proud of being the first and only domestic brand that produces uninterruptible power supplies in accordance with MIL-STD 461G standard.

Tescom will continue to provide power solutions, especially uninterrupted power supply, for all sensitive and critical applications such as weapons, radar, communication, command and control systems, suitable for working in all kinds of environments, including portable systems that can serve in land, air and sea for defense industry.

Visual and technical information about the 300kVA On-Line Uninterruptible Power Supply designed for our project, which located in a shelter to work as an Emergency Power Supply Unit, has been shared for reference.

We would like to state that we are open to all kinds of cooperation for different projects.



## TECHNICAL SPECIFICATIONS

MODEL	DS3150M	DS3300M
Power (kVA)	150	300
<b>INPUT</b>		
Voltage	380/400 VAC 3P + N + G $\pm$ 20%	
Frequency	50Hz / 60Hz , $\pm$ 10%	
Power factor (@ 100% load)	$\geq$ 0.99	
THDI (*)(**)	$\leq$ 5%	
By-pass voltage	380/400 VAC 3P + N, $\pm$ 10%	
Protections	Fuses, Voltage & Frequency tolerance, Input power limit, Phase sequency indicator, Input breaker contactor	
<b>OUTPUT</b>		
Power (kW)	120	240
Power factor	0,8	
Voltage	380-400 VAC 3P + N , $\pm$ 1%	
Voltage THD	< 2% (100% @ linear load)	
Frequency	50Hz / 60Hz	
Frequency tolerance	Line synchronized: $\pm$ 2% / Free running: $\pm$ 0,1%	
Efficiency (@ 100% load)	Up to 96%	
Crest factor	3:1	
Overload capacity (***)	100% - 125% load: 10 min, 125% - 150% load: 1 min, - > 150% load: by pass	
Other protections	Advanced short circuit, Voltage tolerance, DC balance, Regenerative load, Current limiting	
<b>BATTERIES</b>		
Type	Maintenance free, Gel	
Battery number	2x30 ( $\pm$ 30) : 60 pieces	
Charge voltage	2x405 VDC	
End of discharge voltage	2x300 VDC	
Battery cabinet	External	
Battery ambient temperature	25°C	
Protection	3 level alarms, Battery fuses, Charging current limit, Temperature compensation (optional)	
Battery test	Standard every 72 hours (adjustable)	
<b>GENERAL</b>		
Standards	MIL-STD 461G, MIL-STD 810G, EN62040-2, EN62040-3, EN60068	
User interface	Colourful TFT panel, 5 vector buttons, Buzzer	
Indicators	P-N voltage, P-P voltage, Current, Power, Crest Factor, Frequency, PF, Service Time	
Advanced	Self diagnostics, 3 maintenance time indicators, Calibration over RS232, Operating hour meter	
Communication	2xRS232 serial ports, 4 standard and 8 optional DRY contact alarm relays	
Inputs	EPO input, Interactive battery panel input, Genset input	
Genset kit	Standard sensing input	
Software	Standard T-Mon UPS Management Software (3 clients + 1 server management)	
Alarm logging	Standard:with time & date 512 events	
Protection	Power module over-temperature, Overcurrent, Temperature high alarm	
Operation temperature range	0°C - 40°C	
Protection class	Class1-IP20	
Humidity	90% max. (non-condensing)	
Altitude	< 1000m above sea level	
Acoustic noise	< 68 dBA	
Net weight (kg)(**)	588	
Dimensions (mm) HxWxD(**)	1700x900x800	
<b>OPTIONS</b>		
Different input/output voltage	Please ask	
Transformer	Galvanic isolation transformer at the input & output	
Software	T-Mon Admin Multi UPS monitoring 10-50-100-200 clients, T-Mon Server 50-100-200 clients	
Adaptors	SNMP, RS485, Remote monitoring panel, MODBUS (RS485 or TCP/IP), TCP/IP, GSM/GPRS Modem, Comport multiplexer	
Parallel operation	Up to 8 units	
Power factor	0.8/0.9/1.0	
(*) Depending on power and input/output conditions		
(**) It may differ according to the project		
(***) The waiting times for excessive loads vary depending on the ambient temperature.		