



## Critical industrial and medical applications

# M4

## From 10 to 120 kVA

M4T, the latest generation of UPS by INFOSEC UPS SYSTEM.



M4T, with its three-phase Uninterruptible Power Supply (UPS) incorporating the latest cutting-edge technologies, can be used in the most demanding industrial environments and offers perfectly reliable protection for a broad range of hardware installations that must not face power failure: data centers, IT networks, financial services, industrial processes, telecommunications and infrastructures (airports, hospitals, train stations, etc.).

M4T available from 10 to 120 kVA:

- M4T 10 to 40 kVA with built-in batteries.
- M4T 60 to 120 kVA comes with external battery cabinets.

### M4T UPS advantages:

- High Frequency On line Double Conversion
- IGBT rectifier
- DSP (Digital Signal Processor) Control
- Independent rectifier and by-pass power supplies
- High overall efficiency
- AFC (Adaptive Feed Forward Cancellation) advanced control - **EXCLUSIVE!**
- Very low distortion of input current (THDi <1% to 100% of rated load)
- Input power factor correction > 0.99 (from 10% of connected load)
- Up to four UPS devices connected in parallel
- Instant calculation of backup time
- Independent and smart battery management
- Communication ports RS 232 or RS 485, SNMP, ModBUS
- Dry contact relay interface
- Eco-mode function
- Compact format & reduced foot print
- More than 60% of the materials used can be recycled
- Easy and safe maintenance



On Line Double Conversion Technology



High efficiency



Redundant parallelizable



LCD control screen



Remote control software



Extended backup time possible

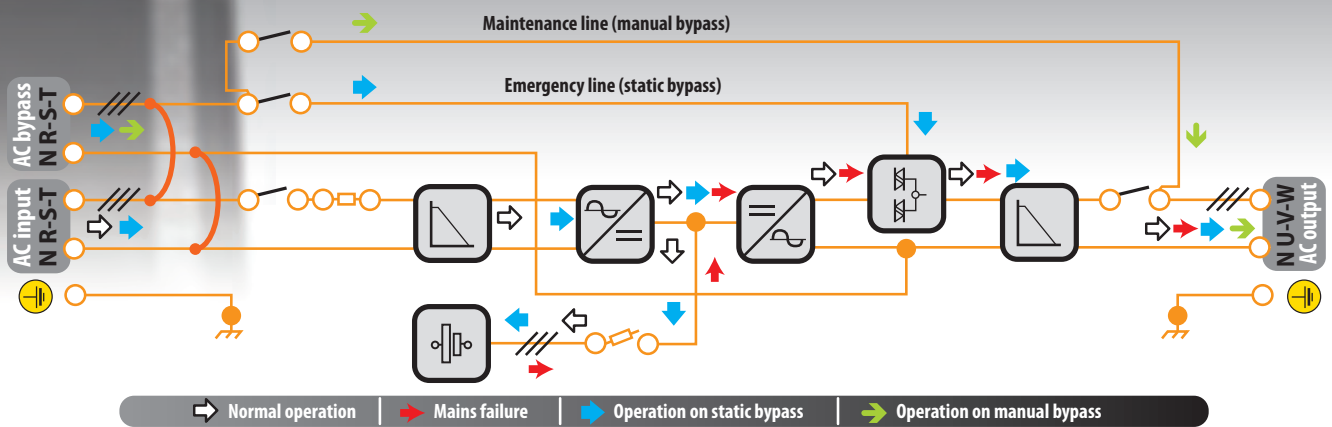


# M4

## ■ A professional tool for high performance:

**M4T's transformerless high-frequency conversion technology** offers a **high overall output** (up to 95%). The absence of a transformer also significantly reduces the weight and volume of the device: this compact UPS requires very little floor space and perfectly fits the most demanding industrial environments.

**Its dual power supply network with independent rectifier and by-pass** is appropriate for use in facilities running separate redundant network systems with generator sets (hospitals, airports, train stations, supermarkets, cold chains, etc.). In this way the critical load can be powered by a second source supplying the by-pass circuit, should the main source fail for a lengthy period.



- M4T devices, fitted with the latest generation IGBT and using High Frequency technology, offer a **low noise level** (<52 dB).

- The M4T range, made from materials over 60% of which can be recycled, **limits its effect on the environment.**



## ■ Installation and easy maintenance:

Space and weight have a significant impact on the total cost of a UPS.

Much attention has therefore been paid to the design of this product:

- Front access for input/output cabling makes **hooking up and checking connections easier**. It is not necessary to move the device to access the connection terminals or to check tautness and tightness.
- Most of the **components are accessible from the front panel** for easy maintenance of the device and to optimise its use of floor space.



## ■ Upgradable and cost-effective

### • In parallel:

To enhance system security and meet the need for system flexibility and upgradability, the M4T range can be configured in parallel. Up to 4 units can be connected in parallel using two connectors, increasing the power and redundancy for even greater security. The «in parallel» function is built into the UPS and is therefore configurable for free.

### • Eco-mode:

This reduces the UPS device's energy consumption by switching it to sleep mode. This feature allows the unit to supply power to the connected load directly from the network while maintaining the UPS fully operational to ensure the continuity of power from the system, should a failure or a major voltage fluctuation occur.



## ■ Superior quality of power:

The **M4T** range comes with **High Frequency On Line Double Conversion technology**. This high-end technology ensures perfect, uninterrupted power to all strategic electronic hardware whose supply must be absolutely guaranteed.

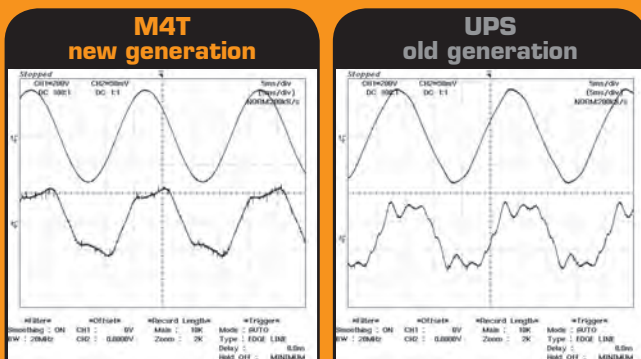
The UPS generates the output voltage and permanently supplies the application. Voltage and frequency continuity and stability are provided independently of the mains power supply.

**EXCLUSIVE!**

## ■ AFC (Adaptive Feed Forward Cancellation) advanced control:

Harmonic distortion is a very important factor for a high-powered UPS: the challenge is how to maintain a low rate regardless of the percentage of connected loads and their nature (capacitive, resistive or inductive).

### Output voltage distortion and output current with discharge lamp



\*\*\*Very low output voltage (THD=0,2%) at full load\*\*\*  
 \*\*\*Very clean current wave form\*\*\*

\*\*\*Very low input current THD (<3%) at full load\*\*\*

The AFC function cancels and compensates for the input and output harmonics over the entire operating range (from 10% to 100% of the connected load).

### A low rate of harmonics offers many advantages:

- Neutralises the harmonics as close as possible to the equipment causing interference
- No additional loss in the cables and wires
- No unstable operation of computers, monitors and electronic hardware, etc.
- Improves the quality of the current delivered to the powered systems
- Improves the installation's power factor
- Extends the useful life of the installation: no overheating of transformers and generators that shorten their life time
- Reduces the energy bill
- Meets the needs of all types of electrical networks including those powered by generator sets.

## ■ PFC (Power Factor Control):

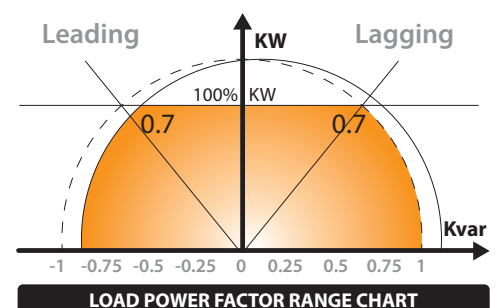
Enables the power quality to be improved, at the rectifier, and to limit input over-sizing of the installations (cables, circuit breakers, disconnecting switches, fuses, etc.).

## ■ DSP (Digital Signal Processor):

**M4T** has a processor dedicated to calculations and signal quality: the DSP has the ability to process a huge amount of information in real time (20 million instructions per second). On one hand, the DSP controls the rectifier and the network current quality and, on the other, it controls the output voltage quality thus guaranteeing users exceptional performance in terms of voltage accuracy, efficiency and reliability.

**M4T** is totally controlled by microprocessor thereby ensuring greater accuracy as well as better system's operating parameters stability.

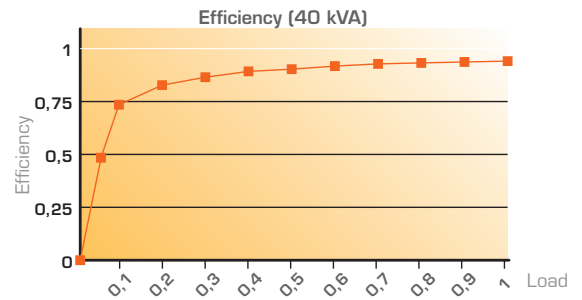
Thanks to all these assets, **M4T** can easily adapt to the most varied and reputedly difficult loads such as non-linear, highly inductive or capacitive loads, but also discharge lamps, induction motors, etc.



# ELECTRICAL PROPERTIES

## ■ High overall efficiency of the UPS output:

**M4T**, due to the DSP control and latest generation IGBT switch, ensures a high overall performance (up to 95%), even at low load, allowing substantial overall energy savings and an optimisation of the components' useful life by decreasing heat loss



## ■ Cost-effective and innovative hardware:

### • Clean IGBT rectifier and low input THDi:

The IGBT rectifier is an essential component because it drastically reduces the interference in the upstream network (source and distribution) and thus prevents reputedly difficult loads from disturbing the network.

**M4T** offers very low distortion of THDi input power due to the innovative rectifier using IGBT technology, i.e. a THDi <1% to 100% load, and even a THDi <5% from and upward of 10% load.

### • Low THDv output:

The **M4T** THDv remains low even with reputedly difficult loads connected i.e. a THDv <0.5% with a resistive load and a THDv <2% with a non-linear load and a crest factor = 3.

The **M4T** range can easily protect the most diverse, reputedly difficult and critical loads (laboratory instruments, hospital environments, etc.).

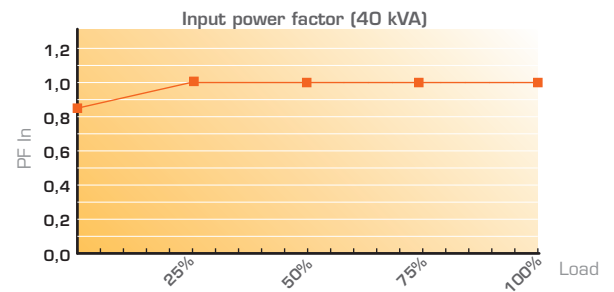
### • Efficient input power factor at low load:

Regardless of the operating mode, **M4Ts**' current consumption is reduced by a 0.99 input power factor (upward of 10% load).

This advantage helps optimise the network upstream and limit power loss as well as reduce operating and maintenance costs.

### • 4-quadrant rectifier:

Useful for loads deemed difficult: it allows the UPS to re-inject energy into the network as well as to optimise and better control the DC-bus voltage.



## ■ Protection against short circuits:

**M4T** controls the UPS output and rectifier PFC function, provides very good protection against short circuits and very significantly improves the reliability of the installation.

The system also increases this degree of reliability by protecting the DC bus from short circuits through ultra-fast-acting fuses on the PFC and Inverter circuits.

# BATTERIES

The energy stored in the batteries is absolutely essential to maintain the power supply to the installation in the event of power cuts or electrical disturbances.

The following characteristics ensure the battery is always available:

## ■ Independent and smart battery management:

- Battery quality and charging time optimisation: batteries charge to 90% in only 5 hours while monitoring and analysing the key parameters to optimise the charging process.

- Battery lifetime optimisation:

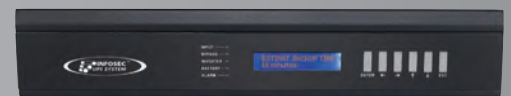
- Monitoring full discharge
- Charge voltage compensation according to the temperature to avoid overheating and excessive battery charging (battery sensor installed in the battery compartment)
- Monitoring the battery voltage ripple ratio

## ■ Battery charging current:

The battery charging current can be adjusted directly on the front panel if necessary:  
Max. current – 10 to 30 kVA: 23.5 A / 40 to 60 kVA: 47.0 A / 80 kVA: 70.5 A

## ■ Backup time calculation:

The use of powerful algorithms means the available backup time can be seen in real time on the LCD display in the event of an extended power cut.



Standard LCD screen

## ■ Battery test:

A battery test can be manually or automatically enabled, depending on the programming, from the control panel.

## COMMUNICATION

UPS protection would not be thorough if the user did not have access to a complete and standalone system able to check UPS status and enabling scheduled actions to be performed.

### ■ The M4T range has a full and easy-to-use communication system as standard:

- **Backlit multilingual display panel** (English, French and Spanish) for real-time display of UPS status.

#### The following information is available in an easy and simple way:

- Hardware control and status
- Rectifier: input voltage (phase/phase and phase/neutral), input current for each phase, frequency
- By-pass: input voltage (phase/phase and phase/neutral), input current for each phase, frequency
- Inverter: output voltage (phase/phase and phase/neutral), frequency, output current for each phase, apparent power output, active power output
- Batteries: voltage, current charge/discharge, estimated backup time
- Alarms
- Settings

Information available on the standard display panel, as well as on the optional LCD screen (visual below):



- **Dry contacts** as standard allow remote transmission of UPS or alarm status information (e.g. for a centralized technical management system).
- **The DB9 communications interface**, which allows the M4T UPS devices to communicate with the various workstations and IT servers, can be configured in two ways: either **RS232 protocol** and InfoPower software or **RS485 protocol** for **MODBUS communication** and integration in BMS (Building Management Systems).
- **An SNMP slot** designed to add an **SNMP agent (optional)** that allows the UPS to be managed and monitored remotely as well as the network to be powered via Ethernet or web.

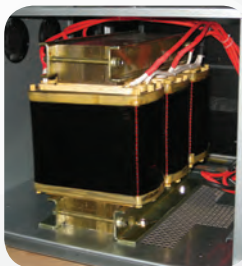
For maximum security, and thanks to all these communication systems, the UPS can be monitored remotely 24 hours a day and 7 days a week.

- **Emergency Stop Push Button (ESPB) function thanks to an external EPO connector:** this function ensures the safety of personnel and equipment in the event of fire or any other emergency situation by tripping a shutdown of the UPS and connected load.

## OPTIONS

### ■ Galvanic isolation transformer:

The **M4T-ISO** version equipped with an output isolation transformer provides the system with complete electrical isolation between the upstream and downstream circuits. The device therefore adapts perfectly to all earthing systems both upstream and downstream.



### ■ SNMP agent:

Using the SNMP agent facilitates the management (local and multi-site) of the **M4T** UPS and network power supply due to the following features:

- Connection to the Ethernet network and identification by IP address
- Configuring and programming extensions and restart of the system on a weekly (or other) basis ...
- UPS configuration locally or remotely
- Self-diagnosis of the UPS devices while operating
- Automatic shutdown according to pre-determined priorities of the various networked computers
- Sending warning messages to network users
- Events log
- Low battery detection
- Temperature, humidity and smoke detector can be connected (optional).



### ■ Backup extensions:

In order to take advantage of extended backup time, battery extension modules can be attached to **M4T** UPS devices.

Different types of battery cabinets are available according to the type of battery needed, but also the physical setting. Some battery cabinets may be supplied in kit form and assembled on site.



### ■ IP21 protection:

The **M4T**, with its rigid plastic cover, can take advantage of IP21 protection in a specific installation.

### ■ 5.7" front screen:

For an even more user-friendly view of UPS status and various measurements.



## ■ DATA CENTERS:

Data processing centers are very sensitive. A power failure, even for a few seconds, can have disastrous consequences for a business (loss of data, activity stopped, etc.).

INFOSEC recommends **M4T** UPS devices as **the optimal solution to power supply related problems** and thus allows the operators in these processing centers to **improve the efficiency of their hardware and thus to improve security and better meet the needs of their clients.**

**M4T** advantages for data centers: parallel redundancy, cutting edge technology (IGBT rectifier, AFC control, etc.), remote control, etc

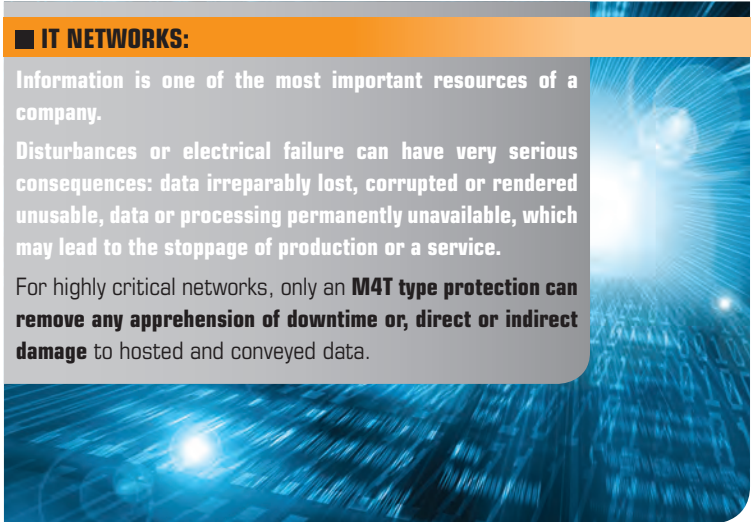


## ■ IT NETWORKS:

Information is one of the most important resources of a company.

Disturbances or electrical failure can have very serious consequences: data irreparably lost, corrupted or rendered unusable, data or processing permanently unavailable, which may lead to the stoppage of production or a service.

For highly critical networks, only an **M4T type protection can remove any apprehension of downtime or, direct or indirect damage** to hosted and conveyed data.



## ■ SENSITIVE INDUSTRIAL EQUIPMENT:

A power failure or disturbance that would result in the shutdown of an in-factory machine for several minutes or several hours must absolutely be avoided.

The **M4T** range's adaptability to any type of loads, even the most difficult (inductive, capacitive, non-linear, discharge lamps, induction motors, etc.), as well as its high performance make it **the ideal solution to ensure the power supply to and continuity of activities and services for all kinds of industrial applications.**



## ■ FINANCIAL SERVICES:

On-line financial transactions, more and more widespread, require a power source to ensure safe and reliable uninterrupted operation in all sectors.

INFOSEC, with its **M4T** range of UPS devices, meets this requirement by providing **an efficient and reliable solution to ensure the exchange of information and power supply continuity** regardless of the scenario.



## ■ TELECOMMUNICATIONS:

The phenomenal growth of the telecommunications sector implies the need for uninterrupted availability of communications and service for the suppliers as well as the subscribers.

**M4T** UPS devices are able to provide the backup required to avoid forced outages. A powerful battery charger helps to provide and configure the necessary backup by adding battery packs.

In addition the effective communication systems of this UPS allow **remote monitoring 24/7** ensuring an immediate response in the event of a problem or failure on the network.



## ■ INFRASTRUCTURES:

Large infrastructures often need a higher level of security because their operation must be uninterrupted and not suffer any forced outage and, in particular, because often the very high human risks can neither be ignored nor minimised.



Hospitals



Airports



Tunnels

## SERVICES & TECHNICAL SUPPORT

Pre-sales and after-sales services provide an appropriate solution to your needs to ensure the durability, reliability and availability of your UPS.



### ■ Technical requirements & pre-installation assistance

A needs pre-qualification questionnaire will help validate the technical choices and options selected for each installation configuration. Our technical sales team can be consulted for the most complex issues.



### ■ Installation, testing, commissioning

An INFOSEC engineer or an INFOSEC certified installer will come to your site to install and start-up the UPS. A test report would be then provided.



### ■ Technical support hotline

The after-sales service can be contacted quickly by phone and/or email to answer any questions or technical queries.



### ■ Maintenance contract

INFOSEC Communication offers several types of maintenance contracts for UPS devices in the ON LINE range from 5 kVA. Maintenance contracts may include the replacement of parts, battery replacement, labour, travel in the event of repair and an annual inspection.



### ■ Replacing the batteries

It is important to ensure the proper operation of the batteries which, after a few years of operation must be changed (between 3 and 5 years depending on the room temperature, number of charge and discharge cycles).

**The batteries absolutely must be changed by a professional: only an INFOSEC engineer or approved INFOSEC engineer may intervene on request.**



**Hotline**

**+33 2 40 76 15 82**

**hotline@infosec.fr**



### ■ Technical training

**INFOSEC makes technical training available for its partners and customers:**

- Training in the use subsequent to on-site commissioning.
- More comprehensive training on all INFOSEC UPS SYSTEM product lines for authorised partners.
- Technical-sales training for sales support and to calculate the size of a UPS according to the facilities to be protected..

**GENERAL CHARACTERISTICS**

<b>Technology</b>	High Frequency On Line Double Conversion - DSP control									
<b>Power</b>	10 kVA	15 kVA	20 kVA	30 kVA	40 kVA	60 kVA	80 kVA	100 kVA	120 kVA	
<b>Output power factor (cos φ)</b>	8 kW	12 kW	16 kW	24 kW	32 kW	48 kW	64 kW	80 kW	96 kW	0,8

**INPUT**

<b>Nominal voltage</b>	3 Ph + N 380/400/415									
<b>Acceptable voltage range</b>	+15% / -20% adjustable									
<b>Frequency</b>	50/60 Hz (± 5%)									
<b>Total harmonic Distortion (THD) (100% / 50% / 10% load)</b>	< 1,5 % / < 2,5 % / < 6,0 %			< 1,0 % / < 2,0 % / < 5,0 %				< 1,5 % / < 2,5 % / < 6,0 %		
<b>Power factor</b>	>0,99 (from 10% load)									

**OUTPUT**

<b>Nominal voltage</b>	3 Ph + N 380/400/415									
<b>Precision</b>	Static variation : ± 1% / Dynamic variation : ± 2% (load variations 100%-0%-100%)									
<b>Frequency</b>	Synchronised : 50/60 Hz ± 4% / Free running : 50/60 Hz ± 0,05%									
<b>Slew rate with the mains power on</b>	± 1 Hz per second									
<b>Total Harmonic Distortion (THDi)</b>	Linear load : < 0,5 % / Non-linear load : < 1,5 %									
<b>Phase Displacement</b>	120° ± 1% (balanced load) / 120° ± 1% (imbalances 50% of the load)									
<b>Dynamic Recovery Time</b>	10 ms. at 98 % of the static value									
<b>Allowable Overload</b>	125% for 10 min / 150% for 60 s									
<b>Allowable Crest Factor</b>	3,4:1			3,2:1			2,8:1		3,2:1	
<b>Imbalance Output Voltage</b>	< 1% (@ 100% Unbalanced Load)									
<b>Efficiency (normal mode at 100% load)</b>	90,5%	90,5%	91,0%	92,0%	92,5%	93,05%	94,0%	93,0%	93,3%	
<b>Current Limit</b>	High overload, short circuit RMS Voltage Limit / High Crest Factor Current: Peak Voltage Limit									

**PROTECTION**

<b>Protection</b>	Discharge / Overcharge / Overload / Short circuit / Overheating									
<b>Input current limitation</b>	High overload : PFC Limit (charging batteries)									
<b>Surge protection</b>	Protection against transitory over-voltages									
<b>Heat dissipation max - Watt</b>	1259,67	1259,67	1582,42	2086,96	2594,59	3612,9	4085,11	TBC	TBC	
<b>Heat dissipation max - Btu/Min</b>	71,64	71,64	89,99	118,69	147,55	205,47	232,32	TBC	TBC	

**STATIC BYPASS**

<b>Type</b>	Static system microprocessor controlled									
<b>Nominal voltage</b>	3 Ph + N 380/400/415 V									
<b>Frequency</b>	50/60 Hz									
<b>Transfer Time</b>	Zero									
<b>Admissible Overload</b>	400% for 10 sec.									
<b>Transfer to Bypass</b>	Immediate for overloads above 150%									
<b>Transfer to normal mode</b>	Automatic									

**MANUAL BYPASS (MAINTENANCE)**

<b>Type</b>	Without interruption									
<b>Nominal voltage</b>	3 Ph + N 380/400/415 V									
<b>Frequency</b>	50/60 Hz									

**BUILT-IN BATTERIES**

<b>Type (2*31)</b>	12V/7Ah	12V/7Ah	12V/9Ah	12V/12 Ah	12V/18 Ah	-	-	-	-	
<b>Recharging time</b>	5 hours to 90% of capacity									
<b>Backup time</b>	20 min.	10 min.	9 min.	8 min.	7 min.	-	-	-	-	

**CONTROL PANEL AND DISPLAY**

<b>LCD display</b>	LCD screen with backlight and saving mode + 2 rows of 20 characters									
<b>Control on front panel</b>	5 LED indications + 6 buttons									

**UPS PHYSICAL CHARACTERISTICS**

<b>Dimensions - HxWxD (mm)</b>	1100 x 450 x 700					1320 x 590 x 805				
<b>Net weight kg (without batteries)</b>	128		181			208	230	255	255	
<b>Net weight kg (with built-in batteries)</b>	268	290	400	538	-	-	-	-		

**COMMUNICATION**

<b>Main connectors</b>	DB9 connector (RS232 & RS485 ports) - Interface to Relay(AS400) - External EPO									
<b>Communication software</b>	InfoPower (Supports Windows® 98/2000/2003/XP/Vista/2008, Windows® 7, Linux, and MAC)									
<b>SNMP (optional)</b>	Power management from SNMP manager and web browser									

**ENVIRONMENT**

<b>Ideal environment</b>	0-40°C, 0-95% of relative humidity (without condensation)									
<b>Operating altitude</b>	Up to 1000 m above sea level (>1000 m 1% deterioration for every 100 m)									
<b>Noise level at 1 meter</b>	< 52dB					< 65dB				

**NORMS**

<b>Standard</b>	EC									
<b>EMC (Electromagnetic compatibility)</b>	EN 62040-2									
<b>Low voltage (Safety)</b>	EN 62040-1-2 / IEC 60950-1									

**SALES INFO**

<b>Warranty</b>	1 year									
<b>Gencods (230V IEC Model)</b>	3700085 65772 0	3700085 65773 7	3700085 65774 4	3700085 65775 1	3700085 65776 8	3700085 65777 5	3700085 65778 2	3700085 65779 8	3700085 65798 0	

BB M4T 62B26	BB M4T 62B44	BB M4T Kit 62B12	BB M4T Kit 62B17/26/40
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**BATTERY BANKS**

<b>Battery bank type</b>	Assembled	Assembled	Sold in kit form.	Sold in kit form.
<b>Battery type &amp; number</b>	2x31 batt. 12V/26Ah	2x31 batt. 12V/44Ah	2x31 batt. 12V/12Ah	2x31 batt. 12V/17Ah 2x31 batt. 12V/26Ah 2x31 batt. 12V/40Ah
<b>Dimensions - HxWxD (mm)</b>	805 x 590 x 1320	980 x 650 x 1322	780 x 470 x 1190	780 x 880 x 1190
<b>Net weight - kg (empty battery bank)</b>	118	151	45	95
<b>Gencod</b>	3700085 65793 5	3700085 65794 2	3700085 65795 9	3700085 65796 6



**From 10 to 120 kVA**

**STANDARD BASE**

- **Standard communication interfaces**
  - DB9 connector (RS232 or RS485)
  - SNMP slot
  - Modbus communication
  - Dry contacts

- **Standard electrical equipment**
  - Maintenance by-pass
  - Redundant parallelizable
  - Dual Input (rectifier/by-pass)
  - EPO Connector for ESPB (Emergency Stop Push Button)

- **Standard environment**
  - IP 20
  - Cable feed-through in the lower part
  - IGBT with internal temperature sensor

**LES OPTIONS**

- **Communication options**
  - SNMP agent
  - Front panel 5.7" Colour LCD screen

- **Electrical options**
  - Backup extension
  - Isolation transformer

- **Environment options**
  - IP 21
  - Temperature, humidity and smoke detector

**Warranty**

One-year guarantee (UPS + battery).



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