



Environmental Complex Solution



**Uninterruptible
Power
Supplies
ECSO**



ECSO GmbH company was founded in 1989 in Nuremberg (Germany), by the group of design engineers, specializing in the improvement and development of components and units of air conditioning and cooling for the aviation industry. In the early 2000s, the company ECSO GmbH has launched its own branded equipment ECSO (Environmental Complex Solution). High quality products along with the high culture of the assembly technique allowed the ECSO to gain a reputation of high quality and reliable equipment.

In order to be able to offer our partners a complete solution for equipping facilities engineering systems of the IT infrastructure, product line has been significantly expanded. Currently, the list of our products includes:

- ▶ HVAC equipment
- ▶ Uninterruptible power supplies
- ▶ Diesel generating sets
- ▶ Server cabinets
- ▶ Raised floor

This catalog provides information on uninterruptible power supplies, manufactured under the brand ECSO. The main place in the line of uninterruptible power supplies take the 3-phase UPS, fully complying with all the modern requirements of quality power supply. Wide range of 3-phase UPS from 10 kVA to 600 kVA, and the possibility of parallel operation of up to 6 devices allow us to construct a system of almost any power with almost any desired level of redundancy.

In addition to a wide range of available power, uninterruptible power supplies ECSO are characterized by the use of modern power conversion technologies, high efficiency, low requirements to the quality of the input voltage, high overload capacity, compact size, reliability and ease of maintenance. All 3-phase UPS from 30 kVA have a dual input power supply.

In addition to 3-phase UPS units, in our range are also presented UPS with 3-phase input and 1-phase output, single-phase UPS as well as for installation in the rack enclosure. ECSO UPS can be applied as to ensure uninterrupted supply of IT-infrastructure, and in other spheres of activity, which is critical to ensure continuous operation. Uninterrupted power supply of industrial equipment, safety systems and equipment, medical equipment can be safely and effectively achieved through our ECSO UPS devices.

Please note that technical specifications presented in the catalog are subject to change. For clarification of technical data, please contact the company ECSO GmbH.

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ECSO ED

Series UPS

160 – 350 kVA

NEW TECHNOLOGY

- ▶ Three level rectifier and inverter
- ▶ High and stable online efficiency (up to 96%)
- ▶ High output PF (0.9)
- ▶ Low input current THD (<4%)

USER-FRIENDLY

- ▶ Touch screen panel user interface
- ▶ Multi language options up to 10 languages
- ▶ Multi communication options
- ▶ Remote monitoring and management software
- ▶ Programmable dry contacts
- ▶ Extended battery life with intelligent battery management
- ▶ Automatic and manual battery test with adjustable period and duration
- ▶ High efficiency ECO-mode (up to 98%)
- ▶ Optimum generator compatibility up to 1.1xPn
- ▶ Reduced weight/volume/footprint
- ▶ 2 years warranty
- ▶ 10 years spare part warranty

RELIABLE

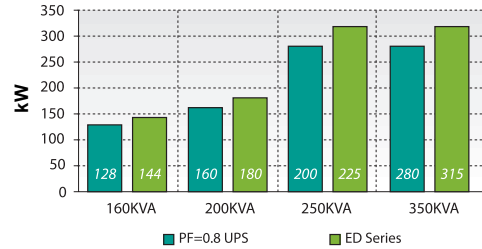
- ▶ Parallel option up to 6 units
- ▶ Intelligent redundancy management (N, N+1, N+X)
- ▶ Variable input low voltage depending on loading percentage (up to -36%)
- ▶ Programmable high overload capacity
- ▶ Dual input
- ▶ Short circuit protection
- ▶ Local and remote emergency power off



96 %
efficiency

MORE ACTIVE POWER

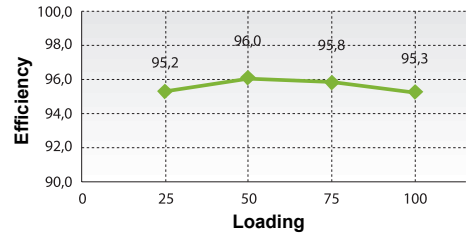
The **EC SO ED** Series UPS is designed to supply more active power critical loads and wide leading-lagging operation region. The **EC SO ED** Series UPS provides 12% more active power against PF=0.8 UPS and responds perfectly to high power factor load requirements without downgrading.



HIGH AND STABLE EFFICIENCY

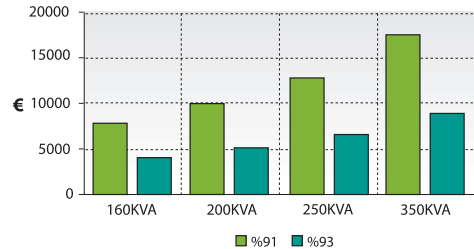
The **EC SO ED** Series UPS reduces energy loss and requirement of cooling systems by high efficiency operation. Up to 96%, the **EC SO ED** Series UPS introduces the highest online efficiency performance on the market.

Also, the **EC SO ED** Series UPS is promising higher efficiency even at low loading conditions. With the following stable efficiency curve, the **EC SO ED** Series UPS is becoming for all load types and offers wide application areas.

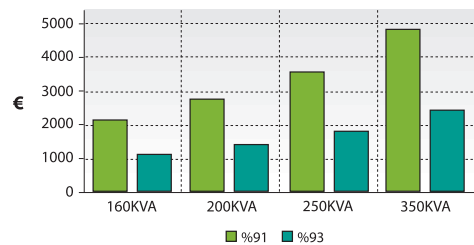


ENERGY SAVING

The **EC SO ED** Series UPS reduces operation and cooling costs and saves significantly on your annual energy bill. The annual savings* of the **EC SO ED** Series UPS as against the 91% and 93% efficiency UPS:



The annual cooling savings* of the **EC SO ED** Series UPS as against the 91% and 93% efficiency UPS:



* Full load operation is considered. 0.0918 EUR is considered per kWh. 0.4kW cooling power is considered per 1kW lose.

HIGHLY COMPACT & SERVICEABLE UPS

Weight, volume and footprint of the **EC SO ED** Series UPS is less than the conventional UPS. Electronic board and component placement ensures ease of service.

HIGH PERFORMANCE THREE LEVEL RECTIFIER

With unity power factor and low harmonic distortion (< 4%), the **ECISO ED** Series UPS significantly optimizes the upstream infrastructure.

- ▶ No need poor power factor compensation and harmonic filter systems
- ▶ Reduced cable cross-section and low capacity circuit breakers
- ▶ Reduced input current and energy loss
- ▶ Possibility of 1.1-1.3 times gen-set sizing (depends on generator technology)
- ▶ No harm to neighboring loads with low EMI emission

HIGH PERFORMANCE THREE LEVEL INVERTER

The **ECISO ED** Series UPS ensures high reliability with the low voltage harmonic distortion.

- ▶ Very short response time (<2ms)
- ▶ Very low output voltage tolerance
 - ≤ 1% (static load)
 - ≤ 2% (dynamic load)
- ▶ Very low voltage harmonic distortion
 - ≤ 2% (linear load)
 - ≤ 5% (non-linear load)

HIGH BATTERY PERFORMANCE

The **ECISO ED** Series UPS extends the battery life with intelligent battery management.

- ▶ Two-stage charging method that extends battery life
- ▶ Equalizing charge
- ▶ Life expectancy
- ▶ Automatic and manual battery test with adjustable period and duration
- ▶ Temperature compensation support
- ▶ Gen-set management: Battery charge stops in order to save energy and not to overload the gen-set.

USER FRIENDLY INTERFACE

- ▶ Touch screen panel
- ▶ Operating mode diagram
- ▶ Multi language menu
- ▶ Remote monitoring:
 - RS232/RS485
 - SNMP
 - MODBUS
 - Remote panel
 - Programmable dry contacts
- ▶ Local and remote emergency power off (EPO)

ADVANCED PARALLEL OPERATION

- ▶ Paralleling up to 6 units
- ▶ Power sharing (N): All units share the load equally.
- ▶ Redundancy (N+1): One unit idles and the others share the load equally. Once one or the other unit stops in case of any faults, the redundant unit starts operating.
- ▶ Units idle or starts operating depending on the load percentage.
- ▶ Lost system standby mode: In case of any faults, only the faulty unit stops and the others continue operating.
- ▶ Redundancy lost alarm: If one of the units stops in case of any faults at existing load percentage, it is notified that the system will be overloaded in advance.
- ▶ External synchronous: Supports bypass synchronous in case of common bypass for two separated parallel systems

TECHNICAL SPECIFICATIONS

Model	ED-160	ED-200	ED-250	ED-350
Apparent power (kVA)	160	200	250	350
Active power (kW)	144	180	225	315
INPUT				
Voltage	380 / 400 / 415 Vac 3ph + N			
Voltage tolerances	± 15% (without downgrading)			
Frequency	50/60 Hz			
Frequency tolerances	± 10%			
Power factor	≥ 0,99			
THDi	< 4%			
BYPASS				
Dual input	Standard			
Voltage	380 / 400 / 415 Vac 3ph + N			
Voltage tolerances	± 10% (adjustable)			
Frequency	50/60 Hz			
Frequency tolerances	adjustable up to ± 10%			
OUTPUT				
Voltage	380 / 400 / 415 Vac 3ph + N			
Voltage tolerances	± 1% (static load), dynamic load in accordance with VFI-SS-11			
Frequency	50/60 Hz (selectable)			
Frequency tolerances	± 0.1% (self-synchronize), ± 4% (mains-synchronize, adjustable up to ± 5%)			
Power factor	0.9			
THDv	≤1% (linear load), ≤5% (non-linear load)			
OVERLOAD CAPACITY				
≤110%	Continuously			
≤130%	60 min.			
≤150%	10 min.			
≤200%	1 min.			
EFFICIENCY (online)				
25% load	95.2%			
50% load	96.0%			
75% load	95.8%			
100% load	95.3%			
ECO-mode	up to 98%			
GENERAL				
Technology	True online-double conversion, Three level rectifier & inverter			
Control	DSP, SPWM			
Battery quantity of a group (12V)	60/64			
Paralleling units	up to 6			
Communication	SNMP, RS232, RS485, MODBUS			
Remote monitoring	SNMPView, UPSMon, Remote panel			
Dry contacts	Programmable 7 dry contacts			
Custom inputs	Generator, Battery temperature sensor, Remote EPO			
ENVIROMENT				
Operating temperature	from 0 °C up to +40 °C (from 20 °C to 25 °C for maximum battery life)			
Relative humidity	0% - 85% (without condensation)			
Noise level	<65 dB (A)			
UPS CABINET				
Dimensions (W × D × H) (mm)	780 × 960 × 1850		780 × 1260 × 1850	
Weight (kg)	600	640	680	750

ECSO D

Series UPS

160 – 600 kVA



NEW TECHNOLOGY

- ▶ IGBT rectifier
- ▶ Efficiency 92%
- ▶ Low input current THD (<4%)
- ▶ Very short response time (<2ms)

USER-FRIENDLY

- ▶ Dual LCD user interface
- ▶ Multi language option
- ▶ Multi communication options
- ▶ Remote monitoring and management software
- ▶ Programmable dry contacts
- ▶ Extended battery life with intelligent battery management
- ▶ Automatic and manual battery test with adjustable period and duration
- ▶ High efficiency ECO-mode (up to 98%)
- ▶ Optimum generator compatibility
- ▶ Reduced weight/volume/footprint
- ▶ 2 years warranty
- ▶ 10 years spare part warranty

RELIABLE

- ▶ Parallel option up to 6 units
- ▶ Intelligent redundancy management (N, N+1, N+X)
- ▶ Variable input low voltage depending on loading percentage (up to -36%)
- ▶ Programmable high overload capacity
- ▶ Dual input
- ▶ Short circuit protection
- ▶ Local and remote emergency power off

TECHNICAL SPECIFICATIONS

Model	D-160	D-200	D-250	D-300	D-400	D-500	D-600
Apparent power (kVA)	160	200	250	300	400	500	600
Active power (kW)	128	160	200	240	320	400	480
INPUT							
Voltage	380 / 400 / 415 Vac 3ph + N						
Voltage tolerances	± 15% (without downgrading)						
Frequency	50/60 Hz						
Frequency tolerances	± 10%						
Power factor	≥ 0,99						
THDi	< 4%						
BYPASS							
Dual input	Standard						
Voltage	380 / 400 / 415 Vac 3ph + N						
Voltage tolerances	± 10% (adjustable)						
Frequency	50/60 Hz						
Frequency tolerances	adjustable to ± 10%						
OUTPUT							
Voltage	380 / 400 / 415 Vac 3ph + N						
Voltage tolerances	± 1% (static load), dynamic load in accordance with VFI-SS-11						
Frequency	50/60 Hz (selectable)						
Frequency tolerances	± 0.1% (self-synchronize), ± 4% (mains-synchronize, adjustable up to ± 5%)						
Power factor	0.8						
THDv	≤ 2% (linear load), non-linear load in accordance with IEC/EN 62040-3						
Crest factor	3:1						
OVERLOAD CAPACITY							
110%	Normal mode continuously						
125%	10 min.						
150%	1 min.						
>150%	Bypass mode continuously						
EFFICIENCY							
Online	up to 92%						
ECO-mode	up to 98%						
GENERAL							
Technology	True online-double conversion, IGBT rectifier						
Control	DSP, SPWM						
Battery quantity of a group (12V)	60/64						
Paralleling units	up to 6						
Communication	SNMP, RS232, RS485, MODBUS						
Remote monitoring	SNMPView, UPSMon, Remote panel						
Dry contacts	Programmable 7 dry contacts						
Custom inputs	Generator, Battery temperature sensor, Remote EPO						
ENIRONMENT							
Operating temperature	from 0 °C up to +40 °C (from 20 °C to 25 °C for maximum battery life)						
Relative humidity	0-85% (without condensation)						
Noise level	<65 dB (A)				<70 dB (A)		
UPS CABINET							
Dimensions (W × D × H) (mm)	630×1110 ×1450	780 × 1260 × 1850			3030 × 810 × 1925		
Weight (kg)	490	730	850	870	1380	1600	1800

ECSO EC

Series UPS

60 – 120 kVA

NEW TECHNOLOGY

- ▶ Three level rectifier and inverter
- ▶ High and stable online efficiency (up to 95,5%)
- ▶ High output PF (0.9)
- ▶ Low input current THD (<4%)

USER-FRIENDLY

- ▶ LCD user interface and advanced panel features
- ▶ Multi language options
- ▶ Multi communication options
- ▶ Remote monitoring and management software
- ▶ Programmable dry contacts
- ▶ Extended battery life with intelligent battery management
- ▶ Automatic and manual battery test with adjustable period and duration
- ▶ High efficiency ECO-mode (up to 98%)
- ▶ Optimum generator compatibility up to $1.1 \times P_n$
- ▶ Reduced weight/volume/footprint
- ▶ 2 years warranty
- ▶ 10 years spare parts warranty

RELIABLE

- ▶ Parallel option up to 6 units
- ▶ Intelligent redundancy management (N, N+1, N+X)
- ▶ Variable input low voltage depending on loading percentage (up to -36%)
- ▶ Programmable high overload capacity
- ▶ Dual input
- ▶ Short circuit protection
- ▶ Local and remote emergency power off



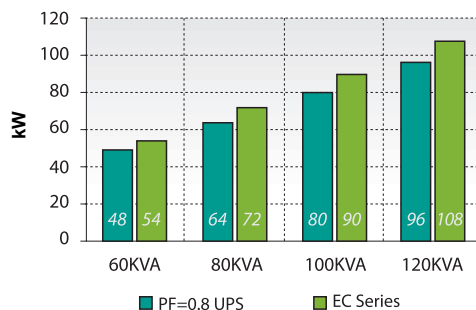
95,5 %
efficiency



MORE ACTIVE POWER

The **ECISO EC** Series UPS is designed to supply more active power critical loads and wide leading-lagging operation region.

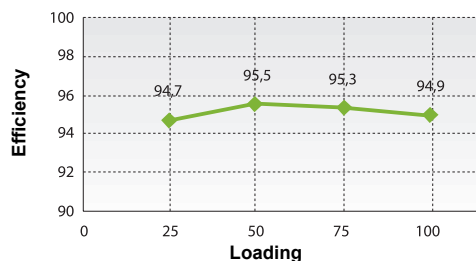
The **ECISO EC** Series UPS provides 12% more active power against PF=0.8 UPS and responds perfectly to high power factor load requirements without downgrading.



HIGH AND STABLE EFFICIENCY

The **ECISO EC** Series UPS reduces energy loss and requirement of cooling systems by high efficiency operation. Up to 95.5%, the **ECISO EC** Series UPS introduces the highest online efficiency performance on the market.

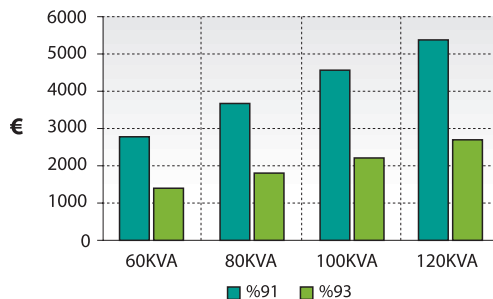
Also, the **ECISO EC** Series UPS is promising higher efficiency even at low loading conditions. With the following stable efficiency curve, the **ECISO EC** Series UPS is becoming for all load types and offers wide application areas.



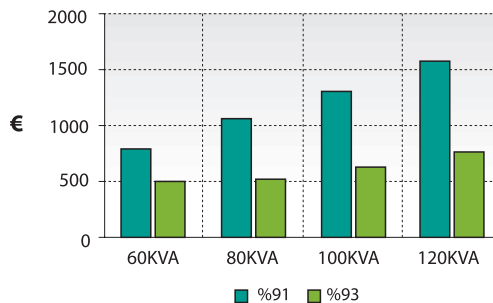
ENERGY SAVING

The **ECISO EC** Series UPS reduces operation and cooling costs and saves significantly on your annual energy bill.

The annual savings* of the **ECISO EC** Series UPS as against the 91% and 93% efficiency UPS:



The annual cooling savings* of the **ECISO EC** Series UPS as against the 91% and 93% efficiency UPS:



* Full load operation is considered. 0.0918 EUR is considered per kWh. 0.4kW cooling power is considered per 1kW lose.

HIGHLY COMPACT & SERVICEABLE UPS

Weight, volume and footprint of the **ECISO EC** Series UPS is less than the conventional UPS. Electronic board and component placement ensures ease of service.

HIGH PERFORMANCE THREE LEVEL RECTIFIER

With unity power factor and low harmonic distortion (< 4%), the **ECISO EC** Series UPS significantly optimizes the upstream infrastructure.

- ▶ No need poor power factor compensation and harmonic filter systems
- ▶ Reduced cable cross-section and low capacity circuit breakers
- ▶ Reduced input current and energy loss
- ▶ Possibility of 1.1-1.3 times gen-set sizing (depends on generator technology)
- ▶ No harm to neighboring loads with low EMI emission

HIGH PERFORMANCE THREE LEVEL INVERTER

The **ECISO EC** Series UPS ensures high reliability with the low voltage harmonic distortion.

- ▶ Very short response time (<2ms)
- ▶ Very low output voltage tolerance
 - ≤ 1% (static load)
 - ≤ 2% (dynamic load)
- ▶ Very low voltage harmonic distortion
 - ≤ 1% (linear load)
 - ≤ 5% (non-linear load)

HIGH BATTERY PERFORMANCE

The **ECISO EC** Series UPS extends the battery life with intelligent battery management.

- ▶ Two-stage charging method that extends battery life
- ▶ Equalizing charge
- ▶ Life expectancy
- ▶ Automatic and manual battery test with adjustable period and duration
- ▶ Temperature compensation support
- ▶ Gen-set management: Battery charge stops in order to save energy and not to overload the gen-set.

USER FRIENDLY INTERFACE

- ▶ The LCD screen and optional keypad
- ▶ Operating mode diagram
- ▶ Multi language menu
- ▶ Remote monitoring:
 - RS232/RS485
 - SNMP
 - MODBUS
 - Remote panel
 - Programmable dry contacts
- ▶ Local and remote emergency power off (EPO)

ADVANCED PARALLEL OPERATION

- ▶ Paralleling up to 6 units
- ▶ Power sharing (N): All units share the load equally.
- ▶ Redundancy (N+1): One unit idles and the others share the load equally. Once one or the other unit stops in case of any faults, the redundant unit starts operating.
- ▶ Units idle or starts operating depending on the load percentage.
- ▶ Lost system standby mode: In case of any faults, only the faulty unit stops and the others continue operating.
- ▶ Redundancy lost alarm: If one of the units stops in case of any faults at existing load percentage, it is notified that the system will be overloaded in advance.
- ▶ External synchronous: Supports bypass synchronous in case of common bypass for two separated parallel systems.

TECHNICAL SPECIFICATIONS

Model	EC-60	EC-80	EC-100	EC-120
Apparent power (kVA)	60	80	100	120
Active power (kW)	54	72	90	108
INPUT				
Voltage	380 / 400 / 415 Vac 3ph + N			
Voltage tolerances	± 15% (without downgrading)			
Frequency	50/60 Hz			
Frequency tolerances	± 10%			
Power factor	≥ 0,99			
THDi	< 4%			
BYPASS				
Dual input	Standard			
Voltage	380 / 400 / 415 Vac 3ph + N			
Voltage tolerances	± 10% (adjustable)			
Frequency	50/60 Hz (selectable)			
Frequency tolerances	adjustable up to ± 10%			
OUTPUT				
Voltage	380 / 400 / 415 Vac 3ph + N			
Voltage tolerances	± 1% (static load), dynamic load in accordance with VFI-SS-11			
Frequency	50/60 Hz (selectable)			
Frequency tolerances	± 0.1% (self-synchronize), ± 4% (mains-synchronize, adjustable up to ± 5%)			
Power factor	0.9			
THDv	≤2% (linear load), ≤5% (non-linear load)			
Crest factor	3:1			
OVERLOAD CAPACITY				
≤110%	Continuously			
≤130%	60 min.			
≤150%	10 min.			
≤200%	1 min.			
EFFICIENCY				
Online	up to 95.5%			
ECO-mode	up to 98%			
GENERAL				
Technology	True online-double conversion, Three level rectifier & inverter			
Control	DSP, SPWM			
Battery quantity of a group (12V)	60/64			
Paralleling units	up to 6			
Communication	SNMP, RS232, RS485, MODBUS			
Remote monitoring	SNMPView, UPSMon, Remote panel			
Dry contacts	3 programmable dry contacts			
Custom inputs	Generator, Battery temperature sensor, Remote EPO			
ENVIRONMENT				
Operating temperature	from 0 °C up to +40 °C (from 20 °C to 25 °C for maximum battery life)			
Relative humidity	0-85% (without condensation)			
Noise level	<65 dB (A)			
UPS CABINET				
Dimensions (W × D × H) (mm)	480 × 890 × 1220			
Weight (kg)	185	250	300	350

ECISO C

Series UPS

30 – 120 kVA



NEW TECHNOLOGY

- ▶ IGBT rectifier
- ▶ Efficiency 92%
- ▶ Low input current THD (<4%)
- ▶ Very short response time (<2ms)

USER-FRIENDLY

- ▶ Dual LCD user interface
- ▶ Multi language option
- ▶ Multi communication options
- ▶ Remote monitoring and management software
- ▶ Programmable dry contacts
- ▶ Extended battery life with intelligent battery management
- ▶ Automatic and manual battery test with adjustable period and duration
- ▶ High efficiency ECO-mode (up to 98%)
- ▶ Optimum generator compatibility
- ▶ Reduced weight/volume/footprint
- ▶ 2 years warranty
- ▶ 10 years spare part warranty

RELIABLE

- ▶ Parallel option up to 6 units
- ▶ Intelligent redundancy management (N, N+1, N+X)
- ▶ Variable input low voltage depending on loading percentage (up to -36%)
- ▶ Programmable high overload capacity
- ▶ Dual input
- ▶ Short circuit protection
- ▶ Local and remote emergency power off

TECHNICAL SPECIFICATIONS

Model	C-30	C-40	C-60	C-80	C-100	C-120
Apparent power (kVA)	30	40	60	80	100	120
Active power (kW)	24	32	48	64	80	96
INPUT						
Voltage	380 / 400 / 415 Vac 3ph + N					
Voltage tolerances	± 15% (without downgrading)					
Frequency	50/60 Hz					
Frequency tolerances	± 10%					
Power factor	≥ 0,99					
THDi	< 4%					
BYPASS						
Dual input	Standard					
Voltage	380 / 400 / 415 Vac 3ph + N					
Voltage tolerances	± 10% (adjustable)					
Frequency	50/60 Hz					
Frequency tolerances	adjustable up to ± 10%					
OUTPUT						
Voltage	380 / 400 / 415 Vac 3ph + N					
Voltage tolerances	± 1% (static load), dynamic load in accordance with VFI-SS-11					
Frequency	50/60 Hz (selectable)					
Frequency tolerances	± 0.1% (self-synchronize), ± 4% (mains-synchronize, adjustable up to ± 5%)					
Power factor	0.8					
THDv	≤ 2% (linear load), non-linear load in accordance with IEC/EN					
Crest factor	3:1					
OVERLOAD CAPACITY						
110%	Normal mode continuously					
125%	10 min.					
150%	1 min.					
>150%	Bypass mode continuously					
EFFICIENCY						
Online	up to 92%					
ECO-mode	up to 98%					
GENERAL						
Technology	True online double conversion, IGBT rectifier					
Control	DSP, SPWM					
Battery quantity of a group (12V)	60/64					
Paralleling units	up to 6					
Communication	SNMP, RS232, RS485, MODBUS					
Remote monitoring	SNMPView, UPSMon, Remote panel					
Dry contacts	3 programmable dry contacts					
Custom inputs	Generator, Battery temperature sensor, Remote EPO					
ENVIRONMENT						
Operating temperature	from 0 °C up to +40 °C (from 20 °C to 25 °C for maximum battery life)					
Relative humidity	0-85% (without condensation)					
Noise level	<65 dB (A)					
UPS CABINET						
Dimensions (W × D × H) (mm)	480 × 890 × 1220					
Weight (kg)	170	185	200	265	320	340

ECISO BA

Series UPS

10 kVA

ECISO BB

Series UPS

15 – 20 kVA

ECISO BC

Series UPS

10 – 20 kVA



TECHNOLOGICAL

- ▶ Three level inverter
- ▶ High and stable online efficiency (up to 94%)
- ▶ Low input current THD (< 5%)

RELIABLE & USER FRIENDLY

- ▶ LCD interface and LED operation mode diagram
- ▶ Wide input voltage tolerances ($\pm 25\%$)
- ▶ Adjustable battery charger
- ▶ Extended battery life with intelligent battery management
- ▶ Automatic and manual battery test
- ▶ Remote monitoring and SNMP management
- ▶ Remote monitoring panel (optional)
- ▶ Short circuit, lightning and surge protection
- ▶ Cold start
- ▶ Generator compatibility
- ▶ Reduced weight/volume/footprint
- ▶ 2 years warranty
- ▶ 10 years spare part warranty

TECHNICAL SPECIFICATIONS

Model	BA-10	BB-15	BB-20	BC-10	BC-15	BC-20
Apparent power (kVA)	10	15	20	10	15	20
Active power (kW)	8	12	16	8	12	16
INPUT						
Voltage	380 / 400 / 415 Vac 3ph + N					
Voltage tolerances	± 25% (without downgrading)					
Frequency	50/60 Hz					
Frequency tolerances	± 10%					
Power factor	≥ 0,95	≥ 0,99				
THDi	< 5%					
OUTPUT						
Voltage	220/230/240 V Vac 1ph + N			380/400/415 Vac 3ph + N		
Voltage tolerances	±1% (static load), dynamic load in accordance with VFI-SS-11					
Frequency	50/60 Hz					
Frequency tolerances	±0.1% (self-synchronize), ±1% (mains-synchronize)					
Power factor	0.8					
THDi	≤2% (linear load), ≤5% (non-linear load)					
Crest factor	3:1					
OVERLOAD CAPACITY						
110%	Normal mode continuously					
125%	60 s					
150%	10 s					
>150%	3 s					
EFFICIENCY						
Online	up to 94%					
ECO-mode	---	up to 98%				
GENERAL						
Technology	True online double conversion, three level inverter					
Control	Microprocessor, SPWM					
Communication	SNMP, RS232					
Remote monitoring	SNMPView, UPSilon, Remote monitoring panel					
Dry contacts	Battery mode, Battery low					
Custom inputs	remote EPO	generator, remote EPO				
ENVIRONMENT						
Operating temperature	from 0 °C up to +40 °C (from 20 °C up to 25 °C for maximum battery life)					
Relative humidity	0-85% (without condensation)					
Noise level	<45 dB (A)	<45 dB (A)				
UPS CABINET						
Dimensions (W×D×H) (mm)	255×660 ×710	255×730 ×870				
Weight (kg)	44	49	51			53

ECSO PM

Modular UPS

120 kVA, 200 kVA

NEW TECHNOLOGY

- ▶ 3-level IGBT rectifier & inverter
- ▶ High and stable online efficiency (up to 95%)
- ▶ Low input current THD (<3%)
- ▶ Hot swappable power modules

USER-FRIENDLY

- ▶ Building capacity with increasing load
- ▶ Touch screen panel user interface
- ▶ Multi language options
- ▶ Multi communication options
- ▶ Intelligent battery management
- ▶ Minimum disaster recovery time
- ▶ High efficiency ECO-mode (up to 99%)
- ▶ Optimum generator compatibility
- ▶ Reduced weight/size/footprint
- ▶ 2 years warranty
- ▶ 10 years spare part warranty

RELIABLE

- ▶ Standard redundancy N+X
- ▶ 2 systems paralleling option
- ▶ Double DSP controller for individual power module
- ▶ High overload capacity



MODULAR UPS FUNCTIONS

Modular UPS System **ECSO PM** is a set of uninterruptible power supplies with three-phase input and three phase output, which uses the double-conversion technology. The power range of the system varies from 20 to 200 kVA, in standard cabinets can be installed up to 6 or 10 modules of the nominal power of 20 kVA each.

The modular uninterruptible power supply **ECSO PM** is designed to provide reasonable protection of redundant high-tech equipment from problems with electricity supply.

This system provides the following functions:

- ▶ Supplies the load with clean and stable power.
- ▶ Equipment protection from interference from mains input.
- ▶ Power supply during mains input failure for a specified battery time.

This system can be used to ensure the smooth operation of IT-equipment, communication centers, technical security systems, dispatching systems.

MAIN ADVANTAGES

GENERAL FUNCTIONALITY

The modular system **ECSO PM** supersedes any model 3-phase UPS with power from 20 kVA to 200 kVA. There is no more need to spend on the project's budget to reserve capacity of the UPS, you can just estimate the number of places for additional power modules. Even if you do not have enough room in one cabinet, you can install a second system **ECSO PM**, and it will run parallel to the first.

HIGH RELIABILITY

Each power module of the **ECSO PM** system is a fully functional UPS with its own DSP-controller, in case of failure of one of the modules, the remaining modules will assume control of the load without any interruption in power supply.

LOW COST

The modular **ECSO PM** system provides the best combination of functionality, reliability and cost. At the same time our system costs less than equivalent in terms of reliability and redundancy UPS system, built on the standalone UPS.

REDUCED SIZE

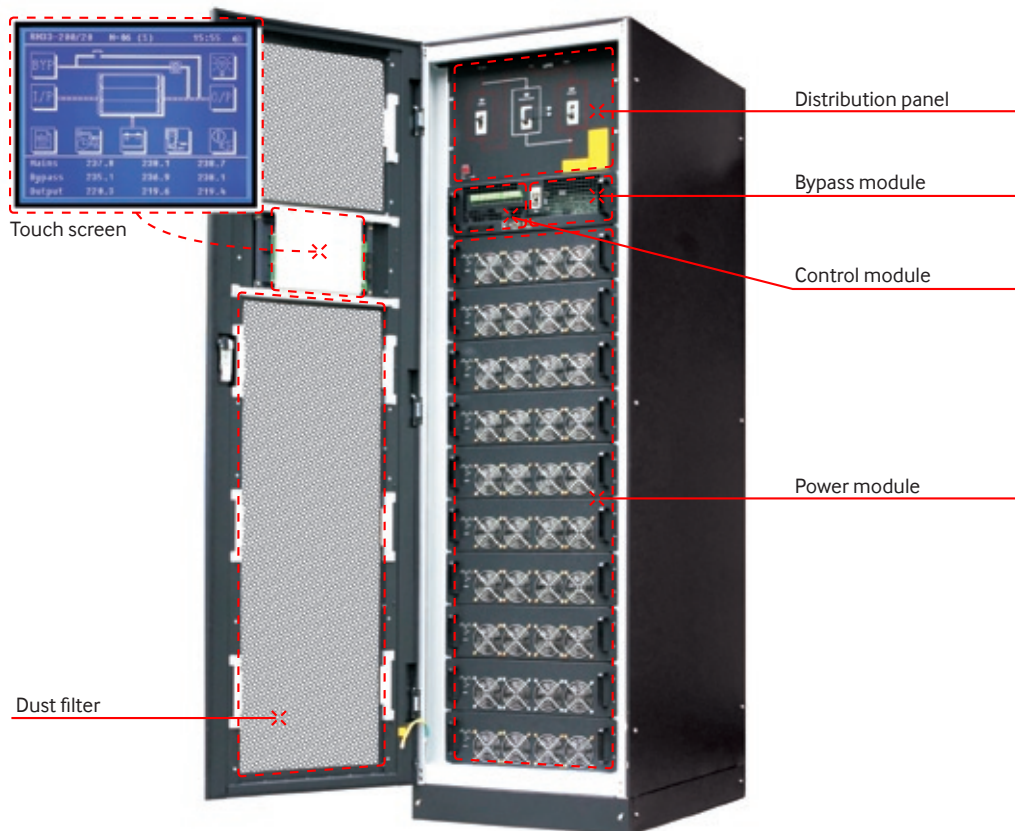
The modular **ECSO PM** system occupies sufficiently less space than equivalent parallel standalone UPS system. This could be important in case of the limited server room size.

EASY MAINTENANCE

Adding and replacing the modules can be implemented by the customer personnel without shutting down the system. There is no need to call certified specialists for this operation and warranty will remain.

ECISO PM STRUCTURE

The structure of the **ECISO PM** modular UPS system is shown below. **ECISO PM** consists of the UPS system cabinet and power modules. The UPS system cabinet includes distribution panel, bypass module, control module with touch screen. SNMP-adapter, temperature compensation kit, dust filter are available as options.



MODULAR SYSTEM FEATURES

- ▶ Three-phase input and three-phase output, online double conversion technology.
- ▶ Capacity of one module is 20 kVA cabinet capacity is 6 or 10 modules. Maximum system capacity is 120 or 200 kVA. It is possible to combine two systems with a maximum capacity of 400 kVA.
- ▶ The system allows for redundancy N + X. Adding or replacing modules can be done without interrupting the operation of the system («hot swap»).
- ▶ Information about the system status is available on touch screen on the front panel or remotely via a connection to an RS-232, RS-485 port, or SNMP.
- ▶ **ECISO PM** could be connected to the required number of external battery cabinets to provide the required working time during mains input failure.

TECHNICAL SPECIFICATIONS

Model	PM 120, PM 200
INPUT	
Voltage	380 /400 /415 Vac 3Ph + N
Voltage tolerances	-40% ÷ +25%
Frequency	50/60 Hz
Frequency tolerances	40–70 Hz
THD	< 3%
Power factor	> 0,99
BATTERY	
Voltage	480 Vdc
Charger power	20%
Charger	accuracy
BYPASS	
Voltage	380 /400 /415 Vac 3Ph + N
Voltage tolerances	-20% ÷ +15%
Overload capacity	up to 150% continuously up to 180% 10 min. over 180% 200 ms
OUTPUT	
Voltage	380 /400 /415 Vac 3Ph + N
Voltage precision	±0,5% (balanced load) ±1% (unbalanced load)
Voltage THD	THD<1% (linear load) THD<3% (non-linear load)
Power factor	0,8
Crest factor	3:1
Overload capacity	up to 110% 1 hour 110%-125% 10 minutes 125%-150% 1 minute
SYSTEM	
Efficiency	Online 95% ECO-mode 99%
Battery mode efficiency	95%
Display	Touch screen and keyboard
IP Class	IP20
Communication	RS-232, RS-485, dry contacts, SNMP-card, generator interface
Installation/Connection	Top or bottom cable connection
Operating temperature	from 0 °C up to +40 °C (from 20 °C up to 25 °C for maximum battery life)
Storage temperature	-25°C / +70°C
Relative humidity	0% – 95% (without condensation)
Noise level	<55 dB
WEIGHT	
Module weight (kg)	22
6-module cabinet weight (kg)	150
10-module cabinet weight (kg)	180
DIMENSIONS (W×D×H)	
Module (mm)	440x600x134
6-module cabinet (mm)	600x900x1600
10-module cabinet (mm)	600x900x2000

ECSO AS RM

UPS Series

6–10 kVA



TECHNICAL SPECIFICATIONS

Model	ASRM-6	ASRM-10
Apparent power (kVA)	6	10
Active power (kW)	4.8	8
INPUT		
Voltage	220 / 230 / 240 Vac 1 Ph + N	
Voltage tolerances	± 25% (without downgrading)	
Frequency	50/60 Hz	
Frequency tolerances	± 10%	
Power factor	≥ 0,99	
THDi	< 5%	
OUTPUT		
Voltage	220 / 230 / 240 Vac 1 Ph + N	
Voltage tolerances	±1% (static load), dynamic load in accordance with VFI-SS-11	
Frequency	50/60 Hz	
Voltage tolerances	±0.1% (self-synchronize), ±1% (mains-synchronize)	
Power factor	0.8	
THDv	≤2% (linear load), ≤5% (non-linear load)	
Crest factor	3:1	
OVERLOAD CAPACITY		
110%	Normal mode continuously	
125%	60 s	
150%	10 s	
>150%	3 s	
EFFICIENCY		
Online	up to 94%	
GENERAL		
Technology	True online double conversion, 3-level inverter	
Control	Microprocessor, SPWM	
Communication	SNMP, RS232, Remote monitoring panel	
Remote monitoring	SNMPView, UPSilon	
Dry contacts	Battery mode, Battery low	
Custom inputs	Remote EPO	
ENVIRONMENT		
Operating temperature	from 0 °C up to +40 °C (from 20 °C up to 25 °C for maximum battery life)	
Relative humidity	0-85% (without condensation)	
Noise level	<40 dB (A)	<45 dB (A)
UPS CABINET		
Dimensions (W×D×H) (mm)	482(19")×562 ×133(3U)	
Weight (kg)	16	16.5

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Environmental Complex Solution

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