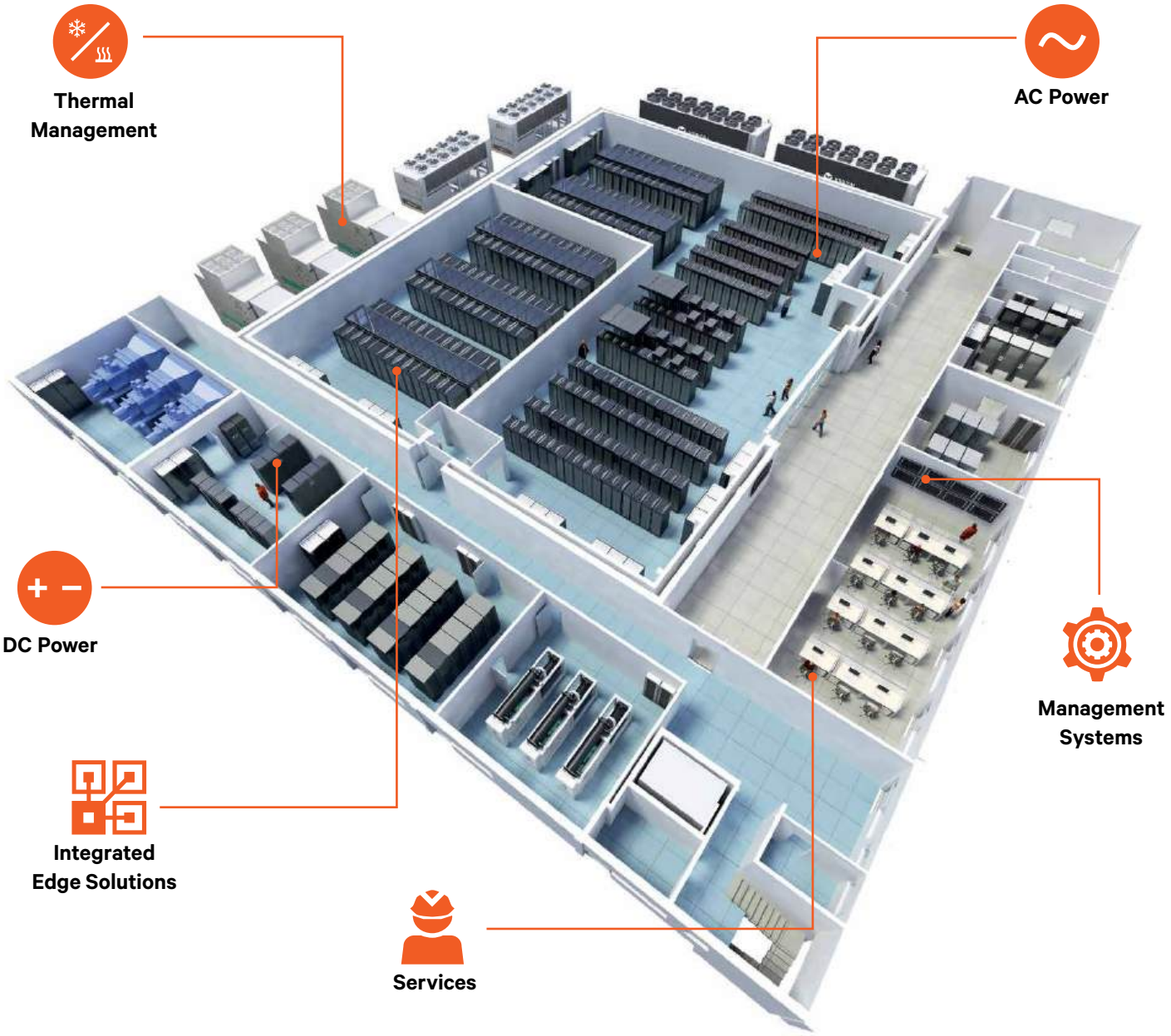
VERTIV.

# Liebert®

Channel Product Portfolio
for Channel Partners

*Vertiv is a global leader in ensuring critical data continuity, by combining visionary expertise and precise execution to enable vital applications for data centers, communication networks, and commercial and industrial facilities.*

## Architects of Continuity™



*Vertiv, formerly Emerson Network Power, designs, builds, and services mission critical technologies that enable vital applications for data centers, communication networks, and commercial & industrial environments.*

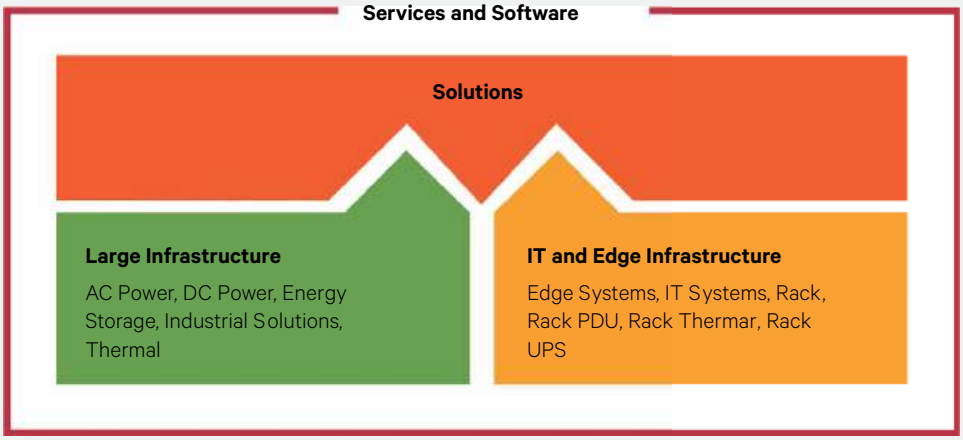
*We support today's growing mobile and cloud computing markets with our portfolio of power, thermal and infrastructure management products, software and solutions, all complemented by our extensive global service network.*

*We help strengthen the world's most vital applications by bringing together global reach and local knowledge, and our decades-long heritage, including brands like Chloride, Liebert, NetSure, Avocent and Geist.*

## Architects of Continuity™

As industry experts and Architects of Continuity, we collaborate with our customers to envision and build futureready infrastructures.

We help our customer meet the worlds demand for data.




### Avocent®
**IT Management**

Our industry-leading software gives customers an integrated view of operations across IT and facilities resources, enabling better decisions that save time and money.

### Chloride®
**Industrial Power**

Our global industrial power solutions meet the most demanding technical specifications and provide safe, reliable power- no matter the challenge.

### Liebert®
**AC Power and Thermal**

Our global power and thermal management solutions are some of the world's most eff icient and reliable power and cooling technologies.

### NetSure™
**DC Power**

Our global intelligently engineered DC power systems deliver high availability, energy efficiency and scalability for converged networks.

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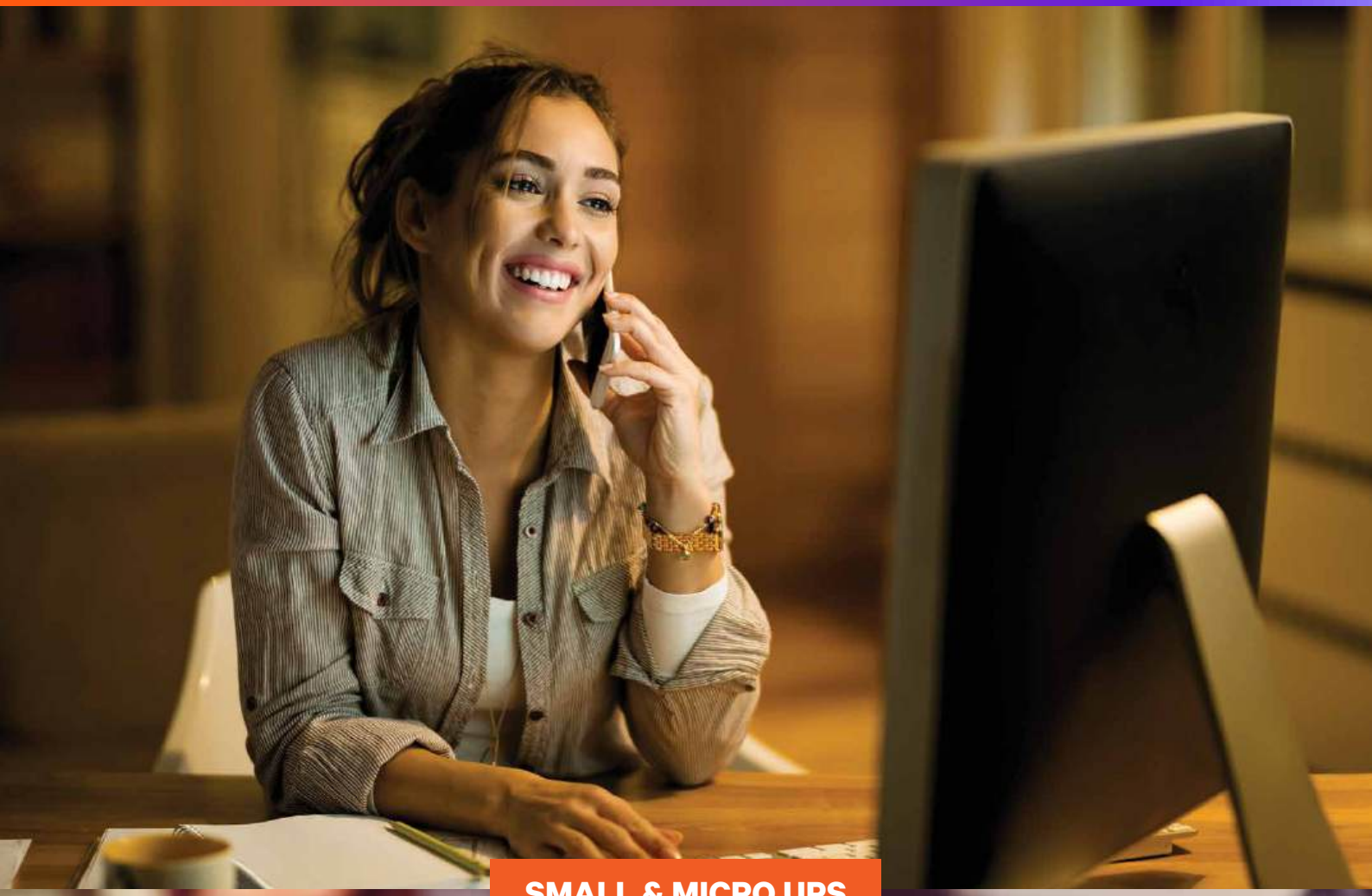


# SMALL & MICRO UPS

# *Best in class power protection and back up technologies for Offices and Home*

The Liebert® ITON™ 600VA CX is an economical line-interactive UPS that offers full-featured power protection for home or small office computers and electronic equipment. With it's unique features and extraordinary performance not normally found in similar products in range.

## Features and Benefits

- Excellent microprocessor control guarantees high reliability
- AVR boost and buck for voltage stabilisation
- Auto restart while AC is recovering
- Simulated sine wave
- Auto charging at Off-mode
- Cold start function
- Generator compatible

Liebert® ITON™ 600VA CX

## Technical Specifications

| Model | Specification | CX 600 VA | 1000 VA LB |
|---|---|---|---|
| **Capacity** | VA/W | 600 VA/360 Watt. | 1000 VA/600 Watt. |
| **Input** | Voltage | 220/230 VAC | |
| | Voltage Range | 140-300 VAC | |
| | Frequency Range | 50 Hz | |
| **Output** | AC Voltage Regulation (Batt. Mode) | ±10% | |
| | Frequency Range (Batt. Mode) | 50 Hz ±1 Hz | |
| | Transfer Time | Typical 2-6 ms | |
| | Waveform (Batt. Mode) | Simulated Sine Wave | |
| | Overload | 110% +/-10% Shutdown after 5 mins | |
| **Battery** | Battery Type & Number | 12 V/7 Ah x 1 | 12VDC |
| | Floating Charge Voltage | | 13.7 VDC ± 2% |
| | Overcharge Protection | | 14.5VDC ± 2% |
| | Maximum Charge Current | | 20 A |
| | Typical Recharge Time | 6-8 hours up to 90% capacity | |
| **Transfer Time** | Minimum line break for transfer to battery | Typical 4-8 msec | |
| **Indicators** | AC Mode | Green lighting | |
| | Battery Mode | Green flashing | |
| | Fault | Red lighting | |
| **Alarms** | Battery Mode, Low Battery, Overload, Battery replacement, fault | Audiable alarm is provided | |
| **Protection** | Full Protection | Overload, discharge, and overcharge protection | |
| **Physical** | Dimension, D X W X H (mm) | 279 X 101 X142 | 350 x 146 x 160 |
| | Net Weight (kgs) | 4.2 | 9.0 |
| **Environment** | Operating Environment | 0-40 Deg C. | |
| | Storage Temp | -15$^0$C to 50$^0$C | |
| | Humidity | 0-95 % RH @ 0- 40°C (non-condensing) | |
| | Noise Level | Less than 40dB | |

| Model | Specification | CX 1000 VA | CX 1500 VA |
|---|---|---|---|
| **Capacity** | VA/W | 1000 VA/600 Watt. | 1500 VA/900 Watt. |
| **Input** | Voltage | 220/230 VAC | |
| | Voltage Range | 140-300 VAC | |
| | Frequency Range | 50 Hz | |
| **Output** | AC Voltage Regulation (Batt. Mode) | ±10% | |
| | Frequency Range (Batt. Mode) | 50 Hz ±1 Hz | |
| | Transfer Time | Typical 2-6 ms | |
| | Waveform (Batt. Mode) | Simulated Sine Wave | |
| | Overload | 110% +/-10% Shutdown after 5 mins | |
| **Battery** | Battery Type & Number | 12 V/7 Ah x 2 | 12 V / 9 Ah x 2 |
| | Typical Recharge Time | 6-8 hours up to 90% capacity | |
| **Indicators** | AC Mode | Green lighting | |
| | Battery Mode | Green flashing | |
| | Fault | Red lighting | |
| **Alarms** | Battery Mode, Low Battery, Overload, Battery replacement, fault | Audiable alarm is provided | |
| **Protection** | Full Protection | Overload, discharge, and overcharge protection | |
| **Physical** | Dimension, D X W X H (mm) | 369 X 141 X 160 | 369 X 141 X 160 |
| | Net Weight (kgs) | 10 | 11.1 |
| **Environment** | Operating Environment | 0-40 Deg C. | |
| | Storage Temp | -15$^0$C to 50$^0$C | |
| | Humidity | 0-95 % RH @ 0- 40°C (non-condensing) | |
| | Noise Level | Less than 40dB | |

** Product specifications are subject to change without further notice*
**Battery run time may vary depending upon load.*

## Features

- IGBT based Rectifier and inverter
- True Online Double Conversion with DSP Control Technology for High Performance and Reliability.
- New Graphical LCD Display Provides UPS Data, Alarms and Helps in faults diagnostics and trouble shooting.
- Double Conversion Efficiency upto 90%.
- Inbuilt programmable outlet
- Active Input Power Factor Correction 0.99.
- 0.8 Output Power Factor.
- Wide Input Voltage window
- Environmental Condition and for Optimized Battery Performance.
- Configurable Output Voltage (200/208/220/230/240 Vac.)
- Generator Compatible with Wide Input Frequency Range (40 Hz-70 Hz).
- 4 Stage Extendable Charging Design for optimized Battery Performance.
- Adjustable Battery Charging Current 1/2/4/6/8 Amps according to Battery Capacity and Rating.
- Intelligent Monitoring with Standard RS232/USB Port Plus Slot Available for RS485/Dry Contact/SNMP Card.
- Inbuilt OVCD.

# *True Online Double Conversion UPS with optional & with extended runtime capabilities*

Liebert® GXT MT+ Series systems is true double conversion online UPS systems designed to provide with a capacity of 1 , 2 & 3 kVA. Liebert® GXT MT+ units making the systems ideal for Data Networks / Small Data Centers/VOIP application.

Liebert® GXT-MT+ 1/2/3 kVA

## Technical Specifications

| Model | | GXT MT + 1 kVA | GXT MT + 2 kVA | GXT MT + 3 kVA |
|---|---|---|---|---|
| Phase | | | 1 phase in / 1 phase out | |
| Capacity | | 1000 VA / 800 W | 2000 VA / 1600 W | 3000 VA / 2400 W |
| **Input** | | | | |
| Nominal Voltage | | | 230 Vac | |
| Voltage Range | Low Line Loss | | 110 VAC ± 3% at 60% Load<br>176 VAC ± 3% at 100% Load | |
| | Low Line Comeback | | 120 VAC ± 3% at 60% Load<br>186 VAC ± 3% at 100% Load | |
| | High Line Loss | | 300 VAC ± 3% | |
| | High Line Comeback | | 270 VAC ± 3% | |
| Frequency Range | | | 40 Hz ~ 70 Hz | |
| Power Factor | | | ≥ 0.99 @ 100% load | |
| **Output** | | | | |
| Nominal Voltage | | | 208/220/230/240VAC | |
| Ac Voltage Regulation | | | ± 1% | |
| Frequency Range (Synchronized Range) | | | 47.5Hz to 52.5 or 57.5Hz to 62.5Hz | |
| Frequency Range (Batt. Mode) | | | 50 Hz ± 0.1 Hz or 60 Hz ± 0.1 Hz | |
| Current Crest Ratio | | | 3:1 (max.) | |
| Harmonic Distortion | | | <=5% THD (non linear load) | |
| Transfer Time | Bypass to Inverter (Line mode) | | Zero | |
| | Inverter to Bypass (Line mode) | | 4 ms (Typical) | |
| Waveform (Batt. Mode) | | | Pure Sinewave | |
| Efficiency on AC to AC Mode@ 100% Load. | | 89% | 89% | 89% |
| Inbuilt Isolation Transformer | | | No | |
| **Battery** | | | | |
| Standard Run Model | Battery Type | 12V/ 7 AH | 12V/ 7 AH | 12V/ 9 AH |
| | Numbers | 3 | 6 | 6 |
| | Typical Recharge Time | | 4 hours recover to 90% capacity | |
| | Charging Current (max.) | | 1.0 A | |
| | Charging Voltage | 27.4VDC ± 1% | 82.1DC ±1% | 82.1 VDC ±1% |
| Long Run Model | Battery Type | | Depending on the capacity of external batteries | |
| | Numbers | 3 | 8 | 8 |
| | Charging Current | | 1.0/2.0/4.0/6.0/8.0 | |
| | Float Charging Voltage | 41.0 VDC ± 1% | 110 VDC ±1% | 110 VDC *1% |
| **Indicator** | | | | |
| Lcd Panel | | | UPS status, Load level, Battery level, Input/Output voltage, Discharge timer, and Fault | |
| **Alarm** | | | | |
| Battery Mode | | | Sounding every 4 seconds | |
| Low Battery | | | Sounding every second | |
| Overload | | | Sounding twice every second | |
| Fault | | | Continuously sounding | |
| **Physical** | | | | |
| Standard Run | Dimension, D x W x H (mm) | 388.5 X 145 X 220 | 387 X 190 X 318 | 387 X 190 X 318 |
| Model | Net Weight (kgs) | 13 | 26 | 28 |
| Long Run | Dimension, D x W x H (mm) | 388.5 X 145 X 220 | 387 X 190 X 318 | 387 X 190 X 318 |
| Model* | Net Weight (kgs) | 7 | 13 | 13 |
| **Environment** | | | | |
| Operation Humidity And Temperature | | | 20-90 % RH @ 0- 45°C (non-condensing) | |
| Noise Level | | | Less than 50dBA @ 1 Meter | |
| **Management** | | | | |
| Smart Rs-232/Usb | | | Supports Windows® 2000/2003/XP/Vista/2008, Windows® 7, Linux, Unix, and MAC | |
| Optional Snmp | | | manager and web browser | |

** Product specifications are subject to change without further notice*

# Liebert® GXT MT + CX 1/2/3 kVA

## Features

- IGBT Based Rectifier
- True Online Double Conversion with DSP Control Technology for High Performance and Reliability.
- New Graphical LCD Display Provides UPS Data, Alarms and Helps in faults diagnostics and trouble shooting.
- Double Conversion Efficiency upto 90%.
- Active Input Power Factor Correction 0.99.
- 0.8 Output Power Factor.
- Wide Input Voltage window
- (110 - 280 Vac) for Indian
- Environmental Condition and for Optimized Battery Performance.
- Configurable Output Voltage (200/208/220/230/240 Vac.)
- Generator Compatible with Wide Input Frequency Range (40 Hz-70 Hz).
- 4 Stage Extendable Charging Design for optimized Battery Performance.
- Adjustable Battery Charging Current 1/2/4/6 Amps according to Battery Capacity and Rating.
- 50/60 Hz Automatic Frequency Converter Mode.
- Intelligent Monitoring with Standard RS232/USB Port Plus Slot Available for RS485/Dry Contact/SNMP Card.
- Inbuilt OVCD.

## *True Online Double Conversion UPS with optional built - in galvonic isolation & with extended runtime capabilities*

Liebert® GXT MT+ Series systems is true double conversion online UPS systems designed to provide with a capacity of 1 , 2 & 3 kVA. Liebert® GXT MT+ units feature total isolation of the load from the mains - isolating input and output sections, and making the systems ideal for Data Networks / Small Data Centers/VOIP application. The units support hot standby configuration, making them suited for critical applications like banks.

Liebert® GXT-MT+ CX 1/2/3 kVA
Liebert® GXT-MT+ CX 1/2/3 kVA XB*

** Adjustable Battery Charging Current 2/4/6/8/10/12/14/16 Amps according to Battery Capacity Rating.*

## Technical Specifications

| Model | | GXT MT + CX 1 kVA | GXT MT + CX 2 kVA | GXT MT + CX 3 kVA |
|---|---|---|---|---|
| Phase | | | 1 phase in / 1 phase out | |
| Capacity | | 1000 VA / 800 W | 2000 VA / 1600 W | 3000 VA / 2400 W |
| **Input** | | | | |
| Nominal Voltage | | | 230 Vac | |
| Voltage Range | Low Line Loss | | 110 VAC ± 3% at 50% Load<br>176 VAC ± 3% at 100% Load | |
| | Low Line Comeback | | 120 VAC ± 3% at 50% Load<br>186 VAC ± 3% at 100% Load | |
| | WHigh Line Loss | | 280 VAC ± 3% | |
| | High Line Comeback | | 270 VAC ± 3% | |
| Frequency Range | | | 40 Hz ~ 70 Hz | |
| Power Factor | | | ≥ 0.99 @ 100% load | |
| **Output** | | | | |
| Nominal Voltage | | | 208/220/230/240VAC | |
| Ac Voltage Regulation | | | ± 1% | |
| Frequency Range (Synchronized Range) | | | 46Hz ~ 54 Hz or 56Hz ~ 64 Hz | |
| Frequency Range (Batt. Mode) | | | 50 Hz ± 0.1 Hz or 60 Hz ± 0.1 Hz | |
| Current Crest Ratio | | | 3:1 (max.) | |
| Harmonic Distortion | | | ≤ 3 % THD (Linear Load), ≤ 7 % THD (Non-linear Load) | |
| Transfer Time | Bypass to Inverter (Line mode) | | Zero | |
| | Inverter to Bypass (Line mode) | | 4 ms (Typical) | |
| Waveform (Batt. Mode) | | | Pure Sinewave | |
| Efficiency on AC to AC Mode@ 100% Load. | | 88% | 88% | 90% |
| Inbuilt Isolation Transformer | | | No | |
| **Battery** | | | | |
| Standard Run Model | Battery Type | 12V/ 9 AH | 12V/ 9 AH | 12V/ 9 AH |
| | Numbers | 2 | 4 | 6 |
| | Typical Recharge Time | | 4 hours recover to 90% capacity | |
| | Charging Current (max.) | | 1.0 A | |
| | Charging Voltage | 27.4VDC ± 1% | 54.7 VDC ±1% | 82.1 VDC ±1% |
| Long Run Model | Battery Type | | Depending on the capacity of external batteries | |
| | Numbers | 3 | 6 | 6 |
| | Charging Current | | 1.0A/2.0A/4.00.0A, 6.0A default | |
| | Float Charging Voltage | 41.0 VDC ± 1% | 82.1 VDC ±1% | 82.1 VDC *1% |
| Indicators | | | | |
| Lcd Panel | | | UPS status, Load level, Battery level, Input/Output voltage, Discharge timer, and Fault | |
| **Alarm** | | | | |
| Battery Mode | | | Sounding every 4 seconds | |
| Low Battery | | | Sounding every second | |
| Overload | | | Sounding twice every second | |
| Fault | | | Continuously sounding | |
| **Physical** | | | | |
| Standard Run Model | Dimension, D x W x H (mm) | 282 x 145 x 220 | 397 x145 x220 | 421 x 190 x 318 |
| | Net Weight (kgs) | 9.8 | 17 | 27.6 |
| Long Run Model* | Dimension, D x W x H (mm) | 282 x 145 x 220 | 397 x145 x220 | 397 x145 x220 |
| | Net Weight (kgs) | 4.1 | 6.8 | 7.4 |
| **Environment** | | | | |
| Operation Humidity And Temperature | | | 20-90 % RH @ 0- 45°C (non-condensing) | |
| Noise Level | | | Less than 50dBA @ 1 Meter | |
| **Management** | | | | |
| Smart Rs-232/Usb | | | Supports Windows® 2000/2003/XP/Vista/2008, Windows® 7, Linux, Unix, and MAC | |
| Optional Snmp | | | manager and web browser | |

** Derate to 80% of capacity in Frequency converter mode,the output voltage is adjusted to 100/200/208VAC and the ambient temperature during 45°C to 50°C*

** * Product specifications are subject to change without further notice*

# Liebert® GXT RT +
## 1, 2, 3 kVA Online UPS System

*Liebert® GXT RT+ DX series is a full featured transformer free scalable UPS designed to offer compact, efficient and reliable power to power thirsty modern electronic gadgets.*

It features double conversion online design that ensures continuous high quality power even when the main AC power fails. Utilize state of the art technology and components to withstand fluctuation of input main voltage. Extra wide input voltage and frequency range effectively reduces the discharging period of battery; thus prolong battery life.

Liebert® GXT RT+ DX provides customers with a reliable source of uninterruptible power even in Harsh power environments, including very wide input voltage/Frequency window, Better output voltage regulation, frequency regulation, internal bypass, and input power factor correction and Low THDi.

## Features

- IGBT Based Rectifier
- True online double Conversion with DSP control Rack Mount
- UPS with 1/2/3 kVA Capacity
- User friendly LCD display
- Wide Input voltage range
- Input power factor correction
- Smart battery charger design for optimized battery performance
- Generator compatible
- SNMP, USB & RS232 Multiple communication
- Eco Mode operation for energy saving
- Emergency power off function

Liebert™ GXT - RT+ 1, 2, 3 kVA

## Applications

- PCs & Workstations
- Small / Medium server rooms
- Datacenter
- Network Closet
- VoIP Telecom

## Technical Specifications

| Model | | GXT RT+ 1 kVA | GXT RT+ 2 kVA | GXT RT+ 3 kVA |
|---|---|---|---|---|
| Phase | | | 1 phase in / 1 phase out | |
| Capacity | | 1000 VA / 800 W | 2000 VA / 1600 W | 3000 VA / 2400 W |
| **Input** | | | | |
| Nominal Voltage | | | 230 Vac | |
| Voltage Range | Low Line Loss | | 110 VAC ± 3% at 50% Load<br>176 VAC ± 3% at 100% Load | |
| | Low Line Comeback | | 120 VAC ± 3% at 50% Load<br>186 VAC ± 3% at 100% Load | |
| | High Line Loss | | 280 VAC ± 3% | |
| | High Line Comeback | | 270 VAC ± 3% | |
| Frequency Range | | | 40 Hz ~ 70 Hz | |
| Power Factor | | | ≥ 0.99 @ 100% load | |
| **Output** | | | | |
| Nominal Voltage | | | 208/220/230/240VAC | |
| Ac Voltage Regulation | | | ± 1% | |
| Frequency Range (Synchronized Range) | | | 46 Hz ~ 54 Hz or 56 Hz ~ 64 Hz | |
| Frequency Range (Batt. Mode) | | | 50 Hz ± 0.1 Hz or 60 Hz ± 0.1 Hz | |
| Current Crest Ratio | | | 3:1 (max.) | |
| Harmonic Distortion | | | ≤ 3 % THD (Linear Load), ≤ 6 % THD (Non-linear Load) | |
| Transfer Time | Bypass to Inverter (Line mode) | | Zero | |
| | Inverter to Bypass (Line mode) | | 4 ms (Typical) | |
| Waveform (Batt. Mode) | | | Pure Sinewave | |
| Efficiency On Ac To Ac Mode@ 100% Load. | | 86% | 88% | 88% |
| Inbuilt Isolation Transformer | | | No | |
| **Battery** | | | | |
| Standard Run Model | Battery Type | 12V/ 9 AH | 12V/ 9 AH | 12V/ 9 AH |
| | Numbers | 2 | 4 | 6 |
| | Typical Recharge Time | | 4 hours recover to 90% capacity | |
| | Charging Current (max.) | | 1.0 A | |
| | Charging Voltage | 27.4VDC ± 1% | 54.7 VDC ±1% | 81.5 VDC ±1% |
| Long Run Model* | Battery Type | | Depending on the capacity of external batteries | |
| | Numbers | 2 | 4 | 6 |
| | Charging Current | | 4 and 8 Amps, 8 Amps default | |
| | Float Charging Voltage | 27 4VDC t 1% | 54 7 VDC ±1% | 81.5VDC |
| **Indicators** | | | | |
| Lcd Panel | | | UPS status, Load level, Battery level, Input/Output voltage, Discharge timer, and Fault conditions | |
| Alarm | | | | |
| Battery Mode | | | Sounding every 4 seconds | |
| Low Battery | | | Sounding every second | |
| Overload | | | Sounding twice every second | |
| Fault | | | Countinously sounding | |
| **Physical** | | | | |
| "Standard Run Model | Dimension, D x W x H (mm) | 380x438x88(2U) | 480x438x88(2U) | 600x438x88(2U) |
| | Net Weight (kgs) | 12.9 | 20.6 | 28 |
| Long Run Model*" | Dimension, O x W x H (mm) | 380x438x88(2U) | 480x438x88(2U) | 600x438x88(2U) |
| | Net Weight (kgs) | 8.6 | 11.3 | 13.8 |
| **Environment** | | | | |
| Operation Humidity And Temperature | | | 20-95 % RH @ 0- 40°C (non-condensing) | |
| Noise Level | | | Less than 50dBA @ 1 Meter | |
| **Management** | | | | |
| Smart Rs-232/Usb | | | Supports Windows® 2000/2003/XP/Vista/2008, Windows® 7, Linux, Unix, and MAC | |
| Optional Snmp | | | Power management from SNMP manager and web browser | |

**Derate capacity to 60% of capacity in CVCF mode and to 90% when the output voltage is adjusted to 208VAC.*
***When using intemal batteries from 16-19, the unit will de-rate according to below formula: P-Pratingx N/20*
****If the UPS is installed or used in a place where the altitude is above than 1000m, the output power must be derated one percent per 100m.*
*Product specifications are subject to change without further notice*

# Liebert® GXT MT + 10-20 kVA

## Features

- IGBT Based Rectifier
- True Online Double Conversion with DSP Control Technology for High Performance and Reliability.
- New Graphical LCD Display Provides UPS Data, Alarms and Helps in faults diagnostics and trouble shooting.
- Double Conversion Efficiency upto 90%.
- Active Input Power Factor Correction 0.99.
- 0.8 Output Power Factor.
- Wide Input Voltage window
- (110 - 280 Vac) for Indian
- Environmental Condition and for Optimized Battery Performance.
- Configurable Output Voltage (200/208/220/230/240 Vac.)
- Generator Compatible with Wide Input Frequency Range (40 Hz-70 Hz).
- 4 Stage Extendable Charging Design for optimized Battery Performance.
- Adjustable Battery Charging Current 1/2/4/6 Amps according to Battery Capacity and Rating.
- 50/60 Hz Automatic Frequency Converter Mode.
- Intelligent Monitoring with Standard RS232/USB Port Plus Slot Available for RS485/Dry Contact/SNMP Card.
- Inbuilt OVCD.

## *True Online Double Conversion UPS with optional built - in galvonic isolation & with extended runtime capabilities*

Liebert® GXT MT+ Series systems is true double conversion online UPS systems designed to provide with a capacity of 10-20kVA. Liebert® GXT MT+ units feature total isolation of the load from the mains - isolating input and output sections, and making the systems ideal for Data Networks / Small Data Centers/VOIP application. The units support hot standby configuration, making them suited for critical applications like banks.

Liebert® GXT-MT+ 10-20 kVA

** Adjustable Battery Charging Current 2/4/6/8/10/12/14/16 Amps according to Battery Capacity Rating.*

## Technical Specifications

| Model | GXT MT+ 10 kVA | GXT MT+ 10KVA | GXT MT+ 20KVA |
|---|---|---|---|
| Phase | 1 phase in / 1 phase out | 3 phase in / 1 phase out | |
| Capacity | 10000 VA/8000 | 10000 VA / 9000 W | 20000 VA / 18000 W |
| **Input Characteristics** | | | |
| Nominal Voltage | 230 Vac (1 Ph+ N) | 3 x 400 VAC (3Ph+N) | |
| Voltage Range | 160 Vac-300 Vac (1-phase) @ 100% load | 305-478 VAC (3-phase) @ 100% load | |
| Frequency Range | 46~54 Hz or 56~64Hz | | |
| Power Factor | ≥ 0.99 @ 100% load | | |
| Thdi | < 6% @ 100% load | | |
| **Output Characteristics** | | | |
| Output Voltage | 208 **/220/230/240VAC | | |
| Ac Voltage Regulation (Batt. Mode) | ± 1% | | |
| Frequency Range (Synchronized Range) | 46~54Hz or 56~64Hz | | |
| Frequency Range (Batt. Mode) | 50 Hz ± 0.1 Hz or 60 Hz ± 0.1 Hz | | |
| Current Crest Ratio | 3:1 (max.) | | |
| Harmonic Distortion | ≤ 2 % THD (Linear Load) ; ≤ 5 % THD (Non-linear Load) | | |
| Transfer Time | AC Mode to Batt. Mode | zero | |
| | Inverter to Bypass | zero | |
| Waveform (Batt. Mode) | Pure Sinewave | | |
| Ac Mode Effiiciency | 91% | >92% | |
| Eco Mode Efficiency | 97% | | |
| **Battery Characteristics** | | | |
| Battery Type | SMF | SMF or Tubular | |
| Numbers | 16-20***(adjustable) | 18-20****(adjustable) | |
| Charging Current (Max.) | 6 Amps settable to 1/2/3/4/5/6 Amps | 12A settable to 2/4/6/8/10/12 Amps | |
| Charging Voltage | 273 VDC ± 1% (Based on 20pcs bateries) | | |
| **Indicators** | | | |
| Lcd Panel | UPS status, Load level, Battery level, Input/Output voltage, Discharge timer, and Fault conditions | | |
| **Alarm** | | | |
| Battery Mode | Sounding every 4 seconds | | |
| Low Battery | Sounding every second | | |
| Overload | Sounding twice every second | | |
| Fault | Countinuously sounding | | |
| **Physical** | | | |
| Dimension, D X W X H (Mm) | 442 x 190 x 318 | 592 X 250 X 576 | 592 x 250 x 826 |
| Net Weight (Kgs) | 23 | 28 | 45 |
| **Environment** | | | |
| Operation Humidity | 0-95 % RH @ 0- 40°C (non-condensing) | | |
| Noise Level | < 55 dB @ 1 meter | < 58dB @ 1 Meter | < 60dB @ 1 Meter |
| **Management** | | | |
| Smart Rs-232/Usb | Supports Windows® 2000/2003/XP/Vista/2008, Windows® 7/8, Linux, Unix, and MAC | | |
| Optional SNMP | Power management from SNMP manager and web browser | | |

** Product specifications are subject to change without further notice*
***Derate capacity to 90% of capacity when the output voltage is adjusted to 208VAC*
*** *When using batteries from 16-19, the unit will be de-rate according to formula ; P= Prating X N/20*
**** *When using batteries from 18-19, the unit will be de-rate according to formula ; P= Prating X N/20*

# Liebert® ITA 2™
5-20kVA

*In today's dynamic world, it is not enough for enterprises to have basic power protection. With digital trends constantly emerging and transforming the way you do business, business continuity is all the more vital. You simply cannot afford downtime in your critical system or waste time recovering these systems after a disruption. What you need is a robust, high-speed, reliable UPS system, which offers perennial, round-the-clock protection to diverse application needs.*

## Our Solution

The Liebert® ITA2™ is a fully-digital, highly reliable, True Online double conversion UPS solution that delivers clean and consistent power. This highly efficient solution is ideal for various deployments, whether it's IT racks, network closets, automation control systems, and precision instruments to small-sized control rooms among other edge applications.

- Cutting –edge design enables seamless integration into various ecosystems
- Tailored for global deployment in a low carbon, compact footprint

The ultimate level of engineering and dynamics that have gone beyond the development of this next-generation, innovative product facilitate top-notch availability and excellent performance at a low cost of ownership, giving you ultimate peace of mind.

5-10kVA

16-20kVA

## Application Areas

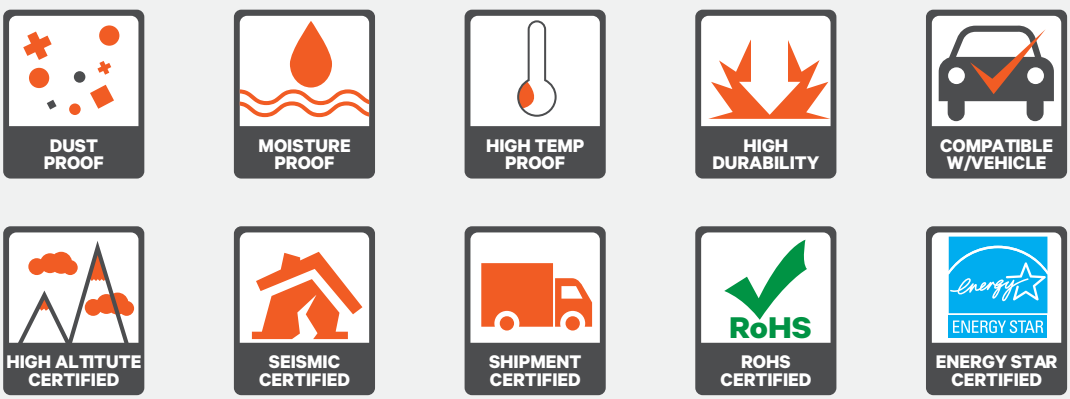
- Edge Networks
- Data Centers
- Automation industries
- Server Farms
- Workstations
- Telecom
- Marine

## Key Features

- Robust structure with cuttingedge channelized airflow design
- Wide input voltage range, making it immune to grid interference
- Programmable output outlets/ terminals with cascade protection to protect key devices during heavy load
- Integrated Ethernet port with HTTP protocol compatibility & streamlined remote monitoring
- Easy to install, repair, and maintain
- Compliance with seismic conduction & vehicle carrying test
- Gravity sense LCD Display
- Turnkey Dust-resistant design with ability to operate under high ambient temperature of up to 50°C

**Liebert® ITA 2™**

Robust power protection solution in a compact package



## Technical Specifications

| Nominal Ratings(kVA) | 5 | 6 | 10 | 16 | 20 |
|---|---|---|---|---|---|
| **Standard/Long Backup Model** | **ITA-05k00AL1102P00/ ITA-05k00AE1102P00** | **ITA-05k00AE1102P00 ITA-10k00AEA102P00** | **ITA-06k00AL1102P00/ ITA-16k00AL3A02P00** | **ITA-06k00AE1102P00 ITA-16k00AE3A02P00** | **ITA-10k00ALA102P00/ ITA-20k00AL3A02P00** |
| **Input parameters** | | | | | |
| Nominal input voltage(V) | 220/230/240VAC | | 220/230/240VAC 1-Phase, 2Wire 380/400/415VAC 3-Phase,4Wire | 380/400/415VAC 3-Phase,4Wire | |
| Input voltage range(V) | 176-288VAC at full load; 100-176VAC at linear derating; 100VAC at half load | | | | |
| Nominal input frequency(Hz) | 50/60 | | | | |
| Input frequency range(Hz) | 40-70 | | | | |
| Input power factor(kW/kVA)* | 0.99 | | | | |
| Input phase reversal correction | NA | | Yes | No | |
| Current THD at full linear load(THDi%)* | <5 | | | | |
| **Battery** | | | | | |
| Battery number | 12(1), 16, 20 | | 12(1), 16, 20 | 24(1), 32, 40 | |
| Battery Charger max. power (A) | 5A (Long back-up model) 2A (Standard model) | | 8A (Long back-up model) 4A (Standard model) | 13A (Long back-up model) 5A (Standard model) | |
| Battery Option | P/C : ITA-BCI0020K01 (built-in battery module of 16 block X 12V X 9AH) Battery cabinet dimensions in rack mounted arrangement-430(W) x 739(D) x 85(H) in mm | | | | |
| **Output** | | | | | |
| Nominal output voltage (V) | 220/230/240VAC (1-Phase) | | | 220/230/240VAC (1-Phase), 380/400/415VAC (3-Phase) | |
| Nominal output frequency (Hz) | 50/60 | | | | |
| Rated power factor(kW/kVA) | Unity | | | | |
| Voltage harmonic distortion(%) | <2% for Linear loads & <5% for Non-linear loads | | | | |
| Overload capacity | At 25°C: 105% ~ 125%, 5min; 125% ~ 150%, 1min; 150%, 200ms | | | | |
| Crestfactor | 3:1 | | | | |
| Split bypass option | No | Yes | | Yes | Yes |
| Output waveform | Pure Sinewave | | | | |
| **Efficiency** | | | | | |
| Online mode efficiency | Up to 95.5% | | Up to 95.8% | Up to 96.2% | |
| ECO mode efficiency | Up to 99% | | | | |
| **Dimensions and weight** | | | | | |
| Dimensions (W x D x H) in mm Rack Mounted Arrangement | 430x450x85 | | 430x560x85 | 430x570x130 | |
| Weight(kg) | 11 | | 15 | 23 | |
| **General** | | | | | |
| Nosie at 1 m(dBA) | 55 | | | 58 | |
| Operating temperature(°C) | 0 ~ 50(2) | | | | |
| Relative humidity (%RH) | 5 ~ 95, non-condensing | | | | |
| Altitude(m) | 3000m | | | | |
| General and safety requirements for UPS " | IEC/EN 62040-1 | | | | |
| EMC requirements for UPS | IEC/EN 62040-2 | | | | |
| UPS classification according to IEC 62040-3 | VFI-SS-111 | | | | |

**Conditions apply*
*Note: Specification are subject to change without any further notification*
*(1) Power derates to 70% of total capacity*
*(2) 0-25 deg no power derating , derate to 80% at 40deg and 70% at 50deg*

# Liebert® Powerbank 600

*In today's dynamic world, it is not enough for enterprises to have basic power protection. With digital trends constantly emerging and transforming the way you do business, business continuity is all the more vital. You simply cannot afford downtime in your critical system or waste time recovering these systems after a disruption. What you need is a robust, high-speed, reliable UPS system, which offers perennial, round-the-clock protection to diverse application needs.*

## Our Solution

The Liebert® Powerbank 600 is a fully-digital, highly reliable, True Online double conversion UPS solution that delivers clean and consistent power. This highly efficient solution is ideal for various deployments, whether it's IT racks, network closets, automation control systems, and precision instruments to small-sized control rooms among other edge applications.

- Cutting –edge design enables seamless integration into various ecosystems
- Tailored for global deployment in a low carbon, compact footprint

The ultimate level of engineering and dynamics that have gone beyond the development of this next-generation, innovative product facilitate top-notch availability and excellent performance at a low cost of ownership, giving you ultimate peace of mind.

## APPLICATION AREAS

- Edge Networks
- Data Centers
- Analytical instruments
- Server Farms
- Workstations
- Telecom

- Inbuilt isolation transformer
- Efficiency >89% with inbuilt transformer
- Settable battery options
- LI-ion battery compatible
- Integrated SNMP for monitoring and modbus function
- Unity power factor
- Higher operating temp-0$^0$ to 50$^0$
- Operates in a parallel configuration upto 4 nos
- Graphical touch screen system LCD display provides user-friendly operating interface

### The Most Eicient UPS

Liebert® Powerbank 600 oers best-in-class eiciency of up to 89% over a wide range of load conditions, resulting in significant OPEX cost savings. Liebert® Powerbank 600's integrated Smart Sleep technology in ECO mode provides a superlative eiciency of up to 94%.

## Technical Specifications

| Model | | POWERBANK 600 |
|---|---|---|
| | Rating | 6kVA (1in - 1out) |
| **Input** | Rated voltage | 230VAC 1-phase,3-wire |
| | Voltage Range | 176 -288VAC at 100% load; 100VAC - 288VAC on 50% load |
| | Rated Frequency | 50Hz/60Hz |
| | Frequency Range | 40Hz ~ 70Hz |
| | Power factor | ≥0.99 at full load , ≥0.98 at full load , |
| **Output** | Rated power | 6KVA/6kW |
| | Voltage | 220/230/240VAC (single phase) |
| | Frequency synchronization range | Rated frequency±3Hz. Configurable range: ±0.5Hz ~ ±5Hz |
| | Rated Power Factor | Unity |
| | Crest Factor | 3:1' |
| | Voltage harmonic distortion | < 1% (linear load) |
| | Voltage Regulation | 1% |
| | Dynamic response recovery time | 60ms |
| | Isolation transformer | Inbuilt |
| | Parallel function | Max 4 (N+1) |
| | Inverter Overload Capability on utility mode | At 25°C: 105% ~ 125%- 5min; 125% ~ 150%-1min; 150%- more than 200ms |
| | Inverter Overload Capability on battery mode | At 25°C :105% ~125%-60~ 30 s; >125%- more than 200ms |
| | Output waveform | Pure Sinewave |
| **Bypass** | Seperate bypass | No |
| | Static bypass | Inbuilt |
| | Manual bypass | Inbuilt |
| **Efficiency** | ECO Mode | 94% |
| | Online mode (AC-AC) | > 89% |
| | Inverter Efficiency(DC-AC) | >88% |
| **Battery** | Type | Sealed, lead-acid, Tubular, LI-ION |
| | No's of Batteries | 12(1), 16, 20; 16 by default |
| | Battery Fuse disconnector | Inbuilt |
| | Battery charging capacity | 5A |
| | Mains - Battery | 0ms |
| **Transfer Time** | Inverter-Bypass | Synchronous transfer: ≤0ms<br>Asynchronous transfer (default): ≤20ms |
| **Noise** | | <65db |
| **Panel display mode** | | Graphical LCD display |
| **Ambient conditions** | Operating temperature | 0°C ~ 50°C(2) |
| | Storage temperature | -40°C ~ +70°C (battery excluded); -25°C ~ +55°C (battery included) |
| | Relative humidity | 5%RH ~ 95%RH, non-condensing |
| | Altitude | ≤3000m; derating when higher than 3000m |
| **Mechanical parameter** | W*D*H (mm) | 500 X 525 X 400 |
| | Weight (Kg) | 85Kg |
| | Ventilation | Forced -air cooled |
| | Ingress protection | IP20 |
| | Color | Powder coated Black Texture finish |
| | Cable entry | Bottom |
| **Network Management** | Smart RS232/USB | Supports Windows 2000/2003/XP/Vista/2008, Windows 7, Linux, unix and MAC |
| | SNMP | Inbuilt for web monitoring only |
| | Optional SNMP | Power management from SNMP manager and web browser |
| | Modbus | Inbuilt via multifunction port |

# Liebert® S600™
## 10kVA-20kVA

*In today's dynamic world, it is not enough for enterprises to have basic power protection. With digital trends constantly emerging and transforming the way you do business, business continuity is all the more vital. You simply cannot afford downtime in your critical system or waste time recovering these systems after a disruption. What you need is a robust, high-speed, reliable UPS system, which offers perennial, round-the-clock protection to diverse application needs.*

### Our Solution

The Liebert® S600™ is a fully-digital, highly reliable, double conversion UPS solution that delivers clean and consistent power. This highly efficient solution is ideal for various deployments, whether it's IT racks, network closets, automation control systems, and precision instruments to small-sized control rooms among other edge applications.

- Cutting-edge design enables seamless integration into various ecosystems
- Tailored for global deployment in a low carbon, compact footprint

The ultimate level of engineering and dynamics that have gone beyond the development of this next-generation, innovative product facilitate top-notch availability and excellent performance at a low cost of ownership, giving you ultimate peace of mind.

### Application Areas

- Edge Networks
- Data Centers
- Analytical instruments
- Server Farms
- Workstations
- Telecom

### The Most Efficient UPS

Liebert® S600™ offers best-in-class efficiency of up to 91% over a wide range of load conditions, resulting in significant OPEX cost savings. S600D's integrated Smart Sleep technology in ECO mode provides a superlative efficiency of up to 94%.

- Inbuilt isolation transformer
- Unity power factor
- Efficiency >91% with inbuilt transformer
- Higher operating temp- $0^0$ to $50^0$
- Settable battery options

**10-20kVA**

- Operates in a parallel configuration upto 4 nos
- LI-ion battery compatible
- Graphical touch screen system LCD display provides user-friendly operating interface
- Integrated SNMP for monitoring

## Technical Specifications

| Model | Rating | 10KVA | 20KVA | 20KVA (3in/3out) |
|---|---|---|---|---|
| **System parameter** | Rating | 10kVA (3in -1out) | 20kVA (3-in -1out) | 20KVA/20kw (3in-3out) |
| **Input** | Rated voltage | 400vac 3-phase,4 wire | 400Vac 3-Phase,4 wire | |
| | Volatge Range | 176 -288VAC at 100% load; 100VAC - 288VAC at 50% load | | |
| | Rated Frequency | 50Hz/60Hz | | |
| | Frequency Range | 40Hz ~ 70Hz | | |
| | Power factor | ≥0.95 at full load | | |
| | Input phase reversal correction | Yes | No | |
| **Output** | Rated power | 10KVA/10kW | 20KVA/20kW | |
| | Voltage | 220/230/240VAC (single phase) | | |
| | Frequency synchronization range | Rated frequency±3Hz. Configurable range: ±0.5Hz ~ ±5Hz | | |
| | Rated Power Factor | Unity | | |
| | Crest Factor | 3:1 | | |
| | Voltage harmonic distortion | < 2% (linear load) | | |
| | Voltage Regulation | 2% | | |
| | Dynamic response recovery time | 60ms | 40ms | |
| | Isolation transformer | Inbuilt at UPS output | | |
| | Inverter Overload Capability the utility mode | At 25°C: 105% ~ 125%- 5min; 125% ~ 150%-1min; 150%- more than 200ms | | |
| | Inverter Overload Capability the battery mode | At 25°C :105% ~125%-60~ 30 s >125%- more than 200ms | | |
| **Bypass** | Bypass Voltage range | Upper limit: +10%, +15% or +20%; default: +20%<br>Lower limit: -10%, -20%, -30% or -40%; default: -40% | | |
| | Seprate bypass | Yes | | |
| | Manual bypass | Inbuilt | | |
| **Efficiency** | ECO Mode | > 94% | > 94% | |
| | Online mode (AC-AC) | > 91% | > 91% | |
| | Inverter Efficiency(DC-AC) | 88% | 88% | |
| **Battery** | Type | Sealed, lead-acid,Tubular,LI-ION | | |
| | No's of Batteries | 12(1), 16, 20; 16 by default | 24(1), 32, 40; 32 by default | |
| | Battery Fuse disconnector | Inbuilt | | |
| | Battery charging capacity | 8A | 13A | |
| **Transfer Time** | Mains - Battery | 0ms | | |
| | Inverter- Bypass | Synchronous transfer: ≤0ms<br>Asynchronous transfer (default): ≤20ms | | |
| **UPS Parallel Numbers** | | 4 | | |
| **Noise** | | <65db | | |
| **Panel display mode** | | Graphical LCD display | | |
| **Ambient Conditions** | Operating temperature | 0°C ~ 50°C(2) | | |
| | Storage temperature | -40°C ~ +70°C (battery excluded); -25°C ~ +55°C (battery included) | | |
| | Relative humidity | 5%RH ~ 95%RH, non-condensing | | |
| | Altitude | ≤3000m; derating when higher than 3000m | | |
| **Machanical parameter** | W*D*H (mm) | 550 X 620 X 700 | 550 X 620 X700 | 550X620X700 |
| | Weight (Kg) | 138 | 158 | |
| | Ventilation | Forced -air cooled | | |
| | Ingress protection | IP20 | | |
| | Color | Powder coated Black Texture finish | | |
| | Cable entry | Bottom | | Rear bottom |
| **Technology** | | IGBT based Double conversion PWM based true OnlineUPS with double conversion technology based on Digital Signal Processor (DSP), noiseless operation. Pure & steady Sine wave output. Full proof protection. Compact & rugged with wheels at base. | | |
| **Network Management** | | Smart RS232/USBPort. | | |
| | | SNMPinterface for network management. | | |
| | | Relay/Dry Contact/Modbus. | | |
| **Codes and Standards** | | UPS shall comply with the following IS/IEC standards: | | |
| | | IEC 62040-1, IEC 62040-2, IEC 62040-3, IEC 61643 | | |
| | | ISO 9001, ISO 14001 | | |
| | | RoHS | | |

*Note : (1) UPS power will derate to 70% of the total capacity*
*(2) UPS power will derate to 80% at 40deg, 70% at 50deg*
**conditions apply*

# *A Modular Power Protection Solution for today and the Future*

## LOW TCO

With the Liebert® APS™, you can maintain flexibility for the future and ensure the availability of your critical systems– all without sacrficing cost or energy efficiency.

Additional features to help lower costs include:

## Industry-leading efficiency:

- 91.5-92% efficiency: 200-240V in/out transformer- free systems.
- 88.5-89.9% efficiency: transformer-based systems.
- Scalability that allows you to cost-effectively add power capacity or battery modules as needed.
- Modular batteries, controls and power components to help reduce maintenance costs with user replacement.
- Two year hassle-free factory warranty program for repair or replacement of your Liebert® APS UPS.
- Module-level redundancy eliminates the expense of purchasing and planning for any additional cabinets.
- Reduced installation time and cost because units are shipped pre-con figured and factory tested, no need for on-site assembly.
- Everything you need for efficiency and availability in one box: power modules, batteries, maintenance bypass, and distribution in a single, small-footprint cabinet.
- Integral battery monitoring with temperature compensated charging to prolong battery life and help reduce replacement costs.

## Reliability and Serviceability

At the core of your business sits your data center and the services running in it. With the Liebert® APS™ UPS solution, you get peace of mind that your critical IT functions – and your business – will be available and running as expected through power disruptions, fluctuations and outages.

- Internal redundancy capability (N+2/20kVA) enhances reliability and provides multiple layers of power protection.
- No single point of failure - Full redundant design allows the critical load to run on conditioned power if there is a failure of any component in the system.
- Configurable design allows you to customize the Liebert® APS UPS for your desired level of capacity and redundancy.
- Fault-tolerant design, enables the power, battery and control modules to take themselves offline if there is a problem, without sacrificing overall system integrity.
- Superior overload capabilities, able to provide conditioned power to temporary overloads without transfers to/from bypass power.
- Internal wrap-around maintenance bypass and Frame-level bypass with indepen dent controls in separate assembly provide higher reliability and availability.

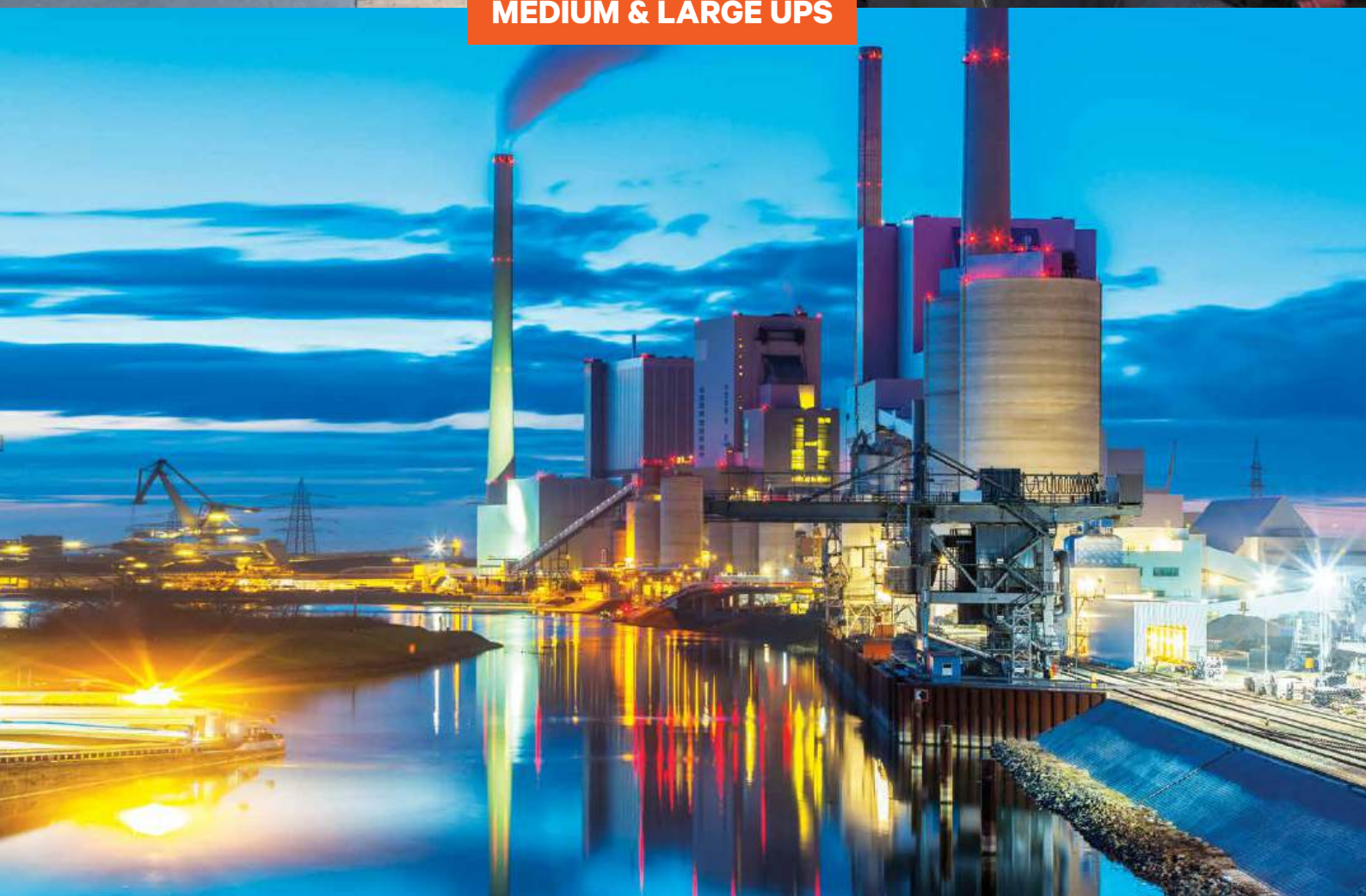
The Liebert® APS™ UPS can be installed on raised floors, traditional flooring, or in rack enclosures.

## Technical Specifications

| Unit Size, Type | 10 Bay | 16 Bay | 12 Bay | 16 Bay |
|---|---|---|---|---|
| | No Transformer | | Tranformer Based | |
| Frame Rating, kVA/kW | 5/4.5, 10/9,15/13.5 | 15/4.5, 10/9, 15/13.5, 20/185/ | 4.5, 10/9, 15/13.5 15/ | 4.5, 10/9,15/13.5,20/18 |
| **Input Parameter** | | | | |
| Nominal Input Voltage Range | 200/208/220/230/240; Single Phase | | | |
| | 380/400/415: Three Phase | | | |
| Input Voltage Range; Vac | Input Voltage Range Depends on the 0/13 Loading | | | |
| Power Factor | Single Phase Input 0.99<br>Three Phase Input 0.95 | | Single Phase Input 0.99 | |
| Input Frequency Hz | 50/60 Hz | | | |
| Input Current Distortion THDi | Less than 5% | | | |
| Input Frequency Range | 40/70 Hz Auto Sensing | | | |
| **Output Parameter** | | | | |
| Output Voltage Vac | 200/208/220/230/240 Vac | | | |
| Voltage Regulation % | ±3 | | | |
| Voltage Stability % | ±7 | | | |
| Voltage Recovery Time, ms | 560 | | | |
| Voltage Distortion % | 5 3 on Linear Load | | | |
| | 5 on Non-Linear Load | | 7 on Non-Linear Load | |
| Output Frequency; Hz | 50/60 | | | |
| OverLoad Capability % | 104% Continuous<br>105%-130% For 1 Min<br>131%-150% For 10 Sec<br>151%-200% for 1 Sec<br>> 201% for 250 msec | | | |
| **Battery Module** | | | | |
| Lead Acid Batteries Per String | 12 | | | |
| Batteries Cells Per String ,Pieces | 72 | | | |
| Battery Capacity,W | 36 W@15 Min rate to 1.67 V Per Cell@ 25 Degree Cel | | | |
| Maximum Charging Current | Power Module Internal Charger 1.8 Amps<br>Charger Module 10 Amps | | | |
| Nominal Voltage, Vdc | 144 | | | |
| **General and Environmental Condition** | | | | |
| Dimension WxDxH in mm | 440x712x920 | | | |
| Operating Temp | 0 to 40 Degree Celsius | | | |
| Storage Temprature | Without battery: -4 to 140 (-20 to 60)<br>With battery: 5 to 104 (-15 to 40) | | | |
| Relative Humidity | 0-95% Non Condensing | | | |
| Altitude ft (m) | 10000 (3000) | | | |

VERTIV.

# MEDIUM & LARGE UPS



# *Utmost Reliable Power Solution for Critical Business Applications*

The Liebert® Hipulse-U™ offers a reliable, scalable and user-friendly solution to ensure availability of various critical applications. The Liebert® Hipulse-U™ offers protection to your investment, and provide lower cost of ownership through its digital architecture and range of options which you can customize specifically for your needs.

## Telecommunication

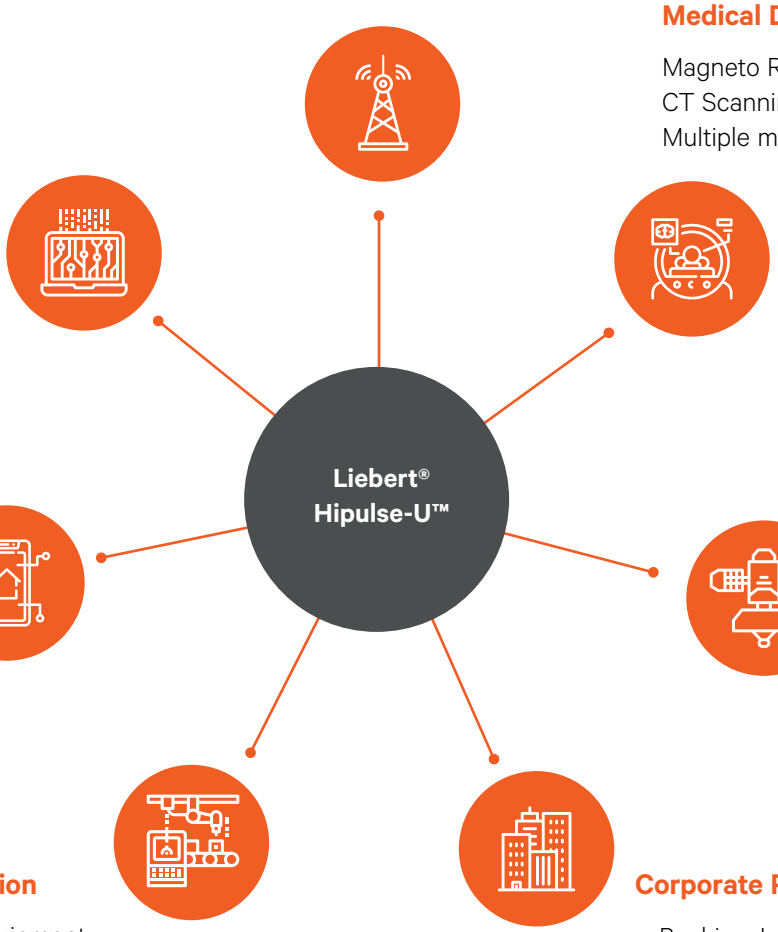
- Mobile (3G,4G)
- Fixed (including WLL)
- MSC, BSC centers

## Information Technology

- Large Internet Data centers
- Coloration Facilities
- Server Farms
- Internet Service Providers

## Medical Diagnostics

Magneto Resonant Imaging
CT Scanning/Cath Lab
Multiple medical imaging units




## Building Automation

- Access Control
- Security System
- Fire Alarm System

## Satellite

- Uplinking
- Earth Stations
- Broadcasting & Entertainment

## Industrial Automation

- Process Control Equipment
- Motion (digital drives and robotics)
- Transport Automation
- Airport automation
- Railways and Road transport automation and ticket booking

## Corporate Parks

- Banking, Insurance and Financial Services.
- Credit Card Operation
- Stock Exchange Operation
- Software Development Houses/Software Technology Parks
- BPO / KPO / EPO operations

# Liebert® Hipulse-U™

## Feature-Loaded UPS

We have studied the emerging needs of our customers and have engineered what we have learned into the new, upgraded Liebert® Hipulse-U™. Now it offers you more value and power per square meter. You will find that the Liebert® Hipulse-U™ offers unique features that address the needs of you business today and is designed to handle the needs that are anticipated in the future.

## Built Investment Protection

- Automatic battery testing
- Field settability of EOD of the battery
- Selectable times for boost charging duration of the battery (15 steps with each step of 1 hour)
- Protection against deep discharge of battery
- Short-circuit proof inverter
- Back-feed protection
- D-level lightning protection
- With 3 auxiliary power supply to ensure redundancy under any condition
- Standard dry contacts
- Choice between 6 or 12 pulse rectifier for 120kVA to 500kVA capacity range
- Choice of array of input harmonic filter options
- Temperature-compensated battery charging (optional)

## FEATURES

- Fully Digital, twin DSP controlled
- Rated at 0.9 output power factor to deliver more active power
- Handle leading power factor loads without KW derating under specified conditions
- On-Line Double Conversion IGBT- based PWM Inverter
- Wide input voltage tolerance (+20/-20%)
- Wide input frequency range of 45Hz to 65Hz
- High overload capability of static bypass (14 times for 10 milliseconds and 10 times for 100 milliseconds)
- Capability to handle:
  High crest factor loads
  100% non-linear loads
  100% unbalanced loads
- Built-in maintenance bypass
- Front access for spares replacement and preventive maintenance
- Easy Dual bus configuration architecture
- Adjustable frequency synchronization window up to 6% in the static bypass
- Field protocols ModBus / Jbus
- Network protocols SNMP
- Overload capability of the UPS:
  110% full load for 60 minutes
  125% full load for 10 minutes
  150% full load for 1 minutes
- Compact footprint

## Liebert® Hipulse U™ Accessories

### Intelligent Paralleling

- Intended to increase system efficiency and to reduce the operating hours on the UPS
- This feature will put one or more paralleled units into standby operation when number of redundant modules is above the user-specfied threshold

### Liebert® Active Filter

- Optional super filter to reduce THDi to <5% and improve input PF up to 0.93 without additional system footprint.*

### Isolation Transformer

- Additional transformer for output or bypass supply depending on application

### Rectifier or Bypass supply

- This allows UPS to be configured in Single or Dual Main supply to ensure system adaptability and reliability

### DC Ground Fault Indications

- This provides indication of occurrence of battery ground fault problems

### Protection Degree (IP)

- To address stressed environmental conditions, Hipulse-U™ UPS with higher than IP 20 degree of protection can be made available for most of the kVA ratings

### Top Cable Entry

- Available for a wide range of our Hipulse-U™ ratings

### Load Bus Synchronisation (LBS)

Ensures the synchronisation of outputs of two independent UPS systems to form Dual Bus Architecture for High availability of Critical BUS

### Liebert® LTS, STS2 or Hiswitch2

- This allows critical load to be automatically transferred between two independent, synchronized AC power sources without any risk of load disturbances

### TVSS (Transient Voltage Surge Suppressor)

- This offers protection from damaging transients and electrical line noises
- This is normally connected at the bypass path of Hipulse-U™ or inside the Static Transfer Switch as an optional item

## Communication Options

When choosing the best system to protect your mission critical applications, an important consideration would be the software and communication options, As part of our commitment to provide the best solution for you, we offer a wide range of sophisticated software and communication options for Hipulse-U™.

- Control through Building Management Systems via Modbus and Jbus protocols
- Web-enabledMonitoring and Management through SNMP protocols
- Network Management Systems ready (HP OpenView, CA unicenter, Novell Managewise, etc)
- Software Solutions
  - Site Monitor Software
  - Facility wide monitoring by Site Scan
  - Shutdown software for your computer

## Technical Data

| Nominal Ratings | 30 | 40 | 60 |
|---|---|---|---|
| **Rectifier Type** | **6P** | **6P** | **6P** |
| **Input** | | | |
| Nominal input voltage | | 380/400/415Vac -wire plus ground | |
| Input voltage range | | 290 to 498Vac | |
| Nominal input frequency | | 50/60Hz | |
| Input frequency range | | 45-55Hz / 55-65Hz | |
| **Output** | | | |
| Nominal output voltage | | 380/400/415Vac - 3 Phase with Neutral | |
| **Frequency** | | | |
| Voltage stability | | ±1% (Steady state); ±5% (Transient state) | |
| Transient recovery time | | 20 milliseconds to 1% | |
| Frequency stability | | ±0.1% (Synchronized with internal clock); ±6% (max)(Synchronized with bypa ss) | |
| Overload capability | | 101-110%, 60minutes; 111-125%,10minutes; 126-150%, 1 minute; | |
| Voltage distortion with linear load | | <1% | |
| Voltage distortion with 100% Non- linear load | | <5% | |
| Permissible load unbalance | | 100% | |
| Non linear load capability | | 100% | |
| Load handing capability without kVA derating | | 0.5 lagging to 0.9 leading | |
| Phase angle displacement accuracy | 100% balanced load | ±1° | |
| | 100% unbalanced load | ±1° | |
| **Dimensions and weight** | | | |
| Depth (mm) | | 810 | |
| Width (mm) | | 715 | |
| Height (mm) | | 1250 | |
| Weight(kg) | 520 | 580 | 660 |
| **General** | | | |
| General and safety requirements for UPS | | IEC 62040-1-1 | |
| EMC requirements for UPS | | IEC 62040-2 | |
| Design & Test Methods (1999) | | IEC 62040-3 | |

**Conditions apply*
*Specifications are subject to change without any prior notification*
*Specifications considering 400V nominal voltage*

## Technical Data

| Nominal Ratings | 80 | 100 | 120 | | 160 | | 200 | | 300 | | 400 | | 500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rectifier Type** | **6P** | **6P** | **6P** | **12P** | **6P** | **12P** | **6P** | **12P** | **6P** | **12P** | **6P** | **12P** | **6P** |
| **Input** | | | | | | | | | | | | | |
| Nominal input voltage | 380/400/415Vac 4-wire plus ground | | | | | | | | | | | | |
| Input voltage range | 290 to 498Vac | | | | | | | | | | | | |
| Nominal input frequency | 50/60Hz | | | | | | | | | | | | |
| Input frequency range | 40-70Hz | | | | | | | | | | | | |
| Input current distortion with linear load (with filter) | 3 to 10% with optional filter | | | | | | | | | | | | |
| Power factor (with filter) | 0.88 to 0.97 with optional filter | | | | | | | | | | | | |
| **Output** | | | | | | | | | | | | | |
| Nominal output voltage | 380/400/415Vac 4-wire plus ground | | | | | | | | | | | | |
| **Frequency** | | | | | | | | | | | | | |
| Voltage stability | ±1% (Steady state); ±5% (Transient state) | | | | | | | | | | | | |
| Transient recovery time | 20 milliseconds (max) | | | | | | | | | | | | |
| Frequency stability | ±0.1% (Synchronized with internal clock); ±6% (max)(Synchronized with bypass) | | | | | | | | | | | | |
| Overload capability | 101-110%, 60minutes; 111-125%,10minutes; 126-150%, 1 minute; | | | | | | | | | | | | |
| Voltage distortion with linear load | <1% | | | | | | | | | | | | |
| Voltage distortion with 100% Non- linear load | <5% | | | | <3.5% | | | | | | | | |
| Permissible load unbalance | 100% | | | | | | | | | | | | |
| Non linear load capability | 100% | | | | | | | | | | | | |
| Load handing capability without kVA derating | 0.5 lagging to 0.9 leading | | | | | | | | | | | | |
| Phase angle displacement accuracy | 100% balanced load | ±1° | | | | | | | | | | | |
| | 100% unbalanced load | ±1° | | | | | | | | | | | |
| **Dimensions and weight** | | | | | | | | | | | | | |
| Depth (mm) | 855 | | | | | | | | | | | | |
| Width (mm) | 900 | 1540 | 1250 | 1640 | 1240 | | 1740 | 1640 | 2280 | | 2640 | | |
| Height (mm) | 1900 | | | | | | | | | | | | |
| Weight(kg) | | 900 | | 1400 | 1200 | | 1750 | 1200 | 1850 | 1600 | 2550 | 2200 | 2900 |
| **General** | | | | | | | | | | | | | |
| General and safety requirements for UPS | IEC 62040-1 | | | | | | | | | | | | |
| EMC requirements for UPS | 111 | | | | | | | | | | | | |
| UPS classification according to CENIEN 6240-3 | IEC 62040-3 | | | | | | | | | | | | |

**Conditions apply*
*Specifications are subject to change without any prior notification*

## FEATURES

- Online mode Efficiency exceeding 96% at partial load
- ECO mode availability for parallel configurations
- Unity output PF (kVA=kW)
- Powerful battery charging capability
- Flexible air flow management; from back and top
- Top or bottom cable entry
- Integrated transformer option
- Full frontal access for installation and service
- LIFE™ remote diagnostic and preventive monitoring service
- Robust internal architecture makes it suitable for light industrial application

# *Efficient, Flexible Power Optimized For Medium Size UPS Applications*

### Medium Size UPS as dynamic as your business

Small and Medium sized businesses need UPS solutions that deliver lower first costs and ongoing operational savings, high reliability, and enable speed and flexibility in a dynamic IT environment.

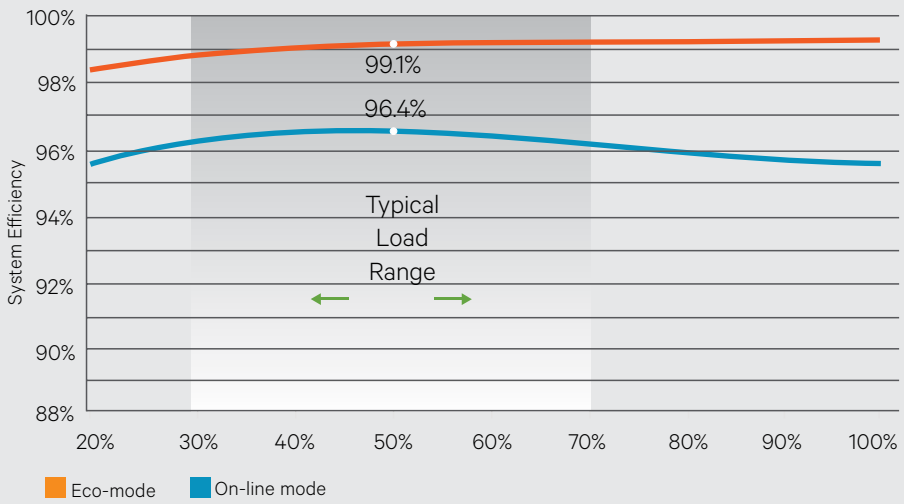
Vertiv's commitment is to deliver the most technologically advance product for our customer's mission critical applications, is once again reiterated by our next generation UPS series Liebert® eXM™

### Highly Efficient, most flexible and reliable transformer free UPS for small and mid-tier applications.

**Efficient power protection** that can meet your capital requirements. Our latest ECO Mode option delivers over 99% efficiency, while the Double Conversion Mode has been optimized to exceed 96%.

**Flexible configurations** provides an ideal mix of both row-based and room-based benefits, optimized to deliver excellent performance at low total cost of ownership and allow organizations to meet stringent Service Level Agreements.

**Reliability** is the epicenter of Liebert® eXM™ Its Internal and external architecture is rugged enough to handle input faults, load faults,temporary overloads, input power disturbances and even light industrial environment.




*Liebert® eXM™ efficiency curve in double-conversion mode: Liebert® eXM™ UPS saves over USD1,000/year for every percentage point gain in efficiency.**USD 0.1/kWh*

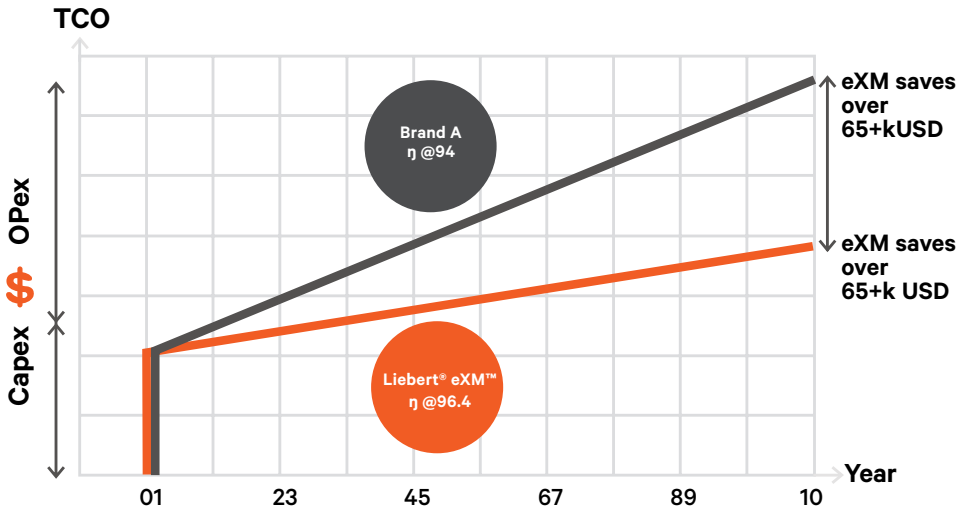
***Liebert® eXM™ efficiency credentials and performance is certified by TUV -Rheinland in accordance with IEC/ EN 62040-1, IEC/ EN 62040- 3***

## Efficient System

Since the need for improving energy efficiency has become more ubiquitous, many manufacturers have introduced energy efficient UPS system to meet the customers' needs on energy conservation. But they fail to communicate the true picture of efficiency with respect to load at the typical operating condition.

Mostly, UPS eiciency is judged at full load calculations –but your system rarely runs at full load. Compare double conversion eiciencies in the 30-70 percent load ranges to get a true picture of operating costs.

## TCO performance at typical 40-60% load level




## This is where Liebert® eXM™ draw out the critical dierence by consistently exceeding unmatched over 96% efficiency level.

Similarly, under ECO mode Liebert® eXM™ constantly delivers over 99% efficiency across the typical load range and It is able to do so even in parallel operation without the need for an external accessories thus saving on initial cost and also, while ensuring high level of availability by transferring the load to inverter and vice versa in less than 2ms, in case of utility voltage anomaly of failure.

When two or more UPS are paralleled to reach the required capacity, an integrated Intelligent Paralleling algorithm can be established. Intelligent Paralleling evenly distributes the operating hours across the connected UPS units by rotating the active ones thus maximizing the total system efficiency.

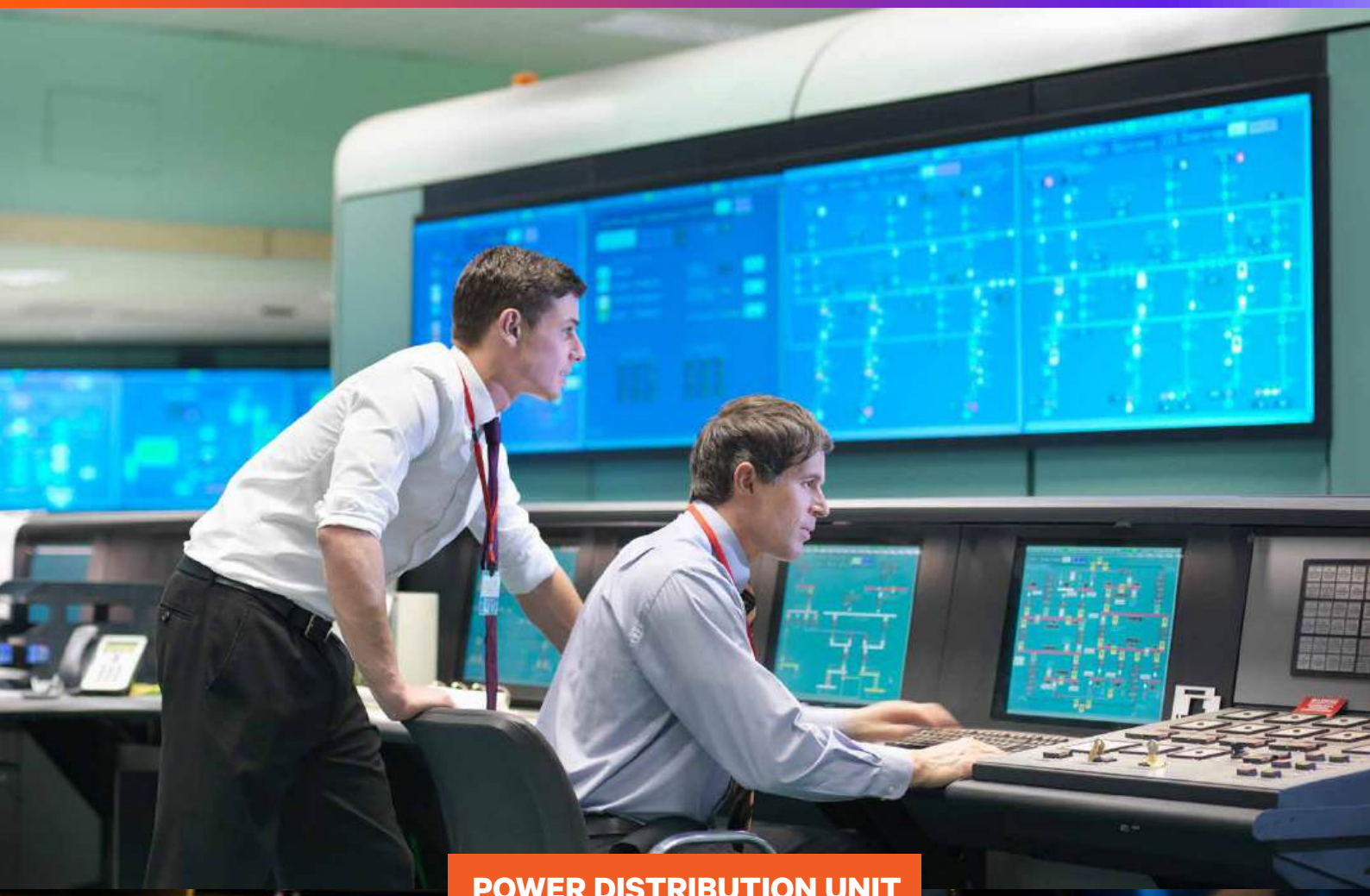
With its advanced efficiency techniques, Liebert® eXM™ contribute to minimizing the carbon footprint of mission critical applications, helping data centers to meet the industry's environmental and efficiency compliance standards.

## Specifications

| Nominal Ratings(kVA/kW) | 80kVA/kW | 100kVA/kW | 120kVA/kW | 160kVA/kW | 200kVA/kW |
|---|---|---|---|---|---|
| **Input** | | | | | |
| Nominal input voltage(V) | 380/400/415 | | | | |
| Input voltage range without battery discharge (V) | 229-478 | | | | |
| Nominal input frequency(Hz) | 50/60 | | | | |
| Input frequency range(Hz) | 40-70 | | | | |
| Bypass voltage tolerance(%) | Upper limit: +10%, +15%, or +20% default: +15%; Lower limit: -10%, -20%, -30% or -40% default: -20% | | | | |
| Bypass frequency tolerance(%) | +/- 10% or +/- 20%, default: +/-10% | | | | |
| Input power factor(kW/kVA) | >0.99 | | | | |
| Current THD at full linear load(THDi%) | <3% | | | | |
| **Battery** | | | | | |
| Number 12V battery per string(Min-Max) | 30-44 | | | | |
| Temperature compensation (mV/°C/c1) | -3.0 (selectable from 0 to -5.0 around 25°C or 30°C, or inhibit) | | | | |
| Battery Charger max. (A) | 20 | 24.5 | 30 | 40 | 49 |
| **Output** | | | | | |
| Nominal output voltage (V) | 380/400/415 | | | | |
| Nominal output frequency (Hz) | 50/60 | | | | |
| Nominal active power (kW) | PF=1 | | | | |
| THDv with 100% linear load (%) | <1% | | | | |
| Inverter overload capacity | 110% for 60 mirr, 125% 10min; 150% for 1 min | | | | |
| **Efficiency** | | | | | |
| Online mode efficiency | Up to 96.4% | | | | |
| ECO mode efficiency | Up to 99.1% | | | | |
| **Dimensions and weight** | | | | | |
| Dimensions (W x D x H) mm | 700 x 1000 x 1500 | 900 x 1000 x 2000 | 900 x 1000 x 2000 | 1200 x 1000 x 1700 | 1200 x 1000 x 1700 |
| Weight(Net weight) | 350 | 480 | 480 | 580 | 625 |
| **General** | | | | | |
| Nosie at 1 m dB(A) | 57 | 59 | 59 | 61 | 64 |
| Altitude | =1500; derate power by 1% per 100m between 1500m and 300m | | | | |
| Ventilation | Front to back standard/ Front to top (optional) | | | | |
| Protection level IEC (60629) | IP 20 Standard | | | | |
| General and safety requirements for UPS | EN62040-1/ IEC62040-1 /A562040-1 | | | | |
| EMC requirements for UPS | EN62040-2 / IEC62040-2 / AS62040-2 (Class C2*) | | | | |
| Method of specifying the performance and test requirements of UPS | EN62040-3 / IEC62040-3 / AS62040-3 (VFI-SS-111) | | | | |

**Class C3 is standard whereas class C2 is optional*
*Specifications are subject to change without any prior notification*

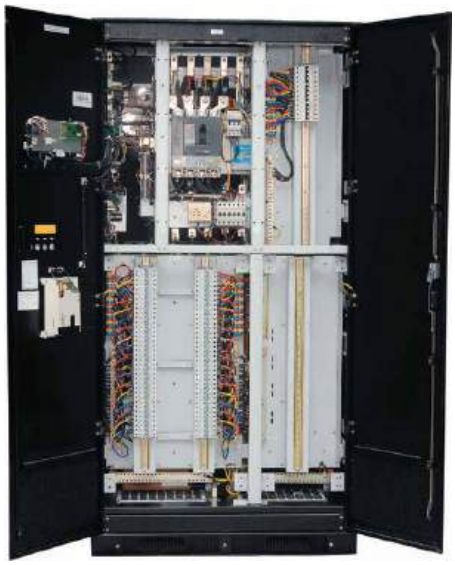
VERTIV.



# POWER DISTRIBUTION UNIT

## FEATURES

- **Computer-grade grounding** - the Vertiv PPC automatically establishes a single point ground to meet grounding requirement major Manufacturers' recommendations and the requirements of the National Electric Code.
- **Handles non-linear loads -** fully compatible with the non-linear loads of modern computer systems and other electronic equipment.
- **Monitoring -** built-in metering and alarm annunciation with communication to Vertiv centralized monitoring & modbus for third party monitoring.
- **Space savings -** compact single cabinet conserves valuable floor space.
- **Easy installation -** single input cable connection reduces installation time and cost.
- **Location flexibility -** the unit can be easily relocated to protect your investment.



## Liebert® delivers the packaged power solution

Liebert® Precision Power Center is an affordable and reliable packaged Power management for a variety of applications, including computer rooms, LANS/WANS, communication facilities and manufacturing units.

Creating high quality power is a major step towards protecting the operation of a critical facility. But don't stop there. Once you've created a better level of power, you need to make sure that it can be distributed properly to each piece of important equipment

## Critical power distribution made easy

This is why Liebert® designed the Precision Power Center (PPC) to bring you a distribution system that will close the power delivery loop in your critical facility. Liebert PPC offers the benefits of a custom-tailored power system, with the convenience and cost savings of a pre-packaged, factory-tested unit. Housed in a single, self- contained cabinet, it combines distribution, computer-grade grounding and power monitoring to provide the protection your vital computer or communications equipment demands. Available In 50-300 kVA capacity systems. The PPC offers flexible expansion capabilities to fit growing sites.

## A proven system

The packaged system approach of the Vertiv PPC is convenient and space-saving, reducing installation time and cost compared to a conventional approach using multiple interconnected components. The Vertiv PPC is built on a proven system design used in thousands of Installations, and unlike the one-of-a-kind, built-up distribution constructed at the site, it undergoes thorough factory testing as a complete system to assure reliable consistent performance.

# Technical Specifications

| Rated Power | 50 | 75 | 100 | 125 | 150 | 200 | 225 | 250 | 300 |
|---|---|---|---|---|---|---|---|---|---|
| **Electrical parameters** | | | | | | | | | |
| Rated Input Mains Voltage[1] | 380 - 400 - 415 Vac | | | | | | | | |
| Input Supply | Three phase, 3 wire and Ground | | | | | | | | |
| Input voltage tolerance | ± 10 % | | | | | | | | |
| Frequency | 50/60Hz | | | | | | | | |
| Input frequency tolerance | ± 5 % | | | | | | | | |
| Output Supply | Three phase or Single phase | | | | | | | | |
| Rated Output Voltage[2] | 220/380 - 230/400 - 240/415 Vac | | | | | | | | |
| **Environmental parameters** | | | | | | | | | |
| Operating Temperature | 0 to 40°C, (average 35°C max) | | | | | | | | |
| Relative Humidity | 90% at 31°C | | | | | | | | |
| Altitude of operation | 1000m above sea level | | | | | | | | |
| Storage/ transport temperature | -25 to 70°C | | | | | | | | |
| **Mechanical parameters** | | | | | | | | | |
| Height | With transformer | 2000mm | | | | | | | |
| | Without transformer | | | | | | | | |
| Width | With transformer | 900mm | | | | 1200mm | | | |
| | Without transformer | 600mm | | | | 1000mm | | | |
| Depth | With transformer | 1050mm | | | | | | | |
| | Without transformer | 600mm | | | | | | | |
| Colour | Structured Black, Epoxy Polyester | | | | | | | | |
| Cooling | By Internal Intake Fans | | | | | | | | |
| Cable Entry / Exit | Outgoing cables = Bottom side; Incoming cables = Top & Bottom side | | | | | | | | |
| Protection grade | IP 20 | | | | | | | | |

** 1. 380V, 400V or 415V is to configured by software.*
*2. Rated output voltage is as per input mains voltage.*
*3. Specification are subject to change without any prior notification*

# *Reliable Redundant protection to your mission critical Applications*

**The LTS™ is a single-pole automatic transfer device with the capacity of 10/16/32 A.**

**It performs the core functions of detection and transfer in the dual-bus system composed of two ways of AC power, and is used in the high-end uninterruptible power supply applications that require high power supply reliability.**

## Redundancy

Currently, only the high- end severs are equipped with dual power. Other types of equipment, including hub, exchange, router, elementary server, and specialized instrument and meter. are singlepower products. You can connect the key equipment to two ways of redundant power through LTS™. The main power and the standby power can directly connect to the LTS™ on the rack can provide redundancy control on the power. Once the main power fails, it will automatically switch to the standby power

## Reliability

The LTS™ adopts the control technology of “First Disconnect Then Connect”

- If one-way power fails, the LTS™ can ensure the uninterruptible power supply to the equipment through the redundant power supply
- Once short circuit occurs, the LTS™ can ensure that the failure will not extend to the standby power, and thus ensure the uninterruptible power supply to the mission critical equipments

## Redundant Design

To ensure that the equipment can still operate normally upon the failure of one single power.

## Compact Size

Optimized 1U size designed to integrate in same server rack

## Full DSP Control

Ensures strong data processing capacity and improves the system reliability.

## Advanced Power-off Detection

Enables quick judgment of power -off failure.

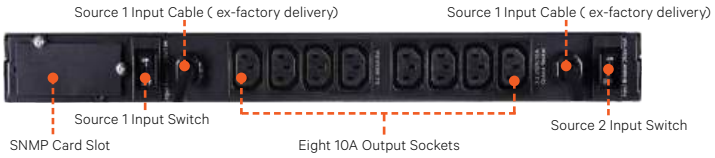
## Advanced Communication

Realizes the remote management through SNMP card (option)

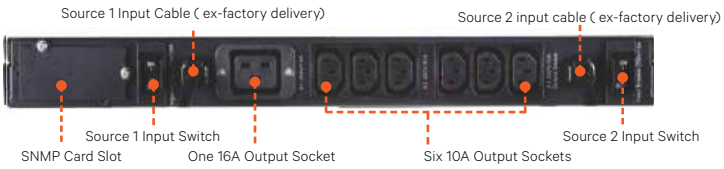
## Applications

- Computer equipment rooms
- Internet data centers
- Telecom&Financial data centers
- Industrial process control centers

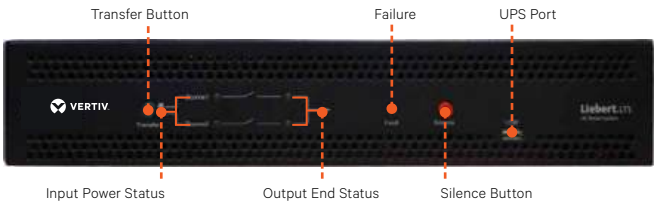
**10A And 16A Front Panel Schematic Diagram**



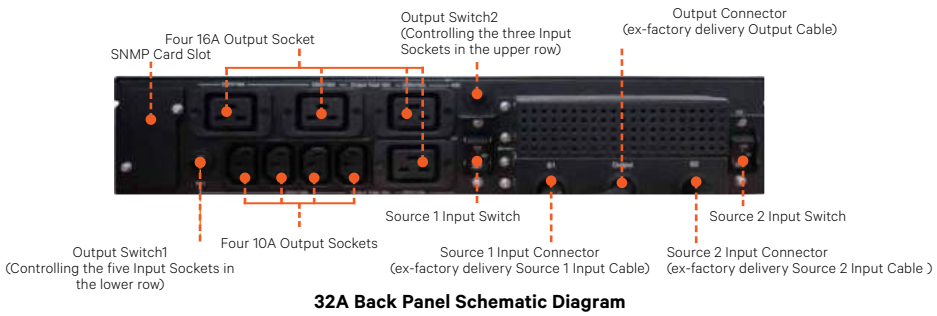

**10A And 16A Front Panel Schematic Diagram**




**16A Back Panel Schematic Diagram**




**32A Front Panel Schematic Diagram**




**32A Back Panel Schematic Diagram**

## Technical Specifications

| Rating | 10A | 16A | | 32A |
|---|---|---|---|---|
| **Input** | | | | |
| Input connectors type | C14 x 2 | IEC309 x 2 (Model 1) | IEC-C20 x 2 (Model 2) | Hard-wired |
| Input source | Two ways of input sources | | | |
| Input mode | 1 +N+PE | | | |
| Rated voltage | 220/230Vac | | | |
| Rated frequency | 50/60Hz | | | |
| Voltage range | 150 ~ 300Vac | | | |
| Frequency range | Rated frequency ±5Hz | | | |
| Voltage distortion | <10% | | | |
| **Output** | | | | |
| Output connectors type | C13 | C13 & C19 | | C13 & C19 |
| Rating & Quantity | 10A x 8 | 10A x 6, 16A x 1 | | 10A x 4, 16A x 4 |
| Power factor | 0.8 ~ 1.0 lead or lag | | | |
| Overload capacity | 125%, 30min (tested at 30°C) | | | |
| Efficiency (100% linear load) | 99% | | | |
| **Transfer** | | | | |
| Numbers of poles | 2 poles | | | |
| Automatic transfer interval | <6ms (typical), <11ms (maximum) | | | |
| **Environment Parameters** | | | | |
| Operating temperature | 0 ~ 40°C | | | |
| Storage temperature | -40 ~ 70°C | | | |
| Relative humidity | 5 ~ 95%, no condensation | | | |
| Elevation | 3000m | | | |
| Pollution level | Level II | | | |
| **Mechanical Parameters** | | | | |
| Dimension (H x W x D) | 44mm x 430mm x 250mm | | | 84mm x 430mm x 340mm |
| Weight | 4.5kg | | | 5kg |

**Specifications are subject to change without any prior notification*

## Intelligent static transfer switches
## Network Power Switch - I, Network Power Switch - II

Ensures maximum reliability to critical loads by eliminating system failures that are caused by power distribution problems.

### Network Power Switch - I
NPS-I R31 16A, 32A, 63A, 100A, 150A, 200A, 250A, 300A Single Phase -1 Pole

### Network Power Switch - I N
NPS-I R32 16A, 32A, 63A, 100A, 150A, 200A, 250A, 300A Single Phase -2 Pole

### Network Power Switch - II
NPS-II FL3 60 to 400A Three Phase - 3 Pole

### Network Power Switch - II N
NPS-II FL4 100 to 300A Three Phase - 4 Pole

## FUNCTION

In a typical connection (see diagram) two different power sources (UPS, Stabiliser, Power conditioner etc.) are connected to the critical load through NPS-I / NPS-II switch, which will intelligently monitor the power from the sources. Depending upon the preset limits, it will allow the power to be passed to the critical load & thus making it as the best solution for mission critical applications.

## APPLICATIONS

- Data Centers
- Call Centers
- Process Control
- Automation

FRONT VIEW (3U SIZE)

REAR VIEW (3U SIZE)

***NOTE** : 4U size is also available*

## FEATURES

**Uses Power Semiconductors as Switching Element**
It acts like protective barrier to the load. When power supply feeding to the load goes beyond the preset limits (Frequency or voltage) the switch instantly disconnects from load and protects it.

**Microcontroller Feature**
Microcontroller enabes source functioning and its control scheme. The smart control enables user to select the priority of source.

**Simple & Rugged design**
Low component count, giving high level of reliability.

**User friendly display[A] & Control**
Display provides status of incoming power source and the condition of static switch.

**Exceptional Performance**
It is tailored to suit the requirements of different operating conditions. It tracks the Input Voltage, Phase & Frequency, Distortion levels at the terminal points. If these parameters are within the limits then depending upon the priority selection, it activates the respective switch. This ensures the power availability to the load

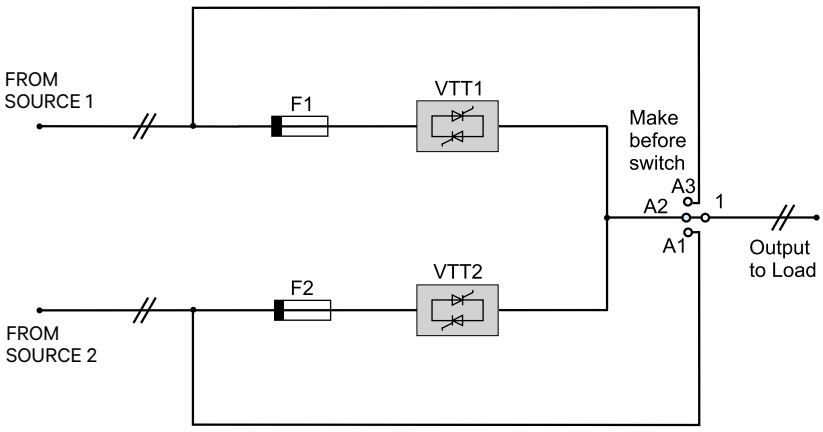
**MODBUS RS 232/485 Interface (optional)**
To connvvect your building Management System (BMS) for monitoring of all status & alarms

**Potential Free contacts[B] (optional)**
For remote monitoring of the switch activity

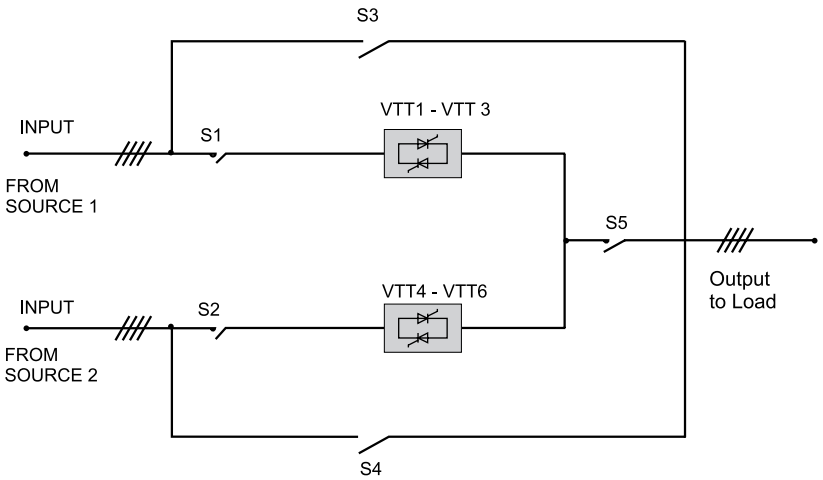
The NPS-I & NPS-II switches allows instantaneous transfer of load between two power sources. It can be used to ensure complete redundancy of power supply upto the last piece of wire. It is useful in many applications, where redundant power supply is available, either from two UPS systems or one UPS and bypass source.

These switches are comprising of semiconductor switches, they ensure continuity of power to the load in the event of failure of one of the power sources. They have different user selectable parameters and in-built microprocessor.

## SINGLE LINE DIAGRAM




NPS-I




NPS-II

***NOTE*** : *A : Display is available for NPS-II ; NPS MON is available for NPS-I*
*B : Potential free contact optional feature is available in NPS-I*
*For NPS-II if potential free contacts are required, contact Product / Marketting*

## Technical Specifications

| Model | NPS-I R31 | | | NPS-I R32 | | |
|---|---|---|---|---|---|---|
| No. of Switching Poles | 1 Pole (Ph) | | | 2 Pole (Ph + N) | | |
| Nominal Output Current[1] | 16 A | 32 A | 63 A | 16 A | 32 A | 63 A |
| Nominal Voltage[1][4] | 220 / 230 / 240 V, 1 Phase (110 / 120 V optional) | | | | | |
| Voltage Tolerance[2] | - 15% to + 10% (Default) | | | | | |
| Nominal Frequency | 50 / 60 Hz, ± 2 Hz (Default) | | | | | |
| Efficiency[5] | At full load & nominal input voltage | | | | | |
| Efficiency AC to AC[7] | Static Switch Rating | | Efficiency (%) for 1P | | Efficiency (%) for 2P | |
| | 16A / 110Vac | | 97 | | 96 | |
| | 16A / 230Vac | | 98.5 | | 98 | |
| | 32A / 110Vac | | 98 | | 96.5 | |
| | 32A / 230Vac | | 99 | | 98 | |
| | 63A / 110Vac | | 98 | | 97 | |
| | 63A / 230Vac | | 99 | | 98 | |
| Overload Capacity [8] | 106% to 125% for < 1 Hrs., 125 to 150% for < 10 min., 150 to 200% for < 1 min., 200 to 400% for < 700 ms., 400 to 700% for < 100 ms, >700% for < 60 ms | | | | | |
| Duty | Continuous | | | | | |
| Protections [8] | Input Under Voltage, Input Over Voltage, Output Overload, Output Short Circuit | | | | | |
| Transfer / Re-transfer Time [2][7] | < 5 ms for Sync. condition | | | | | |
| | < 5 ms / < 15 ms (selectable) for No Sync. Condition | | | | | |
| Manual Bypass facility | Make before break | | | | | |
| Acoustic Noise Level[6] | <45 dBA | | | | | |
| Operating Temperature | 0 to 40° C | | | | | |
| Relative Humidity | Up to 95% (Non-condensing) | | | | | |
| Altitude | < 1000 meter, above sea level (without de-rating) | | | | | |
| Reference standard | IEC 62310 | | | | | |
| Enclosure Protection | IP 20 | | | | | |
| Cooling | Natural Cooling | | | | | |
| Dimension (in mm) WxDxH | 440 x 450 x 132 (480 Including Side Clamp x 450 x 132), 19" Rack mountable, 3U Height | | | | | |
| Color | RAL 7021 | | | | | |
| Weight (Approx) | 20 kg | | | | | |
| Cable Entry | Rear Side | | | | | |
| LED Indications | Source 1 Healthy | | Source 1 Feeding load | | Source 1 Priority | |
| | Source 2 Healthy | | Source 2 Feeding load | | Source 2 Priority | |
| | Source 1 Fuse Fail | | No Sync | | | |
| | Source 2 Fuse Fail | | Alarm | | | |
| | Load on Manual Bypass - Source 1 | | Load on Manual Bypass - Source 2 | | Load on Static Switch | |
| PFC [1] | Source 1 Abnormal or Back Feed (Optional) | | Source 2 Abnormal or Back Feed (Optional) | | Alarm | |
| Other Features | • DSP Based control | | • Hot Swappable Electronics static switching module | | | |
| | • Back feed protection (Optional) | | • Fixed or variable source priority mode and selection of preferred source [3] | | | |
| | • Inbuilt Static Switch fault detector | | • Short circuit protection by electronic circuit | | | |
| | • INSTAMON Software for monitoring all status & alarm (Optional) | | | | | |
| Communication Interface | RS 232 or Ethernet Connectivity, RS 485 MODBUS (Optional) | | | | | |
| Output Sockets | 6 Outlets as per IEC320-C13 (Default) (Rating 10 A / 250 VAC) | | or | 2 Outlet as per IEC320-C19 (Optional) (Rating 16 A / 250 VAC) | | |

*(1) Factory setting (2) Settable from "Insta Mon Software" (3) Settable from "Insta Mon Software" as well as from "Operator control panel"*
*(4) Allowable source voltage distortion (THD) < 10% (5) For tolerance see IEC 60146-1-1*
*(6) Acoustic Noise Level from 1 meter (Ref. ISO 3746)V (7) Efficiency & Transfer time is specified for Linear load*
*(8) Settable from "Insta Mon Software" & Overload Capacity calculated using I2T method, Also No tripping action on overload.*

## Technical Specifications

| Model | NPS-II FL3 | | | | NPS-II FL4 | | |
|---|---|---|---|---|---|---|---|
| Ampere Rating | 60 / 100 A | 200 A | 300 A | 400 A | 100 A | 200 A | 300 A |
| Input / Output | 3 Phase | | | | 3 Phase | | |
| No. of Switching Poles | 3 Pole (Ph) | | | | 4 Pole (Ph+N) | | |
| Nominal Output Current | 60 / 100 A | 200 A | 300 A | 400 A | 100 A | 200 A | 300 A |
| Nominal Voltage | 400 / 415 V (3 Ph + N) | | | | | | |
| Voltage Tolerance | Low band: -30% to +15% (Default), Medium band : -25% to +15%, Narrow Band : -15% to +15% | | | | | | |
| Nominal Frequency | Nominal: 48 - 52 Hz, Wide 40 - 70 Hz (Default) | | | | | | |
| Efficiency [1] | > 98% | | | | > 97% | | |
| Overload Capacity [3] | 110% for 1 hour, 150 % for 1 min., 200 % for 10 sec., 1000 % for 100 ms | | | | | | |
| Duty | Continuous | | | | | | |
| Protections [3] [4] | Input Under Voltage, Input Over Voltage, Output Overload, Output Short Circuit | | | | | | |
| Transfer / Retransfer Time | Low Sensitivity : < 8 ms, Medium Sensitivity : < 5 ms (Default), High Sensitivity: < 3 ms | | | | | | |
| Manual Bypass facility | Provided | | | | | | |
| Acoustic Noise Level [2] | < 60 dBA | | | | | | |
| Operating Temperature | 0 to 40° C | | | | | | |
| Relative Humidity | up to 95% (Non-condensing) | | | | | | |
| Altitude | < 1000 meter, above sea level (without de-rating) | | | | | | |
| Testing Standard | IEC 62310 -3 | | | | | | |
| Enclosure Protection | IP 20 | | | | | | |
| Cooling | Forced Cooling | | | | | | |
| Dimension (in mm) - Width | 800 | 800 | 1000 | 1000 | 800 | 1000 | 1000 |
| - Depth | 600 | 600 | 600 | 600 | 600 | 600 | 600 |
| - Height | 1750 | 1750 | 1950 | 1950 | 1750 | 1950 | 1950 |
| Weight in kg (approx) | 225 | 225 | 275 | 350 | 225 | 250 | 275 |
| Color | RAL 7021 | | | | | | |
| LCD Display parameters | Source 1 R phase voltage<br>Source 1 Y phase voltage<br>Source 1 B phase voltage | | Source 2 R phase voltage<br>Source 2 Y phase voltage<br>Source 2 B phase voltage | | Output Load R<br>Output Load Y<br>Output Load B | | Date & Time |
| LED Indications | Source 1 Healthy<br>Source 2 Healthy | | Source 1 Feeding<br>Source 2 Feeding | | Source 1 Priority<br>Source 2 Priority | | Sensitivity Low<br>Sensitivity Medium<br>Sensitivity High |
| Fault Indications | Overload | | | | | | |
| Communication Interface | RS 485 Modbus (optional) | | | | | | |

*(1) For tolerance see IEC 60146-1-1*
*(2) Acoustic Noise measured @ 1.0 meter as per ISO 3746*
*(3) No tripping action on overload, message is displayed.*
*(4) Output Short Circuit is for protection of SCRs; Customer need to provide upstream fuses or ask for semiconductor fuse box (This wall mounted box is an optional).*

*Specifications subject to change without prior notice.*

## Technical Specifications

| Type | NPS-I FL I | | | | | NPS-I FL II | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Input / Output | | | | | | | | | | |
| Nominal Voltage[1] [4] | 220 / 230 / 240 V, 1 Phase (110 / 120 V optional) | | | | | | | | | |
| Voltage Tolerance[2] | -15 % to +10 % (Default) | | | | | | | | | |
| Frequency[5] | 50 / 60 Hz | | | | | | | | | |
| Frequency Tolerances | ± 3 Hz (Default) | | | | | | | | | |
| Nominal Output Current[1] | 100A | 150 A | 200 A | 250 A | 300A | 100A | 150A | 200 A | 250 A | 300 A |
| Input Sources | 2 Nos. | | | | | | | | | |
| No. Of Switching Poles | 1 Pole (Ph) | | | | | 2 Pole (Ph+N) | | | | |
| Overload Capacity [8] | 106% To 125% For <1 Hrs., 125 To 150% For <10 Min., 150 To 200% For <1 Min., 200 To 400 For <700 ms., 400 To 700% For< 100 ms, >700% For <60 ms | | | | | | | | | |
| Duty | Continuous | | | | | | | | | |
| Load Power Factor Range | 0.6 to unity leading or lagging | | | | | | | | | |
| Static Switch | | | | | | | | | | |
| Transfer/Retransfer Time For Sync Condition[2] [7] | < 5 ms | | | | | | | | | |
| Transfer/Retransfer Time For No-Sync Condition[2] [7] | < 5 ms / < 15 ms | | | | | | | | | |
| Manual Bypass Switch | Provided | | | | | | | | | |
| Efficiency (Ref. Iec 60146-1-1) | At full load & nominal input voltage | | | | | | | | | |
| Efficiency-Ac To Ac [7] | Static Switch Rating | Efficiency (%) For 1pole | | | | Efficiency (%) For 2pole | | | | |
| | 100A / 110V ac | 98 | | | | 97 | | | | |
| | 100A / 230V ac | 99 | | | | 98 | | | | |
| | 150A / 110V ac | 98 | | | | 97 | | | | |
| | 150A / 230V ac | 99 | | | | 98 | | | | |
| | 200A / 110V ac | 98 | | | | 97 | | | | |
| | 200A / 230V ac | 99 | | | | 98 | | | | |
| | 250A / 110V ac | 98 | | | | 97 | | | | |
| | 250A / 230V ac | 99 | | | | 98 | | | | |
| | 300A / 110V ac | 98 | | | | 97 | | | | |
| | 300A / 230V ac | 99 | | | | 98 | | | | |

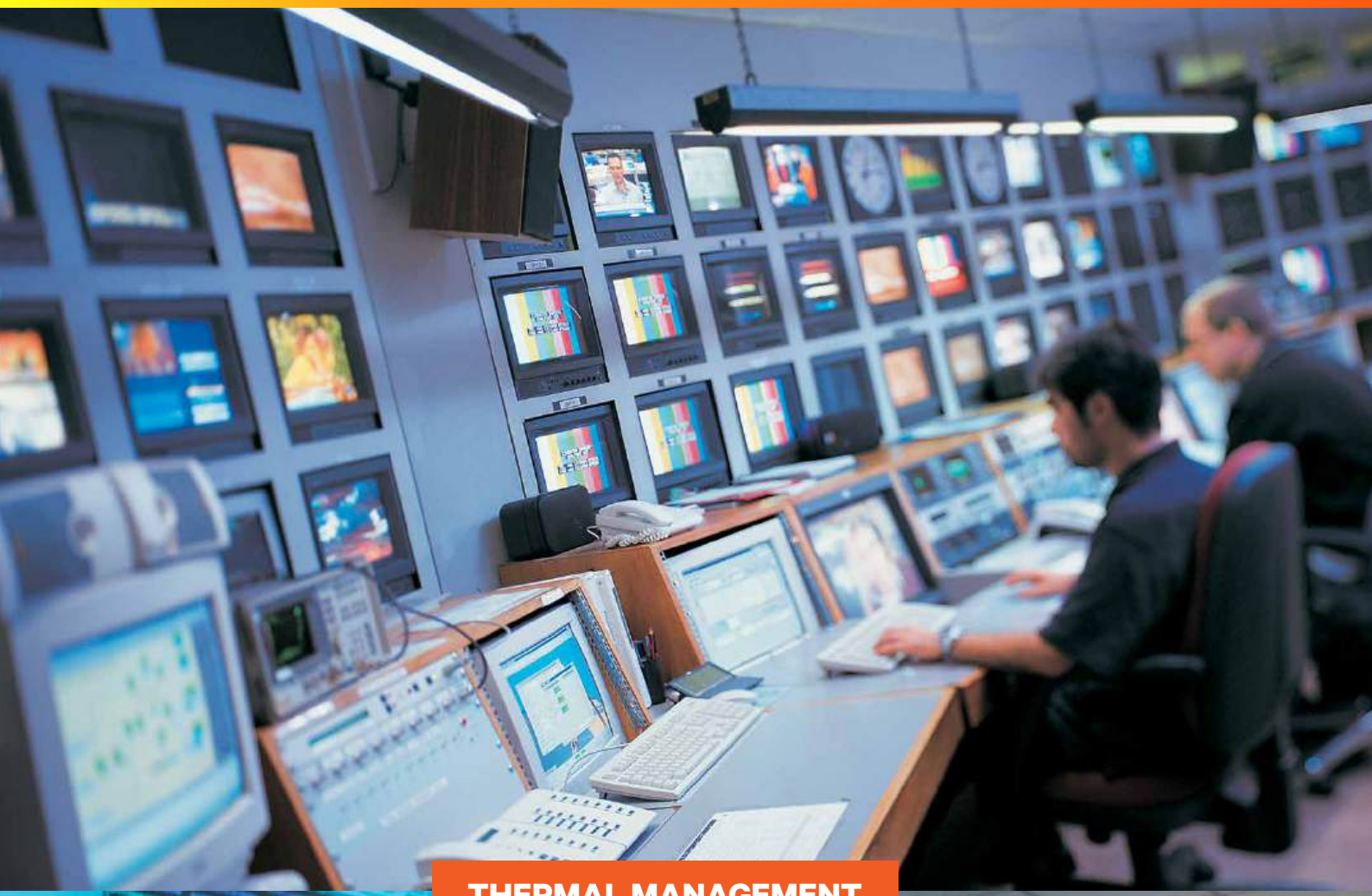
*(1) Factory setting*
*(2) Settable from "Insta Mon Software"*
*(3) Settable from "Insta Mon Software" as well as from "Operator control panel"*
*(4) Allowable source voltage distortion (THD) < 10%*
*(5) For tolerance see IEC 60146-1-1*
*(6) Acoustic Noise Level from 1 meter (Ref. ISO 3746)V*
*(7) Efficiency & Transfer time is specified for Linear load*
*(8) Settable from "Insta Mon Software" & Overload Capacity calculated using I2T method, Also No tripping action on overload.*

## Technical Specifications

| ENVIRONMENTAL | | | | |
|---|---|---|---|---|
| Acoustic Noise Level from 1 Meter (Ref. ISO 3746) | | ≤ 60 dB (For 100A & 150A), ≤ 65 dB (For 200A, 250A & 300A) | | |
| Operating Temperature | | 0 to 40 Deg C | | |
| Storage Temperature | | 0 to 70 Deg C | | |
| Relative Humidity | | Up to 95% RH, (Non-condensing) | | |
| Altitude | | < 1000 meter above sea level (without de-rating) | | |
| **Physical** | | | | |
| Enclosure Protection | | IP 42 - Standard | | |
| Grade | | | | |
| Cooling | | Forced Air | | |
| Color | | RAL 7021 (Default) | | |
| Cable Entry | | Bottom | | |
| Dimensions (In Mm) | For | FL I & FL II | | |
| | Width | 800 | | |
| | Depth | 600 | | |
| | Height | 1600 + 150 + 100 (Panel Height + Plinth + Canopy) | | |
| | Weight | 230 kg Appx. | | |
| Installation | | Free standing floor mounted | | |
| **Led Mimic** | | | | |
| Indications On Mimic | ➲ Source 1 Healthy | ➲ Source 1 Feeding load | ➲ Source 1 Fuse Fail | |
| | ➲ Source 2 Healthy | ➲ Source 2 Feeding load | ➲ Source 2 Fuse Fail | |
| | ➲ Source 1 Priority | ➲ No Sync | | |
| | ➲ Source 2 Priority | ➲ Alarm | | |
| For Switch Position | ➲ Load on STSW | ➲ Load on Source 1<br>Manual Bypass | ➲ Load on Source 2<br>Manual Bypass | |
| **Pfc** (1) | | | | |
| Available Signals | ➲ Source 1 Abnormal or<br>Source 1 Back Feed (Optional) | ➲ Source 2 Abnormal or<br>Source 2 Back Feed (Optional) | ➲ Alarm | |
| Contact Rating | ➲ 2 Amp for 30 VDC<br>1 Amp for 125 VAC | | | |
| Communication Interface | RS 232 or Ethernet Connectivity, RS 485 MODBUS (Optional) | | | |

*(1) Factory setting*
*(2) Settable from "Insta Mon Software"*
*(3) Settable from "Insta Mon Software" as well as from "Operator control panel"*
*(4) Allowable source voltage distortion (THD) < 10%*
*(5) For tolerance see IEC 60146-1-1*
*(6) Acoustic Noise Level from 1 meter (Ref. ISO 3746)V*
*(7) Efficiency & Transfer time is specified for Linear load*
*(8) Settable from "Insta Mon Software" & Overload Capacity calculated using I2T method, Also No tripping action on overload.*

VERTIV.



# THERMAL MANAGEMENT

## *Efficiency, Compactness, Flexibility, 24 X 7 Operations*

Liebert® SRC is designed for high air quantity to match the equipment sensible load application. It is coupled with high energy efficient components and advanced control system which helps in maximum energy efficiency and guarantees proper environmental conditions inside Critical Technological rooms. It is compact in size and being wall mounted type split AC it does not require any floor space too. Liebert® SRC is preconfigured for 24 X 7 operations with the metal body construction, inbuilt sequencing and monitoring features which makes a fully featured product to cater Critical Technology room cooling needs.

## BENEFITS

- **Less Risk**
  - Year-round cooling
  - Real-time remote monitoring and alarming"
  - Easy to service and maintain
  - Trouble Free operation even at High ambient
- **Industry Leading Energy Efficiency**
  - Highest industry NSEER ratings
  - High efficient EC fan and compressor
- **Fast, Simple Installation, Reliable**
  - Less expensive and faster to deploy, compared to ducted system
  - Backed by Proven Service and Support

### First In Industry With Premimum Technology

Liebert® SRC is first to introduce High SHR Split AC in Metalic Body construction, evaporator fan with EC Motor, inbuilt sequncing and control logic, green refrigerant, Integrated optional free cooling and Communication card for remote monitoring.

### Industry's Most Advanced Controller

Liebert® SRC is equipped with the industries most advanced controller. The controller is built with multiunit communication, sequencing, fault failure switch over to achieve highest UPTIME in technology Room. The controller has an optional feature of free cooling coupled with a temperature sensor to utilize lowest compressor run time and maximum energy saving.

### Fully Featured Product

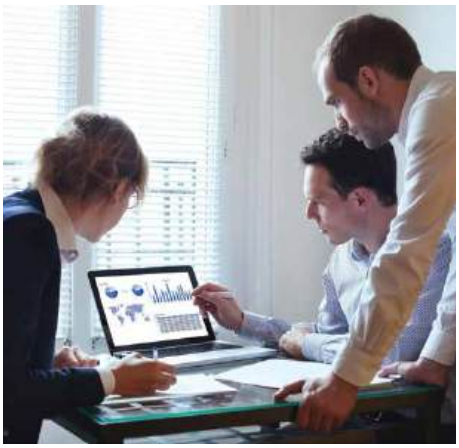
Moisture control with high SHR unit design, dust control with G4 grade filtration, system safety with all necessary refrigeration control (HP/LP, TXV), remote monitoring with inbuilt Modbus protocol and suitability to work at higher ambient makes Liebert® SRC a fully featured product for technology rooms.

### Optimized Air Distribution

Liebert® SRC is designed to deliver 500-600 CFM per TR. This ensures optimum Air distribution for technological room without wasting unwanted power. Liebert® SRC is equipped with field adjustable louvers to set desired air distribution for equipment cooling and heat source. This allows for proper temperature inside the equipment and also increases efficiency of the cooling equipment.

### Maximizing Site Reliability

Critical Technology rooms, ATMs, equipment rooms, operates continuously and always require proper environmental conditions 24/7. Thanks to Liebert® SRC's modern design and components such as Efficient Compressor, Evaporator Plug type Fans, higher Heat exchanger surfaces and Airflows and unit operation upto 430 C guarantees uninterrupted 24/7 unit operation.



## Supremacy

| Parameters | Liebert src | Comfort split ac | Level of Importance |
|---|---|---|---|
| 24 X 7 operation | ✓ | ✗ | ★★★★★ |
| G4 filteration | ✓ | ✗ | ★★★★★ |
| RS485 communication | ✓ | ✗ | ★★★★ |
| Green Refrigerant | ✓ | 90% ✗ | ★★★ |
| EC Fan | ✓ | ✗ | ★★★★★ |
| Metallic body | ✓ | ✗ | ★★★★ |
| 430 C ambient ready condenser | ✓ | ✗ | ★★★★★ |
| >90% SHR | ✓ | ✗ | ★★★★★ |
| Load sharing | ✓ | ✗ | ★★★★ |
| Free cooling Optional | ✓ | ✗ | ★★★ |
| Auto restart | ✓ | ✗ | ★★★★★ |

## Key features

- Temperature control
- EC Fan
- Green refrigerant
- Free cooling for optimizing
- High SHR
- Metallic body
- Energy efficiency
- 24 x 7 operation
- Load sharing
- Remote monitoring
- High ambient

## Air cooled

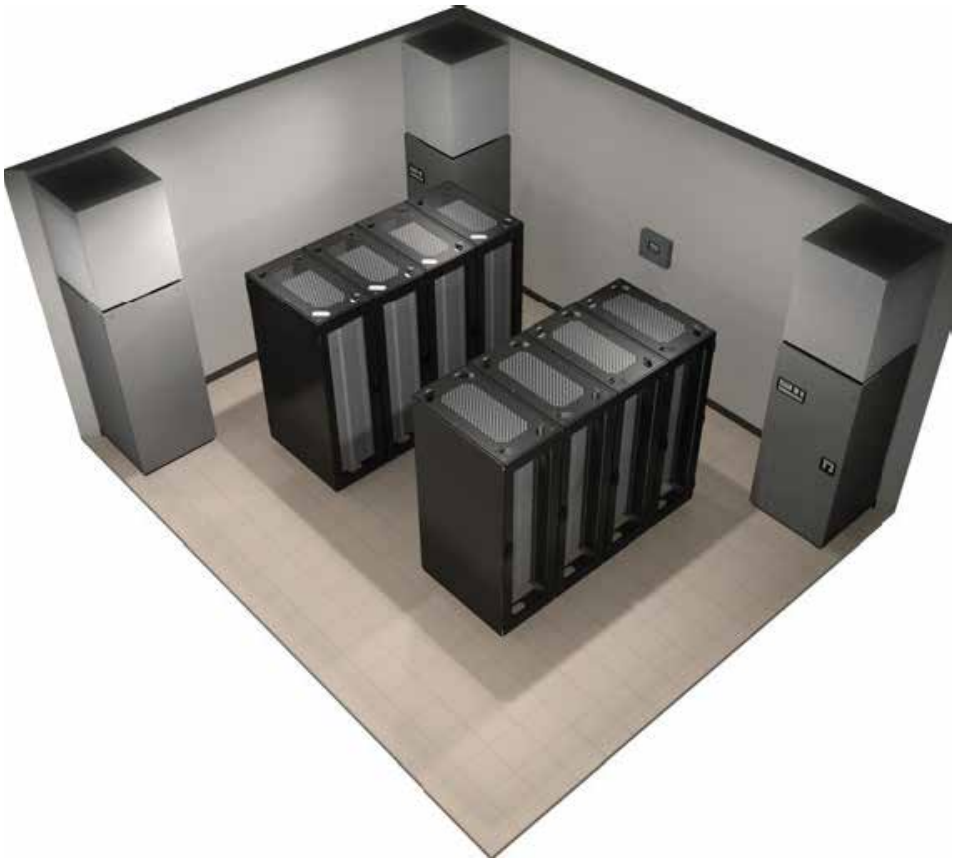
| Model | | SRC03ES | SRC04ES | SRC07ES | SRC07ET | SRC11ET |
|---|---|---|---|---|---|---|
| Net sensible capacity[1] | kW | 2.8 | 4.22 | 7 | 7.1 | 10.6 |
| SHR | >0.9 | >0.9 | >0.9 | >0.9 | >0.9 | >0.9 |
| Airflow | CMH | 750 | 1100 | 1900 | 1900 | 2800 |
| Unit Power Supply | | 230 V, 1phase, 50 Hz | 230 V, 1phase, 50 Hz | 230 V, 1phase, 50 Hz | 400 V, 3phase, 50 Hz | 400 V, 3phase, 50 Hz |
| Condeser type | | Air cooled | Air cooled | Air cooled | Air cooled | Air cooled |
| Refrigerant | | R410A | R407C | R407C | R407C | R407C |
| Indoor unit dimension | | 1105 x 375 x 515 | 1105 x 375 x 515 | 1105 x 375 x 515 | 1105 x 375 x 515 | 1405 x 375 x 515 |
| Indoor unit net weight W x D x H - mm | Kgs | 48 | 50 | 58 | 58 | 68 |
| Outdoor unit dimension W x D x H - mm | MM | 850 x 325 x 590 | 970 x 390 x 800 | 970 x 390 x 800 | 970 x 390 x 800 | 970 x 390 x 1170 |
| Outoor unit net weight | Kgs | 63 | 65 | 69 | 70 | 80 |
| Liquid line diameter | Inch | 3 / 8 | 3 / 8 | 3 / 8 | 3 / 8 | 1 / 2 |
| Suction line diameter | Inch | 1 / 2 | 1 / 2 | 5 / 8 | 5 / 8 | 3 / 4 |
| Control | | Microprocessors based with corded remote | | | | |
| Communications | | RS485 based modbus | | | | |

**Issues when using Comfort Cooling in Small Data Centers/-Computer Rooms (Datacom Rooms)**

1. Using rigid over head ducts provides insufficient air volume (45-55l/ sec per kW) which results in hot spots, and they are also difficult to relocate.
2. Comfort cooling systems cannot control humidity levels and do not typically have integral humidity control.
3. Using separate humidification systems, not controlled by the cooling system, can waste energy and reduce the stability of the environment.

## Start with the right kind of cooling

Some operations use standard comfort cooling systems to save money or to avoid using additional floor space within the facility. But this approach may provide some benefits in the short term-they must be balanced against the cost of downtime and equipment damage resulting from serious overheating as well as the risk of financial loss.



## Liebert® DM™ VS Comfort Cooling

| | Liebert® DM™ | Domestic/ Split Systems | Benefits | Comment |
|---|---|---|---|---|
| **Temperature Control** | +/- 1º C | +/- 3º C] | Stable temperatures ensure operational integrity and reliability of IT equipment. | Wide temperature fluctuations shorten operational life of IT equipment and will increase the risk of catastrophic failure. |
| **Humidity Control** | +/- 5%RH | >+=/- 15%RH | Only thermal management units can control room humidity. | High humidity can lead to condensation and corrosion, low humidity increases the risk of electrostatic discharge, both are major threats to IT equipment. |
| **Network Managed** | Yes<br>IP network Managed ` | No | TM Liebert® DM is a network managed device. It will notify you if there is a failure or potential threat to your equipment. | Standard IP connectivity:<br>• Email (SMTP)<br>• SMS (through email gateway)<br>• SNMP (MIB and trap support)<br>• HTTP (browser)<br>• Optional temperature and humidity sensors can be placed directly into the racks |
| **Reliability and Warranty for 24x7 operation** | Yes | No | TM Liebert® DM thermal management is designed to run nonstop in demanding IT environments. | Domestic air conditioning warranty only covers applications for human comfort and explicitly not for the climatic control of electronic equipment. |
| **Load sharing/ Duty operation** | Yes | No | Interconnected units provide stand by rotation and lead/lag operation through a single cable. | Domestic units require third party or customised management devices adding complexity, warranty and operational risk. |
| **Operational life** | 10 years+ | 1-3 years est, Not designed for IT operations | TM Liebert® DM is designed to run 24hrs x 365 with a mean time of failure of 4 years. Domestic units typically designed to run only 2000-4000 hours/year. | If you run a Domestic unit 24 hrsx365 the expected mean time to failure is 1 year!! |
| **Operating Range** | Operating Range | Most Domestic units will only provide cooling when the outside temperature o is above 10º C | Liebert® DM™ provides continuous cooling opera tion down to -10º C outdoor temperatures. (-30º Cop- tional).<br>Most comfort systems can only cool if the outside temperature its above 10º C. | Domestic systems are designed to cool in summer and heat in winter, IT equipment requires cooling all year round. Misapplication may lead to loss of cooling. |

## FEATURES & BENEFITS

### ENERGY SAVING

- High sensible heat ratio and high energy eiciency
- Equipped with Copeland Scroll Compressors
- Provides stable temperature and humidity condition
- Fans for outdoor units feature easy to access full range speed regulation
- Manageable and unique ECO-Mode option
- Energy saving component ootions

### SPACE SAVING

- Small footprint - 100% front door access

### USER-FRIENDLY AND MAINTENANCE-FREE

- Large screen display with multi-level password protection and expert fault-diagnosis functions
- Automatic startup on power and scheduled startup also available
- Standard Rs485 Monitoring Interface
- Equipped with alarm for Irregularities on blast reduction, fan failure and filter clogging
- Email and SMS notification (thru the Liebert® RDU™ ) for remote monitoring functions

### HIGHLY ADAPTIVE

- 24/7 operation capable
- Ultra wide input voltage range: multiple power protection functions
- Environment adaptability: adoption to outdoor temperature while meeting cooling requirements
- Adaptive to heat dissipation of the main equipment

The Liebert® DM™ Air Cooled Thermal Management System is suitable for precise air conditioning of small and medium sized computer rooms and UPS & Battery rooms. Designed with the latest thermal management technology, the Liebert® DM™ Air Cooled and has passed industry standards for thermal management systems and features high energy eiciency, excellent reliability and long service life. The Air Cooled series is configured with constant temperature and humidity adjustment functionalities that can be easily managed and monitored at the on-screen display.

**ENERGY SAVING**

**WATER LEAK DETECTION SYSTEM**

**RDU-SIC CARD**

*Power protection available, please contact Vertiv sales for more details.

## Liebert DM-Air COOLED

| Model | DME07 | DME12 |
|---|---|---|
| Total Capacity, kW (24°C/50% RH inside;35°C ambient) | 7.5kw | 12.5kw |
| Available configuration | Upflow Plenum Only | |
| Indoor Unit Power Supply | 380V/3ph/50Hz + N | |
| Condenser Type | Outdoor Condenser | |
| Refrigerant | R407C | |
| 1 Humidifier | Infrared | |
| Electric Heater Power, kW | 3.2 | |
| No. of fans | 1 | |
| Indoor Unit Dimension (H x W x D),mm | 1850x510x385 | 1975x600x500 |
| Outdoor Unit Dimension (H x W x D),mm | 830x790x355 | 1240x790x355 |
| Indoor Net Weight, kg | 95 | 145 |
| Outdoor Net Weight, kg | 40 | 60 |
| Liquid line diameter, inch | 1/2' | ' 5/8" |
| Discharge line diameter, inch | 3/4' | ' 5/8" |
| 2 FLA ,A | 7.5 - 12 | 15 - 18.5 |
| Air breaker | 32 | |

** 1 This is an optional feature.*
** 2 FLA is Full load Ampere; the maximum full load current value of the air conditioner is not the sum of rated maximum full load current of all components. It is the sum of rated maximum full load current value of the operating components, which may operate at the same time on the Maximum work load condition*

# *The Thermal Management Solution for Small and Medium Data Centers*

*The Liebert® PDX direct expansion cooling unit is equipped with the most advanced industry technology which allows the unit to reach significant levels of efficiency, guaranteeing precise cooling of data centers and server rooms.*

Liebert® PDX is designed to provide efficient small and large room cooling for data centers, where efficiency, flexibility and simplicity of installation are key factors.

## FEATURES

- Extended Units
- Full load Efficiency +10%
- EC Fan 2.0
- pPUE 1.12
- Partial Load Efficiency +30%
- Up to 100m Length
- Economizer, Freecooler, SmartAisle™
- Digital & EEV
- Up to 38°C Room Temperature with SmartAisle™

## APPLICATIONS

- Variable Frequency Drives Rooms
- Electrical Panel Rooms
- Control Rooms
- UPS, Battery & RACK Room
- Instrument Calibration Room

**Liebert® PDX direct expansion cooling unit**

Equipped with the most advanced industry technology which allows the unit to reach significant levels of efficiency, Liebert® PDX guarantees an efficient thermal management of data centers and server rooms.

**Liebert® PDX** is available both in air cooled and water cooled versions to suit various site installation requirements. It also allows multiple freecooling modes of operation (Direct Air, Indirect Water, Chilled Water on Freecooling Chiller and Liebert® EconoPhase™ pumped refrigerant economizer) increasing its ability to adapt to diverse application demands.

The Liebert® EconoPhase™ pumped refrigerant economizer is compatible with Liebert PDX and Liebert MC to improve thermal management and control, while drastically cutting energy costs and lowering pPUE.

The unit's Digital Scroll configuration, instead, is responsible for modulating cooling capacity while the fresh air economizer function, operated by the iCOMTM control, is adopted when outside air temperature is colder than the return temperature.

In addition, the combination of R410A refrigerant, Electronic Expansion Valve (EEV) and new generation Liebert® EC Fans 2.0 all allow the unit to reach significant levels of efficiency.

## Single Circuit

| Model | | PX015 | PX021 | PX025 | PX031 | PX033 | PX041 | PX045 | PX059 | PX047 | PX051 | PX057 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Gross Cooling Capacity | kW | 13.9 | 19.1 | 25.0 | 30.1 | 34.2 | 40.41 | 44.6 | 57.3 | 46.28 | 53.1 | 59 |
| Net Sensible Cooling Capacity | kW | 13.4 | 18.2 | 23.2 | 26.5 | 28.7 | 35.8 | 39.1 | 45.1 | 43.8 | 50.0 | 54.6 |
| SHR | | 1.00 | 1.00 | 0.98 | 0.94 | 0.90 | 0.93 | 0.93 | 0.82 | 1.00 | 1.00 | 0.98 |
| Net Sensible EER | | 4.37 | 3.93 | 3.53 | 3.21 | 3.09 | 3.51 | 3.33 | 2.99 | 3.70 | 3.47 | 3.40 |
| Airflow | m³/h | 4462 | 5672 | 6792 | 7752 | 7944 | 10000 | 10900 | 11200 | 14500 | 15800 | 16300 |
| Max. ESP | Pa | 250 | 250 | 250 | 220 | 180 | 250 | 100 | 80 | 300 | 300 | 300 |
| Dimensions (WxD) | mm | 844x890 | 844x 890 | 844x 890 | 844x 890 | 844x 890 | 1200x890 | 1200x890 | 1200x890 | 1750x890 | 1750x890 | 1750x890 |
| Height (H) | mm | 1970 | 1970 | 1970 | 1970 | 1970 | 1970 | 1970 | 2570 | 1970 | 1970 | 1970 |
| Weight | kg | 290 | 300 | 320 | 340 | 340 | 452 | 456 | 593 | 620 | 621 | 675 |
| Number of Capacity Steps | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 |
| **Airflow Delivery**<br>Down Flow UP - Fans Over the Raised Floor<br>Up Flow<br>Frontal<br>Downflow Down - Fans in Raised Floor | | | | | | | | | | | | |
| **Cooling Version**<br>Air Cooled<br>Water Cooled<br>Dual fluid (Chilled water + DX Air Cooled)<br>Dual fluid - Chilled water + DX Water Cooled<br>Freecooling<br>EconoPhase | | | | | | | | | | | | |

## Double Circuit

| Model | | PX044 | PX054 | PX062 | PX068 | PX074 | PX092 | PX082 | PX094 | PX104 | PX120 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Gross Cooling Capacity | kW | 44.8 | 55.1 | 62.5 | 66.1 | 74.8 | 92.5 | 85.7 | 94.5 | 106.5 | 123.9 |
| Net Sensible Cooling Capacity | kW | 42.3 | 51.2 | 55.6 | 62.2 | 62.9 | 72.2 | 78.4 | 84.9 | 91.7 | 100.7 |
| SHR | | 0.99 | 0.99 | 0.95 | 0.98 | 0.9 | 0.82 | 0.97 | 0.96 | 0.92 | 0.86 |
| Net Sensible EER | | 3.79 | 3.53 | 3.35 | 4.08 | 3.09 | 2.93 | 3.6 | 3.38 | 3.1 | 2.95 |
| Airflow | m³/h | 12500 | 15500 | 16300 | 18500 | 17600 | 17950 | 24000 | 26000 | 27000 | 27000 |
| Max. ESP | Pa | 300 | 200 | 200 | 300 | 80 | 180 | 250 | 150 | 100 | 100 |
| Dimensions (WxD) | mm | 1750x 890 | 1750x 890 | 1750x 890 | 2550x 890 | 1750 x890 | 1750x 890 | 2550x 890 | 2550x 890 | 2550x 890 | 2550x 890 |
| Height (H) | | 1970 | 1970 | 1970 | 1970 | 1970 | 2570 | 1970 | 1970 | 1970 | 1970 |
| Weight | kg | 638 | 642 | 680 | 887 | 680 | 776 | 901 | 901 | 901 | 954 |
| Number of Capacity Steps | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 4 |
| **Airflow Delivery**<br>Down Flow UP - Fans Over the Raised Floor<br>Up Flow<br>Frontal<br>Downflow Down - Fans in Raised Floor | | | | | | | | | | | |
| **Cooling Version**<br>Air Cooled<br>Water Cooled<br>Dual fluid (Chilled water + DX Air Cooled)<br>Dual fluid - Chilled water + DX Water Cooled<br>Freecooling<br>EconoPhase | | | | | | | | | | | |

# Liebert® PDX - Digital Scroll - SmartAisle™

## Single Circuit

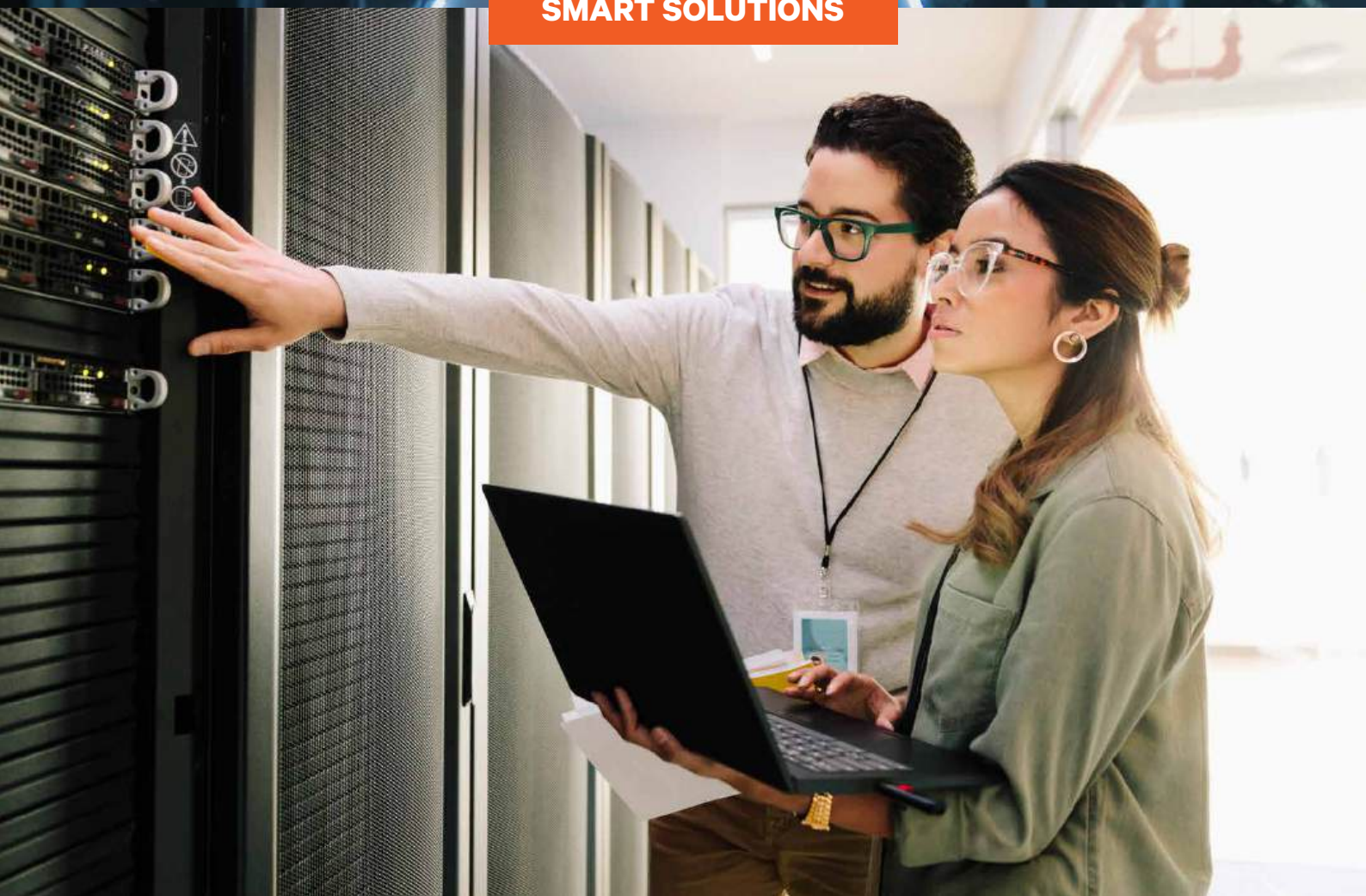
| Model | | PX021 | PX025 | PX031 | PX033 | PX041 | PX045 | PX059 | PX047 | PX051 | PX057 | PX057 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Gross Cooling Capacity | kW | 24.9 | 32.4 | 37.8 | 41.9 | 50.3 | 55.4 | 68.8 | 63 | 67.4 | 74.6 | 59 |
| | kW | 24.1 | 31.1 | 36 | 39.9 | 48.4 | 53 | 66.4 | 60.5 | 64.3 | 71.3 | 54.6 |
| SHR | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.98 |
| Net Sensible EER | | 4.79 | 4.65 | 4.24 | 4.18 | 4.62 | 4.36 | 4.35 | 4.58 | 4.53 | 4.37 | 3.40 |
| Airflow | $m^3/h$ | 5672 | 6792 | 7752 | 7944 | 10000 | 10900 | 11200 | 14500 | 15800 | 16300 | 16300 |
| Max. ESP | Pa | 250 | 250 | 230 | 200 | 250 | 100 | 80 | 300 | 300 | 300 | 300 |
| Dimensions (WxD) | mm | 844x890 | 844x 890 | 845x 890 | 844x 890 | 1200x890 | 1200x890 | 1200x890 | 1750x890 | 1750x890 | 1750x890 | 1750x890 |
| Height (H) | mm | 1970 | 1970 | 1970 | 1970 | 1970 | 1970 | 2570 | 1970 | 1970 | 1970 | 1970 |
| Weight | kg | 300 | 320 | 340 | 340 | 452 | 456 | 593 | 635 | 637 | 675 | 675 |
| Minimum Nominal Capacity Modulation | | 20% | 20% | 20% | 20% | 20% | 20% | 25% | 25% | 25% | 25% | 25% |
| **Airflow Delivery**<br>Down Flow UP - Fans Over the Raised Floor<br>Up Flow<br>Frontal<br>Downflow Down - Fans in Raised Floor | | | | | | | | | | | | |
| **Cooling Version**<br>Air Cooled<br>Water Cooled<br>Dual fluid (Chilled water + DX Air Cooled)<br>Dual fluid - Chilled water + DX Water Cooled<br>Freecooling<br>EconoPhase | | | | | | | | | | | | |

## Double Circuit

| Model | | PX044 | PX054 | PX062 | PX068 | PX074 | PX092 | PX082 | PX094 | PX104 | PX120 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Gross Cooling Capacity | kW | 61 | 72.8 | 80.4 | 90.1 | 94.5 | 113.3 | 111.8 | 126.3 | 133.4 | 153.4 |
| Net Sensible Cooling Capacity | kW | 59.0 | 69.3 | 76.6 | 87.5 | 89.8 | 109.3 | 106.6 | 120.1 | 126.5 | 146.5 |
| SHR | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Net Sensible EER | | 5.19 | 4.8 | 3.28 | 5.6 | 4.34 | 4.38 | 4.46 | 4.33 | 4.35 | 4.22 |
| Airflow | $m^3/h$ | 12500 | 15500 | 16300 | 18500 | 17600 | 17950 | 24000 | 26000 | 27000 | 27000 |
| Max. ESP | Pa | 300 | 200 | 200 | 300 | 80 | 180 | 250 | 150 | 100 | 100 |
| Dimensions (WxD) | mm | 1750x 890 | 1750x 890 | 1750x 890 | 2550x 890 | 1750 x890 | 1750x 890 | 2550x 890 | 2550x 890 | 2550x 890 | 2550x 890 |
| Height (H) | mm | 1970 | 1970 | 1970 | 1970 | 1970 | 2570 | 1970 | 1970 | 1970 | 1970 |
| Weight | kg | 638 | 642 | 680 | 887 | 680 | 776 | 931 | 931 | 931 | 954 |
| Minimum Nominal Capacity Modulation | | 10% | 10% | 10% | 10% | 10% | 10% | 12,5% | 12.5% | 12,5% | 12,5% |
| **Airflow Delivery**<br>Down Flow UP - Fans Over the Raised Floor<br>Up Flow<br>Frontal<br>Downflow Down - Fans in Raised Floor | | | | | | | | | | | |
| **Cooling Version**<br>Air Cooled<br>Water Cooled<br>Dual fluid (Chilled water + DX Air Cooled)<br>Dual fluid - Chilled water + DX Water Cooled<br>Freecooling<br>EconoPhase | | | | | | | | | | | |

VERTIV.

# SMART SOLUTIONS



*Rapidly deploy and manage IT infrastructure in just weeks without building new data center space. Our SmartSolutions™ products help you meet your IT needs with significant savings. With simplified, standardized designs, you can start small and expand over time.*

**The SmartSolutions™ approach gives you the efficiency, economy, interoperability and control to implement an infrastructure strategy that outperforms any you've ever seen.**

The SmartSolutions™ family helps you cost-effectively achieve and manage higher levels of density, availability and efficiency.

| EFFICIENT | ECONOMICAL | SIMPLIFIED | CONTROLLABLE |
|---|---|---|---|
| • **Reduce annual energy costs –up to 27%** through high-efficiency power, dedicated cooling and management technologies and containment<br>• **Optimize space efficiency** through an integrated system<br>• **Reduce maintenance costs** with reliable design and efficient operation that minimizes wear and tear and requires less servicing<br>• **Increases IT efficiency** by streamlining and centralizing monitoring and management | • **Reduce total time and cost of implementation order, install** and implement within just weeks<br>• **Save up to 28% on room upgrades** compared to upfitting a room as a conventional data center | • **Simplify implementation** through an integrated design<br>• **Easily operate and manage** infrastructure systems through integrated controls<br>• **Ensure continuity** of business operations with single system startup, warranty, preventive maintenance and repair<br>• **Utilize industry-leading** service and support provided by local data center design experts | • **Ensure efficiency and availability** with Liebert® iCOM™ controls — manage cooling to optimize IT equipment performance and life<br>• **Enhance performance** and anticipate potential problems before they occur with infrastructure monitoring and management appliances and software<br>• **Increase physical security** and equipment protection with lockable cabinets and access alerts |

# *Deploy a Fully Configured Data Center in Just Weeks.*

The SmartRow™ infrastructure from Vertiv is a simplified, standardized and quickly deployable data center environment with significant CAPEX and OPEX savings over conventional designs. No other solution in the market provides such ease of deployment and integration.

Vertiv has demonstrated up to 10% CAPEX savings over conventional designs and 27% OPEX savings. Here's how SmartRow™ infrastructure does it:

- Significantly reduces the cost of room upgrades or modifications
- Optimizes use of space
- Reduces cooling power usage through contained airflow, and high efficiency technologies
- Increases IT control and productivity
- Deploys in weeks, not months

This complete data center infrastructure solution allows you to easily deploy and effectively manage an integrated IT infrastructure without being limited by building systems such as fire suppression and cooling.

SmartRow™ is available in two to eight -rack configurations for up to 40kVA. The solution allows the flexibility of starting small and expanding over time

| | |
|---|---|
| **Capacity** | **: 10-40kVA** |
| **Rack** | **: 2-8 Racks** |
| **Floor** | **: Primarily non raised** |
| **Key Application** | **: Datacenter, Disaster recovery sites** |

## SmartRow™ Configuration

| SPECIFICATIONS | SR-210 U10-2N | SR-210-RC U10-2N | SR-320 U20-2N | SR-320-RC U20-2N | SR-435 U40-2N | SR-435-RC U40-2N | SR-635 U40-2N | SR-635-RC U40-2N | SR-835 U40-2N | SR-835-RC U40-2N |
|---|---|---|---|---|---|---|---|---|---|---|
| IT Capacity | 10 kVA | 10 kVA | 20 kVA | 20 kVA | 35 kVA | 35 kVA | 35 kVA | 35 kVA | 35 kVA | 35 kVA |
| No. of Racks | 2 | 2 | 3 | 3 | 4 | 4 | 6 | 6 | 8 | 8 |
| Cooling Redundancy | Thru Emergency Ventilation | yes | Thru Emergency Ventilation | yes | Thru Emergency Ventilation | yes | Thru Emergency Ventilation | Yes | Thru Emergency Ventilation | yes |
| Emergency ventila-tion | yes | NA | yes | NA | yes | NA | yes | NA | yes | NA |
| UPS Capacity | 2 X 10 kVA | 2 X 10 kVA | 2 X 20 kVA | 2 X 20 kVA | 2 X 40 kVA | 2 X 40 kVA | 2 X 40 kVA | 2 X 40 kVA | 2 X 40 kVA | 2 X 40 kVA |
| UPS Redundancy | yes | yes | yes | yes | yes | yes | yes | yes | yes | yes |
| Backup Time** | 5 Mins each ups | 5 Mins each ups | 5 Mins each ups | 5 Mins each ups | 5 Mins each ups | 5 Mins each ups | 5 Mins each ups | 5 Mins each ups | 5 Mins each ups | 5 Mins each ups |
| U Space available | 68 | 68 | 99 | 99 | 117 | 117 | 199 | 199 | 283 | 283 |
| Monitoring | yes | yes | yes | yes | yes | yes | yes | yes | yes | yes |
| Fire Suppression and Access control | yes | yes | yes | yes | yes | yes | yes | yes | yes | yes |

**DIMENSIONS**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Width | 2525 | 3225 | 3125 | 3825 | 3725 | 4425 | 4925 | 5625 | 6125 | 6825 |
| Height | 2450 | 2300 | 2450 | 2300 | 2450 | 2300 | 2450 | 2300 | 2450 | 2300 |
| Depth | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |

* Option of water chilled cooling model also available
** AdditionWal backup possible with external batteries
*** Also available additional accessories as optional - KVM, LCD Console, Intelligent Rack PDU, Camera with local surveillance

# SmartCabinet™- Premium

## *Optimize Your Existing or New IT Environments*

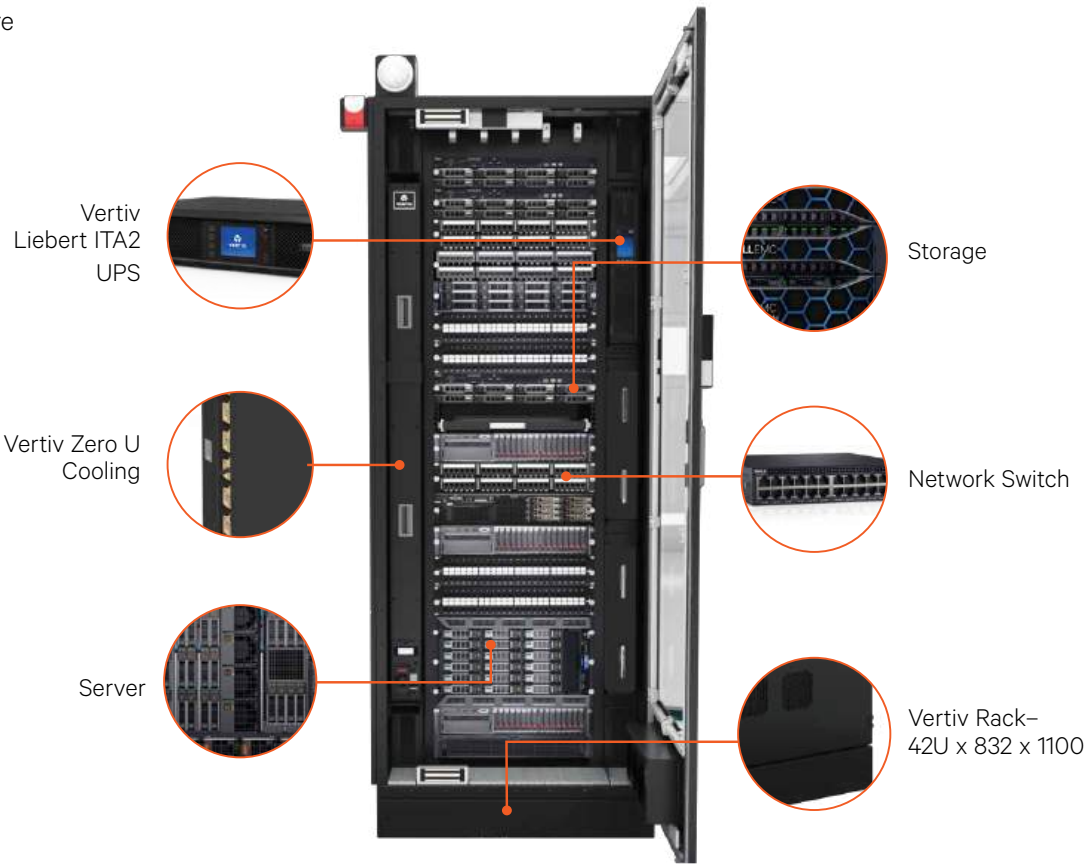
The SmartCabinet™ - Premium empowers Enterprise Class IT Infrastructure through the provision of integrated enclosure, power, cooling and service. The biggest advantage is its Zero U space for non-core IT assets. Critically it also allows the most vital element - namely 360° visibility of all system components.

Customers can effectively manage and plan their IT Infrastructure with real time monitoring and insight into system performance.

| | |
|---|---|
| **Capacity** | **: Upto 20kVA** |
| **Rack** | **: 1-3 Racks** |
| **Floor** | **: Primarily non raised** |
| **Key Application** | **: Server room and Small datacenters** |

Continuous availability in turn rests on the power and cooling infrastructure that supports these systems and is comprised of the following:

- Power Quality
- Cooling
- Enclosure and Physical Infrastructure
- Monitoring and Management




## SmartCabinet™ - Premium Configuration

| Specifications | SCP-1-7-U6 N | SCP-1-7RC-U6 2N | SCP-2-7RC-U10 2N | SCP-3-14RC-U20 2N |
|---|---|---|---|---|
| Capacity | 6 kVA | 6 kVA | 10 kVA | 20 kVA |
| No.of Racks | 1 | 1 | 2 | 3 |
| Cooling Redundancy | N | N + N | N + N | N+1 |
| Cooling Capacity | 7KW | 7KW | 7KW | 14 kW |
| UPS Capacity | 6 KVA | 2 X 6 KVA | 2 X 10 KVA | 2 x 20 kVA |
| UPS Redundancy | N | N + N | N + N | N + N |
| Backup Time | 10 Mins on each | 5 Mins on each | 5 Mins on each | 5 mins on each |
| Usable U Space | 42 | 34 | 84 | 120 |
| **Dimensions** | | | | |
| Width | 832 | 832 | 1632 | 2432 |
| Depth | 1100 | 1100 | 1100 | 1100 |
| Height | 2100 | 2100 | 2100 | 2100 |

*Note: Battery backup & cooling unit capacity can be modified as per requirement. U space available is subjected to change as per configuration.*
**Also available additional accessories as optional - KVM, LCD Console, Intelligent Rack PDU, ATS/LTS, Camera with local surveillance, Access control and Fire suppression*

*The SmartCabinet™ empowers Enterprise Class IT Infrastructure through the provision of integrated enclosure, power, cooling and service.*

| | |
|---|---|
| **Capacity** | **: 1-10kVA** |
| **Rack** | **: 1-2 Racks** |
| **Floor** | **: Primarily non raised** |
| **Key Application** | **: Server room and Small datacenters** |

Critically it also enables the most vital element - namely 360° visibility of all system components.

Customers can effectively manage and plan their IT Infrastructure with real time monitoring and insight into system performance.

Continuous availability in turn rests on the power and cooling infrastructure that supports these systems and is comprised of the following:

- Power Quality
- Cooling
- Enclosure and Physical Infrastructure
- Monitoring and Management

**Camera**

**Beacon**

**UPS, N+N upto 10 kVA**

**Battery Bank**

**STS/NPS (Optional)**

**Precision Cooling unit 1TR. / 2TR**

**42 U HD Rack**

**Distribution Panel**

**RDU-A; Intelligent Monitoring**

**Cable Managers**

**Blanking Panels**

**Keyboard Tray with KVM (Optional)**

## SmartCabinet™ Configuration

| Specifications | SC-1-3 U3-2N | SC-2-3-RC U6-2N | SC-2-7 U10-2N | SC-2-7-DS U10-2N | SC-2-7-RC U10-2N | SC-2-7-RC DS U10-2N |
|---|---|---|---|---|---|---|
| Capacity | 3 kVA | 6 kVA | 10 kVA | 10 kVA | 10 kVA | 10 kVA |
| No.of Racks | 1 | 2 | 2 | 2 | 2 | 2 |
| Cooling Redundancy | No | Yes | No | No | Yes | Yes |
| Cooling Capacity | 3.5 KW | 2X3.5 KW | 7KW | 7KW with DS | 2X7KW | 2X7KW with DS |
| UPS Capacity | 2 X 3 KVA | 2 X 6 KVA | 2 X 10 KVA | 2 X 10 KVA | 2 X 10 KVA | 2 X 10 KVA |
| UPS Redundancy | Yes | Yes | Yes | Yes | Yes | Yes |
| Backup Time | 5 Mins each UPS | 5 Mins each UPS | 5 Mins each UPS | 5 Mins each UPS | 5 Mins each UPS | 5 Mins each UPS |
| Fire Detection | Yes | Yes | Yes | Yes | Yes | Yes |
| Usable U Space | 23 | 58 | 55 | 55 | 45 | 45 |
| **Dimensions** | | | | | | |
| Width | 800 | 1600 | 1600 | 1600 | 1600 | |
| Height | 2100 | 2100 | 2100 | 2100 | 2100 | 2100 |
| Depth | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |

*Note: Battery backup & cooling unit capacity can be modified as per requirement. U space available is subjected to change as per configuration.*
**Also available additional accessories as optional - KVM, LCD Console, Intelligent Rack PDU, Camera with local surveillance, Access control and Fire suppression*

*SmartCloset™ is the new standalone self-contained rack from Vertiv, along with inbuilt power and cooling. It facilitates the housing and trouble-free installation of active IT equipment like switches, routers and so on - for which, an open environment is not conducive for healthy performance.*

## Compact and powerful with inbuilt power and cooling.

SmartCloset™ is suitable for any location like factories, warehouses, branch offices and retail stores where ambient conditions and temperatures are not in control; and also where dust and dirt are common.

## Features and Benefits

- **Dedicated Rack mount cooling -** The air conditioner capacity is designed considering only rack equipment load and rack volume, thus saving on both capital and operating costs.
- **Rack mount UPS and Battery** - A single rack for housing both power and active equipment offers lesser footprint and saves on critical space area.
- **High sensible cooling and 24x 7 application -** As IT equipment is designed to run 24x7 and typically dissipate sensible heat load, SmartCloset™ is exclusively designed for such applications to deliver maximum efficiency.
- **Cooling unit with safety features -** The air conditioner comes with HP/LP switch and Under/Over voltage protection for sites at remote locations and with high voltage fluctuations.
- **Rack Monitoring - (Optional feature)** Rack environment monitoring like temperature, humidity, door sensor, smoke sensor, etc.

## SmartCloset™ Configuration

| Specification | SCL -15 P* #** | SCL - 24 P* #* * | SCL - 42 P* #** |
|---|---|---|---|
| Rack Height | 15U | 24U | 42UP- |
| UPS Capacity (P)* | NA External | 3/6 kVA | |
| BatteryMin | NA External | 10 mins | |
| Usable U space | 11 | 16 | 32 |
| Cooling Capacity # (Watts) * * | 500 | 500 / 1000 | 500 / 1000 / 2000 |

### While ordering

| # | X | Y | Z |
|---|---|---|---|
| | 500 | 1000 | 2000 |

### Order sample

SCL 15 1 X, SCL 24 3 Y.....

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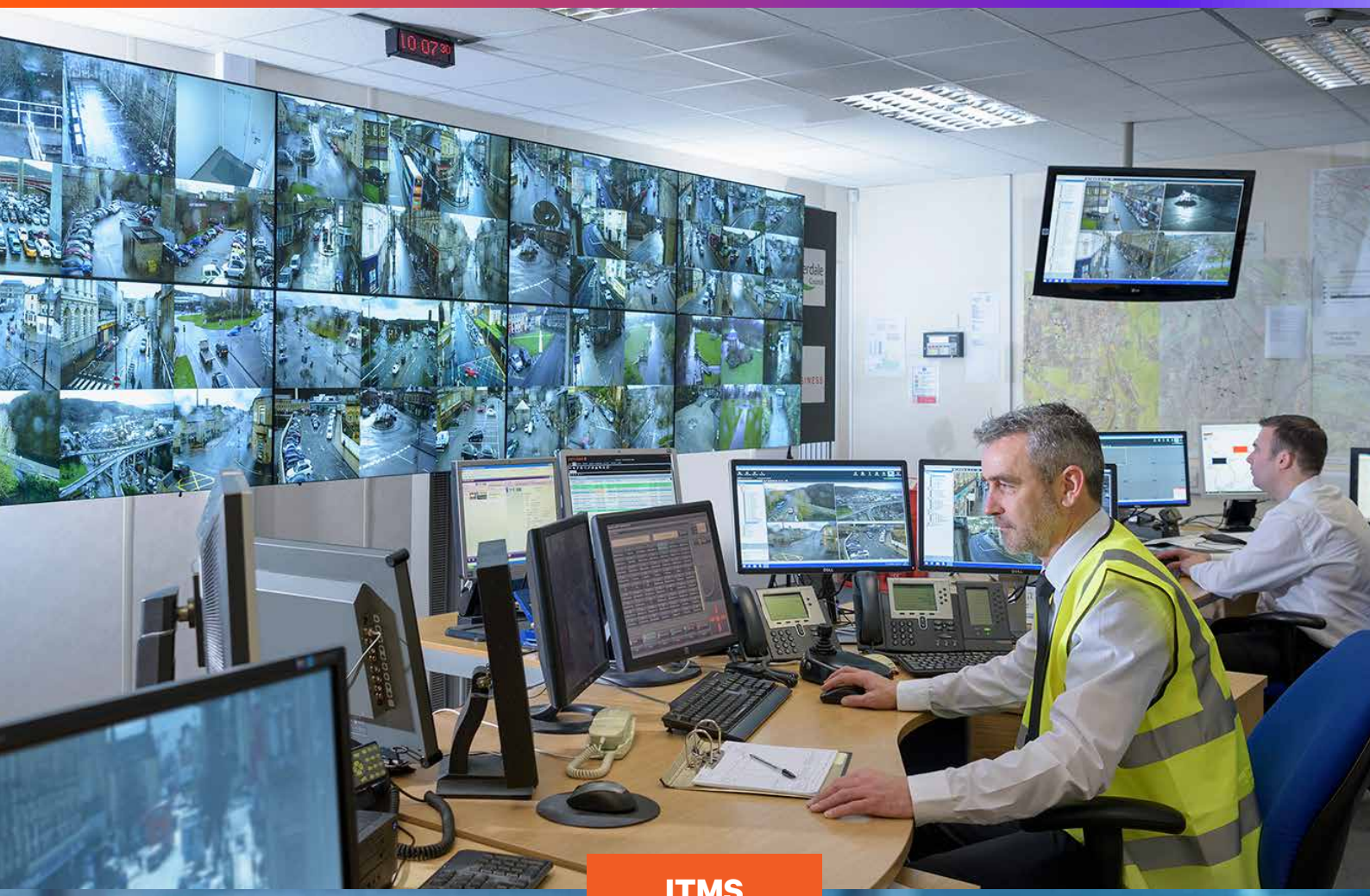


# ITMS

# Avocent® 18.5” Local Rack Access Consoles

Advanced Data Center Local Rack Access

## Benefits

### Local Rack Console

- **Widescreen:** 18.5” LED LCD panel with a 16:9 aspect ratio. Supports resolutions up to 1600 x 1200 at both full screen and aspect ratio.
- **Form Factor:** Easy access in the 1U space. Detent lock engages when stowed in the rack. Room for KVM installation in the same 1U space.
- **KVM Compatibility:** LRA Consoles are compatible with all Avocent® data center KVM switches.
- **User Interface:** On-Screen menu has an intuitive design and can be accessed in 7 languages.
- **Data Center Local Access:** Complete entry point to local servers when needed.
- **Ease of use:** Full desktop style keyboard with number pad, touch pad and 2 USB 2.0 pass through ports.
- **Environmentally responsible:** Low power usage during operation and standby.
- **Global availability:** Certifications and keyboard language support.

### KVM Models

- **Integrated KVM switch options** with 8- or 16-port, local and/or remote access to servers.

*As a busy IT professional, it’s important that you stay productive and on top of your to-do list. You can’t aff ord to be hampered by inefficient, cumbersome, bulky crash carts and space-consuming monitors and keyboards.*

You need a data center access point that gives you simplicity, eff iciency and ease of use. The Avocent® LRA Console family is here to help make your job easier. We offer you quick and easy access to multiple servers, making software upgrades, troubleshooting and system monitoring more convenient and less time consuming.

### Tray Only

Avocent® LRA Console trays let you view servers, network switches and other IT gear immediately without crash carts or other bulky access equipment. These trays feature standard USB and VGA interfaces that are natively compatible with a vast number of servers and network devices. You can easily and eff iciently use our trays with many of the market-leading Avocent® access technologies, including all recent Avocent® data center KVM solutions.

### Pre-Integrated KVM

You understand how valuable data center real estate can be. A crowded server rack can make your job a lot harder. The Avocent® LRA Console is available with pre-integrated 8- and 16- port KVM that seamlessly fits into the same 1U the LCD tray is occupying, providing vastly improved utility while conserving space.

## Specifications

### LRA185KMM

| | |
|---|---|
| **Height (rack units)** | 1U |
| **Shipping (Console Only)** | |
| Shipping Dimensions | 29.5” x 23” x 8.5” |
| Shipping Weight | 34 lbs. |
| **Unit (Console Only)** | |
| Unit Dimensions | 19” x 21” x 1.75” |
| Unit Weight | 22 lbs. |

### RACK POST DISTANCES (OUTSIDE-TO-OUTSIDE)

*Includes round hole posts, square hole posts and threaded posts*

| | |
|---|---|
| **Console Only** | 613mm [24.1”] - 909mm [35.8”] |
| **Provision for KVM Switch** | 706mm [27.9”] - 909mm [35.8”] |

### 18.5-INCH LED MONITOR

| | |
|---|---|
| **Power** | |
| Maximum | 20 Watts |
| Nominal | 17 Watts |
| Standby | 0.5 Watts |
| **Auto-ranging power supply** | Input: 90-264 VAC |
| **Power Connection** | IEC C-14 to the PDU |
| **Display Type** | 18.5” LED LCD Monitor, 19:9 Aspect Ratio |
| **Resolution** | 1366 x 768 @60Hz Standard Resolution<br>1600 x 1200 @60Hz maximum<br>640 x 400 @60Hz minimum<br>Refresh range: 55Hz to 85Hz (scaled) |
| **Scaling** | Full Screen, Aspect, 1:1 |
| **Video Input** | VGA |
| **Display Active Area** | 409.8 mm x 230.4 mm |
| **Diagonal Viewable Image** | 470.1 mm |
| **Pixel Pitch** | |
| **Viewing Angle** | 170° Horizontal (typ.), 160° Vertical (typ.) |
| **Luminance** | 250 [cd/m2] (typ.) |

### KEYBOARD/MOUSE

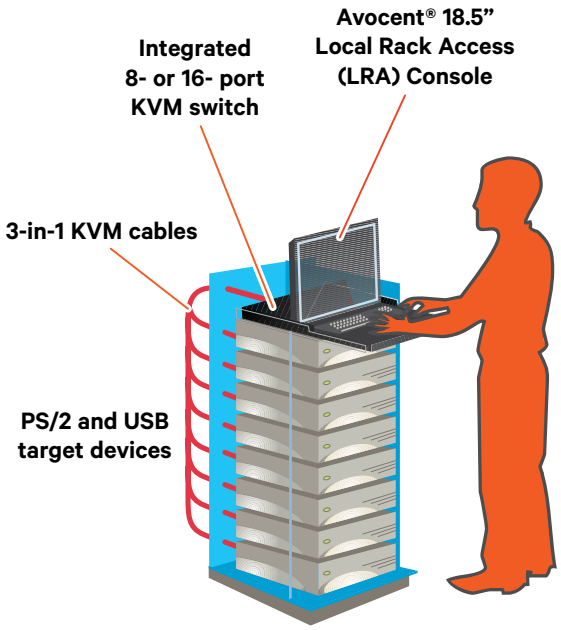
| | |
|---|---|
| Keyboard | Full size 103 keyboard with number pad |
| Pointing Device | Integrated touchpad with two buttons |
| Input | USB or PS/2 |
| **USB PORTS** | |
| USB 2.0 compliant | Two pass through ports |

### OPERATIONAL SPECIFICATIONS

| | |
|---|---|
| **Temperature** | |
| Operational | 0°C - 50°C |
| Storage | -20°C - 70°C |
| **Humidity** | 5% - 80% |
| Operational | 5% - 90% |
| Storage | |
| **Altitude** | |
| Operational | 0 to 10, 000 Feet |
| Storage | -50 to 35, 000 Feet |

### GLOBAL CERTIFICATIONS

| | |
|---|---|
| **Certifications** | UL, CE, CCC, BSMI, RCM, cUL, IC, EAC, VCCI, KCC FCC Class A |




The Avocent® LRA Console family provides the simplicity, efficiency and ease of use to make it the perfect in data center access point. The LRA line enables ease of access to multiple servers making software upgrades, troubleshooting and system monitoring convenient and less time-consuming.

## Ordering Details

| PART NUMBER | DESCRIPTION |
|---|---|
| **CONSOLE ONLY** | |
| **NORTH AMERICA** | |
| LRA185KMM-001 | 18.5 LCD, USB KB, 2USB PASS-US INTL ENG |
| LRA185KMM-G01 | 18.5 LCD, USB KB, 2USB PASS-USA TAA |
| LRA185KMMP-001 | 18.5 LCD, PS2 KB, 2USB PASS-US INTL ENG |
| LRA185KMM8D-001 | LCD, 8P KVM, 8 CABLES, USB KB-US INTL |
| LRA185KMM8D-G01 | LCD, 8P KVM, 8 CABLES, USB KB-US TAA |
| LRA185KMM16D-001 | LCD, 16P KVM, 16 CABLES, USB KB-US INTL |
| LRA185KMM16D-G01 | LCD, 16P KVM, 16 CABLES, USB KB-US TAA |
| **EUROPE** | |
| LRA185KMM-201 | 18.5 LCD, USB KB, 2USB PASS-UK ENG |
| LRA185KMM-001 | 18.5 LCD, USB KB, 2USB PASS-US INTL ENG |
| LRA185KMM-203 | 18.5 LCD, USB KB, 2USB PASS-SWI |
| LRA185KMM-204 | 18.5 LCD, USB KB, 2USB PASS-FRA |
| LRA185KMM-205 | 18.5 LCD, USB KB, 2USB PASS-GER |
| LRA185KMM-206 | 18.5 LCD, USB KB, 2USB PASS-ITA |
| LRA185KMM-207 | 18.5 LCD, USB KB, 2USB PASS-SPA |
| LRA185KMM-214 | 18.5 LCD, USB KB, 2USB PASS-CYR |
| LRA185KMMP-001 | 18.5 LCD, PS2 KB, 2USB PASS-US INTL ENG |
| LRA185KMM8D-201 | LCD, 8P KVM, 8 CABLES, USB KB-UK ENG |
| LRA185KMM8D-001 | LCD, 8P KVM, 8 CABLES, USB KB-US INTL |
| LRA185KMM8D-203 | LCD, 8P KVM, 8 CABLES, USB KB-SWI |
| LRA185KMM8D-204 | LCD, 8P KVM, 8 CABLES, USB KB-FRA |
| LRA185KMM8D-205 | LCD, 8P KVM, 8 CABLES, USB KB-GER |
| LRA185KMM8D-206 | LCD, 8P KVM, 8 CABLES, USB KB-ITA |
| LRA185KMM8D-207 | LCD, 8P KVM, 8 CABLES, USB KB-SPA |
| LRA185KMM8D-214 | LCD, 8P KVM, 8 CABLES, USB KB-CYR |
| LRA185KMM8D-216 | LCD, 8P KVM, 8 CABLES, USB KB-ARB |
| LRA185KMM16D-201 | LCD, 16P KVM, 16 CABLES, USB KB-UK ENG |
| LRA185KMM16D-001 | LCD, 16P KVM, 16 CABLES, USB KB-US INTL |
| LRA185KMM16D-203 | LCD, 16P KVM, 16 CABLES, USB KB-SWI |
| LRA185KMM16D-204 | LCD, 16P KVM, 16 CABLES, USB KB-FRA |
| LRA185KMM16D-205 | LCD, 16P KVM, 16 CABLES, USB KB-GER |
| LRA185KMM16D-206 | LCD, 16P KVM, 16 CABLES, USB KB-ITA |
| LRA185KMM16D-207 | LCD, 16P KVM, 16 CABLES, USB KB-SPA |
| LRA185KMM16D-214 | LCD, 16P KVM, 16 CABLES, USB KB-CYR |
| LRA185KMM16D-216 | LCD, 16P KVM, 16 CABLES, USB KB-ARB |

## Ordering Details

| PART NUMBER | DESCRIPTION |
|---|---|
| **ASIA-PACIFIC** | |
| LRA185KMM-101 | 18.5 LCD, USB KB, 2USB PASS-T-CHN |
| LRA185KMM-103 | 18.5 LCD, USB KB, 2USB PASS-S-CHN |
| LRA185KMM-104 | 18.5 LCD, USB KB, 2USB PASS-KO |
| LRA185KMM-110 | 18.5 LCD, USB KB, 2USB PASS-JPN |
| LRA185KMM-001 | 18.5 LCD, USB KB, 2USB PASS-US INTL ENG |
| LRA185KMM8D-101 | LCD, 8P KVM, 8 CABLES, USB KB-T-CHN |
| LRA185KMM8D-103 | LCD, 8P KVM, 8 CABLES, USB KB-S-CHN |
| LRA185KMM8D-104 | LCD, 8P KVM, 8 CABLES, USB KB-KOR |
| LRA185KMM8D-110 | LCD, 8P KVM, 8 CABLES, USB KB-JPN |
| LRA185KMM8D-001 | LCD, 8P KVM, 8 CABLES, USB KB-US INTL |
| LRA185KMM16D-101 | LCD, 16P KVM, 16 CABLES, USB KB-T-CHN |
| LRA185KMM16D-103 | LCD, 16P KVM, 16 CABLES, USB KB-S-CHN |
| LRA185KMM16D-104 | LCD, 16P KVM, 16 CABLES, USB KB-KOR |
| LRA185KMM16D-110 | LCD, 16P KVM, 16 CABLES, USB KB-JPN |
| LRA185KMM16D-001 | LCD, 16P KVM, 16 CABLES, USB KB-US INTL |
| **MODULES** | |
| AVRIQ-SRL | Server interface module for VT100 serial devices for extended distance (requires UPD-xxx) |
| DSVAIQ-PS2M(L) | Server interface module for VGA video, PS/2 keyboard & mouse with USB virtual media |
| MPUIQ-VMCHS | Server interface module for VGA, USB keyboard, mouse supporting virtual media, CAC and USB2.0 |
| MPUIQ-VMCHD | Server Interface Module for HDMI video, USB keyboard/mouse supporting virtual media, CAC and USB2.0 |
| MPUIQ-VMCDV | Server Interface Module for DVI video, USB keyboard/mouse supporting virtual media, CAC and USB2.0 |
| MPUIQ-VMCDP | Server Interface Module for DisplayPort video, USB keyboard/ mouse supporting virtual media, CAC and USB2.0 |
| **CABLES** | |
| PS2IAC-7 | 7 ft. PS2 CAT-5 integrated access cable |
| PS2IAC-10 | 10 ft. PS2 CAT-5 integrated access cable |
| PS2IAC-15 | 15 ft. PS2 CAT-5 integrated access cable |
| USBIAC-7 | 7 ft. USB CAT-5 integrated access cable |
| USBIAC-10 | 10 ft. USB CAT-5 integrated access cable |
| USBIAC-15 | 15 ft. USB CAT-5 integrated access cable |

# Avocent® Av100 Series - Rack Mount & Desktop Kvm Switches

## Features & Benefits

Single-user, smaller form factor Avocent® AV100 local KVM switches are designed specifically for IT Rooms, small Data Centers and Branch Offices. Different bundle options are available which means KVM cables ship with the unit, symplifying the order and installation process.

### Consolidated Server Management

Simplified local access, management and control of your server resources all from a single console.

### Multiple Video and Target Connections

Supports both VGA and Display Port (DP) targets with a resolution of up to 2048x1536 as well as a variety of server connections with proprietary cable interface adapters

### Easy to manage

- Switch between targets with the simple on-screed display (OSD)*, intuitiv touch buttons, hot-key operation and scan mode
- Standard "1U", "0U" rack-mount as well as desktop installation
- Dedicated USB port for firmware upgrades

### Trusted brand

The Avocent® AV100 switches are backed by Avocent's renowned quality and reliability and come with a 2-year warranty.

Unplanned interruptions in service can have damaging effects on business no matter the scope or size of the server room.

The Avocent® AV100 switches from Vertiv offer a cost-efficient solution to streamline access and control to server resources and increase speed to remediation and operational efficiencies.

These single-user KVM switches, available in **4 , 8** and **16** port models, provide a straightforward user experience and help conserve space in your serve room and reduce cable clutter.

*AV100 family front*

*AV100 family back*

## Product Specifications

| | AV104 | AV108 | AV116 |
|---|---|---|---|
| Form Factor | 1U, 0U, or Desktop | 1U, 0U, or Desktop | 1U, 0U, or Desktop |
| Dimensions | **Height:** 1.72 inches (4.37cm)<br>**Width:** 17 inches (43.2cm)<br>**Depth:** 4.75 inches (12.07cm) | **Height:** 1.72 inches (4.37cm)<br>**Width:** 17 inches (43.2cm)<br>**Depth:** 4.75 inches (12.07cm) | **Height:** 1.72 inches (4.37cm)<br>**Width:** 17 inches (43.2cm)<br>**Depth:** 4.75 inches (12.07cm) |
| Weight | 3.4 lbs | 3.6 lbs | 4.2 lbs |
| Device Connectors | • 4 ports for server targets<br>• 4 USB Ports<br>• VGA monitor local connection | • 8 ports for server targets<br>• 4 USB Ports<br>• VGA monitor local connection | • 16 ports for server targets<br>• 4 USB Ports<br>• VGA monitor local connection |
| Local Access | 1 local user | 1 local user | 1 local user |
| Features Include | • KVM access<br>• Push Button switching<br>• Keystroke Switching<br>• Cascade support | • KVM access<br>• Push Button switching<br>• Keystroke Switching<br>• OSD<br>• Cascade support | • KVM access<br>• Push Button switching<br>• Keystroke Switching<br>• OSD<br>• Cascade support |
| Video Support | • Appliance - VGA<br>• Targets - VGA or DisplayPort | • Appliance - VGA<br>• Targets - VGA or DisplayPort | • Appliance - VGA<br>• Targets - VGA or DisplayPort |
| Power Supply Specifications | 100-240V 50-60Hz AC<br>5v, 10W max Internal<br>Single IEC C14 male connector<br>6 foot C14G power cable | 100-240V 50-60Hz AC<br>5v, 10W max Internal<br>Single IEC C14 male connector<br>6 foot C14G power cable | 100-240V 50-60Hz AC<br>5v, 10W max Internal<br>Single IEC C14 male connector<br>6 foot C14G power cable |
| Environmnetal | • **Operating:** 32 to 122 degrees Fahrenheit (0 to 50 degrees Celsius)<br>• **Non-operating:** -22 to 158 degrees Fahrenheit (-30 to 70 degrees Celsius)<br>• Fanless<br>• **Operating Humidity:** 20% to 85%<br>• **Non-operating Humidity:** 5% to 95% | | |
| Approved Agencies | UL, FCC Class A, cUL, ICES Class A, CE, EAC, VCCI Class A, KCC Class A, RCM, BSMI | | |
| Waranty | 2 years | | |

| PART NUMBER | DESCRIPTION |
|---|---|
| AV104-400 | 1x4 KVM switch with USB, push (touch) button switching, keystroke switching, cascade support, internal power supply |
| AV108-400 | 1x8 KVM switch with USB, w/OSD, push (touch) button switching, keystroke switching, cascade support, internal power supply |
| AV116-400 | 1x16 KVM switch with USB, w/OSD, push (touch) button switching, keystroke switching, cascade support, internal power supply |
| AV104BND4-400 | 1x4 KVM switch with USB, push (touch) button switching, keystroke switching, cascade support, internal power supply, includes 4 CBL0170 cables |
| AV108BND8-400 | 1x8 KVM switch with USB, w/OSD, push (touch) button switching, keystroke switching, cascade support, internal power supply, includes 8 CBL0170 cables |
| AV116BND4-400 | 1x16 KVM switch with USB, w/OSD, push (touch) button switching, keystroke switching, cascade support, internal power supply, includes 8 CBL0170 cables |

| CABLES AND ACCESSORIES | |
|---|---|
| CBL0170 | 6-foot 26-pin to VGA target cable |
| CBL0171 | 12-foot 26-pin to VGA target cable |
| CBL0172 | 6-foot 26-pin to DP target cable |
| CBL0173 | 12-foot 26-pin to DP target cable |
| CBL0170-4 | 6-foot 26-pin to VGA 4-cable bundle |
| CBL0171-4 | 12-foot 26-pin to VGA 4-cable bundle |
| CBL0172-4 | 6-foot 26-pin to DP 4-cable bundle |
| CBL0173-4 | 12-foot 26-pin to DP 4-cable bundle |
| CBL0174 | 26-pin to VGA Cascade cable |
| RMK-94 | 1U/0U/desk mount kit |

## Benefits

### Powerful User Access Control

- Grant access to specified users or implement LDAP directory authentication.
- Limit KVM access to specific targets on the switch.
- Enable smart card or CAC readers to support two factor authentication.

### Streamlined Management

Virtual Media support allows servers to access storage media attached to the KVM, enabling out-of-band file transfers and OS patch deployments.

### Local Port Access

Support for virtual media, USB keyboards and mice.

### Single Solution

Support for USB, PS/2, Sun and serial target devices in a single solution.

### Graphical, Multilingual OSD

Advanced, graphical On-Screen Display eases system configuration and server selection.

### Space-Saving

CAT-5, thin cabling saves space in the rack and allows up to a 30 meter distance between the server and the switch.

### Intelligent Cabling

Server interface modules and integrated access cables automatically assign and retain unique server names for each attached server.

### Server Management for Small Data Centers and Remote/Branch Offices

Unplanned interruptions in service can have damaging effects on business no matter the scope or size of the data center. Whether the data center is in a closet, next to a desk or across the globe in a remote office, IT professionals need tools that provide consolidated, streamlined access to server resources. The Avocent® AV3000 series of KVM over IP switching solutions provides streamlined management and control of server resources all from a single console

### Flexible and Scalable

The Avocent AV3000 KVM over IP portfolio is available in two options to support different needs. The AV3108 switch supports one local and one remote user and up to eight server or serial devices. The AV3216 supports up to two local and one remote user and 16 server or serial devices.

When in share mode, additional, authenticated users can share remote sessions for a total of up to 4 remote, concurrent users. Each AutoView switch supports VGA, Display Port, DVI and HDMI video targets and four USB 2.0 ports for USB enabled devices. When additional systems are added, AutoView switches can be tiered to provide consolidated management of up to 256server or serial devices.

### Streamlined Management

The Avocent AV3000 series KVM over IP switch ships with two intuitive, integrated management interfaces. The OSCAR™ on-screen display for local access and the Web User Interface for remote management. Additionally, AV3000 series KVM over IP switches are compatible with Avocent DSView™ management software for consolidated management across the infrastructure.

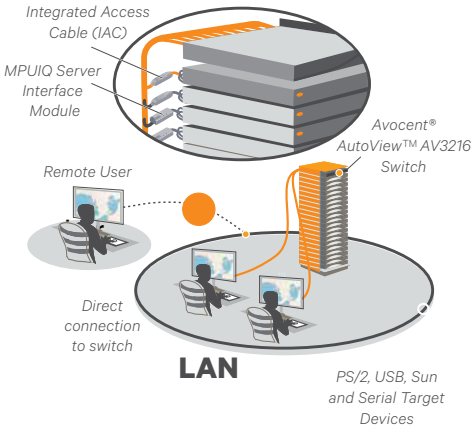
### Secure

In high security environments, CAC support with encryption for smart cards and password protection for local users, provides security you can depend on for your virtual media sessions. Encryption options include 128-bit SSL, AES, DES and 3DES and they can be selected for keyboard, mouse and video signals and virtual media sessions.

*Avocent AV3108 and AV 3216 KVM switches are designed for local and remote management of server resources.*

## Product Specifications

| | AV 3216 | AV3108 |
|---|---|---|
| Form Factor | 1U rack mount | 1U rack mount |
| Dimensions | Height: 1.72 inches (4.37cm) (1U)<br>Width: 17 inches (43.2 cm)<br>Depth: 6.5 inches (16.5 cm) | Height: 1.72 inches (4.37cm) (1U)<br>Width: 17 inches (43.2 cm)<br>Depth: 6.5 inches (16.5 cm) |
| Weight | 4.4 lbs. (2.0 kg) | 4.2 lbs. (1.9 kg) |
| Device Connectors | • 16 ports for servers or serial devices<br>• 4 USB 2.0 ports | • 8 ports for servers or serial devices<br>• 4 USB 2.0 ports |
| Remote Access | 1 remote KVM over IP user<br>10/100 Mbps Ethernet port | 1 remote KVM over IP user<br>10/100 Mbps Ethernet port |
| Local Access | 2 local ports<br>1 ACI port for tiering to another AutoView switch | 1 local port<br>1 ACI port for tiering to another AutoView switch |
| VM/CAC Support | Virtual Media support over USB<br>Common Access Card (CAC) capability for smart cards<br>128-bit SSL, AES, DES and 3DES encryption | |
| Features Include | Agentless control and access for 1 remote user<br>LDAP authentication<br>Single-stack IPv4 or IPv6 access<br>Flash-upgradeable firmware AV KVM Switch and AVRIQ | |
| Video Support | Local VGA connection. Supports VGA, DisplayPort, HDMI, or DVI targets<br>16:9 widescreen, up to 1680 x 1050<br>4:3 standard, up to 1600 x 1200 | |
| Management Software | OSCAR™ On-Screen Display for local access<br>Web User Interface<br>Compatible with Avocent DSViewTM management software | |
| Power Supply Specifications | Connector: IEC C14<br>Type: Internal<br>Power: 18W<br>Heat dissipation: 47 BTU/hr<br>AC input range: 100 - 240 VAC<br>AC frequency: 50/60 Hz auto-sensing<br>AC input current rating: 5 A<br>AC input power (maximum): 20W | |
| Environmental | Operating: 32 to 122 degrees Fahrenheit (0 to 50 degrees Celsius)<br>Non-operating: -4 to 158 degrees Fahrenheit (-20 to 70 degrees Celsius)<br>Airflow is from non-port side (Front) to port side (Back) | |
| Supported Server Interface Adapters | Multi-platform support: PS/2 and USB. Also support for Avocent PS/2, PS2M, USB, Sun, USB2, VMC modules; Dell PS/2, USB, USB2-VM, USB2-VM+CAC SIPs | |
| Approved Agencies | UL, FCC Class A, cUL, ICES Class A, CE, EAC, VCCI Class A, KCC Class A, C-Tick, BSMI | |
| Warranty | | |




| PART NUMBER | DESCRIPTION |
|---|---|
| AV3108-XXX | 1x8 Cat-5 switch with USB, OSCAR™ graphical user interface OSD, virtual media and CAC support |
| AV3216-XXX | 2x16 Cat-5 switch with USB, OSCAR™ graphical user interface OSD, virtual media and CAC support |
| **SERVER INTERFACE MODULES** | |
| MPUIQ-VMCHS | Server interface module for VGA, USB keyboard, mouse supporting virtual media, CAC and USB2.0. |
| MPUIQ-VMCHD | Server Interface Module for HDMI video, USB keyboard/mouse supporting virtual media, CAC and USB2.0. |
| MPUIQ-VMCDV | Server Interface Module for DVI video, USB keyboard/mouse supporting virtual media, CAC and USB2.0. |
| MPUIQ-VMCDP | Server Interface Module for DisplayPort video, USB keyboard/mouse supporting virtual media, CAC and USB2.0. |
| AVRIQ-SRL | Server interface module for VT100 serial devices for extended distance (requires UPD-AM) |
| DSAVIQ-PS2M | Server interface module for VGA video, PS/2 keyboard & mouse with USB virtual media |
| **CABLES** | |
| PS2IAC-7 | 7 ft. PS2 CAT-5 integrated access cable |
| PS2IAC-10 | 10 ft. PS2 CAT-5 integrated access cable |
| PS2IAC-15 | 15 ft. PS2 CAT-5 integrated access cable |
| USBIAC-7 | 7 ft. USB CAT-5 integrated access cable |
| USBIAC-10 | 10 ft. USB CAT-5 integrated access cable |
| USBIAC-15 | 15 ft. USB CAT-5 integrated access cable |

# Avocent® Acs 8000 Advanced Console Server

A Next-Generation Console Management Solution

## Benefits

**Applications**

- Secure console and power management
- Server and network management
- Secure access to test and development lab environments
- Telco central office and remote facilities

**Benefits**

- Secure in-band and out-of-band network remote management
- Fast, automated configuration with Zero Touch Provisioning
- Access and troubleshoot remote locations using automatic network failover to cellular (and failback)
- No need for adaptors with automatic Cyclades™ and Cisco pin-out conversions
- Compliance with data center access and security policies – customizable, multiple access levels
- NEW! - Expanded support for Rack PDUs from Vertiv™, ServerTech, APC, Raritan and Eaton
- NEW! - Support for Vertiv GXT4 UPS systems
- IPv6 and IPv4 support for new network deployments
- Support for Avocent® DSView™ management software
- Strong dial-up and secure dial-back using optional built-in modem
- Console event logging and notification, including “last gasp” capture
- Regulatory compliance and easy troubleshooting – online and off-line data logging with time stamps
- NEW! - Integrated support for 1Gb SFP fiber modules
- NEW! - 8 USB ports to support new IT equipment and external devices
- NEW! - Environmental sensor port

*Avocent® ACS 8000 Advanced Console Server*

The Avocent® ACS 8000 advanced console server series continues the long running success story with a new, ground-up platform of innovation, integrating important new connectivity features such as gigabit fiber, USB and sensors. IT professionals and network operations center (NOC) personnel can now harness these new capabilities to further enable them to perform secure, remote data center management and out-of-band management of IT assets from anywhere in the world. Featuring a dual-core ARM processor architecture with expanded memory capabilities, the updated Linux operating system and DSView™ management software, provides the Avocent® ACS 8000 optimal performance, security, reliability for a complete out-of-band management solution.

### High-Performance Design and Advanced Features

The Avocent® ACS 8000 advanced console server series offers upgraded and advanced features that deliver scalable and high performance solutions for IT administrators. The console server features a dual ARM core processor platform with dual gigabit-Ethernet ports and dual gigabit-Fiber ports for redundancy and optional built-in modem. In addition, there is a new sensor port, to connect a variety of sensors for monitoring and logging on the appliance. Our serial ports are now auto sensing for pin-out and the Avocent® ACS 8000 advanced console server also offers robust software features to meet the requirements of the most demanding data center management applications Features include automated discovery tools to ease identification of servers, routers, switches and power devices connected to any serial port, saving time at initial configuration and installation. To comply with existing data center network access policy, the Avocent® ACS 8000 advanced console server provides customizable, multiple access levels for secure management.The console servers provide a complete solution for secure, remote control with advanced console server features such as enhanced security, data logging and event monitoring. In addition, the Avocent® ACS 8000 advanced console server supports next-generation network standards such as Internet Protocol version 6 (IPv6).Available in 8-, 16-, 32- and 48-port models that fit in 1U of rack space with single and dual, AC and DC power options. With or without modem, the ACS 8000 console server helps maximize IT asset productivity while providing scalability and reducing operational costs. Uses an embedded cryptographic module that is based on the FIPS 140-2 validated cryptographic module (certificate number 1747) running on a Linux ARM platform.

## Hardware Specifications

| | | |
|---|---|---|
| CPU | Dual-core ARM® Cortex™-A9 MPCore™ with CoreSight™ | |
| Memory | 1GB DDR3L RAM<br>16GB eMMC Flash | |
| Interfaces | 2 Gigabit Fiber SFP ports<br>2 Gigabit (10/100/1000BT) Ethernet interfaces on RJ45<br>1 RS-232 serial console port on RJ45<br>Up to 48 RS-232 serial ports on RJ45<br>First 2 ports selectable between RS-232/RS-422/RS-485<br>8 USB 2.0 Ports on Type A connector<br>1 full size SD Card slot<br>Environmental sensor port on RJ45 (1-wire)<br>4 digital-in ports (smoke, leak, pressure and dry contact sensors) | |
| Power | Internal 100–240 VAC, 50/60 Hz Optional –48 VDC power supply<br>Optional dual entry, redundant AC and DC power supplies | |
| Power Usage | Nominal voltage 120VAC:<br>Typical 0.13A, 6.2W<br>Maximum 0.47A, 28W<br>Nominal voltage 240VAC:<br>Typical 0.10A, 7W<br>Maximum 0.29A, 28W<br>Nominal voltage 48VDC (±20%)<br>Typical 0.22A, 11W<br>Maximum 0.67A, 33W | |
| Operating Temp. | 14°F to 140°F (-10°C to 60°C) | |
| Storage Temp. | -4° to 158°F (-20° to 70°C) | |
| Humidity | 20% to 80% noncondensing | |
| Non-perating Humidity | 5% to 95% relative humidity | |
| Dimensions (W x D x H) 17.250 x 9.5 D x 1.75 in. (43.82 x 24.13 x 4.45 cm) | | |
| Weight | 7.5 lbs | |
| Certifications | Emissions and Immunity:<br>• FCC Class A<br>• CE Class A (EU)<br>• ICES-003 (Canada)<br>• VCCI (Japan)<br>• RCM (Australia)<br>• Customs Union (CU)<br>• KCC (Korea) | Safety:<br>• UL (USA)<br>• cUL (Canada)<br>• EN-60950 (EU)<br>• CB<br>• Customs Union (CU) |

# Ordering Details

## AC Power Supply Models

| AC MODELS | DESCRIPTION |
|---|---|
| ACS8008SAC-400 | ACS 8000 8-port unit single AC power supply |
| ACS8008DAC-400 | ACS 8000 8-port unit dual AC power supply |
| ACS8008MDAC-400 | ACS 8000 8-port unit dual AC power supply with built-in modem |
| ACS8016SAC-400 | ACS 8000 16-port unit single AC power supply |
| ACS8016DAC-400 | ACS 8000 16-port unit dual AC power supply |
| ACS8016MDAC-400 | ACS 8000 16-port unit dual AC power supply with built-in modem |
| ACS8032SAC-400 | ACS 8000 32-port unit single AC power supply |
| ACS8032DAC-400 | ACS 8000 32-port unit dual AC power supply |
| ACS8032MDAC-400 | ACS 8000 32-port unit dual AC power supply with built-in modem |
| ACS8048SAC-400 | ACS 8000 48-port unit single AC power supply |
| ACS8048DAC-400 | ACS 8000 48-port unit dual AC power supply |
| ACS8048MDAC-400 | ACS 8000 48-port unit dual AC power supply with built-in modem |
| Additional models are also available. Contact your sales representative for more information | |

| DC MODELS | DESCRIPTION |
|---|---|
| ACS8008SDC-400 | ACS 8000 8-port unit single DC power supply |
| ACS8008MDC-400 | ACS 8000 8-port unit single DC power supply with built-in modem |
| ACS8032DDC-400 | ACS 8000 32-port unit dual DC power supply |
| ACS8032MDDC-400 | ACS 8000 32-port unit dual DC power supply with built-in modem |
| ACS8048DDC-400 | ACS 8000 48-port unit dual DC power supply |
| ACS8048MDDC-400 | ACS 8000 48-port unit dual DC power supply with built-in modem |

## Features

### Operating System

- Embedded Linux

### Accessibility

- Zero Touch Provisioning (ZTP)
- In-band (Ethernet) and out-of-band (dial-up/cellular modem) support
- Built-in v.92 analog modem connectivity
- External device connectivity such as LTE/4G cellular router

### Availability

- Automatic Ethernet or Cellular failover using second GbE port for failover
- Support for multiple-routing tables
- Dual power supply design
- Dual GbE Ethernet support
- Dual 1Gb SFP Fiber support
- USB port support

### Security

- Preset security profiles–secure, moderate and open
- Custom security profiles
- X.509 SSH certificate support
- SSHv1 and SSHv2
- Local, RADIUS, TACACS+, LDAP/AD, NIS and Kerberos authentication
- Two-factor authentication (RSA SecurID®)
- One-Time Password (OTP authentication
- Local, backup-user authentication support
- PAP/CHAP and Extensible Authentication Protocol (EAP) authentication (for dial-up lines)
- Group authorization:
  - TACACS+, RADIUS and LDAP
  - Port access
  - Power access
  - Appliance privilege
- IP packet and security filtering
- User-access lists per port
- System event syslog
- IPSec with NAT traversal support
- IP forwarding support
- Secure factory defaults
- Strong password enforcement

### Console Management

- Sun break-safe (Solaris Ready Certified)
- Break-over SSH support
- Off-line data buffering – local and remote (NFS/Syslog/DSView software)
- Level-based syslog filters
- Time stamp and rotations for data buffering
- Unlimited number of simultaneous sessions
- Simultaneous access on the same port (port sniffing) with ability to toggle
- Configurable event notification (e-mail, pager, SNMP trap)
- Customizable, global time zone support
- Multiple and customizable user levels of access

### Port Access

- Directly by server name or device name
- CLI Command
- Simultaneous Telnet and SSH access
- HTTP/HTTPS

### System Management

- Configuration wizard in Web for first-time users
- Auto-discovery for automatic deployment
- Command line interface (CLI)
- Web Management Interface (HTTP/HTTPS)
- SNMP
- Internal temperature sensor

### Cabling

- CAT-5 compatible adapters for simpler cabling
- Autosensing for Cyclades and Cisco pin-outs for serial ports

### Upgrades

- Upgrades available on FTP site, no charge
- TFTP support for network boot

# *Enhanced Performance and Management of Dynamic IT Spaces*

## Enhance Business Agility, Efficiency and Availability with Vertiv™ Rack PDUs

Data centre investments are sizable, and each component of the power chain from the facility entrance to the rack power distribution is crucial to enabling equipment availability. Enable your IT investment and your business to stay protected with Vertiv Geist family of Rack PDU (rPDU) offerings.

The next generation of rPDUs provides the industry's highest availability and most intelligent power monitoring and distribution - complete with simplified energy management, a future-proof design, and cost savings that ensure your data centre and your business - can operate at peak efficiency.

Our complete portfolio of rPDUs offers value beyond power distribution. They easily integrate to your data centre infrastructure management systems to make your organization more resilient, enhance your business and provide the technological support you need to grow your company.

**POWER** **MONITOR** **INTEGRATE**

### BASIC rPDUs

Vertiv™ Geist™ Basic Rack PDUs (rPDUs) offer reliable, space saving, and cost-effective power distribution at the rack.

Our Basic rPDUs meet a broad range of power distribution requirements for all IT applications.

### INTELLIGENT rPDUs

Vertiv Geist offers a wide range of monitored and switched rPDUs equipped with a network interface to allow for remote monitoring, management, and automated alerts. Vertiv™ Geist™ rPDUs offer important insights on how to improve data centre energy efficiency while enabling you to prevent downtime, providing notifications when user-specified thresholds for power and environmental conditions are breached.

- **Monitored:** Monitor power usage remotely with access to the rPDU's current, voltage, real power, apparent power, power factor and kilowatt hours.
- **Switched:** All the benefits of a Monitored rPDU plus the ability to remotely turn on, turn off, or reboot power at each outlet.

### Outlet Control
Address unresponsive equipment or increase runtime of critical equipment upon power failure with outlet-level control.

### Upgradable & Hot-Swappable
Easily update your rPDU's monitoring capabilities to adapt to latest technologies and changing business needs.

### Environmental Monitoring
Proactively monitor environmental conditions within the cabinet to ensure optimal operating conditions. A variety of sensors are available to meet your needs including temperature, humidity, airflow, door position, flood detection and more.

### Vertiv Intelligence Director
Daisy-chain up to 50 devices on a single IP address. Reduce deployment time with self-configuration of downstream devices.

### U-Lock
Secure power cords and avoid accidental disconnections. Receptacles are color-coded by circuit for instant identification.

### Available Features
Built-to-Order units provide additional features to include alternating phase/ circuit outlets, colored chassis options, and varying power and receptacle configurations. Contact your Vertiv sales team for more information.

### High Temperature Grade
Up to 60°C working ambient variants for high temperature environments.

### Network Interface
Access the rPDU remotely to monitor power consumption and configure user-defined alert notifications to prevent downtime.

### Fault-Tolerant Daisy Chaining
Simplifies intelligent rPDU connectivity and ensures data is reported even when a break in the network chain occurs.

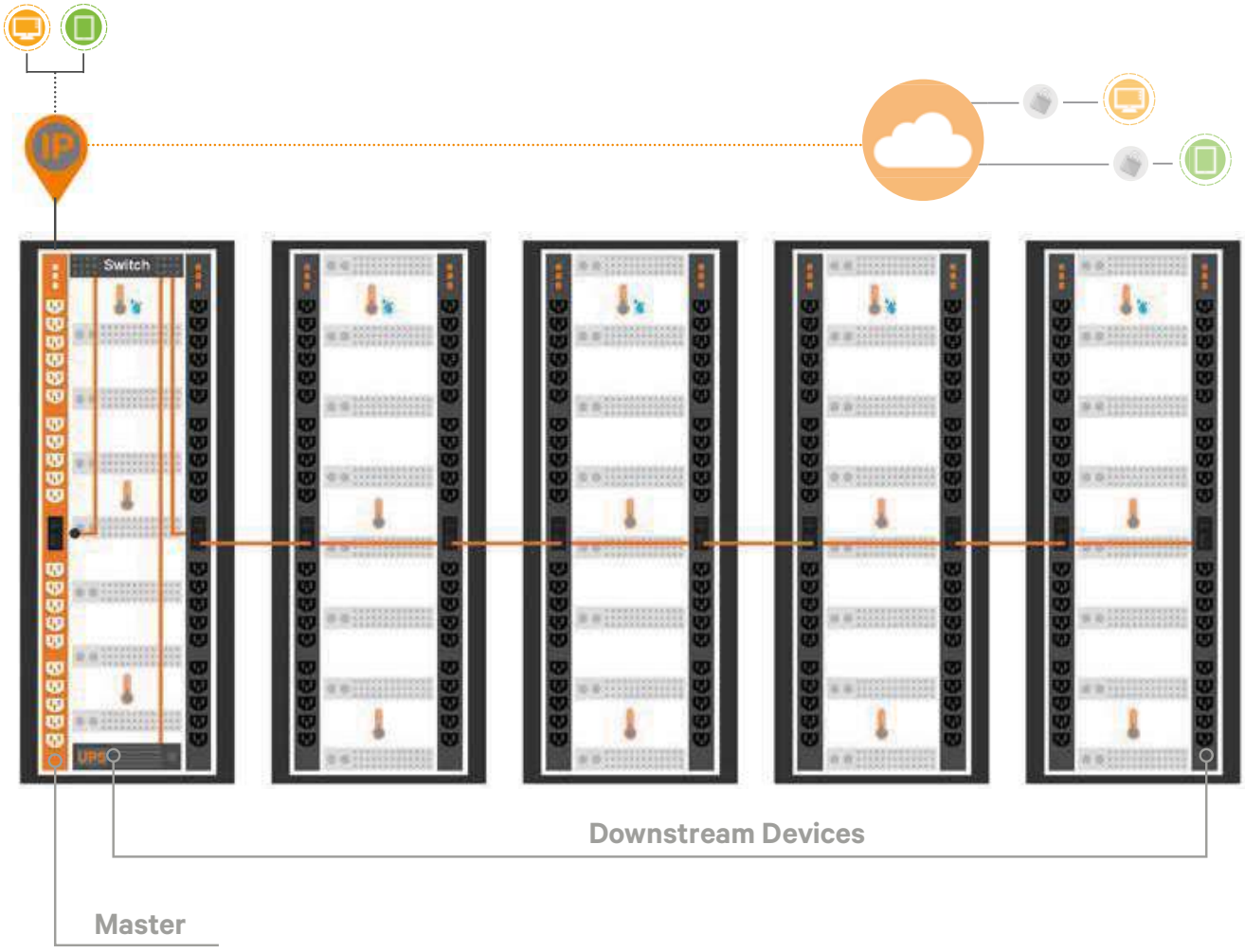
### Visible Light Communication (VLC)
Optically transmit data from the rPDU display to your mobile device using VLC for quick and secure access to unit and power consumption data.

### Small Footprint and Low Profile Breakers)
Compact size to install in tight spaces.

### Input Power Monitoring
Allows data centre managers to accurately reconcile power usage with 1% monitoring accuracy tested to ANSI & IEC standards.

# *Vertiv Intelligence Director*

**Plug-n-Play Data Centre Infrastructure Enabling Lightning Fast Deployments**




## HOW IT WORKS

1. Designate a Switched or Monitored unit with an IMD-3E or IMD-03E installed as the master unit. Switched units come standard with the IMD-3E.
2. Connect up to 50 devices through a network switch or by daisy chaining the rPDUs to the master unit.
3. Securely access downstream device data via SNMP or the master unit user interface through a single IP address and bring the consolidated data in your private cloud.
4. *Bring your infrastructure data together with the option to connect to the Vertiv Intelligence cloud platform.*

**The next generation of Vertiv™ Geist™ rPDUs offer enhanced monitoring and simplified networking with the introduction of Vertiv Intelligence Director.**

- On Monitored* and Switched units, users have the ability to daisy chain up to 50 devices with a single IP address.
- Access data from all downstream rPDU and UPS** devices from one master rPDU.
- Users are able to aggregate data by grouping devices by rack or row.
- Downstream devices self-configure, significantly reducing deployment time.
- *Securely transmit device data to the Vertiv Intelligence cloud for anytime access to critical infrastructure information.*

**One unit per group is required to have an IMD-03E or IMD-3E installed. The IMD-3E comes standard with Switched units. An IMD-03EV can be purchased separately to upgrade a Monitored unit.*

***Vertiv Intelligence Director compatible with VertivLiebert GXT4 UPS product line.*

## Rack PDUs Product Chart

| MODEL | rPDU TYPE | rPDU SUB -TYPE | HORIZON-TAL/ VERTI-CAL | VOLTS | AMPS | MAX KW | PLUG TYPE | OUTPUT C13 | OUTPUT C19 | MAX OPERAT-ING TEMP* | VI DIRECTOR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VP9559 | Basic | Standard | H | 230 VAC | 16 A | 3.6 kVA | IEC60320 C20 | 10 | 2 | 45°C | N/A |
| VP7552 | Basic | Standard | V | 230 VAC | 16 A | 3.6 kVA | IEC60320 C20 | 20 | 4 | 45°C | N/A |
| VP7551 | Basic | Standard | V | 230 VAC | 16 A | 3.6 kVA | IEC60309 1ph/N/PE 6h | 20 | 4 | 45°C | N/A |
| VP7553 | Basic | Standard | V | 230VAC | 32 A | 7.3 kVA | IEC60309 1ph/N/PE 6h | 20 | 4 | 45°C | N/A |
| VP7557 | Basic | Standard | V | 230/400 VAC | 16 A | 11 kVA | IEC60309 3ph/N/PE 6h | 36 | 6 | 45°C | N/A |
| VP8858 | Monitored | Unit Level | V | 230 VAC | 16 A | 3.6 kVA | IEC60320 C20 | 18 | 2 | 60°C | IMD Upgrade** |
| VP8853 | Monitored | Unit Level | V | 230 VAC | 32 A | 7.3 kVA | IEC60309 1ph/N/PE 6h | 36 | 6 | 60°C | IMD Upgrade** |
| VP8881 | Monitored | Unit Level | V | 230/400 VAC | 16 A | 11 kVA | IEC60309 3ph/N/PE 6h | 36 | 6 | 60°C | IMD Upgrade** |
| VP8886 | Monitored | Unit Level | V | 230/400 VAC | 32 A | 22 kVA | IEC60309 3ph/N/PE 6h | 30 | 12 | 60°C | IMD Upgrade** |
| VP8959EU3 | Switched | Unit Level | V | 230 VAC | 16 A | 3.6 kVA | IEC60320 C20 | 21 U-Lock | 3 U-Lock | 50°C | YES |
| VP8953 | Switched | Unit Level | V | 230 VAC | 32 A | 7.3 kVA | IEC60309 1ph/N/PE 6h | 20 U-Lock | 4 U-Lock | 50°C | YES |

**See data sheet for maximum operating temperature requirements.*

***Vertiv Intelligence Director requires one unit per group to have an IMD-03E or IMD-3E installed.*
*The IMD-3E comes standard with Switched units. An IMD-03EV can be purchased separately to upgrade a Monitored unit.*

*Product chart shows limited spec information. For complete product details visit VertivCo.com.*

## At a Glance

- Simple installation and maintenance; ability to ship pre-installed in racks
- Improve Power Usage Effectiveness with increased visibility on power usage.
- Reduce cost of ownership while maximizing ROI.
- Software supported mass firmware updates, backup and configuration.
- Reduce idle energy costs with bistable relays on Switched units.
- Manage and optimize power capacity with remote monitoring.
- Expert support with Distribution Assurance Package.
- Built-to-Order options available for additional configuration needs.
- Improve uptime with Monitored and Switched rPDUs.

### Color

Black powder coat finish.

Red, Orange, Yellow, Green, Blue, White available on Built-to-Order units.

### Warranty

5-Year limited warranty if registered within 120 days of purchase, otherwise warranty defaults to 3 years.

### Certifications

- RoHS
- Assessed to EN 60950 for CE
- Assessed to EN 55032 and EN 55024 for CE
- UL & c-UL Listed 60950
- FCC Part 15 Class A Conformance

## How you benefit from Vertiv™ Rack PDUs

### DESIGNED FOR HIGH AVAILABILITY

- High operating temperature rating to accommodate increased rack densities.
- Secure cords with U-Lock outlets to prevent accidental dislodging.
- Hot-swappable and upgradeable monitoring device allows users to upgrade as technology advances and business needs change.

### OPTIMIZED ENERGY AND CAPACITY MANAGEMENT

- Metering of key electrical parameters with +/-1% accuracy provides highly accuratecomprehensive power monitoring.
- Lowest idle power consumption in the industry.
- Power and environmental trend reports through several Vertiv DCIM solutions to provide visibility and control of energy usage by IT equipment.

### SIMPLIFIED INTEGRATION WITH MANAGEMENT TOOLS

- Integration with Vertiv software stack to simplify implementation and change management translating to real cost savings.
- IPv4 and IPv6 support.
- Support for all major management, authentication and encryption standards and protocols to fully integrate with higher level data centre management software provided by Vertiv or third parties

### COMPATIBILITY WITH RACKS AND POWER CHAIN

- Compatible with all industry racks and can be preinstalled in Vertiv racks to reduce installation costs and implementation time.
- Available in all major global voltage and amperage combinations typically used in data centre or remote sites.
- Easily integrate with Vertiv's full line of power products. A Vertiv expert can assist in selecting the right rPDU for your power chain needs.

### ENHANCED SECURITY FEATURES

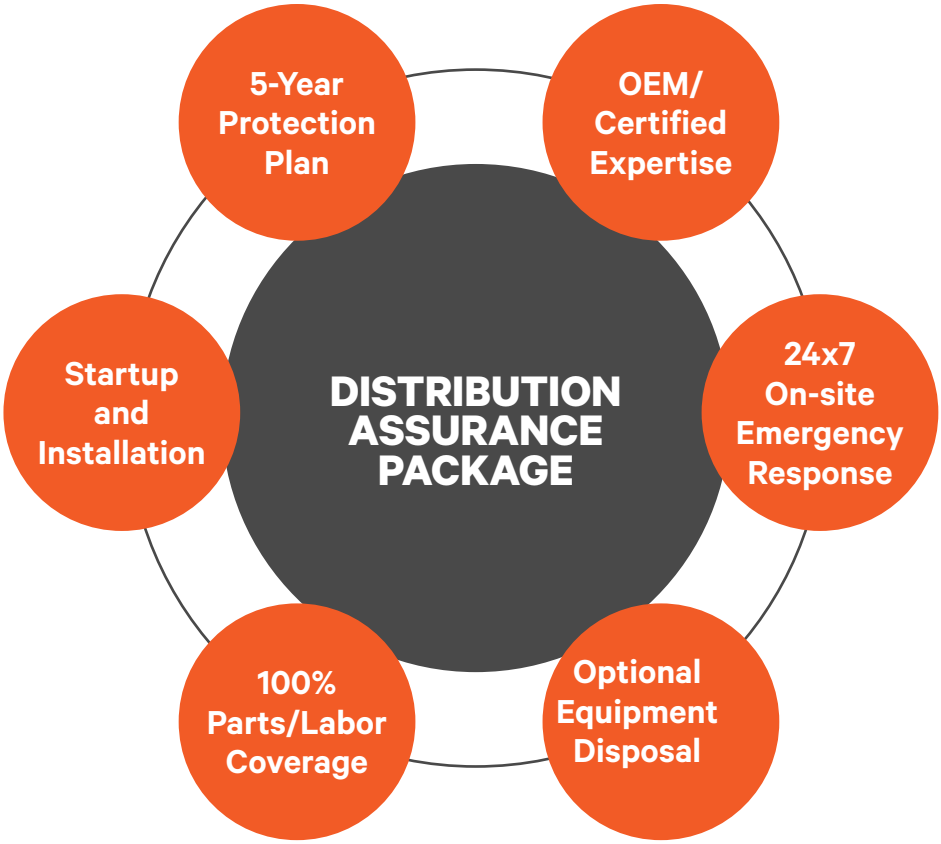
- Visible Light Communication (VLC) for quick and secure access to unit and power consumption with the Vertiv rPDU Scanner mobile app.
- Together with Avocent ACS VPN and Out-of-Band communication supports highest security communication for Edge applications.
- SNMPv3, SSH, HTTP(S) and IPv6 support.

# Ensure Power System availability with Expert Support for Vertiv™ Geist™ rPDUs

**The Distribution Assurance Package combines market-leading rPDU technology with a five-year protection plan and the industry's premier service capability.**

Rack Power Distribution Units (rPDUs) are the last link in the power chain, ensuring delivery of critical power to IT loads. These critical components play a key role in data centre infrastructure management, giving you access to racklevel power consumption and environmental information. Rack PDUs also allow you to directly control power to IT equipment for better capacity and power management. Having rPDUs that are properly installed and maintained is essential for critical system availability. However, your internal resources who are dealing with time and budget constraints cannot always give rPDUs the attention they need. Additionally, services that aren't provided by the original equipment manufacturer (OEM) may not be comprehensive or include the level of expertise required.

By choosing a bundled solution that combines market-leading rPDU technology with lifecycle services provided by the OEM, you simplify the management of your IT equipment.




## OUR DISTRIBUTION ASSURANCE PACKAGE FOR VERTIV™ GEIST™ RPDUS INCLUDES:

**Startup and Installation**

Factory-authorized Vertiv technicians handle rPDU installation and startup at your location. You'll enjoy the convenience and peace of mind that comes from having the experts do the job, and IT staff is free to attend to other tasks.

**Five-Year Protection Plan**

The Distribution Assurance Package provides 100 percent labor and travel coverage, and 100 percent parts coverage for maintenance, repair, or replacement for a full five years. With this level of protection, you avoid unexpected downtime costs and gain network availability.

**Optional Removal and Disposal**

If ordered with the Distribution Assurance Package, our technicians will remove and dispose of any old rPDUs while following all regulatory requirements. This optional task is handled when visiting to install and startup your new rPDUs.

**On-site Support and Emergency Response**

Vertiv's experienced team of technicians offers the industry's premier service capability for maintaining and supporting rPDUs. Should a problem ever arise, you'll have 24x7 access to Vertiv's Customer Resolution Center. You can count on quick recognition by support personnel as well as priority status during emergencies including guaranteed onsite emergency response.

**Comprehensive Reports**

We provide on-demand access to service histories and reports via the Customer Services Network portal. With this vital information at your fingertips, you will always know the status of your rPDUs under contract, and will have the information needed to simplify the management of this critical power system component.

## ORDERING INFORMATION

To learn more about this service and other Vertiv solutions, visit

**VertivCo.com** or call **1-800-543-2378.**

Vertiv.com/en-in | E-mail : marketing.india@vertiv.com | Toll free : 1-800-2096070

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