

# KEOR T EVO 15 kVA

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## 1. GENERAL SPECIFICATIONS

Legrand UPS model KEOR T EVO 15 is an uninterruptible power source with 3-Level IGBT switching technology, high frequency PWM technology, Double Conversion On-line, passing through neutral, with the possibility to have N+X on site parallel redundancy up to total 4 units. Rated Power 15 kVA– 15 kW (output PF=1).

Batteries are lead acid, sealed, free maintenance, valve regulated, and arranged inside the UPS in dedicated Drawers. The architecture of this UPS is a Tower type. The cabinet has a compact footprint corresponding to a footprint of 0.21m<sup>2</sup> with possibility to install from 30 up to 36 internal battery blocks. The UPS is also equipped with moving wheels for easier installation and positioning, and floor fixing kit to increase the stability of the cabinet.

### 1. Architecture

Legrand UPS model KEOR T EVO 15 has stand-alone architecture. UPS is composed by following parts:

- IGBT Rectifier/PFC
- 3-Level IGBT Switching Technology
- Digital Signal Processor (DSP)
- 3.5" TFT Touch Panel
- Automatic Bypass
- Dual Input Bypass
- Internal Manual Bypass
- Standard Internal Backfeed Protection
- Internal Battery Drawer Shelves

The UPS can be easily configured on site, by the authorized personnel, to operate in parallel. Also it is possible to arrange the dedicated bypass input by removing bridge connection on each input phase. Legrand KEOR T EVO 15 has 3-Level IGBT

switching technology and there is no transformer in the unit. These provide high efficiency for the unit.

Backfeed protection provides additional protection at the input in the event of static bypass is short circuited.

By using internal backfeed contactor in bypass line provides safety when fault situation occurs in static bypass line and prevents upstream energy to the input. The internal backfeed protection provides an easy on site installation without any additive cabling or special MCCB type in the upstream distribution panel.

### 2. Redundancy

The Redundancy of the UPS allows N+X redundant configurations. Up to 4 units of same size UPS can be connected in parallel.

### 3. Bypass

KEOR T EVO has internal both static bypass and mechanical (maintenance) bypass as standard. Addition to this input and bypass inputs can easily be separated to obtain dual input by removing the bridge on the connector.

### 4. Control and monitoring

KEOR T EVO is equipped with a touch screen graphic TFT display that provides mimic UPS diagram with relevant information, measurements, statuses and alarms of the UPS in different languages. Below this display, there is a multicolor LED bar showing status of UPS.

- GREEN: Normal or ECO Mode Operation
- ORANGE: Bypass or Battery Operation
- RED: Load not Supplied

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A dedicated software of remote monitoring and management, installed on a PC connected to the UPS, allows to check and set all working parameters of KEOR T EVO (the same functions available on the UPS control panel) and, furthermore, to schedule and program computer remote shutdown.

Optional software (UPSMAN) or Net Interface card (CS141 SK) allow the multi server shutdown and UPS remote control on the LAN.

Also, standard interface board comes with:

- RS232 Serial Communication Port
- Emergency Power Off (UPS OFF)
- Generator Contact (GEN ON)
- 4pcs programmable Dry Contact Information
- 2 contactor relays for Bypass and Battery
- ModBus (over RS485, with 2400 Baud Rate)

Standard Dry Contact Alarms are General Alarm, Bypass Active, Input Failure and Synchronization OK.

Addition to these: High Temperature, Battery Test Failure, Output Failure alarms can be assigned to the contacts. Each alarm can be assigned to separate contacts but also one alarm may be assigned to all contacts. KEOR T EVO front panel is controlled by DSP microprocessor which works together with DSP microprocessors in rectifier and inverter; by display is possible to check all measurements, working parameters and status of the system.

Here follow the measurements and working parameters available on the display:

### RECTIFIER (Input)

Voltage (Vac), per phase  
Current (Aac), per phase  
DC BUS Voltage ( $\pm$  Vdc)

### FREQUENCY

Input Frequency (Hz)  
Output Frequency (Hz)

### BATTERY

Voltage ( $\pm$ Vdc)  
Current ( $\pm$ Adc)  
Temperature  
Autonomy (minute)

### INVERTER (Output)

Voltage (Vac), per phase  
Current (Aac), per phase  
Apparent Power (kVA), per phase  
Active Power (kW), per phase  
Power Factor (load), per phase  
Bypass Voltage, per phase  
Load (%), per phase

The UPS allows also the following settings by display

### OUTPUT

Voltage (380/400/415)  
Frequency (50Hz/60Hz)

### BATTERY

Battery String  
Battery Capacity

### COMMAND MENU

Priority (Online (Inverter) /Green (Bypass))  
Battery Test (KEOR T EVO tests the battery automatically once each 90 days)

Maintenance (Rectifier, Inverter, Bypass, Load Supply – YES/NO)

### RELAY FUNCTIONS

Relay 1 (General Alarm as standard)  
Relay 2 (Input Failure as standard)

Each relay can be adjusted from 7 different alarms

### PARALLEL MODE

Parallel Mode  
(Enable/Disable(Single))  
UPS ID  
Redundancy (+1, +2, +3)  
Operation Mode (Redundancy  
Power Increase)

### OPTIONS

Alarm Voice (Enable/Disable)  
Key Voice (Enable/Disable)  
Warning Window (Enable/Disable)

### OTHER

Display Brightness (0 to 100)  
Emergency Power Off (NC/NO)  
Generator Mode (NC/NO)  
ModBus ID  
Time (hh:mm. Required for Event Log stamp)  
Date (dd:mm:yyyy. Required for Event Log stamp)  
Language (English, Italian, French, German, Spanish, Portuguese, Turkish, Russian, Dutch, Polish)

Legrand KEOR T EVO displays up to 500 last events. Events are stored in EEPROM using FIFO method. Order number of last occurred event is 001 and the last event in the list is erased when there are 500 events. The UPS KEOR T EVO has the CE Mark accordingly with the EU Directives 2014/35/EU, 2014/30/EU of 26 February 2014 and it complies with following standards:

- EN 62040-1 "General rules for electric safety"
- EN 62040-2 "Electromagnetic compatibility and immunity (EMC)"
- EN 62040-3 "Performances and testing rules"

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### 2. TECHNICAL SPECIFICATIONS

#### 1. General specifications

UPS Topology	On line double conversion VFI SS 111
Architecture of the UPS	Stand alone, transformerless, On-Site Paralleling
In/Out phase Configuration	Three phase-Three phase
Neutral	Neutral Passing through
Switching Technology	3-Level IGBT
Backfeed Protection	Internal, standard
Output wave form on mains operation	Sinusoidal
Output wave form on battery operation	Sinusoidal
Standards	EN 62040-1, EN 62040-2, EN 62040-3

#### 2. Input

Nominal Voltage	400 3ph+N+PE
Voltage Range	358 - 459 Ph-Ph full load 208 - 459 Ph-Ph half load"
Fréquence	45 - 65Hz
THDin	< 5% at full load
Power Factor	> 0.99

#### 3. Bypass

Nominal Voltage	400 3ph+N+PE
Voltage Range	380/400/415V -18% +15% (adjustable)
Frequency	47-53Hz or 57-63Hz (adjustable)
Bypass Type	Static and Electro-mechanic
TransferTime	Zero
Manual Bypass	Built-in

#### 4. Output with mains (AC-AC)

Nominal Voltage	380, 400, 415 3ph+N+PE
Nominal Power	15.000 VA
Active Power	15.000 W
Voltage variation (static)	± 1%
THDv on nominal power (linear load)	< 2%
THDv on nominal power (non-linear load)	< 4%
Frequency	50 Hz or 60 Hz (selectable)
Frequency tolerance	± 0,1% Synchronized with input frequency
Current Crest Factor	2.5:1 accordingly to IEC 62040-3
Overload capability:	
10 min	125% load with no bypass
60 sec	150% load with no bypass

#### 5. Output on battery (DC-AC)

Nominal Voltage	380, 400, 415 3ph+N+PE
Nominal Power	15.000 VA
Active Power	15.000 W
Voltage variation (static)	± 1%
THDv on nominal power (linear load)	< 2%
THDv on nominal power (non-linear load)	< 4%
Frequency	50 Hz or 60 Hz (selectable)
Frequency tolerance	± 0,01% free run
Current Crest Factor	2.5:1 accordingly to IEC 62040-3
Overload capability:	
10 min	125%
60 sec	150%

#### 6. Battery

Type	Lead Acid, sealed, free maintenance VRLA
Unit Capacity	7 or 9 Ah (12V)
Nominal UPS Battery Voltage	±180 Vdc (max ±216 Vdc)
Nominal n. of possible internal battery	30pcs (15x2)
Max. n. of possible internal battery	36pcs (18x2)
Battery charger type	IGBT Rectifier also charges batteries
Charging Cycle	Intelligent with boost charge and advanced management"
Max Charging Current without derating	2 A

#### 7. Environmental specs

Noise level @ 1m (50% load)	< 51dBA
Operating temperature range	from 0°C to +40°C
Stock temperature range	from -20°C to +50°C
Humidity range	20-95% not condensing
Protection degree	IP20

#### 8. Mechanical and miscellaneous

Net Weight without batteries <sup>1</sup>	79 kg
Dimensions (HxW xD)	1020 x 265 x 800 mm
Colour	Enclosure: RAL 7016Front Door Metal: RAL 9005
Communication Interface	1 serial port RS232, 1 RS485, 1 smart port for internal SNMP, 4 Dry Contacts, 1 EPO, 1 GENSET
Input/Output connections	3Ph + N + PE

<sup>1</sup> The weigh depends by the number of the installed batteries accordingly with the required autonomy.