

## GLOSSARY

TI0016

### DESCRIPTION

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Equipment : NO-BREAK KS®

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Name	Abbr.	Definition
Accumulator (Kinetic Energy)		(a.k.a. Kinetic Energy Accumulator, Energy Storage Device) A device able to store kinetic energy. This energy is used to supply the critical load through a synchronous machine during the initial seconds of Mains power failure.
Active Power	P	Power consumed by the "resistive" portion of the load. It is expressed in Watts (W) and is equal to the product of the voltage by the portion of the current in phase with the voltage.
<u>A</u> lternative <u>C</u> urrent <u>I</u> nput	ACIN	DCM board that processes the analog signals (4 currents, 4 voltages) of a 3-phase electrical network for their digitisation by an A/D converter.
Alternator		Electromechanical device that converts mechanical energy to electrical energy in the form of alternating currents and voltages. This synchronous machine is reversible: when electrical energy is converted to mechanical energy, it becomes a synchronous motor.
Apparent Power	S	Result from the product of the voltage by the current and the absolute value of complex power, S. It is also the square root of the sum of the squared active and squared reactive powers. Expressed in Volt-Ampere (VA).
<u>A</u> utomatic <u>T</u> ransfer <u>S</u> witch	ATS	A switch designed to sense the loss of one power source and automatically transfer the load to another source of power.
Auxiliary Transformer	TRA	Step-down transformer used to supply panels and auxiliaries in MV systems.
Black Start		The ability of the DRUPS system to start with no other power sources than the fuel and the starter batteries. Black start is achieved at no load, then the load is restored progressively.
Busbar		An electrical conductor, maintained at a specific voltage and capable of carrying high current, usually used to make a common connection between several circuits in a system. As an extension, it can also be used for a group of such conductors to provide 3-phase voltage.
Bypass		A bypass allows the load to be supplied directly from the Mains. It can be manual (QMB) or automatic (QD3). For instance, it can be used during system maintenance.
Bypass Mode		Operating mode of the NO-BREAK KS® system when the automatic bypass (QD3) is active and the load is not secured. Two sub-modes are defined : BYPASS RUNNING (QD1 closes, QD2 opens and the unit is ready to return to Conditioning mode); BYPASS STOPPED (QD1 and QD2 open and the unit is stopped or stopping).
Bypass Running		Operating mode of the NO-BREAK KS® system when the automatic bypass (QD3) is active and the load is not secured: QD1 is closed, QD2 is open and the unit is ready to return to Conditioning mode.
CAN Board	CAN	DCM board that supports the CAN bus drivers (see also Controller Area Network Bus).
Choke		In NO-BREAK KS® systems, chokes are inserted between the Mains and the critical load, to allow the conditioning of the load voltage, and to cope with a poor power quality from the Mains.
Circuit Breaker		An automatically-operated electrical switch designed to protect an electrical circuit from damage caused by overload or short circuit. It can also be used as a controlled switch.
Conditioning Mode		(previously known as Normal Mode) Working mode of the NO-BREAK KS® system in which the load is secured. The load is supplied by the Mains, and the NO-BREAK KS® system is ready to feed the load without interruption if a Mains failure occurs.
<u>C</u> onnecto <u>r</u> <u>A</u> ccumulator	CAC	Connector used as interface for accumulator control.
<u>C</u> ontinuous <u>O</u> peration	COP	According to ISO 8528-1: It is the maximum power which the generating set is capable of delivering continuously whilst supplying a constant electrical load when operated for an unlimited number of hours per year under the agreed operating conditions with the maintenance intervals and procedures being carried out as prescribed by the manufacturer.
<u>C</u> ontrol <u>P</u> anel	COP	Low voltage panel containing all electronics and equipment to control the NO-BREAK KS® unit.
<u>C</u> ontroll <u>e</u> r <u>A</u> rea <u>N</u> etwork <u>B</u> us	CAN Bus	Field bus used in parallel NO-BREAK KS® system for sharing information between
Cooling System		It represents the devices (fans, radiators, heat exchangers,...) that are used to maintain the different elements at an adequate working temperature.

Name	Abbr.	Definition
Critical Load		Load that must be supplied with a continuous and high quality power.
Current Transformer	CT	An instrument transformer used for measuring (high) currents.
Diesel Engine		The Diesel Engine is a reciprocating internal combustion engine widely used in stationary applications, like DRUPS.
Diesel Engine Cabinet	DEC	Electrical cabinet containing the interface for the control of the diesel engine and the clutch.
Diesel Rotary UPS	DRUPS	(a.k.a. Dynamic UPS (DUPS) or Continuous Power Supply (CPS)) UPS where one or more electrical rotating machines provide the output voltage.
Digital Control Module	DCM	Electronic device of a NO-BREAK KS® unit that performs the real time critical controls.
Digital Input Output	DIO	DCM board that interfaces optically isolated digital inputs and optically isolated digital outputs.
Distributed Redundant System		Refers to a system topology including several single NO-BREAK KS® units, each one having their outputs distributed to multiple critical loads by Automatic Transfer Switches (ATS). The different inputs of each ATS are connected to different NO-BREAK KS® units.
Downstream		Refers to the portion of the NO-BREAK KS® system energised through QD2 or QD3 circuit breakers (including the load).
Downstream Busbar		The busbar, in a NO-BREAK KS® unit, that is connected to the Critical load through the QDB circuit breaker.
Dual Output		Refers to NO-BREAK KS®-SB system which protects two kinds of loads : Critical loads & Non-critical loads.
Electromagnetic Clutch		Friction clutch activated by supplying a DC coil.
Emergency Standby Power	ESP	According to ISO 8528-1: the maximum power available during a variable electrical power sequence, under the stated operating conditions, for which a generating set is capable of delivering in the event of a utility power outage or under test conditions for up to 200 hr of operation per year with the maintenance intervals and procedures being carried out as prescribed by the manufacturers.
Enclosure		Housing affording the type and degree of protection suitable for the intended application.
Factory Acceptance Test	FAT	Witnessed commissioning tests carried out in factory.
Footprint		The floor area occupied by a structure or device.
Fuse		An overcurrent protective device with a circuit-opening fusible part that is heated and severed by the passage of overcurrent through it.
Generating Set		(a.k.a. Gen-sets) A group of rotating machines (for example one Diesel engine and one alternator) transforming mechanical or thermal energy into electricity.
Human Machine Interface	HMI	The user interface in a control system.
Independent Mode		(a.k.a. Production mode or Emergency mode) Operating mode when the load is only supplied by the NO-BREAK KS® system (Mains power is disconnected).
Inner Rotor		Part of the accumulator that supports the windings. It is mechanically coupled to the alternator shaft to realise the main shaft, and therefore rotates at 1500 rpm or 1800 rpm (50 or 60 Hz).
Input Power Factor		Ratio of the active power to the apparent power at the input of a NO-BREAK KS® system.
Installation		The complete setting-in-place and readying for operation of one or more NO-BREAK KS® systems and their accessories and equipment.
Interface Machine	INTM	DCM board dedicated to the control of the stato-alternator.
IP Ring Bus		Refers to a system topology of several NO-BREAK KS® units, each of them normally dedicated to its own portion of the critical load. The latter are then interconnected through chokes, to achieve a ring. In case one portion of the critical load loses its dedicated supply, both surrounding chokes are shortcut, thanks to bypass circuit breakers, in order to feed that portion of critical load with other units. Such configuration allows the short circuit current to be limited to reasonable values, even with high power demanding loads.

Name	Abbr.	Definition
IP Star Bus		Refers to a system topology of several NO-BREAK KS® units, each of them normally dedicated to its own portion of the critical load. The latter are then interconnected through chokes, to achieve a star topology. In case one portion of the critical load loses its dedicated supply, the corresponding choke is shortcut, thanks to a bypass circuit breaker, in order to feed that portion of critical load with other units. Such configuration allows the short circuit current to be limited to reasonable values, even with high power demanding loads.
Isochronous Load Sharing		A load sharing between parallel connected devices while operating at rated frequency.
Isolator		A device that must only be open when not carrying current, and has the purpose of ensuring that a circuit cannot become live whilst it is out of service for maintenance.
IT System	IT	Earthing system in which the secondary side of the Mains transformer or the generator has no connection to earth at all, or it has only a high impedance connection. The enclosure of any electrical device is connected to the local earth through a dedicated connection.
KS-VISION		The name of the control system developed by EURO-DIESEL for the NO-BREAK KS® units. KS-VISION involves not only the HMI, but all the functional and monitoring aspects.
Limited Time Power	LTP	According to ISO 8528-1: the maximum power available, under the agreed operating conditions, for which the generating set is capable of delivering for up to 500 hr of operation per year with the maintenance intervals and procedures being carried out as prescribed by the manufacturers.
Line Interactive Rotary UPS		A machine set including a generator, energy storage means and a RIC engine if so equipped, and operating in parallel with the Mains system. The energy storage and RIC engine may all be coupled on the same shaft, or realised as separate units with an indirect coupling (electrical, hydraulic, mechanical, etc).
Linear Load		Load where the parameter Z (load impedance) is a constant when a variable sinusoidal voltage is applied to it. As a result, a sinusoidal voltage causes a sinusoidal current.
Load Bank Test Mode		In a system involving N units, operating mode allowing to fully test one unit independently while the other units continue to protect the load.
Load Power		Power requested by the load.
Low Voltage	LV	Refers to voltage below 1000V (typically 400V, 480V and 600V).
Low Voltage Parallel	LV Parallel	Refers to a system with several low voltage NO-BREAK KS® units working in parallel to secure a given critical load.
Main Shaft		It is the mechanical assembly of the accumulator and the alternator shafts. It rotates at 1500 or 1800 rpm, depending on the Mains frequency (50 or 60 Hz).
Mains Power		Power normally available continuously, which is supplied from the electrical power system (the grid) or by independent electrical power generation.
Manual Bypass	QMB	Bypass operated manually. It can never be closed while load is being protected by the NO-BREAK KS® units.
Mean Time Between Failures	MTBF	This is the predicted elapsed time between inherent failures of a system during operation.
Mean Time To Repair	MTTR	This is the predicted average time required to repair a failed device in a system.
Medium Voltage	MV	Refers to voltage between 1000V and 35000V according to IEEE 1585-2002 standard; between 600V and 69000V according to NECA/NEMA 600-2003.
Medium Voltage Parallel	MV Parallel	Refers to a system with several NO-BREAK KS® units working in parallel to secure a given critical load. When the supply is medium voltage, the chokes and the circuit breaker components operate at medium voltage while each low voltage stator-alternator is connected through a dedicated step-up transformer. Alternatively, medium voltage alternators could be used.
Medium Voltage Switchgear	MV Switchgear	Panels containing the power switching devices needed for an MV NO-BREAK KS® system. The term switchgear refers to the combination of power switching devices used to operate and protect the electrical equipment.
Miniature Circuit Breaker	MCB	Small size air circuit breaker for operation in low voltage and moderate rated current.
Mother Board	MOB	DCM main board with the digital processor.
Neutral Inductance	NTR	Inductance used to create a neutral to ground reference. It is used in MV systems when this reference cannot be provided by the main power supply (f.i. in independent
NO-BREAK KS®		Registered brand name of the DRUPS developed by EURO-DIESEL.
NO-BREAK KS®4		NO-BREAK KS® compact solution, up to 200 kVA.

Name	Abbr.	Definition
NO-BREAK KS®4 EX1		NO-BREAK KS®4, fully encapsulated and ready to connect (for indoor use).
NO-BREAK KS®4 EX2		NO-BREAK KS®4, without acoustic enclosure.
NO-BREAK KS®5		NO-BREAK KS® solution, for critical loads from 200 kVA to 2500 kVA (50 Hz) or 3000 kVA (60 Hz) per unit.
NO-BREAK KS®5-SB		NO-BREAK KS® solution, for combined critical and non-critical loads from 200 kVA to 2500 kVA (50 Hz) or 3000 kVA (60 Hz) per unit.
NO-BREAK KS® System		Refers to a functional assembly comprising one or more NO-BREAK KS® units with the associated common panels and auxiliaries.
NO-BREAK KS® Unit		Refers to one power module with its associated control panel, power panel and auxiliaries.
Non-Critical Load		(a.k.a. Essential Load) Load that can suffer short power supply interruption.
Non-Linear Load		Load where the parameter Z (load impedance) is not a constant but is a variable depending on other parameters, such as voltage or time.
OFF Mode		When in OFF mode, a unit doesn't supply the load neither through QD2 nor QD3.
Outer Rotor		(a.k.a. drum or Accu-rotor) Part of the accumulator that rotates around the main shaft to store kinetic energy.
Parallel System		(a.k.a. Parallel Operation) Installation using 2 or more NO-BREAK KS® systems in parallel to protect a load.
Power Factor	P.F.	Active power divided by apparent power.
Power Module		Part of the NO-BREAK KS® unit that consists of the diesel engine, the clutch, the stato-alternator and the frame.
Power Panel	POP	Panel containing power circuit and equipment of a LV NO-BREAK KS® unit.
Power Supply Unit	PSU	DCM board that converts the 24V DC input into 5V DC to power all other boards.
Prime Power	PRP	According to ISO 8528-1: It is the maximum power which a generating set is capable of delivering continuously whilst supplying a variable electrical load when operated for an unlimited number of hours per year under the agreed operating conditions with the maintenance intervals and procedures being carried out as prescribed by the manufacturer.
Programmable Logic Controller	PLC	A programmable logic controller (PLC) or programmable controller is a digital computer used for automation of processes. Unlike general-purpose computers, the PLC is designed for multiple inputs and output arrangements, extended temperature ranges, immunity to electrical noise, and resistance to vibration and impact. Programs to control the process are typically stored in battery-backed or non-volatile memory.
Proportional Integral Derivative	PID	A proportional–integral–derivative controller (PID controller) is a generic control loop feedback mechanism (controller) widely used in industrial control systems.
Protective Earth	PE	A protective earth (PE) connection ensures that all exposed conductive surfaces are at the same electrical potential as the surface of the Earth, to avoid the risk of electrical shock. It also ensures that in the case of an insulation fault (a "short circuit"), a very high current flows, which will trigger an overcurrent protection device (fuse, circuit breaker) that disconnects the power supply.
Protective Earth-Neutral	PEN	The name of the conductor that fulfils the functions of both a PE and an N conductor in a TN–C earthing arrangement.
Pulse Width Modulation	PWM	Pulse-width modulation (PWM) is a commonly used technique for controlling power to electrical devices, by turning the switch between DC supply and load ON and OFF at a fast pace. The longer the switch is ON compared to the OFF periods, the higher the power is supplied to the load.
QD1	QD1	In a NO-BREAK KS® unit, QD1 is the PLC controlled input circuit breaker. It allows to isolate the choke and the stato-alternator from the Mains.
QD2	QD2	In a NO-BREAK KS® unit, QD2 is the PLC controlled output circuit breaker. It allows to isolate the choke and the stato-alternator from the critical load.
QD3	QD3	(a.k.a. Automatic Bypass) In a NO-BREAK KS® unit, QD3 is the PLC controlled bypass circuit breaker. When it is closed, it allows to supply the critical load directly from the Mains if QD1 and QD2 are open. In Low Voltage systems, QD3 is actually a Switch. In Medium Voltage systems, QD3 is a common circuit breaker for all units.
QD5	QD5	In a NO-BREAK KS®-SB system, QD5 is the PLC controlled circuit breaker that feeds the non-critical loads from the Mains.
QD6	QD6	In a NO-BREAK KS®-SB system, QD6 is the PLC controlled circuit breaker that feeds the non-critical loads from the Downstream busbar.

Name	Abbr.	Definition
QDA	QDA	QDA is a manual input circuit breaker that allows to isolate the whole NO-BREAK KS® unit from the Mains.
QDB	QDB	QDB is a manual output circuit breaker that allows to isolate the whole NO-BREAK KS® unit from the critical load.
QDC	QDC	QDC is the generic name for Tie breakers in the Downstream busbar.
QDX	QDX	QDX is the generic name for Tie breakers in the Upstream busbar.
QLA	QLA	QLA is the circuit breaker that protects the Auxiliary Transformer used in Medium Voltage Systems.
QMB	QMB	(a.k.a. Manual Bypass) QMB is a switching device that allows to bypass the whole NO-BREAK KS® system in order to energize the critical load directly from the Mains.
QSN	QSN	QSN is the circuit breaker that protects the Neutral inductance used in Medium Voltage Systems.
Reactive Power	Q	Portion of the total power consumed by a device or system, that is equal to the product of the voltage and the portion of the current not in phase with the voltage. It is expressed in Volt-Ampere Reactive (VAR) and correspond to the power consumed by the reactive (capacitive or inductive) portion of a load.
Reciprocating Internal Combustion	RIC	Refers to engines using reciprocating pistons to convert pressure into a rotating motion, and, in which the combustion of a fuel occurs in a combustion chamber inside and integral to the engine.
Recovery Time		Time interval between the moment a stabilised voltage or frequency leaves the steady-state tolerance band until the instant when this quantity returns to and stays within the steady-state tolerance band.
Redundant Communication Bus Between Panels	rEDBUS	Redundant communication CAN Bus between panels, allowing to share information without involving the PLCs.
Redundant Start		Guaranteeing the engine start via the Electromagnetic clutch, thanks to the kinetic energy stored in the Accumulator.
Redundant System		(a.k.a. Redundant operation) System with added (groups of) functional units to enhance the availability of load power. (E.g. N+1 System.)
Remote Radiator		In the cooling system, it is a radiator installed in a location where the heat from the power module has no influence on the radiator airflow temperature.
Root Mean Square	RMS	The RMS value of a signal X(t) over a period T is given by the following formula : $X_{RMS} = \sqrt{\frac{1}{T} \int_0^T X^2(t) dt}$
RS-485 Board	RS-485	DCM board that supports the RS-485 serial communication drivers.
Secure Load		Operating mode of the NO-BREAK KS® system when it secures the load. QD2 is closed while QD3 is opened. In Conditioning mode, QD1 is closed. In Independent mode, QD1 is opened.
Single Output		Refers to NO-BREAK KS® system which protects critical loads only.
Single System		A system with one (1) NO-BREAK KS® unit.
Site Acceptance Test	SAT	Witnessed commissioning tests carried out on site.
Stato-Alternator		Electrical machine combining an alternator and an accumulator.
Stato-Alternator Box	SAB	Electrical cabinet containing the interface for the control of the stato-alternator.
Subtransient Reactance	X''	The subtransient reactance, X'', is the generator internal impedance element that is effective in the first cycles (time constant T'') of a transient load event. It allows to calculate the magnitude of the initial fault current from the generator as well as the voltage drop.
Switch		(a.k.a. switching device) A device designed to make, carry and break the current in one or more electric circuits, in normal conditions.
Switchgear		The term switchgear refers to the combination of power switching devices used to operate and protect the electrical equipment.
Symmetrical Components	d,i,0	The symmetrical components are a set of components (positive, negative, homopolar sequences or 1, 2, 0) defined by a linear transformation from the 3-phase components. Applied to an unbalanced 3-phase network, it gives three simpler sequence networks of the same frequency.

Name	Abbr.	Definition
Synchronisation		Adjustment of an AC power source to match another AC source in frequency and phase angle.
Synchronous Machine		A synchronous machine is an AC rotating machine whose speed under steady state condition is proportional to the frequency of the current in its armature (see also Alternator).
SYNCHROSTA® JS		A function that prevents engine start-up during short Mains faults. The length of the accepted faults depends on the kinetic energy available and on the current load.
Synoptic Panel	SYP	A panel gathering information from the control panels and displaying a general view of the whole system.
Table Cooler		Refers to the remote parts (radiators, fans, etc...) in the cooling system of an engine, when these are horizontally installed, usually on the building or enclosure roof.
Tie Breaker		A switchable connection between systems in order to couple their outputs when needed.
TN System	TN	Earthing system in which one active point in the generator or transformer is connected to earth, usually the star point in a three-phase system. The enclosure of any electrical device is connected to earth thanks to a PE conductor, connected to this point. Three subsystems can be identified : TN-S (PE and N are separate conductors that are connected together only near the power source), TN-C (A combined PEN conductor fulfils the functions of both a PE and an N conductors), TN-C-S (upstream part of the system uses a combined PEN conductor, which is at some point split up into separate PE and N lines).
Total Harmonic Distortion	THD	Ratio of the RMS value of the harmonic components as a percentage to the RMS value of the fundamental component of the periodic function.
Total NO-BREAK Load		The total critical load of each NO-BREAK KS® unit that is secured when it is in Conditioning mode. When in Independent mode, it represents the critical load and the non-critical load, if any.
Touch Screen HMI		A touch screen HMI is an HMI equipped with an electronic visual display that can detect the presence and location of a touch within the display area.
Transformer		A transformer is a device that transfers electrical energy from one circuit to another through inductively coupled conductors—the transformer's coils. By appropriate selection of the ratio of turns, a transformer allows an alternating (AC) voltage to be "stepped up", or "stepped down".
Transient Period		Considering that a power system operating under a steady load condition is perturbed, adjustment to the new operating condition is called the transient period.
Transient Reactance	X'	The transient reactance, X', is the generator internal impedance element that becomes effective a few cycles after a transient load event (time constant T'). It allows to calculate the evolution of the fault current from the generator as well as the voltage drop (after the very first moments).
TT System	TT	Earthing system in which one active point in the generator or transformer is connected to earth, usually the star point in a three-phase system. However, the enclosure of any electrical device is connected to the local earth through a dedicated connection, independent of any earth connection at the generator or transformer.
Uninterruptible Power Supply	UPS	Power system for maintaining continuity of load power in the event of failure of the Mains power.
Upstream		Refers to the portion of the installation located before QD1 and QD3 circuit breakers (including the Mains).
Upstream Busbar		The busbar, in a NO-BREAK KS® unit, that is connected to the Mains through the QDA circuit breaker.
Voltage Droop		Intentional loss in output voltage of a device as the delivered power increases. Can be used to achieve non-isochronous load sharing between devices in parallel.
Voltage Transformer	VT	An instrument transformer used for measuring (high) voltages.
WatchDog - Analog (board)	WDAN	DCM board containing the hardware watchdog and an analog input.
Zero Sequence Reactance	Xo	The Zero Sequence reactance, Xo, is the generator internal impedance element to the Zero Sequence currents. It is used to determine line-to-neutral short circuit currents.