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PADS Approved UPS – PA05/05449 (generic information for Ref)

5KVA to 250KVA UPS System

PADS Reference	UPS Part Number
0054/213203	UP7003/372/5M (5KVA)
0054/213204	UP7003/372/7.5M (7.5KVA)
0054/213205	UP7003/372/10M (10KVA)
0054/213206	UP7003/372/15M (15KVA)
0054/213207	UP7003/372/20M (20KVA)
0054/213208	UP7003/372/25M (25KVA)
0054/213209	UP7003/372/30M (30KVA)
0054/213210	UP7003/372/40M (40KVA)
0054/213211	UP7003/372/50M (50KVA)
0054/213212	UP7003/372/60M (60KVA)
0054/213213	UP7003/372/80M (80KVA)
0054/213214	UP7003/372/100M (100KVA)
0054/213215	UP7003/372/120M (120KVA
0054/213216	UP7003/372/160M (160KVA)
0054/213217	UP7003/372/200M (200KVA)
0054/213270	UP7003/372/250 (250KVA)

*May be installed for signaling supplies Nationally.

The Autonomy can be sized to suit application, using the below 10 year design life batteries.

PADS Reference	Part Number
0054/213218	SWL750FR (23Ah)
0054/213219	SWL1100FR (40Ah)
0054/213220	SWL1800FR (55Ah)
0054/213222	SWL2300FR (78Ah)
0054/213223	SWL2500FR (90Ah)
0054/213224	SWL3300FR (105Ah)

We can provide standard enclosures or we can offer higher IP ingress protection depending on the final installation location and the environment.

Harland Simon UPS LTD offer a full range of UPS systems suitable for most rail applications including modular systems for additional flexibility, more resilience (N+1).

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Customer Name:		**Quotation Reference:**	
Project Reference:		**Rev:**	

EQUIPMENT DATA SHEET

SYSTEM	
Rating:	SelectkVA @ 0.8 power factor
Output Voltage:	400V ac, 3-phase, 4 wire
Operating Mode:	Single
RECTIFIER	
Input Supply:	400V ac, 3 phase, 4 wire, 50 Hz.
Output Voltage:	372V DC (-15%, +20%)
Type:	6 Pulse Thyristor
Voltage Tolerance:	± 1%
Regulating Characteristic:	IU to IN41773
Rectifier Input Device:	Contactor
Rectifier Output Protection:	Fast acting fuse
INVERTER	
Output Voltage:	400V ac, 3-phase, 4 wire
Setting Range:	± 5%
Frequency:	50 Hz ± 0.1%, crystal-controlled or synchronized to the AC mains
Synchronization Range:	± 3%
Voltage Regulation, Static:	± 1%
Voltage Regulation, Dynamic:	± 4% with 100% load step
Regulation Time:	<4ms (instantaneous value regulation)
Overload Characteristic:	150% for 1 min. 125% for 10 min. 110% for 20 min.
Short-circuit Characteristic:	2 to 4 times nominal current for 5 seconds.
Waveform:	Sinusoidal
Output THD:	≤ 3% with linear load
Load Power Factor Range:	0.0 lag to 0.0 lead. Power is reduced if pf deviates from 0.8 lag.
Crest Factor of the Load Current:	≤ 2.3 (at 100% rated load)
Inverter Input Protection:	Fast acting fuse
Inverter Output Transformer:	Isolating
ELECTRONIC BYPASS	
Input Supply:	400V ac, 3 phase, 4 wire, 50 Hz.
Overload Rating:	10 times nominal current for 10mS
Bypass Input Device:	Upstream (by others)
Bypass Static Switch Protection:	Fuse switch
Manual Bypass Switch:	2 x manual bypass padlockable isolators

LOAD TRANSFER CRITERIA

Transfer of the load from the inverter to the bypass will be possible when:

- The by-pass voltage is within ±10% of rated UPS System output voltage
- The by-pass frequency is within ±3% of rated frequency
- The by-pass frequency slew rate is within 1Hz/s, and the inverter output and by-pass voltages are synchronized.

Automatic transfer of the load shall be initiated when:

The inverter output voltage drops below 90% of the nominal output voltage and the transfer will be completed within 2.5mS, or

The inverter output voltage exceeds 110% of the nominal output voltage and the transfer will be completed within 2.5mS, or

The inverter output current limit is exceeded.

Inverter fault

Re-transfer of the load from the static bypass to the inverter will be possible when:

The inverter output is within ±10% of the nominal output voltage for more than 10 secs

The inverter output and bypass voltages are synchronised

The fault which resulted in the initiation of the transfer has been cleared.

Transfer will be inhibited in the event of either supply being out of tolerance on voltage or frequency or mains out of synchronisation condition. The inverter and bypass supply will be monitored and any detected failure will transfer load to the healthy system or inhibit transfer as appropriate.

Automatic retransfer is blocked if transfer occurs more than 4 times in 1 minute.

It will also be possible to complete an interrupted transfer when the inverter output is not synchronised to the by-pass supply.

GENERAL REQUIREMENTS	
Acoustic Noise Level:	<70dB(A) at 1M
Ambient Temperature Range:	0 to + 40°C
Climate Classification:	3K3 to IEC 60721-3-3 (85% RH, non condensing)
Permissible Operating Altitude:	1000m without derating
Cooling Method:	Enclosures are naturally cooled; forced air cooling of stack assemblies may be necessay.
EMC:	In accordance with EN 62040-2
Display:	TFT full graphical coloured touch screen display, including event log.

ENCLOSURE DESIGN	
External interconnection cables are not included in our offer.	
Enclosure Protection:	Minimum IP20 in accordance with IEC/EN 60529
Finish:	Painted, RAL7035 pebble grey, textured finish
Cable Type:	Standard LSZH, internal power and control wiring will be sized according to the required current density. Ribbon cables will be 0.25mm²
Cable Entry:	Bottom
Rating Plate & Identification:	Engraved type and secured with screws
Labelling:	External labels – engraved type, screw-fixed Internal labels – printed type, self-adhesive
Earth Bar:	Yes
CPO:	Yes

INSTRUMENTS AND OPERATING INDICATIONS:

The VGA TFT touch screen display panel is the interface between UPS equipment and its user. Measured values can be called up, set points can be changed and the operating mode can be selected on it.

The flow of energy through the UPS equipment is displayed on a user-friendly multi-coloured mimic diagram with colour-coded symbols. Measured values appear alongside the associated measuring points. The measurement accuracy is 1% and the measurements are updated approximately once every second.

A 3-level password system protects the UPS equipment configuration against unauthorized manipulation.

Measurements

The following measured values are available:

- Rectifier input voltage, per phase
- Rectifier input frequency
- Rectifier output voltage
- Rectifier output current
- Battery terminal voltage
- Battery current
- Inverter input voltage
- Inverter input current
- Inverter output voltage
- Inverter output frequency
- Inverter power section temperature
- Bypass input voltage
- Bypass input frequency
- UPS output voltage
- UPS output current
- UPS output frequency

Alarms and Indications

The following alarms and indications values are available:

Rectifier

- CAN Bus fault, rectifier module not responding
- Rectifier On / Off
- Rectifier mains available / fault / in range / out of range
- DC voltage low / OK / high
- Rectifier current < 80% / Rectifier current > 80%
- Battery discharged
- Battery low
- Battery current > 10% / Battery current < 10%
- Battery voltage < charge level / Battery voltage < rectifier voltage
- Battery not in charge

Inverter

- CAN Bus fault, inverter module not responding
- Inverter On / Off
- Inverter DC voltage high
- Inverter output OK / fail
- Inverter synchronized
- Inverter operation
- Inverter voltage fault
- Inverter power section temperature sensor fault
- Output current high
- Output voltage high / OK / fail
- Current limit
- Overload > 100%
- Overload > 110%
- Overload > 125%
- Over temperature warning
- Over temperature switch off

Bypass

CAN Bus fault, inverter module not responding
Load on inverter / bypass / manual bypass
Mains voltage low / OK / high
Mains phase fault
Mains frequency fault
Bypass switch locked
UPS voltage OK / failure

REMOTE ALARMS

The remote alarms shows actual device condition and are cleared automatically once the cause of the alarm has been cleared. The following remote alarms are included as standard but can be updated as necessary to suit project requirements:

Inverter operation
Mains operation
Battery discharging
Battery pre warning low voltage
Mains failure
UPS failure

EVENT STORE

The event store can hold 512 event messages. When the event store is full the next new event message then overwrites the oldest event message. The event messages are registered with a resolution of 4 ms. A sequential event number, the time of the event, the type of event and the event text are stored for every event message.

CAPACITY TEST

For this test, the rectifier output voltage is reduced to a voltage safely above the deep-discharge threshold. The loads are then supplied from the battery. The battery is available as long as the desired capacity can be drawn from the battery without its voltage falling below the minimum value. The rectifier output voltage is raised again as soon as the test has been completed. The results of the test are then presented on the TFT screen.

Please Note: A capacity test cannot be performed with parallel or redundant UPS equipment when fitted with a single battery.