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Project 07CA43188

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REPORT

ON

UNINTERRUPTIBLE POWER SUPPLY EQUIPMENT

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DESCRIPTION

PRODUCT COVERED:

USL, CNL, Uninterruptible Power Supply, Models 72-1740XX-XX, where XX represents any alpha or numeric characters.

All these models may be followed by additional alphanumeric characters.

These Models consist of M5USXXX from volume 1C, section 1. The models are revised as indicated below.

ENGINEERING CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

The Model covered is a stationary uninterruptible power supply (UPS) designed to provide a continuous source of AC power. These units are designed for continuous on line operation. Electronic control circuitry, and fusing are relied upon to shut down the unit during abnormal conditions.

The product covered was evaluated under the Standards for Uninterruptible Power Supply Equipment, UL 1778, fourth edition and CSA-C22.2, No. 107.3.

The unit is intended to be installed only in a controlled environment.

CNL indicates that this Product has been evaluated to the requirements of CAN/CSA-C22.2, No. 107.3

RATINGS:

When a range of electrical ratings is specified, any rating within the range is covered.

ELECTRICAL

Model Number	kVA	V	Phase	Output P.F.	Frequency (Hz)	Max Input Current (A)	Max Bypass/ Output Current (A)
72-1740XX-XX	40	480	3	0.9	60	59	48
72-1740XX-XX	50	480	3	0.9	60	70	60
72-1740XX-XX	60	480	3	0.9	60	88	72
72-1740XX-XX	80	480	3	0.9	60	111	96
72-1740XX-XX	100	480	3	0.9	60	150	120
72-1740XX-XX	130	480	3	0.9	60	182	156

DC ratings: 432 V dc nominal, 2 wire + ground.

91 Adc for 72-1740XX-XX 40 kVA
 113 Adc for 72-1740XX-XX 50 kVA
 136 Adc for 72-1740XX-XX 60 kVA
 181 Adc for 72-1740XX-XX 80 kVA
 227 Adc for 72-1740XX-XX 100 kVA
 295 Adc for 72-1740XX-XX 130 kVA

Short circuit rating of 65KAIC when bypass fuses installed upstream of UPS in auxiliary cabinet. Fuse ratings 630A, 700V by Bussman type 170M4016. Alternate 450A type 170M4013, or 250A type 170M4009.

TEMPERATURE

Temperature Rating - Units are considered acceptable for use in a maximum ambient of 40 °C.

CONSTRUCTION DETAILS:

See Appendix B, unit is being manufactured in two locations.

ADDITIONAL MARKINGS

These are in addition to those stated in Section General. See Section General for Method of Application.

1. DC Circuit, Remote Battery Supply - Identified "DC," "Direct Current" or by the DC symbol - See Section General, Illustration 1.
2. AC Circuits, Fixed Units - Identified to indicate alternating current, frequency or frequency-range or the AC symbol - See Section General, Illustration 1.
3. User Operated Handles, Knobs or Buttons - Operating positions are identified.

10. Polarity Identification, Remote Battery Supply" - "Positive" and "Negative", or the signs "+" for positive and "-" for negative, or color coding red for a positive lead and black for a negative lead, are provided for remote battery supply connections.

Controlled Environment - Intended for installation in a controlled environment.

CAUTIONARY MARKINGS

The following cautionary markings are provided:

1. Live Heat Sink - "CAUTION - Risk of electric shock heat sinks are live. Disconnect unit before servicing."
2. Multiple Power Sources - "CAUTION - Risk of electric shock - This unit receives power from more than one source - Disconnection of ac source (and the dc source) is required to de-energize this unit before servicing." If marking is located on inside of unit, it is visible with any cover or panel opened or removed.
3. No User Serviceable Parts - "CAUTION - Risk of electric shock, do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel."
4. Fuses - Marking provided for all fuses specifying ampere, voltage and ac or dc rating. In addition, the following is provided: "WARNING - To reduce the risk of fire, replace only with same type and rating of fuse." Located adjacent to fuses. For more than one fuse, a single marking together with a drawing identifying the fuses may be used.
5. Capacitor Charge - "CAUTION - Risk of electric shock, capacitor stores hazardous energy. Do not remove cover until 5 minutes after disconnecting all sources of supply." Located on outside of panel that must be removed for access to capacitor.
6. Battery Supplies Over 60 V - "DANGER - Risk of electric shock. Do not touch uninsulated battery terminals." Located outside of unit or inside adjacent to batteries.
7. Nonisolated Battery Supply - "CAUTION - Risk of electric shock - battery circuit is not isolated from ac input, hazardous voltage may exist between battery terminals and ground. Test before touching." May be located internally adjacent to batteries.
8. Servicing of batteries should be performed or supervised by personnel knowledgeable about batteries and the required precautions.
9. Caution : Do not dispose of batteries in a fire. The batteries may explode. Dispose of used batteries according to the instructions.

Caution : Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

10. High leakage current marking. WARNING HIGH LEAKAGE CURRENT EARTH CONNECTION ESSENTIAL BEFORE CONNECTING SUPPLY HIGH TOUCH CURRENT EARTH CONNECTION ESSENTIAL BEFORE CONNECTING SUPPLY

12. Open bottom marking- unit has large openings in bottom of fire enclosure marking SUITABLE FOR MOUNTING ON CONCRETE OR OTHER NON-COMBUSTIBLE SURFACE ONLY.

MODEL 72-1740XX-XX (40-130 KVA) - Fig 1

General - The general construction shall be as described unless otherwise specified. Represents an alternate construction (parallel) of model at Costa Mesa, CA. Also represents all models of the series and field adaptation kits.

1. SCR - R/C(QQX2. Three provided.), Rated 95A 1600V
IXYS (MCC95-16io1), SEMIKRON (SKKT92B/16).

1. 1. Inductor(SELF-L1 - SELF-L3) - Three provided. Chokes 34002442 & 34002443 at bottom of rear
Choke 34002442 (charger coil 130 kVA):
Manufactured by Tamura

Wound C core 4 cores provided

Coil: 2 copper windings connected in parallel. Each winding is with 4 single wires wound together.

Insulator : R/C(QMFZ2) Nomex type 410 by E.I. Dupont DeNemours min. 0.254 mm thick

Choke 34002443 (Neutral Leg coil 130 kVA):

Manufactured by Tamura

Wound E core type E450-26 by Micrometal 2 circuits in parallel

Coil: One winding on central leg of 3 single wires wound together (diam 2 mm). 64 turns

Insulator : Nomex type 410 0,254 mm

2. Current Transformer(CT4-6) - Three provided. Current Transformers- Falco (type T24004)- 1000/1 15 VA Insulated with R/C(QMFZ2) type ABS-PA765A by Chi Mei Corporation.

Alternate : SACI type TUC40D 1000/1 15VA Insulated with R/C (QMFZ2) type Calibre 703-15 by Dow Chemical Pacific LTD

3. Terminal Block (TB6) - R/C(XCFR2,XCFR8). Rated 250 V AC by Cinch, type 2-141.

Alternate: Magnum/Bussmann TB200-02
MARATHON 202
MARATHON SPECIAL/KUL 671-2

EXTN/INTN BOARD - All // Modules MODELS

General- See Ill 1,2 for trace layout.

1. transformers- TV1-TV2-TV3-TV4-TV5-TV6 (6739861)
Manufactured by Tech Power Electronics
Alternate : Sem Suhner
2. T2, T4, T5 -Pulse Transformer SCHAFFNER type IT143, SIRIO type
TI/110.146
3. R/C(K1, k2) R/C(NRNT2) CSA certified TAKAMISAWA type AS-5W-K-B0),
(nrnt2,nrnt8) MATSUSHITA type TQ2-SA-5v-Z , OMRON type G6H-2F-Tr-5VDC.
4. R/C(FPQU2, CSA certified) Optical isolator Vp1 Fairchild (CNY17-3),
5. Relays R/C(NRNT2,NRNT8) (K1, K3) - Omron G6H-2F, MATSUSHITA (TQ2-SA-5v-
Z), R/C(NRNT2, CSA certified)TAKAMISAWA (AS-5W-K-B05)

CSPEN BOARD -80 kVA, // module MODELS-

General- See Ill 3 and 4 for trace layout.

1. Fuse (FU1-FU2) UL Listed, CSA certified cUL Rated 4A / 600Vac
2. Capacitors (C16-C21-C29-C46-C53-C57) - Rated 0.22 μ F 1600V
ARCOTRONICS (R76TR3230SE30K), ARCOTRONICS (C4ASWBU3220A1EJ),
EVOX RIFA (PHE450RF6220JR06L2)
3. Resistors (R57-R67-R68-R133-R134-R135) 15U, 5W
4. 3 thyristors THY. R/C(QQQX2), Rated 95A 1600V
IXYS (MCC95-16i01), SEMIKRON (SKKT92B/16)
3 thyristors THY., Rated 160A 1600V
INFINEON-EUPEC (TT162N16), SEMIKRON (SKKT162B/16)
5. Transformers- (T1-T6) -TAMURA type R40190E.
- 6.
7. Connectors- R/C(ECBT2) -(XMF02 , XMF09), AMP Tyco (350789-1), Elco AVX
(00 9090 030116 805), Molex (1084-5030)
Connector (XMF10) AMP Tyco (350711-1), Elco AVX (00 9090 060116 805), Molex
(1084-5060)

MODEL 72-1740XX-XX (40-130 KVA) -

General - The general construction shall be as described unless otherwise specified. Represents an alternate construction (dual input) configuration of model at Costa Mesa, CA. Also represents all models of the series and field adaptation kits.

1. PCA FIBEN - For 40-80kVA. See ills 7 and 8 for trace layouts.

Capacitors (C11-C12-C13-C14-C15-C16-C17- C18) - R/C (FOWX2, CSA certified)- Rated 47nF 300V +/-20% class Y2
ARCOTRONICS type R41, VISHAY BC COMPONENTS type 338,
R/C(FOKY2,Foky8)EVOX RIFA type PHE850, EPCOS type B32022.

2. PCA FIBON - See Ills 9 and 10 for trace layout.For 100-130kVA
Capacitors (C8-C9-C10-C11-C12-C13-C14-C15) - R/C (FOWX2, CSA Certified)- Rated 47nF 300V +/-20% class Y2
ARCOTRONICS type R41, VISHAY BC COMPONENTS type 338, R/C(FOKY2,FOKY8)
EVOX RIFA type PHE850, EPCOS type B32022

MODEL 72-1740XX-XX (40-130 KVA) -

General - The general construction shall be as described unless otherwise specified. Represents an alternate construction (sync) of model at Costa Mesa, CA. Also represents all models of the series and field adaptation kits.

1. PCA SYNIN -

See Ill 11,12 for trace layout.

- A. Fuse (FU1) R/C(JFHR2) Fuse Size 6.3 x 32 , Rated 2A 500Vac
FERRAZ type 500VFA, SCHURTER type A12FA.
- B. Opto-isolator (VP1-VP2-VP3) R/C(FPQU2,fpqu8)
70V SO6 : FAIRCHILD (CNY17-3),
- C. Varistor (RV1-~~RV2~~) R/C(XUHT2, XUHT8) Rated 100 J 460 V
Epcos (SIOV-S14K460), Littlefuse (V480LT40APX2855), Panasonic
(ERZV14D751)

2. Circuit Breaker(QD2, QD3) -R/C(QVNU2)CSA certified. Two provided. Rated 10A, 240V. By SquareD type C60N.

MODEL 72-1740XX-XX (40-130 KVA) -

General - The general construction shall be as described unless otherwise specified. Represents an alternate construction (caster) of model at Costa Mesa, CA or France. Also represents all models of the series.

1. Caster - four castors, secured to bottom.