SPECIFICATIONS

		Configs.		Input Voltage Range	Output Voltage	# of Modules	Output Current (Cont.)	Output Current (Peak)	Current Limiting	Redundant Current	Line Regulation	Load Regulation	Output Ripple (Max)	Efficiency (Typical)
		N	NM											
	ICT22012-70	●	●	105–130/ 205–250 VAC	13.8 VDC +/– 300 mV	2	34.0 Amps	70.0 Amps	80.0 Amps	34.0 Amps	2.20%	1.00%	40 mV RMS	79%
	ICT22012-100	●	●	105–130/ 205–250 VAC	13.8 VDC +/– 300 mV	3	105.0 Amps	105.0 Amps	120.0 Amps	34.0 Amps	2.20%	1.00%	40 mV RMS	79%
	ICT22012-140	●	●	105–130/ 205–250 VAC	13.8 VDC +/– 300 mV	4	83.0 Amps (90A @ 240 VAC)	127.0 Amps	160.0 Amps	34.0 Amps	2.20%	1.00%	40 mV RMS	77% (80% @ 240 VAC)
	ICT22024-35	●	●	105–130/ 205–250 VAC	27.6 VDC +/– 600 mV	2	17.0 Amps	36.0 Amps	40.0 Amps	17.0 Amps	2.20%	1.00%	40 mV RMS	83%
	ICT22024-50	●	●	105–130/ 205–250 VAC	27.6 VDC +/– 600 mV	3	34.0 Amps	54.0 Amps	60.0 Amps	17.0 Amps	2.20%	1.00%	40 mV RMS	83%
	ICT22024-70	●	●	105–130/ 205–250 VAC	27.6 VDC +/– 600 mV	4	41.0 Amps (51A @ 240 VAC)	56.0 Amps	80.0 Amps	17.0 Amps	2.20%	1.00%	40 mV RMS	83% (84% @ 240 VAC)
Modules	ICT12-30	●		105–130/ 205–250 VAC	13.8 VDC	––	34.0 Amps	35.0 Amps	36.0 Amps	––	2.20%	1.00%	35 mV RMS	80%
Modules	ICT24-17	●		105–130/ 205–250 VAC	27.6 VDC	––	17.0 Amps	18.0 Amps	19.0 Amps	––	2.20%	1.00%	40 mV RMS	80%

N - Standard **NM** - with LCD Meter

All complete systems are CSA C22.2 No 107.1, UL 1012 Approved & FCC class A Compliant

ICT N+1 REDUNDANT SERIES

The ICT N+1 Redundant Series is a high reliablity, expandable DC power system. The system is designed with active current sharing technology to distribute the load current among the modules, reducing stress on individual components and increasing reliability. Each module is equipped with a high power shottky output diode for true redundancy.

This series comes standard with system monitoring functions through a D–Sub connector, with signals such as module ok, over temperature warning, analog DC output current, fan failure, and AC fail. Battery backup terminals are provided for float charging an external lead acid battery and providing battery revert capability.

These instructions should be read before using the product and it should be saved for future reference. A more detailed manual is available on request from ICT.

SETUP

- For 120V operation, set both voltage selection switches to the 120V position. For 220V operation, set both to the 220V position.
- After the system has been mounted, connect the load to the terminal block at the rear of the unit. If desired, connect a 12V or 24V lead acid battery (matching the N+1 system voltage) to the battery terminals for float charging.
- A disconnect device must be provided for both the DC power output circuit and the battery backup circuit if used. The backup battery (if used) should be provided with an overcurrent device suitable for the available short circuit current of the batteries used.
- Connect the AC power cord to the unit and then to the available outlet. Alternate AC cord types are available.
- Turn the power switch on the front of the unit to the on position.

SAFETY + WARNINGS

- Incorrect wiring, such as reverse battery connection, may result in serious damage to both the N+1 system and equipment connected to the system.
- Do not block any of the vents on the outside of the unit.
- Servicing of the unit should be done by ICT.
- Ensure that the two voltage selector switches are both set correctly and to the same position. If the switches are incorrectly set it will result in module failure.
- The system must be operated from an outlet with a proper grounding connection.
- If replacing modules, disconnect power from any external source including the AC cord and any connected batteries.
- WARNING: High leakage current, use only cord set provided with this equipment.

THEPOWEROFRELIABILITY

ICT N+1 REDUNDANT SERIES

INSTRUCTION MANUAL

INNOVATIVE CIRCUIT TECHNOLOGY LTD.

855-080-004

DESCRIPTION OF OPERATION

The N+1 redundant power system consists of a backplane and up to 4 modules. Each module is a 400+ watt DC power supply. They are highly efficient current mode power supplies with electronic current and voltage foldback protection.

For true N+1 operation, each module includes a redundant OR–ing diode. This diode ensures that no matter what type of failure occurs in one of the power modules, it will not affect the DC bus. Each one of these highly reliable power modules is connected through the system backplane.

Through the backplane, each module is connected to create an active load sharing network. This feature forces all of the modules to share the load evenly.

ADJUSTMENT AND SERVICING

Before opening the cover, be sure to turn off the unit and unplug any power souce and any battery connections. A full manual with more detailed instructions is available on request.

Removal of Module

Remove the three screws located on the top of the system cover using a Phillips screwdriver. Then loosen the four screws on the sides of the case. You can now remove the lid.
Each module is secured with 3 screws. Remove the screws using a Phillips screwdriver.
To remove a module, pull the module away from the backplane until it is disconnected from the quick connector and then lift the end up carefully.

Installation of Module

To install a module, follow the steps to remove a module in reverse. Pay special attention to the five spring clips in the metal heat sink of the module. These should be tight and care should be taken not to dislodge them.

STANDARD FEATURES AND OPTIONS

Battery Backup (Standard)

During normal operation, the power supply will provide power to the output while float charging the battery that is connected at the battery backup output. In the event that the AC power source is interrupted, the battery will supply power to the load through an isolation diode; however, the load voltage will be 0.4V lower than the battery voltage. The power resistors used to float charge the battery limit the charging current to about 5 Amps. During battery operation the fans are thermally controlled to conserve power.

Protection Features (Standard)

The unit features protection in the event of faults, transients and other abnormalities.

Input Fuse Protection protects against over current at the input of each module and on the backplane.

STANDARD FEATURES AND OPTIONS (continued)

Protection Features (Continued)

Current Limit and Foldback protection are present on each module to prevent the load from drawing current above the maximum allowable value. If an excessive load is drawn the output voltage will start to fold back, and in the case of a hard short the current will be reduced as well.

Surge protection is provided on the backplane and each module to protect against input voltage transients.

LED Status Display (Standard)

A green LED is provided in the top left for indication of the presence of AC voltage.

A green LED status indicator is provided in the top right to indicate that there is a DC voltage present at the output terminals of the power supply.

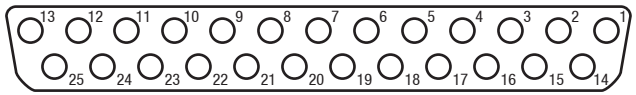
Two LED indicators are provided for each of the four internal modules. A green LED will be lit to indicate that there is a voltage present at the output of the module. A yellow LED will be lit if the module voltage is not present, either due to a fault or absence of the module.

LCD Display (M Option)

An optional LCD display is available for the system. This display shows the output voltage, current, and module status. A plug symbol indicates that AC power is available, while a battery symbol indicates that the unit is running on the backup batteries. The display is backlit for better contrast in a wide range of ambient light conditions.

STATUS

The N+1 is equipped with a 25 pin D–Sub female connector (behind "STATUS CONNECTOR" panel on the rear of the unit) with the following pinout:



PIN	FUNCTION
1	+15V supply
2	AC Power Good Signal (5 VDC = good)
3	Not Connected
4	Fan Fail (5 VDC = ok, 0 VDC = fail)
5	Not Connected
6	System current (0 VDC to 5 VDC = 0A to maximum system current)
7	Module 1 check (5 VDC = good)
8	Module 2 check (5 VDC = good)
9	Module 3 check (5 VDC = good)
10	Module 4 check (5 VDC = good)
11	Not Connected
12	Over–temperature sense (5 VDC = fail)
13	System output voltage sense
14–25	Signal Ground

LIMITED WARRANTY

ICT Ltd. warrants to the original consumer purchaser that this product shall be in good working order, free from defects in materials and workmanship, for a period of one (1) year from the date of purchase. Should failure occur during the above stated time period, then ICT will, at its option, repair or replace this product at no additional charge except as set forth below. All parts, whether for repair or replacement, will be furnished on an exchange basis. All exchange pieces become the property of ICT. This limited warranty shall not apply if the ICT product has been damaged by unreasonable use, accident, negligence, disaster, service, or modification by anyone other than the ICT factory.

Limited warranty service is obtained by delivering the product during the above stated one (1) year warranty period to an authorized ICT dealer or ICT factory and providing proof of purchase date. If this product is delivered by mail, you will insure the product or assume risk of loss or damage in transit, and prepay shipping charges to the factory.

Every reasonable effort has been made to ensure that ICT product manuals and promotional materials accurately describe ICT product specifications and capabilities at the time of publication. However, because of ongoing improvements and updating of ICT products, ICT cannot guarantee the accuracy of printed materials after the date of publication and disclaims liability for changes, errors or omissions.

If this ICT product is not in good working order, as outlined in the above warranty, your sole remedy shall be repair or replacement as provided above. In no event will ICT be liable for any damages resulting from the use of or the inability to use the ICT product, even if an ICT employee or an authorized ICT dealer has been advised of the possibility of such damages, or for any claim by any other party.

ICT reserves the right to make changes without further notice to any products or documentation for improvement of reliability, function, or design.

ICT Ltd. does not recommend use of its products in life support applications wherein a failure or malfunction of the product may directly or indirectly threaten life or cause injury. The user of ICT products, which are to be used in life support applications as described above, assumes all risks of such use and indemnifies ICT against all damages.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following 2 conditions:
1. This device may not cause harmful interference, and
2. This device must accept any interference received, including any interference that may cause undesired operation.

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