

Yukon™ Power System



The Yukon™ Power System provides a global architecture that addresses the expected power requirements of the emerging Global Switching and Access Markets as well as the Outdoor Wireless Market.

Features

- 48V Outdoor Power System
- Up to 5600W in a 19 inch shelf, and up to 7000W in a 23 inch shelf.
- Up to three shelves may be paralleled.
- Worldwide ac operability from 85Vac to 275Vac
- Temperature hardened to operate from -40 °C to +75 °C
- Multi-featured controller with remote access option
- Natural convection cooled
- >90% efficient, constant power rectifiers
- Multi-frequency and multi-voltage ringing generators
- Standard flush mount, mid-mount, 19in (483mm) and 23in (584mm) shelves. Optional ETSI mount brackets
- Front access design for maintenance and installation

Further Applications Include:

- xDSL Application
- Digital Loop Carriers (DLC)
- Wireless Cell Sites
- Telecom Access Market
- Optical/Metallic Remote Optical Network Units (ONU)
- Remote Access Interface Units (RAIU)
- Switching Market
- Future Migration into UMTS (3G) wireless

System Overview

The *Yukon™* Power System is intended for operation as a battery reserve system. Up to four battery strings may be used with the system. Battery management features such as slope thermal compensation, low-voltage disconnect, battery high-temperature alarm and battery shorted-cell detection is available.

Configuration

The *Yukon™* Power System comes in 19 in(483mm), and 23 in(584mm) standard widths, is 11.1 in.(280mm) deep and 3U or 5.25 in.(133 mm) tall. The shelf is designed to be flush mount, mid-mount, and ETSI brackets are available. The system may be configured either as a rectifier-only or rectifier-ringing plant with an optional 50VA ringing module.

Aux Box

The output distribution module, known as the Auxiliary Box (Aux Box), may be provided with either a fused distribution with up to 14 GMT style fuses or a circuit breaker distribution with up to four circuit breakers. The front-access Aux Boxes are the ES713A with up to 14 GMT fuses and FastOn tabs, the ES713B with up to 12 GMT fuses and molex connectors, and the ES713A_D with four bullet style circuit breakers and eight GMT fuses. All Aux Boxes house the system controller, the LVD card, and the ring generator. Another option which will be available in 2003 is the Controller Only Aux Box (ES710A) which is 1.5" wide and houses only a controller for bulk output. External distribution may be used with the *Yukon™* Power System and monitoring by the system controller is possible with the optional

Remote Distribution Module (ES772A). This module allows the system controller to monitor external circuit breakers, fuses, LVD contactor, and shunts. Available rear-access aux boxes are the ES712A with eight GMT style fuses and the ES712B with three DIN style circuit breakers.

Controller and LVD

The *Yukon™* Power System may be ordered with an LVD card with two 80 Amp contactors (ES712-LVD-A), one contactor (ES712-LVD-B), or no contactor (ES712-LVD-C) to protect batteries against deep discharge. The ES712-LVD-D is used for load shedding. The *Yukon™* Power System may be connected to as many as four battery strings and each contactor may be connected to a maximum of two battery strings. The system controller allows users to set the disconnect threshold. Front panel switches on the LVD card allows the user to manually disconnect battery strings from the system for maintenance purposes. The LVD card also protects against connecting batteries in reverse polarity and allows the system to be restarted when depleted batteries are replaced with fresh batteries in order to preserve service.

The system controller (ES740A) is designed to allow the user maximum flexibility in system configuration. The controller allows the user to set the plant float voltage, plant boost voltage, and various alarm thresholds. It provides both low and high temperature battery slope thermal compensation,

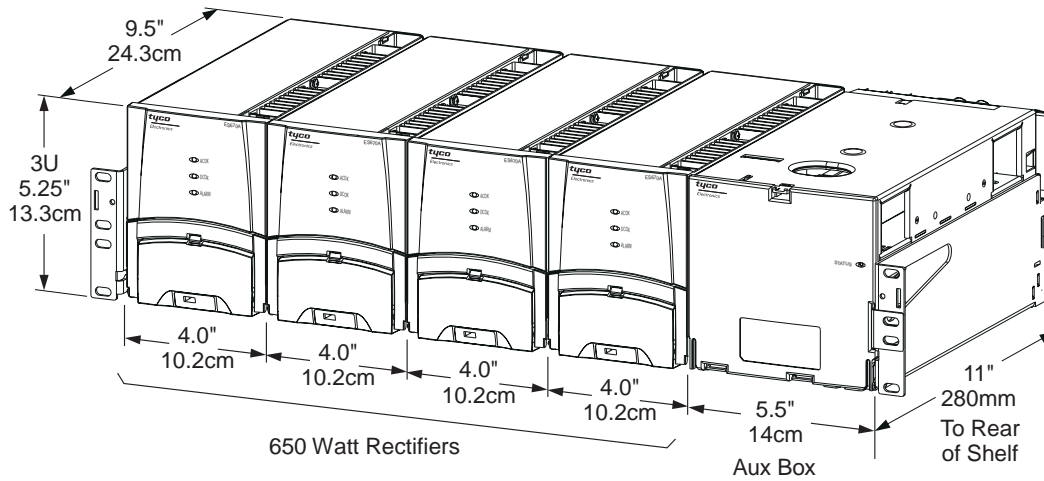
battery shorted-cell detection with the Remote Voltage Monitor, battery high-temperature alarm and user-assisted battery capacity testing. It also provides additional value-added features such as user configurable alarm relays with selective severity assignment (i.e., an alarm condition may be assigned either PMJ or PMN severity status), loss of redundancy and imminent shutdown alarms, inputs for auxiliary alarms, and user definable severity (i.e., PMN or PMJ) for open distribution fuses or breakers. Future options include i2c, TCP/IP, SNMP and RS232 communication.

Ring Generator

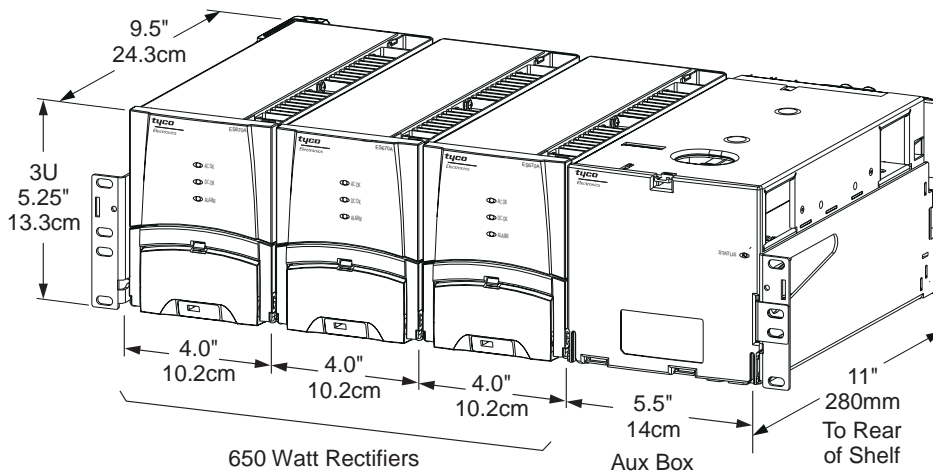
The 50VA redundant ring generator (ES720B) is configurable via the system controller for worldwide use. Four nominal output voltages can be selected: 70V, 80V, 90V, and 100Vrms. Four nominal output frequencies may be selected: 17Hz, 20Hz, 25Hz, and 50 Hz. The ringer card utilizes two on-board ringer modules to provide redundancy, should a module fail. On board intelligence can also discriminate between an internal or external failure to the card and provide appropriate alarms to the system controller.



Outline Drawings



23 Inch (584mm) Shelf



19 Inch (483mm) Shelf

Note: The ES712 or ES713 Aux Boxes can be replaced with an additional rectifier and the 1.5 inch (3.8cm) ES710A Controller Only Aux Box.

Specifications

Input

Parameter	Min	Typical	Max	Unit	Comments
Voltage	85	120/240	275	Vac	
Frequency	47	50/60	63	Hz	
ac Drain (Rectifier)	2.7	5.9 (120Vac) 2.9 (240Vac)	8.3	A	ac input to individual rectifiers
Power Factor		~1			
Efficiency		>88.5 >90		% %	At 120 V and full load At 240 V and full load
Harmonic Distortion		<5			At greater than 85% of full load

Specifications (continued)

Output

Parameter	Min	Typical	Max	Unit
Voltage	Note 1	54.5	56.5	Vdc
Current	0	11.9	14.5 (16.5) Note 2	A
Output Voltage Regulation	±0.5			%
Load Share		5		%
C-message Weighted Noise			<32	dBrnC
Wideband Output Noise			<10	mVrms
Peak-to-peak Noise			<32	mV pk-pk
Psophometric Noise			<2	mV pk

Note 1: During initial power up, the Yukon™ Power System rectifier can supply approximately 675W or 16.5A at 36V for approximately 10 seconds as its output voltage ramps up. This is to allow dc/dc converter loads with high input capacitance to start-up without overloading the power system.

Note 2: Under float conditions, the plant may be set to 51V as minimum. During the Plant Battery Test, the plant is lowered to 44V. Finally, during Battery on Discharge conditions, the plant may be set to disconnect at a minimum voltage of 39V.

Physical

	Depth	Width	Height	Weight
ES760A, ES761A Rectifier	241.3mm (9.5in)	101.6mm (4.0in)	3U (133.4mm) (5.25in)	7lbs (2.3kg)
ES712, ES713, ES714 Aux. Boxes	241.3mm (9.5in)	139.7mm (5.5in)	3U (133.4mm) (5.25in)	6.5lbs (2.9kg)
ES710A Controller Only Aux. Box	241.3mm (9.5in)	38.1mm (1.5in)	3U (133.4mm) (5.25in)	
ES701A, ES701B 23in (584.2mm) Shelf	280mm (11.0in)	546.1mm (21.5in)	3U (133.4mm) (5.25in)	8lbs (3.6kg)
ES700A, ES700B 19in (482.6mm) Shelf	280mm (11.0in)	444.5mm (17.5in)	3U (133.4mm) (5.25in)	7.5lbs (3.4kg)

Environmental

Operating Temperature	-40/-40 50/122	50/122°C/°F 75/167°C/°F	natural convection w/100 LFM Airflow/0.5mps
Operating/Storage Relative Humidity	10 to 90%		
Storage Temperature	-40 °C to +85 °C		
Audible Noise	<45 dBA		

Safety/Standards Compliance

Safety	UL and CUL (or CSA) VDE CB report to support other international certifications
Electromagnetic Compliance:	
Emission	CISPR "B" EMI requirements with 6dB margin IEC/EN61000-3-2 Harmonics IEC/EN61000-3-3 Flicker
Immunity	IEC/EN61000-4-2 ESD level 3 and 4 IEC/EN61000-4-3 Radiated Immunity, 10 V/m IEC/EN61000-4-4 Electrical Fast Transients/Burst, level 4 IEC/EN61000-4-5 Lightning Surge, level 3 and 4 IEC/EN61000-4-6 Conducted Immunity IEC/EN61000-4-11 Voltage Dips, Interruptions and Variations
CE Marking	CE Mark for EMC and LVD
Earthquake	Compliant to Telcordia GR-63-CORE Zone 4, All floors
NEBS	Certification 3rd party

Ordering Information

Description	Model/Notes	Comcode
19 inch Flush Mount Shelf	ES700A	108936535
19-inch to 23-inch Flush Front Shelf Adapter Kit		848683009
19 inch Mid Mount Shelf	ES700B	108969825
19 inch to 23 inch Adapter Kit with two battery breakers		108975228
19 inch to ETSI Adapter Kit with two battery breakers		108975236
23 inch Flush Mount Shelf	ES701A	108959776
ETSI Mounting Bracket Kit Mounts ES700A shelf in ETSI racks		848657425
Mid-mounting Bracket Kit Mid-mounts flush mount shelves		848652426
19-inch to 23-inch Mounting Kit mounts ES700A shelf in 23-inch racks		848652848
23 inch Mid Mount Shelf	ES701B	108969833
23 inch ac front-access shelf	ES701C	108988861
GMT Fuse Distribution Module/Aux Box/Rear Access	ES712A (Note 1)	108902057
GMT Fuse Distribution Module/Aux Box/Front Access/Fast-on Tabs	ES713A (Note 2)	108968066
GMT Fuse Distribution Module/Aux Box/Front Access/Fast-on Tabs/Display	ES713A_D	108983065
GMT Fuse Distribution Module/Aux Box/Front Access/Molex Connectors	ES713B (Note 3)	108974890
GMT Fuse Distribution Module/Aux Box/Front Access/Molex Connectors/Display	ES713B_D	108983073
0.25A GMT Style Fuse		405006222
0.5A GMT Style Fuse		406976894
1.33A GMT Style Fuse		405673146
2A GMT Style Fuse		405181983
3A GMT Style Fuse		406976985
5A GMT Style Fuse		406159061
7.5A GMT Style Fuse		405725433
10A GMT Style Fuse		406159236
12A GMT Style Fuse		407845197
15A GMT Style Fuse		406473959
DIN Circuit Breaker Distribution Module/Aux Box, Rear Access	ES712B (Note 4)	108960501
6A DIN Style Circuit Breaker		408150175
10A DIN Style Circuit Breaker		408513893
16A DIN Style Circuit Breaker		408199016
20A DIN Style Circuit Breaker		408150217
32A DIN Style Circuit Breaker		408359180
40A DIN Style Circuit Breaker		408150258
63A DIN Style Circuit Breaker		408150274
4 Bullet Style Breakers and 4 GMT Style Fuses/Display	ES714A_D	108982802
Controller Only Aux Box	ES710A	108969841
Controller Only Aux Box/Display	ES710A_D	108983081
Low Voltage Disconnect Board (used in Aux Box)		
Board with two 80Amp contactors	ES712_LVD_A	108904186
Board with one 80Amp contactors	ES712_LVD_B	108962952
Board with no contactors	ES712_LVD_C	108976028
Board with load shedding and two 80A contactors (1 load, 1 battery)	ES712_LVD_D	108986662
650 W Constant Power Rectifier	ES760A (Note 5)	108895301
1400W Constant Power Rectifier	ES761A (Note 6)	108985144
Empty Rectifier - Slot Filler (may be used for aesthetics purposes)		108968462

Note 1: Allows the use of up to 8 GMT style fuses, 3 at maximum 15A and 5 at 12 A.

Note 2: Allows the use of up to 14 GMT style fuses.

Note 3: Allows the use of up to 12 GMT style fuses.

Note 4: Allows the use of up to 3 DIN style breakers, 2 at maximum 63A and 1 at 30A; total power drained from Aux Box limited to 4kW.

Note 5: Requires 100LFM airflow above 50°C.

Note 6: Requires 250LFM airflow at all temperatures.

Ordering Information (continued)

Description	Model	Comcode
AC Cable Unterminated for North America (useable worldwide, order one per rectifier)		848545174
AC Cable Terminated for North America (for North America, order one per rectifier)		848545166
AC Cable Unterminated and Harmonized (for Europe, order one per rectifier)		848545208
AC Cable for dual rectifiers		848671681
AC Cable for triple rectifiers		848671699
System Controller	ES740A_D	108983099
Controller Programming Cable Used to program controller via PC		848658100
50VA Redundant Ringer Module	ES720B	108965484
Ringer Load Cables Maximum of two cables per ringer card		847922101
Optional Ringer Filter	ES720A_OPF	108983016
Voltage/Thermal Probe	ES773A	108964305
Thermal Monitor Cable Aux Box to ES773A for thermal comp		848652939
10' VT-Probe Interconnect Cable VT-Probe Interconnect cables		848657383
5' VT-Probe Interconnect Cable VT-Probe Interconnect cables		848657391
1.5' Interconnect RJ11		848680963
Sealed VT-Probe Assembly for one battery string	ES773B	848680971
Sealed VT-Probe Assembly for dual battery strings		848680989
Remote Battery Voltage Monitor Module	ES771A	108958422
Voltage Monitor Wire (used to sense voltage from ES773A)		848652954
10' Interconnect Cable Connects ES771A or ES773A to Aux Box		848652947
Office alarm cable kit for ES712 (used to get office alarms from Aux Box)		848642559
Office alarm cable kit for ES713 (used to get office alarms from Aux Box)		848667689
Intershelf K2 for two shelves		108976002
Remote LVD Distribution Control	ES772A	108963273
Output Rectifier Load Cables for ES712A and ES712B	12A	848652442
	15A	848658233

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