

**ADDENDUM NO. 2
MITCHELL BUILDING GENERATOR REPLACEMENT
DHSS HERMAN HOLLOWAY CAMPUS
1901 N. DUPONT HIGHWAY, NEW CASTLE DE 19720
OMB/DFM PROJECT: MC3501000047
DATE OF ISSUE: MAY 11, 2017**

- 1.0 This addendum, Addendum No. 2, shall be made part of the Project Manual and Drawings dated April 24, 2017 for the DHSS Herman Holloway Mitchell Building Generator Replacement. Any provision in any of the Contract Documents which may be in conflict or be inconsistent with the contents of this Addendum shall be void to the extent of such conflicts or inconsistency.
- 2.0 Changes to Specifications
 - 2.1 Appendix "A":
 - A. This section is missing from the project manual. Attached is the 43 page Appendix
- 3.0 Changes to Drawings:
 - 3.1 There are no changes to Drawings
- 4.0 Questions/Clarifications
 - 4.1 There are no Questions/Clarifications.

END OF ADDENDUM #2

EF/ef
16-1228 Mitchell Addendum #2

CC: All Registered Plan Holders



Emily P. Bissell Hospital
Emergency Generator
DHSS/OMB/DFM Contract No.: MC3514000005
FE&ES Comm. No.: 12-1075A

SHOP DRAWING REVIEW	
ENGINEER'S REVIEW	
<input type="checkbox"/> APPROVED	<input type="checkbox"/> REVISE & RESUBMIT
<input checked="" type="checkbox"/> APPROVED AS NOTED	<input type="checkbox"/> REJECTED - RESUBMIT
Fabrication / installation may be undertaken. Approval does not authorize changes to the Contract Sum or Contract Time.	Fabrication and/or installation MAY NOT be undertaken. In resubmitting, limit corrections to items marked.
Engineer's review is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the Contractor from compliance with the project plans and specifications, nor departures, therefrom. The Contractor remains responsible for details and accuracy, for confirming and correlating all quantities and dimensions, for selecting fabrication processes, for techniques of assembly and for performing their work in a safe manner.	
 801 W. Newport Pike, Wilmington, DE 19804	
FE/ES Submittal No.: <u>1075a-01a</u>	Fayda EES Comm. No.: <u>12-1075a</u>
Date: <u>01-22-2014</u>	By: MJG

Excellent resubmission ; note just a few comments to the various pages.
Release generator for production and respond with letter on Company
Letterhead that items noted will be addressed.





REVISED
SUBMITTAL
FOR

A

KOHLER MODEL 500REOZJ GENERATOR

&

(3) CUTLER-HAMMER AUTOMATIC TRANSFER SWITCHES

SUPPLIED BY

FIDELITY ENGINEERING CORPORATION

TO

WESCOTT ELECTRIC

FOR

EMILY BISSELL HOSPITAL

59-5938r

KOHLER POWER SYSTEM

Model: 500REOZJ **kW:** 500 **Voltage:** 120/208 **Phase:** 3 **Wire:** 4 **Hertz:** 60
Fuel: Diesel **Cooling:** Radiator **Configuration:** Outdoor

- UL 2200 Listed
- Dec 550 Control Panel containing microprocessor logic and control with digital display of 20 various inputs/outputs, shutdowns for high coolant temperature, high oil temperature, low coolant level, low oil pressure, over crank, warning functions for 20 various conditions, common fault
- Custom **SOUND ATTENUATED** outdoor weather housing equipped with vertical air discharge hood, lockable access doors with stainless steel hinges, internally mounted exhaust silencer, designed and constructed to reduce the noise level to approximately 75 dB (A) when measured at 7 meters. Enclosure includes the following electric package, wired in EMT: 100amp 3 Phase 120/208V load center with main breaker, 6 vaportight fluorescent lights, 2 - three-way light switches, 2-duplex receptacles, 1-digital fuel gauge, 2-100W exterior HID lights w/photocell, 1-5kW space heater, 1-small customer connection box for alarms, inlet and discharge dampers wired to load center, 1-Red Indicating light mounted 24" above roof to indicate "Generator Running", 1-Green Indicating Light mounted 24" above roof to indicate "Generator in Automatic", 350kW radiator-mounted load bank installed and wired, 2000amp free-standing switchboard.
- 3000-gallon (72 hour capacity at 100% load) sub-base fuel tank UL 142 Listed double-wall construction equipped with fuel level gauge, low level alarm, and fuel-in-rupture-basin-alarm, 5 gallon fuel fill spill containment, and 2-sets of aluminum stairs with handrail.
- **350kW radiator-mounted resistive load bank**
- Engine block heater
- Electronic isochronous governor
- Remote emergency stop
- Certified Test Report
- Factory 0.8 Power Factor Test
- Restricted air filter indicator
- Form C dry contacts
- Converter, ModBus/Ethernet
- Flexible fuel connections
- Buss bar connection for 2000amp ATS inside enclosure
- 1200amp circuit breaker
- 400amp circuit breaker
- Battery rack and cables
- Remote annunciator
- Spring isolators
- Extended factory testing - 2 hours
- Kohler battery charger, 10amp float type, with alarms
- Steel skid base with end caps and lube oil drain extension
- Lube oil and antifreeze
- Operations and Maintenance manual on CD-ROM
- **2000amp Square D free-standing switchboard**
- **(1) Cutler-Hammer Open Transition Automatic Transfer Switch, Model ATVIMGC32000BSU**
Amps: 2000, Voltage: 208, Pole: 3, Wire: 4, Enclosure: NEMA 1
- **(1) Cutler-Hammer Open Transition Automatic Transfer Switch, Model ATC3C2X30400BSU**
Amps: 400, Voltage: 208, Pole: 3, Wire: 4, Enclosure: NEMA 1
- **(1) Cutler-Hammer Open Transition Automatic Transfer Switch, Model ATC3C2X300080BSU**
Amps: 80, Voltage: 208, Pole: 3, Wire: 4, Enclosure: NEMA 1
- Job site delivery - offloading by others
- Initial start-up and customer demonstration
- Jobsite load test with portable resistive load bank - assuming reasonable access
- Kohler 5 Year Comprehensive warranty & 5 year maintenance agreement

PLEASE REFER TO THIS BILL OF MATERIALS FOR SPECIFIC RATINGS, VOLTAGE AND ACCESSORIES

Note: Fidelity Engineering reserves the right to re-submit on substitute accessory items of equal or greater quality than those submitted on in cases of extended delivery times.

Model: **500REOZJ**

KOHLER POWER SYSTEMS

208–600 V

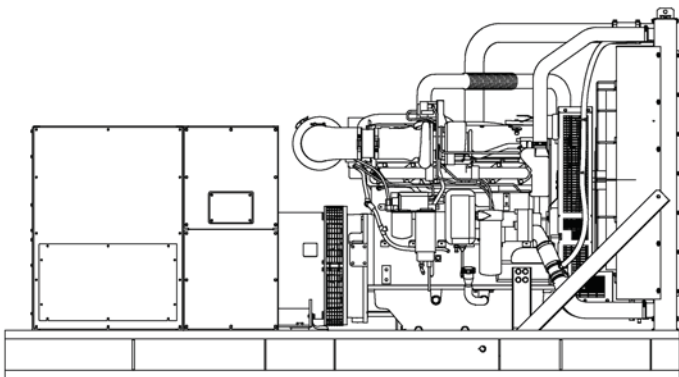
Diesel



**Tier 2 EPA-Certified for
Stationary Emergency
Applications**

Ratings Range

		60 Hz
Standby:	kW	400–500
	kVA	500–625



Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a UL 2200 listing.
- The generator set accepts rated load in one step.
- The 60 Hz emergency generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- A standard one-year limited warranty covers all systems and components. Two-, five-, and ten-year extended warranties are also available.
- Alternator features:
 - The pilot-excited, permanent magnet (PM) alternator provides superior short-circuit capability.
 - The brushless, rotating-field alternator has broadrange reconnectability.
- Other features:
 - Kohler designed controllers for guaranteed system integration and remote communication. See Controllers on page 3.
 - The low coolant level shutdown prevents overheating (standard on radiator models only).
 - Integral vibration isolation eliminates the need for under-unit vibration spring isolators.
 - An electronic, isochronous governor delivers precise frequency regulation.
 - Multiple circuit breaker configurations.

Generator Set Ratings

Alternator	Voltage	Ph	Hz	130°C Rise Standby Rating	
				kW/kVA	Amps
5M4028	120/208	3	60	500/625	1735

Alternator Specifications

Specifications	Alternator
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Permanent-Magnet, Pilot Exciter
Leads: quantity, type	10/12, Reconnectable
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H, Synthetic, Nonhygroscopic
Temperature rise	130°C, 150°C Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Rotor balancing	125%
Voltage regulation, no-load to full-load	Controller Dependent
One-step load acceptance	100% of Rating
Unbalanced load capability	100% of Rated Standby Current
Peak motor starting kVA:	(35% dip for voltages below)

480 V 5M4028 (10 lead) 1800

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
- Brushless alternator with brushless pilot exciter for excellent load response.

Application Data

Engine

Engine Specifications	
Engine manufacturer	John Deere
Engine model	6135HFG75
Engine type	4-Cycle, Turbocharged, Charge Air-Cooled
Cylinder arrangement	6, Inline
Displacement, L (cu. in.)	13.5 (824)
Bore and stroke, mm (in.)	132 x 165 (5.2 x 6.5)
Compression ratio	16.0:1
Piston speed, m/min. (ft./min.)	594 (1949)
Main bearings: quantity, type	7, Replaceable Insert
Rated rpm	1800
Max. power at rated rpm, kWm (BHP)	563 (755)
Crankshaft material	Forged Steel
Valve material	
Intake/Exhaust	Nickel-Chromium Head Chromium-Silicone Stem
Governor: type, make/model	JDEC Electronic L15
Frequency regulation, no-load to full-load	Isochronous
Frequency regulation, steady state	±0.25%
Frequency	Fixed
Air cleaner type, all models	Dry

Exhaust

Exhaust System	
Exhaust manifold type	Dry
Exhaust flow at rated kW, m ³ /min. (cfm)	97.2 (3433)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	524 (975)
Maximum allowable back pressure, kPa (in. Hg)	Min. 4 (1.2) Max. 10 (3.0)
Engine exhaust outlet size, mm (in.)	See ADV drawing

Engine Electrical

Engine Electrical System	
Battery charging alternator:	
Ground (negative/positive)	Negative
Volts (DC)	24
Ampere rating	60
Starter motor rated voltage (DC)	24
Battery, recommended cold cranking amps (CCA):	
Qty., CCA rating each	Two, 950
Battery voltage (DC)	12

Fuel

Fuel System	
Fuel supply line, min. ID, mm (in.)	13 (0.50)
Fuel return line, min. ID, mm (in.)	10 (0.38)
Max. lift, fuel pump: type, m (ft.)	Electronic 2.1 (6.8)
Max. fuel flow, Lph (gph)	214.8 (56.7)
Fuel prime pump	Electronic
Fuel filter	
Secondary	2 Microns @ 98% Efficiency
Primary	10 Microns
Water Separator	Yes
Recommended fuel	#2 Diesel

Lubrication

Lubricating System	
Type	Full Pressure
Oil pan capacity, L (qt.)	40.0 (42.3)
Oil pan capacity with filter, L (qt.)	42.0 (44.4)
Oil filter: quantity, type	1, Cartridge
Oil cooler	Water-Cooled

Application Data

Cooling

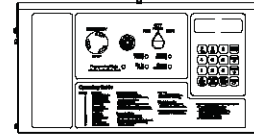
Radiator System	
Ambient temperature, °C (°F)*	50 (122)
Engine jacket water capacity, L (gal.)	18 (4.8)
Radiator system capacity, including engine, L (gal.)	67.2 (17.8)
Engine jacket water flow, Lpm (gpm)	400 (106)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	209 (11896)
Heat rejected to air charge cooler at rated kW, dry exhaust, kW (Btu/min.)	116 (6603)
Water pump type	Centrifugal
Fan diameter, including blades, mm (in.)	965 (38)
Fan, kWm (HP)	18 (24)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H ₂ O)	0.125 (0.5)
* Enclosure with internal silencer reduces ambient temperature capability by 5°C (9°F).	

Operation Requirements

Air Requirements	
Radiator-cooled cooling air, m ³ /min. (scfm)†	651 (23000)
Cooling air required for generator set when equipped with city water cooling or remote radiator, based on 14°C (25°F) rise, m ³ /min. (cfm)†	315 (11131)
Combustion air, m ³ /min. (cfm)	38 (1342)
Heat rejected to ambient air:	
Engine, kW (Btu/min.)	88 (5009)
Alternator, kW (Btu/min.)	40 (2277)
† Air density = 1.20 kg/m ³ (0.075 lbm/ft ³)	

Fuel Consumption	
Diesel, Lph (gph) at % load	Standby Rating
100%	134.5 (35.5)
75%	104.6 (27.6)
50%	75.3 (19.9)
25%	38.8 (10.2)

Controllers



Decision-Maker® 550 Controller

Provides advanced control, system monitoring, and system diagnostic with remote monitoring capabilities.

- Digital display and keypad provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or modem configuration
- Controller supports Modbus® protocol
- Integrated voltage regulator with ±0.25% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-46 for additional controller features and accessories.

6501 Erdman Avenue
Baltimore , MD 21205
410-483-5600
800-231-2258
Fax 410-483-5695
www.pritchardbrown.com



PRITCHARD BROWN, LLC

Quantity: 1

Enclosure Use: Generator 500REOZJ, 500 KW, 208 V

Total Airflow required: 24,342 CFM

ENCLOSURE DETAILS

Construction: Per P.B. Specification no. 2130

Dimensions: 372" O.A.L. x 132" O.A.W. x 108" I.H.

Color: Refer to P-B. color chart

Air Intake: 1-Hood, overhung approximately 4 feet
1-Motor Operated Damper

Air Discharge: 1-Hood, overhung approximately 4 feet
1-Motor Operated Damper

Doors: 2 - Weatherproof Personnel Door w/ Panic Bar & Holdback

Insulation: 3" Thermal Acoustic

Lining: Mill-Finish Perforated Aluminum

Roof: Muffler Hardware for INTERNAL Exhaust:

Muffler Brackets

Muffler Supports

Rain Shield

Rain Collar

Other: 1 - Hinged Access Panel To Load Bank
1 - Removable End Wall
1 - PB Standard Warranty Extended to 5 Years

BASE AND LIFT DETAILS

Base Type: 3000 Gallon Capacity Fuel Tank
3300 Gallon Rupture Basin
Diamond Plate Finished Floor

Lift 4-Pt. Base Lift Plates
Provisions:

Other: 1 - U.L. Listed Fuel Tank Sized for 72 Hour At 100%
Load (Usable Capacity Approx. 2556 Gallons)
1 - Tank Vent
1 - U.L. Listed Emerg. Tank Vent
(Pressure Relief Type, Internal)
1 - Cable Stub-Up Opening
1 - External Fuel Fill W/5 Gallon Spill Containment,
Drain, Fuel Gauge, Tank Full Light & Lockable Cover
2 - Aluminum Access Stairs W/Handrail

ELECTRICAL PACKAGE

PRITCHARD-BROWN FURNISHED AND WIRED:

1 - All Wiring in Surface Mounted EMT
1 - 100A, 3PH, 120/208V Load Center W/Main Breaker
6 - Fluor. Vaportight Light 4ft 2 Tube w/elec. ballast
2 - Light Switches (3-Way)
2 - Receptacle (GFCI, Interior, 125V, 20A, Duplex)
1 - Digital Fuel Gauge, High, Low & Rupture Contacts & 4-20 mA Output
2 - 100W Exterior HID Light W/Photocell
1 - 5KW Heater W/Thermostat & Cut-Out Relay: 208V 3 Ph
1 - Small Customer Connection Box for Alarms, etc.
2 - Inlet & Discharge Dampers Wired to Load Center
1 - Red Indicating Light Per Specification - Mounted 24" Above Roof
(Generator Is Running)
1 - Green Indicating Light Per Specification - Mounted 24" Above Roof
(Generator In Automatic)

CUSTOMER FURNISHED, PRITCHARD BROWN WIRED:

1 - Battery Charger A.C. and D.C.
1 - Battery Charger Alarms to J-Box OR Genset
1 - Generator Strip Heater
1 - Jacket Water Heater
1 - Load Bank Power w/Local Controls (480V)
1 - Free Standing Switchboard, 208V

1 - Free Standing ATS

SYSTEM INTEGRATION DETAILS

PRITCHARD-BROWN FURNISHED EQUIPMENT AND SERVICES:

- 1 - Silencer, 8" Low Profile Super Crit. Cool Series
- 1 - Exhaust Flex
- 1 - Exhaust Elbow
- 1 - Exhaust Raincap
- 1 - Extend Coolant Drain to Exterior
- 1 - Extend Crankcase Breather Tube to Duct Adapter
- 1 - Extend Lube Oil Drain to Exterior
- 1 - Pipe Fuel Tank to Genset
- 1 - Insulation Blanket for Exhaust Flex
- 1 - Insulation Blanket For Exhaust Elbow

FIDELITY ENGINEERING CORPORATION

KOHLER GENERATOR DIVISION · 25 Loveton Circle · P.O. Box 2500 · Sparks, Maryland 21152 · Telephone 1.800.787.6000 · Fax 410.771.9412

Circuit Breakers

This generator is configured the following circuit breakers manufactured by Square D:

(1) 1200 amp – Model: PGP36120

For Load Bank

WIRE RANGE: (4) 3/0 to 500 kcmil

(1) 400 amp – Model: LGP36400CU31X

100% Rated w/ Adjustable Micrologic 3.3 Electronic Trip Unit

For Life Safety ATS

WIRE RANGE: (2) 2/0 to 500 kcmil

Buss Bar Connection Box

Wired To The 2000amp ATS Within Enclosure

FIDELITY ENGINEERING CORPORATION

KOHLER GENERATOR DIVISION · 25 Loveton Circle · P.O. Box 2500 · Sparks, Maryland 21152 · Telephone 1.800.787.6000 · Fax 410.771.9412

Weights & Dimensions

**Kohler Model 500REOZJ outdoor equipped with
a custom sound housing and a 3,000 gallon sub-
base fuel tank**

Generator assembly dimensions:

433”L x 133”W x 150”H

Approximate assembly dry weight: 40,000 lbs

FIDELITY ENGINEERING CORPORATION

KOHLER GENERATOR DIVISION • 25 Loveton Circle • P.O. Box 2500 • Sparks, Maryland 21152 • Telephone 1.800.787.6000 • Fax 410.771.9412

Generator Loading and Transport

- **Do not lift the entire generator assembly by the lifting eye attached to the engine or alternator.**
- **The mounting skid of each generator has four holes strategically placed for attaching a lifting device.**
- **A four point lifting device, properly sized for the total weight of the unit, is necessary to lift the generator set.**
- **The use of spreader bars is necessary to avoid damage to the set during the lifting procedures.**
- **Fork lifts of the proper capacity may be used. Forks should be placed below the steel skid base, with the load properly centered and spread across the forks.**
- **During transport, the generator should be properly secured utilizing the four lifting holes for straps or chain tie downs.**
- **Indoor or separately housed units must be covered during transport to protect them from adverse weather.**

Location and Support

- **The recommended mounting surface is a level concrete pad.**
- **The mounting pad should extend a minimum of 12" beyond the mounting base dimension.**
- **Construction of concrete pad should be per Local and State building code based on total weight of generator and accessories, i.e.: weather housing, sub-base fuel tank with fuel.**
- **Vibration isolators are installed internally by the manufacturer between the engine and the mounting skid.**
- **A minimum of 3' clearance should be maintained on all sides of the generator to allow for servicing.**

Caution - the generator must be placed far enough away from the building, or the exhaust piped in such a manner as to avoid carbon monoxide fumes from entering the fresh air intakes.

Item No.	Qty.	Catalog Number / Details
001-00	1	<p>Designation: SWBD EDS Square D Standard Swbd QED Switchboard</p> <p>-----</p> <p>Square D Standard Swbd Designed and Tested in accordance with: UL 891/NATIONAL ELECTRIC CODE/NEMA PB-2 System Voltage - 208Y/120V 3Ph 4W 60Hz Source Description - Main is Remote System Ampacity - 2000A Bussing - Silver Plated Copper Neutral Bus - 100% Max Available Fault Current (RMS) - 65kA Enclosure - Type 1 Accessibility: Front, Left Side, and Rear Equipment Nameplate White Surface/Black Letters, Adhesive (Field Installed) Exterior Paint Color - ANSI 49 Mimic Nameplate - Power Flow Plastic Ground Lug provided for each device Copper Ground Bus Lineup 1 BTU: 8888</p> <p>Dimensions</p> <p>-----</p> <p>2 - 36" Wide Section(s) 2 - 36" Deep Enclosure(s) Dimensions: 72.00" W X 36" Max D X 91.5" H Approximate Weight: 1727.00</p> <p>Incoming Requirements</p> <p>-----</p> <p>UL Dead Front Entry Point: Right of Lineup, Through the Top Connection Type: Cable</p> <p>Feeders</p> <p>-----</p> <p>Devices Associated with Remote Main: 1 - 150AT 208V 80% Rated 65 kA 3 Pole UL, Group Mounted Thermal Magnetic Circuit Breaker: Type QG Designation: BUILDING G 1 - 200AT 208V 80% Rated 65 kA 2 Pole UL, Group Mounted Thermal Magnetic Circuit Breaker: Type QG Designation: BUILDING F 1 - 175AT 208V 80% Rated 65 kA 3 Pole UL, Group Mounted Thermal Magnetic Circuit Breaker: Type QG Designation: FIRE PUMP 1 - 100AT 208V 80% Rated 65 kA 3 Pole UL, Group Mounted Thermal Magnetic Circuit Breaker: Type FH Designation: PANEL GEN 1 - 1600AT 208V 80% Rated 65 kA 3 Pole UL, Fixed Mounted Basic Electronic Trip Circuit Breaker: Type RG Designation: MAIN BUILDING ATS Common Feeder Features: Nameplate - White Surface / Black Letters, Adhesive (Field Installed)</p> <p>Estimated Ship Days (ARO): 30 Working Days</p>

FIDELITY ENGINEERING CORPORATION

KOHLER GENERATOR DIVISION • 25 Loveton Circle • P.O. Box 2500 • Sparks, Maryland 21152 • Telephone 1.800.787.6000 • Fax 410.771.9412

Exhaust System

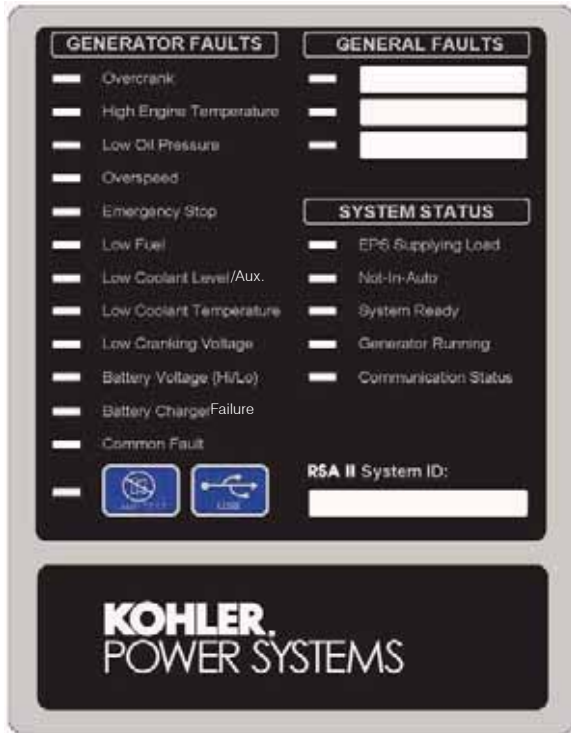
- **Critical grade silencer will be mounted on the inside of the generator enclosure.**
- **All exhaust connections will be completed prior to shipment to the job site.**
- **Exhaust outlets are equipped with a tail pipe and rain cap.**

Electrical Requirements

- **A 208 VAC, 3 phase power source is required at the 100 amp load center that is installed within the generator enclosure. The load center is pre-wired and connected to the following equipment:**
 - **battery charger**
 - **engine block heater**
 - **enclosure heater**
 - **enclosure lighting**
 - **convenience outlets**
 - **motorized dampers**
- **The line feeding the load center must be on the emergency power circuit**
- **Load cables must be ran in a separate conduit, and are connected to the generator at the main line circuit breaker.**
- **DC control wiring and remote annunciator wiring must be ran in a separate conduit from the AC wiring.**

KOHLER POWER SYSTEMS Remote Serial Annunciator II (RSA II)

ISO 9001
KOHLER
 POWER SYSTEMS
 NATIONALLY REGISTERED



RSA II

Remote Serial Annunciator II (RSA II) for Kohler® Controllers

- Monitors the generator set equipped with one of the following controllers:
 - KPC 1000
 - Decision-Maker® 3+
 - Decision-Maker® 3000
 - Decision-Maker® 550
 - Decision-Maker® 6000
- Allows monitoring of the common alarm, remote testing of the automatic transfer switch, and monitoring of the normal/emergency source with one of the following controllers:
 - MPAC™ 1000
 - MPAC™ 1500
- Configuration via a personal computer (PC) software.
- RSA II panel includes writable surfaces (four white boxes in illustration) for user-defined selections.
- Uses Modbus® protocol, an industry standard.
- Controller connections:
 - RS-485 for serial bus network
 - USB device port for PC
 - 12-/24-volt DC power supply
 - 120/208 VAC power supply (available accessory)
- Meets the National Fire Protection Association Standard NFPA 110, Level 1.

Dimensions

- Dimensions—W x H x D, mm (in.). Also fits in a standard 203 mm x 203 mm (8 in. x 8 in.) Hoffman box.

Surface Mounted:

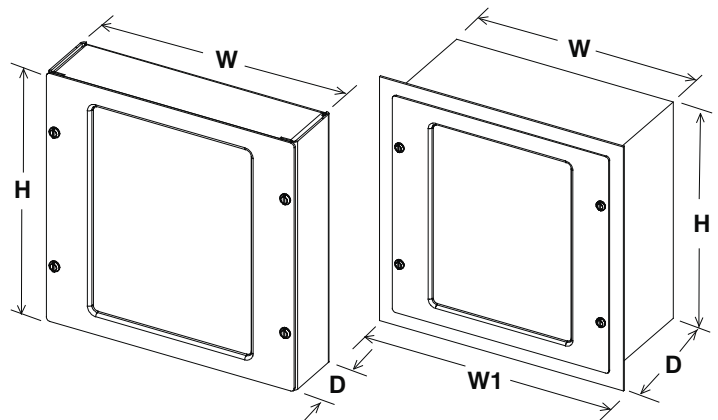
203 x 203 x 56 (8.0 x 8.0 x 2.2)

Flush Mounted:

203 x 203 x 58 (8.0 x 8.0 x 2.3)

Flush mounting plate W1: 229 (9.0)

Modbus® is a registered trademark of Schneider Electric.



APPENDIX A

Surface Mounted

Flush Mounted

Fault and Status Conditions	Fault LEDs	Fault Horn	System Ready LED	Generator Running LED	Communication Status LED
Overcrank Shutdown	Red	On	Red	Off	Green
High Engine Temperature Warning *	Yellow	On	Red	Green	Green
High Engine Temperature Shutdown	Red	On	Red	Off	Green
Low Oil Pressure Warning *	Yellow	On	Red	Green	Green
Low Oil Pressure Shutdown	Red	On	Red	Off	Green
Overspeed Shutdown	Red	On	Red	Off	Green
Emergency Stop *	Red	On	Red	Off	Green
Low Coolant Level/Aux. Shutdown	Red	On	Red	Off	Green
Low Coolant Temperature *	Yellow	On	Red	Off	Green
Low Cranking Voltage	Yellow	On	Red	Off	Green
Low Fuel—Level or Pressure *	Yellow	On	Red	Green or Off	Green
Not-In-Auto	Red	On	Red	Green or Off	Green
Common Fault	Red	On	Green	Green or Off	Green
Battery Charger Fault (1) *	Yellow	On	Red	Green or Off	Green
Battery Charger Fault (2) *	Yellow	On	Green	Green or Off	Green
High Battery Voltage *	Yellow	Off	Green	Green or Off	Green
Low Battery Voltage *	Yellow	Off	Green	Green or Off	Green
User Input #1 (Warning)	Yellow	Off	Green	Green or Off	Green
User Input #1 (Shutdown)	Red	On	Green	Off	Green
User Input #2 (Warning)	Yellow	Off	Green	Green or Off	Green
User Input #2 (Shutdown)	Red	On	Green	Off	Green
User Input #3 (Warning) (1) †	Yellow	Off	Green	Green or Off	Green
User Input #3 (Shutdown) (1) †	Red	On	Green	Off	Green
EPS Supplying Load	Yellow	Off	Green	Green	Green
Communications Status (Fault mode)	—	Off	Green or Red	Green or Off	Red
ATS Fault (RSA II with ATS Controls only)	Red	On	Red or Yellow	Green or Off	Green

Green LEDs appear as steady on when activated.
Yellow LEDs slow flash when activated except steady on with EPS supplying load and high battery voltage.
Red LEDs slow flash when activated except fast flash with loss of communication and not-in-auto.

Specifications

- LED indicating lights for status, warning, and/or shutdown. See the above chart for details.
- Power source with circuit protection: 12- or 24-volt DC
- Power source with 120/208 VAC, 50/60 Hz adapter (option)
- Power draw: 200 mA
- Humidity range: 0% to 95% noncondensing
- Operating temperature range: -20°C to +70°C (-4°F to +158°F)
- Storage temperature range: -40°C to +85°C (-40°F to +185°F)
- Standards:
 - NFPA 110, level 1
 - UL 508 recognized
 - CE directive
 - NFPA 99
 - EN6114-4 fast transient immunity
- RS-485 Modbus® isolated port @ 9.6/19.2/38.4/57.6 kbps (default is 19.2 kbps)
- USB device port
- NEMA 2 enclosure

(1) All generator set controllers except Decision-Maker® 3+ controller.

(2) Decision-Maker® 3+ controller only.

* May require optional kit or user-provided device to enable function and LED indication.

† Digital input #3 is factory-set for high battery voltage on the Decision-Maker® 3+ controller.

Modbus® is a registered trademark of Schneider Electric.

ATS Controls (RSA II with ATS controls only)

- ATS position LED (normal or emergency)
- Power source indicator LED (normal or emergency)
- ATS fault LED
- Key-operated spring-loaded test switch (Re-Transfer/Auto/Test)

NFPA Requirements

- NFPA 110 compliant
- Engine functions:
 - High battery voltage warning *
 - High engine temperature shutdown
 - High engine temperature warning *
 - Low battery voltage warning *
 - Low coolant level/aux. shutdown
 - Low coolant temperature warning *
 - Low cranking voltage
 - Low fuel warning (level or pressure) *
 - Low oil pressure shutdown
 - Low oil pressure warning *
 - Overcrank shutdown
 - Overspeed shutdown
- General functions:
 - Audible alarm silence
 - Battery charger fault *
 - Lamp test
 - Master switch not-in-auto

APPENDIX A

DHSS Holloway Campus
Mitchell Building Generator Replacement

Fault and Status LEDs and Lamp Test Switch

Alarm Horn. Horn sounds giving a minimum 90 dB at 0.1 m (0.3 ft.) audible alarm when a warning or shutdown fault condition exists except on high/low battery voltage or EPS supplying load.

Alarm Silenced. Red LED lights when alarm horn is deactivated by alarm silence switch (lamp test switch).

Alarm Silence Switch. Switch quiets the alarm during servicing. The horn will reactivate upon additional faults.

ATS Fault. Red LED lights when ATS fails to transfer.

Aux. See Low Coolant Level/Aux.

Battery Charger Failure. LED lights if battery charger malfunctions. Requires battery charger with alarm contact.

(High/Low) Battery Voltage. LED flashes if battery or charging voltage drops below preset level. LED lights steady if battery voltage exceeds preset level.

Common Fault. LED lights when a single or multiple common faults occur.

Communication Status. Green LED lights indicating annunciator communications functional. Red LED indicates communication fault.

Emergency Power System (EPS) Supplying Load. LED lights when the generator set is supplying output current (Decision-Maker® 550, 3000, and 6000 controllers) or when transfer switch is in the emergency position (Decision-Maker® 3+ controller).

Emergency Stop. LED lights and engine stops when emergency stop is made. May require a local emergency stop switch on some Decision-Maker® 3+ controllers.

Generator Running. LED lights when generator set is in operation.

(Generator Switch) Not In Auto. LED lights when generator set master switch is in RUN or OFF/RESET position.

High Engine Temperature. Red LED lights if engine has shut down because of high engine coolant temperature. Yellow LED lights if engine coolant temperature approaches shutdown range. Requires warning sender on some models.

Lamp Test Switch. Switch tests all the annunciator indicator LEDs and horn.

Low Coolant Level. LED lights when engine coolant level is below acceptable range on radiator-mounted generator sets only. When used with a Decision-Maker® 3+ controller, the LED indicates low coolant level or an auxiliary fault shutdown. Requires user-supplied low coolant level switch on remote radiator models.

Low Coolant Temperature. LED lights if optional engine block heater malfunctions and/or engine coolant temperature is too low. Requires prealarm sender on some models.

Low Cranking Voltage. LED lights if battery voltage drops below preset level during engine cranking.

Low Fuel (Level or Pressure). LED lights if fuel level in tank approaches empty with diesel models or fuel pressure is low on gas models. Requires customer-supplied switch.

Low Oil Pressure. Red LED lights if generator set shuts down because of insufficient oil pressure. Yellow LED lights if engine oil pressure approaches shutdown range. Requires warning sender on some models.

Overcrank. LED lights and cranking stops if engine does not start in either continuous cranking or cyclic cranking modes.

Overspeed. LED lights if generator set shuts down because of overspeed condition.

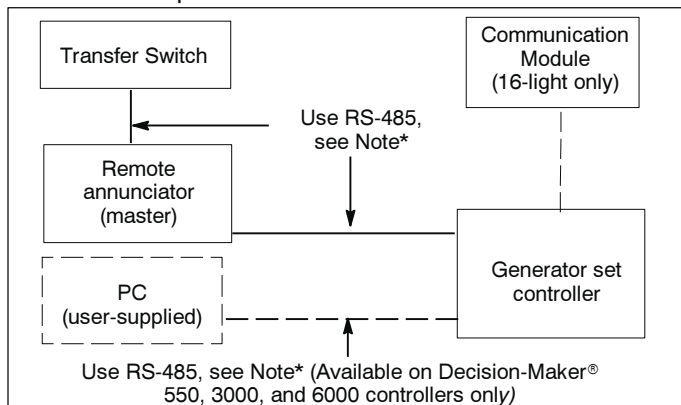
System Ready. Green LED lights when generator set master switch is in AUTO position and the system senses no faults. Red LED indicates system fault.

User-Defined Digital Inputs #1, #2, and #3. Monitors two digital auxiliary inputs (warnings or shutdowns). Individual red LEDs flash when a fault occurs or the status changes. User-defined digital input #1 and #2 are selected via the RSA II master for local or remote (generator set or ATS). The user-defined digital input can be assigned at the controller or via PC using SiteTech™ setup software.

Communications (Shown with RSA II with ATS Controls)

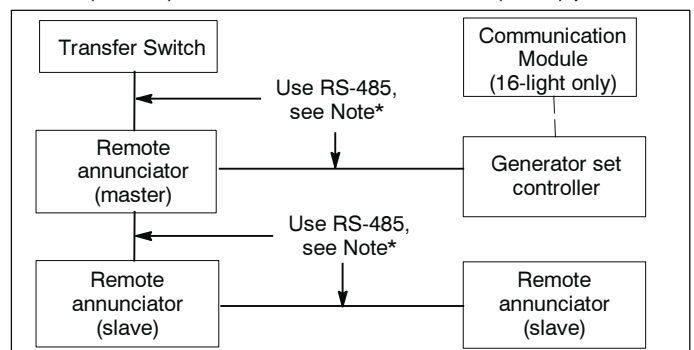
Local Single (Master) Connection

A single RSA II connects directly to the controller's communication port with an RS-485 cable.



Local Multiple (Master/Slave) Connections

A single RSA II master connects directly to the controller's communication port with an RS-485 cable. Additional RSA IIs (slaves) can connect to the single master RSA II. Status of the RSA II (master) is annunciated on the RSA II (slave) panel.



Note*: Use RS-485 for a total of up to 1220 m (4000 ft.) maximum from the first device to the last device.



TRANSFER SWITCH PRODUCT SUBMITTAL

Customer Order No:
355787

General Order No:
KDAA03670

Item No:
1

Job Name:
Emily P. Bissell Hospital

Customer Name:
Fidelity Engineering

Submittal Date:
December 27, 2013

PRODUCT SPECIFICATIONS

Catalog No: ATVIMGF32000BSU

Quantity: 1

General Description:

Automatic Transfer Switch with ATC-600:
208 Volts, 60 HZ, 3 Poles, 2000 Amperes, NEMA 1 Enclosure,
UL-1008 Listed

With Options:

1	2	3	4	5H	5J	5K	5L	6B	7	8C
8D	12C	12D	12G	12H	14E	14F	15E	15F	16B	18AL
23J	26D	26H	26J	26K	26L	32D	35A	36	37A	42
48F	49C	58A	59A							



**Automatic Transfer Switch
Catalog String Explanation**

CATALOG STRING EXPLANATION

AT = Automatic Transfer Switch

V = Vertical mounting of the power panel.

I = ATC-600 Transfer Microprocessor Based Logic

MG = 800 – 3200A Magnum Frame, Drawout

F = Drawout Mount, Molded Case Breaker on Normal Source and on Emergency Source

3 = 3 poles

2000 = 2000A

B = 208V 60Hz

S = NEMA 1 Enclosure. Painted ANSI 61 gray.

U = UL-1008 Listed.

Both Normal Source and Emergency Source shall be LSI Adjustable Trip Circuit Breakers to equal Standard of Design.



Cutler-Hammer

Automatic Transfer Switch Logic Description ATC-600 Logic – Open Transition

The ATC-600 is a programmable, microprocessor-based monitoring device designed for use in Open Transition transfer switch applications. It provides superior precision and versatility in both programming and data access, which is performed using the touch-sensitive function keys in conjunction with an easy-to-read illuminated, alphanumeric LED display window. In addition, the ATC-600 is 100% communications-ready and compatible with other devices. Some of the ATC-600 features include:

- Applicable for use on any 120VAC – 38KV, three phase or single phase system operating at 50 / 60 HZ.
- True RMS three phase voltage sensing on Normal, Emergency and Load. (+/- 2% of nominal voltage)
- Frequency sensing on Normal and Emergency. (40 – 60 Hz, +/- 0.1 Hz digital readout)
- Historical data on most recent transfers (up to 16 events) exportable to Windows based software applications such as spreadsheets and databases. The history storage is unlimited when used with IMPACC / PowerNet software.
- Factory programming will load all customer-specified functions and presets. At customer's request, Cutler-Hammer will add, delete or adjust as needed.
- Programmable setpoints stored in non-volatile memory.
- Exclusive load monitoring and delayed transition features.
- Status indicator lights: Source 1 Available, Source 2 Available, Source 1 Connected, Source 2 Connected, Source 1 Preferred, Source 2 Preferred, Load Energized
- Instrumentation: Voltmeter, Line-to-line voltage reading on sources 1 and 2 and load, Frequency meter, Source available time, Source connected time, Source run time



Cutler-Hammer

Automatic Transfer Switch Power Switching Panel

The power-switching panel consists of the main power contacts, which connect and disconnect the load from the sources of power via the electrically driven, stored energy mechanism integral to the Magnum switching devices. The power-switching panel includes the following features:

- Main contacts are two mechanically interlocked; high withstand Magnum insulated case switches.
- High speed, stored energy, switching mechanisms provide for fast transfer. Energized from power source to which transfer is made.
- Conservatively rated main contacts insure long life at 100% of nameplate rating.
- Meets or exceeds the standard set forth in UL 1008, UL 1087 and UL 489.
- Mechanical and electrical interlocking insures that both power sources cannot be paralleled.
- **Safe manual operation under full load accomplished via mechanical pushbuttons on the face of the Magnum devices.**
- Common load bus and power connections are located at the rear of the power panel and shielded by dead front to insure maximum personnel safety.
- Three normally open, three normally closed auxiliary contacts for both normal and emergency sources supplied as standard.
- Power panel control wiring terminated to insulated, quick-disconnect plugs for interconnection with logic panel. Provides positive, safe disconnection for electrical isolation of electrical operator as well as corresponding logic panel.



Automatic Transfer Switch Features

Feature Description

- | | |
|-----|--|
| 1 | Provides a time delay when transferring from the Normal Power Source to the Emergency Power Source. Adjustable 1 second – 64 minutes. |
| 2 | Delays initiation of the engine start circuit in order to override momentary power outages or voltage fluctuations of the normal power source. Adjustable 0 - 120 seconds. |
| 3 | Delays transfer from Emergency Power Source to the Normal Power Source to permit stabilization of the normal power source before retransfer is made. Adjustable 1 second – 64 minutes. |
| 4 | Permits the generator to continue to run unloaded after retransfer to normal has occurred. Adjustable 1 second – 64 minutes. |
| 5H | Source 2, three phase rotation protection. |
| 5J | Source 2, all phase under voltage / under frequency protection. |
| 5K | Source 2, all phase over voltage / over frequency protection. |
| 5L | Source 2, three phase voltage unbalance / phase loss. |
| 6B | Test push button for testing of transfer switch operation. |
| 7 | Time Delay Engine Failure, adjustable 0 – 6 seconds |
| 8C | A manual pushbutton which will override the time delay transfer of emergency to normal source. |
| 8D | A manual pushbutton which will override the time delay transfer of normal to emergency source. |
| 12C | Pilot light connected to normal source. |
| 12D | Pilot light connected to emergency source. |
| 12G | Pilot light normal source available. |
| 12H | Pilot light emergency source available. |

- 14E Normal source relay auxiliary contacts. Energized when the load is connected to the normal source and normal source voltage is present.
- 14F Emergency source relay auxiliary contacts. Energized whenever the emergency source voltage is present.
- 15E Auxiliary contact, switch position normal, 3NO/3NC.
- 15F Auxiliary contact, switch position emergency, 3NO/3NC.
- 18AL IQ250ML65100 on load side of ATS
- 23J Plant exerciser, selectable load/no load with fail safe. Programmable to allow selection of engine start/run only, exercise with load transfer or a complete bypass of the exercise system. Selector switch marked “ENGINE RUN”, “BYPASS” AND “LOAD TRANSFER”. If emergency source fails during exercise period, immediate retransfer to normal source will occur.
- 26D Go to Source 2
- 26J Source 1, all phase under voltage / under frequency protection.
- 26K Source 1, all phase over voltage / over frequency protection.
- 26L Source 1, three phase voltage unbalance / phase loss.
- 32D In-Phase Monitor / Time Delay Neutral
- 35A Pre-transfer Signal Device – 1 NO/NC contacts open/close on a timed basis to allow the load to be de-energized prior to transfer in either direction.
- 36 Emergency load shed from remote.
- 37A Service entrance rated w/o GFI
- 42 IBC/CBC Seismic qualified.
- 48F Modbus communications
- 49C Multi-tap transformer.
- 58A Shutterless cassette
- 59A Silver plated bus



Automatic Transfer Switch

Normal Incoming Line Lugs

Cable Terminals:

Cables / Phase	Conductor Range	Conductor Type
6	3/0 – 750 mcm	CU/AL

Emergency Incoming Line Lugs

Cable Terminals:

Cables / Phase	Conductor Range	Conductor Type
6	3/0 – 750 mcm	CU/AL

Load Lugs

Cable Terminals:

Cables / Phase	Conductor Range	Conductor Type
6	3/0 – 750 mcm	CU/AL

Neutral Lugs

Cable Terminals:

Cables / Phase	Conductor Range	Conductor Type
24	4/0 – 500 mcm	CU/AL

Standard Withstand, Closing and Interruption Ratings:

Rating with upstream circuit breaker
Or when self protected

SWITCH RATING*	240 VAC	480VAC	600VAC	30 cycle short time rating for selective coordination
2000	100	100	42	85kA

*All Ratings in kA, 3 cycles, any breaker



Automatic Transfer Switch

Logic Set Points

Factory Defaults in Red only on options provided

Programmable Feature Display	Set Point Possibilities	Display Explanation
TDES	0 to 120 Seconds	Time Delay Engine Start Timer 0:03
TDNE	0 to 1800 Seconds	Time Delay Normal to Emergency Timer 0:00
TDEN	0 to 1800 Seconds	Time Delay Emergency to Normal Timer 5:00
TDEC	0 to 1800 Seconds	Time Delay Engine Cool Down Timer 5:00
NOMF	50 or 60 Hz	System Nominal Frequency (hertz) 60
NOMV	120 to 600V	System Nominal Voltage (volts) 208
1UVD	97 to 50% of Nominal	Source 1 Undervoltage Dropout (volts) 80%
2UVD	97 to 50% of Nominal	Source 2 Undervoltage Dropout (volts) 80%
1UVP	(Dropout +2%) to 99%	Source 1 Undervoltage Pickup (volts) 90%
2UVP	(Dropout +2%) to 99%	Source 2 Undervoltage Pickup (volts) 90%
1OVD	105 to 120%	Source 1 Overvoltage Dropout (volts) 115%
2OVD	105 to 120%	Source 2 Overvoltage Dropout (volts) 115%
1OVP	103% to (Dropout -2%)	Source 1 Overvoltage Pickup (volts) 110%
2OVP	103% to (Dropout -2%)	Source 2 Overvoltage Pickup (volts) 110%
1UFD	90 to 97%	Source 1 Underfrequency Dropout (hertz) 94%
2UFD	90 to 97%	Source 2 Underfrequency Dropout (hertz) 94%
1UFP	(Dropout +1 Hz) to 99%	Source 1 Underfrequency Pickup (hertz) 96%
2UFP	(Dropout +1 Hz) to 99%	Source 2 Underfrequency Pickup (hertz) 96%
1OFD	103 to 110%	Source 1 Overfrequency Dropout (hertz) 106%
2OFD	103 to 110%	Source 2 Overfrequency Dropout (hertz) 106%
1OFP	101% to (Dropout -1 Hz)	Source 1 Overfrequency Pickup (hertz) 104%
2OFP	101% to (Dropout -1 Hz)	Source 2 Overfrequency Pickup (hertz) 104%
TDN	0 to 120 Seconds	Time Delay Neutral Timer 0:00
TDNLD	0 = Disabled 1 = Enabled	Time Delay Neutral Load Decay
LDCY	2 to 30% of Nominal Voltage	Load Decay Voltage
PRF SRC	None 1 = Source 1 2 = Source 2	Preferred Source 1
EXER	1 = Enabled 0 = Disabled	Plant Exerciser Enabled or Disabled 1
EXLD	1 = Enabled 0 = Disabled	Load Transfer with Plant Exerciser 1
PEDAY	1 to 7 (1 = Sunday)	Plant Exerciser Day of Week 1
PEH	1am to 11pm	Plant Exerciser Hour 1AM
PEMIN	0 to 59 Minutes	Plant Exerciser Minute 0
MANTR	0 = Automatic 1 = PB Return	Re-transfer Mode
CTDNE	0 = Not Committed 1 = Committed	Commitment to Transfer in TDNE 0

TMODE	0 = No Load Transfer 1 = Load Transfer 2 = Disable Test Pushbutton	Engine Test with/without Load Transfer
TER	0 to 600 Minutes	Engine Test/Plant Exerciser Run Time 0:30
TPRE	1 to 120 Seconds	Pre-transfer Sub-network Time Delay 0:01
GENNO	0 to 2	Number of Generators (Single Generator must be on Source 2) 1
PHASE	1 or 3	Number of System Phases 3
TSEQ	1 to 120 Seconds	Time Delay Load Sequencing
PT	2:1 to 500:1	PT Ratio
CLOSED	1 = Enabled 0 = Disabled	Closed Transition Enabled or Disabled
CTFD	0.0 to 0.3 Hz	Closed Transition Frequency Difference (hertz)
CTVD	1 to 5%	Closed Transition Voltage Difference (volts)
IPHASE	1 = Enabled 0 = Disabled	In-phase Transition Enabled or Disabled 0
IPFD	0.0 to 3.0 Hz	In-phase Transition Frequency Difference (hertz) 1.0
SYNC	1 to 60 Minutes	Closed/In-phase Transition Synchronization Timer 0:05
TDEF	0 to 6 Seconds	Time Delay Engine Failure 6