

XQ2000

On-Pkg. Auto Paralleling

Quick Start Guide

v1.2

SINGLE UNIT



Prior to running:

- Make lead-unit-jumper selection to enable dead bus closure. Located at terminal strip on street side.



Running:

See 'Common Start/Stop Instructions' lower RH corner

Application Notes:

- In single unit mode, the paralleling controller and utility protective relay can be switched off if desired. The unit will operate similar to a standard genset. This switch is located behind the EMCP3 near the terminal strip.

ISLAND MODE



Prior to running:

- Make lead-unit-jumper selection to enable dead bus closure on ONE UNIT ONLY and interconnect signal wiring (load share line, VAR share line-*if applicable*, lead-unit-select wiring) between units. Located at terminal strip on street side.

Running:

See 'Common Start/Stop Instructions' lower RH corner

Application Notes:

- In island mode, GPC (paralleling controller) performs real (kW) and reactive (kVar) load sharing with like units using independent load sharing analog signals. GPC is backwards compatible with legacy units for real power (kW) sharing.
- Reactive (kVar) load sharing should be disabled when paralleling with legacy units. The factory default setting in the GPC is set to 'disabled'.

UTILITY PARALLEL



Prior to running:

- Interconnect wiring to utility breaker aux contact. Generator control system automatically detects utility parallel mode when the utility breaker aux contact is closed.
- Verify lead unit jumper and load share lines are NOT INSTALLED.
- Verify GPC is programmed to the desired:
 - Baseload level (default is 1825kW)
 - Ramp rate (default is 10kW/sec.)
 - PF control (default is i0.95)

Running:

See 'Common Start/Stop Instructions' lower RH corner

Application Notes:

- Baseload level is controlled by either the Baseload potentiometer or pre-programmed setpoint in the GPC. Selection is made by a two-position switch.
- In utility parallel mode, UMR protective relay will perform sync-check to permit generator breaker closure and protects system from faults when in parallel.
- UMR reset: 'TRIP' is reset by pressing STOP on EMCP3 (with 86 lockout relay in tripped state). 'MAJOR ALARM' (indicating fuse loss) is reset by pressing 'RESET' on UMR.



Common Start/Stop Instructions

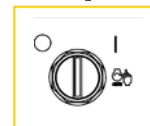
EMCP3 CONTROL

In **RUN** mode, operator must close breaker using breaker control switch (when running at normal V&F). Manual voltage adjust is allowed.

In **AUTO** mode, breaker will automatically close (when running at normal V&F). GPC automatically adjusts voltage and frequency.

Pressing **STOP**: 'Single Unit' and 'Island' modes: breaker will open immediately and engine goes into cooldown. 'Utility' mode: generator load will ramp down to 10% (of rated), the breaker will then trip open and engine goes into cooldown.

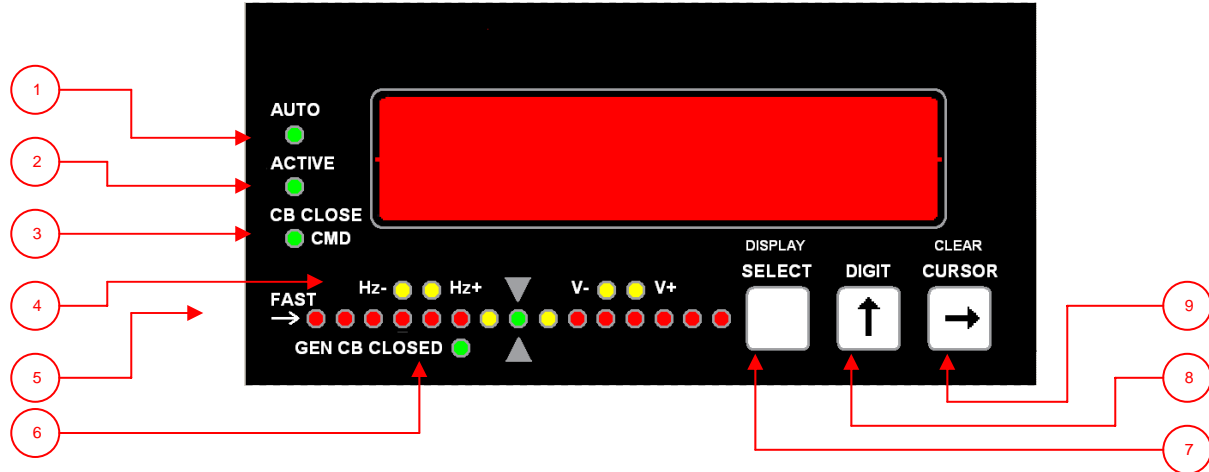
Local Start/Stop Switch



GENERAL NOTES:

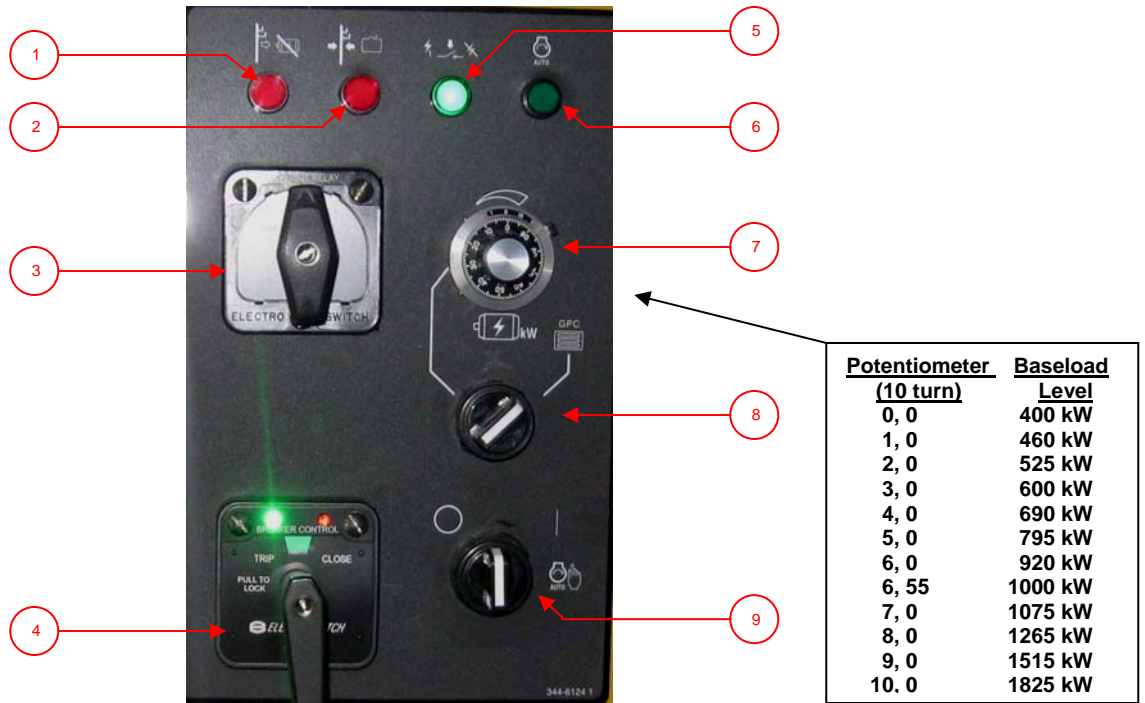
- Remote run request signal can be disabled, if desired, with jumper removal (jumper installed as default).
- Gen breaker can be locked out using the breaker control switch pull-to-lock feature.
- Reset the 86 lockout relay by first pressing STOP on EMCP3

GENERATOR PARALLELING CONTROLLER (GPC)



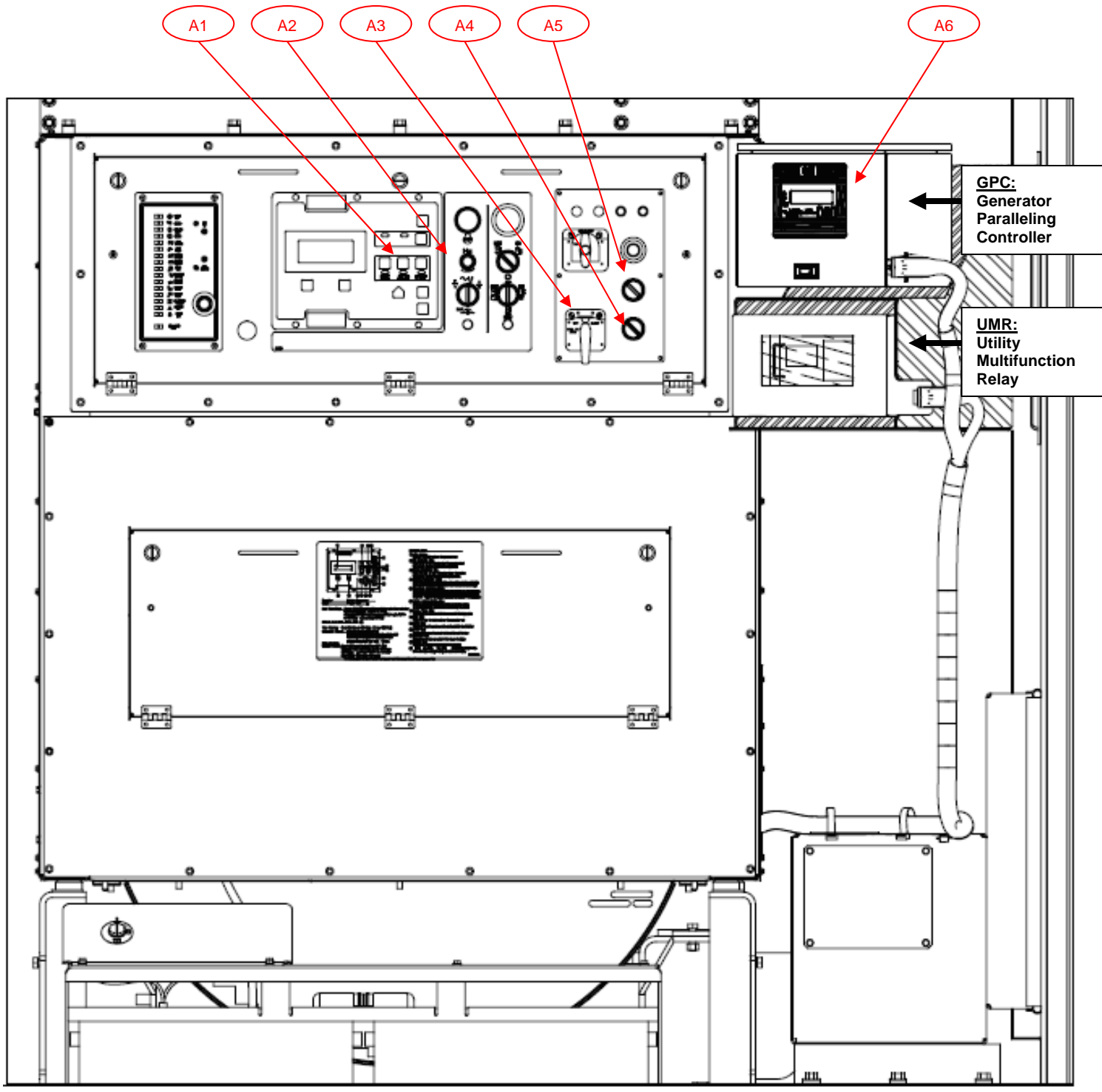
1. “AUTO” lamp – This LED is lit when any of the conditions below are present:
 - Controller is performing auto synchronization (breaker is open). EMCP3.3 must be in AUTO mode and V&F built up to normal.
 - Gen breaker is closed in either SINGLE UNIT or ISLAND MODE
 - Gen breaker is closed with request to run active in UTILITY PARALLEL MODE
Note: lamp goes off during ramp-down when unit is stopping
2. “ACTIVE” lamp – This LED is lit when not in setpoint programming mode using the keypad.
Note: does not indicate whether or not setpoint programming is in use by the PC interface.
3. “CB CLOSE CMD” lamp – This LED is lit when the controller is issuing a circuit breaker close signal.
Note: this will occur only when the LED SYNCHROSCOPE has the green LED lit (center position).
4. “Hz-, Hz+” lamps – These two lamps indicate when the controller is actively biasing the speed signal to the engine control (Hz- is decreasing speed, Hz+ is increasing speed). When paralleled with other sources, indicates decreasing or increasing generator real load (kW) contribution.
“V-, V+” lamps – These two lamps indicate when the controller is actively biasing the voltage regulator (V- is decreasing voltage, V+ is increasing voltage). When paralleled with other sources, indicates decreasing or increasing generator reactive (VAR) contribution.
5. “LED SYNCHROSCOPE” row of lamps – When the lights are moving left to right, the generator is moving faster than the bus. When the lights are moving right to left, the generator is moving slower than the bus. The synchroscope is only active when voltage is within 50%-125% rated and frequency is within +/- 2Hz. When the green LED (center position) is lit then the gen is “in sync” with the bus.
6. “GEN CB CLOSED” lamp – This LED is lit when the generator breaker is closed.
7. “DISPLAY | **SELECT**” pushbutton –
When the ACTIVE lamp is lit, pressing this button (DISPLAY) will alternate between two AC metering screens: one shows gen and bus V&F, the other shows gen voltage, current, kW, and PF (“i” indicates leading/inductive, “k” indicates lagging/capacitive).
When the ACTIVE lamp is off, pressing this button (**SELECT**) will apply setpoint changes made using the other buttons and advance through the setpoints menu.
8. “DIGIT” pushbutton – This button is used only when programming setpoints (ACTIVE lamp off). When pressing this button, the number at which the cursor is currently located is increased by one digit.
9. “CLEAR | **CURSOR**” pushbutton –
When the ACTIVE lamp is lit, pressing this button will clear controller alarms.
When the ACTIVE lamp is off, pressing this button will move the cursor to the desired setpoint digit.

Press “DIGIT” and “CLEAR | **CURSOR**” pushbuttons simultaneously to enter/exit setpoint programming mode.
Press “DISPLAY | **SELECT**” and “CLEAR | **CURSOR**” pushbuttons simultaneously to move back in the setpoints menu.

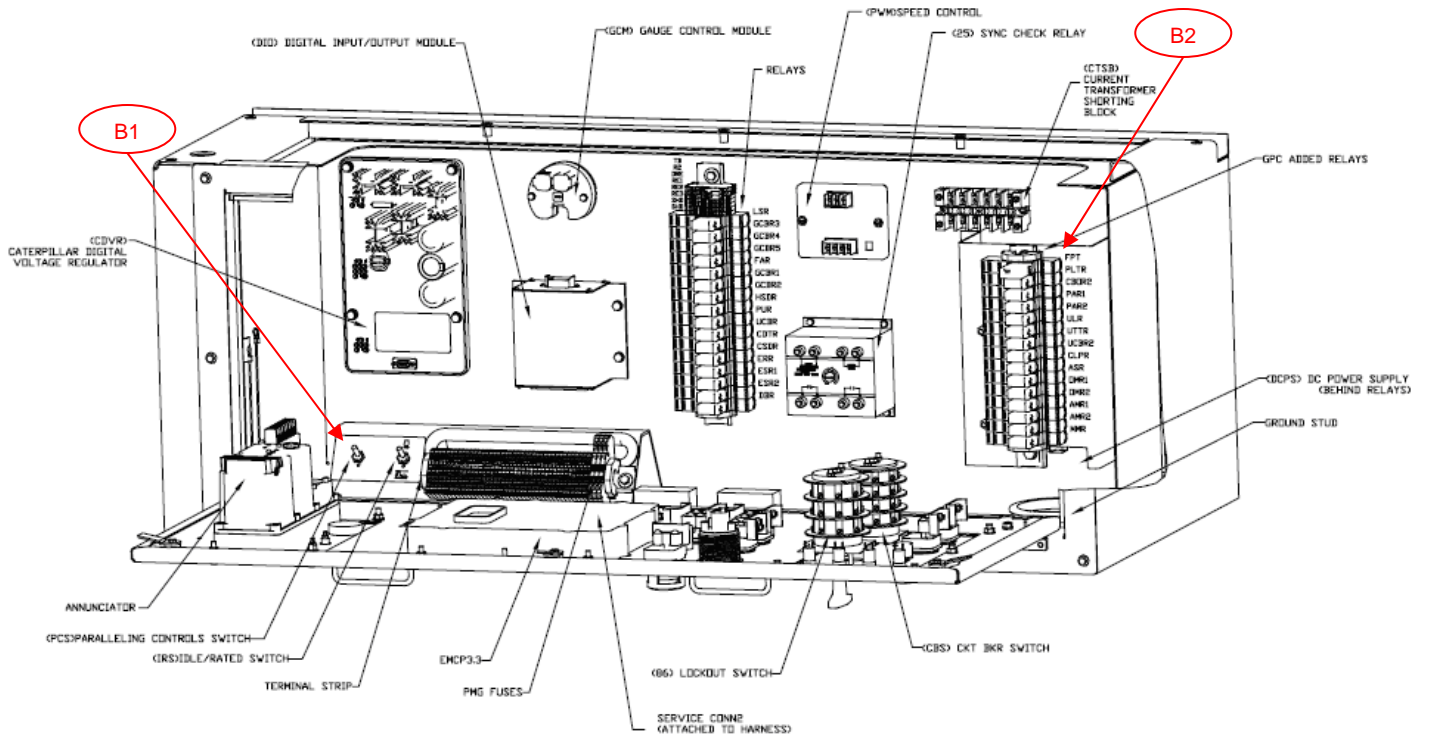


1. “Utility Transfer Trip” lamp – This LED is lit when the customer’s utility transfer trip signal is present.
2. “Utility Breaker” lamp – This LED is lit when the utility breaker is closed.
Note: when this LED is lit and the Red LED on the breaker control switch (item #4) is lit then the generator is operating in parallel with the utility source.
3. 86 Lockout Relay – This device performs fast response fault clearance by opening the generator breaker directly and placing the engine in cooldown when a fault occurs as detected by the on-package utility protective relay or customer’s utility transfer trip signal.
Note: the EMCP3 must be in STOP mode to allow the manual reset of the 86 lockout relay (this also resets fault alarms in the UMR utility protective relay).
4. Circuit Breaker Switch – For automatic paralleling modes, this switch must be in the center position (red or green flag). For manual paralleling modes, the generator breaker is signaled to close when this switch is held in the “close” position and paralleling conditions are satisfied. This switch also provides a “pull-to-lock” feature that gives a constant trip signal to the breaker to lockout operation. Breaker status is indicated by LED’s on the switch (green=open, red=closed).
5. “Dead Bus Close Permissive” lamp:
 - **Single Unit Mode:** lamp is ON when the lead unit jumper is installed and goes OFF when the breaker closes.
 - **Island Mode:** lamp is ON when all units are in standby and at least one unit has the lead unit jumper installed (NOTE: if all are not ON then inspect the interconnect wiring). When units are started this lamp turns OFF on all except the unit with the lead unit jumper. If that unit fails to close, the permissive signal will transfer to the next unit and this lamp will come ON in that unit. This lamp goes OFF when any unit is closed to the bus.
 - **Utility Parallel Mode:** this lamp should never be ON in this mode. If it is, then remove the lead unit jumper.
6. “Auto Start” lamp – This LED is lit when either a remote run request is present or the unit has been started using the local start/stop switch.
IMPORTANT: verify the status of this lamp before placing the EMCP3 in auto mode. If this lamp is ON then the unit will start once the EMCP3 is placed in auto.
7. Baseload potentiometer – This potentiometer is used to manually adjust the generator kW output (range of 400kW to 1825kW) when in parallel with the utility. This potentiometer is enabled by the left position of the switch below it (item #8).
8. Baseload Select Switch – With this switch in the left position, the potentiometer (item #7) is used for baseload level reference. In the right position, the setpoint in the GPC “Power Controller P set1” provides the baseload level reference.
9. Local Start/Stop Switch – This switch is used to locally run the unit in an auto paralleling mode. Requires EMCP3 in AUTO mode.

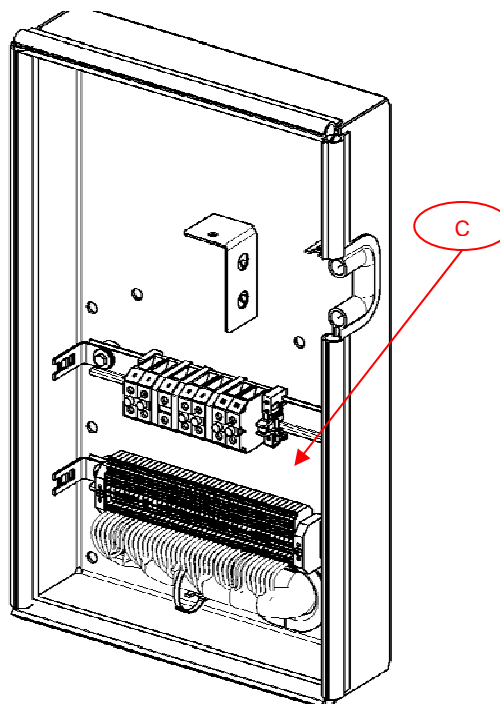
Doghouse & Wall-Mount Components Layout



Doghouse Controls Box Layout



Customer Interconnect Panel (Street side)



Modes of Operation

Single Unit Mode - Manual Operation



Setup:

- Switch OFF paralleling controls (B1)
- Install 'lead unit jumper' (C)
- Configurations: CDVR ('load compensation mode'=OFF)

Startup:

- Press RUN on EMCP3 (A1) (engine will start immediately)
- After engine is running at normal speed, observe generator voltage and frequency on EMCP3 screen
- Adjust voltage and/or frequency, if necessary, using operator controls (A2)
- Close generator breaker, when desired, using circuit breaker switch (A3)

Running:

- Observe engine and generator parameters on EMCP3 screen to verify normal operating conditions

Shutdown:

- Press STOP on EMCP3 (A1) (generator breaker will open immediately, engine will continue to run in cooldown mode until cooldown time is elapsed)

Single Unit Mode - Automatic Operation



Setup:

- Switch OFF paralleling controls (B1)
- Install 'lead unit jumper' (C)
- Install wiring (C) to remote run request contact (i.e. Automatic Transfer Switch)
- Configurations: CDVR ('load compensation mode'=OFF)

Startup:

- Press AUTO on EMCP3 (A1)
- Start engine by either:
 - a) Closing the remote run request contact
 - b) Switch local start/stop switch to ON (A4)
- After engine is running at normal speed, generator breaker will close automatically to a dead bus

Running:

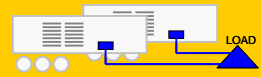
- Observe engine and generator parameters on EMCP3 screen to verify normal operating conditions
- Adjust voltage and/or frequency, if necessary, using operator controls (A2)

Shutdown:

- Shutdown, by any means, will cause generator breaker to open immediately, engine will continue to run in cooldown mode until cooldown time is elapsed:
 - a) Open the remote run request contact
 - b) Switch local start/stop switch to OFF (A4)
 - c) Press STOP on EMCP3 (A1)

Modes of Operation

Island Paralleling Mode - Manual Operation



CAUTION: Verify phase rotation of generator matches that of the bus connection prior to paralleling units. Failure to do so may result in damage to equipment.

Setup A: All paralleling units equipped with GPC Auto Paralleling controls:

- Switch ON paralleling controls (B1)
- Install 'lead unit jumper' in only one unit – the one closing to a dead bus (C)
- Install kW (real) and kVAR (reactive) load share lines interconnected between units (C)
- Configurations (all units): CDVR ('load compensation mode'=OFF), GPC ('Reactive Power Load Share'=ON)

Setup B: One or more paralleling units equipped with GPC Auto Paralleling controls and one or more paralleling units equipped with LSM (Load Share Module):

- Switch ON paralleling controls (B1)
- Install 'lead unit jumper' in only one unit – the one closing to a dead bus (C)
- Install kW (real) load share lines interconnected between units (C)
- Configurations (all units with LSM**): CDVR ('load compensation mode'=DROOP), LSM load share lines: **0-3V** (0-2000kW)
- Configurations (all units with GPC): CDVR ('load compensation mode'=DROOP), GPC ('Reactive Power Load Share'=OFF)

** Units equipped with touch-screen based swgr must have LSM enabled by installed 'Rev Compatibility Mode' jumper.

Startup (closing lead unit to dead bus):

- Press RUN on EMCP3 (A1) (engine will start immediately)
- After engine is running at normal speed, observe generator voltage and frequency on GPC (A6)
- Adjust voltage, if necessary, using operator controls (A2)
- Close generator breaker, when desired, using circuit breaker switch (A3)

Startup (paralleling other units to live bus):

- Press RUN on EMCP3 (A1) (engine will start immediately)
- After engine is running at normal speed, observe generator voltage & frequency and bus voltage & frequency on GPC (A6)
- Adjust voltage, if necessary, using operator controls (A2)**
- Observe linear LED synchroscope on GPC (A6). When the green LED in the center position is lit, the generator is 'in-sync' with the bus
- Close generator breaker, when generator is 'in-sync' with the bus, using circuit breaker switch (A3)

** NOTE: allows only passive freq. and phase synchronization in manual mode.

Running:

- Observe engine and generator parameters on EMCP3 screen to verify normal operating conditions
- Observe load sharing between units (operating in **Setup A**). If load balancing adjustment is desired, adjust the following parameters in the GPC: 'Active Load Share Factor' (lower % puts more emphasis on kW sharing vs. desired freq.) and/or 'Reactive Load Share Factor' (lower % puts more emphasis on VAR sharing vs. desired kVA)
- Observe load sharing between units (operating in **Setup B**). If load balancing adjustment is desired, adjust the gain on the LSM(s). Do not adjust parameters in the GPC. *Verify LSM is setup correctly – see above!*

Shutdown:

- At each unit, press STOP on EMCP3 (A1) (generator breaker will open immediately, engine will continue to run in cooldown mode until cooldown time is elapsed)

Modes of Operation

Island Paralleling Mode - Automatic Operation



CAUTION: Verify phase rotation of generator matches that of the bus connection prior to paralleling units. Failure to do so may result in damage to equipment.

Setup A: All paralleling units equipped with GPC Auto Paralleling controls:

- Switch ON paralleling controls (B1)
- Install 'lead unit jumper' in only one unit – the one closing to a dead bus (C)
- Install kW (real) and kVAR (reactive) load share lines interconnected between units (C)
- Install lead-unit-select wiring interconnected between units (C) (for automatic transfer of dead-bus-close-permissive signal from unit to unit upon occurrence of fail to parallel)
- Configurations (all units): CDVR ('load compensation mode'=OFF), GPC ('Reactive Power Load Share'=ON)

Setup B: One or more paralleling units equipped with GPC Auto Paralleling controls and one or more paralleling units equipped with LSM (Load Share Module):

- Switch ON paralleling controls (B1)
- Install 'lead unit jumper' in only one unit – the one closing to a dead bus (C)
- Install kW (real) load share lines interconnected between units (C)
- Install lead-unit-select wiring interconnected between units (C) (for automatic transfer of dead-bus-close-permissive signal from unit to unit upon occurrence of fail to parallel)
- Configurations (all units with LSM**): CDVR ('load compensation mode'=DROOP), LSM load share lines: **0-3V** (0-2000kW)
- Configurations (all units with GPC): CDVR ('load compensation mode'=DROOP), GPC ('Reactive Power Load Share'=OFF)

** Units equipped with touch-screen based swgr must have LSM enabled by installed 'Rev Compatibility Mode' jumper.

Startup:

- At each unit, press AUTO on EMCP3 (A1)
- Start each engine by either:
 - a) Closing the remote run request contact
 - b) Switch local start/stop switch to ON (A4)
- After lead unit is running at normal speed, generator breaker will close automatically to a dead bus**
- All other units will auto-sync and close to the live bus

** If lead unit takes more than 45 sec. to close its breaker, the fail-to-parallel timer (FPT) will cause a shutdown and the permissive signal will be transferred to the next unit allowing it to close to the dead bus. FPT is adjustable and is located inside the doghouse (RH side) (B2).

Running:

- Observe engine and generator parameters on EMCP3 screen to verify normal operating conditions
- Observe load sharing between units (operating in **Setup A**). If load balancing adjustment is desired, adjust the following parameters in the GPC: 'Active Load Share Factor' (lower % puts more emphasis on kW sharing vs. desired freq.) and/or 'Reactive Load Share Factor' (lower % puts more emphasis on VAR sharing vs. desired kVA)
- Observe load sharing between units (operating in **Setup B**). If load balancing adjustment is desired, adjust the gain on the LSM(s). Do not adjust parameters in the GPC. *Verify LSM is setup correctly – see above!*

Shutdown:

- Shutdown, by any means, will cause generator breaker to open immediately, engine will continue to run in cooldown mode until cooldown time is elapsed:
 - a) Open the remote run request contact
 - b) Switch local start/stop switch to OFF (A4)
 - c) Press STOP on EMCP3 (A1)

Modes of Operation

Utility Paralleling Mode - Manual Operation



CAUTION: Verify phase rotation of generator matches that of the bus connection prior to paralleling units. Failure to do so may result in damage to equipment.

Setup:

- Switch ON paralleling controls (B1)
- Verify GPC setpoint 'Power controller P set1' (default=1825kW) is set to desired baseload level
- Verify GPC 'Pow.fact.control Set point' (default=i0.95) is set to desired power factor level**
- Verify GPC 'Power controller Ramp' (default=10 kW/s) is set to desired (shared setpoint for soft load & soft unload)
- Use 2-position switch to select either potentiometer or GPC setpoint control for baseload level reference (A5)***
- Install wiring to 'utility breaker aux' contact (C) (intertie breaker, form a)
- (Opt.) install wiring to utility equipment for 'utility transfer trip' contact (C) (form a)
- Configurations: CDVR ('load compensation mode'=**DROOP**), GPC ('Reactive Power Load Share'=**OFF**)
- Verify on-board utility protective relay (UMR) settings per site-specific requirements

** If VAR setpoint control is desired, make the following settings: GPC ('Power Factor Control'=OFF), CDVR ('VAR setpoint'=set to desired, and 'Operating Mode'=set to VAR.) No other changes are required.

*** If desired to disable the potentiometer, make the following settings: GPC ('External setp. 4mA'=desired kW, 'External setp. 20mA'=desired kW, and 'Power controller P set1'=desired kW,) where 'desired kW' are all the same value. Verify GPC settings are password protected.

Startup (paralleling to live utility):

- Press RUN on EMCP3 (A1) (engine will start immediately)
- After engine is running at normal speed, observe generator voltage & frequency and bus voltage & frequency on GPC (A6)
- Adjust voltage, if necessary, using operator controls (A2)**
- Observe linear LED synchroscope on GPC (A6). When the green LED in the center position is lit, the generator is 'in-sync' with the bus
- Close generator breaker, when generator is 'in-sync' with the bus, using circuit breaker switch (A3)

** NOTE: allows only passive freq. and phase synchronization in manual mode.

Running:

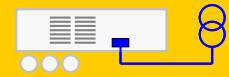
- Observe proper soft load to desired baseload level and then steady state PF and baseload control
- Switch to potentiometer baseload level control is allowed at any time (A5) (soft ramp occurs between selections)

Shutdown:

- Press STOP on EMCP3 (A1)
- Generator will soft unload to 10% of rated (200kW), generator breaker will then trip open, and engine will continue to run in cooldown mode until cooldown time is elapsed ('pre-cooldown' will be displayed on the EMCP3 engine overview screen during soft unload)

Modes of Operation

Utility Paralleling Mode - Automatic Operation



CAUTION: Verify phase rotation of generator matches that of the bus connection prior to paralleling units. Failure to do so may result in damage to equipment.

Setup:

- Switch ON paralleling controls (B1)
- Verify GPC setpoint 'Power controller P set1' (default=1825kW) is set to desired baseload level
- Verify GPC 'Pow.fact.control Set point' (default=i0.95) is set to desired power factor level**
- Verify GPC 'Power controller Ramp' (default=10 kW/s) is set to desired (shared setpoint for soft load & soft unload)
- Use 2-position switch to select either potentiometer or GPC setpoint control for baseload level reference (A5)***
- Install wiring to 'utility breaker aux' contact (C) (intertie breaker, form a)
- (Opt.) install wiring to utility equipment for 'utility transfer trip' contact (C) (form a)
- Configurations: CDVR ('load compensation mode'=**DROOP**), GPC ('Reactive Power Load Share'=**OFF**)
- Verify on-board utility protective relay (UMR) settings per site-specific requirements

** If VAR setpoint control is desired, make the following settings: GPC ('Power Factor Control'=OFF), CDVR ('VAR setpoint'=set to desired, and 'Operating Mode'=set to VAR.) No other changes are required.

*** If desired to disable the potentiometer, make the following settings: GPC ('External setp. 4mA'=desired kW, 'External setp. 20mA'=desired kW, and 'Power controller P set1'=desired kW,) where 'desired kW' are all the same value. Verify GPC settings are password protected.

Startup (paralleling to live utility):

- Press AUTO on EMCP3 (A1)
- Start engine by either:
 - a) Closing the remote run request contact
 - b) Switch local start/stop switch to ON (A4)
- After engine is running at normal speed, generator will auto-sync and close to the live bus**

** If the unit takes more than 45 sec. to close its breaker, the fail-to-parallel timer (FPT) will cause a shutdown

Running:

- Observe proper soft load to desired baseload level and then steady state PF and baseload control
- Switch to potentiometer baseload level control is allowed at any time (A5) (soft ramp occurs between selections)

Shutdown:

- Shutdown, by any means, will cause the generator to soft unload to 10% of rated (200kW), generator breaker will then trip open, and engine will continue to run in cooldown mode until cooldown time is elapsed ('pre-cooldown' will be displayed on the EMCP3 engine overview screen during soft unload):
 - a) Open the remote run request contact
 - b) Switch local start/stop switch to OFF (A4)
 - c) Press STOP on EMCP3 (A1)

On-Board Utility Protective Relay (UMR) Default Settings

The screenshot displays the configuration interface for a Basler BE1-IP5100 protective relay. The interface is organized into several functional panels:

- Protection and Control (Reporting and Alarms):**
 - Overcurrent:** Settings for 50T, 150T, 51, and 151, including Phase, Neutral, and Neg Seq options.
 - Voltage Protection:** Settings for 24, 25, 127P, 47, 27X, 59P, 59X, 159P, and 159X.
 - Power:** Settings for 32 Reverse and 132 Reverse.
 - D/U/RDC Frequency:** Settings for 81 Under, 181 Under, 281 Over, 381 Over, 481 Over, and 581 Over.
 - Active Logic:** Set to 344-1074_2000XQA.
 - Auto Group Selection:** Group 0 (Normal) and Group 1 (51P).
 - Virtual Switches:** Breaker Control (101, 43 SWITCH_43, 143 SWITCH_143).
 - Redosing:** Redose 1, 2, 3, and 4.
 - Breaker Failure:** Settings for breaker failure.
 - Logic Functions:** Timer 62 and Timer 162.
 - Legend:** Status indicators for Enabled, Disabled by Setting, Logic Enabled, Disabled by Logic, Setting Enabled, and Disabled.
- Time Overcurrent:**
 - Pickup (Sec Amps):** 2.00
 - Time Dial:** 5.0
 - Directional Control:** None
 - 27R Threshold (Sec Vals):** 0.00
 - Phase (51P):** 2.00, 5.0, V2, None, Restriart, Enabled, BESTlogic
 - Neutral (51N):** 0.75, 5.0, V2, None, 3 Phase Residual, BESTlogic
 - Neg Seq (51Q):** 0.00, 0.0, V2, None, Disabled, BESTlogic
- Phase Undervoltage With Settable Time Delay:**
 - Pickup (Sec Vals):** 96.0
 - Inhibit (Sec Vals):** 0.00
 - Time (Seconds):** 1.9
 - Phase (27P):** Vpp, 0.00, Vpp, At least 1 of 3, BESTlogic
 - Phase (127P):** Vpp, 0.00, Vpp, 0.160, At least 1 of 3, BESTlogic
- Sync-Check:**
 - Delta Voltage (Sec Vals):** 2.5
 - Delta Angle (Degrees):** 10.0
 - Slip Frequency (Hertz):** 0.01
 - Phase Freq > Aux Freq:** Enable, Enabled, BESTlogic
 - 25VM Settings:** Live (100 Vpp), Dead (20.0 Vpp), Dropout Delay (0.050 Seconds)
 - 25VM Logic:** Dead Phase / Dead Aux, Dead Phase / Live Aux, Live Phase / Dead Aux, 25VM1

The interface includes a top menu bar with options like File, Screens, Copy, RS-232 Communication, Ethernet Communication, Reports, and Help. A status bar at the bottom shows system setup summary, date (6/16/2009), and time (9:45 AM).

BEL-IP5100 Settings (BestComms_344-1074_v44bst)

File Screens Copy RS-232 Communication Ethernet Communication Reports Help

Logic: 344-1074_2000XQA Settings Group 0

24 | 25 | 27P/127P | 27X | 47 | 59P/159P | 59X/159X | INH/81/181/281/381/481/581

Phase Overvoltage With Settable Time Delay

Pickup Sec. Volts: 138 Vpp

Time Seconds: 1.0

Phase 1 (59P1): 144 Vpp

Phase 2 (159P2): 0.160

At Least 1 of 3 BESTlogic

At Least 1 of 3 BESTlogic

Select the units for displaying Voltage values in: Voltage Protection 6/16/2009 9:48 AM

BEL-IP5100 Settings (BestComms_344-1074_v44bst)

File Screens Copy RS-232 Communication Ethernet Communication Reports Help

Logic: 344-1074_2000XQA Settings Group 0

24 | 25 | 27P/127P | 27X | 47 | 59P/159P | 59X/159X | INH/81/181/281/381/481/581

Directional Power

Pickup Sec. 3Ø Volts: 45.0

Time Seconds: 10

Direction: Over

Reverse: Disabled

Total Power BESTlogic

32: 0.0

132: 0.050

Reverse: Disabled

Over: Disabled

Power Protection 6/16/2009 9:49 AM

BEL-IP5100 Settings (BestComms_344-1074_v44bst)

File Screens Copy RS-232 Communication Ethernet Communication Reports Help

Logic: 344-1074_2000XQA Settings Group 0

24 | 25 | 27P/127P | 27X | 47 | 59P/159P | 59X/159X | INH/81/181/281/381/481/581

Neg. Sequence Overvoltage With Settable Time Delay

Pickup Sec. Volts: 12.0 Vpp

Time Seconds: 1.0

Enabled

BESTlogic

Select the units for displaying Voltage values in: Voltage Protection 6/16/2009 9:48 AM

BEL-IP5100 Settings (BestComms_344-1074_v44bst)

File Screens Copy RS-232 Communication Ethernet Communication Reports Help

Logic: 344-1074_2000XQA Settings Group 0

24 | 25 | 27P/127P | 27X | 47 | 59P/159P | 59X/159X | INH/81/181/281/381/481/581

O/U/ROC Frequency With Settable Time Delay

INHIBIT (ALL): 40.0 Vpp

INHIBIT (81R): 20

% Neg Sequence: 64.00

Over Frequency: 46.00

Under Frequency: 46.00

Pickup Time Seconds: 81 (Hz): 53.50

Under Phase VT Input BESTlogic

181 (Hz): 55.00

Under Phase VT Input BESTlogic

281 (Hz): 60.50

Over Phase VT Input BESTlogic

381 (Hz): 00.00

Over Disabled BESTlogic

481 (Hz): 00.00

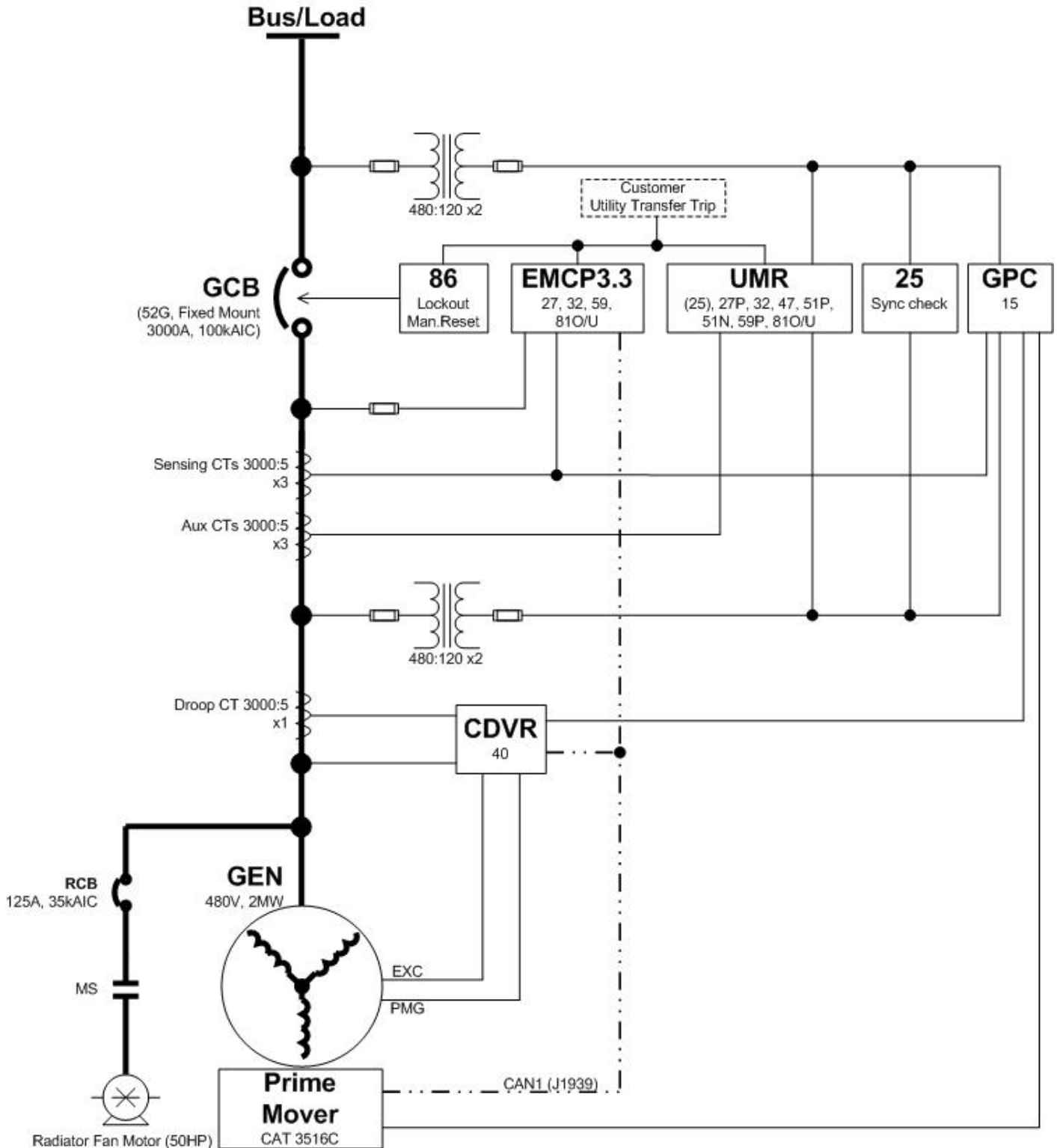
Over Disabled BESTlogic

581 (Hz): 00.00






Over Disabled BESTlogic

Select the units for displaying Voltage values in: Voltage Protection 6/16/2009 9:48 AM

System One-Line Diagram



References

-  Procedure for converting 60Hz to 50Hz
-  Procedure for programming GPC using PC interface
-  Auto Paralleling retrofit kit & installation / field test guide (for units built as manual paralleling only)
-  Presentation: 'Rental On-Pkg Paralleling - Features and Functions 11Jun09'
-  XQ2000 On-Pkg Auto Paralleling controls schematic: 344-1073