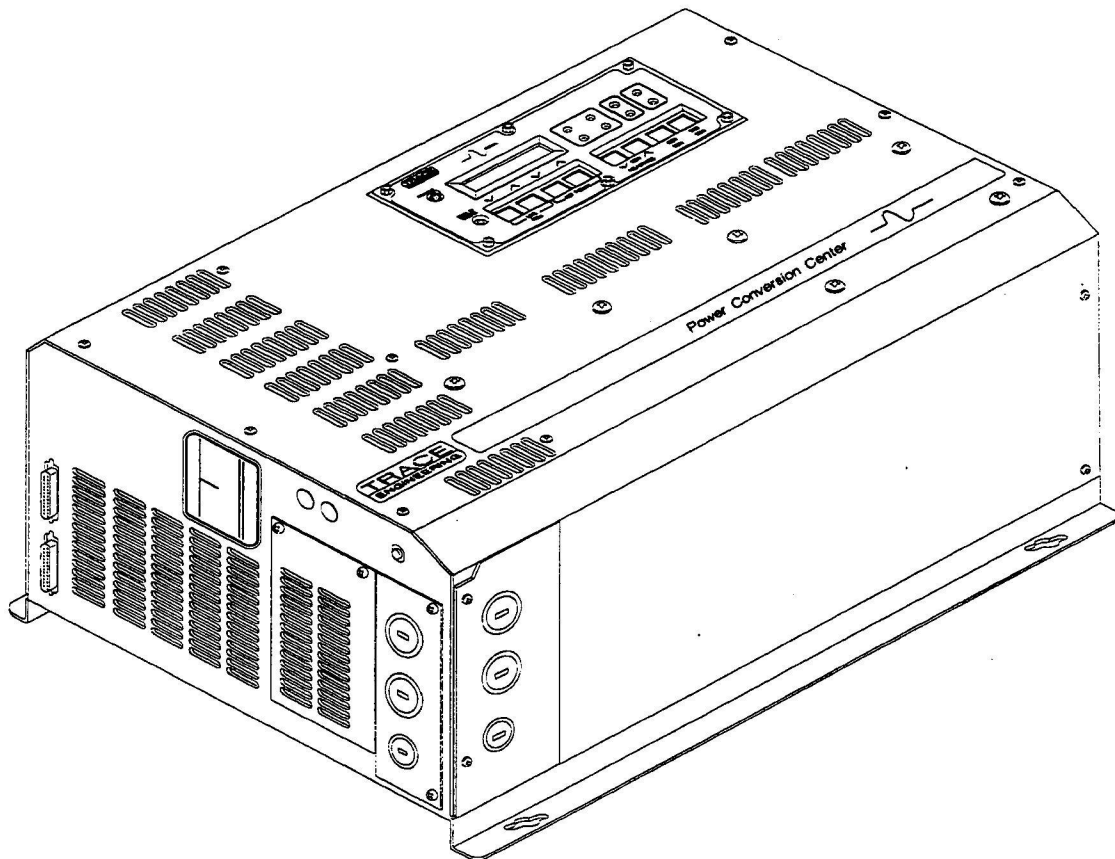




Owner's Manual

Revision 4.01 Option 2.2

**Special Version of the
SW series Inverter / Charger
for Motor Coach Applications**



Trace Engineering Company, Inc.
5916 - 195th Street N.E.
Arlington, WA 98223
TEL (360) 435 - 8826
FAX (360) 435 - 2229
www.traceengineering.com

Part # 2031-8 (Supplement to Normal Manual)

Effective Date: February 1, 1998

Motor Coach Software (Revision 4.01 Option 2.2)

Notes on Changes

The Motor Coach software for the Trace Engineering SW series Inverter/Charger has been specifically developed to meet the operational requirements of vehicle applications. The new software includes several changes to the inverter/charger's basic operation in addition to changes to the default settings. The Motor Coach version is an option for the new Revision 4.01 software, introduced in April of 1996 on all of the SW series.

The changes can be divided into two groups - changes to the basic operation and changes to the default settings. Both groups should be examined together with the changes made in the new Rev. 4.01 software compared to the previous Rev. 3.0 software. Some additional user programming of the inverter and charger settings may be required for your application.

Important Revision 4.01 Changes

The new Rev 4.01 software includes many improvements and new abilities. The most substantial changes for Motor Coach applications are summarized here. A copy of the new Revision 4.01 manual should be reviewed for more information on these and other changes.

- **Menu System** - The new Rev 4.01 software divides the menu system into two parts - a **USER** menu and a **SETUP** menu. This simplifies the menu system for the system user and reduces problems with accidental changes to the inverter/charger settings.
- **Generator Start System** - The new Rev 4.01 software now includes two different start routines. The system itself has been made more fault tolerant and has additional error indications.
- **Control Panel Operation** - The red and green buttons now also are able to select the desired setting from the menu item displayed. The "action" of the buttons has been improved. The "reset to factory default button" now can be used to reset the display. This button now only resets the default settings from a specific menu item location.

Important Operational Changes for the Motor Coach Version

The Motor Coach version includes several changes in the basic operation of the inverter from the standard operation of the Rev 3.0 and Rev 4.01 software previously shipped.

- **AC2 Priority** - The **AC2** input (generator) is now the priority. If the **AC1** (grid) is energized from the shore cord being plugged in, then it will be disconnected when the generator is started. The transfer from shore cord to generator may take 8 seconds or more. (The terminal block on the inverter still lists **AC1** as the priority - the change was made in the software only for the Motor Coach version.)
- **No Cool Down** - The Rev 4.01 software includes a cool-down period for the generator after it was operated. This is not included in the Motor Coach software.

Important Default Setting Changes for the Motor Coach Version

The Motor Coach version includes several changes to the default setting of the Rev 4.01 software. Any unnecessary menu headings have also been eliminated to reduce the complexity of the menu system.

- **Shore Cord Size** - A new menu item, **SET SHORE CORD AMPS AC**, has been included in the **USER** menu under the **SET INVERTER (1)** menu heading to allow adjustment of the **SET GRID (AC1) AMPS AC** menu item in the **SETUP** menu. This makes it easier for the user to change the setting based on the hook-up capacity. It should be set to match the shore cord being used by the coach user when connecting the coach to utility power.
- **Battery Charging** - The software is programmed to have the default settings be appropriate with sealed gel cell or AGM type batteries. The equalization system has been defeated.
- **Generator Starting** - The software defaults to a new generator start routine designed for use with Onan and many diesel generators. See the Rev 4.01 manual for more information. The warm-up period for the generator has been reduced to 16 seconds. The exercising system has been disabled.
- **Low Battery Cut Out** - The default settings have been changed to allow greater use of the batteries. The **LBCO** setting is now also used by the generator start system to signal the generator to start if the battery reaches the **LBCO** setting for 30 seconds continuously.

Identification and Compatibility

The Motor Coach version can be identified by checking for the **REVISION 4.01 OPTION 2.2** menu item display under the **TRACE ENGINEERING (3)** menu heading. This assures that the inverter includes the new software.

The Motor Coach software is compatible with all SW series inverter/chargers built by Trace Engineering. The software must be configured for the DC input and AC output voltage involved before the "chips" are programmed. To change the software, the cover of the inverter must be removed and the top needs good access. This may require removal of the inverter/charger from the vehicle.

Series II Inverter/Chargers

The Motor Coach version also includes changes to the inverter/charger itself. All currently manufactured units now include:

- **Series II Chassis** - A new chassis is being used on all SW series inverter/chargers. It features improved AC wiring access and an easier to remove cover for upgrading software.
- **High Visibility Display** - The LCD display now is backlit and has greater visibility from the sides and below.
- **Larger AC Input Contactors** - The relays that connect the generator or utility grid ac sources to the inverter have been changed to a larger, heavier duty relay. This change has eliminated the problem with stuck relays previously encountered.

AC Input Provisions and Ground Bonding

Neither the Motor Coach version nor the standard version of the SW series inverter/charger includes ground switching or bonding. This must be added externally to the inverter/charger.

DO NOT CONNECT BOTH THE GENERATOR AND THE UTILITY GRID TO THE SAME AC INPUT TERMINALS - THIS IS NOT ACCEPTABLE AND WILL VOID THE WARRANTY IF FOUND. The SW series includes two AC inputs - each must be used as intended.

ON/OFF MENU

Set Inverter
OFF SRCH ON CHG

This button provides direct access to the **SET INVERTER** menu item from anywhere in the user menu. Pressing this red button again selects the next setting to the right, as indicated by the position of the cursor under the first letter. You can also use the **SET POINT** buttons to move the cursor right or left.

GEN MENU

Set Generator
OFF AUTO ON EQ

This button provides direct access to the **SET GENERATOR** menu item from anywhere in the user menu. Pressing this green button again selects the next setting to the right, as indicated by the position of the cursor under the first letter. You can also use the **SET POINT** buttons to move the cursor right or left.

MENU HEADINGS

Inverter Mode 1	Generator Mode 2	Trace Engineering 3	Meters 4	Error Causes 5	Time of Day 00:00:00 6	Generator Timer 7
Set Inverter OFF SRCH ON CHG	Set Generator OFF AUTO ON EQ	Press reset now for defaults	Inverter/charger amps AC 00	Over Current NO	Set Clock hour 00:00:00	Start Quiet time h:m 08:00
Set Shore Cord Size Amps AC 50	Gen under/over speed NO	Revision 4.01 Option MC2.2	Input amps AC 00	Transformer overtemp NO	Set Clock minute 00:00:00	End Quiet time h:m 08:00
CHG avail. only in FLT mode.	Generator start error NO	5916 195th St NE Arlington, WA	Load amps AC 00	Heatsink overtemp NO	Set Clock second 00	Gen doesn't run during quiet
Press red or setpoint button	Generator sync error NO	98223	Battery actual volts DC 25.2	High Battery voltage NO		time unless batt volts is less
to move cursor. Move cursor to	Gen max run time error NO	Ph 360-435-8826 Fax 360-435-2229	Battery TempComp volts DC 25.2	Low Battery voltage NO		than LBCO volts for 30 seconds
Inverter OFF to resetOverCurrent	Load Amp Start ready NO		Inverter volts AC 00	AC source wired to output NO		or load > load start amps
	Voltage Start ready NO		Grid (AC1) volts AC 00	External error (stacked) NO		To defeat timers set start = end.
	Exercise Start ready NO		Generator (AC2) volts AC 00	Generator start error NO		If exercise days set to 1 then
	Move cursor to GEN OFF to reset generator error.		Read Frequency Hertz 60	Generator sync error NO		gen will always start @ endquiet
	If no start in 5 trys then error.		AC1 & AC2 volts valid only when inverter synced to that input.	Gen under/over speed NO		
	If Gen starts & runs for 5 min then stops the inverter will not attempt restart until		Batt volt actual is used for LBCO, HBCO, LBX, LBCI, sell volts and gen starting			
	Gen auto start conditions are again satisfied.		Batt volt temp comp is used for float, bulk, eq & aux relays			
	Under/Over speed will cause a sync error in 10 minutes.					

MENU ITEMS

END USER MENU
8

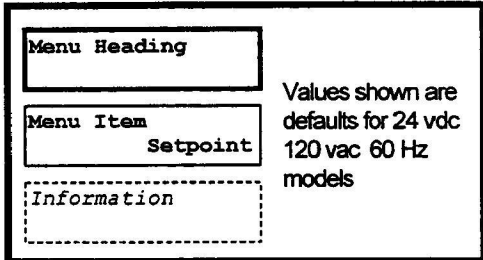
Menu Heading	Values shown are defaults for 24 vdc 120 vac / 60 Hz models
Menu Item Setpoint	
Information	

To access the Setup Menu, press the **RED** and **GREEN** buttons at the same time. To exit the Setup Menu, press the red **ON/OFF MENU** button or use the down **MENU HEADING** button until you reach the User Menu (menu headings 1 - 8).

← **MENU HEADINGS** →

Inverter Setup 9	Battery Charging 10	AC Inputs 11	Gen Auto Start setup 12	Gen starting details 13	Auxiliary Relays R9 R10 R11 14
Set Low battery cut out VDC 21.8	Set Bulk volts DC 28.6	Set Grid (AC1) amps AC 50	Set Load Start amp AC 53	Set RY7 Function GlowStop Run	Set Relay 9 volts DC 22.0
Set LBCO delay minutes 05	Set Absorption time h:m 03:00	Set Gen (AC2) amps AC 50	Set Load Start delay min 05.0	Set Gen warmup seconds 16	R9 Hysteresis volts DC 00.5
Set Low battery cut in VDC 23.0	Set Float volts DC 26.6	Set Input lower limit VAC 105	Set Load Stop delay min 05.0	Set Pre Crank seconds 10	Set Relay 11 volts DC 30.0
33* Set High battery cut out VDC 30.0	Set Equalize volts DC 28.8	Set Input upper limit VAC 140	Set 24 hr start volts DC 24.6	Set Max Cranking seconds 10	R11 Hysteresis volts DC 02.0
Set search watts 48	Set Equalize time h:m 00:10		Set 2 hr start volts DC 23.6	Set Post Crank seconds 30	Relay 9 opens for low battery protection
Set search spacing 59	Set Max Charge amps AC 15		Set 15 min start volts DC 22.6		Relay 10 closes if gen in Auto
	Set Temp Comp LeadAcid NiCad		Read LBCO 30 sec start VDC 21.8		Relay 11 closes batt > setpoint open on batt < setpoint - Hys
			Set Exercise period days 00		
			Set Maximum run time h:m 08:00		
			Set Max Run time to 0 to defeat		
			Set Exercise to 0 to defeat		
			Set Menu 9 to to set LBCO		

* COLD WEATHER SETTING PER
TRACE (TengorRAY)



END SETUP MENU
20

