APPLICATION NOTE NUMBER 17
NRG CHARGER JUMP FEATURE

Introduction

This Application Note describes the function and usage of the JUMP feature included with NRG chargers.

NRG Built-in Protection Features

The NRG charger is equipped with Battery Fault protection such that it automatically checks battery voltage before power-on startup. If battery voltage is either too high or too low, the charger enters a "lockout" period for approximately 10 seconds before attempting an automatic restart. This feature helps identify and protect against reversed polarity of the DC wiring and/or when the battery voltage does not agree with the charger RANGE jumper setting (used to select 12 or 24V, see Figure 1).

The JUMP feature may be used to override this lockout and start charging or commissioning a discharged battery.

What is the JUMP feature?

The JUMP feature allows initial charging/commissioning of nickel cadmium or lead acid batteries supplied from the manufacturer dry and discharged, from a zero charge state. Initial charging/commissioning requires a higher output voltage than normal. By overriding Battery Fault lockout, the JUMP feature allows for (but does not provide) this necessary voltage.

The JUMP feature can also be used when recharging excessively discharged batteries already in service. Please consult the battery manufacturer to determine if the battery can safely be recharged from a discharged state.

How to use the JUMP feature

To initially charge/commission zero charge batteries, place the spare jumper (extra jumper provided with charger) in the JUMP position on JP1 of the charger circuit board (see Figure 1). Operate the charger long enough to retain more than 1.5V/cell for lead acid and 1.0V/cell for nickel cadmium batteries or until the charger returns to FLOAT MODE (FLOAT MODE LED will be green). See SENS Application Note 10 to finish fully commissioning the batteries, as using the JUMP feature alone is not sufficient.

Once the batteries are fully charged, the jumper may be removed or left in the JUMP position permanently. The jumper may remain in the JUMP position permanently to ensure that the charger is able to recharge very low or dead batteries (in the event of a prolonged AC power outage or a generator left unused for an extended period of time). If battery voltage is below 9V (12V system) or 18V (24V system) when AC power is restored and the JUMP feature is not activated, the charger will go into Battery Fault (alarm state that disables charger). In this situation the charger will not charge the batteries. If the JUMP feature is enabled when AC power is restored, the charger will begin charging. Depending on the battery state of charge, the charger may go into Battery Fault and remain so for some period of time (generally 12 – 24 hours) while the batteries are slowly charged. The Battery Fault LED will cycle (approximately once every minute) during this time. Once Battery Fault stops cycling, the charger will return to FLOAT or BOOST MODE as normally demanded.

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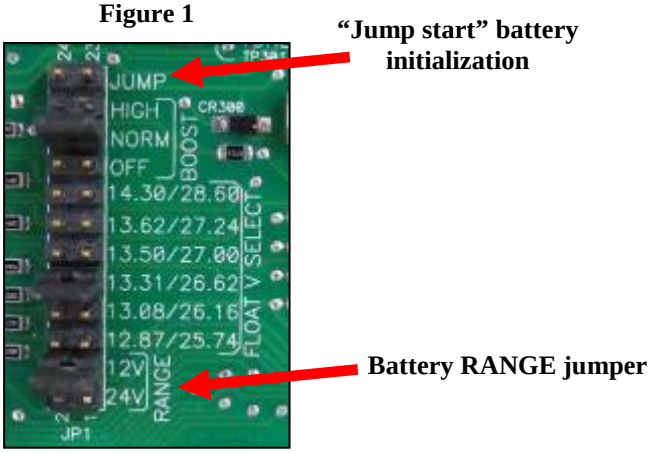
Figure 1



Are there any risks to using the JUMP feature?

As described above, leaving the JUMP feature enabled permanently works well, but only when a charger is correctly set for a 12V or 24V application. The JUMP feature disengages the battery voltage interlock, which senses correct battery voltage (12 or 24V) based on the RANGE jumper setting (see Figure 1). Using the JUMP feature increases the risk of accidentally overcharging 12V batteries with 24V settings (in the event that a 24V battery is replaced with a 12V battery or the charger is moved to a 12V application). Thus, leave a jumper in the JUMP position only if the voltage setting for the charger is definite and not likely to change.

WARNING:

INCORRECT CHARGE VOLTAGE WILL
ACCELERATE GENERATION OF EXPLOSIVE GASES,
INCREASING THE RISK OF FIRE OR EXPLOSION.

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