

Affected Products: Solar Boost 3024i, Solar Boost 2512iX and IPN-ProRemote
(p/n's SB3024i, SB3024Di, SB2512iX, IPNPRO & IPNPRO-S)

Purpose: Dusk-to-Dawn lighting control provided in software versions V2.00 and later

Background:

Solar Boost 3024i and 2512iX charge controllers include load control outputs. When equipped with software version V2.00 or later these products can also serve as lighting controllers with complete flexibility over Post-Dusk and Pre-Dawn ON time settings. An IPN-ProRemote with software version V2.00 or later is required to enable and configure Dusk-to-Dawn lighting control. The IPN-ProRemote does not need to remain with the system and can be used as a setup tool only.

This information supplements the following operators manual revisions and earlier. Dusk-to-Dawn information is included in subsequent versions.

SB3024i (& Di)	Operators Manual p/n 430-0018 Rev D
SB2512iX	Operators Manual p/n 430-0021 Rev B
IPN-ProRemote	Operators Manual p/n 430-0019 Rev B

Dusk-to-Dawn Lighting Control Operation:

Variable time settings are available to turn lighting ON after Dusk (Post-Dusk timer) and/or ON before Dawn (Pre-Dawn timer). If both the Post-Dusk and Pre-Dawn timers are set to DISABLED (factory default), the lighting control feature is disabled and the auxiliary output load controller operates in the normal manner based on battery voltage or amp-hours only. If either the Post-Dusk or Pre-Dawn timers are set to a time value (i.e., not DISABLED), the lighting control feature is enabled. When lighting control is enabled the auxiliary output is controlled by both the normal load control function and the lighting control function such that whichever function wants the auxiliary output OFF prevails. This allows both Low Voltage Disconnect (LVD) and lighting control to operate simultaneously.

Dusk or the beginning of night time begins when the charge control system turns OFF due to insufficient sunlight which occurs when the PV module is no longer able to produce $\approx 50\text{mA}$ of output current at battery voltage. Dawn or the beginning of day time begins when the charge control system turns ON which occurs when the PV module is able to produce $\approx 100\text{mA}^{\circ}$ of output current at battery voltage. Lights will always be OFF during the day when the charge control system is ON.

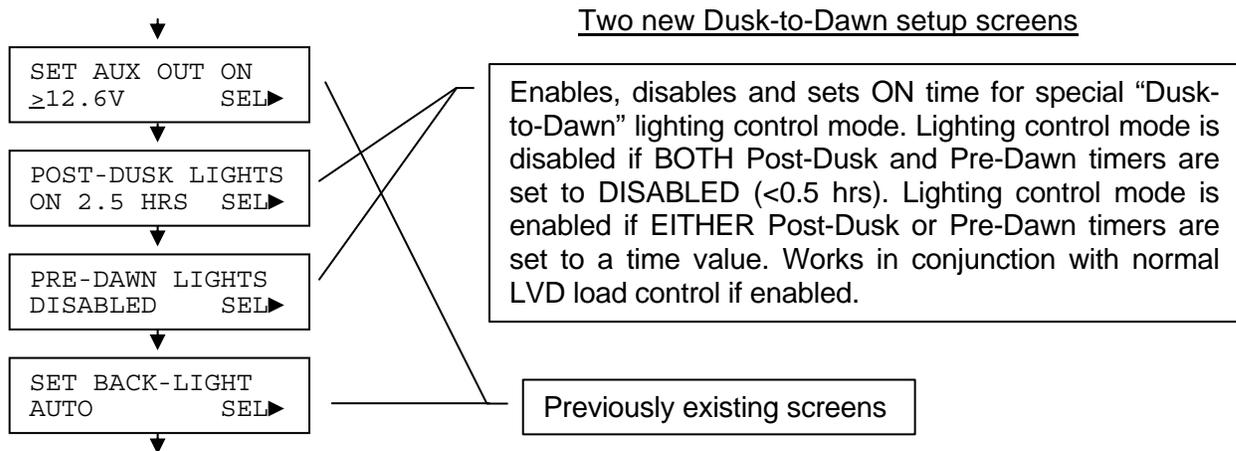
If the Post-Dusk timer was set to 1.0 hour and the Pre-Dawn timer was set to 2.0 hours, lights would turn ON at Dusk, remain ON for one hour, and then turn OFF. Two hours before Dawn the lights would again turn ON and remain on until Dawn. If full Dusk-to-Dawn ON time is desired, set the Post-Dusk timer to it's maximum (20.0 hours) and the Pre-Dawn timer to disabled.

Pre-Dawn control is based on predicting when Dawn is expected to occur. When the controller first boots following the application of battery power it does not yet know when Dawn is expected to occur. As a result Pre-Dawn control does operate for the first night. Once a night time period of 4 hours or more is detected this night time period is stored and Pre-Dawn control will operate. Each subsequent night time period greater 4 hours is added to a running filtered average of night time. The filter slows abrupt changes in the predicted night time period but allows the night time period to slowly change with seasons and weather.

Dusk-to-Dawn Lighting Control Setup:

An IPN-ProRemote with software version V2.00 or later is required setup Dusk-to-Dawn operation. Version V2.00 adds two new setup screens to the IPN-ProRemote SETUP menu as shown below. The IPN-ProRemote does not need to remain with the system and can be used as a setup tool only.

If both the Post-Dusk and Pre-Dawn timers are set to DISABLED (factory default), the lighting control feature is disabled and the auxiliary output load controller operates based on battery voltage or amp-hours only. If either the Post-Dusk or Pre-Dawn timers are set to a time value (i.e., not DISABLED), the lighting control feature is enabled.



Software Upgrade and Compatibility:

Software versions V2.00 are fully forward and backward compatible and software versions can be mixed without difficulty. If the charge controller has V2.00 or later and the IPN-ProRemote does not, the two new screens shown above will not appear and this IPN-ProRemote cannot be used to setup Dusk-to-Dawn operation. If the charge controller has Dusk-to-Dawn capability which has been previously enabled, it will function normally but setup parameters cannot be changed with this IPN-ProRemote. However, performing a RESTORE DEFAULTS with this IPN-ProRemote will restore all factory defaults including Dusk-to-Dawn.

If the IPN-ProRemote has V2.00 but the charge controller does not, the IPN-ProRemote will display dashes (-----) in the Post-Dusk and Pre-Dawn setup screens rather than valid setup data since this charge controller does not have Dusk-to-Dawn capability.

Units in the field can be upgraded to V2.00 by replacing the plug-in microprocessor. The following replacement microprocessors can be purchased for a nominal charge. Refer to Technical Bulletin #100212 for microprocessor replacement instructions.

SB3024i (& Di)	Programmed Microprocessor p/n 590-0001
SB2512i(X)	Programmed Microprocessor p/n 590-0004
IPN-ProRemote	Programmed Microprocessor p/n 590-0002

® Charge On threshold is 200mA for SB3024i Rev D / SB2512iX Rev B or earlier.