NEW BRAVO® SERIES OF MULTIFUNCTION INTELLIGENT CHARGE REGULATOR

Helios Technology is glad to introduce the new intelligent charge regulator **BRAVO®**, that is the result of the twenty-years experience gained by Helios Technology in the photovoltaic field and thanks to the precious suggestions given by experienced installers. This innovative device takes advantage of the most advanced electronic technologies, to allow an incomparable battery charge management and a continuous and very accurate monitoring of the state of charge of the photovoltaic system. **BRAVO®** is able to control the state of charge of the battery and can check its real value by means of one sophisticated algorithm which allows even a remarkable increase of the battery lifetime compared to the traditional charge regulators.
Thanks to its powerful microprocessor which controls all the available functions, **BRAVO®** can fulfill every customer requirement, effectively proving to be a successful instrument for civil and telecommunication systems, isolated chalets, for campers to recharge the service battery or a second auxiliary one, or as a paralleling device for the engine battery. These batteries could be of a different kind each other.
BRAVO® has been also designed to manage in the best and innovative way systems with night-time loads. In fact it is provided with an integrated crepuscular function and with an adjustable internal timer, so that the customer can adjust the desired night operating time. These features make **BRAVO®** the ideal device for the management of public lighting system as solar street lights, including those equipped with a variable-intensity light, thanks to the available digital output. **BRAVO®** can therefore execute several functions, easy to set just positioning the proper jumpers in a slot, while further monitoring and measurements of electrical and environmental parameters can be provided thanks to an available external interface. One remote display and four keys (option MAESTRO DISPLAY) allow the system parameters to be shown in real time and to be adjusted according to the customer needs. Moreover, one remote monitor with two LEDs (option REMOTE MONITOR) and one key allow the remote monitoring of the system and the ON/OFF switch of the load output.

The **BRAVO®** series comprises two models:

BRAVO 15 C: maximum capacity 15A at the module input No.1 and 15A at the load output or 15A at the module input No.1 + 15A at the module input No.2 (total 30A input)

BRAVO 15 L: maximum capacity 15A at the module input No.1 and 15A at the load output + integrated night-time function for the lighting of HELIOS SOX solar street light or night-time loads + integrated digital output for the driving of VARIO light-intensity modulator.

NIGHT-TIME FUNCTION

The integrated night-time function accompanied with an internal adjustable timer allows to drive night-time loads and to customize their operating time according to the following modes:

- Sunset – sunrise;
- Intelligent night-time operating function which allows to feed the load as follows, starting from the sunset:

  a) 7 hours standard period;
  b) 7 hours standard period + pause + 2 hours before sunrise.

  7 hours standard time can be customized and set from 1 up to 9 hours by mean of MAESTRO DISPLAY option.

OPTIONS

MAESTRO DISPLAY: Remote backlighted LCD display + programming unit, with standard connectors and a 3m cable (maximum allowed cable length: 7m), which can be connected to all the **BRAVO®** models.

REMOTE MONITOR: Remote device equipped with two LEDs giving information about the state of the system and one key that allows the forced ON/OFF switch of the load output, with standard connectors and a 5m cable.

TECHNICAL DATA

Normal operating voltage	12V / 24V	Jumper C7+ Jumper C8
Maximum input No.1 / load-output current	15A / 15A	Jumper C-1 not inserted
Maximum input No.1 / input No.2 current	15A / 15A	Jumper C-1 inserted
Maximum power at the module inputs No.1 and No.2	250W / 250W	
Volt resolution	0,1V	
Ampere resolution	0,1A	
Measured values tolerance	4%	
Connecting clamps size	$6mm^2$	
Body dimensions	206 x 64 x 44mm	
Weight	320g	
LEDs OFF / ON self-consumption	13mA / 25mA	
MAX voltage difference between IN - BAT – OUT	0,6V at full power	
Technology	SMD solid-state with MOSFET	
Charging Mode	serial	
Charging time equ, bst	1 hour	
End of charge algorithm	PWM at constant voltage	
Software owner	Helios Technology Srl	
Temperature adjustment coefficient	-6mV/°C / cell (25°C)	
Selectable type of battery	Lead-acid or hermetic gel	To be set with jumper C-3
Operating temperature	from –20°C to +60°C	
Minimum operating voltage	9V	
Overload protection at the “OUT” load output	Electronic to nominal current and against short circuit	
Electronic protection switch-on time	10ms	
Overload protection at the “IN” module inputs No.1 & No.2	electronic PWM to nominal current	
IP protection degree	IP22	

VOLTAGE THRESHOLDS VALUES PRESET AT 25°C

Load cut-off	Ldoff	11,3V
Load RESET	Ldon	12,5V
Buffering charge	norm	13,8V
Equalization charge	equ	14,4V
Deep charge	bst	14,8V

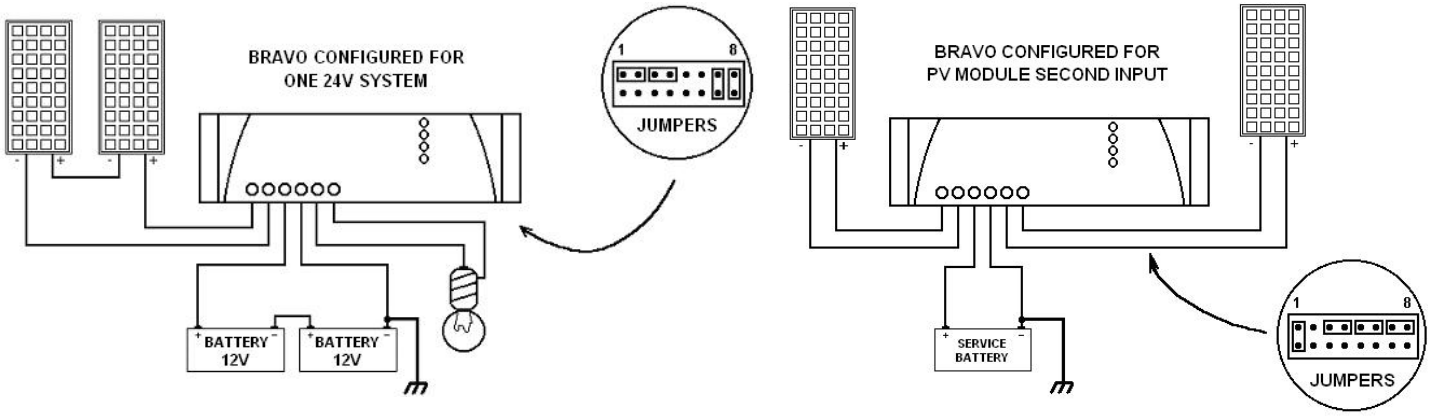
The above thresholds will be automatically modified by the inner temperature-compensation function

STANDARD EXTERNAL INTERFACES

8 jumpers which can be easily positioned by the customer
Standard connector for the MAESTRO external display
Standard connector for the REMOTE MONITOR to get information about the state of the system remotely.

VISUALIZATION AND CONTROL DEVICES

1 green LED + 1 red LED + 1 yellow LED indicating a reverse polarity



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