Globe Temperature

Technical Operations Manual

V 1.0.0

For Globe Temperature
Sensors Version V1.0.0 and up

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The documentation found within this manual is to provide users of our products with technical information pertaining to the installation, maintenance and setup of the product.

It is forbidden to use any Accutron documentation for any other purpose which may be detrimental to the interests of Accutron Instruments INC.

PLEASE NOTE: The newest revision of this manual will be available online at accutroninstruments.com. If you require any assistance in configuring your new Accutron globe temperature sensor, please call our technicians at +1-705-628-0814 or email at info@accutroninstruments.com.

The Manual

Refer to this manual for proper installation, operation, setup and maintenance of the Accutron Pro.

Special attention must be followed to warnings and notices highlighted from the rest of the text to ensure it will stand out.

Warning: Failure to oblige with the necessary precautions can result in death, serious injury, and/or considerable damage to the product.

Note: Important information about the product or that part of the manual, helpful hints, and or troubleshooting advice.

- These instructions do not claim to cover all details or variations in equipment, or to provide for every possible contingency that may arise during installation, operation, setup and maintenance.
- For further information or to resolve issues not covered in the manual, consult the Accutron Technical Service Team.
- The contents of the manual shall not become part of or modify any prior or existing agreement, commitment or relationship.
- The warranty contained in the contract between parties is the sole warranty of Accutron Instruments INC.

IMPORTANT: All specifications are subject to change without notice. Ensure your manual is up to date, the version number can be found on the front page of the manual. If you are unsure, please consult the Accutron Technical Service Team.

Table of Contents

Introduction

Thank you for choosing Accutron Instruments for your monitoring needs. This manual will review the setup and operating procedures of your Globe Temperature Sensor.

The Globe temperature sensor is a Wet Bulb Globe Temperature (WBGT) monitor with black bulb and dry bulb temperature sensors, pressure and humidity sensors, and calculated wet bulb temperature. The ACC-GLOBE sensor calculates WBGT, heat stress/heat index, and monitors changing thermal conditions to ensure environments are safe for workers.

If you have any suggestions on improvements of this product, please share it with us. We value your input. This product was designed to be user friendly, and we are actively looking on how we can improve our products to satisfy our customers.

Section 1: General Information

1.1 Safety Guidelines

This device should only be set up and operated in conjunction with this manual. Qualified personnel are only authorized to install and operate this equipment in accordance with established safety practices and standards.

1.2 Information about your Accutron Globe Temperature Sensor

When you first receive your Accutron Globe Temperature Sensor device, ensure you record the following information shown below. If you need to contact Customer Service, this information will allow us to provide you more efficient service. This information is located on the side of the enclosure.

Table 1: Accutron Globe Temperature Sensor System Information

Accutron Pro
Part Number:
Serial Number:

Section 2: Specifications

Input Power: 12 to 24 VDC

Interfaces: Modbus RTU, RS485

Enclosure: Nema 4X , IP65, ABS

Communication Defaults:

     Modbus Address: 1
     Baud Rate: 9600
     Parity: None
     Stop Bits: 1

Temperature Range: -40˚C to + 60˚C

Wiring:

     Red: V+
     Black: Ground
     Yellow: Data A
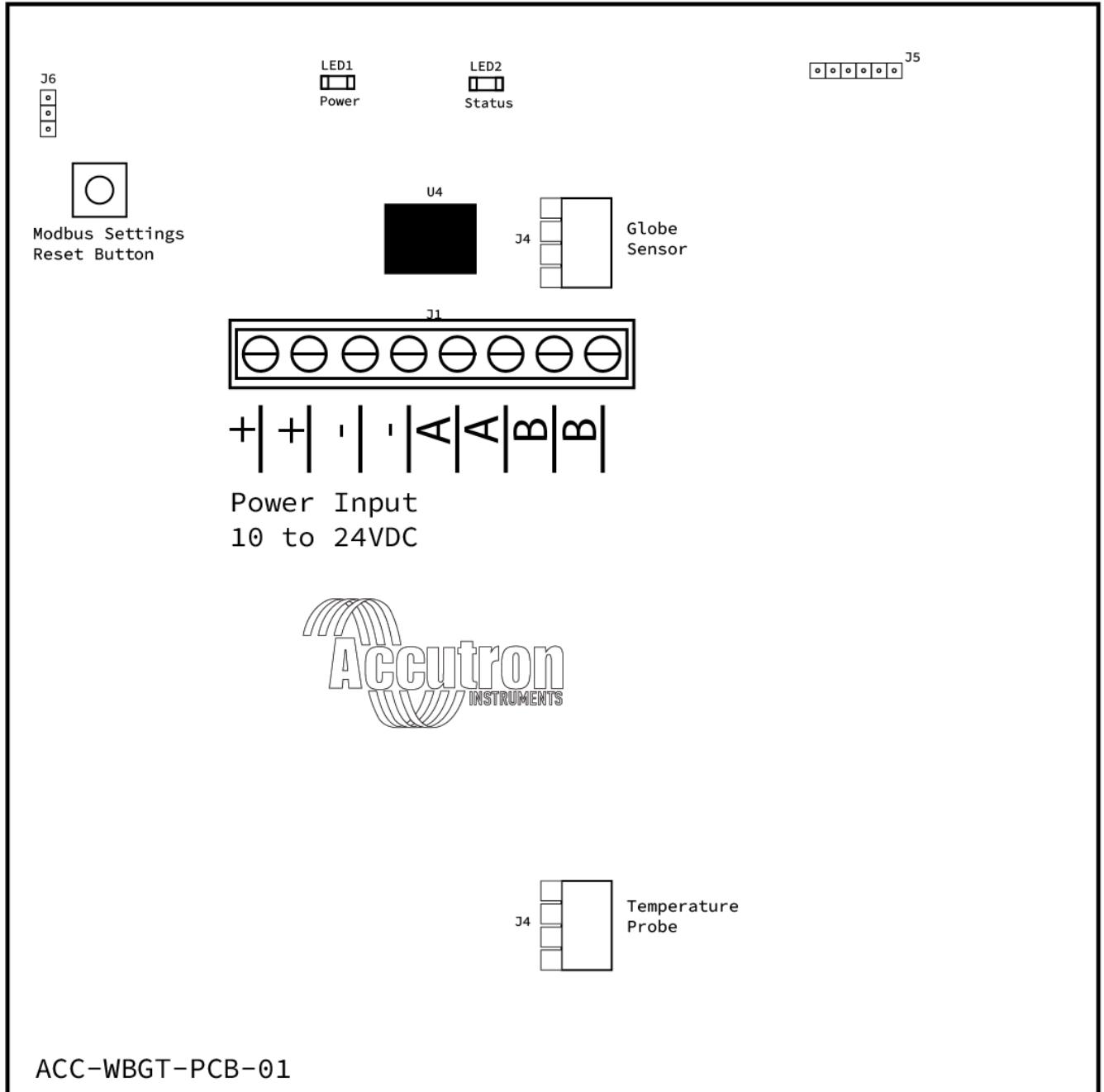   Green: Data B

Section 3: Device Overview

Figure 1: Main board layout and wiring

Section 4: Device Summary

The Accutron Globe sensors is a WBGT sensor with Dry Blub and Black Globe temperature sensors. With pressure and humidity sensors, wet bulb temperatures can be accuratly calculated for a full Wet Bulb Globe Temperature. Both indoor and outdoor WBGT values are available.

LED Indication

There are 6 led color levels - Purple, Red, Orange, Yellow, Green, Blue. Blue is on by default when below the green led trigger value.

Each color can be enabled or disabled.

Triggering source can be from: WBGT (Inside formula)
                                  WBGT (Outside formula)
                                  Heat Stress Index
                                  Dry Bulb Temperature
                                  Wet Bulb Temperature
                                  Globe Temperature
                                  Dew Point

Triggering Levels are User Settable (positive °C values only).

Section 5: Modbus Registers

Address	Variable	Units	Description
16 Bit Int registers			
40000	WBGT inside	°C x100	0.7*wetbulb + 0.3*globetemp
40001	WBGT inside	°F x100	0.7*wetbulb + 0.3*globetemp
40002	WBGT outside	°C x100	0.7*wetbulb + 0.2*globetemp + 0.1*drybulb
40003	WBGT outside	°F x100	0.7*wetbulb + 0.2*globetemp + 0.1*drybulb
40004	Globe Temp	°C x100	
40005	Globe Temp	°F x100	
40006	Relative Humidity	%rh x100	
40007	Temperature (dry bulb)	°C x100	
40008	Temperature (dry bulb)	°F x100	
40009	Wet Bulb	°C x100	
40010	Wet Bulb	°F x100	
40011	Air Pressure kpa	kPa x100	
40012	Air Pressure mbar	mbar x10	
40013	Air Pressure inhg	inhg x10	
40014	Dew Point	°C x100	
40015	Dew Point	°F x100	
40016	Heat stress Index	°C x100	
40017	Heat stress Index	°F x100	
40018	Air Density	kg/m3 x10	
40019	Air Density	lb/ft3 x100	
40020	heartbeat		Counter increments every second
32 Bit float registers			
40022	WBGT inside	°C	0.7*wetbulb + 0.3*globetemp
40024	WBGT inside	°F	0.7*wetbulb + 0.3*globetemp
40026	WBGT outside	°C	0.7*wetbulb + 0.2*globetemp + 0.1*drybulb
40028	WBGT outside	°F	0.7*wetbulb + 0.2*globetemp + 0.1*drybulb
40030	Globe Temp	°C	
40032	Globe Temp	°F	
40034	Relative Humidity	%rh	
40036	Temperature (dry bulb)	°C	
40038	Temperature (dry bulb)	°F	
40040	Wet Bulb	°C	
40042	Wet Bulb	°F	
40044	Air Pressure kpa	kPa	
40046	Air Pressure mbar	mbar	

40048	Air Pressure inhg	inhg	
40050	Dew Point	°C	
40052	Dew Point	°F	
40054	Heatstress Index	°C	
40056	Heatstress Index	°F	
40058	Air Density	kg/m3	
40060	Air Density	lb/ft3	

User Settings - holding registers (16bit ints)

40102	modbus Address	1 to 255	default 1
40103	Baud rate	0 = 4800	default 9600
		1 = 9600	
		2 = 19200	
		3 = 115200	
40104	Parity	0 = none	default none
		1 = even	
		2 = odd	
40105	stop bits	0 = 1 stop bit	default one
		1 = 2 stop bit	

Optional User Settings - holding registers (16bit ints)

40106	Purple Light on when =	°C x100	Example: 2900 = 29.00°C
40107	Red Light on when =	°C x100	
40108	Orange Light on when =	°C x100	(no negative numbers)
40109	Yellow Light on when =	°C x100	
40110	Green Light on when =	°C x100	
40111	enable/disable color	16bit field	1 = enabled, 0 = disabled xxxxxxxxxxPROYGB
40112	Temperature Source for lights	INT	0 = WBGT inside
			1 = WBGT outside
			2 = Dry bulb
			3 = Globe Temp
			4 = Wet Bulb
			5 = Dew point
			6 = Heatstress Index

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