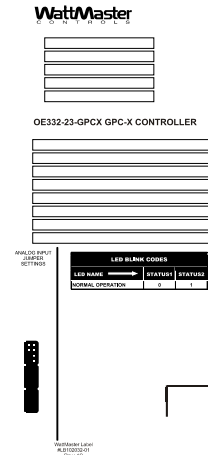


# OE331-23-GPCX GPC-X Controller

## Description

The OE331-23-GPCX GPC-X Controller is used for controlling equipment or processes that cannot be controlled using a standard HVAC controller. The Prism computer front end software is used to interface with the GPC-X controller functions. The GPC-X Controller provides the flexibility to control, schedule and/or monitor equipment such as unit heaters, exhaust fans, motorized louvers, and other mechanical equipment. The GPC-X has (6) configurable inputs which will accept signals from thermistor temperature sensors, 4-20mA or 0-5VDC or 0-10VDC transmitters or dry contact closures. The inputs are set for the desired input by means of a jumper bar. An additional modular input is provided for connection of an OE271 static pressure sensor. The GPC-X has (5) relay outputs for on/off control and (2) analog outputs. With the addition of the OE358-23-12R, 12 Relay Expansion Module, (4) additional relay outputs (of the 12 total relays on the module) are available for use with the GPC-X, providing for a maximum of (9) usable relay outputs total. The GPC-X also has (5) separate 2 event per day schedules, each with its own optimal start functions built in. In addition the GPC-X provides lead/lag start capabilities.



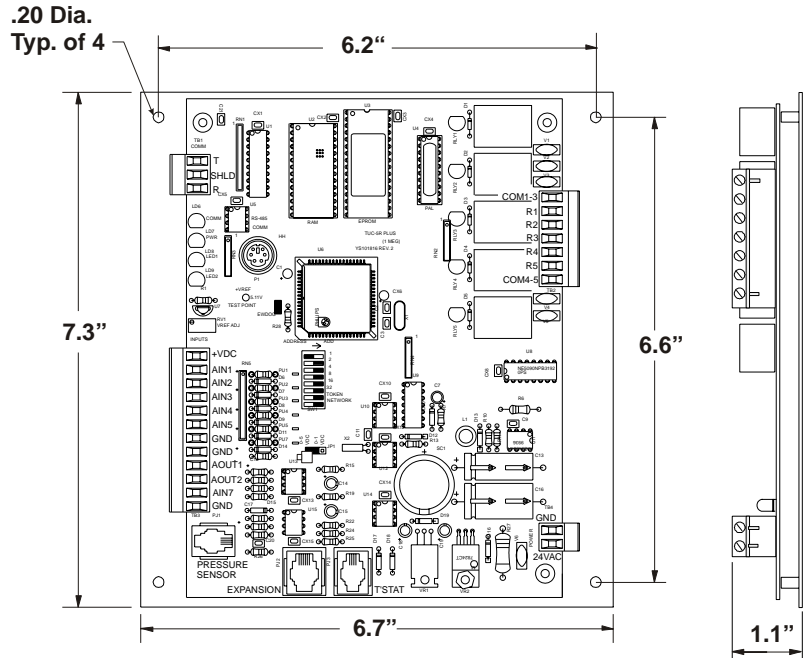
## Mounting

The GPC-X is provided with an integral plastic enclosure which provides mounting points for mounting inside of a control enclosure. It is recommended that the GPC-X be mounted in a control enclosure in the building equipment room. An optional factory control enclosure for the GPC-X is also available.

Technical Data		OE331-23-GPCX GPC-X Controller	
Power	24 Volt AC	Weight	1.5 lb.
Power Consumption	8 VA Maximum	Network Connection	RS-485
Operating Temp	10°F to 149°F	Protocol	HSI Open Protocol Token Passing
Operating Humidity	90% RH Non-Condensing	Communications	RS-485 - 9600 Baud
<b>Inputs:</b>		<b>Outputs:</b>	
Types of Allowed Inputs	Type III-10kohm sensors	Total Relay Qty. On Board	5
	4-20ma	Total Relay Qty. Available With Optional Expansion Board	9
	0-5VDC & 0-10VDC	Relay Power Rating	(2 Amp @ 24 VAC)
	N.O. or N.C. Binary Contact	Analog Output Qty.	2
Total Inputs Available	7	Analog Output Signal	0-10 VDC
Static Pressure Inputs	1 (Modular )	Optimal Start Schedules	(5) Total - (1) for Each Schedule
Configurable Inputs	6	Lead Lag Scheduling	(1) Output can be Configured
Schedules Available	(5) 2 Event per day		
<b>Three Year Warranty</b>		<b>WattMaster reserves the right to change specifications without notice</b>	

## Description

The OE331-21 General Purpose Controller Plus (GPC Plus) is used for controlling equipment or processes that cannot be controlled using HVAC controllers. The Prism computer front end software is used to interface with the GPC Plus controller functions. The GPC Plus Controller provides the flexibility to control, schedule and/or monitor equipment such as unit heaters, exhaust fans, motorized louvers, etc.. The GPC Plus has (6) configurable inputs which will accept signals from thermistor temperature sensors, 4-20mA or 0-5VDC transmitters or dry contact closures. An additional modular input is provided for connection of an OE271 static pressure sensor. The GPC Plus has (5) relay outputs for on/off control and (2) analog outputs. With the addition of the OE352 2 Slot Expansion Base Board and (1) OE357 4 Relay Expansion Board, (4) additional relay outputs are available providing for a maximum of (9) usable relay outputs. The GPC Plus also has (5) separate 2 event per day schedules, each with its own optimal start functions built in. In addition the GPC Plus provides lead/lag start capabilities.



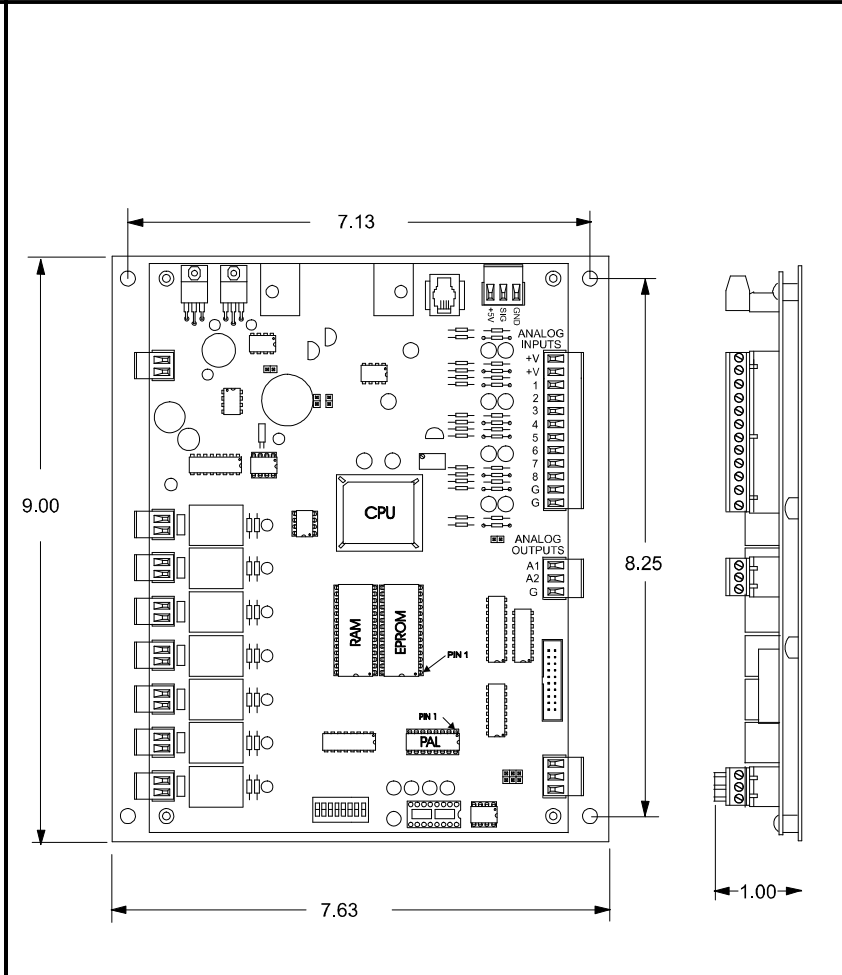
## Mounting

The GPC Plus is provided with an integral backplate for mounting inside of a control enclosure. It is recommended that the GPC Plus be mounted in the HVAC unit control enclosure, or in a control enclosure in the building equipment room. An optional factory control enclosure for the GPC Plus is available.

Technical Data		OE331-21-GPCPLUS GPC Plus Controller	
Power	24 Volt AC	Weight	1.5 lb.
Power Consumption	8 VA Maximum	Network Connection	RS-485
Operating Temp	10°F to 149°F	Protocol	HSI Open Protocol Token Passing
Operating Humidity	90% RH Non-Condensing	Communications	RS-485 - 9600 Baud
<b>Inputs:</b>		<b>Outputs:</b>	
Types of Allowed Inputs	Type III-10kohm sensors	Total Relay Qty. On Board	5
	4-20ma sensors	Total Relay Qty. Available With Optional Expansion Board	9
	N.O. Binary Contact	Relay Power Rating	(2 Amp @ 24 VAC)
	N.C. Binary Contact	Analog Output Qty.	2
Total Inputs Available	7	Analog Output Signal	0-10 VDC
Static Pressure Inputs	1 (Modular)	Optimal Start Schedules	(5) Total - (1) for Each Schedule
Configurable Inputs	6	Lead Lag Scheduling	(1) Output can be Configured
Schedules Available	(5) 2 Event per day	WattMaster reserves the right to change specifications without notice	
Three Year Warranty			

**Description**

The GPC-17 Controller is used for controlling equipment or processes that cannot be controlled using standard HVAC Unit controllers. The Orion Prism computer front end software is used to interface with the GPC-17 controller functions. The GPC-17 is designed with 6 universal inputs, 7 binary outputs and 2 analog output. Each input can be configured for use with a Type III-10k ohm thermistor temperature sensor, 4-20ma sensor, 0-5 VDC sensor or a N.O. or N.C. binary contact closure. Sensor reading values can be selected for the specific input type, such as, %RH, Deg. F, RPM, etc.. If a thermistor type temperature sensor is used, a calibration option is available to offset the actual temperature in relation to the displayed reading. It also has one input configures for Duct Static Pressure and one configured for Building Pressure. The 7 binary outputs may be configured to operate based on any of the 8 sensor inputs, outdoor air temperature, the GPC-17 controller's internal schedule or an external schedule. They can also be configured to use AND/OR logic statements. A Relay Expansion Board can be connected to the GPC-17 to give it an extra 8 relay outputs. In addition to the relay outputs the GPC-17 contains two 0-10VDC analog outputs which can be configured for simple floating point or PID control. The analog output can also be configured to operate based on any of the 8 sensor inputs, outdoor air temperature, the GPC-17 controller's internal schedule or an external schedule. In addition an Analog Output Expansion Board can be connected to the GPC-17, giving it two additional analog outputs.



In addition to the relay outputs the GPC-17 contains two 0-10VDC analog outputs which can be configured for simple floating point or PID control. The analog output can also be configured to operate based on any of the 8 sensor inputs, outdoor air temperature, the GPC-17 controller's internal schedule or an external schedule. In addition an Analog Output Expansion Board can be connected to the GPC-17, giving it two additional analog outputs.

**Mounting**

The GPC-17 is provided with an integral backplate for mounting inside of a control enclosure. It is recommended that the GPC-17 be mounted in the HVAC unit control enclosure, or in a control enclosure in the building equipment room. An optional factory control enclosure for the GPC-17 is available.

Technical Data		OE310-21-GPC GPC-17 Controller	
Power	24 Volt AC	Weight	1.5 lb.
Power Consumption	10 VA Maximum	Network Connection	RS-485
Operating Temp	10°F to 149°F	Protocol	HSI Open Protocol Token Passing
Operating Humidity	90% RH Non-Condensing	Communications	RS-485 - 9600 Baud
<b>Inputs:</b>		<b>Outputs:</b>	
Types Allowed	Type III-10kohm sensors	Relay Qty.	7
	4-20ma sensors	Relay Power Rating	(2 Amp @ 24 VAC)
	N.O. Binary Contact	Analog Output Qty.	2
	N.C. Binary Contact	Analog Output Signal	0-10 VDC
Total Inputs Available	8		
<b>Three Year Warranty</b>		<b>WattMaster reserves the right to change specifications without notice</b>	

**Description**

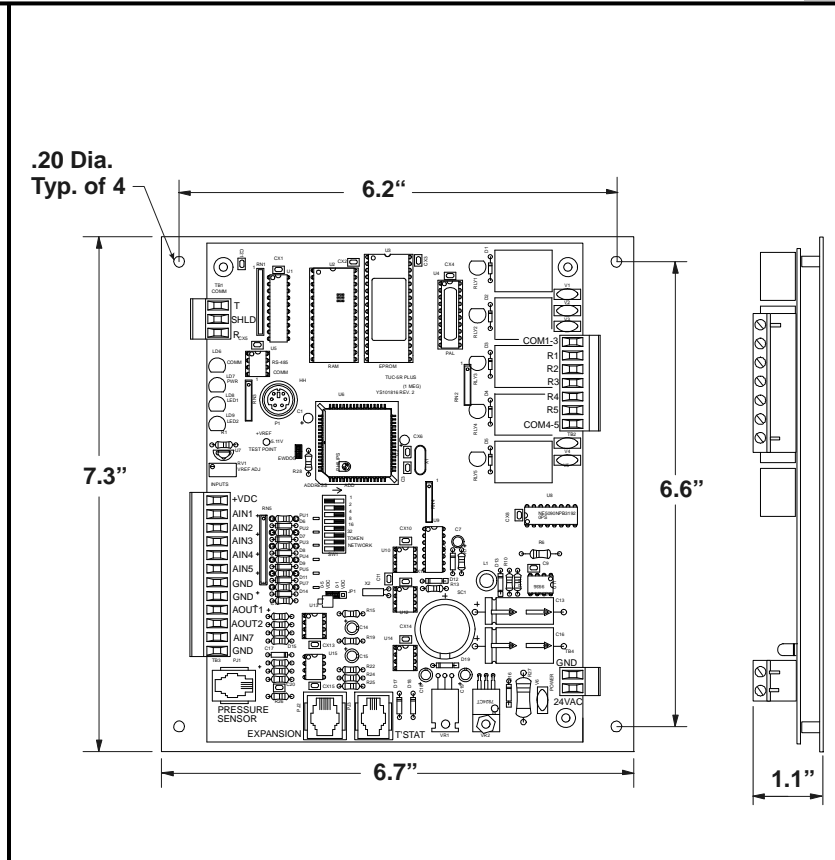
The OE331-21-AVG General Broadcast Device Controller (GBD) provides a method of connecting up to a maximum of 6 Room Temperature Sensors so that they can then be averaged and globally broadcast by the GBD to one VCM controller on a local loop. This General Broadcast Device also includes the ability to read up to 6 Carbon Dioxide sensors and average or find the highest reading and then broadcast the reading to one VCM controller on a local loop. It also provides a 0-10 VDC proportional reset voltage on Analog #1 on the GBD. The GBD calculates and varies the signal depending on the level of CO<sub>2</sub> in the space as it rises from an adjustable minimum setting to an adjustable maximum level. Also, if desired, Analog Output #2 can provide a 10.0 VDC fixed signal whenever the CO<sub>2</sub> is above the minimum setpoint.

Relay Output #1 activates whenever the CO<sub>2</sub> rises above the minimum setpoint and deactivates when it falls 5 PPM below the minimum setpoint. Relay Output #2 activates whenever the CO<sub>2</sub> rises above the maximum setpoint and deactivates when it falls 5 PPM below the maximum setpoint.

Up to a maximum of (2) GBD controllers can be tied together to provide from 7 to 12 Room Temperature Sensors or CO<sub>2</sub> Sensors inputs. Each GBD controller can be used for either temperature averaging or CO<sub>2</sub> averaging but not both on the same GBD controller. When both are required at least 2 GBD controllers, one configured for CO<sub>2</sub> control and the other configured for Temperature averaging must be used.

**Mounting**

The GBD Controller is provided with an integral backplate for mounting inside of a control enclosure. It is recommended that the GBD Controller be mounted in the HVAC unit control enclosure, or in a control enclosure in the building equipment room. An optional factory control enclosure for the GBD Controller is available.



Technical Data		OE331-21-AVG GBD Controller	
Power	24 Volt AC	Weight	1.5 lb.
Power Consumption	8 VA Maximum	Network Connection	RS-485
Operating Temp	10°F to 149°F	Protocol	HSI Open Protocol Token Passing
Operating Humidity	90% RH Non-Condensing	Communications	RS-485 - 9600 Baud
<b>Inputs Available</b>		<b>Outputs Available:</b>	
Types and Quantity of Usable Inputs	Type III-10kohm sensors	Usable Analog Output Qty.	(2) Available
	4-20ma sensors	AOUT1 Output Signal	0-10 VDC Variable Signal
	(6) available	AOUT2 Output Signal	10 VDC Fixed Signal
		Relay Output 1	Contact Closure
		Relay Output 2	Contact Closure
<b>Three Year Warranty</b>		<b>WattMaster reserves the right to change specifications without notice</b>	

**Description**

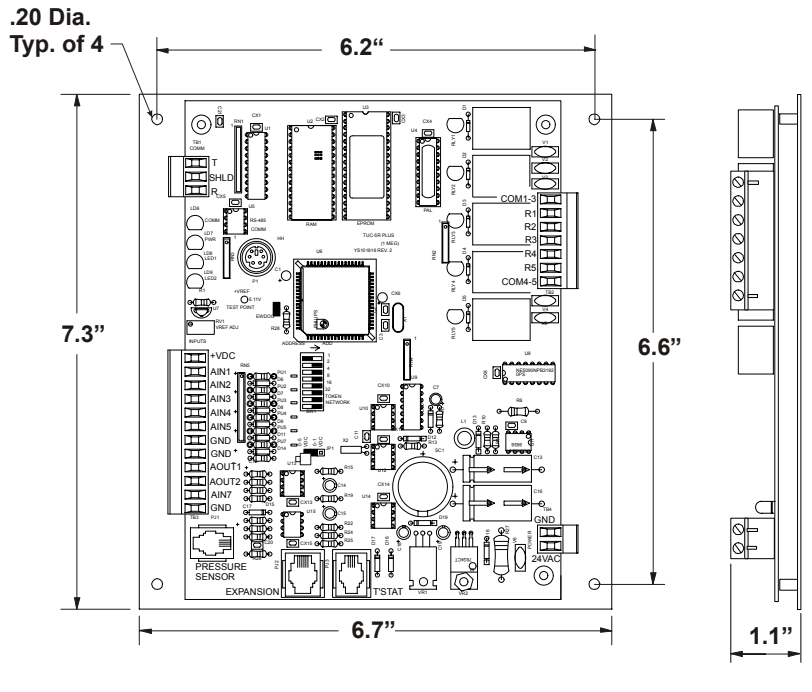
The OE331-21-KWH (Kilowatt Hour) Module provides the ability to record and display KW usage and to limit demand on your control system. Using the Prism Graphical Computer Front End, a status screen displays current demand, yesterday's demand, and the peak demand values and times for both. Historical logs from the previous month and the current month are also available and can be downloaded for archiving via the PRISM software interface. A running total of power consumption is also displayed on the status screen. This value can be manually reset at any time allowing the user to monitor overall power consumption over long periods of time.

Analog Input #2 on the KWH Module monitors all incoming contact closures from a KW pulse meter (usually provided by the utility company) and times them to generate the current KW Demand. A user adjustable setpoint is provided to define what each pulse represents in Kilowatts Per Hour. A Demand Factoring Constant is also provided if it appears that contact bounce may be affecting the operation. The Demand Factor is simply the number of times to average the current demand reading to create the final Demand Reading. It is normally left at a value of '1' unless a problem is encountered.

Two additional setpoints are provided for the EMS Demand Limiting Broadcast. A Limit Setpoint and a Proportional Reset Range are provided so that the user can adjust when to begin shedding demand and how rapidly this occurs. Any controllers equipped to "hear" this broadcast begin spreading their heating and cooling setpoints proportionally until the maximum EMS Adjustment limit is reached. This value is also user adjustable for each individual controller so that the rate at which demand is shed can be optimally configured for special cases where not all zones can tolerate a large change in temperature.

**Mounting**

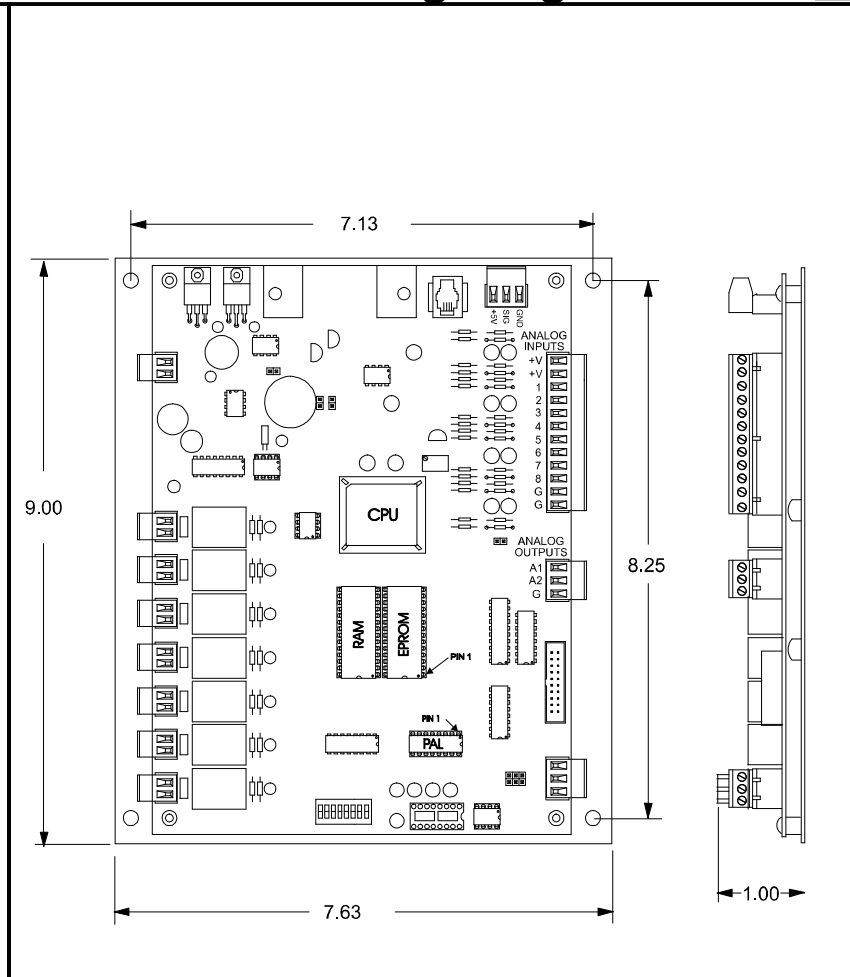
The KWH Module is provided with an integral backplate for mounting inside of a control enclosure. It is recommended that the KWH Module be mounted in a control enclosure in the building equipment room. An optional factory control enclosure for the KWH Module is available.



Technical Data		OE331-21-KWH KWH Module	
Power	24 Volt AC	Weight	1.5 lb.
Power Consumption	8 VA Maximum	Network Connection	RS-485
Operating Temp	10°F to 149°F	Protocol	HSI Open Protocol Token Passing
Operating Humidity	90% RH Non-Condensing	Communications	RS-485 - 9600 Baud
<b>Input</b>		<b>Output</b>	
<b>Location</b>	<b>Type</b>	<b>Location</b>	<b>Type</b>
AIN2	Dry Contact Closure KW Pulse Meter (By Others)	RS-485 Communications Loop	EMS Demand Limiting Broadcast
<b>Three Year Warranty</b>		<b>WattMaster reserves the right to change specifications without notice</b>	

**Description**

The OE310-21-LP Lighting Controller allows an Orion Control System to also control the building lighting systems along with the HVAC system. The Lighting Controller is provided with 7 schedules, each providing 2 start/stop events per day and 14 start/stop holiday events. Lighting Controller schedules are designed to operate from a starting time, a contact closure or a percentage light level as sensed by a (0-1.5kohm, 0-100%) light level sensor, thus providing maximum lighting control flexibility. As an example, a lighting schedule could be programmed to allow the lighting circuit to come on at dusk, based on a light sensor and then turned off at a given time during the night based on a time schedule. With the Lighting Controller, lighting schedules may be overridden to "on" with a user provided pushbutton. This pushbutton is wired to the analog input that corresponds to the schedule number, on the Lighting Controller. Schedule override time periods are programmed from the Orion Prism program. Lighting Controller output relays may be configured for continuous ON mode during the occupied schedule or a short pulse when the schedule starts and another short pulse when the schedule ends. Pulsed output requires an optional Expansion Relay Board and a GE™ RR-7 or RR-9 or equivalent lighting relay. The Lighting Controller may be connected to any local loop at any point on the Orion system. Orion Prism computer front end software is used to interface with the Lighting Panel Controller functions. The Lighting Controller cannot be programmed through the System Manager operator interface.



Pulsed output requires an optional Expansion Relay Board and a GE™ RR-7 or RR-9 or equivalent lighting relay. The Lighting Controller may be connected to any local loop at any point on the Orion system. Orion Prism computer front end software is used to interface with the Lighting Panel Controller functions. The Lighting Controller cannot be programmed through the System Manager operator interface.

**Mounting**

The Lighting Controller is provided with an integral backplate for mounting inside of a control enclosure. It is recommended that Lighting Controller be mounted in the in a control enclosure in the building equipment room. An optional factory control enclosure for the Lighting Controller is available.

Technical Data		OE310-21-GPC GPC-17 Controller	
Power	24 Volt AC	Weight	1.5 lb.
Power Consumption	10 VA Maximum	Network Connection	RS-485
Operating Temp	10°F to 149°F	Protocol	HSI Open Protocol Token Passing
Operating Humidity	90% RH Non-Condensing	Communications	RS-485 - 9600 Baud
<b>Inputs:</b>		<b>Outputs:</b>	
Types Allowed	Pushbutton Override Connected to Analog Input #8 (N.O. Binary Contact by Others) All Schedules May be Programmed to Follow or Not Follow the Override	Type Provided	Continuous Contact Closure or Start Pulse and Stop Pulse for Each of the 7 Schedules (N.O. Binary Contact)
Total Inputs Available	1	Relay Power Rating	2 Amp @ 24 VAC
<b>Three Year Warranty</b>		Total Outputs Available	7
WattMaster reserves the right to change specifications without notice			