

# Power Over Ethernet

**RGS200-12P**

## Support Notes

Jun 2016

# Power over Ethernet (PoE) Application Guide

RGS200-12P switches support PoE function for connected powered device. The operation mode contains 802.3af (15.4W), 802.3at (30W). Each port has 5 classes for selection, class 0~4. And, total power budget of the system is up to 240 watt.

For power management friendly use, it supports power scheduler for each PoE port. Each time interval is 30 minutes from Sunday to Saturday. Customer can select which interval to set PoE on or PoE off. It also supports PoE reset function to power off, then power on the PoE function on a port at certain time. Maximum five time can be created in a week.

## Reserved Power Determination

Power Over Ethernet Configuration	
Reserved Power determined by	<input checked="" type="radio"/> Class <input type="radio"/> Allocation <input type="radio"/> LLDP-MED
Power Management Mode	<input type="radio"/> Actual Consumption <input checked="" type="radio"/> Reserved Power

There are three modes for configuring how the ports/PDs may reserve power.

### 1. Class mode:

In this mode each port automatically determines how much power to reserve according to the class the connected PD belongs to, and reserves the power accordingly. Five different port classes exist and one for 4, 7, 15.4 or 30 Watts.

### 2. Allocated mode:

In this mode the user allocates the amount of power that each port may reserve.

The allocated/reserved power for each port/PD is specified in the Maximum Power fields.

### 3. LLDP-MED mode:

This mode is similar to the Class mode expect that each port determine the amount power it reserves by exchanging PoE information using the LLDP protocol and reserves power accordingly.

If no LLDP information is available for a port, the port will reserve power using the class mode

Note:

For all modes: If a port uses more power than the reserved power for the port, the port is shut down.

## Power Management Mode

Power Over Ethernet Configuration			
Reserved Power determined by	<input checked="" type="radio"/> Class	<input type="radio"/> Allocation	<input type="radio"/> LLDP-MED
Power Management Mode	<input type="radio"/> Actual Consumption	<input checked="" type="radio"/> Reserved Power	

There are 2 modes for configuring when to shut down the ports:

### 1. Actual Consumption:

In this mode the ports are shut down when the actual power consumption for all ports exceeds the amount of power that the power supply can deliver or if the actual power consumption for a given port exceeds the reserved power for that port. The ports are shut down according to the ports priority. If two ports have the same priority the port with the highest port number is shut down.

Port Priority: Critical > High > Low.

When priorities are the same, low number of the port has higher priority.

### 2. Reserved Power:

In this mode the ports are shut down when total reserved powered exceeds the amount of power that the power supply can deliver. In this mode the port power is not turned on if the PD requests more power than available from the power supply.

## Other Setting Parameter

PoE Power Supply Configuration				
Primary Power Supply [W]				
<input type="text" value="240"/>				
PoE Port Configuration				
Port	Mode	Operation	Priority	Maximum Power [W]
*	<> ▼	<> ▼	<> ▼	15.4
1	Enable ▼	802.3af ▼	Low ▼	15.4
2	Enable ▼	802.3af ▼	Low ▼	15.4
3	Enable ▼	802.3af ▼	Low ▼	15.4
4	Enable ▼	802.3af ▼	Low ▼	15.4
5	Enable ▼	802.3af ▼	Low ▼	15.4
6	Enable ▼	802.3af ▼	Low ▼	15.4
7	Enable ▼	802.3af ▼	Low ▼	15.4
8	Enable ▼	802.3af ▼	Low ▼	15.4

### 1. PoE Power Supply

For being able to determine the amount of power the PD may use, it must be defined what amount of power a power source can deliver. Valid values are in the range 0 to 240 Watts.

### 2. PoE Mode

The PoE Mode represents the PoE operating mode for the port.

Disable : PoE disabled for the port.

Enable : Enables PoE for the port.

Schedule : Enables PoE for the port by scheduling.

### 3. Operation Mode

The Operation Mode represents the PoE power operating protocol for the port.

802.3af : Sets PoE protocol to IEEE 802.3af.

802.3at : Sets PoE protocol to IEEE 802.3at.

### 4. PoE Priority

The Priority represents the ports priority. There are three levels of power priority named Low, High and Critical.

The priority is used in the case where the remote devices require more power than the power supply can deliver. In this case the port with the lowest priority will be turn off starting from the port with the highest port number.

### 5. Maximum Power

The Maximum Power value contains a numerical value that indicates the maximum power in watts that can be delivered to a remote device.

For port support 4Pairs mode, the maximum allowed value is 60 W; others are 30 W.

## PoE Power Scheduling & Reset

The power scheduling is used to control the power alive interval on PoE port. It is allowed to set the specific interval to schedule power on/off in one week.

The current scheduling state is displayed graphically during the week. Green indicates the power is on and red that it is off. Directly changes checkmarks to indicate which day are members of the time interval. Check or uncheck as needed to modify the scheduling table.

Configuration

System  
EEE  
Ports  
DHCP  
Security  
Aggregation  
Loop Protection  
Spanning Tree  
IPMC Profile  
MVR  
IPMC  
LLDP  
PoE  
PoE  
Power Scheduler  
Power Reset  
MAC Table  
VLANs  
Voice VLAN  
QoS  
Mirroring  
GVRP  
RingV2  
DDMI  
Monitor  
Diagnostics  
Maintenance

PoE Power Scheduling Control on Port 1

Power Scheduling Interval Configuration

Day							Interval	Action
Sun.	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Start - End	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	00:00 - 00:29	<input checked="" type="radio"/> Power ON <input type="radio"/> Power OFF

Apply

Power Scheduling During 00:00 - 05:59

Time Interval	Day						
	Sun.	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
00:00 - 00:29	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
00:30 - 00:59	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
01:00 - 01:29	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
01:30 - 01:59	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
02:00 - 02:29	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
02:30 - 02:59	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
03:00 - 03:29	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
03:30 - 03:59	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
04:00 - 04:29	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
04:30 - 04:59	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
05:00 - 05:29	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
05:30 - 05:59	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Save Reset

### 1. Day

Checkmarks indicate which day are members of the set. From Sunday to Saturday.

### 2. Interval

Start - Select the start hour and minute. End - Select the end hour and minute.

There are 48 time interval one day. Each interval has 30 minutes.

### 3. Action

Power On - Select the radio button to apply power on during the interval.

Power Off - Select the radio button to apply power off during the interval.

### 4. PoE Power Reset

The entry is used to control the power reset time on PoE port.

It is allowed to create at maximum 5 entries for each PoE port.

PoE Power Scheduling Control on Port 1

Power Scheduling Interval Configuration

Day							Interval	Action
Sun.	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Start - End	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	00:00 - 00:29	<input checked="" type="radio"/> Power ON <input type="radio"/> Power OFF

Apply

# Example 1

## 1. Parameter Setting:

Reserved Power determined: Class  
Power Management Mode: Actual Consumption  
Primary Power Supply: 6W

## 2. Test Port

Port 1: 802.3af with critical priority  
Port 2: 802.3af with high priority  
Port 3: 802.3af with low priority

## 3. PD Power Consumption

Port 1: 3.9 watt (PoE Splitter)  
Port 2: 2.8 watt (PoE VoIP Phone)  
Port 3: 2.5 watt (PoE WiFi AP)

## 4. Web Configuration

**Power Over Ethernet Configuration**

Reserved Power determined by: ☒ Class ☐ Allocation ☐ LLDP-MED

Power Management Mode: ☒ Actual Consumption ☐ Reserved Power

**PoE Power Supply Configuration**

Primary Power Supply [W]: 7

**PoE Port Configuration**

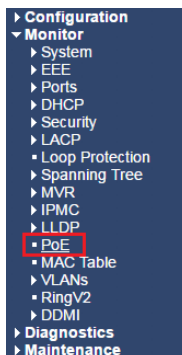
Port	Mode	Operation	Priority	Maximum Power [W]
*	<>	<>	<>	15.4
1	Enable	802.3af	Critical	15.4
2	Enable	802.3af	High	15.4
3	Enable	802.3af	Low	15.4
4	Enable	802.3af	Low	15.4
5	Enable	802.3af	Low	15.4
6	Enable	802.3af	Low	15.4
7	Enable	802.3af	Low	15.4
8	Enable	802.3af	Low	15.4

Save Reset

## 5. Test Result

PoE port status can be monitored by Web: Monitor→PoE

In the following table, it can be seen if system budget is not enough for all PoE device, port with higher priority port will be feed power first. The last priority port (port 3) will not be powered.



#### Power Over Ethernet Status

Local Port	PD class	Power Requested	Power Allocated	Power Used	Current Used	Priority	Port Status
1	0	15.4 [W]	15.4 [W]	3.9 [W]	74 [mA]	Critical	PoE turned ON
2	0	15.4 [W]	15.4 [W]	2.8 [W]	53 [mA]	High	PoE turned ON
3	0	15.4 [W]	0 [W]	0 [W]	0 [mA]	Low	PoE turned OFF - Power budget exceeded
4	-	0 [W]	0 [W]	0 [W]	0 [mA]	Low	No PD detected
5	-	0 [W]	0 [W]	0 [W]	0 [mA]	Low	No PD detected
6	-	0 [W]	0 [W]	0 [W]	0 [mA]	Low	No PD detected
7	-	0 [W]	0 [W]	0 [W]	0 [mA]	Low	No PD detected
8	-	0 [W]	0 [W]	0 [W]	0 [mA]	Low	No PD detected
Total		46.2 [W]	30.8 [W]	6.7 [W]	127 [mA]		

## Example 2

### 1. Parameter Setting:

Reserved Power determined: Allocation

Power Management Mode: Reserved Power

Primary Power Supply: 138 W (> all port reserved power)

### 2. Port Maximum Power

Port 1~8: 15.4 W

Total: 123.2 W

### 3. PD Power Consumption

Port 1: 3.9 watt (PoE Splitter)

Port 2: 2.8 watt (PoE VoIP Phone)

Port 3: 2.5 watt (PoE WiFi AP)

### 4. Web Configuration

**Power Over Ethernet Configuration**

Reserved Power determined by: ☐ Class ☒ Allocation ☐ LLDP-MED

Power Management Mode: ☐ Actual Consumption ☒ Reserved Power

**PoE Power Supply Configuration**

Primary Power Supply [W]: 124

**PoE Port Configuration**

Port	Mode	Operation	Priority	Maximum Power [W]
*	<>	<>	<>	15.4
1	Enable	802.3af	Critical	15.4
2	Enable	802.3af	High	15.4
3	Enable	802.3af	Low	15.4
4	Enable	802.3af	Low	15.4
5	Enable	802.3af	Low	15.4
6	Enable	802.3af	Low	15.4
7	Enable	802.3af	Low	15.4
8	Enable	802.3af	Low	15.4

Save Reset

### 5. Test Result

PoE port status can be monitored by Web: Monitor→PoE

Since power has reserved for each port in advance, each powered device can use power budget of its corresponding port without exceed its maximum power.

Configuration

Monitor

- System
- EEE
- Ports
- DHCP
- Security
- LACP
- Loop Protection
- Spanning Tree
- MVR
- IPMC
- LLDP
- PoE
  - MAC Table
  - VLANs
  - RingV2
  - DDMI

Diagnostics

Maintenance

Power Over Ethernet Status

Local Port	PD class	Power Requested	Power Allocated	Power Used	Current Used	Priority	Port Status
1	0	15.4 [W]	15.4 [W]	3.9 [W]	70 [mA]	Critical	PoE turned ON
2	0	15.4 [W]	15.4 [W]	2.7 [W]	53 [mA]	High	PoE turned ON
3	0	15.4 [W]	15.4 [W]	2.2 [W]	42 [mA]	Low	PoE turned ON
4	-	0 [W]	0 [W]	0 [W]	0 [mA]	Low	No PD detected
5	-	0 [W]	0 [W]	0 [W]	0 [mA]	Low	No PD detected
6	-	0 [W]	0 [W]	0 [W]	0 [mA]	Low	No PD detected
7	-	0 [W]	0 [W]	0 [W]	0 [mA]	Low	No PD detected
8	-	0 [W]	0 [W]	0 [W]	0 [mA]	Low	No PD detected
Total		46.2 [W]	46.2 [W]	8.8 [W]	165 [mA]		