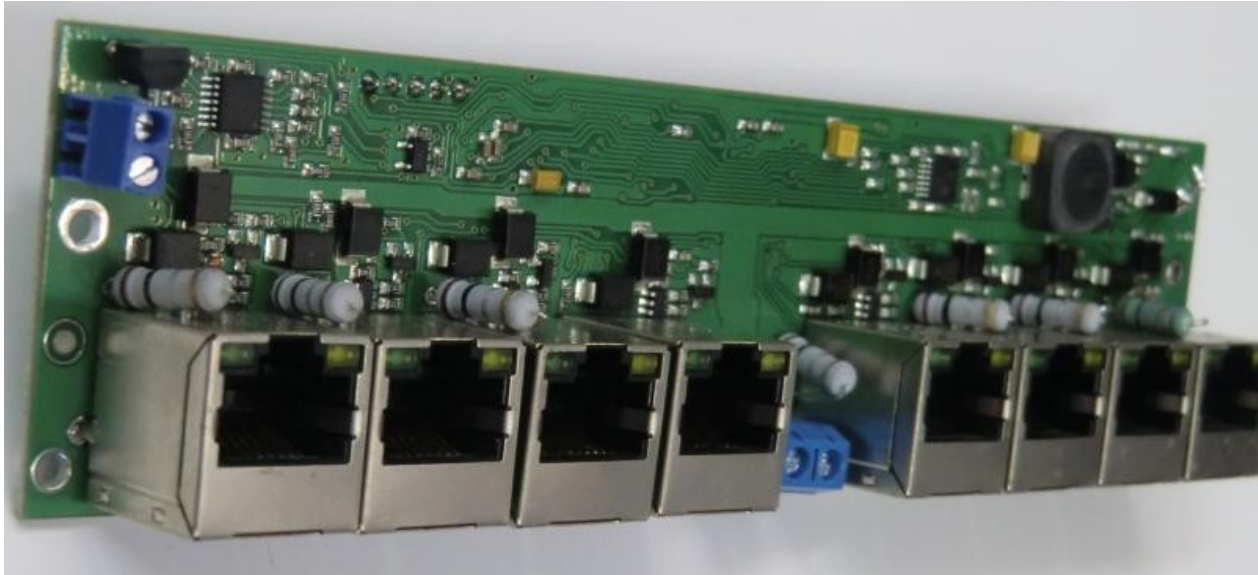# POE SWITCH 8 PORT 100/10Mbit instruction version 1.0

8 PORT SWITCH, POE, MONITOR, WATCHDOG,EMAIL

CAPACITIES:

- management by WWW or SNMP v2.
- Firmware upgrade by special application
- read data in real time without refresh the page
- ON/OFF power to eight passive POE ports directly from a web page or SNMP
- Scheduler
- Watchdog IP on all ports
- monitoring of additional equipment such as power buffer
- environment temperature
- measurement of power voltage:resolution, accuracy - + 0.1 V
- current measurement for each PoE port, 10mA resolution, accuracy +-20mA
- date and time from NTP or manual
- email alert when Watchdog activation
- automatic sending of SNMP TRAP (VCC, temperature, INPD)
- supported protocols: HTTP, SNMP, SMTP, NTP, ICMP, DNS, DHCP.
- 8 ports 100/10Mbit
- cutting off power on the PoE port when 2A current is exceeded.

Default user and password is „admin", adres IP is 192.168.1.200.

TECHNICAL SPECIFICATIONS

- <mark>Power supply: 6-38VDC (56 for models with diode sk26) (for devices supply by POE, voltage should be at least 12V due to the switching transistors), where the supply voltage is lower than 12V and 1A current consumption(for one POE port) than to use the power from POE port 0 or 7</mark>
- Current consumption at one POE port, max 2A (recommended max 1,5 A).
- Total power on all ports should not exceed 8A.
- power consumption of the switch: one active link about 0.6W
- protection against reverse polarity: YES
- work temperature: -20 do +85 st. C
- wymiary bez obudowy 161x42mm

DESCRIPTION
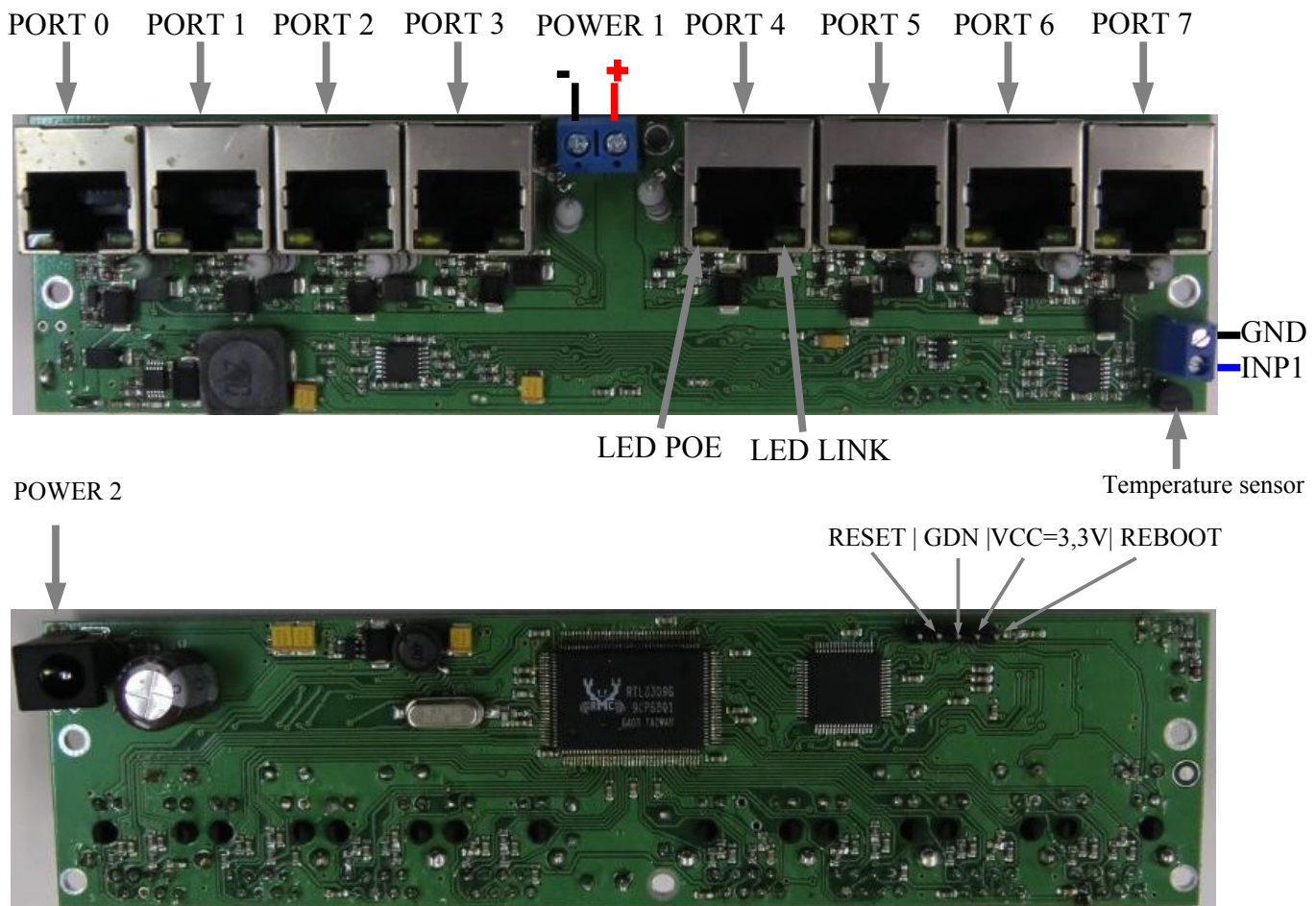
POWER 1 – Main power supply

POWER 2 – Alternative power, use a small current at the POE ports, 1A max intensity

GND – gnd to INP1

LED POE – orange light, emitting means applying power to the PoE port

LED LINK – LED green light indicates an active link, flashing-transfer data RX / TX

INP1 – digital input for monitoring, eg buffer power, max input voltage of 24V..

In the case of connecting INP1 to open collector outputs, connect a resistor (about 10k) pull-up to VCC=3.3V.

VCC=3,3 – 3.3 V voltage output for the pull-up resistor plugged into INP1.

RESET – restore the factory default. Input must be hooked to GND at startup (after a reboot or power supply) device.
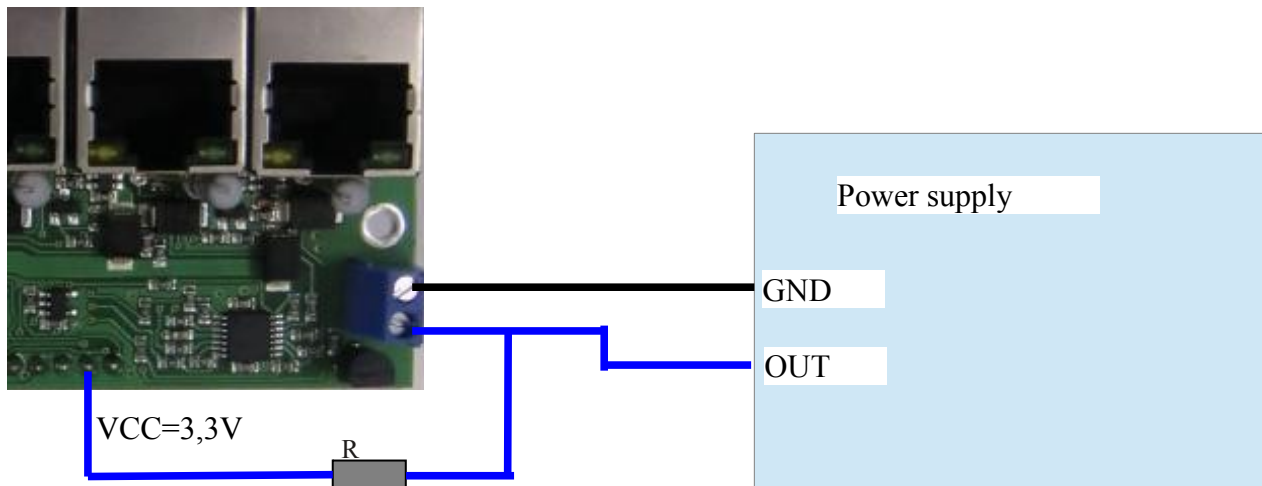
After reset

User and password: admin

IP: 192.168.1.200

REBOOT – short (minimum 10 ms) by attaching to GND cause restart the switch.

Example of connecting INP1 to the power supply buffer with open collector output

Web management.

1.Control Panel

CONTROL PANEL

VCC SUPPLY =8.6 V   Board Temperature= 26 °C

POE PORT STATE

Value in seconds, returning to the state OFF after switching POWER ON POE

Reset time

| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

|PORT0| PORT1| PORT2| PORT3 | PORT4|PORT5|PORT6|PORT7|

| Port0 | Port1 | Port2 | Port3 | Port4 | Port5 | Port6 | Port7 |

Any description of up to 8 characters

OFF   OFF   OFF   OFF   OFF   OFF   OFF   OFF

POE POWER ON/OFF

Current Measure on POE PORT

Port 0	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Out
0	0	0	0	0	0	0	0	mA

The value of current drawn by the device on the port POE

INP1D State HIGH

PORT LINK

Input INP1 state

	Port0	Port1	Port2	Port3	Port4	Port5	Port6	Port7
Enabled	☑ ON	☑ ON	☑ ON	☑ ON	☑ ON	☑ ON	☑ ON	☑ ON
Link Status	no	no	no	no	no	no	no	link
Auto Negotiation	☑	☑	☑	☑	☑	☑	☑	☑
Full Duplex	☑ ?	☑ ?	☑ ?	☑ ?	☑ ?	☑ ?	☑ ?	☑ yes
Speed	? 100	? 100	? 100	? 100	? 100	? 100	? 100	100 100
Flow Control	☑	☑	☑	☑	☑	☑	☑	☑
Port Lock (MAC address lerning)	☑	☑	☑	☑	☑	☑	☑	☑
Loop Detect	no	no	no	no	no	no	no	no
Link Quality	?	?	?	?	?	?	?	12

When cleared for the port are sent all packets, acts as a HUB. After unchecking need to do a switch reboot or wait for 300s.

Loop detects the ports, and off this ports

HW Version:1.0
SW Version:1.0
Build Date:Aug 24 2012

2.Watchdoog.

	P0	P1	P2	P3	P4	P5	P6	P7
Enabled	☐ OFF	☐ OFF	☐ OFF	☐ OFF	☐ OFF	☐ OFF	☐ OFF	☐ OFF
Email send	☐	☐	☐	☐	☐	☐	☐	☐
IP	www.one2t.p	192.168.1.10	192.168.1.10	192.168.1.10	192.168.1.10	192.168.1.10	192.168.1.10	192.168.1.10
ICMP time [ms]	?	?	?	?	?	?	?	?
ICMP fail	2 0	2 0	5 0	5 0	5 0	5 0	5 0	5 0
ICMP wait time	2	3	4	4	4	4	4	4
ICMP send period	2	2	20	20	20	20	20	20
Wait time after restart	6	6	60	60	60	60	60	60
Restart time	3	3	30	30	30	30	30	30
Max restart	6 0	6 0	6 0	6 0	6 0	6 0	6 0	6 0
POE state	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🔴

Save setting

Email send – send an e-mail if activation (will restart power on port POE) watchdoog. Mail has information about the number of the current restart and max permissible number of restarts and the time of the event.

ICMP fail – number of missed ICMP response to an inquiry, followed by activation watchdoog.

ICMP wait time- waiting for an answer in seconds

ICMP send period – period of time in seconds between successive ICMP queries.

Wait time after restart – the period of time in seconds before sending another ICMP requests after activation of watchdoog.

Restart time – period of time, in seconds, indicating how long it will turn off the power no the PoE port after activation of watchdoog

Max restart – the maximum number of restarts (activation of watchdoog). When this number is reached watchdoog on the port is disabled, not to endlessly reboot the device, which still has no intention of properly.

POE state – determines the power state of the POE ports: OFF- red, ON-green.

3.Network configuration.

Network Configuration

Email client settings

SMTP Server:	smtp.com.pl Port: 25
User Name:	user@com.pl
Password:	●●●●●●
To:	admin@com.pl
From:	user@com.pl
Subject:	switch test

[Save Config] [Test e-mail send]

When you change setting press "Save Config" before Test

Network settings

MAC Address:	00:04:A3:78:57:2C
Host Name:	POE SWITCH

☐ Enable DHCP

IP Address:	192.168.1.200
Gateway:	192.168.1.1
Subnet Mask:	255.255.255.0
Primary DNS:	192.168.1.1
Secondary DNS:	0.0.0.0
Net1 Address:	0.0.0.0
Net1 Gateway:	0.0.0.0
Net1 Mask:	0.0.0.0
Net2 Address:	0.0.0.0
Net2 Gateway:	0.0.0.0
Net2 Mask:	0.0.0.0
HTTP Port:	80 max 65534

[Save Config and Reboot]

Setting next routes, if the 0.0.0.0 - network or gateway is not taken.
  Priority routes:
1.Own network
2. Net1
3. Net2

ACCESS settings

User:	admin
Password:	●●●●●

Max char 8

SNMP settings

Read Comm1 : `public`
Read Comm2 : `read`
Write Comm1: `private`
Write Comm2: `write`

☐ TRAP Enable

Trap Reciver IP `192.168.1.1`
Trap Comm ` `

[Save Config]

AUTO SEND TRAP settings

☐ **Enable Automatic Send TRAP**
☑ INP1
☐ VCC
☐ TEMP

Time Interval `1`   * 10s = 0.17m

Date and Time

NTP ○
Set Manual ◉ `1970-01-01;05:19:`

POE PORT after start

PORT0: ☐ ON
PORT1: ☐ ON
PORT2: ☐ ON
PORT3: ☐ ON
PORT4: ☐ ON
PORT5: ☐ ON
PORT6: ☐ ON
PORT7: ☐ ON

[Save Config]

4. Global Configuration

Global Switch Configuration

GENERAL

Filter bad packets	☑
TX Flow Control	☑
RX Flow Control	☑
Loop Detect	☐
Aging Function	☑
Aging time	◉ 200-300s ○ 800us
TX IPG Compensation	◉ 90ppm ○ 65ppm
Broadcast drop mode	◉ input ○ output
LED Mode	7 ▲▼

Save setting   Default

RELATED TO PRIORITY

802.1p base priority	4 ▲▼
Priority queue weight	16:1 ▲▼
Priority for IP address [A]	☐
IP[A]	255.255.255.255
MASK[A]	255.255.255.255
Priority for IP address [B]	☐
IP[B]	255.255.255.255
MASK[B]	255.255.255.255
High priority for DiffServ[A]	☐ code 63
High priority for DiffServ[B]	☐ code 63

Save setting   Default

5. VLAN

VLAN

GENERAL

VLAN - Enabled	☐
802.1Q tag aware VLAN - Enabled	☑
VLAN member set ingress filtering -Pass/Droop	☑
VLAN tag admit accept - All/Tagged	☑

[Save general setting]

VLAN membership and VIDs

VLAN Group and VIDs	PORT 1	2	3	4	5	6	7	8	M	Note
VLAN A [0]	☑	☐	☐	☐	☐	☐	☐	☐	☑	g1
VLAN B [1]	☐	☑	☐	☐	☐	☐	☐	☐	☑	g2
VLAN C [2]	☐	☐	☑	☐	☐	☐	☐	☐	☑	g3
VLAN D [4]	☐	☐	☐	☑	☐	☐	☐	☐	☑	Group D
VLAN E [8]	☐	☐	☐	☐	☑	☐	☐	☐	☑	Group E
VLAN F [16]	☐	☐	☐	☐	☐	☑	☐	☐	☑	Group F
VLAN G [32]	☐	☐	☐	☐	☐	☐	☑	☐	☑	Group G
VLAN H [64]	☐	☐	☐	☐	☐	☐	☐	☑	☑	Group H
VLAN J [128]	☑	☑	☑	☑	☑	☑	☑	☑	☑	Group

PORT M - virtual port to management switch, be careful when setting up
YOU MAY LOSE CONNECTION WITH THE SWITCH

802.1q Port Configuration

	PVID	Tag Mode	Discard Non PVID packets	Null VID replace
Port 1	A	No change	☐	☐
Port 2	B	No change	☐	☐
Port 3	C	No change	☐	☐
Port 4	D	No change	☐	☐
Port 5	E	No change	☐	☐
Port 6	F	No change	☐	☐
Port 7	G	No change	☐	☐
Port 8	H	No change	☐	☐
Port M		No change	☐	☐

[Save setting]

NUMERY OID dla SNMP

```
SYS_UP_TIME                   .1.3.6.1.2.1.1.3 :  READONLY TIME_TICKS.
TRAP_RECEIVER_ID              .1.3.6.1.4.1.17096.1.2.1.1.1 :  READWRITE BYTE.
TRAP_RECEIVER_ENABLED     .1.3.6.1.4.1.17096.1.2.1.1.2 :  READWRITE BYTE.
TRAP_RECEIVER_IP              .1.3.6.1.4.1.17096.1.2.1.1.3 :READWRITE IP_ADDRESS.
TRAP_COMMUNITY               .1.3.6.1.4.1.17096.1.2.1.1.4:READWRITE ASCII_STRING.
OUT0            .1.3.6.1.4.1.17096.1.3.1.0 :  READWRITE BYTE.
OUT1            .1.3.6.1.4.1.17096.1.3.1.1 :  READWRITE BYTE.
OUT2            .1.3.6.1.4.1.17096.1.3.1.2 :  READWRITE BYTE.
OUT3            .1.3.6.1.4.1.17096.1.3.1.3 :  READWRITE BYTE.
OUT4            .1.3.6.1.4.1.17096.1.3.1.4 :  READWRITE BYTE.
OUT5            .1.3.6.1.4.1.17096.1.3.1.5 :  READWRITE BYTE.
OUT6            .1.3.6.1.4.1.17096.1.3.1.6 :  READWRITE BYTE.
OUT7            .1.3.6.1.4.1.17096.1.3.1.7 :  READWRITE BYTE.
P0I             .1.3.6.1.4.1.17096.1.3.2.0 :  READONLY WORD.
P1I             .1.3.6.1.4.1.17096.1.3.2.1 :  READONLY WORD.
P2I             .1.3.6.1.4.1.17096.1.3.2.2 :  READONLY WORD.
P3I             .1.3.6.1.4.1.17096.1.3.2.3 :  READONLY WORD.
P4I             .1.3.6.1.4.1.17096.1.3.2.4 :  READONLY WORD.
P5I             .1.3.6.1.4.1.17096.1.3.2.5 :  READONLY WORD.
P6I             .1.3.6.1.4.1.17096.1.3.2.6 :  READONLY WORD.
P7I             .1.3.6.1.4.1.17096.1.3.2.7 :  READONLY WORD.
INP1            .1.3.6.1.4.1.17096.1.3.3.0 :  READONLY BYTE.
VCC             .1.3.6.1.4.1.17096.1.3.3.1 :  READONLY WORD.
TEMP            .1.3.6.1.4.1.17096.1.3.3.2 :  READWRITE WORD.
WDGE0              .1.3.6.1.4.1.17096.1.3.4.0 :  READWRITE BYTE.
WDGE1              .1.3.6.1.4.1.17096.1.3.4.1 :  READWRITE BYTE.
WDGE2              .1.3.6.1.4.1.17096.1.3.4.2 :  READWRITE BYTE.
WDGE3              .1.3.6.1.4.1.17096.1.3.4.3 :  READWRITE BYTE.
WDGE4              .1.3.6.1.4.1.17096.1.3.4.4 :  READWRITE BYTE.
WDGE5              .1.3.6.1.4.1.17096.1.3.4.5 :  READWRITE BYTE.
WDGE6              .1.3.6.1.4.1.17096.1.3.4.6 :  READWRITE BYTE.
WDGE7              .1.3.6.1.4.1.17096.1.3.4.7 :  READWRITE BYTE.
WDGR0              .1.3.6.1.4.1.17096.1.3.5.0 :  READONLY BYTE.
WDGR1              .1.3.6.1.4.1.17096.1.3.5.1 :  READONLY BYTE.
WDGR2              .1.3.6.1.4.1.17096.1.3.5.2 :  READONLY BYTE.
WDGR3              .1.3.6.1.4.1.17096.1.3.5.3 :  READONLY BYTE.
WDGR4              .1.3.6.1.4.1.17096.1.3.5.4 :  READONLY BYTE.
WDGR5              .1.3.6.1.4.1.17096.1.3.5.5 :  READONLY BYTE.
WDGR6              .1.3.6.1.4.1.17096.1.3.5.6 :  READONLY BYTE.
WDGR7              .1.3.6.1.4.1.17096.1.3.5.7 :  READONLY BYTE.
WDGP0              .1.3.6.1.4.1.17096.1.3.6.0 :  READONLY WORD.
WDGP1              .1.3.6.1.4.1.17096.1.3.6.1 :  READONLY WORD.
WDGP2              .1.3.6.1.4.1.17096.1.3.6.2 :  READONLY WORD.
WDGP3              .1.3.6.1.4.1.17096.1.3.6.3 :  READONLY WORD.
WDGP4              .1.3.6.1.4.1.17096.1.3.6.4 :  READONLY WORD.
WDGP5              .1.3.6.1.4.1.17096.1.3.6.5 :  READONLY WORD.
WDGP6              .1.3.6.1.4.1.17096.1.3.6.6 :  READONLY WORD.
WDGP7              .1.3.6.1.4.1.17096.1.3.6.7 :  READONLY WORD.
```

OUT0-7 – determines the power state of the port POE, for read-write (ON / OFF POWER)

P0I - P7I – read current consumption per port

INP1- input INP1 state

VCC – powers supplay state

TEMP – temperature sensor state

WDGE0-7 – determines the status (ON / OFF) watchoodog, for read-write (ON / OFF)

WDGR0-7 – reading of the number of restarts were made

WDGP0-7 – ICMP time state

Upgrade new software.

In the event that there is a new version of the software or version specific application it is possible to load this software to the device.

Software can be loaded with a dedicated application "POE Switch Firmware Upgrade Application". A description of how to load the new software:

1. Enter the relevant IP address of the switch.
2. Click "Connect", the device goes into charging software and should be reported writing out versions of the boot loader and hardware.
3. Click "Load Bin File" and select a file upgrade with the "bin".
4. Click "Upgrade Firmware and Run" and wait (approximately 15 seconds) until soft will be loaded, after the device should now work with the new soft. How soft is properly loaded in the window should get the message "Verification successfull" and "Device disconnected".

When someone starts upgrade mode but will not execute upgrade it to get out of this mode, click the "Run Application" or disconnect the power.
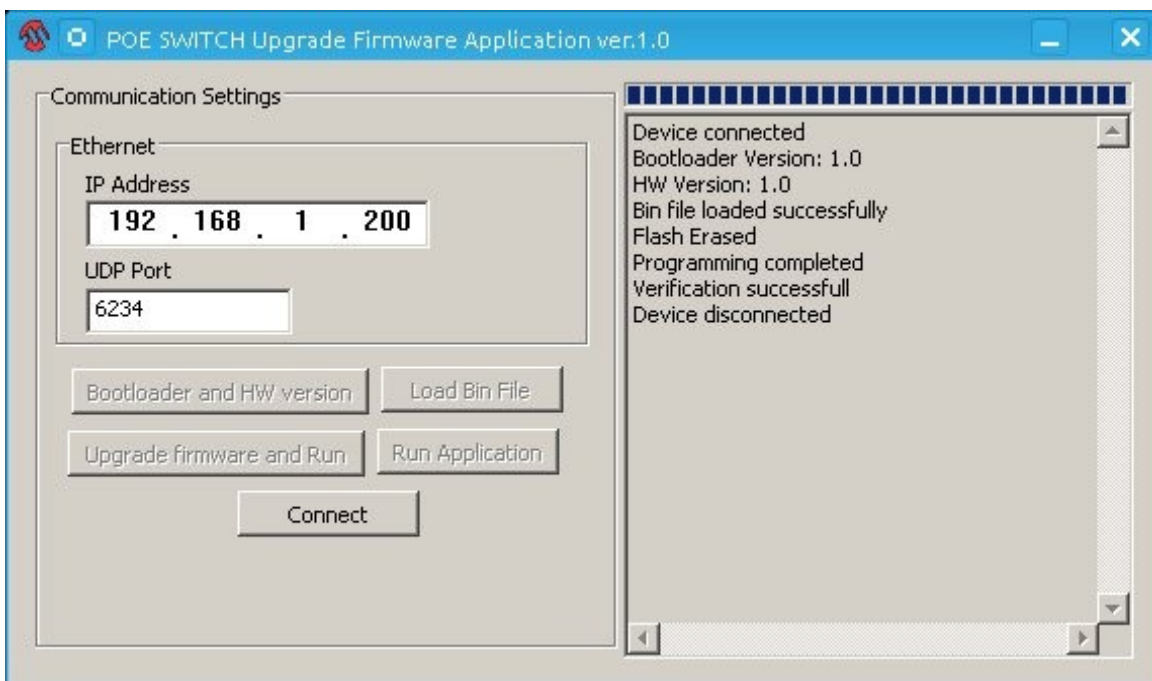
8.3. Advanced Functionality Overview

8.3.1. Port-Based VLAN

If the VLAN function is enabled by pulling down the Dis_VLAN strapping pin, the default VLAN membership configuration by internal register is the MII port overlapped with all the other ports to form nine individual VLANs. Via an attached serial EEPROM or via SMI, the default configuration may be modified to allow the input ports to join any of the nine VLAN groups: VLAN A, B, C, D, E, F, G, H, and I. Each input port can be a member of more than one VLAN group.

Port-based VLAN mapping is the simplest implicit mapping rule. Each incoming frame is assigned to a VLAN based on the input port into which it arrived at the switch. It is not necessary to parse and inspect frames in real-time to determine their VLAN mapping. All frames received on a given input port will be forwarded to members of that port's VLAN group. The RTL8309SB supports nine VLAN indexes to individually index received packets to one of the nine VLAN membership registers. These nine groups of VLAN membership registers, VLAN ID [A] membership bit [8:0] ~ VLAN ID [I] membership bit [8:0], determine which ports are members of this VLAN. The RTL8309SB forwards frames to members of this VLAN only (excluding the input port of this frame). VLAN membership registers descript which port are members in a VLAN member set. A port that is not specified in this port's member set should generally not be receiving and/or transmitting frames for that VLAN.

Figure 5 illustrates a typical application. VLAN indexes and VLAN member definitions are set to form three different VLAN groups.

Port 0 VLAN index=0000	
Port 1 VLAN index=0000	
Port 2 VLAN index=0000	
Port 3 VLAN index=0001	
Port 4 VLAN index=0001	
Port 5 VLAN index=0001	
Port 6 VLAN index=0010	
Port 7 VLAN index=0011	
Port 8 VLAN index=0100	

MemberA	0 0 0 0 0 0 1 1 1
MemberB	0 0 0 1 1 1 0 0 0
MemberC	0 1 1 0 0 0 0 0 0
MemberD	1 1 1 0 0 0 0 0 0
MemberE	1 1 0 0 0 0 0 0 0
MemberF	0 0 0 0 0 0 0 0 0
MemberG	0 0 0 0 0 0 0 0 0
MemberH	0 0 0 0 0 0 0 0 0
MemberI	0 0 0 0 0 0 0 0 0

RTL8309SB

Figure 5.   VLAN Grouping Example

In cases where VLAN and trunking are both enabled at the same time, a situation may occur where a packet is forwarded to a trunk but one of the members of this trunk is not in the same VLAN group associated with the source port. In this situation, the VLAN function has higher priority than the trunking operation. The packet will not be forwarded to the port of this trunk.

For non-VLAN tagged frames, the RTL8309SB performs port-based VLAN. It will use Port n VLAN index [3:0] to index to a VLAN membership. The VLAN ID associated with this indexed VLAN membership is the Port VID (PVID) of this port.

8.3.2. IEEE 802.1Q Tagged VID-based VLAN

IEEE 802.1Q tagged-VID based VLAN mapping uses a 12-bit explicit identifier in the VLAN tag to associate received packets with a VLAN. Nine groups of VLAN membership registers, VLAN ID [A] membership [8:0] ~ VLAN ID [I] membership [8:0], consist of ports that are in the same VLAN corresponding to the registers defined in VLAN ID [A] [11:0] ~ VLAN ID [I] [11:0]. If the VID of a VLAN-tagged frame does not hit the VLAN ID [A] [11:0] ~ VLAN ID [I] [11:0], then the RTL8309SB performs port-based VLAN mapping to the member set indexed by the Port n VLAN index [3:0]. Otherwise, the RTL8309SB compares the explicit identifier in the VLAN tag with the nine VLAN registers to determine the VLAN association of this frame, then forwards it to the member set of this VLAN. Two VIDs are reserved for special purposes. One of them is all ones and is currently unused. The other is all zeros and indicates a priority tag, which is treated as an untagged frame.

When 802.1Q tag aware VLAN is enabled, the RTL8309SB performs 802.1Q tag-based VLAN mapping for tagged frames, but performs port-based VLAN mapping for untagged frames. If 802.1Q tag-aware VLAN is disabled, the RTL8309SB performs only port-based VLAN mapping both for non-tagged and tagged frames. Figure 6 illustrates the processing flow when 802.1Q tag aware VLAN is disabled.
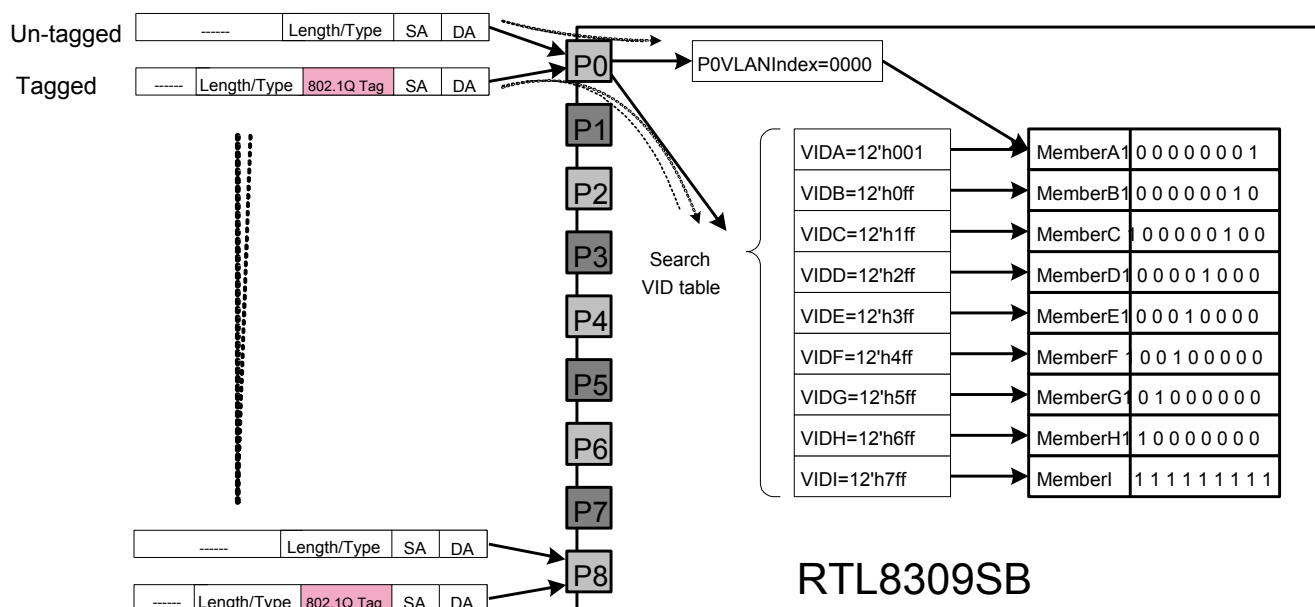
Figure 6. Tagged and Untagged Packet Forwarding When 802.1Q Tag Aware VLAN is Disabled

Two VLAN ingress filtering functions are supported by the RTL8309SB in registers. One is the 'admit VLAN tagged frame' function, which provides the ability to receive VLAN-tagged frames only. Untagged or priority tagged (VID=0) frames will be dropped. The other is the 'ingress member set filtering', which will drop frames if the receive port is not in the member set.

There are also two optional egress filtering functions supported by the RTL8309SB through strapping. One is 'Leaky VLAN', which enables inter-VLAN unicast packet forwarding. That is, if the layer 2 look-up table search has a hit, then the unicast packet will be forwarded to the egress port, ignoring the egress rule. The other is 'ARP VLAN', which broadcasts ARP packets to all other ports, ignoring the egress rule.

8.3.3. QoS Operation

The RTL8309SB can recognize the QoS priority information of incoming packets to give a different egress service priority.

The RTL8309SB identifies the packets as high priority based on several types of QoS priority information:

- x   Port-based priority
- x   802.1p/Q VLAN priority tag
- x   TCP/IP's TOS/DiffServ (DS) priority field
- x   IP Address

There are two priority queues; a high-priority queue and a low-priority queue. The queue service rate is based on the Weighted Round Robin algorithm. The packet-based service weight ratio of the high-priority queue and low-priority queue can be set to 4:1, 8:1, 16:1 or 'Always high priority first' by hardware pins upon reset, or internal register via SMI after reset.

Port-Based Priority

When port-based priority is applied, packets received from the high-priority port are sent to the high-priority queue of the destination port. High priority ports can be partially set by hardware pins, and wholly configured in internal registers.

802.1p-Based Priority

When 802.1p VLAN tag priority applies, the RTL8309SB recognizes the 802.1Q VLAN tag frames and extracts the 3-bit User Priority information from the VLAN tag. The RTL8309SB sets the threshold of User Priority as 3. Therefore, VLAN tagged frames with User Priority value = 4~7 will be treated as high priority frames, other User Priority values (0~3) as low priority frames (follows 802.1p standard). The threshold value can be modified in internal registers via an SMI interface or configured in EEPROM.

DiffServ-Based Priority

When TCP/IP's TOS/DiffServ(DS) based priority is applied, the RTL8309SB recognizes TCP/IP Differential Services Code Point (DSCP) priority information from the DS-field defined in RFC2474. The DS field byte for the IPv4 is a Type-of-Service (TOS) octet. The recommended DiffServ Code Point is defined in RFC2597 to classify the traffic into different service classes. The RTL8309SB extracts the codepoint value of DS-fields from IPv4 packets and identifies the priority of the incoming IP packet following the definition below:

High priority: where the DS-field = (EF, Expected Forwarding:) 101110

                               (AF, Assured Forwarding:) 001010; 010010; 011010; 100010

                               (Network Control:) 110000 and 111000

Differential service code point [A] specified in internal register;

Differential service code point [B] specified in internal register;

Low priority: where the DS-field = other values.

The VLAN tagged frame and 6-bit DS-field in the IPv4 frame format are shown below:

Table 109. 802.1Q VLAN Tag Frame Format

6 bytes	6 bytes	2 bytes	3 bits	
DA SA		81-00	User-Priority (0~3:Low-pri; 4~7: High-pri)	----

Table 110. IPv4 Frame Format

6 bytes	6 bytes	4 bytes	2 bytes	4 bits		4 bits	6 bits	
DA SA		802.1Q Tag (optional)	08-00	Version IPv4= 0100		IHL	TOS[0:5]= DS-field	----

IP-Based Priority

When IP-based based priority is applied, any incoming packets with IP priority equal to IP address [A] AND IP mask [A] or IP address [B] AND IP mask [B] will be treated as high priority packets. IP priority [A] and IP priority [B] may be enabled or disabled independently.

Flow Control Auto Turn Off

The RTL8309SB can be configured to turn off 802.3x flow control and backpressure flow control for 1~2 seconds whenever the port receives VLAN-tagged or TOS/DS high priority frames. Flow control is re-enabled when no priority frame is received for a 1~2 second duration. The purpose of this function is to avoid head-of-line blocking on priority classification.

8.3.4. Insert/Remove VLAN Priority Tag

The RTL8309SB supports four types of insertion/removal of VLAN tags in packet, controlled by internal registers on a per-port basis. They are classified as follows:

Type 11 Do not change packets (Default).

Type 10 Insert input port's PVID for non-tagged packets. Do not change packets if they are already tagged.

Type 01 Remove VLAN tags from tagged packets. Do not change packets if they are not tagged.

Type 00 Remove VLAN tags from tagged packets then insert the input port's PVID. For non-tagged packets, insert the input port's PVID.

In Type 10, if Null VID replacement is enabled, this function has higher priority than type 10. If both type 10 is selected and Null VID replacement is enabled, the RTL8309SB inserts a PVID to non-tagged packets and replaces a null VID with a PVID for tagged packets, and does nothing in tagged packets with a non-null VID.

If the tag removed frame is less than 64 bytes, it will be padded with an 0x20 pattern before the packet's CRC field to fit the 64-byte minimum packet length of the IEEE 802.3 spec. The RTL8309SB will recalculate the FCS (Frame Check Sequence) if the frame has been changed.

8.3.5. Port VID (PVID)

In a router application, the router may want to know which input port this packet came from. The RTL8309SB supports Port VID (PVID) for each port to insert a PVID in the VLAN tag on an egress packet. The VID information carried in the VLAN tag will be changed to a PVID. The RTL8309SB also provides an option to admit VLAN-tagged packets with a specific PVID only. When this function is enabled, packets with an incorrect PVID and non-tagged packets will be dropped.

The RTL8309SB uses an internal register, 'Port n VLAN index [3:0]' to index to a VLAN membership. The VLAN ID associated with this indexed VLAN membership is the PVID for this port. Users may select VLAN insert/remove type 10 or 00 to insert a PVID on egress packets.

On 802.1Q tag-based VLANs do not use a port-based VLAN in PVID applications, as the VID information carried in the VLAN tag will be replaced with a PVID.