PTC2000
Time Convertor
Operation Manual

Kyland Technology (Shanghai) Co., Ltd.

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Contents

Notice for Safety Operation

The product performs reliably as long as it is used according to the guidance. Artificial damage or destruction of the device should be avoided. Before using the device, read this notice carefully for personal and equipment safety. Please keep the manual for further reference.

- Do not place the device near water sources or damp areas. Keep the ambient relative humidity within the range from 5% to 95% (non-condensing).
- Do not place the device in an environment with high magnetic field, strong shock, or high temperature. Keep the working and storage temperatures within the allowed range.
- Install and place the device securely and firmly.
- Please keep the device clean; if necessary, wipe it with a soft cotton cloth.
- Do not place any irrelevant materials on the device or cables. Ensure adequate heat dissipation and tidy cable layout without knots.
- Wear antistatic gloves or take other protective measures when operating the device.
- Avoid any exposed metal wires because they may be oxidized or electrified.
- Install the device in accordance with related national and local regulations.
- Before power-on, make sure the power supply is within the allowed range of the device. High voltage may damage the device.
- Power connectors and other connectors should be firmly interconnected.
- Do not plug in or out the power supply with wet hands. When the device is powered on, do not touch the device or any parts with wet hands.
- Before operating a device connected to a power cable, remove all jewelry (such as rings, bracelets, watches, and necklaces) or any other metal objects, because they may cause electric shock or burns.
- Do not operate the device or connect or disconnect cables during an electrical storm.
- Use compatible connectors and cables. If you are not sure, contact our sales or technical support personnel for confirmation.
- Do not disassemble the device by yourself. When an anomaly occurs, contact our sales or technical support personnel.
- If any part is lost, contact our sales or technical support personnel to purchase the substitute. Do not purchase parts from other channels.
- Dispose of the device in accordance with relevant national provisions, preventing

environmental pollution.

In the following cases, please immediately shut down your power supply and contact your Kyland representative:

- Water gets into the equipment.
- Equipment damage or shell damage.
- Equipment operation or performance has abnormally changed.
- The equipment emits odor, smoke or abnormal noise.

Indicator Flag

	Note	Highlight the important information and use of skills, necessary to the operation of your tips, supplement and instructions.
	Attention	Remind you of operation must be pay attention to and follow such as not operating in accordance with the requirements, equipment damage may arise or other unpredictable result.
	Alarm	Warning you could potentially dangerous situation, if unavoidable, may cause serious personal injury.

1. Basic Features

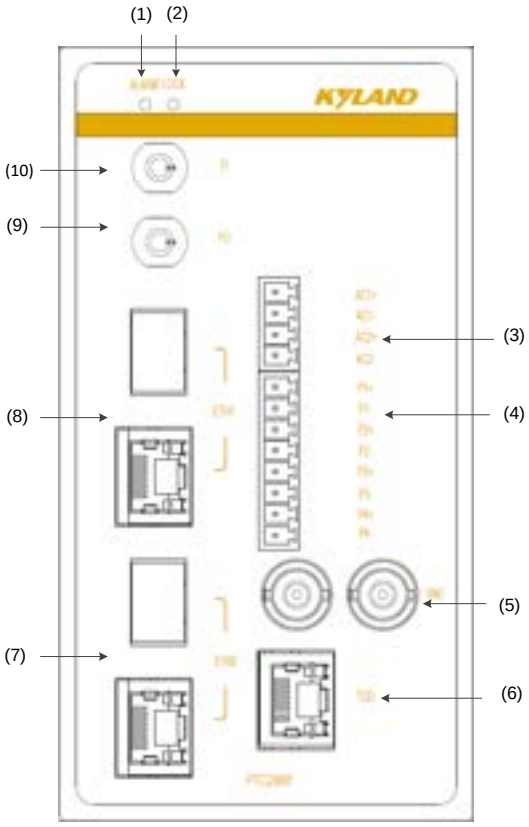
1.1. Introduction

[Figure 1-1] PTC2000 Time Convertor

PTC2000 is a multifunction time convertor. PTC2000 is designed for DIN Rail Mount requirements. It is a compact and provides time conversion service for any industry fields. It supports PTP (Precision Timing Protocol), IRIG-B as input time sources. Based on the multiple time source input PTC2000 has multi-time source selection logical inside to implement time conversion function. It also supports PTP (Precision Timing Protocol), NTP (Network Time Protocol), IRIG-B, 1PPS, 1PPM, 1PPH and TOD etc. time synchronization signal output as time synchronization purpose. The default embedded WEB service provides system management.

2. Structure

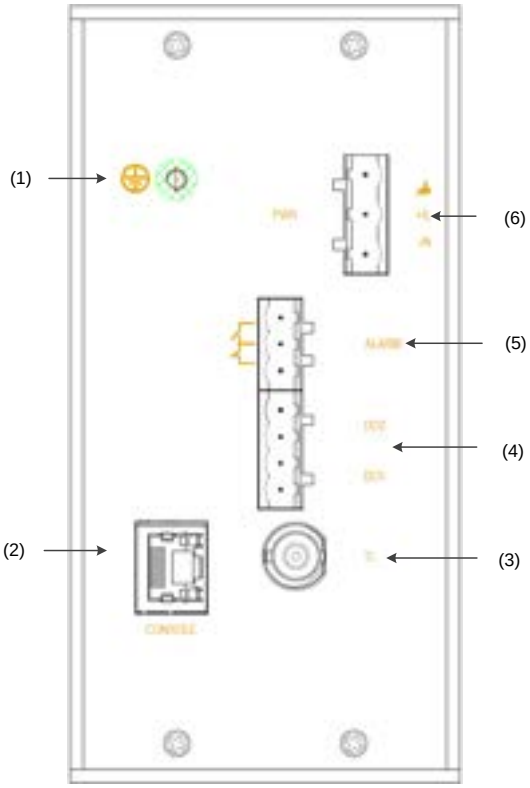
2.1. Device Identification



[Figure 2-1] PTC2000 Front Panel

Table 1 – Front Panel of PTC2000

No.	Name	Description
(1)	**Alarm**	System Alarm
(2)	**LOCK**	Time Lock
(3)	**AC(1-2)**	Two IRIG-B modulated output ports
(4)	**P(1-4)**	Four Terminal TTL output ports, IRIG-B/PPS configurable
(5)	**BNC**	Two BNC TTL output ports, IRIG-B/PPS configurable
(6)	**TOD**	One TOD interface
(7)	**ETH0**	ETH0, Copper and Optical multiplex Ethernet interface
(8)	**ETH1**	ETH1, Copper and Optical multiplex Ethernet interface
(9)	**FO**	Optical Fiber output port
(10)	**FI**	Optical Fiber input port



[Figure 2-2] PTC2000 Top Panel

Table 2 – Top Panel of PTC2000

No.	Name	Description
(1)	⏚	Grounding Screw
(2)	**Console**	Console Port
(3)	**TI**	TTL Input port
(4)	**DO**	Contact output port
(5)	**ALARM**	Alarm output port
(6)	**PWR**	Power Input

2.2. Indicator Lights

The Screen has two lines to indicate system information.

Table 3 – Indicator Lights of PTC2000

Name	Definition	Status	Description
ALARM	System Alarm	On	Device is abnormal.
		Off	Device is normal.
LOCK	Time Lock	Flash(1 second)	Clock is locked.
		Flash(3 seconds)	Clock is holded.
		Off	Clock is unlocked.

Note:

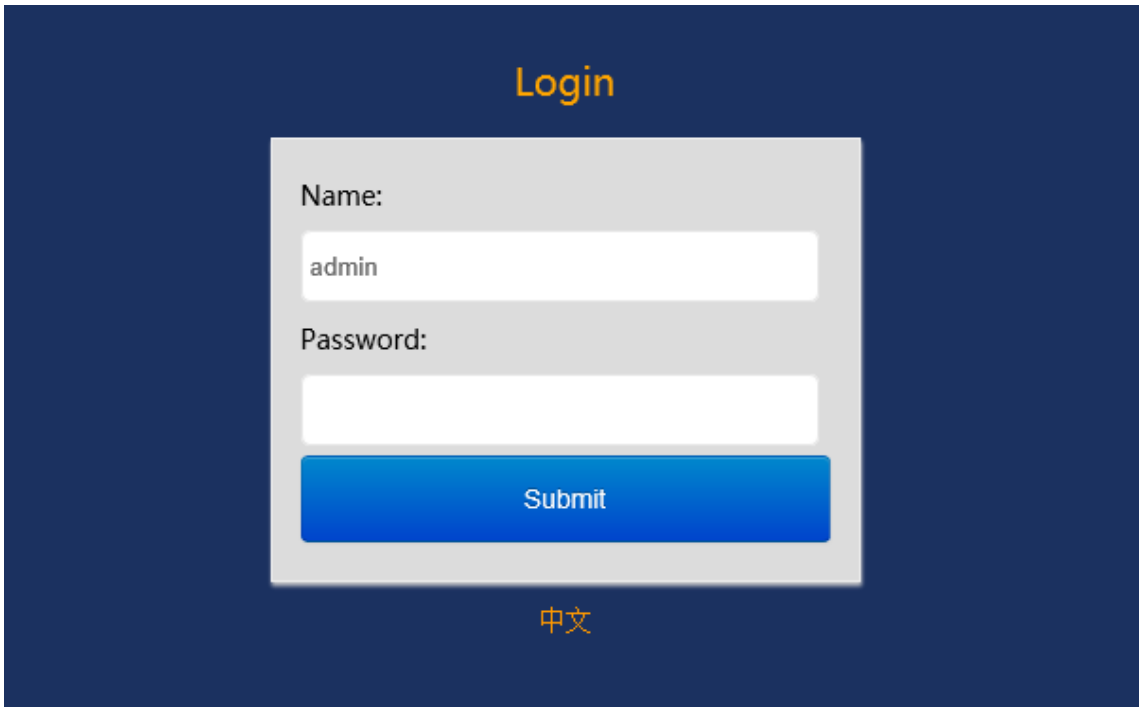
⚠ The enclosure is one part of the whole cooling system. Don’t cover it when it works.

⚠ The picture of Manual is only schematic. Please refer to real device.

3. WEB Operations

3.1. Login

Please connect ETH0 of PTC2000 time convertor and PC by network cable. Open any WEB Browser of PC and input http://192.168.0.111 and press enter, the login WEB screen of PTC2000 time convertor will be shown on your screen.



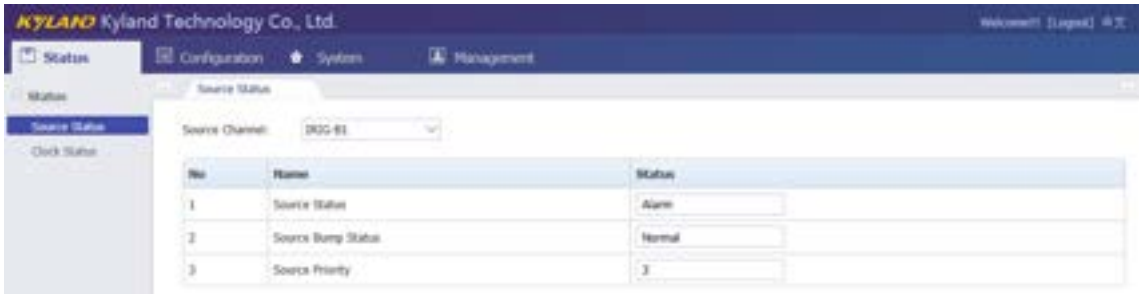
[Figure 3-1] Login Screen

The default user name is 'admin', the default password also is 'admin'. PTC2000 time convertor supports user to modify the password of 'admin' after you login WEB management system.

Before you access WEB management system of PTC2000 time convertor, please confirm you might access this Ethernet port, if find any problems you should check the network whether or not is ready, maybe connection cable has some broken or something else.

3.2. Logout

After you submit your correct user name and password, the default screen of WEB management system will be shown as:



[Figure 3-2] Default Login Screen

On the top right corner, system has a [Logout] option, if you want to logout system, you might directly click this and then system will go to original login screen and wait user to input login information again.

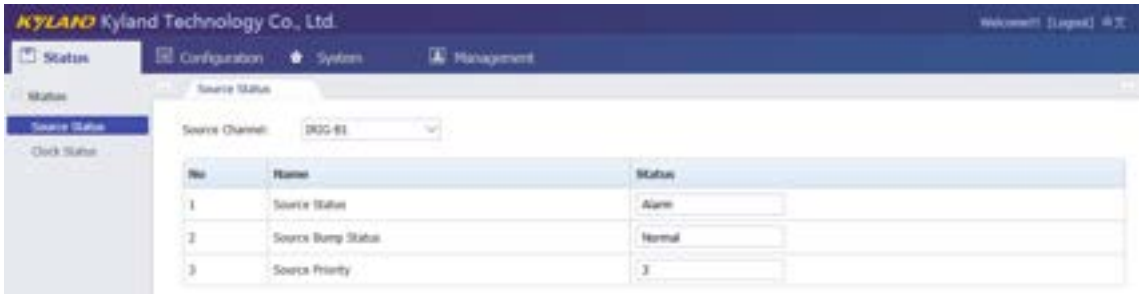
3.3. Languages

The default language is English, the WEB management system of PTC2000 time convertor supports English and Chinese. System can switch language to Chinese language by [中文] option on login screen and default screen.

3.4. Status

The WEB management system supports to view time status by WEB. The status information can help user to easy know the current status and help them to analyze problems as soon as possible.

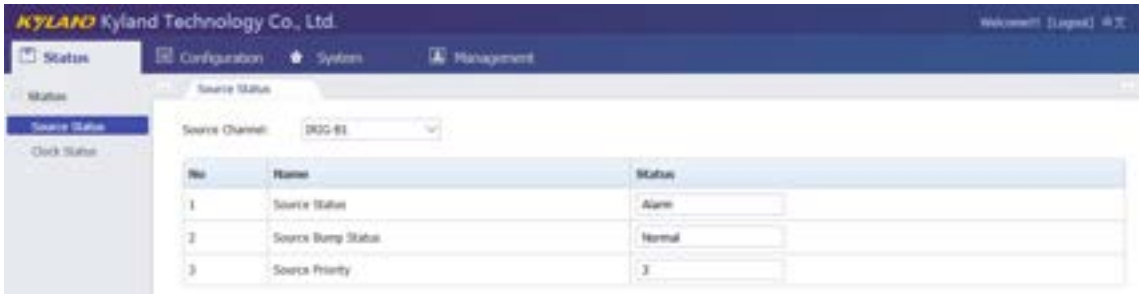
Press ‘Status’ to go to the status screen on the top of navigation bar. The status screen will be shown as:



[Figure 3-3] Status Screen

3.4.1. Source Status

Press ‘Source Status’ on the left navigation bar to show time status screen. The source status screen will be shown as:



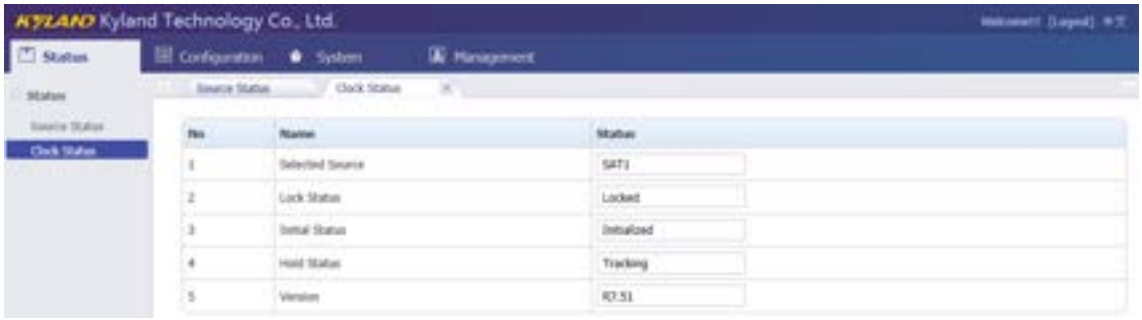
[Figure 3-4] Source Status Screen

The time source status shows the work status of any time source. The PTC2000 time convertor supports 3 source channels including SAT1/IRIG-B1/PTP.

Select different time source channel by manual and the time status of this source will be shown on this screen. For example, if you select SAT1, you might see source status, satellite number, antenna status, and source bump status and source priority. The 'Normal' means this status is OK, if it has some problems, maybe it will show 'Alarm' information.

3.4.2. Clock Status

Press 'Clock Status' on the left navigation bar to show clock status screen. The clock status screen will be shown as:



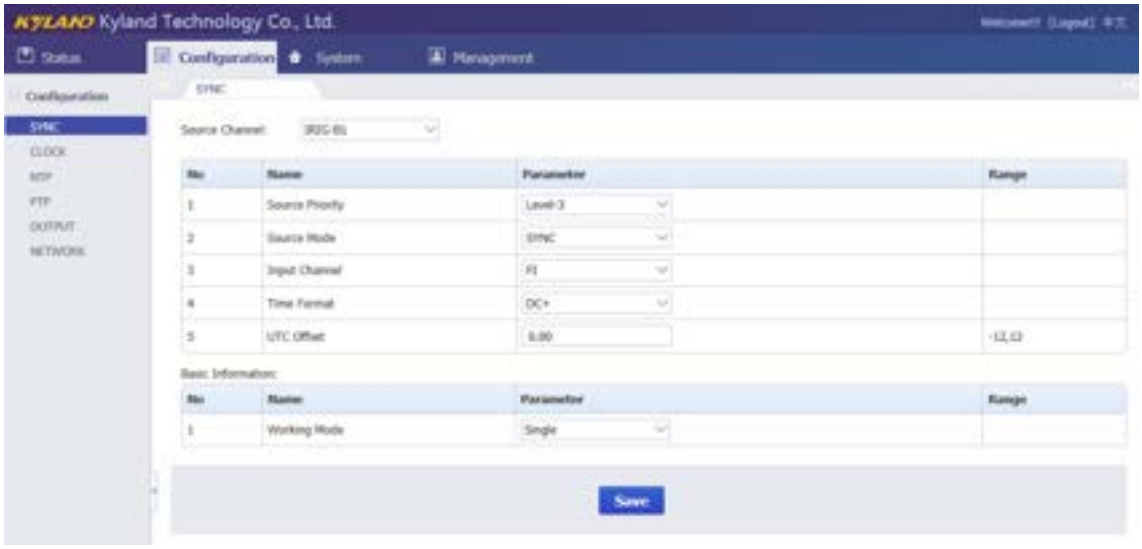
[Figure 3-5] Clock Status Screen

To show the current selected source, inside temperature and the current work status including initial, lock, hold status, position information and version information of PTC2000 time convertor.

3.5. Configuration

The WEB management system supports to set configuration parameter by WEB. The user does not need go to local place to set parameter when time convertor supports this configuration interface. It is a good option for user to easy manage time convertor.

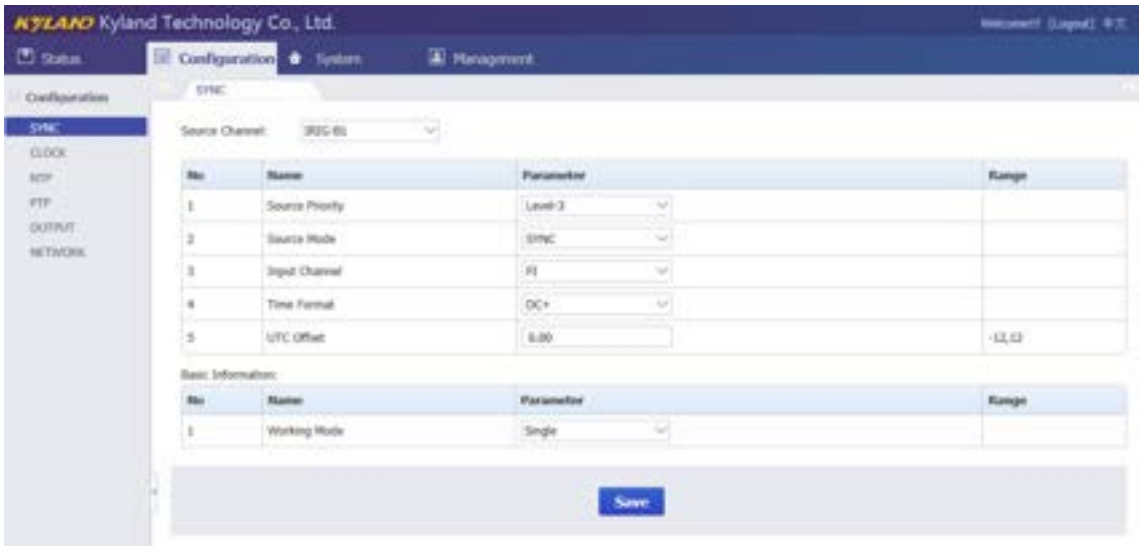
Press ‘Configuration’ to go to the configuration screen on the top of navigation bar. The screen will be shown as:



[Figure 3-6] Configuration Screen

3.5.1. Sync Source Settings

Press ‘SYNC’ on the left navigation bar to show synchronization source setting screen. The sync source setting screen will be shown as:



[Figure 3-7] Sync Source Setting Screen

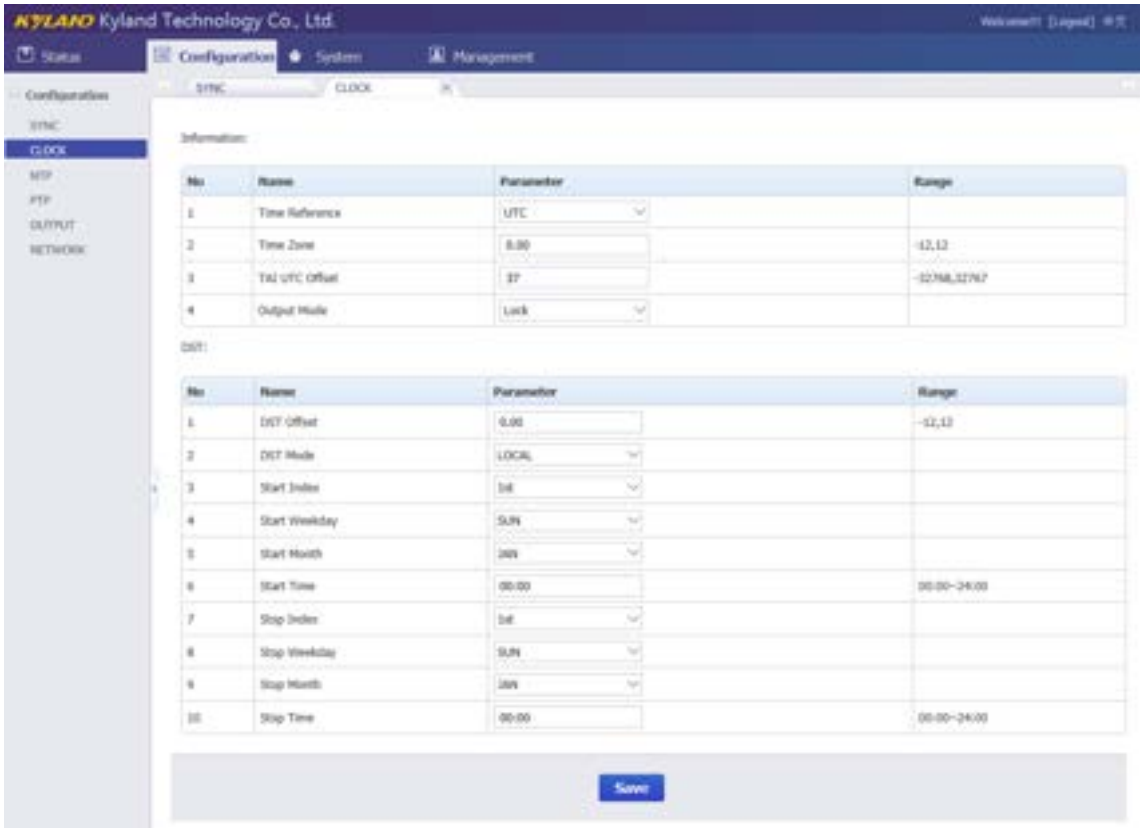
Table 4 – Sync Source Setting

Item	Valid	Parameter	Description
Source Priority	IRIG-B1 IRIG-B2 PTP	1~10	Set the priority for external signal source. 1 is highest source and 10 is lowest source.
Source Mode	IRIG-B1 IRIG-B2 PTP	SYNC/PEER/NONE	To set source working mode. SYNC is individual sync source, PEER is redundancy sync source and NONE is anything to do.
Input Channel	IRIG-B1 IRIG-B2	FI	To set IRIG-B1input time signal.
Time Format	IRIG-B1 IRIG-B2	DC+/DC-	To set IRIG-B1input format, including DC+ (positive polarity DC), DC-(negative polarity DC) IRIG-B signal.
UTC Offset	IRIG-B1 IRIG-B2	0.00H	Set time offset between IRIG-B and UTC.
Working Mode	--	Single	Single source enabled(only one good external source can make clock to work)

Press ‘Save’ button to save the current setting when you change setting.

3.5.1. Clock Settings

Press ‘CLOCK’ on the left navigation bar to show clock setting screen. The clock setting screen will be shown as:



[Figure 3-8] Clock Setting Screen

Table 5 – Clock Setting

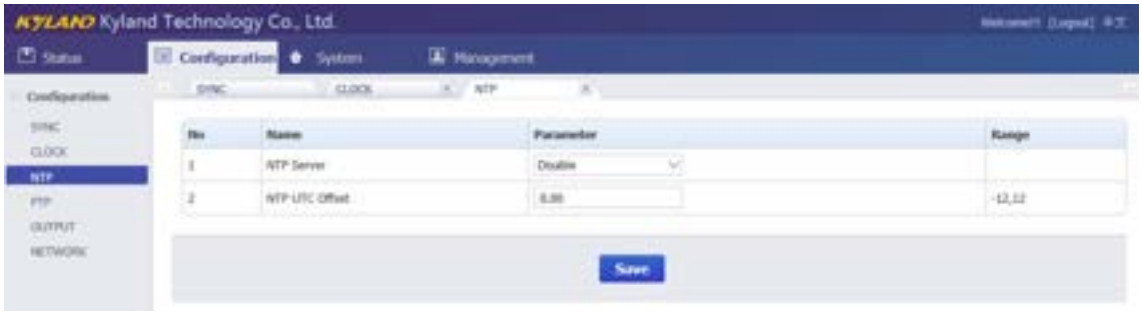
Items	Parameters	Description
Time Reference	UTC / TAI	Set UTC time or TAI time as required
Time Zone	0.00H	Set time zone offset to ensure required time zone display.
TAI UTC Offset	35s	Set time zone offset between TAI and UTC.
Output Mode	Always/Lock	Always means time server has output signals in any status. Lock means time server only has output signals after timer server is locked by external time source.
DST Offset	0.00H	Set how many hours need to adjust at DST period.
DST Mode	UTC/LOCAL	Set use which reference time to convert DST time.
Start Index	$1^{st}/2^{nd}/3^{rd}/4^{th}/5^{th}$/Last	Set start date of DST.
Start Weekday	MON/TUE/WEN/THU /FRI/SAT/SUN	

Items	Parameters	Description
Start Month	JAN/FEB/MAR/APR/MAY/JUN/JUL/AUG/SEP/OCT/NOV/DEC	
Start Time	00:00~24:00	
Stop Index	1st/2nd/3rd/4th/5th/Last	Set stop date of DST.
Stop Weekday	MON/TUE/WEN/THU/FRI/SAT/SUN	
Stop Month	JAN/FEB/MAR/APR/MAY/JUN/JUL/AUG/SEP/OCT/NOV/DEC	
Stop Time	00:00~24:00	

Press 'Save' button to save the current setting when you change setting.

3.5.2. NTP Settings

Press 'NTP' on the left navigation bar to show NTP setting screen. The NTP setting screen will be shown as:



[Figure 3-9] NTP Setting Screen

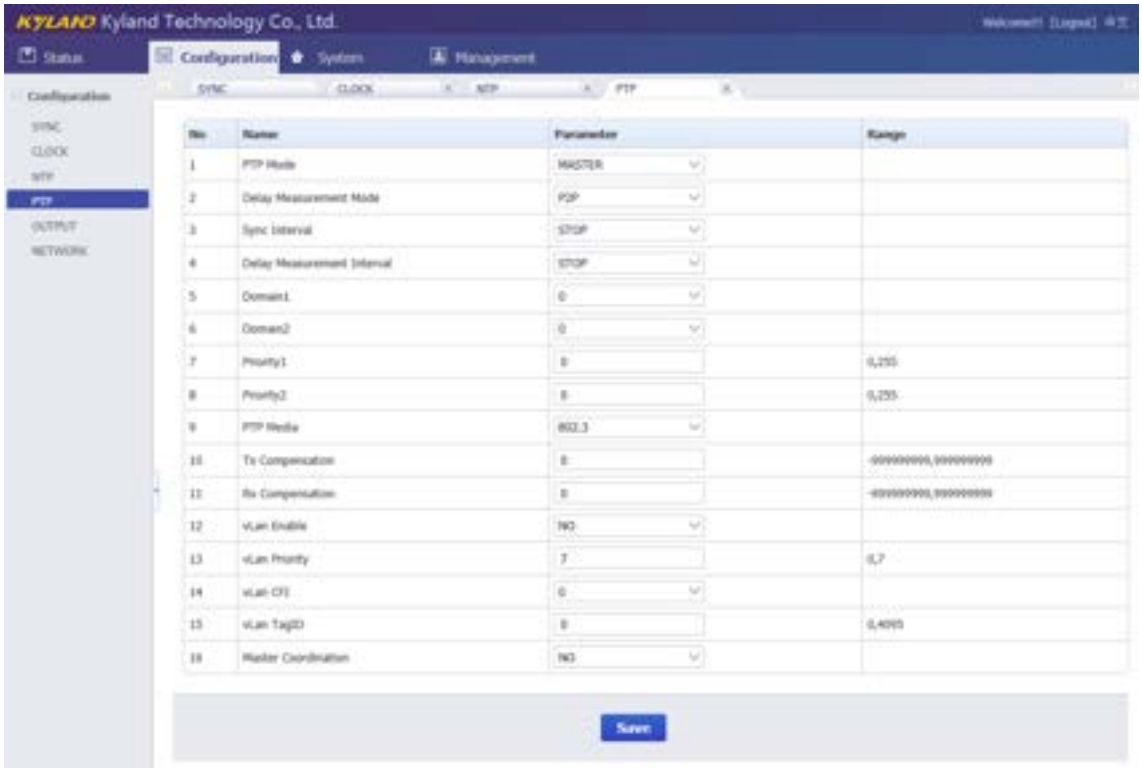
Table 6 – NTP Setting

Items	Parameters	Description
NTP Server	Enable/Disable	To enable or disable NTP server of time server.
NTP UTC Offset	0.00H	Set time offset between NTP and UTC.

Press 'Save' button to save the current setting when you change setting.

3.5.3. PTP Settings (Optional)

Press 'PTP' on the left navigation bar to show PTP setting screen. The PTP setting screen will be shown as:



[Figure 3-10] PTP Setting Screen

Table 7 – PTP Setting

Items	Parameters	Description
PTP Mode	Master/Slave /Boundary	Set PTP working mode.
Delay Measurement Mode	E2E / P2P / Disable	Set clock delay measurement mode or disable this function.
Sync Interval	-8~4 / Stop	Set the PTP sync message rate of PTP master clock. Setting value is n, actual interval is 2^n seconds. Valid range is from -8 to 4 and Stop. Default value is Stop.
Delay Measurement Interval	-8~4 / Stop	Set delay measurement rate. Setting value is n, actual interval is 2^n seconds. Valid range is from -8 to 4 and Stop. Default value is Stop.
Domain1/2	0~3	Set the working domain name for PTP message.
Priority1/2	0~255	Set working priority for PTP message.
PTP Media	802.3 / IPv4	Set the transmission protocol for PTP.IEEE802.3 and Ipv4 are supported.
Rx Compensation	0ns	Set the time delay for receiving PTP message.
Tx Compensation	0ns	Set the time delay for sending PTP message.
vLan Enable	Yes / No	Set whether to send vLan information.

Items	Parameters	Description
vLan Priority	0~7	Set vLan priority.
VLan CFI	0	Set vLan CFI information.
vLan TagID	0~4095	Set vLan ID information.
Master Coordination	YES/NO	Set master coordination function with BMC.

Press ‘Save’ button to save the current setting when you change setting.

3.5.4. Output Settings

Press ‘OUTPUT’ on the left navigation bar to show output setting screen. The default output setting screen will be shown as:

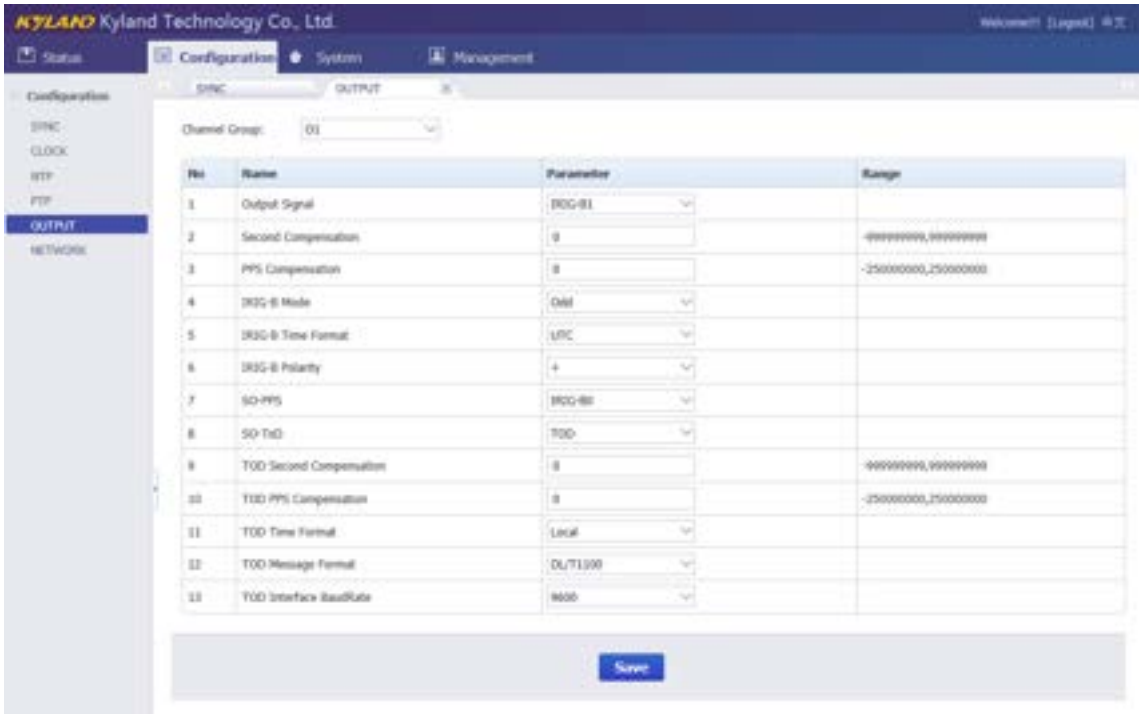


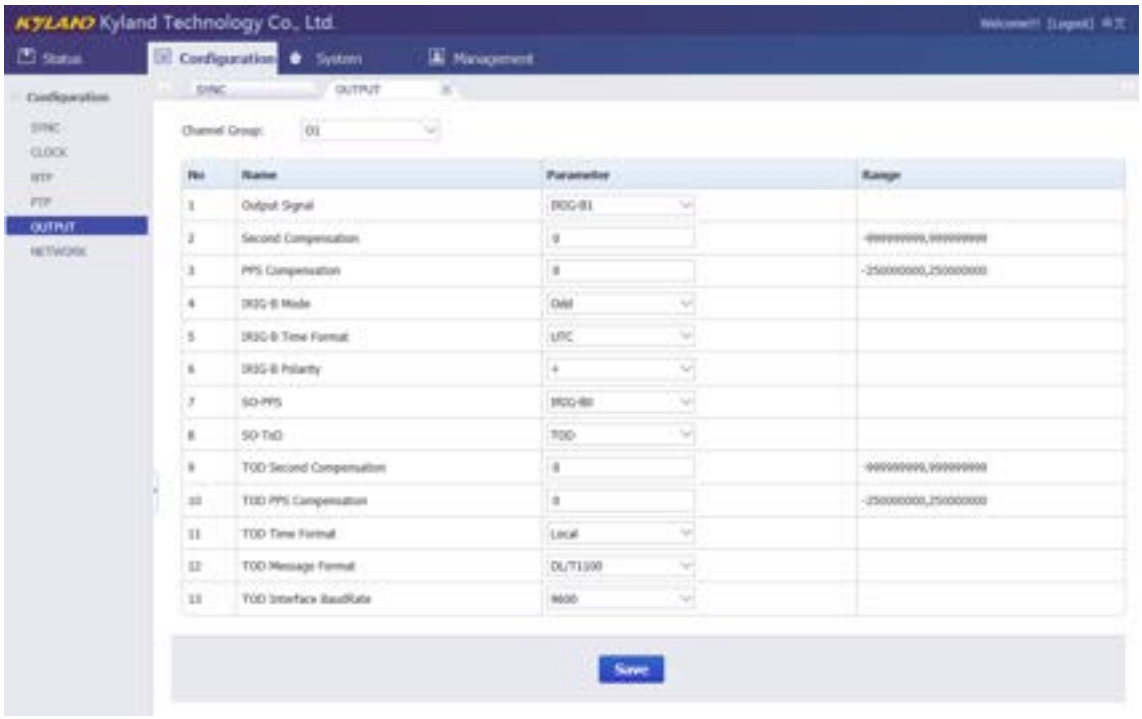
Figure 8 – Output Setting Screen

Press ‘Save’ button to save the current setting when you change setting.

Press ‘Channel Group’ to select different output channel.

Channel Group has the following options: O1/O2/O3/O4/O5.

If select O1, the output setting screen will be shown as:

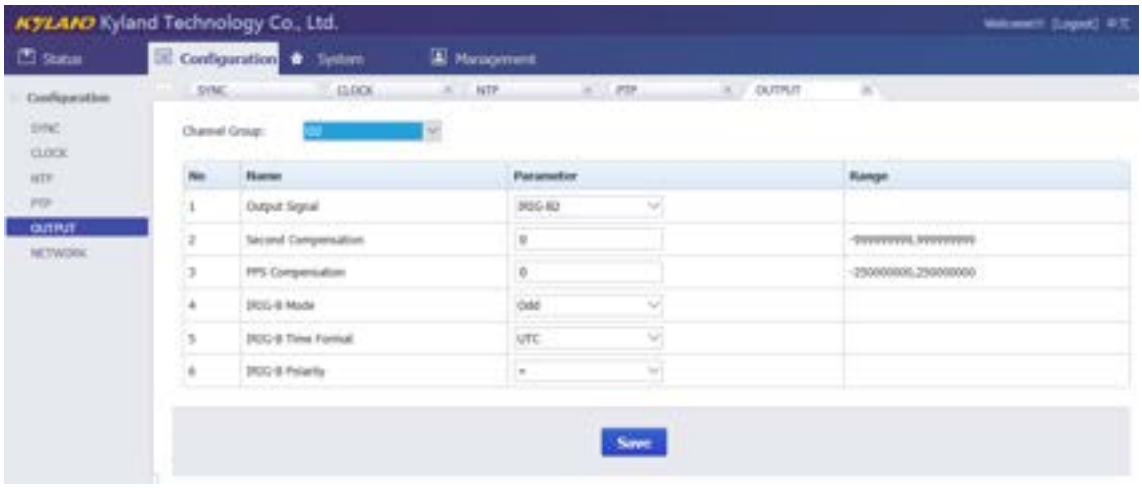


[Figure 3-11] Output Setting Screen (O1)

Table 9 – Output Setting (O1)

Items	Parameters	Description
Output Signal	PPS,IRIG-B,PPM,PPH	Set the output signal type for O2/O3/O4.
Second Compensation	0s	Set second compensation offset.
PPS Compensation	0ns	Set PPS compensation offset.
IRIG-B Time Format	UTC / TAI / Local	Set output time format which can be set to UTC/TAI/Local time.
IRIG-B Mode	Even /Odd	Set IRIG-B check code: even, odd check.
IRIG-B Polarity	+/-	Set IRIG-B output signal polarity.
SO-PPS	PPS,IRIG-B,PPM,PPH	Set the signal type for serial port PPS signal.
SO-TxD	TOD	Set the signal type for serial port TxD signal.
TOD Message Format	DLT1100/CM-TOD/CMBB	Set the coding format for serial message.
TOD Interface BaudRate	300~115200	Set the working baud rate for serial port, ranging from 300 to 115200.
TOD Second Compensation	0s	Set second compensation offset.
TOD PPS Compensation	0ns	Set PPS compensation offset.
TOD Time Format	UTC / TAI / Local	Set output time format which can be set to UTC/TAI/Local time.

If select O2/O3/O4, the output setting screen will be shown as:

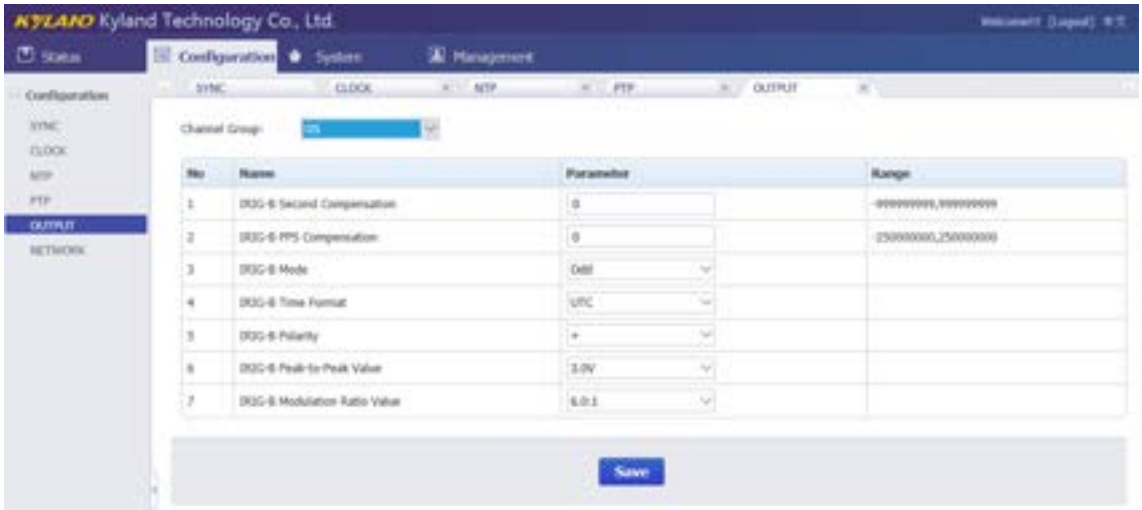


[Figure 3-12] Output Setting Screen (O1/O2/O3)

Table 10 – Output Setting (O2/O3/O4)

Items	Parameters	Description
Output Signal	PPS,IRIG-B,PPM,PPH	Set the output signal type for 01~05.
Second Compensation	0s	Set second compensation offset.
PPS Compensation	0ns	Set PPS compensation offset.
IRIG-B Time Format	UTC / TAI / Local	Set output time format which can be set to UTC/TAI/Local time.
IRIG-B Mode	Even /Odd	Set IRIG-B check code: even, odd check.
IRIG-B Polarity	+/-	Set IRIG-B output signal polarity.

If select O5, the output setting screen will be shown as:



[Figure 3-13] Output Setting Screen (O5)

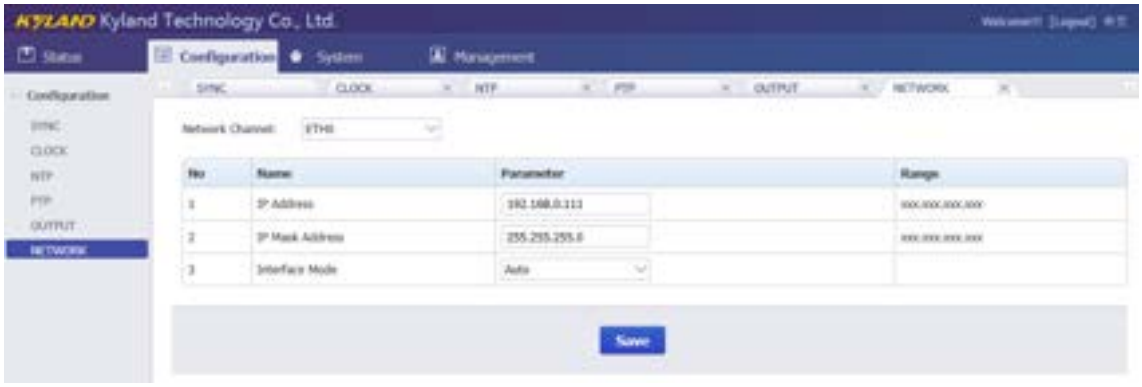
Table 11 – Output Setting (O5)

Items	Parameters	Description
IRIG-B Second Compensation	0s	Set second compensation offset.

Items	Parameters	Description
IRIG-B PPS Compensation	0ns	Set PPS compensation offset.
IRIG-B Time Format	UTC / TAI / Local	Set output time format which can be set to UTC/TAI/Local time.
IRIG-B Mode	Even /Odd	Set IRIG-B check code: even, odd check.
IRIG-B Polarity	+/-	Set IRIG-B output signal polarity.
IRIG-B Peak-to-Peak	3.0V~12.0V	Set the peak-to-peak value for IRIG-B modulated, ranging from 3.0V to 12.0V, adjusting step length is 0.5V, default value is 12.0V.
IRIG-B Modulation Ratio	3.0:1~6.0:1	Set the modulation ratio for IRIG-B modulated, ranging from 3.0:1~6.0:1, adjusting step length is 0.5:1; default value is 3.0:1.

3.5.5. Network Settings

Press ‘NETWORK’ on the left navigation bar to show network setting screen. The network setting screen will be shown as:



[Figure 3-14] Network Setting Screen

Press ‘Network Group’ to select different network port including ETH0/1/2/3

Table 12 – Network Setting

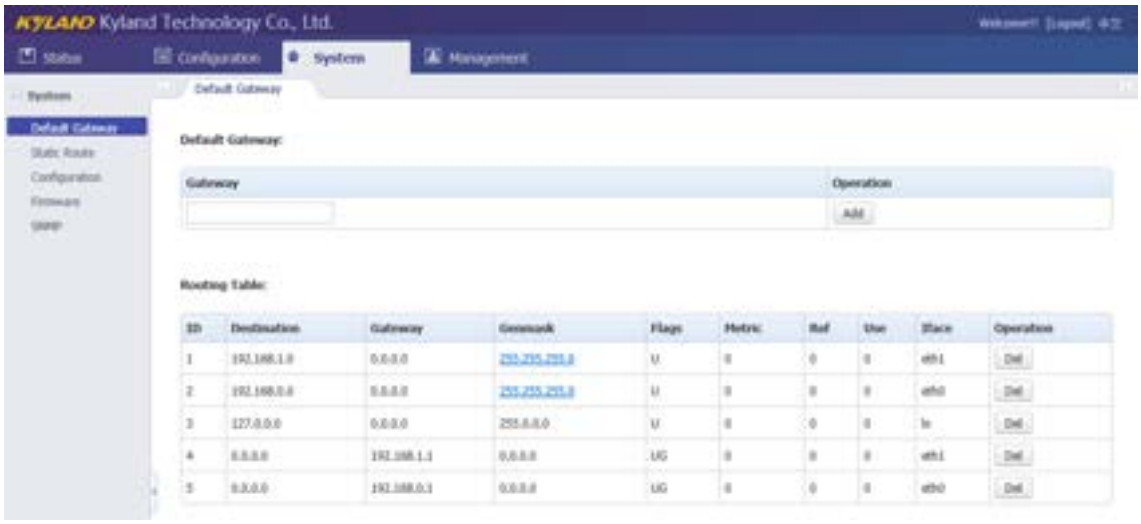
Items	Parameters	Description
IP Address	ETH0:192.168.0.111 ETH1:192.168.1.111	Set ETH0/1 IP address.
IP Mask Address	ETH0:255.255.255.0 ETH1:255.255.255.0	Set ETH0/1 Subnet mask address.
Interface Mode	Auto/100M-FX FDX/100M-FX HDX /1000M-FX FDX/1000M-FX HDX	Set ETH0/1 interface mode.

Press ‘Save’ button to save the current setting when you change setting.

3.6. System

The WEB management system supports to manage Gateway, Route information and to backup and restore configuration file, in the same time it also supports firmware management of PTC2000 time convertor by WEB. Normally, if PTC2000 time convertor has SNMP features, the SNMP management node will be shown in the left navigation bar.

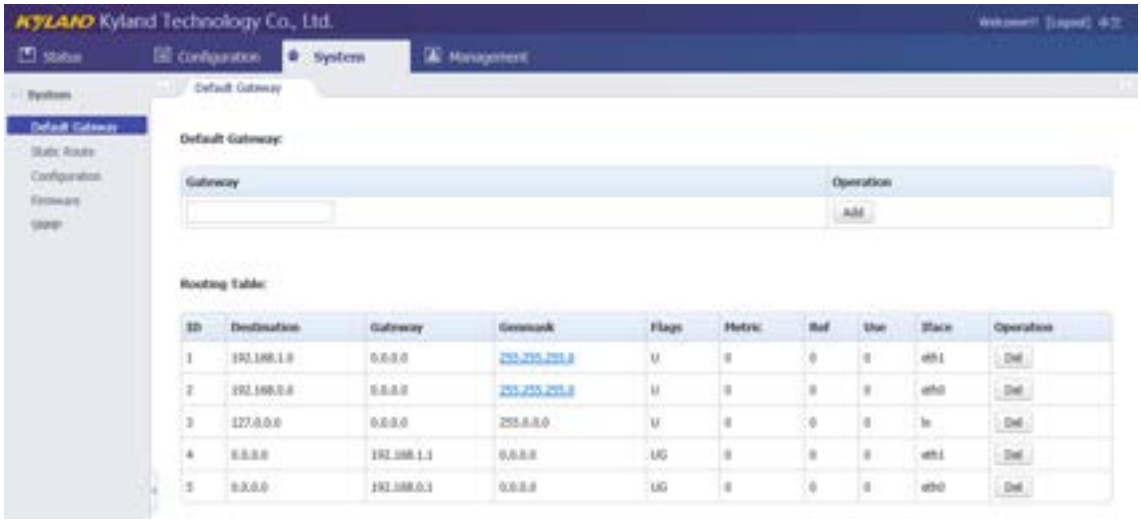
Press ‘System’ to go to the system screen on the top of navigation bar. The screen will be shown as:



[Figure 3-15] System Screen

3.6.1. Gateway

Press ‘Default Gateway’ on the left navigation bar to manage Gateway information. The gateway screen will be shown as:



[Figure 3-16] System Screen

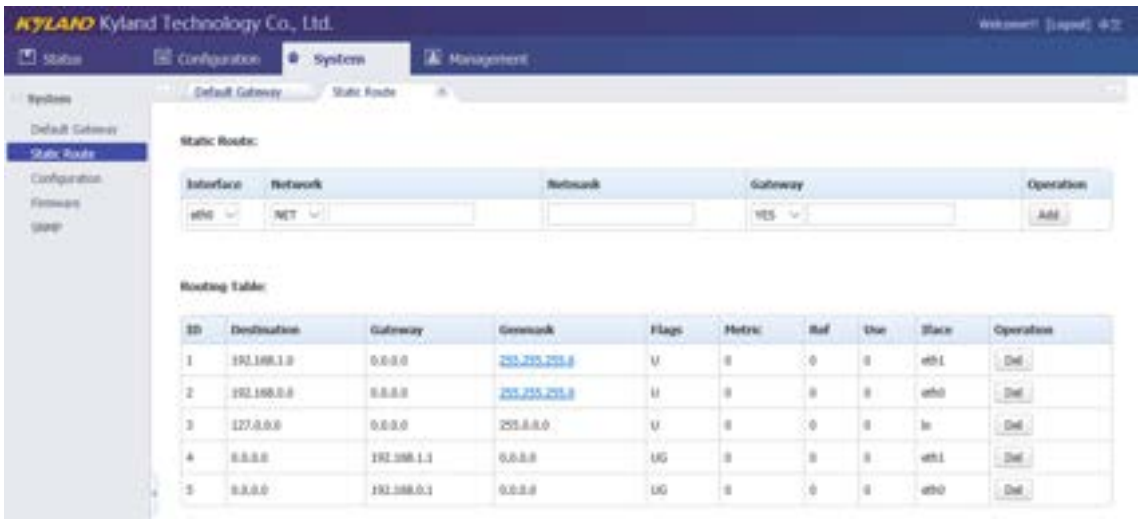
The current routing table will be listed on the bottom of screen.

Press ‘Add’ to add a new gateway for PTC2000 time convertor.

Press ‘Del’ to delete the selected route information.

3.6.2. Route

Press ‘Route’ on the left navigation bar to manage Route information. The route screen will be shown as:



[Figure 3-17] Route Screen

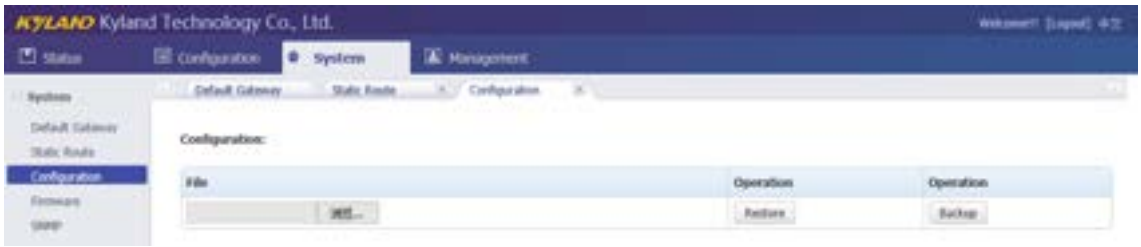
The current routing table will be listed on the bottom of screen.

Press ‘Add’ to add a static route for PTC2000 time convertor.

Press ‘Del’ to delete the selected route information.

3.6.3. Configuration

Press ‘Configuration’ on the left navigation bar to backup and restore configuration file. The configuration screen will be shown as:



[Figure 3-18] Configuration Screen

Press ‘Backup’ and system will pop-up a tip window, let user to select a directory to save configuration file. The name of configuration file is named by MAC address.

Press ‘Restore’ to restore a configuration by WEB. Before do it, please select a file.

After press ‘Restore’, the system will active your selected configuration file.

3.6.4. Firmware

Press ‘Firmware’ on the left navigation bar to upgrade firmware. The firmware screen will be shown as:

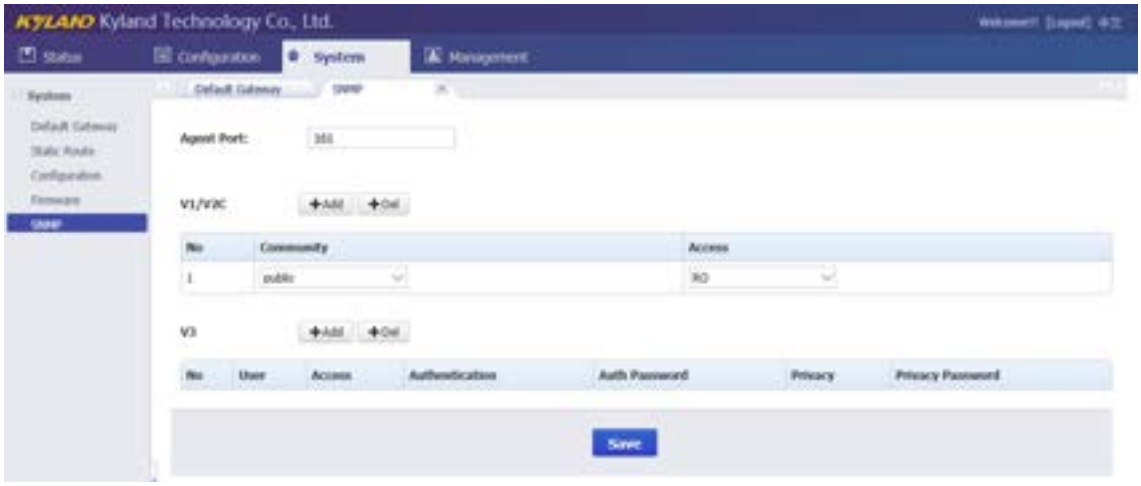
[Figure 3-19] Firmware Screen

Press ‘Download’ to update the new firmware of PTC2000 time convertor. Before do it, please select upgrade file. After finish this action, you should reboot device and make the new firmware active. There are 2 types to reboot device. One is turn off power and then turn on; another is controlled by WEB management system.

The firmware should be published by Official.

3.6.5. SNMP (Optional)

Press ‘SNMP’ on the left navigation bar to manage SNMP feature. The SNMP screen will be shown as:



[Figure 3-20] SNMP Screen

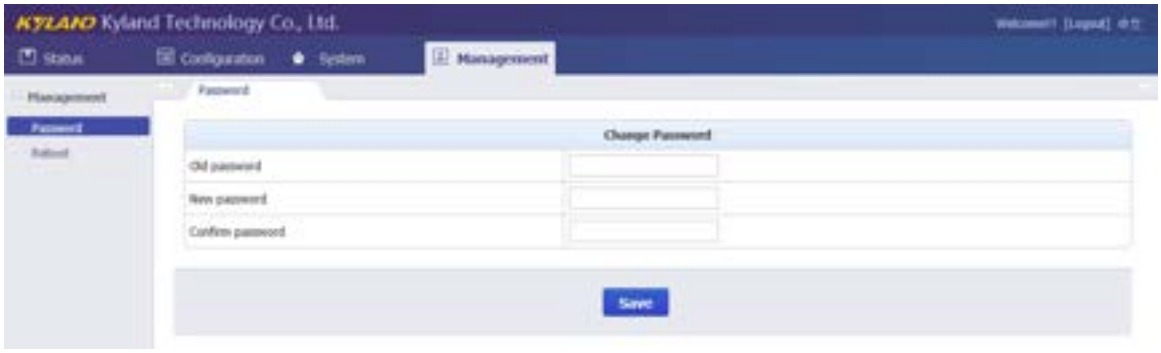
SNMP management supports to modify agent port and to add or delete V1/V2C and V3 access parameters. The default agent port of SNMP is 161. The default access parameter of V1/V2C named ‘public’, it only has read-only permissions. V3 does not have default value.

Any modifications about SNMP should reboot module to activate it.

3.7. Management

The WEB management system supports to change user password and reboot device by WEB.

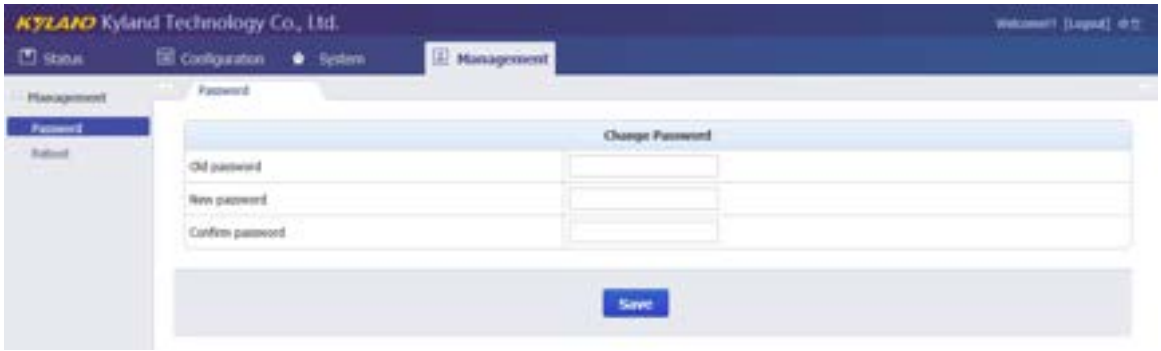
Press ‘Management’ to go to the management screen on the top of navigation bar. The screen will be shown as:



[Figure 3-21] Management Screen

3.7.1. Change Password

Press ‘Change Password’ on the left navigation bar to change password. The change password screen will be shown as::



[Figure 3-22] Change Password Screen

Please ‘Save’ to confirm the new password.

3.7.2. Reboot

Press ‘Reboot’ on the left navigation bar to reboot device. The reboot screen will be shown as:

[Figure 3-23] Reboot Screen

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