

ptf

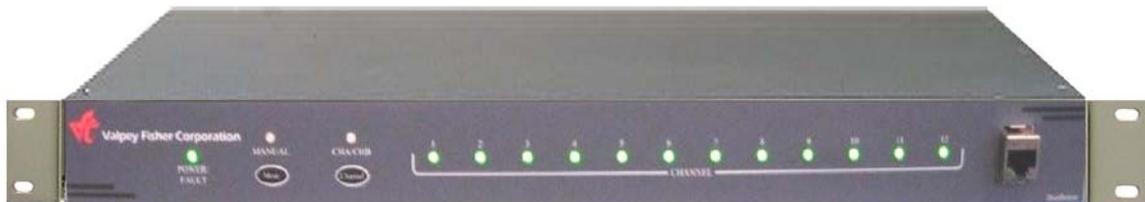
Precise Time and Frequency, Inc

***ptf* Distribution Amplifiers**

with Remote Monitor/Control

(*ptf* 1203C-MC, 1204A-MC, 1205A-MC)

Operation and Maintenance Manual



Document # 11445
Revision A

Certificate of Conformance

This certificate confirms that the following equipment:

Unit type: Distribution Amplifier with Remote M/C Interface

Serial Number: _____

has successfully passed a FINAL ACCEPTANCE TEST and conforms in all respects of form, fit, and function to current specifications, including regulatory requirements and certifications.

Inspected and verified by:

Date:

For Precise Time and Frequency, Inc

Declaration of Conformity

This certificate confirms that the following equipment:

Unit type: Distribution Amplifier with Remote Monitor/Control Interface
is in conformity with the relevant provisions of the following standard(s)
or other normative document(s):

EU EMC Directive 89/336/EEC:

- | | |
|---------------------|--|
| EN55022 | Limits and methods of measurements of radio disturbance characteristics of information technology equipment |
| EN61000-3-2 (2001) | Limits for harmonic current emissions (equipment input current up to and including 16A per phase) |
| EN61000-3-3 (1995) | Limitation of voltage fluctuations/flicker in low voltage supply systems for equipment with rated current $\leq 16A$ |
| EN55024 (1998) | Information technology equipment – immunity characteristics
- Limits and methods of measurement |
| EN61000-4-2 (1995) | Electrostatic discharge immunity |
| EN61000-4-3 (1997) | Radiated, radio frequency, electromagnetic field Immunity |
| EN61000-4-4 (1995) | Electrical fast transient/burst immunity |
| EN61000-4-5 (1995) | Surge Immunity |
| EN61000-4-6 (1996) | Immunity to conducted disturbances, induced by radio frequency fields |
| EN61000-4-8 (1994) | Power frequency magnetic field immunity |
| EN61000-4-11 (1994) | Voltage Dips, short interruptions and voltage variations immunity |

EU Low Voltage Directive 72/23/EEC:

- | | |
|-------------------|---|
| EN 60950-1 (2000) | Safety of Information Technology Equipment, including electrical business equipment |
|-------------------|---|

Introduction

Congratulations on your purchase of a ptf Distribution Amplifier with remote monitor and control interface!

This product meets the highest standards of quality and reliability, and Precise Time and Frequency, Inc wants to insure that you enjoy the maximum benefits and functionality that this unit can provide.

The technology within this unit uses the decades of experience in time and frequency applications of our engineering team, to provide a unit that is highly advanced, and gives a very powerful feature set in an inexpensive and compact package,

Operation of the unit is straightforward and the contents of this manual are designed to provide a basic understanding of the product, set-up and functionality, and procedures for maintenance and repair.

If you have any questions or concerns, please do not hesitate to contact our technical service department who will be pleased to provide assistance.

Please help us to live up to our stated objectives, our company motto is:

KNOW THE NEEDS AND EXPECTATIONS OF YOUR CUSTOMER...THEN DELIVER!

Once again, thank you for purchasing our product, and we look forward to you utilizing Precise Time and Frequency, Inc. for your future time and frequency instrumentation needs.



President
Precise Time and Frequency, Inc.

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1. ***ptf* 1203C-MC, 1204A-MC, 1205A-MC Distribution Amplifiers - Technical Overview**

The *ptf* distribution amplifiers with remote monitor/control, come in three basic formats according to the application requirements and ordered options.

The Remote Monitor and Control interface can manage up to 36 outputs, however in the *ptf* 120X-MC application only 12 of the possible 36 outputs are implemented, under firmware control.

Remote monitoring and control is provided on Ethernet (Telnet/HTTP/SNMP) interfaces or an RS232C serial interface. The outputs types are preselected in firmware according to the model, either RF, Digital, or IRIG B.

Outputs are labeled 1 through 12. Each of the different distribution types is described below.

1.1. *RF Distribution*

The *RF Distribution* uses at its heart an RF design combining the latest technology in low noise components, with decades of experience in low noise layout design, to buffer high quality input signals while preserving the integrity and purity of input signal by minimizing any phase noise addition.

The unit uses two stages of input signal buffering to distribute the input signal to the separate outputs, and insure maximum isolation between individual output signals.

In most applications the phase noise capability of the *ptf RF Distribution* will outperform the input signal performance to such a degree that no additive phase noise will be noticeable on the outputs.

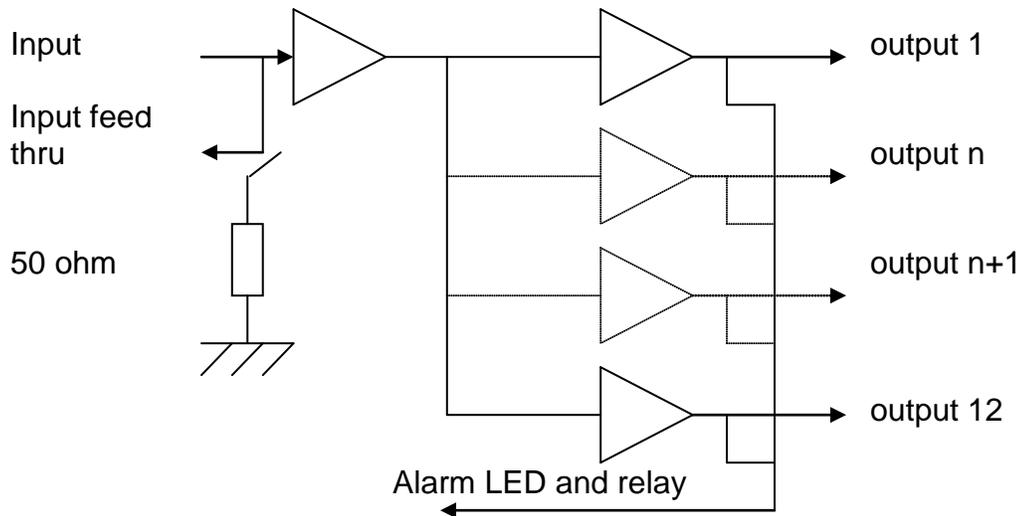


Figure 1. *ptf RF Distribution* Schematic

1.2. ptf RF Distribution - Specifications

Note: For specifications on the Remote Monitoring/Control Interface refer to section 5.

1.2.1. Electrical

RF Output

Frequency Range 900kHz to 50MHz

Level 1V rms (nominal)

Harmonic Distortion <-40 dB

Non-Harmonic Signals <-80 dB

Load Impedance 50.

Isolation >90 dB*

Connectors BNC

Additive SSB Phase Noise

(1 Hz bw) Offset from carrier

1 Hz	-120 dB
10 Hz	-135 dB
100 Hz	-145 dB
1,000 Hz	-155 dB
10,000 Hz	-160 dB

RF Input

Frequency Range 900kHz to 20MHz

Level 1 V rms (nominal)

1.3. Digital Distribution

The **Digital Distribution** uses at its heart an electronic design benefiting from the latest technology in high performance components. Through decades of timing design experience, the ptf team is able to reproduce precision pulse input signals with the minimum of propagation delays.

The unit uses two stages of input signal buffering to distribute the input signal to the separate outputs, and insure maximum isolation between individual output signals.

Particular attention has been given to insuring virtually no differential propagation delays between channels, resulting in channel-to-channel output coherence in the order of 2ns.

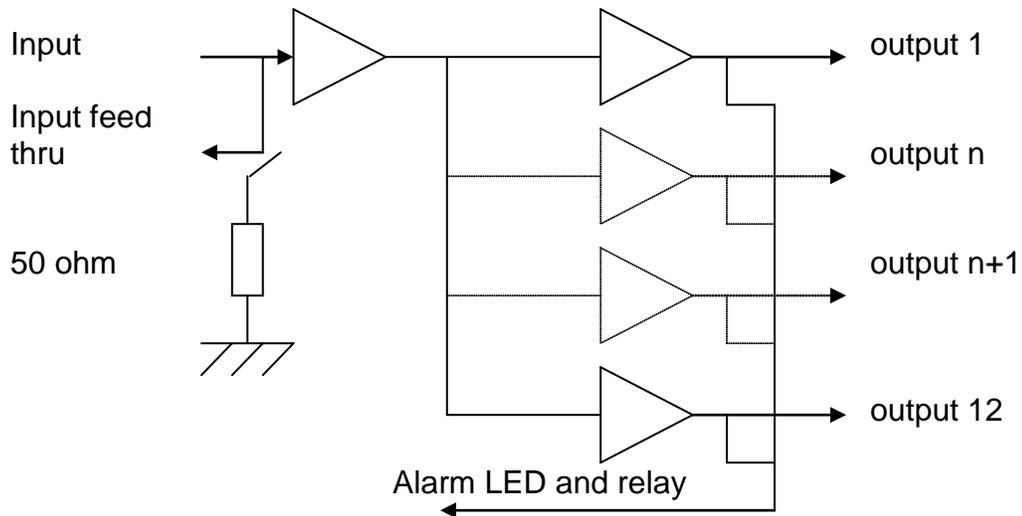


Figure 2. **ptf Digital Distribution** Schematic

1.3.1. Digital Distribution - Specifications

1.3.2. Electrical

Digital Output

Pulse Rate Range 1 pulse per hour to 1,000,000 pulses per second

Level 5V logic (under load)

Load Impedance 50 ohms.

Connectors BNC

Maximum Alarm setting 1 minute between pulses

Pulse Input

Pulse Rate Range 1 pulse per hour to 1,000,000 pulses per second

Level 5 V logic (tolerant up to 10V)

Impedance 50 ohms

1.4. IRIG B Distribution

The **IRIG Distribution** uses a basic RF design of low noise components, with careful layout, to buffer the IRIG B (am) input signals. If distribution of IRIG B DCLS is required, the Digital Distribution design should be used.

The unit uses two stages of input signal buffering to distribute the input signal to the separate outputs, and insure maximum isolation between individual output signals.

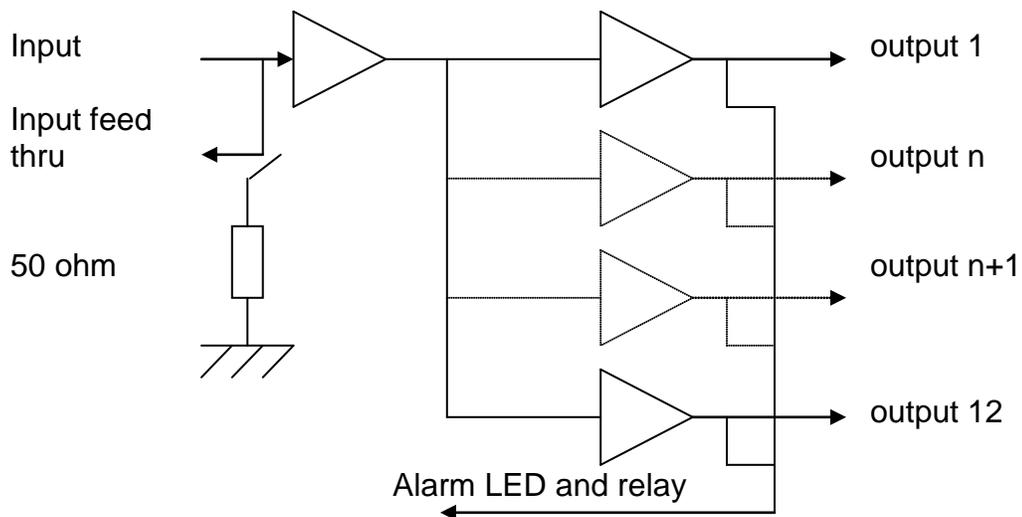


Figure 3. **ptf IRIG Distribution** Schematic

1.5. IRIG B Distribution - Specifications

1.5.1. Electrical

Time Code Output

Code Format	IRIG-B
Modulation Frequency	1kHz
Modulation Ratio	3:1
Amplitude	≤3V P-P into 50 Ω 50Ω source impedance
Connectors	BNC

Time Code Input

Code Format	IRIG-B
Modulation Frequency	1kHz
Modulation Ratio	3:1
Amplitude	≤3V P-P
Impedance	50Ω /Hi Z switch (50KΩ)

2. General Specifications (All Distribution Modules)

2.1.1. Alarm Output (one per chassis)

Summary alarm indicates failure of any output signal
Non-alarm condition: Relay energized (fail safe)
Connector: 9 pin D-male

Alarm Indicator	Red LED on Front panel
------------------------	------------------------

2.1.2. Power Input

Standard AC power input:

Input voltage	85 to 264 V AC
Input Frequency range	45 to 65 Hz

Power Indicator	Green LED on Front Panel
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2.1.3. Dimensions

Chassis	Height 3.5 Inches. (2U) Width 17 Inches (19 inch rack mounting) Depth 12 Inches Maximum.
---------	--

2.1.4. Weight

Chassis	< 15 pounds
---------	-------------

2.1.5. Environmental

Operating Temp:	-0 C to +55 C
-----------------	---------------

Humidity	to 95% RH non-condensing
----------	--------------------------

3. Monitor / Control Interfaces

The monitor and control interface allows full remote monitoring of input and output status for the distribution products. The unit is pre-configured to monitor 12 channels simultaneously. There is also a capability to control an option input auto switch.

The remote monitor/control interface allows selection (activation/de-activation) of individual inputs/outputs so that only those inputs/outputs being used will generate remote system alarms etc. In addition the interface allows selection (activation/de-activation) of complete pcb assemblies for remote monitoring/control.

Monitoring and control of unit functionality is available through the following interfaces;

Local: Front panel, by means of LED indicators.

RS 232: Intended primarily for local use, accessed via a rear panel 9 pin D connector

Ethernet - 100 Base-T Ethernet , accessed via a rear panel RJ-45 jack including; Telnet: TCP/IP, HTTP web browser. SNMP: UDP

3.1. Telnet

3.1.1. Command Format

The telnet interface is designed as a machine interface, and therefore characters sent to the unit are not echoed as this imposes undue difficulties on the transmitting device. If using telnet manually from a computer application such as HyperTerminal, it is recommended to set "local echo" on. Command format is of the form :

[Command][Space][Data][Enter]

Where;

Command is in the form CXX e.g. C01

Space is ASCII 32(decimal)

Data can be numbers, or characters according to the command

Enter is line feed/CR combination (ASCII 10 dec. and 13 dec.)

All entered characters are converted internally to UPPER CASE, therefore either upper or lower case characters can be used

There are also several special commands that are of the form;

[Command][Enter]

e.g. the Status command.

Available commands are shown in section 3.1.3

In addition typing ;

[HELP][SPACE][COMMAND][ENTER]

or typing

[COMMAND][SPACE][?][ENTER]

Will display additional help information on the selected command.

3.1.2. Login

To login to the unit via the telnet interface, it is necessary to provide a user name and password. The default user name is admin. The password can be numbers only and the default password is 123456.

3.1.3. Commands

Command	Description	Type	Range	Comments
C01 to C16	Reserved			
C17	Date	String	MM/DD/YYYY	Only valid dates
C18	Time	String	HH:MM:SS	24 hour format
C19	IP	xxx.xxx.xxx.xxx	IP address	
C20	NET MASK	xxx.xxx.xxx.xxx	Net Mask	
C21	GATEWAY	xxx.xxx.xxx.xxx	Gateway	
C22	DHCP	String	ON / OFF	
C23	PASSWORD	Number	1 > 2147483647	
C24	Set Default	Password		Resets defaults
C25	Reserved			
C26	Reserved			
C27	Baud Rate	Number	9600 19200 57600	Baud rate for serial port
C28	IP SNMP MGR	xxx.xxx.xxx.xxx	IP	IP address of SNMP manager
C29	SNMP Traps	String	On / Off	
C30	Reserved			
C31	NTP Update Interval	Integer	0 to 100000	0 = no NTP update
C32	TNET Port	Integer	1 to 65536	Select port for telnet (default=23)
C33	TNET Timer	Integer	0 to 100000	0 = no timeout
LOGOUT	Telnet	String	Logout	Logs out telnet session
HELP	Print Help	String	Help	Prints help menu
VER	Version	String	Ver	Displays s/w version
Macno	Macno	String	Macno	Display unit MAC #
Reset	Unit Reset	String	Reset	Restarts unit
Status	Status	String	Status	Give channel status
C42	Active	Integer	1 to 36 (Channel No.)	Sets channel o/p Active
C43	Inactive	Integer	1 to 36 (Channel No.)	Sets channel o/p Inactive
C44	i/p Active	Integer	1 to 3 (Input No.)	Sets input channel Active
C45	i/p Inactive	Integer	1 to 3 (Input No.)	Sets input channel Inactive
C46	pcb Active	Integer	1 to 3 (pcb No.)	Sets pcb Active
C47	pcb Inactive	Integer	1 to 3 (pcb No.)	Sets pcb Inactive

Hidden Commands:

Command	Description	Type	Range	Comments
C25	Clear Log	Password		ptf hidden command
C26	Print Log	Number	0 to 100	ptf hidden command
C34	Serial Events	String	On / Off	ptf hidden command
C35	Telnet Events	String	On / Off	ptf hidden command
C36	Default IP	IP	xxx.xxx.xxx.xxx	ptf hidden command unit will reset to this IP upon execution of default command
C37	Def Net Mask	IP	xxx.xxx.xxx.xxx	ptf hidden command
C38	Def Gateway	IP	xxx.xxx.xxx.xxx	ptf hidden command
C39	RF Channels	Integer	1 to 3	ptf hidden command set pcb to RF type
C40	Digital (1PPS) Channels	Integer	1 to 3	ptf hidden command Set pcb to digital type
C41	IRIG Chans	Integer	1 to 3	ptf hidden command set pcb to IRIG type
C48	IP DNS	IP	000.000.000.000	ptf hidden command to set DNS server for NTP

The above commands are factory preset and should not be modified by the user.

3.1.4. Help Screens

When used with a standard interface such as Hyper terminal, it can be helpful to be able to quickly see available commands and their formats.

The unit includes both a summary help screen, that provides a quick reference for available commands, and reports the currently set values of the various parameters, and also multi-line help for each of the individual commands.

The summary screen is accessed by typing;

[HELP][ENTER]

at the command prompt and the multi line help for a single command is accessed by typing either;

[HELP][SPACE][COMMAND][ENTER] or

[COMMAND][SPACE][?][ENTER]

Examples of the help screens as displayed on hyper terminal are shown below;

```

10.0.0.5 - HyperTerminal
File Edit View Call Transfer Help
[Icons]

> All Commands Help. For more info on a single command type <help Cxx>
Name      Cmd      Current Value      Name      Cmd      Current Value
DATE(UTC) C17      10/06/2009         TIME(UTC) C18      11:44:10
IP        C19      010.000.000.005    NET MASK  C20      255.255.255.000
GATEWAY   C21      010.000.000.001    DHCP      C22      0n
PASSWORD  C23      *****           SET DEFAULT C24      0
BAUD RATE C27      57600              IP SNMP MGR C28      010.000.000.007
SNMP TRAPS C29      0n                  NTP u/d int C31      70
TNET PORT C32      23                  TNET Timer C33      0
TELNET    LOGOUT
VERSION   VERS
Reset     RESET
Active    C42      FFFF FFFF FFFF     Inactive  C43      FFFF FFFF FFFF
i/p Active C44      FFFF FFFF FFFF     i/p Inact. C45      FFFF FFFF FFFF
pcb Active C46      FFFF FFFF FFFF     pcb Inact. C47      FFFF FFFF FFFF
> _

Connected 0:27:12  ANSI  TCP/IP  SCROLL  CAPS  NUM  Capture  Print echo

```

Summary Help Screen

```

10.0.0.5 - HyperTerminal
File Edit View Call Transfer Help
[Icons]

>
Name      m/c      Current Value
DATE(UTC) C17      10/06/2009
Current date
Entry type is xx/xx/xxxx ( month/day/year )

>
Name      m/c      Current Value
TIME(UTC) C18      11:49:26
Current time
Entry type is xx:xx:xx ( hour:minute:seconds )

>
Name      m/c      Current Value
IP        C19      010.000.000.005
The Internet Address (IP) of this NetTyme
Entry type is xxx.xxx.xxx.xxx ( IP address )

>

Connected 0:31:35  ANSI  TCP/IP  SCROLL  CAPS  NUM  Capture  Print echo

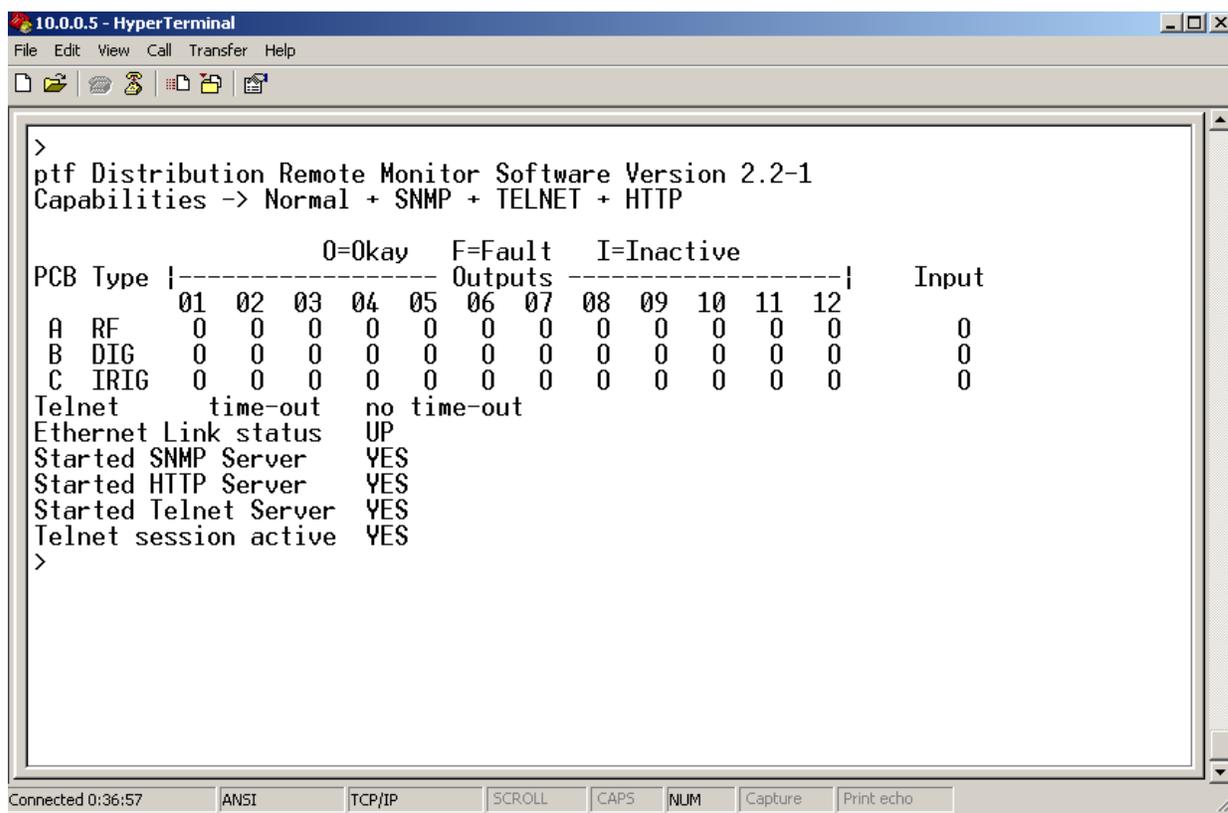
```

Expanded help on specific commands

3.1.5. Status Command

The Status command is provided as a means of obtaining a quick summary of the status of the unit, and provides summary information on each of the Auto switch channels, together with other settings such as the Manual mode and telnet timeouts, Ethernet status etc.

A sample Status screen is shown below;



```
>
ptf Distribution Remote Monitor Software Version 2.2-1
Capabilities -> Normal + SNMP + TELNET + HTTP

PCB Type |----- 0=Okay  F=Fault  I=Inactive -----|      Input
          |----- Outputs -----|
A RF      01 02 03 04 05 06 07 08 09 10 11 12      0
B DIG     0 0 0 0 0 0 0 0 0 0 0 0      0
C IRIG    0 0 0 0 0 0 0 0 0 0 0 0      0
Telnet    time-out  no time-out
Ethernet Link status  UP
Started SNMP Server   YES
Started HTTP Server   YES
Started Telnet Server  YES
Telnet session active YES
>
```

Distribution Remote Monitor Interface Status Screen

For the *ptf* 1203C-MC, 1204A-MC and 1205A-MC, the unit is pre-configured to display row A only.

3.2. RS 232

3.2.1. Command Format

The RS232 command format has been designed to have an identical look and feel as the telnet interface. The main difference is that the RS232 is primarily provided for local control and therefore the commands are echoed.

For the command format please refer to section 3.1.1

3.2.2. Login

As the RS232 is designed for local access, no login is required to access this capability as physical presence is assumed.

3.2.3. Commands

Available commands are exactly the same as for the telnet interface. Please refer to section 3.1.3

3.2.4. Help Screens

The RS232 Help Screens are identical to those provided on the telnet interface. Please refer to section 3.1.4

3.2.5. Status Command

Format of the Status command is exactly the same as the format for the telnet interface. Please refer to section 3.1.5

3.3. SNMP Agent

3.3.1. General

The distribution unit includes an SNMP agent (SNMPv1) using the standard UDP interface and providing basic information on the unit (location, capabilities etc.) together with traps on alarm conditions that are sent to the address set as the SNMP manager IP address.

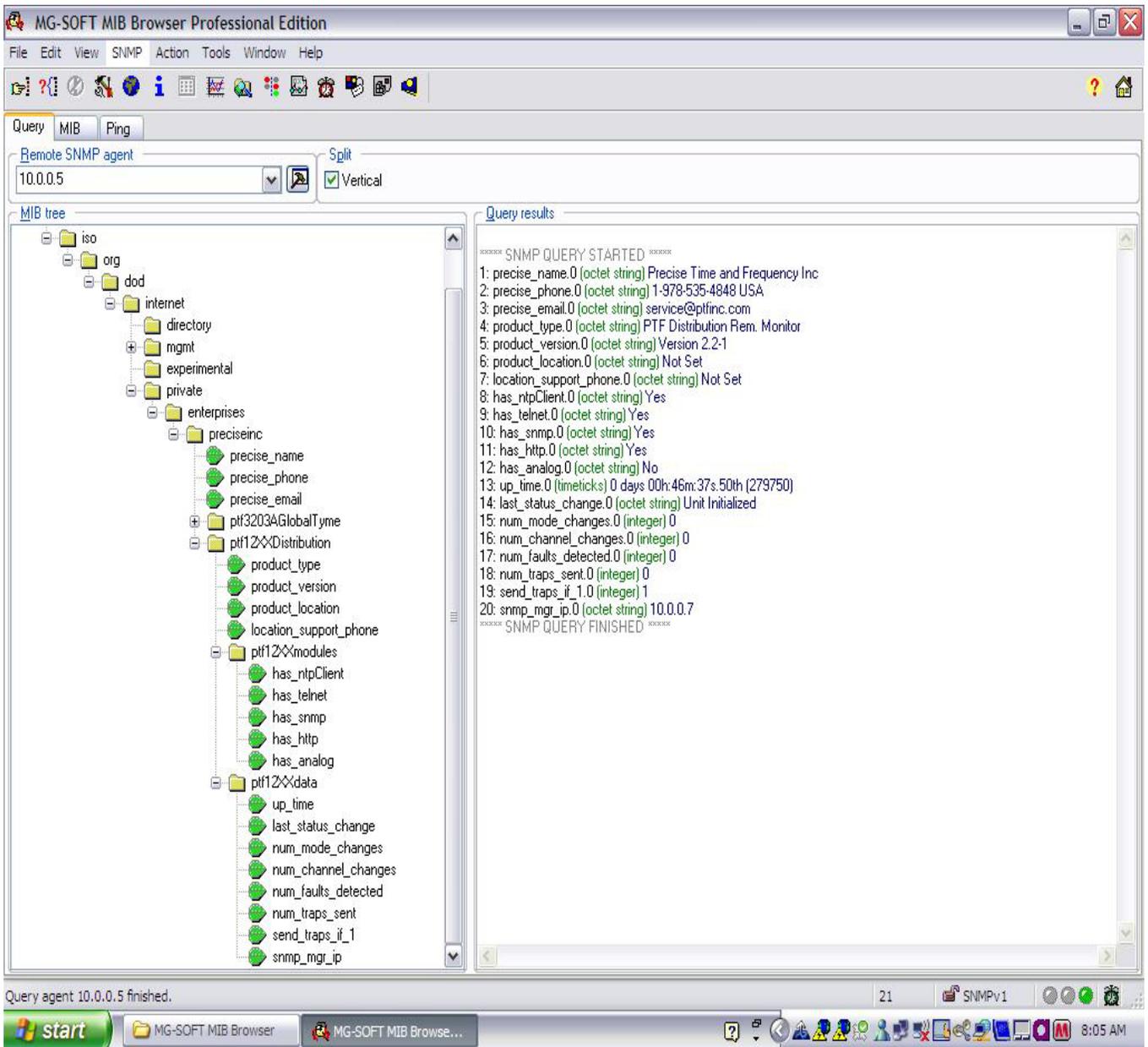
3.3.2. SNMP Queries and Traps

SNMP traps are available to provide summary event information to the SNMP manager. Specific traps available are;

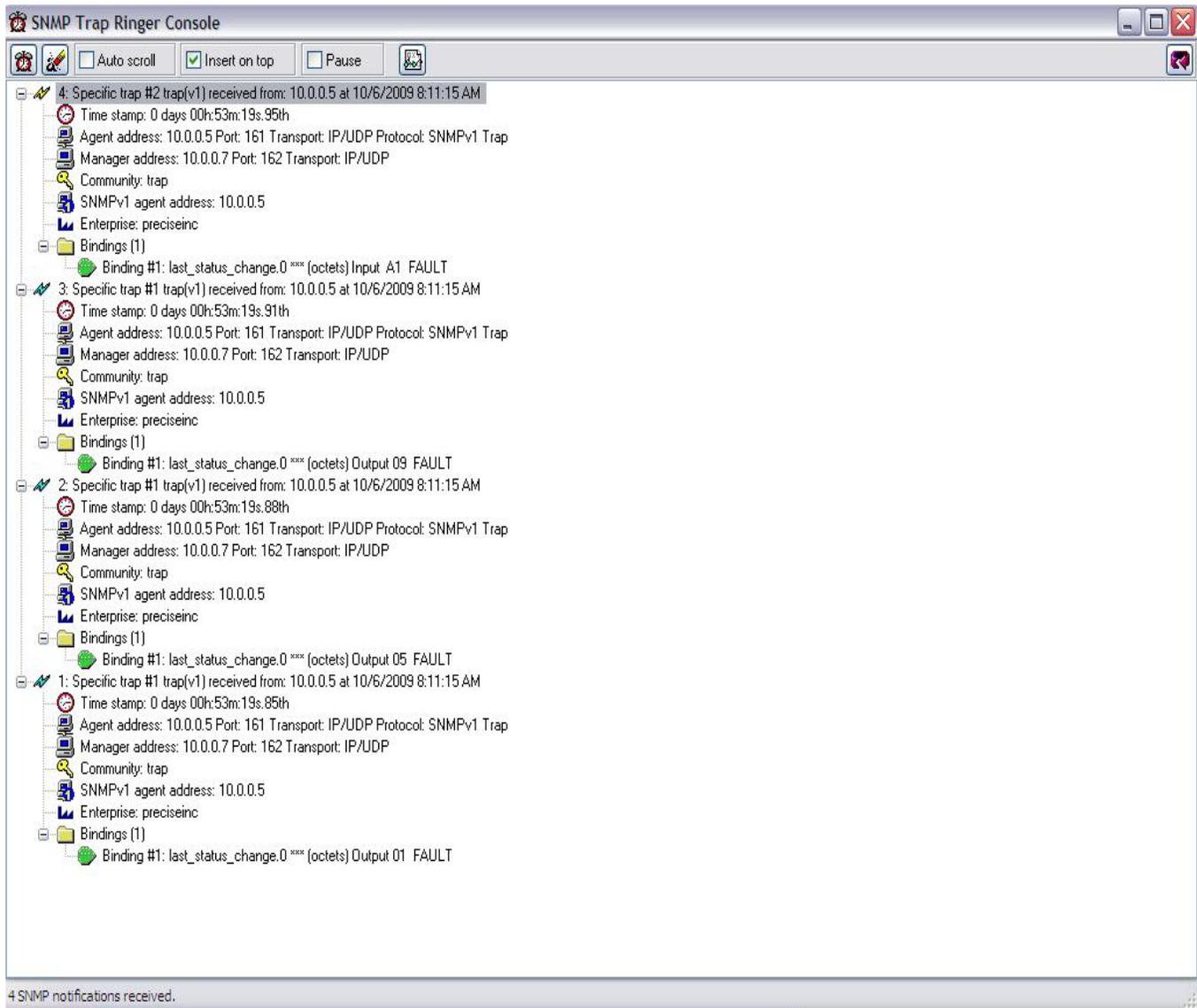
Trap#1	Output Mode Change (Fault/Okay)
Trap#2	Input Mode Change (Fault/Okay)

Traps can be enabled or disabled from either the telnet or the serial Monitor/Control interface.

Screen shots of the SNMP Query screen and trap ringer console after initiating a number of “trap” events, are shown below;



SNMP Query Screen



SNMP Trap Ringer Screen

3.4. Web Browser

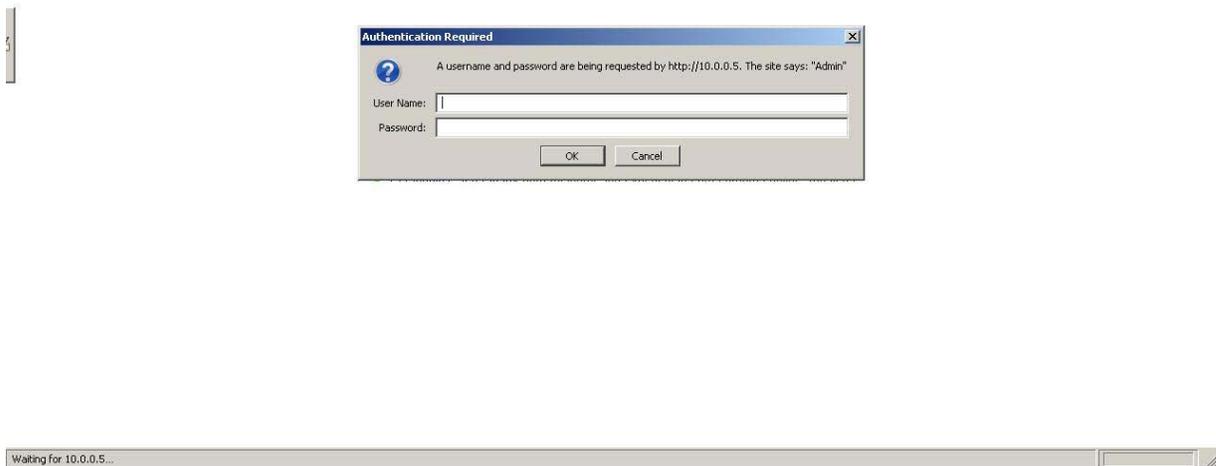
The web browser interface provides a sub-set of the RS232 and Telnet commands, accessed through a standard web browser such as Internet Explorer (version 5 or higher recommended), or Firefox

3.4.1. Login

To connect to the unit via a web browser type the unit IP address in the address window as follows;

<http://10.0.0.5/> where 10.0.0.5 is the unit IP address

The unit will respond with a login screen, shown below;

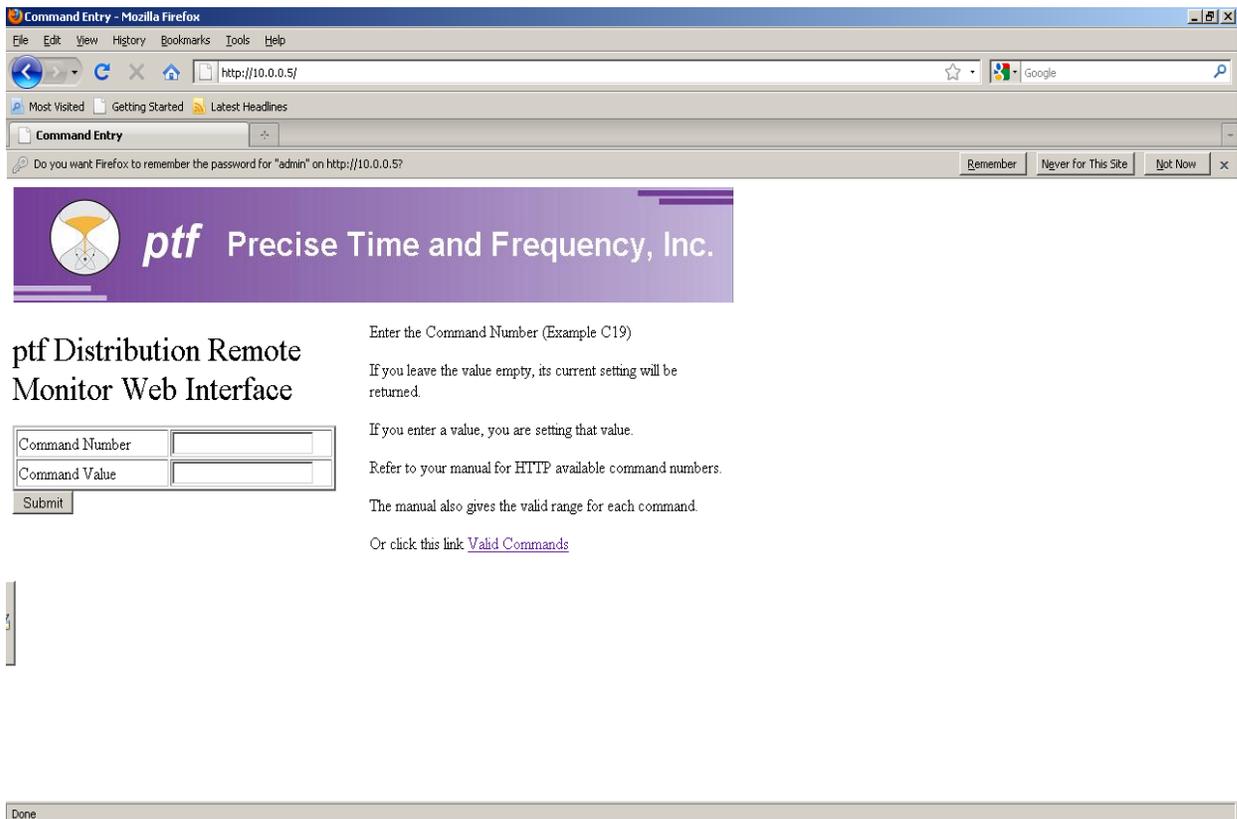


The user name is always admin, and the password is the system password (default 123456)

3.4.2. Command Entry Page

Upon receiving a valid login, the unit will serve up the Command Entry page where valid commands can be entered. A list of valid commands is

shown in a following section, or can be called up on a link from the Command Entry page.

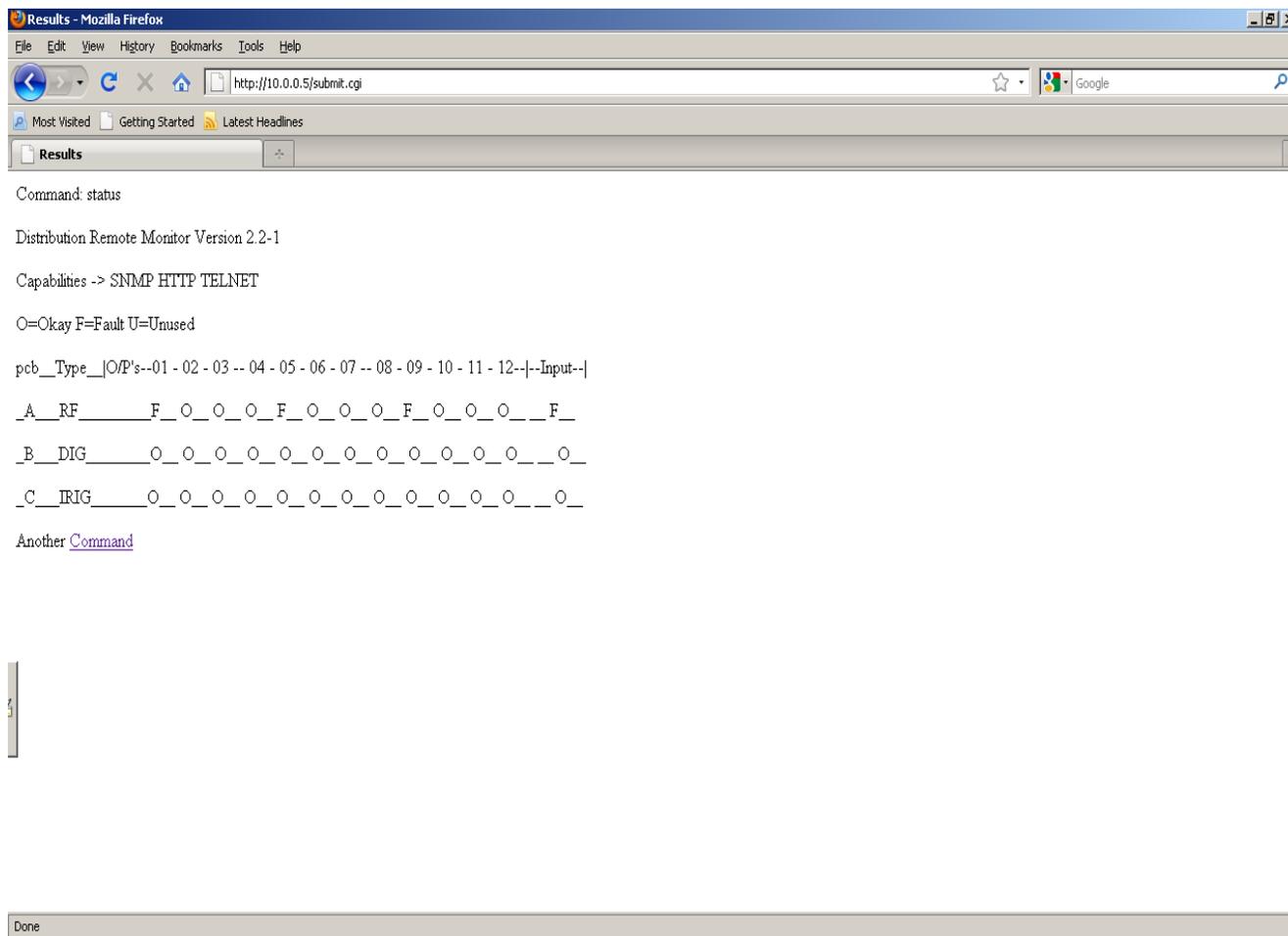


Entering a valid command number in the Command Number entry box, with no value in the Command Value box, will return the current value of the parameter. Entry a valid command in the Command Entry box and a value within the valid range in the Command Value box will set the new entered value into the selected parameter.

Two special commands exist, Status and Reset, they do not require a value entry. Status will return current unit status, while reset will initiate a unit reset after a wait period of 5 seconds.

3.4.3. Status Command Screen

The Status Command screen is shown below;



3.4.4. Valid Commands

Valid commands for the web browser interface are shown below;



Distribution Remote Monitor, Commands available via Http

[Return to Command Page](#)

Cmd	Read R Write W	Description	Min, Max or String Values
C19	R/W	Ip Address xxx.xxx.xxx.xxx	000.000.000.000 to 255.255.255.255
C20	R/W	Netmask xxx.xxx.xxx.xxx	000.000.000.000 to 255.255.255.255
C21	R/W	Gateway xxx.xxx.xxx.xxx	000.000.000.000 to 255.255.255.255
C22	R/W	DHCP Off or On	On or Off
STATUS	R	Unit Version Capabilities and Status	
LOGOUT	R	Logout Telnet Session	
RESET	R	System Reset	

Done

3.5. Local (Front Panel)

3.5.1. Monitors

The front panel has a green LED indicator for power and a red LED as a summary fault indicator. The summary fault indicator will be illuminated if there is an input fault or any of the outputs are faulted.

Using the Remote Monitor/Control to make an input or output inactive does not affect the operation of the local fault indication.

A local summary alarm monitor is also provided on a 9 pin D type connector located on the unit rear panel. The output is on clean relay contacts

4. Unpacking/Inspection/Installation

4.1. Unpacking/Inspection

The **ptf** Distribution amplifier together with accessories is shipped in a custom designed package. Upon receipt the equipment should first be visually inspected for any signs of visible damage.

If visible damage is apparent immediate notification should be given to both Precise Time and Frequency, Inc., and the carrier responsible for shipment. Do not discard the shipping container, which should be made available for inspection by the carrier.

For purposes of unit reference, the unit serial number located on the rear panel of the unit should be quoted in all communications.

4.2. Chassis Installation

The chassis is supplied with rack ears ready for simple installation into a standard 19-inch rack frame/cabinet.

For adequate support when mounted into the rack, a rear supporting bar or tray should be used as the rack ears are designed to secure the unit in the rack, NOT to support the full weight of the unit.

Attention should be given to the internal rack environment to insure the unit operates within it's specified operating temperature range of 0 to 50 deg. C also noting that the unit relies upon convection for cooling, so there should be sufficient air flow to accommodate this.

4.3. Power Connection

Power is supplied by connecting the supplied ac power cable to and AC source, at 120 or 230 V AC, +/-15%. The AC input is a universal input – no range switching is required.

4.4. Input/Output Connections



5. Maintenance

5.1. Overview

The ***ptf Distribution Amplifiers*** use state-of-the art solid state and semi-conductor, primarily surface mount, components.

All of the components are selected for their inherent high reliability, and as advanced techniques with highly sophisticated equipment, are used for assembly and test of the unit.

Due to the above, no periodic maintenance of the unit is required and the units can be expected to deliver many years of trouble free operation.

Any maintenance or service of the unit should be performed at a Precise Time and Frequency, Inc. authorized facility, to insure the appropriate equipment and expertise is available.

6. MIB/SMI Files For SNMP Manager

6.1. MIB File

The following text file is the MIB file for the SNMP Manager;

```
-- *****  
-- *****  
-- -- Copyright 2009 Precise Time and Frequency Inc  
--  
-- DESCRIPTION:  
--   This file contains the ptf 12XX Distribution Remote Monitor private MIB.  
--  
-- *****  
-- *****
```

PRECISE12XXv2-MIB DEFINITIONS ::= BEGIN

IMPORTS

```
  OBJECT-TYPE  
    FROM RFC-1212  
  preciseinc  
-- ptf12XXdistribution,  
-- ptf12XXmodules,  
-- ptf12XXdata  
  FROM Precise-SMI;
```

```
    -- 1.3.6.1.4.1.18507.8  
    ptf12XXDistribution OBJECT IDENTIFIER ::= { preciseinc 8 }
```

```
    -- Note, leaf nodes under ptfproduct 1-4 are  
    -- prod type  
    -- prod version  
    -- prod location  
    -- prod local support phone  
    -- then comes modules folder  
    -- 1.3.6.1.4.1.18507.8.7.5  
    ptf12XXmodules OBJECT IDENTIFIER ::= { ptf12XXDistribution 7 }
```

```
    -- 1.3.6.1.4.1.18507.8.8.8  
    ptf12XXdata OBJECT IDENTIFIER ::= { ptf12XXDistribution 8 }
```

```
-- 1.3.6.1.4.1.18507.1
precise_name OBJECT-TYPE
    SYNTAX OCTET STRING
    ACCESS read-only
    STATUS mandatory
    ::= { preciseinc 1 }

-- 1.3.6.1.4.1.18507.2
precise_phone OBJECT-TYPE
    SYNTAX OCTET STRING
    ACCESS read-only
    STATUS mandatory
    ::= { preciseinc 2 }

-- 1.3.6.1.4.1.18507.3
precise_email OBJECT-TYPE
    SYNTAX OCTET STRING
    ACCESS read-only
    STATUS mandatory
    ::= { preciseinc 3 }

-- So it goes private-enterprises-preciseinc - ptfproduct -producttype
-- assume only one 'product' or device handled by one resident snmp agent
-- on that product
-- 1.3.6.1.4.1.18507.8.1
product_type OBJECT-TYPE
    SYNTAX OCTET STRING
    ACCESS read-only
    STATUS mandatory
    ::= { ptf12XXDistribution 1 }

-- 1.3.6.1.4.1.18507.8.2
product_version OBJECT-TYPE
    SYNTAX OCTET STRING
    ACCESS read-only
    STATUS mandatory
    ::= { ptf12XXDistribution 2 }

-- 1.3.6.1.4.1.18507.8.3
product_location OBJECT-TYPE
    SYNTAX OCTET STRING
    ACCESS read-write
    STATUS mandatory
    ::= { ptf12XXDistribution 3 }
```

```
-- 1.3.6.1.4.1.18507.8.4
location_support_phone OBJECT-TYPE
    SYNTAX OCTET STRING
    ACCESS read-write
    STATUS mandatory
    ::= { ptf12XXDistribution 4 }
```

```
-- 1.3.6.1.4.1.18507.8.7.1
has_ntpClient OBJECT-TYPE
    SYNTAX OCTET STRING
    ACCESS read-only
    STATUS mandatory
    ::= { ptf12XXmodules 1 }
```

```
-- 1.3.6.1.4.1.18507.8.7.2
has_telnet OBJECT-TYPE
    SYNTAX OCTET STRING
    ACCESS read-only
    STATUS mandatory
    ::= { ptf12XXmodules 2 }
```

```
-- 1.3.6.1.4.1.18507.8.7.3
has_snmp OBJECT-TYPE
    SYNTAX OCTET STRING
    ACCESS read-only
    STATUS mandatory
    ::= { ptf12XXmodules 3 }
```

```
-- 1.3.6.1.4.1.18507.8.7.4
has_http OBJECT-TYPE
    SYNTAX OCTET STRING
    ACCESS read-only
    STATUS mandatory
    ::= { ptf12XXmodules 4 }
```

```
-- 1.3.6.1.4.1.18507.8.7.5
has_analog OBJECT-TYPE
    SYNTAX OCTET STRING
    ACCESS read-only
    STATUS mandatory
    ::= { ptf12XXmodules 5 }
```

```
--
--
--
```

-- 1.3.6.1.4.1.18507.8.8.1

up_time OBJECT-TYPE

SYNTAX TimeTicks

ACCESS read-only

STATUS mandatory

::= { ptf12XXdata 1 }

-- 1.3.6.1.4.1.18507.8.8.2

last_status_change OBJECT-TYPE

SYNTAX OCTET STRING

ACCESS read-only

STATUS mandatory

::= { ptf12XXdata 2 }

-- 1.3.6.1.4.1.18507.8.8.3

num_mode_changes OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

::= { ptf12XXdata 3 }

-- 1.3.6.1.4.1.18507.8.8.4

num_channel_changes OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

::= { ptf12XXdata 4 }

-- 1.3.6.1.4.1.18507.8.8.5

num_faults_detected OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

::= { ptf12XXdata 5 }

-- 1.3.6.1.4.1.18507.8.8.6

num_traps_sent OBJECT-TYPE

SYNTAX Counter

ACCESS read-only

STATUS mandatory

::= { ptf12XXdata 6 }

--

-- Command and Control

--

-- 1.3.6.1.4.1.18507.8.8.7
send_traps_if_1 OBJECT-TYPE
SYNTAX Counter
ACCESS read-write
STATUS mandatory
::= { ptf12XXdata 7 }

-- 1.3.6.1.4.1.18507.8.8.8
snmp_mgr_ip OBJECT-TYPE
SYNTAX OCTET STRING
ACCESS read-write
STATUS mandatory
::= { ptf12XXdata 8 }

END

6.2. SMI File

The following text file contains the ptf SMI (Structure of Management Information) file for the SNMP manager;

```
-- *****
-- Precise-SMI.txt: Precise Time and Frequency Enterprise
--                   Structure of Management Information
--
-- September 2003 Les Herbst
--
-- Copyright (c) 2003 by PTF Inc
-- All rights reserved.
-- *****

Precise-SMI DEFINITIONS ::= BEGIN

IMPORTS
    OBJECT-TYPE
        FROM RFC-1212
    enterprises,
        FROM RFC1155-SMI;
--
-- Node Definitions
--

    -- 1.3.6.1.4.1.18507
    preciseinc OBJECT IDENTIFIER ::= { enterprises 18507 }

END
```

7. Contact Information – Technical Assistance

The Precise Time and Frequency, Inc service department normal hours of operation are from Monday to Friday, between the hours of 8.00 a.m. and 5.00 p.m. US Eastern Standard Time.

24 hour, 7-day technical assistance is available under special contract.

Before returning any equipment for service or repair please contact our service department for an RMA number.

Tel: (+1) 781 245 9090
Fax: (+1) 781 245 9099
E-mail: service@ptfinc.com

Shipping address is:

Precise Time and Frequency, Inc.
50L Audubon Road
Wakefield, MA 01880
USA

Attn: Service Manager

Billing address is:

Precise Time and Frequency, Inc.
50L Audubon Road
Wakefield, MA 01880
USA

Attn: Accounts