

MANUAL OF GPS MASTER SLAVE CLOCK

INTRODUCTION :

DYNATEK make 'GPS MASTER CLOCK ' is one of the most user friendly and Highly reliable microcontroller based GPS CLOCK system. This system offers 16 X 4 LCD Back-lit Display to view all Connected / disconnected clocks , GPS status. The GPS Clock is designed to provide an accurate time by synchronizing with Global Positioning Satellite System (GPS). GPS system which contains highly accurate clock transmits time signals to earth. GPS Receiver picks up these time signals & transmits to GPS Clock through RS485 converter. GPS Clock communicates satellite time to server or IP based slave clocks through Ethernet port(TCP/IP).

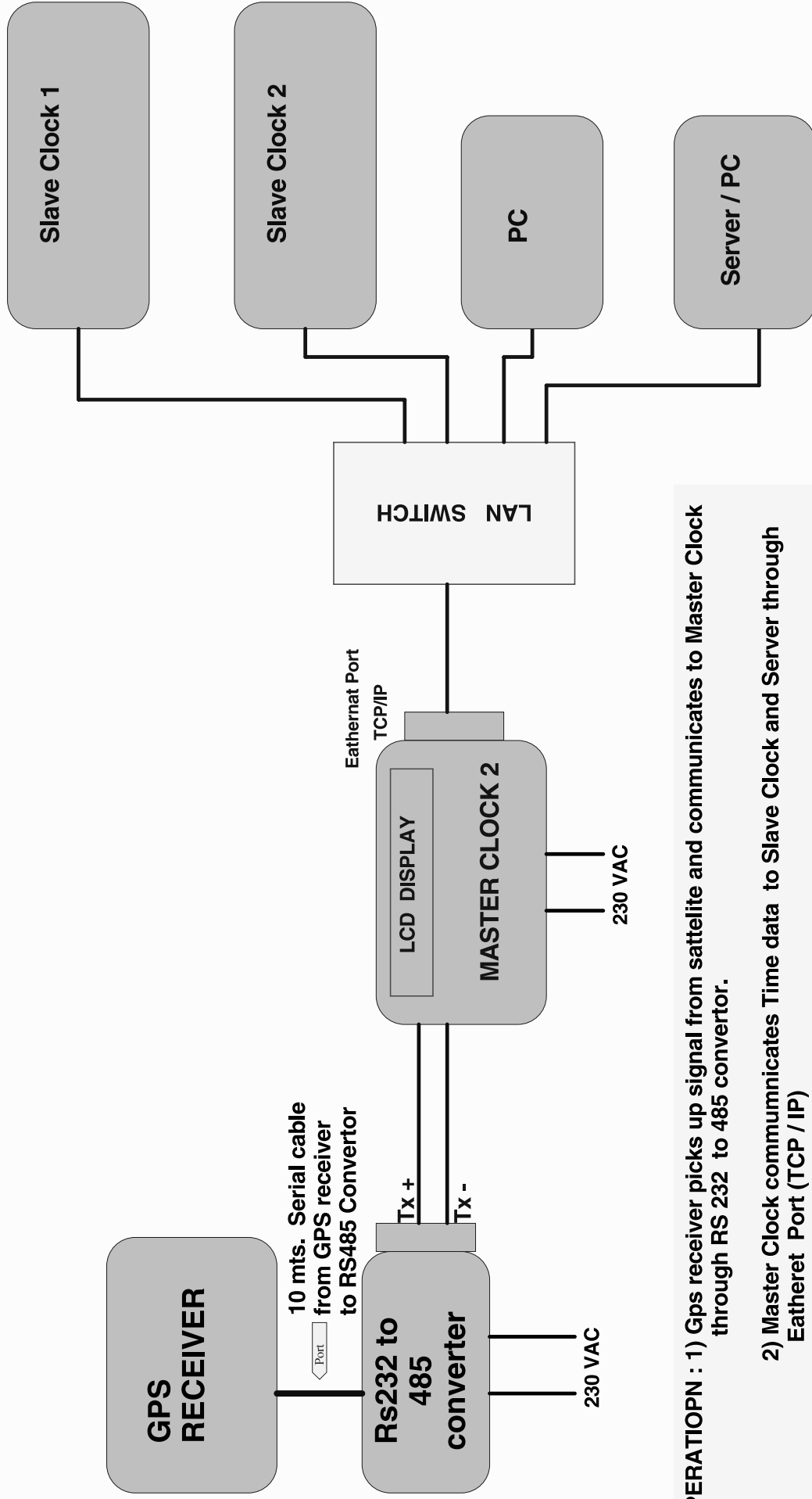
This system are generally used where the synchronize accurate time is required such as activities in Power plant, Process Industries ,Engg. industries Clinical Trials centers. Airports, Railways stations , Broadcasting Media etc.

In absence of satellite signals, Master clock works as a standalone clock using built in high accuracy RTC with battery backup.

SPECIAL FEATURES :

- 1) GPS time synchronization to server, any no. of PC through TCIP Interface.
- 2) Multiple Slave Clocks can be connected through LAN network.
- 3) Built in Real Time Clock.
- 4) Membrane keypad for programming.
- 5) LED indication for GPS healthy status.
- 6) Operating voltage 230 VAC.
- 7) Time Date Display (16 X 4 LCD).
- 8) Lithium Battery backup for RTC.
- 9) Facility for Server /slave clock connectivity status
- 10) User friendly operation
- 11) Compact design

SYNCHRONISE DIGITAL CLOCK SYSTEM



OPERATION : 1) Gps receiver picks up signal from satellite and communicates to Master Clock through RS 232 to 485 converter.

2) Master Clock communicates Time data to Slave Clock and Server through Ethernet Port (TCP / IP)

3) All slave clock are Ethernet based with individual IP address.

4) PctimeUPDATER utility is provided at server or PC end to synchronise server Time with GPS Master Clock.

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This system consists following items.

- i) Gps Master Clock.
- ii) Softwear Utility.
- iii) GPS receiver
- iv) RS232 to 485 convertor.

I) Gps Master Clock : Master Clock is provided with two mode

- 1) Set Mode 2) Log mode

1) “ SET mode” : User can set in built RTC parameter GMT Time Hour , minute and sec. Date. Dd/mm/yy and weekday.

2) “LOG mode” : User can see status of disconnected slave clocks.

ii) Softwear Utility. : This software is provided with

- 1) I/P Utility
- 2) Device finder
- 3) PC time updater.
- 4) ClockPCclient

1) I/P Utility : This utility is used to configure slave clock net parameter i.e I/P add,sub-net mask, Gate way and device name.

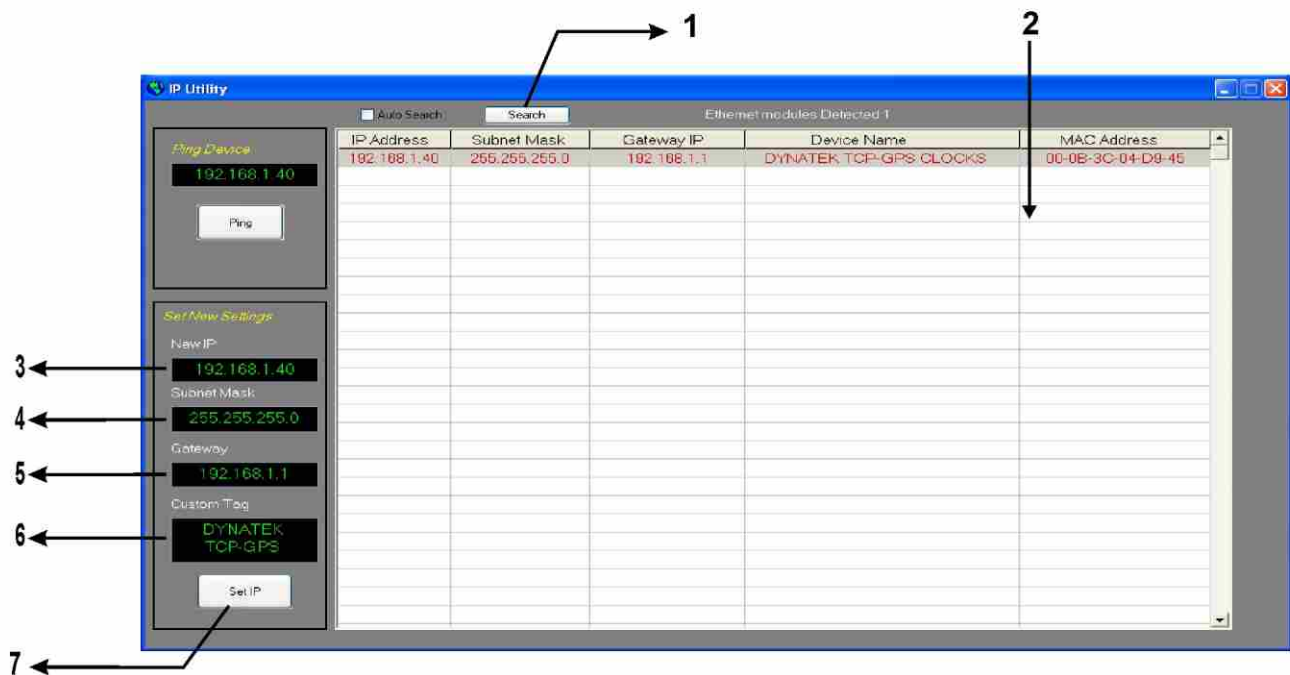
2) Device finder : This utility is used to configure GPS Master clock net parameter i.e I/P add, Sub-net mask, Gate way and device name.

3) PCtimeupdater : This utility is used to set server or PC time with Master clock. This utility keeps in task bar.

4) CLock pc client : This utility is used to Program GPS Master clock.i.e I/P of all slave clock. It can be used to see the following status

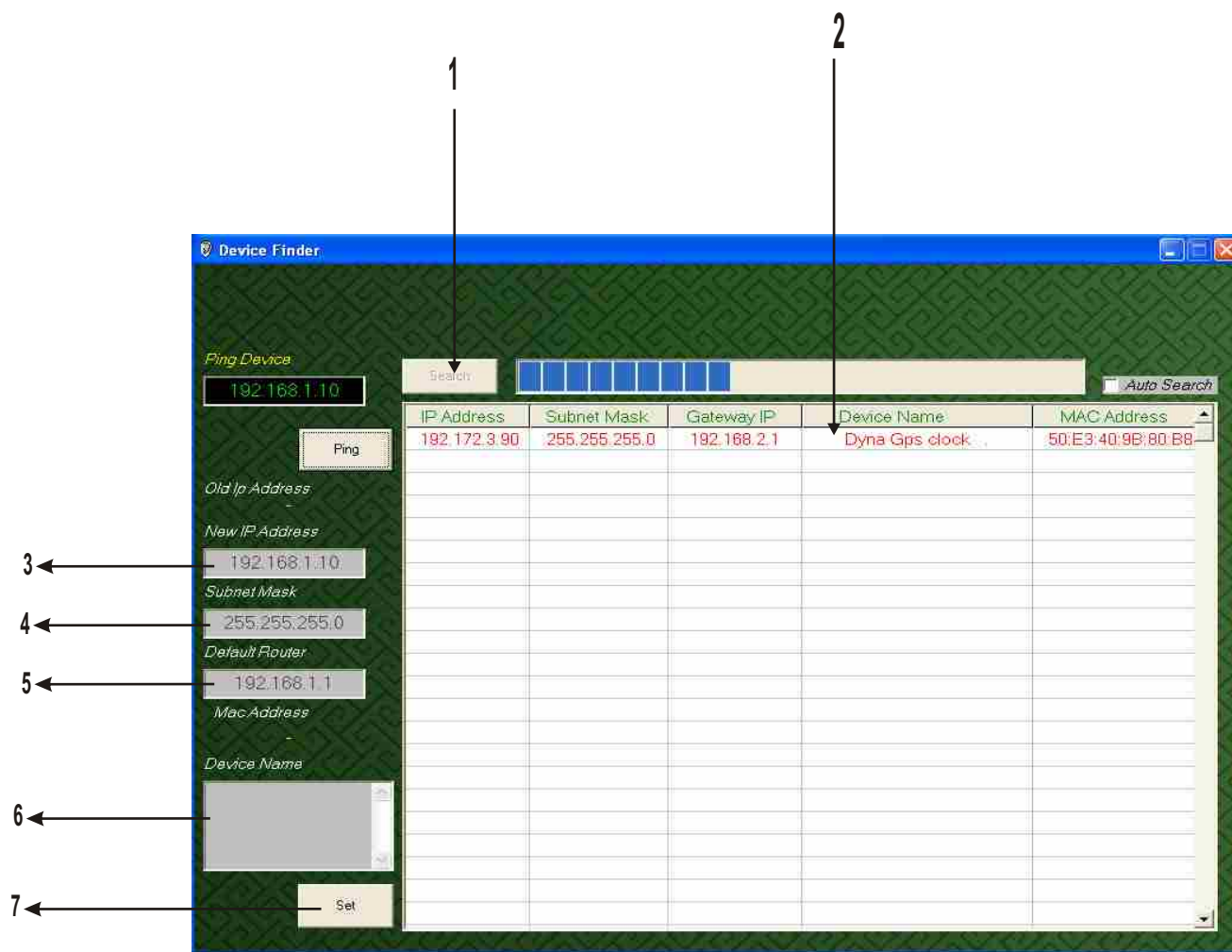
- 1) Total clocks.
- 2) Connected clocks.
- 3) Gps status
- 4) Each slave online or Offline status.
- 5) Master clock time.
- 6) User can set UTC time of GPS MASTER clock.
- 7) Write and Read I/P add of all slave clocks.

I/P Utility is used to Configure Slave clock



- 1) Search to all connected clocks in same "LAN only"
- 2) Display for conneted clock in the list to change I/P add, Subnet Mask, Device name.
- 3) Set new I/P add.
- 4) Display to set new subnet Mask.
- 5) Display to set new Gateway
- 6) Display to set new Device name.
- 7) "Set" button to programme new I/P.

Utility is used to Configure Master clock



- 1) Search to all connected Master clocks in same "LAN only"
- 2) Display for conneted clock in the list to change I/P add, Subnet Mask, Device name.
- 3) Set new I/P add.
- 4) Display to set new subnet Mask.
- 5) Display to set new Gateway
- 6) Display to set new Device name.
- 7) "Set" button to programme new I/P.

This utility is used to set server or PC time with GPS Master Clock

The screenshot shows the 'PC Time Update Tool' window. It is divided into two main sections: 'Status' and 'TCP Connection Details'.
1. In the 'Status' section, 'TCP Connection Status' is 'Connected'.
2. 'Received time(GMT)' is '10:21:32 26/8/13'.
3. 'GPS Status' is 'GPS FIX GOOD'.
4. In the 'TCP Connection Details' section, 'Clock Server IP' is '192.168.2.15'.
5. 'Poll Interval' is '5 seconds'.
6. There are two radio buttons: 'Update PC Time on GPS' (unselected) and 'Update PC time on GPS or clock server RTC time' (selected).
7. A 'Set' button is located at the bottom right of the window.

1) Status for Connection of Gps Master clock.

2) UTC time sent By Gps Master Clock

3) GPS status Connected or Disconnected

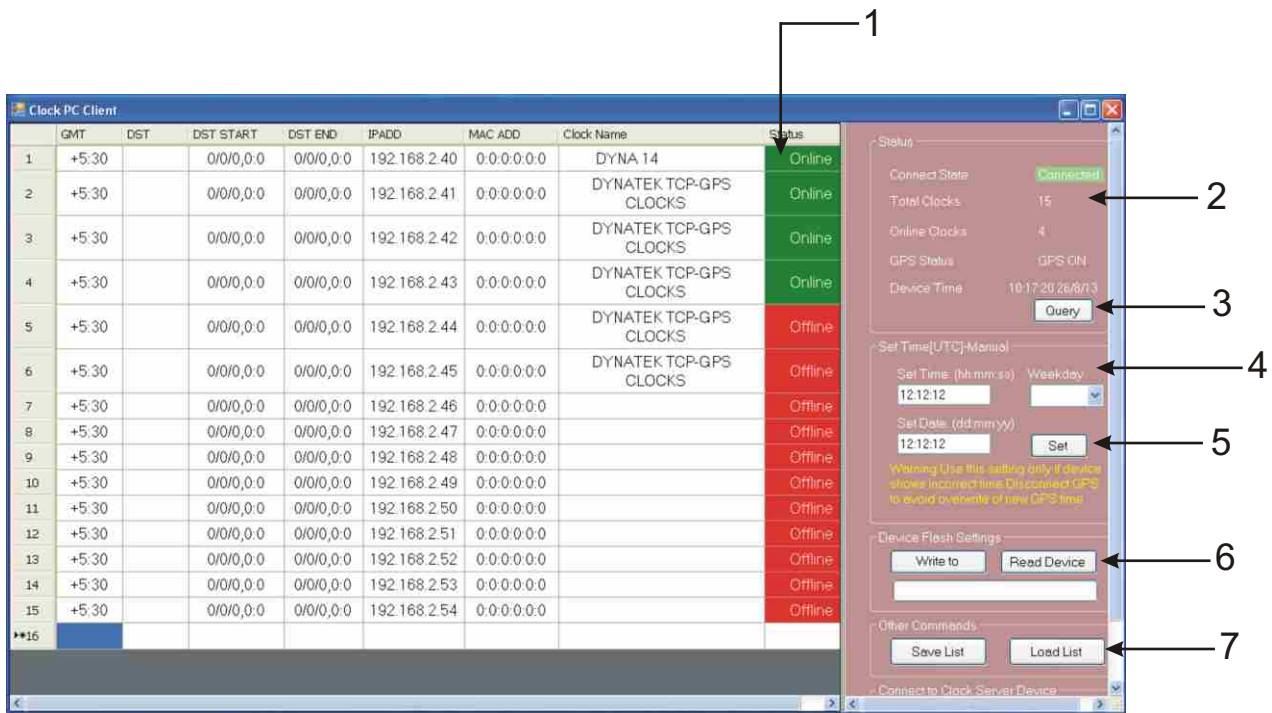
4) Gps Master Clock server I/P

5) Poll interval to sync with Master clock.

6) setting to update PC time with Gps or Master clock RTC time.

7) Set button to store above settings.

This utility is used to programmed Master clock device i.e. slave clock i/p and user can see the whole status of Gps clock on PC



- 1) Status of slave clock online / offline.
- 2) Staus of Master clock connected / disconnected
 No. Of Total clocks
 Online clocks
 Gps status On/ Off.
 Master clock device Time.
- 3) By pressing query button user can get all this data.
- 4) If GPS receiver fails to send time to Master clock user can Set inbuilt RTC time of Master clock.
- 5) User can Read and Write Master Clock device.
- 6) User can save and load Slave clock list.

Technical Specifications for Digital Slave Clock

1. Type of Clock : Ethernet based Slave digital clock
2. Time Format : 12/24 Hour Format selectable
3. Display : LED Red Colour seven segment display with long distance visibility
4. Display Size : 4 inch
5. Display Face : Single face display
6. Visibility : Up to. 70 to 75 Feets.
7. Communication Port : **TCPIP Ethernet**
8. Adjustment Control : Provision for time setting switches.
9. Power Supply : 230 VAC/50 Hz.
10. Temperature Range : 0 to 60 degree.
11. Mounting : Wall mountl
12. Enclosure : MS Black Power coated
13. Size : 660mm X185mm X 65mm
14. Display Format : HH:MM:SS