

User's Manual

DDU-TDC

Digital Display Unit



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1. INTRODUCTION

Foreword

Thank you for purchasing Display Unit.

DDU-TDC (Time Date configurable Display Unit, 4" [100 mm], 6 LED Display)

This manual describes the basic functions and operation methods. Please read through this user's manual carefully before using the product.

Notice

Configuration through serial and telnet is covered in this manual.

The contents of this manual are subject to change without notice as a result of continuous improvements to the instrument's performance and functions.

Every effort has been made to ensure accuracy in the preparation of this manual. Should any errors or omissions come to your attention, however, please inform MASIBUS Sales office or sales representative. Under no circumstances may the contents of this manual, in part or in whole, be transcribed or copied without our permission.

Trademarks

Our product names or brand names mentioned in this manual are the trademarks or registered trademarks of Masibus Automation and Instrumentation (P) Ltd. (herein after referred to as **masibus**).

Adobe, Acrobat, and Postscript are either registered trademarks or trademarks of Adobe Systems Incorporated. All other product names mentioned in this user's manual are trademarks or registered trademarks of their respective companies.

Checking the Contents of the Package

Unpack the box and check the contents before using the product. If the product is different from which you have ordered, if any parts or accessories are missing, or if the product appears to be damaged, contact your sales representative.

Product Ordering Code

Ordering Code for Time / Date Configurable Display Unit (DDU-TDC)												
Model	Display Type		Mounting		Input Type 1		Input Type 2		Input Type 3		Input Type 4	
DDU	XXX		X		X		X		X		X	
	TDC	Time/Date Configurable	T	Table Top (IP20)	1	RS232/ RS485	N	None	N	None	N	None
			R	Rack / Panel (IP20)			1	SNTP / NTP	1	IRIG-B Mod	1	IRIG-B TTL
			W0	Wall (IP 20)			2	NTP over POE option				
			H0	Hanging Type (IP 20)								

The unit has a nameplate affixed to the one side of the enclosure. Check the model and suffix codes inscribed on the nameplate to confirm that the product received is that which was ordered.

List of Accessories

The product is provided with the following accessories according to the model and suffix codes (see the table below). Check that none of them are missing or damaged.

No	Item name	Part number	Qty	Remarks
1	Mounting Clamp	-	2	IP20 Rack Mount
			2	IP20 Table Top Clamp
3	Serial Cable for RS232/RS485 IP20 Enclosure	-	2 meters long	4 cores, Single side 9-pin D-connector Male
5	Serial Cable Config for RS232 IP20 Enclosure	-	2 meters long	4 Core, Single side 9 Pin D-Connector Female
6	RJ45 Cable for NTP	-	2 meters long	Standard Ethernet Cable

Accessories (Optional-On request)	
Extra Mounting Clamp for IP20 Enclosure	
Rack/Panel	Table Top
m-MK-FPL-50-3 [177mm Height Unit]	m-MK-FPL-50-2
	

Safety Precautions

The product and the instruction manual describe important information to prevent possible harm to users and damage to the property and to use the product safely.

2. SPECIFICATIONS

2.1 Technical Specification Sheet

	Time/Date Display
Display	
No of Digit	Six Digit
Digit Height	4 "
Type of display	7-Segment
Display Colors ²	Red / Amber / Green / Blue
Display Format	Time: HH:MM:SS Date: DD.MM.YY / MM.DD.YY / YY.MM.DD
Lock/Unlock Indicator	✓
12/24 Hour Mode	✓
AM/PM Indication	✓
International Time Zone	✓
User Interface	
Serial Configuration [Hyper terminal]	✓
Telnet CLIENT [with LAN Interface only]	✓
Password Protected	✓
DIP Switch	NA
Signal Input	
RS232/RS485	✓
IRIG-B TTL[PWM]	✓
IRIG-B Modulated	✓
NTP (LAN Interface)	✓
Line Frequency Input	NA
Connectors	
RS-232 [Terminal Blocks Standard 3 Pin Plug in type]/ RS-485 [Standard 2 -pin Plug-in Type]	✓
Ethernet, 100BaseT, RJ-45	✓
Power, Standard 3-pin Plug-in Type	✓

Mechanical

IP20 Protection	
Size [W x H x D] [in mm] [Without Mounting Bracket]	646 x 177 x 68
Weight(approx.)	4.5Kg
Material	M.S with powder coating Inside and outside
Front Acrylic	Smoke Grey
Power Supply	Non - POE Standard
Power	AC: 94-264 V, 47-63 Hz ,1 Ph& DC 90-300 V DC
Power Consumption	<10 W
Terminals	3 Pin Plug in type connector [Cable size 2.5 sq.mm]
Environmental	
Operating temperature	0 to 55 °C
Storage temperature	-20 to 80 °C
Humidity	20 to 90% RH (Non - Condensing)

2.2 Time Signal Input

Input	Description	Physical Interface
Serial RS485	- Protocols: NMEA-0183[RMC] / NGTS/ T – Format - Baud Rate: 4800/9600/19200/38400/57600/115200	2 Pin Plug-in type Connector [Cable Size: 0.22sq.mm]
Serial RS232		3-Pin Plug in type Connector[Cable Size: 0.22 sq.mm]
NTP (LAN Interface)	- Time sync protocol: NTP V3 - Internet protocol : IPv4, Mode: Client - Protocol Time format : UTC	RJ45, 10/100 Mbps

3. FRONT PICTURE

3.1 DDU-TDC IP20 Front view



4. INSTALLATION& MOUNTING DETAIL

4.1 Safety Precautions in Installation



1. Turn off the power to the Instrument before installing it on the panel because there is a possibility of electric shock.
2. To minimize the possibility of fire or shock hazards, do not expose this instrument to rain or excessive moisture.
3. Do not use this instrument in areas under hazardous conditions such as excessive shock, vibration, dirt, moisture, corrosive gases or oil. The ambient temperature of the areas should not exceed the maximum rating specified.



Ground the device. Otherwise, it may cause an electric shock or fire.

The protective conductor terminal is marked with a label on the product terminals with the following symbol:



Also insure that Earth Ground of the premises has been done properly.

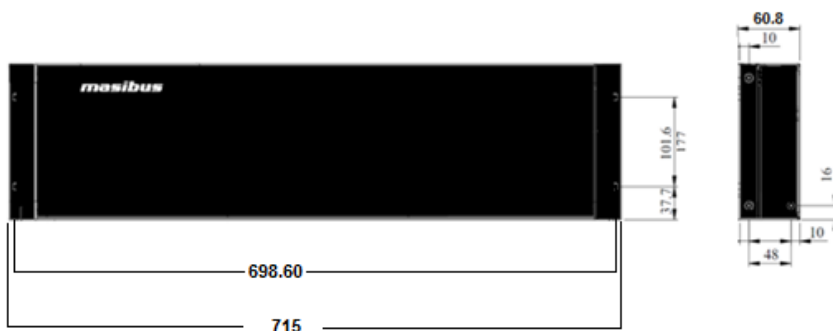


Be sure all personnel involved in installation, servicing, and programming are qualified and familiar with electrical equipment and their ratings

Do not install, store, or use it in the place with a lot of dust, corrosive and flammable gases, vibrations and shocks exceeding the allowed values, place low or high temperature outside of the installation condition, direct sunlight and near equipment generating strong radio waves or magnetic fields, It may cause accidents.

4.2 IP20 Rack Mount

Fig 4.3.1: Mounting detail for RACK mount DDU-TDC Enclosure



5. TERMINAL CONNECTIONS

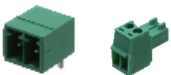
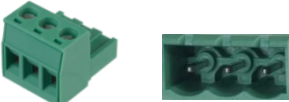
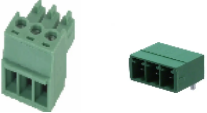
5.1 Terminal connections on IP20 Enclosures

5.1.1 Terminal connection for Wall/Rack/Table Top Mount Enclosure



5.1.2 Terminal connection detail for IP20 Enclosure

Table1: Terminal Connection Detail of IP20 Enclosures

No.	Terminal Type		Description
1	RJ45 Socket for NTP		For RJ45 based Ethernet connection for NTP[Network Time Protocol]
2	BNC Female Conn for IRIG-B AM/TTL		For IRIG-B12X/B00X Amplitude Modulation /Unmodulated Signal.
3	MSTB Conn. 2 pin for RS485		RS485 serial data input Pin -1 D+ Pin -2 D-
4	MSTB Conn. 3 pin for Power IN		Pin 1 -L/+ Pin 2 -N/- Pin 3 - Earth
5	MSTB Connector 3 Pin for RS232		Pin 1 - GND Pin 2 - TX Pin 3 - RX

6	Switch for RS232/RS485 Selection		On Right (towards connector) : RS485 On Left (towards enclosure) : RS232 View: From the back side of display.
---	---	---	--

Note:- As per Ordering code terminals will be available which terminals are not covered in ordering code will get covered by Terminal cover

5.2 How to connect wires

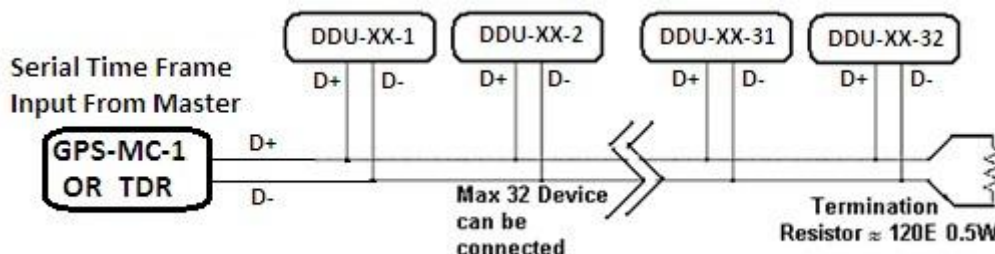
Before carrying out wiring, turn off the power and check that the cables to be connected are not alive because there is a possibility of electric shock.



NOTE:

- ✓ All wiring must confirm to appropriate standards of good practice and local codes and regulations. Wiring must be suitable for Voltage, Current and temperature rating of the system.
- ✓ Provide power from a single-phase instrument power supply. If there is a lot of noise in the power line, insert an insulating transformer into the primary side of the line and use a line filter on the secondary side. Do not place the primary and secondary power cables close to each other.
- ✓ Use repeater after each set of 32 instruments connected in RS-485 Communication.
- ✓ Unused terminals should not be used as jumper points as they may be internally connected, which may cause damage to the unit.
- ✓ Use >250V-1Amp Cable for Power Supply.
- ✓ Supply voltage must be below maximum voltage rating specified on the label.

Fig 5.3: RS485 Connection Details



- ✓ In case of RS-232 Output from Master clock, external RS-232 to RS-485 Connector required, and it will be connected direct in case of RS-485 output from Master.

6. CONFIGURATION GUIDELINES

6.1 Default Configuration

- A DDU-TDC ships with following factory set default configuration.

Baud Rate : 9600
Stop Bit : 1
Parity Bit : None

IP Address : 192.168.100.032
Subnet mask : 255.255.255.000
Gateway : 192.168.100.001
Primary Server IP Address : 192.168.100.153
Secondary Server IP Address : 192.168.100.154
Query Interval Time [When Querying NTP Server] : 0016
Secondary Server Option for NTP : Disable

Current Display Intensity: 1 (100% of Full)

Display Type : Time Display
Date Format : DD/MM/YY
Time Format : Hour Time Format 24
Leading Zeroes: Enable

IRIG-B Type : 007/127

Time Zone Offset : +05:30
Time Zone Offset for NTP : Disable
Time Zone Offset for IRIG-B : Disable
Time Zone Offset for SERIAL : Disable

Note:

- For NTP Use RJ-45 cross cable when connecting DDU-TDC directly with GPS Master Clock. Use RJ-45 straight cable when connect DDU-TDC through switch.
- Fundamental operation mode (Display Settings) will come in affect immediately of SW change. Action of CONFIG can be switched during clock operation. No power on/off cycle is required to change these modes.
- For Time & Date Combine Display Unit, first raw is for Time & second raw is for Date by default, there will be no switch selection available for changing Time to Date or Date to Time Display.
- It is better to Power on/off DDU-TDC after the completion of configurations.

6.2 Configuration Command for NTP [For Time/Date and Day& Calendar]

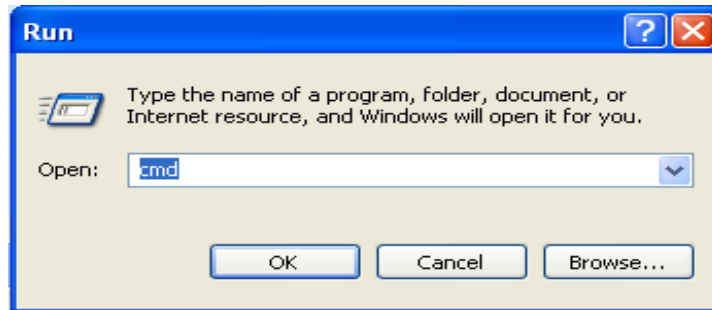
6.2.1 For the First Time setup follow the below procedure.

1. MasibusDisplay Unit has default network settings as mentioned in **Section 6.1**, First connect the Display Unit direct with local computer using a **cross** cable. (Not in Network)
2. Make the computer IP 192.168.100.XXX (XXX is any value between 1 to 255)
3. Ping the Display Unit IP & response must come from it. Now follow the below commands to configure the Display Unit.

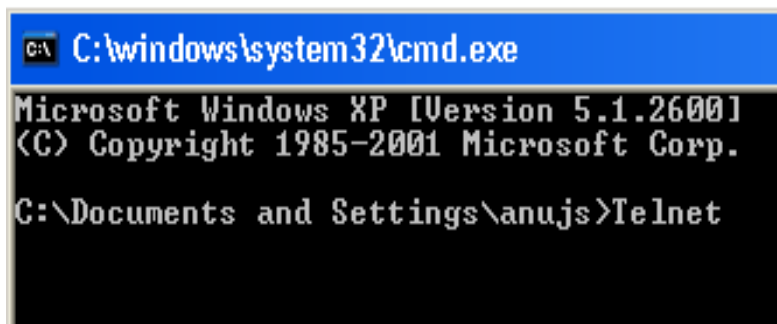
To check ping command open run window & enter **ping xxx.xxx.xxx.xxx -t** command where xxx.xxx.xxx.xxx means the IP of DDU-TDC.

6.2.2 Network settings using windows as TELNET client.

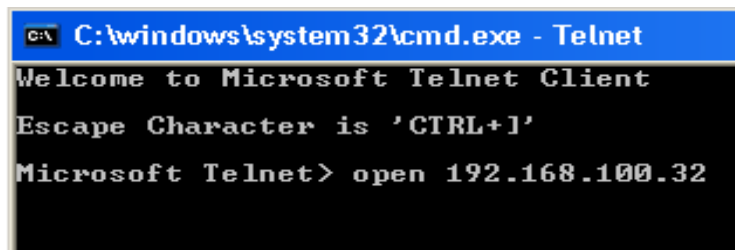
1. Open command prompt.



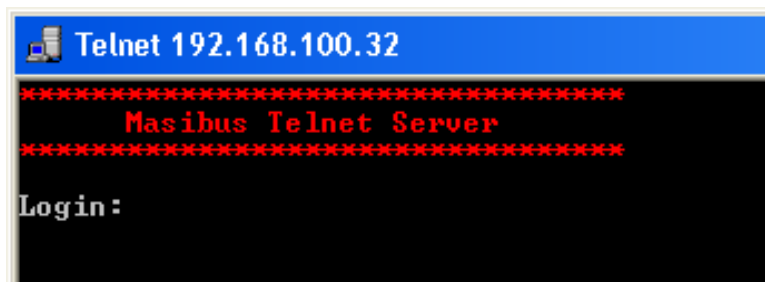
2. Enter Telnet and press Enter.



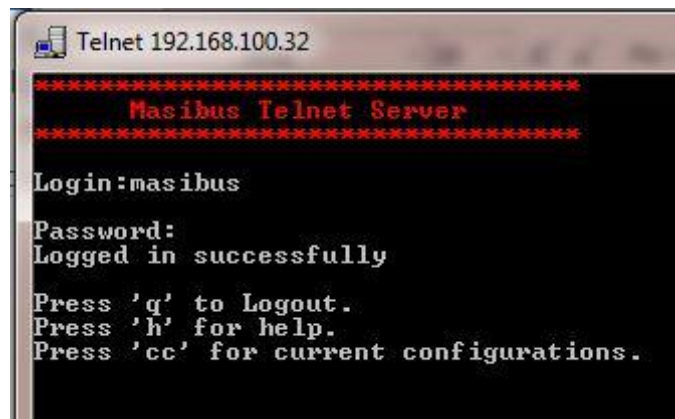
3. Enter "open 192.168.100.32" and press Enter.



4. Following screen will be displayed.

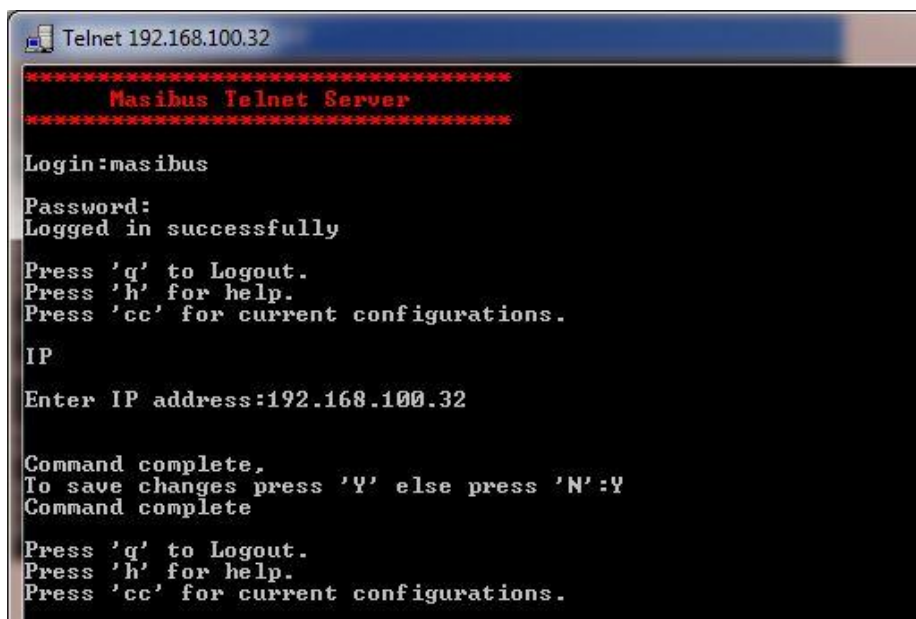


5. Enter Login-name and press enter. Enter password and press enter. Login-name and password both are case sensitive. **Default Login- name and password both are "masibus"**.



6. IP

- This command is used to change **IP address** of DDU-TDC.
- IP address should be entered in **xxx.xxx.xxx.xxx** form.
- Enter new IP address and press enter. To save the new IP address Press '**Y**' else press '**N**'. If you press **Y** new IP address will be saved and if you press **N** the previous IP address will be retained.
- IP address of DDU-TDC is 192.168.100.032 by default.



7. MASK

- This command is used to change **Subnet Mask** of DDU-TDC.
- Subnet Mask should be entered in **xxx.xxx.xxx.xxx** form.
- Enter new Subnet Mask and press enter. To save the new Subnet Mask Press '**Y**' else press '**N**'. If you press **Y** new Subnet Mask will be saved and if you press **N** the previous Subnet Mask will be retained.
- Subnet Mask of DDU-TDC is 255.255.255.0 by default.

```
Telnet 192.168.100.32

*****
Masibus Telnet Server
*****

Login:masibus
Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

MASK

Enter Subnet mask:255.255.255.0

Command complete,
To save changes press 'Y' else press 'N':Y
Command complete

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

8. GTY

- This command is used to change **Gateway** of DDU-TDC.
- Gateway should be entered in **xxx.xxx.xxx.xxx** form.
- Enter new Gateway and press enter. To save the new Gateway. Press '**Y**' else press '**N**'. If you press **Y** new Gateway will be saved and if you press **N** the previous Gateway will be retained
- Gateway of DDU-TDC is 192.168.100.1 by default.

```
Telnet 192.168.100.32

*****
Masibus Telnet Server
*****

Login:masibus
Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

GTY

Enter Gateway:192.168.100.1

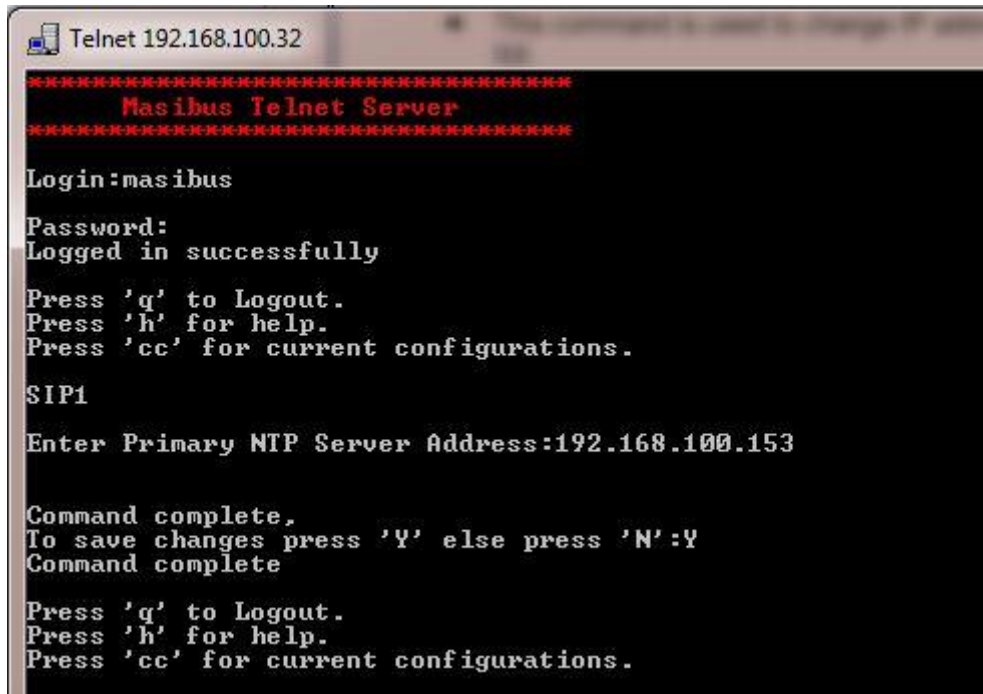
Command complete,
To save changes press 'Y' else press 'N':Y
Command complete

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

9. SIP1

- This command is used to change IP address of NTP time source (**NTP Primary Server**) for DDU-TDC.
- IP address should be entered in **xxx.xxx.xxx.xxx** form.

- Enter new IP address and press enter. To save the new IP address Press '**Y**' else press '**N**'. If you press **Y** new IP address will be saved and if you press **N** the previous IP address will be retained.
- IP address of NTP time source (NTP Primary server) for DDU-TDC is 192.168.100.153 by default.



```
Telnet 192.168.100.32

*****
Masibus Telnet Server
*****

Login:masibus
Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

SIP1

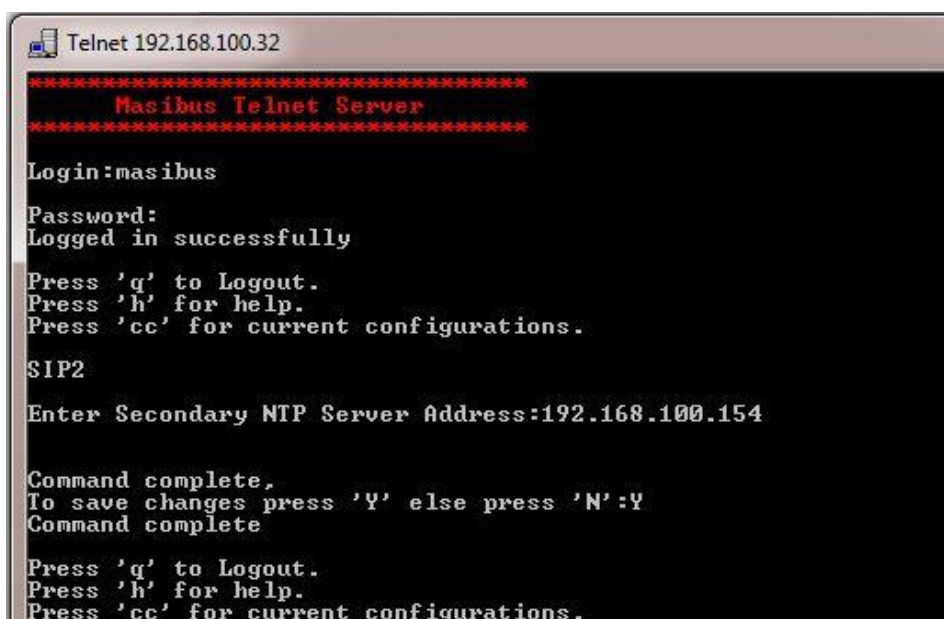
Enter Primary NTP Server Address:192.168.100.153

Command complete,
To save changes press 'Y' else press 'N':Y
Command complete

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

10. SIP2

- This command is used to change IP address of NTP time source (**NTP Secondary Server**) for DDU-TDC.
- IP address should be entered in **xxx.xxx.xxx.xxx** form.
- Enter new IP address and press enter. To save the new IP address Press '**Y**' else press '**N**'. If you press **Y** new IP address will be saved and if you press **N** the previous IP address will be retained.
- IP address of NTP time source (NTP Secondary Server) for DDU-TDC is 192.168.100.154 by default.



```
Telnet 192.168.100.32

*****
Masibus Telnet Server
*****

Login:masibus
Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

SIP2

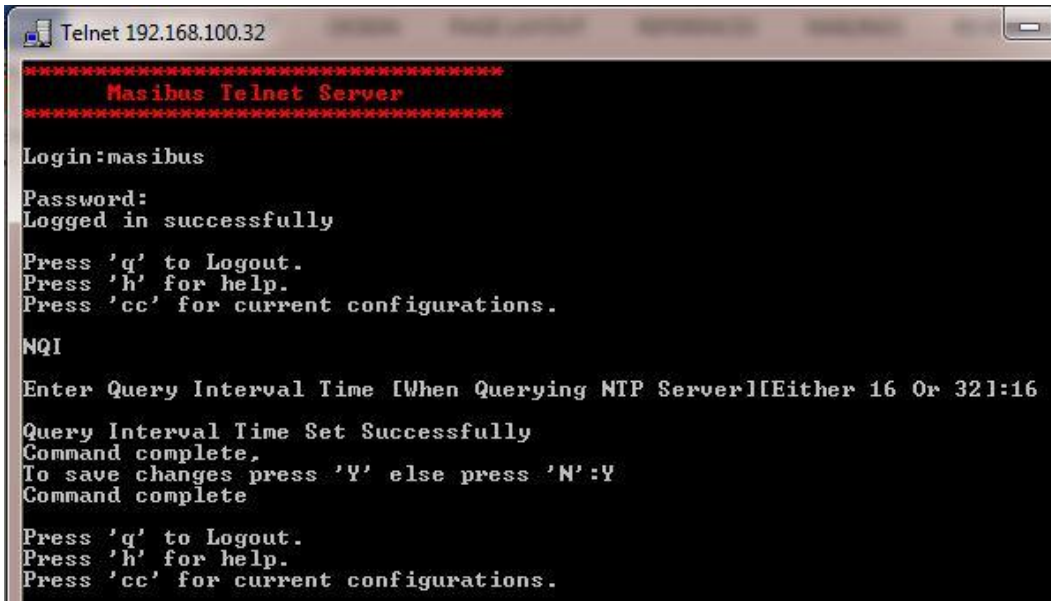
Enter Secondary NTP Server Address:192.168.100.154

Command complete,
To save changes press 'Y' else press 'N':Y
Command complete

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

11. NQI

- This command is used to change **NTP Query Interval Time** [When Querying NTP Servers] for DDU-TDC.
- NTP Query Interval Time should be entered either 16 or 32.
- Enter new NTP Query Interval Time and Press Enter. To save the new NTP Query Interval Time Press 'Y' else press 'N'. If you press Y new NTP Query Interval Time will be saved and if you press N the previous NTP Query Interval Time will be retained.
- NTP Query Interval Time [When Querying NTP Servers] for DDU-TDC is 16 by default.



```
Telnet 192.168.100.32
*****
Masibus Telnet Server
*****
Login:masibus
Password:
Logged in successfully
Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
NQI
Enter Query Interval Time [When Querying NTP Server][Either 16 Or 32]:16
Query Interval Time Set Successfully
Command complete,
To save changes press 'Y' else press 'N':Y
Command complete
Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

12. SNS

- This command is used to enable or Disable **Secondary Server Option for NTP** for DDU-TDC.
- The Selection of Secondary NTP server enables or Disable by Pressing 'E' or 'D' followed by enter Key respectively.
- To save the Selection of Secondary Server Option Press 'Y' else press 'N'. If you press Y new Selection of Secondary Server option will be saved and if you press N the previous Selection of Secondary Server will be retained.
- Default Secondary server Option for NTP is Disable.

```
Telnet 192.168.100.32

*****
Masibus Telnet Server
*****

Login:masibus
Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

SNS

Press E To Enable Secondary NTP Server else Press D:e

Secondary NTP server option Set Successfully
Command complete.
To save changes press 'Y' else press 'N':Y
Command complete

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

13. Z

- This command is used to Set **Time Zone Offset Configuration** for DDU-TDC.
- By entering “Z” You will enter in Time Zone Offset Configuration.

```
Telnet 192.168.100.32

*****
Masibus Telnet Server
*****

Login:masibus
Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

Z
Time Zone Offset Configuration
Command : Function
1 : View Time Zone Configuration Parameters
2 : Enter Time Zone Offset
3 : Enable Time Zone Offset For NTP
4 : Enable Time Zone Offset For IRIG-B
5 : Enable Time Zone Offset For SERIAL
```

13.1 “Z” “1” Command:

- By Press “1” enter in “Z” menu for View Time Zone Configuration, you will get Details of Current Time Zone Settings.

```
Telnet 192.168.100.32
*****
Masibus Telnet Server
*****

Login:masibus
Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

Z
Time Zone Offset Configuration
Command : Function
1 : View Time Zone Configuration Parameters
2 : Enter Time Zone Offset
3 : Enable Time Zone Offset For NTP
4 : Enable Time Zone Offset For IRIG-B
5 : Enable Time Zone Offset For SERIAL
1
Time Zone Offset :+05:30
Time Zone Offset For NTP :Disable
Time Zone Offset For IRIG-B :Disable
Time Zone Offset For SERIAL :Disable
```

13.2 "Z" "2" Command:

- By Press "2" enter in "Z" menu for to Set Time Zone offset.
- Enter Standard Time Zone in +HH:MM or -HH:MM format, any else than Standard time zone will give invalid entry message.
- To save the Selection of Time Zone offset Press 'Y' else press 'N'. If you press Y new Selection of Time Zone offset will be saved and if you press N the previous Selection of Time Zone offset will be retained.
- Default Time Zone Offset is +05:30.

```
Telnet 192.168.100.32
*****
Masibus Telnet Server
*****

Login:masibus
Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

Z
Time Zone Offset Configuration
Command : Function
1 : View Time Zone Configuration Parameters
2 : Enter Time Zone Offset
3 : Enable Time Zone Offset For NTP
4 : Enable Time Zone Offset For IRIG-B
5 : Enable Time Zone Offset For SERIAL
2
Time Zone Offset Configuration
Enter Time Zone Offset[+HH:MM or -HH:MM]:+05:30

Time zone offset set successfully
Command complete.
To save changes press 'Y' else press 'N':Y
Command complete

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

13.3 "Z" "3" Command:

- By Press "3" enter in "Z" menu for to enable Time Zone offset for NTP input.
- Enter "0" followed by Enter,it will disable Time zone offset for NTP.

- Enter "1" followed by Enter, it will enable Time zone offset for NTP.
- To save the Selection of Time Zone offset for NTP input Press 'Y' else press 'N'. If you press Y new Selection of Time Zone offset for NTP input will be saved and if you press N the previous Selection of Time Zone offset for NTP input will be retained.
- By default it is Disable for NTP.

```
Telnet 192.168.100.32
*****
Masibus Telnet Server
*****

Login:masibus
Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

Z
Time Zone Offset Configuration
Command : Function
  1      : Uiew Time Zone Configuration Parameters
  2      : Enter Time Zone Offset
  3      : Enable Time Zone Offset For NTP
  4      : Enable Time Zone Offset For IRIG-B
  5      : Enable Time Zone Offset For SERIAL
3
Time Zone Offset Configuration
Time Zone Offset For NTP
Command : Function
  0      : Time Zone Offset Disable
  1      : Time Zone Offset Enable
Enter Command:1

NTP Time zone offset set successfully
Command complete.
To save changes press 'Y' else press 'N':Y
Command complete

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

13.4 "Z" "4" Command:

- By Press "4" enter in "Z" menu for to enable Time Zone offset for IRIG-B input.
- Enter "0" followed by Enter, it will disable Time Zone offset for IRIG-B input.
- Enter "1" followed by Enter, it will enable Time Zone offset for IRIG-B input.
- To save the Selection of Time Zone offset for NTP input Press 'Y' else press 'N'. If you press Y new Selection of Time Zone offset for IRIG-B input will be saved and if you press N the previous Selection of Time Zone offset for IRIG-B input will be retained.
- By default it is disable for IRIG-B.

```
Telnet 192.168.100.32
*****
Masibus Telnet Server
*****

Login:masibus
Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

Z
Time Zone Offset Configuration
Command : Function
  1 : Uiew Time Zone Configuration Parameters
  2 : Enter Time Zone Offset
  3 : Enable Time Zone Offset For NTP
  4 : Enable Time Zone Offset For IRIG-B
  5 : Enable Time Zone Offset For SERIAL
4
Time Zone Offset Configuration
Time Zone Offset For IRIG-B
Command : Function
  0 : Time Zone Offset Disable
  1 : Time Zone Offset Enable
Enter Command:1

IRIG-B Time zone offset set successfully
Command complete,
To save changes press 'Y' else press 'N':Y
Command complete

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

13.5 "Z" "5" Command:

- By Press "5" enter in "Z" menu for to enable Time Zone offset for SERIAL input.
- Enter "0" followed by Enter, it will disable Time Zone offset for SERIAL input.
- Enter "1" followed by Enter, it will enable Time Zone offset for SERIAL input.
- To save the Selection of Time Zone offset for SERIAL input Press 'Y' else press 'N'. If you press Y new Selection of Time Zone offset for SERIAL input will be saved and if you press N the previous Selection of Time Zone offset for SERIAL input will be retained.
- By default it is disable for SERIAL.

```
Telnet 192.168.100.32

*****
Masibus Telnet Server
*****

Login:masibus
Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

Z
Time Zone Offset Configuration
Command : Function
  1      : View Time Zone Configuration Parameters
  2      : Enter Time Zone Offset
  3      : Enable Time Zone Offset For NTP
  4      : Enable Time Zone Offset For IRIG-B
  5      : Enable Time Zone Offset For SERIAL
5
Time Zone Offset Configuration
Time Zone Offset For SERIAL
Command : Function
  0      : Time Zone Offset Disable
  1      : Time Zone Offset Enable
Enter Command:1

SERIAL Time zone offset set successfully
Command complete.
To save changes press 'Y' else press 'N':Y
Command complete

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

14. MT

- This command is used to Set **Manual Time Setting** for DDU-TDC.
- By entering “**MT**” You will enter in **Manual Time Setting** Configuration.
- Enter Time and Date in HH:MM:SS,DD/MM/YY mode after it will give confirmation.

```
Telnet 192.168.100.32

*****
Masibus Telnet Server
*****

Login:masibus
Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

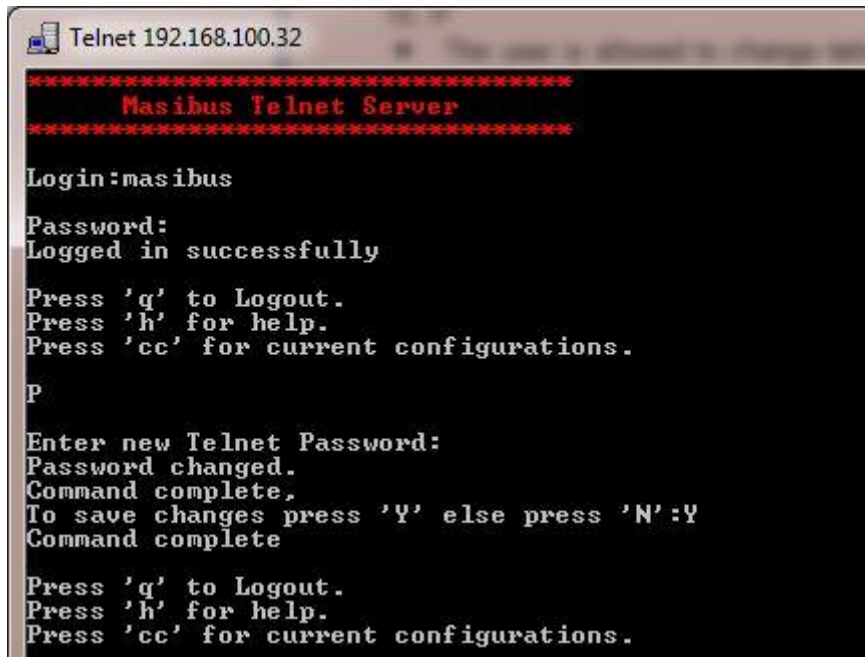
MT
Manual Time And Date Setting
Enter Time and Date [HH:MM:SS,DD/MM/YY]:10:10:30,01/02/19

Manual Time and Date set successfully
Command complete.
To save changes press 'Y' else press 'N':Y
Command complete

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

15. P

- The user is allowed to change telnet password. The command for changing the password is: P (**password**).
- Then enter new password and press enter. To save the new password press '**Y**' else press '**N**'. If you press **Y** new password will be saved and if you press **N** the previous password will be retained.
- The default password is 'masibus'.
- Remember that the password should not exceed 10 characters. If you try to keep a password that has more than 10 characters, the system will show an error "Invalid Entry" and the previous password will be retained.



```
Telnet 192.168.100.32
*****
Masibus Telnet Server
*****
Login:masibus
Password:
Logged in successfully
Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
P
Enter new Telnet Password:
Password changed.
Command complete.
To save changes press 'Y' else press 'N':Y
Command complete
Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

16. U

- The user is allowed to change telnet Login name. The command for changing the Login name is: '**U**'.
- Then enter new Login name and press enter. To save the new Login name. Press '**Y**' else press '**N**'. If you press **Y** new Login name will be saved and if you press **N** the previous Login name will be retained.
- The default Login name is 'masibus'.
- Remember that the Login name should not exceed 10 characters. If you try to keep a Login name that has more than 10 characters, the system will show an error "Invalid Entry" and the previous Login name will be retained.

```
Telnet 192.168.100.32

*****
Masibus Telnet Server
*****

Login:masibus

Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

U

Enter new Telnet Username:
Username changed.
Command complete.
To save changes press 'Y' else press 'N':Y
Command complete

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

17. DI

- This command is used to configure **Display Intensity** for DDU-TDC
- By entering “DI” You will enter in **Display Intensity** Configuration.
- There are four levels of display intensity, so enter value between **1&4**
- **4** corresponds to minimum intensity (25%) and **1** corresponds to maximum intensity (100%).
- To save the Display Intensity press ‘Y’ else press ‘N’
- If you press Y new value of Display Intensity will be saved and if you press N the previous Selection of Display Intensity will retain
- By Default Display Intensity is 1(100%).

```
Telnet 192.168.100.32.

*****
Masibus Telnet Server
*****

Login:masibus

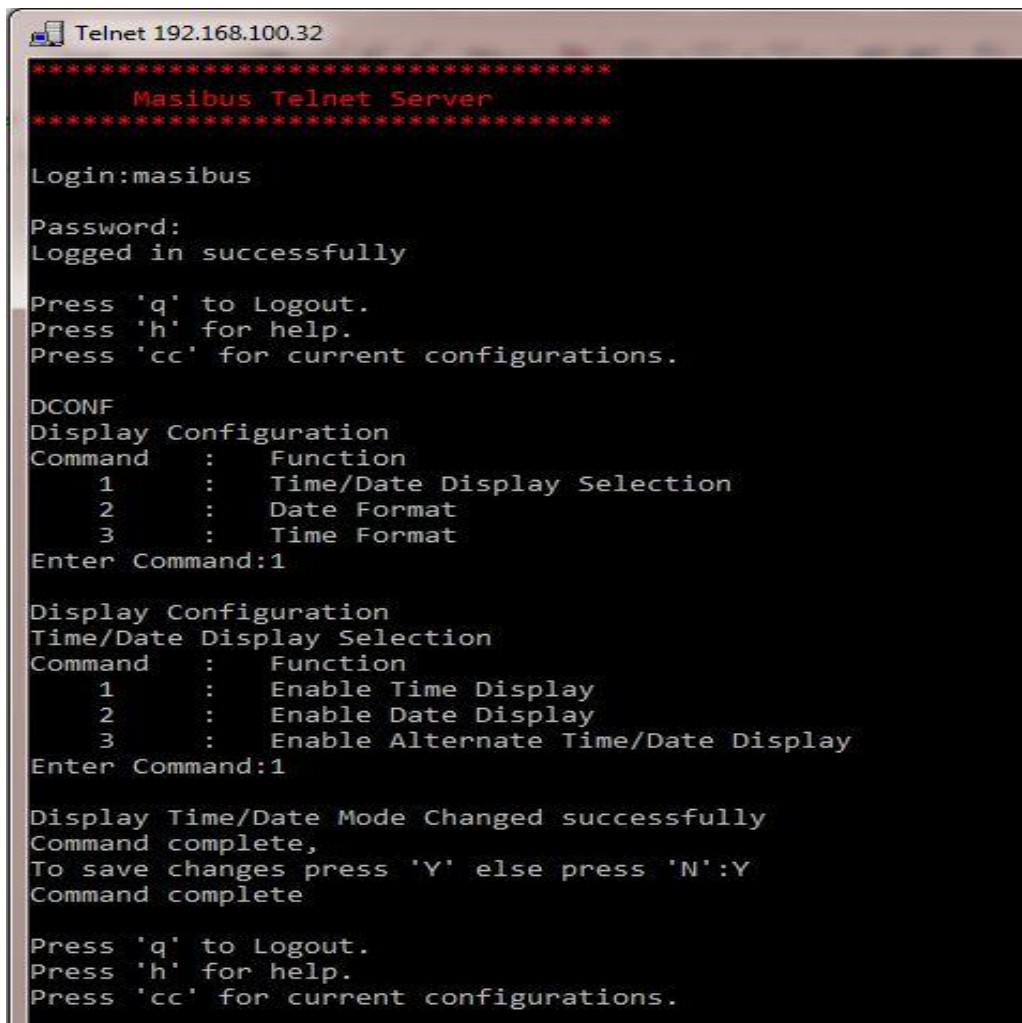
Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

DI
Display Intensity
Command      :      Function
   1         :      Display Intensity 100 %
   2         :      Display Intensity 75 %
   3         :      Display Intensity 50 %
   4         :      Display Intensity 25 %
Enter the Value to set Display Intensity:4

Display Intensity Changed successfully
Command complete,
To save changes press 'Y' else press 'N':Y
Command complete

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

```
Telnet 192.168.100.32
*****
Masibus Telnet Server
*****

Login:masibus
Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

DCONF
Display Configuration
Command : Function
1 : Time/Date Display Selection
2 : Date Format
3 : Time Format
Enter Command:1

Display Configuration
Time/Date Display Selection
Command : Function
1 : Enable Time Display
2 : Enable Date Display
3 : Enable Alternate Time/Date Display
Enter Command:1

Display Time/Date Mode Changed successfully
Command complete,
To save changes press 'Y' else press 'N':Y
Command complete

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

18.2 “DCONF” “2” Command:

- By entering “2” you enter into Date Format Selection Mode.
- Select a date format and enter the command corresponding to it.
- To save the Date Format press, “Y” else press, “N”. If you press “Y” new Date Format will be saved and if you press “N” the previous Selection of Date Format will retain.

```
Telnet 192.168.100.32
*****
Masibus Telnet Server
*****

Login:masibus
Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

DCONF
Display Configuration
Command      :      Function
   1         :      Time/Date Display Selection
   2         :      Date Format
   3         :      Time Format
Enter Command:2

Display Configuration
Date Format
Command      :      Function
   1         :      DD/MM/YY
   2         :      MM/DD/YY
   3         :      YY/MM/DD
Enter Command:1

Display Date Mode Changed successfully
Command complete,
To save changes press 'Y' else press 'N':Y
Command complete

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

18.3 “DCONF” “3” Command:

- By entering “3” you enter into Time Format Selection Mode.
- Select a Time Format and enter the command corresponding to it.
- To save the Time Format press, “Y” else press, “N”. If you press “Y” new Time Format will be saved and if you press “N” the previous Selection of Time Format will retain.

```
Telnet 192.168.100.32
Masibus Telnet Server
*****
Login:masibus
Password:
Logged in successfully
Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

DCONF
Display Configuration
Command      :      Function
   1          :      Time/Date Display Selection
   2          :      Date Format
   3          :      Time Format
Enter Command:3

Display Configuration
Time Format
Command      :      Function
   1          :      24 Hour Time Format
   2          :      12 Hour Time Format
Enter Command:1

Display Time Mode Changed successfully
Command complete,
To save changes press 'Y' else press 'N':Y
Command complete

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

19. SD
- This SET DEFAULT “SD” command is used to set all clock parameters to their default values.
20. H
- This HELP “H” command is used to see different commands and their functions.

```
Telnet 192.168.100.32

*****
Masibus Telnet Server
*****

Login:masibus
Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

H

-----
COMMAND  FUNCTION
-----
IP        IP address
MASK      SUBNET MASK
GTW       GATEWAY
SIP1      Primary NTP Server Address
SIP2      Secondary NTP Server Address
NQI       NTP Query Interval Time[When Querying NTP Server]
SNS       Secondary Server option for NTP
Z         Time Zone Offset Configuration
MT        Manual Time And Date Setting
P         Password
U         User name
DI        Display Intensity Configuration
DCONF     Display Time/Date Configuration
SD        Set Default Parameters

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

21. CC

- This command is used to see **Current Configurations** on the DDU-TDC.

```
Telnet 192.168.100.32

*****
Masibus Telnet Server
*****

Login:masibus
Password:
Logged in successfully

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.

CC

-----
Current Configurations
-----
IP Address           :192.168.100.032
Subnet Mask          :255.255.255.000
Gateway              :192.168.100.001
Primary NTP Server Address :192.168.100.153
Secondary NTP Server Address :192.168.100.154
NTP Query Interval Time :0016
Secondary Server for NTP :Enable
Telnet Username      :masibus
Telnet Password      :masibus
Display Type         :Time Display
Time Hour Mode       :24 Hour Time Mode
Date Format           :DD/MM/YY
Date Intensity       :Display Intensity 25 %

Press 'q' to Logout.
Press 'h' for help.
Press 'cc' for current configurations.
```

20. Q

This QUIT “Q” command is used to close Telnet session.

6.2.3 Important Points for Telnet Configuration

- Digital Display Unit's Telnet Server has timeout period of 5 minutes. If you do not press any character till 5 minutes, the session will be automatically closed with a message of Timeout, Session Closed.
- Commands are case insensitive.
- If Display Unit Telnet server is open at that time Display Unit will not synchronize with the NTP Time Source.
- Display Unit operates in NTP client mode.

6.3 Serial Configuration [For Time/Date and Day& Calendar]

DDU-TDC offers facility to the users for configuring communication parameters of serial port, Display Format Selection, Time Zone Selection, Ethernet Configuration, Manual Time Set, IRIG-B Format Selection, Set Default Parameter and View Current Settings.

- The communication parameters include baud rate, number of stop bits and parity.
- In Ethernet Configuration, User can set, IP, MASK, GATEWAY, SUBNET, Primary Server IP, Secondary Server IP, NTP Query Interval Time [When Querying NTP Server] , Secondary Server Option For NTP.
- User Can Set Manual Time if no availability of Time Inputs.
- The user is free to choose TimeDisplay, Date Display and Both in Alternate Time/Date Display.
- User Can Select IRIG-B Input Type IRIG-B 002/122 or IRIG-B 007/127.
- User can set any Standard Time Zone Offset, in any Input like NTP, IRIG-B, and Serial.
- The user can enter the time offset of the time zone, where the unit is to be installed.
- Users can set Default all Configuration Parameter and View Current Configuration Parameter using Serial Configuration.
- User Can Check Current Synchronization Status of DDU Configuration Parameter
- In Day Display Unit, there will be no availability of display configuration.

6.3.1 For the First Time setup follow the below procedure.

Configuration requires a standard 9-way D-type at one side and 0.22 sq.mm cable with lug at another side, standard communication software in the PC, such as HyperTerminal. HyperTerminal is available in every Windows based PC on the link shown in figure6.3.1.

Note: - RS485 to RS232 converter is not supplied along with the product,
In place of RS485 to RS232 converter, RS485 to USB converter also can be used.

Fig 6.3.1.0: Hyper Terminal



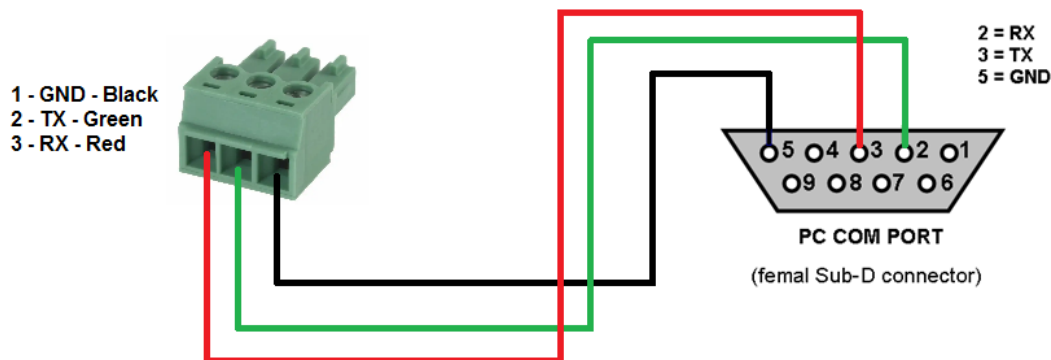
The cable requirement for the DDU-TDC configuration is shown in figure 6.3.2.

Connect one end of the cable to DDU-TDC and other end with DB 9 connector to an available serial port on your local PC.

Open the HyperTerminal and start new connection on COMx of your PC. (x can be any available serial RS232 port number)

In using HyperTerminal, it is recommended to select File\Properties\Settings and set Emulation to ANSI, to avoid auto-detect making unwanted changes to the settings.

Fig 6.3.1.1: RS232 Cable Connection



The port settings in HyperTerminal and the COM port of the DDU-TDC must match each other for fruitful communication. The default settings of COM port of the DDU-TDC are 9600 baud, 8, N, 1. The settings of the HyperTerminal must be set same as COM port of the DDU-TDC to initialize the communication. This is shown in figure 6.3.3. In order to configure the settings, Please Follow Below steps on the HyperTerminal.

- Step 1: Open Hyper Terminal follow figure 6.3.1
- Step 2: Hyper Terminal Name
- Step 3: Select Local PC COM Port in which you wish to connect DDU-TDC.
- Step 4: Select Baud Rate, Parity Bit and Stop Bit.

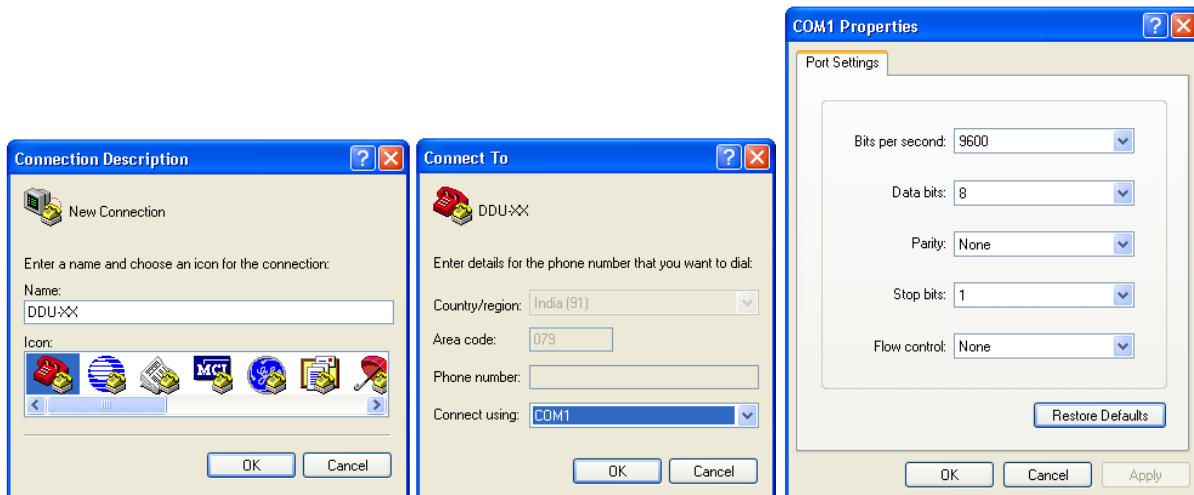
Fig 6.3.1.2: Configuration of Hyper terminal

COM: 9600 - N - 8 - 1

Step 2:

Step 3:

Step 4:



6.3.2 CONFIGURATION COMMANDS AND PASSWORD

6.3.2.1 “CONFIG” command and Password:

- Enter “CONFIG” followed by Enter.
- You will get Password Page as shown in figure 6.3.2.1.1

Fig 6.3.2.1.1: CONFIG

```
CONFIG
Enter Password :_
```

- Password is user defined and by default password is “masibus”. User can change this password by logging in by entering correct password. Enter Correct Password “masibus”, if password is matched it will give conformation of password OK and ask to enter command to Configure parameter as shown in figure 6.3.2.1.2

Fig 6.3.2.1.2: CONFIG and Password Ok

```
CONFIG
Enter Password :*****
Password OK
Enter Command To Configure Parameter

Press H For Help Menu
Press Q To Exit
```

- If you enter a wrong password it will give message of access denied and ask to enter "CONFIG".

Fig 6.3.2.1.3: Wrong Password

```
CONFIG
Enter Password :*****
Access Denied
Enter 'CONFIG' To Enter in Configuration Mode
```

6.3.2.2 "H" and "Q" command:

- By Entering Correct password it will show figure 6.3.2.1.2 and in this page it will ask to press "H" for Help Menu and "Q" for Exit.
- Press "H" followed by Enter you will get below image.

Fig 6.3.2.2.1: H for Help Menu

```
Commands :   Function
S          :   Serial Configuration
E          :   Ethernet Configuration
M          :   Manual Time & Date Setting
D          :   Display Configuration
I          :   IRIG-B Frame Format Configuration
Z          :   Time Zone Offset Configuration
PWD        :   Change Password
SD         :   Set Default All Parameters
L          :   List Of Current Parameters
CS         :   Current Sync Status

Enter Commands To Configure Parameters
Press Q To Exit
```

- Press "Q" followed by Enter you will get below image.

Fig 6.3.2.2.1: Q for Exit

```
Q
You Have Exit From Configuration Mode
—
```

6.3.2.3 “S” command:

- Press “S” for Serial Configuration:
- By entering “S” followed by Enter you will get below image.

Fig 6.3.2.3.1: S Menu

```
S

Serial Configuration
Command      :   Function
   1         :   Baud Rate
   2         :   Stop Bit
   3         :   Parity

Press H For Help Menu
Press Q To Exit

_
```

6.3.2.3.1 “S” “1” commands:

- If you want to change Baud Rate of Serial Port, Enter “1” followed by Enter, then it will show figure 6.3.2.3.2:
- Press Command between 1 to 6, according below image to set your baud rate.
- If you want to set 115200 baud rate then press 6, by pressing 6 followed by Enter, it will set baud rate of 115200 and Communication must stopped.
- If your Device baud rate and Hyper terminal Baud rate is not same , then hyper terminal stop the working you have to again configure the Hyper terminal baud rate.
- As shown in figure 6.3.2.3.3, you have to disconnect the hyper terminal and then from File->Properties, change Baud rate accordingly.

Fig 6.3.2.3.2: Baud rate menu

```
1

Serial Configuration
Baud Rate Selection
Command      :   Baud Rate
   1         :   4800
   2         :   9600
   3         :   19200
   4         :   38400
   5         :   57600
   6         :   115200

Press H For Help Menu
Press Q To Exit
```

Fig 6.3.2.3.3: Hyper terminal Disconnect



6.3.2.3.2 “S” “2” commands:

- If you want to change Stop Bit of Serial Port, Enter “2” followed by Enter in “S” menu, then it will show figure 6.3.2.3.4:

Fig 6.3.2.3.4: Stop bit

```
Serial Configuration
Stop Bit Selection
Command      :   Function
    1        :   1 Stop Bit
    2        :   2 Stop Bit

Press H For Help Menu
Press Q To Exit
```

- Press Command 1 for 1 Stop bit and Press 2 for 2 stop bit.
- If you want to set 1 Stop Bit then press 1, followed by Enter, it will set stop bit 1.
- As shown in figure 6.3.2.3.3, you have to disconnect the hyper terminal and then from File->Properties, change Stop bit accordingly.

6.3.2.3.3 “S” “3” commands:

- If you want to change Parity Bit of Serial Port, Enter “3” followed by Enter in “S” menu, then it will show figure 6.3.2.3.5:

Fig 6.3.2.3.5: parity bit

```
3

Serial Configuration
Parity Selection
Command      :   Function
    1        :   Even Parity
    2        :   Odd Parity
    3        :   None Parity

Press H For Help Menu
Press Q To Exit
```

- Press Command between 1 to 3, according to what you have to set the Parity Bit.

- If you want to set Even Parity Bit then press 1, followed by Enter, it will set Parity Bit to Even and Communication must stopped.
- As shown in figure 6.3.2.3.3, you have to disconnect the hyper terminal and then from File->Properties, change Parity Bit according to your set value.

6.3.2.4 “E” command:

- Press “E” for Ethernet Configuration:
- By entering “E” followed by Enter you will get figure 6.3.2.4.1.

Fig 6.3.2.4.1: Ethernet Configuration

```
Ethernet Configuration
Command      : Function
1           : View Current Ethernet Parameters
2           : Set IP Address
3           : Set Subnet Mask
4           : Set Gateway
5           : Set Primary Server IP Address
6           : Set Secondary Server IP Address
7           : Query Interval Time [When Querying NTP Server]
8           : Secondary Server option for NTP
9           : Set Default Ethernet Parameters

Press H For Help Menu
Press Q To Exit
```

6.3.2.4.1 “E” “1” commands:

- If you want to view current Ethernet Parameter, Enter “1” followed by Enter in “E” menu, then it will show figure 6.3.2.4.2.

Fig 6.3.2.4.2: View Current Parameter

```
List Of Ethernet Parameters

IP Address           :192.168.100.161
Subnetmask           :255.255.255.000
Gateway              :192.168.100.001
Primary Server IP Address :192.168.100.183
Secondary Server IP Address :192.168.100.001
Query Interval Time[When Querying NTP Server] :0016
Secondary Server option for NTP :Disable

Press H For Help Menu
Press Q To Exit
```

6.3.2.4.2 “E” “2” commands:

- If you want to set IP Address of DDU-TDC device, Enter “2” followed by Enter in “E” menu, then it will show figure 6.3.2.4.3 and Ask for to Enter IP Address in XXX.XXX.XXX.XXX format.
- After Entering IP Address, it will give conformation as shown in figure 6.3.2.4.4 and if you enter wrong address it will give message of invalid data.
- Default IP Address is 192.168.100.32

Fig 6.3.2.4.3: Enter IP

```
2
Ethernet Configuration
Press H For Help Menu
Press Q To Exit
Enter IP Address[XXX.XXX.XXX.XXX]:_
```

Fig 6.3.2.4.4: IP SET

```
2
Ethernet Configuration
Press H For Help Menu
Press Q To Exit
Enter IP Address[XXX.XXX.XXX.XXX]:192.168.100.32
IP Address Stored Successfully
Press H For Help Menu
Press Q To Exit
```

6.3.2.4.3 “E” “3” commands:

- If you want to set IP Address of Subnet MASK of DDU-TDC device, Enter “3” followed by Enter in “E” menu, then it will show figure 6.3.2.4.5 and Ask for to Enter IP Address of Subnet MASK in XXX.XXX.XXX.XXX format.
- After Entering IP Address of Subnet MASK, it will give conformation as shown in figure 6.3.2.4.6 and if you enter wrong address it will give message of invalid data.
- By Default IP Address of Subnet MASK is 255.255.255.0

Fig 6.3.2.4.5: ENTER MASK

```
3
Ethernet Configuration
Press H For Help Menu
Press Q To Exit
Enter Subnet Mask[XXX.XXX.XXX.XXX]:
```

Fig 6.3.2.4.6: MASK SET

```
3
Ethernet Configuration
Press H For Help Menu
Press Q To Exit

Enter Subnet Mask[XXX.XXX.XXX.XXX]:255.255.255.0

Subnet Mask Stored Successfully

Press H For Help Menu
Press Q To Exit
```

6.3.2.4.4 “E” “4” commands:

- If you want to set IP Address of Gateway of DDU-TDC device, Enter “4” followed by Enter in “E” menu, then it will show figure 6.3.2.4.7 and Ask for to Enter IP Addressof Gateway in XXX.XXX.XXX.XXX format.
- After Entering IP Address of Gateway, it will give conformation as shown in figure 6.3.2.4.8 and if you enter wrong address it will give message of invalid data.
- Default IP Address of Gateway is 192.168.100.1

Fig 6.3.2.4.7: ENTER GATEWAY

```
4
Ethernet Configuration
Press H For Help Menu
Press Q To Exit

Enter Gateway [XXX.XXX.XXX.XXX]:_
```

Fig 6.3.2.4.8: GATEWAY SET

```
4
Ethernet Configuration
Press H For Help Menu
Press Q To Exit

Enter Gateway [XXX.XXX.XXX.XXX]:192.168.100.1

Gateway Stored Successfully

Press H For Help Menu
Press Q To Exit
```

6.3.2.4.5 “E” “5” commands:

- If you want to set IP Address of Primary Server of DDU-TDC device, Enter “5” followed by Enter in “E” menu, then it will show figure 6.3.2.4.9 and Ask for to Enter IP Address of Primary Server in XXX.XXX.XXX.XXX format.
- After Entering IP Address of Primary Server, it will give conformation as shown in figure 6.3.2.4.10 and if you enter wrong address it will give message of invalid data.
- Default IP Address of Primary Server is 192.168.100.153

Fig 6.3.2.4.9: ENTER Primary Server

```
5
Ethernet Configuration
Press H For Help Menu
Press Q To Exit
Enter Primary Server IP Address[XXX.XXX.XXX.XXX]:
```

Fig 6.3.2.4.10: Primary Server Set

```
5
Ethernet Configuration
Press H For Help Menu
Press Q To Exit
Enter Primary Server IP Address[XXX.XXX.XXX.XXX]:192.168.100.153
Primary Server IP Address Stored Successfully
Press H For Help Menu
Press Q To Exit
```

6.3.2.4.6 “E” “6” commands:

- If you want to set IP Address of Secondary Server of NTP in DDU-TDC device, Enter “6” followed by Enter in “E” menu, then it will show figure 6.3.2.4.11 and Ask for to Enter IP Address of Primary Server in XXX.XXX.XXX.XXX format.
- After Entering IP Address of Secondary Server, it will give conformation as shown in figure 6.3.2.4.12 and if you enter wrong address it will give message of invalid data.
- Default IP Address of Secondary Server is 192.168.100.154

Fig 6.3.2.4.11: ENTER Secondary Server

```
6
Ethernet Configuration
Press H For Help Menu
Press Q To Exit
Enter Secondary Server IP Address [XXX.XXX.XXX.XXX]:_
```

Fig 6.3.2.4.12: Secondary Server Set

```
6
Ethernet Configuration
Press H For Help Menu
Press Q To Exit
Enter Secondary Server IP Address [XXX.XXX.XXX.XXX]:192.168.100.154
Secondary Server IP Address Stored Successfully
Press H For Help Menu
Press Q To Exit
```

6.3.2.4.7 “E” “7” commands:

- If you want to set Query Interval Time [When Querying NTP Server]of DDU-TDC device, Enter “7” followed by Enter in “E” menu, then it will show figure 6.3.2.4.13 and Ask for to Query Interval Time either 16 or 32.
- After Entering Query Interval Time, it will give conformation as shown in figure 6.3.2.4.14 and if you enter wrong value it will give message of invalid data.
- Default Query Interval Time is 16.

Fig 6.3.2.4.13: ENTER Query Interval Time

```
7
Ethernet Configuration
Press H For Help Menu
Press Q To Exit
Enter Query Interval Time [When Querying NTP Server][Either 16 or 32]:
```

Fig 6.3.2.4.14: Query Interval Time Set

```
7
Ethernet Configuration
Press H For Help Menu
Press Q To Exit
Enter Query Interval Time [When Querying NTP Server][Either 16 or 32]:16
Query Interval Time Set Successfully
Press H For Help Menu
Press Q To Exit
```

6.3.2.4.11 “E” “8” commands:

- If you want Enable or Disable Secondary Server Option for NTPbefore switching servers in DDU-TDC device, Enter “11” followed by Enter in “E” menu, then it will show figure 6.3.2.4.21 and Ask for to Enable or Disable Secondary Server Option for NTP.

- After Enable or Disable Secondary Server Option for NTP, it will give conformation as shown in figure 6.3.2.4.22 and if you enter wrong value it will give message of invalid data.
- DefaultSecondary Server Option for NTP is Disable.

Fig 6.3.2.4.21: Secondary Server Option Selection

```
8

Ethernet Configuration
Press H For Help Menu
Press Q To Exit

Secondary Server option for NTP

Command : Function
0       : Disable
1       : Enable

Press H For Help Menu
Press Q To Exit
```

Fig 6.3.2.4.22: Secondary Server Option Set

```
1

Secondary NTP Server Enabled

Press H For Help Menu
Press Q To Exit
```

6.3.2.4.12 “E” “9” commands:

- If you want to set Default all Ethernet Parameter, Press “9” followed by enter in “E” menu, it will set default all parameter.

6.3.2.5 “M” command:

- Press “M” for Manual Time Setting:
- By entering “M” followed by Enter you will get figure 6.3.2.5.1.

Fig 6.3.2.5.1: Enter Manual Time & Date Set

```
M

Manual Time And Date Setting

Press H For Help Menu
Press Q To Exit

Enter Time and Date [HH:MM:SS,DD/MM/YY]:
```

- Enter Time and Date in HH:MM:SS,DD/MM/YY mode after it will give conformation as shown in below image.

Fig 6.3.2.5.2: Manual Time & Date Set

```
M
Manual Time And Date Setting
Press H For Help Menu
Press Q To Exit

Enter Time and Date [HH:MM:SS,DD/MM/YY]:01:01:00,11/11/14

Manual Time And Date Set Successfully

Press H For Help Menu
Press Q To Exit
```

6.3.2.6 “D” command:

For Time/Date Display:

- Press “D” for Display Configuration:
- By entering “D” followed by Enter you will get figure 6.3.2.6.1.

Fig 6.3.2.6.1: Display Setting

```
D
Display Configuration
Command      : Function
  1          : Time/Date Display selection
  2          : Date Format
  3          : Time Format
  4          : Leading Zeroes
  5          : Display Intensity

Press H For Help Menu
Press Q To Exit
```

6.3.2.6.1 “D” ”1” command:

- Press “1” followed by enter in “D” menu for Time /Date Display selection :
- By entering “1” followed by Enter you will get below figure 6.3.2.6.2.

Fig 6.3.2.6.2: Display Selection

```
1
Display Configuration
Time/Date Display Selection
Command : Function
  1      : Enable Time Display
  2      : Enable Date Display
  3      : Enable Alternate Date/Time Display

Press H For Help Menu
Press Q To Exit
```

- If you want Enable Time Display, Press 1 in figure 6.3.2.6.2 menu, it will set Time Display.
- If you want to Enable Date Display press 2, in figure 6.3.2.6.2 menu, it will set Date Display.
- If you want both Date/Time Alternate Display Press 3.
- By Entering “3”, it will ask to enter alternate seconds, as per below image.

Fig 6.3.2.6.2: Alternate second

```
3
Alternate Date/Time Display Enabled
Please Enter Second For Alternating Time & Date Display [Between 3 To 300]:5

Alternate Second Set Successfully

Press H For Help Menu
Press Q To Exit
```

- Default set Display Type is Time Display.

6.3.2.6.2 “D” ”2” Command:

- Press “2” followed by enter in “D” menu for **Date Format selection**, you will get below figure 6.3.2.6.3:

Fig 6.3.2.6.3: Date Format selection

```
2
Display Configuration
Date Format
Command : Function
  1      : DD/MM/YY
  2      : MM/DD/YY
  3      : YY/MM/DD

Press H For Help Menu
Press Q To Exit
```

- Enter “1” followed by Enter in figure 6.3.2.6.3 menu, it will set DD/MM/YY Date Format.
- Enter “2” followed by Enter in figure 6.3.2.6.3 menu, it will set MM/DD/YY Date Format.
- Enter “3” followed by Enter in figure 6.3.2.6.3 menu, it will set YY/MM/DD Date Format.
- Default Set format is DD/MM/YY.

6.3.2.6.2 “D” ”3” Command:

- Press “3” followed by enter in “D” menu for **Time Format selection**, you will get below figure 6.3.2.6.5:

Fig 6.3.2.6.5: Time Format selection

```
3
Display Configuration
Time Format
Command : Function
  0      : 12 Hour Time Format
  1      : 24 Hour Time Format

Press H For Help Menu
Press Q To Exit
```

- Enter “0” followed by Enter in figure 6.3.2.6.5 menu, it will set 12 Hour Time Format.
- Enter “1” followed by Enter in figure 6.3.2.6.5 menu, it will set 24 Hour Time Format.
- Default Set Type is 24 Hour Time Format.

6.3.2.6.3 “D” ”4” Command:

- Press “4” followed by enter in “D” menu for Leading Zeroes selection in Display, you will get below figure 6.3.2.6.6:

Fig 6.3.2.6.6: Leading Zeroes Selection

```
4
Display Configuration
Leading Zeroes
Command : Function
  0      : Disable
  1      : Enable

Press H For Help Menu
Press Q To Exit
```

- Enter “0” followed by Enter in figure 6.3.2.6.6 menu, it will disable Leading Zeroes.
- Enter “1” followed by Enter in figure 6.3.2.6.5 menu, it will enable Leading Zeroes.
- Default Set Type is Disable Leading Zeroes.

6.3.2.6.3 “D” ”5” Command:

- Press “5” followed by enter in “D” menu for Display Intensity selection in Display, you will get below figure 6.3.2.6.7:

Fig 6.3.2.6.7: Display Intensity Selection

```
5
Display Intensity
Command : Function
  1      : Display Intensity 100 %
  2      : Display Intensity 75 %
  3      : Display Intensity 50 %
  4      : Display Intensity 25 %

Press H For Help Menu
Press Q To Exit
```

- Enter “1” followed by Enter in figure 6.3.2.6.7 menu, it will set display intensity to 100% of full.
- Enter “2” followed by Enter in figure 6.3.2.6.7 menu, it will set display intensity to 75%of full.
- Enter “3” followed by Enter in figure 6.3.2.6.7 menu, it will set display intensity to 50%of full.

- Enter “4” followed by Enter in figure 6.3.2.6.7 menu, it will set display intensity to 25%of full.
- Default display intensity is 100% of full.

6.3.2.7 “I” Command:

- Press “I” for IRIG-B Format Selection:
- By entering “I” followed by Enter you will get figure 6.3.2.7.1.

Fig 6.3.2.7.1: IRIG-B Format Selection

```
I
IRIG-B Frame Format Configuration
Command : Format
  1      : IRIG-B 002/122
  2      : IRIG-B 007/127

Press H For Help Menu
Press Q To Exit
```

- Enter “1” followed by Enter in figure 6.3.2.7.1 menu, it will Set IRIG-B 002/122.In IRIG-B 002/122 format DDU-TDC does not decode Year information it will use previously entered, or previous stored Year information to display Date.
- Enter “2” followed by Enter in figure 6.3.2.7.1 menu, it will Set IRIG-B 007/127.
- Default IRIG-B Format is set to IRIG-B 007/127.

6.3.2.8 “Z” Command:

- Press “Z” for Time Zone Offset Configuration:
- By entering “Z” followed by Enter you will get figure 6.3.2.8.1.

Fig 6.3.2.8.1: Time Zone Offset Configuration

```
Z
Time Zone Offset Configuration
Command : Function
  1      : View Time Zone Configuration Parameters
  2      : Enter Time Zone Offset
  3      : Enable Time Zone Offset For NTP
  4      : Enable Time Zone Offset For IRIG-B
  5      : Enable Time Zone Offset For SERIAL

Press H For Help Menu
Press Q To Exit
```

6.3.2.8.1 “Z” ”1” Command:

- Press “1” followed by enter in “Z” menu for View Time Zone Configuration,you will get Details of Current Time Zone Settings as shown in below figure 6.3.2.8.2:

Fig 6.3.2.8.2: View Time Zone Parameter

```
Time Zone Offset:+05:30
NTP Offset      :Disable
IRIGB Offset    :Disable
SERIEL Offset   :Disable

Press H For Help Menu
Press Q To Exit
```

6.3.2.8.2 “Z” ”2” Command:

- Press “2” followed by enter in “Z” menu for to Set Time Zone offset,you will get below figure 6.3.2.8.3:

Fig 6.3.2.8.3: Enter Time Zone Offset

```
2

Time Zone Offset Configuration

Press H For Help Menu
Press Q To Exit

Enter Time Zone Offset[+HH:MM or -HH:MM]:
```

- Enter Standard Time Zone in +HH:MM or –HH:MM format, any else than Standard time zone will give invalid entry message.
- Default Time Zone Offset is +05:30.

6.3.2.8.3 “Z” ”3” Command:

- Press “3” followed by enter in “Z” menu for to enable Time Zone offset for NTP input, you will get below figure 6.3.2.8.4:
- Enter “0” followed by Enter in figure 6.3.2.8.4 menu, it will disable Time zone offset for NTP.
- Enter “1” followed by Enter in figure 6.3.2.8.4 menu, it will enable Time zone offset for NTP.
- Bydefault it is disable for NTP.

Fig 6.3.2.8.4: Enable Time Zone Offset for NTP

```
3

Time Zone Offset Configuration

Time Zone Offset For NTP
Command : Function
  0      : Time Zone Offset Disable
  1      : Time Zone Offset Enable

Press H For Help Menu
Press Q To Exit
```

6.3.2.8.4 “Z” ”4” Command:

- Press “4” followed by enter in “Z” menu for to enable Time Zone offset for IRIG-B input, you will get below figure 6.3.2.8.5:

Fig 6.3.2.8.5: Enable Time Zone Offset for IRIG-B

```
4
Time Zone Offset Configuration
Time Zone Offset For IRIG-B
Command : Function
  0      : Time Zone Offset Disable
  1      : Time Zone Offset Enable

Press H For Help Menu
Press Q To Exit
```

- Enter “0” followed by Enter in figure 6.3.2.8.5 menu, it will disable Time zone offset for IRIG-B.
- Enter “1” followed by Enter in figure 6.3.2.8.5 menu, it will enable Time zone offset for IRIG-B.
- By default it is disabling for IRIG-B.

6.3.2.8.5 “Z” ”5” Command:

- Press “5” followed by enter in “Z” menu for to enable Time Zone offset for SERIAL input, you will get below figure 6.3.2.8.6:

Fig 6.3.2.8.6: Enable Time Zone Offset for SERIAL

```
5
Time Zone Offset Configuration
Time Zone Offset For SERIAL
Command : Function
  0      : Time Zone Offset Disable
  1      : Time Zone Offset Enable

Press H For Help Menu
Press Q To Exit
```

- Enter “0” followed by Enter in figure 6.3.2.8.6 menu, it will disable Time zone offset for SERIAL.
- Enter “1” followed by Enter in figure 6.3.2.8.6 menu, it will enable Time zone offset for SERIAL.
- By default it is disabled for SERIAL.

6.3.2.9 “PWD” Command:

- Press “PWD” for User Password Change:
- By entering “PWD” followed by Enter you will get figure 6.3.2.9.1.

Fig 6.3.2.9.1: Enter Password

```
PWD

Press 'ESC' To Exit From Password Change Mode
Enter New Password[Max 10 Characters,Case Sensitive]:_
```

- Enter Password of maximum 10 character, more than 10 characters will give invalid entry.
- Password is case sensitive.

- If you enter in “PWD” window and if you want exit from that password change mode press ‘ESC’.
- Default Password is “masibus”.

6.3.2.10 “SD” Command:

- Press “SD” to set Default all Parameters:
- By entering “SD” followed by Enter, it will set all Parameters.

6.3.2.11 “L” Command:

- Press “L” to View Current all Parameters:
- By entering “L” followed by Enter you will get figure 6.3.2.11.1
- In Time and Date Display unit (DDU-TD) there will be no display type option.
- In Day Display unit (DDU-DY) there will be only one option of display blink status and other options Display type, date format, time format and leading zeroes are not available.

Fig 6.3.2.11.1: View List of Current Parameter for Time Display

```
L
*****
List of Current Parameters
*****
Baud Rate           :9600
Stop Bit            :1
Parity Bit          :None

IP Address           :192.168.100.032
Subnetmask           :255.255.255.000
Gateway             :192.168.100.001
Primary Server IP Address :192.168.100.153
Secondary Server IP Address :192.168.100.154
Query Interval Time[when Querying NTP server] :16
Secondary Server option for NTP :Enable

Current Display Intensity : 4 ( 25% of Full)

Display Type        :Time Display
Date Format          :DD/MM/YY
Time Format          :24 Hour Time Format
Leading Zeroes      :Enable

IRIG-B Type         :007/127

Time Zone Offset    :+05:30
Time Zone Offset For NTP :Enable
Time Zone Offset For IRIG-B :Enable
Time Zone Offset For SERIAL :Disable

Press H For Help Menu
Press Q To Exit
```

6.3.2.12 “CS” Command:

- Press “CS” to View Current all Parameters:
- By entering “CS” followed by Enter you will get figure 6.3.2.12.1

Fig 6.3.2.12.1: View Current Sync Information

```
CS

Current Sync Status : Not Sync

Press H For Help Menu
Press Q To Exit
```

- This Command will print Current Sync with information.

6.3.3 Important Points for Serial Configuration

- Digital Display Unit's Serial Configuration has timeout period of 2 minutes. If you do not press any character till 2 minutes, the session will be automatically closed with a message of Timeout, Session Closed.
- Commands are case insensitive, only Password is Case sensitive.

7. OPERATION INFORMATION

7.1 Operation as Time/Date Display

1. Insert the power cord into an appropriate connector inside the clock.
2. Upon Power up of DDU-TDC, starts displaying time/date from internal RTC. After synchronization with master clock, it will display the time/date of master device. DDU-TDC clock will start from 00:00:00, during first time PowerON& run on internal RTC until synchronizes with master clock. At every power ON for 5 Seconds all the segments on display will light up then it will display time.

NOTE: First power ON and synchronization is done in factory.

3. **RS232/485 Signal as Input:**

There is auto frame detection mode is given in DDU-TDC, so no switch selection is required. Connect a source of Serial Communication of GPS to the input serial connector of DDU-TDC. The synchronized time should appear on the display within 60 seconds of application of time code. If the time code signal is lost or disconnected, then DDU-TDC will continue to display time based on its internal RTC in unlock condition, until the time code signal is returned.

4. **IRIG-B TTL Signal as Input:**

Connect IRIG-B TTL as Input from master clock to the DDU-TDC. For IRIG-B TTL input there are two options available for configuration, one is IRIG-B 002/122 format and other is IRIG-B 007/127. In IRIG-B 002/122, there is no year information will be taken from IRIG-B, TTL Input, it takes year information from RTC or entered year information by manual Time/Date Settings. In IRIG-B 007/127, DDU Will Decode Year information from Input Source.

5. **IRIG-B Amplitude Modulated Signal as Input:**

Connect IRIG-B AM as Input from master clock to the DDU-TDC. As Described in IRIG-B TTL Input Signal, same thing will be applicable for IRIG-B Modulated signal. In IRIG-B 002/122 Format, there is no year information will be taken from IRIG-B, TTL Input, it takes year information from RTC or entered year information by manual Time/Date settings. In IRIG-B 007/127, DDU Will Decode Year information from Input Source.

6. **ETHERNET as Input:**

Connect the RJ-45 cross cable between Ethernet port of DDU-TDC & NTP Server. Ethernet Client settings for DDU-TDC will be done by two way, one is use Telnet and second way is by using serial configuration, check section 6.2 and 6.3.2.5 for configuration.

- Open the Telnet configuration window as explained in Section 6.2 of Configuration. Now Enter the I.P. address of NTP time source **Server [Primary and secondary server], MASK, Gateway, and Query interval time**. After configuration, close the Telnet window.
- DDU-TDC will send query to both the NTP servers (@ every **Query interval time**) for Time code.
- DDU-TDC checks the received time frames for with NTP stratum, stratum conveys accuracy of the time received.
- DDU-TDC then synchronizes to the server with lower value stratum.
- If both the time servers are providing the same stratum time DDU-TDC then prioritizes the primary server.
- In case where primary server is not reachable DDU-TDC synchronizes to secondary server and vice-versa.

7. Connect master clock Ethernet output to RJ-45 Ethernet connector of DDU-TDC. If the time code signal is lost or disconnected, then DDU-TDC will continue to display time based on its internal RTC with column LEDs blinking, until the time code signal is returned.

8. If the clock is unable to achieve a time code lock see the section entitled **Troubleshooting Tips**.

9. For Serial/Ethernet Communication time codes date must be encoded to the standard specification. These specifications are also supported by Masibus Master Clock systems [see **Communication Guidelines Section**].

7.1.1 Lock/Unlock Indication for Time/Date Display

- The colons of the clock display will flash if the time displayed is not locked to time code of GPS.
- When time code is present and decoded properly the colons will remain steady-on.
- DDU take decision of Lock /Unlock at every minute at 00 sec, but in NTP input it take decision on every set Query interval.
 - In case of Date Display colons will not blink but “dp” after 2nd and 4th digit will provide lock/unlock information.

7.1.2 AM/PM Indication for Time Display

- If the DDU-TDC is configured for a 12-hour time display mode an AM/PM indicator will appear in the top left corner of the display during the PM hours. You will find decimal point **ON** when clock will be in PM hours in 12 hr mode.

7.1.3 Display Format

- In DDU-TDC, have 3 option configurable
 1. Time Display
 2. Date Display
 3. Alternate Date & Time Display, which Display Both Time and Display at set alternate seconds, one by one. These Display settings can be done by Serial Configuration between 3 to 300 seconds.
- There are two Time Format selectable
 1. 12 hour format
 2. 24 hour format
- There are 3 Date format given for Display
 1. DD/MM/YY
 2. MM/DD/YY
 3. YY/MM/DD
- There is a provision for Leading Zero Enable / Disable option for Display
- As Described above are all options for Time/Date Display and for Day Display it will show option to enable or disable the blinking of day display in unlocking condition.

7.1.5 Serial Port Settings

- In DDU-TDC, for serial port, there are 6 Baud rate given configurable.
 1. 4800
 2. 9600
 3. 19200
 4. 38400
 5. 57600
 6. 115200
- Parity Bit can be configurable as Even ,Odd or None
- Stop Bit can be configurable as 1 Stop bit or 2 Stop bit
- All settings can be set by Serial Configuration as shown in section 6.3

7.1.6 Time Zone Offset Settings

- In DDU-TDC, Configurable Time Zone option is given.
- User Can Set Standard Time zone offset between +12:00 to -12:00.
- User can also enable Time Zone for any specified input ,e.g., if user want to add Time Zone in only NMEA serial input,then user have to enable Time zone for Serial as shown in section 6.3.2.8 and disable other two option of IRIG-B and NTP Input
- All settings can be set by Serial Configuration as shown in section 6.3.2.8

7.1.7 Manual Time Settings

- In DDU-TDC, if there is no Time frame input available, at that time user can enter Manually Time and Date, Manual Time set can be done by using Serial configurations shown in section 6.3.2.5.

7.1.8 Time Frame Input Priority

- In DDU-TDC, Time Frame Input Priority is given for redundancy,
- Higher to lower priority areas per below list.
 1. Serial(NMEA,NGTS,T-FORMAT)
 2. IRIG-B TTL
 3. IRIG-B MODULATED
 4. NTP (Primary Server)
 5. NTP (Secondary Server)
- First priority is given to Serial , so if user had connected more than 2 or all Time Frame Inputs , DDU-TDC will take Time from First Serial and in case of non-availability of Serial, it will shifts on second highest priority, and follows above sequence.
- If DDU-TDC is Sync with High Priority input, in case the High Priority input will be removed or not available at that time it Blinks Colon for 1 minute [Other than NTP, For NTP it will not wait for 00 but will stay Unlock for Query Interval Time], and shift on lower priority inputs, this sequence of colon blink is followed by every time when DDU-TDC shift from Higher to Lower Priority Input.
- In case of if device Shifts from lower to higher priority input that time colon stays steady on does not blinks.
- Every time DDU tries for Higher priority inputs, if it is working on other than serial input

8. COMMUNICATION GUIDELINES

8.1 Serial Time Frame Input

8.1.1 NMEA-0183[RMC] Format

The \$GPRMC sentence contains time and date of position fix, speed and course information. The following examples show the contents of a typical RMC sentence:

The settings for this serial format is 9600, 8, N, 1.

The full data message of this format shall consist of data fields as follows:

Table 9: NMEA-0183[RMC] Format

Field	Example	Comments
Sentence ID	\$GPRMC,	
UTC Time	130525.00,	hhmmss.ss,
Status	A,	A = Valid/V = Invalid,
Latitude	4250.5589,	ddmm.mmmm,
N/S Indicator	S,	N = North/S = South,
Longitude	14518.5084,	dddmm.mmmm,
E/W Indicator	E,	E = East/W = West,
Speed over ground	000.1,	Knots,
Course over ground	245.0,	Degrees,
UTC Date	291206,	DDMMYY,
Magnetic variation	,	Degrees,
Magnetic variation	,	E = East/W = West,
Checksum	*25	*CC
Terminator	<CR><LF>	Non-printing characters

8.1.2 NGTS Format

The settings for this format are programmable. The full data message of NGTS format shall consist of 14 printable characters and a concluding CRLF as follows:

Table 10: NGTS Format

Description	Number of Characters	Character Position	Range of Value/Information
Code Identification	1	1	Capital T
Year in Century	2	2,3	0 to 99
Month	2	4,5	1 to 12
Day of Month	2	6,7	1 to 31
Day of Week	1	8	1 to 7
Hours	2	9,10	0 to 23
Minutes	2	11,12	0 to 59
GMT Marker	1	13	0 or 1
Validity Marker	1	14	0 or 1
CRLF	2	15,16	Non-printing character

The transmission sequence shall be from the Code Identification character through to the CRLF with the most significant digits being transmitted first.

The message shall become automatically available at one second prior to the clock minute epoch.

8.1.2 T-Format

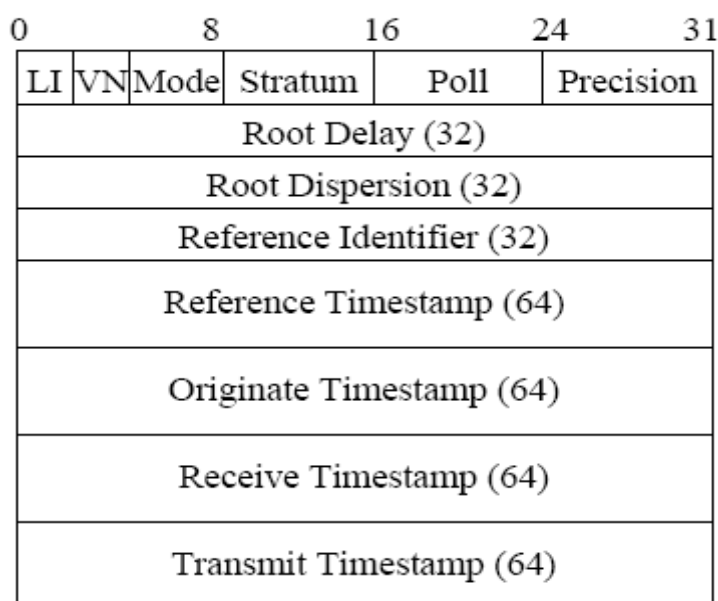
The settings for this format are programmable. The full data message of T-format shall consist of 21 printable characters with a concluding CRLF as follows:

Table 11: T-Format

Description	Number of Characters	Character Position	Range of Value/Information
Code Identification	1	1	Capital T
Divider	1	2	:
Year in Century	2	3,4	0 to 99
Divider	1	5	:
Month	2	6,7	1 to 12
Divider	1	8	:
Day of Month	2	9,10	1 to 31
Divider	1	11	:
Day of Week	1	12	1 to 7
Divider	1	13	:
Hours	2	14,15	0 to 23
Divider	1	16	:
Minutes	2	17,18	0 to 59
Divider	1	19	:
Seconds	2	20,21	0 to 59
Divider	1	22	:
GMT Marker	1	23	0 or 1
Validity Marker	1	24	0 or 1
CRLF	2	25,26	Non printing character

8.2 NTP Packet format:

Fig 8.1: NTP packet header format



NTP Message Header

Following is the description of each parameter in NTP Packet:

Leap 2-bit integer warning of an impending leap second to be inserted or Deleted in the last minute of the current month, coded as follows:
 0 no warning
 1 last minute of the day has 61 seconds
 2 last minute of the day has 59 seconds
 3 alarm condition (the clock has never been synchronized)

Version. 3-bit integer representing the NTP version number.

Mode 3-bit integer representing the mode, with values defined as follows:
 4 server

Peer clock stratum 8-bit integer representing the stratum, with values defined as follows:
 0 unspecified or invalid
 1 primary server (e.g., equipped with a GPS receiver)
 2-255 secondary server (via NTP)

Polling interval can be set either 16 second or 32 second; it is representing the maximum interval between successive Queries.

Clock precision 8-bit signed integer representing the precision of the system clock. GPS is having clock precision of 1 us (1 microseconds = 0.000001s)

Root Delay Total roundtrip delay to the reference clock, in NTP short format.

Root Dispersion Total dispersion to the reference clock, in NTP short format.

Reference clock id. 32-bit code identifying the particular server or reference clock.
 GPS Global Positioning System

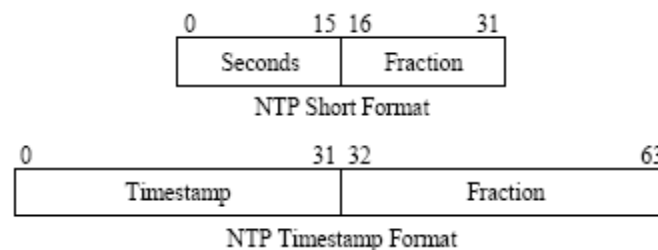
Reference clock update time Time when the system clock was last set or corrected, in NTP timestamp format.

Originate timestamp Time at the client when the request departed for the server, in NTP timestamp format.

Receive timestamp Time at the server when the request arrived from the client, in NTP timestamp format.

Transmit timestamp Time at the server when the response left for the client, in NTP timestamp format.

Fig 8.2: NTP Timestamp Format



Follow www.ntp.org for more details for NTP Time Format and Client Settings...

8.3 The IRIG-B Signal

The IRIG-B format is a serial format based on a message frame per second which is Co-ordinated with the synchronized 1pps time output pulse. There are two alternative forms of output, a dc level shift output, and a modulated output. The modulation frequency is 1 KHz.

For each form of output there are three output codes:-

- A Reference Mark
- A logical 1
- A logical 0

For IRIG-B, each one of these codes is 10 ms long, which is 10 cycles for the modulated format. There are 100 possible codes per time frame, although not all of them are used. The code sequence is shown in Table 1, and the waveforms shown in Figure 2. The day number starts at 1 on the first of January.

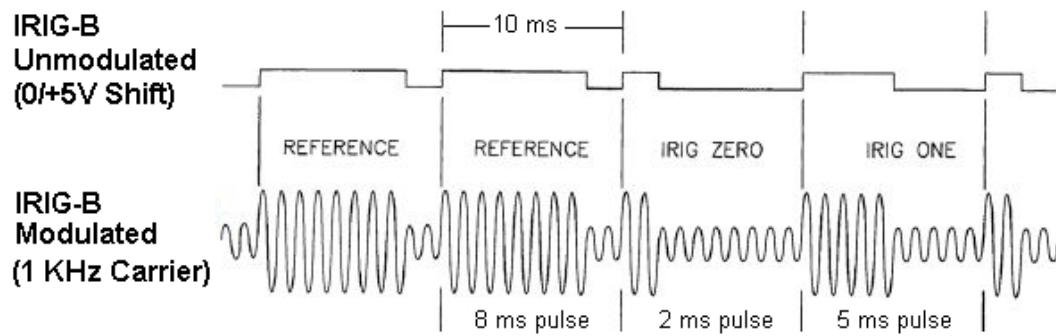
The output voltage of the modulated waveform is 3 V peak to peak into a 50ohms load. The dc level output is TTL standard and the rising edge of the pulse is "On Time". 1 kHz modulated IRIG-B signal is connected to BNC on the rear panel of the device. IRIG-B TTL level signal is connected to a BNC connector on the rear panel of the device.

Table 12: IRIG B Code Sequence

Bit	Weight	Meaning	Bit	Weight	Meaning	Bit	Weight	Meaning	Bit	Weight	Meaning	Bit	Weight	Meaning
00	P _r	Frame marker	20	1	Hours (0–23)	40	100	Day of year (1–366)	60	0	Unused, available for Control Functions	80	1	Straight Binary Seconds (0–86399)
01	1	Seconds (00–59)	21	2		41	200	Unused	61	0		81	2	
02	2		22	4		42	0		62	0		82	4	
03	4		23	8		43	0		63	0		83	8	
04	8		24	0		44	0	Tenths of seconds (0.0–0.9)	64	0		84	16	
05	0	Unused	25	10	Unused	45	0.1		65	0		85	32	
06	10		26	20		46	0.2		66	0		86	64	
07	20		27	0		47	0.4		67	0		87	128	
08	40		28	0		48	0.8		68	0		88	256	
09	P ₁	Position identifier	29	P ₃	Position identifier	49	P ₅	Position identifier	69	P ₇	Position identifier	89	P ₉	
10	1	Minutes (00–59)	30	1	Day of year (1–366)	50	1	Year (00–99)	70	0	Unused, available for Control Functions	90	512	
11	2		31	2		51	2		71	0		91	1024	
12	4		32	4		52	4		72	0		92	2048	
13	8		33	8		53	8		73	0		93	4096	
14	0		34	0		54	0		74	0		94	8192	
15	10	Unused	35	10	Unused	55	10		75	0		95	16384	
16	20		36	20		56	20		76	0		96	32768	
17	40		37	40		57	40		77	0		97	65536	
18	0		38	80		58	80		78	0		98	0	Unused
19	P ₂	Position identifier	39	P ₄	Position identifier	59	P ₆	Position identifier	79	P ₈	Position identifier	99	P ₀	Position identifier

Note**Bit not 45 -48 and 80 to 97 we are supporting, Tenths of seconds and Straight Binary Seconds.

Fig 8.3: IRIG-B Code Structure



9. TROUBLESHOOTING TIPS

If the operating display does not appear after turning on the controller's power, follow the measures in the procedure below.

If a problem appears complicated, contact our sales representative.

IMPORTANT

Take note of the parameter settings when asking the vendor for repair.

Time Code decoding problems can include any of the following:

- No Time Code present
- Ground loops or other interference such as coupling from nearby AC power lines, bad/intermittent cables, wiring or connectors incorrect wiring connection for unbalanced or balanced input signals
- Out of range signal level that is too high or too low
- Fluctuating signal level
- A signal that is distorted
- Excessive loading on the Time Code line
- A Time Code that your clock does not support

Problem: Clock is unable to "Lock" to time code after 2 minutes.

Possible reasons/solutions:

1. Close the TELNET configuration window, if DDU-TDC is under configuration over TELNET Protocol.
2. Use **Cross** CAT5 or equivalent cable for synchronization of DDU-TDC with Master Clock / Desktop Computer.
3. Use **Straight** communication cable for RS-232 / 485 for DDU-TDC synchronization with Master clock.
4. Check the connectivity of DDU-TDC in LAN using ping command. (if Ethernet as input)
5. Check all the input signals voltage level for DDU-TDC synchronization. E.g. IRIG-B TTL/PWM – Varies between 1.4 – 2.4V DC, IRIG-B AM/Modulated – Varies between 0.5 – 0.6V AC, RS232 – approx. 10.4 V DC, RS-485 – Varies between 0-5 V DC. Here these voltages are measured with multi meter. This is not the exact voltage level of any signal but this gives ruff idea about signal presence on port.
6. The time code being fed to the DDU-TDC must be recognized format. Verify that your time code source is providing one of the time code formats that the DDU-TDC can decode& match its frame length as per standard.

Problem: Not displaying the correct local time and/or date.

Possible reasons/solutions:

1. For Ethernet: Required time zone offset needs to be configuring using TELNET Protocol. For Detail description refer section 6.2.2.
For Serial communication: NGTS & T format supports IST only.
In case of NMEA (\$GPRMC) frame format IST time user need to enable time zone offset for Serial.
If LED in DDU-TDC blinks after the time zone configuration done in DDU-TDC, reset the power of the DDU-TDC is must for effective synchronization.
2. Your Time Code source is not providing the time and/or date that you expect. Contact the individual responsible for the Time Code source for more information

PROBLEM: UTC time and/or date is incorrect.

There are several potential failure points:

- Invalid, intermittent or missing Time Code source
 - Date/year overwrite function for non-date encoded Time Code may be configured improperly
 - Battery may need to be replaced
 - A local Time Zone configuration not set correctly
1. Verify that your Time Code source is generating the UTC referenced time and date that you expect and that this Time Code format is at an acceptable signal level and quality that can be detected at the client side (i.e. DDU-TDC input).
 2. If you are using in-house Time Code, verify that the Time Code source is locked to the GPS satellite system for UTC Time Code. Time Code sources such as SMPTE Time Code that is fed via a broadcast satellite will have a delay due to the satellite transmission. Your clock cannot compensate for satellite transmission delays.
 3. If you are using a Time Code source from another vendor, be certain your Time Code contains encoded year/date information to the IEEE 1344 (IRIG-B).
 4. If your Time Code source is providing DST adjustments, these functions must be checked if it is applicable or not at that time & place.
 5. If your Time Code source is providing Time Zone offsets these functions must be disabled in your DDU-TDC in order to eliminate double offsets.
 6. Check Configured IRIG-B 002/122 or IRIG-B 007/127 Format, If you have configured IRIG-B 002/122 Format , then it will not decode Year in case of IRIG-B Frame input both TTL and Modulated input it shows previously stored Year information, so for IRIG-B 002/122 , manually Set time/Date.

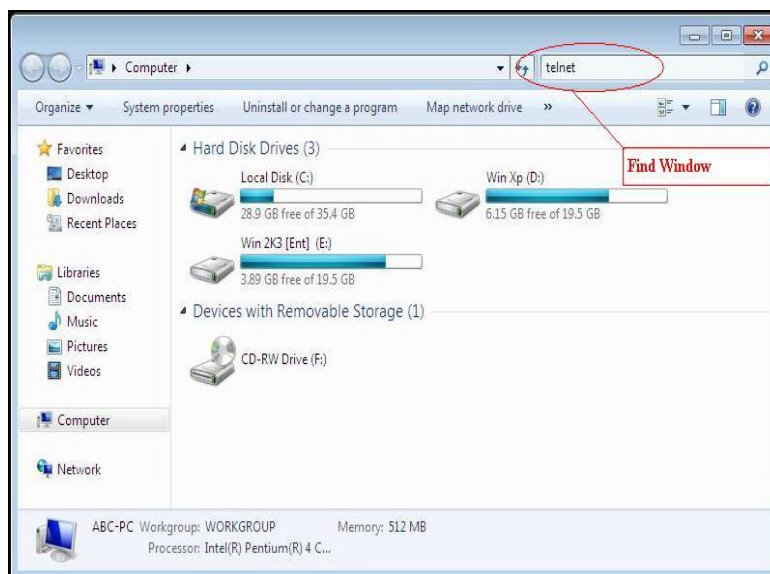
PROBLEM: Clock is unable to find NTP reference.

Possible reasons/solutions:

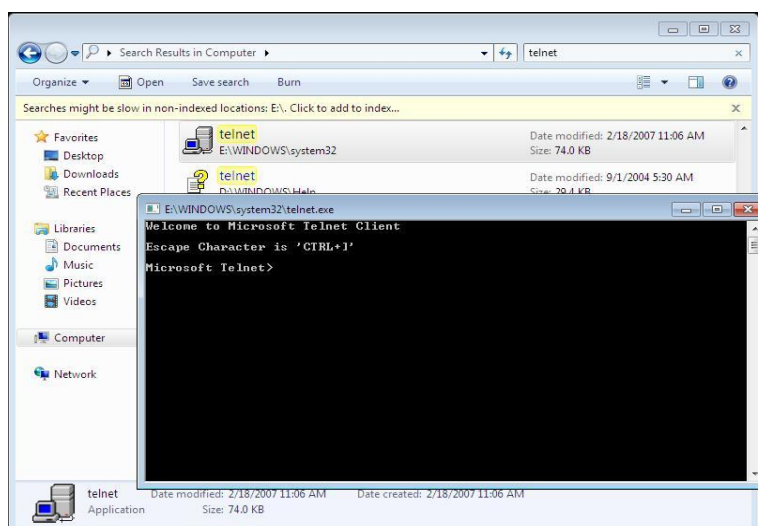
1. Verify that the NTP server(s) specified are reachable, communicating, and are not flagging their reported time as invalid.
2. Verify that a gateway/router/firewall has been configured that allows the clock to communicate outside of its local network.
3. Verify that the IP address configured for the clock is correct. If you manually enter an IP address that already exists on the network, this will create an IP address conflict. Obtain a new IP address for the clock or resolve the duplication. Consult your IT/Network Administrator for a list/range of available IP addresses to avoid IP address conflicts.
5. Verify that the clock is connected to the Ethernet LAN.
6. Verify that all network cables, hubs, etc. are in proper working order. Be sure that Ethernet crossover "patch cables" are not being used where inappropriate.

TELNET Configuration for WINDOWS 7:

If TELNET window is not opening in windows-7 Operating System, then go to My Computer →Find window→ write TELNET as shown in below Picture.



By Pressing enter you can see the TELNET file. By double clicking on that TELNET file it will open new window as shown in below figure.



If these troubleshooting tips do not solve your problem then, please contact technical support at either nearest area office or Main Head Officeas given on the first page.

10. REVISION HISTORY

Following Changes added in m06om401-02 compared to m06om401-01.

1. Company name & Logo are updated.

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