masibus®
A Sonepar Company

MC-2

DDU-24

DDU-26

DDU-44

DDU-46

AC/ DC · 866 MHZ · RS-485 · P⏻E · IP65 · CLEAN ROOM · GMP · RoHS

NTP, PoE and Wireless Clock System

MC-2
Wireless Master Clock

DDU-24/26
DDU-44/46
NTP, PoE and Wireless Slave Clock

Masibus Wireless Clock System MC-2 Master Clock and DDU-24/26, DDU-44/46 Slave Clock is a perfect solution for a wide range of applications where accurate, synchronized time is required over wireless. It displays parameters like Time and Date.

Wireless Clock System eliminates wiring and reduces installation cost and also allows a retrofitting of an existing installation in a convenient way. Each clock can work as Slave cum repeater that helps to extend the network range. The Wireless system allows multiple Slave clocks to work on same/multiple frequency range and can retransmit without interfering with other wireless products.

Frequency hopping technology is available for error free communication in case of interference from some wireless device on some particular communication frequency.

Masibus Wireless Clock System also has more options of wired RS232 or RS485 Connection and NTP other than RF wireless connection to sync with GPS Master Clock.

MC-2 and DDU-24/26, DDU-44/46 works on Time protocols like (NGTS, NMEA and T-Formats) for wired Connection.

DDU-24/26, DDU-44/46 also available with NTP [Network Time Protocol] with PoE [Power Over Ethernet] option.

The DDU-24/26, DDU-44/46 has built-in Battery backed RTC which maintains time in case of loss of power and communication break.

DDU-24/26, DDU-44/46 Slave Clock is specially designed with SS faceplates, Modular wall mounting compatible for Pharma & Clean room requirement. The rugged Mild Steel case with Front Soft Steel makes DDU-24/26, DDU-44/46 ideal for demanding industrial environments and elegant look. Flush LED display of DDU-24/26, DDU-44/46 offers a wide angle viewing. Time and Date Display are available in Flush Mount, Panel Mount & Wall mount versions.

DDU-24/26-XP, DDU-44/46-XP is for use in Zone 1 and 2 of Gas group IIA and IIB Hazardous areas. The enclosure is also IP-65 certified.

MC-2 Master Clock is designed in ABS Enclosure with Wall Mount or Table Top provision. Can be provided with FLP Enclousure on requirment

Features

MC-2
- Receives automatic time from network of GPS satellites
- Transmits the time to clocks through RF or Serial
- Synchronization of Server time system through RS232/ RS485
- 6 digit 0.56" (14mm) LED Display
- Status LED indications
- Compact ABS plastic Enclosure along with Antenna
- Table-top or Wall-mount option

DDU-24/ 26 or DDU-44/ 46
- 4 digit, 2.3" (57mm), Large LED Display for DDU-24
  4" (100 mm), Large LED Display for DDU-44
  6 digit, 2.3" (57 mm), Large LED Display for DDU-26
  4" (100 mm), Large LED Display for DDU-46
- Best suited for clean room applications
- Each clock can act as Repeater to extent network range
- Works in stand-alone mode if network fails
- Wall Mount, Panel Mount or Flush mount option
- DDU-24/26-XP, DDU-44/46-XP is also available in Ex-proof Enclosure for gas group IIA and IIB (IP65)
- Optional NTP [LAN Interface] with IEEE 802.3af compliant PoE
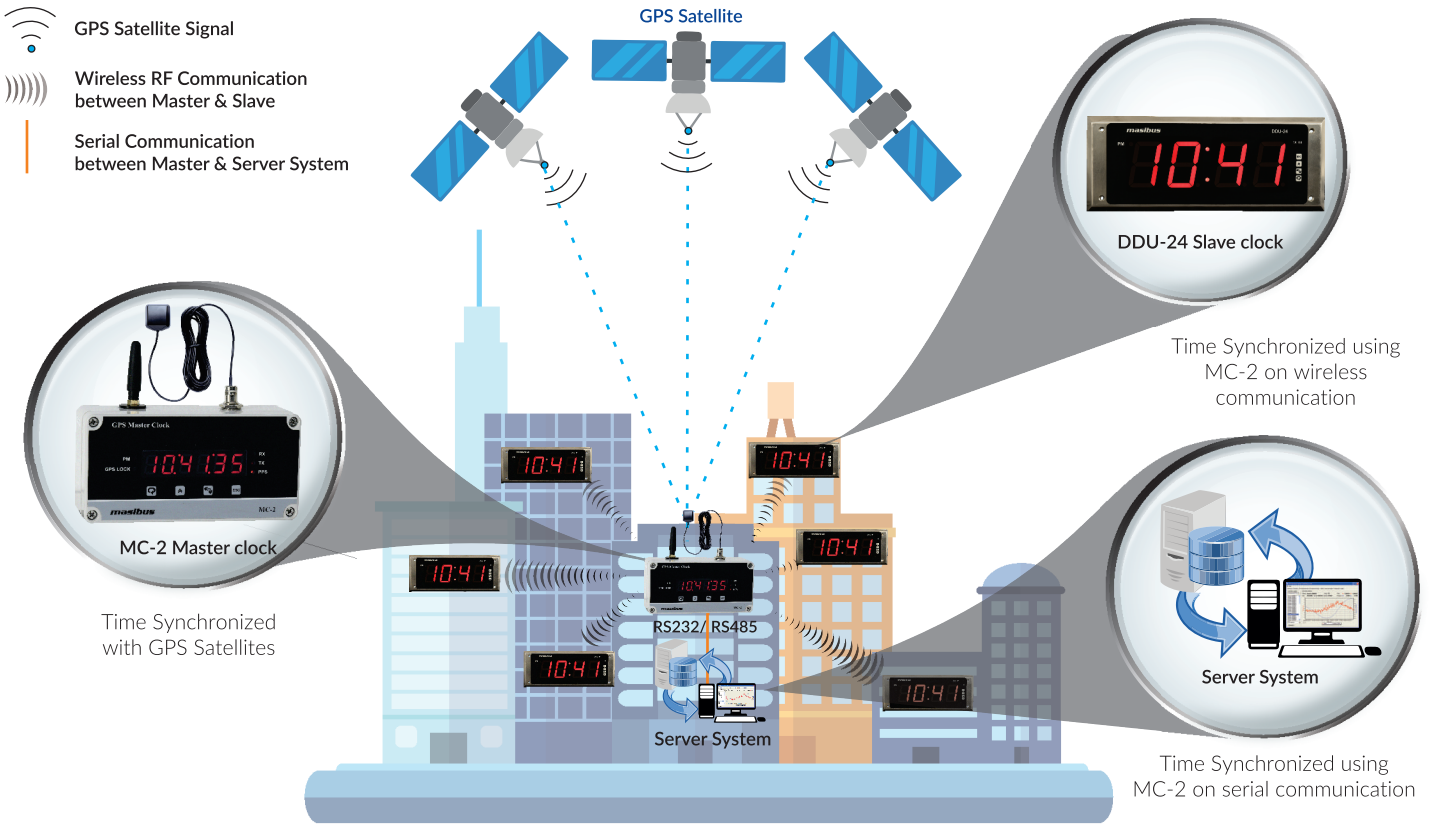
MC-2 and DDU-24/ 26, DDU-44/ 46
- Option to communicate on RF(866 MHz Freq.) or Serial
- Use of unlimited slave clocks within transmitter's range
- Multiple serial time frame Inputs
  - NMEA-0183[RMC] / NGTS/ T-Format
- Retains time during loss of power/time code
- Manual Time Setting(In case of GPS Failure)
- International Time Zone option
- 12 Hour and 24 Hour Time Format
- Time and Date Display (Front keypad selectable)
- Communication loss indication
- Universal Power Supply
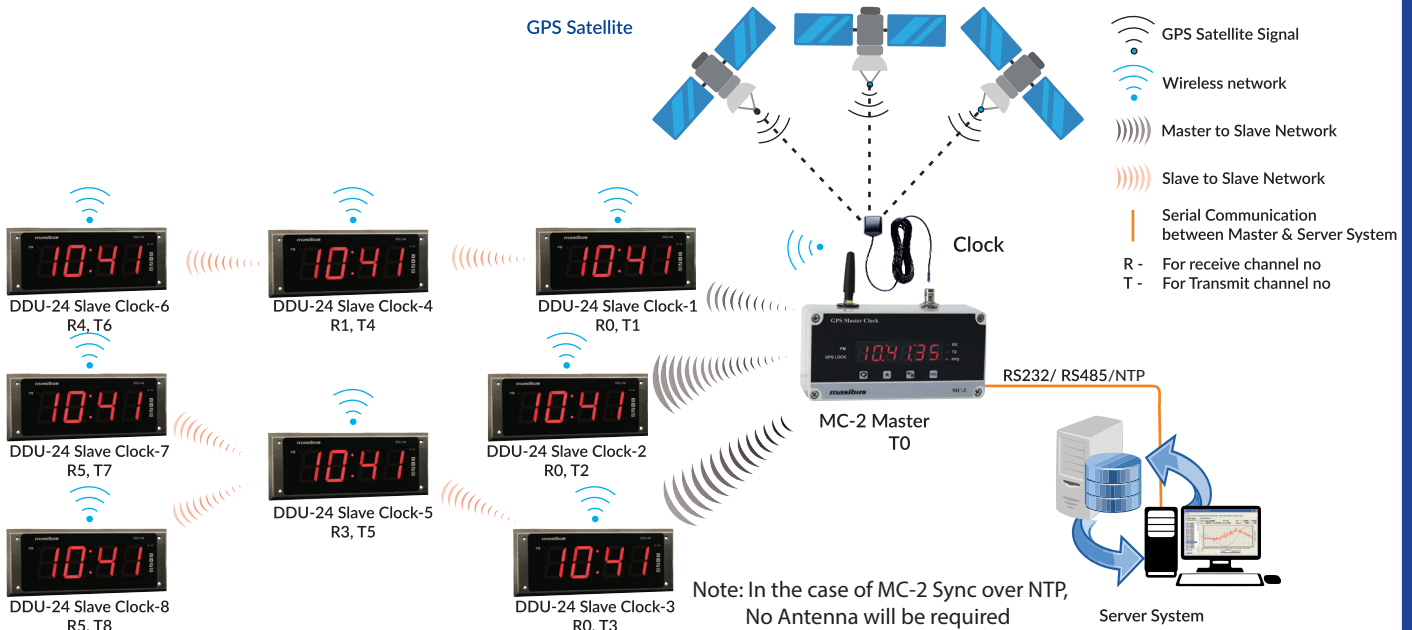
Application
- Synchronization with GPS System in
  - Pharmaceutical Industry and Process Industry
  - Factory/Offices/Warehouse/Canteen/Clean room
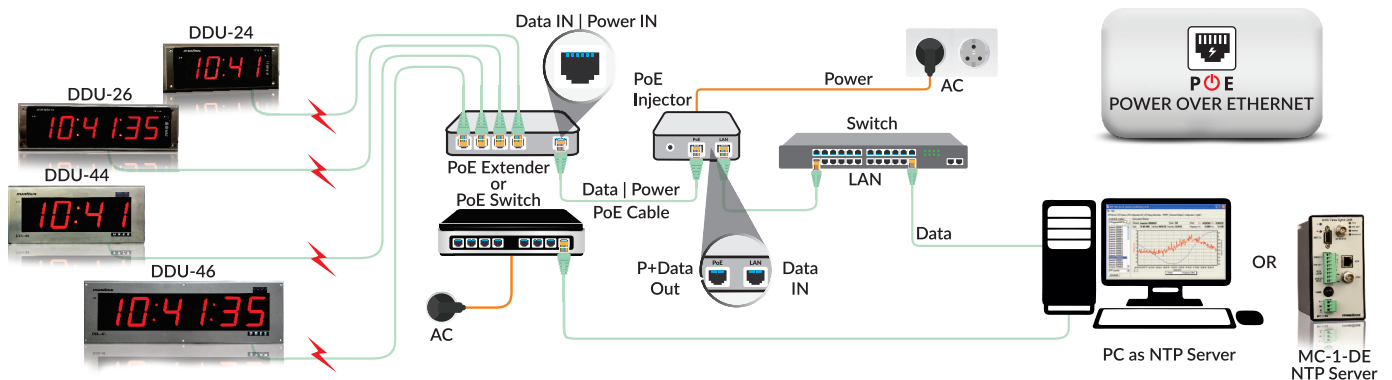 - School/College/Healthcare units[hospital, Laboratory]

APPLICATION DIAGRAM:

Wireless Master Slave Communication

GPS Satellite Signal

Wireless RF Communication
between Master & Slave

Serial Communication
between Master & Server System

GPS Satellite

DDU-24 Slave clock

Time Synchronized using
MC-2 on wireless
communication

MC-2 Master clock

Time Synchronized
with GPS Satellites

RS232/ RS485

Server System

Server System

Time Synchronized using
MC-2 on serial communication

Wireless Master Slave with Slave Retransmission

GPS Satellite

GPS Satellite Signal

Wireless network

Master to Slave Network

Slave to Slave Network

Serial Communication
between Master & Server System

R -   For receive channel no
T -   For Transmit channel no

DDU-24 Slave Clock-6
R4, T6

DDU-24 Slave Clock-4
R1, T4

DDU-24 Slave Clock-1
R0, T1

Clock

DDU-24 Slave Clock-7
R5, T7

DDU-24 Slave Clock-5
R3, T5

DDU-24 Slave Clock-2
R0, T2

MC-2 Master
T0

RS232/ RS485/NTP

DDU-24 Slave Clock-8
R5, T8

DDU-24 Slave Clock-3
R0, T3

Note: In the case of MC-2 Sync over NTP,
No Antenna will be required

Server System

DDU 24/26 or DDU 44/46 Wireless & NTP PoE Synchronized Slave Clocks

DDU-24

Data IN | Power IN

DDU-26

PoE
Injector

Power

AC

Switch

P O E
POWER OVER ETHERNET

DDU-44

PoE Extender
or
PoE Switch

Data | Power
PoE Cable

LAN

DDU-46

Data

P+Data
Out

Data
IN

OR

AC

PC as NTP Server

MC-1-DE
NTP Server

APPLICATION DIAGRAM:

Specifications	MC-2 (Master Clock)	DDU-24/44 (Slave Clock)	DDU-26/46 (Slave Clock)
Display			
No of Digit	Six	Four	Six
Digit Height	0.56"(14mm)	2.3"(57mm) for DDU-24/26 4"(100mm) for DDU-44/46	
Type of Display		LED	
Display Color		RED	
Display Format	Time: HH:MM:SS Date: DD.MM.YY/ MM.DD.YY/ YY.MM.DD	Time: HH:MM Date: DD.MM / MM.DD	Time: HH:MM:SS Date: DD.MM.YY/ MM.DD.YY/ YY.MM.DD
12/24 Hour Mode		✓	
AM/PM Indication		✓	
International Time Zone		✓	
User Interface			
Push Button Switch (For Configuration)		✓	
Password Protected		✓	
RF Wireless Communication			
Wireless frequency		866 MHz	
Antenna	3 dbi Rubber-duct External Antenna	Integrated antenna	
Receiver Sensitivity	-120 dBm	-120 dBm	
Transmitter Power	+30 dBm	+20 dBm	
Distance Range (Approx.)	600m Line of site;100meters with obstacles, 50 meters with obstacles for slave to slave(depends on site conditions)		
Serial Communication (RS232 / RS485)			
Protocols		NMEA-0183[RMC] / NGTS/ T–Format	
Baud Rate	4800/9600/19200/38400	9600/19200	
Terminal		4 pin, Plug-in type Connector; Wire: 2.5mm^2	
Power Supply			
Power		AC: 85-265V, 50/60 Hz, 1Ph & DC: 100-300 V	
Power Consumption	<2W	5W	
Terminal		3 pin, Plug-in type Connector	
Cable/Conductor Size		2.5mm^2	
Environmental			
Operating Temperature		0 °C to +55 °C	
Storage Temperature		-20 °C to +80 °C	
Humidity		20-95%RH(Non-Condensing)	
Physical			
Enclosure Protection		IP20	
Size [H x W x D] [in mm]	80 x 160 x 55	118 x 298 x 54 for DDU-24 175 x 460 x 70 for DDU-44(MS Enclosure) 215 x 500 x 79 for DDU-44(SS Front)	118 x 404 x 54 for DDU-26 175 x 665 x 70 for DDU-46(MS Enclosure) 215 x 705 x 79 for DDU-46(SS Front)
Weight (approx.)	0.4Kg	1.5Kg for DDU-24 2.8 Kg for DDU-44(MS Enclosure) 3.0 Kg for DDU-44(SS Front)	1.9 Kg for DDU-26 4.0 Kg for DDU-46(MS Enclosure) 4.1 Kg for DDU-46(SS Front)
Material	ABS	Front plate (SS) and Enclosure Mild Steel for DDU-24/26, DDU-44/46 Mild Steel for DDU-44/46	
Mounting	Wall Mount/ Table Top	Wall Mount/ Panel/ Flush Mount	

GPS Receiver for MC-2		Optional NTP [LAN Interface] for Slave Clocks	
Timing Accuracy	< 15 ns with GPS Receiver (Receiver is locked on fixed position)	Time Sync Protocol	NTP V3, UDP, Telnet
Positioning Accuracy	< 10m	Internet Protocol	IP V4
Input Frequency	1575.42 MHz L1 C/A code	Mode	Client
Tracking	12 parallel channels	Protocol Time Format	UTC
Acquisition Time	Hot Start < 5 sec Warm Start < 38 sec Cold Start < 45 sec	Physical Interface	RJ45, 10/ 100 Mbps

GPS Antenna for MC-2		PoE [Power Over Ethernet] for NTP Slave Clocks	
Type	Active L1, GPS, 28 dB gain	Standard	IEEE 802.3af
Antenna Cable	RG174 (5 meters supplied with unit)#	Input Supply Voltage	48VDC[36VDCmin - 57VDCmax]
Operating Temperature	-40 to +85 °C	Power Consumption	<6W
Coverage	360°C Omni-directional	Terminal	100BaseT, RJ45
Ingress Protection	IP67	Cable	CAT 5
Weight (approx.)	60 g		

Isolation (Withstanding voltage)
Between primary terminals* and secondary terminals**: At least 1500 V AC for 1 minute
Between primary terminals* and grounding terminal: At least 1500 V AC for 1 minute
Between grounding terminal and secondary terminals**: At least 1500 V AC for 1 minute

* Primary terminals indicate power terminals
** Secondary terminals indicate RS232/485.
Insulation resistance: 20MΩ or more @ 500 V DC between power terminals and grounding terminal
\# For any different type of antenna cable and length contact HO

DDU-24-XP / DDU-26-XP

Physical		Mounting	
Size [H x W x D] [in mm]	180 x 350 x 85 for DDU-24 180 x 455 x 85 for DDU-26	Mounting	Wall mounting with the help of 4 NOS bolts of size M8
Enclosure	Flameproof (Explosion proof) Ex-d	Cable Entry Size/no	3/4" ET-2 Nos
Area Classification	Zone 1&2	Plug Details	1 Blind Plug & 1 DC Cable gland 3/4''ET
Gas Group	IIA,IIB		
Enclosure Protection	IP65		
Weight (approx.)	5.4Kg for DDU-24/ 6.7Kg for DDU-26		

Ordering Code for MC-2

Model		Mounting		Output Type 1		Output Type 2		Input Type
MC-2	X		X		X		X	
	W	Wall	N	None	N	None	1	GPS
	T	Table Top	1	Wireless(RF)	1	RS 232	2	Sync over RS 485
					2	RS 485	3	Sync over NTP

Note : For FLP Enclosure in MC-2 contact factory.

: In the case of MC-2 Sync over NTP, Output type 2 will not be applicable

Ordering Code for DDU

Model	Display size		No of Digits		Mounting		Input Type 1		Input Type 2	
DDU	X		X		X		X		X	
	2	2.3"	4	4 digits	W	Wall (IP 20)	N	None	N	None
	4	4"	6	6 digits	F*	Flush Mount	1	Wireless(RF)	1	RS 232
					R**	Rack/Panel Mount (IP20)	2	NTP	2	RS 485
					XP	Flame Proof (IP65)	3	NTP + PoE		
					XPSS	Flame Proof with SS Box				
					XPSF	Flame Proof with SS Front Plate				

Note: *Flush Mounting will have only front SS Plate, other part of Enclosure will be MS Material.
DDU-44/46 is available with SS (SS-304) Front Plate without Conceal Box with wall mount key holes.
**Panel Mount Enclouser available in DDU-44/46 only

DDU-26-XP
Time Display Unit
Display Height: 57mm
Display Color: Red
Mounting: Wall/ Flush/ FLP
Protection: IP20/ IP65(XP)
Communication: Serial/Wireless/ NTP

DDU-24-XP
Time Display Unit
Display Height: 57mm
Display Color: Red
Mounting: Wall/ Flush/ FLP
Protection: IP20/ IP65(XP)
Communication: Serial/Wireless/ NTP

MC-2
Master Clock
Display Height: 14 mm
Display Color: Red
Mounting: Wall/ Table top
Protection: IP20
Communication: Serial/ Wireless

DDU-44
Time Display Unit
Display Height: 100mm
Display Color: Red
Mounting: Wall/ Panel/ Flush
Protection: IP20
Communication: Serial/ Wireless/ NTP

DDU-46
Time Display Unit
Display Height: 100mm
Display Color: Red
Mounting: Wall/ Panel/ Flush
Protection: IP20
Communication: Serial/ Wireless/ NTP