

**Name of work:-SITC of 02 Nos of GPS Based Master clock & 40 Slave Clocks (Driven by Master clock) along with 06 Nos of Stand Alone Digital Clock at LBSI Airport Varanasi.**

BOQ of work:-

Sr.No	Item	Description	Quantity	Remark
1.	GPS based Master Digital Clock.	GPS BASED	02 Nos	Master Clock in Main & S/By Setup.
2.	Slave Clock	Driven By master	40 Nos	
3.	Cat-6 Cable		2500 mtr	For Various master Slave set up
4.	8 Port Switch		06 Nos	
5	Stand Alone GPS Based Digital Clock		06 Nos	
6	Warranty		03 Years	

Slave will be driven by Master Clock Panel in Main & Stand by Configuration.30% (12)of Slave clock will be in Direct connection with Master with Status rest of 70% allowed in Series with indication in Master panel. SITC include cabling work from Master to slave with proper Tagging & Color code.

**Master clock panel will be located in 2<sup>nd</sup> Floor Equipment room most of slave driven by master will be located in 1<sup>st</sup> ,2<sup>nd</sup> & Grnd Floor ,except Single Tower location (7<sup>th</sup> Floor ~100ft max cable length).**

### **Technical Specification for GPS Clock**

<b>S.No.</b>	<b>Parameter</b>	<b>Requirement</b>
	<u>MASTER CLOCK</u>	
1	RTC accuracy	1sec/month
2	Communication with slave	Full Duplex
3	Standard Size of display	4 Inch
4	Configuration	Hot Standby/Redundant
5	Time update mode	Through GPS connectivity/LAN Server
6	Diagnostic software to identify faulty port or connectivity	In-built
7	Diagnostic method for testing different communication ports	In-built
8	Synchronised output for various interfaces	RF, RS-232, RS485,TCP/IP/NTP etc.
9	Viewing angle	120degree/60 degree
10	Viewing distance	Upto 40 mtrs
11	Illumination intensity	Indoor
12	LED type/Display mode	Diffused & Bright of Nichia / 7 segment
13	No. of digits	06
14	Time setting	Provision for manual time setting
15	Time Display	HH:MM:SS
16	Flashing colon	With dots between HH MM SS
17	Display	Single side
18	Display format	12/24 Hours format selectable
19	Display Colour	Bright Red
20	Time Zone mode	UTC/ IST time zone
21	Input Supply	180-260 VAC,1 phase 50 Hz
22	Multiport for output RS232/RS485	1 to 16 port , LAN -1
23	MS sheet metal/Galvanized structure	At least 16 SWG ,UV stabilised polycarbonate sheet of minimum 03 mm thickness.
24	Power Consumption	<10W
25	Operating Temperature	0 deg to 50 deg
26	Humidity	95% Non condensing
27	Mounting Requirement	19" rack mountable version
28	Slave Driving capacity	Any size of digital clock 50 nos.
29	Slave Driver	Lines with capacity to drive minimum 40 no. of slave clocks within 1000m
30	Synchronisation with GPS	Every minute
31	Protection circuit	Over voltage, under voltage, short circuiting, surge ,high voltage
32	Certification	ISO 9001:2015, ISO 14001:2015

S.No.	Parameter	Requirement
	<u>SLAVE CLOCK</u>	
1	Controlled by	Master clock
2	Communication with master	Full Duplex
3	Standard Size of display	16 Inch
4	Manual time setting	Provision for manual time setting required
5	Use of own RTC	Only In case of loss of synchronisation with master
6	Multiport for output	1 o/p port, RS-232, RS485, TCP/IP/NTP / LAN -1
7	Viewing angle	120 degree /60 degree
8	LED type /Viewing distance	Diffused, Bright of Nichia/ Upto 40 mtrs
9	Display Brightness control	External Manual control brightness
10	Display mode	Switch selectable GMT/UTC
11	Driving Distance from master	Upto 1000 mtr
12	Illumination intensity	Indoor
13	Display Type/display side	7 segment/single side
14	No. of digits	06
15	Time Display	HH:MM:SS
16	Display Colour/Format	Bright Red/ 12/24 Hours selectable
17	Time Zone mode	UTC/ IST time zone
18	Input Supply	180-260 VAC, 1 phase 50 Hz
19	Power Consumption	<10W
20	Operating Temperature	0 deg to 50 deg
21	Humidity	95% Non condensing
22	Cabinet with colour	Wall mountable type with key holes on backside panel. Stainless steel/mild steel or Aluminium powder coated profile.
23	Protection circuit	Over voltage, under voltage, short circuiting, surge ,high voltage
24	Certification	ISO 9001:2015, ISO 14001:2015

S.No.	Parameter	Requirement
	<b><u>GPS RECEIVER</u></b>	
1	Accuracy	Frequency L1, 1575.42 Mhz C/A code 1.023 Mhz Channel 12
2	Blinking LED indicator for GPS signal	Yes
3	Acquisition rate	Reacquisition time < 2 sec Hot start < 10 sec, average Warm Start < 40 sec Cold start < 50 sec
4	Power	+3.3 V DC +/- 5%
5	Operating temperature	10° C to 55° C
6	Humidity	10% - 90%
7	Short circuit protection	Yes
8	Update rate	1 Hz

S.No.	Parameter	Requirement
	<b><u>GPS Antenna</u></b>	
1	Type	Active, L1, GPS, 25 dB gain min
2	Length	100 mts
3	Coverage	360 degree
4	VSWR	Low
5	Protection	Lightening protection & surge suppressor

### **Technical Specification for Wireless (Stand Alone) GPS Synchronized clock**

<b>S.No.</b>	<b>Parameter</b>	<b>Requirement</b>
1	Microcontroller based clock	8 bit Atmel/AVR/NXP make microcontroller
2	Power Supply	Inbuilt PS to work directly on 230VAC +/-25%, 50Hz +/- 2Hz
3	Standard Size of display	16 Inch
4	Built in RTC with battery backup	Used in case of GPS signal failure
6	Viewing angle	120degree/60 degree
7	Viewing distance	Upto 25 mtrs
8	Illumination intensity	Indoor
9	Display Type/ Face	7 segment / Single side display
10	No. of digits	06
11	Time Display	HH:MM:SS
12	Display Colour	Bright Red
13	Time Zone mode	UTC/ IST time zone, toggle switch for IST & UTC mode
14	Power Consumption	<20W
15	Operating Temperature	0 deg to 50 deg
16	Humidity	95% Non condensing
17	Protection	Digital clock shall be covered with U.V. stabilized polycarbonate sheet with thickness of min 3mm . Single polycarbonate sheet without any joint should cover the clock.
18	Cabinet	19" rack mountable version/Wall mountable version with key holes on backside panel. CRCA sheet metal body with powder coated black.
19	Protection circuit	Over voltage, under voltage, short circuiting, surge ,high voltage
20	Time Setting	Increment switches for time setting
21	IC type	All ICs and other components should be SMD type ensure greater reliability
22	Test switch	To check the display
23	Certification	ISO 9001:2015,ISO14001:2015
24	PCB	Separate PCB for display, microcontroller card, control circuit and GPS module

