

CHAPTER- XXI

PASSENGER INFORMATION SYSTEM

21.1 The following type of Passenger Information systems are provided by the Telecom department for Indian Railways.

21.1.1 Interactive Voice Response System (IVRS):

Interactive Voice Response System, the technical system giving the information of Train Running, Passenger PNR etc. on a PSTN / Mobile Network through a centralized database, which is at present maintained at CRIS or through NTES servers.

21.1.2 Prerecorded Announcement and Auto Announcement System:

It is either an IVRS System, generally provided as a stand alone system, to give the information to the public on PSTN Telephone regarding Train Running Information or to work as an Announcement System on Platforms with suitable interface to PA system.

21.1.3 Train Indicator:

It is a display device which gives the information regarding running of Train Arrival / Departure timing and Platform No. etc. The system is either operated locally at a particular station or can be fed from Central location. They are mainly provided at Platforms and Public utility locations.

21.1.4. Coach Guidance System:

It is a display device, which indicates the position of each coach from engine with description of train number and Coach Position.

21.1.5. GPS Clock/Master Slave Clock:

- (a). Master Clock is a Controlling Clock in Railway premises, which drives the other Slave Clocks in the same or remote premises to keep uniform timing. Slave Clocks are the clocks in the Railway premises driven by the Master Clock.
- (c). GPS clocks may be provided independently or used to work as Master Clock / Slave clock. Master clock can drive all slave clocks either in the same premises such as in the control office or through separate networking to a distant location.

SECTION - A

21.2 PROVISION OF PASSENGER AMENITIES (TELECOM) AT STATIONS

21.2.1. The requirement of Passenger Amenities Systems related with telecom department at Stations should be based on the guidelines issued by the Commercial Directorate and works proposed by the commercial department from time to time. The provision of Passenger Amenities at various categories of Railway Stations shall be provided in lines with recommendations laid down by commercial directorate/consultative committee and shall be ascertained accordingly.

SECTION - B

21.3 INTEGRATED PASSENGER INFORMATION SYSTEM (IPIS)

1. Integrated Passenger Information System is used for giving train arrival/departure information and any other video/image/alert information to passengers, which includes different type of display i.e. Single Line, Multiline, True colour indoor and outdoor video display, At a glance, coach guidance and PC based announcement system, placed at various places of the station with feature of networking, Operations from local/remote operator and remote monitoring from a central place.
2. It shall consist of following sub systems-
 - (a) Auto Announcement System
 - (b) Train Indicator Boards-
 - Multi Line display Board
 - Single Line display Board
 - Train at a glance Boards
 - LED TV/monitor type display board
 - (c) Coach Guidance Boards.
3. It shall be possible to choose one or more of these subsystems at a station.
4. The Data is entered by the data entry operator / Enquiry cum Reservation Clerk/Station Master. The software shall show the the status of various components as well as the messages being displayed.
5. Messages announced on the Platform PA system shall synchronize with the information shown on the display board.

6. The software driving the IPIS system shall have the following salient features:
 - a. The software should have a GUI and shall be user friendly. It should get the requisite commands from the operator in as less number of clicks as possible.
 - b. The software should support bilingual characters (English & Devnagari) and enable displaying of information in English & Hindi both and regional language.
 - c. The software for train indication boards shall display Train number, Train name, and expected departure/arrival time of Trains, platform no. etc.
 - d. Provision should be made in software for alteration in the Time Table of Train. It should be possible for Railways to change/ add the details of trains to be displayed by the system at the time of change of timetable.
 - e. All the software and licenses shall be in the name of Railways and only licensed software shall be used.
 - f. The software for coach guidance system should have preloaded information of coach composition of all the trains arriving or departing from the station. When the train is likely to arrive at station or depart from the station, the concerned operator is required to enter the train number and update position of coaches i.e., from ENGINE to GUARD Brake Van.
 - g. It shall be possible for software to acquire updated data of running trains from NTES/ COIS or any central server & process updated data of running trains to display on various types of display boards, coach guidance systems and announcement on PA system. The auto derived information has to be cross examined by the local operator and the same has to be got corrected before announcement/display.
 - h. There shall be provision for adding a new coach type in the coach master database.
 - i. Provision shall be made for the operator to send announcement related to train number, platform numbers, and arrival/ departure just by entering the train number, platform number and status in conditions -
 - Late arrival of trains.
 - Platform No. of arriving/ arrived trains and change in platform No.
 - Right time arrival of trains.
 - Departure of trains at scheduled or unscheduled time.

- Announce/display that trains is arriving/ departing shortly or terminated or and Current status of the train.
 - Cancellation of train
 - Route Diversion of train
 - Any other message required to be announced/ displayed regarding train arrival/departure.
- j. Voice files used in announcement for hour, minute and status (i.e.बजकर, बजे etc.) shall be recorded by the same announcer & same shall be used.
- k. Announcements of newly added trains shall be automatic without any recording to be modified unless the train name or station name is specific.

SECTION - C

21.4 AUTO Announcement System:

21.4.1 The system shall be PC/Server based with user friendly GUI for the announcement of various messages related to train operations/safety etc.

21.4.2 Fixed audio messages shall be recorded in digital format and shall be added to audio files list in the PC/Server.

21.4.3 It should be possible to make repeated announcements without affecting other operations. It should be possible for the operator to stop the announcements being played.

21.4.4 Software shall be user friendly to the maximum extent so that addition and alterations can be done by the Railway Engineer without the help of suppliers and programmer. For any newly added train, it shall be possible to record a file externally and attached to the train through user interface. The application shall take care of placing the recorded file at the appropriate internal application folder. However, any newly added train shall automatically play unless the train name or station is specific.

21.4.6 The system shall have provision to select messages and language for announcement. The announcement shall be fluent and professional enough to avoid unnatural pauses between two pieces of voice clips.

21.4.7 The entire voice recording for this system shall be done in a sound proof professional studio.

21.4.8 This system shall be provided at the Stations so as to cover the Concourse, Platform area and other important locations such as waiting rooms etc. The type of Speakers, Mikes, Acoustical environment, Type of Loudspeaker, Wiring and Cabling, Earthing and other Safety precaution should be of standard make and as per RDSO specification.

SECTION - D

21.5 TRAIN INDICATION BOARD

21.5.1 General

It is a display device which gives the information regarding running of Train Arrival / Departure timing and Platform No. etc. The system is either operated locally at a particular station or can be fed from Central location. They are mainly provided at Platform and Public utility location.

- 21.5.1.1 Various types of Train Indication boards and the places where these are to be used as described below:
- a) Multiline (multi & mono colour), Multiple row Single/Double face train indicators at the entrance of platforms as per the need of the stations and number of platforms at concourse / lobby. Multi Colour multiline train indicator displays train information and any other video information to passengers, commercials advertisement, entertainment programs etc.
 - b) Single line Single/Double faces train indicators at platforms at various locations along with platform length with clear visibility.
 - c) At-A-Glance Display Board Single/Double faces train indicators along with coach composition at various locations like FOB, Main entrance of the platform.
 - d) LED TV/Monitor type display Boards shall be used at enquiry office, waiting halls, VIP rooms, crew lobby etc.
- 21.5.1.2 All Display Boards should be given unique identification code/address and their status is to be reflected and made available on screen of the operating console as a health monitoring system.
- 21.5.1.3 At the time of accidents/derailments, these display boards may be used to display slogans/ messages in rolling, flashing & steady mode.

- 21.5.1.4 The Indicator system should be designed in such a way that the operator has to do a minimum number of operations for initiating and completing the entire process of a data entry.
- 21.5.1.5 Surge and lightning protection arrangement should be provided at 230V AC mains end and output of power supply, so as to protect the electronic modules from damage. The arrangement may include GD tubes, MOVs and fuses etc.
- 21.5.1.6 The system should be designed to suit the 25 KV AC traction areas. Proper earthing arrangement should be provided for grounding the shield of the data cable to prevent the EMI & RFI interference. However earthing for 230 volt AC power supply should be made separate.
- 21.5.1.7 Electrical power supply for all Train indication Boards shall be provided from a centralized place.
- 21.5.1.8 Ease of maintenance and immunity to failures should be the primary consideration in the designing of the system.

21.5.2 Operating Console (Central Data Controller):

The operating console should be installed in the announcer's cabin or at remote locations at Station. It should have required software and provision of data entry for train no. time table of Trains, PF. No. & Expected Arrival / Departure time etc.

- 1) The workstation and associated equipment should be installed in a secure manner so that only required equipment are accessible to the operator.
- 2) Adequate arrangement for housing the wires e.g. cable duct etc. should be made in the 19" housing cabinet. (All the wires, termination arrangement etc. required for interfacing should be provided. Any casing, capping, conduit, guide ladder etc. if required should be provided as per site requirement)

21.5.3 Laying of Data and Power Cable over Steel Bridges /under Platform sheds:

- i. The laying of data and power cable over metallic structure under platform sheds and at FOBs should be carried out in separate DWC/HDPE/PVC pipe suitably fixing the same along the route or preferably a common arrangement of cable tray inside platform sheds for all such type of cabling should be done for better aesthetics and security.

- ii. Suitable metallic clamps should be fixed at regular intervals (not more than 5 mtrs) to hold the pipes carrying the cable along with the metallic structures/ girders to avoid any sagging of the Data & power cable.

21.5.4 The Standard Personal Computer, keyboard, monitor, UPS & other accessories should be preferably housed in standard 19" cabinet.

21.5.5 General Requirement of Installation / Mounting and Wiring of the Display Boards:

- a) The display board should generally be hung from the metallic structure of the roof of the platform & FOBs.
- b) The metallic hanging arrangement should be capable enough to bear the full mechanical load of the display boards and should be able to prevent any accidental dislocation of the display board which may be hazardous for the safety of the passengers and should be designed to prevent swinging of the display boards due to strong wind or movement of the trains or vibration.
- c) In general the display boards should be hung from the platform/FOB's roof by using G.I. angles. One end of this G.I. angles should be fixed with the metallic structure of the platform shed by using suitable metallic clamps, other end of the G.I. angles should be rigidly fixed with the inner side walls/clamp holes of the display boards. The length of the down angles for individual display boards may vary as per site requirement.
- d) Wiring of the data cable and power cable should be done through the PVC /HDPE or DWC pipe separately. The PVC/HDPE or DWC pipe should be properly fitted with the wall / roof / floor of the platform with standard fixing material like clamps, elbows, T joints, Straight joints, four way & three way junction boxes.
- e) Termination of the data cable should be done by using proper terminal strips or by using proper connector of standard size of branded/reputed make.
- f) The data cable & power cable from top of the display unit should be taken through flexible corrugated pipes to improve the aesthetics. No loose wire/exposed terminations, wires etc. should be visible outside of the display board.

21.6 COACH GUIDANCE SYSTEM

21.6.1 General

The Coach Guidance System alongwith at-a-glance display board enables the passengers to locate their coach for the Train on which they wish to travel.

21.6.2 At-a-Glance Display Board.

(a) At a Glance Display Board at Entry to station lobby.

It is essential that at entry or at lobby a display board is provided to guide the passenger the Train No., Platform No., to which Train is arriving / standing, the position of coach with respect to engine. On the platform at various locations suitable indicator with respective coach location board may be provided giving the details of Trains No. and Coach No.

- 1) A suitable Display board indicating the Train No. Platform No. arrival / departure time along with position of the coaches with respect to engine should be provided.
- 2) There should be provision for blanking the complete display board to ensure that no stray dots lights up when there is no data signal from the operating console.
- 3) The information displayed on the display boards should be clearly visible under normal ambient conditions. Proper weather protection and glare protection (hood) as per site requirement should be provided to achieve the optimum visibility of the display boards.
- 4) All boards should have input power_ON indication outside the board.

(b) Coach guidance boards

1. The system consists of coach guidance boards at Station and platform operated through PC workstation at remote location / control offices or at Stations.
2. Protection Arrangement: The equipment should be mounted in metallic housing of industrial grade to avoid entry of dust and rise of temperature with necessary earthing etc. to provide complete EMI & RFI protection.
3. Coach Guidance Display Board should conform to the typical layout and should be approved by Railways depending on location and need.
4. Double face coach guidance display board should be provided on platforms

21.6.3 Installation Arrangements of Coach Guidance System:

Mechanical fixing arrangement for installation of single/double face LED display board should be designed to prevent swinging of LED display boards

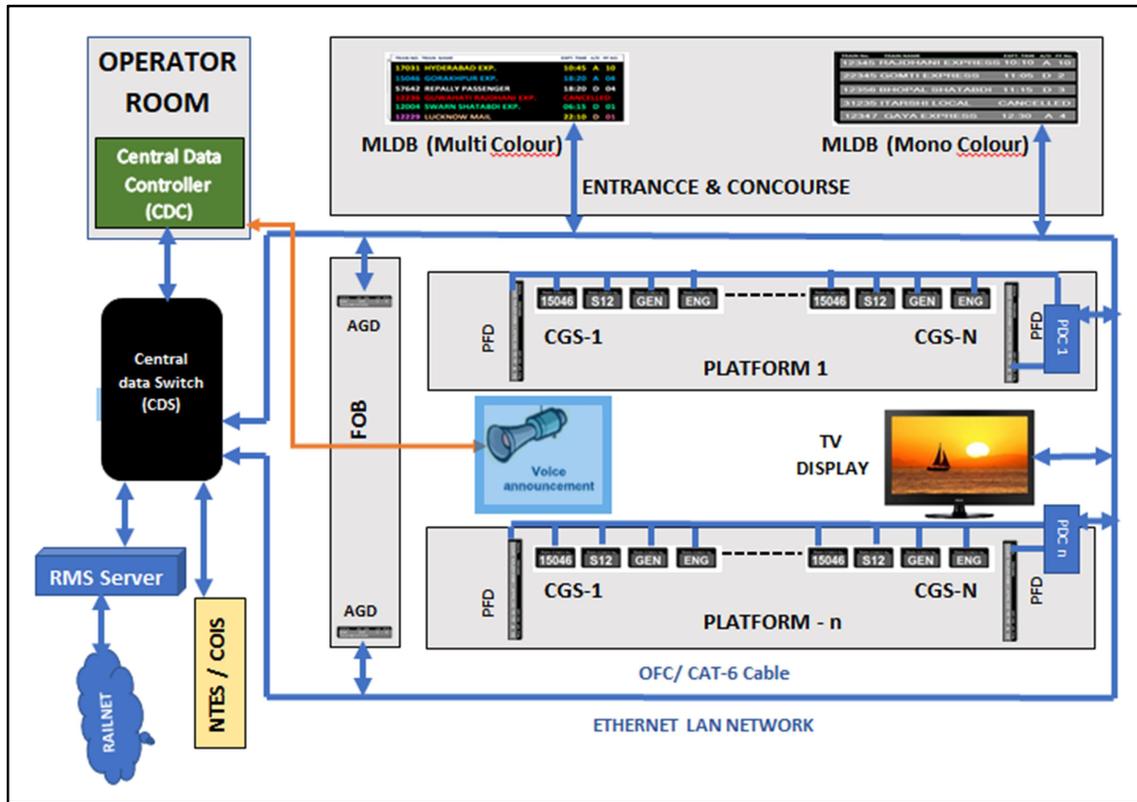
due to strong wind / vibration due to movement of the trains .For installation of coach guidance display board on uncovered portion of the platform shall be provided using GI pipe of minimum 3-inch diameter with suitable size of shelter.

SECTION - E

21.7 IP based IPIS

- 1) Looking into the prevalence and widespread domination of IP technology, IP based Integrated Passenger Information system has also been designed for Indian Railways.
- 2) It includes a PC based announcement system for announcing train information to passengers, LED display boards & coach guidance display boards for displaying train information to passengers.
- 3) All the devices in this system are IP enabled that facilitates monitoring each and every board. The remote monitoring server when connected to Railnet shall enable monitoring from anywhere on Indian Railways.
- 4) It uses Optical Fiber based communication network for connecting display boards and other components of IPIS.
- 5) Smart monitors and TVs can also be used as Display Boards in this system.

This system has central server with necessary software to perform the function of IP based IPIS. The data of all the trains Arriving/Departing from that station is fed into the server. Along with voice clips of the train name, Train No., station, starting station and destination station. The train No. platform and time and status of the train to be displayed are selected by operator and automated information is generated for display on LED display boards and audio announcement on PA system. Brief schematic describing working of system is under.



SECTION - F

21.8 GPS/MASTER & PLATFORM (SLAVE) CLOCKS

21.8.1 General

GPS/Master Slave Clocks are utilized in Control Office / Stations to maintain uniform timing for Train operation.

21.8.2 Requirements of Master Clock:

- i. The Master Clock shall be capable to drive number of Slave Clocks as per requirement either in one location or distributed in various other locations.
- ii. The Master Clock shall be based on microprocessor based technology utilizing GPS.
- iii. It should be controlled by GPS as time base. The accuracy of the Clock should be better than ± 5 Sec. per week over the expected temperature range, which can generally be achieved only through a GPS based system.

- iv. The design construction and reliability of equipment should be based on modern technology and standards using commercially available solid-state components. The modules and components should be plug in type.
- v. The Master Clock should work on main power supply of 230 V AC single phase 50 Hz.
- vi. The Master Clock should be equipped with LED based or 7 segment numeric display in 24 Hrs. mode to show the real time even in case of mains power supply failure in Hours, Minutes & Seconds.
- vii. Adjustment switches shall be provided on the Master Clock to set the time. These switches should be located at the rear of the unit so that any accidental operation of the switches does not change the Master Clock time.
- viii. The Master Clock should be immune to EMI noise / Power transients, spikes etc. It should display time on both sides.
- ix. The Master Clock should transmit data through a pair of conductor to the Slave Clocks.
- x. Railways can have GPS Clock in control office to work as Master Clock. This can drive all slave clocks either in same premises or through separate networking to distant location.
- xi. Where wiring is not feasible , Master GPS clock shall be used in place of slave clock. In case of non-availability of GPS signals at critical locations such as indoor locations , slave clocks are to be provided and it should be wired with GPS master clock placed at suitable location.
- xii. The Master Clock shall meet the Technical Specification of RDSO.

21.8.3 Requirement of Digital Platform (Slave) Clock:

- i. Digital Platform (Slave) Clock operated by Master Clock should be capable of receiving continuous serial data through a pair of conductors.
- iii. In case of AC main power supply failure the display of Slave Clock shall be automatically synchronized with the Master Clock whenever main power supply restores.
- iv. Slave Clock shall be capable to work on 230 V AC single phase 50 Hz.

- v. Suitable mechanical fixing arrangement as per site requirement shall be provided for hanging at adequate level for better visibility on both the sides.
- vi. Technical requirement of Digital Platform (Slave) clock should be as per RDSO specification.

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