

Corporate Profile



Areca Embedded Systems Private Limited, founded in 2007, believes in transforming a societal need into a product, characterized for latest technology, quality and reliability, and is engaged in development and manufacturing of products related to Railways, Telecom and Defence.

Vision : To provide enabling environment for individual

Mission : To offer dependable products and services to our customers and to build long term relationships through customer satisfaction.

Quality Policy :

We, at Areca Embedded Systems Pvt. Ltd, are committed to innovative solutions and shall provide product development of Hardware, Software & Firmware in the field of Information and Communication Technologies as per customer needs.

We shall strive hard to achieve "Total Customer Satisfaction" by implementing quality management system requirements and continually improving effectiveness of our processes by the involvement of all employees.

Areca Deliverables

- Reliability
- Timely Delivery
- Superior Quality
- Professional Services
- Quick Reach to Customers
- Cost-effective Designs

Areca at a Glance

Inception	2007
Business Segments	Railways, Telecom, Defence, Industries & Institutions
Employee Demographics	Strength : 110+ Young work force Average Age : <29 yrs
Infrastructure	18000 Sq Ft working space Test Equipment: Thermal Chamber, LED Chromaticity Test Setup, Wave Soldering Machine, Power Analyzers, Data Analyzers, Digital Oscilloscopes, Thermal Image Camera
	Capable of producing 750 Sq. mts. of LED Screens per month.
Quality Approvals	ISO 9001:2015



R&D

Ever since its inception, Areca has been constantly striving to adapt the best technologies and manufacturing practices, keeping in mind the needs of its customers. Areca has its own R&D centre where about 30 qualified engineers, with a blend of Hardware, Software and Firmware expertise, are encouraged to innovate and develop reliable and cost effective products.

Approvals from RDSO (Research Designs and Standards Organization) of Indian Railways

- ▶ Integrated Passenger Information Systems for stations
- ▶ GPS based Digital Clocks
- ▶ Onboard Passenger Information Systems for EMUs
- ▶ Onboard Passenger Information Systems for long distance trains
- ▶ LED based Intelligent Emergency Lamps

Products and Applications

Telecom Sector	Defence Sector
Intelligent Power Management Unit	Handheld Cable Tester
Auto BTS Site Manager	Fibre Optic Voice, Data, Telemetry Links
Auto BTS Site Alarm Manager	Universal Multiplexer
Aviation Warning Lamp	PCI Bus based GPS Time Synchronizer
DC Energy Meter (4 channels)	Synchronized IRIG Time Code Reader / Generator
PFC Expander	
Fire Alarm	
Railway Sector	Others
GPS based Passenger Information Systems with Audio / Video Announcements	Contactless Smart Card based AFCPC System
LED based Intelligent Lamps for Coaches	GPS, GPRS, Web Server based Vehicle Fleet Tracking Software
GPS based Digital Clocks for Platforms	



CLIENTELE



ARECA
WE INNOVATE SOLUTIONS
Areca Embedded Systems Pvt. Ltd.

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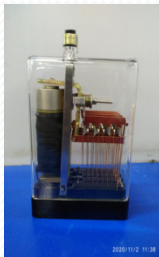
SPECIFICATION FOR MINIATURE TRACTIVE ARMATURE AC IMMUNE DC NETURAL LINE RELAY, PLUG-IN TYPE, METAL TO CARBON, FOR RAILWAY SIGNALLING . Spec. No. BRS 930, BRS 931A, BRS 933A, BRS 935A, BRS 939A, BRS 943A

A relay is an electromagnetic device, which is used for closing or opening of an electrical circuit. The relay may be classified as Shelf type and Plug-In-Type

Plug-in-type relays which are plugged in to prewired terminal boards. It works on electromagnetic principle. Each relay has a base electromagnet, armature, contact spring, contacts, transparent cover, and handle. A non-magnetic residual pin is fixed on the inner face of armature, in all relay except magnetic latch relays.

The relays covered by this specification are for use in line circuits where alternating current at industrial frequency may be present in the circuit.

This specification relates to design requirements for A.C. immune miniature tractive armature D.C. neutral line relays of the plug-in type for use in railway signaling circuits.



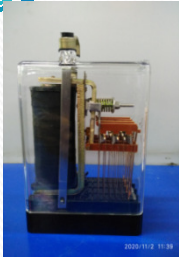
Type: QNA1
Contacts:12F4B,
Code: 021
Volts: 24VDC
Specification no.: BRS931A



Type: QN1
Contacts:12F4B
Code: 001
Volts: 24VDC
Specification no.: BRS930



Type: QNA1K
Contacts:6F6B
Code: CDEKY
Volts: 24VDC
Specification no. : BRS931A



Type: QN1K
Contacts:6F6B
Code: BDEKX
Volts: 24VDC
Specification no. : BRS930



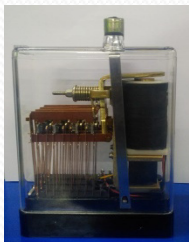
Type: QSPA1
Contacts:8F4B
Code: ABDEJ
Volts: 24VDC
Specification no. : BRS933A



Type: QTA2
Contacts:2F/1B
Code: FGHKX
Volts: 1.3VDC
Specification no. : BRS939A



Type: QBCA1
Contacts:2F(HD)/4B
Code: BCEJK
Volts: 24VDC
Specification no. : BRS943A



Type: QL1
Contacts:11F/4B
Code: ABDEG
Volts: 24VDC
Specification no. : BRS935A

GPS LOCATION BASED PUBLIC ADDRESS & PASSENGER INFORMATION SYSTEM AND LED DESTINATION BOARDS IN LHB TYPE AC AND NON-AC COACHES.

Spec. No. RDSO/CG-18001

Passenger address system along with passenger information system and LED destination board shall be integrated for providing all important information in audio and visual form to the passengers.

The system equipped with GPS technology for activating location based audio visual information and features of the system like speed, location of the coach and calculating kilometer run by the coach on per day/month/year basis.

This system cover the general functional design requirements of such system for Indian Railway coaches. System supports key features and technology based on internet services through Quad band GSM/GPRS or HSDPA/HSUPA modem and through Wi-Fi connectivity to the base station for remote accessibility of the system and monitoring of important parameters.

Main Processing Unit : Main Processing Unit is a Compact Fanless industrial grade PC with IP65 compliant enclosure unit along with panel mount IP65 compliant external touch screen display and comply with EN50155 or IEC 60571 standards.

MPU shall process the GPS data (Latitude, Longitude, Date and Time) on real time basis and detect its presence on the train route automatically and perform calculation for initiation of triggering command for audio/ visual data for PAS and PIS LCD display unit or PIS LED display units.

Slave LED Destination Board Display System : Slave LED Destination Display unit is mounted preferably sunk type and should be IP65 compliance with 1.2 mm thickness of robust stainless steel Out Side of the coach, Display unit of 16 X 128 LED with auto brightness control module. To display

Train Name

Destination of the train

Train route (via)

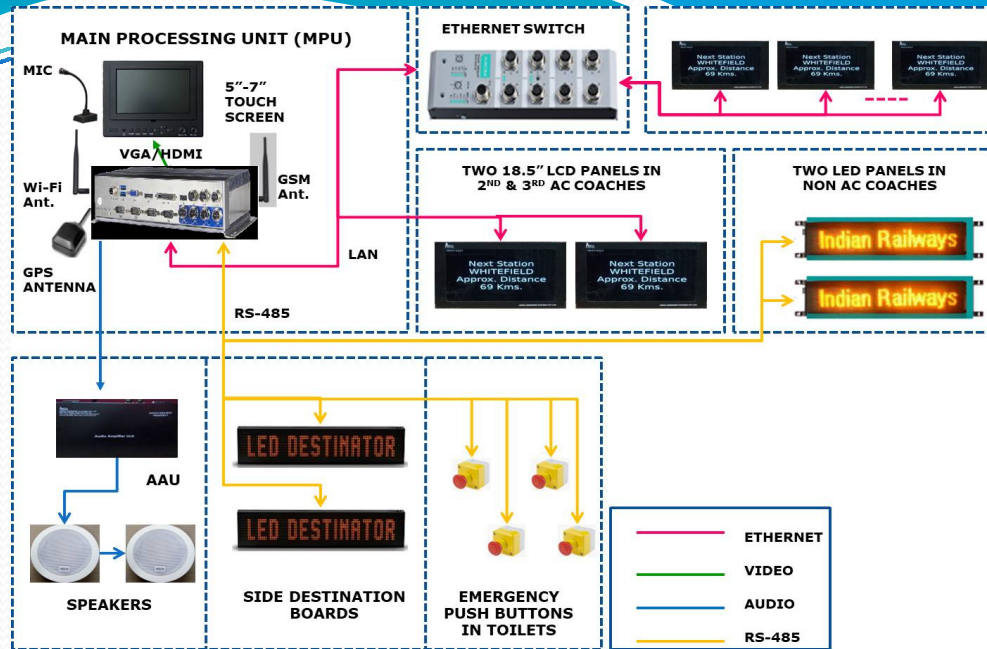
Welcome Message.

Slave PIS LED Display System: Slave LED Display System Unit is mounted inside the coach shall be designed with suitable antitheft and anti-vandal protection mounting arrangement inside the coach.

Display Size: 16 X 112 SMD type LED at 5 mm pitch

Display Area 560mm X 80 mm

IP65 compliant enclosure



Display the messages like

- welcome message,
- train Route,
- train speed,
- Current time,
- Next halting station,
- Expected time to reach next halting station,
- Slogan for passengers safety,
- Late running status of the train.

Slave PIS LCD Display System: Slave LCD Display System Unit is 19.0 inch (10 inch for 1st AC coupe) in 16:9 ratio with suitable antitheft and anti-vandal protection mounting arrangement inside the coach.

- Resolution :1366x768
- Display Colour :16M
- Brightness :350 cd/m²
- Contrast ratio: 1500:1
- Viewing angle :140°

Display the messages like

- welcome message,
- train Route,
- train speed,
- Current time,
- Next halting station,
- Expected time to reach next halting station,
- Slogan for passengers safety,
- Late running status of the train.

TRAIN COLLISION AVOIDANCE SYSTEM (TCAS) RDSO/SPN/196/2012 Version 3.2

TCAS will be provided on sections equipped with Multi Aspect Colour Light Signaling and loco pilot will follow line-side signals as per prevalent operating rules. Provision of TCAS will be an additional safety aid to the loco pilot to prevent consequences arising out of Signal Passing At Danger (SPAD), to control train speed within specified limits, to display Signal Aspect in Loco pilot's cab and to further reduce the probability of train collisions in block sections and on running lines at stations through certain non-signaling based protections.

In the event of a conflict between this specification and any other standards or specifications quoted herein, the requirements of this specification shall prevail.

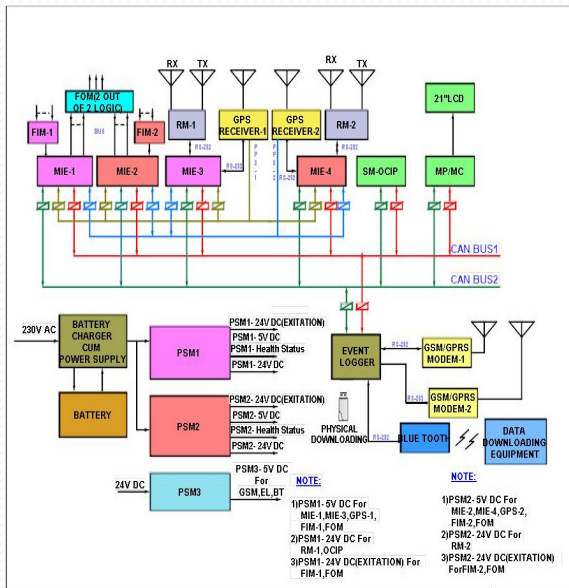
The operation of TCAS shall, in no way, infringe / overrule the rules of normal train operations on Indian Railways.

Basic Functioning

- TCAS will be an additional aid to the loco pilot which shall prevent Signal Passing At Danger (SPAD).
- TCAS will be able to carry out Speed Supervision.
- TCAS will be able to display Signal Aspect in Loco pilot's cab.
- TCAS will be able to supervise train and shunting movements.
- TCAS is required to be functional up to a maximum train speed of 200 kmph.
- Interoperability: The Loco TCAS unit, Stationary TCAS Unit, Network Management System, Key Management System and RFID tags shall adhere to the requirement of interoperability

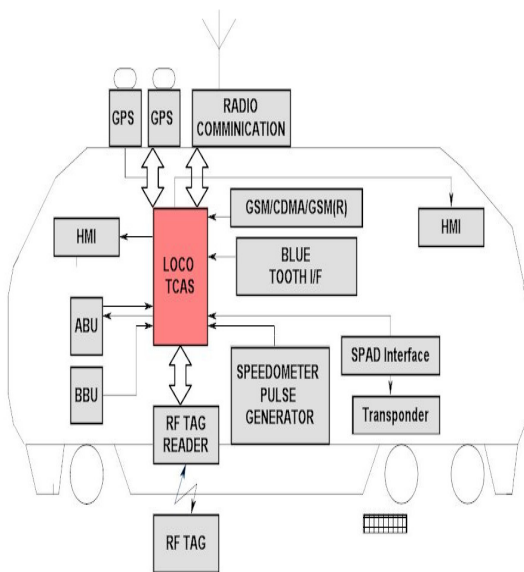
Major Sub-Units of TCAS

- Station Units located in stations
- Loco Units located in locomotives
- IBS/LC Units located in block sections
- Centralized monitoring system
- Test benches at Loco Sheds



Station TCAS Architectural Features

- Two Microcontrollers (MIE 1 & MIE 2) working in “2 out of 2” mode to achieve safety of desired functionality.
- All modules are connected through redundant CANBUS.
- Two redundant Microcontroller (MIE 3 & MIE 4) working on for radio communication and display.
- Event logger for major event logging and storage for 30 days
- Two UHF full-duplex Radio Communication Equipment with hot standby and associated antenna
- Frequency of Transmission by Station : MHz
- Frequency of Reception by Station: MHz
- Two GPS units are interfaced with Station TCAS
- Radio Antennae & GPS receiver antennae are permanently fixed on the preinstalled 30 mtr towers.
- Two GSM/GPRS modems for transfer of failures to CMS.



Loco TCAS – Architectural Features

- Two redundant Microcontrollers (MIE 1 & MIE 2) working in “2 out of 2” mode to achieve high level of safety.
- All modules are connected through redundant CANBUS.
- Two redundant Microcontrollers (MIE 3 & MIE 4) as communication processors.
- Two redundant Microcontrollers for peripheral interface.
- Separate Event logger for major events logging and storing for 90 days.
- Two UHF full-duplex Radio Communication Equipment with hot standby and associated antenna
- Frequency for Transmission by Loco : MHz
- Frequency for Reception by Loco : MHz
- Transmission by Loco for emergency (SOS) Communication : 466.8MHz

IP Based Integrated Passenger Information System

RDSO/SPN/TC/108/2019, ver 0.0

The IP Based Integrated Passenger Information System (IPIS) will consist of Central Data Controller (CDC) loaded with software for announcement & display, Remote monitoring Software (RMS), PDC, LED display (TV) and display boards of different sizes like Single Line, Multiline, At a glance, True colour Indoor and outdoor video display, Coach Guidance

Multiline Display Board to display train Information in mono colour i.e. Train number, Name, time of arrival/departure and platform number. It will show information of up trains/ down trains or both as decided by the purchaser. The multiline display boards will be placed at main entrance / concourse of the station.

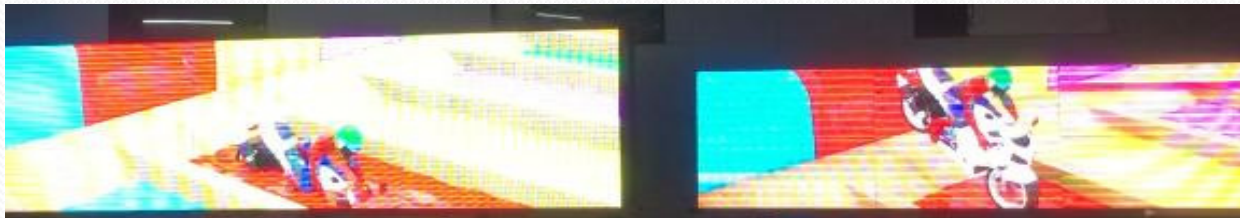
True colour Indoor and Outdoor Video Display shall display train information in multi-colour, commercials, entertainment programs and other information to passengers.

Platform Display Board to display the information of the train scheduled for arrival/departure from that platform i.e. Train number, Name, time of arrival / departure in mono colour. The Platform display boards will be placed at suitable places on platforms/ foot-over bridges.

At-A-Glance Display Board for displaying information of the train arriving / departing from that platform along with coach composition in mono colour.

Coach Guidance Display Board to indicate position of coach No. scheduled for arrival/ departure from that platform for guidance of passengers in mono colour.

Display Monitor/ LED TV (Industrial grade capable of working 24x7) to display train information being displayed on Multiline Display Board. Display monitor shall be provided in the enquiry offices, waiting rooms or at any suitable Indoor application only.

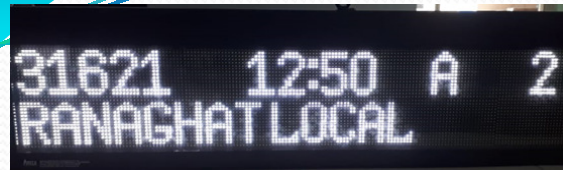


17401	కృష్ణా ఎక్స్‌ప్రెస్ 1	DELHIR 1
17402	పద్మావతి సూపర్‌ఫాస్ట్ ఎక్స్‌ప్రెస్ 2	18:30 A 11A
17403	తెలంగాణ ఎక్స్‌ప్రెస్ 3	06:40 A 1
17405	కృష్ణా ఎక్స్‌ప్రెస్ 4	21:10 A 1
17406	పద్మావతి సూపర్‌ఫాస్ట్ ఎక్స్‌ప్రెస్ 5	18:30 D 2
17417	కృష్ణా ఎక్స్‌ప్రెస్ 16	రద్దు చేయబడినది

True Color Video Display (Indoor & Outdoor)

TRAIN NO	TRAIN NAME	EXPT.TIME	A/D	PF NO
34165	BGB SEALDAH LOCAL	00:02	A	1
34112	SEALDAH BGB LOCAL	04:20	A	2
34111	BGB SEALDAH LOCAL	04:52	A	1
34114	SEALDAH BGB LOCAL	05:12	A	2
34113	BGB SEALDAH LOCAL	05:52	A	1

Multiline Display Board (Mono Color)



At-A-Glance Display Board



Single line Platform Display Board



Coach Guidance Display Board



Platform Data Controller

The Mechanical dimensions of display board shall be as under:

Display board Type	Physical Dimensions in mm
Multiline display board (Single Colour) (for Min 2 lines)	3550(L) ± 10 x 600(H) ± 5 x 150(D) ± 5 - Single sided. 3550(L) ± 10 x 600(H) ± 5 x 200(D) ± 5 - Double sided. Gap between two adjacent lines: 80±5 Increase in Height for each additional line: Max 240
Single line display board	3550(L) ± 10 x 350(H) ± 5 x 150(D) ± 5 - Single sided. 3550(L) ± 10 x 350(H) ± 5 x 200(D) ± 5 - Double sided.
At-a-glance display board	2150(L) ± 10 x 500(H) ± 5 x 150(D) ± 5 - Single sided 2150(L) ± 10 x 500(H) ± 5 x 200(D) ± 5 - Double sided
Coach guidance display board	540(L) ± 5 X 250(H) ± 5 X 200 ± 5 (Depth Top) & 178 ± 5 (Depth Bottom)

SN	Description	Specifications		
		6-Line	12-Line	18-Line
1.	Pixel LED	3-in-1 (RGB) SMD LED		
2.	Pixel Resolution (W x H)	432 x 128	432 x 256	432 x 384
3.	No. of lines	6 Line	12 Line	18 Line
4.	Color Processing	12-Bit per color or more		
5.	Line Height	20 pixels		
6.	Scan Rate	1:4 Scan		
7.	PCB Thickness	1.6 mm ± 0.16 mm		
8.	PCB Mask & Legend	Black/Green Mask & White Legend		

OVD

SN	Description	Specifications		
		6-Line	12-Line	18-Line
1.	Pixel LED	3-in-1 (RGB) SMD LED		
2.	Pixel Resolution (W x H)	432 x 128	432 x 256	432 x 384
3.	No. of lines	6 Line	12 Line	18 Line
4.	Color Processing	12-Bit per color or more		
5.	Line Height	20 pixels		
6.	Scan Rate	1:8 Scan or better		
7.	PCB Thickness	1.6 mm ± 0.16 mm		
8.	PCB Mask & Legend	Black/Green Mask & White Legend		

IVD

Integrated Passenger Information System

RDSO/SPN/TC-61/2015, Rev-4.0

The IP Based Integrated Passenger Information System (IPIS) will consist of Central Data Controller (CDC) loaded with software for announcement & display, Remote monitoring Software (RMS), PDC, LED display (TV) and display boards of different sizes like Single Line, Multiline, At a glance, True colour Indoor and outdoor video display, Coach Guidance

Multiline Display Board to display train Information in mono colour i.e. Train number, Name, time of arrival/departure and platform number. It will show information of up trains/ down trains or both as decided by the purchaser. The multiline display boards will be placed at main entrance / concourse of the station..

Platform Display Board to display the information of the train scheduled for arrival/departure from that platform i.e. Train number, Name, time of arrival / departure in mono colour. The Platform display boards will be placed at suitable places on platforms/ foot-over bridges.

At-A-Glance Display Board for displaying information of the train arriving / departing from that platform along with coach composition in mono colour.

Coach Guidance Display Board to indicate position of coach No. scheduled for arrival/ departure from that platform for guidance of passengers in mono colour.

Display Monitor/ LED TV (Industrial grade capable of working 24x7) to display train information being displayed on Multiline Display Board. Display monitor shall be provided in the enquiry offices, waiting rooms or at any suitable Indoor application only.



At-A-Glance Display Board



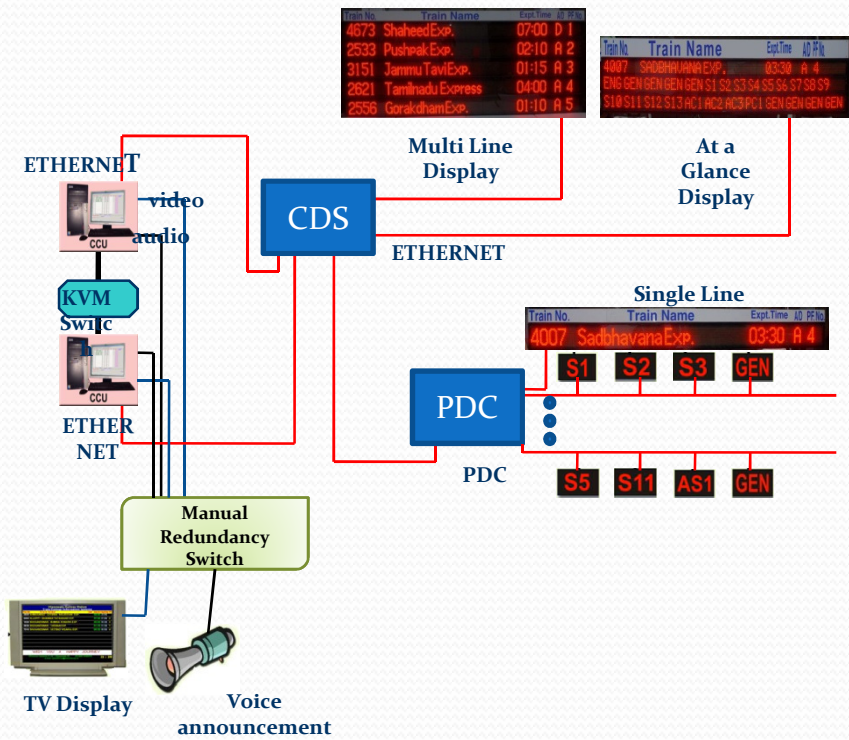
Single line Platform Display Board



Platform Data Controller

Multiline Display Board (Mono Color)

TRAIN NO	TRAIN NAME	EXPT.TIME	A/D	PF NO
34165	BGB SEALDAH LOCAL	00:02	A	1
34112	SEALDAH BGB LOCAL	04:20	A	2
34111	BGB SEALDAH LOCAL	04:52	A	1
34114	SEALDAH BGB LOCAL	05:12	A	2
34113	BGB SEALDAH LOCAL	05:52	A	1



The Mechanical dimensions of display board shall be as under:

Display board Type	Physical Dimensions in mm
Multiline display board (Single Colour) (for Min 2 lines)	3550(L) ± 10 x 600(H) ± 5 x 150(D) ± 5 - Single sided. 3550(L) ± 10 x 600(H) ± 5 x 200(D) ± 5 - Double sided. Gap between two adjacent lines: 80±5 Increase in Height for each additional line: Max 240
Single line display board	3550(L) ± 10 x 350(H) ± 5 x 150(D) ± 5 - Single sided. 3550(L) ± 10 x 350(H) ± 5 x 200(D) ± 5 - Double sided.
At-a-glance display board	2150(L) ± 10 x 500(H) ± 5 x 150(D) ± 5 - Single sided 2150(L) ± 10 x 500(H) ± 5 x 200(D) ± 5 - Double sided
Coach guidance display board	540(L) ± 5 X 250(H) ± 5 X 200 ± 5 (Depth Top) & 178 ± 5 (Depth Bottom)



LED Based Head Code, GPS Based Passenger Information and Public Address System for EMUS / MEMUS

RDSO Specification No: RDSO/PE/SPEC/EMU/0065

Approved by RDSO, Ministry of Railways, Govt. of India



System is introduced to provide readable information to passenger and to avoid rotating and changing of destination boards by motorman. Information system is to inform the passengers about the next halting station through audio and display.

Includes:

- ▶ DDC (Driver Desk Console)
- ▶ TCU (Train Control Unit)
- ▶ AAU(Audio Announcement Unit)
- ▶ HCDB(Head Code Display Board)
- ▶ ICDB(In Coach Display Board)

Features of DDC

- ▶ Easy of operation with keypad and navigation through LCD menu.
- ▶ Automatic selection of master if other DDC fails.
- ▶ Reports for rote log data for future analysis.
- ▶ USB database dumping and log downloading.

Features of AAU

- ▶ All audio files are recorded by professional system in sound proof cabins.
- ▶ Pleasant and clear announcement without noise.
- ▶ Auto volume adjustment with noise sensing.

Features of Display Boards

- ▶ Multi-lingual Display
- ▶ LEDs with more viewing angle and better life time
- ▶ Dust proof, Weather proof and Water proof systems as per protection class IP 54
- ▶ Auto brightness adjustment with ambient light sensor
- ▶ Smooth scrolling display without any flickering for better readability

Parameters	Head Code	In-coach Display
Display Matrix	16X48	16X128
Number of Sides	Single Sided	Single Sided
LED Type	Diffused	Diffused
Pixel Size	5mm Oval	smd
Pixel Pitch	8mm	3.2mm x 2.8mm
Pixel Color	Amber	Amber
Character Height	120mm	80mm
LED Brightness	100 mcd	100 mcd
Viewing Angle	60°	120°
Viewing Distance	50 mts	20 mts
Interface	RS485	RS485
Case Dimension (LxDxH) in mm	1073 X 50 X 180	680 X 80 X 135
Case Material	CRCA sheet to IS 513 grade O with Powder coating and Anti-glare Toughened Glass front cover	CRCA sheet to IS 513 grade O with Powder coating and Anti-glare Toughened Glass front cover
Mounting	Ceiling suspension	Wall mounting / Ceiling suspension
IP Protection	IP54	IP54
Power Supply	90 - 135 V DC	90 - 135 V DC
Operating Temperature	-20° to +70°C	-20° to +70°C

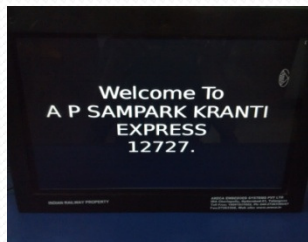


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Passenger Information System for AC And Non AC Coaches RDSO/PE/SPEC/AC/0087-2008



Passenger Information System consists of Master Display Unit (MDU) and Slave Display Unit (SDU). Master Display Unit is integrated with Coach Processing Unit and Speakers for Audio announcement.

The Passenger Information system uses Global Positioning System (GPS), LED technology for display boards and IR communication between the Master Display Unit and the user. This system uses GPS technology to decode the current position and display the current station, next halting station and distance to next halting station and display on the led display board which are important for the passengers

Features

Storage capacity of 256 characters x 20 text slogans /messages per route per language in at least 3 languages.

Up and Down journey selection either through a switch or through route selection using keypad or automatically using GPS data.

10 routes up and down journey log data.

USB for data uploading and log file downloading.

1Km accuracy in position display.

All audio files are recorded by professional in sound proof cabins.

Pleasant and clear announcement without noise.

Auto volume adjustment with noise sensing.

Smooth scrolling display without any flickering for better readability.

Parameters	In coach display
Display Matrix	16X112
Number of Sides	single Sided
LED type	Diffused
Pixel Size	smd
Pixel Pitch	3.2mm x 2.8mm
Pixel color	amber
Character Height	80 mm
LED Brightness	100 mcd
Viewing Angle	120°
Viewing Distance	20 mts
Interface	RS485
Case Dimension (LxDxH)	600mm X 80mm X 120mm
Case Material	CRCA sheet to IS 513 grade O with Powder coating and with anti glare toughened glass front cover
Mounting	Wall mounting / Ceiling suspension
IP Protection	IP54
Power Supply	90 - 135 V DC
Operating Temperature	-20° to +70°C

Microprocessor controller of RMPU for LHB and Double Decker Coaches (as per specification no. RDSO/PE/SPEC/AC/0139 – 2009 (rev.1))

The Microprocessor Controller for Roof Mounted AC Package Unit for LHB Coaches and Double Decker Coaches is a Microcontroller based unit to control the sub-devices of the RMPU automatically according to the Heating, Ventilation and Air-Conditioning (HVAC) algorithm, which provides comfort journey experience to the AC coach passengers of the Indian Railways.

Description :

The Microprocessor Controller consists of one Control Unit and one Display Unit. Control Unit controls the sub devices of two RMPUs and also senses the different temperatures like Return-Air temperature, Fresh-Air temperature, Supply-Air temperature and Humidity of the Return-Air etc. by means of various sensors fitted in the RMPU Units.

It also continuously monitors the status of the RMPU's sub-units, all temperature sensors, hygrostats, safety devices, pressure sensors, power supply and stores the log of events and list of failures using "Event Recording System" and "Fault Storage System" respectively. The Events & Faults stored in the memory can be downloaded through USB port by the inserting the USB drive. The health (OK/Not OK) status of the devices additionally indicated by the glowing LEDs provided on the top of the Control Unit.

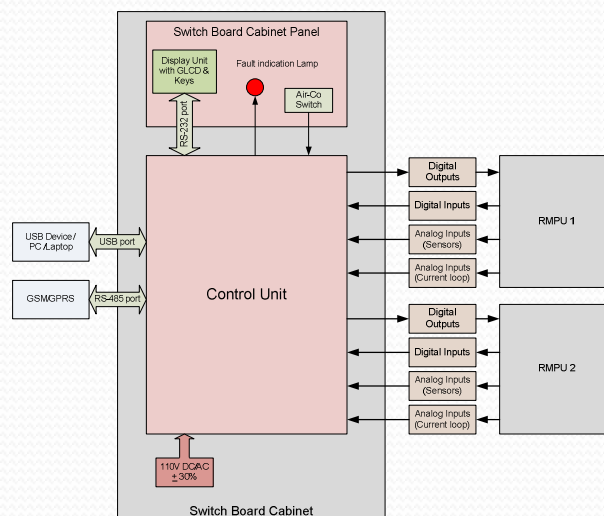
Display Unit as a part of the Microprocessor Controller consists the graphical LCD and the Keys. It is used to display Date, Time, Coach No., RMPU No. and Make, Status of the RMPU's sub-devices, various temperature sets (pre-defined) etc., It is possible to change the defaults settings of the above mentioned parameters through the keys provided on the Display Unit. The messages displayed on the Display Unit are under the control of Control Unit.

The communication between the Control Unit and Display Unit should happen through RS-232 port. RS-485 Communication Port provided for GSM/GPRS Module connectivity, this provision facilitates to centralize the system as a future requirement.

System Modules

The Microprocessor Controller consists of the following units.

- ❖ Control Unit
- ❖ Display Unit



Control Unit:

Control Unit consists Controller Section, Digital Input Section, Digital Output Section, Communication Section, Memory Section, Real Time Clock & Watchdog Section, LED Indication Section, Power Supply Section and operates different relays associated with Blowers, condensers, compressors and heaters. It is mounted inside the switch board cabinet.

Features:

- ❖ Event Recording - Sampling of event recording will be done once in every 2 minutes and the past 200 hrs. of event log data will be available and it can be downloaded through USB drive via USB port.
- ❖ Fault Storage - The Control Unit stores the various tripping and faults of the RMPU and maintains past 2000 memory backup it can be downloaded through USB drive via USB port.



Display Unit

The Display Unit used to display the date, time, seven temperature settings and various parameters of the RMPUs. There is provision to set/configure the date, time, RMPU number & make and selection of seven set temperature point etc., through keypad provided on Display Unit.

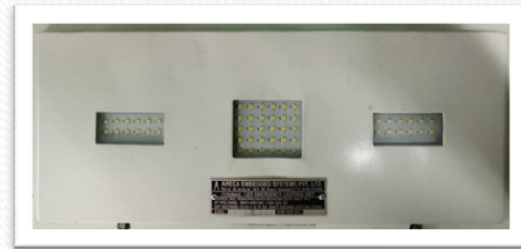


Brief Specification

Input Voltage	- 110 V DC / AC
Digital Inputs	- 22 nos.
Input Voltage	- 110VAC/DC
Type of Switching	- Opto-isolated
Digital Outputs	- 20 nos.
Switching Voltage	- 250VAC max.
Switching Current	- 1A (max.) at 100VDC.
Type of switching contacts)	- Relay contacts (normally open contacts).
Analog Inputs (Sensors)	- 7 nos.
Analog Inputs (Current loop)	- 8 nos.
Measuring Signal	- 4 - 20mA.
Type of switching	- Current loop.
Maximum load	- 700 ohms.

Emergency Lighting Unit (ELU)

RDSO/PE/SPEC/AC/0180-2016(Rev-0)



Emergency lighting system is developed to provide illumination during failure of all other power supplies inside the coach due to derailment and accidents to facilitate easy exit of passenger and their immediate rescue during such emergencies. These emergency lights provided inside the coach and on doorways would switch 'on' automatically in the event of failure of normal power supply system.

Features:

Automatically gets on when battery supply system of the coach fails during any unforeseen circumstances.

The Emergency Lighting System will deliver full output for an initial period of 2 hours and with reduced power for the subsequent 10 hours .It has sufficient battery capacity of 7Ah to ensure working emergency light continuously for 12 hours in order to provide the required illumination ,when the normal supply fails

Battery low and supply failure indications.

Super Bright White LED.

Microcontroller based Intelligent Battery Charging/Discharging mechanism for optimum life of Battery

LED Type	SMD
Pixel Color	white
Color Temperature	5000-7000K
Luminous Flux	7 lumens
Viewing Angle	100°
Case Dimension(LxDxH)	LHB Coach- 405 X 102 X 185 TL/AC(SGC) Coach-240X175 X165
IP Protection	IP54
Power Supply	90-135 V DC
Operating Temperature	(-)20° to +70°
Weight without Battery	2.5 Kg
Life time	Minimum 50000 hrs at TJ=70 °C



Digital Clocks with GPS Synchronization

RDSO Specification No: RDSO/SPN/TC/62/2008



Purpose

To display precise and accurate time on all digital clocks placed throughout any Railway station, any Organization or Commercial places and also to eliminate the need for manual setting of time.

Types of Clocks

MASTER CLOCK

OFFICE CLOCK

PLATFORM CLOCK (Single & Double sided)

Features

- ▶ Master Clock synchronizes with GPS time.
- ▶ Rack mountable 1U height master clock.
- ▶ Master clock synchronizes time across all slave clocks.
- ▶ Built-in controls for setting 12 or 24 hour time format.
- ▶ Each clock can be configured as master clock in standalone mode.
- ▶ Slave clocks communication health status is indicated in Master.
- ▶ Time display in Digital clocks with built-in RTC even when connection fails with Master.
- ▶ Power ON self diagnosis for testing different peripherals and communication ports.
- ▶ Password authentication provision is provided for time setting and port testing through user interface of master clock.
- ▶ Protection against transient and voltage fluctuations.
- ▶ Class 'D' surge protection in data communication.

Parameters	Master Clock	Office Clock	Platform Clock Single-sided	Platform Clock Double-sided
LED Type	7 Segment Diffused	Diffused	Diffused	Diffused
LED Size	-	5mm Oval	5mm Oval	5mm Oval
LED Color	RED	RED	RED	RED
Time Format	HH:MM:SS	HH:MM:SS	HH:MM	HH:MM
Segment Height	½ Inch	70 X 37	320 X 150	320 X 150
LED Brightness	100 mcd	600 mcd	600 mcd	600 mcd
Viewing Angle	50°	Horizontal: 110° Vertical: 40°	Horizontal: 110° Vertical: 40°	Horizontal: 110° Vertical: 40°
Viewing Distance	Up to 10 mts	Up to 20 mts	Up to 50 mts	Up to 50mts
Interface	Optically isolated RS 485	Optically isolated RS 485	Optically isolated RS 485	Optically isolated RS 485
Case Dimension (LxDxH) in mm	482 X 255X 1U	420 X 90X 150	1080 X 210 X 490	1080 X 210 X 490
IP Protection	IP54	IP54	IP54	IP54
Case Material	Powder coated galvanized iron	Powder coated galvanized iron	Powder coated galvanized iron	Powder coated galvanized iron
Mounting	Rack mounting	Wall mounting / Ceiling suspension	Wall mounting / Ceiling suspension	Wall mounting / Ceiling suspension
Power Supply	160 to 270 VAC	160 to 270 VAC	160 to 270 VAC	160 to 270 VAC
Operating Temperature	-10° to +70°C	10° to +70°C	-10° to +70°C	10° to +70°C



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