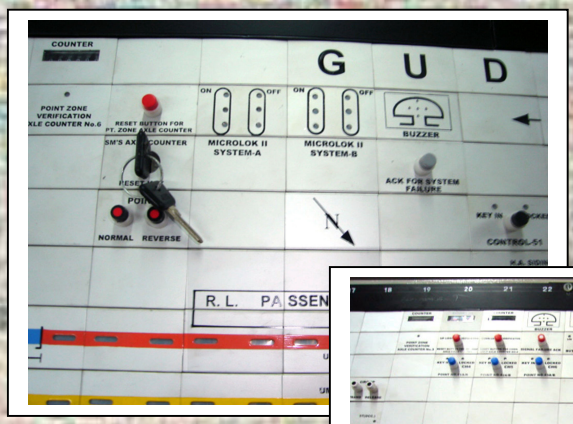
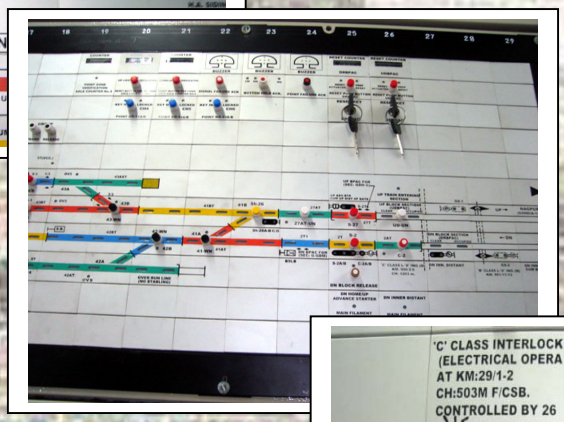
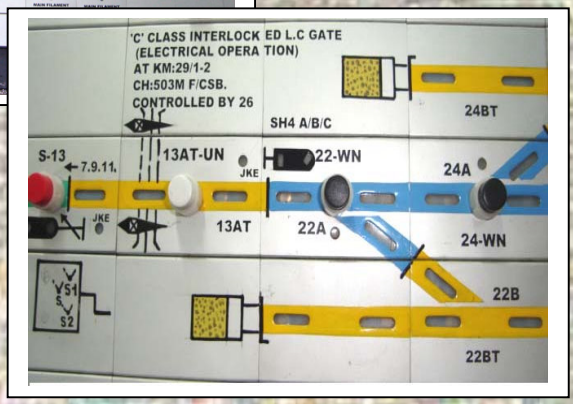
An ISO 9001:2000 Company

DOMINO TYPE
CONTROL CUM INDICATION PANEL
D E S D O M
(For all types of PI / RRI / SSI Installations)

Conforming to RDSO/SPN/186/2004







Deltron Equipment & Systems Pvt. Ltd.

An ISO 9001:2000 Company

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INTRODUCTION

Operating cum Indication panels (O & I) are critically related to railway signaling system. They are used to reliably display the status of various signaling elements, so that route selection and line clearance operation can be performed without any ambiguity.

Domino panels from DES are fabricated out of large number of small sized dominos in matrix formation, each of them being independent module. They offer features of utmost importance for signaling operation as listed below:

- Quick replacement of faulty components and parts
- Easy and fast maintenance of panels resulting least shutdown time
- Compatibility to easily accommodate any kind of remodeling of yards, such as addition, deletion and reconfiguration of signals, points, tracks, axle counters etc.
- Cost effectiveness without loss of reliability and performance
- User friendly regarding operation and maintenance

DESIGN FEATURES

Mechanical Structure

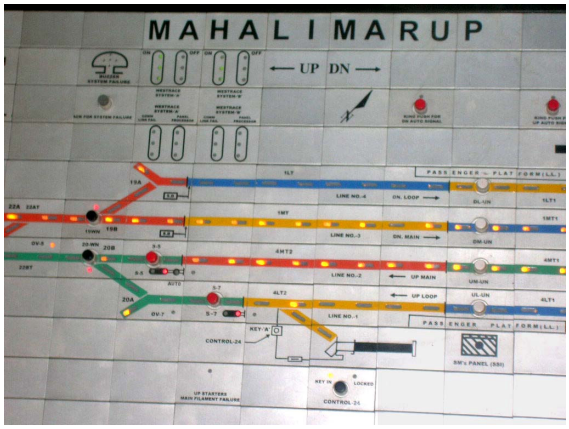
- The body of panel is fabricated from 18/16 SWG cold rolled mild steel sheet as per IS: 513 Grade D and painted with Siemens gray powder coating with texture finish.
- Panel is provided with detachable back covers that are easily removable to facilitate access to the internal wiring, termination etc and are provided with double locking and sealing facility.

Side view of Control Panel (with provision of Leg space for the operator & faceplate inclination angle of 30°)

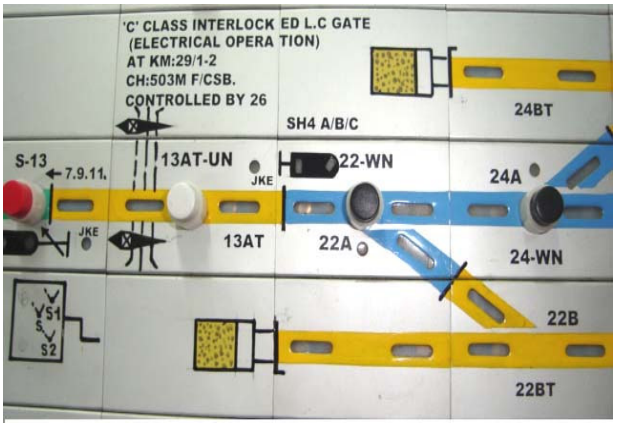
Side view of Control Panel (without provision of Leg space for the operator & faceplate inclination angle of 60°)

Faceplate

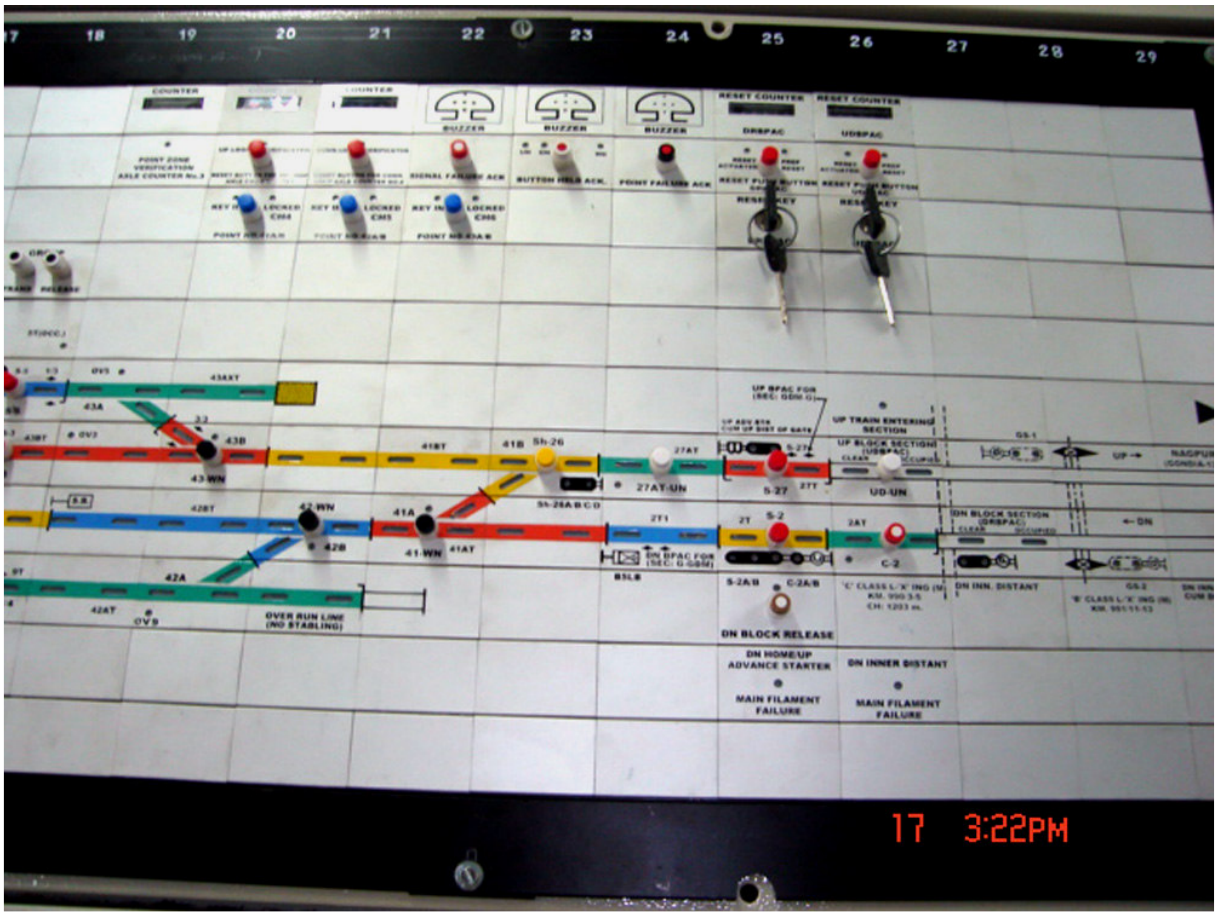
- The illuminated faceplate is kept at an angle between 30° to 60° or 90° from horizontal plane for proper visibility and convenient operation.
- The yard layout is reproduced on the faceplate of the panel in accordance to its geographical position. The detailed yard layout showing tracks, points, signals, level crossing gates, sand humps, platforms, stationmaster's cabin etc. is printed on to the panel faceplate. The track occupancy and route status, point status, main and shunt signal status etc. are represented by an illuminated diagram
- The areas covered by each track circuit are clearly distinguished by separate colours. Width of track layout is 7mm(±1mm), for proper visibility, even in poor ambient light. Minimum length of any track is generally kept not be less than is 1or 2 domino modules.
- Push Buttons for operating of points, signals and controls etc., are normally provided on the illuminated diagram itself in Geographical order.
- Group buttons, emergency buttons, emergency counters, SM's key are also provided on the faceplate, for convenient operation.
- Indications on the panel are provided through clear (colourless) white/ red/ yellow/ green light emitting diodes (LED's) from international manufacturers like Agilent, QTC or Everlight.
- Faceplate is covered by transparent acrylic sheet of 4mm thickness ± 0.5mm which is fixed on the top of the faceplate by a removable frame of minimum 2 mm thickness ± 0.2mm.



Showing panel under operation



Showing panel under operation



A part of the faceplate of typical domino panel

Domino module

A domino is a mini sized independent module having separate power supply and inputs. Its main building block is rectangular and is made of moulded Nylon having a honeycomb inner structure divided into a number of run-through chambers for holding the panel elements like LED's, switches etc. and there connecting leads which ensures low loss electrical path.

Each domino has its own panel of duly matched size and it is clip fitted at the front of the nylon block. The PCB for the module is fitted at the back plane of the same block. The multi pin connector of PCB is soldered to the members of the respective wire groups whose other ends are crimped to rigidly fitted terminals or connectors already wired to relay racks.

A domino consists of easy to dismantle parts like nylon block and the PCB with connector and a domino module itself is easily detachable from the panel built out of arrays of dominos, without disturbing the neighboring members.

• **Indication Domino module**	 **Internal wiring of Indication Domino**  **A complete Indication Domino with cover and legend printing**
• **Push button Domino module**	 **Push Button Switch Assembly**  **A complete Push Button Domino with cover and legend printing**
• **Key Domino module**	 **A complete Key Domino module with cover and legend printing**
• **Counter Domino module**	 **A complete Counter Domino module with cover and legend printing**

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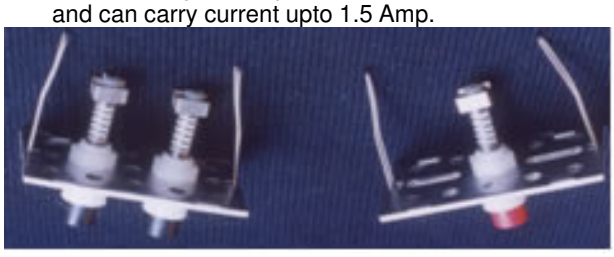
Following configurations of domino modules are used as per design requirement:

PART	SPECIFICATIONS	FIGURES
FRONT COVER	• **Material** Anodized aluminum as per IS: 7088 • **Colour** Silver-Grey • **Thickness** 1.5 mm. • **Size** 54 mm X 34mm	 Front Cover with legend printing
NYLON BLOCK	• **Material** Nylon 66 • **Colour** White • **Electrical Insulation** 100 MΩ. • **No. Of honeycombed chamber** 15 (5x3) • **Rows in the chamber** 3 • **Columns in the chamber** 5 • **Dimensions (mm)** 52x32x41 (L x W x H)	 Nylon 66 Domino Block
PCB	• **Material** Copper clad glass epoxy of Grade FR4 or equivalent • **Connector** 10 pins. / 8 pins as per design requirement • **Size** Matched to block	 PCB for Domino

Push Button

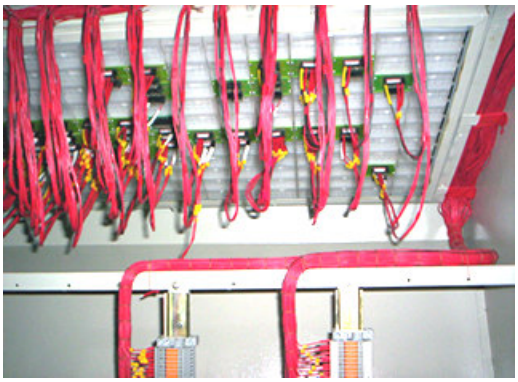
- Push Button has provisions of 1 NO normally. Other contact configurations like 1 NO/NC or 1 NO+1 NC or 2NO+2 NC can be provided with special attachment contacts as per design requirement.
- All contacts are made of phosphor bronze as per IS: 7814 with silver-plating as per IS: 1771. Thickness of silver coating is adequate to last for entire service life of panel. Contact resistance is not more than 90 mΩ and can carry current upto 1.5 Amp.



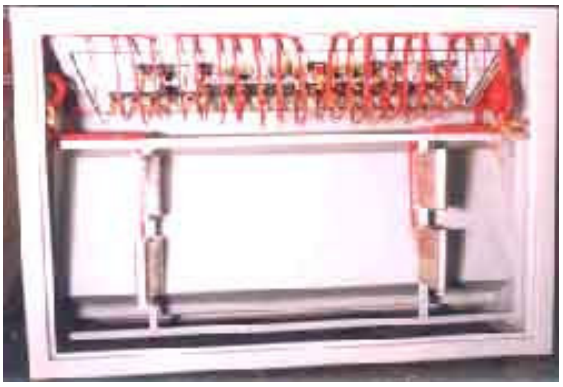
1NO Push Button Switch assembly for Domino Panel

Wiring & Terminals

- The Domino type Control cum indication panels are wired using 7/36 or 7/0.2 mm PVC or Teflon coated, multi-stranded, single core tinned copper conductor capable of carrying a current of 1.2 Amp.
- The domino block's internal wiring is performed using flameproof Teflon coated wire of above specification.
- The panels are either terminated in Tag Blocks (as per IRS: S77), Terminals (Wago, Phoenix, Connectwell etc. as per IEC 947-7-1) or conventional Barrier terminals as per RDSO specifications.
- The wiring is properly dressed and bunched using bunching cord, cable ducts, sleevings, plastic belts and numbered with proper ferrules to ensure proper trace ability.



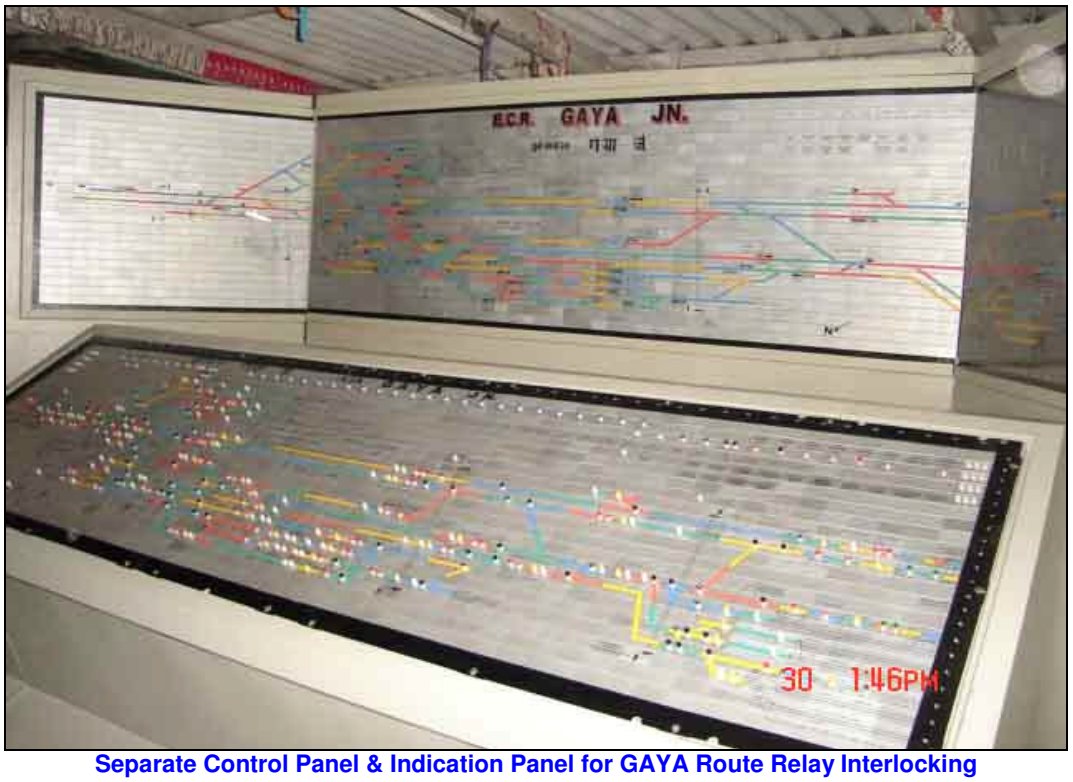
Back view of Domino Panel wired with Terminals



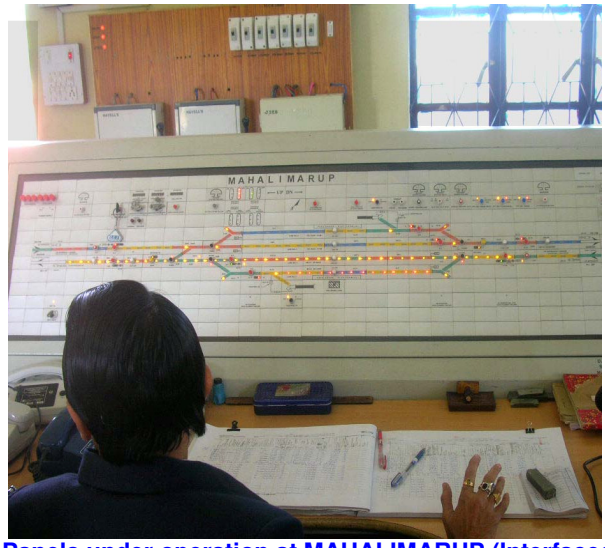
Back view of Domino Panel wired with Tag Blocks

Information to be provided for manufacture:

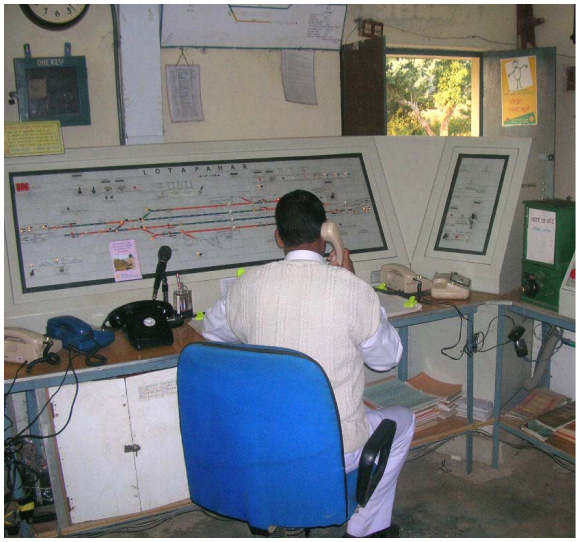
- Station working rule diagram
- Approved faceplate layout including illuminated diagram
- Angle of faceplate with respect to horizontal plane (30° to 60° or 90°)
- Any other special information, as deemed fit



Separate Control Panel & Indication Panel for GAYA Route Relay Interlocking



Panels under operation at MAHALIMARUP (Interfaced with WESTRACE - SSI)



Panels under operation at LOTAPAHAR (Interfaced with MICROLOK II - SSI)

Users of our Panel in Indian Railways:

- South Eastern Railways
- Eastern Railways
- East Central Railways
- East Coast Railways
- Northern Railways
- North Central Railways
- South Central Railways
- North Frontier Railways
- Metro Railways

Users of our Panel in different other Asian countries:

- Bangladesh Railways
- Malaysian Railways

Some of the Companies Using our Panels for different PI & RRI:

- IRCON International
- RITES
- Union Switch & Signals
- Siemens India Ltd.
- Crompton Greaves
- M.R. Trading & Company
- Kalindee Rail Nirman
- MCML Systems
- V.N. Reddy & Associates
- Vijaywargi & Sons
- & Many more…….