AUTOMATIC SELECTIVE DOOR OPENING *(ASDO)* CORRECT SIDE DOOR ENABLING *(CSDE)*

SELLA
CONTROLS
SAFE AND SECURE

Automatic Selective Door Opening (ASDO) Correct Side Door Enabling (CSDE)

Selective Door Opening and Correct Side Door Enabling Systems are used to prevent train doors being released when there is no platform available. Provision of a SDO and CSDE system can enhance passenger safety and improve dwell times at stations.

SELLA CONTROLS have been involved in Selective Door Opening systems since the early 1990s and have extensive experience in these applications.

The selection of an ASDO and/or CSDE system is dependent on a number of factors such as existing technology already on board the train, route geography and commercial factors.

It is also possible to provide an ASDO system combined with Driver Controlled Operation (DCO).

TRACKLINK III

Typical Solutions:

Train Based ASDO and CSDE solutions using Tracklink III® Beacons with interface to Train TCMS.
The system has a Tracklink III® Reader mounted in each cab vehicle per unit and communicates to the TCMS via a serial link. Tracklink III® Beacons are mounted at every platform. The Tracklink III® Beacons provide location specific information as per RIS-2795-RST to the TCMS. Based on the TCMS knowing the length of the train and the length of the platform from the Tracklink III® beacon data then the TCMS can enable the correct doors at each platform.
References: Class 444, Class 450, Class 707.

Train Based ASDO and CSDE solutions using Tracklink III® Beacons and interface to Train TCMS with GNSS.
The system has a Tracklink III® Reader mounted in each unit and communicates to the TCMS via a serial link. The TCMS is used as the ASDO/CSDE controller and contains a database of the stations on the route. A GNSS geofence for each station and a network route is used so that the train identifies when it is at a particular station. This information is used to provide the SDO functionality which is enhanced by Tracklink III® beacons at platforms. Where there are stations with different platform lengths or where there is unreliable GNSS coverage then Tracklink III® Beacons are mounted at each platform of the affected station. If CSDE is required then Tracklink III® beacons are installed at all platforms.
References: Class 378, Class 387, Class 701, Class 710, Class 720, Class 730.

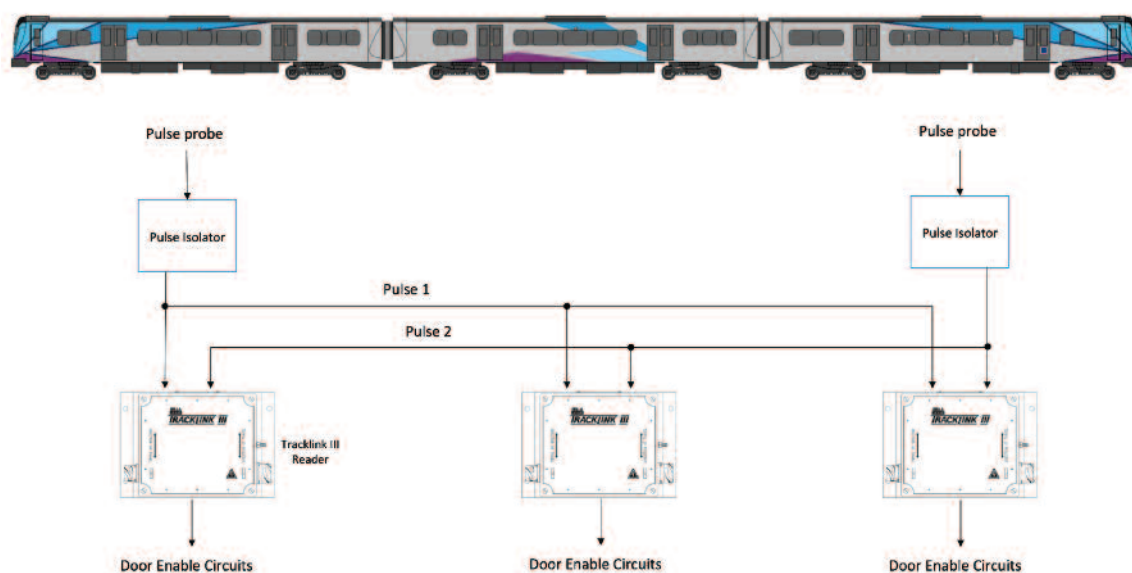**Train Based ASDO solutions using Odometry, GNSS and Tracklink III®.**
The system has an EKE Trainnet® ASDO controller with odometry, GNSS and a Tracklink III® Reader. The ASDO controller contains a database of the stations on the route. A geofence for each station and a network route with distances between station stops is used so that the train identifies when it is at a particular station. This information is used to provide the SDO functionality for most of the route. Where there are stations with different platform lengths or where there is unreliable GNSS coverage then Tracklink III® Beacons are mounted at each platform of the affected station. At these stations the ASDO system will default to the shortest platform length unless it detects the Tracklink III® beacon, with the information from the beacon the ASDO controller can then release the full amount of doors for that platform. The ASDO controller communicates with remote Input/Output modules on each individual vehicle to release the correct doors on each vehicle.
*References: Class 195, Class 196, Class 197, Class 331, Class 397, Class 777.*

Coach based ASDO (C-ASDO) solution using Tracklink III® Readers and Beacons
The system has a Tracklink III® Reader installed under each coach and a Tracklink III® beacon installed at the start of each platform on the train routes.
Any coach fitted with a Tracklink III® Reader that passes over a Tracklink III® beacon will have its doors enabled, any coach that does not pass over the Tracklink III® beacon will not have its doors enabled. Interface to the door control circuits is done via outputs in the Tracklink III® Reader.
References: Class 458/5, Class 185.

ASDO Controller with Odometry, GNSS and Beacon Reader – Typical Train based Solution
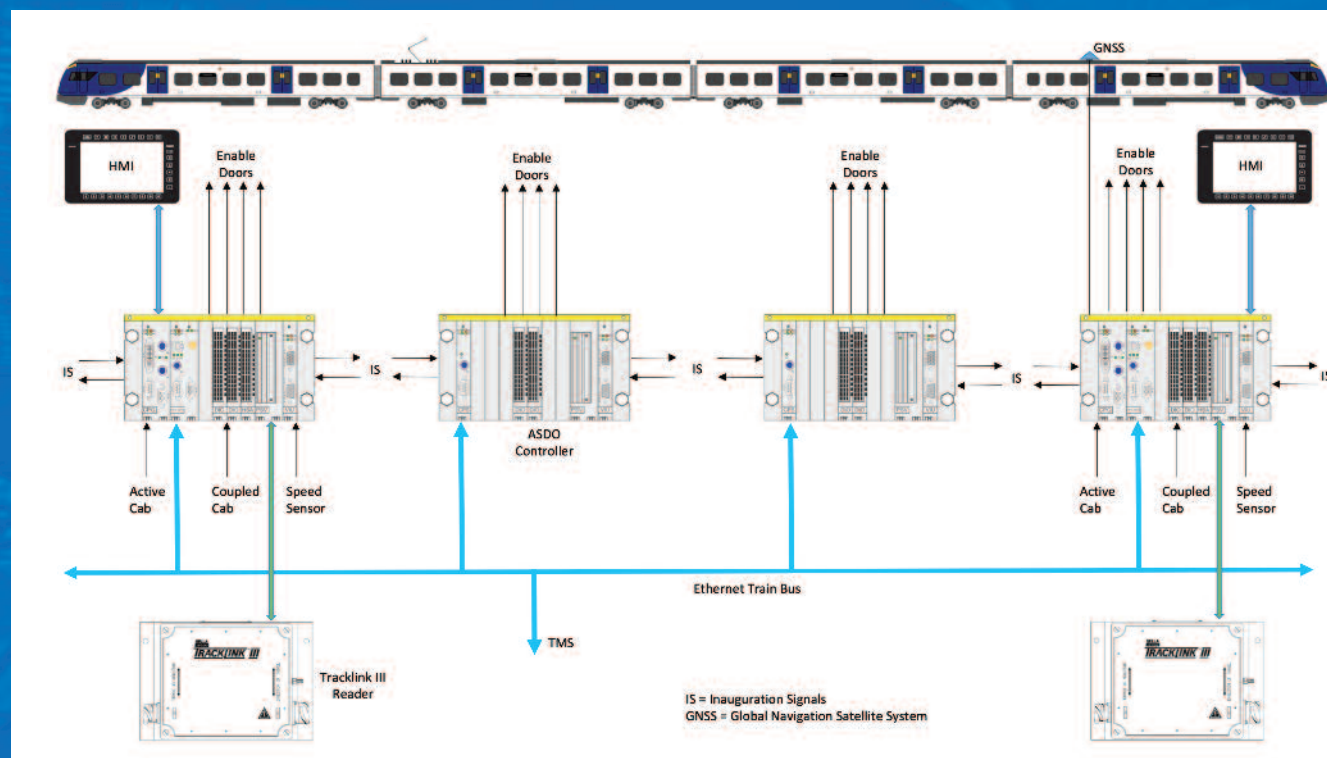
This sample scheme is a typical train based ASDO solution that can be deployed on new vehicles or retrofitted to existing vehicles which uses EKE Trainnet® Modules and Tracklink III® Reader and beacons.

The ASDO Master controller with odometry and GNSS is used to determine where the train is on the network and when a train is at a station. Odometry and GNSS station Geofencing is the main method of determining where the train is on the network and determine which doors should be opened at the station, but where stations have platforms of varying lengths then beacons are required to determine exactly which platform the train has entered, GNSS and odometry is not accurate enough to give platform discrimination. Beacons may also be required at stations with poor GNSS coverage. Where Correct Side Door Enabling is required then Beacons may be required at all platforms.

An important part of any ASDO system is determining the train configuration, detecting the length of the train and controlling the appropriate doors. There are a number of methods of achieving this functionality with the Trainnet® ASDO controller by using a BUS system to connect the ASDO controllers in each coupled unit or by the use of existing train wires and additional unit wires.

Each cab would have an ASDO display which provides the operator with information as to what train configuration has been detected, what doors have been selected for the current platform and the ability for the operator to carry out a manual override of the ASDO.

SELLA CONTROLS ASDO solutions are designed to meet the guidelines of Rail Industry Standard RIS-2747-RST.

ASDO Controller with Odometry and GNSS

A typical ASDO controller is made up of EKE Trainnet® Modules to provide interface to the train control systems, train orientation detection and interface to the drivers ASDO display.

Typical Trainnet® Modules can include:

CPS-GPS Module
Main processor with GNSS which manages the ASDO functionality. Contains the station database.

CPG Module
Interface card to drive the ASDO display

WTB Module
Wire Train Bus to interface other ASDO controllers.

DIO Module
SIL-2 Digital Input and Output module with 24 Input only channels, 8 Input/Output channels.

HSA Module
4 off SIL-2 Speed Sensor Inputs

PSV Module
Power supply Module

PIU Module
Power Input Unit

Other modules are available and any combination of cards can be implemented.

Typical ASDO Controller

ASDO Drivers Display

12.1" or 6.5" Display with function keys. Provides information to the driver of the train configuration and what doors are selected.

ASDO Drivers Display

Tracklink III® Reader and Beacons

Provides platform specific data by way of the train mounted Tracklink III® Reader and the track mounted Tracklink III® Beacons. The Tracklink III® system complies with RIS-2795-RST.

Tracklink III® Beacon

Tracklink III® Reader

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