

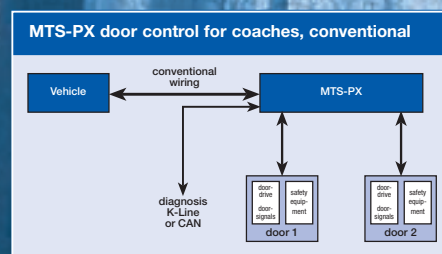
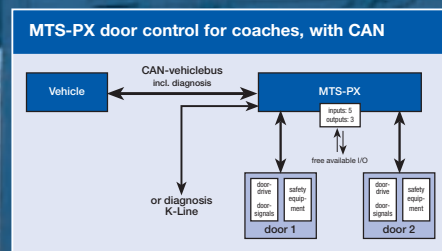
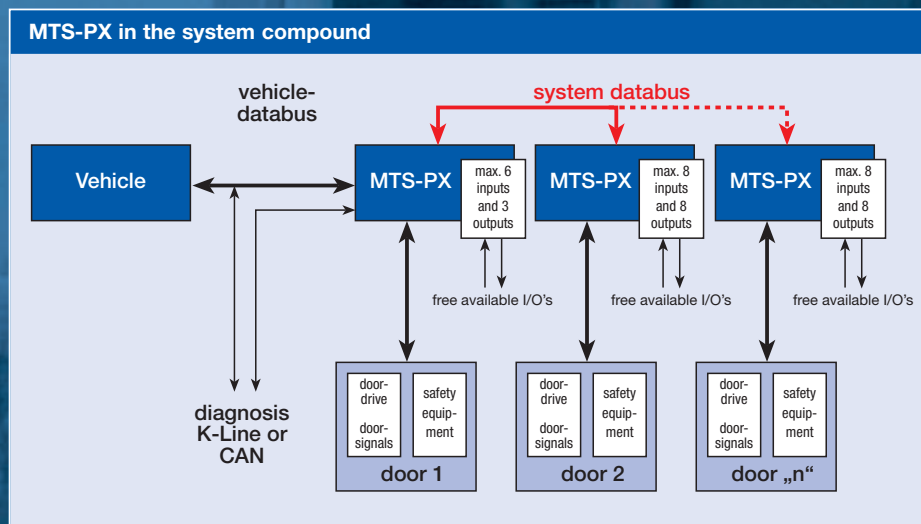
# MTS

Modular Door Control System



# WABCO

# Modular door control for buses and coaches



## One control system for different door designs

The highly flexible of WABCO Modular Door Control System (MTS) allows to operate and monitors up to five doors of different designs with identical ECUs in one vehicle.

MTS is applicable for a multitude of doors, such as inward swinging doors, outward swinging doors with and without lifting lock, and hinged sliding doors.

In a single vehicle equipped with MTS, both pneumatically and electrically driven doors can be installed in any combination. Because of their fundamentally different requirements a special variant of the ECU is used for these electrically driven doors.

## Operation

In one single MTS system up to five ECUs are connected by a CAN databus, which considerably reduces wiring. The door system is connected to the vehicle at the first door, either by conventional wiring or by a second CAN databus.

The vehicle manufacturer determines the type of door by an easy parameterization at the end-of-line. At the same time, many other specific features can be programmed.

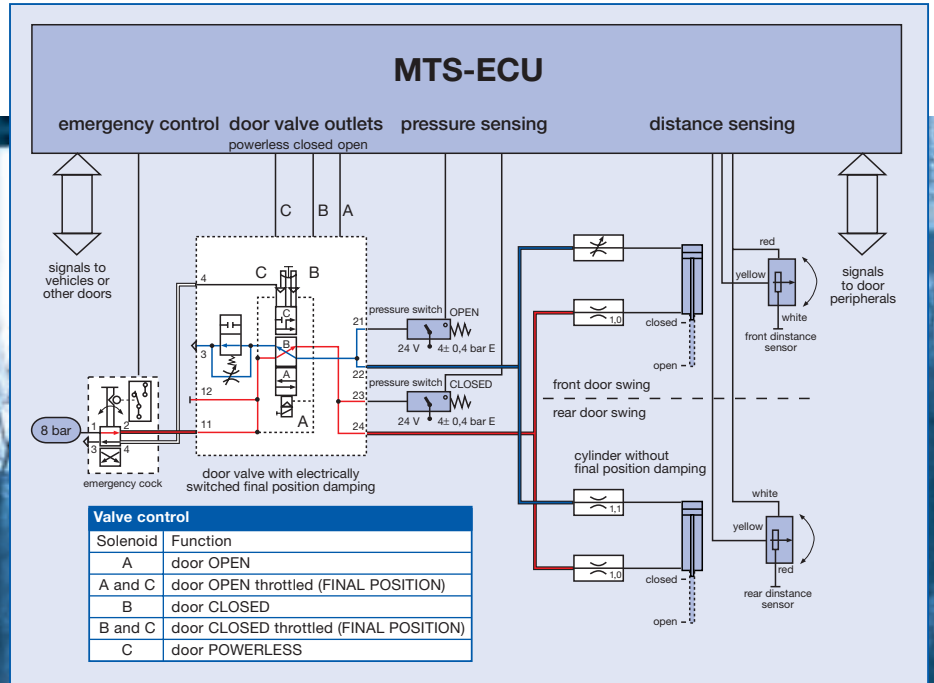
The parameters of all doors are saved solely in the ECU of door 1. Therefore the ECUs of door 2 to 5 are freely interchangeable.

## Increased flexibility of MTS-PX

The flexibility of the MTS system has stood the test of time in tens of thousands of applications. In its latest generation, MTS-PX, it has been further enhanced by the integration of a multiplex system.

When MTS is connected to the vehicle via the CAN databus, eight inputs and eight outputs can be freely occupied at the doors 2 to 5, as can six inlets and three outlets at the first door. The corresponding data is communicated to the central board computer by newly defined CAN messages and can be linked there freely.

Electrical switching boards can be connected directly to the MTS-PX and monitored without any additional devices. Moreover, the MTS-PX can control both outward swinging doors of a coach with only one ECU.



### MTS-P for pneumatic doors

All pneumatic functions are integrated in one single door valve. In normal operation this valve acts like a 4/2 directional control valve for the alternate pressurizing of the door cylinder chambers. For pressure sensing, two pressure switches are used, which are screwed into the door valve.

Depending on the position of the door, the ECU switches on the damping integrated in the valve: in order to reduce the door speed before it reaches its final position, or in order to enable a “soft” reversing processes. A damping mechanism integrated in the door cylinder is not necessary.

Two door valves can be connected to the MTS, thus enabling, for example, the separate control of two door wings of a double door, or the independent control of both outward swinging doors of a coach.

### Anti-pinch protection

If a person or an object gets caught by the closing door wings, the door motion is slowed down. The ECU identifies this process by the “sensitive edges” or by distance sensors, which are connected to the drive. The door valve is reversed and the doors open again.

If a person or an object gets caught by the back edge of a door during opening, the sensors detect this slowing of the door motion. The ECU operates the central solenoid of the door valve. As a result, all door cylinder chambers are pressurized and the door becomes nearly “powerless”. The door wings consequently stop moving or move slowly into the “opening” direction. The remaining power is very low, and the door wings can easily be moved by hand.

### Emergency cock operation

When the emergency cock is operated, the door control system is vented and the door cylinders become pressureless. At the same time the door valve is pressurized via a control port. The door valve is then switched into a position which pressurizes all cylinder chambers simultaneously, when the emergency cock has turned back into its normal operating position. This avoids the door wings slamming, and the door is immediately ready for unrestricted use again.

### MTS-E for electrical doors

The MTS ECU for electrical doors (MTS-E) can directly control one or two motors. As in pneumatic doors the motion of the door is measured by analogue sensors, or otherwise by two-channel pulse generators.



WABCO, the vehicle control systems business of American Standard Companies, is the world's leading producer of electronic braking, stability, suspension and transmission control systems for heavy duty commercial vehicles. WABCO products are also increasingly used in luxury cars and sport utility vehicles (SUVs). Customers include the world's leading commercial truck, trailer, bus and passenger car manufacturers. Founded in the US 135 years

ago as Westinghouse Air Brake Company, WABCO was acquired by American Standard in 1968. Headquartered in Brussels, Belgium, the business today employs nearly 6500 people in 29 office and production facilities worldwide. In 2003, WABCO contributed US\$ 1.358 billion to American Standard's total sales of US\$ 8.568 billion.

**Website: [www.wabco-auto.com](http://www.wabco-auto.com)**

