

System

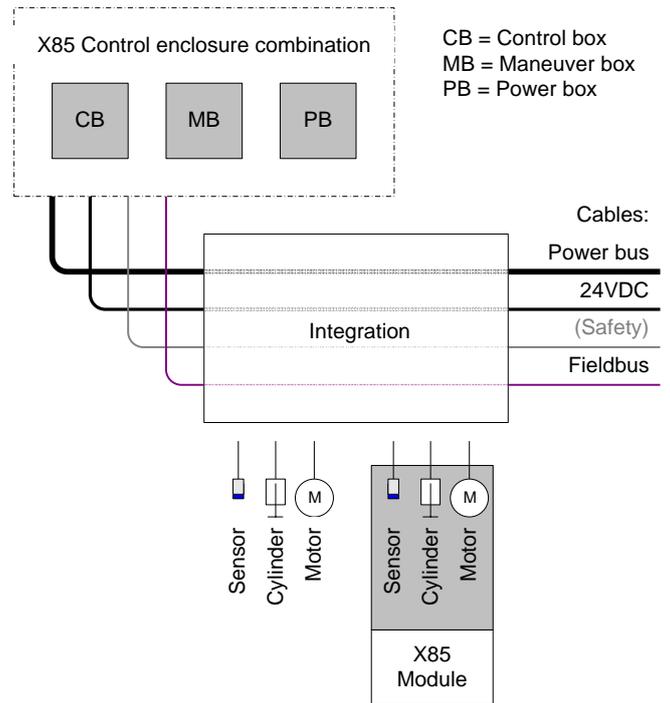
General system architecture

X85 Pallet Controls concept provides standardized control enclosures for distributed line control.

Enclosure groups:

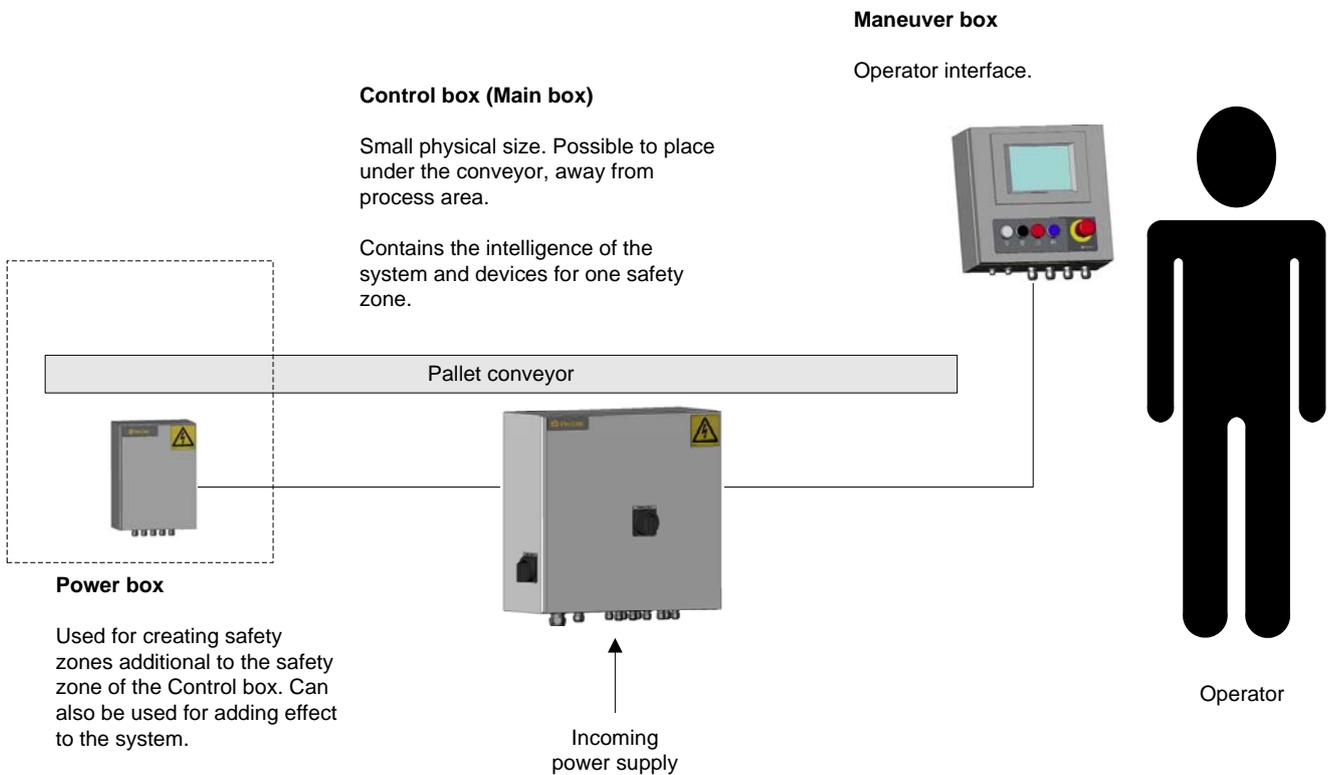
- Control box
- Power box
- Maneuver box

Distributed line control means that all application initiators and actuators such as sensors, pneumatic cylinders and motors are controlled through distributed fieldbus slaves.



X85 system architecture

Control enclosure area of application



System

Control box basics

The Control box is the starting-point of the X85 Pallet control system.

Basic features:

- Controller (PLC/PC) with fieldbus master
- Power bus distribution (V_{AC})
- $24V_{DC}$ distribution

All external I/Os are connected to the controller through fieldbus.

No operator interface is included.



Control box

Maneuver box basics

The Maneuver box is the operator interface. The simplest version includes pushbuttons and lamps for starting and stopping the system, while the larger version includes touch panel.

The smallest Maneuver box type can be directly connected, hard-wired, to the Control box.

The system can be divided into several maneuver zones by equipping each zone with one Maneuver box each.



Maneuver box

Power box basics

The Control box has certain limitations such as the number of motors it can power and that all motors must belong to the same safety zone.

Power boxes are used for either adding more safety zones (parallel or embedded) to the system or provide more effect.



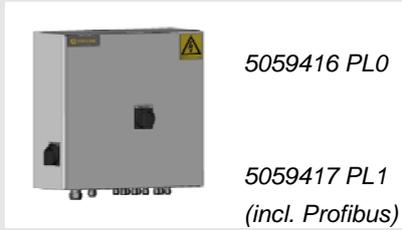
Power box

System

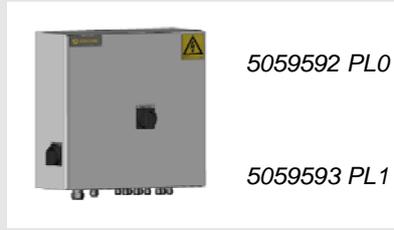
Control box assortment overview

Europe, Power bus 400V

Single safety zone



AS-i



Profibus

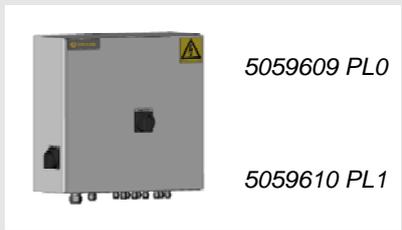
Triple safety zone



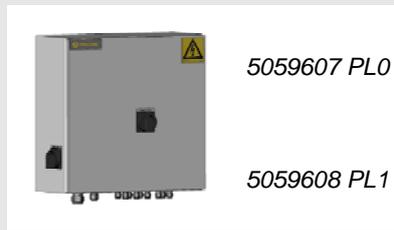
Asi+Profibus

US, Power bus 480V

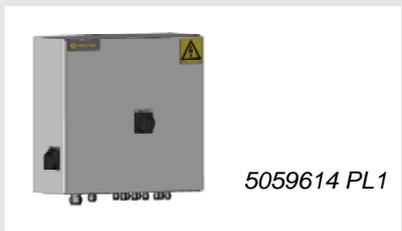
Single safety zone



AS-i



DeviceNet



AS-i + EthernetIP



DeviceNet + EthernetIP

System

Power box assortment overview

Europe, Power bus 400V

 <p>5058140</p>	 <p>5058141</p>	 <p>5058150</p>
Power-x	Air-x	Air

US, Power bus 480V

 <p>5059410</p>	 <p>5059411</p>	 <p>5058150</p>
Power-x	Air-x	Air

System

Maneuver box assortment overview

Europe



5105200

Maneuver unit



5105206

Maneuver unit + HMI



5110879

Reset

US



5105200

Maneuver unit



5105207

Maneuver unit + HMI



5110879

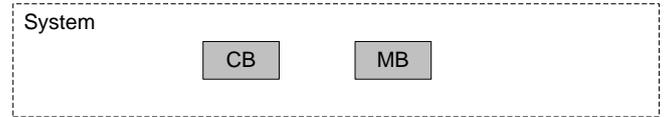
Reset

System

Box combination examples

Example 1

The system is equipped with a Control box and one Maneuver box.
The Maneuver box will affect the whole system.



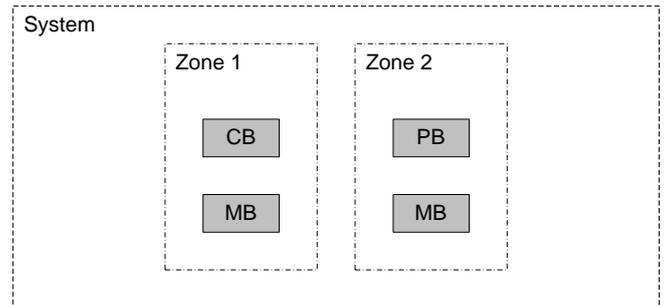
Example 1: Small system architecture

Example 2

The system is equipped with a Control box, a Power box and two Maneuver boxes.

Both zones are equipped with one Maneuver box each.
Zone 2 is equipped with a Power box creating a safety zone in parallel to the safety zone of the Control box.

Zone 1 and 2 are independent of each other regarding start/stop and emergency stop.

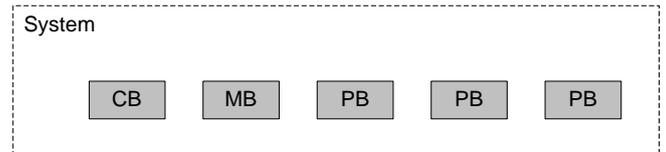


Example 2: Medium system architecture

Example 3

The system is equipped with a Control box, a Maneuver box and three Power boxes.

All Power boxes belong to the same safety zone as the Control box and together provide the system with additional incoming effect. Together can these 4 boxes (1 CB + 3 PB) power up to 30 kW, i.e. 40 0.75 kW-motors.



Example 3: Motor intensive system architecture

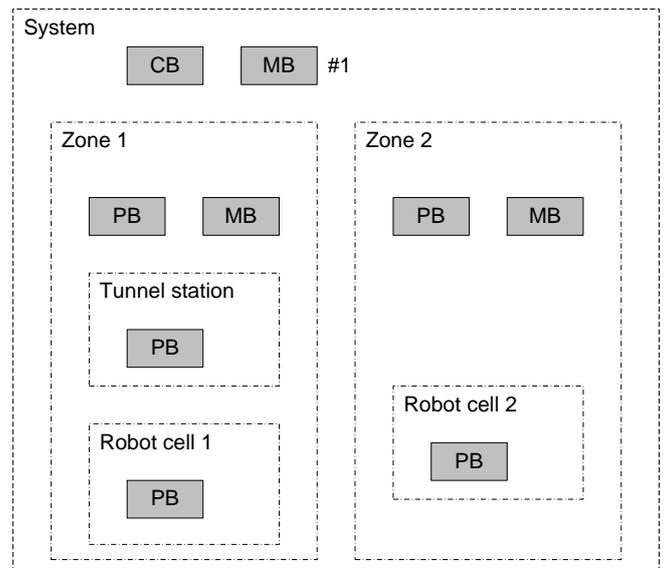
Example 4

The system is equipped with a Control box, three Maneuver boxes and five Power boxes.

The Control box and Maneuver box #1 has as system-global effect. Activating the emergency switch of Maneuver box #1 will stop the entire system with all its embedded zones (such as Zone 1 and Zone 2) and their inherent embedded zones.

Zone 1 and Zone 2 are equipped with one Power box and Maneuver box each. The zones are parallel and independent of each other. It is possible to stop one zone while the other is running.

Both zones have embedded zones. The embedded zones of Zone 1 will not be affected to any events in any parallel embedded zone. For example, opening the safety hatch of the Tunnel station will safety stop the Tunnel station but not affect Robot cell 1.



Larger system safety architecture

System

Office floor communication

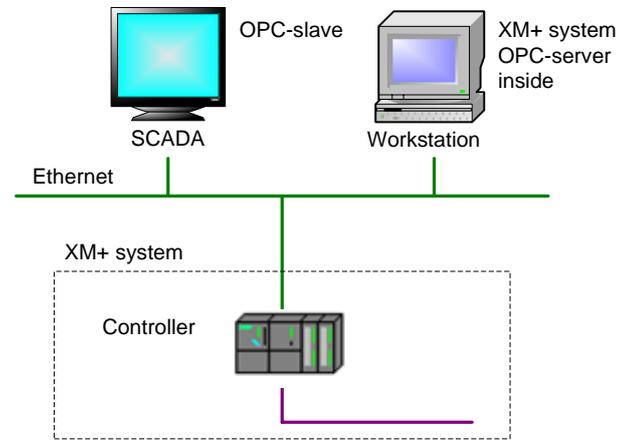
All Control box controllers can be equipped with Ethernet-module facilitating OPC-communication for open communication with the office floor.

US control boxes must be selected including the Ethernet-functionality, while for european Control boxes, the integrator adds the module.

OPC (OLE for process control) is open connectivity in industrial automation and enterprise systems that support industry.

OPC communication speed: 15000-20000 Words/second.

For more info: www.opcfoundation.com



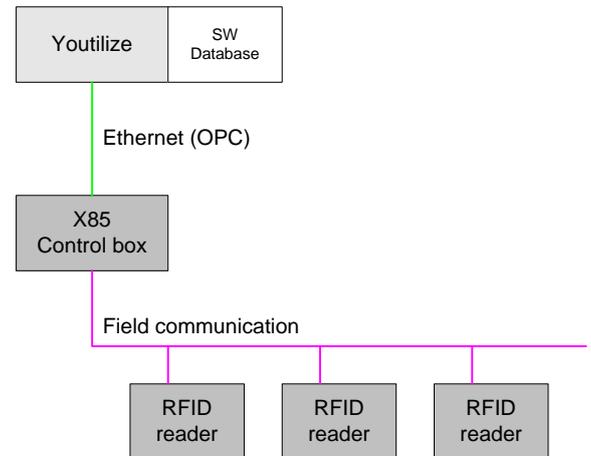
Picture: OPC communication

Youtilize connectivity

The intelligence of X85 Pallet system is central, which means that the Control box alone control the production flow.

When connected to Youtilize the control signals and RFID data are sent between Control box and Youtilize through Ethernet using OPC requiring Ethernet TCP/IP. The X85 Control box assortment include versions for Ethernet communication.

Note: The RFID readers communicates with the Control box using the fieldbus.



Youtilize connectivity