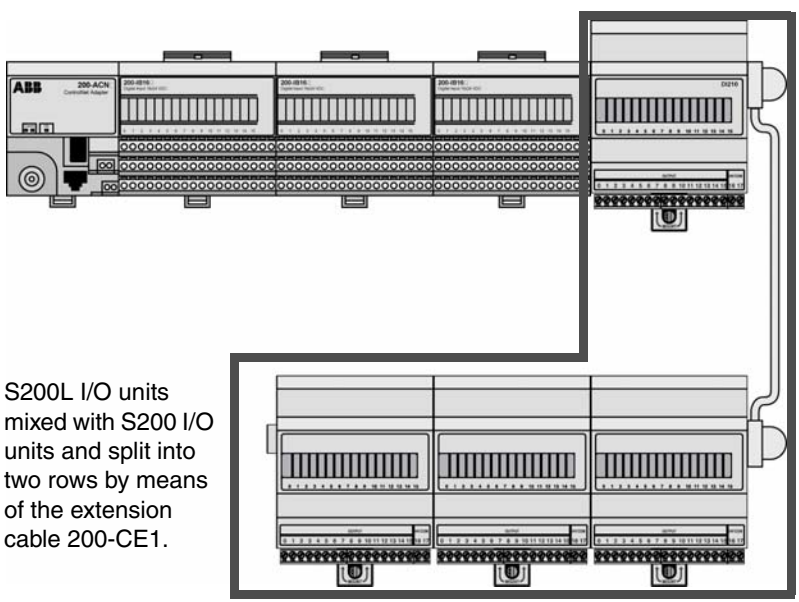
Section 1 Introduction

Product Overview

Compact I/O is a range of cost effective I/O units which can be mixed with S200 I/O units on the same DIN rail. These units can be connected to controllers through the adapters for various fieldbuses.

This manual describes the general facilities of the Compact I/O system. The use of S200L I/O and I/O 200C units and their functionality with different control platforms is dependent on certain system versions and configurations. The setting of filter constants, for instance, can be limited in some systems. Refer to the relevant manuals or product guides.



S200L I/O units mixed with S200 I/O units and split into two rows by means of the extension cable 200-CE1.

Figure 1. Configuration example

Compatibility with S200 I/O

Compact I/O units are bus compatible with S200 I/O units but because the I/O serial bus is an integral part of the S200L I/O and I/O 200C units, they cannot be replaced without physically breaking the bus. Consequently, the system power must be switched off before Compact I/O units are replaced.

External cables are connected to the units by means of detachable blocks with a total of 18 screw terminals.

Up to 8 I/O units can be plugged together on a DIN rail, but they can also be split into two rows by means of the extension cables 200-CE1 or 200-CE3.

Refer to the manual *S200 I/O, Hardware and Installation,* regarding S200 I/O units.

S200L I/O Components

The following I/O units are available:

DI210	16 digital inputs, 24 VDC, one counter input max.
DO210	16 digital outputs, 24 VDC, 600 mA
DX210	Digital combo with 10 inputs and 6 outputs
AI210	8 analog inputs, 0-20 or 4-20 mA, 12 bit resolution
AO210	4 analog outputs, 0-20 or 4-20 mA, 11 bit resolution
AX210	Analog combo with 4 inputs and 2 outputs

I/O 200C Components

200C-IB16	16 digital inputs, 24 VDC, one counter input max.
200C-OB16P	16 digital outputs, 24 VDC, 600 mA
200C-IB10xOB6P	Digital combo with 10 inputs and 6 outputs
200C-IE8	8 analog inputs, 0-20 or 4-20 mA, 12 bit resolution
200C-OE4	4 analog outputs, 0-20 or 4-20 mA, 11 bit resolution
200C-IE4xOE2	Analog combo with 4 inputs and 2 outputs

Section 2 Installation

Mandatory installation instructions in this section are marked with the symbol (M). Such instructions must be followed to fulfil the requirements of the European Union directives.

Installation Precautions

A system installed according to the instructions in this document meets the company's environmental specifications for industrial equipment. These specifications concern electric, climatic and mechanical environment.

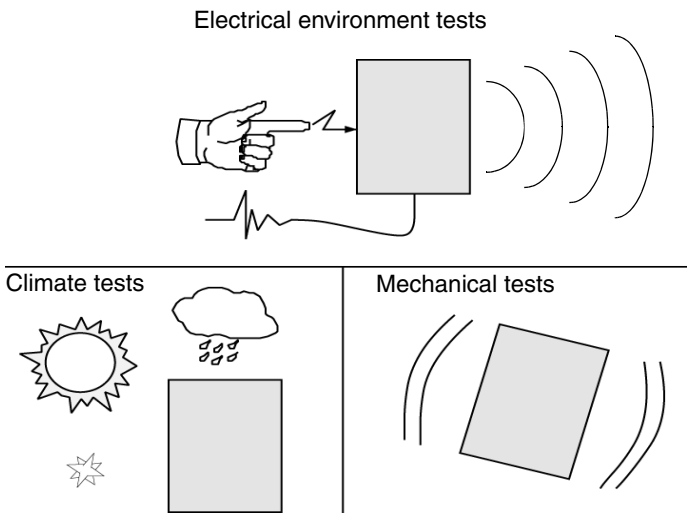


Figure 2. Environment tests

By taking the proper precautions, control systems can operate safely and reliably in normal industrial environments. Avoid locating equipment:

- where the ambient temperature is outside the range specified in the Technical Specifications.
- where the relative humidity exceeds the range specified in the Technical Specifications.
- where condensation may occur following sudden temperature changes.
- where it may be exposed to high electric or magnetic fields.
- where it may be exposed to corrosive or inflammable gases.
- where it may be exposed to dust, conductive particles, oil mist or organic solutions.
- where it may be exposed to direct sunlight.
- where it may be exposed to vibration or mechanical shock.
- where it may be exposed to water.
- (M) close to powerful high-frequency sources. Possible problems may be solved by means of external filters.

Do not use communication radios and cellular phones within one meter of the control system, as there is a risk that industrial interference levels may be exceeded, which may disturb the system.

Power Installation

Overvoltage Protection

Cables running outdoors may require overvoltage protection, see section Devices for Extended Noise Suppression on page 106. Be sure to use the correct device for each cable, otherwise the protection device may not work properly.

Contactors

Avoid mounting contactors and other disturbing equipment in the same cabinet as the control system. If this should be necessary, suppress interference (by snubbers, tranzorbs, diodes, varistors, etc.) and maintain the greatest possible distance between the system and the contactors.

Building and Power Distribution

The building in which the control system is located must be sufficiently protected against lightning, taking the local conditions into consideration.

The power distribution network must be sufficiently protected against overvoltage, taking the local conditions into consideration. In severe cases, we recommend gas discharge tubes in the main panel and varistors in the subpanel.

If the overvoltage protectors do not have a built-in inductance, the cable between the main panel and the subpanel must be longer than 10 meters.

The building should have a grounding busbar system to minimize common-mode currents. Alternatively, ground current loops must be broken by grounding shielded cables at only one end, or by using isolation amplifiers, fiber modems, etc.

Power Supply

For controllers and I/O systems, supplied by 24 V DC power supply units, see section Power Supplies on page 111.

M The output from the power supply must be isolated from mains.

It is recommended that the power supply be mounted in the same cabinet as the supplied system. If the power supply does not have a mains fuse, this can be installed between the power-line filter and the 24 V DC power supply.

Adapter for PROFIBUS 200-APB12

Technical Data	
Input voltage range	+24 V DC nominal, 19.2–31.2 V DC
I/O capacity	8 I/O units
Status indicators	2 red/green LEDs for unit status and communication status
Communication rate	Up to 12 Mbit/s
Current consumption	400 mA max. from external 24 V DC supply (includes internal current to I/O units)
Power dissipation	7.68 W max. at 19.2 V DC
Temperature	Operating: 0 °C to + 55 °C Non-operating: -40 °C to + 85°C
Humidity	5–95%, non-condensing
Weight	0.18 kg excl. package 0.27 kg incl. package
Dimensions	W 68 x H 88 x D 69 mm
Approval(1)	CE-marked and meets the EMC directive 89/336/EEC according to the standards EN 50081-2 and EN 50082-2
Agency certification	PNO (PROFIBUS Nutzerorganisation, PROFIBUS User Organization)
Order code	200-APB12

(1) Please note that the 200-APB12 adapter is not UL/CSA approved.