E ASCON TECNOLOGIC

DIN-rail mounting
double action controller
with analogue output

82 SERIES

D3 line
Installation manual

D3 line
Installation manual • 03/04 • Code: ISTR_I_D3_E_03_--
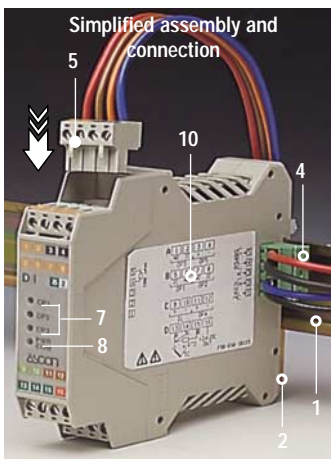
CE

C UL US LISTED

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General description

Simplified assembly and connection

1 DIN-rail, EN50022
2 Sping loaded slide for rail fastening
3 Side connector, build-in, to connect one instrument to another (up to 31)
4 5-pole male connector, with screw terminals, for power supply and serial communications bus
5 Four quick polarised connectors with 4 screw terminals for I/O
6 Female connector, with termination resistor for serial communications
7 Three Output status leds (red)
8 Green Status led:
  - ON: power on
  - flashing: serial communications in progress
9 Couple of connector protections
10 Wiring label
11 Model identification label

Common power supply

Withdrawable

Easy to replace even if powered
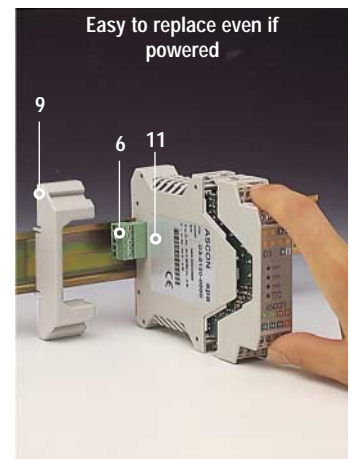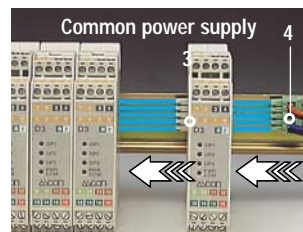
Model code

Mod. **D 3** **5 B C D** - **E F 0 0**
       Line   Basic   Accessories

The product code indicates the specific hardware configuration of the instrument, that can be modified by specialized engineers only.

Line		
	D	3

OP1-OP2 outputs		B
Relay - Relay		1
SSR - SSR		5

Serial communications		C
CanBus		3
RS485 Modbus/Jbus SLAVE		5

Options		D
None		0
Valve drive output		2
Analogue output		5
Valve drive output + Analogue output (retr.)		7

Special functions		E
Not fitted		0
Start-up + Timer		2

User manual		F
Italian/English (std)		0
French/English		1
German/English		2
Spanish/English		3

CE Notes on electric safety and electromagnetic compatibility

Please, read carefully these instructions before proceeding with the installation of the controller

Class II instrument, rear panel mounting.
This controller has been designed with compliance to:
Regulations on electrical apparatus: according to directive 73/23/EEC amended by directive 93/68/EEC and the Regulations on the essential protection requirements in electrical apparatus EN61010-1 : 93 + A2:95
Regulations on Electromagnetic Compatibility: according to the directive n089/336/EEC, amended by directive n° 92/31/EEC, 93/68/EEC, 98/13/EEC and the following regulations:
Regulations on RF emissions
EN61000-6-4 : 2001   industrial environments
Regulation on RF immunity
EN61000-6-2 : 2001   industrial equipment and system

It is important to understand that it's responsibility of the installer to ensure the compliance of the regulations on safety requirements and EMC.
The repair of this controller has no user serviceable parts and requires special equipment and specialised engineers. Therefore, a repair can be hardly carried on directly by the user. For this purpose, the manufacturer provides technical assistance and the repair service for its Customers.
Please, contact your nearest Agent for further information.
All the information and warnings about safety and electromagnetic compatibility are marked with the ⚠CE sign, at the side of the note.

Installation kit

Each set of interconnected controllers requires one model **AD3-KIT/BA.RT.PC.CD** kit:

Power supply and serial comm.s connector code AD3/BA

Connector with termination resistor for serial comm.s code AD3/RT

Couple of connector protections code AD3/PC

CD Rom with configuration software tool code AD3/CD

Dimensions

99 mm
3,9 in

114,5 mm
4,5 in

22.5 mm
0,89 in

6.3 mm
0,25 in
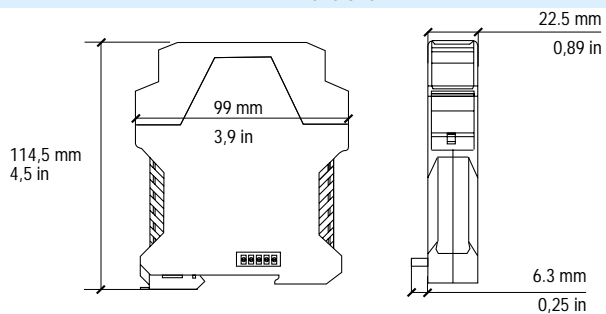
Conditions d'environnement		⚠ CE	Suggestion
Conditions standards	🌡°C Température 0…50°C		
	%Rh Humidité relative 5...95% sans condensation		
Special conditions	🌡°C Température > 50 °C		**Use forced ventilation**
	%Rh > 95% RH		**Warm up**
	Conducting atmosphere		**Use filter**
Forbidded condition	Corrosive atmosphere	Explosive atmosphere	

Mounting on DIN rail (EN60022)
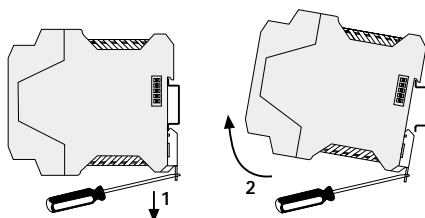
Mounting

1 clip the upper part of the instrument on the rail

2 rotate the instrument downwards until the click
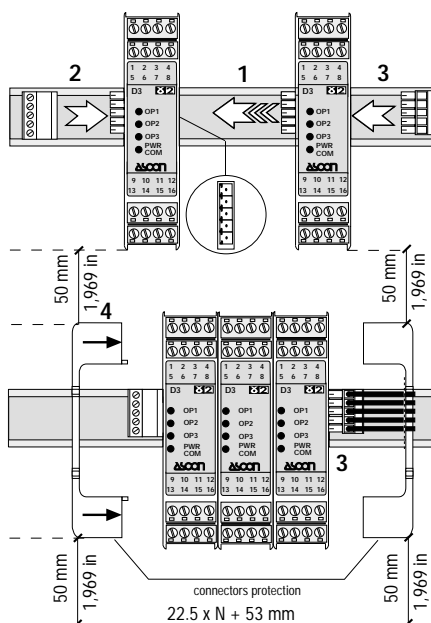

CLICK
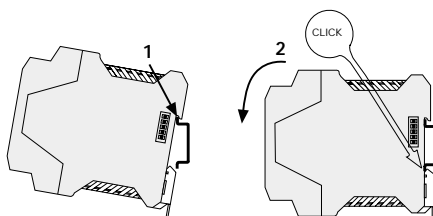
Disassembly

Switch the instrument off

1 lower the spring slide by inserting a flat-blade screwdriver as indicated

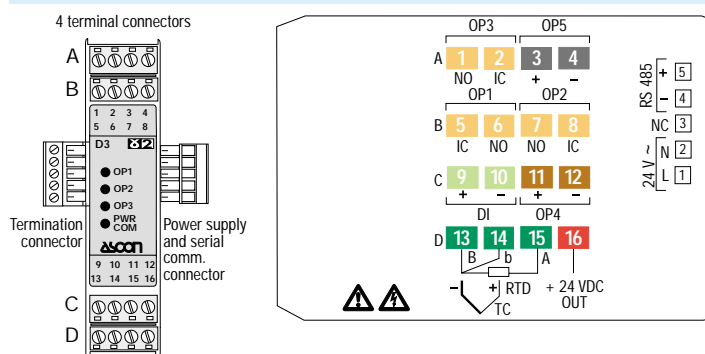**2** turn and lift the instrument upwards.

Mounting several instruments (up to 31) side by side

1 After the mounting of instruments on the rail, put them side by side so that the male side connector fits into the corresponding female connector

2 After mounting all the instruments side by side insert the female 5-pole connector with the termination resistor of the serial communications into the corresponding male connector

3 Wire the 5-pole male power supply and serial communications connector and insert it in the corresponding female connector

**4** When assembled insert the connector protection on both sides

50 mm
1,969 in

50 mm
1,969 in

50 mm
1,969 in

50 mm
1,969 in

connectors protection
22.5 x N + 53 mm

Termination unit

4 terminal connectors

A
B

1 2 3 4
5 6 7 8

D3

● OP1
● OP2
● OP3
● PWR COM

Termination connector

Power supply and serial comm. connector

9 10 11 12
13 14 15 16

C
D

OP3   OP5
A 1 2 3 4
   NO IC + –

OP1   OP2
B 5 6 7 8
   IC NO NO IC

C 9 10 11 12
   +   +

DI   OP4
D 13 14 15 16
   B b A

RS 485 5
        4
NC   3
24 V~ N 2
       L 1

⚠ ⚠   – + RTD   + 24 VDC OUT
       TC

| Features		Terminal connector A-B-C-D	Power supply and comm.s connector
Flexible cable section:		0,2...2,5 mm² (AWG24 - AWG12)	0,08...1,5 mm² (AWG28-AWG16)
	Stripped wire	7 mm - 0.28 in	7 mm - 0.28 in
	Negative screwdriver	0,6 x 3,5 mm	0,4 x 2,5 mm
	Holding screw	0,5 - 0,6 Nm	0,4 - 0,5 Nm

Input

### PV control input: L-J-K-S-R-T-B-N-E-W thermocouple type

D 13 14 15 16
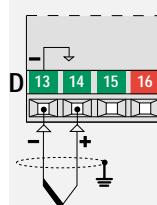
- Connect the wires with the polarity as shown
- Use always compensation cable of the correct type for the thermocouple used
- The shield, if present, must be connected to a proper earth.

Line 150Ω max

PV control input: For Pt100 resistance thermometer - ΔT (2 x Pt100) special

Pt100
D 13 14 15 16
   B b A

ΔT (2 x Pt100)
D 13 14 15 16
   A B A
   R2   R1

R1+R2<320Ω
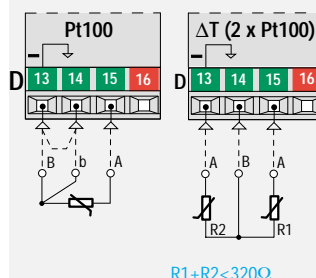
- If a 3 wires system is used, use always cables of the same section (1mm² min.) (maximum line resistance 20 Ω/line)
- When using a 2 wires system, use always cables of the same section (1,5mm² min.) and put a jumper between terminals 13 and 14

⚠ When the distance between the controller and the sensor is 15 mt. using a cable of 1.5 mm² section, produces an error on the measure of 1°C (1,8°F).
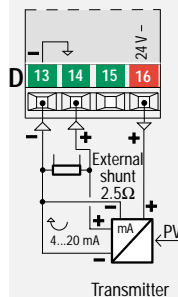
PV control input: for mA, mV

D 13 14 15 16

External shunt 2.5Ω

mA
mV
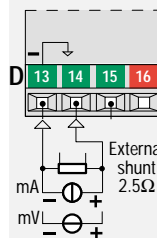
PV control input: With 2 wires transducers
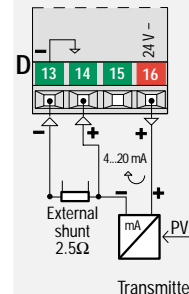
D 13 14 15 16   24 V –

4...20 mA

External shunt 2.5Ω

mA PV

Transmitter

Auxiliary power supply for external transmitter
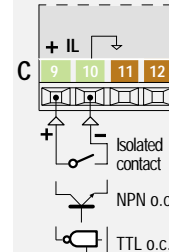- 24V– ±20%
- 30mA max
- without short circuit protection

PV control input: With 3 wires transducer

D 13 14 15 16   24 V –

External shunt 2.5Ω

4...20 mA   mA PV

Transmitter

Auxiliary power supply for external transmitter
- 24V– ±20%
- 30mA max
- without short circuit protection

Digital input

C 9 10 11 12

+ IL

Isolated contact

NPN o.c.

TTL o.c.

- **ON**
  The input is active when the logic state is ON, corresponding to the contact closed
- **OFF**
  The input is inactive when the logic state is OFF, corresponding to the contact open

Precautions

⚠️ All the wiring must comply with the local regulations .

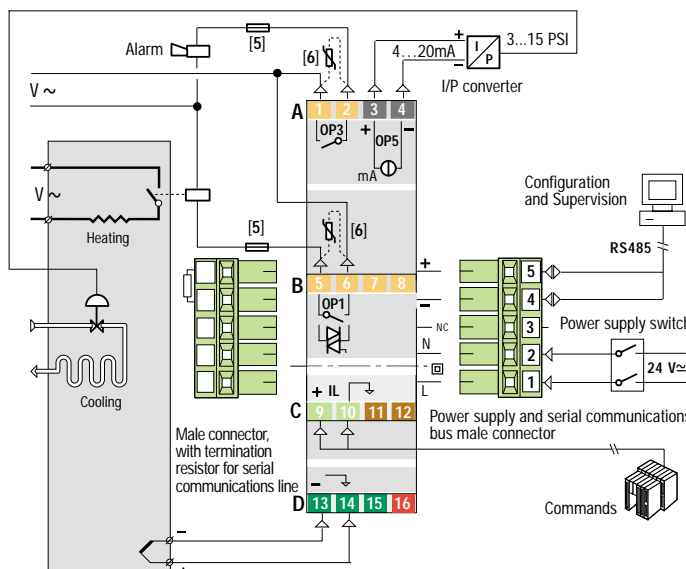The supply wiring should be routed away from the power cables

Avoid to use electromagnetic contactors, power Relays and high power motors nearby.
Avoid power units nearby, especially if controlled in phase angle .

Keep the input low voltage sensor wires away from the power lines and the output cables.
If this is not achievable, use shielded cables on the sensor input, with the shield connected to earth

## Example of wiring diagram (Heat / Cool control)

Alarm
V ~
V ~
Heating
Cooling
Male connector, with termination resistor for serial communications line

[5]
[6]
4...20mA
I/P converter
3...15 PSI

Configuration and Supervision
RS485
Power supply switch
24 V~
Power supply and serial communications bus male connector
Commands

A 1 2 3 4
OP3 OP5 mA
B 5 6 7 8
OP1
C 9 10 11 12
+ IL
D 13 14 15 16

+ NC N L
5 4 3 2 1

Notes

1 Make sure that the power supply voltage is the same indicated on the instrument.

2 Switch on the power supply only after that all the electrical connections have been completed.

3 In accordance with the safety regulations, the power supply switch shall bring the identification of the relevant instrument. The power supply switch shall be easily accessible from the operator.

4 The instrument is protected with a 0.5 A~ T fuse. In case of failure it is suggested to return the instrument to the manufacturer for repair.

5 To protect the instrument internal circuits use:
- 2 A~ T fuses for Relay outputs
- 1 A~ T fuses for SSR outputs.

6 Relay contacts are already protected with varistors.
Only in case of 24 V ~ inductive loads, use model A51-065-30D7 varistors (on request).
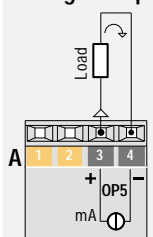
## OP1 - OP2 - OP3 - OP4 - OP5 outputs

Single action Relay (SSR)
Load Fuse
B 5 6 7 8
OP1
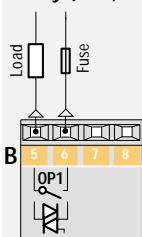
Single action SSR Drive
C 9 10 11 12
OP4 + Load
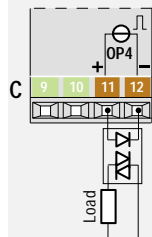
Single action Analogue output
Load
A 1 2 3 4
OP5 + − mA

OP1-OP2-OP3-OP4-OP5 output characteristics

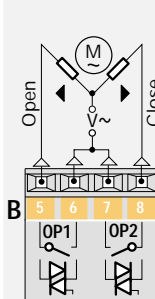| Output	Type	For resistive load or auxiliary circuit breaker
OP1 - OP2	Relay	SPST Relay N.O., 2A/250 V~ **External fuse 2A ~ T**
OP1 - OP2	SSR	1A/250 V~ **External fuse 1A ~ T**
OP3	Relay	SPST Relay N.O., 2A/24 V ~ **External fuse 2A ~ T**
OP4	Digital	Not isolated: 0...5 V−, ±20% 30 mA max
OP5	Analogue	**For control or PV / SP retransmission** isolation 500V~/1 min: 0/4...20 mA - 750 Ω / 15 V max

Double action Relay (SSR) / Relay (SSR)
Heat load Fuses Cool load
B 5 6 7 8
OP1 OP2
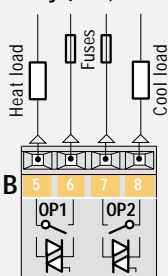
Double action Relay (SSR) / SSR Drive
Heat load Fuse
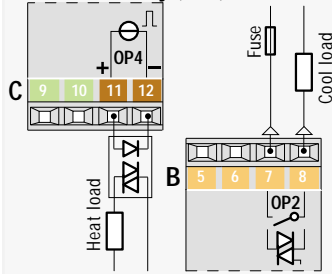OP4 +
9 10 11 12
B 5 6 7 8
OP1 Cool load
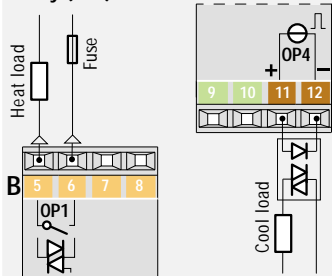
For valve driver - Relay (SSR) / Relay (SSR)
Valve drive PID without potentiometer
3 pole output with NO contacts (raise, lower, stop)
Open M Close
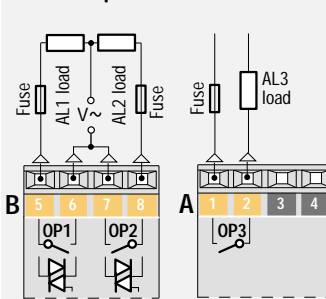B 5 6 7 8
OP1 OP2

Double action SSR Drive/ Relay (SSR)
OP4 +
C 9 10 11 12
Heat load
Fuse Cool load
B 5 6 7 8
OP2

Double action Relay (SSR) / Analogue output
Heat load Fuse
B 5 6 7 8
OP1
Cool load
A 1 2 3 4
OP5 + − mA

Alarm output
Fuse AL1 load AL2 load Fuse V~
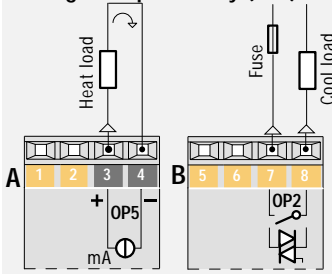B 5 6 7 8
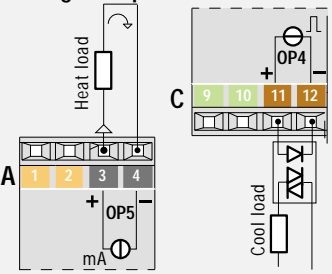OP1 OP2
Fuse AL3 load
A 1 2 3 4
OP3
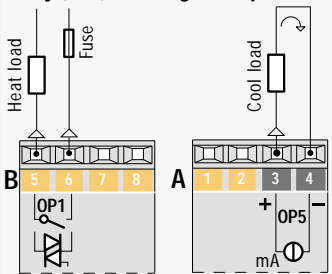
⚠️ The relay/SSR output OP1, OP2 can be used as alarm outputs only if they are not used as control outputs

Double action Analogue output / Relay (SSR)
Heat load Cool load
A 1 2 3 4
OP5 + mA
B 5 6 7 8
OP2

Double action Analogue output / SSR Drive
Heat load Fuse Cool load
A 1 2 3 4
OP5 + mA
OP4 +
C 9 10 11 12
Cool load

Power supply bus and serial communication RS485

RS485
5 4 3 NC 2 N 1 L
24 V~
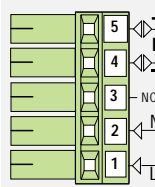
Power supply: Switching type with double insulation with incorporated PTC (fuse which can be reset)..

Rated voltage: 24 V~(-25% +12%) 50/60 Hz;
24 V- (continuous) (-15% +25%).
Power consumption: 3 W max.
Protection: Incorporated PTC.

Serial communication: Passive and galvanically isolated interface 500 V~/1 min. Conforms to standard EIA RS 485, Modbus/Jbus protocol