DIN-rail mounting temperature controller with current transformer input D1 line

δ2 SERIES

Quick Guide • QG D1 - 1/11.09 • Cod. J30-478-1AD1 QG

CE

ASCON TECNOLOGIC spa

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Configuration and setting Software

The instrument must be configured using **Controller Explorer** (a propietary free software). The most recent release of Controller Explorer is downloadable from our web site:
www.ascontecnologic.com
To download the file access click on the banner: **ascon**
Select: **Download/Software**
Note: The first time you access the Download/Software area, you are requested to register yourself to the site. Press the "**Register**" key and follow the instructions displayed.
Search and download the file:
Ascon_SW_CE_Xnn.zip (**Xnn** identifies the release).
The default communications parameters are: transmission speed: **9600 bps**; protocol: **ModBus**; serial address: **247**.
Warning! When more controllers/instruments are to be installed, keep in mind that the default serial address **always** is 247.
For this reason, always connect/power on only 1 not configured instrument a time, in order to avoid the presence, on the same network, of 2 instruments with the same address. During the configuration, assign to each instrument a different serial address.

The "*gammadue® and deltadue® controller series Serial communications and configuration software*" manual can be downloaded from the web site:
www.ascontecnologic.com (then click on: **ascon**)
Select: **Download/Documentation**, and fill the table with:
- Typology: **Manual**
- Type: **All**
- Language: **All**
- Code: **SERG2D2**

Click: **SEARCH** and download the file:
Ascon_MIU_SERIALE GAMMA2-DELTA2_RevXX_EN.zip (**XX** identifies the revision number)

Model code

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

	Line	Basic	Accessories	Configuration 1st part	2nd part
Model:	D 1	5 B 5 D	- E 9 0 0	/ I L M N	- O P Q R

Line	D	1

Output OP1 – OP2		B
Relay – Not fitted		0
Relay – Relay		1
SSR – Not fitted		3
SSR – SSR		5

Options		D
None		0
Current transformer (CT)		3

Special function		E
Not fitted		0
Start–up + Timer		2

Configuration code

A 4 + 4 digits index code follows the model (letters from I... R).
This code can be used to buy a pre–configured controller.

Input type and range			I	L
TR Pt100 IEC751	–99.9...300.0°C	–99.9...572.0°F	0	0
TR Pt100 IEC751	–200...600°C	–328...1112°F	0	1
TC L Fe–Const DIN43710	0...600°C	32...1112°F	0	2
TCJ Fe–Cu45% Ni IEC584	0...600°C	32...1112°F	0	3
TC T Cu–CuNi	–200...400°C	–328...752°F	0	4
TC K Chromel–Alumel IEC584	0...1200°C	32...2192°F	0	5
TC S Pt10%Rh–Pt IEC584	0...1600°C	32...2912°F	0	6
TC R Pt13%Rh–Pt IEC584	0...1600°C	32...2912°F	0	7
TC B Pt30%Rh Pt6%Rh IEC584	0...1800°C	32...3272°F	0	8
TC N Nichrosil–Nisil IEC584	0...1200°C	32...2192°F	0	9
TC E Ni10%Cr–CuNi IEC584	0...600°C	32...1112°F	1	0
TC Ni–NiMo18%	0...1100°C	32...2012°F	1	1
TC W3%Re–W25%Re	0...2000°C	32...3632°F	1	2
TC W5%Re–W26%Re	0...2000°C	32...3632°F	1	3
Dc input 0...50mV linear	Engineering units		1	4
Dc input 10...50mVlinear	Engineering units		1	5
Custom input range [1]			1	6

[1] For instance, other thermocouples types, ΔT (with 2 PT100), custom linearisation etc.

Declaration of conformity and manual retrival

Class II instrument, rear panel mounting. This controller has been designed with compliance to the European Directives. Consult Declaration of Conformity for further details on Directives and Standards used for Compliance. Declaration of Conformity can be found in the file **ASCON_DC_D2.zip**.

All information about the controller are inserted in the manuals (**ASCON_MI_D1_EN.zip** and **ASCON_MU_D1_EN.zip**). The Declaration of Conformity and the manuals of the controller can be downloaded (free of charge) from the web–site:
www.ascontecnologic.com
Once connected to the web–site, click on the **ascon** logo.
Select: **Download/Documentation**, and fill the table with:
- Typology: **Manual**; Type: **All**; Language: **All**; Code: **DELTA2**

Click: **SEARCH** and
- Download the file: **ASCON_DC_D2.zip** (Declaration of Conformity of delta2 controllers)
  ASCON_MI_D1_EN.zip (Installation)
 or **ASCON_MU_D1_EN.zip** (User)

⚠ Warning!

- Whenever a failure or a malfunction of the device may cause dangerous situations for persons, things or animals, please remember that the plant must be equipped with additional devices which will guarantee safety.
- We warrant that the products will be free from defects in material and workmanship for 18 months from the date of delivery. Products and components that are subject to wear due to conditions of use, service life, and misuse are not covered by this warranty.

Mounting several instruments

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

2 Then, 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

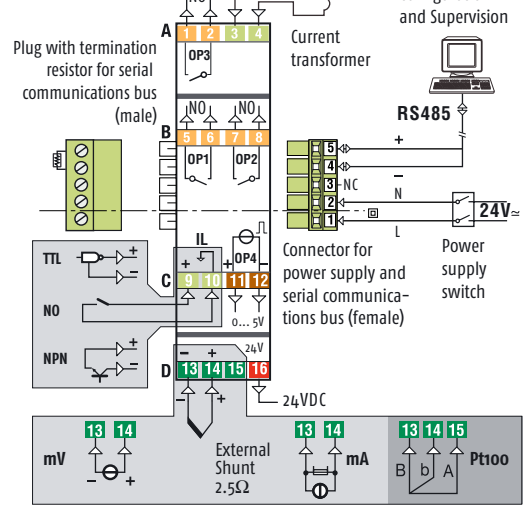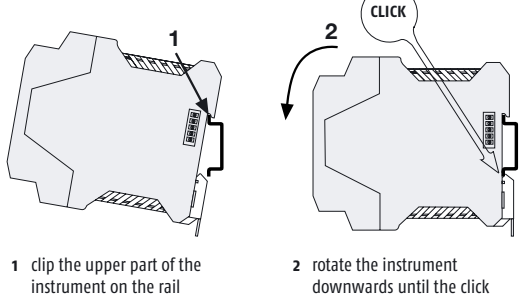4 When assembled insert the connector protection on both sides.
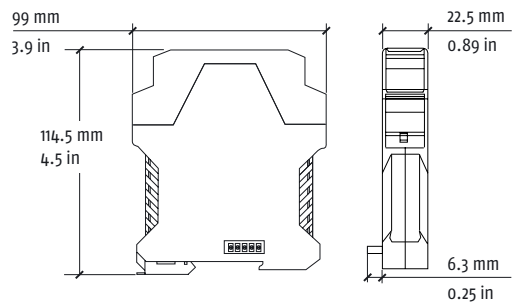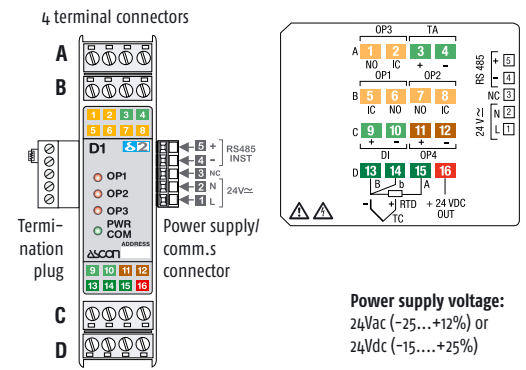
Parameters list

In the table that follows are listed the parameters of the controller associated to the correspondent serial ModBus address. For further details, consult the manual: "*gammadue® and deltadue® controller series Serial communications and configuration software*".
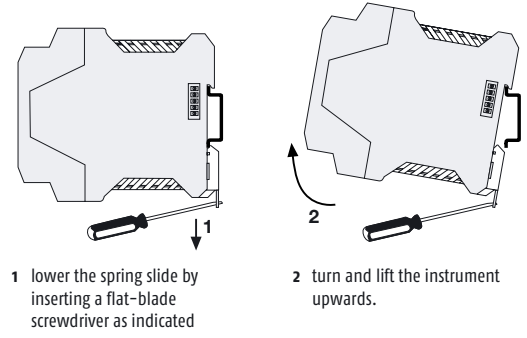
Analogue

ModBus address	Parameter name	Value		
		Default	Modbus	User
0	PV process variable			
1	SP Setpoint			
2	Main output			
3	SPT Target Setpoint			
4	SPL local Setpoint			
5	Proportional band (PID) or Hysteresis (ON – OFF)	5.0 or 0.5	50 or 5	
6	Overshoot control	1.00	100	
7	Integral time	5.0	50	
8	Derivative time	1.00	100	
9	Control output cycle time (heat)	20	20	
10	Low range			
11	High range			
12	AL2 alarm threshold	0	0	
13	AL3 alarm threshold	0	0	
14	AL2 alarm hysteresis	0.5	5	
15	AL3 alarm hysteresis	0.5	5	
16	Relative Cold Gain	1.0	10	
17	Cool output Hysteresis (ON-OFF)	0.5	5	
19	Heat/Cool Dead band	0.5	5	
20	Cool cycle time	20	20	
21	Cool output maximum value	100.0	1000	
24	Timer setting	0.5	5	
25	Timer Stand–by Setpoint	0	0	
26	Soft–start output value	0.5	5	
27	Soft–start activation time	1	1	
28	Manual reset	50.0	500	
29	Setpoint low limit	low range		
30	Setpoint high limit	high range		
31	Error Dead Band	inhibited	0	
32	Control output high limit	100.0	1000	
33	Output safety value	0.0	0	
34	Slope up	inhibited	0	
35	Slope down	inhibited	0	
36	Input filter	inhibited	0	
37	Input shift	inhibited	0	

ModBus address	Parameter name	Value		
		Default	Modbus	User
38	Start/Stop One shot tuning (0 = stop, 1 = start)	stop	0	
39	Overshoot Control relative band	0.5	5.0	
44	Start–up Setpoint	0	0	
45	Start–Up Hold time	1	1	
46	Output high limit during Start–up	100.0	1000	
47	Timer remaining time	0.5	5	
49	Setpoint selection	local	0	
50	1st stored Setpoint			
51	2nd stored Setpoint			
56	AL1 alarm threshold	0	0	
57	AL1 alarm hysteresis	0.5	5	
58	AL1 latching and blocking	none	0	
59	AL2 latching and blocking	none	0	
60	AL3 latching and blocking	none	0	
61	LBA delay	inhibited	0	
62	Instrument position	single	0	
63	Read the first 16 coils on word (B.O.R. = Bit On Register)			

Digital

ModBus address	Parameter	Value
1	Automatic/Manual	0 = Automatic, 1 = Manual
2	OP4 logical output status	0 = OFF, 1 = ON
3	OP1 digital output status	0 = OFF, 1 = ON
4	OP2 digital output status	0 = OFF, 1 = ON
5	OP3 digital output status	0 = OFF, 1 = ON
6	Out of range status	0 = Normal operation, 1 = Safety
7	Auto–Tune status	0 = Disabled, 1 = Run
8	Timer function status (if option present)	0 = OFF, 1 = Run
11	Forcing the Output status	0 = Not influenced, 1 = Forced to OFF
12	IL Digital Input status	0 = OFF, 1 = ON
13	Tune Fail status	1 = Tune failed
15	Latching alarms acknowledgement	1 = Alarm acknowledge

Dimensions

99 mm / 3.9 in
114.5 mm / 4.5 in
22.5 mm / 0.89 in
6.3 mm / 0.25 in

Terminal connectors

4 terminal connectors

A, B, C, D

D1 δ2

Termination plug

Power supply/ comm.s connector

Power supply voltage: 24Vac (–25...+12%) or 24Vdc (–15....+25%)

Connections

Configuration and Supervision

Current transformer

RS485

24V / 24VDC

mV — External Shunt 2.5Ω — mA — Pt100

Connector for power supply and serial communications bus (female)

Power supply switch

Terminals

Features		A – B – C – D	Bus/Power Supply
	Stripped wire	L = 7 mm – 0.28 in.	L = 7 mm – 0.28 in.
	Flat blade screwdriver	0.6 x 3.5 mm	0.4 x 2.5 mm
	Tightening torque	0.5... 0.6 Nm	0.4... 0.5 Nm

Control mode

Control mode		M
ON–OFF reverse action		0
ON–OFF direct action		1
PID single reverse action		2
PID single direct action		3
PID double action	Linear cool output	4
	ON–OFF cool output	5
	Water cool output	6
	Oil cool output	7

Output configuration

Output configuration		N
Single Action	Double action	
Relays (OP1)	Heat OP1, Cool OP2	0
SSR drive (OP4)	Heat OP1, Cool OP4	1
	Heat OP4, Cool OP2	2

Tipo e modo di intervento allarmi		O	P	Q
AL.		1	2	3
Disabled or used by Timer (only for AL3)		0	0	0
Sensor break/Loop Break Alarm (LBA)		1	1	1
Absolute	active high	2	2	2
	active low	3	3	3
Deviation	active high	4	4	4
	active low	5	5	5
Band	active out	6	6	6
	active in	7	7	7

Setpoint type		R
Local only		0
Local and 2 tracking stored Setpoint		1
Local and 2 Stand–by stored Setpoint		2

[2] 2 different correcting methods of the control output are available. One for water and the other for oil:
OP water=100•(OP2/100)^2 – OP oil=100•(OP2/100)$^{1.5}$

DIN rail mounting

1 clip the upper part of the instrument on the rail
2 rotate the instrument downwards until the click

Removing the instrument from the DIN rail

Switch off the instrument

1 lower the spring slide by inserting a flat–blade screwdriver as indicated
2 turn and lift the instrument upwards.

Serial communications connection examples

Configuration

Configuration Cd–Rom

Acquisition and centralized supervision

D1 – 31 max. instruments

Local control

D1 – 31 max. instruments

Operator panel