



D8 line

User manual

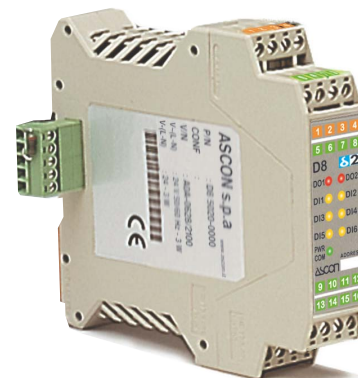
Table of contents

- Resources and output configuration;
- Model code;
- Description and table of parameters;
- Technical specifications;
- Timers.

Ascon Tecnolog S.r.l.
viale Indipendenza 56,
27029 - Vigevano (PV)
Tel.: +39 0381 69871,
Fax: +39 0381 698730
www.ascontecnologic.com

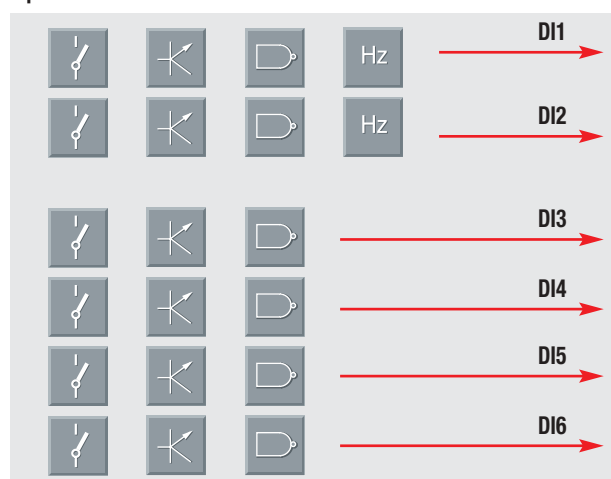
D8 line

User Manual • 08/08 • Code: ISTR_U_D8_E_02_--



Resources

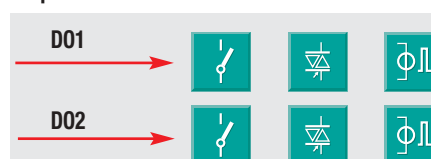
Inputs



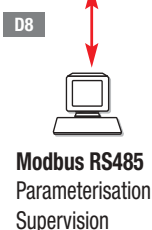
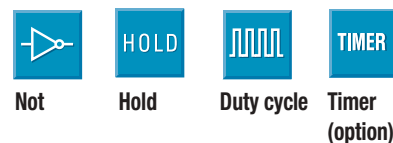
Available functions



Outputs



Available functions



Model code

Configuration

Mod. **D 8** **5 B 5 0** - **0 F 0 0** / **I L 0 0** - **0 0 0 0**
Line Basic Accessories 1st part 2nd part

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

Line **D 8**

DO1-DO2 outputs	B
Relay - Relay	1
Relay - SSR Drive	2
SSR drive - SSR drive	3
SSR - SSR	4
SSR - SSR drive	5

Special Functions	E
None	0
2 Timers	2

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

Input type	I
No frequency input	0
Frequency input on DI1	1
Frequency input on DI1 and DI2	2

Output type	L
No PWM output	0
PWM output on DO2	[1] 1
PWM output on DO1 and DO2	[2] 2

Notes:

- [1] Only when B = 2, 3, 4 and 5;
[2] Only when B = 3, 4 and 5.

Configuration parameters description

Configuration parameters, shown in the table at page 3 have been divided into groups with homogeneous functionalities. The parameters described hereafter are in the same order as they are listed in the parameters table.

Configuration

PWM.f PWM frequency for both DO1 and DO2 - Table 1

Parameter	Description	Value	Function
PWM.f	PWM frequency	0...10000	1 = 0,1 Hz, 10000 = 1kHz

Both outputs, when selected as SSR or SSR drive can be configured as PWM (Pulse Width Modulation) outputs with adjustable frequency and Duty Cycle. PWM frequency is applied to both DO1 and DO2 outputs (see also DC.O_ parameter).

t.FI_ filter time for DI_ inputs - Table 2

Parameter	Description	Value	Function
t.FI_	Input filter time	0...255	Allows the user to set, separately for each input (DI_ = DI1... DI6), a filtering time with steps of 16 ms (0 = disabled, 1 = 16ms, 255 = 4080ms)

In order to eliminate problems caused by disturbances, the user can define the minimum signal width (input time). The input filter is made by units of 16ms (1... 255 units). Value 0 disables the input filter.

Nt.I_ Negate (NOT) input status - Table 3

Parameter	Description	Value	Function
Nt.I_	NOT (negate) DI_	0	Disables negate input status (DI_ = DI1... DI6)
		1	Negates input status (DI_ = DI1... DI6)

Input status
On
Off

Is possible to enable, separately for each input (DI1...DI6), the negate (NOT) function of the physical input status in order to operate in inverted logic.

Enable NOT function
On
Off

Note: The NOT command influences also the status of the Toggle (TG.I_) and Flip-Flop (FF.I_) functions (see "Logic function diagram" at page 3).

Internal logic status
On
Off

Nt.O_ Negate (NOT) output status - Table 4

Parameter	Description	Value	Function
Nt.O_	NOT (negate) DO_	0	Disables negate output status (DO_ = DO1, DO2)
		1	Negates output status (DO_ = DO1, DO2)

Internal logic status
On
Off

It is possible to enable, separately for each output (DO1 and DO2), the negate (NOT) function of the output internal logic status.

Enable NOT function
On
Off

Output status
On
Off

Parameters description

Parameters, shown in the table at page 3 have been divided into groups with homogeneous functionalities. The parameters described hereafter are in the same order as they are listed in the parameters table.

Parameters

DO.O_ Output status at power ON - Table 5

Parameter	Description	Value	Function
DO.O_	DO_ at power ON	0	Output OFF at power ON (DO_ = DO1, DO2)
		1	Output ON at power ON (DO_ = DO1, DO2)

It allows to specify, separately for each output (DO1, DO2), which status the physical output must assume at power ON independently from the last written value.

DT.O_ Duty Cycle at power ON - Table 6

Parameter	Description	Value	Function
DT.O_	DC_ at power ON	0...1000	Duty Cycle at power ON

It allows to specify, separately for each output (DO1, DO2), the Duty Cycle (ON output period expressed as a percentage of the total PWM period) the module must use at power ON, independently from the last value written in the DC.O_ parameters.

DC.O_ DO_ output Duty Cycle of PWM - Table 7

Parameter	Description	Value	Function
DC.O_	DO_ output Duty Cycle	0... 1000	It set the time an output stays ON as a percentage of the total PWM period (DO_ = DO1 and DO2)

Internal logic status
On
Off

PWM output
On
Off

When the SSR or SSR drive outputs have been selected as PWM output with a specific frequency, the Duty Cycle value of each output (ON output period expressed as a percentage of the PWM period) can be specified. The Duty Cycle of each output can be selected through the parameter DC.O_ which allows the following values:

0... 1000 (0 = 0%; 1000 = 100%).

$T = \text{PWM period}$ [s]

$\text{PWM frequency} = \frac{1}{T}$ [Hz]

$\text{Duty cycle} = \frac{T_1}{T} \times 100$ [%]

TG.I_ DI_ Toggle - Table 8

Parameter	Description	Value	Function
TG.I_	DI_ input Toggle		Manages an internal logic status connected to the inputs as a bistable type T register (DI_ = DI1...DI6)

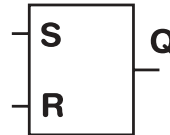
Input status
On
Off

Internal logic status (T)
On
Off

Bistable that changes its status at the leading edge of the input signal. An internal logic status (T) is connected to each input. The internal logic status value changes every time the input status changes from 0 to 1.

FF.I_ DI_ Flip-Flop - Table 9

Parameter	Description	Value	Function
FF.I_	DI_ input Flip-Flop		Manages an internal logic status connected to the inputs as a bistable type SR register (DI_ = DI1...DI6)



Input		Internal logic status (SR)
S	R	
0	0	Unchanged
0	1	0
1	0	1
1	1	0

Bistable (type SR); it changes the value of the register Q to 1 at the leading edge of the SET input signal and changes the value register Q to 0 at the leading edge of the RESET input signal. SET and RESET inputs are couples of physical inputs that cannot be changed (DI1 and DI2, DI3 and DI4, DI5 and DI6).

DI1, DI3 and DI5 are SET inputs, DI2, DI4 and DI6 are RESET inputs.

HL.O_ DO_ HOLD - Table 10

Parameter	Description	Value	Function
HL.O_	HOLD output DO_	0	Releases the output status (DO_ = DO1, DO2)
		1	"Freezes" the output status (DO_ = DO1, DO2)

Internal logic status
On
Off

Enable HOLD signal
On
Off

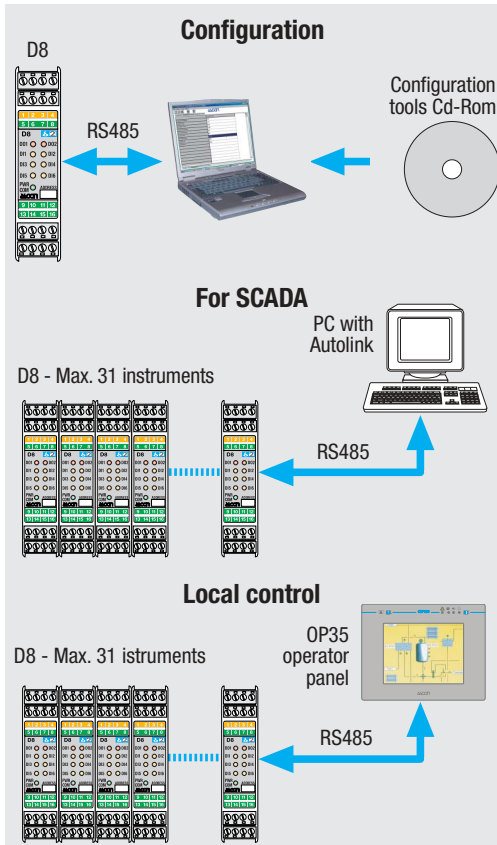
Output status
On
Off

The HOLD output command freezes the status of a physical output (DO1 or DO2) to the actual value. As long as the HOLD command is active, if the internal logic status changes, the corresponding output status does not change.

Addr Communications address

This parameter can be set between 1...247 and must be unique (no other instrument connected to a supervisor can have the same number).

Serial communications connection example



Communications parameters reset

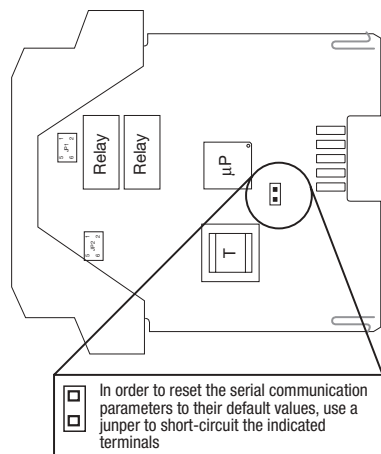
The serial communications parameters can be reset to the original factory settings (protocol: Modbus, Baud Rate: 9600, Address: 247).

The instructions to remove/re-insert the I/O module from/in its plastic case are described in the "Installation manual".

After having removed the I/O module, use the instructions that follow to reset the communications parameters:

- 1) Use a jumper to short-circuit the terminals shown in the drawing that follows;
- 2) Insert the I/O module in its housing and power ON the instrument;
- 3) Power OFF the instrument, extract the I/O module from its plastic case and remove the short circuit jumper;
- 4) Reinstall the module in its housing.

At the end of this procedure, the communications parameters will be reset to its factory settings.



Warranty

We warrant that the products will be free from defects in material and workmanship for 3 years from the date of delivery.

The warranty above shall not apply for any failure caused by the use of the product not in line with the instructions reported on this manual.

Table of standard parameters

Configuration parameters

Mnemonic code	Parameter description	Range	Unit	Factory setting	Notes
PWM.f	PWM frequency	0...10000	1/10 of Hz	0	See table 1 at page 2
t.F.I.	Input filter time	1...255	Steps of 16ms	0	See table 2 at page 2
baud	Baud rate	1200, 2400, 4800, 9600	Baud	9600	
Nt.I.	Negate (NOT) DI ₋	0/1		0	See table 3 at page 2
Nt.O.	Negate (NOT) DO ₋	0/1		0	See table 4 at page 2
Prot	Communications protocol	M.bus/Jbus		M.bus	

Parameters

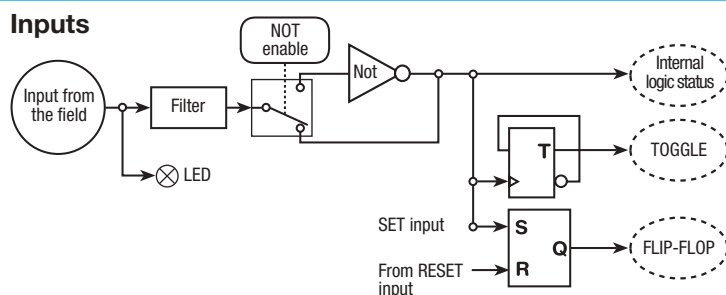
Mnemonic code	Parameter description	Range	Unit	Factory setting	Notes
DO.O	Output status at power ON	0, 1		0	See table 5 at page 2
DT.O	Duty cycle DO ₋ at power ON	0...1000	Steps of 0.1%	0	See table 6 at page 2
DC.O	Duty Cycle output DO ₋	0...1000	Steps of 0.1%	0	See table 7 at page 2
TG.I	Toggle	0, 1			See table 8 at page 2
FF.I	Flip-Flop	0, 1			See table 9 at page 2
HL.O	Hold DO ₋ output	0, 1		0	See table 10 at page 2
Addr	Serial communication address	1...247		247	

Technical specification

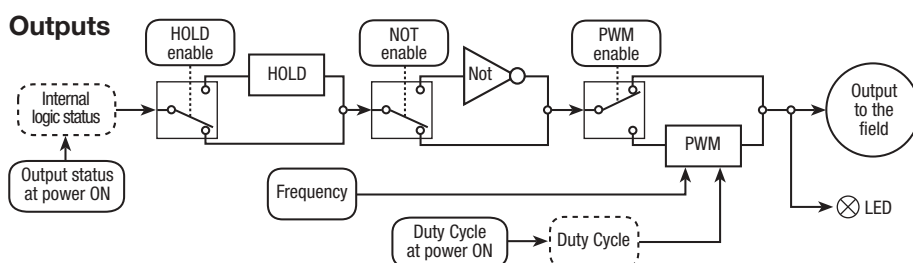
Features (at 25°C env. temperature)	Description
Total configurability	Using the configuration tools on a PC it is possible to choose: - Input type - Functions to elaborate inputs/outputs - Output type 6 digital inputs in 2 groups (DI1, DI2 and DI3, DI4, DI5, DI6), optoisolated
Inputs	<p>Voltage inputs</p> <p>Compatible with EN61131-2 standard: - logic status voltage $1 \geq 5V_{dc}$; - logic status voltage $0 \leq 2V_{dc}$; - max. voltage allowed: 24Vdc</p> <p>Frequency inputs (DI1 and DI2)</p> <p>0.1...10 kHz</p> <p>No voltage inputs</p> <p>Minimum pulse width: 16 ms (table 2)</p>
Outputs	<p>SPST relay contact:</p> <p>2A/250Vac (4A/120Vac) for resistive loads;</p> <p>SSR:</p> <p>1A/250Vac for resistive loads;</p> <p>SSR drive:</p> <p>5Vdc $\pm 20\%$, max. 30mA</p>
Serial communications	Isolated RS485, protocol Modbus/Jbus, 1200, 2400, 4800, 9600 bit/s, 2 wires
Operational safety	<p>Parameters</p> <p>Parameters and configuration data are stored in a non volatile memory for an unlimited time</p>
General characteristics	<p>Power supply (PTC protected)</p> <p>24Vac (-25...+12%) 50/60Hz and 24Vdc (-15...+25%)</p> <p>Power consumption</p> <p>3.2W max.</p> <p>Safety</p> <p>EN61010-1 (IEC1010-1) installation class 2 (2.5kV), pollution degree 2, instrument class II</p> <p>Electromagnetic compatibility</p> <p>Compliance to CE standards</p> <p>Protection</p> <p>Terminal block: IP20</p> <p>UL and cUL approval</p> <p>File E176452</p> <p>Dimensions</p> <p>Pitch: 22.5 mm - depth: 114.5 mm</p>

Logic-function diagrams

Inputs



Outputs



Timer

Description

Up to 2 timers can be activated in the instrument. The term “timer” for this instrument means all the functionalities connected to Digital Inputs, Digital outputs and internal variables conditioned by a free-running counter that has a settable time base.

Timer types

Four types of timer can be set:

- Free Run;
- Pulse;
- Countdown;
- Countdown Latched.

The following parameters must be doubled: one set for Timer1 and 1 set for Timer2.

Configuration

Mnemonic code	Parameter description	Range	Unit	Factory setting	Notes
TbTp	Time base for the Period (Tp)	0, 1, 2	S, Min, Hour	0	
TbOn	Time base for TOn	0, 1, 2	S, Min, Hour	0	
Tp	Period value	1... 32000		0	The values must be referred to the respective time base
TOn	ON time value	1... 32000		0	
TTm	Timer Type	None; FreeRun; Pulse; Countdown; Countdown Latched		None	
Trig	Digital Input associated to the Trigger	None; DI1, DI2		None	he Timer is active when the selected Digital Input is enabled (TEn = ON). If no Digital Input is selected (None), the timer is active depending on the Trigger status in the instrument memory (TrRa).
Rst	Digital Input associated to the Reset	None; DI1, DI2		None	
Out	Digital Output associated to the Timer	None; DO1, DO2		None	More than one function can be assigned to the same physical output. The Output status is the OR of the sources
TEnP	Timer enable value at Power ON	0,1		0	

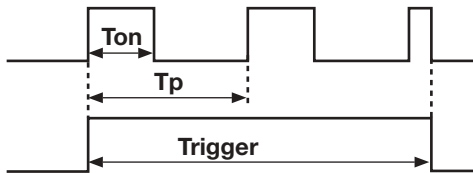
Parameters

Mnemonic code	Parameter description	Range	Unit	Factory setting	Notes
TEn	Timer enable	0, 1		0	At Start-Up this parameter is initialized to the TEnP value
TrRa	Trigger in memory	0, 1		0	For “Free Run” only, at Start-Up this parameter is initialized to the TEnP value
TRes	Memory Reset	0, 1		0	
TEv	Events	Read only: 0, 1			

Operating modes

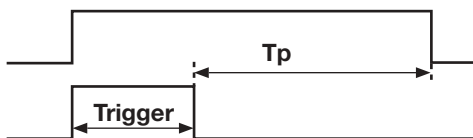
Free Run Timer

The user must define the Time period (**Tp**) and the duration of the periodic event (**TOn**). With Timer enabled (**TEn** = ON) and **Trigger** = ON the instrument generates the **Event** having a duration = **TOn** and periodicity = **Tp**, in continuous mode. **Reset** = ON pauses the **Event** generation.



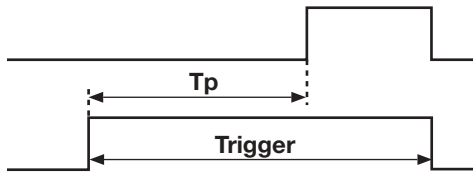
Pulse timer

With Timer enabled (**TEn** = ON) and **Trigger** = ON the instrument generates the **Event** having a duration = **Tp** starting at **Trigger** = OFF. **Reset** = ON pauses the **Event** generation.



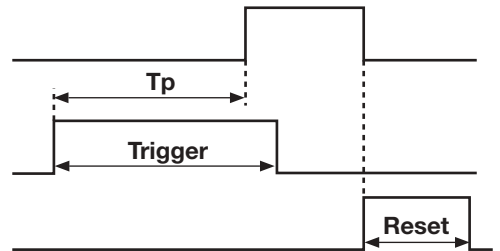
CountDown Timer

With Timer enabled (**TEn** = ON) the instrument generates the **Event** after a delay having a duration = **Tp** starting at **Trigger** = ON. The **Event** is maintained until the **Trigger** value goes OFF. **Reset** = ON pauses the **Event** generation.



CountDown Latched Timer

With Timer enabled (**TEn** = ON) the instrument generates the **Event** after a delay having a duration = **Tp** starting at **Trigger** = ON. The **Event** is maintained until the **Reset** value goes ON (once the event is activated is independent from **TEn** signal); **Reset** = ON pauses the **Event** generation.



To activate the **Event**, **Trigger** must be active (ON) for a time longer than **Tp**.