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EV91D - SLAVE GENERIC OUTPUT MODULE



USE

The EV91D module is suitable to be used on all plants where it is necessary to start pumps, generic motors, mixing valves, etc. It is therefore suitable to be used on heating and/or air-conditioning plants, greenhouses, swimming pools and industrial plants.

OPERATION

The EV91D module features four relays, each of which may be associated with an operation program and a weekly time programming.

RELAY OPERATION PROGRAMS

All these four relays can be configured to operate in the three different modes listed below:

- **AUTOMATIC** The relay works automatically according to the time programming set by the user.
- **ALWAYS OPEN** The relay contact is always kept open.
- **ALWAYS CLOSED** The relay contact is always kept closed.

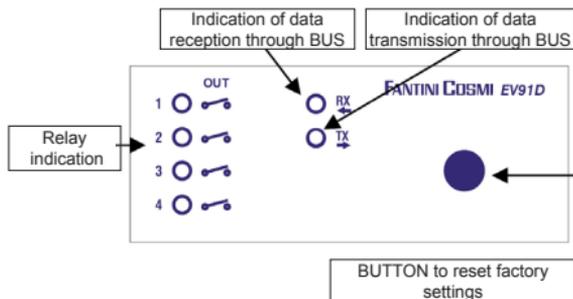
TIME PROGRAMMING

All four outputs may be piloted to close according to the time programming of three time bands for each day of the week, when the related relay has been programmed in **AUTOMATIC** mode.

In the period between the three **ON** and the three **OFF** times, the output is piloted to close whereas out of this period it is piloted to open. If one of the three time bands is excluded (to do this press the **PLUS** and **MINUS** keys of the remote keyboard to highlight the dashes --,--) the output is piloted to open.

DESIGN CHARACTERISTICS

6-module DIN container; removable terminal boards facilitate replacement.



INSTALLATION

INSTALLING THE CONTROL UNIT

Mount the device onto the DIN rail inside a panel in order to provide suitable protection. Removable terminal boards facilitate wiring and replacement. Connecting leads to the control unit must have a section of at least 1 mm² and a length of 1000 metres.

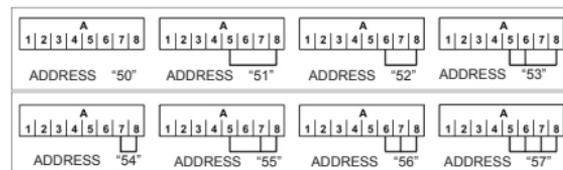
CONNECTION TO THE FANBUS

Connect the EV91D control unit to the Master EV90 through the FANBUS. Bear in mind that the bus has low voltage and it is not polarised, terminals can therefore be inverted with each other without causing

malfunction.

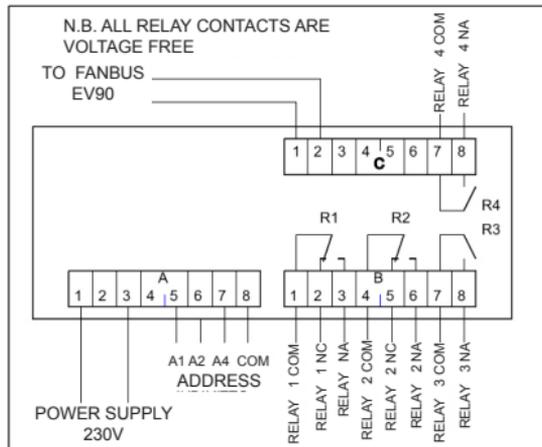
CONTROL UNIT ADDRESS

The control units must be addressed through the terminal board to work properly. The address of the EV91D unit is made up of a high part that corresponds to number "5", and a low part that may take on a value between "0" and "7". The MASTER unit starts a progressive search of SLAVES EV91D from address "50" and it will stop if it gets no reply. It is therefore necessary that connected slaves have different consecutive addresses starting from address "0". The diagrams below show how to set the low part of the address through terminal board 'A':



EV91D WIRING DIAGRAM

The wiring diagram on the right shows that relays 1 and 2 feature both a normally open and a normally closed contact whereas relays 3 and 4 feature just the normally open contact. Programming made by the user for the four relays always refer to the normally open contact.



SETTINGS AND ADJUSTMENTS

FACTORY SETTINGS

The EV91D leaves the factory with all parameters set for standard operation. Should it be necessary to reset factory parameters (default data), turn off the power supply, then turn it on again while pressing the key on the front panel. All data entered will be lost, whereas factory parameters will be reset.

INITIALISING THE DEVICE

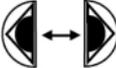
Each time the control unit is powered, the leds set on the front panel will start flashing simultaneously until the Master EV90 starts communicating with the relevant device by selecting its address or transmitting time data through the bus. As from this moment the control unit will start working regularly.

SETTINGS AND ADJUSTMENTS

To modify EV91D data it is necessary to use the Master EV90 that will act like the display and the remote keyboard of the EV91D. Data is entered through special menus provided for the purpose which may contain a number of submenus. Press the "PLUS" "MINUS" "FORWARD" "BACK" "UP" and "DOWN" keys to scroll the different menus and to modify parameters.

COMMANDS ON THE FRONT PANEL OF MASTER EV90 FOR CONTROLLING SLAVE EV91D

The highlighted cursor indicates which menu item is currently selected. Each item has a number of pages that can be scrolled through by keys "Forward/Back" (MASTER).

 		 
Use keys "UP" and "DOWN" to move over a page and to go from one parameter to another.	Use keys "<" and ">" to go from one page to another	Use keys "+" and "-" to change parameters

EV91D CONTROL UNIT MENUS

Device Type		EV91D control unit
EV90	00	List of submenus
GYM	10	
BUILDING		
SOUTH SIDE	11	
SANITARY	40	
BOILERS 1-2	20	
BOILERS 3-4	21	
INPUTS	50	EV91D --> 50
OUTPUTS	30	>Description
.....		>Information
		>Config. Output 1
		>Config. Output 2
		>Config. Output 3
		>Config. Output 4

DESCRIPTION SUBMENU

It consists of two pages, one contains the plant description and the other gives control unit identification data.

The plant description is a 16-character string that is sent to the MASTER when it searches the SLAVES on the bus. The first 14 characters of the string may be changed using the keys located on the EV90 front panel. ASCII characters that may be entered include numbers 0 to 9, letters 'A' to 'Z' and other characters. Signs '<' and '>' are not included.

Description

EV91D REV.:00 5x

Page 1 of the description submenu can be modified by pressing the keys UP/DOWN and +/- .

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INFORMATION SUBMENU

It consists of a submenu giving information about the status of the four outputs.

Relay status			
1	2	3	4
OP	CL	OP	CL

OP Indicates that the relay contact is open
CL Indicates that the relay contact is closed

CONFIG. OUTPUT 1 SUBMENU

Use this submenu to configure relay number 1 so that it works in one of the three operating modes described previously, to set the time programming for Automatic operation and to associate the relay with an identification name consisting of 16 alphanumeric characters.

Configuration
Output No. 1
>ALWAYS CLOSED

MON On-Off Copy
06,00 22,00
-, -, -, -
-, -, -, -

Description
Output No. 1
OUTPUT 1

CONFIG. OUTPUT 2 SUBMENU

Use this submenu to configure relay number 2 so that it works in one of the three operating modes described previously, to set the time programming for Automatic operation and to associate the relay with an identification name consisting of 16 alphanumeric characters.

Configuration Output No. 2 >ALWAYS OPEN	MON On-Off Copy 06,00 22,00 -- , --- , -- -- , --- , --	Description Output No. 2 OUTPUT 2
---	--	---

CONFIG. OUTPUT 3 SUBMENU

Use this submenu to configure relay number 3 so that it works in one of the three operating modes described previously, to set the time programming for Automatic operation and to associate the relay with an identification name consisting of 16 alphanumeric characters.

Configuration Output No. 3 >ALWAYS CLOSED	MON On-Off Copy 06,00 22,00 -- , --- , -- -- , --- , --	Description Output No. 3 OUTPUT 3
---	--	---

CONFIG. OUTPUT 4 SUBMENU

Use this submenu to configure relay number 4 so that it works in one of the three operating modes described previously, to set the time programming for Automatic operation and to associate the relay with an identification name consisting of 16 alphanumeric characters.

Configuration Output No. 4 >AUTOMATIC	MON On-Off Copy 06,00 22,00 -- , --- , -- -- , --- , --	Description Output No. 4 OUTPUT 4
---	--	---

N.B. To configure the four outputs in page 1 press the Plus/Minus keys of the remote keyboard.

For daily relay programming, use the copy function (move the cursor to Copy and press the PLUS key of the remote keyboard) that enables to copy the times set for the current day to the next day.

REMOTE MANAGEMENT

Like with all SLAVE devices connected to the MASTER EV90, certain EV91D parameters may be changed remotely using an analog or GSM modem connected to the MASTER EV90. When the MASTER EV90 receives a command for the EV91D control unit from the modem (analog or GSM), it will send the command to it through the FANBUS. It then waits for reply and sends it to the sender, which may be a mobile phone, if a GSM modem in voice mode is used or a PC if an analog modem or GSM modem in data mode is used.

In order to communicate properly with the required device, every command must be preceded by the address of the relevant SLAVE:

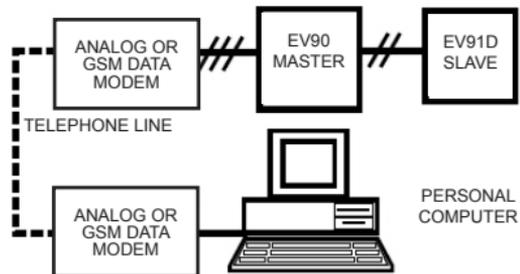
E.g.: to communicate with SLAVE EV91D add \$50:

“50” followed by the command

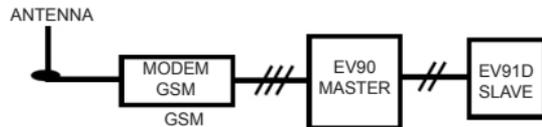
To communicate with SLAVE EV91D add \$51:

“51” followed by the command

DATA CONNECTION:



SMS CONNECTION:



N.B: Management software for Personal Computer is available in Italian language only.

REMOTE MANAGEMENT COMMANDS

??? Use this command to know which commands may be sent. EV91D replies to this question with:

```
<16 characters of description >  
<RELE=?>  
<INF=?>  
<CONFy=PAUT/PCH/PAP>  
<PROGyx=?>  
<PROGyx=08.00-09.00 12.00-14.00 18.00-22.00>  
(EXAMPLE OF TIME BANDS)  
<(y=A-B-C-D) (x=1-7)>y indicates the relay A+D  
x indicates the day of the week "MON+ SUN"
```

RELE=? Use this command to know the status of the four relays (OPEN or CLOSED).

EV91D replies to this question with:

```
<16 characters of description >  
<NomeRele1-AP o CH>  
<NomeRele2-AP o CH>  
<NomeRele3-AP o CH>  
<NomeRele4-AP o CH>
```

INF=? Use this command to know the program used for each of the four relays.

EV91D replies to this question with:

```
<16 characters of description >  
<A:SEMPREAPERTO o SEMPRECHIUSO o  
AUTOMATICO>  
<B:SEMPREAPERTO o SEMPRECHIUSO o
```

AUTOMATICO>

```
<C:SEMPREAPERTO o SEMPRECHIUSO o  
AUTOMATICO>
```

```
<D:SEMPREAPERTO o SEMPRECHIUSO o  
AUTOMATICO>
```

Where A B C D identify relays 1 2 3 4 respectively.

CONFA= PAUT o PCH o PAP (relay 1 configuration:
PAUT=automatic-PCH always closed- PAP=always
open)

CONFB= PAUT o PCH o PAP (relay 2 configuration:
PAUT=automatic-PCH always closed- PAP=always
open)

CONFC= PAUT o PCH o PAP (relay 3 configuration:
PAUT=automatic-PCH always closed- PAP=always
open)

CONFD= PAUT o PCH o PAP (relay 4 configuration:
PAUT=automatic-PCH always closed- PAP=always
open)

Use this command to change the program of one of the four relays.

EV91D replies to this question with:

```
<16 characters of description>  
<A:SEMPREAPERTO o SEMPRECHIUSO o  
AUTOMATICO>  
<B:SEMPREAPERTO o SEMPRECHIUSO o
```

AUTOMATICO>
<C:SEMPREAPERTO o SEMPRECHIUSO o
AUTOMATICO>
<D:SEMPREAPERTO o SEMPRECHIUSO o
AUTOMATICO>

PROGyx=? Use this command to know the programming period of one of the four relays for a certain day of the week. Letter “y” must be replaced with letter “A or B or C or D” to identify relays “1 2 3 4” respectively, whereas letter “x” must be replaced by “1 or 2 or 3 or 4 or 5 or 6 or 7 “to identify the day of the week from “MON to SUN”.

EV91D replies to this question with:

<16 characters of description>
<Nome del Relè>
<Giorno della settimana>
<08,00-09,00> (example of time bands)
<12,00-14,00>
<18,00-22,00>

PROGyx= 08.00-09.00 12.00-14.00 18.00-22.00
(example of time bands)

Use this command to program one of the four relays (identified by letter y) for a day of the week (identified by letter x).

The three time bands can be excluded by entering the dashes “--,--” instead of times Leave a space between each time band otherwise the command will

not be recognised.

All the six time bands are approximated to the previous quarter of an hour.

EV91D replies to this question with:

<16 characters of description >
<Nome del Relè>
<Giorno della settimana>
<08,00-09,00> (example of time bands)
<12,00-14,00>
<18,00-22,00>

TECHNICAL DATA

Power supply	230V 50Hz
Consumption	5 VA
Contact rating	8(5)A 250Vac
Voltage free contacts	
Max ambient temperature T45	
Protection degree	IP40 (rear panel mounting)
Pollution degree	2
Impulse voltage	4000V
Class A software	
Removable terminal boards for friendly wiring	
Compliance with Standards EN60730-1 Standard	

Dimensions (mm)

