V3IS00470-010

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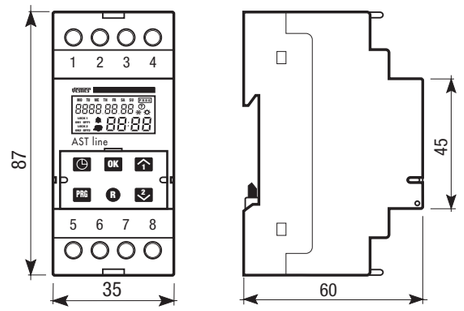
Mod. **AST line**

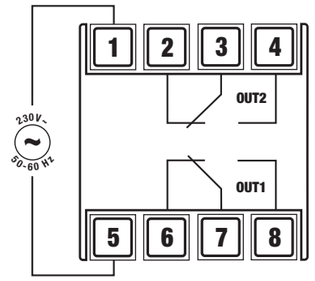
User Manual
ASTRONOMICAL TIME SWITCH
Read all the instructions carefully

■ The **AST line** product is an astronomical time switch designed to handle electrical utilities from sunrise to sunset in the geographical area of installation, without the need for outside sensors.

DIMENSIONS



CONNECTION DIAGRAM



- **OUT1**: astronomical handling relay output with pre-set programming (programmes: ON, OFF, PF, PH, P1, P2)
- **OUT2**: astronomical handling relay output (ON from sunset to sunrise)

SAFETY WARNINGS

To ensure correct installation, you must comply with the following indications:
1) Read this manual carefully before installing the appliance
2) The appliance should only be installed by skilled personnel
3) Before exposing the terminals, make sure the wires to be connected to the appliance are not live
4) Make sure the electric panel in which the appliance is to be installed is designed in such a way that no access to the terminals will be possible after installation
5) Do not power or connect the appliance if any part of it is damaged

NOTE: the instrument is switched off when supplied, to avoid unnecessary use of the battery. To switch on the instrument, press "RESET" followed by "PRG".

Code	Model	Description
VP876700	AST line	Astronomical time switch

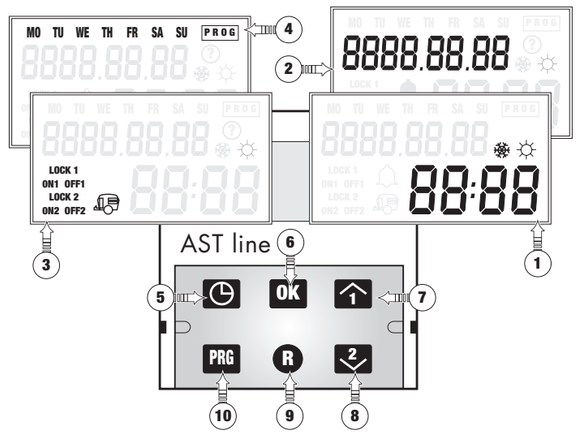
TECHNICAL SPECIFICATIONS

- Power supply: 230 V AC (-10%/+15%)
- Frequency: 50/60 Hz
- Absorption: 8VA (2 W)
- Outputs: 2 relays x 16(10)A/250 V AC
- Contact capacity for lamps:
  – incandescent/halogen 1500 W 240 V AC
  – fluorescent 600 W 240 V AC
- Annual clock with calendar up to 31.12.2172
  – clock precision ±1s per day
  – precision of sunrise/sunset calculation ±1 minute
  – programming resolution 1 minute
  – charge reserve (with lithium battery) 4 years approx. (if not powered)
- LCD rear lit display
- Weekly event programming
- Automatic change of summer/winter time with settable change mode
- Simplified programming in two languages:
  – Italian: provincial capital
  – English: latitude, longitude, time zone
- Handling of consecutive holiday periods up to 99 days
- Operating timer for each channel max 99999 h for 11 years approx.
- Non-volatile programme memory (EEPROM)
- Daily update of sunrise/sunset times
- Manual forcing of the temporary and permanent outputs
- Normal pollution level
- 2 DIN module container
- Cover can be lead-sealed
- Storage temperature: -10 °C ÷ +70 °C
- Operating temperature: 0 °C ÷ +50 °C
- Protection level: IP20 at the connector terminals
  IP41 on the front panel

ELECTRICAL CONNECTIONS

- See the **"Safety Warning"** section
- Connect the instrument as described in the **"Connection Diagram"**

DESCRIPTION OF INSTRUMENT



Display
1) Hours/minutes indication(**HH:MM**):
– summertime symbol **" ☼ "**
– winter time festival **" ❄ "**
2) **"Year/month/day"** indication (**AAAA.MM.JJ**)
3) Relay status indication:
– **HOLIDAY** programme symbol **" 🖳 "**
4) **"Days of the week"** and **"PRG"** programming status indication

Keyboard
5) Date and time setting, change of time setting, rapid exit from programming
6) Confirmation of data entered and movement to next programming stage, holiday period programming (1-99 days)
7) Increase of parameter and forcing of relay 1
8) Decrease of parameter and forcing of relay 2
9) Instrument reset
10) Entry into daily and advanced programming

OPERATION

Normal operation

- In normal operation, the date, time, day of week, relay status (**ON, OFF, LOCK**) and **" ☼ "** or **" ❄ "** symbols for summer/winter time are displayed (plus the **" 🖳 "** symbol if the current programming is in **Holiday** mode).

PROGRAMMING PROCEDURE

- **The logical sequence for the programming of the instrument is set out below:**

1) The instrument is switched off when supplied, to avoid unnecessary use of the battery
2) Install the instrument in the panel and switch on the power (this will improve the visibility of the display and increase the calculation speeds)
3) To switch on the instrument, press **"RESET"** followed by **"PRG"**
4) Select the place of installation (Italy or other country)
5) Go to the programming of the geographical data of the location in accordance with the selection made in point 4:
– for Italy, simply programme a code from 0 to 103 corresponding to the provincial capital nearest to the place of installation (**see the province code/capital table**)
– for other countries, enter the degrees of latitude and longitude (**see the map**) and the time difference (time difference from the Greenwich meridian)
6) It is not necessary to set the sunrise and sunset time correction parameters (unless you wish to advance or retard the start-up and switching off of the load)
7) Programme the current time and date (with the **" ◷ "** key)
8) Set the weekly programming and parameters with the **"PRG"** key
9) At this point, the instrument is programmed correctly.
Check the sunrise and sunset times with the **"OK"** key.

GENERAL DESCRIPTION OF THE PRODUCT

Note: for correct operation, it is essential to enter certain items of information (astronomical parameters) to enable the instrument to identify the geographical area in which it is to be installed.

- This operation is important as the instants of sunrise and sunset in calculated by the AST LINE appliance depend not only on the date set but also on the geographical location of installation.
- The procedures to be followed for this setting depend on whether the instrument is to be installed in Italy or abroad.
- If the instrument is to be installed in Italy, the procedure is simplified, as it is not necessary to know the latitude or longitude of the place of installation, but merely to enter the code for the Italian province (see the **"province code/provincial capital"** table).
When the instrument is to be installed outside Italy, it is necessary to know the geographical data (**latitude and longitude, see map**).

Initial setting (selection of language and place of installation)

- First and foremost, it is necessary to select Italian or foreign installation.
- This selection determines the way in which the geographical data and language are programmed.
- Press the **"RESET"** key followed by the **"PRG"** key within 3 seconds.
The message **"SELECt YOUr COUntrY"** will move across the screen.
Use the **" ▲ "** and **" ▼ "** keys to make the selection between **" ItAL IA"** and **"OthEr COUntrY"**.
Press **"OK"** to confirm and go on automatically to the astronomical parameter menu.
- The programming menu for Italy or abroad will appear, depending on the selection made.

SETTING THE ASTRONOMICAL PARAMETERS FOR ITALY

- If installation in Italy was selected in the previous point, the message **"SELE2 IONArE CAPOLUOGO ItAL IAno"** will move across the screen.
To select the code for the provincial capital, see the **"province code/capital"** table.
– Press **" ▲ "** to increase the provincial capital field
– Press **" ▼ "** to decrease the provincial capital field
– Press **"OK"** to confirm the information and go to the next stage in the programming (the values that can be set range from 0 to 103.

— The message **"CorrE2 IONE orAr lo trAnSIto"** will move across the screen
- Due to the characteristics of the location (altitude, surrounding mountains and other geographical features), the sunrise and sunset times may differ from those calculated, and this parameter provides a correction in minutes with respect to the sunset time.
– Press **" ▲ "** to increase the field
– Press **" ▼ "** to decrease the field
– Press **"OK"** to confirm the information and go to the next stage in the programming (the value of this parameter may range from +120 min to -120 min)

— The message **"CorrE2 IONE orAr lo ALbA"** will move across the screen (this parameter provides a correction in minutes with respect to the sunrise time).
– Press **" ▲ "** to increase the field
– Press **" ▼ "** to decrease the field
– Press **"OK"** to confirm the information and go to the next stage in the programming (the value of this parameter may range from +120 min to -120 min)

— The message **"FUn2 IONAMENtO USO ItE ALtErnAtO"** will move across the screen
- If this parameter is on, the operation will be exchanged between OUT1 and OUT2 every day, to balance the loads connected at the outputs.
– Press **" ▲ "** to increase the field
– Press **" ▼ "** to decrease the field
– Press **"OK"** to confirm the information and go to the next stage in the programming (the values that can be set are ON/OFF)
Note: if the output exchange is enabled, this will take place each day at 12 noon

— The message **"tEMPO M In Mo USC ItE on"** will move across the screen
- This parameter determines the minimum duration of an On switching for each output close to sunrise and sunset. It is used in the programmes PF, PH, P1 and P2 to prevent the lamps from coming on for a period of time lower than the minimum set.
– Press **" ▲ "** to increase the field
– Press **" ▼ "** to decrease the field
– Press **"OK"** to confirm the information and go to the next stage in the programming (the parameter range is 0-30')

— **DISPLAY / ZEROING OF THE RELAY OUTPUT TIMER OUT1**
The number of hours for which the relay OUT1 will be on is displayed (displayed as CH1).
The timer can be zeroed by pressing the **"PRG"** key for at least 3 seconds
– Press **"OK"** to confirm the information and go to the next stage in the programming (the parameter range is 0-99999h)

— **DISPLAY / ZEROING OF THE RELAY OUTPUT TIMER OUT2**
The number of hours for which the relay OUT2 will be on is displayed (displayed as CH2).
The timer can be zeroed by pressing the **"PRG"** key for at least 3 seconds
– Press **"OK"** to confirm the information and go to the next stage in the programming (the parameter range is 0-99999 h)
Note: the timer does not move forward if the instrument is not connected to the power supply

— The message **"SEt PASS PEr bLoCCo"** will move across the screen
- This is the password to disable the settings guard.
The default password is "123".
– Press **" ▲ "** to increase the field
– Press **" ▼ "** to decrease the field
– Press **"OK"** to confirm the information and go to the NORMAL operation (the parameter range is 000-999)

TABLE - CODE / PROVINCIAL CAPITAL

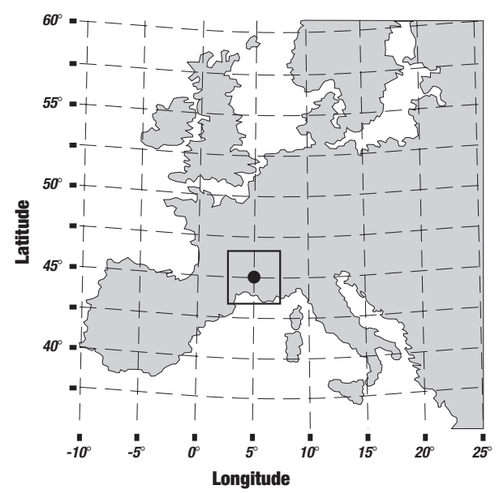
Code	Abbrev.	Name
0	[AG]	Agrigento
1	[AL]	Alessandria
2	[AN]	Ancona
3	[AO]	Aosta
4	[AR]	Arezzo
5	[AP]	Ascoli Piceno
6	[AT]	Asti
7	[AV]	Avellino
8	[BA]	Bari
9	[BL]	Belluno
10	[BN]	Benevento
11	[BG]	Bergamo
12	[BI]	Biella
13	[BO]	Bologna
14	[BZ]	Bolzano
15	[BS]	Brescia
16	[BR]	Brindisi
17	[CA]	Cagliari
18	[CL]	Caltanissetta
19	[CB]	Campobasso
20	[CE]	Caserta
21	[CT]	Catania
22	[CZ]	Catanzaro
23	[CH]	Chieti
24	[CO]	Como
25	[CS]	Cosenza

Code	Abbrev.	Name
26	[CR]	Cremona
27	[KR]	Crotone
28	[CN]	Cuneo
29	[EN]	Enna
30	[FE]	Ferrara
31	[FI]	Firenze
32	[FG]	Foggia
33	[FO]	Forlì
34	[FR]	Frosinone
35	[GE]	Genova
36	[GO]	Gorizia
37	[GR]	Grosseto
38	[IM]	Imperia
39	[IS]	Isernia
40	[SP]	La Spezia
41	[AQ]	L'Aquila
42	[LT]	Latina
43	[LE]	Lecce
44	[LC]	Lecco
45	[LI]	Livorno
46	[LO]	Lodi
47	[LU]	Lucca
48	[MC]	Macerata
49	[MN]	Mantova
50	[MS]	Massa
51	[MT]	Matera

Code	Abbrev.	Name
52	[ME]	Messina
53	[MI]	Milano
54	[MO]	Modena
55	[NA]	Napoli
56	[NO]	Novara
57	[NU]	Nuoro
58	[OR]	Oristano
59	[PD]	Padova
60	[PA]	Palermo
61	[PR]	Parma
62	[PV]	Pavia
63	[PG]	Perugia
64	[PS]	Pesaro
65	[PE]	Pescara
66	[PC]	Piacenza
67	[PI]	Pisa
68	[PT]	Pistoia
69	[PN]	Pordenone
70	[PZ]	Potenza
71	[PO]	Prato
72	[RG]	Ragusa
73	[RA]	Ravenna
74	[RC]	Reggio Calabria
75	[RE]	Reggio Emilia
76	[RI]	Rieti
77	[RN]	Rimini

Code	Abbrev.	Name
78	ROMA	Roma
79	[RO]	Rovigo
80	[SA]	Salerno
81	RSM	San Marino
82	[SS]	Sassari
83	[SV]	Savona
84	[SI]	Siena
85	[SR]	Siracusa
86	[SO]	Sondrio
87	[TA]	Taranto
88	[TE]	Teramo
89	[TR]	Terni
90	[TO]	Torino
91	[TP]	Trapani
92	[TN]	Trento
93	[TV]	Treviso
94	[TS]	Trieste
95	[UD]	Udine
96	[VA]	Varese
97	[VE]	Venezia
98	[VB]	Verbania
99	[VC]	Vercelli
100	[VR]	Verona
101	[VV]	Vibo Valentia
102	[VI]	Vicenza
103	[VT]	Viterbo

MAP - LATITUDE / LONGITUDE



Example = Longitude 5° Est - Latitude 45° Nord