Operating Instruction
Grässlin digi 127-9

GRÄSSLIN

80.10.0304.7

1. Unlock key board protective cover. (Turn key clockwise – attached to underside of instrument.) Lift cover and remove in direction of arrow (Fig. 1).
2. The countersunk screws at top right and bottom left fulfill a double function. After loosening central screws (use a narrow blade screwdriver) the plug in socket can be removed (Fig. 2 and 3).
3. Wire terminal socket in accordance with wiring diagram; socket may be surface or DIN rail mounted as required. Plug digi 127 into socket and tighten central screws (top right, bottom left).
4. For panel mounting the securing ears are engaged behind the panel by pressing down the outer screws (use wide blade screwdriver) and turning clockwise 90° so that locating ears engage behind panel. Outer screws are reached through the holes at bottom left and top right (i. e. Same holes as fixing screws).

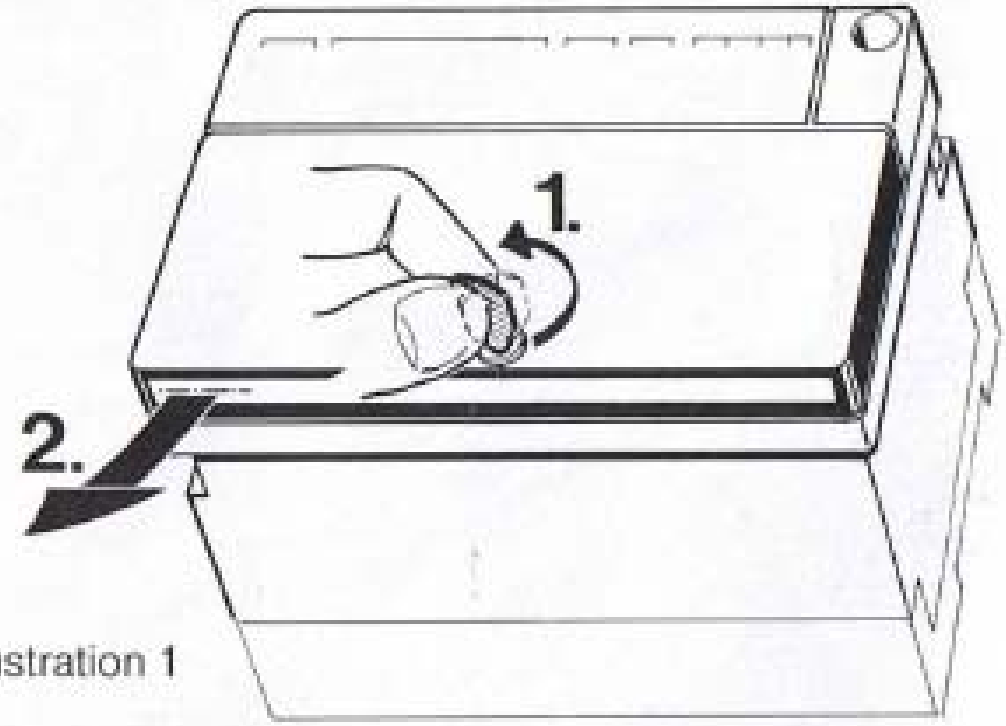


Illustration 1

The "day" display indicates the day on which the switching instructions will be executed. Monday 1, Tuesday 2, Wednesday 3, etc. Digi 127-9 wil display a "0" for daily recurring switching instructions.

The time display indicates the hours and minutes of switching times as put in.

In normal operation the first five figures of the display indicate the actual day of the week and exact time of day.

The "ON/OFF" display indicates whether the switching instruction switches the output on (1) or off (0).

The "Channel" display indicates on which of the 4 channels a switching operation will be carried out.

Push button "W" is thae "Write" button and is used to programme tahe digi 127-9. After pressing this push button the switching times can be entered.

Push button "M" means "Memory reset". Operation of this button cancels all programmes put into the digi 127-9 except the time of day. It is secured against unauthorished and unintentional operation and requires a pencil a pencil point to operate.

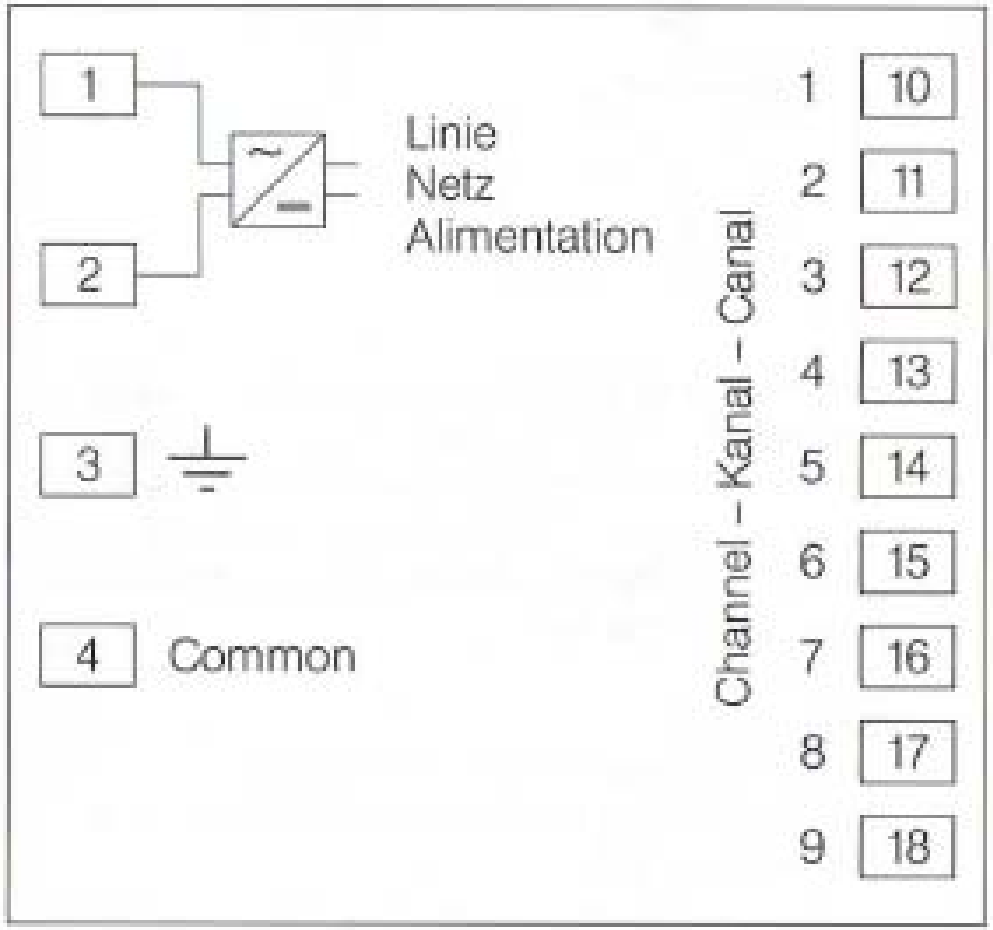
Push buttons 0-9 serve for the programming of figures indicating day, time ON/OFF and channel.

Push button "T" means "Time" (Time of day). It serves to start operations and for setting of the exact time.

Push button "R" means "Read". It enables the operator to check at any time tahe complete programme in the digi 127-9.


Day
Jour
Time
Heure
on/off
I/O
Channel
Canal
6 15.34 15.
W
7
8
9
M
4
5
6
1
2
3
T
O
R
GRÄSSLIN digi 127 – 9

The circuit connection is to be carried out according to the following wiring diagram:



Digi 127-9 need not be switched on – it becomes automatically operational as soon as the supply voltage is connected. The second digit and the control digit for the readiness to write are illuminated, which means that time input can start immediately.

Technical data:

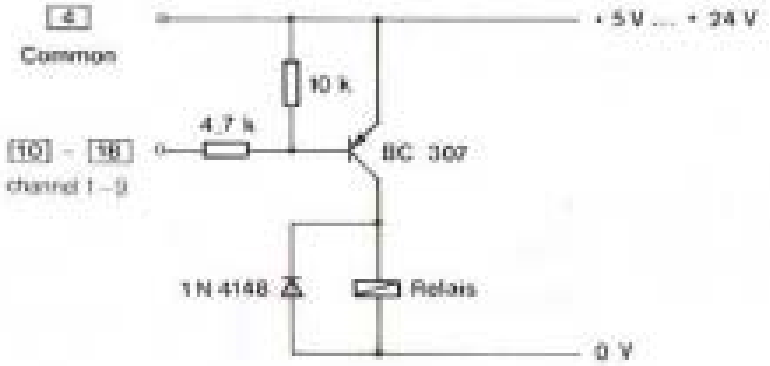
Supply voltage	240 V / 50 Hz
Switching capacity	5 V / 20 mA
Running reserve	100 hrs at + 20° C
Power input	8.8 VA
Shortest switching time	1 minute
Surrounding temperature	– 20° C to + 50° C
Quartz stabilized	

Digi 127-9 has 9 programmable low level active, open collector exit channals. A direct voltage of + 5 V is on terminal 4 (Common). In position "On" a voltage (illustration 1) of 0 V and a current of 20 mA for the control of an external unit or a relay (illustration 2) is available at the exit terminals (10 – 18).

Illustration 1

Voltage at exit terminals 10 – 18 terminal 4 (Common)

Illustration 2



In addition to digi 127-9 a relay board is available as an optional extra. The relay board makes it possible to connect manual switches for all 9 exit relays. If no relay board is used the positive supply voltage of the external unit must be connected to Common (terminal 4).

Relay board
Supply voltage: 240 V / 50 / 60 Hz
9 potential free changeover contacts 10 A
in three groups

1st Step: Setting of time

1.1. Keep button "T" firmly depressed during the whole setting of time.
1.2. Press button for the present day of the week, Monday = 1, Tuesday = 2, Wednesday = 3 etc.
1.3. Setting of time of day in the following sequence: first the hours (00 to 23), followed by the minutes (00 to 59).
Keep button "T" firmly depressed to the full minute (time signal of Radio or Telephone). Release button. Seconds display flashes. Clock in operation.

2nd Step: Setting of switching times

2.1. Briefly depress button "W". All figures will disappear. Seconds display flashes. Control digit Readiness for writing is illuminated.
2.2. Input of day of the week (1 – 7) on which switching is required. If a switching time is to be repeated daily, press 0 instead of 1 – 7.
2.3. Setting of switching time (as 1.3.).
2.4. Setting of switching command. 1 = On, 0 = Off.
2.5. Setting of one of the 9 Channels on which switching is to be carried out.
2.6. When 7 figures are illuminated, press button "W" briefly. All figures will disappear. The instrument is ready for the input of the next switching time.

3rd Step: Normal position

3.1. When the input of switching times is finished, press button "T" briefly. The day of the week as well as the exact time of day will appear on the display. The switching programme will continue automatically without further operation.

4th Step: Checking of programmed

4.1. It is possible at any time to check all switching times stored in digi 127-9 without interference with the automatic switching programme. For that purpose briefly press button "R". All figures will disappear. Seconds display flashes. Control digit Readiness for reading is illuminated.

4.2 Any further operation of button "R" will result in the display of one switching time after another in an orderly sequence from bottom to top, i. e. starting from 000.00 00 and increasing until all switching times contained in the storage compartment have been shown.

4.3 Normal position: Press button "T".

If a wrong input occurs during the setting of time (1st step) (week day = 8, time = 26) all further inputs are immediately blocked. The display flashes. In that case press button "T" again and start the input from the beginning.

If the display flashes as the result of a wrong input when setting the switching times (2nd step) press button "W" again and start step 2 from the beginning.

Detailed information concerning operation and variation possibilities of digi 127-9

Steps 1 – 4 of the short instruction are not repeated here, instead the following concrete example will serve to complete this short instruction:

Digi 127-9 will be installed on a Monday at 12.00 hrs. Its duty is to switch on Channel 3 at 6.05 hrs on Wednesday and switch off Channel 3 again on Friday at 18.30 hrs. Furthermore it is to switch on Channel 1 daily at 21.45 hrs and switch off again at 00.00 hrs.

After installation the display of digi 127-9 is dark. Only the seconds digit and the control digit for the readiness for writing are illuminated. First of all the actual time of day will be put in, in this example Monday 12.00 hrs.

1. Keep button "T" permanently depressed.
2. Press button 1 for Monday. Under "Day" a 1 will appear on the display.
3. For 12.00 hrs press buttons 1 – 2 – 0 – 0 in that sequence. Under "Time" the figures 12.00 will appear on the display.
4. Keep button "T" depressed until you hear the 12.00 time signal on Radio or Telephone. Then release button. The seconds digit starts to flash. The clock is in operation and after exactly 60 seconds it will show 12.01.

The next step is the programming of the switching time for Wednesday, 6.05 hrs ON on Channel 3.

1. Press button "W" briefly. All figures will disappear. The seconds digit flashes, the control digit for Readiness for writing is illuminated.
2. Press button 3 for Wednesday. Under "Day" a 3 will appear on the display.
3. For 6.05 hrs press buttons 0 – 6 – 0 – 5 – in that sequence. Under "Time" the figure 06.05 will appear on the display.
4. Press button 1 for the switching-on command. Under "On/Off" figure 1 will appear on the display.
5. For circuit 3 press button 3. Under "Channel" a 3 will appear on the display.

The programming operation for Wednesday, 6.05 hrs ON Channel 3 is finished. This data must now be transferred into the computer where the switching oder will be stored and carried out automatically at the correct time.
Press button "W" briefly for the data transfer into the storage compartment. All figures on the display will disappear. The instrument is ready to receive the next switching time, in our example Friday, 18.30 hrs OFF on Channel 3.

1. Press button 5 for Friday.
2. Press buttons 1 – 8 – 3 – 0 for 18.30 hrs.
3. Press button 0 for the switching-off order.
4. Press button 3 for Channel 3.

Once again the data will be transferred into the storage compartment by pressing button "W". The display is extinguished. The instrument is ready for the next switching time, namely daily, 21.45 hrs ON on Channel 1.

1. Press button 0 for daily.
2. Press buttons 2 – 1 – 4 – 5 for 21.45 hrs.
3. Press button 1 for the switching-on command.
4. Press button 1 for Channel 1.
5. Press button "W". The data will be transferred into the storage compartment. The instrument is ready for the input of a new switching time, namely daily 00.00 hrs OFF on Channel 1.

1. Press button 0 for daily.
2. Press buttons 0 – 0 – 0 – 0 for 00.00 hrs.
3. Press button 0 for the switching-off command.
4. Press button 1 for Channel 1.
5. Press button "W" – The end.

All switching times of your example are now registered and will be carried out automatically for the time being. **If the stored programme has to be increased by additional switching times at a later date, it is not necessary to put in the whole programme afresh, but only the additional switching times. The computer automatically arranges the new data into the correct sequence. As described it is possible to programme a total of 127 different switching times.** When 127 data are contained in the storage compartment, the capacity of digi 127-9 is exhausted which is signalled by simultaneous flashing of the ON/OFF-display and the Channel display.

Normal position
Now back to our example: The programming of the switching times is finished all figures on the display are extinguished. By pressing button "T" the present day of the week and the exact time of day are shown on the display, because the clock has continued to function internally accurate to the second during the whole input operation. Digi 127-9 remains in this position until new inputs or corrections become necessary.

Checking of programmed switching times
It is possible at any time to check all programmed switching times by operating button "R" (Reading), which means that all switching commands contained in the storage compartment will be shown on the display after pressing button "R". It is immaterial when the switching times have been programmed or in what order they have been put in because the computer arranges all switching commands in an increasing sequence.

In the case of our example digi 127-9 would display as follows:

1. Press button "R". Display 0 00.00 01
2. Press button "R". Display 0 21.45 11
3. Press button "R". Display 3 06.05 13
4. Press button "R". Display 5 18.30 03
5. Press button "R". Display 0 00.00 00
6. Press button "R". Display dark
7. Press button "R". Display 0 00.00 01

The computer has arranged all switching times contained in the storage-compartment from 0 00.00 01 in increasing order. In this way one can be 100 % sure that no switching command is stored between any 2 switching times displayed.

When all switching times have been displayed and no further switching-command is contained in the storage compartment, 0 00.00 00 will appear. After repeated pressing of button "R" the display will remain dark and then the computer will start again with the first switching time. In order to revert from this position back to normal setting, press button "T" briefly.

Further examples for the checking of stored switching times are to be found in the schedules at the end.

Correction of switching times

The switching time to be altered will be brought into the display by repeated pressing of button "R". Then press button "W" briefly. The old switching time will disappear and can be substituted by the new one. After this operation the storage compartment is blocked for safety reasons. If only this one correction was necessary press button "T" for normal position. Should further corrections have to be carried out it is necessary to bring the next switching time to be altered into the display by pressing button "R". Press button "W". Old switching time to be substituted by new one, etc. To avoid pressing button "R" 126 times in the most adverse case in order to be able to alter or check the last switching time, each stored switching time can be selected. Example:
Switching time 5 18.30 03 must be altered to 5 18.45 03. This means that digi 127-9 is to switch off on Friday at 18.45 hrs instead of 18.30 hrs on Channel 3.

1. Press button "R". Display dark.
2. Because the first three figures of the new switching time are identical with the old switching time, it is not necessary to search for storage place 5 18 (Friday, 18.00 hrs), but it can be selected directly. To achieve this press buttons 5 – 1 – 8. The figures will appear in the display.

3. Press button "R". The computer will now show the first switching-time on Friday after 18.00 hrs. It has omitted all switching commands which have been programmed before this time.
4. By repeated pressing of button "R" the time to be corrected 5 18.30 03 will appear on the display and can be substituted as per instruction.
5. Normal position by pressing of button "T".

Further examples for the correction of stored switching times can be found in the schedules at the end!

Cancellation of switching times

If a switching time is not to be corrected but cancelled completely, the time in question has to be brought into the display as in the case of correction. Press button "W" and write seven times 0. The storage space is now empty and will be filled again by the computer during one of the next inputs. Button "M" serves to cancel all switching times contained in the storage compartment, so that digi 127-9 no longer carries out any functions. For safety reasons this button can only be operated by a ballpoint pen or similar pointed object.

Correction of time

If it is necessary to alter the actual time of day (changeover from winter time to summer time) not all figures will have to be substituted but only those to be corrected. Example: 1 16.20 must be altered into 1 17.20.

1. Press button "T" constantly. All figures will disappear.
2. Press buttons 1 – 1 – 7.
3. Release button "T". The display shows now 1 17.20. The minutes and the accurate operation of the clock have been maintained automatically.

If, apart from the hours, the minutes too have to be corrected, the complete time must be programmed again. See chapter "Setting of Time".

Operating errors

Digi 127-9 signals operating errors immediately by flashing of the display. In addition all further inputs are blocked at once. An operational error causing damage to either the instrument or the stored switching times is, therefore, impossible.

The following mistakes will be signalled:

1. All illogical data, like week days 8 and 9, hours 24 to 99, minutes 60 to 99 and on/off 2 to 9.
2. Functional commands which contradict each other.
3. On- and Off-commands at the same time.
4. On-command or Off-command programmed daily (day of week 0) and in addition on a week day 1 – 7.

If the display starts to flash, the corresponding operation has to be restarted from the beginning.

The guidance given so far is repeated concisely and clearly in the following schedules and the most important operational steps of the examples are shown.

Monday 12.00 hrs Function	Button	Display
Readiness for writing – Clock	T continuous	---.----
Day of Week	1	1--.----
Hours in tens	1	11-.----
Hours in ones	2	112.----
Minutes in tens	0	112.0---
Minutes in ones	0	112.00--
Start Clock	T release	112.00--

Wednesday 6.05 hrs, ON on Channel 3 Function	Button	Display
Readiness for writing Input of switching times	W	---.----
Day of Week	3	3--.----
Hours in tens	0	30-.----
Hours in ones	6	306.----
Minutes in tens	0	306.0---
Minutes in ones	5	306.05--
Switch on	1	306.051-
Channel	3	306.0513

Daily 21.45 hrs, ON on Channel 1

Function	**Button**	**Display**
Readiness for writing Input of switching times	W	---.----
Day of Week	0	0--.----
Hours in tens	2	02-.----
Hours in ones	1	021.----
Minutes in tens	4	021.4---
Minutes in ones	5	021.45--
Switch on	1	021.451-
Channel	1	021.4511

Daily 00.00 hrs, OFF on Channel 1 Function	Button	Display
Readiness for writing Input of switching times	W	---.----
Day of Week	0	0--.----
Hours in tens	0	00-.----
Hours in ones	0	000.----
Minutes in tens	0	000.0---
Minutes in ones	0	000.00--
Switch off	0	000.000-
Channel	1	000.0001

Daily 18.30 hrs, OFF on Channel 3 **Function**	**Button**	**Display**
Readiness for writing Input of switching times	W	---.----
Day of Week	5	5--.----
Hours in tens	1	51-.----
Hours in ones	8	518.----
Minutes in tens	3	518.3---
Minutes in ones	0	518.30--
Switch off	0	518.300-
Channel	3	518.300-

Checking of programmed switching times

Function	Button	Display	Remarks
Readiness for reading	R	---.----	
Reading	R	000.0001	1st switching time
Reading	R	021.4511	2nd switching time
Reading	R	306.0513	3rd switching time
Reading	R	518.3003	4th switching time
Reading	R	000.0000	No further switching times programmed
Reading	R	---.----	Display dark
Reading	R	000.0001	All stored switching times are repeated

You want to know which switching times have been programmed on Thursday after 18.00 hrs

Function	Button	Display
Readiness for reading	R	---.----
Day of Week	5	5--.----
Hours in tens	1	5 1-.----
Hours in ones	8	5 1 8.----
Reading	R	1st switching time programmed after 5 18, but first all switching times will be displayed which have been programmed daily (day of week 0) after 18.00 hrs
Normal position	T	Time of day

You want to know which switching times have been programmed on Saturday after 7.41 hrs **Function**	**Button**	**Display**
Readiness for reading	R	---.----
Day of Week	6	6--.----
Hours in tens	0	60-.----
Hours in ones	7	607.----
Minutes in tens	4	607.4---
Minutes in ones	1	607.41--
Reading	R	1st switching time programmed after 607.41, but first all switching times will be displayed which have been programmed daily (day of week 0) after 7.41 hrs
Normal position	T	Time of day

You want to know which switching times have been programmed on Wednesday after 22.59 hrs on Channel 3

Function	Button	Display
Readiness for reading	R	---.----
Day of Week	3	3--.----
Hours in tens	2	32-.----
Hours in ones	2	322.----
Minutes in tens	5	322.5---
Minutes in ones	9	322.59--
Channel	3	322.59-3
Reading	R	1st switching time which has been programmed after 3 22.59 on Channel 3, but first all switching times will be displayed which have been programmed daily (day of week 0) after 22.59 hrs on Channel 3
Normal position	T	Time of day

You want to know the total number of switching times which have been programmed on Channel 2

Function	Button	Display
Readiness for reading	R	---.----
Day of Week	0	0--.----
Hours in tens	0	00-.----
Hours in ones	0	000.----
Minutes in tens	0	000.0---
Minutes in ones	0	000.00--
Channel	2	000.00-2
Reading	R	After each depressing of button "R" all switching times which have been programmed on Channel 2 will appear one after another
Normal position	T	Time of day

Switching time 5 18.30 03 must be changed to 5 18.45 03. Digi 127-9 is therefore required to switch off on Friday at 18.45 hrs instead of 18.30 hrs on Channel 3.

Function	Button	Display
Readiness for reading	R	---.----
Day of Week	5	5--.----
Hours in tens	1	51-.----
Hours in ones	8	518.----
Reading	R	After each depressing of button "R" the next programmed switching time appears on the display
Reading	R	518.3003
Readiness for writing	W	---.----
Day of Week	5	5--.----
Hours in tens	1	51-.----
Hours in ones	8	518.----
Minutes in tens	4	518.4---
Minutes in ones	5	518.45--
OFF	0	518.450-
Channel 3	3	518.4503
Normal position	T	Time of day

Alteration of time 1 16.20 (winter time) into 1 17.20 (summer time)

Function	Button	Display	Remarks
Readiness for reading – Clock	T continuous	---.----	It is sufficient to programme afresh only the first three figures. The minutes and the sequence accurate to the second will be transferred unchanged.
Day of Week	1	1--.----	
Hours in tens	1	11-.----	
Hours in ones	7	117.----	
Transfer	T release	117.20--	