

Types 1078-1 / 1078-2

Timer without or with configuration module type 1077-2



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Technische Änderungen vorbehalten.

Sous réserve de modifications techniques.

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Operating Instructions

Bedienungsanleitung
Manuel utilisateur

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1. ABOUT THIS MANUAL

This manual describes the entire life cycle of the device. Please keep this manual in a safe place, accessible to all users and any new owners.

This manual contains important safety information.

Failure to comply with these instructions can lead to hazardous situations.

- This manual must be read and understood.

1.1. Symbols used



DANGER

Warns you against an imminent danger.

- Failure to observe this warning can result in death or in serious injury.



WARNING

Warns you against a potentially dangerous situation.

- Failure to observe this warning can result in serious injury or even death.



CAUTION

Warns you against a possible risk.

- Failure to observe this warning can result in substantial or minor injuries.

NOTE

Warns you against material damage.

- Failure to observe this warning may result in damage to the device or system.



indicates additional information, advice or important recommendations for your safety and for the correct operation of the device.



refers to information contained in this manual or in other documents.

→ indicates a procedure to be carried out.

1.2. Definition of the word "device"

The term "device" used within the manual refers to the timer type 1078-1 or 1078-2 (with or without configuration module type 1077-2).

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English

2.2. Foreseeable misuse

- Do not use this device in a potentially explosive atmosphere.
- Do not subject the device to mechanical loads (e.g. by placing objects on top of it or by using it as a step).
- Do not make any external modifications to the device. Do not paint or varnish any part of the device.

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English

2. INTENDED USE

Use of the timer that does not comply with the instructions could present risks to people, nearby installations and the environment.

- The timer, with or without configuration module, allows for controlling the activation/deactivation cycle of a solenoid valve having a compatible supply voltage.
- Installation, adjustment and maintenance of the device must be carried out by qualified staff with an electrical certification for the 110/230 V AC energized versions.
- Protect the device from electromagnetic perturbations, ultraviolet radiations and, when installed outside, from the effects of climatic conditions.
- Use this device in compliance with the characteristics and commissioning and use conditions specified in the contractual documents and in the instruction manual.
- Requirements for safe and proper operation are proper transport, storage and installation as well as careful operation and maintenance.
- Only use the device as intended.

2.1. Restraints

Observe any existing restraints when the device is exported.

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English

3. BASIC SAFETY INFORMATION

This safety information does not take into account:

- any contingencies or occurrences that may arise during assembly, use and maintenance of the devices.
- the local safety regulations that the operator must ensure the staff in charge of assembly observe.



Danger due to electrical voltage.



Various dangerous situations

To avoid injury take care to:

- prevent any accidental power supply switch-on.
- carry out installation and maintenance by qualified and skilled staff with the appropriate tools.
- guarantee a defined or controlled restarting of the process, after a power supply interruption.
- use the device only if in perfect working order and in compliance with the instructions provided in the user manual.
- observe the general technical rules during the planning and use of the device.

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English

NOTE

Elements / Components sensitive to electrostatic discharges

- This device contains electronic components sensitive to electrostatic discharges. They may be damaged if they are touched by an electrostatically charged person or object. In the worst case scenario, these components are instantly destroyed or go out of order as soon as they are activated.
- To minimise or even avoid all damage due to an electrostatic discharge, take all the precautions described in the EN 61340-5-1 and 5-2 norms.
- Also ensure that you do not touch any of the energized electrical components.

4. GENERAL INFORMATION

4.1. Manufacturer's address and international contacts

To contact the manufacturer of the device, use following address:

Bürkert SAS
Rue du Giessen
BP 21
F-67220 TRIEMBACH-AU-VAL

The addresses of our international branches can be found on the last pages of this manual.

They can also be found on the Internet under:

www.burkert.com

4.2. Warranty conditions

The condition governing the legal warranty is the conforming use of the device in observance of the operating conditions specified in this manual.

4.3. Information on the Internet

You can find the user manual and technical datasheets regarding type 1078 or 1077 on the internet at:

www.burkert.com

5. AREA OF APPLICATION

The timer 1078-1 or 1078-2 is plugged on a solenoid valve by means of an EN 175301-803 form A fixed connector.

The timer allows for controlling the activation/deactivation cycle of the solenoid valve.

5.1. General description

5.1.1. Construction

The timer 1078-1 or 1078-2 is a class II control device and a Type 1 action device (see EN 60730-1 standard).

The timer 1078-1 or 1078-2 is an electronic module enclosed in a housing with a transparent cover, a cable gland and an EN 175301-803 female fixed connector, form A, with seal. The timer is attached to the solenoid valve by means of a screw.

- The timer 1078-1 is connected to the power supply through the cable gland, by means of a 3-pole terminal block in the housing.
- The timer 1078-2 is connected to the power supply through the cable gland, by means of a 5-pole terminal block in the housing.

The timer energizes the solenoid valve.

The timer 1078-2 can be configured by means of a configuration module 1077-2, inserted onto the 1078-2 in place of

its cover.

5.2. Available versions

Device	Supply voltage	Order code
Timer 1078-1	12-24 V DC	060647
	24-48 V AC, 50-60 Hz, 24-48 V DC	060621
	110-230 V AC, 50-60 Hz	060620
Timer 1078-2	12-24 V DC	060648
	24-48 V AC, 50-60 Hz, 24-48 V DC	060629
Configuration module 1077-2 for timer 1078-2		060638

5.3. Description of the name plates

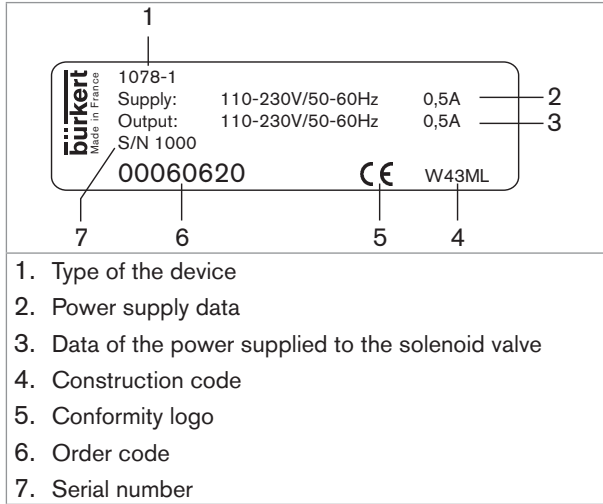


Fig. 1: Nameplate of the 1078

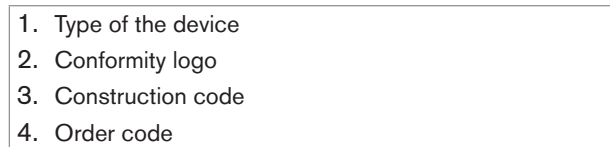
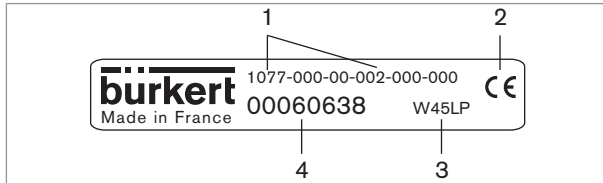


Fig. 2: Nameplate of the 1077

6. TECHNICAL DATA

6.1. Conditions of use

Ambient temperature	(in operation)
▪ 1078	▪ -10°C...60°C
▪ 1077	▪ 0°C...60°C
Air humidity	< 85%, non condensated
Height above sea level	max. 2000 m
Degree of pollution	2
Protection rating	IP65, when screwed to the solenoid valve at a torque rating between 0,5 and 0,8 Nm, wired and cable gland tightened

6.2. General technical data

6.2.1. Mechanical data

Part	Material
Housing	
▪ 1078	▪ PA6 or polyarylamide
▪ 1077-2	▪ Polyamide
Cover	PSU

Part	Material
Female EN 175301-803 fixed connector	PA6
PG9 cable gland	PA6 or polyarylamide
M3x45 or M3x55 screw	1, in stainless steel AL2
Seal for the female fixed connector	NBR

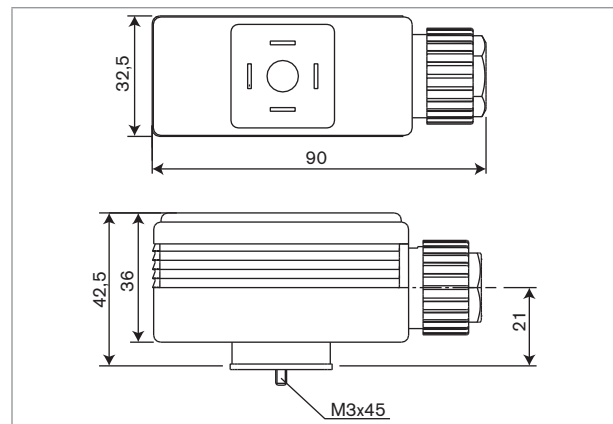


Fig. 3: Dimensions [mm] of the 1078

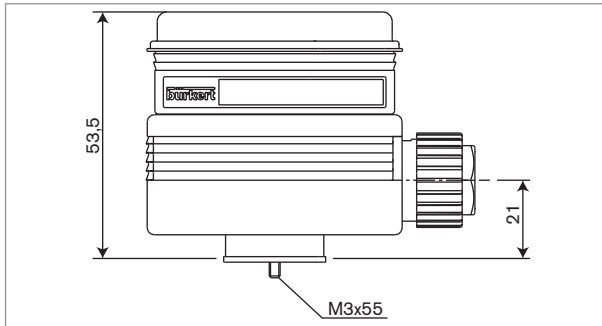


Fig. 4: Dimensions [mm] of the 1078-2 combined with the 1077-2

6.2.2. General features

Time range (1078-1) (mechanical adjustment using the 6 switches N° 1, 2, 3, 6, 7 and 8)	<ul style="list-style-type: none"> ▪ 0,5 to 10 s (default setting) ▪ 1,5 to 30 s ▪ 5 to 100 s ▪ 0,5 to 10 min. ▪ 1,5 to 30 min. ▪ 5 to 100 min. ▪ 12 to 240 min. ▪ 0,5 to 10 h
--	--

Time range (1078-2) (digital adjustment through module 1077-2)	0,2 s to 9999 h, continuous
Tolerance (1078-2)	1 %
Resolution (1078-2)	<ul style="list-style-type: none"> ▪ up to 199 s ▪ up to 199 min. ▪ up to 99 h ▪ up to 9999 h ▪ 10 ms ▪ 1 s ▪ 1 min. ▪ 1 h

6.2.3. Electrical data

Table 1: Electrical data of the 1078

Power supply	Tolerance 10 %
<ul style="list-style-type: none"> ▪ 1078-1 ▪ 1078-2 	<ul style="list-style-type: none"> ▪ 12-24 V DC, max. 2 A or 24-48 V AC/DC, max 1,5 A or 110/230 V AC, max 0,5 A ▪ 12-24 V DC, max. 2 A or 24-48 V AC/DC, max 1,5 A
Protection against polarity reversal	No, for devices energized with a direct voltage

Power supplied to the solenoid valve	<ul style="list-style-type: none"> ▪ Version 12-24 V DC ▪ Version 24-48 V AC/DC ▪ Version 110/230 V AC ▪ 12-24 V DC, max. 2 A ▪ 24-48 V DC, max. 1,5 A ▪ 110/230 V DC, max. 0,5 A
Clearance and leakage path	Acc. to VDE 0100
Electrical connection	Through PG9 cable gland
<ul style="list-style-type: none"> ▪ Cable diameter ▪ Cross section of the wires 	<ul style="list-style-type: none"> ▪ 6 to 7 mm ▪ max. 1,5 mm²

Table 2: Electrical data of the 1077-2

Supply voltage	Energized by the 1078-2
Power consumed	5 mW

7. INSTALLATION AND WIRING

7.1. Safety information



DANGER

Risk of injury due to electrical voltage.

- Before starting work, make sure that you switch off the supply voltage and secure it to prevent restarting.
- Do not unscrew the cover of a powered device.
- Observe all applicable accident protection and safety guidelines for electrical equipment.



WARNING

Risk of injury due to nonconforming installation.

- The electrical installation can only be carried out by qualified and skilled staff with the appropriate tools.
- Install appropriate safety devices (correctly rated fuse and/or circuit-breaker).



WARNING

Risk of injury due to unintentional switch on of power supply or uncontrolled restarting of the installation.

- Take appropriate measures to avoid unintentional activation of the installation.
- Guarantee a defined or controlled restarting of the process subsequent to any intervention on the device.



Protect the power supply.

- Fit the power supply with a fuse of a value suited to the load to be switched, if it is not protected by default.



- Use a shielded cable with an operating temperature $> +80\text{ }^{\circ}\text{C}$.
- Use a high quality electrical power supply, filtered and regulated.

- Loosen the screw of the housing cover.
- Remove the cover.
- Loosen the nut of the cable gland.
- Insert the cable through the nut then through the cable gland and refer to Fig. 5 or Fig. 6 for wiring.
- Tighten the cable gland.

- Install the cover and check for the correct position of the seal.
- Tighten the supplied screw at a torque rating between 0,5 and 0,8 Nm.

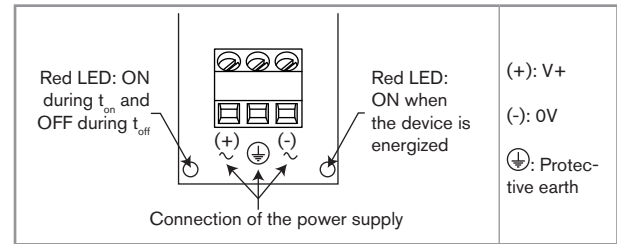


Fig. 5: Terminal assignment of the 1078-1

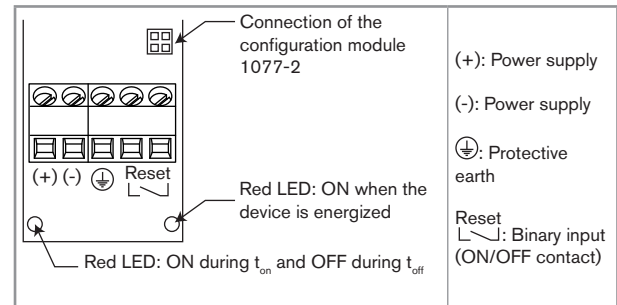


Fig. 6: Terminal assignment of the 1078-2

8. COMMISSIONING

8.1. Safety information



WARNING

Danger due to nonconforming commissioning.

Nonconforming commissioning could lead to injuries and damage the device and its surroundings.

- Before commissioning, make sure that the staff in charge have read and fully understood the contents of the manual.
- In particular, observe the safety recommendations and intended use.
- The device/installation must only be commissioned by suitably trained staff.

NOTE

Risk of damage to the device due to the environment

- Protect the device from electromagnetic perturbations, ultraviolet radiations and, when installed outside, from the effects of climatic conditions.



When the device is switched on and the cover is open, protection against electric shock is no longer guaranteed.

9. ADJUSTMENT

9.1. Safety information



DANGER

Risk of injury due to electrical voltage

- Observe all applicable accident protection and safety guidelines for electrical equipment.



WARNING

Risk of injury due to nonconforming adjustment.

Nonconforming adjustment could lead to injuries and damage the device and its surroundings.

- The operators in charge of adjustment must have read and understood the contents of this manual.
- In particular, observe the safety recommendations and intended use.
- The device/installation must only be adjusted by suitably trained staff.

9.2. Adjustment of the 1078-1



DANGER

Risk of electric shock.

- To adjust the potentiometers, use an insulated screwdriver.



The set operation mode starts when the device is energized.

- Set the operation mode before energizing the device combined with a solenoid valve.

To adjust the 1078-1:

→ Adjusting the valve operation mode.

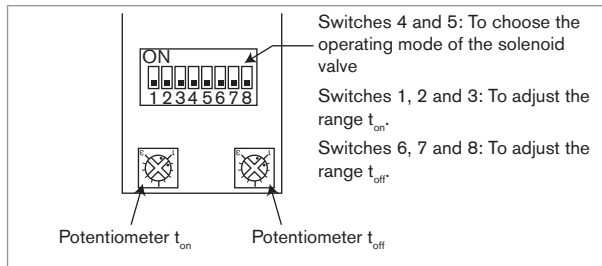


Fig. 7: Adjustment elements of the 1078-1

The timer 1078-1 allows for controlling the ON (called t_{on}) / OFF (called t_{off}) cycle of a solenoid valve.

Four operation modes can be set with switches 4 and 5. See Fig. 7 and Fig. 8.

Switches 4 and 5	Operation mode of the solenoid valve	
ON 4 5	ON (t_{on})/OFF (t_{off}) cycle of the valve: Set the time t_{on} and the time t_{off}	
ON 4 5	OFF (t_{off})/ON (t_{on}) cycle of the valve: Set the time t_{on} and the time t_{off}	
ON 4 5	Timed-out activation of the valve: Only set the time t_{on}	
ON 4 5	Delayed activation of the valve: Only set the time delay t_{off}	

Fig. 8: Operation modes of the 1078-1

→ Set the time range for t_{on} with switches 1, 2 and 3 and/or t_{off} with switches 6, 7 and 8. See Fig. 7 and Fig. 9.

Switches 1, 2, 3 (t_{on}) and 6, 7, 8 (t_{off})	Time range
ON 1 2 3 6 7 8	0,5-10 seconds

Switches 1, 2, 3 (t_{on}) and 6, 7, 8 (t_{off})	Time range
ON 1 2 3 6 7 8	1,5-30 seconds
ON 1 2 3 6 7 8	5-100 seconds
ON 1 2 3 6 7 8	0,5-10 minutes
ON 1 2 3 6 7 8	1,5-30 minutes
ON 1 2 3 6 7 8	5-100 minutes
ON 1 2 3 6 7 8	12-240 minutes
ON 1 2 3 6 7 8	0,5-10 hours

Fig. 9: Time ranges for t_{on} and t_{off}

→ Set the ON time t_{on} with potentiometer t_{on} and/or the OFF time t_{off} with potentiometer t_{off} with a flat screwdriver of correct size. See Fig. 7 and Fig. 10.

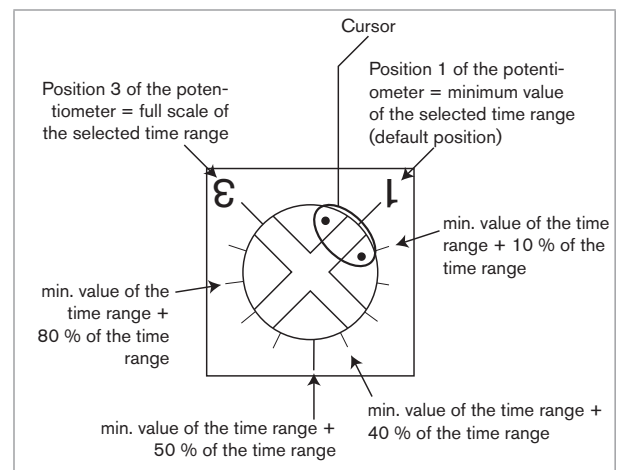
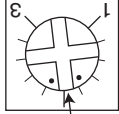


Fig. 10: Using the potentiometers of the 1078-1

For example:

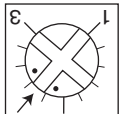
The time range for t_{on} is set to 5-100 seconds and the time range for t_{off} is set to 1,5-30 minutes.

→ If $t_{on} = 50$ seconds = min. value of the range (5 s) + 45 s ($45/95 \cdot 100 = 47\%$ of the range), set the cursor of the t_{on} potentiometer as follows:



$t_{on} = \text{min. value of the range} + 47\% \text{ of the time range}$

→ If $t_{off} = 20$ seconds = min. value of the range (1,5 min.) + 18,5 min. ($18,5/28,5 \cdot 100 = 65\%$ of the range), set the cursor of the t_{off} potentiometer as follows:



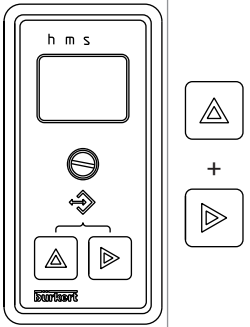
$t_{off} = \text{min. value of the range} + 65\% \text{ of the time range}$

Fig. 11: Setting example of potentiometers t_{on} and t_{off} of the 1078-1

9.3. Adjustment of the 1078-2

- To change the parameters of the 1078-2, install a configuration module type 1077-2 on the timer 1078-2.
- Switch off the power supply of the 1078-2 in order not to damage the current 1078-2 settings.
 - Check that both red LEDs are OFF.
 - Loosen the screw from the 1078-2.
 - Remove the cover.
 - Install the 1077-2 with its seal onto the 1078-2, in any position. See Fig. 6, page 21.
 - Insert the screw supplied with the 1077-2.
 - Tighten the screw at a torque rating between 0,5 and 0,8 Nm.

9.3.1. Adjustment keys of the 1077-2



To access the Settings level.

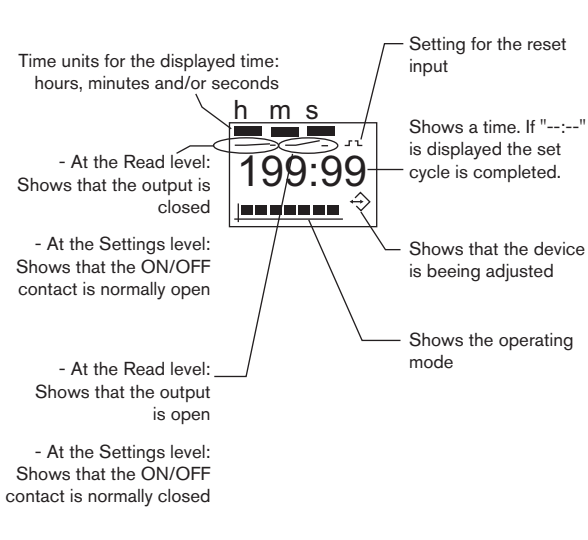
- From the Read level to go to the next time.
- From the Settings level to go to the next function.
- To validate the setting of each function.
- At the end of the adjustment, to transfer the new settings to the timer.

At the Settings level:

- To change the flashing numerical value.
- To go to the next choice of a function.

Fig. 12: Adjustment of the 1077-2

9.3.2. Display elements of the 1077-2



Time units for the displayed time: hours, minutes and/or seconds

Setting for the reset input

Shows a time. If "--:--" is displayed the set cycle is completed.

Shows that the output is closed

Shows that the device is being adjusted

Shows the operating mode

- At the Read level: Shows that the output is open

- At the Settings level: Shows that the ON/OFF contact is normally closed

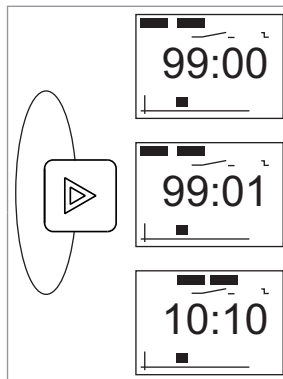
Fig. 13: Display of the 1077-2

9.3.3. Operating levels

The configuration module has two operating levels: The Read level and the Settings level.

- The Read level allows for reading the different times that have been set and for following their count down.
- The Settings level allows for setting the operating mode, the reset type and the times (units and values).

9.3.4. Navigating within the Read level

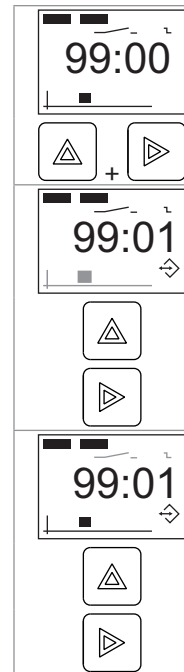


When the device is energized or when the Settings level is left, the display shows the first running time (which depends on the set operating mode). The count-down of that time starts.

The next screens show the other set times. The number of times depends on the set operating mode.

Fig. 14: Navigation at the Read level

9.3.5. Accessing the Settings level



Read level

To access the Settings level.

a) Symbol \diamond is displayed and the operating mode flashes.

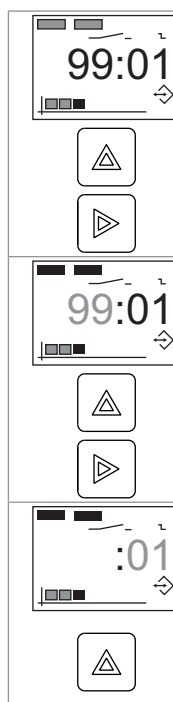
→ Change the operating mode. See Fig. 16.

→ Validate the displayed choice and go to the next function.

b) The reset type flashes.

→ Change the reset type. See Fig. 17.

→ Validate the displayed choice and go to the next function.



c) The time units and the first time to be set flash.

→ Choose the time units for the first time to be set. See Fig. 18.

→ Validate the displayed choice and go to the next function.


d) The part of the time, that is associated to the greatest time unit, flashes.

→ Set the time associated to the greatest time unit. See Fig. 18.

→ Validate the set value and go to the next function.

d) The part of the time, that is associated to the smallest time unit, flashes.

→ Set the time associated to the smallest time unit. See Fig. 18.



→ Validate the set value and end the adjustment (\diamond goes out and the settings are saved) or go to the next time (\diamond is still displayed).

→ To set each additional time, repeat steps c), d) and e).

Fig. 15: Adjustment of the 1078-2

Function	Values to be set
	<ul style="list-style-type: none"> ▪ the delay T_{off} (■■■■) ▪ the pulse T_{on} (■■■)
	<ul style="list-style-type: none"> ▪ the pulse T_{on} (■■■■■■■■) ▪ the duration T_{off} (■■■■■■■■)
	<ul style="list-style-type: none"> ▪ the duration T_{on} (■■■■■■■■) ▪ the duration T_{off} (■■■■■■■■)
	<ul style="list-style-type: none"> ▪ the duration T_{off} (■■■■■■■■) ▪ the duration T_{on} (■■■■■■■■)
	the pulse T_{on} (■■■■)
	the delay T_{off} (■■■■■■■■)

Function	Values to be set
	<ul style="list-style-type: none"> the pulse $T_{on\ 1}$ (■ ■ ■) the duration $T_{off\ 1}$ (■ ■ ■ ■ ■ ■ ■ ■) the duration $T_{on\ 2}$ (■ ■ ■ ■ ■).
	<ul style="list-style-type: none"> the delay $T_{off\ 1}$ (■ ■ ■ ■ ■ ■ ■ ■) the duration T_{on} (■ ■ ■ ■ ■) the duration $T_{off\ 2}$ (■ ■ ■ ■ ■ ■ ■ ■).
T_{on} = ON duration of the valve T_{off} = OFF duration of the valve	

Fig. 16: Operating modes

Symbols chosen at the Settings level	The reset occurs...
	No reset.
	when the ON/OFF contact is opened.
	when the ON/OFF contact is closed.
	when the ON/OFF contact is closed but the parametered cycle only begins when the ON/OFF contact is opened.

10. MAINTENANCE AND TROUBLESHOOTING

10.1. Safety information

DANGER

Risk of injury due to electrical voltage.

- Before starting work, make sure that you switch off the supply voltage and secure it to prevent restarting.
- Observe all applicable accident protection and safety guidelines for electrical equipment.

WARNING

Risk of injury due to non-conforming maintenance.

- Maintenance must only be carried out by qualified and skilled staff with the appropriate tools.
- Guarantee a defined or controlled restarting of the process subsequent to any intervention on the device.

Symbols chosen at the Settings level	The reset occurs...
	No reset.
	when the ON/OFF contact is closed.
	when the ON/OFF contact is opened.
	at each change of state of the ON/OFF contact.

Fig. 17: Possible resets

h	m	s	Setting range for the time
■			00:00h to 9999h
■ ■			00:00h to 99h:59min.
	■ ■		00:00min. to 199min.:59s
		■ ■	00:00s to 199s:99

Fig. 18: Time units and associated setting ranges

10.2. Maintenance and cleaning

NOTE

The device may be damaged by the cleaning product.

- Clean the device with a cloth slightly dampened with water or a cleaning product compatible with the materials from which it is made.

Please feel free to contact your Bürkert supplier for any additional information.

11. SPARE PARTS AND ACCESSORIES

CAUTION

Risk of injury and/or damage by the use of incorrect parts.

Incorrect accessories and unsuitable spare parts may cause injuries and damage the device and the surrounding area.

- Use only original accessories and original spare parts from Bürkert.

12. PACKAGING, TRANSPORT

NOTE

Damage due to transport

Transport may damage an insufficiently protected device.

- Transport the device in shock-resistant packaging and away from humidity and dirt.
- Avoid the effects of heat and cold, which could cause the storage temperature range to be exceeded.

13. STORAGE

NOTE

Poor storage can damage the device.

- Store the device in a dry place away from dust.
- Ambient storage temperature: -10 to +60 °C.

14. DISPOSAL OF THE DEVICE

→ Dispose of the device and its packaging in an environmentally-friendly way.

NOTE

Damage to the environment caused by products contaminated by fluids.

- Keep to the existing provisions on the subject of waste disposal and environmental protection.



Note

Comply with the national and/or local regulations which concern the area of waste disposal.