SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

BTS1050
Boiler Blowdown Timer
Installation and Maintenance Instructions



1. Safety information
2. General product information
3. Mechanical installation
4. Electrical installation
5. Commissioning
6. Fault finding
7. Technical information
8. Technical assistance

© Copyright 2021
Printed in Germany

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

1. Safety information

The equipment may only be installed, electrically connected and commissioned by suitable persons with the relevant instruction/training.

Maintenance and modification may only be performed by authorised staff who have undergone specific instruction/training.



Danger
The terminal strips of the equipment are live during operation! There is a risk of serious injury due to electric shock!
Always cut off the power supply to the equipment before installing, removing or connecting terminal strips!



Important
The name plate specifies the features of the equipment. Do not commission or operate any item of equipment that does not have its own specific name plate.

Directives and standards

LV (Low Voltage Directive) and EMC (Electromagnetic Compatibility)

The equipment conforms to the requirements of the Low Voltage Directive 2014/35/EU and the EMC Directive 2014/30/EU.

ATEX (Atmosphère Explosible)

According to the European Directive 2014/34/EU the level switch BTS1050 must not be used in potentially explosive areas.

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

2. General product information

2.1 Intended use

The BTS1050 is a timer for the control of a bottom blowdown valve. It allows the bottom blowdown valve to open, removing precipitated solids that could otherwise build up and eventually cause damage.

The BTS1050's timers are controlled from a battery backed up Real Time Clock (RTC).

A separate blowdown timer can be enabled for each weekday with different start, stop and repeat times. A simple copy feature allows the parameters to be copied to all days if required.

A test function provides the operator with a diagnostic tool.

Up to nine BTS1050 (or BCR3250 or BT1050) units can be installed and priority linked for multi-boiler installations.

A limit switch box can be connected to monitor proper valve opening / closing action.

2.2 Function

The BTS1050 blowdown timer features the following properties:

- Purpose designed for bottom blowdown duties
- Comprehensive timer options
- Straightforward to commission – quick set-up option, using copy function
- Power supply: 24 Vdc
- Priority link and a recovery timer prevent boilers from blowing down in rapid succession
- Warns if valve fails to open or close
- Standby input to reduce boiler water loss if the boiler is on standby or low demand
- Password protection



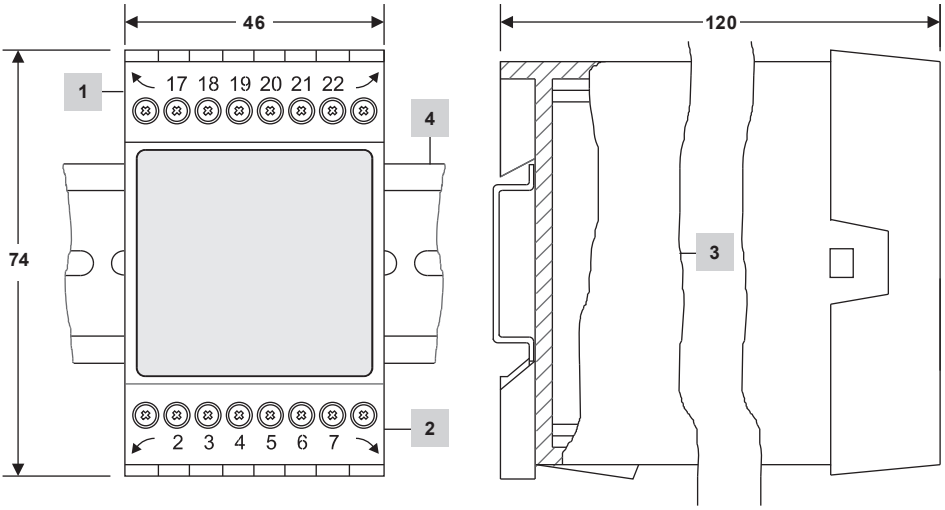
Fig. 1

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

3. Mechanical installation

3.1 Dimensions (approximate) in mm



Item	
1	Upper terminal strip
2	Lower terminal strip
3	Housing
4	Support rail TH 35, EN 60715

Fig. 2

3.2 Installation inside a control cabinet

The BTS1050 Boiler Blowdown Timer is clipped onto a type TH 35, EN 60715 support rail in the control cabinet. Fig. 2, Item 4.

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

3.3 Installation in a control cabinet door

The BHC Panel Adaptor Small is available which enables the timer to be installed in a control cabinet door.



Fig. 3

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

3.4 Name plates

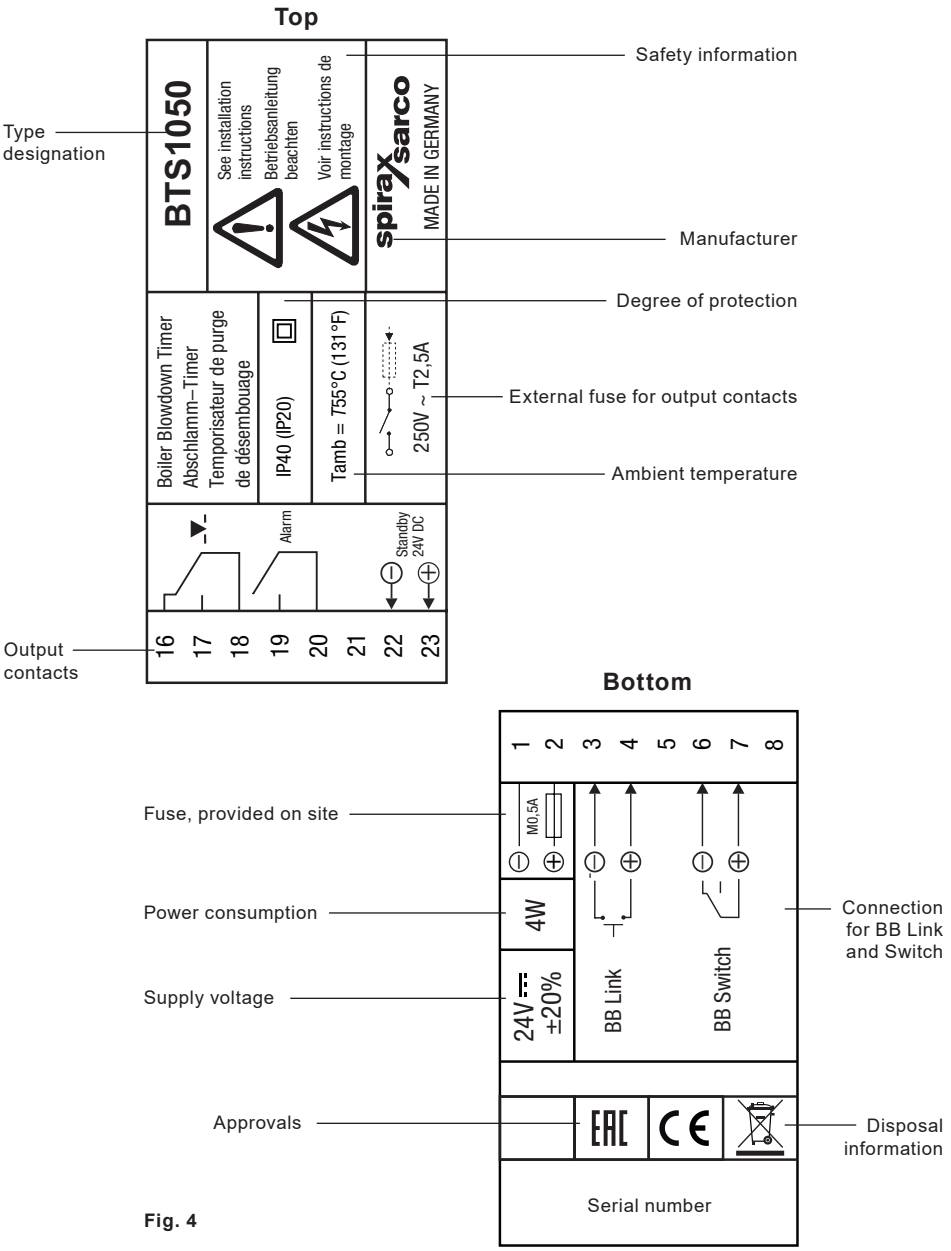


Fig. 4

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

4. Electrical installation

4.1 Wiring diagrams

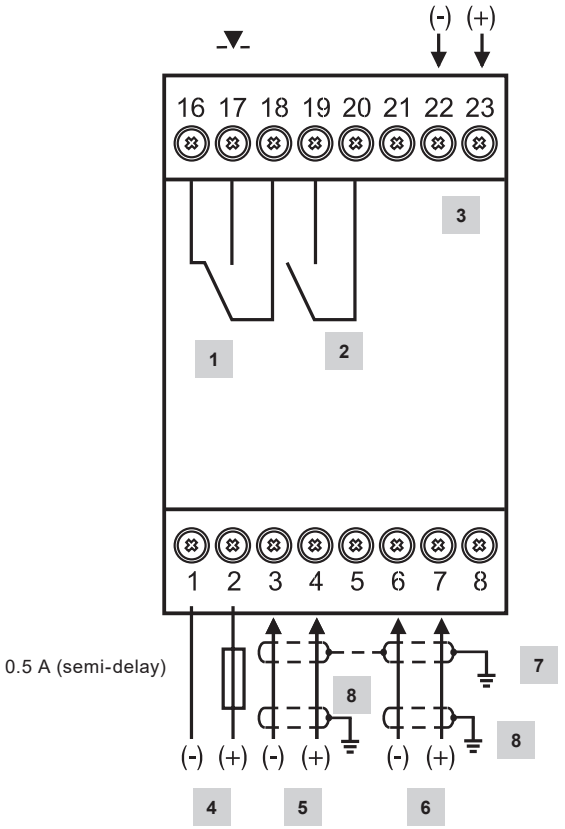


Fig. 5 Wiring Diagram

Item	
1	Bottom Blowdown (BB) valve output contacts
2	Alarm output contact
3	Standby input (24 Vdc), ON = standby, OFF = normal operation
4	Connection of supply voltage 24 Vdc with fuse 0.5 A (semi-delay) provided on site
5	Bottom blowdown (BB) link input
6	Bottom blowdown (BB) switch input
7	Central earthing point (CEP) in control cabinet
8	Earthing point at the auxiliary equipment

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

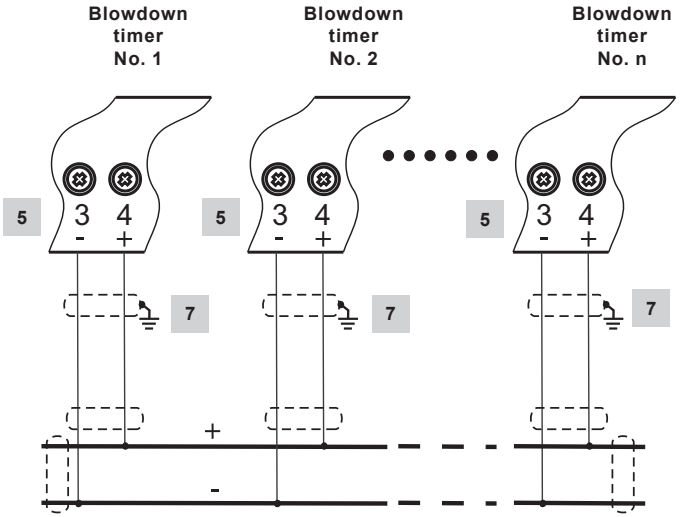


Fig. 6
Bottom Blowdown priority link connection

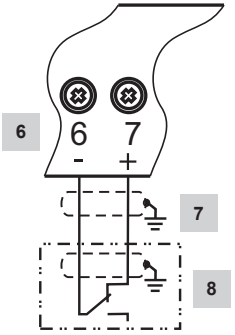


Fig. 7
Bottom Blowdown switch connection
(shown valve closed)

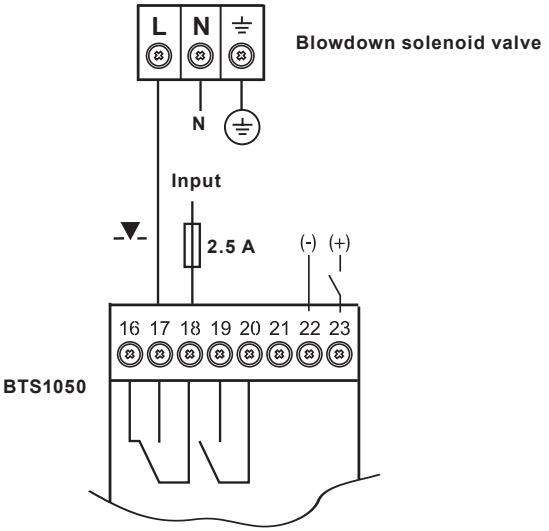


Fig. 8
Blowdown solenoid valve connection

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

4.2 Supply voltage connection

The equipment must be supplied with 24 Vdc from a SELV (Safety Extra Low Voltage) power supply.
An external 0.5 A semi-delay fuse must also be fitted.
This power supply unit must be electrically isolated from dangerous live voltages and meet the requirements for double or reinforced insulation in accordance with one of the following standards:
EN 50178, EN 61010-1, EN 60730-1, EN 60950-1 or EN 62368-1.

4.3 Connection of output contacts

Wire the upper terminal strip 1 (terminals 16-20), shown in Figure 5, according to the desired switching functions. Provide an external slow-blow 2.5 A fuse for the output contacts.
When inductive loads are switched off, voltage spikes are produced that may have a major adverse effect on the operation of control and measuring systems. Connected inductive loads must therefore have interference suppression (RC combination) as per the manufacturer's specifications.

4.4 Connecting the BB Link and BB Switch

To connect the equipment use screened multi-core control cable with a min. conductor size 0.5 mm², e.g. LiYCY 2 x 0.5 mm². max. length: 100 m
Wire terminal strip in accordance with the wiring diagram Figure 5. Connect the screen to the central earthing point (CEP) in the control cabinet and the auxiliary equipment.
Make sure that connecting cables leading to the equipment are segregated and run separately from power cables.

4.5 Connection of input for standby input (24 Vdc)

To connect the equipment use multi-core control cable with a min. conductor size of 0.5 mm²,
e.g. LiYY 2 x 0.5 mm², max. length: 100 m.
Wire terminal strip in accordance with the wiring diagram. Figure 5.
Make sure that connecting cables are segregated and run separately from power cables.

4.6 Tools

Screwdriver size 3.5 x 100 mm, fully insulated to VDE 0680-1.



Important

- **Make sure that connecting cables leading to the equipment are segregated and run separately from power cables.**
- **Do not use unused terminals as support point terminals.**



Danger

The 24 V power supply and standby circuits must be electrically isolated from dangerous voltages and must meet at least the requirements on double or reinforced isolation according to one of the following standards: DIN EN 50178, DIN EN 61010-1, DIN EN 60730-1 or DIN EN 60950.

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

5. Commissioning

5.1 Factory settings

- BB Duration = 5 seconds
- BB Priority = 0 (not linked)
- BB Recovery time = 4 hours
- BB Switch Fitted = no
- BB Switch Close time = 5 seconds
- BB Switch Lift time = 5 seconds
- BB Switch Alarm = off
- Timers Monday - Sunday
  - Enabled = yes
  - Timer Start time = 00:00
  - Timer Stop time = 23:59
  - Timer repeat time = 00:00

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

5.2 Meaning of codes on the 7-segment display



Fig. 9

Code	Meaning	
Indicated when up and down buttons are pressed:		
dur	BB Duration	Bottom blowdown duration setup.
Prio	BB Priority	Bottom blowdown priorty setup.
rEco	BB Recovery Time	Bottom blowdown vessel recovery time setup.
SWCH	BB Switch	Bottom blowdown switch monitoring setup: fitted, close/lift time, alarm, link status, switch status.
Mon	Timer Monday	Timer setup: enable, start, stop, repeat, copy.
tuE	Timer Tuesday	Timer setup: enable, start, stop, repeat.
Wed	Timer Wednesday	Timer setup: enable, start, stop, repeat.
thu	Timer Thursday	Timer setup: enable, start, stop, repeat.
Fri	Timer Friday	Timer setup: enable, start, stop, repeat.
SAt	Timer Saturday	Timer setup: enable, start, stop, repeat.
Sun	Timer Sunday	Timer setup: enable, start, stop, repeat.
CLoc	Clock	Real time clock setup: time, day/month, year.
tESt	Test	Test of valve / alarm output relay.
rSt.A	Reset Alarm	Reset BB switch alarm / BB not executed alarm.

Indicated if malfunctions occur.		
A.003	Alarm	Bottom Blowdown switch alarm
A.005	Alarm	Bottom Blowdown not executed alarm
E.030	Error	RTC error
E.097	Error	Walkthrough test error.
E.098	Error	Walkthrough application error.
E.099	Error	Internal test error.

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

5.3 Password Entry

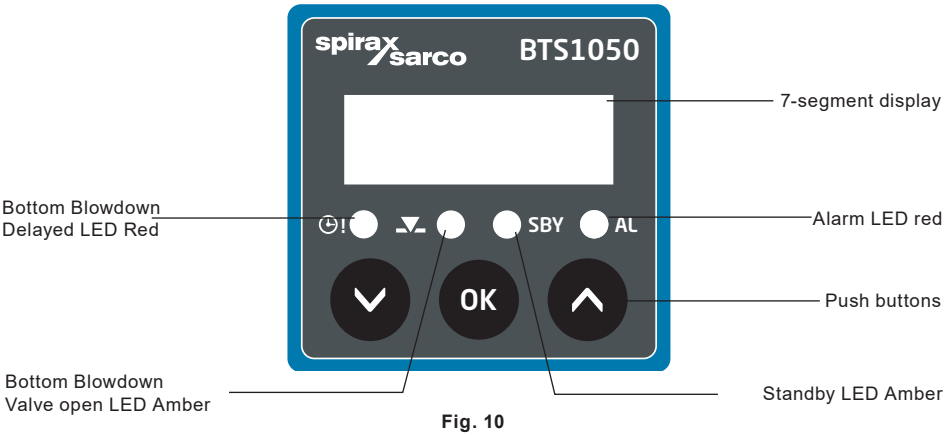


Fig. 10

Start
The ability to change parameters of the timer is password protected. The default password is 7452

Password Entry		
Action	**Display**	**Function**
Press the up or down button until desired parameter is shown.	Display toggles between parameter and saved value.	Selecting the parameter.
Press and hold the ok button.	**P A S S** is displayed.	Password protection is active.
Press and hold the ok button.	First digit (000**0**) flashes.	Password entry mode active. You can change the first digit.
Press the up or down button.	A new value is displayed.	Pressing the up button increases the value, pressing the down button reduces the value.
Briefly press ok button.	2nd, 3rd or 4th digit flashes (from right to left).	2nd, 3rd or 4th digits can now be changed using the up and down buttons. Pressing the up button increases the value, pressing the down button reduces the value.
When your entries are complete: Press and hold the ok button for 3 sec.	**d o n E** is briefly displayed. Next, the display toggles between the parameter and value.	Correct password entered. System switches back to the parameter. Now all paramaters can be changed.
	F A i L is briefly displayed After this, the display toggles between the parameter and value.	Wrong password entered. System switches back to the parameter.
If you do not make any further entries for 10 sec.	**q u i t** is briefly displayed After this, the display toggles between the parameter and value.	Password entry has timed out. System switches back to the parameter.
After 30 minutes of inactivity (no button pressed) the password has to be entered again. After power cycling the device always starts password protected.		

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

5.4 Setting parameters



Fig. 11

Start		
Action	**Display**	**Function**
Switch on supply voltage. Time to next BB, day and actual time shown.	7-segment display shows software and type of equipment.	System test, takes approx. 3 sec.
	7-segment display toggles between bb and remaining bb time countdown.	Bottom Blowdown after power cycling is executed. (Takes place only if the bottom blowdown timer is enabed for the current day and the actual time is within the timer start and stop range)
	7-segment display shows countdown to next BB. Once per minute the current day of week and actual time is shortly displayed.	System switches to operating mode.

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

Setting parameters		
Action	**Display**	**Function**
Press the up or down button until desired parameter is shown.	Display toggles between parameter and saved value.	Selecting the parameter.
Press and hold the ok button.	**P A S S** is displayed.	Password Entry, follow section 5.5.
Press and hold the ok button.	First digit (000**0**) flashes.	Parameterization mode active. You can change the first digit.
Press the up or down button.	A new value is displayed.	Pressing the up button increases the value, pressing the down button reduces the value.
Briefly press ok button.	2nd, 3rd or 4th digit flashes (from right to left).	2nd, 3rd or 4th digit can now be changed using the up and down buttons. Pressing the up button increases the value, pressing the down button reduces the value.
When your entries are complete: press and hold the ok button within 3 sec.	**donE** is displayed. Next, the display toggles between the parameter and the new saved value.	Input is confirmed. System switches back to the parameter.
If you do not confirm your entry within 3 sec. or you do not make any further entries:	**quit** is briefly displayed. After this, the display toggles between the parameter and the old value.	If you do not confirm, your entries will not be applied. Please repeat the procedure. If you do not confirm, the system switches back to the parameter.
Press the up or down button until the next parameter is shown. Or press the up or down button until the actual countdown value is displayed. Or after 30s, the actual countdown value is displayed automatically. Some parameters (e.g. timers) are organized in submenus. A long press of the OK button enters a submenu. A short press of the OK button leaves a submenu.		

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

5.5 Setting control parameters and timers



Fig. 12

Setting the BB Duration	
Select parameter **dur**, enter and save the desired value.	Duration time between 0 and 999s. Please note that the valve open time (BB duration) has to be longer than the BB switch lift/close time (if a switch is fitted). Otherwise a false alarm will be triggered.
Setting the BB Priority	
Select parameter **Prio**, enter and save the desired value.	Priority setting between 0 (not linked) and 9.
Setting the Recovery time	
Select parameter **rEco**, enter and save the desired value.	Recovery time between 00:00h and 11:59h (hh.mm)
Setting the BB switch fitted	
Select parameter **SWCH**, then sub-parameter **Fitt**, enter and save the desired value.	Switch fitted options yes or no.
Setting the BB switch close time	
Select parameter **SWCH**, then sub-parameter **CLOS**, enter and save the desired value.	Close time between 1 and 10s.
Setting the BB switch lift time	
Select parameter **SWCH**, then sub-parameter **LiFt**, enter and save the desired value.	Lift time between 1 and 10s.

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

Setting the BB switch lift alarm	
Select parameter **SWCH**, then sub-parameter **AL**, enter and save the desired value.	Alarm options on or off. This option activates a "BB lift-alarm". A "BB close-alarm" is active when BB switch is configured as fitted.



Note

The BB switch lift/close alarm can be reset using the rSt.A parameter. This alarm is latched until reset, power cycling or fault free execution during next bottom blowdown.

Status BB Link (read only)	
Select parameter **SWCH**, then sub-parameter **Ln.In**.	Display shows **OPEn** (link open) or **CLOS** (link closed).
Status BB Switch (read only)	
Select parameter **SWCH**, then sub-parameter **SW.In**.	Display shows **OPEn** (switch open) or **CLOS** (switch closed).
A short press of the OK button leaves a submenu.	

Setting the Timers	
Each day of the week has the same parameters, Monday is shown as an example below, it has the additional parameter **COPy** which copies parameters from Monday to all other timers.	
Enabling Timers	
Select parameter **Mon**, then sub-parameter **En**, enter and save the desired option.	Enable yes or no.
Setting the Start time	
Select parameter **Mon**, then sub-parameter **Strt**, enter and save the desired option.	Enter time between 00:00h and 23:58h (hh.mm).
Setting the Stop time	
Select parameter **Mon**, then sub-parameter **StoP**, enter and save the desired option.	Enter time between 00:01h and 23:59h (hh.mm).
Setting the Repeat time	
Select parameter **Mon**, then sub-parameter **rEP**, enter and save the desired option.	Enter time between 00:00h and 12:00h (hh.mm).

Copying parameters from Monday to all days	
Select parameter **Mon**, then sub-parameter **COPy**, long press on OK and then **done** is displayed	Copy parameters from Monday to all weekdays.
A short press of the OK button leaves a submenu.	

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

5.5 Setting control parameters and timers (continued)

Setting the Clock	
Select parameter **CLoc**, then sub-parameter **hh.mm** (time), enter and save the desired value.	Enter time between 00:00h and 23:59h (hh.mm).
Select parameter **CLoc**, then sub-parameter **dd.MM** (day/ month), enter and save the desired value.	Enter day/month between 01.01. and 31.12. (dd.MM).
Select parameter **CLoc**, then sub-parameter **yyyy** (year), enter and save the desired value.	Enter year between 2000 and 2099 (yyyy)

5.6 Timer setup examples

The BTS1050 has seperate timers which can be enabled for each weekday with a different start, stop and repeat times.

The timers are used to prioritise boiler blowdown cycles.

- This allows recovery time (for water in a blowdown vessel to cool)
- This minimises waste of heat and water
- This selects the most suitable blowdown time (i.e. avoiding peak steam demand times, blowdown at night or at weekend to reduce noise emission)

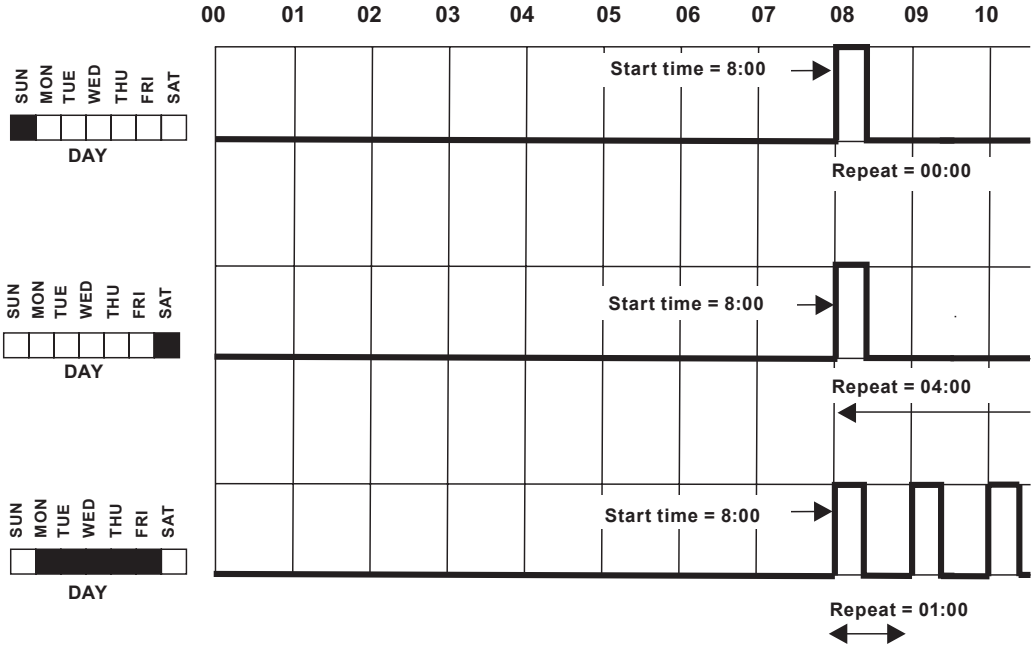


Fig. 13

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

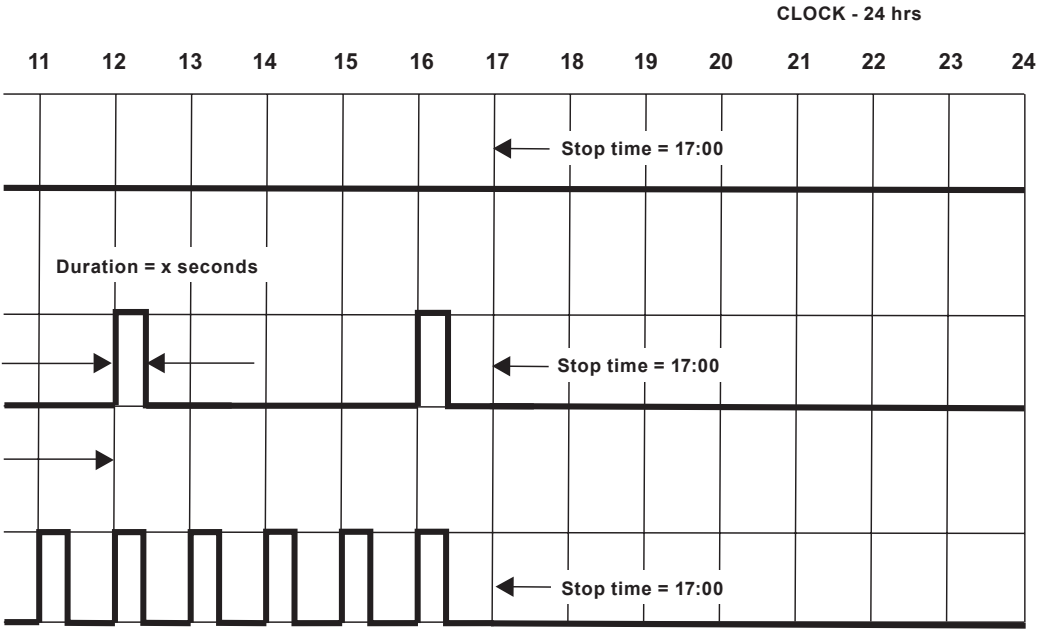
SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

Note

The clock starts with default values (00:00 / 01.01 / 2000) when battery is replaced. Replace the battery if the default values are shown after every power cycling.

Example 1

One BTS1050 set for a typical operating week
Sunday set for single blowdown at 08:00, no repeat
Saturday set for 3 blowdown events, start time 08:00, repeat = 04:00 and stop time = 17:00
Monday - Friday blowdown set for every hour between 08:00 and 17:00.

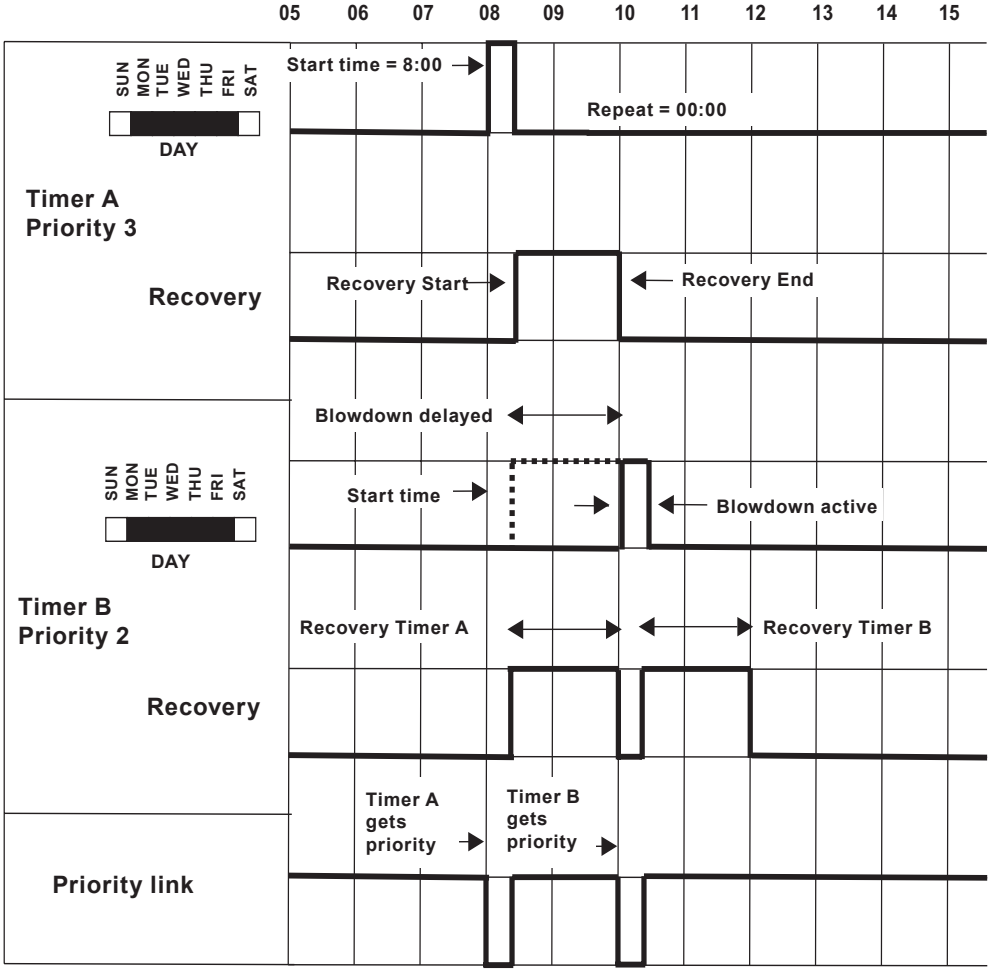


SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

Example 2

2 Timers set for similar start times on a single blowdown event
Shows recovery time and operation of priority link



SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

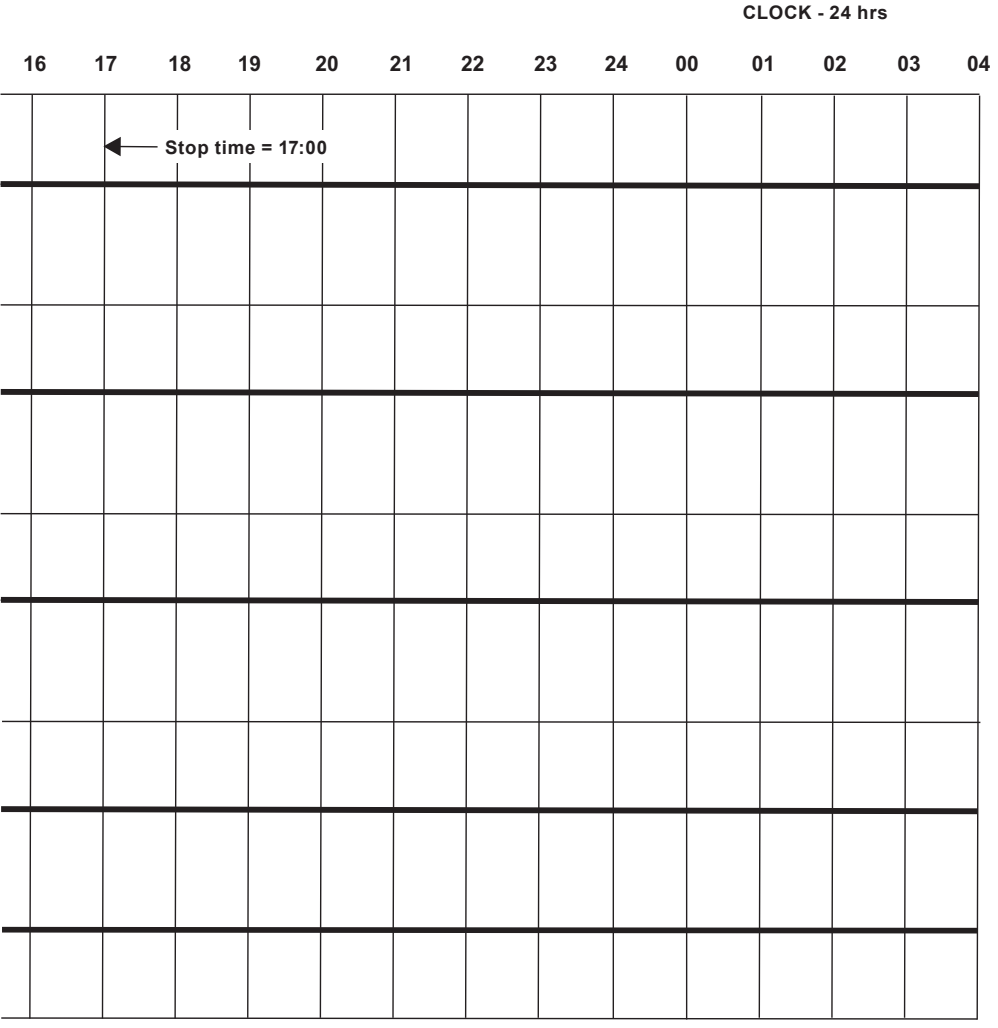


Fig. 14

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

5.7 Displays

Operation		
Action	**Display**	**Function**
Between Bottom Blowdown Cycles		
Countdown to next bottom blowdown	7-segment Display shows countdown to next Bottom Blowdown. Once per minute the current day of week and actual time is shortly displayed.	BB Valve output contact 17/18 open.
During Bottom Blowdown Cycles		
Bottom blowdown	7-segment display toggles between bb and remaining bb time countdown. BB Valve LED lights up.	BB Valve output contact 17/18 closed.
Standby Input		
Standby input not active.	Standby LED does not light.	BB Valve output operates.
Standby input active.	Standby LED lights up.	BB Valve output does not operate.
Alarm		
BB switch alarm active	7-segment display shows **A.003** Alarm LED lights up	Alarm output contact 19/20 open.
BB not executed alarm active	7-segment display shows **A.005** Alarm LED lights up BB delayed LED lights up	Alarm output contact 19/20 open.
Bottom Blowdown delayed		
Link line was blocked by a timer with higher priority.	7-segment display toggles between **rEco** and recovery time countdown. BB delayed LED blinks.	Will be excecuted when the timers priority has come.

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

5.8 Check function of relay output contacts

Test of Valve and Alarm Relay outputs		
Action	**Display**	**Function**
In operating mode: Select parameter **tESt** then sub-parameter **tSt.o** Press and hold the ok button until test starts.	BB Valve LED lights up, display toggles between bb and remaining bb time countdown.	BB Valve output contact 17/18 closes for the BB duration time, default 5s.
	display briefly shows **donE**.	test complete.
Note: A short press on OK button aborts the bb valve relay test.		
In operating mode: Select parameter **tESt** then sub-parameter **tSt.A** Press and hold the ok button.	**tSt.A** flashes on and off, Alarm LED lights up for 3s.	Alarm output contact 19/20 opens for 3s.
	tSt.A flashes on and off, Alarm LED is off for 3s.	Alarm output contact 19/20 closes for 3s.
Note: The test continues for as long as you press the OK button, release the OK button and the test finishes then quit is briefly displayed.		



Note

The test festure is protected by the requirement for PASSWORD entry see section 5.3

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

5.9 Bottom blowdown parameters

During the evaporation process fine sludge deposits settle on heating surfaces and in the lowest part of the steam boiler. Boiler sludge is caused e. g. by oxygen-scavenging agents. The accumulated sludge sediments form a thermally insulating layer and can damage the boiler walls due to excessive heat.

To perform a bottom blowdown the valve must be opened abruptly. The resulting suction effect occurs only at the moment when the valve is being opened. The opening time should therefore be set rather short and the bottom blowdown procedure repeated more often.

5.9.1 Bottom blowdown duration

The bottom blowdown duration depends on the installation and water condition, but 5 seconds is the recommended maximum initially.

5.9.2 Bottom blowdown priority

Up to nine blowdown timers can be installed and linked for multi-boiler installations, preventing more than one boiler blowing down at a time. This feature avoids the possibility of overloading a blowdown vessel, which could lead to water being discharged to drain at a too high temperature. Shutting one of the linked timers off does not impacts the functionality of the other timers. The timer with the next priority will blow down instead.

To prevent more than one boiler blowing down at the same time, set the priority greater than zero and connect the link between the timers. The number prioritises which boiler opens the bottom blowdown valve first.

Select the priority number:
9 = highest priority and 1 = lowest priority
If the blowdown timer is not linked to other timers, set priority to '0' (default).



5.9.3 Bottom blowdown recovery time

Select a recovery time which is sufficient for the blowdown vessel to cool down. If the blowdown priority is zero, then the recovery time is not active. The recovery time is restarted on all linked timers every time a bottom blowdown is initiated by a linked timer (link line is pulled low). It is suggested to set the recovery time similar in all linked timers.

The recovery time should always be setup smaller than the bottom blowdown repeat time.
If multiple boilers are linked, then the sum of the recovery time for each scheduled blowdown should be less than the time period between timer start and stop time. Otherwise the boiler with the lowest priority will not be able to blow down and after 24h the "blowdown not executed alarm" will be triggered.

Configuration example:
If four boilers are linked to use the same blowdown vessel and should blow down once between 8:00 and 16:00 (repeat time set to zero), then the recovery time of each blowdown timer should be set to less than 2h minus the blowdown duration (4x2h = 8h).

If working with repeat times then every repeated blowdown has to be considered as well.

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

5.9.4 Bottom blowdown limit switch

If the bottom blowdown valve is fitted with a limit switch, select BB Switch "fitted".

If the valve fails to close the alarm relay will be de-energised.

WARNING - Recommend maximum close time is 5 seconds.

Set the "BB alarm" to "on" to activate the lift alarm function.

If the valve fails to lift off the seat within the configured lift time, the alarm relay will be de-energised (if the BB lift alarm is activated).

The bottom blowdown limit switch alarms are latched until manual alarm reset, power cycling or fault free execution during next bottom blowdown. The alarm can be reset by selecting the rSt.A parameter and pressing the OK button.

5.9.5 Standby operation

To avoid loss of water, the bottom blowdown timer can be de-activated during standby operation or when the burner is switched off.
For this purpose an external control signal has to be applied to the standby input. As long as the signal is active no bottom blowdown is executed.
After the equipment switches back to normal operation a bottom blowdown is executed, if applicable (bottom blowdown timer enabed for the current day and the actual time is within the timer start and stop range).

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

6. Fault finding

6.1 Display, diagnosis and troubleshooting



Important

Please check the following before fault diagnosis:

Supply voltage:
Is the equipment supplied with the voltage specified on the name plate?

Wiring:
Is the wiring in accordance with the wiring diagram?

Faults indicated by the Display		
Fault code	**Fault**	**Remedy**
A.003	Bottom Blowdown Switch Alarm	Check lift/close time has been set correctly and the BB duration is longer than lift/close time. Check wiring between BB switch and the timer. Check the correct operation of the valve. Check and replace the switch and/or valve if necessary.
A.005	Bottom Blowdown not executed Alarm	Bottom Blowdown was delayed by more than 24h due to link line being low. Check priority and recovery time settings on all linked timers. Check BB link wiring.
E.030	RTC error.	Internal error. If persists replace the equipment
E.097	Walkthrough application error.	Internal error. If persists replace the equipment.
E.098	Walkthrough test error.	Internal error. If persists replace the equipment.
E.099	Internal test error.	Internal error. If persists replace the equipment.



Important

Check that you have read the IMIs of all associated equipment, for example the Bottom Blowdown valve



Note

If a malfunction occurs in the bottom blowdown timer an alarm will be triggered.

In the case of some internal errors (E.097) and when the cyclic self-test reports OK again, the device restarts.

Should this happen over and over again, replace the equipment with a new one.

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

6.2 Action against high-frequency interference

High frequency interference can occur for example as a result of out-of-phase switching operations. Should such interference occur and lead to sporadic failures, we recommend the following actions in order to suppress any interference.

- Provide inductive loads with RC combinations according to manufacturer's specification to ensure interference suppression
- Make sure that all connecting cables leading to the sensors are segregated and run separately from power cables
- Increase the distance from sources of interference
- Check the connection of the screen to the central earthing point (CEP) in the control cabinet and auxilliary equipment
- Suppress HF interference using hinged-shell ferrite rings
- Use a separate power supply for the timer

6.3 Decommissioning/replacing the boiler blowdown timer BTS1050

- Switch off the power supply and cut off power to the equipment
- Remove the upper and lower terminal strips (Fig. 15)
- Insert a screwdriver between the terminal strip and the front frame, to the right and left of the arrow markings
- Release the terminal strip on the right and left sides, by turning the screwdriver in the direction of the arrow
- Remove the terminal strips
- Release the white sliding fixture at the bottom of the housing and take the device off the support rail

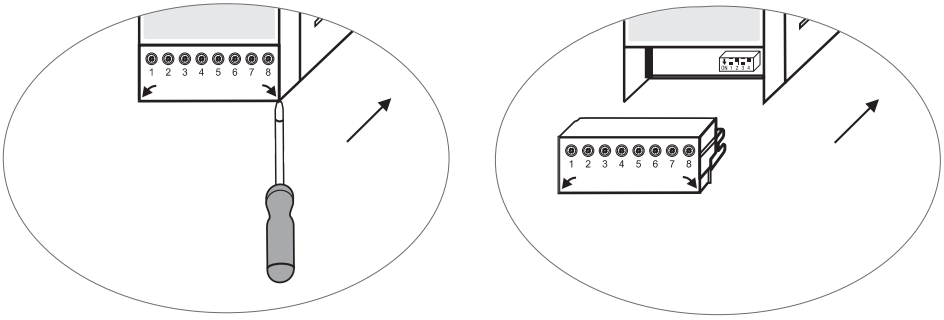


Fig. 15

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购



Danger

The upper terminal strip of the equipment is live during operation.

There is a risk of serious injury due to electric shock!

Always cut off the power supply to the equipment before installing, removing or connecting the terminal strip!

6.4 Disposal

The equipment must be disposed of in accordance with statutory waste disposal provisions, please see Section 6.6 about battery disposal.

In the event of faults that cannot be remedied with the aid of this manual, please see the contact details in Section 8.

6.5 Battery

The shelf life of the battery is estimated to be at least five years when the device is stored at room temperature without power applied to the device. When the device is powered, no battery power is drained. High ambient temperatures reduce the working life of the battery.

The battery can be replaced, and must be removed before disposing of the product.



Note

The battery must not be disposed of in waste destined for landfill or untreated incineration, but must be collected separately and disposed of in accordance with local and national regulations.

6.6 Changing the battery

- Turn off any power applied to the device
- Follow instructions in section 6.3 to remove the upper and lower terminal strips
- Remove the timer from the support rail
- Use a screwdriver to push the locking catch releasing the front panel from the housing
- Repeat for other side
- Carefully slide the front panel away from the housing
- Push battery from rear of holder until enough of the battery has been exposed to grip with fingers
- Fit new battery ensuring that it is clean, refer to section 7 for battery specification
- Re-assemble timer following the instructions in reverse order, clicking assembly back into place ensuring correct orientations at all times

  Note: Once the timer is removed from the support rail it is recomended that it is taken to a clean environment before changing the battery

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

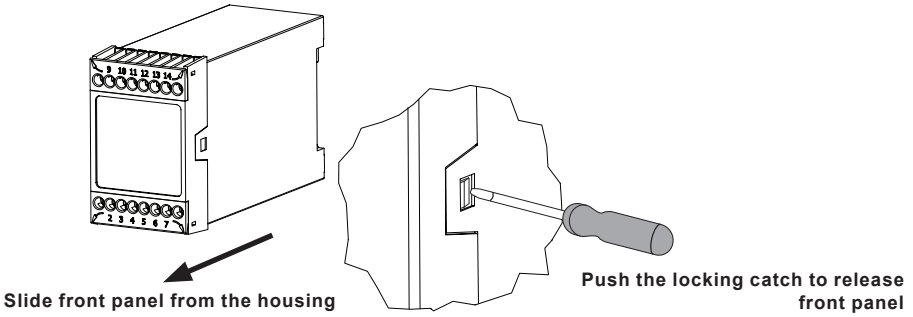


Fig. 16

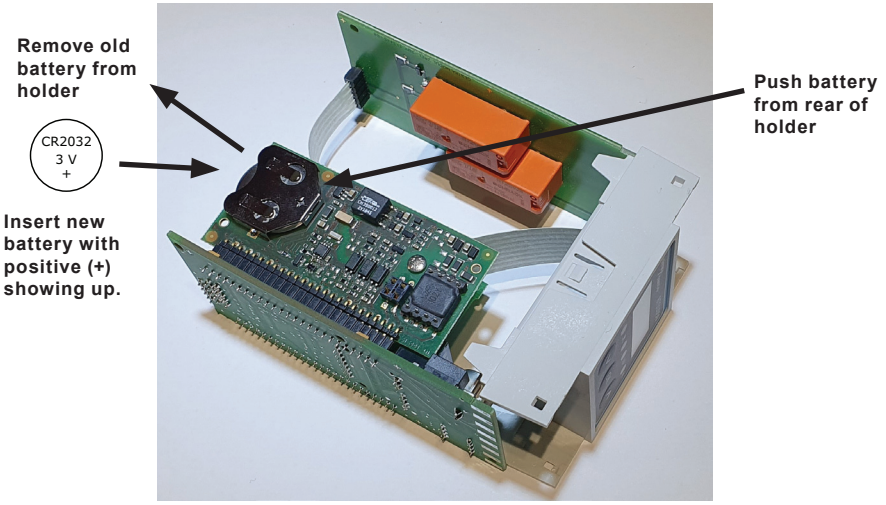


Fig. 17

Important

- DO NOT use a sharp or metallic tool to push the battery out of the holder as you might short the battery or damage the components on the PCB.
- DO NOT use pliers to grip the battery to remove it from the holder as it will short the battery.
- Ensure that there is no power applied to the terminal strips before re-connecting them to the timer.

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

7. Technical information

Supply voltage	24 Vdc +/– 20%
Fuse	External 0.5 A (semi-delay)
Power consumption	4 W
Battery	Type: CR2032 (3 V, 230 mAh, Lithium Manganese Dioxide, Lithium content 0.07 g, UN38.3 tested) Manufacturer / Part number: Varta / 6032101501
Inputs	1 two-wire connection to Bottom Blowdown Link 1 two-wire connection to Bottom Blowdown Switch 1 two-wire standby connection (24 Vdc +/– 20%, 10 mA)
Outputs:	1 volt-free change-over contacts, 8 A 250 Vac/30 Vdc cos f = 1 (Bottom Blowdown valve) 1 floating open/closed contact, 8 A 250 Vac/30 Vdc cos f = 1 (Alarm Relay)
Displays and controls	3 push-buttons for parameter setting 1 green 4 digit 7-segment LED display 2 red LEDs for Bottom Blowdown Delayed and Alarm indication 2 amber LEDs for Bottom Blowdown Valve and Standby Input activity indication
Housing	Housing material, base: black polycarbonate; front: grey polycarbonate Maximum Conductor size*: 1 x 4.0 mm^2 solid, per wire, or 1 x 2.5 mm^2 per stranded wire with sleeve to DIN 46228, or 2 x 1.5 mm^2 per stranded wire with sleeve to DIN 46228 (min. Ø 0.1 mm) *Please see section 2.4 to 2.6 for recommended cable specifications Terminal strips can be detached separately Housing attachment: Mounting clip on support rail TH 35, EN 60715
Electrical safety	Pollution degree 2 for installation in control cabinet with degree of protection IP 54, fully insulated
Protection	Housing: IP 40 to EN 60529 Terminal strip: IP 20 to EN 60529
Weight	approx. 0.2 kg
Ambient temperature	when system is switched on: 0° ... 55 °C during operation: –10 ... 55°C
Transport temperature	–20 ... +80 °C (<100 hours), defrosting time of the de-energised equipment before it can be put into operation: 24 hours
Storage temperature	–20 ... +70 °C, defrosting time of the de-energised equipment before it can be put into operation: 24 hours
Relative humidity	max. 95%, no moisture condensation

Contents of package

1 x Boiler Blowdown Timer, BTS1050
1 x Installation and Maintenance Instructions

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

8. Technical assistance

Contact your local Spirax Sarco representative. Details can be found on accompanying order/delivery documentation or on our web site:

www.spiraxsarco.com

Returning faulty equipment
Return all items to your local Spirax Sarco representative. Ensure all items are suitably packed for transit (preferably in the original cartons).

Please provide the following information with any equipment being returned:

1. Your name, company name, address and telephone number, order number and invoice and return delivery address.
2. Description and serial number of equipment being returned.
3. Full description of the fault or repair required.
4. If the equipment is being returned under warranty, please indicate:
   a. Date of purchase.
   b. Original order number.

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购

Spirax Sarco Ltd
Runnings Road
Cheltenham
GL51 9NQ
United Kingdom

www.spiraxsarco.com

SHOPVALVES
GLOBAL VALVE SOLUTIONS | 阀门易购