Electronic steam boiler controls

for boiler level, TDS blowdown and bottom blowdown

First for Steam Solutions

EXPERTISE | SOLUTIONS | SUSTAINABILITY

spirax sarco

Electronic steam boiler controls

Simple, safe and reliable

Modern boilers are designed to meet the needs of a variety of industries and their associated processes. Consequently the engineers at Spirax Sarco have researched and developed a comprehensive range of electronic boiler control systems to match the performance and operating requirements of most boilerhouses.

Spirax Sarco's electronic boiler control systems are designed for simple installation, easy commissioning and provide safe and trouble free operation. Investing in one of our systems will ensure that major boiler accidents are a thing of the past. The range offered has been approved to many national standards, relevant codes of practice and local regulations.

Spirax Sarco's sensing probes have no moving parts, can be easily mounted, either directly into the boiler shell or into probe chambers. All the control systems require very little or no maintenance.

Wherever you are in the world, your local Spirax Sarco representative will be able to assist you in matching the most appropriate system for your specific needs:

- Level control.
- TDS (total dissolved solids) continuous blowdown.
- Bottom blowdown control.
- Condensate contamination detection.

Advanced boiler control system

Simple, safe and reliable

Modern boilers are designed to meet the needs of a variety of industries and their associated processes. Consequently the engineers at Spirax Sarco have developed an advanced electronic boiler control system to match the performance and operating requirements of most boiler houses.

Spirax Sarco's electronic boiler control systems are designed for simple installation and can be integrated into existing systems. It provides safe and trouble free operation.

The range has been approved to many national standards, relevant codes of practice and local regulations.

Spirax Sarco's sensing probes have no moving parts, can be easily mounted, directly into the boiler shell and require very little or no maintenance.

Level, TDS and Bottom blowdown controls can be viewed through a central HMI removing the need for manual processes.

- High resolution, 5" touch screen display
- Simple BMS connectivity using Modbus RTU or TCP/IP
- Will display both Level and TDS measurement
- Monitor trends and historical alarms to identify and react to potential issues that could reduce boiler efficiency.

Our BHC systems and display panels allow fast and automatic provision of data, as well as connectivity to energy management systems so you can remotely monitor trends and identify areas for improvement.

Our automatic BHC systems will take the manual processes (and risk of human error) out of blowdown and level control in your boilerhouse, to free up your team and ensure safety.

Stringent regulations mean that energy managers are required to reduce energy usage. Our intelligent controls automatically monitor water level and contamination therefore improving the efficiency of your boiler.

- Two element control for safe and efficient boiler duty
- Relay output and 4-20mA loop signal to drive valves and alarms
- SIL3 approved single controller providing 1st and 2nd low
- 5" High resolution, touch screen display
- Interface for Modbus RTU and Modbus TCP/IP
- Will display both Level and TDS measurement
- Blowdown functionality with interlocking

Spirax Sarco electronic steam boiler controls

Spirax Sarco expertise

Operating in over 62 countries and with over 100 years' experience of working alongside industries like yours - we understand the challenges you face in the boiler house and we're committed to long-standing relationships with all of our customers.

Spirax Sarco are the industry leaders in steam solutions, with a true global team and over 1300 local engineers ready to support you, our network is on your doorstep, giving you vital peace of mind and an aftercare service you can rely on.

Spirax Sarco training

Our commitment to customer knowledge is openly evident - We have over 30 training centres around the world running a broad spectrum of practical and theoretical courses specifically tailored to your needs. Alternatively you can arrange one of the many on-site courses that we run; these are available on request.

Please note that Spirax Sarco is a licensed and approved training provider for the Boiler Accreditation Scheme (BOAS). The Boiler Accreditation Scheme provides national accreditation for industrial boiler operators and boiler plant managers.

Spirax Sarco support

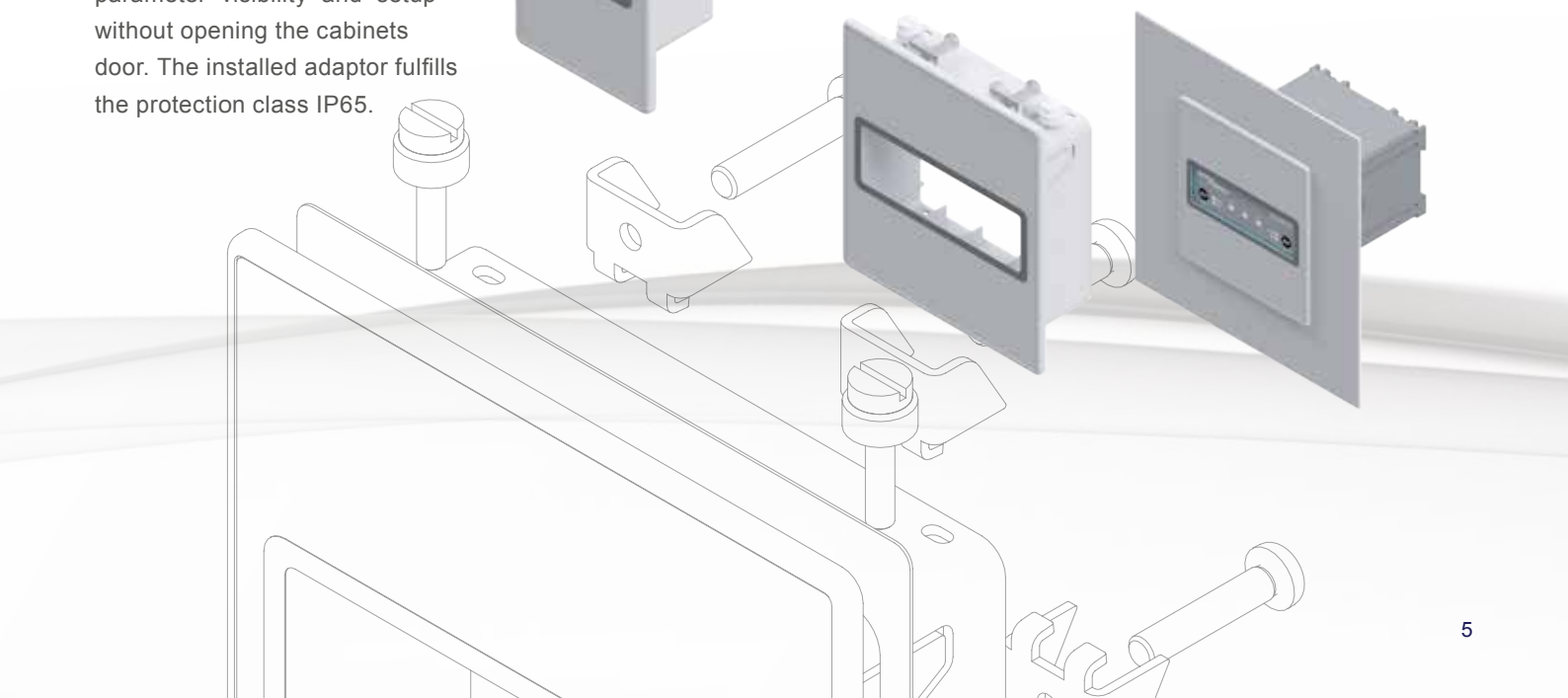
We are committed to providing long-term, dedicated support to our customers. Wherever you are in the world our teams of representatives are close-by to offer whatever support and advice you require.

Choice	Providing the right control system.
Quick delivery	All controllers and probes supplied from local stocks.
Quality	ISO 9001 approved company.
Reliability	No moving parts, designed for purpose.
Ease of maintenance	Little or no maintenance required.
Service and knowledge	Specialists sales and service engineers.
Value for money	Providing a comprehensive range at competitive prices.

Panel mounting

The BHC Panel Adaptor Small is designed for use with the controllers LCR2250, LCR2251, LCS1350, BCR3150, BTS1050 and enables controller installation in a control cabinet door. It offers the advantage of parameter visibility and setup without opening the cabinets door. The installed adaptor fulfills the protection class IP65.

The BHC Panel Adaptor Large is designed for use with the controllers LCS3050 and LCS3051, and enables controller installation in a control cabinet door. It offers the advantage of status visibility and alarm testing without opening the cabinets door. The installed adaptor fulfills the protection class IP65.



Spirax Sarco electronic steam boiler controls - at a glance

Level controls and alarms

	Level controllers	Input signal range	Control characteristic	Communication	Mounting options	Enclosure rating
	**LCS1350**	Minimum: 1 µS/cm (25°C)	On / off		DIN rail or panel mounted (for panel mount option use small adapter)	IP40 (IP65 when panel mounted)
	**LCR2250/51**	4 - 20 mA	On / off (not applicable to LCR2250) Adjustable on / off Modulating		DIN rail or panel mounted (for panel mount option use small adapter)	IP40 (IP65 when panel mounted)
	**LCR2652 + BHD50**	4 - 20 mA	2 and 3 element control Adjustable on / off Modulating	Modbus RTU or TCP/IP when using BHD50	DIN rail	IP40 (IP65 when panel mounted)
	**LCS3050/51**	Minimum: 10 µS/cm or 30 ppm @ 25°C	High integrity Low Level Limiter (LCS3050) High Level Limiter (LCS3051) Low alarm High alarm		DIN rail or panel mounted (for panel mount option use large adapter)	IP40 (IP65 when panel mounted)

	Level probes	Probe type	Control characteristic	Probe process connection	Nominal length	Body design rating
	**LP11-4**	Conductivity	On / off	1" BSP taper	95 mm to 2 095 mm	PN40
	**LP21/PA420** (NB optional PA420 preamplifier)	Capacitance	Adjustable on / off Modulating	½" BSP taper	370 mm to 1 500 mm	PN40
	**LP40**	Conductivity	High integrity Limiter Low alarm	½" BSP taper	500 mm 1 000 mm 1 500 mm	PN40
	**LP41**	Conductivity	High integrity Limiter High alarm	½" BSP taper	500 mm 1 000 mm 1 500 mm	PN40

TDS blowdown controls and alarms

TDS blowdown controllers	Input signal range	Control characteristic	Communication	Mounting options	Enclosure rating
BCR3150	Minimum 10 µS/cm	Monitor Limiter		DIN rail or panel mounted (for panel mount option use small adapter)	IP40 (IP65 when panel mounted)
BCR3250 + BHD50	Minimum 10 µS/cm	Monitor Simple timer Limiter	Modbus RTU or TCP/IP when using BHD50	DIN rail	IP40 (IP65 when panel mounted)

Conductivity probes	Probe type	Control characteristic	Connection	Nominal length	Body design rating
CP10	Conductivity	On / off	⅜" BSP taper	50 mm	PN40
CP40	Conductivity	On / off	⅜" BSP taper	300 mm 500 mm 1 000 mm 1 500 mm	PN40
CP42	Conductivity	On / off	⅜" BSP taper	300 mm 500 mm 1 000 mm	PN40

Bottom blowdown controls and alarms

Bottom blowdown controllers	Input signal range	Control characteristic	Communication	Mounting options	Enclosure rating
BTS1050	N/A	Real time clock		DIN rail or panel mounted (for panel mount option use small adapter)	IP40 (IP65 when panel mounted)

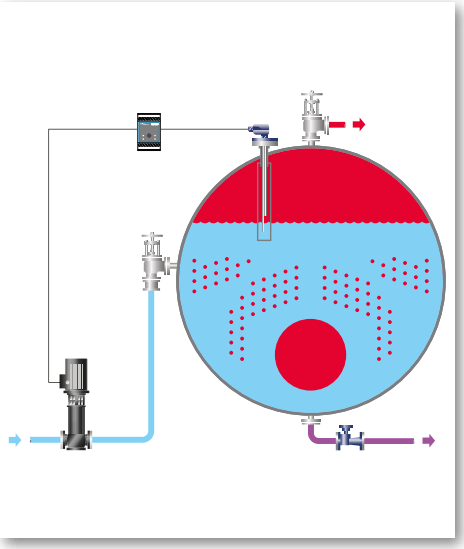
Condensate contamination detection

Conductive contamination	Input signal range	Control characteristic	Communication	Mounting options	Enclosure rating
BCR3150	Minimum 10 µS /cm	Monitor Limiter		DIN rail or panel mount (for panel mount option use small adapter	IP40 (IP65 when panel mounted)
CP10	Conductivity	On/Off	3/8" BSP taper	50 mm	PN40

Non-conductive contamination					
556 Converter	Factory Set 0-25 ppm	2 x SPDT Relay	0(4)-20mA	Rack or Housing	IP40 (IP65 Housing)
TF56-N	Scattered Light	Continuous	n/a	Flanged	DN25 PN16 1" ANSI 150

Level controls and alarms

LCS1350 and LP11-4 level control system



For simple liquid level controls and alarms select the LP11-4 conductivity probe and LCS1350 level controller system.

This system provides simple on / off control by completing an electrical circuit to earth when the water level contacts each tip.

The LP11-4 conductivity probe and LCS1350 level control system is ideal for small steam boiler installations with a reasonably constant steam demand.

The LCS1350 controller can be used to control a feedpump, operate a soleniod valve or sound an alarm, depending on the application assigned to each tip.

The LP11-4 probe has four tips, supplied separately, that are cut to length on installation to give the required switching level. The probe tips are 1 000 mm in length (set of 4) and supplied inclusive of connectors and supports.

Important note

Under many local regulations, boilers using this system for 1st and 2nd low water alarms must be supervised, and the alarms tested daily.

Spirax-Sarco can assist in ensuring that the your boiler control system is compliant with local regulations.

Key features:

- Versatile system for a wide range of applications providing maximum flexibility.
- Works with conductivities down to 0.5 µS / cm at 25°C.
- Manual test button for alarm test.
- Versatile mounting options: DIN rail or with panel adaptor.

Associated products:

- C2 probe chamber.
- SPV1 and SPV2 sequencing purge valves.
- Probe mounting flanges and adaptors.

LCR2250 / 51 and LP21 / PA420 level control system

For liquid level controls and alarms select the LP21 / PA420 capacitance probe and LCR2250 / 51 level controller.

This system provides adjustable on / off or modulating control.

LCR2250:

- for valve motor drive control (VMD)
- MIN and MAX alarm

LCR2251:

- for ON/OFF pump control
- for modulating control via 4-20 output for a positioner
- MIN or MAX alarm configurable

The capacitance probe and preamplifier assembly is powered by the controller and produces a dc voltage proportional to the water level.

The LP21 / PA420 capacitance probe and LCR2250 / 51 level control system is ideal for medium sized steam boiler installations with a variable steam demand.

This control system offers an extended flexibility, providing:

- An advanced on / off boiler feedpump control system with adjustable switching levels (LCR2251).
- Modulating boiler feedwater control using a penumatic control valve and positioner (LCR2251).
- Modulating boiler feedwater control using an electrically actuated valve (LCR2250).

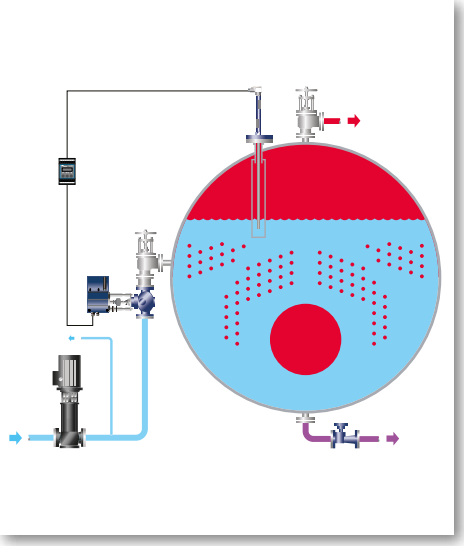
A main feature of this control system is that switching levels can be easily set and adjusted without shutting down the boiler.

The setting up process is considerably simplified, as the water level in a boiler can vary from the level shown in the gauge glass at different firing rates.

This system is also ideal for tank level control or with any two-wire 4-20 mA transmitter. For example for pressure, temperature or level control using a pressure or differential pressure transmitter.

The LP21 / PA420 capacitance probe is available in a range of predetermined lengths (mm):-

370	470	550	600	650
750	800	900	950	1050
1200	1350	1500		



Key features:

- Simple ‘two point’ calibration.
- Alter switching levels without shutting down the boiler.
- Versatile system for a wide range of applications.
- Works with conductivities down to 5 µS / cm at 25°C.
- Manual test button for alarm test.
- Isolated 4-20 mA for a positioner or retransmit.
- Versatile mounting options: DIN rail or with panel adaptor.

Associated products:

- SP7 positioner.
- Electrically actuated control valve.
- Pneumatically actuated control valves.
- DCV3/B disc check valve.
- C2 probe chamber.
- SPV1 and SPV2 sequencing purge valves.
- Probe mounting flanges and adaptors.

Level controls and alarms

LCR2652 and LP21 / PA420 level control system

For accurate control of water levels in boilers, select the LP21/PA420 capacitance probe, the LCR2650 multi-functional level controller and the BHD50 5” colour touch display.

Easy control via 5" colour touch display allows user to monitor trends and historical alarms.

This system is ideal for controlling the boiler water levels in modern steam boilers where there is a difficult balance between steam pressure, load and feedwater flowrate.

Incorrect level control can result in boiler lockouts or carryover of boiler water into the steam system.

The LP21 / PA420 level probe and LCR2650 control system is well matched for medium to large steam boiler installations with a varying steam demand.

This control system is ideal for applications where close control of tank or boiler water levels is required. The system can be easily configured to provide:

- On /off water level control within tanks.
- Modulating control for electrically or pneumatically actuated control valves.

A feature of this control system is the adjustable integral action giving closer control of water level, reducing the risk of carryover and spurious alarms.

Another important feature of the LCR2652 is the 2 and 3 element control capability.

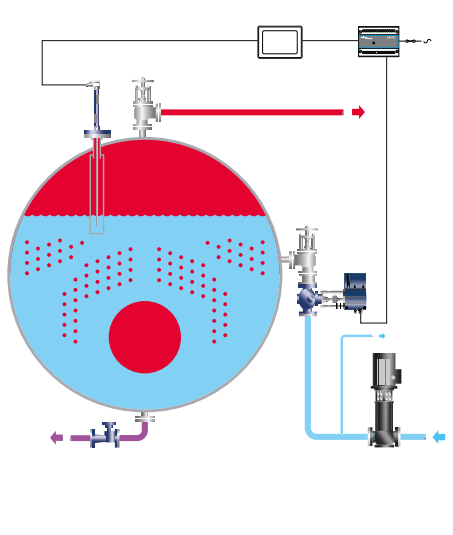
By configuring 2 element control the system utilises a signal output from a steam flowmeter as a feed forward signal, for applications where sudden load swings can be experienced in, for example, breweries and laundries.

Where a number of boilers share a common feedwater supply the differential pressure can vary across the feedwater valve, changing the flowrate. This change can be compensated for by configuring 3 element control, taking an additional signal from a feedwater flowmeter.

The LCR2652 provides an alarm input (24Vdc), to display and communicate on Modbus the alarm status of any connected LCS3050 or LCS3051 level limit switch.

The LP21 / PA420 capacitance probe is available in a range of predetermined set lengths (mm):-

370	470	550	600	650
750	800	900	950	1050
1200	1350	1500		



Key features:

- Simple 'two point' calibration.
- Adjustable integral action.
- Standard 2 and 3 element control.
- Versatile system for a wide range of applications.
- Works with conductivities down to 5 µS/cm at 25°C.
- Manual test of valve, pump and alarm (tests by way of BHD50 on screen).
- Isolated 4-20 mA for a positioner and retransmission.
- Modbus RTU/TCP 485 or RS485 for external Via BHD50. communications.

Associated products:

- SP7 positioner.
- Electrically actuated control valve.
- Pneumatically actuated control valves.
- DCV3/B disc check valve.
- C2 probe chamber.
- SPV1 and SPV2 sequencing purge valves.
- Probe mounting flanges and adaptors.

LP21 using PA420 preamplifier

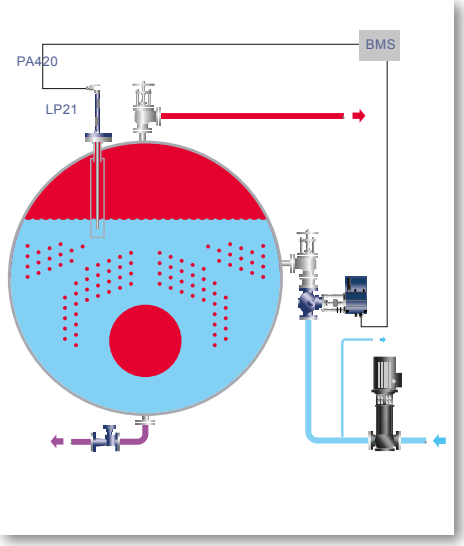
The LP21/PA420 probe is a flexible solution that integrates easily with your existing control system.

The PA420 preamplifier is a loop powered two-wire level transmitter for use in conjunction with LP21 level probes. It amplifies the capacitance measured and converts it to a direct 4-20 mA output proportional to the liquid level.

A water level control transmitter for steam boilers and process tanks that provides a direct 4-20 mA output to either a Spirax Sarco level controller or to an alternative existing PLC control system.

The PA420 is easily commissioned using only two buttons to set up and calibrate the desired water levels in your level control application. A dual green / red LED indicates status for confirmation, error or alarm.

The PA420 can be configured to output 4 - 20 mA over a water level range. The 4 - 20 mA signal may also be inverted for applications that require 20 mA high and 4 mA low water levels.

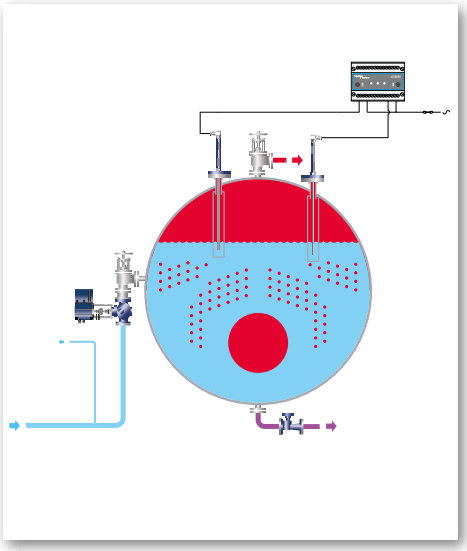


Key features:

- Direct 4 - 20 mA analogue output
- Simple 2 button commissioning
- Loop powered 2-wire transmitter
- Capacitance based modulating control
- Minimum water conductivity 5 µS / cm (5 ppm)
- 4 - 20 mA signal can be inverted
- Dual green / red LED status indication
- Compatible with all lengths of LP21 probe
- Low cost level control solution

Level controls and alarms

LCS3050 and LP40 high integrity, self-monitoring, Dual Channel low level alarm system



The level switch LCS3050 is used in conjunction with level probe LP40 to limit the water level in steam boilers. Water level limiters switch off the heating when the water level falls below the set minimum level (low water).

The level switch LCS3050 is designed for connecting two level probes. When the water level falls below the low level the level probes are exposed and a low level alarm is triggered in the level switch. This switchpoint is determined by the length of the probe rod (level probe LP40). After the de-energizing delay has elapsed, the two output contacts of the level switch will open the safety circuit for the heating.

The switching-off of the heating is interlocked in an external safety circuit and can only be deactivated when the level probe enters the water again. In addition, two signal outputs for external signalling devices close instantaneously. An alarm will also be raised if a malfunction occurs in the level probe and/or the electrical connection.

An automatic self-testing routine monitors the safety functions in the level switch and the level probes. In the event of a malfunction the safety circuit opens instantaneously and switches the heating off. Alarm and error messages are indicated by LEDs and a signal output for each level probe is energized without delay.

Alarms can be simulated by pressing a test button.

The LCS3050 and LP40 system has a TÜV EU Type approval and is suitable in demand and continuous mode to a safety integrity level of SIL3, meeting the requirements of IEC 61508-1,2,3:2010. The design of the equipment corresponds to the architecture 1oo2.

Key features:

- Powered by a 24V DC supply.
- No moving parts and minimal maintenance.
- Cyclic self-test of the probe, cable and electronic circuit.
- Works with conductivities down to 10 µS/cm at 25°C.
- Manual test buttons to operate alarm.
- Fail safe design.
- Versatile mounting options: DIN rail with panel adaptor.

Associated products:

- Probe mounting flanges and adaptors.

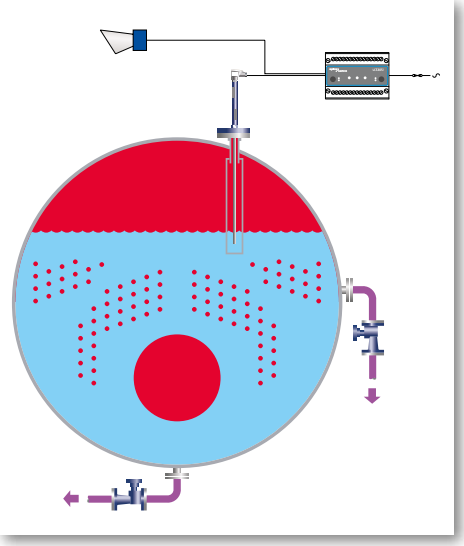
LCS3051 and LP41 high integrity, self-monitoring high level alarm system

The level switch LCS3051 is used in conjunction with level probe LP41 as high level alarm in steam boilers and (pressurised) hotwater plants. A high level alarm prevents the water level from exceeding the preset max. water level (HW) and for this purpose switches off e.g. the feedwater supply. The level switch LCS3051 is designed for connecting one level probe. When the water level exceeds the MAX limit, the level probe enters the liquid and an alarm is triggered in the level switch. This switchpoint is determined by the length of the probe rod (level probe LP41).

After the de-energizing delay has elapsed, both output contacts of the level switch will open the safety circuit, e. g. for the feedwater supply. If the deactivation of the feedwater supply is interlocked in the external safety circuit, the lockout can only be deactivated when the level probe is exposed again.

An alarm will also be raised if a malfunction occurs in the level probe and/or the electrical connection. An automatic self-testing routine monitors the safety functions of the level switch. In the event of a malfunction the safety circuit opens instantaneously and switches off e. g. the feedwater supply. Alarm and malfunction messages are indicated by LEDs, and the signal output is instantaneously energized.
An alarm can be simulated by pressing a test button.

Reasons for protection against high water level:
- Increased carryover of water into the steam will result in poor operation and / or malfunction of steam system components.
- Wet steam can lower processing temperatures. This can interfere with proper sterilisation of food products or processing of pharmacueticals and cause wastage.
- Increased risk of waterhammer in the steam system, damage to plant and even injury to personnel.



Key features:

- Powered by a 24V DC supply.
- No moving parts and minimal maintenance.
- Cyclic self-test of the probe, cable and electronic circuit.
- Works with conductivities down to 10 µS / cm at 25°C.
- Manual test buttons to operate alarm.
- Fail safe design.
- Versatile mounting options: DIN rail with panel adaptor.

Associated products:

- Probe mounting flanges and adaptors.

TDS blowdown controls and alarms

BCSR1
blowdown control system

The BCSR1 blowdown control system is suitable for small horizontal and vertical shell boilers.

The control system measures the electrical conductivity of the boiler water which is directly related to the level of total dissolved solids (TDS).

Accurate control of TDS minimises blowdown and reduces the risk of carryover. Automatic TDS control can significantly reduce operating costs whilst ensuring the quality of steam production.

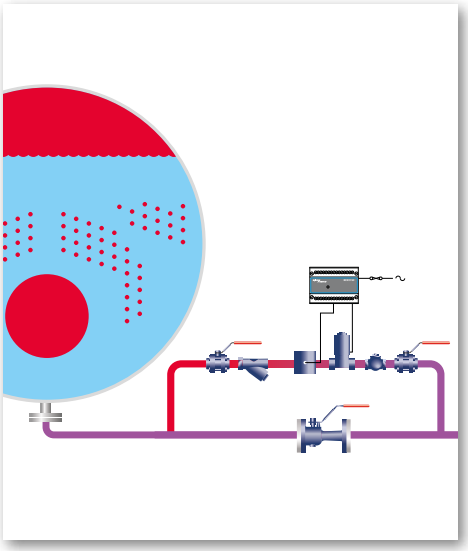
The conductivity of the boiler water is compared with the Set Point in the controller. If it is lower than the Set Point the blowdown valve closes at the end of the purge time and remains closed. If the conductivity is higher than the Set Point the blowdown valve will remain open until the conductivity level drops below the Set Point.

There is the option to choose either the BCR3150 or the BCR3250 controller. The adjacent key features are for the BCR3150. The BCR3250 has all the features of the BCR3150 plus the following additional benefits:

- Controlled BB timer.
- The alarm hysteresis is not variable and there is no latch implemented.
- Compensated conductivity measurement and scale detection with CP42 probe.
- Temperature displayed in °C or °F.
- The BCR3250 has a bottom blowdown timer.
- Priority link for multiple boiler applications (interlocking of up to 9 BCR3250 or BT1050 controllers).

The BCS1 pipeline is available as a packed set.

- PT2 plug tail.
- BCV1 blowdown valve.
- Fig 12 strainer.
- Two model 10 isolating valves.
- LCV1 lift check valve.



Key features for the BCR3150:

- TÜV type approved as a TDS controller and monitor. The controller can provide a MAX alarm.
- Compensated conductivity measurement with CP42 probe.
- Scale detection with CP42 probe and BCR3250.
- Pulsed probe conditioning cycle.
- Automatic detection of temperature input (Selectable Pt100 temperature compensation).
- The BCR3250 has a bottom blowdown timer.
- Automatic purge on calibration.
- Isolated 4-20 mA for retransmission.
- Versatile mounting options: DIN rail (with panel adaptor for BCR3150 and BHD50 for BCR3250)
- Manual purge, probe cleaning cycle and system calibration can be activated from the menu.

Associated products:

- KBV21i/KBV40i
- MS1 conductivity meter.

BCSR3
blowdown control system

The BCSR3 blowdown control system is suitable for shell and water tube boilers, where the probe can be fitted in the boiler shell itself (the ideal arrangement) and can easily be linked to energy / building management systems.

The control system measures the electrical conductivity of the boiler water which is directly related to the level of total dissolved solids (TDS).

Accurate control of TDS minimises blowdown and reduces the risk of carryover. Automatic TDS control can significantly reduce operating costs whilst ensuring the quality of steam production.

The conductivity probe is mounted directly in the boiler shell and continuously monitors the conductivity of the boiler water which is directly related to the level of total dissolved solids (TDS). This measured value is compared with the Set Point in the controller. If it is lower than the Set Point the blowdown valve remains closed, if it is higher than the Set Point the blowdown valve will be open. The high TDS boiler water is replenished by clean make-up water, lowering the measured conductivity and closing the blowdown valve.

The BCSR3 system offers a choice of controllers, conductivity probes, and blowdown valves.

There is the option to choose either the BCR3150 or the BCR3250 controller. The adjacent key features are for the BCR3150. The BCR3250 has all the features of the BCR3150 plus the following additional benefits:

- Controlled bottom blowdown timer.
- Compensated conductivity measurement and scale detection with CP42 probe.
- Temperature displayed in °C or °F.
- A bottom blowdown countdown timer.

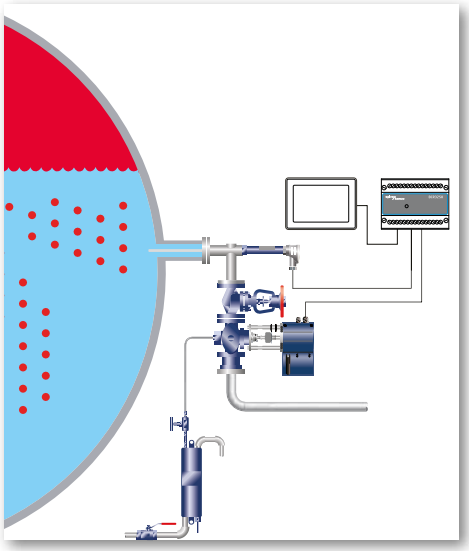
The CP40 and CP42 probes measure the boiler water conductivity. In addition the CP42 has an integral temperature sensor that compensates for temperature variation and a patented scale compensation feature to automatically detect and compensate for any scaling or polarisation on the tip.

Two types and two sizes of blowdown control valve are available:

- DN20 and DN40 blowdown control valve - electrohydraulically actuated.
- DN20 and DN40 BCV43 blowdown control valve - pneumatically actuated.

The BCS3 blowdown control system comprises of:

- BCV43 blowdown control valve.
- CP40 or CP42
- Probe elbow



Key features for the BCR3150:

- The BCR3150 is TÜV type approved as a TDS controller and monitor. The controller can provide a MAX alarm.
- Compensated conductivity measurement with CP42 probe.
- Scale detection with CP42 probe and BCR3250.
- Pulsed probe conditioning cycle.
- Automatic detection of temperature input (Selectable Pt100 temperature compensation).
- Automatic purge on calibration.
- Isolated 4 - 20 mA for retransmission.
- Switchable alarm latch.
- Versatile mounting options: DIN rail with panel adaptor.

Associated products:

- SC20 sample cooler.
- EL2270 temperature sensor.
- Check valve.
- BSA3 stop valve.
- MS1 conductivity meter.

TDS blowdown controls and alarms

BCSR4
blowdown control system

The BCSR4 blowdown control system is suitable for shell and water tube boilers, where it is not possible to mount a conductivity probe directly in the boiler shell.

The control system measures the electrical conductivity of the boiler water which is directly related to the level of total dissolved solids (TDS).

The BCSR4 system can easily be linked to energy/building management systems.

Accurate control of TDS minimises blowdown and reduces the risk of carryover. Automatic TDS control can significantly reduce operating costs whilst ensuring the quality of steam production.

The conductivity of the boiler water is compared with the Set Point in the controller. If it is lower than the Set Point the blowdown valve closes at the end of the purge time and remains closed. If the conductivity is higher than the Set Point the blowdown valve will remain open, the high TDS boiler water is replenished by clean make-up water, lowering the measured conductivity and the blowdown valve closes.

The BCSR4 system offers a choice of controllers and blowdown valves.

There is the option to choose either the BCR3150 or the BCR3250 controller. The adjacent key features are for the BCR3150. The BCR3250 has all the features of the BCR3150 plus the following additional benefits:

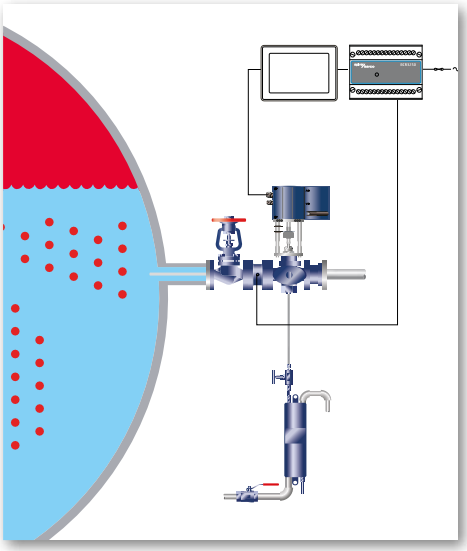
- Bottom blowdown timer.
- Calibration reminder.
- Real time clock.
- Variable alarm hysteresis with latch.
- Compensated scale detect.
- Option for continuous or pulsed cleaning cycle.
- Temperature displayed in °C or °F.
- A bottom blowdown countdown timer.

Two types and two sizes of blowdown control valve are available:

- DN20 and DN40 blowdown control valve - electrically actuated.
- DN20 and DN40 BCV43 blowdown control valve - pneumatically actuated.

The BCS4 blowdown control system comprises of:

- BCV43 or blowdown control valve.
- S11 sensor chamber.
- CP10 conductivity probe.
- PT2 plug tail.- SC20 sample cooler.
- BSA3 stop valve.
- DCV check valve.



Key features for the BCR3150:

- TÜV type approved as a TDS controller and monitor. The controller can provide a MAX alarm.
- Compensated conductivity measurement with CP42 probe.
- Scale detection with CP42 probe and BCR3250.
- Pulsed probe conditioning cycle.
- Automatic detection of temperature input (Selectable Pt100 temperature compensation).
- Automatic purge on calibration.
- Isolated 4-20 mA for retransmission.
- Versatile mounting options: DIN rail with panel adaptor.

Associated products:

- SC20 sample cooler.
- BSA3 stop valve.
- Check valve.
- EL2270 temperature sensor.
- MS1 conductivity meter.

BTS1050
bottom blowdown control system

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.

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) 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.

The advantages of automatic boiler blowdown are:
- Automatic timed blowdown avoids wasted heat.
- Choose the exact time and duration of blowdown.
- Repetition or omission of blowdown is avoided.
- Up to 9 BTS1050 systems can be linked to blow down sequentially.

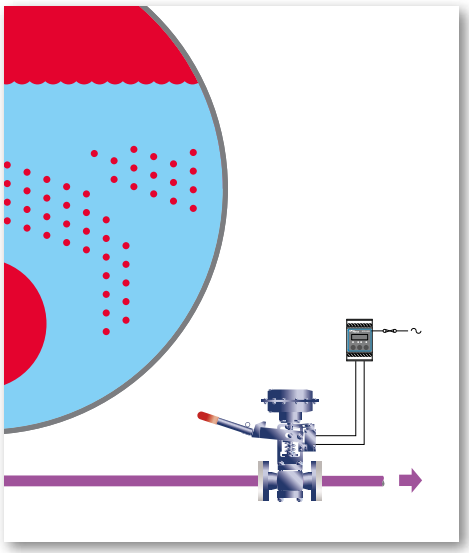
Time controlled bottom blowdown systems bring many benefits to your plant and business.

Minimised energy loss from the boiler blowdown can save approximately 2% of a facilities total energy use, with an average simple pay back in one year.

The system can be used for single and multi-boiler installations.

Less water, fuel and water treatment chemicals are required, providing a cleaner and more efficient boiler.

Reduced operating costs, reduced labour cost and a safer boiler.



Key features:

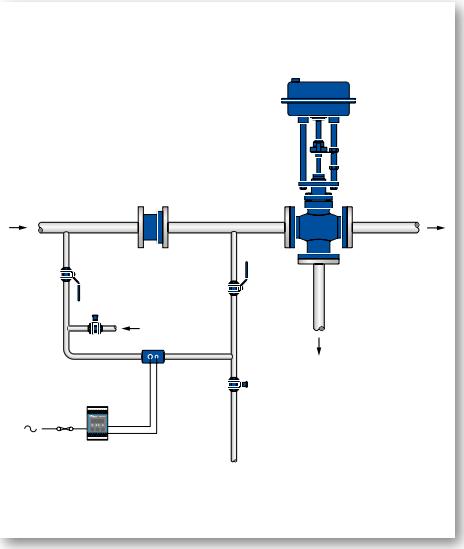
- Real time clock and calendar.
- Variable valve closing and opening times.
- Manual valve open / close.
- Isolated 4 - 20 mA for a positioner or retransmit.
- Versatile mounting options: DIN rail with panel adaptor.
- Blowdown cycles at 30 minute intervals.
- Range of linear and rotary blowdown valves.

Associated products:

- MV11 solenoid valve.
- Optional manual handle for BBV43.
- ABV21i / ABV40i.
- BBV43.

Condensate contamination detection

BCR3150 and CP10 condensate contamination detection system



For conductive condensate contamination detection (CCD) select the CP10 conductivity probe and BCR3150 controller.

The control system monitors and displays the conductivity of condensate being returned to the boiler and diverts contaminated condensate to drain.

Steam is an extremely efficient way of transmitting energy, and is used for many industrial processes.

When steam has given up its heat to the process, the remaining hot condensate, ideally, should be returned to the boiler feedtank.

There are significant benefits to be gained from installing a CCD system:
- Saving water.
- Saving residual heat in condensate.
- Saving on expensive water treatment chemicals.

It is essential to ensure that the condensate is clean, even low levels of contamination can cause foaming, scaling or corrosion. Continuous condensate contamination monitoring can protect the boiler, ensure product quality and maximise energy and water savings.

The CCD system comprises of:
- S20 sensor chamber.
- CP10 conductivity sensor.
- TP20 temperature probe.

Key features:

- Avoids boiler damage and product contamination.
- Can sense conductivities down to 1 µS/cm at 25°C.
- Condensate temperature compensation for greater accuracy.
- Isolated 4-20 mA output.
- Versatile mounting options: DIN rail with panel adaptor.

Associated products:

- SCS20 sample cooler systems.
- MS1 portable conductivity meter.
- Check valves.
- Stop valves.
- Electrically actuated valves.
- Pneumatically actuated valves.

Condensate contamination detection

Model 556/TF56-N Turbidity Monitoring System

Select the TF56-N Turbidimeter and the 556 Converter to monitor non-conductive contamination in condensate return and make-up water to a boiler's feed water system.

The Turbidity Monitoring System from Spirax Sarco is a precise and reliable solution for preventing non-conductive contamination entering a boiler's feed water system. The system is designed to monitor make up water and condensate returns to the feed water system and divert any contaminated water or condensate to drain, avoiding malfunction and process interruption in your plant.

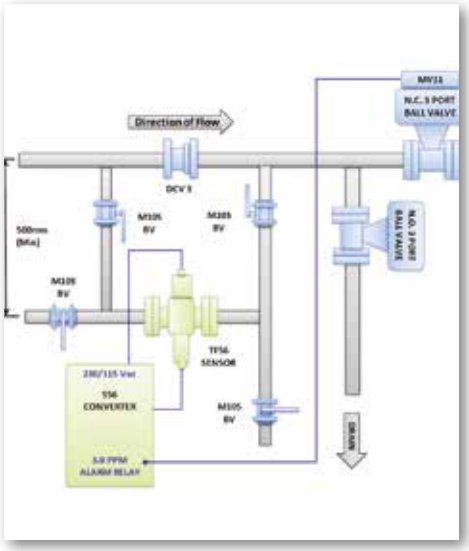
For example, harmonised standards EN12952 and EN12953 now cite minimum requirements for limiting devices to protect all boilers. The turbidity monitoring system is one such device that will fulfil your need for 'Water Quality Protection' against the ingress of oil and grease.

The turbidity monitoring system continuously monitors for oil and grease contamination in condensate return to a boiler's feed water system and automatically diverts contaminated condensate to drain if prescribed limits are exceeded.

There are significant savings to be gained by installing a turbidity monitoring system.

- Reduced water consumption
- Recovery of condensate and residual heat
- Reduced use of water treatment chemicals

The turbidimeter is a precise, dual channel, scattered light turbidity monitor that uses light in the visible range (VIS) and Near Infrared Range (NIR) from 400 to 1100 nm. A precisely defined constant light beam penetrates the fluid medium and the light scattered from any oil or grease particles in the condensate or make-up water is detected by four hermetically sealed silicon photodiodes set at an angle of 11°. Simultaneously unscattered light is detected by a reference photodiode. This unique Dual Channel Design compensates for colour and disturbances in the flow returns. The sensor can measure very low particle sizes and concentrations.

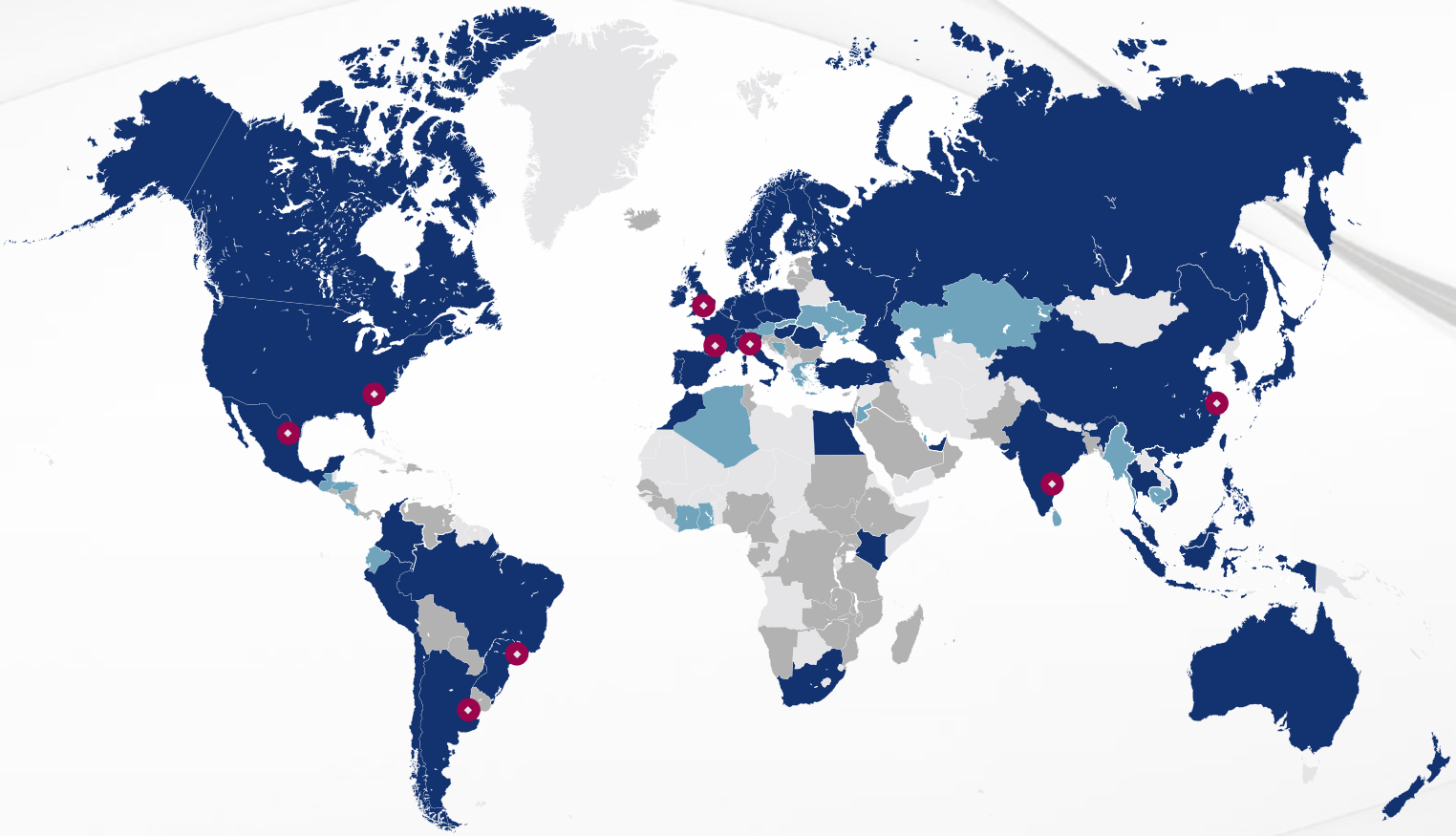


Key features:

- Continuous, real-time monitoring
- Two independent alarm set points
- Fail safe relay
- 0 - 20 or 4 - 20 mA output
- Compensating dual channel design
- Low maintenance
- CIP/SIP compatible
- Compact dimensions
- Reliable, cost effective measurement

Associated products:

- MS10 isolating ball valve
- DCV 3 check valve
- ¼ turn ball valve actuator
- M21 two port ball valve
- MV solenoid valve
- Three port QL valve



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