

Bg Main Switch Bs Number

A practical guide to bg main switch bs number, covering the reader intent, the relationship to bg main switch bs number, key evaluation criteria, common risks, and the information the intended project audience should confirm before taking the next step.



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Main topic: Level Switches

<https://www.level-meters.com/products/level-switches/>

In industrial automation and fluid management, the integration of electrical control components with sensing instrumentation is a fundamental requirement for safety and operational efficiency. A critical aspect of this integration involves the power supply and isolation of the system, often identified by the "bg main switch bs number." This terminology typically refers to British General (BG) electrical switchgear and the corresponding British Standard (BS) numbers that govern their manufacturing and performance.

For engineers and system integrators deploying Level Switches in process environments, understanding how these electrical standards intersect with level measurement technology is essential. This guide explores the principles of level detection, the selection of appropriate switches, and the electrical compliance standards required for a robust industrial installation.

Understanding British Standards (BS) for Main Switches

The "BS number" associated with a main switch (isolator) defines its technical specifications, safety ratings, and suitability for specific environments. In the context of industrial control panels for level measurement systems, several standards are paramount:

1. **BS EN 60947-3:** This is the primary standard for low-voltage switchgear and controlgear, specifically for switches, disconnectors, switch-disconnectors, and fuse-combination units. Any main switch used to isolate a level control system must comply with this standard to ensure it can safely break the circuit under load.
2. **BS 7671:** Also known as the IET Wiring Regulations, this standard dictates how electrical components, including main switches and level sensors, must be installed and wired in the UK and many other regions following similar regulatory frameworks.
3. **BS EN 60529:** This standard defines the Ingress Protection (IP) ratings. For a main switch (like those produced by BG) used in proximity to liquid storage tanks, an IP65 or higher rating is often required to protect against moisture and dust.

When specifying a "bg main switch," engineers are typically looking for a device that meets these BS requirements while providing a reliable point of isolation for the Level Switches and associated pumps or valves. The main switch acts as the primary safety barrier, allowing maintenance personnel to de-energize the entire level control loop.

| Measurement Principles of Level Switches

Before selecting a switch based on its electrical BS number, it is vital to understand the physical measurement principle that will drive the control logic. Level switches are point-level detection devices that trigger a signal when a substance reaches a specific height. Welk provides several technologies based on different physical principles:

| Float Level Switches

This is the most traditional method, utilizing buoyancy. A float containing a magnet moves with the liquid level. When it reaches a reed switch housed within the stem, the magnetic field causes the switch to open or close. This is a simple, low-cost solution for clean liquids.

| Tuning Fork (Vibrating) Switches

The sensor consists of a fork that vibrates at its natural resonant frequency using piezoelectric crystals. When the fork is submerged in a liquid or solid, the frequency changes. The internal electronics detect this shift and trigger the switch output. This technology is highly resistant to turbulence, foam, and bubbles.

| Capacitance Level Switches

These sensors treat the tank wall and the probe as two plates of a capacitor. As the medium rises and covers the probe, the dielectric constant changes, altering the capacitance. This change is measured and converted into a switching signal. These are ideal for both liquids and solids but require calibration based on the material's dielectric properties.

Ultrasonic Level Switches

Ultrasonic switches emit high-frequency sound waves. In a gap-style ultrasonic switch, the signal travels across a small gap in the sensor head. When liquid fills the gap, the signal transmission improves, triggering the switch. These are non-contact in nature (for the sensing element) and are excellent for corrosive or viscous fluids.

Selecting the Right Level Switch for Industrial Applications

Choosing the correct instrumentation requires balancing the physical properties of the media with the electrical requirements of the control panel. The following table provides a comparison of common level switch technologies used in conjunction with industrial main switches.

Technology	Suitable Media	Max Temperature	Max Pressure	Key Advantage
Float Switch	Clean liquids, water	120°C	20 bar	Low cost, no power required for sensing element
Tuning Fork	Liquids, powders, granules	150°C	40 bar	High reliability, no calibration needed
Capacitance	Acids, alkalis, solids	200°C	25 bar	No moving parts, handles high temperatures
Ultrasonic	Viscous liquids, wastewater	80°C	5 bar	Unaffected by density or conductivity changes
Optical	Clear liquids, oils	125°C	50 bar	Extremely compact, fast response time

When integrating these with a control system governed by a BS-compliant main switch, consider the electrical load. Most level switches provide a SPDT (Single Pole Double Throw) or DPDT (Double Pole Double Throw) relay output. The main switch must be rated to handle the total current of the sensors plus any auxiliary equipment like alarms or contactors.

| Installation and Compliance with BS Standards

To ensure the longevity of the Level Switches and the safety of the electrical installation, certain engineering practices must be followed. These practices align with the requirements of BS 7671 and standard industrial protocols.

| Mounting Considerations

Avoid Turbulence: Do not install level switches directly in the path of an inlet flow. The resulting turbulence can cause "chatter" (rapid cycling of the switch), which leads to premature failure of both the sensor and the main switch contacts.

Orientation: Ensure that horizontal float switches are perfectly level to prevent the float from sticking. For vertical probes, ensure there is sufficient clearance from the tank floor to avoid sediment buildup.

Stilling Wells: In tanks with heavy agitation, use a stilling well (a perforated pipe) to house the switch. This provides a calm surface for accurate measurement.

| Wiring and Isolation

Following the "bg main switch bs number" specifications, the wiring should be executed using appropriately rated cables (e.g., BS 6004 or BS 5467).

Isolation: The main switch must be installed at the entry point of the control cabinet. It should be lockable in the 'OFF' position to comply with LOTO (Lockout/Tagout) safety procedures.

Grounding: All metallic housings of level switches must be bonded to the common functional earth of the system to prevent static buildup and ensure EMC (Electromagnetic Compatibility) compliance.

Cable Glands: Use IP68-rated cable glands that match the BS standard of the enclosure to maintain the environmental seal.

| Limitations and Maintenance of Level Control Systems

While level switches are robust, they are not universal solutions. Understanding their limitations prevents system downtime.

1. **Coating and Buildup:** Capacitance and tuning fork switches can be affected by heavy coating or "bridging" of material between the probes. Regular inspection is required in sticky or crystallizing media.
2. **Specific Gravity:** Float switches are dependent on the density of the liquid. If the liquid density changes significantly (e.g., due to temperature fluctuations), the float may no longer trigger at the correct level.
3. **Contact Wear:** Mechanical relay outputs have a finite life cycle (typically 100,000 to 1,000,000 operations). For high-frequency switching applications, consider solid-state outputs (PNP/NPN).

Maintenance Checklist:

Monthly: Test the manual override on the main switch to ensure mechanical functionality.

Quarterly: Inspect the level switch probe for material buildup or corrosion.

Annually: Verify the calibration of capacitance sensors and check all electrical terminals for tightness (thermal cycling can loosen screw terminals over time).

| Frequently Asked Questions (FAQs)

Q: What is the most common BS number for an industrial main switch?

A: BS EN 60947-3 is the standard most frequently cited for industrial isolators and main switches used in control panels for level measurement systems.

Q: Can I use a level switch to directly start a high-power pump?

A: It is generally not recommended. While some level switches have high-capacity relays, it is best practice to use the level switch to trigger a contactor. The main switch (BS compliant) should be sized to handle the inrush current of the pump motor.

Q: Does the "BG" in "bg main switch" refer to a specific technical standard?

A: "BG" usually refers to the manufacturer British General. However, the technical suitability is determined by the BS (British Standard) number printed on the device, such as BS EN 60669 or BS EN 60947.

Q: How do I choose between a tuning fork and an ultrasonic switch?

A: Choose a tuning fork switch if the application involves foam or varying liquid densities. Choose an ultrasonic switch if the media is extremely viscous or if you require a non-contact gap measurement.

Q: Are Welk level switches compatible with standard UK control panels?

A: Yes, Welk instruments are designed with universal output options (Relay, Transistor, or 4-20mA) that integrate seamlessly with control systems utilizing BS-standard components and main switches.

By adhering to the correct electrical standards and selecting the appropriate measurement technology, engineers can ensure that their level control systems are both safe and reliable. Whether you are specifying a new installation or upgrading an existing tank farm, the synergy between a high-quality main switch and precision Level Switches is the foundation of industrial process safety.