



Join a high-performing group with a purpose:
to grow a safer, cleaner, healthier future
for everyone, every day.

We are hiring for **Embedded Firmware Engineer** in **Halma company SENSIT Technologies**

Location	Business Unit	Report to
Ahmedabad	Environmental & Analysis	Firmware Lead

About us

Halma is a global group of life-saving technologies companies, driven by a clear purpose. We are an FTSE 100 company with headquarters in the UK and operations in 23 countries, including regional hubs in India, China, Brazil, and the US

Our diverse group of nearly 50 global companies specialise in market leading technologies that push the boundaries of science and technology.

For over 50 years, the combination of our purpose, strategy, people, DNA and sustainable business model has resulted in **record long-term growth in revenues and profits and an increase in dividend by ≥ 5% every year**– an achievement unrivalled by any company listed on the London Stock Exchange.

Halma India fulfils the potential of the region by harnessing the diverse talents, expertise, infrastructure, and operational

We have a team of over 250 professionals representing commercial, digital and support functions across our seven offices in India, two in Bengaluru and one each in Delhi, Mumbai, Thanjavur, Vadodara, and Ahmedabad.

Halma India is a Great Place to Work® certified organisation, recognised for 3 consecutive years.

Here's why working with us is fulfilling:

We offer a safe and respectful workplace, where everyone can be who they 'REALLY' are, feel free to bring their whole selves to work and use their unique talents, knowledge, expertise, experiences, & backgrounds to create meaningful outcomes.

We nurture entrepreneurial spirits and empower them to think beyond the possibilities, to discover, shape and build their own unique stories. Our diverse businesses and operations provide fulfilling opportunities to grow as individuals and make an impact.

We are simple, humble and approachable, and we believe in leadership at all levels to bring our purpose to life. Everyone at Halma India makes an impact, and so do you when you join us!

Halma India is an equal opportunity employer, which means the base of our recruitment decisions is always on skills, competencies, attitudes, and values. We are committed to hiring from diverse backgrounds without regard to age, ethnicity, religion, marital status, disability status, sex, gender identity, or sexual orientation.



Detailed job description

About Halma company SENSIT Technologies

SENSIT Technologies is a global leader in the design and manufacture of gas detection instruments used by utilities, municipalities and industrial customers worldwide. Our products protect lives and infrastructure by detecting combustible and toxic gases in the field, every day, in demanding conditions.

SENSIT is part of Halma plc, a FTSE 100 group of life-saving technology companies. Our India engineering centre in Ahmedabad is a core part of the global product development organisation, owning firmware, software and systems work end-to-end for products shipped worldwide.

Position Objective (The purpose of role in current business/market scenario)

We are looking for an Embedded Firmware Engineer to design, develop and maintain production firmware for our next generation of portable gas detection instruments. You will work close to the metal on STM32 microcontrollers — writing bare-metal drivers, building FreeRTOS-based applications, developing custom bootloaders, and implementing the firmware protection and encryption measures that safeguard our intellectual property in the field.

This is a hands-on engineering role with real ownership. You will take features from requirement through design, implementation, unit test, integration and release — working alongside hardware, mechanical, QA and product teams in India and the United States.

Responsibilities (KRAs / deliverables / job expectations)

- Design, develop and maintain embedded firmware in C for STM32 (Cortex-M0+/M3/M4) based instruments, from bare-metal register-level drivers up to FreeRTOS application tasks.
- Develop and optimise low-level peripheral drivers — UART, I2C, SPI, ADC, DMA, timers, RTC, GPIO, PWM, low-power modes — with and without HAL/LL layers.
- Architect and implement FreeRTOS-based applications: task decomposition, priority assignment, queues, semaphores, mutexes, event groups, stack sizing, and diagnosis of priority inversion, race conditions and stack overflow.
- Write and maintain custom bootloader code — memory partitioning and linker scripts, dual-bank / A-B image schemes, image validation with CRC and digital signatures, rollback and fail-safe recovery.
- Implement secure and encrypted firmware update paths (OTA and wired), including AES-encrypted image delivery, signature verification and anti-rollback protection.



	• Implement firmware protection and anti-tamper measures: STM32 Read-Out Protection (RDP), write protection, proprietary code readout protection (PCROP), secure boot / root of trust, debug port lockdown and key storage strategy. • Integrate and characterise sensors and peripherals — electrochemical, catalytic, IR/TDLAS gas sensors, displays, flash memory, Bluetooth Low Energy and GPS modules. • Support power optimisation and battery life targets for portable, field-deployed instruments. • Debug at hardware level using oscilloscopes, logic analysers, multimeters and JTAG/SWD debuggers; work directly with hardware engineers on board bring-up and design reviews. • Write unit and integration tests, participate in code reviews, and maintain firmware under version control with a disciplined branching and release process. • Produce and maintain engineering documentation: design documents, interface specifications, test protocols and release notes, in line with our quality management system. • Support production, service and field teams on firmware-related issues, including root cause analysis of returns and field failures.
Critical Success factors (critical / high impact aspects of role)	• Strong, demonstrable proficiency in Embedded C, including pointers, memory management, bit manipulation, volatile and interrupt-safe coding. • Solid bare-metal experience on STM32 microcontrollers — direct register programming, startup code, linker scripts, interrupt vector tables, clock tree and memory map configuration. • Practical, production-level experience with FreeRTOS on microcontrollers — not just tutorial exposure. • Demonstrated experience writing bootloader code, including firmware update mechanisms and image validation. • Working knowledge of firmware protection and encryption concepts: symmetric encryption (AES), hashing, digital signatures, secure boot, and microcontroller readout/debug protection features. • Strong grasp of serial communication protocols (UART, I2C, SPI, Modbus) and the ability to debug them on a wire. • Comfortable with hardware debug tools — ST-Link/J-Link, SWD/JTAG, oscilloscope, logic analyser — and able to read schematics and datasheets independently. • Experience with Git and a structured development workflow.
Academic qualification	• Bachelor's or Master's degree in Electronics, Electronics & Communication, Instrumentation, Computer Engineering or a related discipline.



Experience (exposure)	3 to 5 years of hands-on embedded firmware development experience in a product company is mandatory.
Key attributes (critical functional competencies)	Desired skill set (Nice to have): - Experience with STM32CubeIDE, STM32CubeMX, Keil MDK or IAR Embedded Workbench. - Exposure to STM32 TrustZone (Cortex-M33), SFI (Secure Firmware Install) or hardware crypto accelerators. - Experience with Bluetooth Low Energy stacks, or wireless connectivity on battery-powered devices. - Background in gas detection, analytical instrumentation, medical devices, or other safety-critical / regulated products. - Familiarity with functional safety or certification standards (ATEX, IECEx, UL, CSA, IEC 61508) as they apply to firmware. - Experience with static analysis, MISRA-C, unit test frameworks (Unity/CMock) or CI for embedded builds. - Working knowledge of Python or C# for test automation and internal tooling.
Competencies (fundamental skills and attitudes)	- Good written and verbal communication in English; able to work with a distributed team across time zones. - Good Analytical & problem-solving skills. - Able to work independently. - Sense of ownership. - Process oriented.