

6. System description

The Leuze RFID systems – HF compact reader family is mainly designed for industrial applications (e.g. conveyors, tool identification, warehouse technology, ...), suitable for open-loop systems in classic supply chain environments.

Products in such family are classified according to operating frequency and host communication interface (ProfiNet, TCP).

Common characteristics are:

- Industrial-grade reliability.
- ETH-based communication interface (ProfiNet, TCP).
- Compatibility with indoor / outdoor environment (IP67 / NEMA 6 compliant).
- Robust plastic housing ASA/PC, UL-94 V0-1.5mm

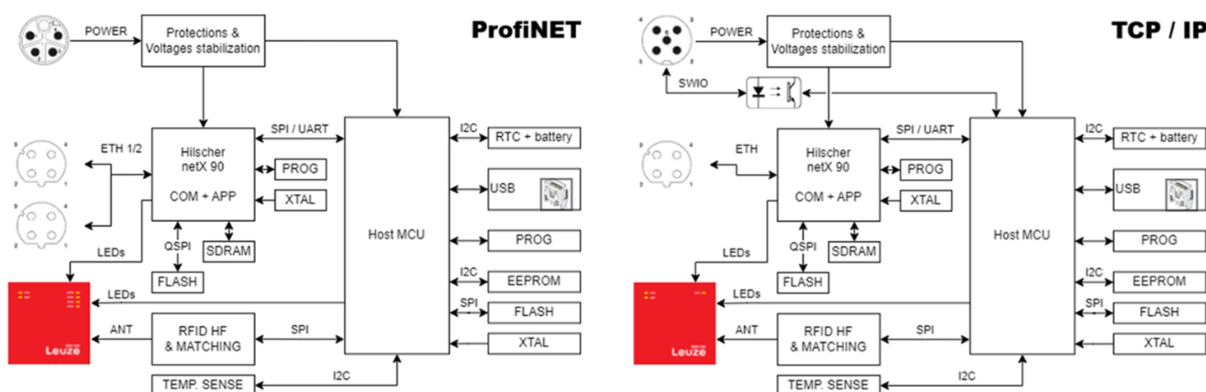


Figure 1: HF compact products differentiation.

The system is based on two different microcontrollers:

- Host: STM STM32G0B0RE (ARM-based CM0+, 512kb Flash memory, 128kB SRAM).
- Communication: Hilscher netX90 (dual-core ARM CM4).

The STM microcontroller manages the tag readout (performed via STM ST25R3916B RF front-end and an inductive loop antenna integrated into the front label) and shares data with the netX90, which takes care of the communication.

The system is equipped with 32Mb Flash memory + 64kb EEPROM (host), and 128Mb Flash memory + 64Mb SDRAM (communication). A RTC maintains the system date and clock, with the help of a ML621 rechargeable battery, if the customer needs date&clock retention during system power-off.

The overall system is powered by 24V_{DC}, through IP67-compliant M12 connectors. Overvoltage, overcurrent, overtemperature protection and voltage stabilization are integrated. TCP version also hosts two dedicated I/O lines (SWIO).

Electronic arrangement is the following: the main PCB is the same for both HF compact ProfiNet and TCP versions, while the powering connector has different codings and hosts two digital IO lines in the latter version.

Due to the difference between Ethernet protocols, ProfiNet requires two ETH connectors (full 17B24 PCB), TCP just one (half 17B24 PCB).

Labels are similar, for what concerns the integrated RF antenna and the bicolor SYS/ANT status LEDs to the left – the difference consists in the fact 4 bicolor LEDs are required for ProfiNet status (STS/LNK for each port) and just a bicolor LED is needed for TCP communication status.



Figure 2: PCB interconnection scheme: ProfiNet (left) vs TCP (right).