Why Choose Kamstrup HC-003-55 over Elvaco CMi4140 – Comprehensive Comparison

Prepared for sales conversations and customer proposals

Executive Summary

Kamstrup HC-003-55 provides stronger end-to-end security, longer battery lifetime, and a built-in Wireless M-Bus fallback that secures data delivery when LoRaWAN coverage is weak. Elvaco CMi4140 is an efficient LoRaWAN module with commissioning via smart phone, but it lacks Wireless M-Bus fallback and offers a shorter guaranteed battery lifetime, and less security.

Kamstrup HC-003-55

Elvaco CMi4140

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	Kamstrup HC-003-55	Elvaco CMi4140
Security	• Uses the keys derived from the meter's DEK for LoRaWAN • Selectable OMS Security Profile D for application layer • All keys in one .kem2 file	• Uses separate keys from Elvaco • No encryption for application layer • Keys must be downloaded at Elvaco EVO
Fallback	• Has Wireless M-Bus C1 fallback	• Relies solely on LoRaWAN
Battery	• 16 years	• 12 years in EcoMode
Protocol	• Uses standardized OMS over LoRaWAN protocol	• Supports message schemes via Elvaco formats
Alarms	• Immediate transmission of critical infocodes (alarms)	• Infocodes via normal transmission scheme
Installation	• CALL via meter buttons + display indices for on-site link check	• Elvaco OTC smart phone app or meter buttons
Configuration	• Support predefined configuration from factory (YY-ZZZ) • Datagrams can be tailor made • Support for all meter registers • Configurable redundancy (13 hours as standard for E1)	• Delivered in "standard" mode from factory, with 7 selectable Elvaco formats • No factory programmed settings • No redundancy in transmission
Downlink commands	• Clock adjustment	• Clock adjustment • Transmit interval • Messageformat (datagram) • EcoMode • Reboot

In details...

1. Communication & Robustness

HC-003-55 combines LoRaWAN 1.0.4 with a Wireless M-Bus C1 interface used as local readout and automatic fallback if LoRaWAN connectivity is unavailable. Adaptive Data Rate (DR0–7) and optimized scheduling minimize battery impact while preserving range..

CMi4140 delivers long-range LoRaWAN connectivity. It does not provide a Wireless M-Bus fallback, which means data delivery depends on LoRaWAN availability..

Practical implication: *With HC-003-55, utilities can still perform walk/drive-by readout during LoRaWAN outages, avoiding data gaps and truck rolls.*

2. Battery Lifetime

HC-003-55 achieves up to 16 years battery lifetime depending on datagram configuration and RF conditions

CMi4140 specifies 11+1 years battery lifetime with EcoMode enabled, targeting low maintenance but still below Kamstrup's upper range.

3. Security & Key Management

HC-003-55 keys (AppKey/OMS) are derived from the meter's Data Encryption Key (DEK) according to Kamstrup's Security Concept. This ensures full traceability and removes key storage from the communication module. The module supports OMS Security Profile D for application-layer encryption. See https://oms-group.org/

CMi4140 uses Elvaco's One-Touch Commissioning (OTC) via NFC for secure key transfer and device configuration. A configuration lock helps prevent unauthorized changes. While secure, the security chain is not anchored in the meter's DEK as in Kamstrup's concept, and no encryption is provided for the application layer.

4. Data Model & Flexibility

HC-003-55 uses the YY-ZZZ coding to define security profile (YY), data content and intervals (ZZZ). Utilities can factory-select or later adjust the setup, e.g., transmit frequently changing registers often and monthly logs less frequently, to optimize both battery and network load.

CMi4140 supports diffrent message types with adjustable transmission intervals via NFC or LoRaWAN downlink. This covers many use cases but provides less granular control than Kamstrup's YY-ZZZ approach.

5. Installation & Commissioning

HC-003-55: Activate CALL from the MULTICAL® 403 buttons to join the network. On-site validation is simple: display index 47 shows link quality and 49 shows communication status. External antenna is recommended if link quality < 10.

CMi4140: Commission via NFC using Elvaco's OTC mobile app, or by pressing meter buttons until CALL appears. Internal or external antenna options are available.

6. Integration & Ecosystem

HC-003-55: OMS over LoRaWAN ensures open, vendor-neutral interoperability. The module can be integrated in third-party systems or read by Kamstrup READy.

CMi4140: supports multiple message formats and can be integrated through Elvaco's own ecosystem as well as various third-party platforms.

7. Customer Value & TCO

- Fewer site visits due to longer battery life (up to 16 years) and ADR optimization.
- Assured data continuity with Wireless M-Bus fallback during LoRaWAN outages.
- Lower risk and stronger security with meter-anchored DEK key derivation.
- Simpler troubleshooting through on-meter diagnostics (indices 47/49).

Typical Use Cases

- Dense urban areas with variable RF conditions → fallback avoids data gaps.
- Mixed portfolios requiring open interoperability (OMS over LoRaWAN).
- Cost-sensitive operations targeting long service ntervals (battery life).

One-minute Pitch

Choose Kamstrup **HC-003-55** for robust operations and long-term TCO: it delivers provable security rooted in the meter, longer lifetime, and continuous data via Wireless M-Bus fallback—advantages that are difficult to match with a LoRaWAN-only alternative.

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