

# Smart-meter File System

Advanced file system customized for high performance smart-meters

*High quality fully  
MIGRA C:2004 compliant*

*Extend guaranteed flash life*

*Reduced bill  
of material cost*

*Lower power by minimizing  
number of required  
flash accesses*

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102403210333360455788015
7770088825566211492114522001252
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68452218 01251 6248699877 789214552111
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6503320111 50001225478200568110 333604
0253020048 00145200011557785777
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01225 82005 10240321 3336045 880155402530 048
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4032 333604557 01554 02 452000115 78577
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02486998774
```

Smart-meter systems must meet significant technical challenges in order to lower manufacturing cost, power consumption and achieve high reliability. HCC has developed an advanced Smart-meter File System (SMFS™) custom designed for the needs of smart-energy and smart-meter applications. This can result in lower cost of manufacturing, shorter development time, reduced field maintenance and longer guaranteed life of operation.



Instead of using a traditional file based system HCC has taken the radical approach of defining a system built around the needs of smart-meters. Metering applications usually have well defined record structures and HCC has used its' extensive flash experience to take advantage of this characteristic. By taking a data focused, and not a file focused approach, it is possible to reduce the required number of write/erase cycles by an order of magnitude. Traditional file systems do not have built-in cyclic buffer logic for storing records and this can add complexity, significantly increasing the number of times flash must be accessed. SMFS uses a structured database to reduce complexity of the application which can improve the performance in almost every way; speed, power consumption, and flash life.

**High Quality Development:** The software is developed using high quality development methodology and is rigorously compliant with MISRA C:2004.

**Small Footprint:** The 'Smart-meter File System™' (SMFS™) requires less than 15kB program memory and 1.5kB of RAM on 32-bit MCUs.

**Reduced Development Time:** the simplicity of SMFS means that engineers can easily configure and implement a system which will be fail-safe, provides wear-leveling and has ECC error correction and encryption options, significantly shortening time to market.



## Key features

- Fail-safe data storage, system will always recover.
- Persistent data storage: preserved for 15 years or more.
- Minimum number of flash operations to preserve both the flash and the battery.
- Deterministic behavior in the event of unexpected reset.
- 16 and 32-bit MCU support

## Seamless Integration with any RTOS, MCU and Toolchain

HCC has a unique approach to embedded software that means that engineers using HCC software have almost no integration effort and a 'future proof' development roadmap. All HCC software components are developed as target independent packages using HCC's Advanced Embedded Framework. HCC can supply all software as fully integrated source code supplied with abstractions to operate with any RTOS, development board, toolchain or MCU peripheral tested on the target system. Should any of these elements change in future projects, only the framework abstractions change leaving all interfaces to file systems and communications software unchanged – meaning working with HCC software is a long term investment.