

RELEASE NOTES

SPECTROMETER MODULE — RMS1336-01-E

These release notes contain important information about the new firmware and how it will affect the performance of instruments in which it is installed. Please read the notes before attempting to use the new firmware.

1. MODIFICATIONS

- 1.1 Execution of the binary to ASCII conversions on the first thirteen 24-bit integers of the spectrometer data, requested by the MCM through 'SPASC', is now forced to take place in real-time. The original intention of this conversion was only to allow visual checking of the ASCII data — its relatively long execution time made it undesirable for real-time implementation. Testing, however, has shown that the conversions can be handled in real-time with no major effect on performance. The (only) benefit for the user is in that the converted data is now suitable for recording (as well as visual checking).

The total response time of the spectrometer module (SPECTM) has been increased as a result of the modification described above:

$$T_s \text{ [typical]} \approx 199 \text{ [ms]} + T_r$$

$$T_s \text{ [worst-case]} \approx 216 \text{ [ms]} + T_r$$

where:

T_s = Total response time (synchronous, or real-time conversion). The time between the trigger of the spectrometer by the SPECTM, and the SPECTM indicating to the MCM that a block of data is ready.

T_r = Spectrometer response time. The delay before the spectrometer starts sending data, after it has been triggered.

For the previous version of the firmware (non-real-time conversion), we had:

$$T_a \approx 183 \text{ [ms]} + T_r$$

where:

T_a = Total response time (asynchronous, or non-real-time conversion).

- 1.2 The SPECTM will now time-out if an on-going (32-byte) block transfer is not completed within 2 seconds. The condition is reported as a "Spectrometer Length Error".

This modification is intended to prevent a potential deadlock situation: if during a block transfer one (or more) of the strobe pulses from the spectrometer is missed by the SPECTM hardware (because of being too short, having excess noise, etc.), the latter would wait indefinitely for the missing data; if the spectrometer also waits for the 1/2-empty pulse indefinitely, the system will be effectively deadlocked.

2. COMPATIBILITY

Firmware revision RMS1336-01-E of the Spectrometer Module is compatible with MCM firmware revisions RMS1551-01-A (or later) and/or RMS1337-05-D (or later).