

HIGHLIGHTS OF V4.37/3.37 & V4.36/3.36 SOFTWARE RELEASE

V4.36 for the DMXter4/4A and V3.36 for the MiniDMXter4 are primarily releases that enhance the RDM responder.

The main focus is on the needs of a user doing software development/verification. It will have value to those using the DMXter/Mini as teaching tools. V4.37 adds one major test - Baud Rate Measurement. It adds some other small changes.

Release Notes for V4.37 January 2019

Shows a warning in "Flavors-Interleave" if NSC is disabled	15.12.6 (manual reference)
Adds "Message-Count non-zero" to Specific Tests	16.4.25
Baud Rate Validating Routine	5.10.4.6

This routine is found in the Advanced Receive Menu in version V4.37 for the DMXter4/4A. It will be placed between 5.10.5 and 5.10.6 of the V4.3 manual. It is useful for validating bit banging routines or routines getting the baud clock from the micro controller's internal oscillator. Many micro controllers that claim 2% accuracy for their internal oscillator cannot meet that accuracy across their entire operating range of voltage and temperature.

The routine works by measuring the low (spacing) period of the DMX data stream (4, 8, ... , 36 μ s). Any low on a properly functioning DMX line should be a multiple of 4us or >92us. Slots with longer sequences of zero bits will give more accurate readings (such as 0x00 and 0x80).

This routine measures and reports the baud rate of a DMX data stream over a range of +/-5% of 250K baud. The E1.11 DMX Standard requires +/-2% accuracy. The DMXter reports the results in hundredths of a baud. The clock in DMXters is not normally traceable. By design it is within 60ppm of its 16MHz target. Normally the results are valuable without calibration. (Measurement of the main clock of the DMXter4/4A is possible - consult the factory.)

Requirements & Limitations

- Test requires a clean, well terminated line. Reflections will cause measurement errors.
- A large amount of line driver asymmetry will result in inaccurate measurements.
- RDM Discovery may cause baud rate measurement errors
- Turn off RDM Discovery, or make sure all responders have been discovered before measuring baud rate

Error Reporting

The DMXter4/4A reports certain data stream errors that can be of concern. They are:

"**Short**" is any low pulse less than 3.8us long . This time reflects a nominal 4us (1-bit) pulse that is sent 5% fast.

"**Between**" is any low pulse that falls between the valid bit times. For example: a 10us pulse is "between" because it's too long to be 2 bits, but too short to be 3 bits.

"**Long**" is any low pulse greater than 37.9us long that is too short to be a break. 37.9us reflects a 36us (9-bit) pulse that is sent 5% slow.

"**Runt**" means multiple edges occurred too close together for the DMXter to measure, i.e two or more edges that are less than ~1.5us apart.

Entry Point: | ADVANCED RECEIVE |
 | MEASURE BAUD RATE? |

Measurement Data and UI:

The following displays show which lengths of low pulses were used to make the baud measurements.

Summary Display

```
|SUMMARY (BKPS)           |   |SUMMARY ERROR:SBLF |  
|249.35 250.00 250.65|   |249.35 250.00 250.65|
```

The first number on the bottom line is the slowest baud seen from any bit length measured. The middle number is the last baud measured. The right hand one is the fastest baud rate seen. Measurement errors will show on the top line as "ERROR" followed by one or more characters. The characters are: 'S'hort, 'B'etween, 'L'ong, 'F'alling-runt, and 'R'ising-runt.

The next nine display windows show the lowest, last, and highest baud rate as calculated from one of the bit lengths seen in the DMX data stream. The number on the top right is the number of samples of the particular bit length. You can use <Up> or <Down> to see data for each bit length.

```
|BIT -1          12345| thru |BIT -9          278080|
|249.36 250.00 250.64|      |249.35 250.00 250.65|
```

```
| BREAK COUNT |
| 118844 |
```

This is the number of breaks seen since the last time the routine was reset.

Regularly seeing any of the following errors means that there are serious data problems which may or may not be related to the baud rate. One should be careful how much trust one should put in the baud measurements in the presence of these errors.

```
| SHORT BETWEEN LONG | |RUNTS: FALL RISE|
| 0 10 0 | | 0 0 0 |
```

Rise and **fall** are a count of rising or falling glitches. Any error reported here is likely to mean that the baud rate measurement is invalid.

Scope Trigger:

```
|SCOPE TRIGGER >OFF<|
| SHT BTW LNG RUNT |
```

Scope Trigger is a 0.5µs pulse on Pins 4+5 that occurs 1 to 2 µs after the event. The Scope Trigger triggers on error conditions.

What is in the V4.36 Update

RDM Responder:

Software package affected:

Added Custom Sensor	ADV RDM
Added Record Sensor PID	ADV RDM
Allow pending queued and status messages to be canceled from the keypad	ALL
Added Selftest PID support	ALL
Count – Status Messages , Queued, "Get_last" requests	ALL
Added a queued message for an unsupported PID	ADV RDM
Added a queued message for a nonexistent PID	ADV RDM
Added a queued message with the message count stuck on	ADV RDM
This feature sends a DMX Personality PID every time the controller asks for a queued message	
Added a routine that causes the Message Count to never reach zero	ADV RDM
Added the ability to send a Corrupt Status Message	ADV RDM
Added a routine to bypass flavor range limits	ADV RDM
Added a routine to generate custom status messages	ADV RDM
The DMXter asks for confirmation when ending a responding session via <OFF> or <Back> keys	ALL

RDM Controller

Changed Reset Min/Max to Reset/Clear Sensor to better align with E1.20's text.	ALL
Added Slot ID Definitions from ESTA website to Table C2	ALL

Advanced RDM only

Track Min/Prev/Max stats on number of bytes in DUB Response	ADV RDM
Added Send One NSC to Advanced RDM. The entry point is visible only when interleaving DMX is disabled.	ADV RDM

RDM Sniffer

The Sniffer asks for confirmation when ending a sniffing session via <OFF> or <BACK>	ADV RDM / Sniffer
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Cost: \$50. Free if you purchased a unit or a software upgrade within the last year. Please provide serial number of your unit with order.

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