## New features in Micro-Scope 3a (V7.1) firmware release

The new features in this release are all aimed at making it easier for the user to analyse data and identify network problems with non-zero start code DMX512 data.

The concept of the start code has existed in DMX512 since the protocol was designed, but has only seen widespread use in recent years. The start code is a single byte of data that is transmitted after the Break and before the data. Its purpose is to define the meaning of the remaining data in the packet.

A start code value of zero defines the data as 'lighting levels' and this is the bulk of the data that will be found on a DMX512 network. Other start codes are used to transmit other types of data such as Remote Device Management.

This release makes it simpler to isolate data and timing related to these different start codes.

### Packet counter

Previously menu 2 was used to analyse System Information Packets (SIPs). SIP is a feature of DMX512-A which never really caught on and its functionality has largely been superseded by RDM. This menu has been replaced with a packet counter that displays the following information:

- Pk. The total number of DMX512 packets received irrelevant of their start code.

- Sc. The total number of DMX512 packets received with a start code matching that set in menu 4. If the start code in menu 4 is set to 'Don't Care' (Toggle Key) this will display the same number as 'Pk'.

- RDM. The total number of RDM packets received (including both draft and standard start codes).

- Fer. The total number of framing errors detected. Before the advent of RDM a framing error was simply an error. RDM makes use of collisions to discover devices on the network. These collisions generate framing errors. So this counter can be used to see whether RDM discovery is in progress.

The 'Toggle' key is used to reset all counters to zero. In order to display the maximum possible count range, the data is displayed in hexadecimal.

### Scope Trigger

The operation of the scope trigger (pins 4&5 of DMX512 output connector) has been greatly improved. In previous versions the scope trigger output a pulse synchronised to Break and selected display start address.

In this release the scope trigger is now synchronised to the start code selected in menu 4. The rising edge of the scope trigger occurs 50uS after detection of a DMX512 packet with the selected start code. This allows a scope to be used to view DMX512 frames with a specific start code.

(Continued overleaf...)

*www.ArtisticLicence.com*

The falling edge remains synchronised to the start address selected in menu 1. This is useful for two reasons:

1. It allows a specific data slot to be viewed on a scope by triggering on the falling edge of the scope trigger.

2. If the start address is set to a large value, the trigger will only occur for packets containing at least that many slots. DMX512 packets such as RDM are valiable length, so it is possible to capture specific lenth packets on the scope.

Timing Analyser

The DMX512 timing analyser in menu 1 has been improved and now displays data specific to the selected start code (menu 4). That is:

- 'P' This is the period or time between DMX512 frames. If the start code (menu 4) is set to 'don't care' this will display the time between all consecutive frames. In networks containing RDM that can be difficult to interpret as the packet lengths are so different. When the start code is set to a specific value, the time period displayed will be a measure of the time between DMX512 breaks of consecutive packets with that start code. The result is a more accurate view of packet timing and bandwidth use.Sc. The total number of DMX512 packets received with a start code matching that set in menu 4. If the start code in menu 4 is set to 'Don't Care' (Toggle Key) this will display the same number as 'Pk'.

- 'Bk' This is the break time. If the start code (menu 4) is set to 'don't care' this will display the break time of all frames. It can be useful to view the break time of packets with a specific start code, which is achieved by setting the start code in menu 4.

- 'MaB' This is the mark after break time. If the start code (menu 4) is set to 'don't care' this will display the mark after break time of all frames. It can be useful to view the mark after break time of packets with a specific start code, which is achieved by setting the start code in menu 4.

- 'C' This is the number of data slots in the DMX512 frame. If the start code (menu 4) is set to 'don't care' this will display the count for all frames. This can be difficult to interpret in networks containing data with multiple start codes. When the start code is set to a specific value, the 'C' count will show the number of data slots in all frames which match.