RDM:

A Very Brief Introduction

A White Paper

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Introduction

For those of you who are still unaware, and hopefully that's very few of you, RDM (Remote Device Management) is a lighting control protocol which allows so called 'controllers' and 'responders' to talk to each other, passing useful lighting orientated messages backwards and forwards with the intention of making the lighting users life a little bit better and easier. The 'controller' will often be your lighting control desk, and the 'responders' will typically be what your lighting desk is controlling. The moving lights, LED fixtures, smoke machines and fans etc that constitute your lighting rig.

The clever bit about RDM is you don't need to add any extra cable or equipment to use it. The DMX cable you have already run out is also your RDM cable. (With one small caveat we will come on to later).

A Bit Of History On RDM

RDM became a ratified ANSI standard (BSR E1.20, since you ask) in 2006. It does not belong to any one particular manufacturer. Anybody can produce RDM enabled equipment and anybody can use it.

As with anything 'new', RDM had to establish itself in the marketplace and some felt initial take up was a bit slow.

Back in 2006 the birth of RDM wasn't all plane sailing. RDM is much more technically challenging than DMX for manufacturers to implement and some mistakes were made along the way. The original standard had a few loopholes but a revision in 2010 went a long way to making things better.

Leap forward 14 years and RDM has come of age and well and truly taken its place as a tried and tested addition to the lighting toolbox.

Nearly every control desk manufacturer has elected to include an RDM controller in their lighting consoles and you will be hard pressed to buy a new lighting fixture which does not 'talk' RDM.

The ***RDM standard*** mandates that in order to be an 'RDM fixture' it must support a minimum set of functions, perhaps most useful being the 'Identify' command, which allows the user to identify exactly which devices they are currently talking to (typically by flashing itself on and off) and the ability to remotely set the devices DMX address.

But RDM is capable of much, much more and most manufacturers go on to allow many or all of the fixtures modes and user options to be set remotely and information such as lamp hours, set up configuration and error messages to be reported back to the user. Some manufacturers have abandoned the traditional '4 buttons and LCD display' user interface altogether and moved towards RDM being the only method of configuration.

And RDM doesn't just find its way into lighting fixtures. Any device that is controlled by DMX can make use of RDM.

RDM As An Electrician's Tool

RDM controllers built in to lighting consoles are useful for programmers and operators but electrician's and technicians are also catered for with a range of portable battery powered RDM controllers. These are great for configuration in a workshop or on stage during a load in when there might not be access to a lighting desk.

Many manufacturers have offerings. Some are completely self-contained with their own LCD display screen; others need the help of a laptop to operate.

Special mention here should go to City Theatrical's very own DMXcat® which has raised the bar and puts easy RDM configuration and DMX fixture testing into anybody's hands using their mobile phone as the display and interface. (Notwithstanding the fact this article is appearing in a City Theatrical newsletter, if any manufacturer begs to differ, please let me know. I would love to see your device!)

RDMnet – The Latest Bit!

In September last year (2019) RDM gained another feather in its cap as RDMnet became an officially recognised standard. (ANSI E1.33). RDMnet allows RDM information to be transferred back and forth over an ethernet lighting system. Before RDMnet several manufacturers had produced their own solutions to this problem, but they were largely bespoke to that manufacturer and tied the user in to their equipment. MA Lighting could do it using MAnet, but you had to be using MA nodes. ETC could do it using their ETC Net3, but you had to be using ETC gateways, you get the picture. The one company to buck this trend was Artistic Licence. Since its first release in 1998 Artnet has always been a 'royalty free public domain' protocol, meaning any manufacturer can use it. Artnet 'beat' sACN to be the first public domain method of getting DMX over ethernet and Artnet 'beat' RDMnet to get RDM over ethernet. But the arrival of RDMnet can only be a good thing for the end user, ensuring they have more choice in compatible equipment.

RDMnet – The Future

RDM isn't resting on its laurels. Instead it is under constant development. That is not to say the RDM equipment you invest in today will become out of date. Far from it. Much as a child who learns to speak a language, but then continues to grow its vocabulary, RDM is doing the same. The fundamental RDM 'syntax' remains the same, but the number of devices it can talk to continues to grow with the adoption of new PIDs – Parameter IDs, new 'words' in the RDM vocabulary. Recent updates have seen RDM turning its attention to configuring dimmers, and dimmers these days don't just mean those large racks of tungsten dimmer modules on the side of the stage, it increasingly means low voltage LED controllers. RDM can configure fade curves and PWM frequencies and a host of other features. More recently still RDM has evolved ways of setting ip addresses in networked equipment and a universal means of updating firmware via RDM is currently in development.

City Theatrical themselves have invested heavily in their Multiverse system allowing simultaneous wireless transmission of DMX and RDM data.

One of the strengths of RDM lies in the group of men and women of the ESTA Control Protocols Working Group who maintain and continue to develop the standard. For them it is not their day jobs, but rather a personal passion to keep making it better. As well as holding regular meetings they also organise 'Plugfests' in both North America and Europe. These events allow manufacturers to learn from each other, swapping ideas and techniques, and to bring along their latest pieces of equipment for informal testing. During these practical sessions the maze of interconnecting DMX and network cables have led to the tongue in cheek moniker 'tanglefest'.

RDM. If I Had One Wish.

I mentioned earlier you didn't need to install any special infrastructure to use RDM, and that your existing, good quality, DMX cable would be just fine. And so, it will. With one caveat. The humble DMX splitter. If your show makes use of DMX splitters (or boosters or buffers, call them what you will), they will need to be RDM compatible. When planning new installations this is not a problem, RDM splitters are readily available from any number of manufacturers. The problem arises when hiring or renting your system where lighting shops still have a large incumbent stock of regular DMX splitters which will not pass RDM. (Your fixtures will continue to work just fine through the splitter, It's just you'll never 'see them' beyond that splitter with RDM).

Rental shops and hire companies are under constant designer driven pressure to invest in the latest lighting fixtures which will invariably come with RDM as standard. The pressure to invest in new DMX splitters is less obvious.

A well-designed DMX splitter is relatively bomb proof, and there is, as of yet, no lighting design award category for 'best use of DMX splitter'. While RDM splitters still carry a price premium there is little incentive to invest the money in that direction.

So, if I had one wish it would be for RDM splitters to become the standard in lighting rental stock.

RDM: What Is It Good For?

Well, quite a lot. Here are 3 examples of how I use Remote Device Management in my work as a theatre production electrician:

When rigging LED fixtures FOH in a theatre all those glowing LED indicators are useful to prove the fixtures are getting power as you hang your rig. But during performance they are not so desirable, especially if they distract the audience's eye. I use RDM to turn them off without having to visit each fixture. This is especially helpful if the fixtures are in a hard to access position.

On tour with a show we ask the local house crew to hang many of the FOH fixtures for us. Before RDM each fixture was pre-addressed and labelled and the correct unit had to be rigged in exactly the right position. When touring abroad with crews whose first language was not English this was a slow process and often prone to confusion and error. Now (within reason) I can give a local crew a bunch of lights and just say 'go and hang them' any light, anywhere. I know I can then sort out the DMX addressing using RDM.

Whilst prepping a new show in the workshop I was able to get all the moving lights on 'soak test' together. I used that opportunity to address and configure all the fixtures using RDM and a DMXcat. This saved a lot of button pushes compared to using the menu system on each light.

Conclusion

RDM is here. What ever area of lighting you are involved in, be it as a programmer, operator, or technician, it can provide you with new ways of doing your job and has the potential to make your life easier. If you have not already, I encourage you to give it a go.

Resources:

https://www.rdmprotocol.org/rdm/

https://tsp.esta.org/tsp/index.html

https://en.wikipedia.org/wiki/RDM_(lighting)