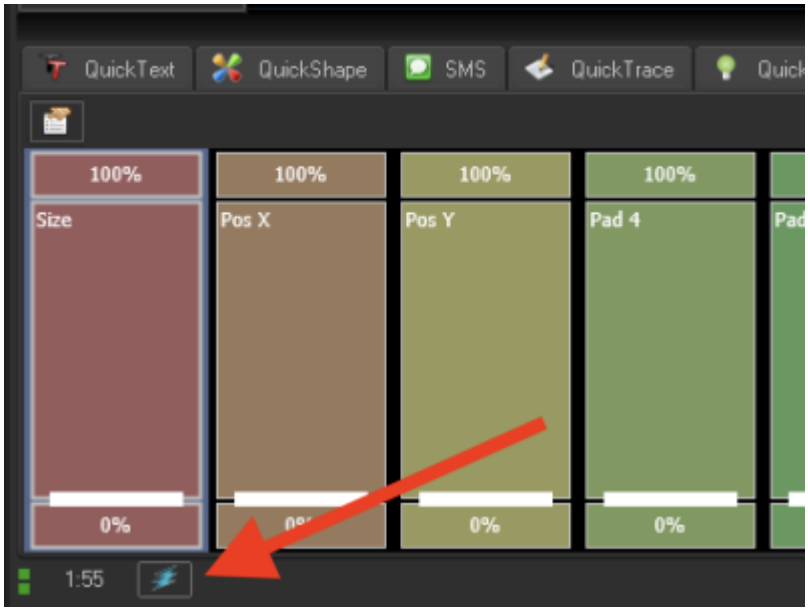
Turbo Streaming

BEYOND 5.5 and up, will be able to use a new communication model aimed at large amount of FB4 laser controllers. You can enable this mode by clicking the Turbo button.

The Turbo button can be found in the bottom bar.



Turbo button	Activity state
	Disabled
	Enabled

The Classic Model

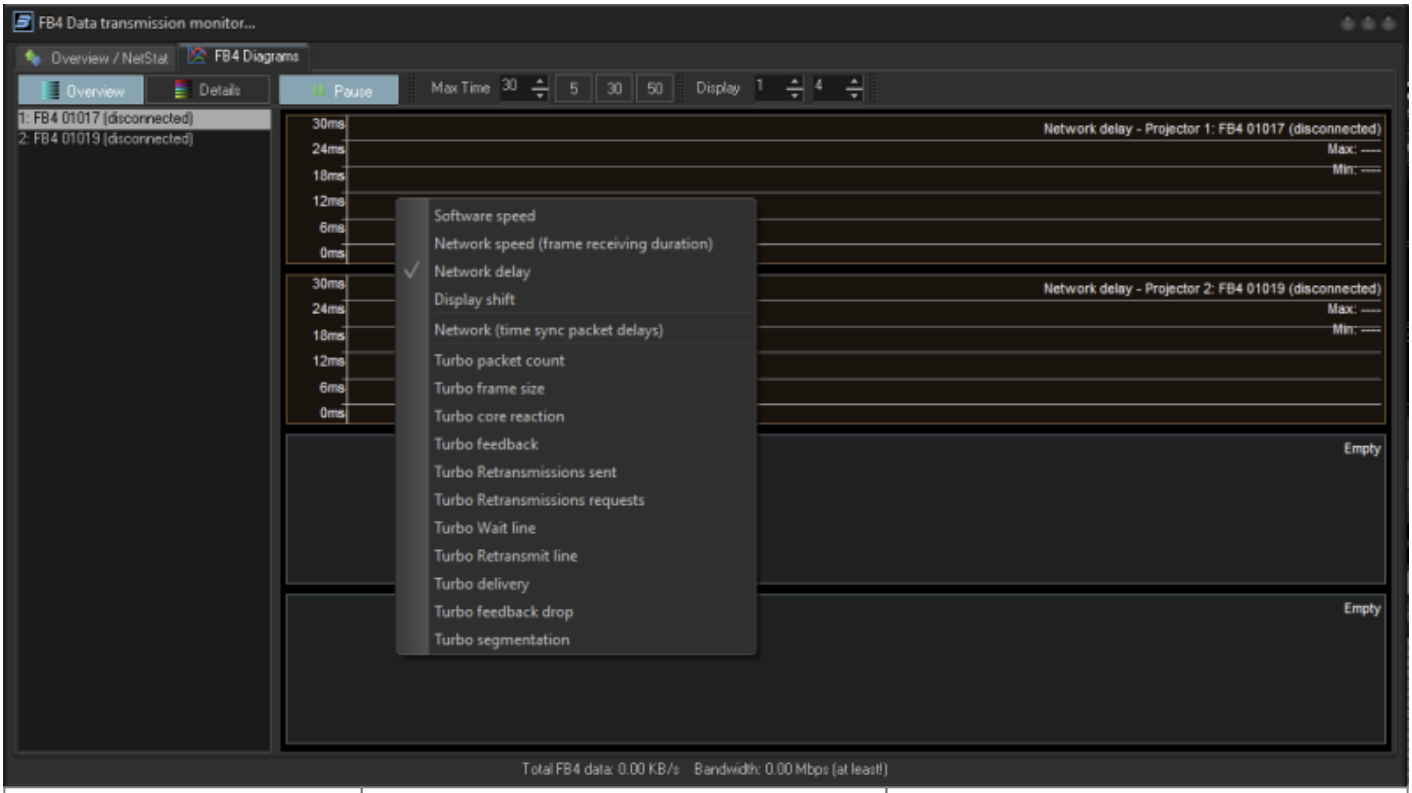
The classic streaming model is the default communication mode.The Classic model is exclusively based on TCP/IP communication. The TCP protocol takes care about data delivery. TCP waits for confirmation to make sure that the data is delivered. TCP communication is recognized as reliable because it will always deliver data but this also has its downsides. TCP does not consider that data might be outdated and will use high segmentation and multiple internal messages for delivery confirmation. In a less ideal situation, this can cause for delays in laser output as it can increase delivery time. Time is a critical thing!

The Turbo mode model

It is not a secret that ArNET and ANN are based on UDP (User Datagram Protocol) communication. UDP is less depended on delivery notifications. What we did in turbo mode is use the best of both worlds. The turbo mode protocol is based on both TCP and UDP.

Monitoring communications

Monitoring of communication between FB4 and BEYOND can be done through the FB4 data transmission monitor Diagrams. The FB4 data transmission monitor has been expanded with the following graphs. which you can access by right clicking on the graphs.



Menu option	Function	Comments
Turbo packet count	displays the number of UDP packets per output frame	
Turbo frame size	displays size of laser frame in bytes	
Turbo core reaction	displays the reaction of streaming core	Expected value 0-2 ms. Otherwise means that CPU is busy. A lower value is better.
Turbo feedback	displays the time between sending a frame and getting a confirmation from FB4	This may vary between 2 till 6 ms, depending on frame size. Overall, this is the round trip time.
Turbo Retransmissions sent	displays the number of retransmissions sent to the wire	Zero is good.
Turbo Retransmissions requests	displays the number of retransmissions requested by FB4	Zero is good.
Turbo Wait line	displays the number of laser frames waiting to be sent	Usually, you should see zero or 1.
Turbo Retransmit line	displays the number of frames waiting for confirmation of receiving	If all is fine – you should see a small number of frames. Frame are removed as soon as confirmed.

Turbo delivery	displays the time between 1st and last segment of laser frame	With good network conditions, time should be up to 3ms for big laser frames.
Turbo feedback drop	displays the number of laser frames where feedback did not arrive.	
Turbo segmentation	displays the graph of packets per laser frame	One pixel is one packet. Normally you should see green dots. If all green – data flows well. If some red – signal of lost packet. Most of parameters are statistics. Keep an eye on the main parameters in case if problems
Turbo Core reaction	displays the core reaction time.	Normally this should be around 1ms
Turbo Retransmission requests	displays the retransmission requests.	If all is well, then should be zero
Turbo feedback drop	displays drops in feedback.	The laser frame may still look correct; however, the confirmation which is send from FB4 to BEYOND is lost.

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