

Stimulation & Stimulus Presentation: Questions and Answers

Stimulus Presentation Webinars:

- [Stimulus Presentation and Event Mark Up with SuperLab](#)
- [Stimulus Presentation and Event Mark Up with E-Prime](#)
- [E-Prime 3 Experiments](#)
- [E-Prime 3 Experiment Creation](#)

Stimulus Presentation Screencasts:

- [Focus Areas | Automatically Create Using Define Between Events](#)

We recommend reviewing this [BIOPAC Knowledge Base](#) entry on preparing electrode sites and this document on [fundamentals of electrode use](#). We also recommend viewing this [video](#) on the EL-CHECK electrode checker, as it provides a good video review of participant preparation and impedance verification.

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Stimulus Presentation Recording

1. Q: I have MP35. Is that similar to MP36R?
A: The MP35 works with the BSLPRO software and doesn't contain all the analysis features that are available in the full version of AcqKnowledge. However, you can still bring the events in from E-Prime and the hardware setup is the same. The only difference will be in the software functionality that is available for analyzing the data.
2. Q: If the participant talks while responding, will it create artefacts? Can this be controlled for during the analysis?
A: Talking won't specifically create artifacts in the EDA and we have many users that record EDA during all kinds of social interactions, including public speaking and group meetings. The best way to prevent artifacts in your data is to ensure that you have everything setup correctly before you start. I would recommend watching some of our webinars on great ways collect data. The webinars describe how to place the electrodes

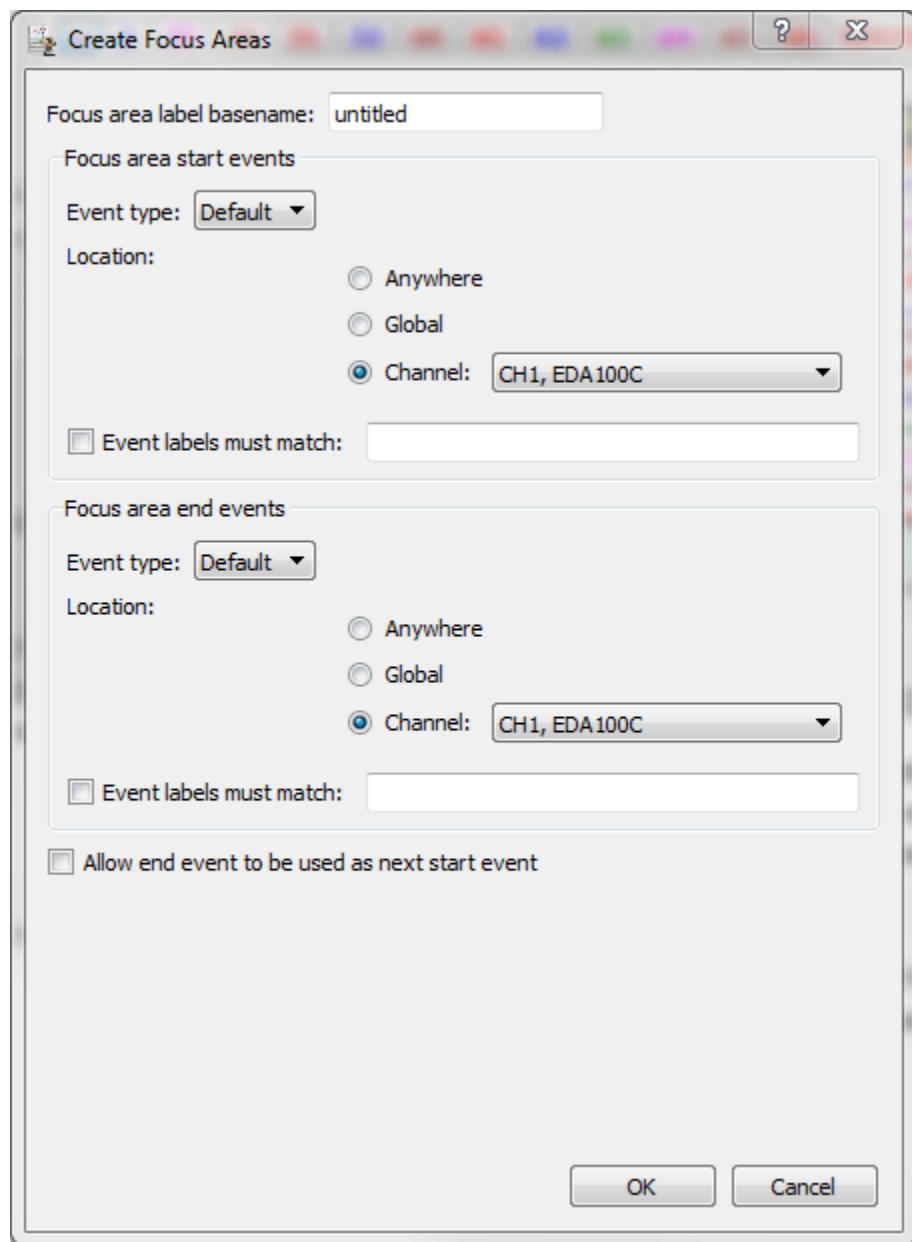
and manage the leads so that you avoid certain types of artifact. The following link will take you to the webinar page on our website where you can watch past events.

<https://www.biopac.com/webinars/>

3. Q: In terms of event marking, what if you are trying to mark an extended period of time rather than just a pulse. So event marking the data being recorded over a given trial block in an experiment that might last around a minute or two?
A: If you want to mark a period around a trial block you can do that automatically using the Focus Areas. See the answer to question 5 for further information. This can also be handled manually by selecting the region of interest and then creating a Focus Area.
4. Q: Is it possible to collect data via the Smart Center while running E-prime on the same computer? If so, is it possible to send triggers/events internally without having to mediate the event signal via an external module?
A: Yes, you can bring the event marks into the BioNomadix Smart Center and this can be done without using the Chronos device. You can interface with the parallel port of the computer and bring the events into the I/O port of Smart Center. The following link will provide you with the appropriate cable option. <https://www.biopac.com/product/io-interface-ttl-inputs/> If you do not have a parallel port, you can also use the following device. <https://www.biopac.com/product/usb-ttl/>
5. Q: Can you do the same with the digital signal if we use parallel port to send different triggers for a certain type of stimuli?
A: Yes, the triggers from the parallel port can be recorded by the BIOPAC hardware and we have cables available for that port. From an E-Prime perspective, the settings used for Chronos are nearly identical to a parallel port, so the DigitalSignal attribute would look either identical or very similar depending on your hardware wiring.

Stimulus Presentation Analysis

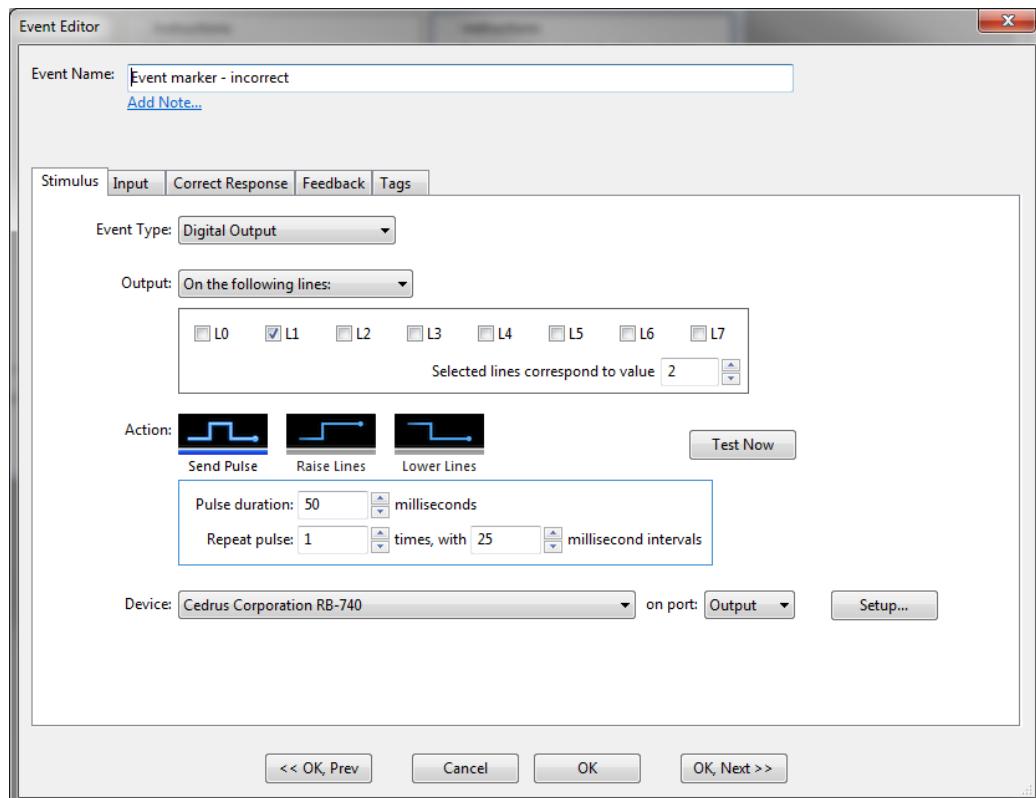
1. Q: Can you explain why you need to subtract 1 from the digital signal values again? And how it relates to the pins?
A: Digital output on any device is 0-based. This is simply common practice in electrical engineering. This means that when you are using a SetBit command in E-Prime, you have to subtract 1 from the bit through which you want to communicate. So if, for example, you would like to send a signal out of the 5th pin, you will have to do a SetBit command of “4” in E-Prime in order to activate the 5th pin.
2. Q: I have an experiment set up in e-prime that turns on the digital input to BIOPAC when a video starts and turns it off when a video ends. Is there a faster way to identify and analyze those specific windows in acknowledge than manually creating focus areas?
A: Yes, there is a faster way to create Focus Areas around specific digital events. From the Analysis menu select the Focus Areas > Define Between Events option. The utility allows you to select event marks to automatically create Focus Areas around specific events. The following image shows the dialog box for creating the Focus Areas and this link will take you to a screencast that describes how to use the utility.
<https://youtu.be/4YSJtaY98a8>



You can also do this with the Find Cycle feature and the following screencast will walk you through the process. <https://www.youtube.com/watch?v=rRQDOVcGBIU>

3. Q: Hello! I am interested to know how to add event markers to SuperLab. Specifically, how does the pulse duration etc works. Thank you!

A: This was covered in the webinar. However, you can use the Event Editor to create a Digital Output that will send a pulse to a specific digital line that can be recorded by a BIOPAC device. The following dialog shows the Event Editor with a digital output enabled.



4. Q: Using AcqKnowledge 4.2 is it possible to do any automated analysis with EDA and event markers without using the focus areas (as it is not an option in the old version)?

A: The automated EDA analysis does not require Focus Areas to work. You can run the analysis over the entire file. The Focus Areas were added to AcqKnowledge 4.3. It is possible to update to the latest version of AcqKnowledge, which is v5.0.2. The following link will provide you with additional information and the second link will provide you with a screencast on Focus Areas. <https://www.biopac.com/product/acqknowledge-software-upgrade-to-current-release/>

<https://www.youtube.com/watch?v=CBYGYkIB9Yo&t=13s>

5. Q: Can you automatically give labels to the triggers if you have more than one type of trigger/event?

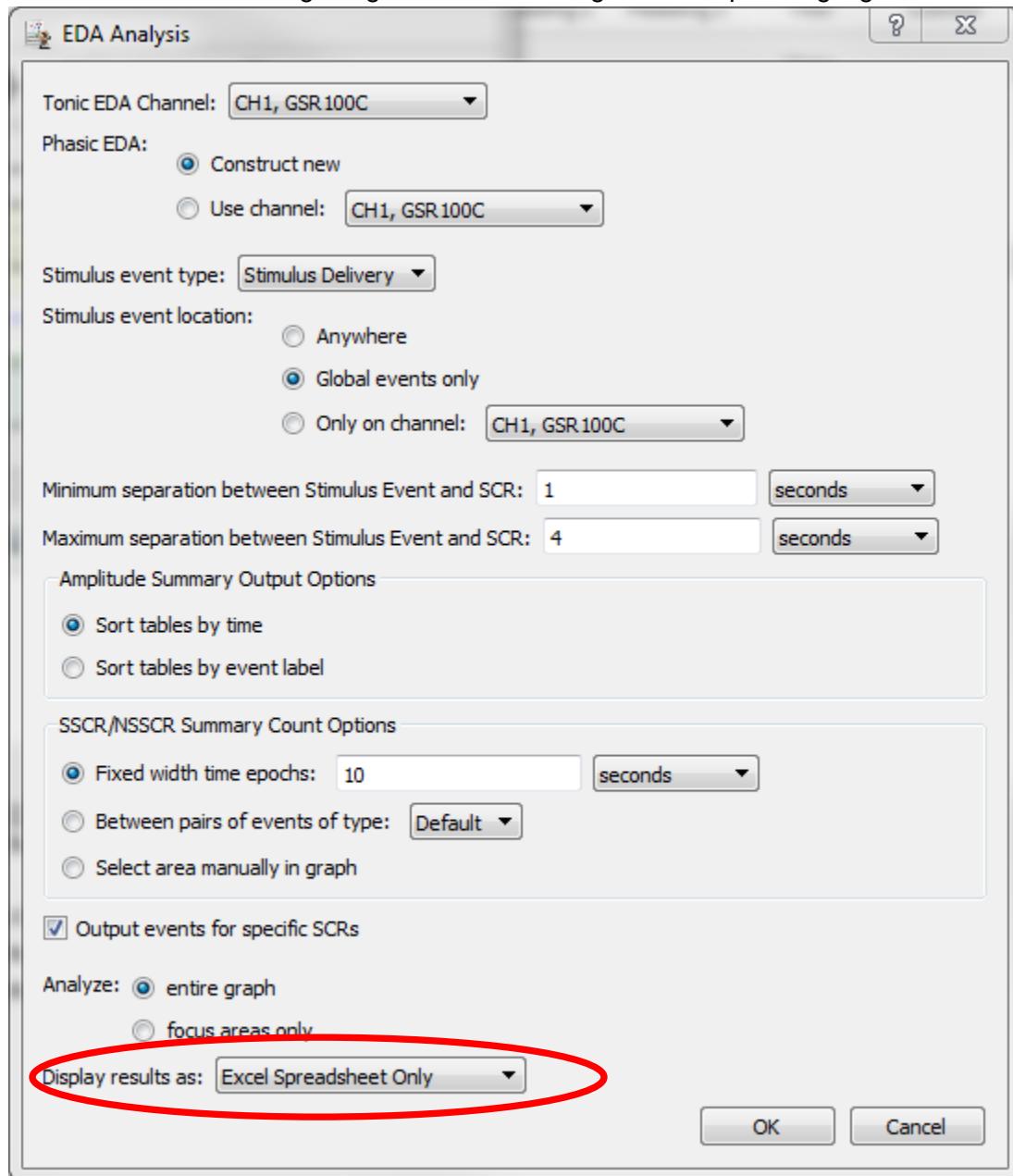
A: When you convert the digital inputs from E-Prime to AcqKnowledge events, AcqKnowledge will automatically assign unique event numbers to the different event types. The experimenter can also edit and customize the labels to match their specific needs.

6. Q: Can you export the results into Matlab?

- A: Yes, you can export the raw data and the results from the analysis to other programs, including MatLab. AcqKnowledge includes a SaveAs filter for MatLab.
7. Q: Could you also send me the links for creating focus areas automatically from events?
A: See the answer to question 5.
8. Q: Would your settings for the digital pulse attribute be the same if you have a calculated channel in AcqKnowledge that automatically converts from binary to integers?
A: Yes, the settings for the digital pulse attribute would be identical if I had a calculated channel in AcqKnowledge that automatically converts from binary to integers. The purpose of the DigitalSignal attribute in the experiment is to determine the exact pin value through which E-Prime is communicating with BIOPAC and does not dictate the actual value of the signal aside from activating that given bit.
9. Q: Can you export the results into R?
A: The results from the EDA analysis are available in Text or Excel format.
10. Q: What if we have different type of triggers for different events in the same digital input channel, how we can distinguish them? can we label them differently?
A: If the digital events are all in the same channel, it is difficult to distinguish them in AcqKnowledge. AcqKnowledge requires the digital event marks to appear on unique digital channels as demonstrated in the webinar. However, if you have all the events on the same channel, you can label them separately, but the labelling will be a manual task.
11. Q: How would you set stimulus onset asynchronous in E-Prime? In order to wait for a certain duration before a trigger is sent.
A: This is very easy to do. All you would have to do is change the Delay property for your Task Events. In the sample experiment that you will receive, the signal and the presentation of the stimuli are time-locked. To delay them by any amount (make them asynchronous), you simply change the Task Event's Delay property to however much asynchronicity that you desire. Keep in mind that this property represents a delay in milliseconds.
12. Q: How we can create focus areas using certain event markers automatically? if we need to do it for a long list of different type of event markers?
A: See the answer to question 5 for further information. The screencast will provide you with a way to automate the process.

13. Q: What did you do to transfer the data to the spreadsheet?

A: When you access the analysis dialog for the Event-related EDA analysis, you can choose where you want the results sent. The default is Excel, but they can also go to the Journal file. The following image shows the dialog with the option highlighted.



Stimulus Presentation System Questions

1. Q: Is Facereader using a webcam only? Would it be considered a supplement to facial EMG or a replacement?

- A: Yes, Facereader is using a webcam that is connected to the PC running the Facereader software and being controlled by AcqKnowledge. Facereader is a good option if you don't want to apply electrodes to the face of the subject, but you must ensure that the subject is always in view of the camera and the camera is able to focus on their facial features. The alternative is to use facial EMG, which is more sensitive and allows the subject to turn away from the camera, but it does mean applying electrodes to the face of the subject. There are pros and cons to both options and experiment design will largely dictate the method of choice.
2. Q: What does it mean that the STP100C provides isolation between the subject and the Chronos device?
- A: The STP100C is used to safely isolate digital inputs (in the range of 0-3.3 V or 0-5.0 V) and outputs to and from an MP System (MP160 and MP150). This provides patient safety when connecting external devices to the MP160 while a subject is also connected to BIOPAC amplifiers. https://www.biopac.com/product/isolated-digital-interfaces/?attribute_pa_size=isolated-digital-interface
3. Q: What's the primary difference between the MP150 and MP160?
- A: The following link will provide you with details about the upgrade from the MP150 to the MP160 system. <https://www.biopac.com/product/mp100-system-upgrades/>
4. Q: How does the face reader work? Is it looking for a specific action unit? or a constellation of units? was it trained on adults, children?
- A: The FaceReader software uses a live video feed from a web cam, or recorded video to analyze the facial expressions of a subject. It accurately models 500 key points on the subject and more than 10,000 still images were used to train the software. The software will analyze six basic facial expressions, plus twenty action units. The software will work with adults and children over the age of three. It is used by more than 500 universities and research institutes. FaceReader uses two methods that work side-by side.
- a Face modeling and classification**—First, a model-based method is used, called the Active Appearance Model (AAM), to synthesize an artificial face model, which describes the location of over 500 key points in the face and the facial texture of the area entangled by these points. The model uses a database of annotated images and calculates the main sources of variation found in the images. Principal Component Analysis compression is used to reduce the model dimensionality. New faces can then be described as deviations from the mean face, using a vector. Then, classification of the facial expressions is done by training an artificial neural network, which takes the above vector as input. As training material over 10000 manually annotated images were used. The network was trained to classify the six basic or universal emotions described by Ekman: happy, sad, angry, surprised, scared, disgusted and a neutral state.
- b Deep face classification**—FaceReader uses a deep artificial neural network to recognize patterns in the face. With this method, FaceReader directly classifies the facial expressions from image pixels. So no face modeling is done. This has the advantage that FaceReader can analyze the face even if it is partly hidden.

Chronos System Questions

1. Q: Aside from the Chronos, which is hardware, does Eprime 3 introduces any new feature to help synchronizing Eprime experiments with external hardware?
A: The main new feature of E-Prime 3.0 that is going to help you with synchronizing E-Prime experiments with external hardware is our Script Task Events feature. This new feature expands upon the pre-existing Task Events feature. Now, not only can you time-lock actual triggers with events and responses in E-Prime but now you can time-lock entire processes allowing you to have more flexibility with the types of triggers that you send. If you would like more information on Script Task Events, we have a YouTube video here: [E-Prime 3.0 Live Stream: Script Task Events](#), a very well-written documentation article about it here: [Script Task Events](#) and a sample is pre-installed on your computer when installing E-Prime 3.0 in the Samples folder.
2. Q: Could you go a bit more in detail on the Chronos 'Expansion Kit i/o' especially wiring & how to use, setup.
A: As far as the setup for the Chronos Expansion Kit is concerned, all you have to do is plug it into the back of the Chronos device and then insert wires into whatever pins you would like to use to send signals from E-Prime. This is all that is needed to set up the I/O Expander kit. BIOPAC offers the complete Chronos system as a bundle with your choice of interface cable. The following link will provide additional information.
<https://www.biopac.com/product/chronos-biopac/>
3. Q: Does Chronos work with E-Prime 2.0?
A: Chronos does work with E-Prime 2.0. Once you purchase Chronos for E-Prime 2.0 you will have to install the device using the included installation disk.
4. Q: Is it bound to Chronos or any other device that has an adequate port?
A: The MP recording devices will accept any digital signal in the 0-3.3 volt or 0-5 volt range.