

## Related Groups of Channels

*It's all in the family!*

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Each analog channel is supported by an analog descriptor entry in the local database. It may be helpful to make associations between channels that are related in some way. A hitherto unused word in the descriptor record has been nominated to fill this need. This note describes its use.

The value stored in the "family" word (at offset 60 bytes in the descriptor, accessible by listype #17) is a delta channel number that indicates the "next" channel in the related group of channels. The value zero then refers to itself. In preparing the family word contents for a group of channels, one should build a chain that links back to itself. In that way, when given any member of the group, one can gain access to all channels in the group. The use of a *delta* channel value means that consecutive channels which all belong to a related group can use the value 1 for the family word. The last channel's family word would likely have a negative value to refer back to the start of the group.

To make accessing the group of related channels easier, a new listype (#49) supports a data request using a channel ident. The returned data consists of a word equal to the number of channels in the group followed by the list of that many channel numbers, beginning with the channel number that was used in the ident. The length of the returned list of channels is also limited to the number of bytes specified in the request. This means that if the size of the group is 9 channels, for example, and the data request is for 16 bytes, the returned data will indicate 7 for the number of channels followed by the first 7 channel numbers in the group.

The motivation for providing this feature was to form a group of channels that all relate to a given timing channel on the Clock Timer board. There are analog channels used for coarse and fine delay control, trigger clock event selection, and clearing all selected trigger events. These can all be formed into a related group, or family, of channels. Given a coarse delay channel, for example, one can ask for the channel group, request the analog control fields for all of the members of the group, and by analysis determine the channels that are used for event selection. The settings of those channels will give the selected clock events for the timing channel.