

Group Addressing and Trigger Model with PMLA Loads

(Firmware Rev. 1.3 or higher)


In a system with many load channels, it is often necessary to assign the same setpoint or switch on several channels simultaneously.

For this purpose, the multi-channel load series PMLA helps with the group addressing function.

The trigger model is used when several channels require different settings to be set simultaneously.



Safety Instructions

 Before starting to operate any electronic load, read the General Safety Instructions and the user manual!

The functions of the electronic load are explained in detail in the user manual. In this Application Note we have compiled the terms and special features of group addressing and trigger model using examples. Here we focus on programming via a data interface.

Terminology and Explanations

Channel, Address

- smallest selectable unit in a system
- up to 72 channels in a system
- address from 1 to 99

Channel Group

- group of assigned channels
- up to 10 groups in a system (group 1 to 10)
- predefined group 10 with all channels of the system
- channels can be assigned to several (also all) groups
- configuration only via data interface (CHANnel : GROUp : MEMBERS <Channels>)

Selection

- channel selection (CHANnel [: SElect]) or group selection (CHANnel : GROUp [: SElect]) via data interface
- selected channel executes following commands and queries
- selected group executes following commands (cannot execute channel specific queries)
- selection of a channel group overrides selection of an individual channel

Namen

- user-defined names ('A-Z', '0-9', '_') for channels (CHANnel:NAME <Number>, <String>) and groups (CHANnel:GROup:NAME <Number>, <String>) via data interface
- selection by name or number

Example 1: Building and Using Groups

3 groups with some shared channels are formed, group names are assigned. The load inputs of the groups are activated one after the other.

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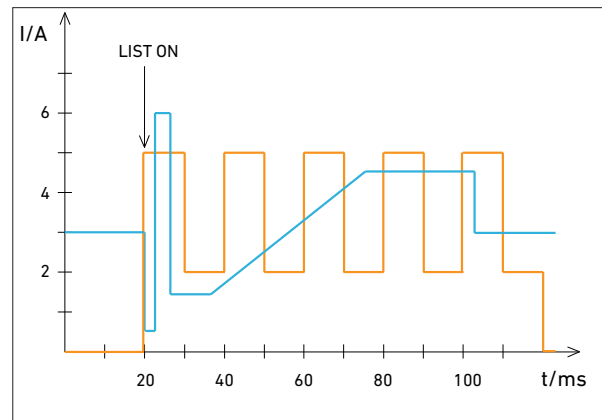
CHANnel:GROup 1
CHANnel:GROup:NAME 1, "LIGHTS"
CHANnel:GROup:MEMBers 1,2
CHANnel:GROup 2
CHANnel:GROup:NAME 2, "DOORS"
CHANnel:GROup:MEMBers 3,4,5,6
CHANnel:GROup 3
CHANnel:GROup:NAME 3, "DOORS_L"
CHANnel:GROup:MEMBers 3,4
CHANnel:GROup:4
CHANnel:GROup:NAME 4, "DOORS_R"
CHANnel:GROup:MEMBers 5,6
CHANnel:GROup LIGHTS
INPut ON
...
CHANnel:GROup DOORS
INPut ON
...
CHANnel:GROup DOORS_L
INPut OFF
...
CHANnel:GROup DOORS_R
INPut OFF
...
CHANnel:GROup LIGHTS
INPut OFF

```

Example 2: Starting Different Load Profiles Simultaneously

Two channels are programmed with different load profiles. To start the two load profiles simultaneously, we combine the two channels in a group.

<pre> CHAN 5 CURR 3;:INP ON LIST:MODE CURR LIST:CURR 0.5,6.0,1.4,4.5 LIST:RTIM 0,0,0,0.038 LIST:DWEL 0.0025,0.0035,0.01,0.028 LIST:COUN 1 </pre>	<p>select channel 5 3 A static, input on list mode current current list ramp list dwell list</p> <p>1 iteration</p>
<pre> CHAN 6 CURR 0;:INP ON LIST:MODE CURR LIST:CURR 5.0,2.0 LIST:RTIM 0,0 LIST:DWEL 0.01,0.01 LIST:COUN 5 </pre>	<p>select channel 6 0 A static, input on list mode current current list ramp list dwell list 5 iterations</p>
<pre> CHAN:GRO 1 CHAN:GRO:MEMB 5,6 ... CHAN:GRO 1 LIST ON </pre>	<p>define channel group assign channels 5+6 to group 1 ... select group 1 start list</p>



Simultaneous start of channel 5 and 6

Example 3: Activating Different Settings Simultaneously by Trigger

Different setpoints shall be set simultaneously in different operating modes at 3 channels. For this purpose, the operating modes, the static setting values and the triggered setting values are specified.

With a bus trigger (*TRG), the triggered setting values are set.

<pre>CHAN 1 FUNC:MODE CURR CURR 1.25;:CURR:TRIG 5.0</pre>	<pre>select channel 1 set op. mode CC set 1.25 A static, 5 A triggered</pre>
<pre>CHAN 2 FUNC:MODE CURR CURR 0;:CURR:TRIG 3.75</pre>	<pre>select channel 2 set op. mode CC set 0 A static, 3.75 A triggered</pre>
<pre>CHAN 3 FUNC:MODE VOLT VOLT MAX;:VOLT:TRIG 11.2</pre>	<pre>select channel 3 set op. mode CV set Vmax static, 11.2 V triggered</pre>
<pre>CHAN:GRO 10;:INP ON ...</pre>	<pre>activate input at all channels ...</pre>
<pre>*TRG</pre>	<pre>trigger event: channel 1 sets 5 A channel 2 sets 3.75 A channel 3 sets 11.2 V</pre>