

BEP
LEADING ELECTRICAL DESIGN

MASTERVOLT

CZONE™



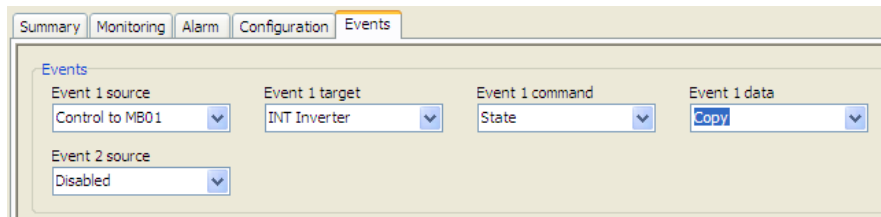
Mass Sine CZone™ Configuration Instructions

Configuration within MasterAdjust

First, ensure both the Mass Sine and the MasterBus Interface are both powered and connected, along with a MasterBus USB interface, to the MasterBus network. If all of this has been done the Mass Sine and the MBI will be listed, with any other MasterBus Compatible devices also connected to the network, in the left column on the MasterAdjust Screen.

Inverter On/Off Control

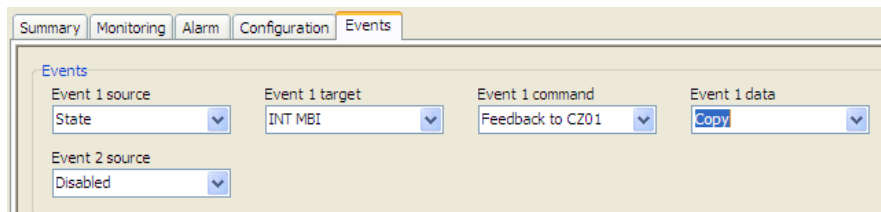
1. Select the MBI (default name: "INT Bridge") from the list of MasterBus devices, navigate to the 'Events' tab and create a new event using the following settings to allow a control signal from CZone™ to MasterBus to control the Mass Sine's On/Off state.



The screenshot shows the 'Events' configuration window in MasterAdjust. The 'Events' tab is selected. Under the 'Events' section, there are two event configurations. Event 1 is configured with the following settings: Event 1 source is 'Control to MB01', Event 1 target is 'INT Inverter', Event 1 command is 'State', and Event 1 data is 'Copy'. Event 2 source is set to 'Disabled'.

2. Select the Mass Sine (e.g. INT Inverter) from the list of MasterBus devices and create a new event using the below settings to allow the Mass Sine's On/Off status to be fed back to CZone™ as a feedback/'systems in operation' signal.

Note: For every control event programmed from CZone™ to MasterBus, a corresponding feedback event needs to also be programmed.



The screenshot shows the 'Events' configuration window in MasterAdjust. The 'Events' tab is selected. Under the 'Events' section, there are two event configurations. Event 1 is configured with the following settings: Event 1 source is 'State', Event 1 target is 'INT MBI', Event 1 command is 'Feedback to CZ01', and Event 1 data is 'Copy'. Event 2 source is set to 'Disabled'.

Inverter Monitoring

To allow AC/DC data, as well as the inverter and charger state (e.g. Bulk, Float, etc.) to be shown in CZone™, the individual MasterBus data items (voltage, current, state of charge, etc.) need to be selected in order to populate standard NMEA2000 AC/DC/Charger Status PGN messages which are to be transmitted and monitored within the NMEA2000/CZone™ network. Each of these sets of AC/DC/Charger Status data items are configured within the MBI Configuration tab using data item index values retrieved from the Monitoring tabs of devices presenting the information.

Inverter Status

Select the MB Bridge (INT Bridge) from the list of MasterBus devices and go to the Configuration tab.

1. In the first available Metering field (in this example Metering 1) click on the 'Type' dropdown and select Inv/Chg Status. (The same data type is used for both Charger and Inverter Status items)
2. Click the 'Device' dropdown and select the Mass Inverter (e.g. INT Inverter). This indicates that the data item being configured will come from the Mass Sine.
3. Click the 'Inverter status' dropdown and select 'Monitoring'. This indicates that the data item being configured will come from the Monitoring tab of the Mass Sine.
4. To figure out the correct 'Inverter status' index to enter, click on the 'INT Inverter' in the device list on the left of the screen. Navigate to the 'Monitoring' tab. Hover the mouse pointer over the Inverter State parameter. The Index Number will appear beside the mouse pointer – note this number down. Return to the 'Configuration' tab of the MBI and enter the index number just noted down into the 'Inverter status' number box.

The image shows a configuration window titled "Metering 1" with the following fields and values:

- Type: Inv/Chg Status (indicated by red arrow 1)
- Device: INT Inverter (indicated by red arrow 2)
- Inverter status: Monitoring (indicated by red arrow 3)
- Inverter status: 0 (indicated by red arrow 4)
- Charger status: Not selected (indicated by red arrow 5)
- Charger status: 0

5. Leave the 'Charger status' items as 'Not selected'.

Configuration within CZone™

Open the CZone™ Configuration Tool.

Controlling the Inverter

The control mechanism between CZone™ and MasterBus functions by configuring virtual loads (MasterBus Event Sources) within CZone™ which subsequently function as virtual switches (Control to MB) within MasterBus. To control one of these virtual switches, a load must first be configured within CZone™ and programmed to turn on/off within a CZone™ circuit. The corresponding switch within MasterBus will then follow the state (on=closed, off=open) of this virtual load (MasterBus Event Source).

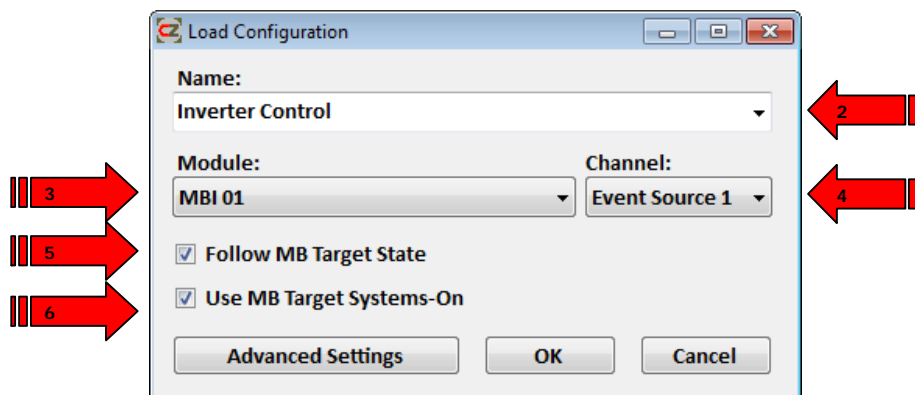
The virtual load (MasterBus Event Source) can be configured within CZone™ as follows.

Ensure that the MBI has been added to the configuration within the 'Modules' tab.

Inverter Load Configuration

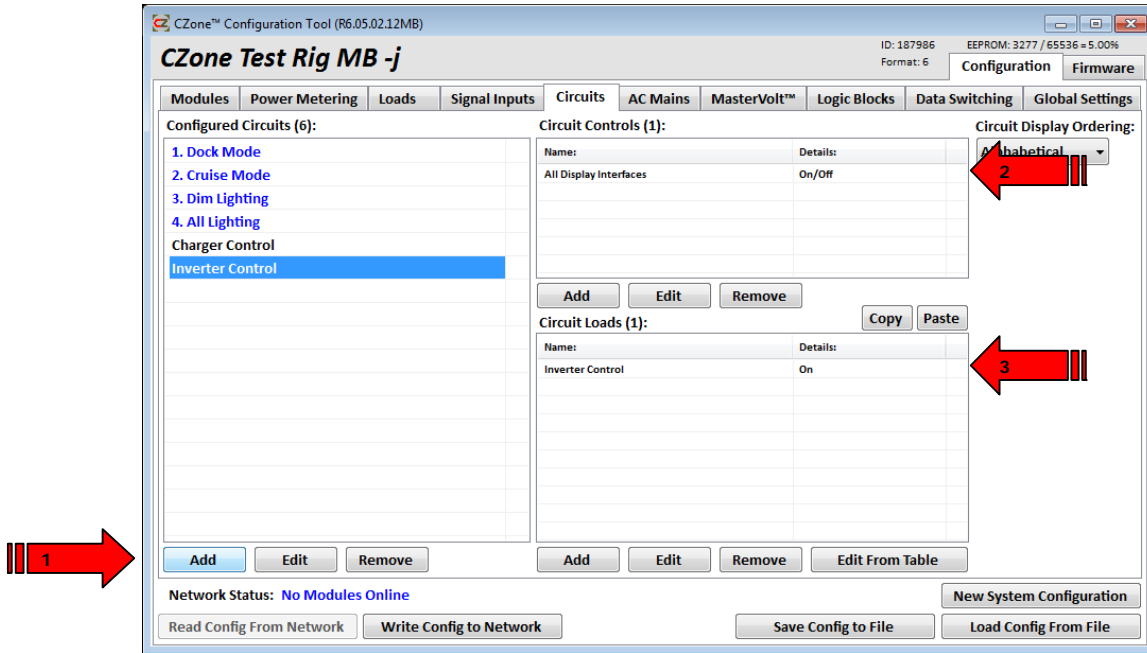
1. Go to the 'Loads' tab and then click 'Add'.
2. Enter a name for the virtual load/MasterBus Event Source (e.g. "Inverter Control").
3. Click the 'Module' dropdown and select the 'MBI' previously added in the Modules tab for this example we are using 'MBI 01'.
4. Click the 'Channel' dropdown and select the Event Source number configured above in MasterAdjust to control the inverter On/Off state (for this example we are using 'Event Source 1').
5. Tick the box 'Follow MB Target State' checkbox. This ensures that the virtual load (Event Source) on/off state follows the on/off state of the Mass Sine. This is important when the Mass Sine is also controlled from outside of CZone™ – if the virtual load remains off when the Mass Sine is turned on externally, turning the virtual load off in order to turn the charger off will have no effect. The virtual load (Event Source) state must therefore follow the target device state in order for on/off commands from the user to always function correctly.
6. Tick the 'Use MB Target Systems-On' checkbox. This ensures that the systems in operation indicators for any circuits in which this virtual load are used will follow the on/off state of the target MasterBus device (which needs configured in MasterAdjust to be fed back to the MBI, as above). If this checkbox is not ticked, the systems in operation for the virtual load will follow the state of the virtual load, which may not correctly indicate the state of the target device (this would be like indicating the state of a switch rather than indicating the state of what the switch controls).

The advantage to having this box not ticked is that the systems in operation feeds back instantly, which can be preferable when there is a significant delay in the feedback event from the target device within MasterBus. For the Mass Sine there is a delay of 2-3 seconds in the systems in operation feedback from the charger, so it may in fact be preferable to leave the 'Use MB Target Systems-On' checkbox not ticked.

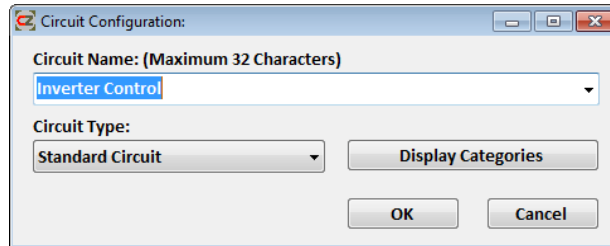


Inverter Circuit Configuration

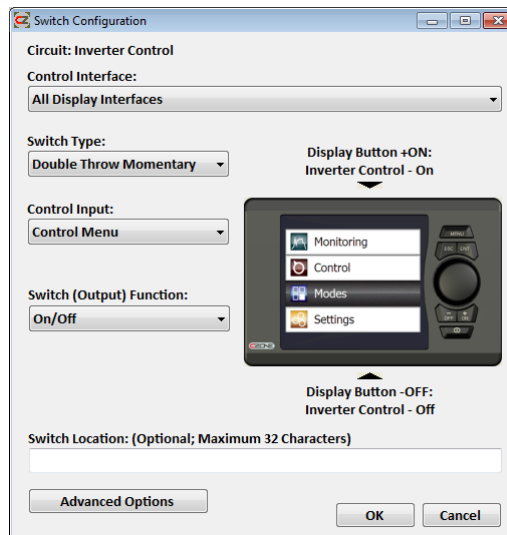
Here is where we set up the circuit to control the virtual load we just created for the Inverter Control.



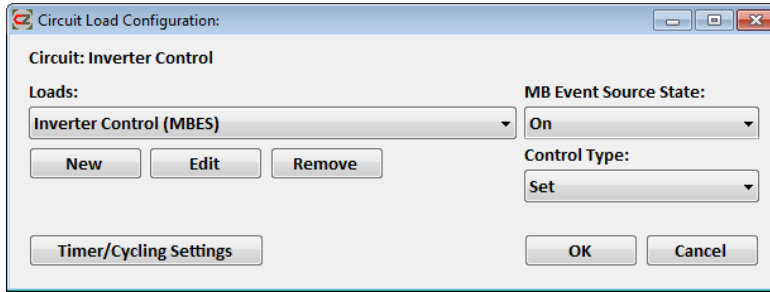
1. Go to the 'Circuits' tab. Under 'Configured Circuits' select 'Add'. Create a standard circuit, in this example called 'Inverter Control'.



2. Under 'Circuit Controls' set up an 'All Display Interfaces' switch as a Double Throw Momentary On/Off. Note: If control is only required within the CZone™ 'Inverter/Charger Control' page and not within the standard 'Circuits' menu, there is no need to add this 'All Display Interfaces' circuit controller.



- Under Circuit Loads select the MasterBus Event Source virtual load we created above in the Loads section (e.g. "Inverter Control").



Mastervolt™ Device Configuration

Here is where we set up the parameters to enable all of the data configured for the Mass Sine to be displayed on a single diagram within the CZone™ Inverters/Chargers Control menu.

1. Go to the 'Mastervolt' tab and then under the 'Configured Mastervolt Inverter/Chargers' section click 'Add'.
2. Enter a name for the device (e.g. 'Mass Sine').
3. Click the 'Inverter/Charger Status Metering Item' dropdown and select the metering item number used for the Inverter/Charger status configured in the MasterAdjust section above (i.e. Metering 1).
4. Click the 'Device Type' dropdown and select 'Mass Sine Inverter'.
5. Click the 'Charger Instance' dropdown and select 'None / Inverter Only'.
6. Click the 'Inverter Instance' dropdown and select a unique NMEA 2000 Inverter Instance (these instance numbers must be different for each charger added to the system).
7. Click the 'Inverter Output AC Instance' dropdown and select None. Unless you have already configured an 'AC Meter' under the 'Power Metering' tab using a device such as an ACMI.
8. Click the 'Inverter Control Circuit' dropdown and select the 'Inverter Control' circuit configured above (i.e. Inverter Control)

The screenshot shows the 'MasterVolt™ Inverter/Charger Setup' dialog box. It contains several dropdown menus for configuration. Red arrows with numbers 2 through 8 point to the following fields:

- 2: Device Name (Maximum 32 Characters) - Mass Sine
- 3: Inverter/Charger Status Metering Item - MBI 01 - Metering 1
- 4: Device Type - Mass Sine Inverter
- 5: Charger Instance - None / Inverter Only
- 6: Inverter Instance - 0
- 7: Inverter Output AC Instance - None
- 8: Inverter Control Circuit - Inverter Control

At the bottom of the dialog are 'OK' and 'Cancel' buttons.

At this stage we are ready to save and write the CZone™ configuration to the network and see it all in action.

Below is an example of what will be shown in the 'CZone™ Inverters/Chargers Control' page for the example configured above:

