

# Parameters

## Object's Attributes

Each CANopen Object in emDrive inverter has several attributes. Following attributes are related to changing, storing and loading values of objects.

| Attribute     | Description  |
|---------------|--|
| Access Type   | Defines if the object is readable and/or writable  |
| Default Value | Default value is value that the object is set to when setting parameters to factory/manufacture defaults |
| Read Level    | Access level that is required for reading value of object  |
| Write Level   | Access level that is required for writing value to object  |
| Persistent    | Defines if the value of object is saved in permanent storage (keeps value after reboot or power cycle)   |

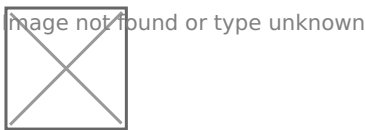
Object which have Persistent attribute set to "1" are stored in permanent memory and are therefore called "**Parameters**".

Objects attributes are visible in EDS or DCF files.

See [Access Levels](#) for more information about access to objects.

## Parameters Sections

There are several different "sections" where parameters can be saved or restored from.



## Current Parameter Values

Current value of parameter that is in use. These values are used by applications, firmware and can be accessed and changed via CANopen or custom CAN messages, depending on inverter.

## Manufacturer Default Values

These values are hardcoded into firmware and are used to restore the device to factory default configuration. See section "Restore Manufacturer defaults - "Factory Reset" (5)"

## Customer Default Values

Customer defaults is a special section that can be used by Emsiso customer during their configuration or alternatively can be loaded at production. Customer has then the ability to reset configuration to their desired defaults i.e. "Customer defaults" without completely resetting parameters to factory defaults.

See sections "Saving to Customer defaults (3)" and "Restore Customer defaults (4)" on how to store values and restore values from this section.

## Device Parameter Values

Parameter values stored into permanent memory that are loaded at every power up. See section "Saving Device parameters (1)" on how to save current configuration.

There is also an additional section "Calibration parameter" which is used for calibration in production. Customer does not have access to it. Objects that are stored in that section will be loaded from that section at powerup.

# Saving and Restoring Parameters

## Saving Device parameters (1)

Saving parameters is done by SDO write to CANopen object with index 0x1010 - "Store\_Parameters\_Field". Writing value 0x73617665 (ASCII "save") or byte swapped value 0x65766173 to any of sub indexes 0x01-0x04. Return status of SDO write will indicate success or failure.

Saving can also be done within emDrive Configurator by selecting "Device" -> "Save parameters" or by using shortcut "CTRL + S".

 Saving parameters in emDrive Configurator

## Saving to Customer defaults (3)

Saving parameters to "Customer Defaults" section is done by SDO write to CANopen object with index 0x1010 - "Store\_Parameters\_Field". Writing value 0x73617665 (ASCII "save") or byte swapped value 0x65766173 to sub index 0x05 "Save\_Customer\_Defined\_Parameters. Return status of SDO write will indicate success of failure.

Saving can also be done within emDrive Configurator by selecting "Device" -> "Save to customer parameters" or by using shortcut "CTRL + SHIFT + S".

image.png Saving parameters to Customer defaults in emDrive Configurator

Saving to Customer defaults is only possible with Access Level 2 (Customer) or above.

## Restore Manufacturer defaults - "Factory Reset" (5)

Restoring parameter values to manufacturer defaults is done by SDO write to CANopen object with index 0x1011 - "Restore\_Default\_Parameters". Writing value 0x6C6F6164 (ASCII "load") or byte swapped value 0x64616F6C to any of sub index 0x01-0x04. Return status of SDO write will indicate success of failure.

Restoring can also be done within emDrive Configurator by selecting "Device" -> "Set parameters to manufacturer defaults" or by using shortcut "CTRL + D".

image.png Setting parameters to manufacturer defaults in emDrive Configurator

Restoring from manufacturer defaults is only possible with Access Level 2 (Customer) or above.

## Restore Customer defaults (4)

Restoring parameter values to Customer defaults is done by SDO write to CANopen object with index 0x1011 - "Restore\_Default\_Parameters". Writing value 0x6C6F6164 (ASCII "load") or byte swapped value 0x64616F6C to sub index 0x05 "Restore\_Cusstomer\_Define\_Default\_Parameters. Return status of SDO write will indicate success of failure.

Restoring to Customer defaults can also be done within emDrive Configurator by selecting "Device" -> "Set parameters to customer defaults" or by using shortcut "CTRL + SHIFT + D".

image.png Restoring parameters from Customer defaults in emDrive Configurator

After each operation device shall be reset to apply new values.

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