Weigl Control via CANopen

This application note demonstrates how to configure a SilverSterling S2-IGx or S3-IGx controller to read show parameter data from either internal or external non-volatile memory. Once show parameter data is read, the controller configures itself to interface with a Weigl device via CANopen.

Associated Files:

Init + App - Show Parameters from Internal Memory.qcp
Initialization and application program file downloaded to controller. The program file is configured to obtain show parameters from internal non-volatile memory.

Init + App - Show Parameters from External Memory.qcp
Initialization and application program file downloaded to controller. The program file is configured to obtain show parameters from external non-volatile memory when using QCI's backplane/card cage QCI-BO-BP8.

List of Motor and Show Parameters.xlsx
This spreadsheet is used to export show parameters as a CSV file.

- Worksheets
  - **List**: Lists each show parameter with a brief description.
  - **Axis 1-8 Data**: User enters data for up to eight axes.
  - **Export Axis 1-8**: Extracts show parameters from previous worksheet for eight axes. This sheet is formatted to be exported as a CVS file.
  - **Export Axis 1 Only**: Extracts show parameters from previous worksheet for only Axis 1. This sheet is formatted to be exported as a CVS file.

Import Show Parameters.txt
This file links the CSV file to the QCP file.
Downloading "**Init…Internal Memory.qcp,**" downloads a copy of the CSV file into local non-volatile memory.
Downloading "**Init…External Memory.qcp,**" does **not** download the CSV file into local non-volatile memory.

Show Parameters.csv – Exported show parameters for a single axis in a 64-row x 2-column table. Each row holds a show parameter. The first column is the target QCI register and the second column is the show parameter data intended for the target QCI register.

Mandatory Reading

Refer to Technical Document:QCI-TD090 for a detailed description of all show parameters. The technical document provides instructions on how to initialize card cage memory and outlines how to modify parameters stored in card cage memory on the fly.

Accessing Show Parameters from External Memory

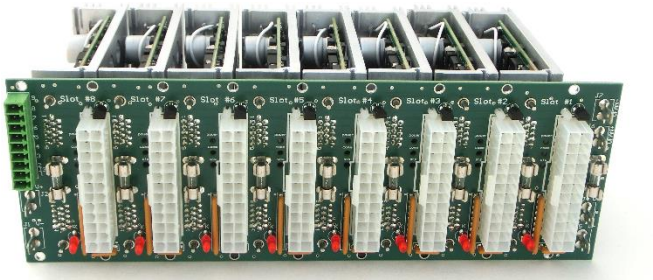

Figure 1 - QCI-BO-BP8 with 8x QCI-S2-IGH

The SilverSterling S2-IGx or S3-IGx may be used with QuickSilver Controls' eight-slot backplane QCI-BO-BP8. The backplane supports up to eight SilverSterling controllers with both power and communications (serial + CANopen) on a common bus. The backplane includes a 1-wire external memory chip for each controller, which is used to store show parameter data. The show parameter data is read from the 1-wire memory chip on power-up. For more information refer to backplane datasheet QCI-DS038_QCI-BO-BP8.

1. It is presumed that user has written show parameter data onto card cage memory.
    a. Refer to Technical Document:QCI-TD090 for show parameter details and instructions on how to write to card cage memory.
2. Open "**Init + App - Show Parameters from External Memory.qcp**" file in QuickControl and click Download/Restart.
3. On power-up, the controller accesses external card cage memory to read show parameter data.

For applications that do not use the backplane, the show parameters can be saved to a controller's internal EEPROM memory chip.

Accessing Show Parameters from Internal Memory

1. Open the **List of Motor and Show Parameters.xlsx** spreadsheet.
2. Go to the "Axis 1-8 Data" worksheet and modify the show parameter data for Axis 1. Note that only parameters under the *Axis 1* column will be exported.
    a. Refer to Technical Document:QCI-TD090 for show parameter details.
3. Go to the "Export Axis 1 Only" worksheet and ensure that the data displayed is the data wished to be exported.
4. File → Export → Change File Type → Select CSV (Comma delimited) (*csv) → click Save As → Show Parameters.csv
    a. If Excel warns that the file type does not support multiple sheets, click OK.
    b. This will only export the current worksheet.
    c. The exported CSV file should be formatted as 64-rows x 2-columns.
5. Ensure all three of the following files are in the same directory:
    a. Init + App - Show Parameters from Internal Memory.qcp
    b. Import Show Parameters.txt
    c. Show Parameters.csv
6. Open "**Init + App - Show Parameters from Internal Memory.qcp**" file in QuickControl and click Download/Restart.
7. On power-up, the controller accesses its internal EEPROM memory to read show parameter data.

Troubleshooting Notes

Two of the parameters configures the controller's serial unit ID and CAN ID to receive and transmit messages. If the controller cannot access either internal or external memory, due to memory not initialized or possibly due to corrupt data, for example, the controller's serial ID defaults to 254 and CAN ID defaults to 127. The default IDs enable the controller to transmit an EMCY error message reporting a memory failure.

CANopen Configuration

Both internal and external QCP program files configure the controller's CAN controller as follows:

- TPDO2: Sent once per second
  - 32 bits: Motor target
  - 32 bits: Motor Measured Positions
- TPDO3: Sent once per second
  - 16 bits: Motor Temperature: C*16
  - 16 bits Processor Temperature: C*10
  - 16 bits Power Supply voltage: V*100
  - 16 bits Status state of power up – Not yet defined
- TPDO4: Sent once per second
  - 32 bits: Copy of CAN Errors reported 2002
  - 32 bits: Spare, not currently in use, may be 2 x 16 registers
- RPDO1: Received asynchronous, update immediately (Receive type 254)
  - 16 bits: Target position
- RPDO4: Received asynchronous, update immediately (Receive type 254)
  - 32 bits: Clear bits in object 0x2002

Contact Weigl for technical support with Weigl hardware and software configuration.