

HI1756-WS and -2WS Programmer's Quick Reference 1.3

The Programmer's Quick Reference guide is intended to be a helpful and efficient reference tool for power users and technical personnel when interfacing with this Hardy product. It is not designed to replace the User's Guide.

LED Indicator Lights:

| LEDS | | |
|-----------------------------|----------------------------------|--|
| Scale Data LEDs | Flashing Green | Error No Calibration |
| | Steady Green | Running (Normal) |
| | Steady Red | Error Read Failure or Error eeprom write. Contact HI Customer Support |
| | Flashing Red | Read Convert Error. |
| | LED is Off | Channel is Inactive |
| OK Module Status LED | Brief Steady | During power up the LED lights Red for about one second. |
| | Flashing Green | In Program mode. (Normal) |
| | Steady Green | In Run Mode. (Normal) |
| | Steady Red (Backplane Available) | Config. Fault The eeprom checksum failed - bad serial eeprom data or blank serial eeprom. Contact HI Customer Support. |
| | Steady Red | Internal Hardware watchdog timer fault (e.g. bad Hardware or Firmware). ASIC is non-operational. |
| | Flashing Red | Communication Error. |

Physical Pinouts:

| Single Channel | | Dual Channel | |
|----------------|--------|--------------|--------|
| Pin 1 | Exc+ | Pin 1 | Exc+ |
| Pin 2 | Sense+ | Pin 2 | Sense+ |
| Pin 3 | Sig+ | Pin 3 | Sig+ |
| Pin 4 | Sig- | Pin 4 | Sig- |
| Pin 5 | Sense- | Pin 5 | Sense- |
| Pin 6 | Exc- | Pin 6 | Exc- |
| Pin 7 | C2+ | Pin 7 | C2+ |
| Pin 8 | C2- | Pin 8 | C2- |
| Pin 9 | Shield | Pin 9 | Shield |
| | | Pin 10 | Exc+ |
| | | Pin 11 | Sense+ |
| | | Pin 12 | Sig+ |
| | | Pin 13 | Sig- |
| | | Pin 14 | Sense- |
| | | Pin 15 | Exc- |
| | | Pin 16 | C2+ |
| | | Pin 17 | C2- |
| | | Pin 18 | Shield |

| | | | |
|----------------------------|-------|-------|----------------|
| + Local:5:I.ChannelStatus | {...} | | HI:1756_Cha... |
| - Local:5:I.Ch0GrossWeight | 700.0 | Float | REAL |
| - Local:5:I.Ch0NetWeight | 700.0 | Float | REAL |
| - Local:5:I.Ch0DOC | 0.0 | Float | REAL |

PLC INPUT TABLE

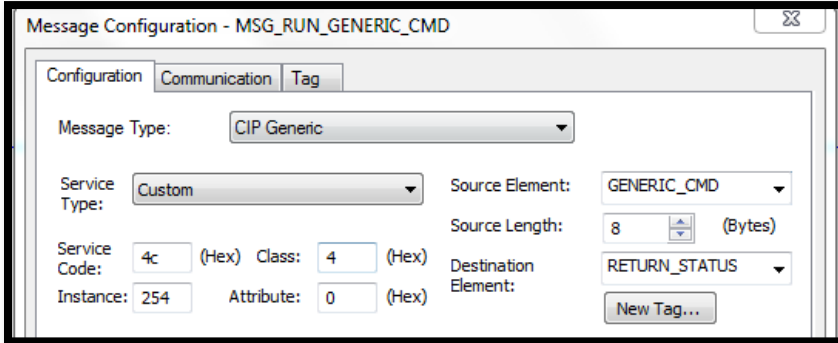
| | | | |
|--------------------|---------|-----|----------|
| - Local:5:O | {...} | | HI:1756_ |
| + Local:5:O.Ch0CMD | 16#0000 | Hex | INT |
| + Local:5:O.Ch1CMD | 16#0000 | Hex | INT |

PLC OUTPUT TABLE

Commands:

- 1 - Zero
- 2 - Tare
- 4 - Write Non Volatile (Save)
- 64 - Cal Low
- 65 - Cal High
- 66 - C2 Cal
- 69 - Read Param
- 6D - IT Test -- User must manually input the # of sensors on WeighSysTest Rung 1

Message Configuration:



When you run a command from the sample program mainroutine, it inserts the command into the GENERIC CMD tag, then runs the run_cmd routine. The run_cmd routine sends a MSG instruction to the module.

Status Words:

When set up with the AOP:

Channel 0 is on the right. Expand the ChannelStatus word to see the individual status bits.

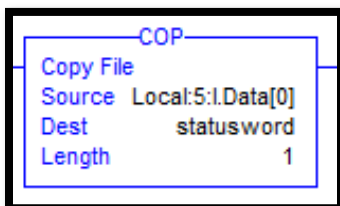
| | | |
|---|--------------|-----|
| [-] Local:5:I | {...} | |
| [-] Local:5:I.ChannelStatus | {...} | |
| [+] Local:5:I.ChannelStatus.ChannelStatus | 16#0000_0000 | Hex |

When set up as a Generic Module:

Status comes back in the same general location...word 0... However, it is a floating point.

| | | | |
|-----------------------|------------------|-------|--------|
| [-] Local:5:I | {...} | | AB:175 |
| [-] Local:5:I.Data | {...} | Float | REAL[|
| [-] Local:5:I.Data[0] | -1.88265570e-039 | Float | REAL |

It gets copied to a DINT called "statusword" in the main routine.



Then the status reads out in hex in the statusword tag.
 16#(Channel 1 Status)_(Channel 0 Status)

| | | | |
|--------------|--------------|-----|------|
| + statusword | 16#8014_8014 | Hex | DINT |
|--------------|--------------|-----|------|

Each channel is showing a value of 8014:

8000 - That channel is enabled for use.

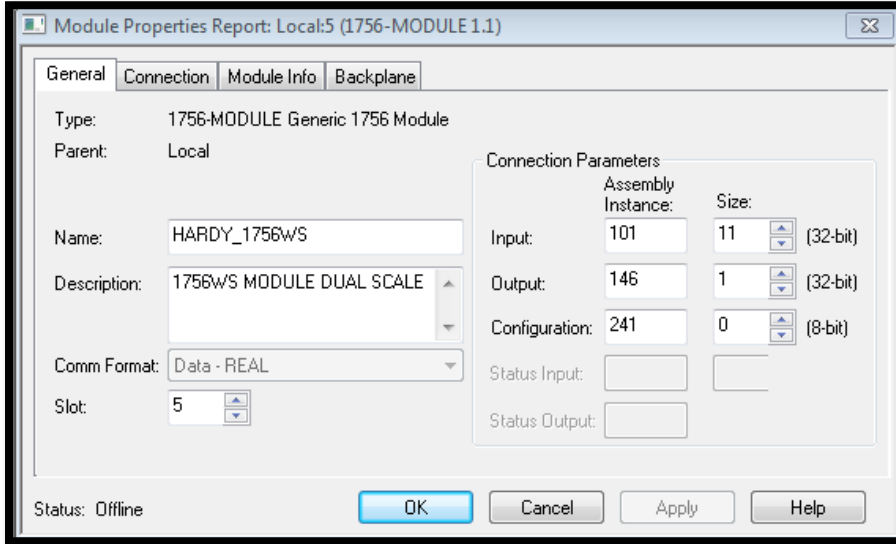
0010 -The red C2 button is enabled on the front of the module. See manual.

0004 - The unit is calibrated and using LBS. (English system VS Metric System)

Status Word Values:

| Word | Number | Definition |
|---------------------|--------|--|
| ERRORADCONVERT | 0x0001 | Millivolt return from the load cell system is out of range for the unit. |
| ERRORADFAILURE | 0x0002 | A/D converter in the unit is no longer responding. |
| STATUSENGLISH | 0x0004 | Unit calibrated in lbs. If the bit is off, calibrated in kgs. |
| STATUSZTRACK | 0x0008 | Auto Zero Tracking is turned on. |
| STATUSBUTTONENABLED | 0x0010 | Enabled/Disabled calibrate button. |
| STATUSINMOTION | 0x0040 | Weight is changing on the scale. |
| ERRORNOCAL | 0x0080 | The unit is at factory default settings. |
| ERROREEPROMWRITE | 0x0100 | EEPROM Hardware Error |
| ERROREXCITEMON | 0x0200 | Excitation monitor error. |
| ERRORMAX144 | 0x0400 | Hardware Error in Excitation Monitor |
| STATUSCMDRCVD | 0x2000 | Output Table Command Complete |
| STATUSCMDERROR | 0x4000 | Output Table Command Failed |
| STATUSCHANENABLED | 0x8000 | Set if channel is enabled |

Generic Module Tips:



- Read the parameters first.
- Copy or manually set the parameters in the WRITE_PARAMS tag, then toggle the write params bits in the main routine.
- When set up as a generic module, the program jumps to the “Run_cmd” routine, then sends messages to the module using the GENERIC_CMD word:

| | | | | |
|-------------------------|-------|---------|----------------|---|
| [-] GENERIC_CMD | {...} | | HardySimpleMsg | Generic source tag used for most commands. |
| [+] GENERIC_CMD.command | 102 | Decimal | DINT | Command # determined by command being done. |
| [+] GENERIC_CMD.channel | 0 | Decimal | DINT | Channel #, 0 or 1 |
| [+] GENERIC_CMD.status | 0 | Decimal | DINT | N/A |

AOP Tips:

The AOP sample program sends messages to run commands, even though it has an AOP. However, it does have a command output word to manually perform calibrations, etc.

| | | | | |
|----------------------|---------|-----|--|-----------------|
| [-] Local:5:0 | {...} | | | HI:1756_xWS:0:0 |
| [+] Local:5:0.Ch0CMD | 16#0000 | Hex | | INT |
| [+] Local:5:0.Ch1CMD | 16#0000 | Hex | | INT |

IMPORTANT: READ THE PARAMETERS AND SAVE TO NON-VOLATILE MEMORY WHEN CHANGES ARE MADE. BOTH CAN BE TOGGLED IN THE MAINROUTINE

Parameter Changing:

To read the parameters that are running in the unit, toggle the Read Params bit in the mainroutine. The code will move the parameters into the PARAMS_READ tags.

Then code or manually copy the parameters from the PARAMS_READ to the PARAMS_WRITE tags.

Adjust the parameters in the PARAMS_WRITE tag, then toggle the write params bit in the main routine.

| | | | | |
|----------------|-------|--|------------|----------------------|
| + PARAMS_READ | {...} | | PARAMETERS | Current parameter... |
| + PARAMS_WRITE | {...} | | PARAMETERS | New parameters t... |

In short, you are reading the params out of the unit, copying them to the WRITE PARAMS tags and writing them back to the module.

Parameter changing with the Module Reconfigure Message:

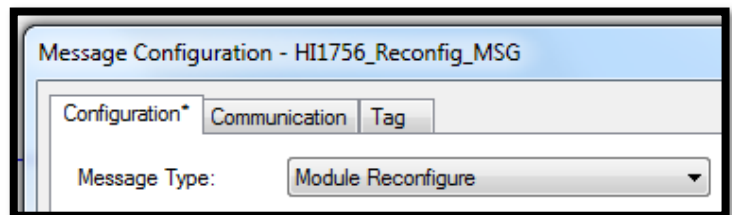
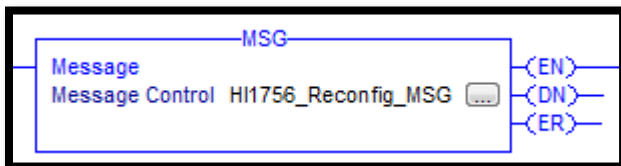
The parameters can be changed in the "C" table and a Module Reconfigure type MSG instruction can be executed to write the "C" parameters to the module.

Its important to read the parameters to verify the changes have taken effect.

These parameters will now be written to the module upon every power/connection cycle if the "Copy Configuration Data" check box is checked in the AOP.

Example:

| | | | | |
|---------------------------------|-------|----|---------|-------------------------------|
| - Local:1:C | {...} | | | HI:1756_WS_rev3:C:0 |
| + Local:1:C.Ch0CopyConfigEnable | {...} | | | HI:1756_Ch0_CopyConfigEna... |
| + Local:1:C.Ch0ChannelEnable | {...} | | | HI:1756_Ch0_ChannelEnable:... |
| + Local:1:C.Ch0NumDecPlaces | | 0 | Decimal | DINT |
| + Local:1:C.Ch0Metric | | 0 | Decimal | DINT |
| + Local:1:C.Ch0NumAverages | | 10 | Decimal | DINT |
| + Local:1:C.Ch0Waversaver | | 2 | Decimal | DINT |



For further information, please reference the HI1756 User's Guide at:
<https://www.hardysolutions.com/Content/Downloads/Manual/7b1930ec-0d30-4dd0-a56f-a2709c9b0402.pdf>