



## Smartmod Modbus I/O Parameter Configuration Utility for use with XLe



### Introduction:

The purpose of the Smartmod Modbus I/O Parameter Configuration Utility is to allow easy configuration of Modbus parameters and operational settings of a Smartmod when connected to an XLe type Horner APG OCS.

The Smartmod Modbus I/O Parameter Configuration Utility can be incorporated into existing programs. Care must be taken to avoid address conflicts. Screens for this utility start at 501.

In Cscope, under, "Tools/Options", the "OR Around Function Block" *must be checked* for 'allow'.

It is up to the application programmer to decide how best to open and close the port for Modbus communication.

The open/close functions below are written specifically for this program to handle the Smartmod parameters.

If incorporating this program into an existing program the open and close conditions would need to be examined and changed appropriately.

It will be necessary to change the Constant Move Data destination address to match the Modbus Master MCB address.

The port parameters are configured for the default settings of the Smartmod I/O units when the jumper is in place from INIT to GND. If port parameters are desired other than what the unit is currently configured for, the parameters of the Smartmod I/O are changed first through this config routine and then the open port ladder function is changed to match.

Once changes are written to the Smartmod I/O the jumper is removed and the Smartmod unit power cycled.

### [[ Important!! ]]

Multiple Open port functions can reside in one program, but there should be only one Modbus Master function. There should not be more than one Modbus master ladder function.

**Ladder Modbus functions are not used in conjunction with the Protocol Config. Use one method or the other per port.**

### Connections:

To connect an XLe OCS to a Smartmod requires an RS485 connection. To configure an XLe, for example, to communicate via RS485, requires a change to the system settings. The Set Serial Ports item in the System Menu can be used to enable RS-485 biasing. the System Menu in an XLe is accessed by pressing the ↓ and ↑ keys at the same time. Then, either press ESC to exit the System Menu, or use the ↓ and ↑ keys to select an item and press **Enter** to display the item's Sub-Menu.

### To set the MJ2 port to RS485:

*MJ2 port to RS485 Bias = Yes*



Set Serial Ports

The Set Serial Ports Sub-Menu displays three System Settings, all of which are editable, and one optional item. For the **Dflt Pgm Port** System Setting, only MJ1-232 can be selected, unless either an Ethernet (XEC) or a Modem (XMC) COM module is installed. Also, the **Set Ethernet (Enet)** item only appears if an Ethernet COM module is installed.

**Dflt Pgm Port:** MJ1-232 = MJ1 RS232 port is the default programming port  
 Enet = Ethernet COM module is the default programming port  
 Modem = Modem COM module is the default programming port

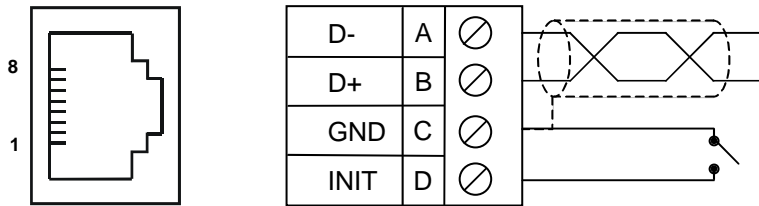
**MJ1 RS485 Bias:** No = MJ1 RS485 bias resistors are not switched in  
 Yes = MJ1 RS485 bias resistors are switched in

**MJ2 RS485 Bias:** No = MJ2 RS485 bias resistors are not switched in  
 Yes = MJ2 RS485 bias resistors are switched in

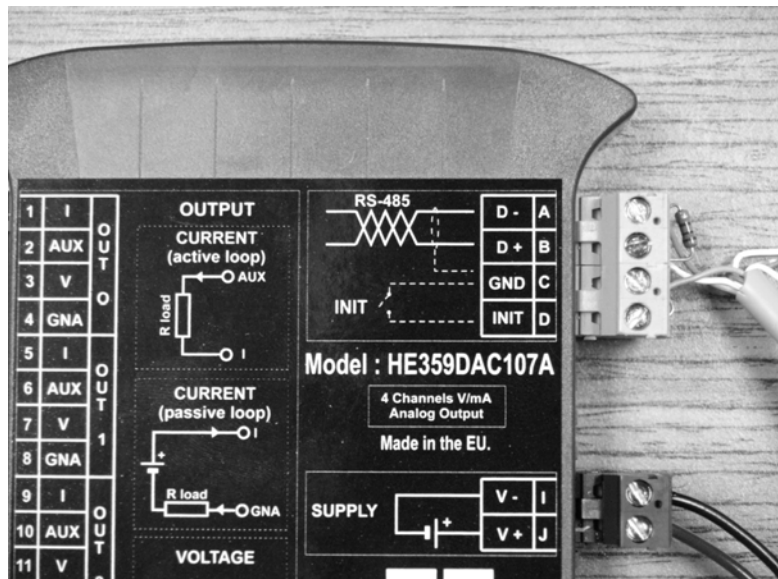
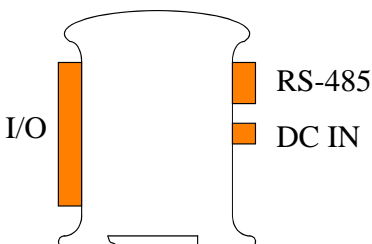
**Set Ethernet (Enet)** = Select and press **Enter** to setup the Ethernet COM module

**Cabling:**

**Note:** MJ1 and MJ2 look the same but have different pin assignments and functions.



Connect the XLe to the Smartmod via a cable from the Ethernet port (MJ2 on an XLe) to the RS485 port.



Place a jumper from INIT D to GND C...

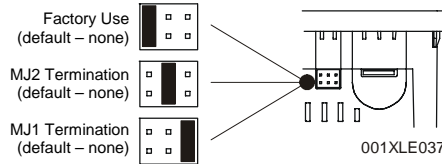
The Smartmod end of the RS-485 network should be terminated with a 120ohm, 1/4W, 1% resistor between D - and D + . Appropriate termination of the OCS is enabled via the RS-485 Termination accomplished with jumpers at the top of the XLE.

**External Jumpers Settings XLe (RS-485):**

The External Jumpers are used for termination of the RS-485 ports. The XLE is shipped unterminated.

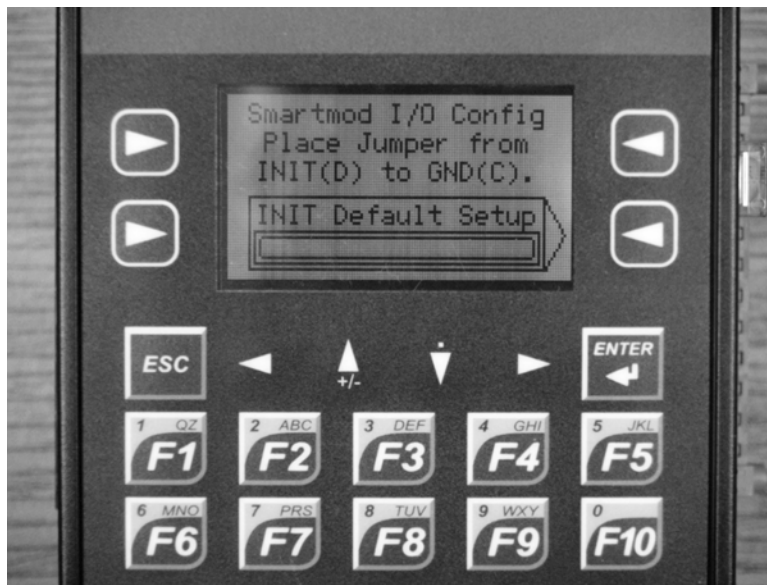
To terminate, select one of the jumpers shipped with the product and insert it based upon the option that is desired.

As seen when looking at the top of the XLE unit: Refer to Section 3 for the location of the External Jumpers.



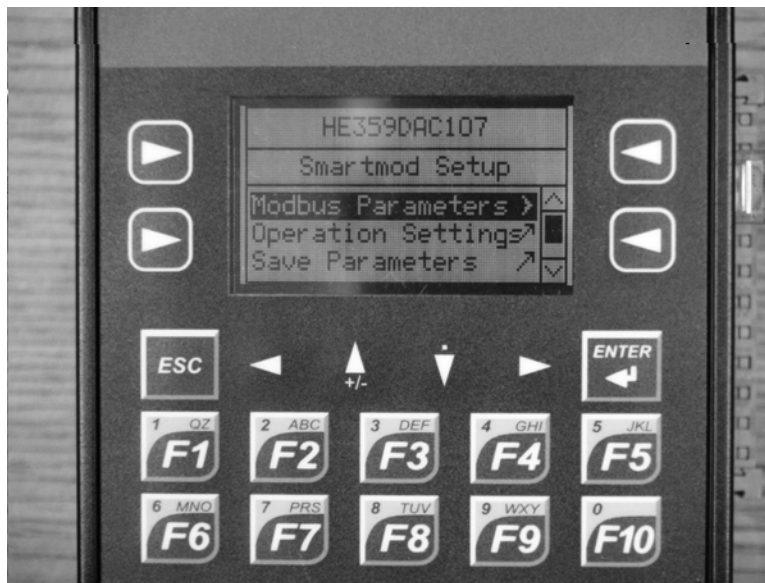
**Powering up the OCS + Smartmod and First Screens:**

Apply power to the OCS and Smartmod simultaneously. If the OCS has been programmed properly with the Smartmod Modbus I/O Parameter Configuration Utility you should see a screen like this, or very similar:



Press the indicated soft key...

If the cable is working properly and the RS485 bias is set and the Smartmod has power, you should next see a screen similar to this one:



Note that the top line in this screen should accurately reflect the type of Smartmod connected, in this case a DAC107.

From this point in the Configuration Utility program you can adjust *Modbus Parameters* such as Modbus ID, Baud Rate, Mode, *Operation Settings* such as the Watchdog Timer and then you may save your settings.

## SAFETY

When found on the product, the following symbols specify:



**Warning:** Consult user documentation.



**Warning:** Electrical Shock Hazard.

**WARNING:** To avoid the risk of electric shock or burns, always connect the safety (or earth) ground before making any other connections.

**WARNING:** To reduce the risk of fire, electrical shock, or physical injury it is strongly recommended to fuse the power. Be sure to locate fuses as close to the source as possible.

**WARNING:** Replace fuse with the same type and rating to provide protection against risk of fire and shock hazards.

**WARNING:** In the event of repeated failure, do not replace the fuse again as a repeated failure indicates a defective condition that will not clear by replacing the fuse.

**WARNING:** Only qualified electrical personnel familiar with the construction and operation of this equipment and the hazards involved should install, adjust, operate, or service this equipment. Read and understand this manual and other applicable manuals in their entirety before proceeding. Failure to observe this precaution could result in severe bodily injury or loss of life.

- All applicable codes and standards need to be followed in the installation of this product.
- For I/O wiring (discrete), use the following wire type or equivalent: Belden 9918, 18 AWG or larger.

Adhere to the following safety precautions whenever any type of connection is made to the module.

- Connect the green safety (earth) ground first before making any other connections.
- When connecting to electric circuits or pulse-initiating equipment, open their related breakers. Do not make connections to live power lines.
- Make connections to the module first; then connect to the circuit to be monitored.
- Route power wires in a safe manner in accordance with good practice and local codes.
- Wear proper personal protective equipment including safety glasses and insulated gloves when making connections to power circuits.
- Ensure hands, shoes, and floor are dry before making any connection to a power line.
- Make sure the unit is turned OFF before making connection to terminals. Make sure all circuits are de-energized before making connections.
- Before each use, inspect all cables for breaks or cracks in the insulation. Replace immediately if defective.

## TECHNICAL SUPPORT

For assistance and manual updates, contact Technical Support at the following locations:

North America:

(317) 916-4274  
[www.heapg.com](http://www.heapg.com)  
[techsppt@heapg.com](mailto:techsppt@heapg.com)

Europe:

(+) 353-21-4321-266  
[www.horner-apg.com](http://www.horner-apg.com)  
[techsupport@hornerirf.ie](mailto:techsupport@hornerirf.ie)

## NOTES