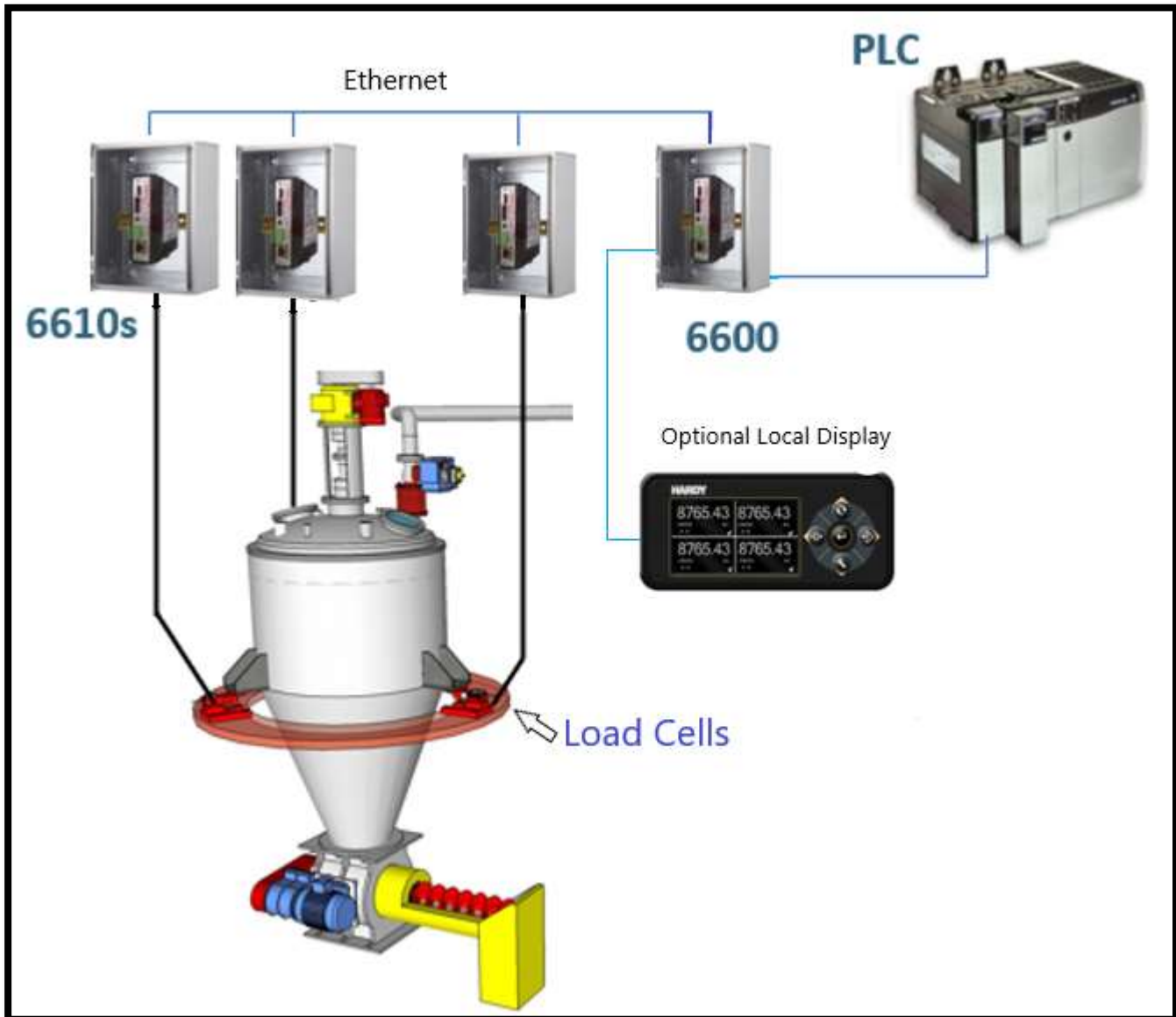


TECHNICAL NOTE

Real-Time Monitoring of Load Sensor Array with the HI6600 Multi-Channel System

- Sensors: Hardy C2® Advantage Load Cells (or any standard strain-gauge based sensors).
Instruments: Hardy HI6600 Series multichannel instrument solution with HI6110 Display/Cable.
Controller: Rockwell PLC
Extras: DIN rail enclosure with minimum interior dimension size of 6" H x 3" W x 6.6" D, such as Vevor SPT 12x8x8. Ethernet cables, 24VDC power supply.



Weight readings from each channel are captured and totaled in the PLC to indicate total weight of the vessel.

Example PLC Code:

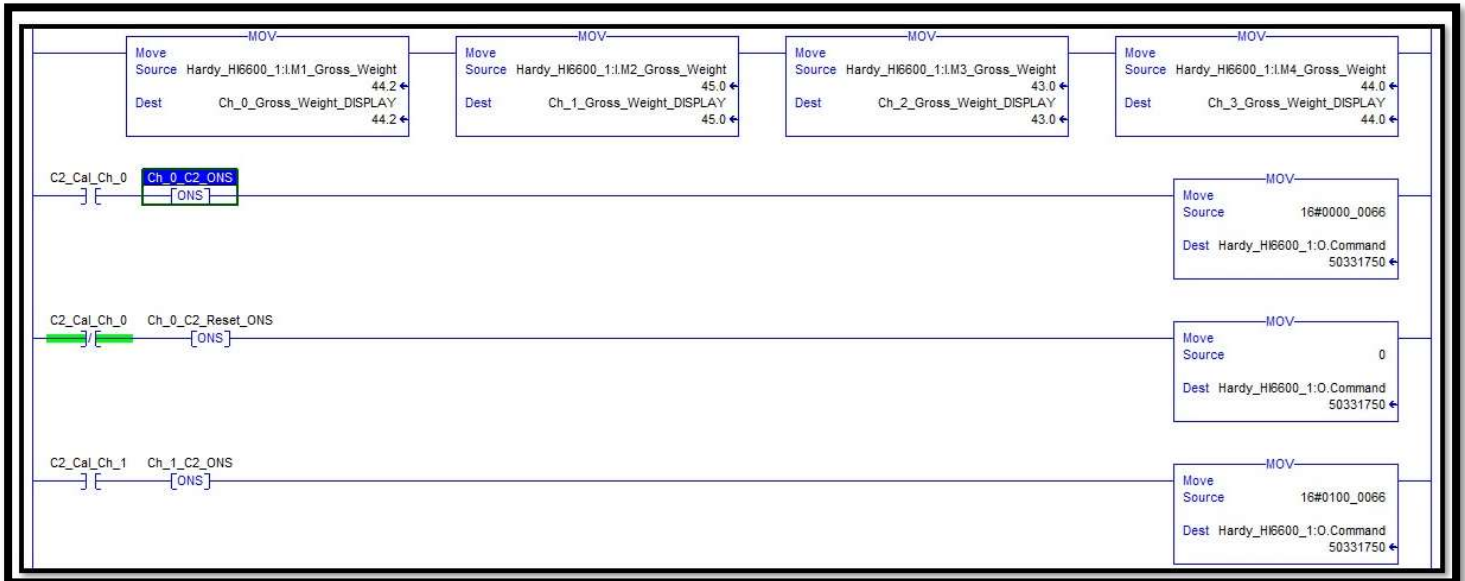
Example Code Below for Viewing and Calibrating Each Channel:
 The top line of code is being used to display the weight on each individual leg.
 Add the individual legs to calculate the total vessel weight.

Example C2 Calibration Commands Below:

Channel 0 receiving a 66 (C2 Calibration in hex) = 16#0000_0066

Channel 1 receiving a 66 (C2 Calibration in hex) = 16#0100_0066

The commands can be sequenced with a timer.
 20-30ms between commands is suggested to allow for general PLC network communication.



Advantages:

1. Real time failure monitoring of load cells due to any intermittent or loose load cell connections, binding, and impacts to the sensor.
2. Reduction of downtime by substituting an estimated weight value for a damaged load cell until a replacement is available.
3. Identification of individual module channels (HI6610-WP) using a System Discovery function LED.
4. Individualized filtering levels (vibration immunity) for each load sensor.
5. Calibration without test weights (C2®) when using Hardy load cells.
6. Compatible with industry standard strain-gauge load cells versus specialized 'single source' sensors.