

## Recommended Qi parameters for SCADA display

A large amount of data is available to the host control system (PLC). Normal practice would be to create a dedicated "Qi maintenance screen" for this data. In addition some of these items are important enough that they should also be included on one of the normal operational screens.

Below you will find a subset of the data available to a host control system. These are the recommended variables that should be displayed on the SCADA system. I have indicated by means of color, those which I consider to be vital and the most important. The exact location of these variables within the host control system will vary from system to system.

This data set is repeated for each Scale or Flowmeter in the process (cluster).

The data types are: bits, bytes, integers and floats.

Byte A (bit positions follow)

0. "PAC Data Integrity Bit" alternates polarity every 5 seconds.
1. **"Instrument Data Integrity OK"**
2. "Scale Over Capacity"
3. **"Scale Under Zero"**
4. "Scale Motion"
5. **"Material Transfer Cycle Active"**
6. **"Final Control Element Output", 0 = Off , 1 = On**
7. **"Waiting for Controller to Acknowledge Last Material Transfer/Hand Add complete"**

Word B (bit positions follow)

0. "Feed Type"
1. "Feed Type" 0=Gain In Weight, 1= Loss In Weight, 2= Flow Meter, 3 = Hand Add
2. **"Manual-Not Auto-Mode"**
3. "Gross Weight Feed"
4. "Feed Override Active" – external logic inhibited from removing feed permissive
5. **"Feed Failed"**
6. **"Communication Error"**
7. "Device Stability Warning"
8. "Very Unstable Device"
9. "Too High or Too Low Flow" at cutoff
10. "Three Times Average Flow" at cutoff
11. **"Fast Feed Rate Alarm"**
12. "Wait for All Overlap Requests"
13. "Waiting to Start Primary" Overlapped Feed
14. "Primary Overlapped Feed" In Progress
15. "Secondary Overlapped Feed" In Progress

Float C

**Net amount fed**

(This is a dynamic value of the net weight during a feed) The final value is used by the Qi in its feed report.

Float D

**Gross Weight**

(Gross weight of product in the hopper)

Float E

**Flow Rate**

(Flow rate of product into hopper)

Integer F

Time until Slow Step Timer Expires, in Seconds. 0 = Alarm.

Integer G

Estimated Time to Complete, in Seconds

(The following is the Command data to the Qi from the Host Control system)

Byte H

Channel number

Byte I

Sequence number

Integer J

Material Path number

Byte K

Command

(The following is the Command response data from the Qi. Ie the result of the previous command )

Byte L

**Channel number**

Byte M

**Sequence number**

Integer N

Material Path number

Byte O

**Command**

Byte P

**Command Status**

Byte Q  
**Material Transfer Status**

Float R  
**Delivered Weight**

**PLEASE NOTE: the above information is normally supplied in conjunction with customer training. During this training the location and interpretation of this data is covered in more detail**

Electrical interfacing of the Qi to existing Control O/Ps
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The Control O/P of the Qi must be wired in series with the current Material Control signals. In order to make use of the Qi,s high speed it is important that this is a physical series connection.

This O/P must be in series with ALL the material control relays per channel. Typically there will be a common side to these control relays which the Qi's O/P can be inserted.

The actual O/P of the Qi is an open collector transistor, which cannot switch a large load. This O/P is typically used to switch a device such as an Opto22 O/P, which in turn will control a larger capacity relay. ( depending on the switching requirements)

Summation of requirements:

- Interfacing Relay or Relays
- PSU 12 or 24 VDC
- Mounting and or housing of above
- Electrical cable