

Application Note

1900 Series Remote I/O Handler

The 1900 Series has a standard remote I/O interface port available through a 37-pin DB type connector located on the rear panel of the instrument. This port has outputs lines to indicate a measurement in process and binning information. Input lines are also available for start and stop control.

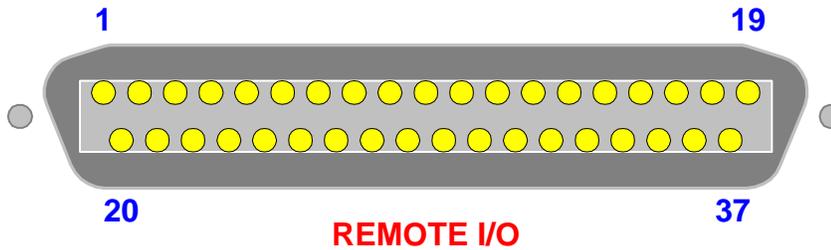


Figure 1: Remote I/O Pin Configuration

| I/O | Pin | Action | &/Or | Action & Condition |
|-----------------|-------|----------------------------------|------|--|
| Outputs: | | | | |
| Busy | 1 | Measurement in process | | |
| Bin 1 | 2 | Primary Pass | | |
| | | | Or | Secondary Pass If Binning is enabled and all Primary bin limits are OFF |
| | | | Or | All steps in sequence Pass |
| Bin 2 | 3 | Primary Pass | Or | Step 1 in Sequence Test Fails |
| Bin 3 | 4 | Primary Pass | Or | Step 2 in Sequence Test Fails |
| Bin 4 | 5 | Primary Pass | Or | Step 3 in Sequence Test Fails |
| Bin 5 | 6 | Primary Pass | Or | Step 4 in Sequence Test Fails |
| Bin 6 | 7 | Primary Pass | Or | Step 5 in Sequence Test Fails |
| Bin 7 | 8 | Primary Pass | Or | Step 6 in Sequence Test Fails |
| Bin 8 | 9 | Primary Pass | | |
| Bin 9 | 10 | Primary Pass | | |
| Bin 10 | 11 | Primary Pass | | |
| Bin 11 | 12 | Primary Pass | & | Secondary Fail Low |
| Bin 12 | 13 | Primary Pass | & | Secondary Fail High |
| Bin 13 | 14 | Primary Fail | & | Secondary Pass |
| Bin 14 | 15 | Primary Fail | & | Secondary Fail |
| Under Test | 16 | Opposite of Pin 1 (Busy) | | |
| GND | 20-37 | Signal ground | | |
| Inputs: | | | | |
| Stop | 18 | Stops the measurement in process | | |
| Start | 17 | Starts the measurement | | |

Application Note

Output Signals & Input Lines

Output Signals

All output lines are negative if true from open collector drivers that pull each signal line to a low voltage, signal ground, when the signal is active (true). Each external line must be pulled up to a positive voltage between 5V and 24V. The pull up resistor is required to limit the current to < 20mA. Outputs are controlled via a Texas Instruments TPIC6273DW Power Logic octal D-Type Latch. Schematic is shown in Figure 2.

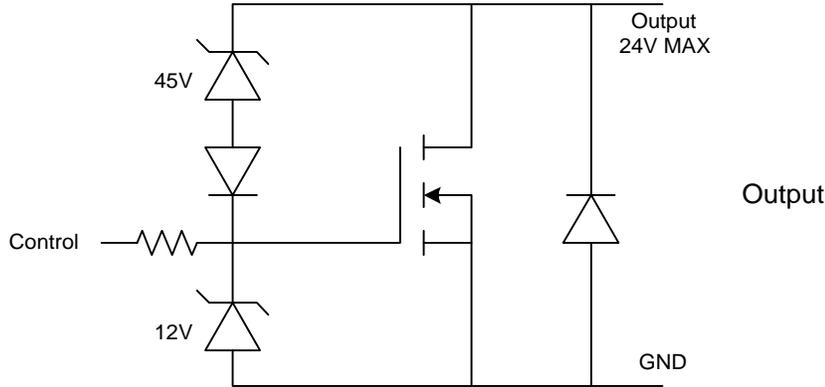
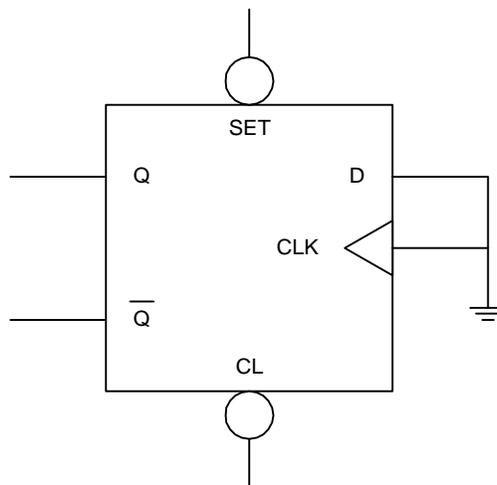


Figure 2: Outputs

Input Lines

Input signals are active low and require a positive external voltage that must pull the signal down below 0.4V, ground. Maximum input voltage is $V_{CC} \pm 0.5V$ and is stated in the 1900 instruction manual as 5V. For the inactive state, the external circuit must allow the signal line with its internal 3.3k Ω to float above 2.5V, but not above 5V. A pull up resistor or current limiting resistor is not required for operation. The Input signals are tied directly to the SET line of an 74AC74 D-Type Flip-flop. Schematic is shown in Figure 3.0.



Application Note

Figure 3.0: Inputs

Connection of Switch

This example shows the connection of a simple switch to start a measurement and LED to indicate if bin 1 is true, to the 1900 Series remote I/O. When the switch is closed ground is connected to Pin 17 and the 1900 Series LCR meter will perform a measurement. A pull up resistor is not required for operation as pin 17 will float high to 5V but is shown for consistency. Note: Trigger Source in the utilities menu of the 1900 must be set to “External” and the 1900 should be programmed for binning with high and low limits for bin 1. Please refer to appropriate sections of the instruction manual.

Application Note

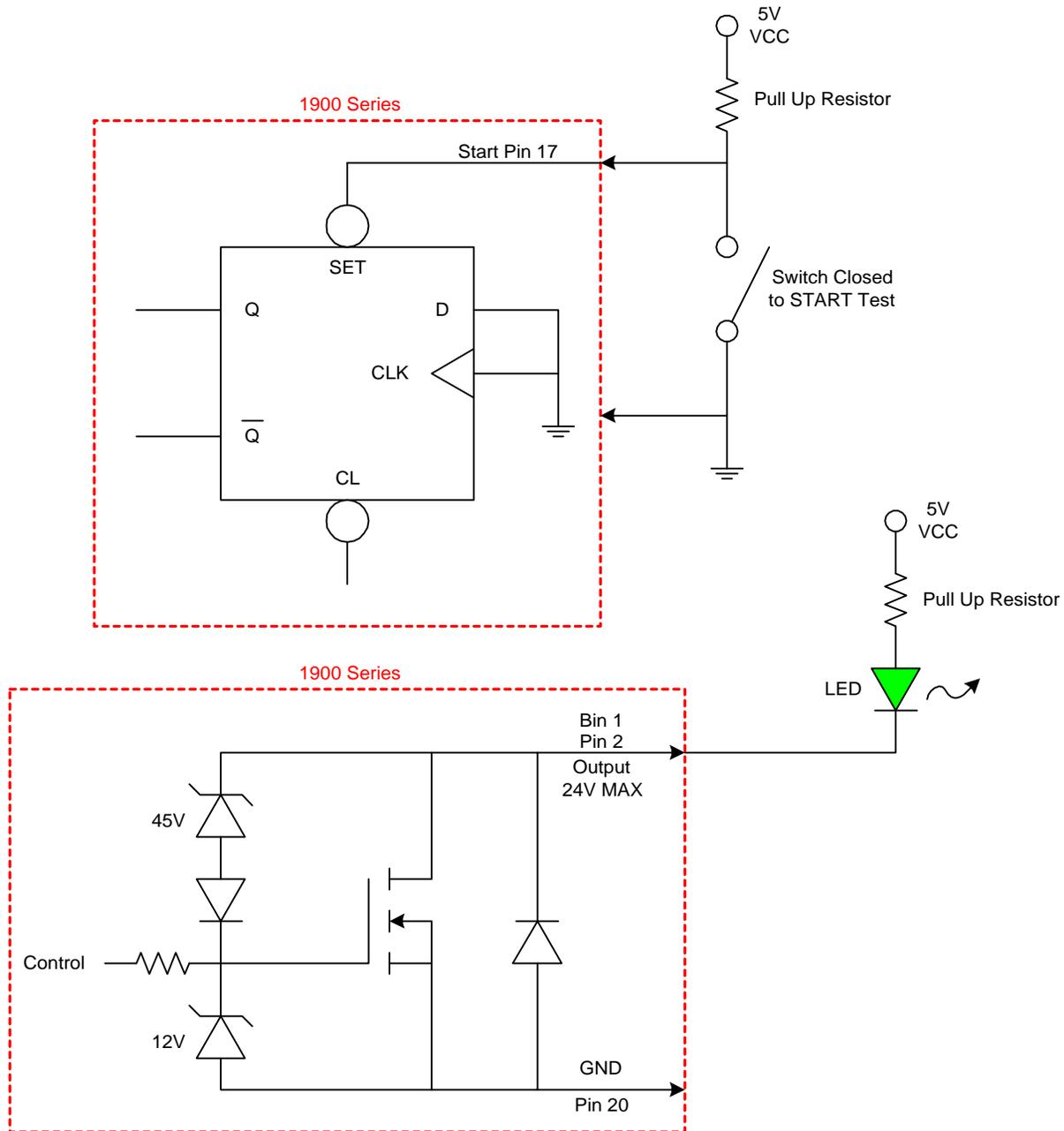


Figure 4.0: Switch & LED Connection

Connection to a 24V PLC

The 1900 Series can also be connected to a PLC. Note: Trigger Source in the utilities menu of the 1900 must be set to “External” and the 1900 should be programmed for binning with high and low limits for bin 1. As the inputs of the 1900 Series cannot exceed 5V, a 5V Zener diode, 4.7V to 5.1V can be used, and current limiting resistor are used to protect the 1900 Series.

Application Note

To start a measurement the 24V control must go to ground or 0V. If the measured value of the component is within the high and low limits programmed for bin1, bin 1 is true so pin 2 on the remote I/O will go to 0V or ground, on completion of the test. This results in the signal to the PLC going from 24V to ground or 0V on completion of the test.

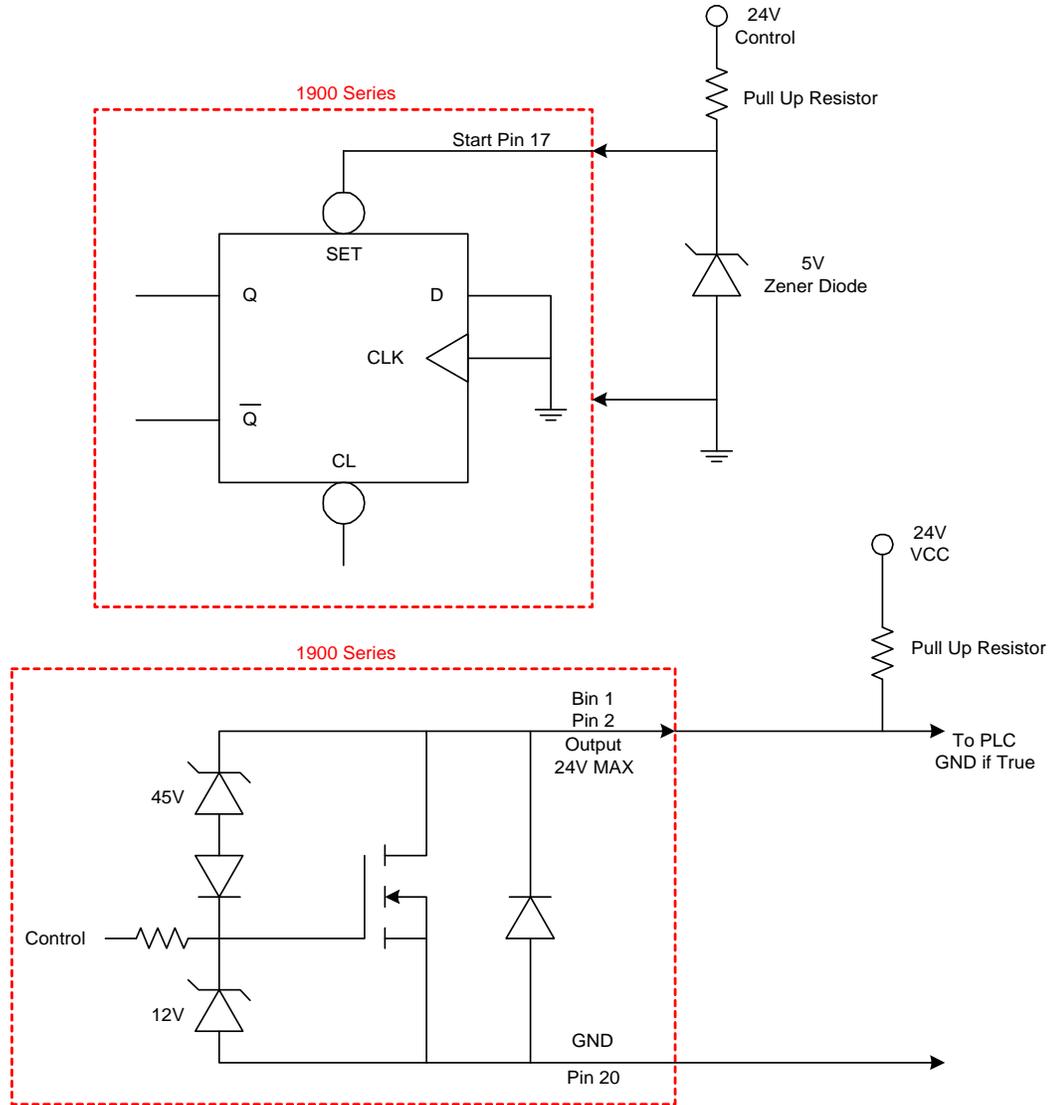


Figure 5.0: Connection to PLC

1900 Series Precision LCR Meters

The 1900 Series Precision LCR Meters are highly accurate laboratory quality instruments that provide solutions to testing needs quality assurance, materials testing and production line environments. The remote I/O interface is quite useful in these applications and especially in component handling.

Application Note



Figure 6.0: 1920 Precision LCR Meter

If there are further questions on the 1900 Series remote I/O interface please contact IET Labs for applications support. The 1900 Series Instruction manuals can be accessed and downloaded in pdf format at www.ietlabs.com