

Using the MicroRidge GageWay5 Digital Gage Interface

Application Note #19

Overview

The MicroRidge GageWay5 Interface is designed to multiplex digital dial gages from a number of manufacturers including Chicago Dial, Fowler, Federal, Mitutoyo, Ono Sokki and Sylac. It may also be used to multiplex other RS-232 serial devices such as smart bar code wands, scales, etc. It includes 5 ports, one can be used to “daisy-chain” additional GageWay5 units to expand the channels in increments of 4.



This Application Note will describe how to connect the GageWay5 interface to the Campbell based data acquisition system, whether CR10X, CR800 or CR1000, and then configure MultiLogger to read the connected Chicago Dial Indicator type indicators. The advantage of this system is that data acquisition for a project becomes centralized to the Campbell based data acquisition system, this insures a higher reliability of data acquisition as well as simplified setup of the data acquisition system using the Canary Systems MultiLogger software. There are 3 steps to the setup, **Hardware** (the physical interconnection between GageWay5 and control module), **GageWay5 Configuration** (using the supplied GWSetup software) and **MultiLogger Configuration**.

Hardware

The GageWay5 must be connected to the data acquisition system. This is done using the supplied RS-232 cable. Power is also provided on the supplied RS-232 cable. Wiring is shown below.

Note: The GageWay5 draws approximately 150mA from the 12V supply. When running from batteries this must be considered as it relates to battery run time. For example, factoring in the control module power drain, a fully charged 7aHr battery will be depleted within approximately 36 hours. It is recommended to have a charger plugged in maintaining the battery charge at all times.

GageWay5 RS-232 Wiring to Control Module

Male DB-9	Color	Function	CR10X	CR800	CR1000
2	White	TD (Output)	C6	C4	C6
3	Green	RD (Input)	C5	C3	C5
5	Black	Ground	G	G	G
7	Red	12V (Input)	12V	12V	12V

Alternately the supplied AC adaptor may be used to power the GageWay5 and the 12V connection shown above may be disconnected.

Optical isolation may also be used between the GageWay5 and the control module in the case of noise. Contact Canary Systems for more information on installing this optical isolation.

GageWay5 Configuration

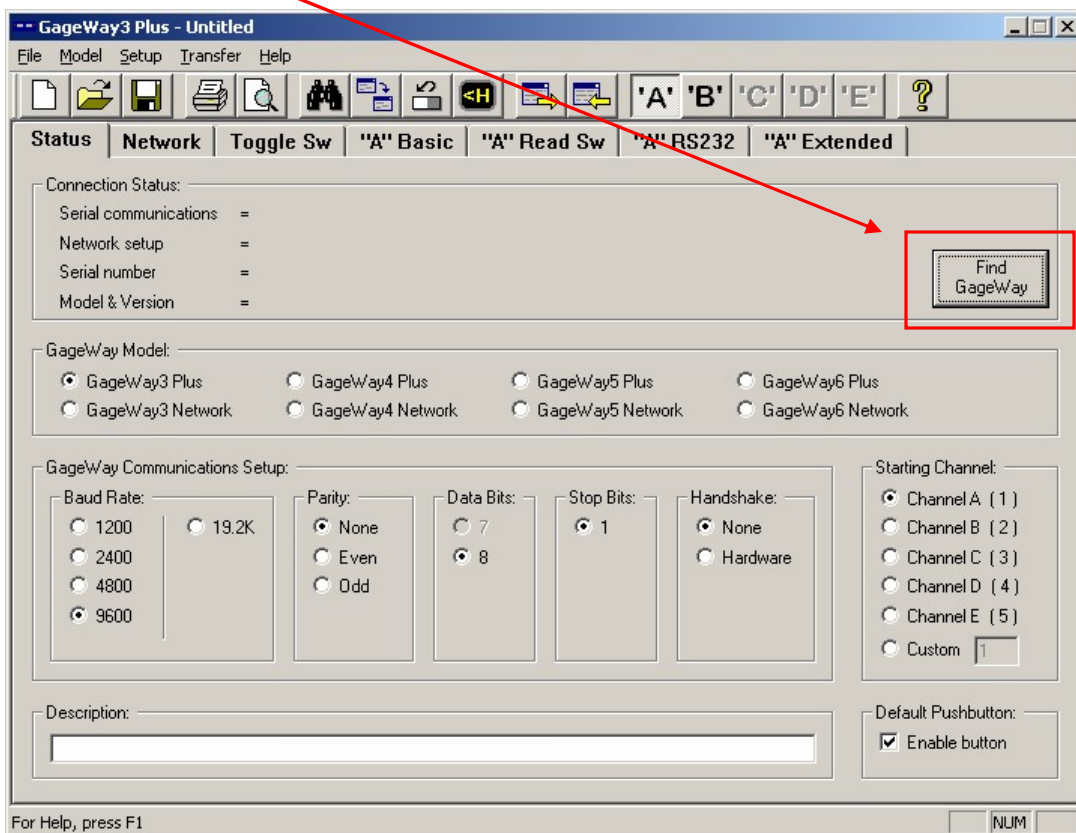
Install the **GWSetup** software from the supplied MicroRidge CD. This software is designed to allow configuration and testing of the GageWay5.

Note: You must configure the GageWay5 prior to using it with the Campbell control modules!

Connect power to the GageWay5 using the supplied AC adaptor. Use a standard RS-232 cable between the GageWay5 RS-232 port and the PC.

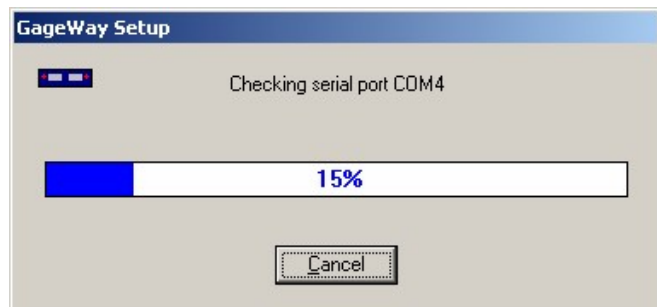
Launch the software using the **GWSetup** icon placed on your desktop or in the GageWay Setup group.

Notice the **Find GageWay** button, click it to attempt finding the interface.



The software will then start scanning all the COM ports on your computer and testing various baud rates to find the GageWay5.

Please wait while this process completes.



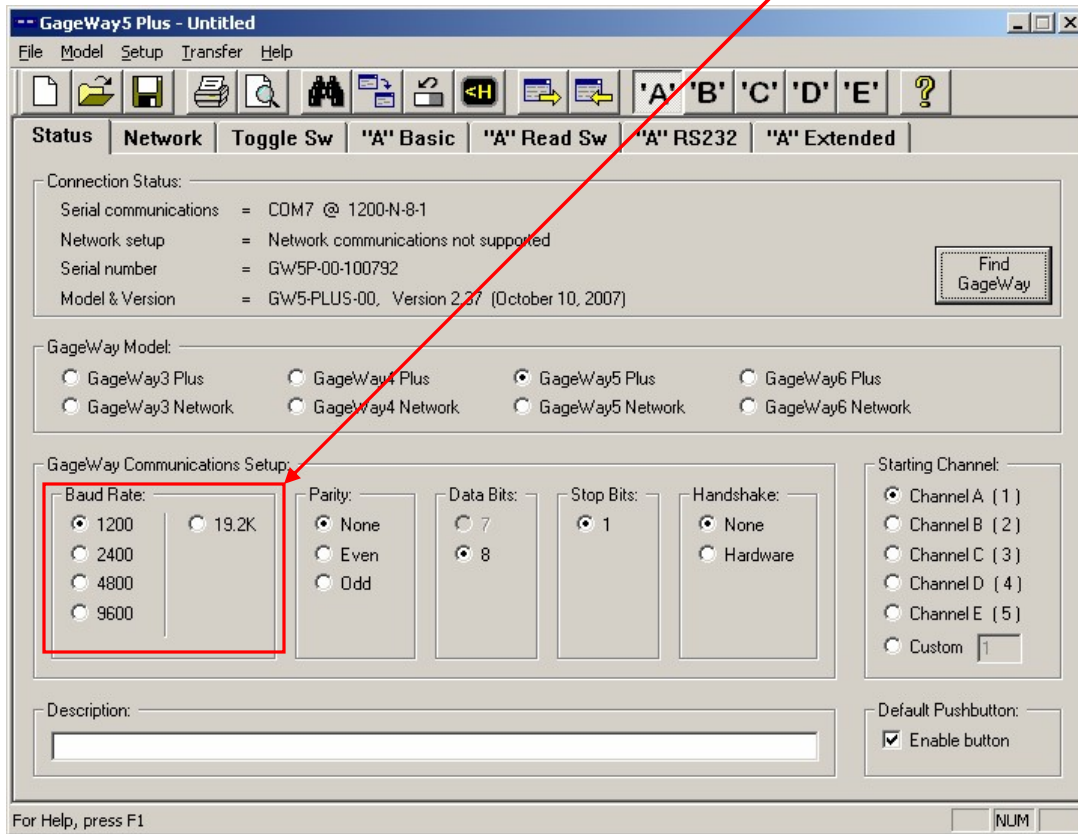
Once the GageWay5 is found the parameters will be read and shown on the various tabs.

There are 2 configuration changes you need to make from the defaults to provide for operation with the Campbell control modules.

1. Baud Rate

2. Digital Indicator Type

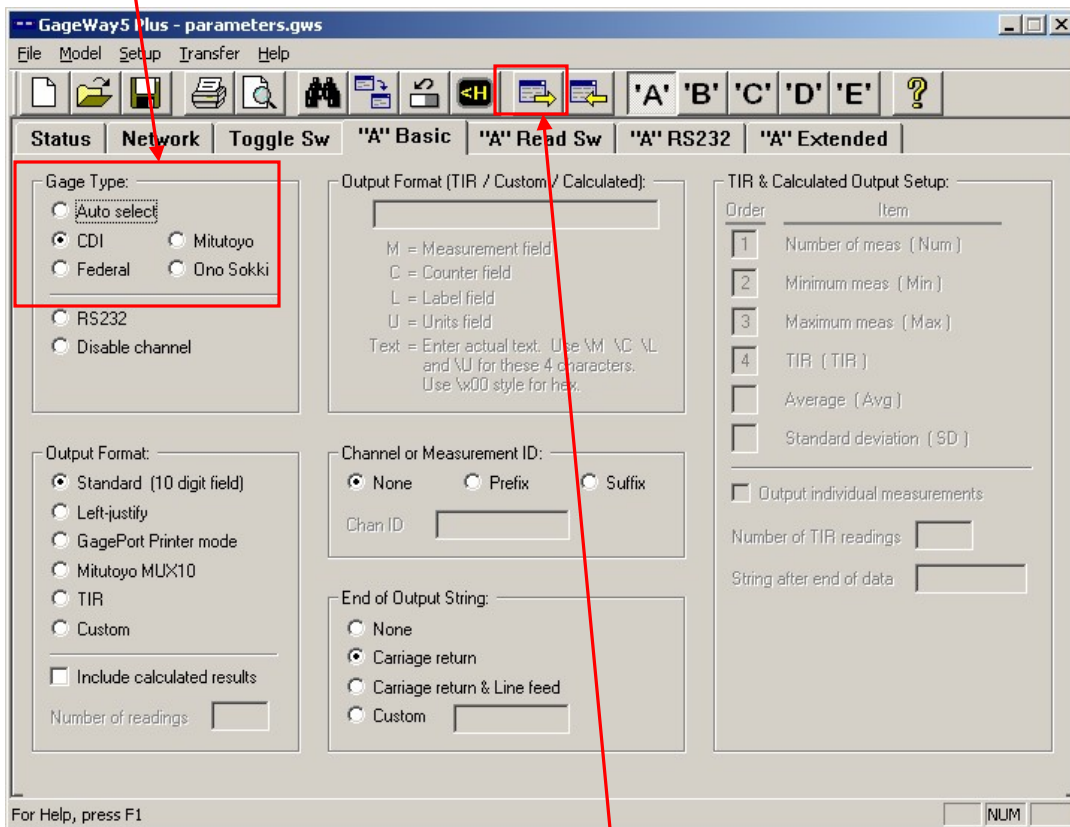
The Baud Rate is configured on the Status panel, select 1200 in the **Baud Rate** group.



The Digital Indicator Type must be configured for each channel, channels are shown on the toolbar as 'A' (channel 1), 'B' (channel 2), etc.

Click on 'A' (default), then the "A" **Basic** tab, screenshot shown on following page.

Notice the **Gage Type** group. Select **CDI** for the standard Chicago Dial Indicator gage.



Send Parameters Button

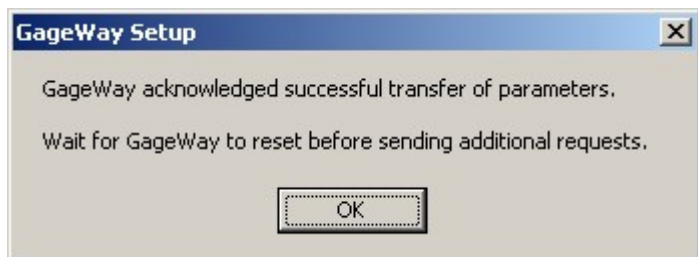
Go through all channels for the GageWay5 and configure the channels as shown. Double-check that the settings match the screenshot shown above.

Once complete press the **Send Parameters to GageWay** button.

The GageWay5 will be updated and the status message will display.

It's a good idea to save these parameters to a parameters file for easy recall should the GageWay5 need to be re-configured at any point.

Use the **Save** button shown on the toolbar.



You can now disconnect the GageWay5 from your PC and connect it to the control module using the supplied cable. You may also connect your digital dial indicators using the supplied cables.

Note: The GageWay5 will arrive configured with the above settings but it's a good idea to check them.

MultiLogger Configuration

MultiLogger configuration is straight-forward, simply select the **Digital | MicroRidge | Gageway5 CHnn** for each channel connected. Use the **Direct Connect Channels**.

Configure channels using **Digital | MicroRidge | Gageway5 CHnn**, example for channel 1 shown below.

The screenshot shows the 'Configure Direct Connect Channels' window for Channel 1. The 'Gage Type' is set to 'Digital', 'Make' is 'MicroRidge', and 'Model' is 'Gageway5 CH01'. The 'Conversion Method' is set to 'Linear'. The 'Linear Coefficients' section shows 'Zero Reading' at 0.0, 'Gage Factor' at 1.0000, and 'Offset' at 0.0. The 'Polynomial Coefficients' section shows 'Coefficient A' at 0.00000, 'Coefficient B' at 1.00000, and 'Coefficient C' at 0.00000. The 'Units Conversion' section shows 'Units Type' as 'Default', 'Input Units' as 'None', and 'Output Units' as 'None'. The 'Upper Channel' section shows 'Label' as 'DirectCH_1Temp', 'Description' as 'DirectCH_1Temp', 'Device' as 'None', and 'Units' as 'None'. The 'Check Alarms' section shows 'Type' as 'None', 'Alarm Low' at 0.00, and 'Alarm High' at 0.00. Buttons for Copy, Paste, Print, Help, Accept, and Cancel are at the bottom.

You may also configure the **Conversion Method**, **Units Conversion** and **Check Alarms** if desired. The **Upper Channel** configuration is not generally used for the digital dial gage channels.

Note: The units output from the digital indicators will be a function of the indicator setup. See the operating instructions for the digital indicator to configure the units display.

Troubleshooting

Output shows -99999.

Check whether the digital dial gages are powered up. By default they power off after a set amount of time. You will likely need to disable the auto power-off. Check the cabling between GageWay5 and control module. Check cabling between the dial gages and GageWay5, the connectors must be seated properly. You may also use the Communications Test Program button on the GWSetup software to test the digital indicators directly using a PC connection to the GageWay5. See the enclosed GageWay Interface Help Manual for information on using this function.

Output is unstable

Check whether the digital dial gages are showing unstable measurements – if so this may be due to vibration of the structure being monitored. Check for proper system power, it should be > 12VDC. Check for noise sources nearby, possible sources includes generators, welders or motors. Re-locate the noise generating equipment if possible, or re-locate the electronics including cabling. Check for moisture in the digital dial gage and/or cabling, dry and shield the gages/cabling from water.