VeriFast LVDT Integrator Guide for Controls Solutions

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Consider the ‘big picture’. If there are multiple machines, or a large line, the controls solutions should be common across all operations. CenterLine can help if we are aware of the *entire* process. Remember that this may involve multiple integrators.

Decide if an analog or digital solution is desired. Each has its advantages and disadvantages. These are further explained later in this document.

Be sure there are enough of the correct I/O, either discrete or analog, for the installation. For analog (Signal Conditioner): 1 input channel is required for each weld body. For digital (MicroView): 4 outputs and 12 inputs are required if all I/O will be used.

Remember all valves, and outputs for them: Each retractable pin typically uses a double solenoid valve. A single solenoid valve is sufficient for blow off, for each weld body.

After the controls solution has been selected, be sure to order the correct number and type of cables necessary for complete connectivity. (e.g., 4, 5 or 8 pin tool cords, power cords.) Again, CenterLine can be help with this.
➢ Use di-electric grease in all electrical connectors.

➢ All electrical connectors must be properly tightened according to manufactures specifications. Compromised electrical connections can lead to variations in the system.

➢ When setting Weld Proceed or Set Down positions, the weld pin must **not** be at the top OR bottom of its stroke. The weld pin must move for proper fastener and set down detection.

➢ If using an OHMA cylinder, teach positions under close pressure, NOT intensify pressure.

➢ The LVDT coil is sealed inside the weld body and is not user serviceable. In the unlikely event that it fails, the weld body must be replaced. We offer a rebuild service. Contact CenterLine Service at: 519-734-0080 or 800-268-8184 or **service@cntrline.com**.

For more information: https://www.cntrline.com/products/verifasttm-lvdt
Analog Programming Considerations

- 0 to 10V DC analog signal from each Signal Conditioner.
- 15 bit resolution is recommended.
- Proper programming is critical! Position windows must be user settable, with adjustable tolerance windows. Programming templates are available.
- Tolerance windows must be accurate. Too small and nuisance faults will occur. Too large and upside down, or wrong fasteners can be welded.
- Positions must be checked periodically to ensure they are properly set. (Red Rabbit routine.)

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Panel Mounted Signal Conditioners

Advantages: ✓ Very flexible. Customer has complete control over analog signals.
✓ Easy to display data on an HMI.
✓ Most cost effective hardware solution.
✓ Not limited to a maximum number of Signal Conditioners.

Disadvantages: X Customer has to process analog signals. ‘Teach’ and ‘Tolerance’ functions required in both the PLC and HMI. Programming must be correct and consistent.
X Requires panel space for Signal Conditioners.
X Requires an analog card. 1 analog input per Signal Conditioner in the PLC.
**NetLink**  
(Connects LVDT Signals Conditioners and/or LPTs to a communications network)

**Advantages:**
- Very flexible. Customer has complete control over analog signals.
- Easy to display data on an HMI.
- Easy to install. Does not require additional panel space for Signal Conditioners.

**Disadvantages:**
- Customer has to process analog signals. ‘Teach’ and ‘Tolerance’ functions required in both the PLC and HMI. Programming must be correct and consistent.
- Requires a communications network.
- Additional hardware cost. (Offset by simplified wiring.)

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- **Double ended cord**
  - Max. distance: 150M (500’)

- **Double ended cord**
  - Max. distance: 15M (50’)

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Control Panel or Network

Max. distance depends on communications used
MicroView

- Converts 1 or 2 analog devices (0 to 10 V) to digital PLC inputs.
- Presets for LVDT, LPT or generic.
- 2 types: V1 and V2. Both available with any combination of the previously mentioned 2 analog inputs.
- 4.3” Resistive Touch HMI.
- Uses standard tool cords. (4, 5 or 8 pin, depending on version)
- Onboard storage for Weld Position and Set Down data for over 500,000 welds, per channel, downloadable to USB flash drive.
- Metal enclosure measures about 6” wide, 7.5” tall, 4” deep

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MicroView requires 1 to 4 PLC outputs for schedule selection (15 schedules available)

MicroView provides digital PLC input bits for:
   a) Teach Mode
   b) Run Mode
   c) 4 Position bits, plus bypass for each device. (10 total)

All position bits are teachable, each with an adjustable tolerance window.

Tolerance windows must be accurate. Too small and nuisance faults will occur. Too large and upside down, or wrong fasteners can be welded.

Positions must be checked periodically to ensure they are properly set. (Red Rabbit routine.)

Programming templates are available.

All PLC inputs are instant on. Dwell timers must be done in the PLC.
MicroView, Standard (5 Port, Dual Device, or V1)

Advantages: ✓ Easily added to existing equipment, in some cases even without a PLC. ✓ Consistent programming / processing methodology—no processing of analog signals. ✓ Digital signal processing is much easier.

Disadvantages: X Must be accessible to maintenance personnel. X 5 and 8 pin tool cords are not as common as 4 pin tool cords. X Additional hardware cost. (Offset with simplified programming.)
**MicroView, Connectorized (10 Port, Dual Device, or V2)**

**Advantages:**
- Easy to add to existing equipment, in some cases even without a PLC.
- Consistent programing / processing methodology—no processing of analog signals.
- Digital signal processing is much easier.
- Direct replacement for SE-01, using standard, 4 pin tool cords.

**Disadvantages:**
- Must be accessible to maintenance personnel.
- Requires Field Block(s) and a communications network.
- Additional hardware costs. (Offset with simplified programming and wiring.)