Dynisco

From lab to production,
providing a window into the process

Dynisco ViscoIndicator Online Rheometer

SIMPLIFIED RHEOLOGY FOR THE MASSES

Description

Specifically designed for the thermoplastics resin industry, the ViscoIndicator provides continuous measurements of the melt flow rate, apparent viscosity, or intrinsic viscosity directly on the extruder.

The ViscoIndicator online rheometer duplicates the test conditions of a laboratory Melt Flow Rate (MFR) tester or capillary rheometer. Melt viscosity measurements such as melt flow rate and Intrinsic viscosity are primary specifications of thermoplastic resins. MFR and melt viscosity are related to polymer molecular properties so these numbers give some measure of the physical properties of their product as well as polymer processability. The ViscoIndicator has a look and feel that will be familiar to most shop personnel.

Why is this important – it lowers the training time to become effective in measuring the rheological properties of your polymer process. This along with the ease of connection gets you up in running in the minimal amount of time.

Features

- Based on the proven technology of our successful ViscoSensor and CMR IV series
- 1/2 -20 Mounting Port that is compatible with the standard pressure port on extruders
- User Interface based on Windows™ 10 IoT allowing users to leverage familiar Microsoft services
- Provides continuous indication of both Melt Flow Rate, Apparent and/or Intrinsic viscoscity
- Variety of heated material transfer line options available that enable rheological head to mount into tight spaces
- One cable power cord and simple cable bundle with robust connectors for quick interconnection between RSU, RCU, and HMI -- ideal for self installation
- Material is not returned to process stream
- Comes standard with Dynisco Vertex™ Mercury Free Pressure transducer for high accuracy
- Small footprint for easy set-up and integration into existing and/or new machinery
- Quick changing of capillaries

THE VISCOINDICATOR RSU

A Rheological Sensing Unit (RSU) that connects directly to the process and samples, conditions, and measures the properties of the resin. It can be mounted on extruders, reactors, or molten polymer transfer lines in various orientations. It uses a metering pump to isolate it from the process, to direct the molten polymer across interchangeable capillaries, and discharge a minimal amount of material at a rate of approximately 0.5lb/hr (0.2kg/hr). A three wire platinum RTD is used to control and measure the temperature of the molten polymer. A Vertex Mercury Free pressure transducer mounted directly before the capillary die is used to capture the pressure drop.

VISCOINDICATOR iRCU

A Rheological Control Unit (iRCU) that controls the measurement parameters (temperature, pressure, flow rate), and provides communications to an HMI. This combination provides the system with processing power and hi-end graphics allowing the iRCU to provide +/- 2% Full Scale Accuracy. Th iRCU provides the processor the ability to measure Melt Flow Ratio, Relative Viscosity, Intrinsic Viscosity, and Melt Viscosity in typical end-user environments. All of which create a cost-effective system that reduces the risk of failure to an acceptable level. The ViscoIndicator controls are based on an industry standard Windows 10 IoT. External connectivity can be accomplished through Ethernet, Wireless Connection to Windows 10 computers, or USB. A color touch screen, local human-machine interface (HMI) is standard. The HMI allows for the calibration and configuration of the system and is typically housed in a separate enclosure located within a distance of 10 meters from the iRCU, with an interconnecting cable.

VISCOINDICATOR HUMAN MACHINE INTERFACE

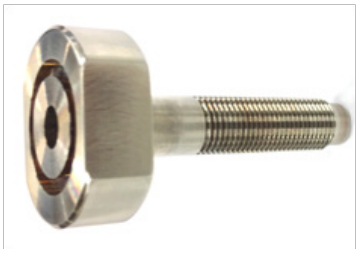
The Human Machine Interface (HMI) remotely manages test parameters and provides measured and computed material properties. It provides rheological data similar to a Laboratory Capillary Rheometer or MFR readings similar to a Melt Flow Indexer.

Optional Process Adapters for Easy Mounting

Allow us to customize the connection to a customer's specific needs

Connection tubes with heating available

Process Interrrupt Valves (PIV)

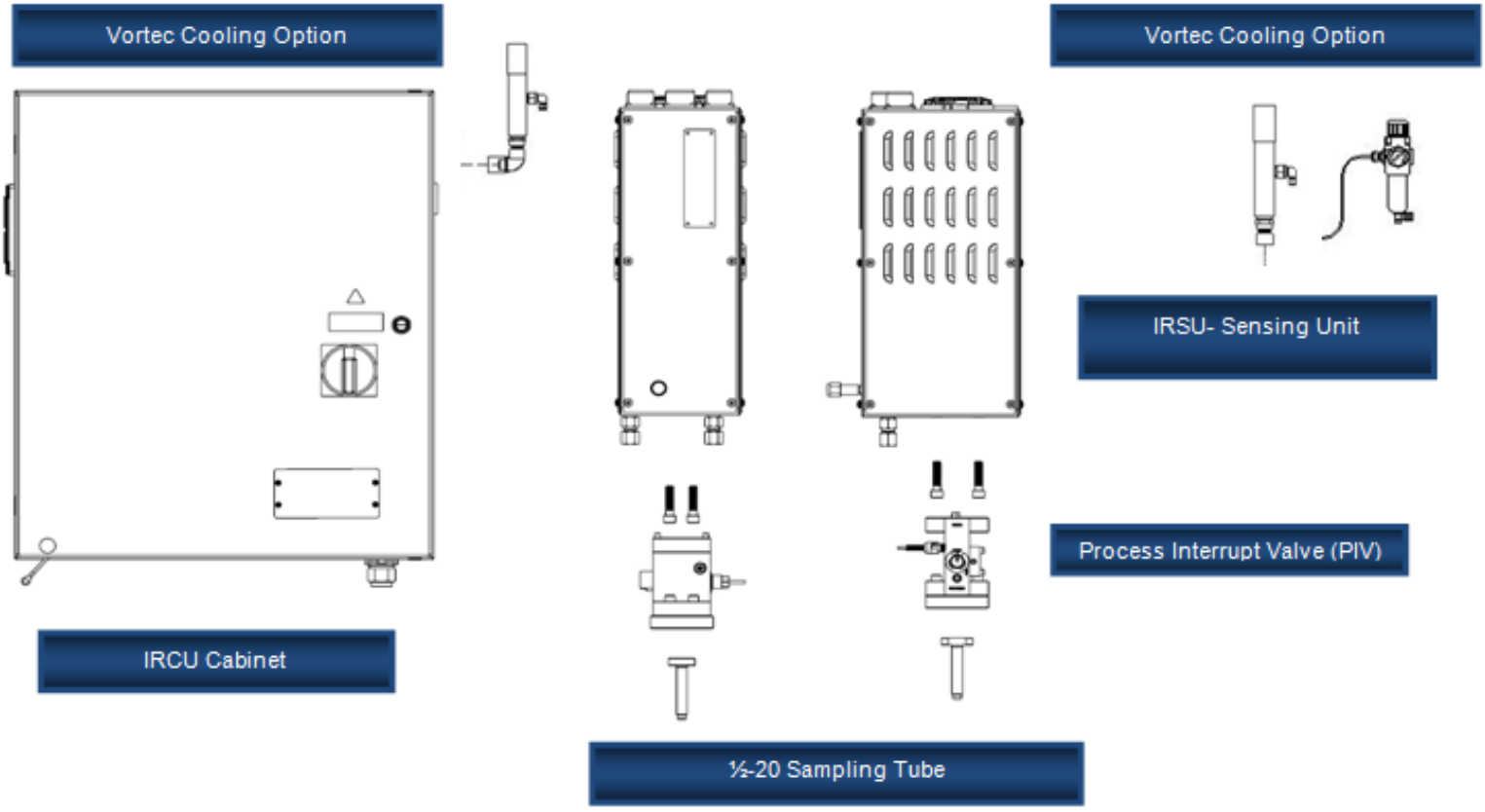


1/2-20 UNF Process Connection

Performance Characteristics	
Melt Flow Index Range	0.1 to 25,000 g/10min (With Melt Density of 0.75g/cc and 2.16Kg test load)
Viscosity Range	10 – 10^5 PaS (Applicable Shear Rates Vary with Viscosity)
Intrinsic Viscosity Range	0.2-5.0
Shear Rate	0.1 to 25,000 sec-1
Shear Stress	2.9 x 10^3 – 1.95 x 10^5 Pa
Temperature Range	40 – 300°C
Pressure Range	3 x 10^5 – 3.5 x 10^7 Pa
Max Process Temperature	300°C
Material Geneaology Output	Provides full lot traceabilty of rheological data from start to finish of your process. Data is available real time via HMI (running number or historical trend graph), with ability to export historical data via CSV file
Pump Speed Range	1 to 60 RPM Brushless Servo motor with resolver feedback
Physical Dimensions	
ViscoIndicator RSU (HxWxD)	20" x 6" x 8 " (508mm x 152mm x 203mm)
ViscoIndicator IRCU (HxWxD)	24" x 12"x 8" (610mm x 305mm x 203mm)
ViscoIndicator HMI Screen (LxH)	7" diagonal: 6.2" x 3.5" (157.5mm x 89mm)
Electrical Specifications	
System Voltage	220-240 VAC, single phase, 50/60 Hz-standard[1]
Power Requirements	1,500 W
Maximum Distance from iRCU to Rheometer Sensing Unit (RSU):	Standard cable: 2.5" (up to 100m available) The interconnecting cables required for the ViscoIndicator for longer distances are included in the options and accessories section of this quotation. *NOTE: Maximum distance between the HMI and the IRCU is 10 meters.*
HMI/Display	NEMA 3, IP20 Enclosure[1]
External Connections	
Digital Output	Fault and Warning (Dry Contact)
Digital Input	Remote Start (24VDC) & Emergency Stop

[1]*Consult factory for other options avaliable*

General Scope System Diagram



PN: DSVISCOINDICATOR
REV: 0917

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