

rs5000 Series Drives & Rheometers

The latest development in material characterization and polymer processing



Rheometer Services Inc.

rs5000 Series Drives & Rheometers

New solutions for material characterization
and polymer processing

rs5000 Series drives and rheometers from Rheometer Services Inc. are the perfect choice for laboratory scale polymer studies using a wide range of industry standard mixers and extruders.

Choose from 3 drive configurations

rs5000 Series drives are available in 3 configurations (S1, S2, & S5) designed to meet your budget and requirements. All drives are available in 5hp and 7.5hp models and a variety of RPM/Torque ranges to fit your application.

rs5000-S1 Polymer Prep Station

The rs5000-S1 Polymer Prep Station is an affordable drive system designed for sample prep using either mixers or single and twin screw extruders. Systems are configured with:

- 3 zones of temperature control (up to 6 available)
- 1 melt temperature readout (up to 2 available)
- 1 RPM readout (additional Auxiliary drive readout available)
- Accommodation for up to 2 melt pressure indicators
- Motor Torque indicator

System Architecture

The rs5000-S1 system is designed to provide a familiar operator man-machine interface for users accustomed to working with the expansive installed base of pilot plant mixing and extrusion systems.



The rs5000-S1 MMI

rs5000-S1 Polymer Prep Station



The rs5000-S1 Polymer Prep Station

Temperature Control

rs5000 S1 Drives utilize Eurotherm 3216 controllers which provide unprecedented control for process temperature. Independent air cooling channels (up to 4 zones) ensure excellent control.

Speed control

rs5000-S1 drives incorporate state of the art AC drive technology with closed loop control to ensure optimum speed control. Standard speed range is 0-200RPM.

Drive Torque Measurement *

rs5000-S1 systems provide a "representative" indication of the torque required to process your material. This signal is generated directly from the motor drive (as opposed to a load cell). Combined with the features of the Eurotherm 32h8i indicator (tare & scaling) an excellent indication of energy generated by the process can be monitored.

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rs5000-S2 Polymer Study Station

The rs5000-S2 Polymer Study Station is a mid-range drive with the added capability of Modbus communication and the *Insight* data acquisition system. All data from your test runs are recorded at a rate of 1/sec and stored for later recall using the built in data review package.

When equipped with an in-line, direct measurement torque load cell, the rs5000-S2 becomes a versatile and affordable torque rheometer solution.

System Architecture

The rs5000-S2 system design incorporates the same MMI as the rs5000-S1 with the addition of Modbus communication cards in each controller and readout. This added communication capability opens up the possibility of enhancing the system with the *Insight* data acquisition system.

Torque measurement

The rs5000-S2 system can accommodate either the Drive Torque measuring system provided with rs5000-s1 drives or enhanced with an in-line, direct measurement torque load cell. This added capability provides torque measurement equal to or exceeding that of the highest priced rheometers on the market.



The Insight Data Acquisition System

rs5000-S2 Polymer Study Station



The rs5000-S2 Polymer Study Station

Insight Features

- 8 hour runtime
- Event markers
- User defined alarm limits for all process parameters
- Color coded indication of all process parameters based on alarm status
- Digital and graphic display of all process parameters
- Auto alarm logging
- Event marker with user comments
- Time, date, and operator stamps on all alarm and event makers
- Powerful data review/report generator
- Advanced data recovery for power outage situations
- Easy data import for use in today's popular spreadsheet, database, SQC and SPC packages

rs5000 Series Drives & Rheometers

Insight Data Acquisition System



The Insight Data Acquisition System

Providing new solutions for Process Monitoring

In today's highly competitive marketplace it is crucial that you not only deliver quality products, but maintain quality records on the process used to develop & produce these products. You expect no less from your suppliers, and your customers expect no less from you.

Enter, **Insight** the latest development in Process Monitoring Systems from **LTD Design Services**. Utilizing the modbus communication features of Eurotherm's 3216 controllers and 32h8i readouts, Insight has been optimized for use with the **rs5000-S2 Polymer Study Station**. Insight provides you with a clear real-time process view of your test run while logging data from all process variables at a rate of once per second.

Insight Components

THE PROCESS PAGE

The Process Page is your main view of the actual test run. All measured parameters are clearly presented to the operator and each process parameter is color coded based on user defined Hi & Lo alarm limits. Any process variable can be displayed in a Data Strip view, Analog Meter view or Graphic Trend view directly on the Process Page.

THE PRODUCT INFO PAGE

The Product Info page is used to enter qualitative information about your test run. This information is stored with your data files for later recall.

THE REALTIME DATA PAGE

The Realtime Data page provides a digital snapshot of the current run data along with Hi-Lo settings for all process variables. This snapshot can be sent to the printer at any time during a run.

THE REALTIME TRENDS PAGE

The Realtime Trends page provides a graphic display of up to 4 process variables at one time. These plots can also be expanded to a full screen overlay view. The **Insight** quick-zoom feature allows you to zoom and expand critical run time data plots.

THE ALARM & EVENTS PAGES

The Alarm and Events pages ensure that a complete history of the test run is logged for future review. The Alarm page automatically logs any process variable which enters either a Hi or Lo alarm condition. This information is logged along with the time, operator, and alarm value. The Events page allows the operator to log comments and events during the test run.

DATA REVIEW

The **Insight** Review package allows you to recall data from previous test runs and generate reports along with graphic data plots.

Remote Access Capability

All **Insight** systems ship with a remote control access package which can be used for a variety of functions. These include remote service support, data file transfer, easy upgrades, and remote viewing of your test runs.

Insight Features

- 8 hour runtime
- Event markers
- User defined alarm limits for all process parameters
- Color coded indication of all process parameters based on Hi-Lo status
- Digital and graphic display of all process parameters
- Auto alarm logging
- Event marker with user comments
- Time, date, and operator stamps on all alarm and event markers
- Powerful data review/report generator
- Advanced data recovery for power outage situations
- Easy data import to spreadsheets, data base, SQC and SPC packages

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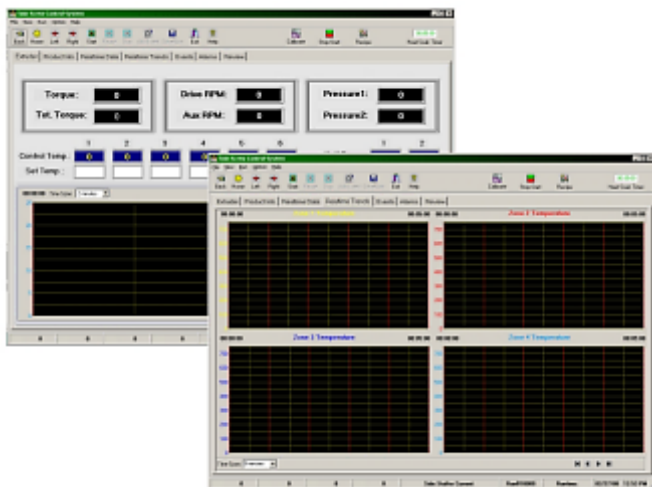
rs5000 Series drives and rheometers from Rheometer Services Inc. are the perfect choice for laboratory scale polymer studies using a wide range of industry standard mixers and extruders.

rs5000-S5 Torque Rheometer

The rs5000-S5 Torque Rheometer is a fully equipped, computer controlled Polymer Study Station. All control functions of the rheometer are achieved via the **System 5** PC based control/data acquisition system. Interchangeable, auto range detect, direct in-line torque measurement provides the highest accuracy/resolution available.

System Architecture

The rs5000-S5 system design incorporates state of the art, industry standard input/output hardware from Allen-Bradley. This eliminates the extended down time associated with single source, proprietary hardware. It also expands the system capabilities in regard to high speed/high resolution data and enhanced safety features not found in other rheometers currently available. A single high speed Ethernet/IP connection to the PC provides all communication with the instrument.



The System 5 Control D/A System

rs5000-S5 Torque Rheometer



The rs5000-S5 Torque Rheometer

Torque measurement

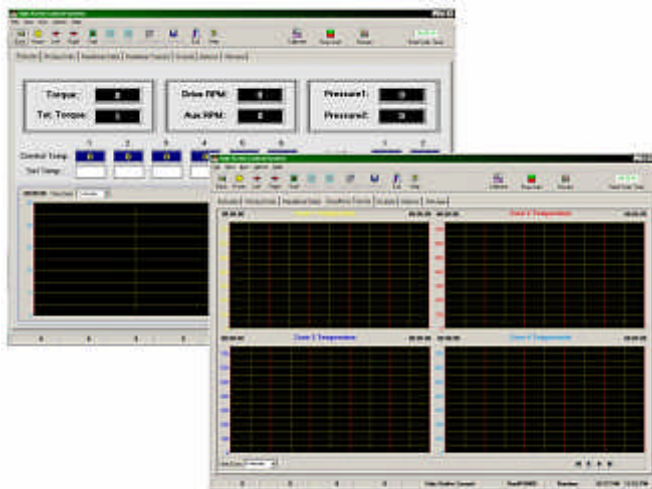
The rs5000-S5 comes standard with a 200Nm (other ranges available) in-line, direct measurement torque load cell providing the highest accuracy/resolution available.

System 5 Features

- Unlimited recipe storage
- Custom process View
- 8 hour runtime
- Event markers
- User defined alarm limits for all process parameters
- Color coded indication of all process parameters based on alarm status
- Digital and graphic display of all process parameters
- Auto alarm logging
- Event marker with user comments
- Time, date, and operator stamps on all alarm and event makers
- Powerful data review/report generator
- Advanced data recovery for power outage situations
- User and administrator access levels protect vital system settings

rs5000 Series Drives & Rheometers

System 5 Control D/A System



The System 5 Control D/A System

Providing new solutions for Process Control and Monitoring

In today's highly competitive marketplace it is crucial that you not only deliver quality products, but maintain quality records on the process used to develop & produce these products. You expect no less from your suppliers, and your customers expect no less from you.

Enter, **System 5** the latest development in Process Control and Monitoring systems from **LTD Design Services**. Based on the Allen-Bradley SoftLogix 5800 controller, **SYSTEM 5** is a combination of state of the art hardware and Windows® XP (Vista ready) software which has been optimized for the **rs5000-S5 Torque Rheometer**. System 5 provides you with a clear real-time process view of your test run while logging data from all process variables at a rate of once per second.

SYSTEM 5 Components

THE RECIPE DIALOG

System 5 allows the user to build comprehensive recipes containing all control parameters along with extensive information pertinent to the process run by the recipe. Recipes can be stored for later recall and all recipe information is stored with your data files.

THE PROCESS PAGE

The Process Page is your main view of the actual test run. All measured parameters are clearly presented to the operator and each process parameter is color coded based on user defined Hi & Lo alarm limits. Any process variable can be displayed in a Data Strip view, Analog Meter view or Graphic Trend view directly on the Process Page.

THE REALTIME DATA PAGE

The Realtime Data page provides a digital snapshot of the current run data along with Hi-Lo settings for all process variables. This snapshot can be sent to the printer at any time during a run.

THE REALTIME TRENDS PAGE

The Realtime Trends page provides a graphic display of up to 4 process variables at one time. These plots can also be expanded to a full screen overlay view. The *System 5* quick-zoom feature allows you to zoom and expand critical run time data plots.

THE ALARM & EVENTS PAGES

The Alarm and Events pages ensure that a complete history of the test run is logged for future review. The Alarm page automatically logs any process variable which enters either a Hi or Lo alarm condition. This information is logged along with the time, operator, and alarm value. The Events page allows the operator to log comments and events during the test run.

DATA REVIEW

The *System 5* Review package allows you to recall data from previous test runs and generate reports along with graphic data plots.

Remote Access Capability

All *System 5* systems ship with a remote control access package which can be used for a variety of functions. These include remote service support, data file transfer, easy upgrades, and remote viewing of your test runs.

System 5 Features

- Unlimited recipe storage
- Recipe information stored with data file
- 8 hour runtime
- Event markers
- User defined alarm limits for all process parameters
- Color coded indication of all process parameters based on Hi-Lo status
- Digital and graphic display of all process parameters
- Auto alarm logging
- Event marker with user comments
- Time, date, and operator stamps on all alarm and event markers
- Powerful data review/report generator
- Advanced data recovery for power outage situations
- User and administrator access levels protect vital system settings
- User configurable drive/auxiliary interlocks
- Easy data import to spreadsheets, data base, SQC and SPC packages

rs5000 Selection Guide

System			
Feature	S1	S2	S5
Temp zones	3 --- max 6	3 --- max 6	6
Cooling Zones	1 --- max 4	1 --- max 4	4
Melt Temperature	1 --- max 2	1 --- max 2	2
Main Drive RPM readout	Yes	Yes	Yes
Auxiliary Drive Readout	Optional	Optional	Yes
Aux Stop/Start	Optional	Optional	Yes
Aux Speed Pot	Optional	Optional	NA (computer controlled)
Pressure Readout	max 2	max 2	2
Torque Measurement			
Drive Torque	Yes	Yes	No
Load Cell	Optional	Optional	Yes
Totalized Torque	No	No	Yes
Data Acquisition	No	Yes	Yes
Computer Control	No	No	Yes
Recipe Storage/Recall	No	No	Yes
Integrated Data Review	No	Yes	Yes
Temperature Programming	No	No	Yes
Speed Programming	No	No	Yes

Specifications

rs5000 S1 - S2

Temperature Control: Eurotherm 3216 PID controller .. Type J thermocouple

Melt Temperature Indicator: Eurotherm 3216 Indicator .. Type J thermocouple

Drive: 5hp 200Nm at 200RPM (other torque/RPM configurations available)

rs7500 7.5hp 400Nm at 150RPM (other torque/RPM configurations available)

Speed control: 1024ppr encoder Closed loop control ... Manual, 10 turn speed pot

Pressure Readout: Eurotherm 32h8i w/10vdc excitation. Integrated Calibration & Tare

Torque: Drive Torque Measurement (adjusted motor load). Load cell measurement optional (see below)

rs5000 - S5

Temperature Control: Auto tune PID computer control (w/programming) .. Type J thermocouple

Melt Temperature: Type J thermocouple

Drive: 5hp 200Nm at 200RPM (other torque/RPM configurations available)

rs7500 7.5hp 400Nm at 150RPM (other torque/RPM configurations available)

Speed control: 1024ppr encoder Closed loop control ..Manual or computer control (w/programming)

Pressure Readout: 12vdc excitation .. Accepts 3mv/v transducers

Torque: Direct, In-Line load cell measurement. Accuracy: .025% of FS. Auto range detect.

Specifications subject to change without notice

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