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Multi-Feeder Controller

About the MD-II-MFC

Acrison's MD-II-MFC is a technologically advanced multiple feeder controller offering unequalled ease of operation, a unique "operator friendly" graphic display of the feeder subsystem, and exceptional reliability. The MD-II-MFC utilizes a parallel multiprocessor architecture, permitting very fast system, feeder and screen updates and control of as many as 16 Acrison feeders, including Acrison's [Series 400](#) "Weight-Loss-Differential" Weigh Feeders, [Series 200](#) Weigh Belt and Weigh Auger Weigh Feeders, and Acrison's various [volumetric](#) feeders.



The MD-II-MFC Controller includes all of the most desired operating modes and features, such as gravimetric or volumetric operation, continuous or batching modes, operation as a ratio/proportioning or master/slave system, and recipe storage and retrieval, all selectable and operable from the controller's color touchscreen keyboard display; no hardware changes are needed. In addition, the controller can be operated from a remote host device via its host communications option.

Setting a new standard for multiple feeder controller displays, the MD-II-MFC provides both feeder symbols, depicting important operating values and status, and a graph of the current feed rate, all at once and on the same touchscreen display. Operation couldn't be easier, or less error prone; it's almost intuitive.

Serial communication is one of the most powerful features of the MD-II-MFC Controller; up to two system serial communication option modules can be installed for communication with an external device, such as a DSC, PLC or host computer. A wide selection of industry protocols are supported.

As an alternative to host communication, the serial channels can be used to equip the MD-II-MFC Controller with up to two remote touchscreen display units, each operating independently and simultaneously, with individual password and lockout parameters.

As with all Acrison weigh feeder multiprocessor controllers, the MD-II-MFC performs "fixed" feed rate sampling (updates) and simultaneous feed rate output modulation. In addition, and to

ensure optimum performance, the weight signal from each weigh feeder's scale is read numerous times per second by the controller. Such rapid control functions and response ensure the highest possible degree of short term accuracy while effectively optimizing overall feeder performance.

Unique Features

The standard MD-II-MFC is equipped with one or two card racks each capable of controlling up to eight feeders. An expanded version of the card rack can also be supplied. The expanded card rack supports up to four feeders, but can accept up to two additional MD-II option modules per feeder. This feature permits a variety of different configurations as shown in the diagrams. Up to four expanded card racks can be supplied in a single MD-II-MFC Controller. Both standard and expanded card racks can be mixed, if required.

Serial communication is one of the most powerful features of the MD-II-MFC. Up to two system Serial Communication Option Modules can be installed in an MD-II-MFC Controller for communication with an external device such as a DCS, PLC or host computer. A wide selection of industry protocols are supported, see Data Link Software Protocols. As an alternative to host communication, the serial channels can be used to equip the MD-II-MFC with up to two Remote Keyboard/Display Units (KDU), each operating independently and simultaneously, with individual password and lockout parameters.

When equipped with the expanded card rack, each individual feeder within the MD-II-MFC can be supplied with a remote KDU in addition to the overall MD-II-MFC KDU. Each Keyboard/Display Unit offers messages in English, Spanish, French and German. For applications where system functions are not required, individual feeder KDUs can replace the MD-II-MFC KDU, resulting in a very economical feeder controller configuration.

Standard Operating Features

- State-of-the-art design featuring virtually all CMOS logic, 32-bit main processor, and 16-bit individual feeder processors.
- Operates up to 16 feeders in a given system from a single keyboard/display console.
- Gravimetric and volumetric control mode selection including standard provisions for ratio/proportioning and master/slave configurations.
- Continuous and batch weighing (both "Weight-Loss-Differential" and Batch/Dump) selectable from the keyboard.
- A bright nine inch color touchscreen keyboard display for easy operator-controller interface with clear messages and data in the user-selectable language.



- Graphic representation of operating feeders indicating hopper levels, alarms, metering of materials, operating motors, and real-time feed rate graph.
- Totalization in either the continuous or batch modes, with non-volatile storage to avoid loss of data, including password protection to ensure against the inadvertent clearing of totals.
- Automatic Compensation for many external factors.
- Patented Acri-Lok[®] feature ensures optimum continuous metering accuracy should the actual weight signal experience an abnormal disturbance during operation (Series 400 Continuous Weigh Feeders).
- Proprietary Batch-Lok[®] feature ensures optimum batch weighing accuracy should the actual weight signal of any "Weight-Loss-Differential" Batch Weigh Feeder or Batch/Dump Scale experience an abnormal disturbance during a batching cycle.
- SPC Data: Standard deviation and CV of feed rate plus feed rate mean are provided.
- Auto Tuning feature for PID constants.
- Deviation Alarms for both feed rate and batch amount fed.
- Built-in feeder emulation for user training and testing.
- Non-volatile storage of all operating data and set points.
- Multi-level password security feature.
- "Delayed Run" and "Delayed Stop" feature for special applications.
- Individual feeder permissive Run/Remote Run (dry contact closure input).
- Four individual feeder user-programmable outputs can be selected from thirty-six parameters.
- Individual feeder analog inputs and outputs, in various protocols, are available (3 outputs and 2 inputs maximum).
- RS-232 printer output for reporting and logging.
- Individual feeder output for general alarm.
- UL/CSA/IEC certified.
- Applicable Acrison SCR/DC motor controllers for use with the MD-II-MFC Controller are all UL/CSA and IEC certified.
- The MD-II-MFC is totally adjustment-free.
- User-selectable feeder symbols for display.
- Separate "display pages" provide the user with a visual display of all feeders in a system, plus data.
- EEPROM saves user-defined parameters for recall.
- Automatic multiple-batch capability with power-fail "Batch Resume" feature and Batches Remaining indication.
- Batch Count plus programmable delay between batches.
- Programmable Ramp-Time to Feed Rate Set Point.
- External Mode pacing even during Acri-Lok and refill (selectable - "Weight-Loss-Differential" Weigh Feeders).
- Automatic Rezero (Weigh Belt/Auger Weigh Feeders).
- Alarms can be selected to "latch" or "self-clear" as desired.
- Overfill/Empty Alarms with front panel indicators and alarm output ("Weight-Loss-Differential" Weigh Feeders).
- "Intelligent" Operational Table only displays required entries.
- Maximum motor speed threshold settings and alarm.

GRAPHICS KEYBOARD/DISPLAY UNIT

The optional Graphics Keyboard/Display Unit (KDU) is available as a remote keyboard/display for individual feeders. It features a 240 X 128 dot CCFL backlit black and white liquid crystal display (LCD) which provides a simultaneous display of up to 13 parameters, set points or commands at a time.



The Graphical Display has been designed to simultaneously show all of the most-needed feeder operating parameters, thereby giving the operator an immediate and complete picture of the status of the feeder. The graphical nature of many of the parameters (Feed Rate Error Graph, Hopper Graphics, On-Off and Alarm Symbols) makes it easy to assess feeder status at a glance, without the need to evaluate numerical values. Batch Mode provides Percent Complete and Batch Error (last 25 batches) graphs.

The small size of the Graphics KDU (7 3/4" x 5 5/8") also makes it ideal for applications where space is limited.



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