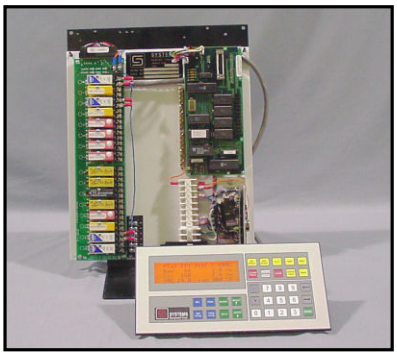
SYSTEMS
Equipment Corporation

Model ADP-020B
Asphalt Drum Mix Process Controller



Designed to measure and control the liquid asphalt flow rate so the asphalt blend is accurately interlocked to the measured aggregate flow. Interface modules are available that allow this controller to be configured on-site, to include virgin and recycle belt scales, asphalt and mix temperatures, style of asphalt control and 0 to 5 simple potentiometrically controlled feeders.

NOTE

Features and their required interface modules are priced and included according to the user's actual requirement as specified in this proposal's Price Summary section.

Available features include:

Weighbridge Totalizers.....

CAUTION!

The blending results obtained with process control systems can be no better than the signals acquired from the conveyor belt scale. The user is cautioned to carefully examine the conveyor, weighbridge, and any associated signal conditioning amplifiers to determine that these components are at least as state of the art as the process control system. New, high accuracy, high stability scale components are available from **SYSTEMS** if replacement is indicated.

- Integral virgin and recycle aggregate totalizers compatible with SYSTEMS' high stability, high precision, direct-connection weighbridge loadcell amplifier, or with users' stand-alone voltage, current or frequency output belt scale conditioner.
- User established scale damping and run/off threshold values.
- User installed aggregate percent moisture. All internal calculations and displayed values are based on the compensated dry TPH rates.
- Automatic weighbridge Zero Tracking.
- Operator entered scale damping and threshold values
- Operator selected weighbridge zero trac provides a continuous, unattended, tracking zero adjustment.
- Direct connection to users weighbridge loadcell and 110vAC belt scale starter interlock. Belt speed will be assumed proportional to the Line frequency

  OR

  Direct connection to user's weighbridge loadcell and optional pulse output belt speed sensor. The use of a belt speed sensor does increase measurement accuracy and may be required by governing specifications.

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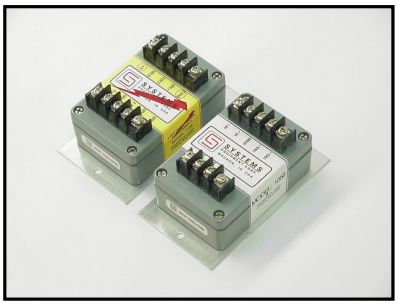
Direct Connection Weighbridge Loadcell Amplifier(s)

NOTE

External belt scale loadcell amplifiers/totalizers are not required, and may be removed and discarded. SYSTEMS integral totalizer comes with equipment mounted, high stability, high precision, loadcell pre-amplifier and SYSTEMS proprietary *Lightning Quick Disconnect.* Loadcell, loadcell amplifier and belt scale speed pickup are automatically disconnected electrically from the control center whenever the ADP-020 is turned off. This disconnect protects against lightning induced transients of up to 1500 volts.



Liquid Asphalt Blending

- Asphalt pumping rate control by low voltage electronic potentiometer equivalent or by pulsed INCREASE/DECREASE outputs.
- Asphalt INJECT output with position sensing limit switch input
- Continuous asphalt temperature measurement and display utilizing customers asphalt temperature probe. Automatic temperature compensation of volumetric meters to 60°F. The asphalt meter is compensated to its displayed temperature reading. If asphalt temperature is not being read automatically it may be entered by the operator. Mechanical temperature compensators such as used in the Broodie stackup can be removed and discarded. Separate electronic interface cards such as provided with DigiFlo meters are not required and may be removed and discarded.
- Asphalt blend interlocked to virgin and recycle aggregate scales. Maintains the desired asphalt content in the total mix regardless of the uniformity of the aggregate flow from the recycle bin.
- User selected blending of asphalt as a percent of total mix or as a percent of total aggregate.
- Operator set asphalt recirculation rate.
- Operator set asphalt inject/divert delay interval minimizes the problem of uncoated reject material on plant startup and shutdown.

Aggregate Proportioning

- Volumetric control of Eddy Current, VFAC or DC Motor Powered Feeders
- Up to 5 Volumetric Feeders may be controlled. All bin speeds are adjusted by the computer to provide the desired user set desired % aggregate blend. Actual speed control settings are based on the volumetric relationship between the control output and the delivered material rate as determined during the controller assisted feeder calibration procedure.
- Aggregate scale and feedbin material use totals.
- Nine (9) mix formulas are available to configurations with 2 or more feeders. Each formula contains the user specified % blend for each aggregate and the target %asphalt blend.
- *NOTE: Tachometer feedback is not supported with this controller. Please contact SYSTEMS Equipment if this feature is required.*
- *NOTE: No separate feeder On/Off control outputs are provided. Manual On/Off control must be provided for those feeders that cannot be started and stopped through the speed control input. This is often necessary with VFAC drives.*

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Data Recordation Printer Output

- A full feature data recordation output is included. Interface provided to an IBM compatible parallel printer. Printer and connecting cables are not provided.
- User defined automatic and unattended print interval. Demand print may be initiated by user at any time.
- Print spooling—printer access does not interfere with any function or display, nor interrupt process control.

Operator Specified Options

- Aggregate belt scale auto zero feature may be enabled/disabled.
- Metric English units of measure may be specified. All calibration values and accumulated totals are adjusted for the units selected so that the user may switch between options without needing to recalibrate
- Asphalt blend may be calculated on the basis of aggregate or on the basis of total mix.
- When feeder number one (1) is optionally controlled and there is a recycle scale present, the target value for this feeder may be interlocked to the virgin scale. This option is used primarily when feeder 1 is a recycle feeder and it is desired that the target value for this feeder track the measured virgin aggregate rate. Material not measured by an aggregate scale will be algebraically added into the total mix.

Calibration Features

- Single on-screen calibration entry for each piece of connected equipment. No screwdriver adjustments are required. With single point calibration, there is never any discrepancy between the value read & displayed, the value used in determining the blends, and the value used for recordation. One calibration serves all.
- Computer assisted & prompted temperature, weighbridge, asphalt meter, and feeder calibration procedures.
- User installed process delay intervals for precise computer control of asphalt injection and divert timing.

Operational Features

- High intensity 4 x 20 character & 33 key display terminal, visible in direct daylight or in the dark.
- User selected Target RATE and Asphalt recirculation rate. Target rate may optionally be increased or decreased in 5 TPH increments with a single keystroke.
- Interlocked w/feeder collector belt for hands off Loaded Start/Stop operation.
- Divert Valve Position is verified and errors are annunciated.

Controller Characteristics

- Industrial Grade Components.
- Direct Interface to most motor controllers, load cell scales, asphalt pumps and meters.
- Nine (9) Digit Floating Point Precision math ability. SYSTEMS' proven real time operating system.
- Full integrating analog data conversion with greater than +/- 0.002% precision.

System Packaging

- Terminal and backplate supplied loose for mounting by user.
- Backplate includes processor, power supply, input/output interface modules, and terminal strips for all field connections.
- 10' backplate to terminal interconnecting cable.
- Various enclosures are optionally available.

Products are sold subject to SYSTEMS Equipment's current Warranty, Terms, & Conditions.