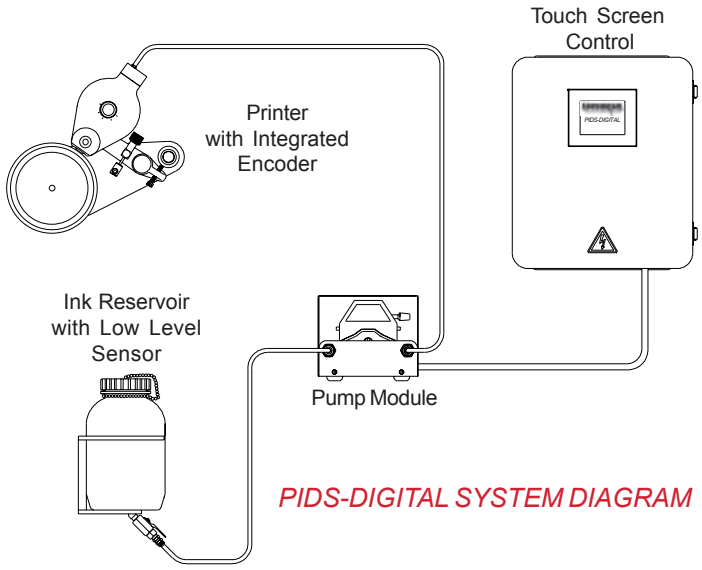
UNIVERSAL
Stenciling & Marking Systems

Technical Bulletin

New! PIDS - DIGITAL Programmable Ink Delivery System

Model Shown: PIDS-DIGITAL



PIDS-DIGITAL SYSTEM DIAGRAM

Universal's New PIDS-DIGITAL Programmable Ink Delivery Systems feature the accuracy and versitility of a powerful PLC based control with a color touch screen interface. The new control design receives encoder pulse inputs from the printer to automatically detect web motion and velocity and automatically adjusts ink delivery rates to maintain perfect print regardless of variations in web speed. To eliminate the need for a seperately mounted external encoder, one of the printers installed with the PIDS-DIGITAL system is specially modified to provide web velocity data to the control.

Universal's PIDS Systems were developed as an advanced method of supplying ink "on-demand" to our line of Non-Porous Roll Coders. The ability of these systems to deliver ink to the coders from a bulk ink reservoir eliminates the need for constant monitoring of the printing system and allows production personel to concentrate on more critical duties. The New PIDS-DIGITAL Systems combine the simplicity of touch screen electronic programming and the accuracy of peristaltic metering pumps to automatically deliver small but precise amounts of ink to the coders at programmed intervals. This unique method of ink delivery greatly reduces inking system maintenance and ensures consistent high quality code printing. By greatly reducing the required volume of ink stored in the printers ink roll, the PIDS-DIGITAL System enables the coders to print at much higher web speeds than previously possible. PIDS-DIGITAL systems are capable of controlling up to four peristaltic pump heads.

Features of the new PIDS-DIGITAL Programmable Ink Delivery Systems include:

- **Simplified programming and operation monitoring via a color touch screen interface.**
- **Encoder pulse based programs automatically compensate for changes in web velocity.**
- **Automatic sensing of web motion stops ink delivery when the web stops - no parent equipment interface is required.**
- **Pump Tube Hour Meter tracks pump tube life and notifies operator when pump tube replacement is required.**
- **Low level Ink Sensor alerts operator when ink reservoir needs to be re-filled.**
- **Touch Screen displays web velocity in FPM and ink consumption rates in ml/1,000 yards based on active program.**
- **A High Visibility Two Color LED Strobe light on the control alerts operators of alarm conditions.**

Manufactured By
Universal Stenciling & Marking Systems, Inc.
P.O. Box 871 - St. Petersburg, FL 33731 - U.S.A.
Ph: (727) 894-3027 Fax: (727) 821-7944 E-Mail: sales@universal-marking.com Website: www.universal-marking.com

The Pump System

The positive displacement peristaltic pump heads used in the PIDS systems move ink through progressive waves of contraction and relaxation of a resilient pump tube. Since ink never touches any of the pumps mechanical parts, maintenance on the system is limited to replacing the pump tube after approximately 1,000 hours of operation. The unique design of the pump head and Universal's quick disconnect replacement pump tube assembly, facilitates pump tube changes in less than 10 seconds. There are no seals to leak, no valves to clog or wear and only one moving part - simplicity of design at its best!

The Coder Connection

The final challenge in the development of the PIDS System was to mate the ink delivery system with Universal's Non-Porous Coders. Again, targeting design simplicity, our project team discarded all previous design concepts in an effort to dramatically improve the level of existing technology.

The result of this effort is a unique wiper adapter for our top mounted, Non-Porous Coders. Ink from the PIDS System is injected through a miniature duck bill check valve between two very thin plastic membrane wipers which rest against the face of the ink roll. The wipers transform the ink into a very thin film which is then evenly spread across the entire face of the roll. This design provides instantaneous coder response, ensures uniform print density over the full print width of the coder and accomplishes all this with no moving parts!

In many cases, the purchase decision for a PIDS system can be justified on the basis of ink costs alone. Substantial savings can be achieved through the purchase of bulk ink and this can result in a rapid return on investment in in high volume printing applications.

High Speed Web Printing

As the need to gain competitive advantage forced the increase of production speeds in factories, web speeds have increase dramatically. Production which may have run at 200 - 300 FPM web speeds in the past are now commonly tripled in many factories. Printing on very high speed web has always been a challenge with contact printing systems due to ink control issues. Due to the increased affect that centrifugal force has on rotating parts at high speeds most contact printing systems are limited to web speeds of approximately 600 FPM. By eliminating the large mass of ink in the printers inking system and feeding very small volumes on demand, the PIDS-DIGITAL Systems allow the printers to run at web speeds up to 1,000 FPM.

PIDS-100-PMA-D
Single Head Pump Module

Pump Module Options

The new PIDS-DIGITAL Control System will accommodate up to two single or dual head plug-in pump modules - giving the system the ability to feed ink to 1, 2, 3 or 4 printers running on the same web.

MODEL #	NUMBER OF PUMP HEADS
PIDS-DIGITAL-100	1
PIDS-DIGITAL-200	2
PIDS-DIGITAL-300	3
PIDS-DIGITAL-400	4

PIDS-200-PMA-D
Dual Head Pump Module

Ink Reservoir

The new Ink Reservoir supplied with the PIDS-DIGITAL Control System have a capacity of 64 Fluid Ounces of ink. A low level capacitive proximity sensor continuously monitors the ink level in the reservoir and will alert the operator when the reservoir reaches a low level. A high visibility LED strobe light on top of the control turns on automatically when a low ink level condition exists and will alert the operator of this condition from a great distance.

USM-GFR-64-LLS
with low level sensor

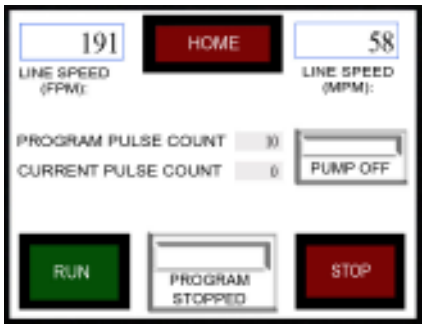
Programming & Operation Screen Samples

Home Screen

The color touch screen interface on the PIDS-DIGITAL System is designed to guide the operator through the programming sequence and provides help screens for each data entry page. The program entry pages are password protected to prevent unauthorized personnel from changing the program but allows operator access to all necessary operational screens.

Operation Screen

The operation screen displays web speed in FPM, the programmed pulse count interval for pump operation, the current pulse count and a pump On-Off Indicator. The progarm can be started and stopped from this screen as necessary.

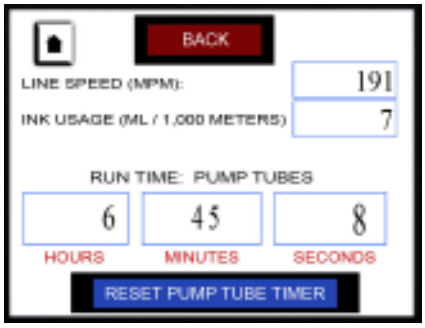


Program Adjust Screen

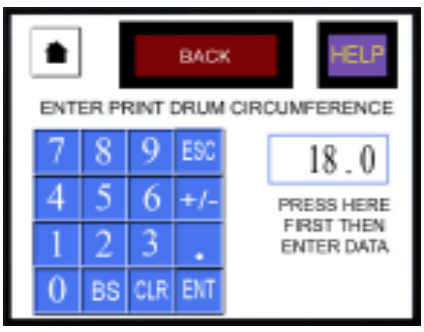
After the initial programming is completed and production is running, fine adjustments can be made to the ink delivery rates to fine tune the operation. This eliminates the need to re-enter data on all the programming screens if only a minor adjustment is required.

Operational Data Screen

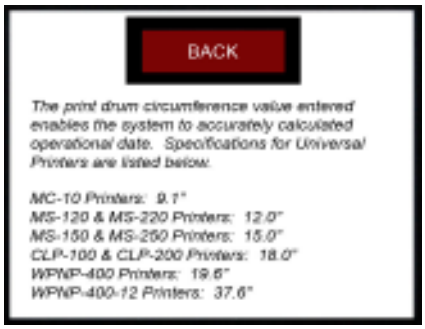
At any time while the program is running, the operator can access the operational data screen to view the ink consumption rates and monitor the pump tube hour meter status. The ink usage rates are calculated continuously during operation based on web travel distance and the programmed pump operating sequence. If fine adjustments are made to the program during operation, these changes will be reflected in the ink usage rates within a few seconds.



Operator Prompts and Help Screens

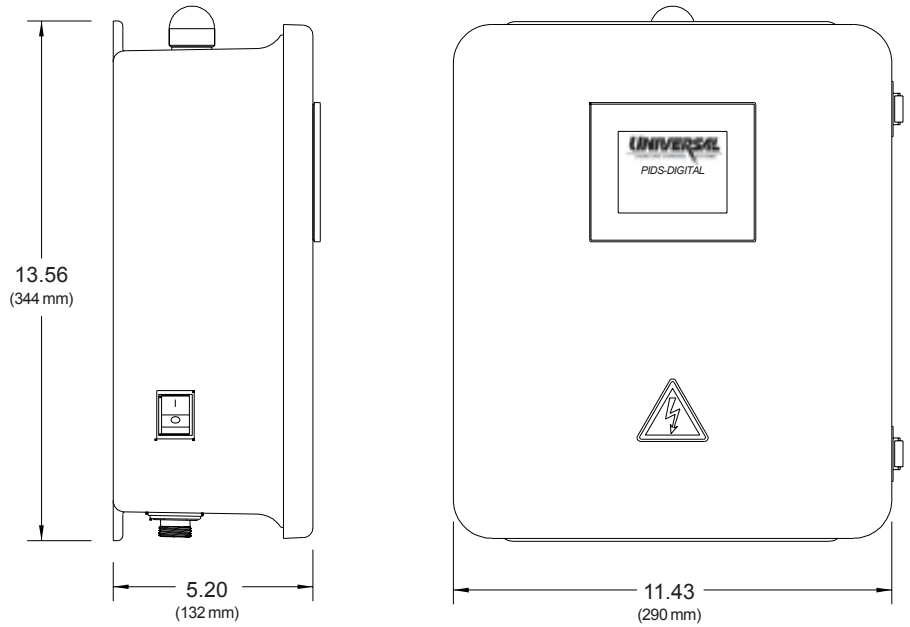


On programming screens where data input is required, prompts and/or Help screens are displayed to explain the functions and assist the operator with entering the appropriate data.

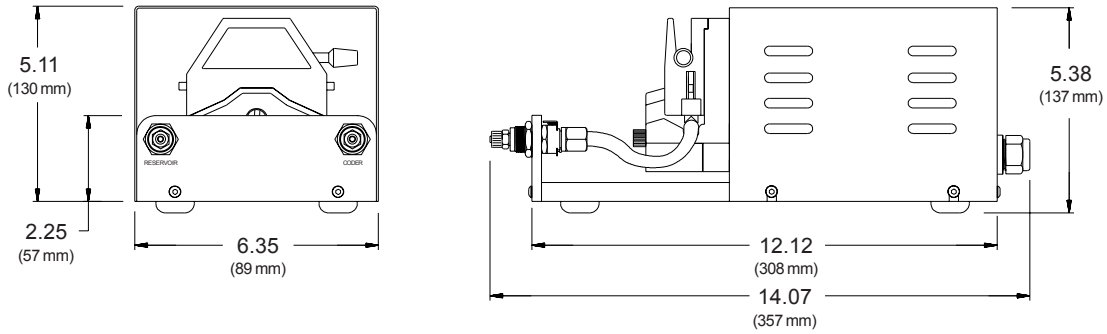


System Dimensions

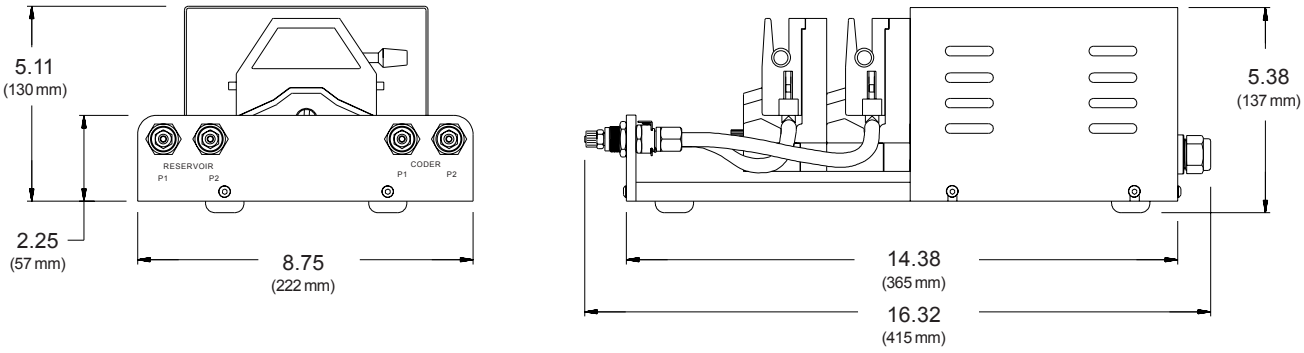
PIDS-DIGITAL CONTROL



PIDS-100-PMA-D SINGLE PUMP MODULE



PIDS-200-PMA-D DUAL PUMP MODULE



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