CONTREX®

ML Series

Compact Controllers for Precise Speed and Ratio Control

DIGITAL and ANALOG

The **ML-Trim** digital motor speed control is a universal add-on to any variable speed drive, AC/DC/Vector. Isolated drive signal replaces original speed potentiometer. Convert any drive, new or existing, into a precision digital drive for critical applications in coordinated multi-motor systems.

The **ML-Drive** digital motor speed control has all the same control features as the ML-Trim, but includes a built-in DC drive. It controls armature voltage directly through an internal SCR bridge. No need to buy or install a separate external variable speed drive. Rated 10 amps for up to 2 HP.

ML-Plus Analog Series
Included in the ML Series are CONTREX's MLP models, the ML-Trim Plus and ML-Drive Plus, both available with one-channel analog input for setpoint replacement, frequency replacement or dancer trim offset. The MLP Series features Zero Error Loop in frequency follower mode, Remote Scroll Up/Scroll Down feature that permits remote set point scrolling, and two programmable alarms, allowing the operator to choose from 16 programmable conditions. Additional programmable functions are also available.

- DC Drive & Universal Trim Models
- Preprogrammed Intelligence
- Optical Isolation
- Full keypad access to all parameters
- Easy set-up/Operation
- Master/Follower/Inverse Modes
- Analog input (MLP models)

Preprogrammed Intelligence

CONTREX has embedded motion control intelligence into the ML-Series controls. No language to learn, no code to write. Flexible and adaptable, simply enter a few set-up parameters into the keypad. End use plants can operate, modify, or maintain these controllers without a need for programming specialists.

Optical Isolation

The controls offer several levels of isolation, for protection against electrical noise. The logic and sensor inputs/outputs are always isolated from the AC line, and from the drive signal or SCRs. But they can also be isolated from the CPU when an external power supply is used for logic and sensor inputs.

Easy Operation

Full keypad for numerical input. Each key has a clear function and label, for error free, easy to remember, control procedures. No ambiguous or confusing arrow keys. Bright LED display shows speed or ratio. Switch between Master/Follower, or change setpoints on-the-fly.

Factory Automation Scheme

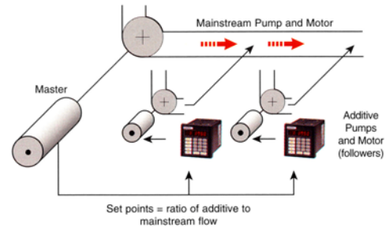
The ML-Series controllers can interface with a host computer through a RS485 Serial Communication Interface. This feature allows the host computer to perform remote control parameter entry, status or performance monitoring, and remote control of the ML-Series controllers.

ML-SERIES DIGITAL AND ANALOG MOTOR SPEED CONTROLS

The ML-Series controllers are easy to operate, designed for stand alone control of a single motor or accurate coordination of more complex multi motor drive systems. Applications include metering pumps, web handling, extrusion lines, test stands, fiber/textiles, dancer trim offset.

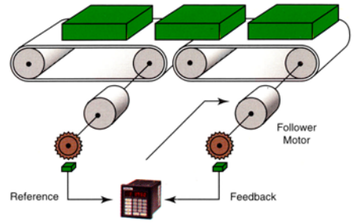
Blending

Metering pumps, screw augers, feeder conveyors can be precisely ratio controlled for perfect recipes.



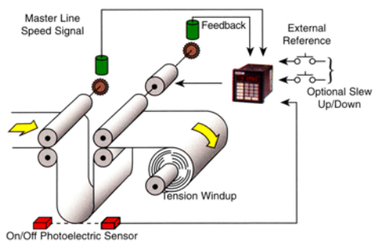
Conveyers

Process conveyors or transfer conveyors can be coordinated with precision. Product spacing can be adjusted. Inverse "time-in-the-oven" setpoints are available.



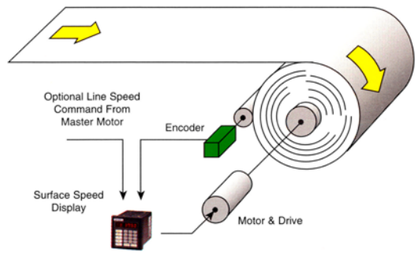
Web Drives

Film, paper, fabric processing with dancer control. Use simple on-off photo eye for loop control. Or use dancer pot or sonic sensor.



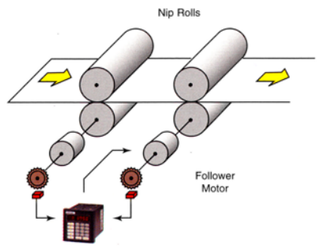
Windup

Wind coils, reels and beams at constant surface speed. Surface driven, or center driven windup with surface speed sensing.



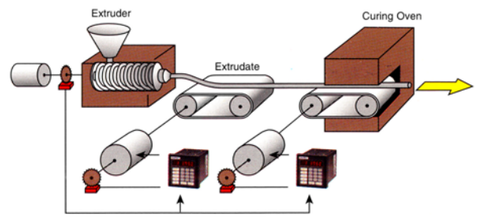
Stretch & Draw Ratios

Fiber and plastic film can be stretched to exact draw ratio. Extensible products often behave better with speed ratio control rather than tension control. Fractional draw percentages are possible.

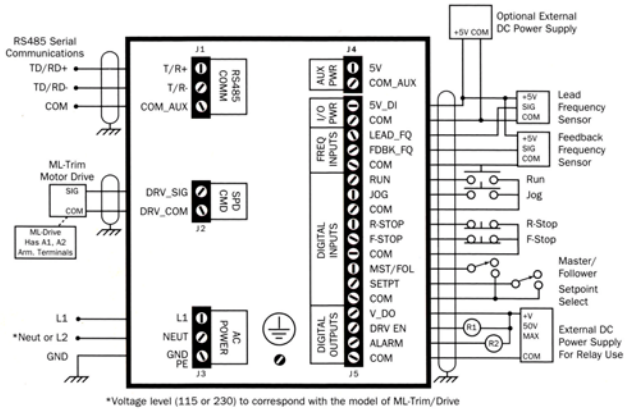


Extruders

Maintain constant volumetric die flow rates. Precisely control take-away conveyors, cooling conveyors, sizing rolls and other downstream motors in extruder processes. Many more applications in blown film lines and coextrusion processes as well.

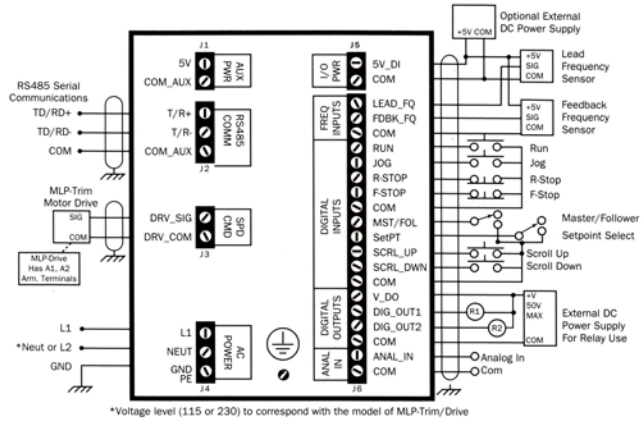


ML Series General Wiring



*Voltage level (115 or 230) to correspond with the model of ML-Trim/Drive

ML-Series



*Voltage level (115 or 230) to correspond with the model of MLP-Trim/Drive

MLP-Series

Specifications

Accuracy	.01% Set Speed MLP Zero Error in Frequency Follower
Response	10 Millisecond Control Loop Update
Tuning	Separately Adjustable Gain, and Integral Parameters for Stability and Response
Scaling Formats	Direct- Direct Set of Analog Output (Drive Command) Master- Absolute Setpoint Entry Follower- Ratio Setpoint Calculation
Setpoints	Six Total (2) Master (2) Follower (1) Direct (1) Jog
Engineering Units	Engineering Unit Setpoint and Display
Accel/Decel	0 to 600.0 Seconds
Frequency Inputs	Open-Collector (Encoder) 0-30 kHz Feedback & Lead
Analog Input	MLP Series (0 - 10 VDC 4 - 20 mA Use for frequency replacement, set point replacement or dancer offset)
Control Inputs	Vin, MAX ≤ 24 VDC Vin, LOW ≤ 1.0 VDC (Logic Low) Vin, HIGH ≥ 3.5 VDC (Logic High) Run R-Stop F-Stop Jog Master/Follower Setpoint Select MLP Remote Scroll Up/Down
Status Outputs	Open-Collector Driver (50 VDC Max, 200 mA Continuous, 500 mA Peak) Drive Enable Alarm Programable output on MLP
Motor Drive Signal	(ML-Trim & MLP-Trim) 0-12 VDC, Isolated, Adjustable
Motor Output Power	(ML-Drive & MLP-Drive) Arm 0-10 Amps Continuous RMS 15 Amps Peak RMS 0-90 VDC (115 VAC) 0-180 VDC (230 VAC) Current Limit Adjust 1/4 to 2HP
+5 VDC Supply	150 mA, Max
Serial Interface	RS485 300-9600 Baud Full Parameter Access and Control
Optical Isolation	Additional Isolation of Signal and Control Inputs Optional Via Use of Additional External 5 VDC Power Supply
Power Requirements	**ML-Trim and MLP-Trim** 115 -10% +15% VAC 230 -10% +15% VAC 50/60 Hz 0.1 Amps **ML-Drive and MLP-Drive** Same Plus ARM. Amps
Operating Temperature	0° to 55° C (Interior Temp)
Humidity	0 to 95% Non-Condensing
Physical Dimensions	Height 102mm (4.0 Inches) Width 102mm (4.0 Inches) Depth 152mm (6.0 Inches)
Faceplate Rating	NEMA 4, 4X, 12, 13 IP65

	Order Numbers
ML-Trim	
115 VAC	3200 - 1931
230 VAC	3200 - 1932
MLP-Trim	
115 VAC	3200 - 1936
230 VAC	3200 - 1937
ML-Drive	
115 VAC/1HP	3200 - 1933
230 VAC/2HP	3200 - 1934
MLP-Drive	
115 VAC/1HP	3200 - 1938
230 VAC/2HP	3200 - 1939

CONTREX®

CONTREX, INC.

MOTION CONTROL PRODUCTS

P.O. BOX 9000 · MAPLE GROVE, MN 55311-9000

1-800-342-4411 · 612-424-7800 · FAX 612-424-8734

www.contrexinc.com · info@contrexinc.com