

## TIP120 Motion Controller using Incremental Encoder

### Application Information

The TIP120 family of IndustryPack® compatible modules is designed for motion control applications using incremental encoders as position feedback.

There are five versions available: The TIP120-1x is a one or two axes motion control IP based on the LM628 controller from National Semiconductor providing a  $\pm 10V$  output signal by a 12 bit D/A converter. The TIP120-2x is a one or two axes motion control IP based on the LM629 controller from National Semiconductor providing an 8 bit sign-magnitude PWM output signal. The TIP120-30 is a two axes motion control IP based on the LM628 controller from National Semiconductor for axis 1 providing a  $\pm 10V$  output signal by a 12 bit D/A converter and based on the LM629 controller from National Semiconductor for axis 2 offering an 8 bit sign-magnitude PWM output signal.

The position feedback is provided by an incremental encoder interface. The level of the encoder signals can be TTL or RS422. The LM628 / LM629 used on the TIP120-xx are dedicated motion control processors designed for use with a variety of DC and brushless DC servo motors, and other servomechanisms which provide a quadrature (quadruple) incremental position feedback signal.



The LM628 / LM629 perform the intensive, real-time computational tasks required for high performance digital motion control. The host control software interface is facilitated by a high-level command set.

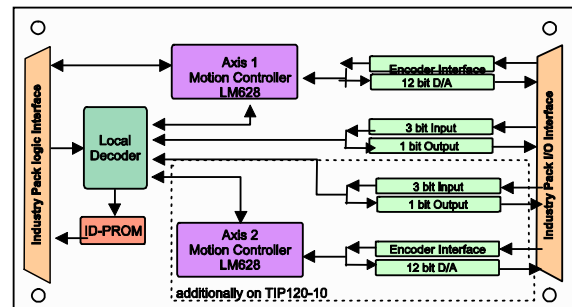
Three isolated 24V DC digital inputs are available for user functionality. The function for the three inputs may be limit switches and emergency stop input. A floating optical output can be controlled by software, for example as enable signal for the motor power amplifier. The TIP120-1x uses the LM628 as motion controller and provides a  $\pm 10V$  output signal by a 12 bit D/A converter. The  $\pm 10V$  output signal is buffered by an operational amplifier which is able to drive unlimited capacitive loads. This signal can be used to drive the power amplifier of the motor drive system.

For First-Time-Buyers the Engineering Documentation TIP120-ED is recommended. The Engineering Documentation includes TIP120-DOC, schematics and data sheets of TIP120.

Software support (TIP120-SW-xx) is available for different operating systems.

### Technical Information

- Interface according to IndustryPack specification
- Identification-PROM
- Single Size IndustryPack
- 8 bit sign-magnitude PWM output data (LM629) per axis to control a servo amplifier
- 12 bit DAC output data (LM628) per axis with  $\pm 10V$  output signal to control a servo amplifier
- 32 bit position, velocity and acceleration registers
- Quadruple analysis of count signals
- Maximum count frequency: 1 MHz
- Programmable derivative sampling interval
- Real time programmable host interrupt
- Internal trapezoidal velocity profile generator
- 16 bit PID-filter parameter
- 3 inputs per axis for limit switches, emergency stop
- 1 output per axis for enable signal



## Order Information

### None RoHS Compliant

<b>TIP120-10</b>	Two Axes Incremental Motion Controller with LM628
<b>TIP120-11</b>	One Axis Incremental Motion Controller with LM628
<b>TIP120-20</b>	Two Axes Incremental Motion Controller with LM629
<b>TIP120-21</b>	One Axis Incremental Motion Controller with LM629
<b>TIP120-30</b>	Two Axes Incremental Motion Controller (axis 1 with LM628, axis 2 with LM629)

### Documentation

<b>TIP120-DOC</b>	User Manual
<b>TIP120-ED</b>	Engineering Documentation, includes TIP120-DOC

### Software

<b>TIP120-SW-25</b>	Integrity Software Support
<b>TIP120-SW-42</b>	VxWorks Software Support (Legacy and VxBus-Enabled Software Support)
<b>TIP120-SW-65</b>	Windows XP/XPE/2000 Software Support
<b>TIP120-SW-72</b>	LynxOS Software Support
<b>TIP120-SW-82</b>	LiNux Software Support
<b>TIP120-SW-95</b>	QNX 6 Software Support

For other operating systems please contact TEWS.