

Webinar 2011 New PTO Utility



What Is It Good For?

PTO – Pulse Train Output

- Stepper Motors
 - Frequency converters + servo motors
 - Conveyors
 - Robotics
 - Elevators
- And more



Unitronics Way to PTO

First Step – Simple HSO

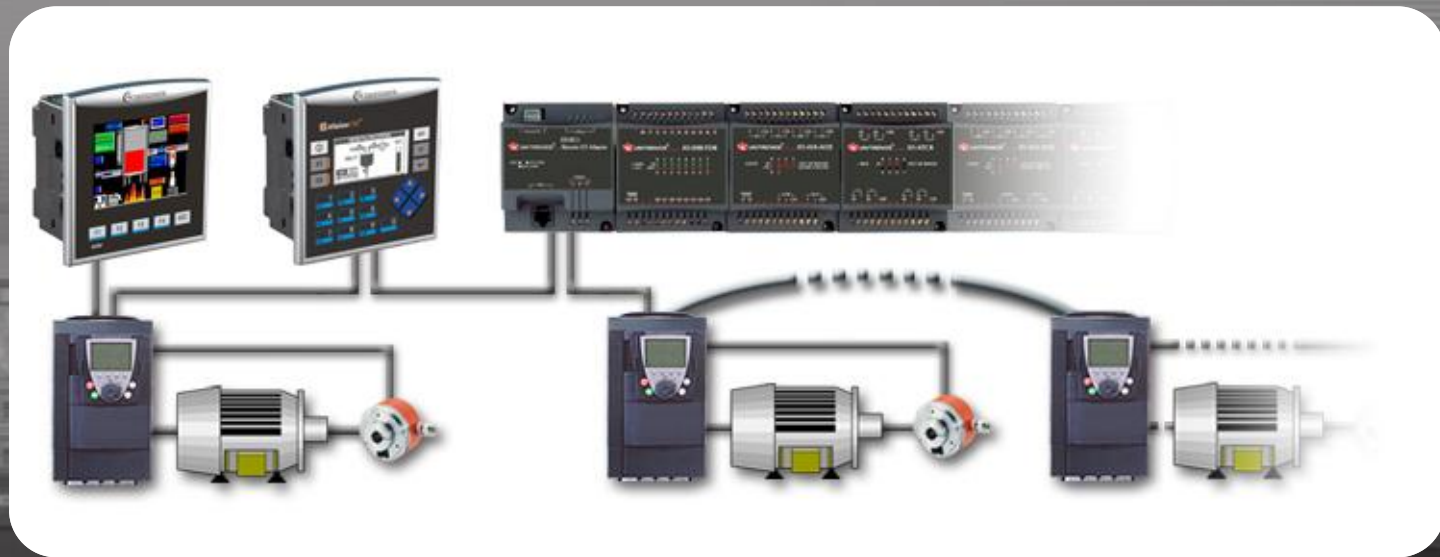
- Frequencies:
 - PNP 0.5 kHz
 - NPN 60 kHz
- Frequency + Duty Cycle
- Every PLC with transistor outputs



Unitronics Way to PTO

Second Step – Hardware PTO

- Vision 130, 350 TR – 200 kHz
- Snap-in – 60 kHz
- Pulses can be counted
- Target can be set – precise stop
- Setting acceleration and deceleration times – via Ladder
- Work is in pulses
- Direction – via Ladder



Unitronics Way to PTO

Third Step – Ladder utility PTO

- Pulse, Pulse+Dir and CW/CCW
- Ladder modules for all operations – easy and intuitive programming
- Work is in Engineer units
- Jerk Control – from trapezoid to full ‘S’ curve in 16 steps
- Absolute and relative target
- Open Loop
- Control of each Axis by itself

Range	Minimum	Maximum
1	5 Hz	15 kHz
2	10 Hz	20 kHz
3	305 Hz	133 kHz
4	610 Hz	200 kHz

The Modules – PTO Configuration

PTO Configuration

Vision model: TR34

Channel 0

Mode: Pulse + Dir

Unit: MI 1 - PTO CH1, Unit

Switch Outputs: 0

Pulses per Unit: MI 2 - PTO CH1, Pulses per Unit

Channel 1

Mode: Not Active

Unit:

Switch Outputs: 0

Pulses per Unit:

Channel 2

Mode: Pulse

Unit: MI 4 - PTO CH3, Unit

Switch Outputs: 0

Pulses per Unit:

Status messages

Status messages: MI 3 - Status: PTO Configuration

Success Bit: MB 2 - Success: PTO Configuration

OK Cancel Help

Select the appropriate model

A Channel comprises the inputs used to carry out the PTO function, and determines their function

The possible modes are:

- Pulse
- Pulse + Direction
- Clockwise/Counter Clockwise

Unitronics way to PTO

Third Step – Ladder utility PTO

Possible combinations for numerous PTO channels

	Output used per Channel				
Channel 0	Pulse (O0)	Pulse (O0) + Direction (O2)	Pulse (O0) + Direction (O2)	Pulse (O0)	Clockwise (O0) / Counter Clockwise (O1)
Channel 1	Pulse (O1)	Pulse (O1) + Direction (O3)	Pulse (O1)	Pulse (O1) + Direction (O3)	Disabled
Channel 2	Pulse (O2)	Disabled	Disabled	Pulse (O2)	Pulse (O2)

The Modules – PTO Set Profile

PTO Set Profile

The graph shows Velocity on the vertical axis and Time on the horizontal axis. The profile consists of three main phases: acceleration, constant velocity, and deceleration. Key parameters are labeled as follows:

- (B) Start/Stop Velocity: The velocity level at the beginning and end of the profile.
- (C) Maximum Velocity: The peak velocity reached during the constant velocity phase.
- (D) Acceleration time: The duration of the acceleration phase.
- (E) Deceleration time: The duration of the deceleration phase.
- (F) Jerk Factor: The rate of change of acceleration, indicated by the slope of the acceleration and deceleration curves.



Params	#	Type	Add			Format	Description
IN	A	D#		0		DEC	Channel 0
	B	DW	0			DEC	Start/Stop Velocity: PTO Set Profile
	C	DW	1			DEC	Maximum Velocity: PTO Set Profile
	D	MI	8			DEC	Acceleration Time (mS): PTO Set Profile
	E	MI	9			DEC	Deceleration Time (mS): PTO Set Profile
	F	MI	10			DEC	Jerk Factor: PTO Set Profile
OUT	G	MI	11			DEC	Status: PTO Set Profile
	H	MB	3				Success: PTO Set Profile

Ok Cancel

The Modules – PTO Move

 PTO Move

X

Params	Type	Add			Format	Description
IN	D#		0		DEC	Channel 0
	D#		0		DEC	Movement Type: Absolute
	DW	2			DEC	Velocity: PTO Move
	ML	0			DEC	Target Position: PTO Move
OUT	MI	12			DEC	Status: PTO Move
	MB	4				Success: PTO Move



Ok



Cancel

OK

CANCEL

The Modules – PTO Read Status



 PTO Read Status 

Params	Type	Add			Format	Description
IN	D#		0		DEC	Channel 0
OUT	MI	13			DEC	Current Position: PTO Read Status
	DW	3			DEC	Current Velocity: PTO Read Status
	MB	5				Current Direction: PTO Read Status
	MB	6				In Progress: PTO Read Status
	MI	14			DEC	Status: PTO Read Status
	MB	7				Success: PTO Read Status

The Modules – PTO Set Home

 PTO Set Home



Params	Type	Add			Format	Description
IN	D#		0		DEC	Channel 0
	MI	16			DEC	Offset: PTO Set Home
OUT	MI	17			DEC	Status: PTO Set Home
	MB	9				Success: PTO Set Home

Ok

Cancel

OK

CANCEL

Demonstration

