

One Integrated Solution for Control & Automation:

# AC Servo: Drives & Motors

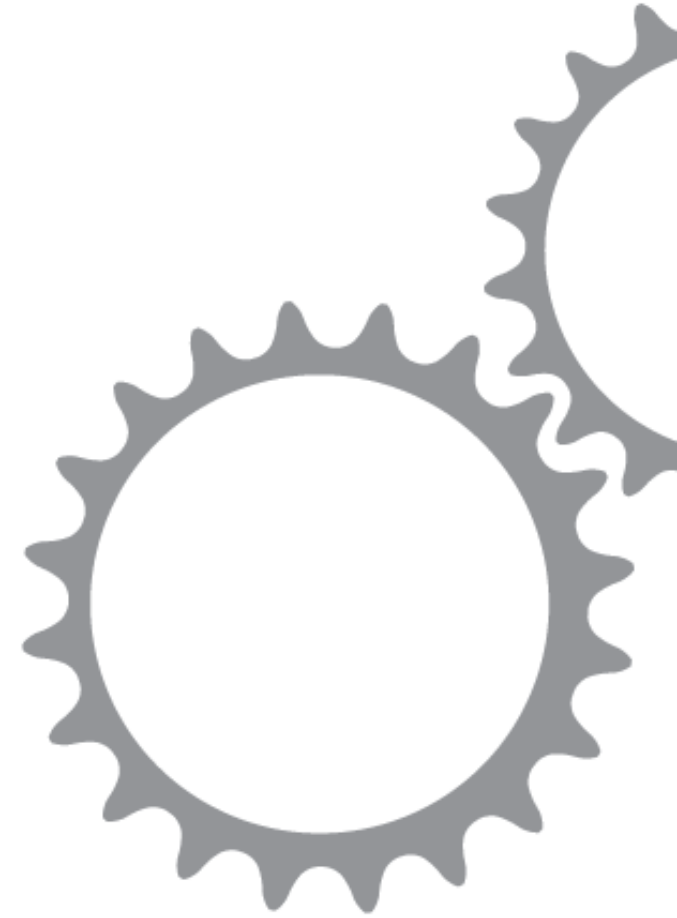


# What is Motion control?

- “**Motion control** is a sub-field of automation, encompassing the systems or sub-systems involved in moving parts of machines in a controlled manner.”
- “In control engineering a **servomechanism**, sometimes shortened to **servo**, is an automatic device that uses error-sensing negative feedback to correct the action of a mechanism.”

# Your Servo Challenges

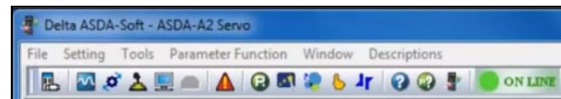
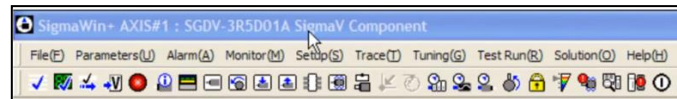
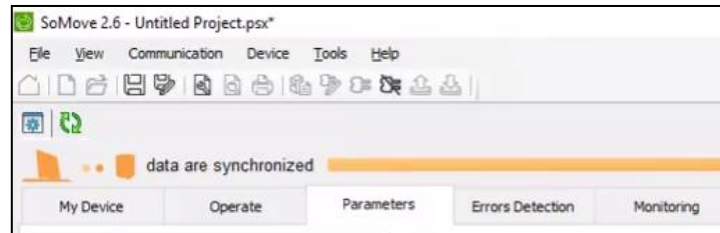
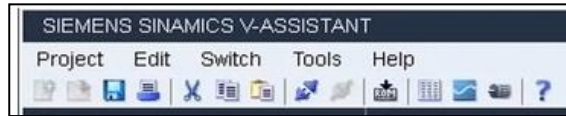
- **Multiple tools to use.**
  - System design
  - Servo configuration & tuning
  - Communication (fieldbus) implementation
  - Logic development
  - HMI Design
- **Requires different motion related skill sets:**
  - Mechanical
  - Electrical
  - Communication & Control
  - System integration
- Motion control operation requires many detailed steps



# Why should you use our solution?

**One**, single software to controls it all

Instead of learning and struggling a verity of software tools

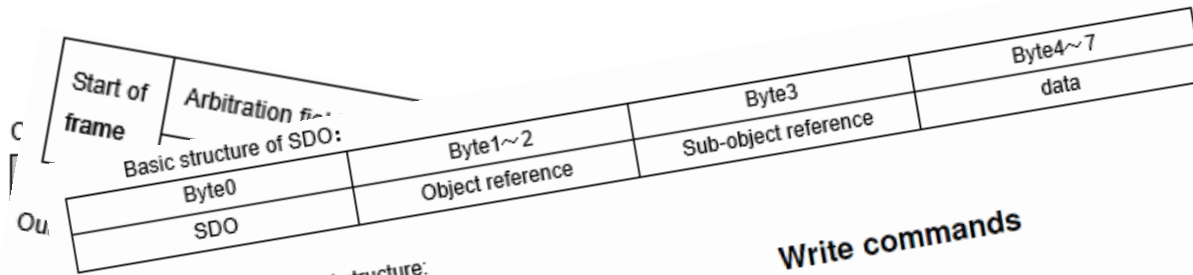


V10 - UniLogic  
Project Edit Layout PLC Tools Help  
Clipboard Text Editing Find & Replace  
Solution Explorer  
Servo Drives X Function1 X Axis1 X Axes X Motion Diagnostics X URB Remote I/O X Uni-I/O & Uni-COM X Controller X Toolbox  
Drive Name Drive Type Description  
Drive1 UMD-B3  
Drive2 UMD-B3  
Drive3 UMD-B3  
Drive4 UMD-B3  
Properties Window  
CANOpen Communication Settings  
CANopen ID 2  
Motor  
Motor series UMM-XXX-B3  
Motor UMM-0050CAB-B3  
Motor properties  
Encoder resolu... 23  
Encoder type Absolute  
Rated current [A] 28  
Peak current [A] 84  
Rated torque [...] 23.9  
Peak torque [N... 54.3  
Rated speed [r... 2000  
Max speed [rpm] 3000  
Brake

Name	Type	Format	Description
On board IO	IO		
Drive1	IO		
Drive2	IO		
Drive3	IO		
Drive4	IO		

# Why should a customer use our solution?

## Seamless Communication Management



SDO read/write command structure:

### Read commands

#### UINT8 / INT8

Command: 40<sub>h</sub> IX0 IX1 SU  
Answer: 4F<sub>h</sub> IX0 IX1 SU D0

#### UINT16 / INT16

Command: 40<sub>h</sub> IX0 IX1 SU  
Answer: 4B<sub>h</sub> IX0 IX1 SU D0 D1

#### UINT32 / INT32

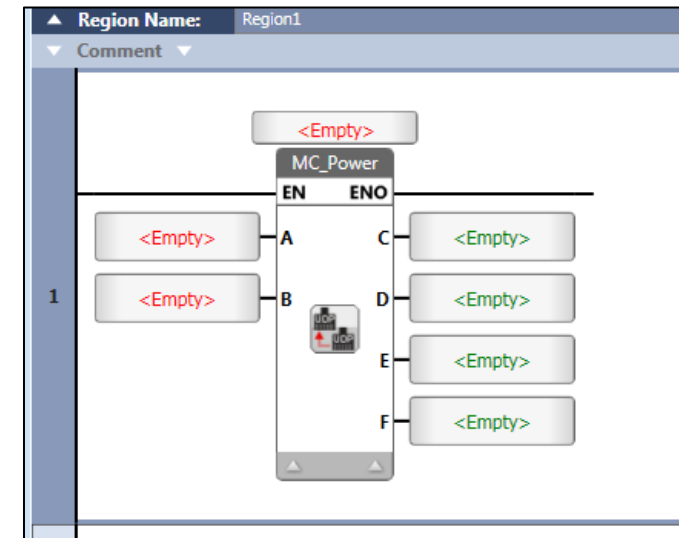
Command: 40<sub>h</sub> IX0 IX1 SU  
Answer: 43<sub>h</sub> IX0 IX1 SU D0 D1 D2 D3

### Write commands

Token for 8 Bit  
2F<sub>h</sub> IX0 IX1 SU DO  
60<sub>h</sub> IX0 IX1 SU

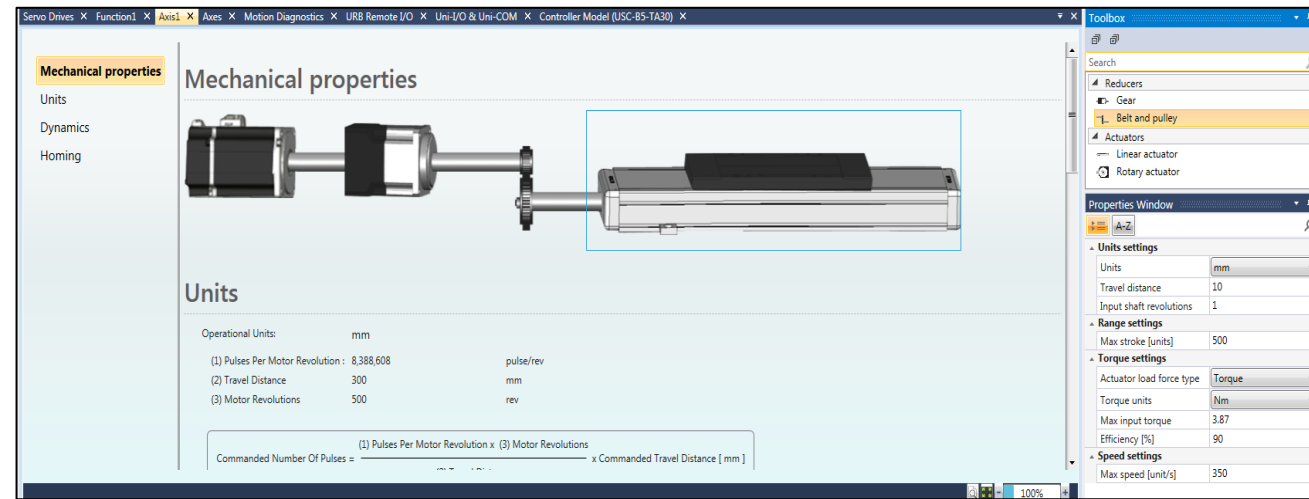
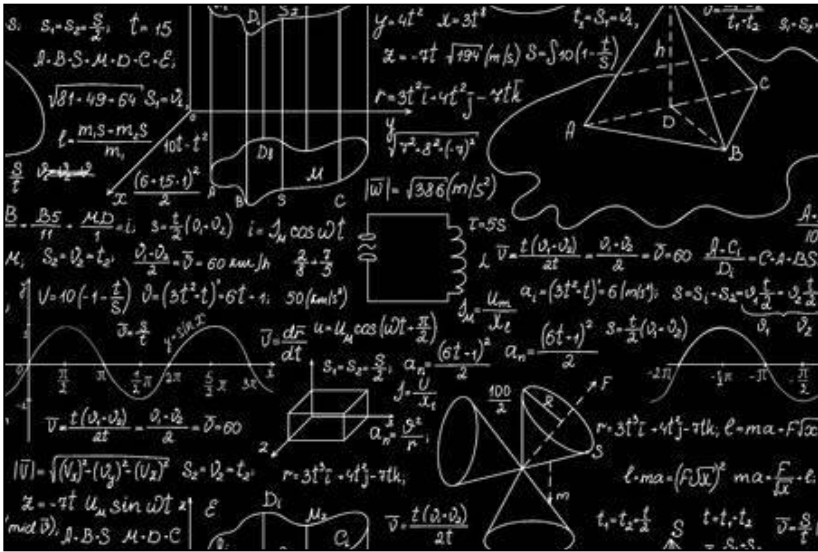
Token for 16 Bit  
2B<sub>h</sub> IX0 IX1 SU DO D1  
60<sub>h</sub> IX0 IX1 SU

Token for 32 Bit  
23<sub>h</sub> IX0 IX1 SU DO D1 D2 D3  
60<sub>h</sub> IX0 IX1 SU



# Why should a customer use our solution?

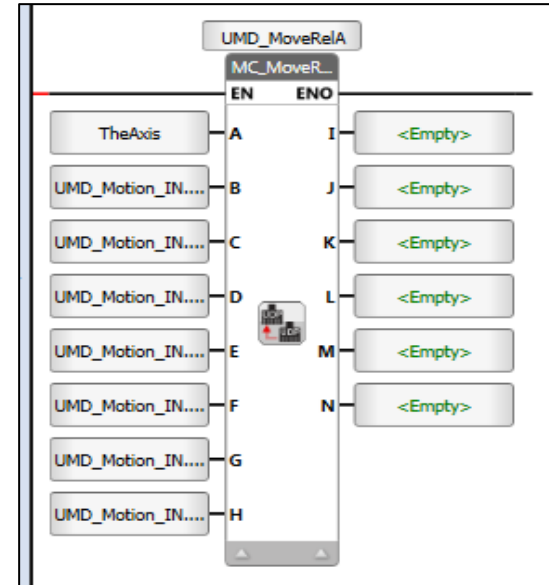
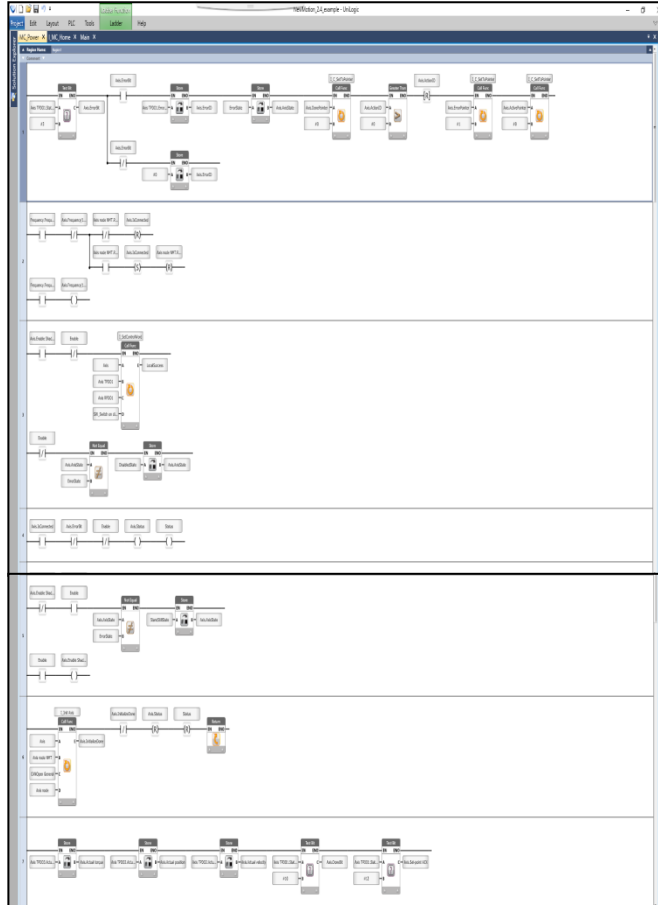
## Mechanical conversions & simplifying



- Unit conversion (up to 3 actuators)
- Controlling the mechanical restrictions and limitations
- Minimize room for errors

# Why should a customer use our solution?

Drag & Drop function blocks - Reduces code length and complexity

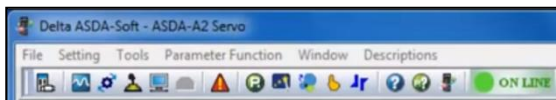
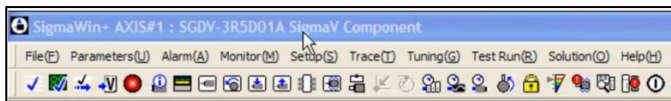
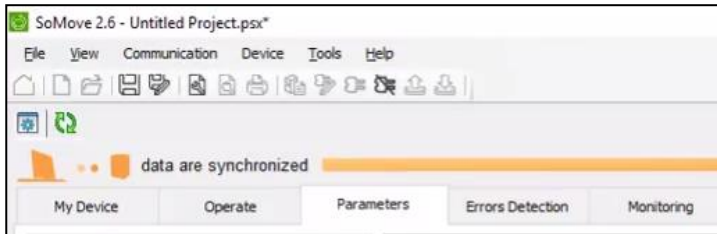
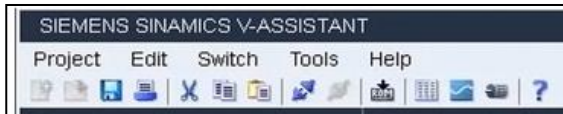


- PLCopen Based FBs

# Why should a customer use our solution?

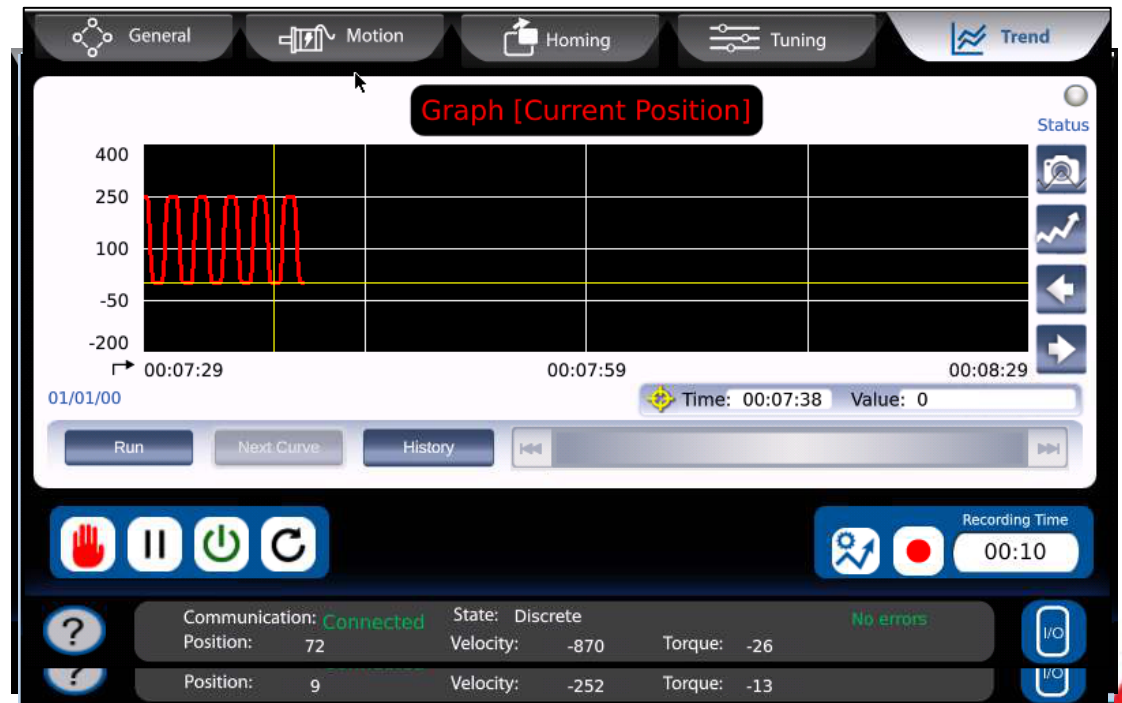
**No PC needed**

No need to learn & struggle with a variety of PC software tools



Set Axis Parameters  
Execute movements  
Monitor Axis behavior

Full functionality over you HMI with automatic importing

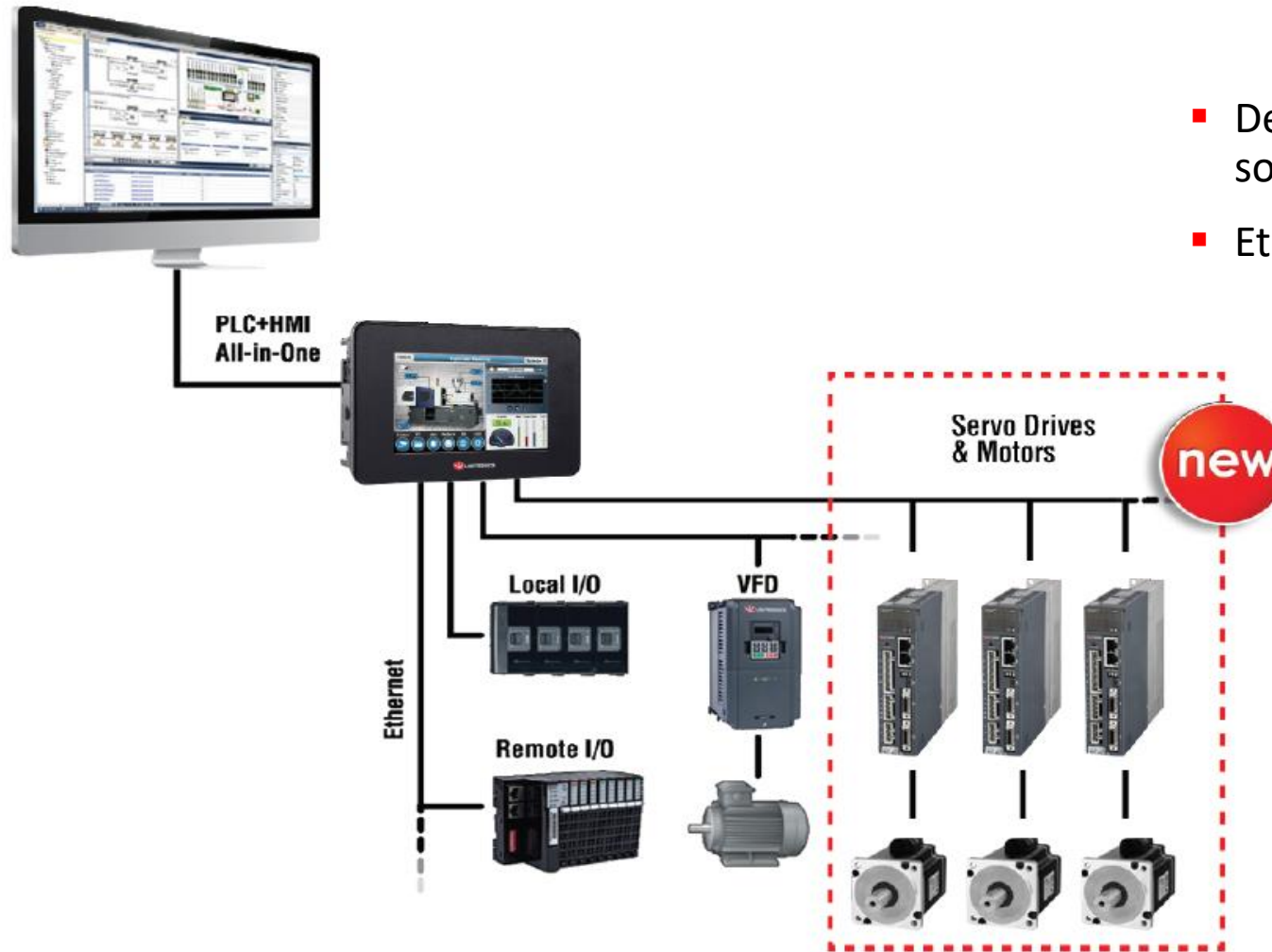




# Added values

- **Greatly simplifies** matters for customers who lack a motion skillset
- **Minimalize time** and **complexity**
- **Easier programming** via Drag & Drop FBs (PLCopen based)
- **One Software, One Company, One** integrated solution

# Unitronics System Architecture



- Designed for Unitronics vertical solution over CanOpen
- EtherCat will be available soon

# Product Offering

## A bundle that include:

### Drives:

- 1-Phase 200-230V: 50W - 1kW (0.06 - 1.34HP)
- 3-Phase 200-230V: 750w - 5kW (1.01- 6.7HP)
- 3-Phase 380-440V: 1kW - 5kW (1.34 - 6.7HP)

### Motors:

- Holding Brake – Optional
- Built-in Encoder
  - 23bit – Absolute
  - 20bit – incremental

### Stock:

- Samples availability for all products
- High availability for key products

### Available soon:

- EtherCAT
- STO



# Product Offering

## Accessories:

- IO Terminal block
- Filters
- Breaking resistors
- Cables - 3m, 5m, & 10m

\*standard and robotics



# Unitronics Servo - Benefits

- **One Software** - for system design, axis configuration, components tuning, and program it all:  
PLC, HMI, Servo, VFD, and I/O
- **Automatic communication setup:** absolutely seamless
- **Saves Time** – short learning curve, plug & play integration
- **Hiding complexity** – configuring only what's needed

# Unitronics Servo - Benefits

- **Minimal room for error:** we analyze your mechanical properties and recommend safe values for your application
- **Embedded Diagnostic tools: no PC needed.**
- **Motion Control programming - drag & drop function blocks**
- **Wide servo power range – 50W to 5,000W (0.06-6.7 hp)**

# Typical Applications

- Packaging
- Pick & place
- Material handling
- Conveyors
- Clamping
- Dosing
- Capping
- Etc



# Common Applications

- Filling\Dosing
- Pick & Place
- Indexer + Capping
- Assembly line + inspection





# Unitronics Servo Positioning

- **One Integrated Solution**
  - PLC + HMI
  - Servo + accessories
  - IOs
  - VFDs
- **Single development Environment**
- **Bring innovative approach to motion control**
- **Competitive TCO**

Thank you!

# Variable Frequency Drive

**NEW!**

## Moving your Control Forward – VFD from Unitronics

0.4-2.2kW Single Phase  
0.75-110kW Three Phase



# Total Solution



## VFD: Easy to Program. Simple to Use

- EMC built-in filters
- Variety of mounting options
- Temperature - extended operating range
- Modbus RTU fieldbus
- UL, TÜV-SÜD safety and CE certified
- Braking units - built-in
- Sensorless Vector and Torque control
- Heavy-duty overload capacity
- STO (Safe Torque Off)

## One Complete Solution for Control and Automation

**UNISTREAM® VISION™ SAMBA™**

Complete  
Range of  
PLC+HMI

Full Range  
of VFDs

All-in-One  
Software  
for PLC,  
HMI & VFD

Outstanding  
Tech Support

# Specifications

		UMI-B1 EU	UMI-B1 UL	UMI-B5 UL
<b>Power</b>	Input Voltage	200-240VAC, Single Phase 380-440VAC, Three Phase	200-240VAC, Single Phase 200-240VAC, Three Phase 380-480VAC, Three Phase	200-240VAC, Three Phase 380-480VAC, Three Phase
	Input Frequency	50/60Hz		
	Supported Motors	Asynchronous Induction Motors, Three Phase Input		Asynchronous Induction Motors, Three Phase Input  Permanent Magnet Synchronous Motors, Three Phase Input
	Output Frequency	0-400Hz		
	Overload Capacity	150%, 60 seconds		
180%, 10 seconds				
200%, 1 second				
<b>Control</b>	Control Method	SVPWM (Space Vector PWM) SVC (Sensorless Vector Control)		
	Control Setting	MODBUS, Analog, Digital, PID, Pulse		
	Communication	MODBUS RTU RS-485		
<b>Input</b>	Analog Inputs	<b>Total 2:</b> 1 input 0-10V, 0-20mA, 1 input 0-10V		<b>Total 3:</b> 2 inputs 0-10V, 0-20mA, 1 input 0-10V
	Digital Inputs	<b>Total 5:</b> 4 inputs 1kHz, 1 input 50kHz		<b>Total 9:</b> 8 inputs 1kHz, 1 input 50kHz
<b>Output</b>	Analog Outputs	<b>Up to 2:</b> 1 output 0-10V, 0-20mA ≤2.2kW/3HP, (2nd output available from >2.2kW/3HP)	2 outputs 0-10V, 0-20mA	
	Digital Outputs	1 output sink/source		<b>Total 2:</b> 1 output sink/source, 1 output 50kHz
	Relay Outputs	<b>Up to 2:</b> 1 Programmable Multi-functional output. 2nd output available from >2.2kW/3HP	<b>Total 2</b> Programmable Multi-functional outputs	
<b>Features</b>	Dynamic Braking Unit	Built-in (≤37kW/50HP)		Built-in (≤30kW/40HP)
		Optional (>37kW/50HP)		Optional (>30kW/40HP)
	EMC Filters	Built-In C3 (≥4kW/5HP), Comply with IEC/EN 61800-3		Built-In C3, Comply with IEC/EN 61800-3
		Optional C3 (<4kW/5HP), Comply with IEC/EN 61800-3		
		Optional C2, Comply with IEC/EN 61800-3		
<b>General</b>	Operating Temperature	(-10)°C/14°F – 50°C/122°F (de-rated by 1% for every 1°C/2°F above 40°C/104°F)		
	Altitude	2000m/6600 ft (de-rated by 1% for every additional 100m/330ft above 1000m/3300ft)		
	Enclosure Rating	IP20		
	Mounting Options	Wall and Rail (≤2.2kW/3HP)		Wall, Flange
		Wall and Flange (>2.2kW/3HP)		
	Cooling	Air-cooling		
	Safe Torque Off	√	×	
Compliance	CE, TÜV-SÜD Safety Mark	CE, UL and cUL		

# Product Offering

## UMI-B1 Series - STO



Article Number	Input Voltage	Rated Output Power		Rated Input Current (A)	Rated Output Current (A)	Dimensions (W x H x D mm)			Safety Class
		kW	HP						
UMI-0004BE-B1	Single phase 200-240V	0.4	0.5	6.5	2.5	80	160	124	Class PLd SIL2 CAT.3
UMI-0007BE-B1		0.75	1	9.3	4.2	80	160	124	
UMI-0015BE-B1		1.5	2	15.7	7.5	80	185	141	
UMI-0022BE-B1		2.2	3	24	10	80	185	141	
UMI-0007EE-B1	Three phase 380-440V	0.75	1	3.4	2.5	80	185	141	Class PLd SIL2 CAT.3
UMI-0015EE-B1		1.5	2	5	4.2	80	185	141	
UMI-0022EE-B1		2.2	3	5.8	5.5	80	185	141	
UMI-0040EE-B1		4	5	13.5	9.5	146	256	167	Class PLe SIL3 CAT.3
UMI-0055EE-B1		5.5	7.5	19.5	14	146	256	167	
UMI-0075EE-B1		7.5	10	25	18.5	170	320	197	
UMI-0110EE-B1		11	15	32	25	170	320	197	
UMI-0150EE-B1		15	20	40	32	170	320	197	
UMI-0185EE-B1		18.5	25	47	38	200	341	185	
UMI-0220EE-B1		22	30	51	45	200	341	185	
UMI-0300EE-B1		30	40	70	60	250	400	202	
UMI-0370EE-B1		37	50	80	75	250	400	202	
UMI-0450EE-B1		45	60	98	92	282	560	238	
UMI-0550EE-B1		55	75	128	115	282	560	238	
UMI-0750EE-B1		75	100	139	150	282	560	238	
UMI-0900EE-B1		90	120	168	180	338	554	330	
UMI-1100EE-B1		110	150	201	215	338	554	330	

## Optional Parts



External Keypads



Flange Mounting Plates



Braking Resistors



C3 Input Filters  
C2 Filters



Dam-board for side heat releasing holes

## Product Designation

UMI - 0022	E	U	- B1
①	②	③	④ ⑤

No.	Key	Description
①	Product Line	Unitronics Motion Inverters
②	Power Range	0004:400W/0.5HP 0022:2.2kW/3HP
③	Power Rating	B: 1PH 200V-240V C: 3PH 200V-240V E: 3PH 380V-440V/480V
④	Certification	U - UL Certified E - TÜV-SÜD Certified
⑤	Product series	B1 / B5

## UMI-B1 Series - UL



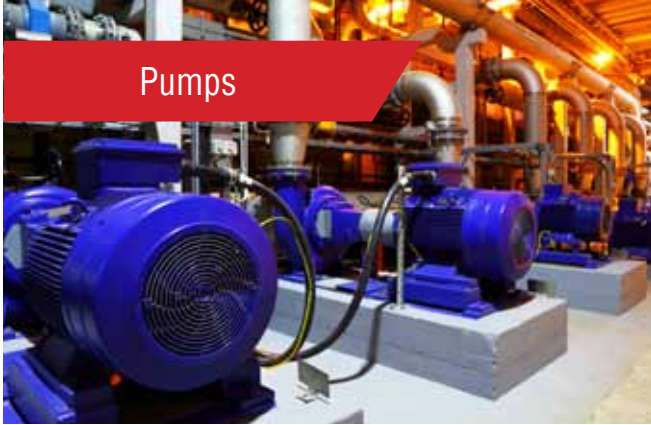
Article Number	Input Voltage	Rated Output Power		Rated Input Current (A)	Rated Output Current (A)	Dimensions (W x H x D mm)		
		kW	HP					
UMI-0004BU-B1	Single phase 200-240V	0.4	0.5	6.5	2.5	80	160	124
UMI-0007BU-B1		0.75	1	9.3	4.2	80	160	124
UMI-0015BU-B1		1.5	2	15.7	7.5	80	185	141
UMI-0022BU-B1		2.2	3	20	10	80	185	141
UMI-0004CU-B1	Three phase 200-240V	0.4	0.5	3.7	2.5	80	185	141
UMI-0007CU-B1		0.75	1	5	4.2	80	185	141
UMI-0007EU-B1	Three phase 380-480V	0.75	1	3.4	2.5	80	185	141
UMI-0015EU-B1		1.5	2	5	4.2	80	185	141
UMI-0022EU-B1		2.2	3	5.8	5.5	80	185	141

## UMI-B5 Series - UL



Article Number	Input Voltage	Rated Output Power		Rated Input Current (A)	Rated Output Current (A)	Dimensions (W x H x D mm)		
		kW	HP					
UMI-0007CU-B5	Three phase 200-240V	0.75	1	5	4.5	126	193	175
UMI-0015CU-B5		1.5	2	7.7	7	146	263	181
UMI-0022CU-B5		2.2	3	11	10	146	263	181
UMI-0040CU-B5		4	5	17	16	170	332	216
UMI-0055CU-B5		5.5	7.5	21	20	170	332	216
UMI-0075CU-B5		7.5	10	31	30	230	342	216
UMI-0110CU-B5		11	15	43	42	255	407	384
UMI-0150CU-B5		15	20	56	55	255	407	384
UMI-0185CU-B5		18.5	25	71	70	270	555	325
UMI-0220CU-B5		22	30	81	80	270	555	325
UMI-0300CU-B5		30	40	112	110	270	555	325
UMI-0370CU-B5		37	50	132	130	325	680	365
UMI-0450CU-B5		45	60	163	160	325	680	365
UMI-0550CU-B5		55	75	200	200	325	680	365
UMI-0015EU-B5		Three phase 380-480V	1.5	2	5	3.7	126	193
UMI-0022EU-B5	2.2		3	5.8	5	126	193	175
UMI-0040EU-B5	4		5	13.5	9.5	146	263	181
UMI-0055EU-B5	5.5		7.5	19.5	14	146	263	181
UMI-0075EU-B5	7.5		10	25	18.5	170	332	216
UMI-0110EU-B5	11		15	32	25	170	332	216
UMI-0150EU-B5	15		20	40	32	230	342	216
UMI-0185EU-B5	18.5		25	47	38	230	342	216
UMI-0220EU-B5	22		30	56	45	255	407	384
UMI-0300EU-B5	30		40	70	60	255	407	384
UMI-0370EU-B5	37		50	80	75	270	555	325
UMI-0450EU-B5	45		60	94	92	270	555	325
UMI-0550EU-B5	55		75	128	115	270	555	325
UMI-0750EU-B5	75		100	160	150	325	680	365
UMI-0900EU-B5	90		120	190	180	325	680	365
UMI-1100EU-B5	110	150	225	215	325	680	365	

# Applications



And More!



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