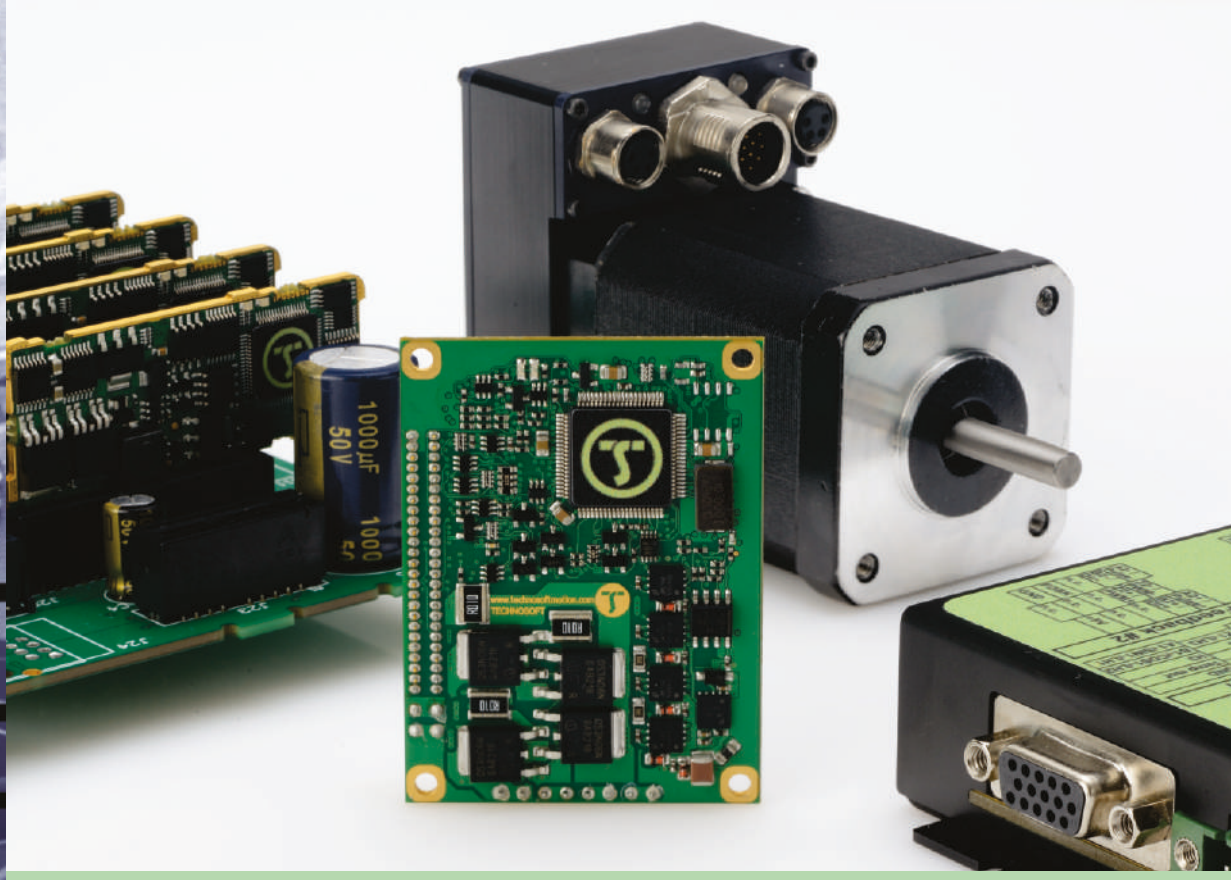


Product Overview
Intelligent Servo Drives
Intelligent Motors

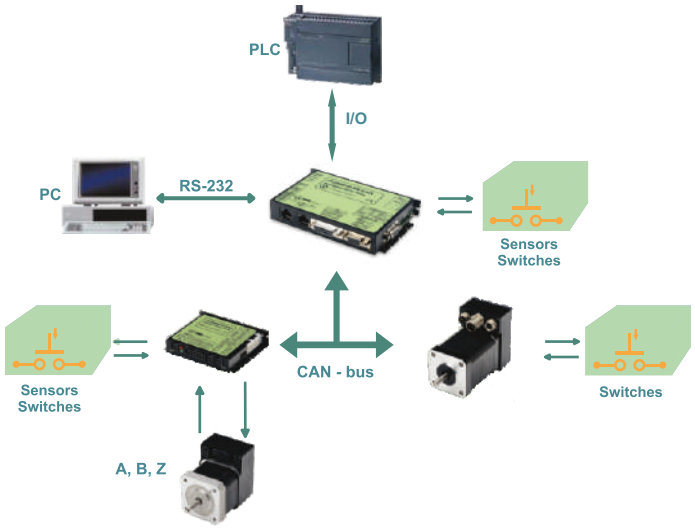
Your **Next** Intelligent **Move**

T E C H N O S O F T

MOTION TECHNOLOGY

An Innovative Company

Technosoft is a leading DSP Motion Control technology company, specialized in the design and manufacture of motion control products and custom motion systems.
Technosoft's focus on innovative design, using the latest control technology has culminated in the realization of MotionChip™ - a dedicated solution for motion control, embedded today in a broad range of intelligent servo drive products.
Technosoft products use modularity both at hardware and software levels. This provides highly flexible and adaptable dedicated solutions that can easily be prototyped to meet specific OEM needs.
The automotive, medical, robotics, textile and factory automation industries have effectively used Technosoft's motor control expertise in the fast development of specific products for highly demanding applications.



Your Benefits

Compact and cost effective intelligent drives

- **All in one** : controller and drive in one unit
- **One for all** : same drive for DC, step, brushless or linear motors
- **Distributed intelligence** with :

CANopen	CANopen	EtherCAT	EtherCAT
TMLCAN	TML	Ethernet	ETHERNET

- **Advanced digital motion control** with MotionChip™ DSP technology :
  -PVT, S-curves, electronic camming, 3D motion commands
- **Easy implementation** with various motion libraries for PC / PLC
- **Graphical programming** with EasyMotion Studio

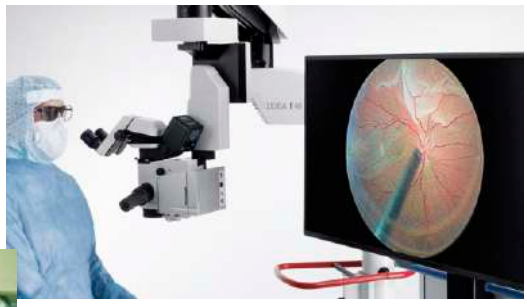
Intelligent Drives and Motors

Technosoft Intelligent Servo Drives belong to a new family of fully digital servo drives with embedded intelligence, based on the latest DSP controller technology. These state-of-the-art intelligent drives offer features usually found only in high-power servo-amplifiers:

- Software configurability to drive AC or DC brushless, DC brush or step motors
- Multi-mode motion operation: contouring, profiling, gearing, electronic camming
- Stand-alone or multi-axis configuration
- Typical feedback devices: tacho generators, incremental encoders, digital or linear Halls
- Distributed control over CAN, CANopen, EtherCAT, Ethernet

MEDICAL

- Respiratory devices
- Surgical instruments & robots
- Clinical Diagnosis
- Dosing machines
- Liquid Handling System
- Ophthamology equipment
- X-Ray equipment
- Biomechatronics
- Centrifugal pumps



Instrumentation & Optics

- Digital microscopes
- Laser measuring systems
- Aerial view cameras
- Photometry
- Lens shaping and polishing
- Auto focus & auto zooming

Research Laboratories

- Analysis equipment
- Pipetting
- Laboratory automation

Industrial Equipment

- Elevators
- Elevator doors
- Solar cells
- Hydraulic pumps
- Solar trackers
- Photovoltaic panels

Factory Automation

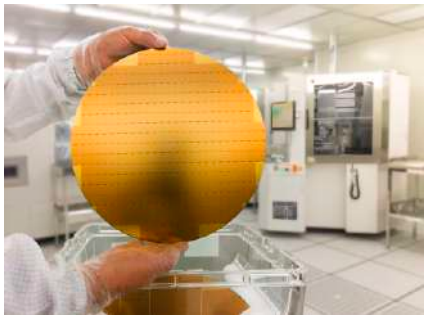
- Pick and place robots
- Cartesian robots
- Welding robots
- Printing equipment
- Bonding systems
- Laser cutting
- Laser marking
- Wafer inspection

Robotics

- Robots and cobots
- Exoskeletons
- Grippers
- Automated guided vehicles (AGVs)
- Warehouse automation

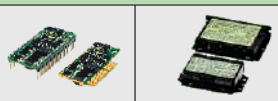
Semiconductor Equipment

- Flexible automation
- Atomic layer etching
- Trim and form
- Pick and place handler



Packaging

- Bottling machines
- Labeling machines
- Gluing machines
- Package printing
- Material dosing

	Family	iPOS2401	iPOS360x				iPOS4808	
								
	Drive	iPOS2401MX CAN/CAT Intelligent Servo Drive 25W	iPOS3602 VX / MX Intelligent Servo Drives 75 W	iPOS3604 VX / MX Intelligent Servo Drives 144 W	iPOS3602 HX /BX Intelligent Servo Drive 75 W	iPOS3604 HX/BX Intelligent Servo Drive 144W	iPOS4808 VX Intelligent Servo Drive 400 W	iPOS4808 MY Intelligent Servo Drive 400 W
Controlled Motors	• DC	✓	✓	✓	✓	✓	✓	✓
	• Step (up to 256 µsteps)	✓	✓	✓	✓	✓	✓	✓
	• Brushless (AC & DC)	✓	✓	✓	✓	✓	✓	✓
	• Linear	✓	✓	✓	✓	✓	✓	✓
Electrical Parameters	Bus Voltage	12-24 V	12-36 V	12-36 V	12-36 V	12-36 V	12-48 V	12-48 V
	Output Current - Nominal	1 A	2 A	4 A	2 A	4 A	8 A	8 A
	Peak Current	1 A	3.2 A	10A	3.2 A	10A	20 A	20 A
Communication	RS-232	✓	✓	✓	✓	✓	✓	✓
	CAN / CANopen	✓	✓	✓	✓	✓	✓	✓
	EtherCAT	✓	Optional	Optional			Optional	Optional
	TMLCAN	✓	✓	✓	✓	✓	✓	✓
Motion Control	Control Functions Position, Speed, Torque	✓	✓	✓	✓	✓	✓	✓
	Electronic Gearing	✓	✓	✓	✓	✓	✓	✓
	Electronic Camming	✓	✓	✓	✓	✓	✓	✓
Inputs / Outputs	Analog Inputs	1	2 (VX) / 1 (MX)	2 (VX) / 1 (MX)	2	2	2	2
	Digital Inputs	5	5	5	5	5	8	6
	Digital Outputs	2	4 (VX) / 3 (MX)	4 (VX) / 3 (MX)	3	3	5	5
Sensors	Quadrature Incremental Encoder	✓	✓	✓	✓	✓	✓	✓
	Digital Hall	✓	✓	✓	✓	✓	✓	✓
	Linear Hall	Optional	✓	Optional	Optional	Optional	✓	✓
	Sin / Cos Encoder		✓	✓	✓	✓	✓	✓
	SSI Encoder							✓
	BiSS Encoder							✓
	Resolver							
Others	Size (mm)	47x19x8 50x20x15	56 x 29 x 7 (VX) 55 x 26 x 13 (MX)	56 x 29 x 7 (VX) 55 x 26 x 13 (MX)	73x45x16(HX) 80x55x16(BX)	73x45x16(HX) 80x55x16(BX)	56x44x7	60x44x12
	Weight (g)	7 /12	10 (VX) / 8 (MX)	10 (VX) / 8 (MX)	48(HX)/ 70(VX)	48(HX)/ 70(VX)	18	20
	Ambient Temp. Range (*)	0 - 40 °C	0 - 40 °C	0 - 40 °C	0 - 40 °C	0 - 40 °C	0 - 40 °C	0 - 40 °C

(*) Extended temperatures available on request

iPOS4808		iPOS80x0	iMOTIONCUBE	Multi-axes			Family	
								
iPOS4808 MY CAN/ CAT-STO COMBO Intelligent Servo Drive 400 W	iPOS4808 BX Intelligent Servo Drive 400 W	iPOS8010 BA CAN/CAT Intelligent Servo Drive 400 W	iMOTIONCUBE Intelligent Servo Drive 1600 W	iPOS360x SX Multi-axes Motion system 4 x 144 W	iPOS360x SY Multi-axes Motion system 6 x 144 W	iPOS4808 SY Multi-axes Motion system 4 x 400 W		
✓	✓	✓	✓	✓	✓	✓	DC	Controlled Motors
✓	✓	✓	✓	✓	✓	✓	• Step (up to 512 µsteps)	
✓	✓	✓	✓	✓	✓	✓	• Brushless (AC & DC)	
✓	✓	✓	✓	✓	✓	✓	• Linear	
12-48 V	12-48 V	12-80 V	12-80 V	12-36 V	12-36 V	12-48 V	Bus Voltage	Electrical Parameters
8 A	8 A	10 / 20A	20 A	4 x 4 A	6x4 A	4x8 A	Output Current - Nominal	
20 A	20 A	20 / 40A	40 A	4 x 10 A	6x10 A	4x20 A	Peak Current	
✓	✓	✓	✓	✓	✓	✓	RS-232	Communication
✓	✓	✓	✓	✓	✓	✓	CAN / CANopen	
CAT only	CAT only	✓	Optional	Ethernet	✓	✓	EtherCAT	
✓	✓	✓	✓	✓	✓	✓	TMLCAN	
✓	✓	✓	✓	✓	✓	✓	Control Functions Position, Speed, Torque	Motion Control
✓	✓	✓	✓	✓	✓	✓	Electronic Gearing	
✓	✓	✓	✓	✓	✓	✓	Electronic Camming	
2	2	2	2	4x2	6x2	4x2	Analog Inputs	Inputs / Outputs
6	6	4	4	4x5	6x5	4x6	Digital Inputs	
5	5	4	4	4x4	6x4	4x5	Digital Outputs	
✓	✓	✓	✓	✓	✓	✓	Quadrature Incremental Encoder	Sensors
✓	✓	✓	✓	✓	✓	✓	Digital Hall	
✓	✓	✓	✓	✓	✓	✓	Linear Hall	
✓	✓	✓	✓	✓	✓	✓	Sin / Cos Encoder	
✓	✓	Optional	✓			✓	SSI Encoder	
✓	✓	Optional	✓			✓	BiSS Encoder	
		Optional					Resolver	
60 x 44 x 21 (CAN) 64 x 44 x 21 (CAT)	89 x 77 x 17 (CAN) 103 x 71 x 17 (CAT)	139 x 94 x 25	60 x 40 x 20	100x98x37	160x122x37	96x100x76x16	Size (mm)	Others
43 / 45	110 / 120	240	45	125	200	325	Weight (g)	
0 - 40 °C	0 - 40 °C	0 - 40 °C	0 - 40 °C	0 - 40 °C	0 - 40 °C	0 - 40 °C	Ambient Temp. Range (*)	

(*) Extended temperatures available on request

	Family	iMOT17 Step			iMOT17 Brushless			iMOT23 Step		Gearheads
										
	Drive	iMOT 17xS XM-CAN Intelligent Step Motors 0.3 Nm	iMOT 17xS TM-CAN Intelligent Step Motors 0.3 Nm	iMOT 17xS TM-CAT Intelligent Step Motors 0.3 Nm	iMOT 17xB XM-CAN Intelligent Brushless Motors 0.1-0.3.Nm	iMOT 17xB TM-CAN Intelligent Brushless Motors 0.1-0.3.Nm	iMOT 17xS TM-CAN Intelligent Brushless Motors 0.1-0.3.Nm	iMOT 23xS XM-CAN Intelligent Step Motors 1-1.8 Nm	iMOT 23xS TM-CAN Intelligent Step Motors 1-1.8 Nm	GP Gearheads up to 90 Nm
Controlled Motors	• DC									
	• Step (up to 512 µsteps)	✓	✓	✓				✓	✓	
	• Brushless (AC & DC)				AC	AC	AC			
	• Linear									
Electrical Parameters	Bus Voltage	12-48V	12-48V	12-48V	12-48V	12-48V	12-48V	12-48V	12-48V	
	Output Current - Nominal	0.3 Nm	0.3 Nm	0.3 Nm	0.1-0.3 Nm	0.1-0.3 Nm	0.1-0.3 Nm	1-1.5 Nm	1-1.5 Nm	Rated Torque up to 90 Nm
	Peak Current	0.5 Nm	0.5 Nm	0.5 Nm	0.3-0.9 Nm	0.3-0.9 Nm	0.3-0.9 Nm	1-1.8 Nm	1-1.8 Nm	Peak Torque up to 150 Nm
Communication	RS-232	✓	✓	✓	✓	✓	✓	✓	✓	
	CAN / CANopen	✓	✓		✓	✓		✓	✓	
	EtherCAT			✓			✓			
	TMLCAN	✓	✓		✓	✓		✓	✓	
Motion Control	Control Functions Position, Speed, Torque	✓	✓	✓	✓	✓	✓	✓	✓	
	Electronic Gearing	✓	✓	✓	✓	✓	✓	✓	✓	
	Electronic Camming	✓	✓	✓	✓	✓	✓	✓	✓	
Inputs / Outputs	Analog Inputs	1	1	1	1	1	1	1	1	
	Digital Inputs	5	4	4	4	4	4	5	4	
	Digital Outputs	2	2	2	2	2	2	2	2	
Sensors	Quadrature Incremental Encoder	Internal	Internal	Internal	Internal	Internal	Internal	Internal	Internal	
	Digital Hall									
	Linear Hall									
	Sin / Cos Encoder									
	SSI Encoder									
	BiSS Encoder									
	Resolver									
Others	Size (mm)	51÷65x43x57	51÷65x43x57	51÷65x43x57	58÷91x43x57	58÷98x43x57	58÷98x43x57	68÷92x58x73	68÷92x58x73	40 / 57 / 86 Diameter
	Weight (g)	285-600	285-600	285-600	325-700	325-700	325-700	700-1100	700-1100	Up to 4500
	Ambient Temp. Range (*)	0 - 40 °C	0 - 40 °C	0 - 40 °C	0 - 40 °C	0 - 40 °C	0 - 40 °C	0 - 40 °C	0 - 40 °C	0 - 40 °C

(*) Extended temperatures available on request

iPOS Line

iPO2401 MX CAN/CAT Intelligent Servo Drives — 24 V, 1 A, 25 W

CAN

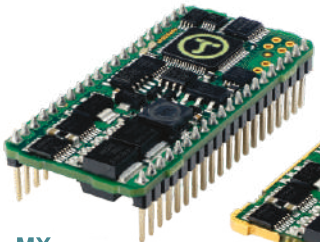
CAT

- Suitable for rotary, linear brushless, DC brush and step motors
- 12-24 V power supply (motor and logic)
- 1 A continuous, 1 A peak current
- 5 Digital inputs , 3 digital outputs and 2analog inputs
- High resolution stepper control up to 512 microsteps / step
- Quadrature and Sin / Cos encoders, Hall sensors or linear Halls
- RS-232 and CAN (TMLCAN and CANopen protocols)
- EtherCAT extension with CoE protocol
- Size: 47 x 19 x 8 mm (CAN model) / 50 x 20 x 15 mm (CAT model)

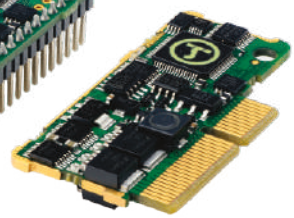
CANopen TML EtherCAT

Ordering information:
P024.300.E101 – iPOS2401 MX-CAN; 24 V, 0.9 A, pin-plug, encoder, CAN
P024.200.E121 — iPOS2401 MX-CAT Combo, 24 V, 1 A, EtherCAT

iPOS3602 VX / iPOS3602 MX Intelligent Servo Drives — 36 V, 2 A, 75 W



MX



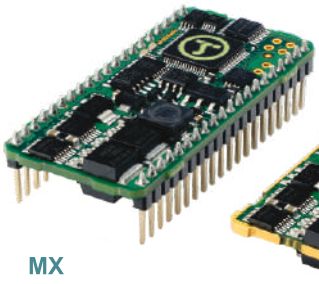
VX

- Suitable for rotary, linear brushless, DC brush and step motors
- 12-36 V power supply (motor and logic)
- 2 A continuous, 3.2 A peak current
- Digital inputs (5), digital outputs (4 VX model / 3 MX model) and analog inputs (2 VX model / 1 MX model)
- High resolution stepper control up to 512 microsteps / step
- Quadrature and Sin / Cos encoders, Hall sensors or linear Halls
- RS-232 and CAN (TMLCAN and CANopen protocols)
- Optional EtherCAT extension with CoE protocol
- Mounting: vertical (VX model), horizontal (MX model)
- Size: 56 x 29 x 7 mm (VX model) / 55 x 26 x 13 mm (MX model)

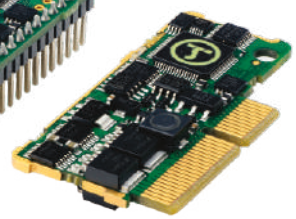
CANopen TML EtherCAT ETHERNET

Ordering information:
P028.001.E001 iPOS3602 VX-CAN Servo Drive, 36 V, 2 A, CAN
P028.001.E101 iPOS3602 MX-CAN Servo Drive, 36 V, 2 A, CAN

iPOS3604 VX / iPOS3604 MX Intelligent Servo Drives — 36 V, 4 A, 144 W



MX



VX

- Suitable for rotary, linear brushless, DC brush and step motors
- 12-36 V power supply (motor and logic)
- 4 A continuous, 10 A peak current
- Digital inputs (5), digital outputs (4 VX model / 3 MX model) and analog inputs (2 VX model / 1 MX model)
- High resolution stepper control up to 512 microsteps / step
- Quadrature and Sin / Cos encoders, Hall sensors or linear Halls
- RS-232 and CAN (TMLCAN and CANopen protocols)
- Optional EtherCAT extension with CoE protocol
- Mounting: vertical (VX model), horizontal (MX model)
- Size: 56 x 29 x 7 mm (VX model) / 55 x 26 x 13 mm (MX model)

CANopen TML EtherCAT ETHERNET

Ordering information:
P028.002.E001 iPOS3604 VX-CAN Servo Drive, 36 V, 4 A, CAN
P028.002.E101 iPOS3604 MX-CAN Servo Drive, 36 V, 4 A, CAN

BX

HX

iPOS3602 BX / HX Intelligent Servo Drives — 36 V, 2 A, 75 W

- Suitable for rotary, linear brushless, DC brush and step motors
- 12-36 V single power supply
- Continuous current: 2 A
- Peak current: 3.2 A
- Digital inputs (5) / outputs (4) and analog inputs (2)
- High resolution stepper control up to 512 microsteps / step
- Quadrature and Sin / Cos encoders, Hall sensors or linear Halls
- RS-232 and CAN (TMLCAN and CANopen protocols)

- Size: 80 x 55 x 16 mm (BX model) / 73x45x16 mm (HX model)

CANopen TML

Ordering information:

P028.001.E201 iPOS3602 BX-CAN Servo Drive, 36 V, 2 A, CAN
P028.001.E501 iPOS3602 HX-CAN Servo Drive, 36 V, 2 A, CAN

BX

HX

iPOS3604 BX / HX Intelligent Servo Drives — 36 V, 4 A, 144 W

- Suitable for rotary, linear brushless, DC brush and step motors

12-36 V single power supply

- Continuous current: 4 A
- Peak current: 10 A
- Digital inputs (5) / outputs (4) and analog inputs (2)
- High resolution stepper control up to 512 microsteps / step
- Quadrature and Sin / Cos encoders, Hall sensors or linear Halls
- RS-232 and CAN (TMLCAN and CANopen protocols)

- Size: 80 x 55 x 16 mm (BX model) / 73x45x16 mm (HX model)

CANopen TML

Ordering information:

P028.002.E201 iPOS3604 BX-CAN Servo Drive, 36 V, 4 A, CAN
P028.002.E501 iPOS3604 HX-CAN Servo Drive, 36 V, 4 A, CAN

MY

VX

iPOS4808 VX / iPOS4808 MY Intelligent Servo Drives — 48 V, 8 A, 400 W

- Suitable for DC brushed, brushless, step or linear motors
- 12-48 V motor power supply, 12-36 V logic supply
- 8 A continuous, 20 A peak current
- Digital inputs (8) / outputs (6 VX model / 6 MY model) and analog inputs (2)
- High resolution stepper control up to 512 microsteps / step
- Quadrature and Sin / Cos encoders, Hall sensors or linear Halls
- Optional feedback extension for: SSI and BiSS encoders
- RS-232 and CAN (TMLCAN and CANopen protocols)
- Optional EtherCAT extension with CoE protocol
- Mounting: vertical (VX model), horizontal (MY model)
- Size: 56 x 44 x 7 mm (VX model) / 60 x 44 x 12 (MY model)

CANopen TML EtherCAT

Ordering information:
P027.014.E001 iPOS4808 VX-CAN Servo Drive, 48 V, 8 A, CAN
P027.414.E101 iPOS4808 MY-CAN Servo Drive, 50 V, 8 A, CAN

iPOS4808 MY CAN / CAT - STO COMBO 48 V, 8 A
Intelligent Servo Drive 400 W

- Suitable for DC brushed, brushless, step or linear motors
- 12-48 V motor power supply, 12-36 V logic supply
- 8 A continuous, 20 A peak current
- Digital inputs (6) / outputs (5) and analog inputs (2)
- High resolution stepper (512 µsteps) or step-less control
- Quadrature and Sin/Cos encoders, digital and linear Halls
- Dual Feedback and absolute ecnoders support (SSI and BiSS)
- STO (Safe Torque Inputs) capability
- RS-232, TMLCAN and CANopen, CoE protocol for the EtherCAT version
- Size: 60/64 (CAN/CAT Combo) x 44 x 21 mm

CANopen TML EtherCAT

Ordering information:
P027.314.E111 iPOS4808 MY-CAN-STO Combo, 48 V, 8 A, CAN, STO
P027.314.E121 iPOS4808 MY-CAT-STO Combo, 48 V, 8 A, EtherCAT, STO

iPOS4808 BX CAN / CAT 48 V, 8 A
Intelligent Servo Drive 400 W

- Suitable for DC brushed, brushless, step or linear motors
- 12-48 V motor power supply, 12-36 V logic supply
- 8 A continuous, 20 A peak current
- Digital inputs (6) / outputs (5) and analog inputs (2)
- High resolution stepper control up to 512 microsteps / step
- Quadrature and Sin / Cos encoders, Hall sensors or linear Halls
- Dual Feedback and absolute encoder support (SSI and BISS)
- RS-232, CAN (TMLCAN and CANopen protocols) and EtherCAT extension with CoE protocol
- Size: 89 x 77 x 17 mm (CAN) / 103 x 71 x 17 mm (CAT)

CANopen TML EtherCAT

Ordering information:
P027.014.E201 iPOS4808 BX-CAN Servo Drive, 48 V, 8 A, CAN
P027.014.E221 iPOS4808 BX-CAT Servo Drive, 48 V, 8 A, EtherCAT

iPOS8010 BX CAN / CAT 80 V, 10 A
Intelligent Servo Drive 800 W

- Suitable for DC brushed, brushless, step or linear motors
- 12-80 V motor power supply, 12-36 V logic supply
- 10 A/20A continuous, 20 A /40A peak current
- Digital inputs (4) / outputs (4) and analog inputs (2)
- High resolution stepper control up to 256 microsteps / step
- Quadrature and Sin / Cos encoders, Hall sensors or linear Halls
- Dual Feedback and absolute encoder support (SSI and BiSS)
- 2 Safe Torque Off (STO) inputs
- RS-232, CAN (TMLCAN and CANopen protocoles) and EtherCAT extension with CoE protocol
- Size: 139 x 94 x 16 mm

CANopen TML EtherCAT

Ordering information:
P029.025.E201 iPOS8010 BX-CAN Servo Drive, 80 V, 10 A, CAN
P029.025.E221 iPOS8010 BX-CAT Servo Drive, 80 V, 10 A, EtherCAT
P029.026.E201 iPOS8020 BX-CAN Servo Drive, 80 V, 20 A, CAN
P029.026.E221 iPOS8020 BX-CAT Servo Drive, 80 V, 20 A, EtherCAT

iPOS4808 SY
Multi-axis Motion System

12-50 V
4 x 400 W

- Up to 4 axis motion system based on iPOS4808 MY
- For brushless, DC brushed or step motors
- 12-50V motor supply, 12-36V logic supply
- Each axis supports 8A continuous, 20A peak current
- EtherCAT communication bus supporting full CoE protocol
- RS232 for setup
- Size: 96x100x74x16 mm

Ordering information:
P027.051.E424 iPOS4808 SY-CAT, 4 axis system 4808, EtherCAT
P027.051.E423 iPOS4808 SY3-CAT, 3 axis system 4808, EtherCAT

iMOTIONCUBE
Intelligent Servo Drive

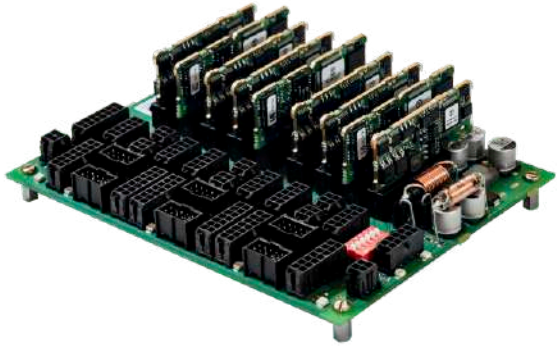
80 V, 20 A
1,6 kW

- Suitable for DC brushed, brushless, step or linear motors
- 12-80 V motor power supply, 12-36 V logic supply
- 20 A continuous, 40 A peak current
- Digital inputs (4) / outputs (4) and analog inputs (2)
- High resolution stepper control up to 512 microsteps / step
- Quadrature and Sin / Cos encoders, Hall sensors or linear Halls
- Dual Feedback and absolute encoder support (SSI and BiSS)
- RS-232 and CAN (TMLCAN and CANopen protocols)
- Size: 60 x 40 x 20 mm

Ordering information:
P025.126.E101 iMOTIONCUBE Intelligent Drive 80V 20A CAN
P025.126.E201 iMOTIONCUBE evaluation module

iPOS360x SX/SY
Multi-axis Motion System

12-36 V
4/6 x144 W



- Suitable for DC brushed, brushless, step or linear motors
- Can be supplied from1 to 6 axis of any combination of iPOS3602 and iPOS3604
- iPSO360x SX systems with up to 4 axis for RS232, TMLCAN, CANopen or Ethernet
- iPSO360x SY systems with up to 6 axis for RS232, TMLCAN, CANopen or EtherCAT
- 12-36 V power supply (motor and logic separately)
- 2A continuous / 3.3A peak, respectively 4A continuous / 10A peak per axis
- Size: 100 x 98 x 36 mm (4x) / 160 x 122 x 36 mm (6x)

P028.002.E884 iPOS360x MBX-CAN motherboard, 4 axes iPOS VX-CAN
P038.022.E001 ENET-VX Ethernet plug-in interface
P028.023.E000 iPOS360x MBX6-CAT motherboard for 6 axes iPOS VX-CAT, G3
P038.021.E001 ECAT-VX EtherCAT plug-in interface
P028.024.E006 iPOS360x MBX6-CAN motherboard for 6 axes iPOS VX-CAN, G3

iMOT Line

iMOT17xS Intelligent Step Motors — 12-48 V 0.3 Nm

- Fully programmable intelligent step motors due to TML instruction set
- 12-48 V motor power supply, 12-36 V logic supply
- 3 motor sizes offering from 0.2 to 0.4 Nm
- Minimal power consumption due to true servo closed loop operation
- Integrated position sensor with 4096 counts/rotation
- Programmable digital I/Os and analogue inputs
- RS-232, CANopen, EtherCAT and Ethernet optional

Ordering information:
P036.1x1.E120 iMOT17xS XM-CAN Intelligent Step Motor
P036.1x1.E320 iMOT17xS TM-CAN Intelligent Step Motor
P036.1x1.E323 iMOT17xS TM-CAT Intelligent Step Motor

iMOT17xB Intelligent Brushless Servo Motors — 12-48 V 0.1-0.3 Nm

- Fully programmable intelligent brushless motors due to TML instruction set
- 12-36 V motor power supply, 12-36 V logic supply
- 3 motor sizes offering from 0.1 to 0.3 Nm @ 3'000 rpm
- Torque up to 18 Nm when provided with the GP gearheads
- Integrated position sensor with 4096 counts/rotation
- Programmable digital I/Os and analogue inputs
- RS-232, CANopen, EtherCAT, TMLCAN,and Ethernet optional

Ordering information:
P042.1x1.E120 iMOT17xB XM-CAN Intelligent Brushless Motor
P042.1x1.E320 iMOT17xB TM-CAN Intelligent Brushless Motor
P042.1x1.E322 iMOT17xB TM-CAT Intelligent Brushless Motor

iMOT23xS Intelligent Step Motors — 12-48 V 1-1.8 Nm

- Fully programmable intelligent step motors due to TML instruction set
- 12-48 V motor power supply, 12-36 V logic supply
- 3 motor sizes offering from 1 to 1.8 Nm
- Minimal power consumption due to true servo closed loop operation
- Integrated position sensor with 4096 counts/rotation
- Programmable digital I/Os and analogue inputs
- RS-232 and CAN (optional EtherCAT and Ethernet communication busses)

Ordering information:
P036.222.E120 iMOT232S XM-CAN Intelligent Step Motor, CAN
P036.223.E120 iMOT233S XM-CAN Intelligent Step Motor, CAN

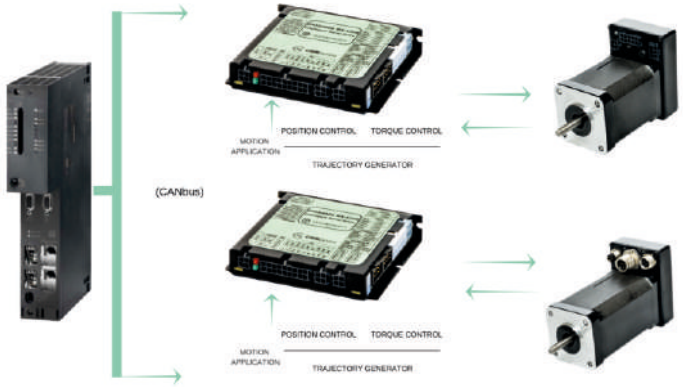
Gearheads

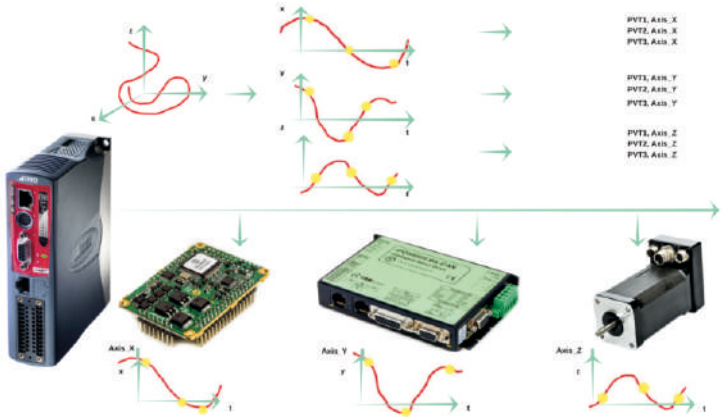
GP
High Efficiency Gearheads

- Torque output 5 to 90 Nm
- All steel construction with ratios 5 to 500:1
- Assembled to the iMOT Line of brushless and step motors
- Three families 40 mm, 57 mm and 86 mm diameter
- Intermittent torque from 7.5 to 150 Nm
- Efficiency up to 92%
- Average backlash <30 arc minutes
- Exact ratios simplify calibration in position control applications
- Non standard ratios from 3 to 1000:1

Ordering information:
P042.621.E100 GP40M100:1-A-1 Gearbox, Size 17, Ratio 100:1
(example, see documentation for complete program)

Technosoft Motion Language Examples





Through high level software programmability, Technosoft drives and motors offer extended flexibility and versatility resulting in easy-to-use solutions for a variety of motion control applications.

Single-Axis Servo, Stand Alone or Host Controlled

The drives can run a locally stored TML program, in stand-alone mode or they can be programmed and controlled from a host controller system, via a communication channel: RS-232, RS-485, EtherCAT or CAN-bus (with CAN / CANopen drive versions). 'Immediate' on-line commands and TML instructions (loading and running of programs, setup of parameters, queries on drive status) can be sent and executed.

Events and Interrupts Handling

Programmable events on Technosoft drives, combined with the TML specific interrupts structure, allow you to simultaneously handle different tasks as: protections, time intervals, I/O status or capture, control error or status variable values, besides the main program's TML motion sequences.

Multiple-Axis Coordination

In distributed multiple-axes structures, a host can provide data points to axes in the network (EtherCAT, CAN, CANopen or RS485). Also, locally stored motion profiles can be executed at the host's command, or coordinated via on-board I/Os. Moreover, any axis can request and receive information from other axes in the system, via specific TML commands.

Multi-dimensional Paths (linear interpolation & vector mode)

All Technosoft drives, together with the multi-axis controller TMC-3D, can execute 2D, $2^{1/2}$D or 3D coordinated moves. The trajectories are defined through a series of linear or circular segments. Optionally, for each segment a vector speed and acceleration can be specified. TMC-3D splits each segment into PVT points and sends these points to the slaves. On receiving the PVT points, the slaves rebuild their paths using 3rd order interpolation.

Multiple I/O Treatment / Multiple-Axis I/O Handshake

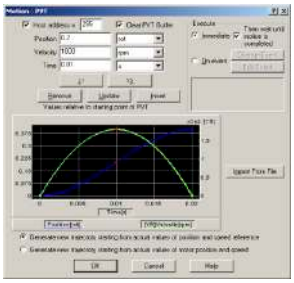
PLC-specific functionalities of Technosoft drives allow you to configure and use the I/O resources of the drive. Also the I/Os available on the drives allow you to create handshake structures between the axes, by appropriate TML programming. Activation of specific axes, completion of programmed tasks on axes, chaining of actions from one axis to another can easily be implemented, further increasing the flexibility of the motion system configuration.

Trapezoidal Speed Profiles

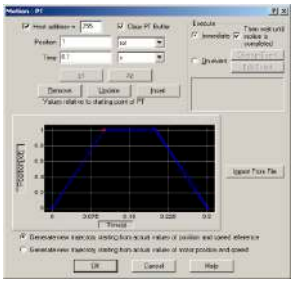
Trapezoidal Position Profiles

S-curve Profiles

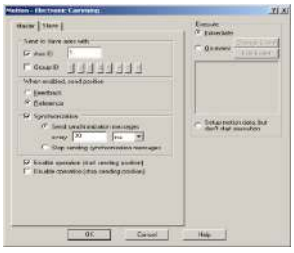
Additive Position Profile



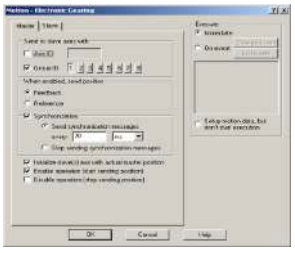
PVT Mode



PT Mode

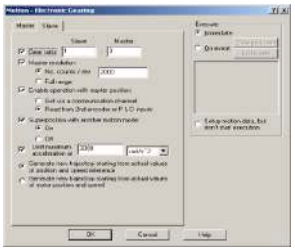


Electronic Camming - Master



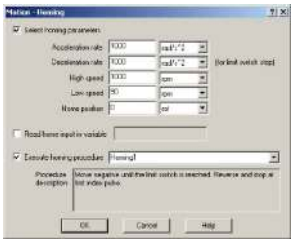
Electronic Gearing - Master

Electronic Camming - Slave

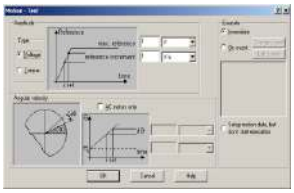


Electronic Gearing - Slave

External Mode



Homing Mode



Test Mode

Technosoft Motion Modes

Technosoft drives and motors allow you to program their built-in motion controller in order to set different motion modes and trajectories — internal and external — depending on the way the motion reference is generated.

Trapezoidal Speed Profiles

Program a speed profile with a trapezoidal shape of the speed, due to a limited acceleration.

Trapezoidal Position Profiles

Program a position profile due to a limited acceleration. You must specify the position you want to reach, the acceleration / deceleration rate and the travel speed. The built-in reference generator computes the position trajectory, which results in a trapezoidal or triangular speed profile.

On-the-fly Change of Motion Parameters

Almost any motor mode can be switched to another mode on the fly. This feature is especially useful for position/speed control applications, where the target reference is provided by the internal trajectory generator using position / speed profile modes, position / speed contouring modes, electronic gearing, electronic cam and stop modes.

S-curve Profiles

Program a position profile with an S-curve shape of the speed. This shape is due to the jerk limitation, which leads to a trapezoidal or triangular profile of the acceleration, and to an S-curve speed profile.

PT Mode

Programs a positioning path described through a series of points where each point specifies the desired Position and Time (the PT data). Between points, the built-in reference generator performs a linear interpolation.

PVT Mode

Programs a positioning path described through a series of points. Each point specifies the desired Position, Velocity and Time (the PVT data). Between points, the built-in reference generator performs a 3rd order interpolation.

Electronic Gearing

Sets the drive as a master or a slave for electronic gearing mode. When set as a master, the drive sends its position via a multi-axis communication channel, like the CANbus. The master sends either the load position or the position reference once, at each slow loop sampling time interval. When set as a slave, the drive follows the master's position with a programmable ratio. The slave can also superpose the electronic gearing movement with another mode.

Electronic Camming

Similarly to the electronic gearing mode, the drives can be programmed to implement electronic camming. When set as master, the drive sends its position via a multi-axis communication channel. The master sends either the load position or the position reference once at each slow loop sampling time interval. When set as slave, a drive executes a cam profile function of the master position.

External Mode

Programs the drives to work with an external reference provided by another device. There are 3 types of external references: analogue, digital and online.

Additive Position Profile

On-the-fly end-point modification during drive's execution of the motion profile. While a motor is executes a position profile, a new target position can be specified by adding a new position increment to the 'old' target position.

Fast Position Capture

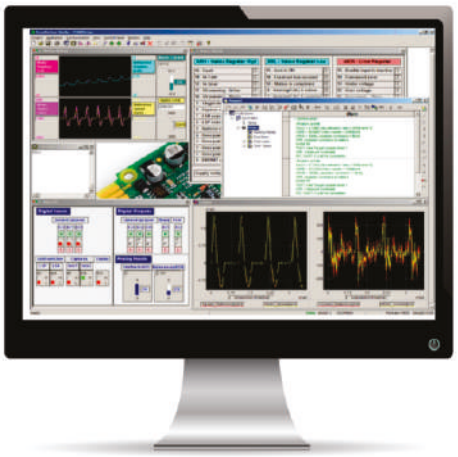
Lets you store motor/load positions based on the transition of a digital input, allowing close correlation of axis positions to external events.

Homing

Is a sequence of motions, usually executed after power-on, through which the load is positioned into a well-defined point.

Test Mode

Sets the drives in a special test configuration setup. This configuration is supposed to be used during drive setup.



EasyMotion Studio

EasyMotion Studio gives you access to the performance of the Technosoft Motion Language (TML). The TML is a high-level set of instructions that can be used to configure and parameterize the MotionChip-based drives, and to execute advanced motion operations. EasyMotion Studio platform simplifies the setup and motion programming, as well as the development and graphical evaluation of your motion sequences.
With the EasyMotion Studio, you can:

- Define the system architecture
- Identify the parameters of the motor, sensor or load
- Tune and adjust digital control loops
- Define motion sequences, import G-code files (for TMC-3D)
- Build the application in TML for single or multi-axis
- Analyze and evaluate the dynamic behavior of your motion system through real time data acquisition

Motion Libraries for PCs and PLCs

Motion Libraries are collections of functions allowing you to implement motion control applications on a PC computer or PLC, in order to run Technosoft intelligent rives based on the MotionChip™ technology. They enable you to communicate with a drive, set up its parameters, interrogate about its status, send motion commands, define motion events, test input and set output port statuses.

- **PC Motion Libraries running under Windows:** C/C++, C#, Visual Basic, Delphi Pascal and LabVIEW
- **PC Motion Libraries running under Linux:** C/C++
- **PLC Motion Libraries for Siemens, OMRON and B&R:** TML_LIB_S7, TML_LIB_ CJ1 and TML_LIB_x20

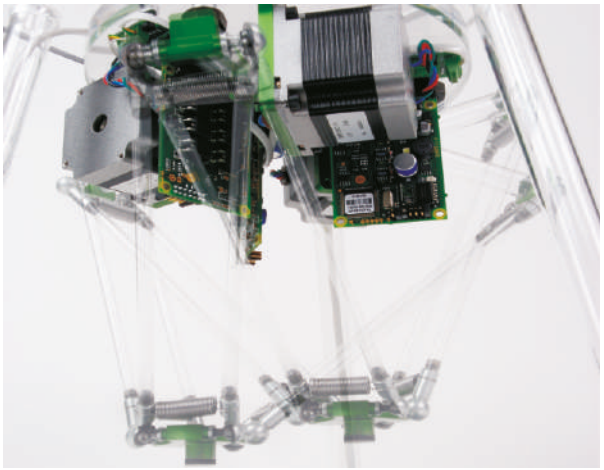
Starter Kits

For a fast and easy way of learning how to use our intelligent servo drives, Technosoft offers starter kits for each product.

These evaluation kits are ready-to-run packages that include the complete hardware and software you need in order to evaluate and develop your motion applications.

Starter kits include:

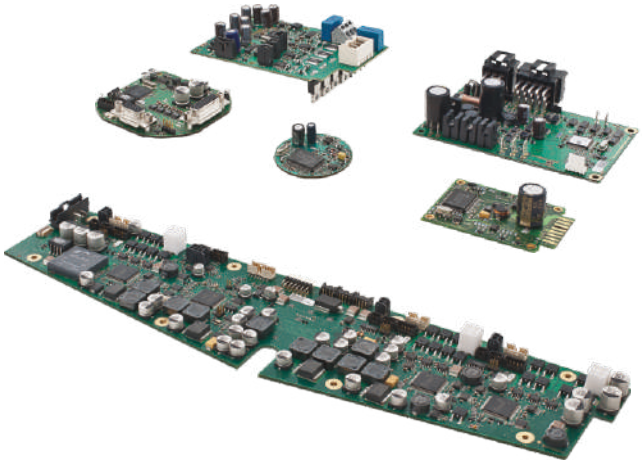
- The EasyMotion Studio software
- The intelligent drive of your choice
- A motor (brushless or stepper)
- An I/O board
- A collection of application notes



Industrial Applications

Technosoft's emphasis on modularity at both hardware and software levels allows us to create highly flexible and adaptable dedicated solutions that can easily and rapidly be prototyped to meet your specific needs. Customers from various industries requiring a wide range of motion control products and systems for specialized applications have effectively utilized Technosoft's expertise for:

- **Packaging:** intelligent solutions for distributed control
- **Medical:** laboratory automation, life support devices
- **Textile:** yarn feeder, high dynamic controls
- **Automotive:** sensorless vector control in fuel cell applications
- **Machine tools:** electronic screw drivers and nut runners
- **Semiconductor industry:** wafer handling and processing



Custom Solutions

We combine advanced theoretical and modelling know-how in the field of electrical machines and digital motion control implementation on the latest Digital Signal Processor (DSP) technology. Our multidisciplinary engineering team includes experts in the various fields of motion control and mechatronics, such as:

- Intelligent and distributed motion control
- Digital control electronics
- Specific motor control algorithms
- Sensorless vector control
- Digital, analog and power electronic design

Technosoft on-demand solutions are particularly suited for:

- Specific custom integration
- Digital motor control software modules
- Intelligent modular motor controllers

Quality

- **Our experience**

  Since over 20 years Technosoft has delivered motion solutions in various fields of the industry. This experience has matured into the continuous improvement of the performance and robustness of our products.

- **Our commitment**

  Satisfy our customer's expectations by mastering all the technological aspects related to digital motion control solutions.

- **Your satisfaction**

  Technosoft is certified according to the ISO 9001:2015 standard. This rigorous management system and continuous improvement of the processes reinforce every day our competitiveness and the satisfaction of our customers.

Available Documentation and Software

Installation

Hardware Reference

Getting Started

Setup and Configuration

EasySetUp

Motion Programming

EasyMotion Studio

TML_LIBs for PC

TML_LIBs for PLC

TML Programming Manual

Application Support

Getting started with EasyMotion Studio

Application Notes with EasyMotion Studio

FAQ

Tutorials with EasyMotion Studio

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