iMOTIONCUBE Intelligent Servo Drive 20 A, 80Vdc

For Brushless, Brushed, Linear or Step Motors

Description

The iMOTIONCUBE is a new member of the iPOS family of Technosoft intelligent drives. It is based on a new design concept for high power density drives, offering a very compact and cost effective solution for the control of rotary or linear brushless, DC brush, and step motors of powers up to 1,6kW.

Designed to cover low to medium volume applications, the iMOTIONCUBE embeds motion controller, drive, and PLC functionalities into a single unit.

When used as an intelligent drive - like all other members of the iPOS family - the iMOTIONCUBE is empowered by the extreme flexibility offered by the TML (Technosoft Motion Language) instruction set.The unit can replace the host in various single or multi-axis stand-alone applications.

Advanced positioning profiles like the PVT or electronic caming, I/O and program flow control, data transfer between axes, subroutines, ISRs and multiple homing modes ease the motion application implementation task.

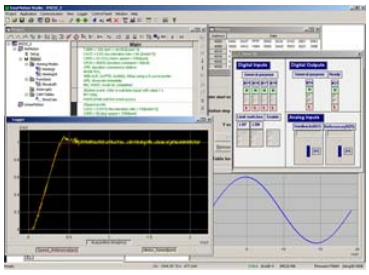
In systems that require a host, the iPOS operates as an intelligent slave executing motion sequences triggered via commands received on RS-232 or TMLCAN while fully supporting as well the CiA402 CANopen drive profile.

Dual Loop

Equipped with 2 feedback connectors, the iMOTIONCUBE provides advanced dual-loop control schemes that minimize the transmission backlash negative effects.

EasyMotion Studio

The configuration, tuning and programming of the iMOTIONCUBE drive is easy with Technosoft's powerful graphical platform, EasyMotion Studio.



Features :

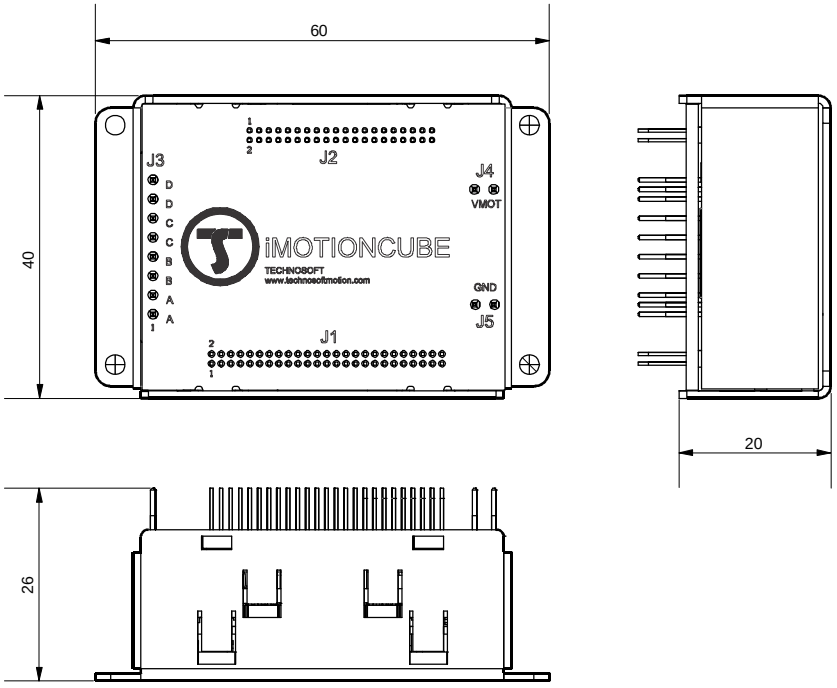
- **Motion controller and drive in a single compact unit**
- **Universal drive solution for brushless, brushed, linear or step (true closed loop) motors**
- **Advanced motion control capabilities (PVT, S-curve, electronic cam)**
- **Motion programming via TML (Technosoft Motion Language) or motion libraries for Visual C / VB / LabVIEW / Linux and PLC**
- **Standalone operation with stored motion sequences**
- **Drive enable circuit**
- **Communication :**
  - **RS-232 serial**
  - **CAN-Bus with TMLCAN or CANopen (CiA301, 305, 402) protocols**
- **Digital and analogue I/Os:**
  - **4 digital programmable inputs, 5 - 36 V**
  - **4 digital outputs, 5 - 36 V, 0.5 A**
  - **2 analogue inputs: 12 bit resolution, 0 - 5 V**
- **Feedback devices (dual-loop supported) :**
  - **1st Feedback :**
    - **Incremental quad encoder (differential)**
    - **Analogue sine/cosine encoder (differential 1Vpp)**
    - **Digital Hall sensors**
  - **2nd Feedback : Incremental quad encoder (single ended)**
- **Programmable protections :**
  - **Over-current, over-temperature, short circuit**
  - **Over and undervoltage, i2t, control error**

Electrical Specifications :

Motor power supply:	12 - 80 Vdc
Logic supply :	12 - 36 Vdc
Continuous phase current	20 A
Peak current (2.4 sec. max.)	40 A
PWM switching frequency	20 - 100 kHz
Ambient operating temperature	0 °C - 40 °C

TECHNOSOFT
MOTION TECHNOLOGY

TECHNICAL AND ORDERING INFORMATION



Weight : 45 g
All dimensions are in mm.

J1

1 232Rx	13 CAN Lo	26 Out1	39 Reserved	**J2**	**J3**
2 Enc1 A+/Sin1+	14 Hall 1	27 In2/LSP	40 Reserved	1 to 28 - Reserved	1 - 2 Phase A
3 232Tx	15 ENA1	28 Out2/Error	41 Enc2 A	29 CAN Hi	3-4 Phase B
4 Enc1 A-/Sin1-	16 Hall 2	29 In3/LSN	42 Sin2	30 Reserved	5-6 Phase C
5 AxisID0	17 ENA2	30 Out3/Ready	43 Enc2 B	31 CAN Lo	7-8 Phase D or Brake
6 Enc2 B+/Cos1+	18 Hall 3	31 AD in Motor temp.	44 Cos2	32. Reserved	
7 AxisID1	19 Ref	32 Reserved	45 Enc2 Z	33 +5V	**J4**
8 Enc1 B-/Cos1	20 Feedback	33 Reserved	46 +5V	34 Gnd	1-2 +Vmot IN
9 AxisID2	21 +Vlog	34 Reserved	47 Reserved	35 to 39 Reserved	
10 Enc1 Z+	22 +5V	35 Gnd	48 Reserved	40 Gnd	**J5**
11CAN HI	23 In0	36 Gnd	49 Reserved		1-2 Gnd Vmot IN
12 Enc1 Z-	24 Out0	37 Reserved	50 Reserved		
	25 In1	38 Reserved			

The high level graphical development environment EasyMotion Studio supports the configuration, parameterization and programming of the drive, through:

- Motion system set-up wizard
- Tuning assistance with capture functions
- Definition, programming and testing of motion sequences

MOTION CONTROL LIBRARIES

The TML_LIB Motion Control Libraries can be used to implement a motion control application on a PC from Visual C / C++, C#, Visual Basic, Delphi or LabVIEW under Windows or Linux operating systems.
If a PLC is used as host, implementations of the TML_LIB according with IEC-61131 standard are available for Siemens, B&R and Omron PLCs.

Application notes with TML program examples at :
www.technosoftmotion.com

ORDERING INFORMATION :

P025.126.E101	iMOTIONCUBE Intelligent Drive, 80V, 20A, CAN
P034.001.E002	EasyMotion Studio Software
P040.001.Exxx	TML_LIB Motion Library*

*ask for existing libraries types

FLEXIBILITY :

Control schemes supported by the iMOTIONCUBE Drive

Motor types	Torque Control	Speed Control	Position** Control
Brushless	√	√	√
Brushed	√	√	√
Step	√	√	√
Linear	√	√	√

** Dual-loop supported

CONNECTORS TYPE AND MATING CONNECTORS :

iMOTIONCUBE was designed to be mount on a printed circuit board (PCB) via 2,54 mm pitch square pins (0,635 mm) for power pins and 1,27 mm pitch square pins (0,41 mm) for I/O and communication signals.
In order to eliminate or reduce the development time of a new PCB, consider using the available iMOTIONCUBE-BX module with integrated connectors, to directly include the drive into the application.

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www.technosoftmotion.com

iPOS360x SY-CAN Multi-axis Motion System 6 x 144 W

6-Axis Compact Solution for Rotary or Linear Brushless, DC Brush and Step Motors

The iPOS360x SY-CAN provides a compact, ready to run solution for multi-axis applications up to 6 axes. Using iPOS3602 or iPOS3604 intelligent drives, the iPOS360x SY-CAN multi-axis motion system offers a cost effective solution for control of up to 6 rotary or linear brushless, DC brushed, or step motors with powers up to 144W and CAN-bus communication.

Designed to cover low to medium volume applications, each iPOS intelligent drive embeds motion controller, drive, and PLC functionalities into a single unit.

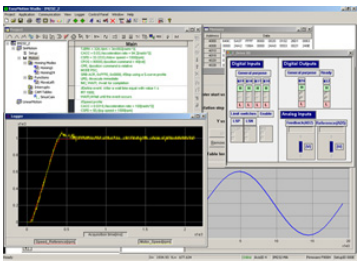
The iPOS drives can operate as standard CiA402 CANopen drives or can execute complex motion programs directly at drive level, using the built-in motion controller and the high level Technosoft motion language (TML).

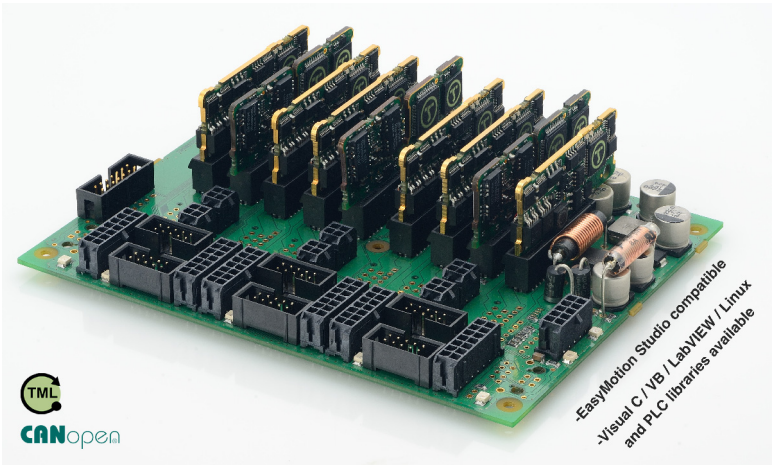
When used as an intelligent drive the unit can replace a host in various single or multi-axis stand-alone applications. The powerful TML language allows one drive to control the others and therefore to become the application master. The drive may call other axis to execute complex TML functions. The slave drives may also be programmed to send information messages to the master drive.

Advanced positioning profiles like the PVT or electronic caming, I/O and program flow control, data transfer between axes, subroutines, ISRs and multiple homing modes ease the motion application implementation task.

The iPOS360x SY-CAN can be programmed to operate completely stand-alone with drives executing their TML program stored in the local memory.

Communication between the drives is done via CAN-bus. An RS-232 port is also included for easy interfacing with a PC.



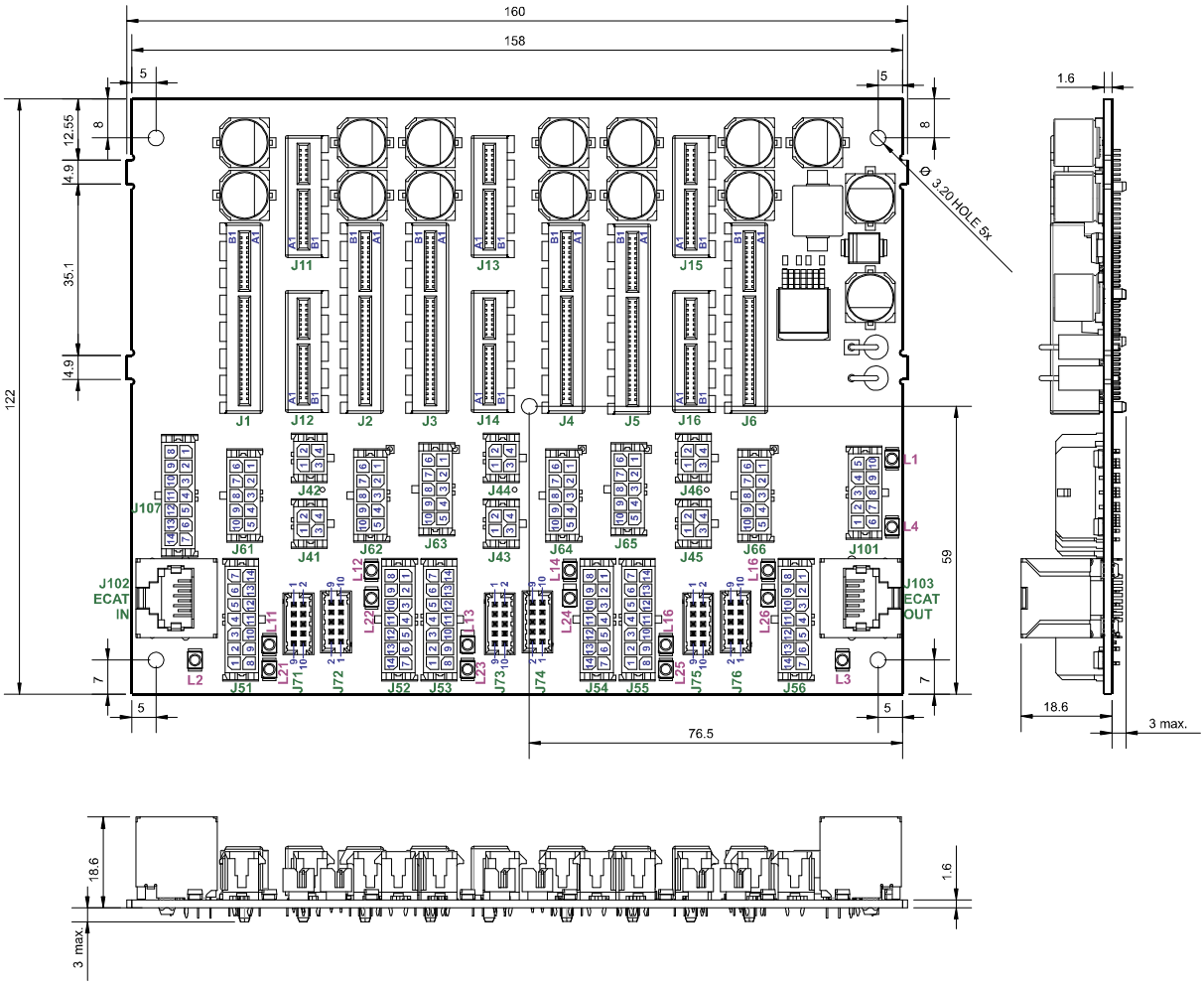


iPOS360x SY-CAN Features

- **mainboard for mounting the multi-axis motion system**
- **up to 6-axis motion system with iPOS3602 or iPOS3604 drives**
- **six EtherCAT/CAN bridges for each axis**
- **Compact solution: 160 x 122 x 22 mm**
- **Standalone operation using drives embedded motion controller**
- **Power supply: 12-36 V_{DC}; logic supply: 12-36 V_{DC}**
- **Output current / axis:**
  - **iPOS3604: 4 A continuous, 10 A_{PEAK}**
  - **iPOS3602: 2 A continuous, 3.2 A_{PEAK}**
- **Communication between axes: CAN-bus up to 1Mb with CANopen (CiA301, 305, 402) or Technosoft TMLCAN protocol, jumper selectable**
- **RS-232 (up to 115 k) for system setup**
- **Delivery options: from one to six iPOS3602 VX or iPOS3604 VX Intelligent Servo Drives, each offering:**
  - **High performance control of rotary or linear brushless, DC brush and step motors**
  - **Sinusoidal (FOC) or trapezoidal (Hall-based) control of brushless motors**
  - **Open-loop (up to 256 µsteps) and closed-loop control of 2 and 3-phase steppers**
  - **Torque, speed or position control**
  - **Feedback options: incremental encoders, single-ended, differential RS-422 and 1 Vpp sine/cosine, digital or linear Hall sensors**
  - **Powerful Technosoft Motion Language (TML) instruction set for the definition and execution of motion sequences (TMLCAN protocol), including:**
    - **Operation mode and parameters selection**
    - **Program flow control via conditional jumps and function calls, interrupts and events monitoring**
    - **I/O handling, arithmetic and logic operations**
    - **Data transfers between drives**
    - **Use of one axis as application master which controls the other axes**
    - **Synchronization of all axes from the network**
- **5 digital inputs: 5-36 V (compatible with NPN outputs): Enable, 2 limits switches and 2 general-purpose ones**
- **3 digital outputs: 5-36 V, 0.5 A (NPN open-collector): Ready, Error, and 1 general-purpose**
- **2 analogue inputs: 12-bit, 0-5 V: Reference, Feedback or general-purpose**
- **Protections to over-current, short-circuit, earth fault, over- and under-voltage, I2t, control error**

DIMENSIONS, SPECIFICATIONS, ORDERING INFORMATION

iPOS360x SY-CAN MULTI-AXIS MOTION SYSTEM



Dimensions in mm. Drawings not to scale.

EASYMOTION STUDIO

The high level graphical development environment EasyMotion Studio, supports the configuration, parameterization and programming of the drive, through:

- Motion system set-up wizard
- Tuning assistance with capture functions
- Definition, programming and testing of motion sequences

MOTION CONTROL LIBRARIES

The TML_LIB Motion Control Libraries can be used to implement a motion control application on a PC from Visual C / C++, C#, Visual Basic, Delphi or LabVIEW under Windows or Linux operating systems. If a PLC is used as host, implementations of the TML_LIB according with IEC-61131 standard are available for Siemens, B&R and Omron PLCs.

iPOS360x SY-CAN MULTI-AXIS MOTION SYSTEM

Electrical Specifications	with iPOS3602	with iPOS3604
Maximum DC supply voltage	36 V	36 V
Maximum continuous current	2 A	4 A
Peak current (2.4 sec. max.)	3.2 A	10 A
Nominal switching frequency	20 - 100 kHz	20 - 100 kHz
Operating ambient temperature	0 °C - 40 °C (*)	0 °C - 40 °C (*)

(*)up to 65 °C with derating

Ordering Information

P028.024.E006	iPOS360x MBX6-CAN motherboard for 6 axes, CAN compatible, G3
P028.002.E001	iPOS3604 iPOS3604 VX-CAN, 36V 4A, plug-in, Enc, CAN
P028.001.E001	iPOS3602 iPOS3602VX-CAN, 36V 2A, plug-in, Enc, CAN
P028.040.C399	CCS 6xiPOS360x SXD G3 (Complete cable set 100 cm MBX 6 axis with dif. enc.)
P028.040.C398	CCS 6xiPOS360x SXE G3 (Complete cable set 100 cm MBX 6 axis with single-ended enc.)
P034.001.E002	EasyMotion Studio Software

FLEXIBILITY

Control schemes supported by the iPOS360x SY-CAN Multi-axis Motion System

Motor Types	Torque Control	Speed Control	Position Control
Brushless	✓	✓	✓
DC Brushed	✓	✓	✓
Step	✓	✓	✓

This information is subject to change without notice.

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

TECHNOSOFT
MOTION TECHNOLOGY

iPOS360x SY-CAT Multi-axis Motion System 6 x 144 W

6-Axis Compact Solution for Rotary or Linear Brushless, DC Brush and Step Motors

The iPOS360x SY-CAT provides a compact, ready to run solution for multi-axis applications up to 6 axes. Using iPOS3602 or iPOS3604 intelligent drives, the iPOS360x SY-CAT multi-axis motion system offers a cost effective solution for control of up to 6 rotary or linear brushless, DC brushed, or step motors with powers up to 144W and EtherCAT communication.

Designed to cover low to medium volume applications, the iPOS intelligent drives embed motion controller, drive, and PLC functionalities into a single unit. They can be used as intelligent drives, or as a standard drives accepting CAN application protocol over EtherCAT (CoE).

When used as an intelligent drive, the iPOS360x are empowered by the extreme flexibility offered by the TML (Technosoft Motion Language).

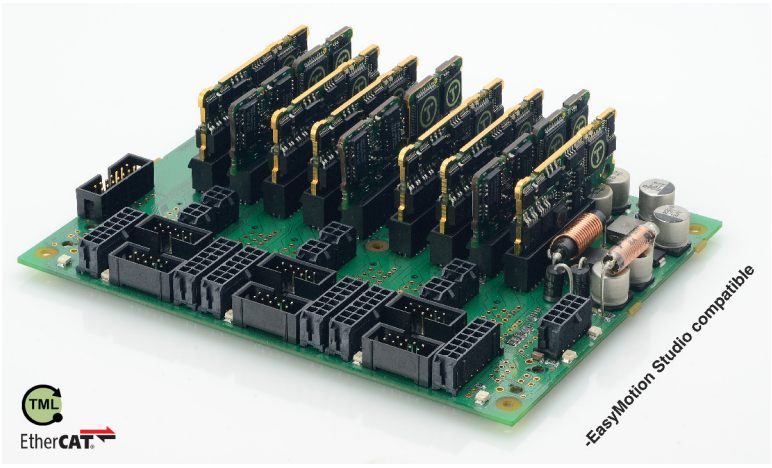
EtherCAT Networking

The iPOS360x SY-CAT multiaxis motion system supports CAN application protocol over EtherCAT® (CoE) in conformance with CiA 402 device profile. Advanced features are covered,as cyclic synchronous position, up to 35 customizable homing modes, PVT third order interpolation polynomial motion profiles, etc.

Initial drive commissioning is performed via the Technosoft EasySetup or EasyMotion Studio software platforms; checking and updating of setup data can also be done from the EtherCAT master.

Motion programming can be done via an EtherCAT® master, or using the drive built-in motion controller executing a TML program. A distributed control approach, like for example a master calling motion functions programmed on the drives in TML is also possible.

The EtherCAT communication is done via additional EtherCAT plug-in interfaces, one for each axis used. For the unused axes, instead of the EtherCAT interfaces, EtherCAT/CAN bridges have to be used to assure the network continuity. For setup and testing, access to each drive is also possible via an RS-232 link.



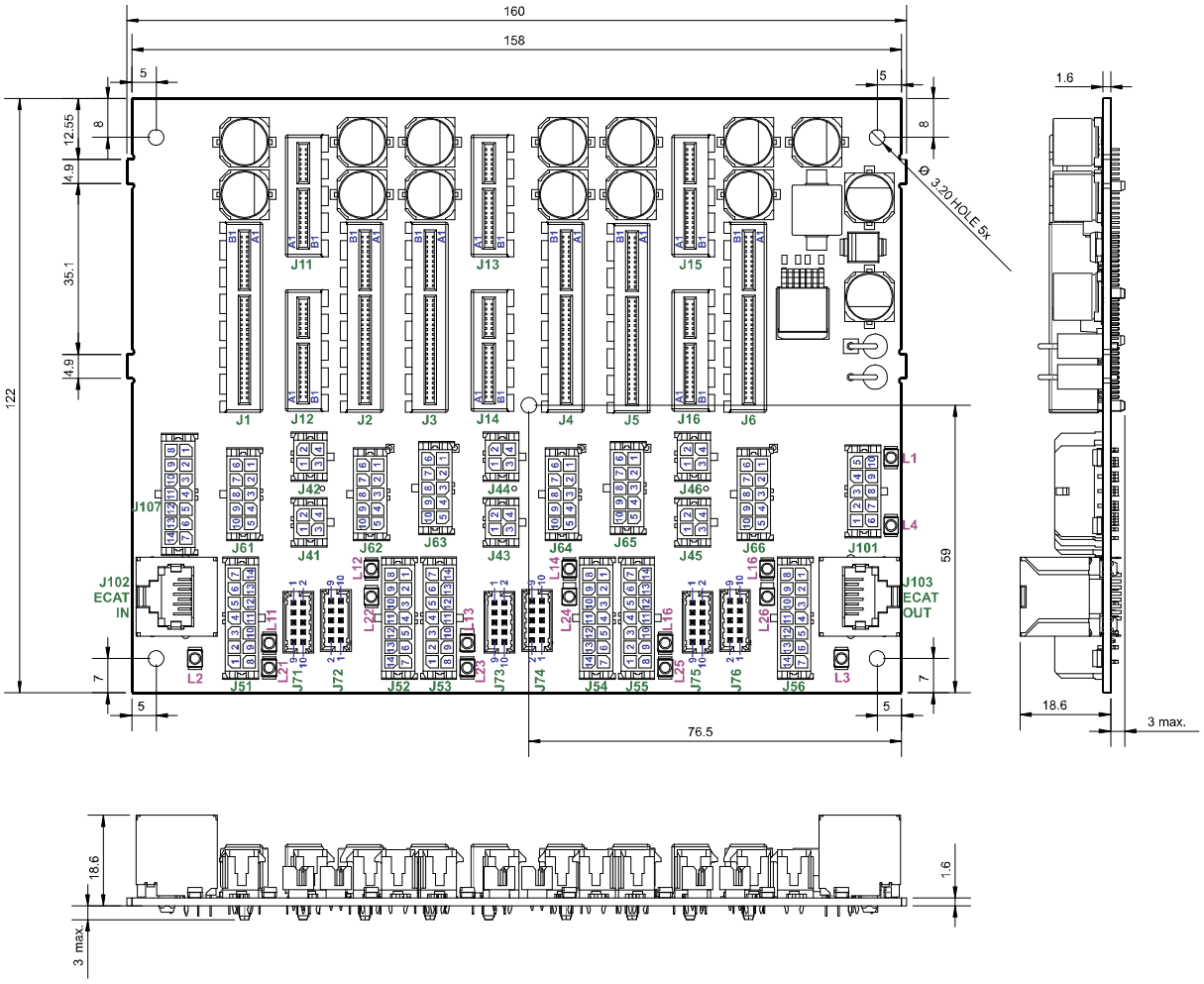
iPOS360x SY-CAT Features

- **mainboard for mounting the multi-axis motion system**
- **up to 6-axis motion system with iPOS3602 or iPOS3604 drives**
- **up to six ECAT-VX EtherCAT plug-in interfaces**
- **up to six EtherCAT/CAN bridges for axes not used**
- **Compact solution: 160 x 122 x 22 mm**
- **Standalone operation using drives embedded motion controller**
- **Power supply: 12-36 V_{DC}; logic supply: 12-36 V_{DC}**
- **Output current / axis:**
  - **iPOS3604: 4 A continuous, 10 A_{PEAK}**
  - **iPOS3602: 2 A continuous, 3.2 A_{PEAK}**
- **Communication between axes: EtherCAT with CoE protocol**
- **RS-232 (up to 115 k) for system setup**
- **Delivery options: from one to six iPOS3602 VX or iPOS3604 VX Intelligent Servo Drives, each offering:**
  - **High performance control of rotary or linear brushless, DC brush and step motors**
  - **Sinusoidal (FOC) or trapezoidal (Hall-based) control of brushless motors**
  - **Open-loop (up to 256 µsteps) and closed-loop control of 2 and 3-phase steppers**
  - **Torque, speed or position control**
  - **Feedback options: incremental encoders, single-ended, differential RS-422 and 1 Vpp sine/cosine, digital or linear Hall sensors**
  - **Powerful Technosoft Motion Language (TML) instruction set for the definition and execution of motion sequences (TMLCAN protocol), including:**
    - **Operation mode and parameters selection**
    - **Program flow control via conditional jumps and function calls, interrupts and events monitoring**
    - **I/O handling, arithmetic and logic operations**
    - **Data transfers between drives**
    - **Use of one axis as application master which controls the other axes**
    - **Synchronization of all axes from the network**
- **5 digital inputs: 5-36 V (compatible with NPN outputs): Enable, 2 limit switches and 2 general-purpose ones**
- **3 digital outputs: 5-36 V, 0.5 A (NPN open-collector): Ready, Error, and 1 general-purpose**
- **2 analogue inputs: 12-bit, 0-5 V: Reference, Feedback or general-purpose**
- **Protections to over-current, short-circuit, earth fault, over- and under-voltage, I2t, control error**

P091.028.iPOS360xSY-CAT.LFT.0216

Dimensions, Specifications, Ordering Information

iPOS360x SY-CAT Multi-axis Motion System

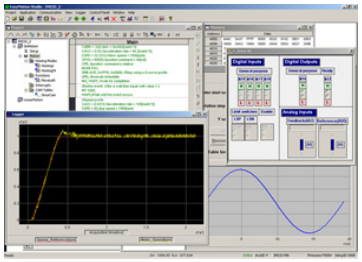


Dimensions in mm. Drawings not to scale.

EasyMotion Studio

The high level graphical development environment EasyMotion Studio, supports the configuration, parameterization and programming of the drive, through:

- Motion system set-up wizard
- Tuning assistance with capture functions
- Definition, programming and testing of motion sequences



iPOS360x SY-CAT Multi-axis Motion System

Electrical Specifications	with iPOS3602	with iPOS3604
Maximum DC supply voltage	36 V	36 V
Maximum continuous current	2 A	4 A
Peak current (2.4 sec. max.)	3.2 A	10 A
Nominal switching frequency	20 - 100 kHz	20 - 100 kHz
Operating ambient temperature	0 °C - 40 °C (*)	0 °C - 40 °C (*)

(*)up to 65 °C with derating

Ordering Information

P028.023.E000	iPOS360x MBX6-CAT motherboard for 6 axes VX, EtherCAT compatible, G3
P028.002.E021	iPOS3604 iPOS3604 VX-CAT, 36V 4A, plug-in, Enc, EtherCAT
P028.001.E021	iPOS3602 iPOS3602VX-CAT, 36V 2A, plug-in, Enc, EtherCAT
P038.020.E001	ECAT-VX EtherCAT plug-in module
P038.021.E000	ECAT/CAN-VX bridge PCB plug-in
P028.040.C399	CCS 6xiPOS360x SXD G3 (CCS 100 cm MBX 6 axis with dif.enc.
P028.040.C398	CCS 6xiPOS360x SXE G3 (CCS 100 cm MBX 6 axis with single-ended enc.
P034.001.E002	EasyMotion Studio Software

Flexibility

Control schemes supported by the iPOS360x SY-CAT Multi-axis Motion System

Motor Types	Torque Control	Speed Control	Position Control
Brushless	√	√	√
DC Brushed	√	√	√
Step	√	√	√

This information is subject to change without notice.

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iPOS360x SX-CAN Multi-axis Motion System 4 x 144 W

4-Axis Compact Solution for Rotary or Linear Brushless, DC Brush and Step Motors

The iPOS360x SX-CAN provides a compact, ready to run solution for multi-axis applications up to 4 axes. Using iPOS3602 or iPOS3604 intelligent drives, the iPOS360x SX-CAN multi-axis motion system offers a solution for control of up to 4 rotary or linear brushless, DC brushed, or step motors with powers up to 144W and CAN-bus communication.

Designed to cover low to medium volume applications, each iPOS intelligent drive embeds motion controller, drive, and PLC functionalities into a single unit.

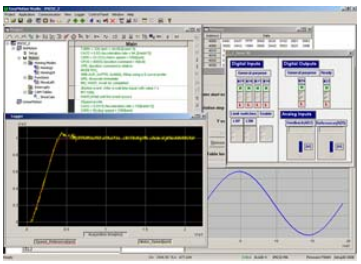
The iPOS drives can operate as standard CiA402 CANopen drives or can execute complex motion programs directly at drive level, using the built-in motion controller and the high level Technosoft motion language (TML).

When used as an intelligent drive the unit can replace a host in various single or multi-axis stand-alone applications. The powerful TML language allows one drive to control the others and therefore to become the application master. The drive may call other axis to execute complex TML functions. The slave drives may also be programmed to send information messages to the master drive.

Advanced positioning profiles like the PVT or electronic caming, I/O and program flow control, data transfer between axes, subroutines, ISRs and multiple homing modes ease the motion application implementation task.

The iPOS360x SX-CAN can be programmed to operate completely stand-alone with drives executing their TML program stored in the local memory.

Communication between the drives is done via CAN-bus. An RS-232 and optionally an Ethernet port are available for easy interfacing with a PC.



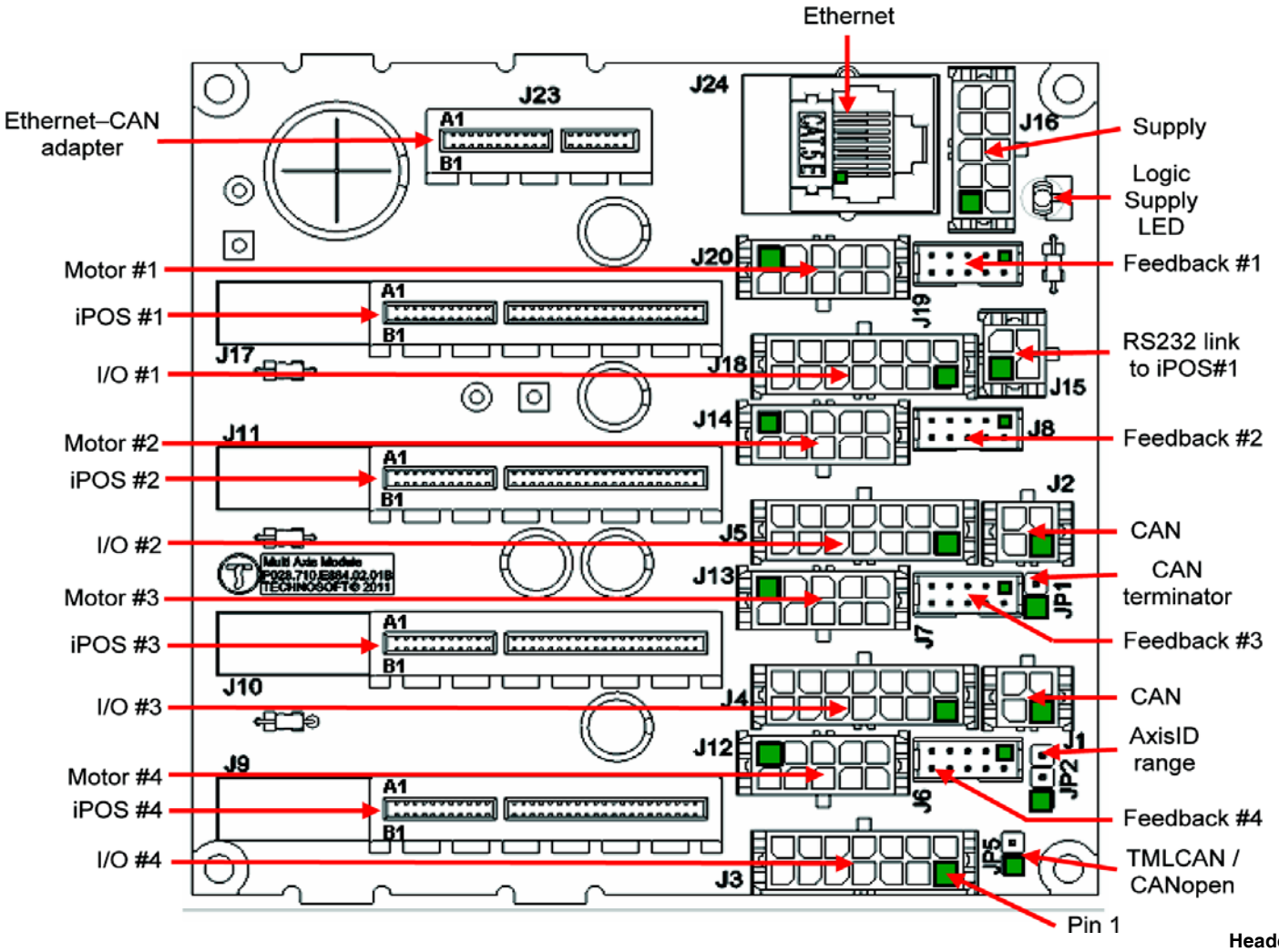
iPOS360x SX-CAN Features

- **mainboard for mounting the multi-axis motion system**
- **up to 4-axis motion system with iPOS3602 or iPOS3604 drives**
- **Compact solution: 100 x 98 x 37 mm**
- **Standalone operation using drives embedded motion controller**
- **Power supply: 12-36 V_{DC}; logic supply: 12-36 V_{DC}**
- **Output current / axis:**
  - **iPOS3604: 4 A continuous, 10 A_{PEAK}**
  - **iPOS3602: 2 A continuous, 3.2 A_{PEAK}**
- **Communication between axes: CAN-bus up to 1Mb with CANopen (CiA301, 305, 402) or Technosoft TMLCAN protocol, jumper selectable**
- **RS-232 (up to 115 k) and Ethernet 100 Mb/s (optional) for system setup**
- **Delivery options: from one to four iPOS3602 VX or iPOS3604 VX Intelligent Servo Drives, each offering:**
  - **High performance control of rotary or linear brushless, DC brush and step motors**
  - **Sinusoidal (FOC) or trapezoidal (Hall-based) control of brushless motors**
  - **Open-loop (up to 256 µsteps) and closed-loop control of 2 and 3-phase steppers**
  - **Torque, speed or position control**
  - **Feedback options: incremental encoders, single-ended, differential RS-422 and 1 Vpp sine/cosine, digital or linear Hall sensors**
  - **Powerful Technosoft Motion Language (TML) instruction set for the definition and execution of motion sequences (TMLCAN protocol), including:**
    - **Operation mode and parameters selection**
    - **Program flow control via conditional jumps and function calls, interrupts and events monitoring**
    - **I/O handling, arithmetic and logic operations**
    - **Data transfers between drives**
    - **Use of one axis as application master which controls the other axes**
    - **Synchronization of all axes from the network**
- **5 digital inputs: 5-36 V (compatible with NPN outputs): Enable, 2 limits switches and 2 general-purpose ones**
- **3 digital outputs: 5-36 V, 0.5 A (NPN open-collector): Ready, Error, and 1 general-purpose**
- **2 analogue inputs: 12-bit, 0-5 V: Reference, Feedback or general-purpose**
- **Protections to over-current, short-circuit, earth fault, over- and under-voltage, I2t, control error**

TECHNOSOFT
MOTION TECHNOLOGY

Dimensions, Specifications, Ordering Information

iPOS360x SY-CAN Multi-axis Motion System



Dimensions in mm. Drawings not to scale.

EasyMotion Studio

The high level graphical development environment EasyMotion Studio, supports the configuration, parameterization and programming of the drive, through:

- Motion system set-up wizard
- Tuning assistance with capture functions
- Definition, programming and testing of motion sequences

Motion Control Libraries

The TML_LIB Motion Control Libraries can be used to implement a motion control application on a PC from Visual C / C++, C#, Visual Basic, Delphi or LabVIEW under Windows or Linux operating systems. If a PLC is used as host, implementations of the TML_LIB according with IEC-61131 standard are available for Siemens, B&R and Omron PLCs.

iPOS360x SX-CAN Multi-axis Motion System

Electrical Specifications	with iPOS3602	with iPOS3604
Maximum DC supply voltage	36 V	36 V
Maximum continuous current	2 A	4 A
Peak current (2.4 sec. max.)	3.2 A	10 A
Nominal switching frequency	20 - 100 kHz	20 - 100 kHz
Operating ambient temperature	0 °C - 40 °C (*)	0 °C - 40 °C (*)

(*)up to 65 °C with derating

Ordering Information

P028.002.E884	iPOS360x MBX-CAN motherboard, 4 axes VX, CAN
P028.002.E001	iPOS3604 iPOS3604 VX-CAN, 36V 4A, plug-in, Enc, CAN
P028.001.E001	iPOS3602 iPOS3602VX-CAN, 36V 2A, plug-in, Enc, CAN
P038.010.E001	ENET-VX Ethernet-to-CAN adapter, plug-in interface (optional)
P028.040.C198	CS MFIO iPOS360x MBX (Cable set 100 cm for 1 axis: motor, feedback, I/O)
P028.040.C197	CS PWCOM iPOS360x MBX (Cable set 100 cm for 1 power, RS232, CAN)
P034.001.E002	EasyMotion Studio Software

Flexibility

Control schemes supported by the iPOS360x SX-CAN Multi-axis Motion System

Motor Types	Torque Control	Speed Control	Position Control
Brushless	√	√	√
DC Brushed	√	√	√
Step	√	√	√

This information is subject to change without notice.

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

TECHNOSOFT
MOTION TECHNOLOGY

iPOS8010 BA-CAT Intelligent Servo Drive 10 A, 80 Vdc

For Brushless, Brushed Linear or Step Motors

Description

The iPOS8010 BA-CAT is a new member of the iPOS family of Technosoft intelligent drives. It is based on a new design concept for panel-mounted drives, offering a very compact and cost effective solution for the control of rotary or linear brushless, DC brush, and step motors of powers up to 800 W with EtherCAT communication.

Designed to cover low to medium volume applications, the iPOS8010 BA-CAT embeds motion controller, drive, and PLC functionalities into a single unit. It can be used as an intelligent drive, or as a standard drive accepting CAN application protocol over EtherCAT (CoE).

When used as an intelligent drive - like all other members of the iPOS family - the iPOS8010 BA-CAT is empowered by the extreme flexibility offered by the TML (Technosoft Motion Language).

EtherCAT Networking

The iPOS8010 BA-CAT drive supports CAN application protocol over EtherCAT® (CoE) in conformance with CiA 402 device profile. Advanced features are covered,as cyclic synchronous position, up to 35 customizable homing modes (including all CiA 402 standard homing modes), PVT third order interpolation polynomial motion profiles, etc.

Initial drive commissioning is performed via the Technosoft EasySetup or EasyMotion Studio software platforms; checking and updating of setup data can also be done from the EtherCAT master.

Motion programming can be done via an EtherCAT® master, or using the drive built-in motion controller executing a TML program. A distributed control approach which combines the above options, like for example a master calling motion functions programmed on the drives in TML is also possible.

Dual Loop

Equipped with 2 feedback connectors, the iPOS8010 BA-CAT provides advanced dual-loop control schemes that minimize the transmission backlash negative effects, and increases system damping and stability.

Features :

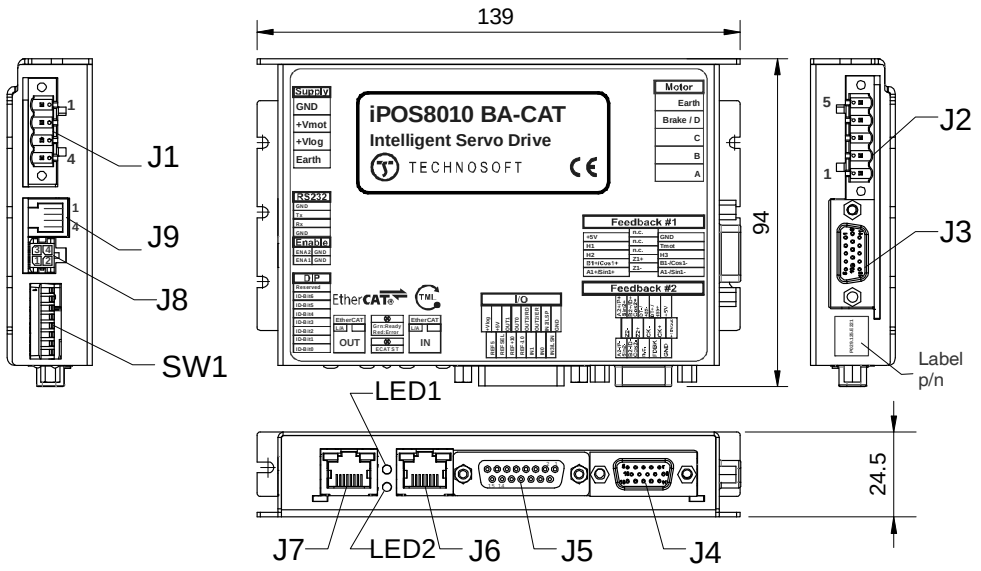
- **Motion controller and drive in a single compact unit**
- **Universal drive solution for brushless, brushed, linear or step (true closed loop) motors**
- **Advanced motion control capabilities (PVT, S-curve, electronic cam)**
- **Motion programming via TML (Technosoft Motion Language)**
- **Standalone operation with stored motion sequences**
- **Drive enable circuit**
- **Communication**
  - **RS-232 serial**
  - **EtherCAT : CoE protocol**
- **Digital and analogue I/Os:**
  - **4 digital programmable inputs, 5-36 V**
  - **4 digital outputs, 5-36 V, 0.5 A**
  - **2 analogue inputs: 12 bit resolution, 0-5 V**
- **Feedback devices (dual-loop supported)**
  - **1st Feedback :**
  - **Incremental quad encoder (differential)**
  - **Analogue sine/cosine encoder (differential 1Vpp)**
  - **Digital Hall sensors**
  - **2nd Feedback :**
  - **Incremental quad encoder (differential)**
  - **Analogue sine/cosine encoder (differential 1Vpp)**
  - **SSI**
  - ***Hiperface encoder**
  - ***EnDAT2.1 / EnDAT2.2 encoder**
  - ***BiSS encoder**
  - **** in preparation***
- **Programmable protections :**
  - **Over-current, over-temperature, short circuit**
  - **Over and undervoltage, i2t, control error**

Electrical Specifications :

Motor power supply:	12 - 80Vdc
Logic supply :	12 - 36Vdc
Maximum continuous phase current	10 A
Peak current (2.4 sec. max.)	20 A
PWM switching frequency	20 - 100 kHz
Ambient operating temperature	0 °C - 40 °C

P091.029.iPOS8010 BA-CAT.LFT.0615

TECHNICAL AND ORDERING INFORMATION



Weight : 240 g
All dimensions are in mm.

J1 Motor Supply
1 GND
2 +VMOT
3 +VLOG
4 Earth

J2 Motor Output
1 A/A+
2 B/A-
3 C/B+
4 BR/B-
5 Earth

J3 Primary Feedback #1	**J4 Secondary Feedback #2**	**J5 Digital, analog, I/O and logic supply**
1 +5VOUT	1 +5VOUT	1 GND
2 Hall 1	2 DT+	2 IN2/LSP
3 Hall 2	3 DT-	3 OUT2/Error
4 B1+/Cos+	4 B2+/Dir+	4 OUT3/Ready
5 A1+/Sin+	5 A2+/Pulse+	5 OUT0
6 n.c.	6 +10Vout	6 OUT1
7 n.c.	7 CK+	7 +5VOUT
8 n.c.	8 CK-	8 +VLOG
9 Z1+	9 Z2+	9 IN3/LSN
10 Z1-	10 Z2-	10 IN0
11 GND	11 GND	11 IN1
12 Temp Mot	12 FDBK	12 REF10+
13 Hall 3	13 n.c.	13 REF10-
14 B1-/Cos-	14 B2-/Dir-	14 REF5
15 A1-/Sin-	15 A2-/Pulse-	15 REFSEL

J6&J7 EtherCAT®
J6 ECAT IN
J7 ECAT OUT

J8 Enable
1 ENA1
2 GND
3 ENA2
4 GND

J9 RS232
1 GND
2 232TX
3 232RX
4 GND

LED1
Green = Ready
Red = Error

LED2
EtherCAT® Status

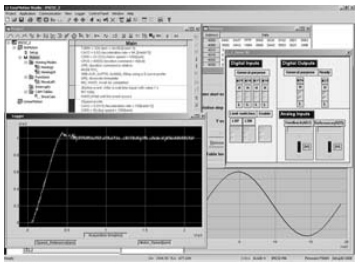
SW1
1: reserved
2: Axis ID - Bit 6
3: Axis ID - Bit 5
4: Axis ID - Bit 4
5: Axis ID - Bit 3
6: Axis ID - Bit 2
7: Axis ID - Bit 1
8: Axis ID - Bit 0

EASYMOTION STUDIO

The configuration, tuning and programming of the iPOS4808 BA-CAT drive is easy with Technosoft's powerful graphical platform, EasyMotion Studio.

The high level graphical development environment EasyMotion Studio, supports the configuration, parameterization and programming of the drive, through:

- Motion system set-up wizard
- Tuning assistance with capture functions
- Definition, programming and testing of motion sequences



Application notes with TML program examples at :
www.technosoftmotion.com

ORDERING INFORMATION :

P029.025.E222	iPOS8010 BA-CAT 80V, 10A, cl. frame, abs.enc., EtherCAT
P034.001.E002	EasyMotion Studio Software

FLEXIBILITY :

Control schemes supported by the iPOS8010 BA-CAT Drive

Motor types	Torque Control	Speed Control	Position Control*
Brushless	√	√	√
Brushed	√	√	√
Step	√	√	√
Linear	√	√	√

*Dual-loop control supported

CONNECTORS TYPE AND MATING CONNECTORS :

Connector	Mating connectors
J1	CTBA9208/4FL CAMDEN-Boss
J2	CTBA9208/5FL CAMDEN-Boss
J3, J4	High Density D-Sub male, 15 pins
J5	D-Sub male, 15 pins
J6, J7	RJ-45 plug
J8	Molex 43045-0400
J9	RJ-10 plug

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iPOS8010 BX-CAT Intelligent Servo Drive 10 A, 80 Vdc

For Brushless, Brushed Linear or Step Motors

Description

The iPOS8010 BX-CAT is a new member of the iPOS family of Technosoft intelligent drives. It is based on a new design concept for panel-mounted drives, offering a very compact and cost effective solution for the control of rotary or linear brushless, DC brush, and step motors of powers up to 800 W with EtherCAT communication.

Designed to cover low to medium volume applications, the iPOS8010 BX-CAT embeds motion controller, drive, and PLC functionalities into a single unit. It can be used as an intelligent drive, or as a standard drive accepting CAN application protocol over EtherCAT (CoE).

When used as an intelligent drive - like all other members of the iPOS family - the iPOS8010 BX-CAT is empowered by the extreme flexibility offered by the TML (Technosoft Motion Language).

EtherCAT Networking

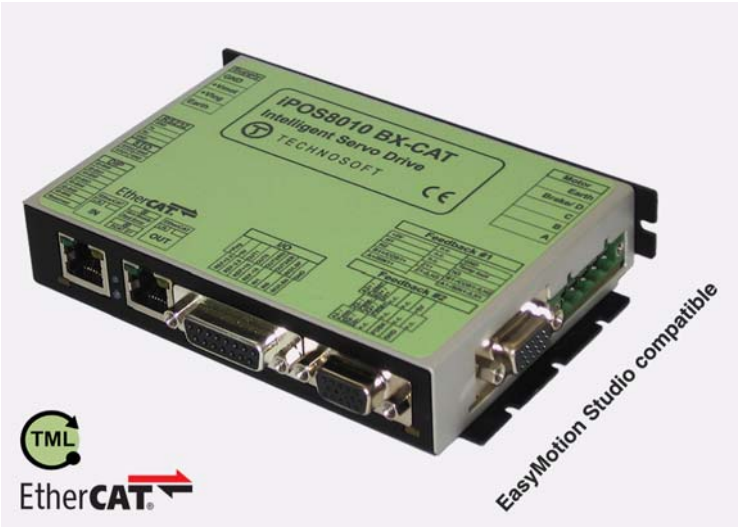
The iPOS8010 BX-CAT drive supports CAN application protocol over EtherCAT® (CoE) in conformance with CiA 402 device profile. Advanced features are covered,as cyclic synchronous position, up to 35 customizable homing modes (including all CiA 402 standard homing modes), PVT third order interpolation polynomial motion profiles, etc.

Initial drive commissioning is performed via the Technosoft EasySetup or EasyMotion Studio software platforms; checking and updating of setup data can also be done from the EtherCAT master.

Motion programming can be done via an EtherCAT® master, or using the drive built-in motion controller executing a TML program. A distributed control approach which combines the above options, like for example a master calling motion functions programmed on the drives in TML is also possible.

Dual Loop

Equipped with 2 feedback connectors, the iPOS8010 BX-CAT provides advanced dual-loop control schemes that minimize the transmission backlash negative effects, and increases system damping and stability.



Features :

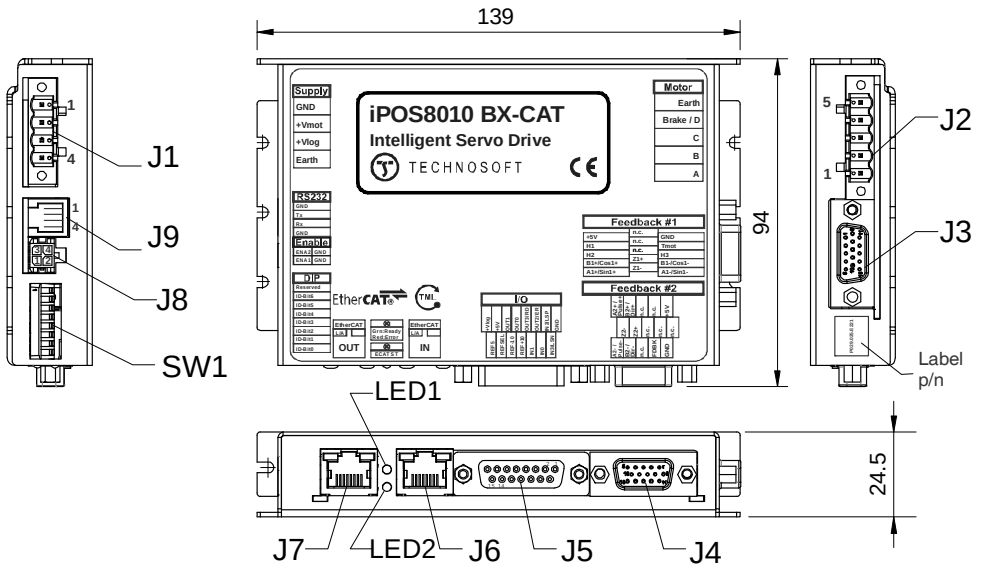
- **Motion controller and drive in a single compact unit**
- **Universal drive solution for brushless, brushed, linear or step (true closed loop) motors**
- **Advanced motion control capabilities (PVT, S-curve, electronic cam)**
- **Motion programming via TML (Technosoft Motion Language)**
- **Standalone operation with stored motion sequences**
- **Drive enable circuit**
- **Communication**
  - **RS-232 serial**
  - **EtherCAT : CoE protocol**
- **Digital and analogue I/Os:**
  - **4 PNP/NPN digital programmable inputs, 24 V**
  - **4 NPN digital outputs, 5-36 V, 0.5 A**
  - **2 analogue inputs: 12 bit resolution, 0-5 V**
- **Feedback devices (dual-loop supported)**
  - **1st Feedback :**
  - **Incremental quad encoder (differential)**
  - **Analogue sine/cosine encoder (differential 1Vpp)**
  - **Digital Hall sensors**
  - **2nd Feedback :**
  - **Incremental quad encoder (differential)**
- **Protections:**
  - **Over-current, over-temperature, short-circuit**
  - **Over and undervoltage, i2t, control error**

Electrical Specifications :

Motor power supply:	12 - 80Vdc
Logic supply :	12 - 36Vdc
Maximum continuous phase current	10 A
Peak current (10 sec. max.)	20 A
PWM switching frequency	20 - 60 kHz
Ambient perating temperature	0 °C - 40 °C

P091.027.iPOS8010 BX-CAT.LFT.0615

TECHNICAL AND ORDERING INFORMATION



LED2
EtherCAT® Status

Weight : 240 g
All dimensions are in mm.

J1 Motor Supply
1 GND
2 +VMOT
3 +VLOG
4 Earth

J2 Motor Output
1 A/A+
2 B/A-
3 C/B+
4 BR/B-
5 Earth

J3 Primary Feedback #1	**J4 Secondary Feedback #2**	**J5 Digital, analog, I/O and logic supply**
1 +5VOUT	1 +5VOUT	1 GND
2 Hall 1	2 n.c.	2 IN2/LSP
3 Hall 2	3 n.c.	3 OUT2/Error
4 B1+/Cos+	4 B2+/Dir+	4 OUT3/Ready
5 A1+/Sin+	5 A2+/Pulse+	5 OUT0
6 n.c.	6 n.c.	6 OUT1
7 n.c.	7 n.c.	7 +5VOUT
8 n.c.	8 n.c.	8 +VLOG
9 Z1+	9 Z2+	9 IN3/LSN
10 Z1-	10 Z2-	10 IN0
11 GND	11 GND	11 IN1
12 Temp Mot	12 FDBK	12 REF10+
13 Hall 3	13 n.c.	13 REF10-
14 B1-/Cos-	14 B2-/Dir-	14 REF5
15 A1-/Sin-	15 A2-/Pulse-	15 REFSEL

J6&J7 EtherCAT®
J6 ECAT IN
J7 ECAT OUT

J8 Enable
1 ENA1
2 GND
3 ENA2
4 GND

J9 RS232
1 GND
2 232TX
3 232RX
4 GND

LED1
Green = Ready
Red = Error

LED2
EtherCAT® Status

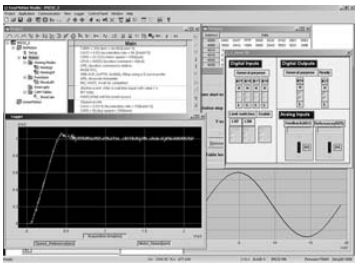
SW1
1: Reserved
2: Axis ID - Bit 6
3: Axis ID - Bit 5
4: Axis ID - Bit 4
5: Axis ID - Bit 3
6: Axis ID - Bit 2
7: Axis ID - Bit 1
8: Axis ID - Bit 0

EASYMOTION STUDIO

The configuration, tuning and programming of the iPOS4808 BX-CAT drive is easy with Technosoft's powerful graphical platform, EasyMotion Studio.

The high level graphical development environment EasyMotion Studio, supports the configuration, parameterization and programming of the drive, through:

- Motion system set-up wizard
- Tuning assistance with capture functions
- Definition, programming and testing of motion sequences



Application notes with TML program examples at :
www.technosoftmotion.com

ORDERING INFORMATION :

P029.025.E221	iPOS8010 BX-CAT 80V, 10A, cl. frame, enc.EtherCAT
P034.001.E002	EasyMotion Studio Software

FLEXIBILITY :

Control schemes supported by the iPOS8010 BX-CAT Drive

Motor types	Torque Control	Speed Control	Position Control*
Brushless	√	√	√
Brushed	√	√	√
Step	√	√	√
Linear	√	√	√

*Dual-loop control supported

CONNECTORS TYPE AND MATING CONNECTORS :

Connector	Mating connectors
J1	CTBA9208/4FL CAMDEN-Boss
J2	CTBA9208/5FL CAMDEN-Boss
J3, J4	High Density D-Sub male, 15 pins
J5	D-Sub male, 15 pins
J6, J7	RJ-45 plug
J8	Molex 43045-0400
J9	RJ-10 plug

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iPOS8010 BX-CAN Intelligent Servo Drive 10A, 80Vdc

For Brushless, Brushed, Linear or Step Motors

Description

The iPOS8010 BX-CAN is a new member of the iPOS family of Technosoft intelligent drives. It is based on a new design concept for closed-frames drives, offering a very compact and cost effective solution for the control of rotary or linear brushless, DC brush, and step motors of powers up to 800 W.

Designed to cover low to medium volume applications, the iPOS8010 BX-CAN embeds motion controller, drive, and PLC functionalities into a single unit.

When used as an intelligent drive - like all other members of the iPOS family - the iPOS8010 BX-CAN is empowered by the extreme flexibility offered by the TML (Technosoft Motion Language) instruction set.The unit can replace a host in various single or multi-axis stand-alone applications.

Advanced positioning profiles like the PVT or electronic caming, I/O and program flow control, data transfer between axes, subroutines, ISRs and multiple homing modes ease the motion application implementation task.

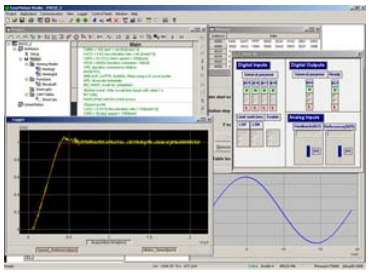
In systems that require a host, the iPOS operates as an intelligent slave executing motion sequences triggered via commands received on RS-232 or CAN while fully supporting as well the CiA402 CANopen drive profile.

Dual Loop

Equipped with 2 feedback connectors, the iPOS8010 BX-CAN provides advanced dual-loop control schemes that minimize the transmission backlash negative effects.

EasyMotion Studio

The configuration, tuning and programming of the iPOS8010 BX-CAN drive is easy with Technosoft's powerful graphical platform, EasyMotion Studio.



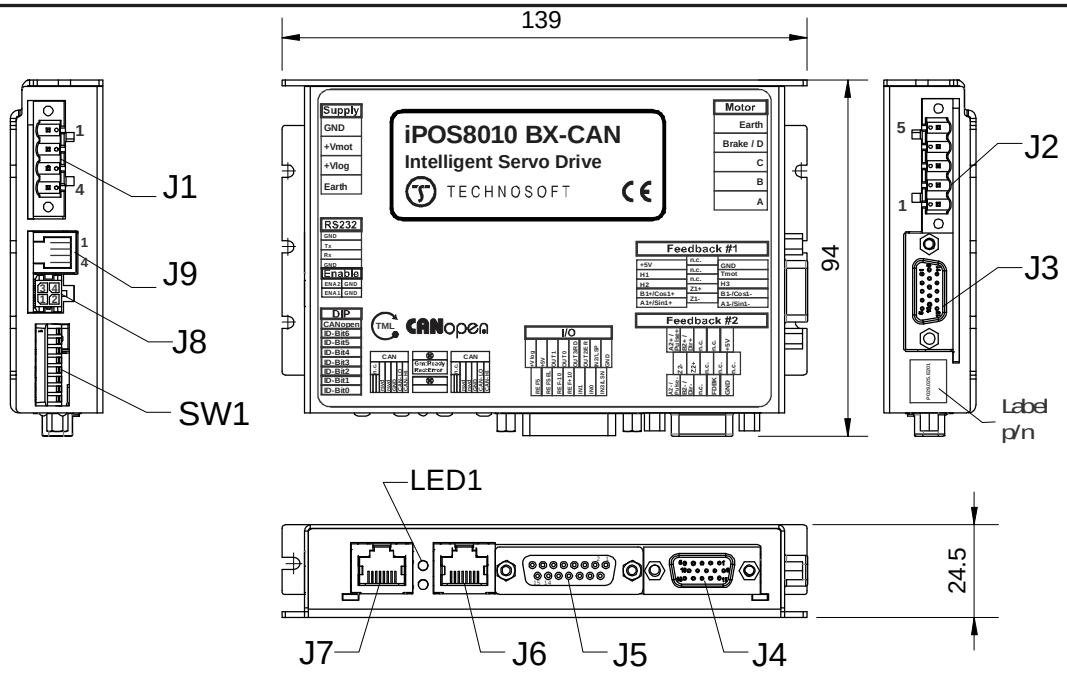
Features :

- **Motion controller and drive in a single compact unit**
- **Universal drive solution for brushless, brushed, linear or step (true closed loop) motors**
- **Advanced motion control capabilities (PVT, S-curve, electronic cam)**
- **Motion programming via TML (Technosoft Motion Language) or motion libraries for Visual C / VB / LabVIEW / Linux and PLC**
- **Standalone operation with stored motion sequences**
- **Drive enable circuit**
- **Communication :**
  - **RS-232 serial**
  - **CAN-Bus with TMLCAN or CANopen (CiA301, 305, 402) protocols**
- **Digital and analogue I/Os:**
  - **4 PNP/NPN digital programmable inputs, 24 V**
  - **4 NPN digital outputs, 5 - 36 V, 0.5 A**
  - **2 analogue inputs: 12 bit resolution, 0 - 5 V**
- **Feedback devices (dual-loop supported) :**
  - **1st Feedback :**
  - **Incremental quad encoder (differential)**
  - **Analogue sine/cosine encoder (differential 1Vpp)**
  - **Digital Hall sensors**
  - **2nd Feedback :**
  - **Incremental quad encoder (differential)**
- **Protections :**
  - **Over-current, over-temperature, short circuit**
  - **Over and undervoltage, i2t, control error**

Electrical Specifications :

Motor power supply:	12 - 80 Vdc
Logic supply :	12 - 36 Vdc
Continuous phase current	10A
Peak current (10 sec. max.)	20 A
PWM switching frequency	20 - 60 kHz
Ambient operating temperature	0 °C - 40 °C

TECHNICAL AND ORDERING INFORMATION



Weight : 240 g
All dimensions are in mm.

J1 Motor Supply
1 GND
2 +VMOT
3 +VLOG
4 Earth

J2 Motor Output
1 A/A+
2 B/A-
3 C/B+
4 BR/B-
5 Earth

J3 Primary Feedback #1
1 +5VOUT
2 Hall 1
3 Hall 2
4 B1+/Cos+
5 A1+/Sin1+
6 n.c.
7 n.c.
8 n.c.
9 Z1+
10 Z1-
11 GND
12 Temp Mot
13 Hall 3
14 B1-/Cos-
15 A1-/Sin-

J4 Secondary Feedback #2
1 +5VOUT
2 n.c.
3 n.c.
4 B2+/Dir+
5 A2+/Pulse+
6 n.c.
7 n.c.
8 n.c.
9 Z2+
10 Z2-
11 GND
12 FDBK
13 n.c.
14 B2-/Dir-
15 A2-/Pulse-

J5 Digital, analog, I/O and logic supply
1 GND
2 IN2/LSP
3 OUT2/Error
4 OUT3/Ready
5 OUT0
6 OUT1
7 +5VOUT
8 +VLOG
9 IN3/LSN
10 IN0
11 IN1
12 REF10+
13 REF10-
14 REF5
15 REFSEL

J6&J7 CANopen

J8 Enable
1 ENA1
2 GND
3 ENA2
4 GND

J9 RS232
1 GND
2 232TX
3 232RX
4 GND

LED1
Green = Ready
Red = Error

SW1
1: ON = CANopen
OFF = TMLCAN
2: Axis ID - Bit 6
3: Axis ID - Bit 5
4: Axis ID - Bit 4
5: Axis ID - Bit 3
6: Axis ID - Bit 2
7: Axis ID - Bit 1
8: Axis ID - Bit 0

The high level graphical development environment EasyMotion Studio supports the configuration, parameterization and programming of the drive, through:

- Motion system set-up wizard
- Tuning assistance with capture functions
- Definition, programming and testing of motion sequences

MOTION CONTROL LIBRARIES

The TML_LIB Motion Control Libraries can be used to implement a motion control application on a PC from Visual C / C++, C#, Visual Basic, Delphi or LabVIEW under Windows or Linux operating systems.
If a PLC is used as host, implementations of the TML_LIB according with IEC-61131 standard are available for Siemens, B&R and Omron PLCs.

Application notes with TML program examples at :
www.technosoftmotion.com

ORDERING INFORMATION :

P029.025.E201	iPOS8010 BX-CAN, 80V,10A, cl. frame, Enc, CAN
P034.001.E002	EasyMotion Studio Software
P040.001.Exxx	TML_LIB Motion Library*

*ask for existing libraries types

FLEXIBILITY :

Control schemes supported by the iPOS8010 BX-CAN Drive

Motor types	Torque Control	Speed Control	Position Control *
Brushless	√	√	√
Brushed	√	√	√
Step	√	√	√
Linear	√	√	√

* Dual-loop control supported

CONNECTORS TYPE AND MATING CONNECTORS :

Connector	Mating connectors
J1	CTBA9208/4FL CAMDEN-Boss
J2	CTBA9208/5FL CAMDEN-Boss
J3, J4	High Density D-Sub male, 15 pins
J5	D-Sub male, 15 pins
J6, J7	RJ-45 plug
J8	Molex 43045-0400
J9	RJ-10 plug

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iPOS4808 BX-CAT Intelligent Servo Drive 8A, 48Vdc

For Brushless, Brushed, Linear or Step Motors

Description

The iPOS4808 BX-CAT is a new member of the iPOS family of Technosoft intelligent drives. It is based on a new design concept for closed-frames drives, offering a very compact and cost effective solution for the control of rotary or linear brushless, DC brush, and step motors of powers up to 400 W with EtherCAT communication.

Designed to cover low to medium volume applications, the iPOS4808 BX-CAT embeds motion controller, drive, and PLC functionalities into a single unit. It can be used as an intelligent drive, or as a standard drive accepting CAN application protocol over EtherCAT (CoE).

When used as an intelligent drive - like all other members of the iPOS family - the iPOS4808 BX-CAT is empowered by the extreme flexibility offered by the TML (Technosoft Motion Language).

EtherCAT Networking

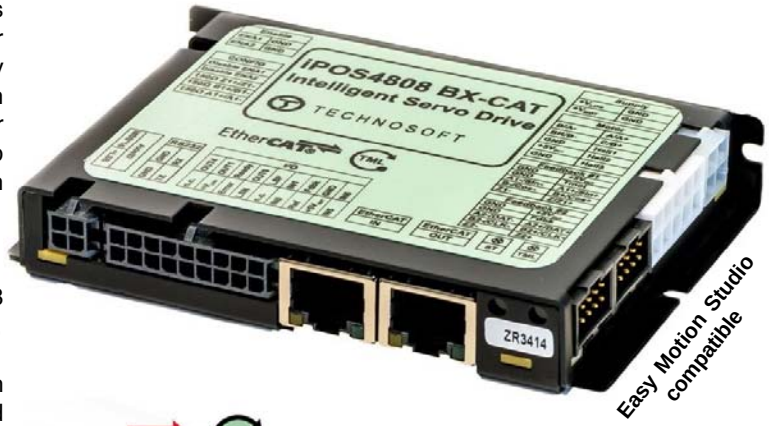
The iPOS4808 BX-CAT drive supports CAN application protocol over EtherCAT® (CoE) in conformance with CiA 402 device profile. Advanced features are covered,as cyclic synchronous position, up to 35 customizable homing modes (including all CiA 402 standard homing modes), PVT third order interpolation polynomial motion profiles, etc.

Initial drive commissioning is performed via the Technosoft EasySetup or EasyMotion Studio software platforms; checking and updating of setup data can also be done from the EtherCAT master.

Motion programming can be done via an EtherCAT® master, or using the drive built-in motion controller executing a TML program. A distributed control approach which combines the above options, like for example a master calling motion functions programmed on the drives in TML is also possible.

Dual Loop

Equipped with 2 feedback connectors, the iPOS4808 BX-CAT provides advanced dual-loop control schemes that minimize the transmission backlash negative effects, and increases system damping and stability.



EtherCAT TML

Features :

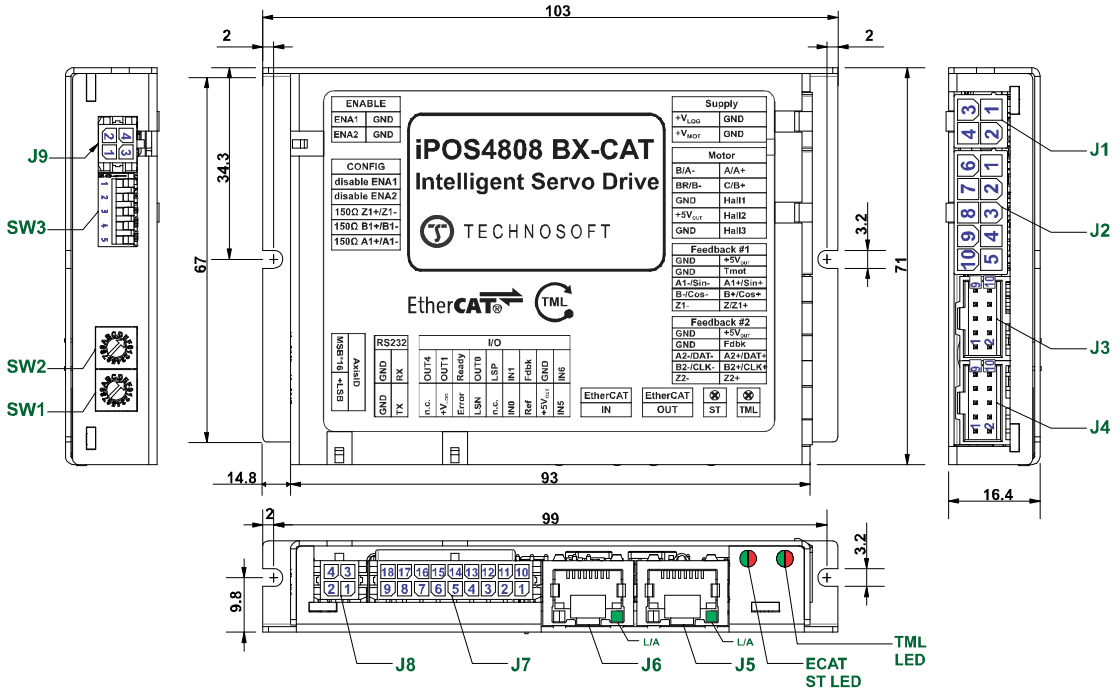
- **Motion controller and drive in a single compact unit**
- **Universal drive solution for brushless, brushed, linear or step (true closed loop) motors**
- **Advanced motor and motion control capabilities (dual-loop, PVT, S-curve, electronic cam)**
- **Motion programming via TML (Technosoft Motion Language)**
- **Communication :**
  - **RS-232 serial (for setup)**
  - **EtherCAT : CoE protocol**
- **Digital and analogue I/Os:**
  - **6 digital programmable inputs, 12 - 36 V**
  - **5 digital outputs, 5 - 36 V, 0.5 A**
  - **2 analogue inputs: 12 bit resolution, 0 - 5 V**
- **Feedback devices (dual-loop supported) :**
  1st Feedback :
  - **Incremental quad encoder (single ended / differential)**
  - **Pulse & Direction (single ended) interface**
  - **Analogue sine/cosine encoder (differential 1Vpp)**
  - **Digital Hall sensors**

  2nd Feedback :
  - **Incremental quad encoder (differential), SSI, BISS**
- **Programmable protections :**
  - **Over-current, over-temperature, short circuit**
  - **Over and undervoltage, i2t, control error**

Electrical Specifications :

Motor power supply:	12 - 48 Vdc
Logic supply :	12 - 36 Vdc
Continuous phase current	8 A
Peak current (2.4 sec. max.)	20 A
PWM switching frequency	20 - 100 kHz
Operating ambient temperature	0 °C - 40 °C

Technical And Ordering Information



J1 Supply
1 GND
2 GND
3 +VLOG
4 +VMOT

J2 Motor + Halls
1 Motor phase A/A+
2 Motor phase C/B+
3 Hall 1
4 Hall 2
5 Hall 3
6 Motor phase B/A-
7 Brake/phase B-
8 GND
9 +5VOUT
10 GND

J3 Feedback#1
1 Z1-
2 Z1+
3 B1-/Cos-
4 B1+/Cos+/Dir
5 A1-/Sin-
6 A1+/Sin+/Pulse
7 GND
8 TempMot
9 GND
10 +5Vout

J4 Feedback#2
1 Z2-
2 Z2+
3 B2-/Dir-/CLK-/MA-
4 B2+/Dir+/CLK/MA+
5 A2-/Pulse-/Data-/SL-
6 A2+/Pulse+/Data+/SL+
7 GND
8 FDBK
9 GND
10 +5Vout

J5 EtherCAT OUT

J6 EtherCAT IN

J7 I/O & Logic Supply

1 In5 DI*	11 GND
2 +5 VOUT	12 Feedback AI*
3 Reference AI*	13 In1 DI*
4 In0 DI*	14 In2/Limit+ DI*
5 n.c.	15 Out0 DO*
6 In3/Limit- DI*	16 Out3/Ready DO*
7 Out2/Error DO*	17 Out1 DO*
8 +VLOG	18 Out4 DO*
9 n.c.	
10 In6 DI*	

* AI - analog input ; DI - digital input ; DO - digital output

J8 RS232
1 232TX
2 GND
3 232RX
4 GND

J9 Enable
1 ENA2
2 ENA1
3 GND
4 GND

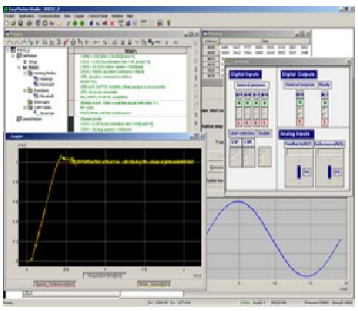
LEDs
Green - Ready
Red - Error
Bi-color - EtherCAT Status

EasyMotion Studio

The high level graphical development environment EasyMotion Studio supports the configuration, parameterization and programming of the drive, through:

- Motion system set-up wizard
- Tuning assistance with capture functions
- Definition, programming and testing of motion sequences

The configuration, tuning and programming of the iPOS4808 BX-CAT drive is easy with Technosoft's powerful graphical platform, EasyMotion Studio.



Application notes with TML program examples at :
www.technosoftmotion.com

Ordering Information :

P027.214.E221	iPOS4808 BX-CAT Drive, 48 V, 8 A, closed frame, EtherCAT
P034.001.E002	EasyMotion Studio Software
P027.040.C218	Complete cable set 100 cm for iPOS4808 BX-CAT, 1 x enc.single ended
P027.040.C219	Complete cable set 100 cm for iPOS4808 BX-CAT, 1 x enc.differential
P027.040.C089	Housing & crimp pins set for iPOS4808 BX-CAT

Flexibility :

Control schemes supported by the iPOS4808 BX-CAT Drive

Motor types	Torque Control	Speed Control	Position Control*
Brushless*	√	√	√
Brushed*	√	√	√
Step	√	√	√
Linear	√	√	√

* Dual-loop control supported

Connectors Type and Mating Connectors :

Connector	Housing	Crimp Pin
J1	Molex 39-03-9042	Molex 45750-1111
J2	Molex 39-03-9102	
J3,J4	Molex 90142-0010	Molex 90119-0109
J7	Molex 43025-1800	Molex 43030-0007
J8, J9	Molex 43025-0400	
J5, J6	RJ45 8P8C plug	-

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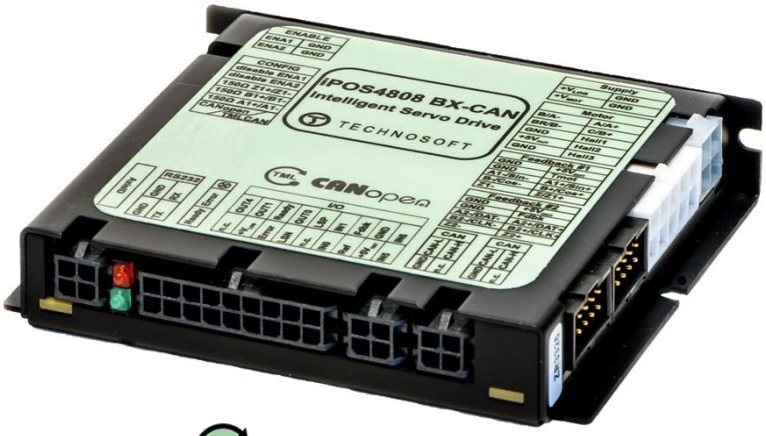
iPOS4808 BX-CAN Intelligent Servo Drive 8A, 48Vdc

For Brushless, Brushed, Linear or Step Motors

Description

The iPOS4808 BX-CAN is a new member of the iPOS family of Technosoft intelligent drives. It is based on a new design concept for closed-frames drives, offering a very compact and cost effective solution for the control of rotary or linear brushless, DC brush, and step motors of powers up to 400 W with CAN communication.

Designed to cover low to medium volume applications, the iPOS4808 BX-CAN embeds motion controller, drive, and PLC functionalities into a single unit. It can be used as an intelligent drive, or as a standard drive accepting TMLCAN or CANopen commands.



CANopen TML

CANopen Networking

The iPOS4808 BX-CAN drive supports CANopen application protocol in conformance with CiA 402 device profile. Advanced features are covered,as cyclic synchronous position, up to 35 customizable homing modes (including all CiA 402 standard homing modes), PVT third order interpolation polynomial motion profiles, etc.

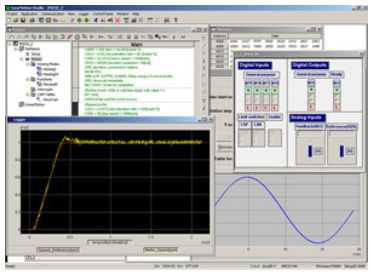
Initial drive commissioning is performed via the Technosoft EasySetup or EasyMotion Studio software platforms; checking and updating of setup data can also be done from the CANopen master.

Dual Loop

Equipped with 2 feedback connectors, the iPOS4808 BX-CAN provides advanced dual-loop control schemes that minimize the transmission backlash negative effects, and increases system damping and stability.

EasyMotion Studio

The configuration, tuning and programming of the iPOS4808 BX-CAN drive is easy with Technosoft's powerful graphical platform, EasyMotion Studio.



Features :

- **Motion controller and drive in a single compact unit**
- **Universal drive solution for brushless, brushed, linear or step (true closed loop) motors**
- **Advanced motion control capabilities (PVT, S-curve, electronic cam)**
- **Motion programming via TML (Technosoft Motion Language) or motion libraries for Visual C / VB / LabVIEW / Linux and PLC**
- **Standalone operation with stored motion sequences**
- **Communication :**
  - **RS-232 serial**
  - **CAN-Bus with TMLCAN or CANopen (CiA301v4.2 and CiA402v3.0) protocols selectable by h/w switch**
- **Digital and analogue I/Os:**
  - **6 digital programmable inputs, 12 - 36 V, PNP/NPN programmable**
  - **5 digital outputs, 5 - 36 V, 0.5 A, NPN-open collector**
  - **2 analogue inputs: 12 bit resolution, 0 - 5 V**
- **Feedback devices (dual loop supported):**

1st Feedback :

- **Incremental quad encoder (single ended / differential)**
- **Pulse & Direction (single ended) interface**
- **Analogue sine/cosine encoder (differential 1Vpp)**
- **Digital Hall sensors**

2nd Feedback :

- **Incremental quad encoder (differential), SSI, BISS**

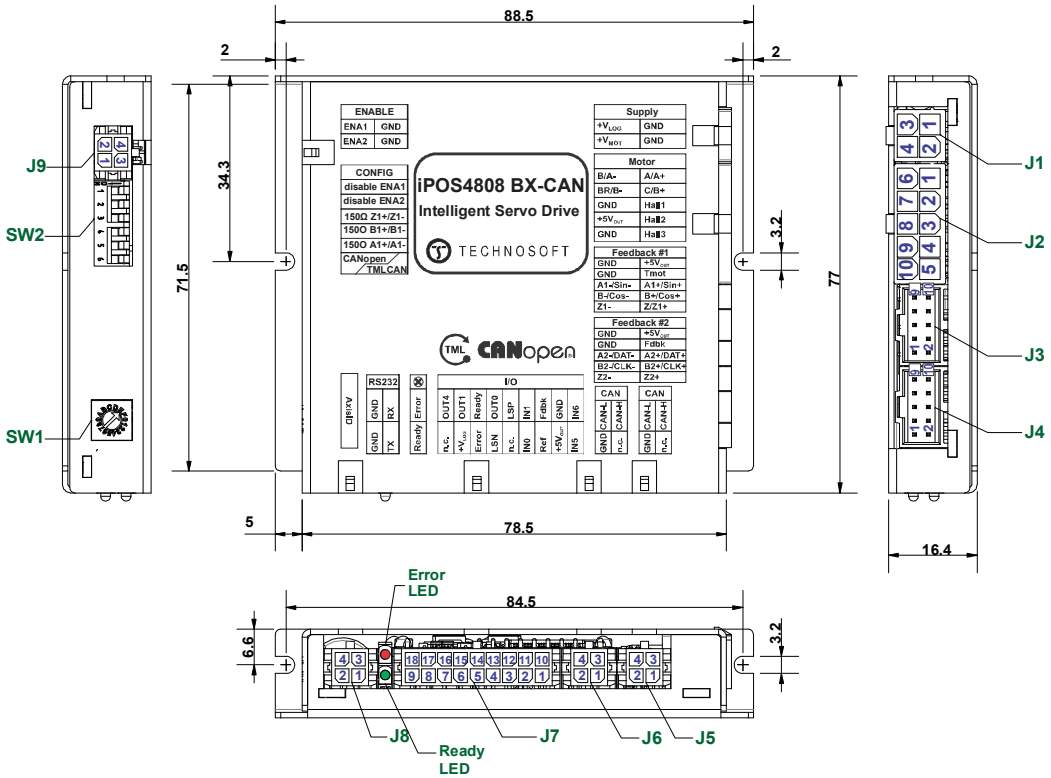
- **Programmable protections :**
  - **Over-current, over-temperature, short circuit**
  - **Over and undervoltage, i2t, control error**

Electrical Specifications :

Motor power supply:	12 - 48 Vdc
Logic supply :	12 - 36 Vdc
Continuous phase current	8 A
Peak current (2.4 sec. max.)	20 A
PWM switching frequency	20 - 100 kHz
Operating ambient temperature	0 °C - 40 °C

TECHNOSOFT
MOTION TECHNOLOGY

Technical And Ordering Information



J1 Supply
1 GND
2 GND
3 +VLOG
4 +VMOT

J2 Motor + Halls
1 Motor phase A/A+
2 Motor phase C/B+
3 Hall 1
4 Hall 2
5 Hall 3
6 Motor phase B/A-
7 Brake/phase B-
8 GND
9 +5VOUT
10 GND

J3 Feedback#1
1 Z1-
2 Z1+
3 B1-/Cos-
4 B1+/Cos+/Dir
5 A1-/Sin-
6 A1+/Sin+/Pulse
7 GND
8 TempMot
9 GND
10 +5Vout

J4 Feedback#2
1 Z2-
2 Z2+
3 B2-/Dir-/CLK-/MA-
4 B2+/Dir+/CLK/MA+
5 A2-/Pulse-/Data-/SL-
6 A2+/Pulse+/Data+/SL+
7 GND
8 FDBK
9 GND
10 +5Vout

J5 CAN OUT

J6 CAN IN

J7 I/O & Logic Supply
1 In5 DI*
2 +5 VOUT
3 Reference AI*
4 In0 DI*
5 n.c.
6 In3/Limit- DI*
7 Out2/Error DO*
8 +VLOG
9 n.c.
10 In6 DI*
11 GND
12 Feedback AI*
13 In1 DI*
14 In2/Limit+ DI*
15 Out0 DO*
16 Out3/Ready DO*
17 Out1 DO*
18 Out4 DO*

* AI - analog input ; DI - digital input ; DO - digital output

J8 RS232
1 232TX
2 GND
3 232RX
4 GND

J9 Enable
1 ENA2
2 ENA1
3 GND
4 GND

The high level graphical development environment EasyMotion Studio supports the configuration, parameterization and programming of the drive, through:

- Motion system set-up wizard
- Tuning assistance with capture functions
- Definition, programming and testing of motion sequences

Motion Control Libraries

The TML_LIB Motion Control Libraries can be used to implement a motion control application on a PC from Visual C / C++, C#, Visual Basic, Delphi or LabVIEW under Windows or Linux operating systems.
If a PLC is used as host, implementations of the TML_LIB according with IEC-61131 standard are available for Siemens, B&R and Omron PLCs.

Application notes with TML program examples at :
www.technosoftmotion.com

Ordering Information :

P027.214.E201	iPOS4808 BX-CAN Intelligent Drive, 48V, 8A, closed frame, encoder, CAN
P034.001.E002	EasyMotion Studio Software
P040.001.Exxx	TML_LIB Motion Library**
P027.040.C299	Complete cable set 100 cm for iPOS4808 BX-CAN, enc.diff
P027.040.C279	Housing & crimp pins set for iPOS4808 BX-CAN

**ask for existing libraries types

Flexibility :

Control schemes supported by the iPOS4808 BX-CAN Drive

Motor types	Torque Control	Speed Control	Position Control
Brushless	√	√	√
Brushed	√	√	√
Step	√	√	√
Linear	√	√	√

Connectors Type and Mating Connectors :

Connector	Housing	Crimp Pin
J1	Molex 39-03-9042	Molex 45750-1111
J2	Molex 39-03-9102	
J3,J4	Molex 90142-0010	Molex 90119-0109
J7	Molex 43025-1800	Molex 43030-0007
J5, J6, J8, J9	Molex 43025-0400	

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iPOS3604 BX-CAN Intelligent Servo Drive 4A, 36Vdc

For Brushless, Brushed, Linear or Step Motors

Description

The iPOS3604 BX-CAN is a new member of the iPOS family of Technosoft intelligent drives. It is based on a new design concept for closed-frames drives, offering a very compact and cost effective solution for the control of rotary or linear brushless, DC brush, and step motors of powers up to 144 W.

Designed to cover low to medium volume applications, the iPOS3604 BX-CAN embeds motion controller, drive, and PLC functionalities into a single unit.

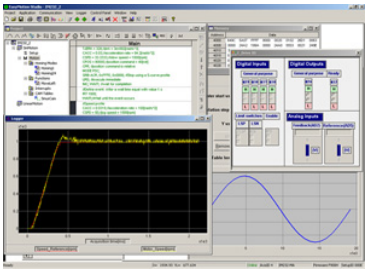
When used as an intelligent drive - like all other members of the iPOS family - the iPOS3604 BX-CAN is empowered by the extreme flexibility offered by the TML (Technosoft Motion Language) instruction set. Acting as a programmable motion controller and drive in a compact form, the unit can replace the host in various single or multi-axis stand-alone applications.

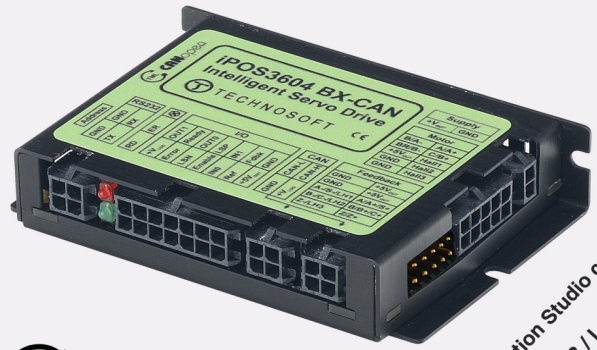
Complex motion sequences can be programmed and executed automatically at power-up from the non-volatile memory of the drive. Advanced positioning profiles like the PVT or electronic caming, I/O and program flow control, data transfer between axes, subroutines, ISRs and multiple homing modes ease the motion application implementation task.

In systems that require a host, the iPOS operates as an intelligent slave executing motion sequences triggered via commands received on RS-232 or TMLCAN while fully supporting as well the CiA402 CANopen drive profile.

EasyMotion Studio

The configuration, tuning and programming of the iPOS3604 BX-CAN drive is easy with Technosoft's powerful graphical platform, EasyMotion Studio.





-EasyMotion Studio compatible
-Visual C / VB / LabVIEW / Linux and PLC libraries available

TML

CANopen

Features :

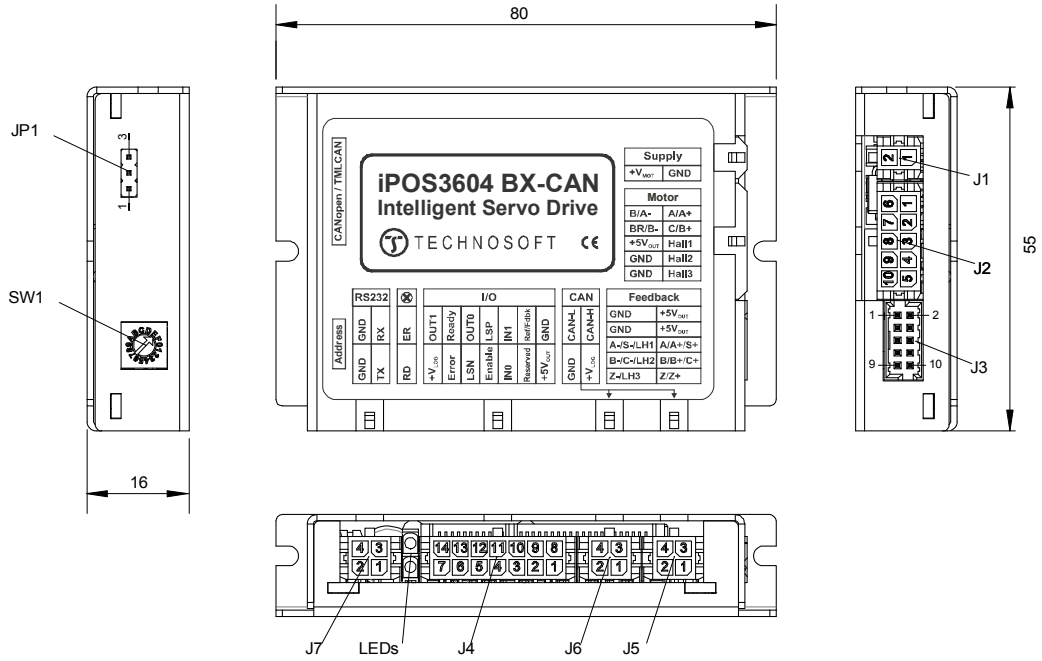
- **Motion controller and drive in a single compact unit**
- **Universal drive solution for brushless, brushed, linear or step (true closed loop) motors**
- **Advanced motion control capabilities (PVT, S-curve, electronic cam)**
- **Motion programming via TML (Technosoft Motion Language) or motion libraries for Visual C / VB / LabVIEW / Linux and PLC**
- **Standalone operation with stored motion sequences**
- **Communication :**
  - **RS-232 serial**
  - **CAN-Bus with TMLCAN or CANopen (CiA301, 305, 402) protocols**
- **Digital and analogue I/Os:**
  - **5 digital programmable inputs, 5 - 36 V**
  - **4 digital outputs, 5 - 36 V, 0.5 A**
  - **1 analogue inputs: 12 bit resolution, 0 - 5 V**
- **Feedback devices :**
  - **Incremental quad encoder (differential)**
  - **Analogue sine/cosine encoder (differential 1Vpp)**
  - **Digital Hall sensors**
- **Programmable protections :**
  - **Over-current, over-temperature, short circuit**
  - **Over and undervoltage, i2t, control error**

Electrical Specifications :

Motor power supply:	12 - 36 Vdc
Logic supply :	12 - 36 Vdc
Continuous phase current	4 A
Peak current (2.4 sec. max.)	10 A
PWM switching frequency	20 - 100 kHz
Operating ambient temperature	0 °C - 40 °C

TECHNOSOFT
MOTION TECHNOLOGY

TECHNICAL AND ORDERING INFORMATION



Weight : 85 g
All dimensions are in mm.

J1 Motor Supply
1 GND
2 +V_{MOT}

JP1 Jumper
1-2 CANopen mode
2-3 TMLCAN mode

SW1 Switch
Axis ID

J2 Motor + Halls
1 Motor phase A/A+
2 Motor phase C/B+
3 Hall 1
4 Hall 2
5 Hall 3
6 Motor phase B/A-
7 Brake/phase B-
8 +5V_{OUT}
9 GND
10 GND

J3 Feedback
1 GND
2 +5V_{OUT}
3 GND
4 +5V_{OUT}
5 A-/Sin-/LH1
6 A/A+/Sin+
7 B-/Cos-/LH2
8 B/B+/Cos+
9 Z-/LH3
10 Z+

J4 I/O & Logic Supply
1 +5 V_{OUT}
2 Reserved
3 In0
4 Enable
5 LSN
6 Error
7 +V_{LOG} In
8 GND
9 Ref/Fdbk
10 In1
11 LSP
12 Out0
13 Ready
14 Out1

J5&J6 CAN
1 +V_{LOG} In/Out
2 GND
3 CAN-Hi
4 CAN-Lo

J7 RS232
1 232TX
2 GND
3 232RX
4 GND

LEDs
Green - Ready
Red - Error

The high level graphical development environment EasyMotion Studio supports the configuration, parameterization and programming of the drive, through:

- Motion system set-up wizard
- Tuning assistance with capture functions
- Definition, programming and testing of motion sequences

MOTION CONTROL LIBRARIES

The TML_LIB Motion Control Libraries can be used to implement a motion control application on a PC from Visual C / C++, C#, Visual Basic, Delphi or LabVIEW under Windows or Linux operating systems.
If a PLC is used as host, implementations of the TML_LIB according with IEC-61131 standard are available for Siemens, B&R and Omron PLCs.

Application notes with TML program examples at :
www.technosoftmotion.com

ORDERING INFORMATION :

P028.002.E201	iPOS3604 BX-CAN Intelligent Drive, 36V, 4A, closed frame, encoder, CAN
P034.001.E002	EasyMotion Studio Software
P040.001.Exxx	TML_LIB Motion Library*
P028.040.C099	Complete cable set 100 cm for iPOS3604 BX-CAN, enc.diff
P028.040.C079	Housing & crimp pins set for iPOS3604 BX-CAN

*ask for existing libraries types

FLEXIBILITY :

Control schemes supported by the iPOS3604 BX-CAN Drive

Motor types	Torque Control	Speed Control	Position Control
Brushless	√	√	√
Brushed	√	√	√
Step	√	√	√
Linear	√	√	√

CONNECTORS TYPE AND MATING CONNECTORS :

Connector	On the drive	Mating
J1	Molex 43045-0200	Molex 43025-0200
J2	Molex 43045-1000	Molex 43025-1000
J3	Molex 87833-1031	Molex 511110-1056
J4	Molex 43045-1400	Molex 43025-1400
J5,J6,J7	Molex 43045-0400	Molex 43025-0400

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iPOS4808 Intelligent Servo Drives 400 W

Compact Drive Solution for Rotary or Linear Brushless, DC Brush and Step Motors

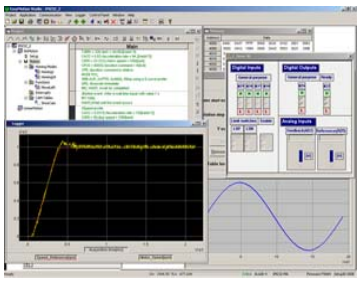
The iPOS4808 is based on a new design concept offering a cost effective, compact and modular solution for the control of rotary or linear brushless, DC brush, and step motors of powers up to 400 W, with 50 V nominal voltage.

Modularly designed to cover from low- to high-volume applications, iPOS4808 integrates all the basic motor control functions and the motion control functionality on a single plug-in module. A series of I/O signals, both digital and analogue, are available for easy interfacing with the application.

iPOS4808 offers a flexible and modular solution at various levels: plug-in vertical (VX models) or horizontal (MX models) open PCB that can be integrated on the user's motherboard, or protected by a metal cover and provided with retractable connectors (BX models).

Thanks to the TML (Technosoft Motion Language) instruction set, the iPOS4808 is an intelligent drive programmable at user's level. In simple applications the unit can operate as a single-axis motion controller and drive, in stand-alone mode, autonomously running the program residing in its non-volatile memory. In systems that request a host, the iPOS drive operates as an intelligent slave executing motion sequences triggered by input lines or commands received via RS-232, CAN bus or EtherCAT communication.

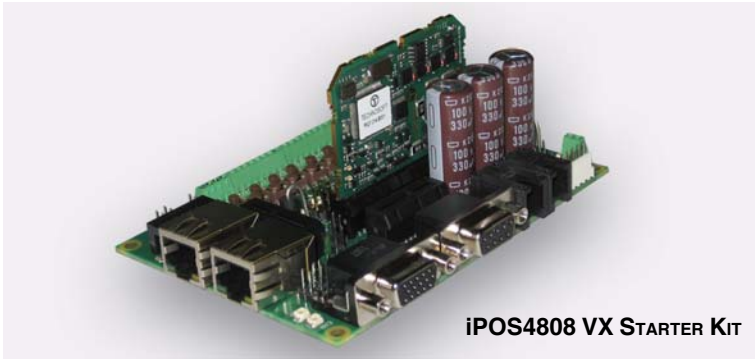
The configuration, tuning and programming of the iPOS4808 drive is easy with Technosoft's powerful graphical platform, EasyMotion Studio. System configuration and parameterization are performed by selecting and testing the system structure, motor and sensor types and control mode.



Application notes with TML program examples available at www.technosoftmotion.com.

iPOS4808 Features

- **Fully digital servo drive suitable for the control of rotary or linear brushless, DC brushed, and step motors**
- **Very compact design**
- **Standard PCIe 8x mating connectors (VX models)**
- **Standard headers 2.54mm and 1.27mm pitch (MX models)**
- **Sinusoidal (FOC) or trapezoidal (Hall-based) control of brushless motors**
- **Open or closed-loop control of 2 and 3-phase steppers**
- **Various modes of operation, including: torque, speed or position control; position or speed profiles, external analogue reference or sent via communication bus**
- **Technosoft Motion Language (TML) instruction set for the definition and execution of motion sequences**
- **Standalone operation with stored motion sequences**
- **Communication:**
  - **RS-232 serial up to 115kbits**
  - **CAN-Bus up to 1 Mbit/s with TMLCAN and CANopen (CiA301, 305 and 402) protocol**
  - **EtherCAT (CoE protocol) via additional extension module**
- **Digital and analogue I/Os:**
  - **8 digital inputs: 5 - 36 V, sourcing/NPN (Enable, 2 Limits switches and 5 general-purpose)**
  - **5 digital outputs: 5 - 36 V, 0.5 A, sinking/NPN open-collector (Ready, Error and 3 general-purpose)**
  - **2 analogue inputs: 12-bit, 0 - 5 V: Reference, Feedback or general-purpose**
- **Feedback devices supported:**
  - **Incremental quad encoder (single-ended, open collector and differential)**
  - **Analogue sine/cosine incremental encoder (differential 1Vpp)**
  - **Digital and linear Hall sensors**
- **Power supply: 11 - 50 V**
- **Logic supply: 9 - 36 V**
- **High current capability (8 A continuous, 20 A peak current)**
- **Protection to over-current, over-temperature, short-circuit, over- and under-voltage, I2t, control error**



iPOS4808 VX Starter Kit

P091.027.iPOS4808VXMX.LFT.1112

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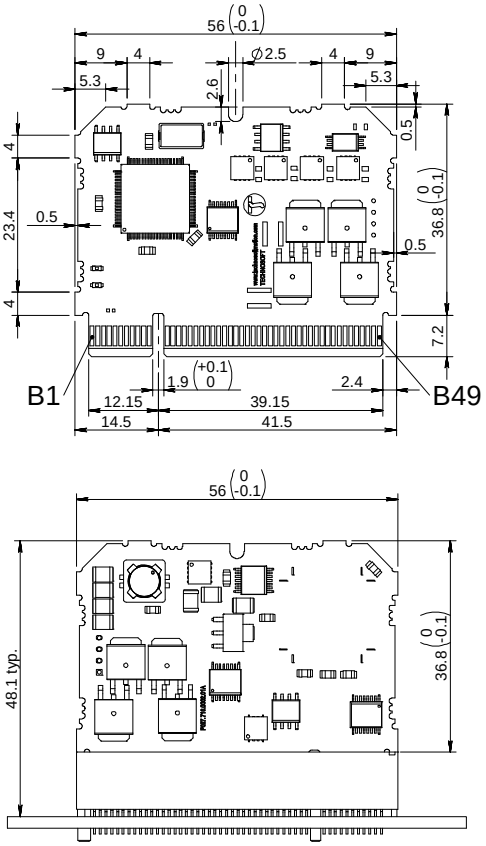
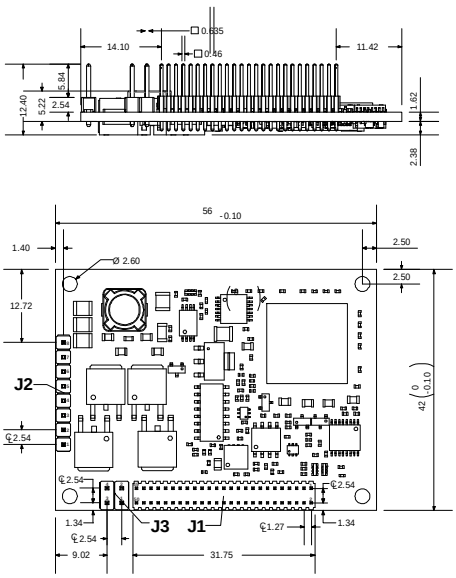
MOTION TECHNOLOGY

DIMENSIONS, SPECIFICATIONS, ORDERING INFORMATION

iPOS4808 VX



iPOS4808 MX



Dimensions in mm. Drawings not to scale.

EASYMOTION STUDIO

The high level graphical development environment EasyMotion Studio, supports the configuration, parameterization and programming of the drive, with:

- Motion system set-up wizard
- Tuning assistance with capture functions
- Definition, programming and testing of motion sequences

MOTION CONTROL LIBRARIES

The TML_LIB Motion Control Libraries can be used to implement a motion control application on a PC from C / C++, C#, Visual Basic, Delphi or LabVIEW under Windows or Linux operating systems.

If a PLC is used as host, implementations of the TML_LIB observing the IEC-61131 standard are available for Siemens, B&R and Omron PLCs.

iPOS4808 STARTER KIT

Complete evaluation packages for the iPOS4808 drives, containing the servodrive, motor, I/O board and EasyMotion Studio software are available, supported by application notes and documentation.

iPOS4808 INTELLIGENT SERVO DRIVE

Electrical Specifications

Maximum DC supply voltage: motor and logic	50 V
Maximum continuous current	8 A
Peak current (2.4 sec. max.)	20 A
Nominal switching frequency	20 - 100 kHz
Operating ambient temperature	0 °C - 40 °C (*)

(*)or higher temperatures with derating

Ordering Information

P027.014.E001	iPOS4808 VX-CAN Drive, 50 V, 8 A, Plug-in, Enc., CAN
P027.014.E101	iPOS4808 MX-CAN Drive, 50 V, 8 A, Pins, Enc., CAN
P027.014.E201	iPOS4808 BX-CAN Drive, 50 V, 8 A, Closed-frame,CAN
P027.114.E221	iPOS4808 BX-CAT Drive, 50 V, 8 A, Closed-frame, EtherCAT
P027.014.E810	iPOS4808 VX-CAN Starter Kit without Motor
P027.014.E811	iPOS4808 VX-CAN Starter Kit with Brushless Motor
P027.014.E812	iPOS4808 VX-CAN Starter Kit with Stepper Motor
P027.014.E890	iPOS4808 VX I/O Board
P034.001.E002	EasyMotion Studio Software
P040.001.Exxx	TML_LIB Motion Library**

**ask for existing libraries types

FLEXIBILITY

Control schemes supported by the iPOS4808 Drive

Motor Types	Torque Control	Speed Control	Position Control
Brushless	√	√	√
DC Brushed	√	√	√
Step	√	√	√

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www.technosoftmotion.com

iPOS3604 HX-CAN Intelligent Servo Drive 4A, 36Vdc

For Brushless, Brushed, Linear or Step Motors

Description

The iPOS3604 HX-CAN is a new member of the iPOS family of Technosoft intelligent drives. It is based on a new design concept for closed-frames drives, offering a very compact and cost effective solution for the control of rotary or linear brushless, DC brush, and step motors of powers up to 144 W.

Designed to cover low to medium volume applications, the iPOS3604 HX-CAN embeds motion controller, drive, and PLC functionalities into a single unit.

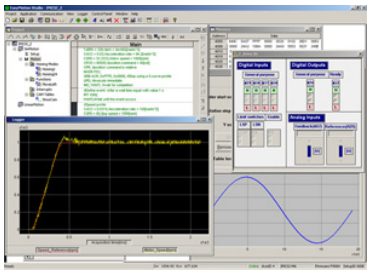
When used as an intelligent drive - like all other members of the iPOS family - the iPOS3604 HX-CAN is empowered by the extreme flexibility offered by the TML (Technosoft Motion Language) instruction set. Acting as a programmable motion controller and drive in a compact form, the unit can replace the host in various single or multi-axis stand-alone applications.

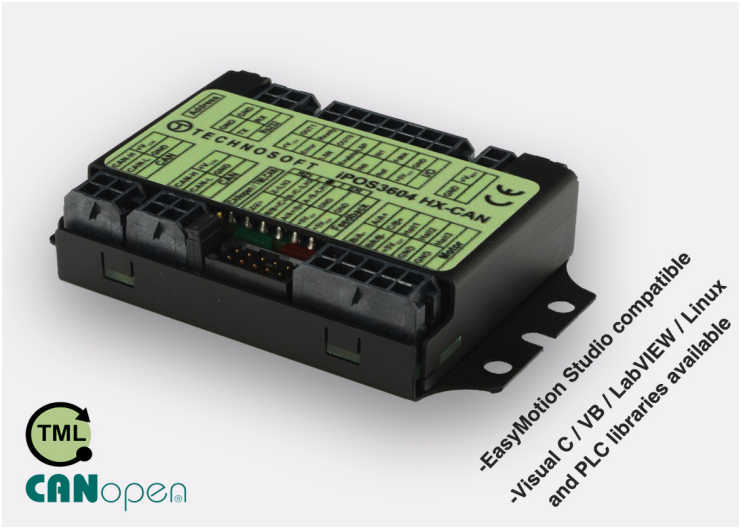
Complex motion sequences can be programmed and executed automatically at power-up from the non-volatile memory of the drive. Advanced positioning profiles like the PVT or electronic caming, I/O and program flow control, data transfer between axes, subroutines, ISRs and multiple homing modes ease the motion application implementation task.

In systems that require a host, the iPOS operates as an intelligent slave executing motion sequences triggered via commands received on RS-232 or TMLCAN while fully supporting as well the CiA402 CANopen drive profile.

EasyMotion Studio

The configuration, tuning and programming of the iPOS3604 HX-CAN drive is easy with Technosoft's powerful graphical platform, EasyMotion Studio.





Features :

- **Motion controller and drive in a single compact unit**
- **Universal drive solution for brushless, brushed, linear or step (true closed loop) motors**
- **Advanced motion control capabilities (PVT, S-curve, electronic cam)**
- **Motion programming via TML (Technosoft Motion Language) or motion libraries for Visual C / VB / LabVIEW / Linux and PLC**
- **Standalone operation with stored motion sequences**
- **Communication :**
  - **RS-232 serial**
  - **CAN-Bus with TMLCAN or CANopen (CiA301, 305, 402) protocols**
- **Digital and analogue I/Os:**
  - **5 digital programmable inputs, 5 - 36 V**
  - **4 digital outputs, 5 - 36 V, 0.5 A**
  - **1 analogue input: 12 bit resolution, 0 - 5 V**
- **Feedback devices :**
  - **Incremental quad encoder (differential)**
  - **Analogue sine/cosine encoder (differential 1Vpp)**
  - **Digital Hall sensors**
- **Programmable protections :**
  - **Over-current, over-temperature, short circuit**
  - **Over and undervoltage, i2t, control error**

Electrical Specifications :

Motor power supply:	12 - 36 Vdc
Logic supply :	12 - 36 Vdc
Continuous phase current	4 A
Peak current (2.4 sec. max.)	10 A
PWM switching frequency	20 - 100 kHz
Operating ambient temperature	0 °C - 40 °C

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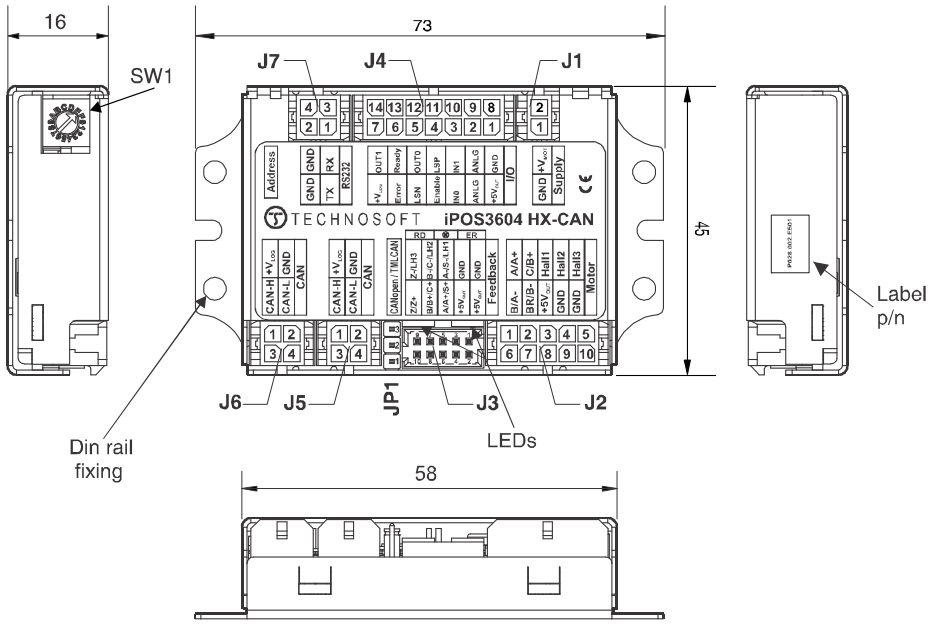
MOTION TECHNOLOGY

TECHNICAL AND ORDERING INFORMATION



Weight : 48 g
All dimensions are in mm.

J1 Motor Supply
1 GND
2 +V_{MOT}

JP1 Jumper
1-2 CANopen mode
2-3 TMLCAN mode

SW1 Switch
Axis ID

J2 Motor + Halls
1 Motor phase A/A+
2 Motor phase C/B+
3 Hall 1
4 Hall 2
5 Hall 3
6 Motor phase B/A-
7 Brake/phase B-
8 +5V_{OUT}
9 GND
10 GND

J3 Feedback
1 GND
2 +5V_{OUT}
3 GND
4 +5V_{OUT}
5 A-/Sin-/LH1
6 A/A+/Sin+
7 B-/Cos-/LH2
8 B/B+/Cos+
9 Z-/LH3
10 Z+

J4 I/O & Logic Supply
1 +5 V_{OUT}
2 ANLG
3 In0
4 Enable
5 LSN
6 Error
7 +V_{LOG} In
8 GND
9 ANLG
10 In1
11 LSP
12 Out0
13 Ready
14 Out1

J5&J6 CAN
1 +V_{LOG} In/Out
2 GND
3 CAN-Hi
4 CAN-Lo

J7 RS232
1 232TX
2 GND
3 232RX
4 GND

LEDs
Green - Ready
Red - Error

The high level graphical development environment EasyMotion Studio supports the configuration, parameterization and programming of the drive, through:

- Motion system set-up wizard
- Tuning assistance with capture functions
- Definition, programming and testing of motion sequences

MOTION CONTROL LIBRARIES

The TML_LIB Motion Control Libraries can be used to implement a motion control application on a PC from Visual C / C++, C#, Visual Basic, Delphi or LabVIEW under Windows or Linux operating systems.
If a PLC is used as host, implementations of the TML_LIB according with IEC-61131 standard are available for Siemens, B&R and Omron PLCs.

Application notes with TML program examples at :
www.technosoftmotion.com

ORDERING INFORMATION :

P028.002.E501	iPOS3604 HX-CAN Intelligent Drive, 36V, 4A, closed frame, encoder, CAN
P034.001.E002	EasyMotion Studio Software
P040.001.Exxx	TML_LIB Motion Library*
P028.040.C099	Complete cable set 100 cm for iPOS3604 HX-CAN, enc.diff
P028.040.C079	Housing & crimp pins set for iPOS3604 HX-CAN

*ask for existing libraries types

FLEXIBILITY :

Control schemes supported by the iPOS3604 HX-CAN Drive

Motor types	Torque Control	Speed Control	Position Control
Brushless	√	√	√
Brushed	√	√	√
Step	√	√	√
Linear	√	√	√

CONNECTORS TYPE AND MATING CONNECTORS :

Connector	On the drive	Mating
J1	Molex 43045-0212	Molex 43025-0200
J2	Molex 43045-1012	Molex 43025-1000
J3	Molex 87831-1031	Molex 511110-1056
J4	Molex 43045-1412	Molex 43025-1400
J5,J6,J7	Molex 43045-0412	Molex 43025-0400

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iPOS3604 Intelligent Servo Drives 144W

Compact Drive Solution for Rotary or Linear Brushless, DC Brush and Step Motors

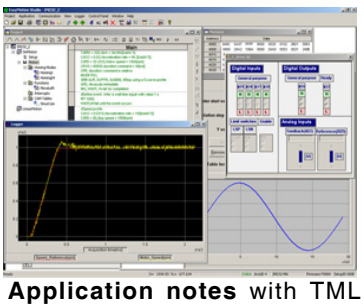
The iPOS3604 is based on a new design concept offering a cost effective, compact and modular solution for the control of rotary or linear brushless, DC brush, and step motors of powers up to 144W, with 36V nominal voltage.

Designed to cover for low- to high-volume applications, iPOS3604 integrates all the basic motor control functions and the motion control functionality on a single plug-in module. A series of I/O signals, both digital and analogue, are available for easy interfacing with the application.

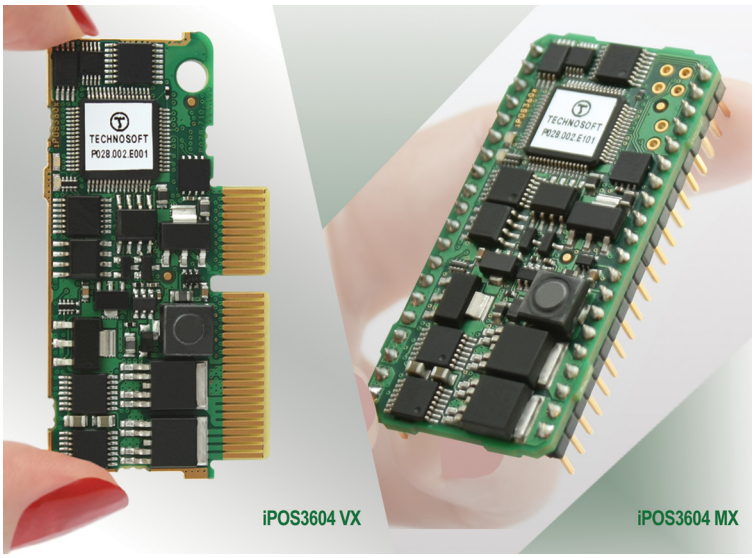
iPOS3604 offers a flexible and modular solution at various levels: plug-in vertical (VX models) or horizontal (MX models) open PCB that can be integrated on the user's motherboard, or protected by a metal cover and provided with retractable connectors (BX models).

Thanks to the TML (Technosoft Motion Language) instruction set, the iPOS3604 is an intelligent drive programmable at user's level. In simple applications the unit can operate as a single-axis motion controller and drive, in stand-alone mode, autonomously running the program residing in its non-volatile memory. In systems that request a host, the iPOS drive operates as an intelligent slave executing motion sequences triggered by input lines or commands received via RS-232 or CAN bus communication.

The configuration, tuning and programming of the iPOS3604 drive is easy with Technosoft's powerful graphical platform, EasyMotion Studio. System configuration and parameter-ization are performed by selecting and testing the system structure, motor and sensor types and control mode.



Application notes with TML program examples available at www.technosoftmotion.com.



iPOS3604 Features

- **Fully digital servo drive suitable for the control of rotary or linear brushless, DC brush, and step motors**
- **Very compact design**
- **Standard PCIe 4x mating connectors (VX models)**
- **Standard header 2.54 mm pitch connectors (MX models)**
- **Sinusoidal (FOC) or trapezoidal (Hall-based) control of brushless motors**
- **Open or closed-loop control of 2 and 3-phase steppers**
- **Various modes of operation, including: torque, speed or position control; position or speed profiles, external analogue reference or sent via communication bus**
- **Technosoft Motion Language (TML) instruction set for the definition and execution of motion sequences**
- **Standalone operation with stored motion sequences**
- **1K x 16 SRAM for data acquisition**
- **4K x 16 E²ROM to store TML motion programs and data**
- **RS-232 serial communication**
- **CAN-Bus 2.0B up to 1 Mbit/s**
- **TMLCAN and CANopen (CiA 301v4.2 and 402v3.0) protocols**
- **EtherCAT communication via additional extension module (optional)**
- **Digital and analogue I/Os:**
  - Digital inputs: 5-36V, NPN [Enable, 2 Limits switches, plus general-purpose: 2 (VX model), 1 (MX model)]
  - Digital outputs: 5-36V, 0.5A, NPN open-collector [Ready, Error, plus general-purpose: 2 (VX model), 1 (MX model)]
  - Analogue inputs: 12-bit, 0-5V: Reference, Feedback (VX model) or general-purpose
- **Feedback devices supported:**
  - Incremental quad encoder (single-ended, open collector and differential)
  - Analogue sine/cosine incremental encoder (differential 1Vpp)
  - Digital and linear Hall sensors
- **Single power supply: 9-36V; optional logic supply: 7-36V**
- **Output current: 4A cont. (BLDC mode); $10A_{PEAK}$ up to 100KHz PWM**
- **Operating ambient temperature: 0-40°C (over 40°C with derating)**
- **Hardware protections: short-circuit between motor phases and from motor phases to GND, over-voltage, under-voltage and I^2t**

iPOS3604 VX Starter Kit

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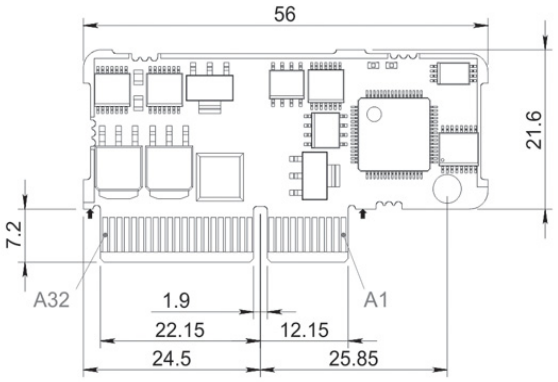
MOTION TECHNOLOGY

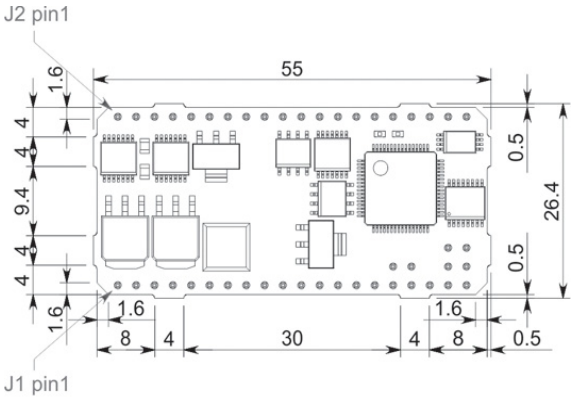
P091.028.iPOS3604.LFT.0313

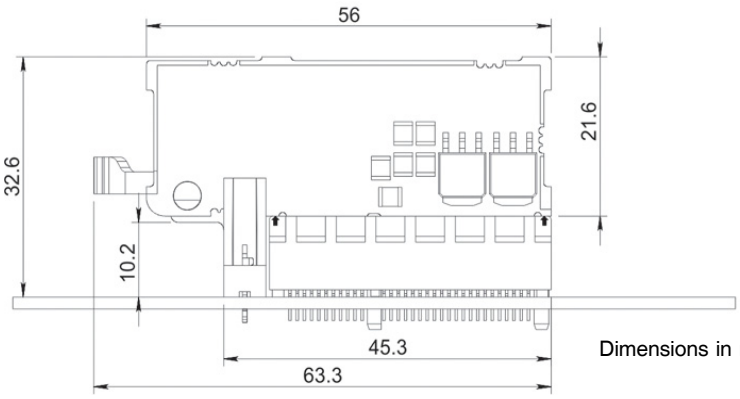
Dimensions, Specification, Ordering Information

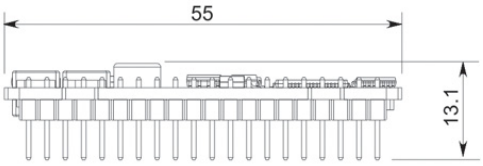
iPOS3604 VX



iPOS3604 MX







Dimensions in mm. Drawings not to scale.

EasyMotion Studio

The high level graphical development environment EasyMotion Studio, supports the configuration, parameterization and programming of the drive, through

- Motion system set-up wizard
- Tuning assistance with capture functions
- Definition, programming and testing of motion sequences

Motion Control Libraries

The TML_LIB Motion Control Libraries can be used to implement a motion control application on a PC from Visual C / C++, C#, Visual Basic, Delphi or LabVIEW under Windows or Linux operating systems.
If a PLC is used as host, implementations of the TML_LIB observing the IEC-61131 standard are available for Siemens, B&R and Omron PLCs.

iPOS3604 Starter Kit

Complete evaluation packages for the iPOS3604 drives, containing the servodrive, motor, I/O board, EasyMotion Studio software, that are supported by a collection of application notes and documentation.

iPOS3604 Intelligent Servo Drives

Electrical Specifications

Maximum DC supply voltage: motor and logic	36V
Maximum continuous current	4A
Peak current (2.4 sec. max.)	10A
Nominal switching frequency	20-60kHz
Operating ambient temperature	0°C-40°C

Ordering Information

P028.002.E001	iPOS3604 VX-CAN Intelligent Drive, 36V, 4A, Plug-in, Enc., CAN
P028.002.E101	iPOS3604 MX-CAN Intelligent Drive, 36V, 4A, Pins, Enc., CAN
P028.002.E201	iPOS3604 BX-CAN Intelligent Drive, 36V, 4A, Closed-frame, CAN
P028.002.E801	iPOS3604 VX-CAN Starter Kit with Brushless Motor
P028.002.E804	iPOS3604 MX-CAN Starter Kit with Brushless Motor
P028.002.E880	iPOS360x VX-CAN I/O Board
P028.002.E881	iPOS360x MX-CAN I/O Board
P034.001.E002	EasyMotion Studio Software
P040.001.Exxx	TML_LIB Motion Library**

**ask for existing libraries types

Flexibility

Control schemes supported by the iPOS3604 Drive

Motor Types	Torque Control	Speed Control	Position Control
Brushless DC / AC (Rotary or Linear)	√	√	√
DC Brush	√	√	√
Step	√	√	√

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iPOS3602 BX-CAN Intelligent Servo Drive 2A, 36Vdc

For Brushless, Brushed, Linear or Step Motors

Description

The iPOS3602 BX-CAN is a new member of the iPOS family of Technosoft intelligent drives. It is based on a new design concept for closed-frames drives, offering a very compact and cost effective solution for the control of rotary or linear brushless, DC brush, and step motors of powers up to 144 W.

Designed to cover low to medium volume applications, the iPOS3602 BX-CAN embeds motion controller, drive, and PLC functionalities into a single unit.

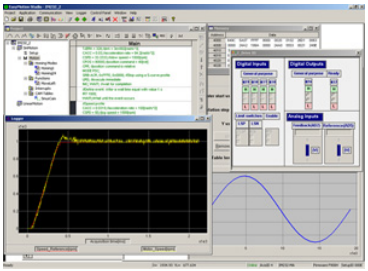
When used as an intelligent drive - like all other members of the iPOS family - the iPOS3602 BX-CAN is empowered by the extreme flexibility offered by the TML (Technosoft Motion Language) instruction set. Acting as a programmable motion controller and drive in a compact form, the unit can replace the host in various single or multi-axis stand-alone applications.

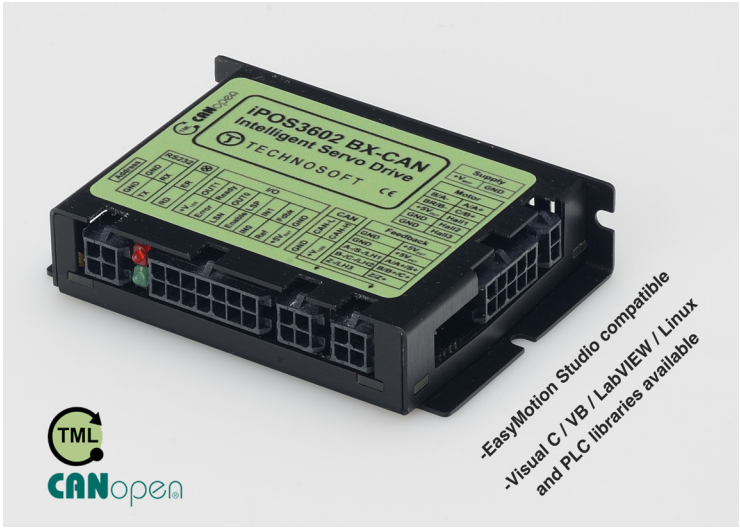
Complex motion sequences can be programmed and executed automatically at power-up from the non-volatile memory of the drive. Advanced positioning profiles like the PVT or electronic caming, I/O and program flow control, data transfer between axes, subroutines, ISRs and multiple homing modes ease the motion application implementation task.

In systems that require a host, the iPOS operates as an intelligent slave executing motion sequences triggered via commands received on RS-232 or TMLCAN while fully supporting as well the CiA402 CANopen drive profile.

EasyMotion Studio

The configuration, tuning and programming of the iPOS3602 BX-CAN drive is easy with Technosoft's powerful graphical platform, EasyMotion Studio.





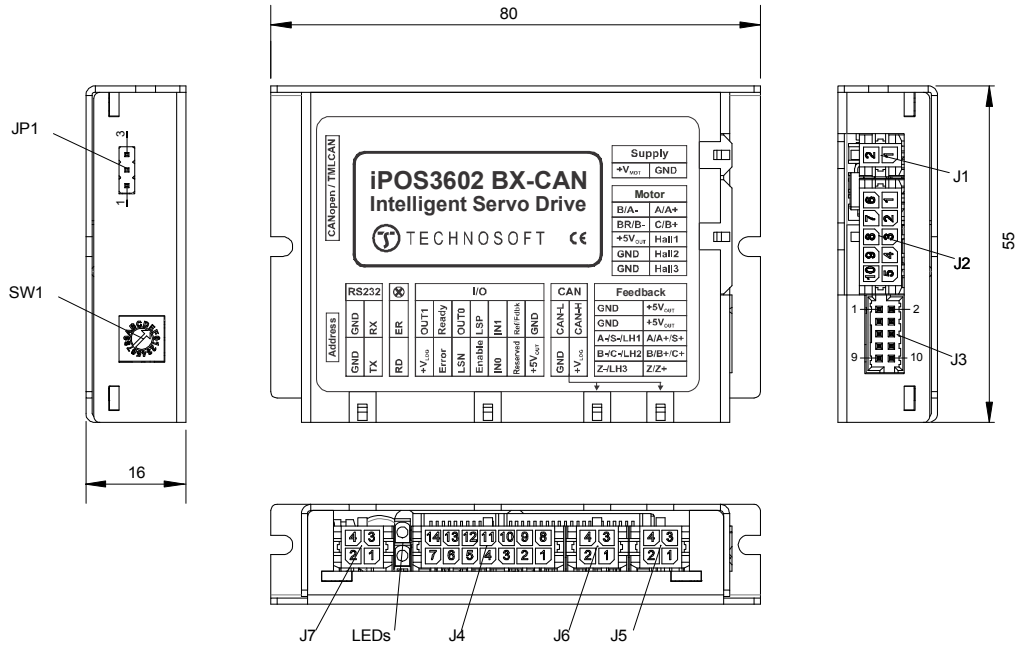
Features :

- **Motion controller and drive in a single compact unit**
- **Universal drive solution for brushless, brushed, linear or step (true closed loop) motors**
- **Advanced motion control capabilities (PVT, S-curve, electronic cam)**
- **Motion programming via TML (Technosoft Motion Language) or motion libraries for Visual C / VB / LabVIEW / Linux and PLC**
- **Standalone operation with stored motion sequences**
- **Communication :**
  - **RS-232 serial**
  - **CAN-Bus with TMLCAN or CANopen (CiA301, 305, 402) protocols**
- **Digital and analogue I/Os:**
  - **5 digital programmable inputs, 5 - 36 V**
  - **4 digital outputs, 5 - 36 V, 0.5 A**
  - **1 analogue inputs: 12 bit resolution, 0 - 5 V**
- **Feedback devices :**
  - **Incremental quad encoder (differential)**
  - **Analogue sine/cosine encoder (differential 1Vpp)**
  - **Digital Hall sensors**
- **Programmable protections :**
  - **Over-current, over-temperature, short circuit**
  - **Over and undervoltage, i2t, control error**

Electrical Specifications :

Motor power supply:	12 - 36 Vdc
Logic supply :	12 - 36 Vdc
Continuous phase current	2 A
Peak current (2.4 sec. max.)	10 A
PWM switching frequency	20 - 100 kHz
Operating ambient temperature	0 °C - 40 °C

TECHNICAL AND ORDERING INFORMATION



Weight : 85 g
All dimensions are in mm.

J1 Motor Supply
1 GND
2 +V_{MOT}

JP1 Jumper
1-2 CANopen mode
2-3 TMLCAN mode

SW1 Switch
Axis ID

J2 Motor + Halls
1 Motor phase A/A+
2 Motor phase C/B+
3 Hall 1
4 Hall 2
5 Hall 3
6 Motor phase B/A-
7 Brake/phase B-
8 +5V_{OUT}
9 GND
10 GND

J3 Feedback
1 GND
2 +5V_{OUT}
3 GND
4 +5V_{OUT}
5 A-/Sin-/LH1
6 A/A+/Sin+
7 B-/Cos-/LH2
8 B/B+/Cos+
9 Z-/LH3
10 Z+

J4 I/O & Logic Supply
1 +5 V_{OUT}
2 Reserved
3 In0
4 Enable
5 LSN
6 Error
7 +V_{LOG} In
8 GND
9 Ref/Fdbk
10 In1
11 LSP
12 Out0
13 Ready
14 Out1

J5&J6 CAN
1 +V_{LOG} In/Out
2 GND
3 CAN-Hi
4 CAN-Lo

J7 RS232
1 232TX
2 GND
3 232RX
4 GND

LEDs
Green - Ready
Red - Error

The high level graphical development environment EasyMotion Studio supports the configuration, parameterization and programming of the drive, through:

- Motion system set-up wizard
- Tuning assistance with capture functions
- Definition, programming and testing of motion sequences

MOTION CONTROL LIBRARIES

The TML_LIB Motion Control Libraries can be used to implement a motion control application on a PC from Visual C / C++, C#, Visual Basic, Delphi or LabVIEW under Windows or Linux operating systems.
If a PLC is used as host, implementations of the TML_LIB according with IEC-61131 standard are available for Siemens, B&R and Omron PLCs.

Application notes with TML program examples at :
www.technosoftmotion.com

ORDERING INFORMATION :

P028.001.E201	iPOS3602 BX-CAN Intelligent Drive, 36V, 2A, closed frame, encoder, CAN
P034.001.E002	EasyMotion Studio Software
P040.001.Exxx	TML_LIB Motion Library*
P028.040.C099	Complete cable set 100 cm for iPOS3602 BX-CAN, enc.diff
P028.040.C079	Housing & crimp pins set for iPOS3602 BX-CAN

*ask for existing libraries types

FLEXIBILITY :

Control schemes supported by the iPOS3602 BX-CAN Drive

Motor types	Torque Control	Speed Control	Position Control
Brushless	√	√	√
Brushed	√	√	√
Step	√	√	√
Linear	√	√	√

CONNECTORS TYPE AND MATING CONNECTORS :

Connector	On the drive	Mating
J1	Molex 43045-0200	Molex 43025-0200
J2	Molex 43045-1000	Molex 43025-1000
J3	Molex 87833-1031	Molex 511110-1056
J4	Molex 43045-1400	Molex 43025-1400
J5,J6,J7	Molex 43045-0400	Molex 43025-0400

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www.technosoftmotion.com

TECHNOSOFT
MOTION TECHNOLOGY

iPOS3602 HX-CAN Intelligent Servo Drive 2A, 36Vdc

For Brushless, Brushed, Linear or Step Motors

Description

The iPOS3602 HX-CAN is a new member of the iPOS family of Technosoft intelligent drives. It is based on a new design concept for closed-frames drives, offering a very compact and cost effective solution for the control of rotary or linear brushless, DC brush, and step motors of powers up to 72 W.

Designed to cover low to medium volume applications, the iPOS3602 HX-CAN embeds motion controller, drive, and PLC functionalities into a single unit.

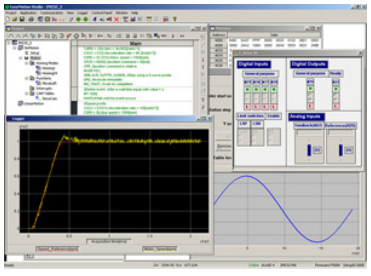
When used as an intelligent drive - like all other members of the iPOS family - the iPOS3602 HX-CAN is empowered by the extreme flexibility offered by the TML (Technosoft Motion Language) instruction set. Acting as a programmable motion controller and drive in a compact form, the unit can replace the host in various single or multi-axis stand-alone applications.

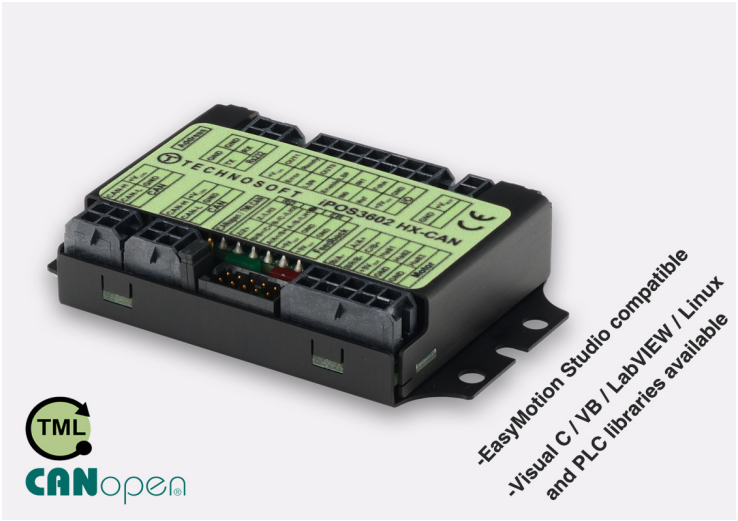
Complex motion sequences can be programmed and executed automatically at power-up from the non-volatile memory of the drive. Advanced positioning profiles like the PVT or electronic caming, I/O and program flow control, data transfer between axes, subroutines, ISRs and multiple homing modes ease the motion application implementation task.

In systems that require a host, the iPOS operates as an intelligent slave executing motion sequences triggered via commands received on RS-232 or TMLCAN while fully supporting as well the CiA402 CANopen drive profile.

EasyMotion Studio

The configuration, tuning and programming of the iPOS3602 HX-CAN drive is easy with Technosoft's powerful graphical platform, EasyMotion Studio.





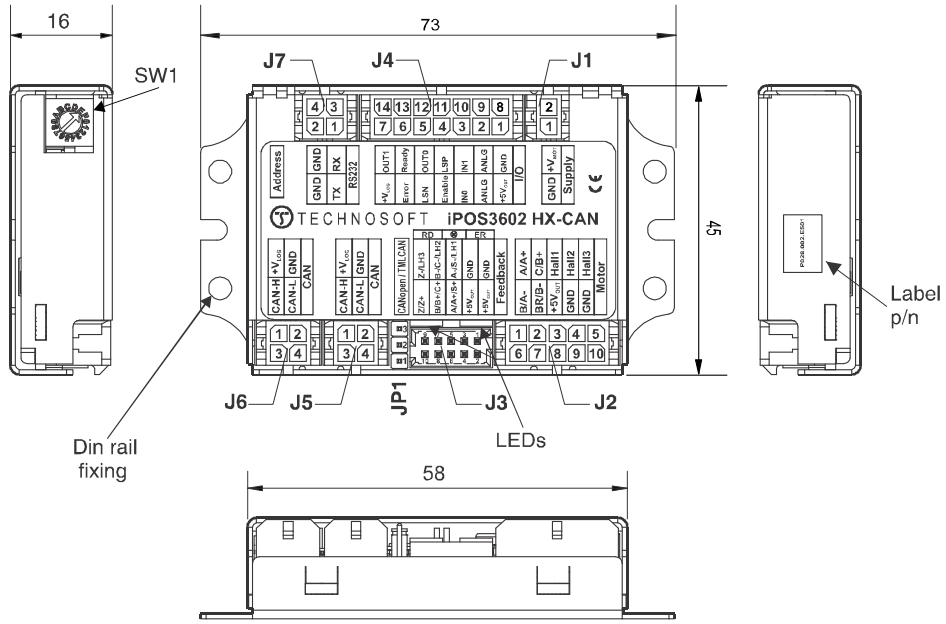
Features :

- **Motion controller and drive in a single compact unit**
- **Universal drive solution for brushless, brushed, linear or step (true closed loop) motors**
- **Advanced motion control capabilities (PVT, S-curve, electronic cam)**
- **Motion programming via TML (Technosoft Motion Language) or motion libraries for Visual C / VB / LabVIEW / Linux and PLC**
- **Standalone operation with stored motion sequences**
- **Communication :**
  - **RS-232 serial**
  - **CAN-Bus with TMLCAN or CANopen (CiA301, 305, 402) protocols**
- **Digital and analogue I/Os:**
  - **5 digital programmable inputs, 5 - 36 V**
  - **4 digital outputs, 5 - 36 V, 0.5 A**
  - **1 analogue input: 12 bit resolution, 0 - 5 V**
- **Feedback devices :**
  - **Incremental quad encoder (differential)**
  - **Analogue sine/cosine encoder (differential 1Vpp)**
  - **Digital Hall sensors**
- **Programmable protections :**
  - **Over-current, over-temperature, short circuit**
  - **Over and undervoltage, i2t, control error**

Electrical Specifications :

Motor power supply:	12 - 36 Vdc
Logic supply :	12 - 36 Vdc
Continuous phase current	2 A
Peak current (2.4 sec. max.)	3.2 A
PWM switching frequency	20 - 100 kHz
Operating ambient temperature	0 °C - 40 °C

TECHNICAL AND ORDERING INFORMATION



Weight : 48 g
All dimensions are in mm.

J1 Motor Supply
1 GND
2 +V_{MOT}

JP1 Jumper
1-2 CANopen mode
2-3 TMLCAN mode

SW1 Switch
Axis ID

J2 Motor + Halls
1 Motor phase A/A+
2 Motor phase C/B+
3 Hall 1
4 Hall 2
5 Hall 3
6 Motor phase B/A-
7 Brake/phase B-
8 +5V_{OUT}
9 GND
10 GND

J3 Feedback
1 GND
2 +5V_{OUT}
3 GND
4 +5V_{OUT}
5 A-/Sin-/LH1
6 A/A+/Sin+
7 B-/Cos-/LH2
8 B/B+/Cos+
9 Z-/LH3
10 Z+

J4 I/O & Logic Supply
1 +5 V_{OUT}
2 ANLG
3 In0
4 Enable
5 LSN
6 Error
7 +V_{LOG} In
8 GND
9 ANLG
10 In1
11 LSP
12 Out0
13 Ready
14 Out1

J5&J6 CAN
1 +V_{LOG} In/Out
2 GND
3 CAN-Hi
4 CAN-Lo

J7 RS232
1 232TX
2 GND
3 232RX
4 GND

LEDs
Green - Ready
Red - Error

The high level graphical development environment EasyMotion Studio supports the configuration, parameterization and programming of the drive, through:

- Motion system set-up wizard
- Tuning assistance with capture functions
- Definition, programming and testing of motion sequences

MOTION CONTROL LIBRARIES

The TML_LIB Motion Control Libraries can be used to implement a motion control application on a PC from Visual C / C++, C#, Visual Basic, Delphi or LabVIEW under Windows or Linux operating systems.
If a PLC is used as host, implementations of the TML_LIB according with IEC-61131 standard are available for Siemens, B&R and Omron PLCs.

Application notes with TML program examples at :
www.technosoftmotion.com

ORDERING INFORMATION :

P028.001.E501	iPOS3602 HX-CAN Intelligent Drive, 36V, 2A, closed frame, encoder, CAN
P034.001.E002	EasyMotion Studio Software
P040.001.Exxx	TML_LIB Motion Library*
P028.040.C099	Complete cable set 100 cm for iPOS3602 HX-CAN, enc.diff
P028.040.C079	Housing & crimp pins set for iPOS3602 HX-CAN

*ask for existing libraries types

FLEXIBILITY :

Control schemes supported by the iPOS3602 HX-CAN Drive

Motor types	Torque Control	Speed Control	Position Control
Brushless	√	√	√
Brushed	√	√	√
Step	√	√	√
Linear	√	√	√

CONNECTORS TYPE AND MATING CONNECTORS :

Connector	On the drive	Mating
J1	Molex 43045-0212	Molex 43025-0200
J2	Molex 43045-1012	Molex 43025-1000
J3	Molex 87831-1031	Molex 511110-1056
J4	Molex 43045-1412	Molex 43025-1400
J5,J6,J7	Molex 43045-0412	Molex 43025-0400

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www.technosoftmotion.com

iPOS3602 Intelligent Servo Drives 75W

Compact Drive Solution for Rotary or Linear Brushless, DC Brush and Step Motors

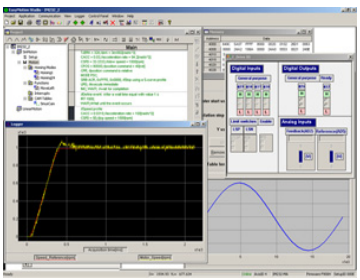
The iPOS3602 is based on a new design concept offering a cost effective, compact and modular solution for the control of rotary or linear brushless, DC brush, and step motors of powers up to 75W, with 36V nominal voltage.

Designed to cover from low- to high-volume applications, the iPOS drive integrates all the basic motor control functions and the motion control functionality on a single plug-in module. A series of I/O signals, both digital and analogue, are available for easy interfacing with the application.

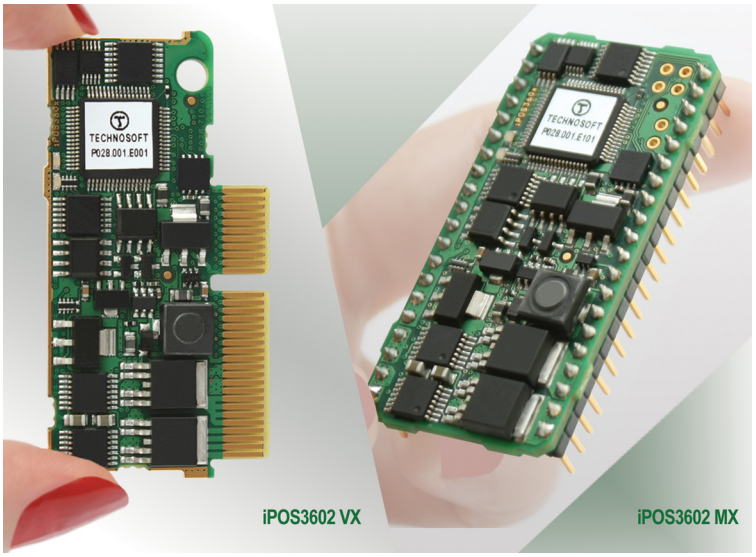
iPOS3602 offers a flexible and modular solution at various levels: plug-in vertical (VX models) or horizontal (MX models) open PCB that can be integrated on the user's motherboard, or protected by a metal cover and provided with retractable connectors (BX models).

Thanks to the TML (Technosoft Motion Language) instruction set, the iPOS3602 is an intelligent drive programmable at user's level. In simple applications the unit can operate as a single-axis motion controller and drive, in stand-alone mode, autonomously running the program residing in its non-volatile memory. In systems that request a host, the iPOS drive operates as an intelligent slave executing motion sequences triggered by input lines or commands received via RS-232 or CAN bus communication.

The configuration, tuning and programming of the iPOS3602 drive is easy with Technosoft's powerful graphical platform, EasyMotion Studio. System configuration and parameter-ization are performed by selecting and testing the system structure, motor and sensor types and control mode.



Application notes with TML program examples available at www.technosoftmotion.com.



iPOS3602 Features

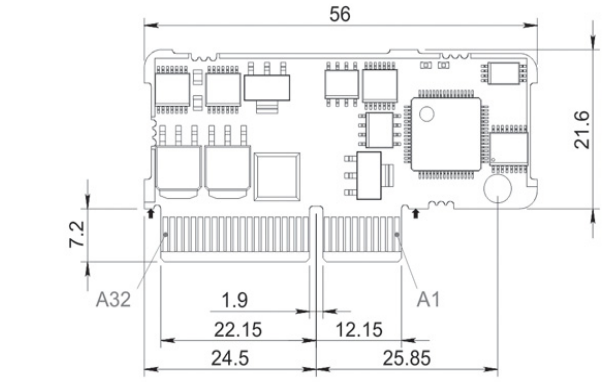
- **Fully digital servo drive suitable for the control of rotary or linear brushless, DC brush, and step motors**
- **Very compact design**
- **Standard PCIe 4x mating connectors (VX models)**
- **Standard header 2.54 mm pitch connectors (MX models)**
- **Sinusoidal (FOC) or trapezoidal (Hall-based) control of brushless motors**
- **Open or closed-loop control of 2 and 3-phase steppers**
- **Various modes of operation, including: torque, speed or position control; position or speed profiles, external analogue reference or sent via communication bus**
- **Technosoft Motion Language (TML) instruction set for the definition and execution of motion sequences**
- **Standalone operation with stored motion sequences**
- **1K x 16 SRAM for data acquisition**
- **4K x 16 E^2ROM to store TML motion programs and data**
- **RS-232 serial communication**
- **CAN-Bus 2.0B up to 1 Mbit/s**
- **TMLCAN and CANopen (CiA 301v4.2 and 402v3.0) protocols**
- **EtherCAT communication via additional extension module (optional)**
- **Digital and analogue I/Os:**
  - Digital inputs: 5-36V, NPN [Enable, 2 Limits switches, plus general-purpose: 2 (VX model), 1 (MX model)]
  - Digital outputs: 5-36V, 0.5A, NPN open-collector [Ready, Error, plus general-purpose: 2 (VX model), 1 (MX model)]
  - Analogue inputs: 12-bit, 0-5V: Reference, Feedback (VX model) or general-purpose
- **Feedback devices supported:**
  - Incremental quad encoder (single-ended, open collector and differential)
  - Analogue sine/cosine incremental encoder (differential 1Vpp)
  - Digital and linear Hall sensors
- **Single power supply: 9-36V; optional logic supply: 7-36V**
- **Output current: 2A cont. (BLDC mode); 3.2A_{PEAK} up to 100KHz PWM**
- **Operating ambient temperature: 0-40°C (over 40°C with derating)**
- **Hardware protections: short-circuit between motor phases and from motor phases to GND, over-voltage, under-voltage and I^2t**

iPOS3602 VX Starter Kit

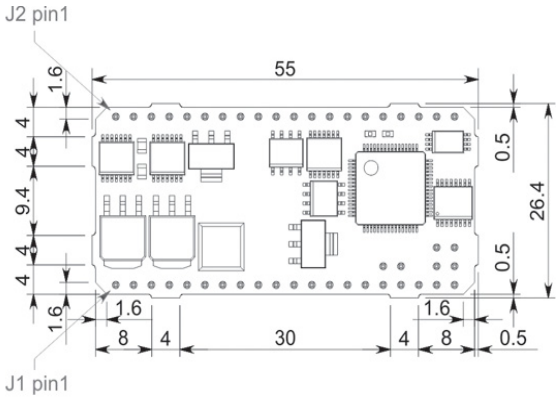
TECHNOSOFT
MOTION TECHNOLOGY

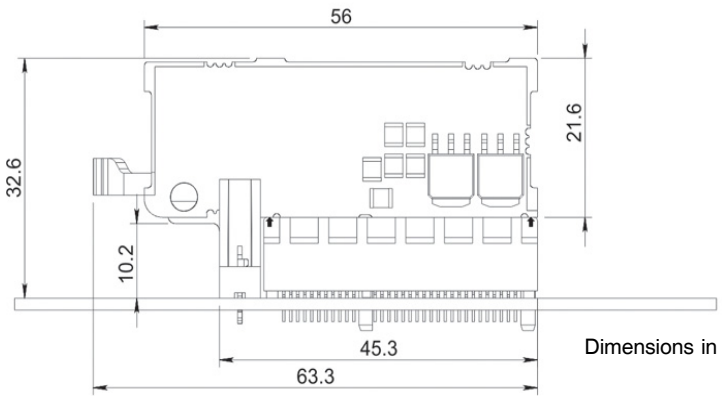
Dimensions, Specification, Ordering Information

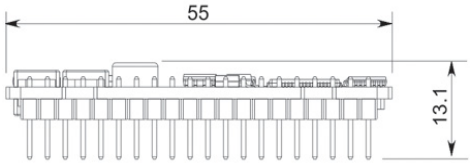
iPOS3602 VX



iPOS3602 MX







Dimensions in mm. Drawings not to scale.

EasyMotion Studio

The high level graphical development environment EasyMotion Studio, supports the configuration, parameterization and programming of the drive, through

- Motion system set-up wizard
- Tuning assistance with capture functions
- Definition, programming and testing of motion sequences

Motion Control Libraries

The TML_LIB Motion Control Libraries can be used to implement a motion control application on a PC from Visual C / C++, C#, Visual Basic, Delphi or LabVIEW under Windows or Linux operating systems.
If a PLC is used as host, implementations of the TML_LIB observing the IEC-61131 standard are available for Siemens, B&R and Omron PLCs.

iPOS3602 Starter Kit

Complete evaluation packages for the iPOS3602 drives, containing the servodrive, motor, I/O board, EasyMotion Studio software, that are supported by a collection of application notes and documentation.

iPOS3602 Intelligent Servo Drives

Electrical Specifications

Maximum DC supply voltage: motor and logic	36V
Maximum continuous current	2A
Peak current (2.4 sec. max.)	3.2A
Nominal switching frequency	20-60kHz
Operating ambient temperature	0°C-40°C

Ordering Information

P028.001.E001	iPOS3602 VX-CAN Intelligent Drive, 36V, 2A, Plug-in, Enc., CAN
P028.001.E101	iPOS3602 MX-CAN Intelligent Drive, 36V, 2A, Pins, Enc., CAN
P028.001.E201	iPOS3602 BX-CAN Intelligent Drive, 36V, 2A, Closed-frame, CAN
P028.001.E801	iPOS3602 VX-CAN Starter Kit with Brushless Motor
P028.001.E804	iPOS3602 MX-CAN Starter Kit with Brushless Motor
P028.002.E880	iPOS360x VX-CAN I/O Board
P028.002.E881	iPOS360x MX-CAN I/O Board
P034.001.E002	EasyMotion Studio Software
P040.001.Exxx	TML_LIB Motion Library**

**ask for existing libraries types

Flexibility

Control schemes supported by the iPOS3602 Drive

Motor Types	Torque Control	Speed Control	Position Control
Brushless DC / AC (Rotary or Linear)	√	√	√
DC Brush	√	√	√
Step	√	√	√

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