



Compax3

*ServoDrives /
ServoController*

*Catalog: 192-120013 N3 / UK
Version 3, January 2007*





Intelligent ServoDrives

Compax3

Contents

- (2) Compax3 Intelligent ServoDrives
- (3) The ServoDrive Family
- (4) The complete Product range
- (6) Modern Control Technology
- (7) I10T10 - +/-10V or Step-/ Direction
- (8) T11 - with integrated position controller
- (10) T30 - Motion control based on IEC61131-3 and PLCopen
- (11) T40 - Electronic cam generation based on IEC61131-3 and PLCopen
- (13) Interfaces for simple system integration
- (14) Compax3 powerPLmC - the PLC in the Drive
- (15) ServoManager - Software tool for configuration, programming, commissioning and maintenance
- (16) IEC61131-3 - International Standard for the programming of automation components
- (18) Options and Accessories
- (20) Order information
- (22) Technical data overview



Compax3S

Compax3H

Compax3 is Parker Hannifin's new ServoDrive Family. Compliance with important industry and safety standards reduces the need for specialized device-specific knowledge.

Compax3 is Parker Hannifin's new ServoDrive Family. Compax3 offers worldwide application solutions from a smaller range of drives. This results in ...

- reduced stock requirements
- simplified order processing

Compax3 is based on a modular structure

- lower initial costs with always the optimum device for the application

Compax3S complies with safety standards such as „Safe Standstill“

- no development and testing of customer-specific safety procedures
- certified, integrated safety standards

Compax3 complies with the CE, UL and cUL international and national standards

- ensures the safety of your machine
- potential problems during acceptance testing of the machine can be avoided

Compax3S comes in an ultra-compact housing - space is expensive!

- significant reduction in the size of machines and systems
- lower cost and hence greater competitive advantage

All connections on the front panel

- Simplified installation - no special tools required
- space-saving mounting in control cabinets
- optimized use of the available space

Multiple interfaces with high-level controllers

- via digital inputs/outputs
- via RS232 / RS485
- via Profibus
- via CANopen

- via DeviceNet
- via Ethernet Powerlink

Compax3 offers the IEC61131-3 international programming language for automation components

- IEC61131-3 is well-known to your customers and support engineers- the service and maintenance overhead is minimized
- No additional training is required for device-specific programming and configuration software

Parker Hannifin has succeeded in certifying and totally integrating the PLCopen Motion Control Modules into Compax3

- IEC61131-3 - Motion control functions can be used without specialist knowledge
- PLC programmers cover motion programming as well as the logic operations
- Motion and logic merge into one functional unit

The Microsoft Windows Compax3 is based on standards such as WinCE, OLE, COM, DCOM and ActiveX,...

- Well-known operator interface - no additional training required
- Windows standards ensure fast, safe and efficient exchange of data between the individual software tools

Compax3 is suitable for use with a range of feedback systems

- Costs, performance and efficiency of the application can be optimized
- The ideal feedback system can be chosen with respect to precision, environmental conditions, costs and space requirements

Compax3 - one device for all traditional servo motors, asynchronous motors or direct drives such as linear or torque motors

- reduced stock requirements
- no additional training for different drive controllers
- simplified order processing



The ServoDrive - Compax3

Compax3 standard equipment

- ▶ **Enclosed housing**
- ▶ **All connections of the front panel**
- ▶ **Direct on-line operation**
- ▶ **Supply voltage**
 - ✓ Single-phase 230VAC; 45-65Hz
 - ✓ Three-phase 230VAC; 45-65Hz
 - ✓ Three-phase 400VAC to 480VAC +10%; 45-65Hz
- ▶ **8 digital inputs / 4 digital outputs**
- ▶ **RS232 / RS485 - interface**
- ▶ **2 analog inputs (+/-10V, 14bits)**
- ▶ **2 analog outputs (+/-10V, 8bits)**
- ▶ **Encoder input or output**
- ▶ **Short circuit proof IGBT power stage**
- ▶ **CE compliance**
 - ✓ EMC interference immunity/emission as per EN 61800-3
 - ✓ Safety according to VDE 0160 / EN 50178
- ▶ **Safety technology**
 - ✓ Compax3S: Safe standstill in accordance with EN 954-1 (category 3)
- ▶ **Position sensing at the motor shaft via**
 - ✓ Resolver
 - ✓ Sine-cosine feedback
 - ✓ Hiperface interface
 - ✓ EnDat 2.1 interface
 - ✓ Compatible with most feedback systems on the market
- ▶ **Fast and easy commissioning**
 - ✓ With the Compax3-ServoManager
 - ✓ Wizard-guided configuration
 - ✓ Setup mode

Additional versions:

Interfaces

- ✓ HEDA real-time bus for inter-axis coupling

Technology functions of the axis controllers

- ✓ Positioning (T11)
- ✓ IEC61131-3 programs in the servo controller (T30)

In addition to T30:

- ✓ Cam functions in the servo controller (T40)
- ✓ Multi-axis control Compax3 *powerPLmC*



Device: C3	Current A_{RMS}		Mains voltage	power range
	I_{cont}	$I_{peak}(<5s)$		
S025V2	2.5	5.5	1 * 230/240VAC	1
S063V2	6.3	12.6		2.5
S100V2	10	20	3 * 230/240VAC	4
S150V2	15	30		6
S015V4	1.5	4.5	3 * 400/480VAC	1.25
S038V4	3.8	9.0		3.1
S075V4	7.5	15		6.2
S150V4	15	30		11.5
S300V4	30	60		25
H050V4	50	75	3 * 400/480VAC	35
H090V4	90	135		70
H125V4	125	187.5		91
H155V4	155	232.5		109

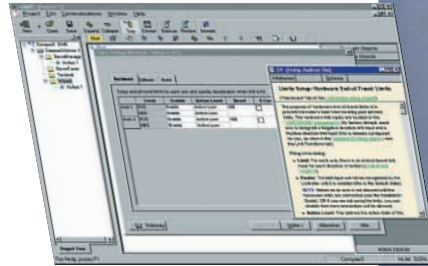


Open, flexible drive and control system

Project development, commissioning, programming

PC - tools - open and transparent

- * **Compax3 ServoManager**
 - ▷ Intuitively understandable user interface
 - ▷ Wizard technology
 - ▷ Online help
 - ▷ Oscilloscope function
 - ▷ Optimal co-ordination of complete mechatronic systems
- * **MotorManager**
- * **IEC61131-3 - Debugger**
- * **CoDeSys programming system**



Monitoring and control

Parker Operator Panels

Control equipment for all text and graphics applications in industrial environments using Profibus DP, CANopen, DeviceNET, Interbus - S fieldbuses.

From two-line displays to touch-panels. For further information please refer to catalogue 192-081011.

In addition to the Compax3 / Compax3 powerPLmC drivers, drivers for other PLC products can be integrated on request.

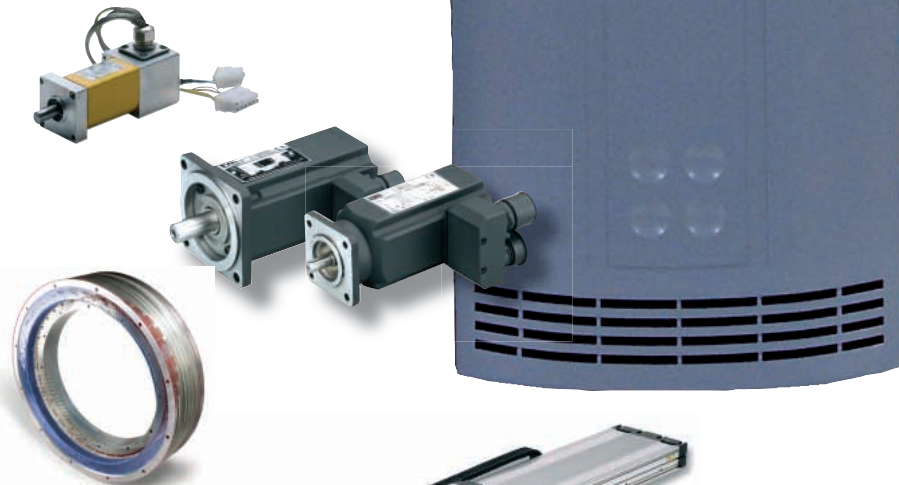


Open, powerful and flexible

Large motor range

- * **Motors**
 - ▷ Sinusoidally-commutated synchronous motors
 - ▷ Sinusoidally-commutated asynchronous motors
 - ▷ Torque motors
 - ▷ Linear motors

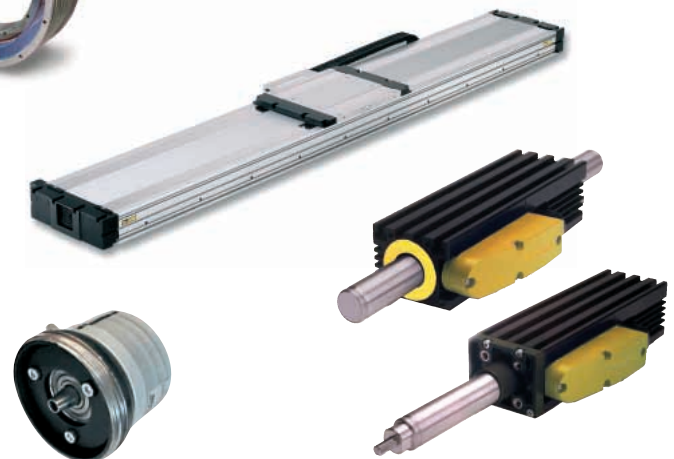
MotorManager supports the configuration of any desired motor.

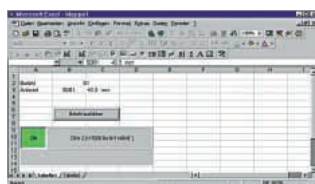


Trusted standards

Supported feedback systems

- * **Resolver robust & precise**
 - ▷ Relative and absolute, high-precision position feedback
- * **SineCosine Single or Multiturn Encoder**
 - ▷ with Hiperface® interface or
 - ▷ EnDat2.1 interface (interpolation factor 14bits)
- * **Analog and digital hall sensors.**
- * **Rotatory and linear encoders for:**
 - ▷ Distance-coded encoders
 - ▷ Incremental SineCosine and RS422 feedback
- * **Linear encoders for:**
 - ▷ Absolute encoder with EnDat2.1 interface (interpolation factor 14bits)





Flexible service and maintenance

Operating module for Compax3S

- * **Backlit plug-in module, two lines with sixteen-character text display**
- * **Simple menu navigation with 4 keys**
 - ▷ Display of status values and
 - ▷ Clear text error messages
- * **Used for changing parameters and manual operation**
- * **Complete upload, download and device exchange without a PC**
- * **Multi-language dialog control**

Integration with the office environment

ActiveX® - Plugin

- * **Office and industrial environments are constantly growing closer together**
- * **The use of ActiveX® technology allows simple integration into the office applications**



Connection to the PC

OPC communications standard

- * **simple integration of fieldbuses into applications**
- * **Drive servers/OPC servers for Compax3 powerPLmC**

Interface option

Fieldbuses

- * **Profibus DP PROFIdrive profile for V3 drive technology**
- * **CANopen CiADS402 (Master / Slave)**
- * **DeviceNet**
- * **Ethernet Powerlink**
- * **Address configurable via Dip switch**

Connection of external inputs/outputs

- * **Parker I/O - System (PIO)**

Additional external digital and analog inputs and outputs can be integrated via CANopen.

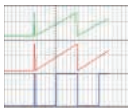


International standards in programming

Advantages offered by integrated standards

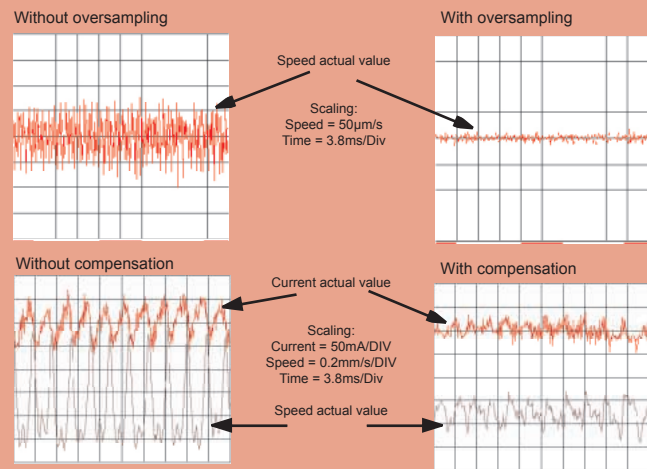
- * **Programming system**
 - ▷ CoDeSys
- * **Programming language**
 - ▷ IEC61131-3
 - ▷ Function modules according to PLCopen





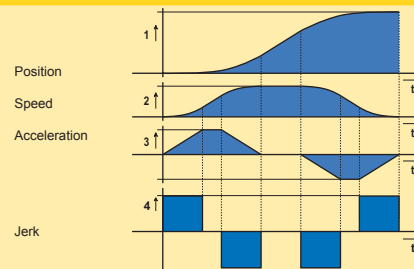
Real-time signal processing

- ⇒ **Oversampling of the speed and current signals which result in:**
 - ✓ Reduction of the quantization noise
 - ✓ Increase in signal resolution
- ⇒ **Online feedback error compensation corrects for offset and gain errors**
- ⇒ **14 bit increase in resolution**
(Increase in the resolution of the scale graduation of up to 14 bits)
 - ✓ by interpolation of sine-cosine feedback signals
- ⇒ **Determination of the speed by the observer technique**
- ⇒ **Doubling of the controller bandwidth**
 - ✓ by load torque observer principle



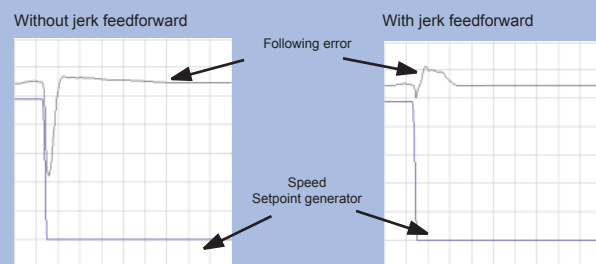
Jerk-limited setpoint generation, resulting in:

- ⇒ **Gentle handling of the moved goods**
- ⇒ **Increased service life of mechanical components**
- ⇒ **Overshoot-free positioning possible**
- ⇒ **Reduced excitation for mechanical resonance frequencies**



Control

- ⇒ **Controller in the feedback path helps avoid differentiating components in the numerator of the transmission function**
(these can result in significant overshoot of the actual value)
- ⇒ **Automatic controller design**
 - ✓ User-oriented optimization of "damping" and "stiffness" parameters
 - ✓ Robust controller setting based on the method of double ratios
- ⇒ **Feedforward of speed, acceleration, motor current and jerk, which will result in:**
 - ✓ Optimization of the response behavior
 - ✓ Minimization of the following error



Commissioning / controller optimization

- ⇒ **Automatic determination of the load moment of inertia**
- ⇒ **Compax3 - MotorManager for specifying the motor characteristics and the motor position feedback**
- ⇒ **Optimization using the integrated oscilloscope function**





Analog or step / direction input Compax3 I10T10

Function range I10T10

⇒ General

With its analog interface or alternatively with step/direction or encoder input, the Compax3 I10T10 offers straightforward, economic access to the world of servo-drive technology. This applies regardless of whether a PLC or PC is used as the central controller. The Compax3 I10T10 represents an ideal way of migrating from analog +/- 10V technology to intelligent digital servo-drives.

⇒ Simple configuration

Configuration is performed using a PC with the help of the Compax3 ServoManager.

Simply install the program on your PC and connect the PC with the Compax3 using the RS232 cable (listed under Accessories).

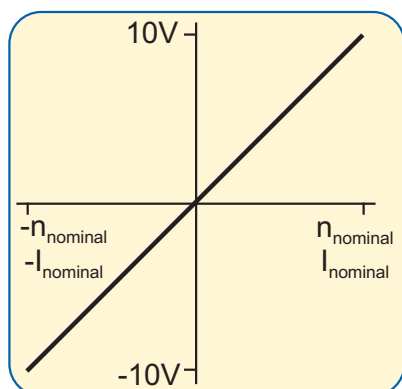


A choice of different operating modes:

+/-10V-input

⇒ ±10V - input

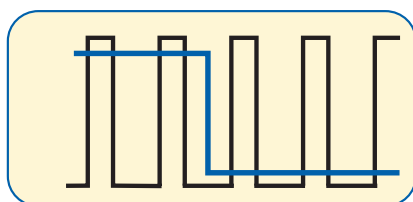
- ✓ **±10V rotation speed setpoint** with encoder simulation for actual position value feedback.
- ✓ **±10V predefined current setpoint** with encoder simulation for actual position value feedback and configurable standstill functions.



Step/direction input

⇒ Step/direction command input

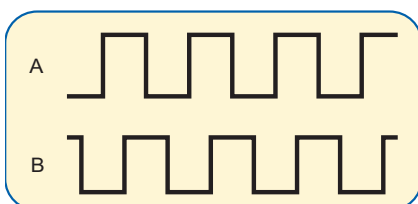
- ✓ Step/direction signals as 24V logic levels or
- ✓ With step/direction logic signals conforming to RS422.



Encoder input

⇒ Encoder input

- ✓ RS422
- ✓ 24V signals





Positioning with Compax3 T11



Function range T11:

⇒ General:

With its high functionality, the Positioning version of Compax3 forms an ideal basis for many applications in high-performance motion automation.

⇒ Up to 31 motion profiles can be created with the help of the PC software:

- ✓ Absolute or relative positioning
- ✓ Electronic Gearbox (Gearing)
- ✓ Reg-related positioning
- ✓ Speed control
- ✓ Stop profile
- ✓ Dynamic positioning

⇒ Motion profiles stored in non-volatile flash memory

⇒ Motion profiles can be selected via field bus or digital inputs/outputs

⇒ Fault report, 'in position' report

⇒ Wide choice of machine zero modes for your individual application

⇒ Detection of the absolute position by distance-coded feedback

⇒ Simple commissioning

- ✓ Guided configuration with the Compax3 ServoManager
- ✓ Flexible Optimization

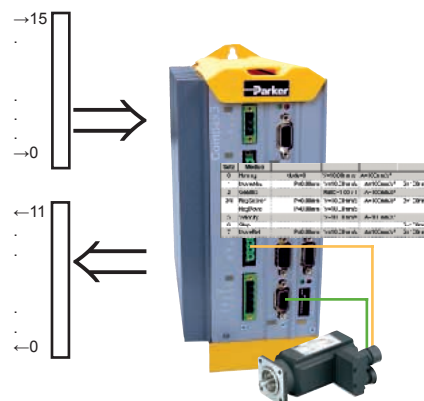
⇒ Adjustable jerk limitation

⇒ Optional expansion of the digital I/Os

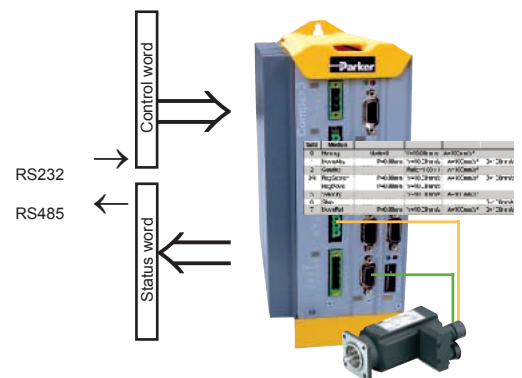
Motion control with the Compax3 I12 T11:

- ⇒ via digital I/Os
- ⇒ via RS232/RS485 with control- and status word
- ⇒ up to 31 motion functions via set table
- ⇒ Status bits for each motion set

Access via Compax3 inputs/outputs:

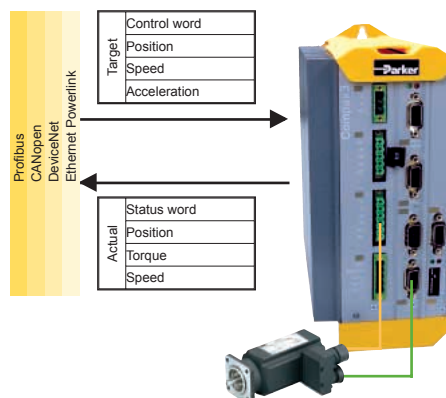


Access via RS232 / RS485:



Motion control with the Compax3 I2xT11 / I30T11:

- ⇒ Standard profiles via Profibus, CANopen, DeviceNet, Ethernet Powerlink
- ⇒ Direct set allocation via fieldbus telegrams or
- ⇒ Set selection (31 motion sets)
- ⇒ Status bits for each motion set
- ⇒ Operating modes:
 - ✓ Speed controller, direct positioning, positioning via set selection

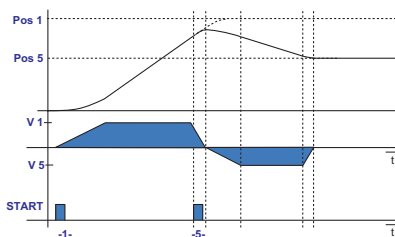
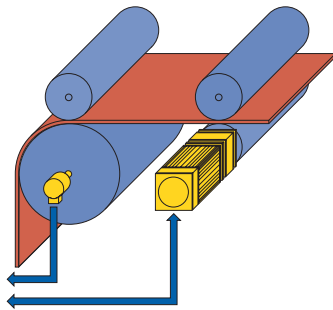
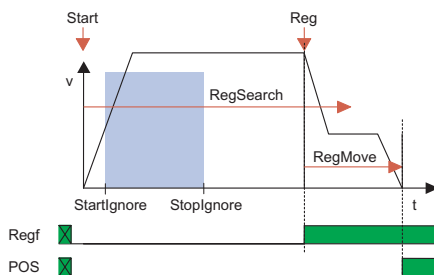
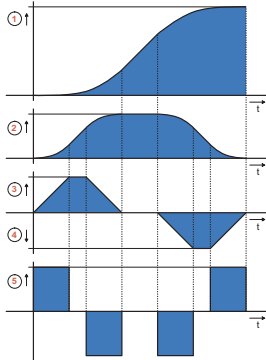


Ratings:

Profibus	
Profile:	PROFIdrive-profile drive technology V3
DP versions:	DPV0 / DPV1
Baud rate:	up to 12MHz
CANopen	
Profile:	MotionControl CiADS402
Baud rate [kBit/s]:	20 ... 1000
DeviceNet	
I/O data:	up to 32 Byte
Baud rate [kBit/s]:	125 ... 500
Nodes:	up to 63 Slaves
Ethernet Powerlink	
Profile:	MotionControl CiADS402
Baud rate:	100Mbits (FastEthernet)
Cycle time:	<200µs; up to 240 nodes



Motion functions:



Absolute / Relative Positioning:

MoveAbs and MoveRel

⇒ A motion set defines a complete motion with all settable parameters

- 1: Target position
- 2: Travel speed
- 3: Maximum acceleration
- 4: Maximum deceleration
- 5: Maximum jerk

Reg-related positioning:

RegSearch, RegMove

⇒ For registration mark-related positioning, 2 motions are defined

- ✓ RegSearch: Search of an external signal, e.g. a registration mark on a product
- ✓ RegMove: The external signal interrupts the search movement and the second movement by an offset follows without transition

⇒ Precision of the registration mark detection: <math><1\mu\text{s}</math>

Electronic Gearbox:

Gearing

⇒ Motion synchronized to a master axis with any transmission ratio. The position of a master axis can be detected via:

- ✓ +/-10V analog input
- ✓ Step/direction command Input
- ✓ the encoder input or
- ✓ HEDA, with Compax3 Master

Dynamic positioning

⇒ A new motion profile can be selected during a positioning sequence - a smooth transition takes place

Speed control:

Velocity

⇒ Defined via speed and acceleration

Stop movement:

Stop

⇒ The Stop set interrupts the current motion set



Compax3 T30: IEC61131-3 Positioning with function modules based on PLCopen



Function range T30

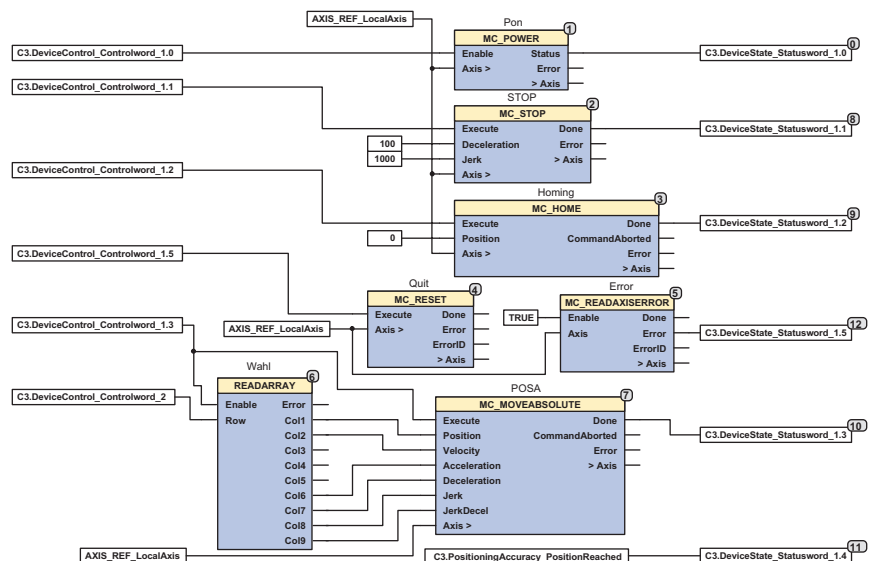
- ⇒ Programmable based on IEC61131-3
- ⇒ Programming system: CoDeSys
- ⇒ Up to 5000 instructions
- ⇒ 500 16bit variables / 150 32bit variables
- ⇒ Recipe table with 288 variables
- ⇒ 3 16bit retain variables / 3 32bit retain variables
- ⇒ PLCopen function modules:
 - ✓ Positioning: absolute, relative, additive, continuous
 - ✓ Machine Zero
 - ✓ Stop, energizing the power stage, Quit
 - ✓ Position, device status, reading axis error
 - ✓ Electronic gearbox (MC_GearIn)
- ⇒ IEC61131-3 standard modules:
 - ✓ Up to 8 timers (TON, TOF, TP)
 - ✓ Triggers (R_TRIG, F_TRIG)
 - ✓ FlipFlops (RS, SR)
 - ✓ Counters (CTU, CTD, CTUD)
- ⇒ Device-specific function modules:
 - ✓ C3_Input: generates an input process image
 - ✓ C3_Output: generates an output process image
 - ✓ C3_ReadArray: access to recipe table
- ⇒ Inputs/outputs:
 - ✓ 8 digital inputs (24V level)
 - ✓ 4 digital outputs (24V level)
 - ✓ 2 analog inputs (14Bit)
 - ✓ Optional addition of 12 inputs/outputs

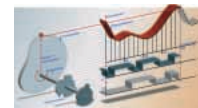
Compax3 PLCopen function modules

- ▶ Absolute Positioning
- ▶ Relative Positioning
- ▶ Additive Positioning
- ▶ Continuous Positioning
- ▶ Stop
- ▶ Machine Zero
- ▶ Energizing the power output stage
- ▶ Reading device status
- ▶ Reading axis error
- ▶ Acknowledging errors
- ▶ Reading the current position
- ▶ Electronic Gearbox (Gearing)

Example of an IEC61131 application controlled by means of a bus interface:

- ▶ 2 control words are placed on the cyclic channel of the bus.
- ▶ The position data records (position, speed, acceleration etc.) are stored in a table (array).
- ▶ The desired position data record is selected with Controlword_2.
- ▶ The individual bits of Controlword_1 control positioning.
- ▶ A return message is given through a status word on the cyclic channel of the bus.





Compax3 T40: IEC61131-3 Positioning with cam function modules

Function range T40

⇒ General

Compax3 T40 is able to simulate mechanical cams and cam switching mechanisms electronically.

The T40 electronic cam was especially optimized for:

- ⇒ the packaging machine industry,
- ⇒ the printing industry

⇒ all applications where a mechanical cam is to be replaced by a flexible, cyclic electronic solution

This helps to realize discontinuous material supply, flying knife and similar drive applications with distributed drive performance.

Compax3 T40 supports both real and virtual master movements. In addition, the user can switch to other cam profiles or cam seg-

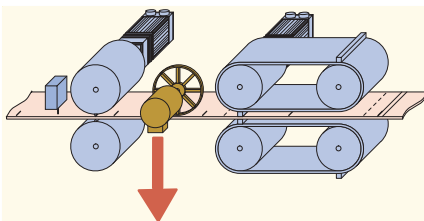
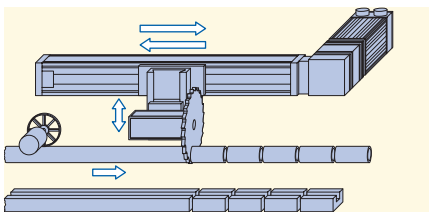
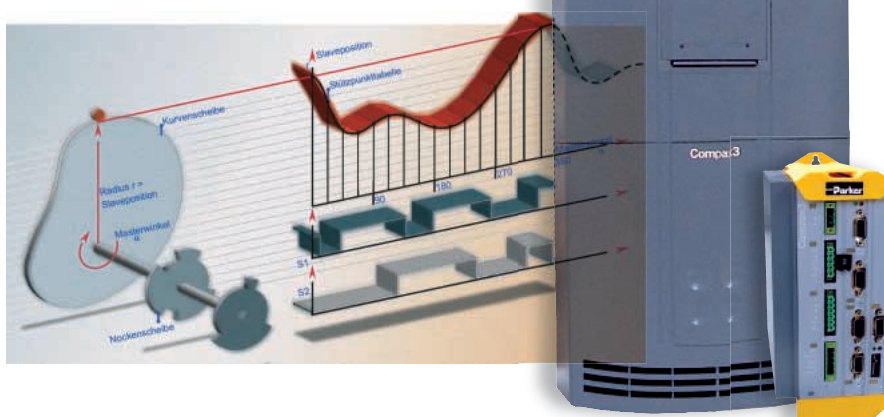
ments on the fly.

Programming is carried out in the IEC61131-3 environment.

With the aid of the cam function modules and CamDesigner, cam applications can be implemented very easily.

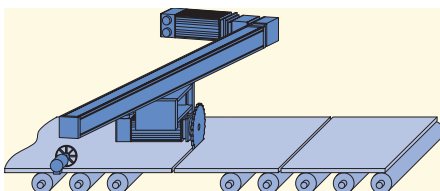
T40 function overview:

- ⇒ T30 Technology Functions completely integrated and available
- ⇒ Master position acquisition
- ⇒ Mark synchronization
- ⇒ Cam switching mechanism
- ⇒ Coupling and decoupling functions
- ⇒ Cam profiles
- ⇒ Cam memory
- ⇒ Cam generation with Cam Designer

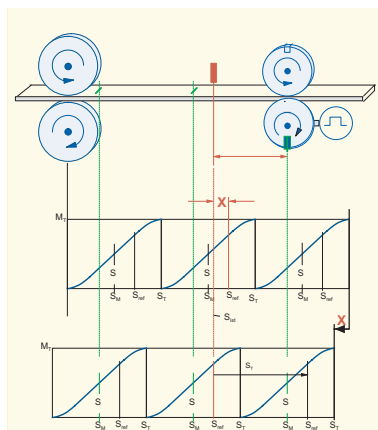


Master position acquisition

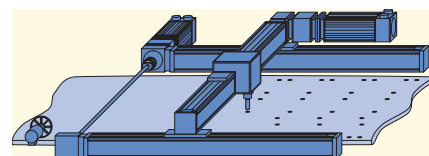
- ⇒ Acquisition by incremental encoder
- ⇒ Acquisition by the HEDA real-time bus
- ⇒ Virtual master:
 - ✓ A second axis in the IEC program can be used to program a motion profile which serves as a master for one or several slaves.



Mark synchronization



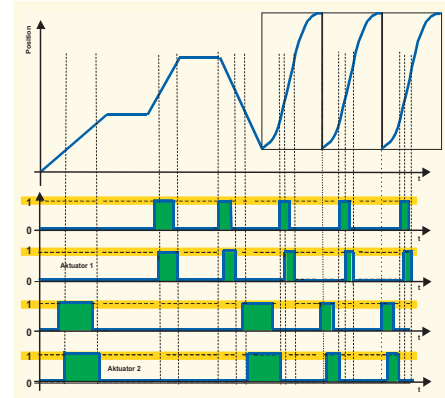
- ⇒ Master or slave oriented (simultaneous, cam-independent)
- ⇒ highly precise mark recognition (accuracy < 1 μs; Touchprobe)





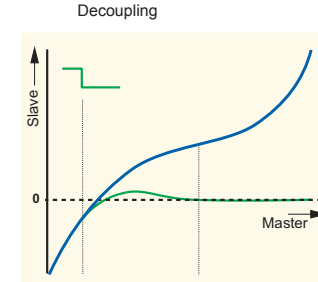
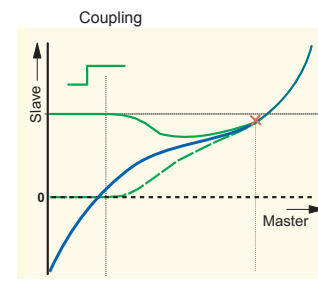
Cam switchig mechanism

- ⇒ 36 cams with individual profiles
- ⇒ 4 fast cams (125 µs per cam) standard: 500 µs
- ⇒ 32 serial cams, 16ms/cam cycle (0.5ms/cam)
- ⇒ Delay-time compensated cams: Compax3 can advance the cam to compensate for delays in switching elements



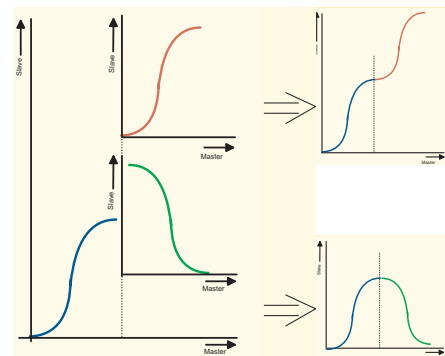
Coupling and decoupling functions

- ⇒ by means of a setpoint generator
- ⇒ by means of a change-over function
- ⇒ without overspeeding by coupling over several master cycles
- ⇒ virtually free set-up of the coupling and decoupling movement
- ⇒ master-guided coupling movement
- ⇒ random standstill position



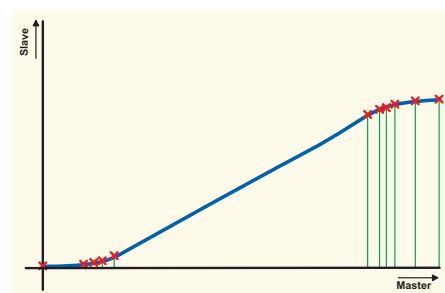
Cam profiles

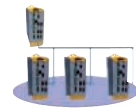
- ⇒ Up to 20 cam segments can be produced by:
 - ✓ virtually random cam links (forwards and backwards)
 - ✓ freely programmable event-controlled cam branches
 - ✓ Scalable cam segments and complete cam profiles



Cam memory

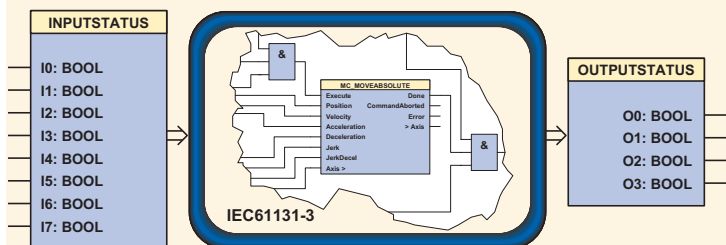
- ⇒ 10.000 points (master / slave) in 24 bit format
- ⇒ High-precision profile generation:
 - ✓ Variable points spacing with full back-up of the current master and slave co-ordinates (even if the power fails)
 - ✓ Linear interpolation between interpolation points
- ⇒ cam memory for upto 20 curves





Connection of high-level controllers: Compax3 30 and T40 interfaces

5 interfaces are available:



*** Compax3 I11T30 / I11T40:
Control via digital inputs/outputs**

The digital I/Os can be optionally extended by 12 I/Os (M10 and M12 option).

*** Compax3 I20T30 / I20T40:
Control via Profibus**

Profibus ratings

DP-Versions:	DPV0 / DPV1
Baud rate:	up to 12MHz
Profibus ID:	C320

*** Compax3 I22T30 / I22T40:
Control via DeviceNet**

DeviceNet ratings

I/O - data:	up to 32 Byte
Baud rate [kBit/s]:	125 ... 500
Nodes:	up to 63 Slaves

*** Compax3 I30T30 / I30T40:
Control via Ethernet Powerlink**

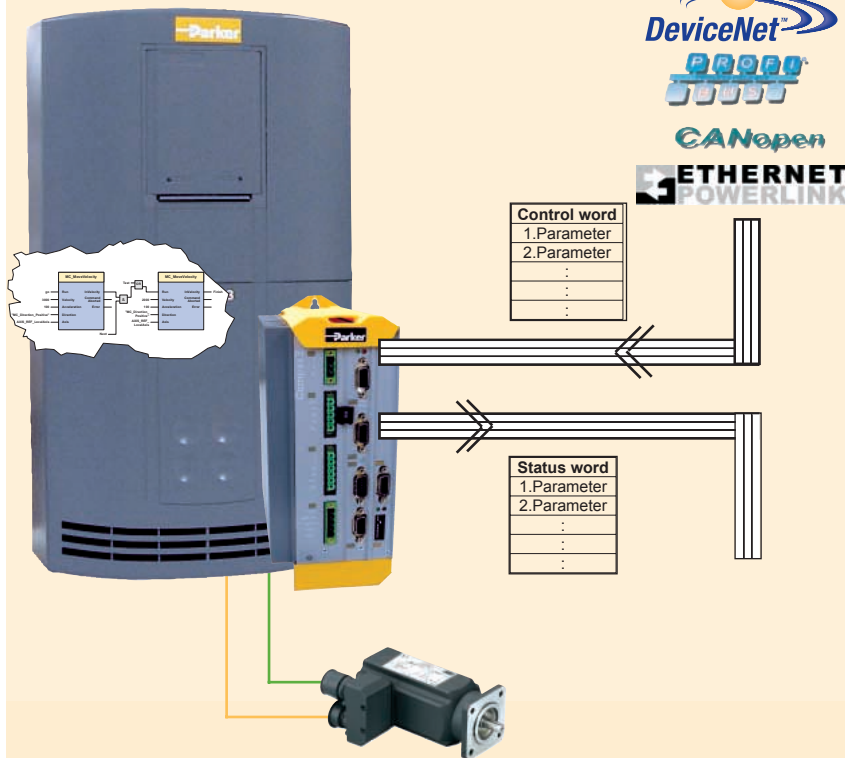
Ethernet Powerlink ratings

Baud rate:	100Mbps (FastEthernet)
Cycle time:	<200µs; up to 240 nodes

*** Compax3 I21T30 / I21T40:
Control via CANopen**

CANopen ratings

Baud rate [kBit/s]:	20 ... 1000
Service-Data-Object:	SDO1
Process-Data-Objects:	PDO1, ... PDO4

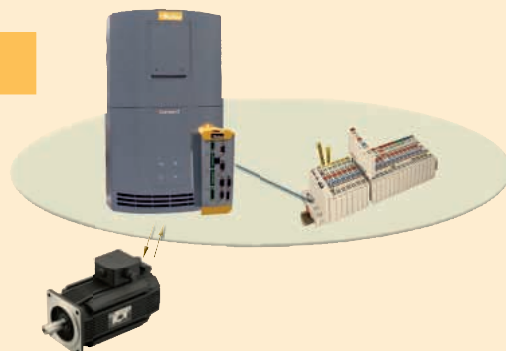


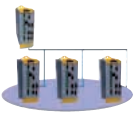
*** I21T30 / I21T40:
Decentralized control via CANopen: with external inputs/outputs (PIO)**

Additional external digital and analog inputs and outputs can be integrated via the CANopen master function.

For this purpose we offer the Parker I/O system (PIO):

- CANopen fieldbus coupler: 650mA/5V, 1650mA/5V
- Digital input terminals: 2-, 4-, 8-channel
- Analog input terminals: 2-channel (0-10V), 4-channel (0-20mA)
- Digital Output terminals: 2-, 4-, 8-channel
- Analog Output terminals: 2-channel (0-10V, 0-20mA), +/-10V





Compax3 powerPLmC: Multi-axis control with IEC61131-3 and PLCopen



Compax3 powerPLmC
- integrated into the Compax3 servodrive -

- 32 Bit-RISC-Processor
 < 100µs for 1000 IL commands
- CANopen
 Multi-axis communication
- Profibus DP Slave
 connection to the host controller
- Drive Interface
 Simple integration of the servo axes
- Ethernet
 Programming interface
 Remote diagnostics via Internet / Intranet
 Process visualization
 System integration

Function scope:

⇒ **General**
 Compax3 powerPLmC is a control system for combined PLC, motion and visualization tasks. CANopen links the individual bus devices to the CANopen master „Compax3 powerPLmC“. The power range of commands based IEC61131-3 is available for control tasks. Programming via „CoDeSys“ high-power programming system using the Ethernet interface. The implementation of multi-axis motion tasks is supported by PLCopen function modules.

- PLC logic
- + Motion Control
- + Visualization
- = powerPLmC

Motion Control

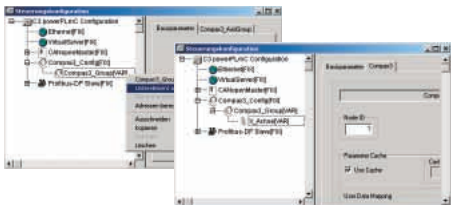
- ⇒ **Integrated Motion Control functions for dynamic, synchronized control of multiple axes**
- ⇒ **Ready-made PLCopen compliant Motion Control function modules allow users to create programs effectively**
- ⇒ **Thanks to the integrated drive interface**
 - ✓ no fieldbus knowledge is required (automatic mapping)
 - ✓ there is no need to run the fieldbus state machine (to Power ON).
 - ✓ the integrated Compax3 inputs and outputs are also available
 - ✓ effective program creation is guaranteed

Visualization

- ⇒ **Integrated into the local programming system**
 - ✓ Monitoring of machine or system states
 - ✓ Debugging
 - ✓ Diagnosis
- ⇒ **With integrated access to web server via standard browser**
- ⇒ **OPC interface for integrating Windows-based visualisation programs such as InteractX, WinCC, Intouch, Protool**
- ⇒ **Remote diagnosis**

PLC functionality

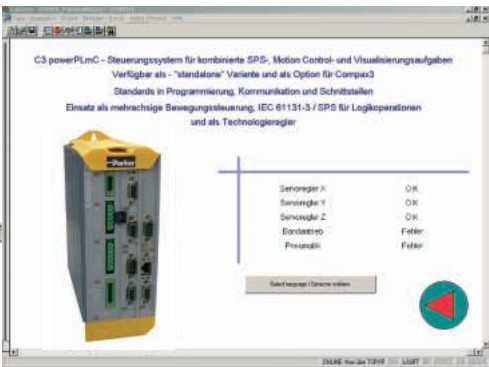
- ⇒ **4 real-time task types**
 - ✓ Free running
 - ✓ Cyclic
 - ✓ Event-triggered, internal events
 - ✓ Event-triggered, external events
- ⇒ **Online program change**
- ⇒ **Online debugging, single step, watch function, log**
- ⇒ **Simulation, online trace, breakpoints**
- ⇒ **Watchdog Timer**
- ⇒ **Minimal IEC task time: 1ms**
- ⇒ **PIO - Parker I/O system (digital and analog I/O), can be integrated via EDS file**



⇒ **Due to an internal cache memory on the Compax3 powerPLmC as well as on the Compax3, only the drive parameters that are modified are transferred. This results in the shortest possible transfer times**

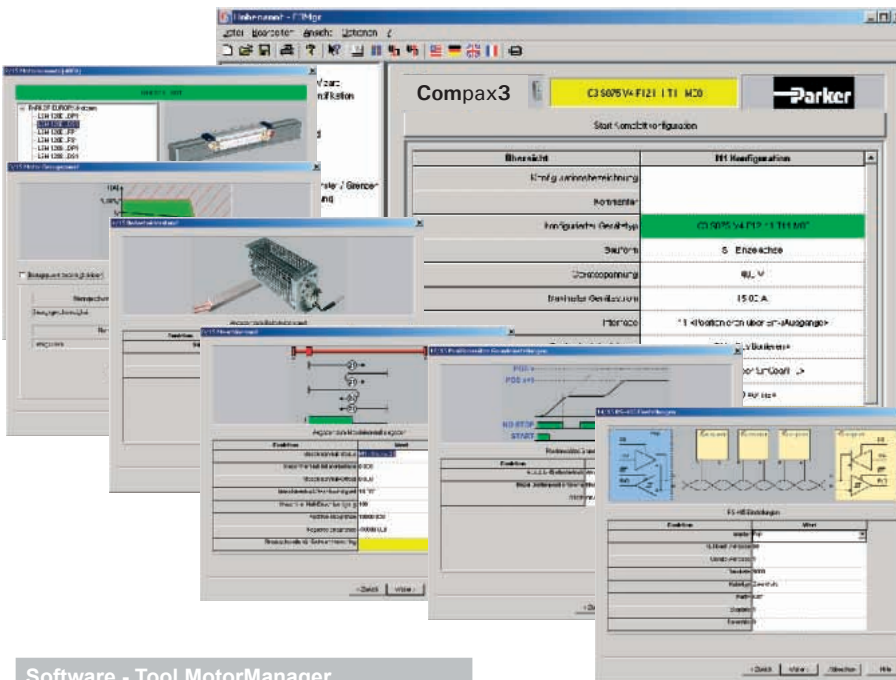


Visualization with Compax3 powerPLmC and CoDeSys





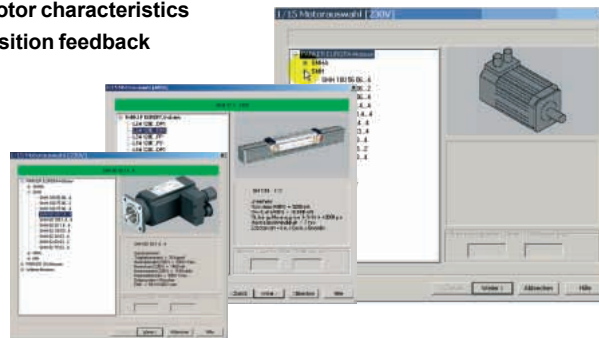
Simple, wizard-guided configuration and commissioning:



Configuration wizard

Software - Tool MotorManager

- ⇒ Simple creation of customized motors
- ⇒ Determination of motor characteristics and of the motor position feedback



C3 ServoManager Software Tool

⇒ General

Configuration is made on a PC using the Compax3 ServoManager

⇒ Wizard-guided configuration

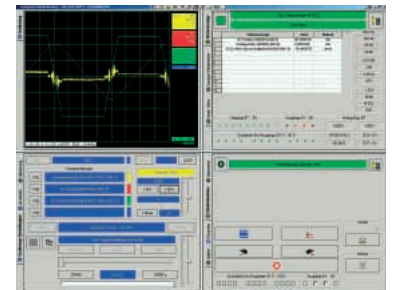
- ✓ Automatic querying of all necessary entries
- ✓ Graphically supported selection

⇒ Setup mode

- ✓ Moving individual axes
- ✓ Predefined profiles
- ✓ Convenient operation
- ✓ Storage of defined profiles
- ✓ Determination of the moment of inertia

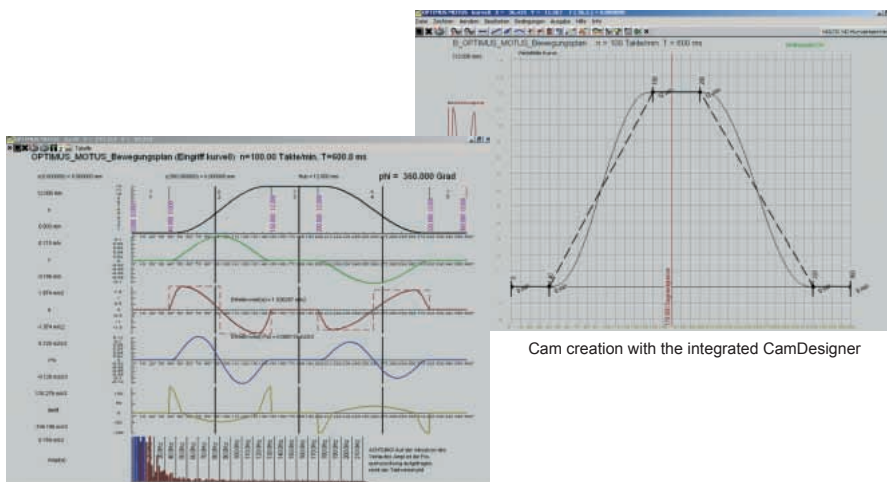
⇒ integrated 4-channel oscilloscope

- ✓ Signal tracking directly on the PC
- ✓ Various modes (single/normal/auto/roll)
- ✓ Zoom function
- ✓ Export as image or table (for example to Excel)



C3 ServoManager with oscilloscope

Cam creation with CamDesigner



Evaluation of the motion profile

CamDesigner Software Tool

⇒ Standardized Nolte cam generating tool with:

- ✓ standard or extended range of functions
- ✓ evaluation of the motion profiles
- ✓ verification of the drive sizing

⇒ Transition laws from the VDI directive 2143:

- ✓ Selection of motion laws
- ✓ The CamDesigner Basic Version features 15 motion laws (based on the dwell-to-dwell interpolation method)

Advantages offered by international standards in programming

IEC61131-3:

IEC61131-3 is the only company- and product independent programming language with world-wide support for industrial automation devices.

IEC61131-3 includes graphical and textual programming languages:

- ⇒ Instruction list
- ⇒ Structured text
- ⇒ Ladder diagram
- ⇒ Sequential function chart
- ⇒ Function block diagram

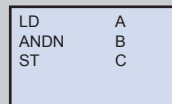
```

0001 FUNCTION_BLOCK_AWL_EXAMPLE
0002 (* Sinus und CoSinus einer Zahl berechnen *)
0003 VAR_INPUT
0004   r1: REAL := 0.0;
0005 END_VAR
0006 VAR_OUTPUT
0007   sinus: REAL;
0008   cosinus: REAL := 9.9;
0009 END_VAR
0010
0011 (* Den Sinus einer Zahl berechnen und mit 1000 multiplizieren *)
0012 LD   r1
0013 SIN
0014 MUL  1000.0
0015 ST   sinus
0016
0017 (* Den Cosinus einer Zahl berechnen und mit 1000 multiplizieren *)
0018 LD   r1
0019 COS
0020 MUL  1000.0
0021 ST   cosinus
0022
0023 (* Die Zahl weiterschalten *)
0024 LD   r1
0025 ADD  0.1
0026 ST   r1
0027

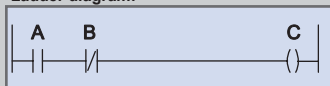
```

- ⇒ **Integrated standards offer:**
 - ✓ a trusted programming environment
 - ✓ standardized programming
- ⇒ **Integrated standards reduce:**
 - ✓ the overhead of development
 - ✓ maintenance costs
 - ✓ software upkeep
 - ✓ training overhead
- ⇒ **Integrated standards increase:**
 - ✓ productivity
 - ✓ software quality
 - ✓ concentration on core competence

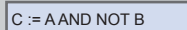
Instruction list (IL)



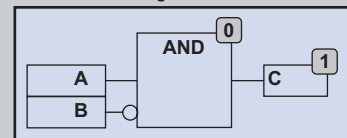
Ladder diagram:



Structured Text:



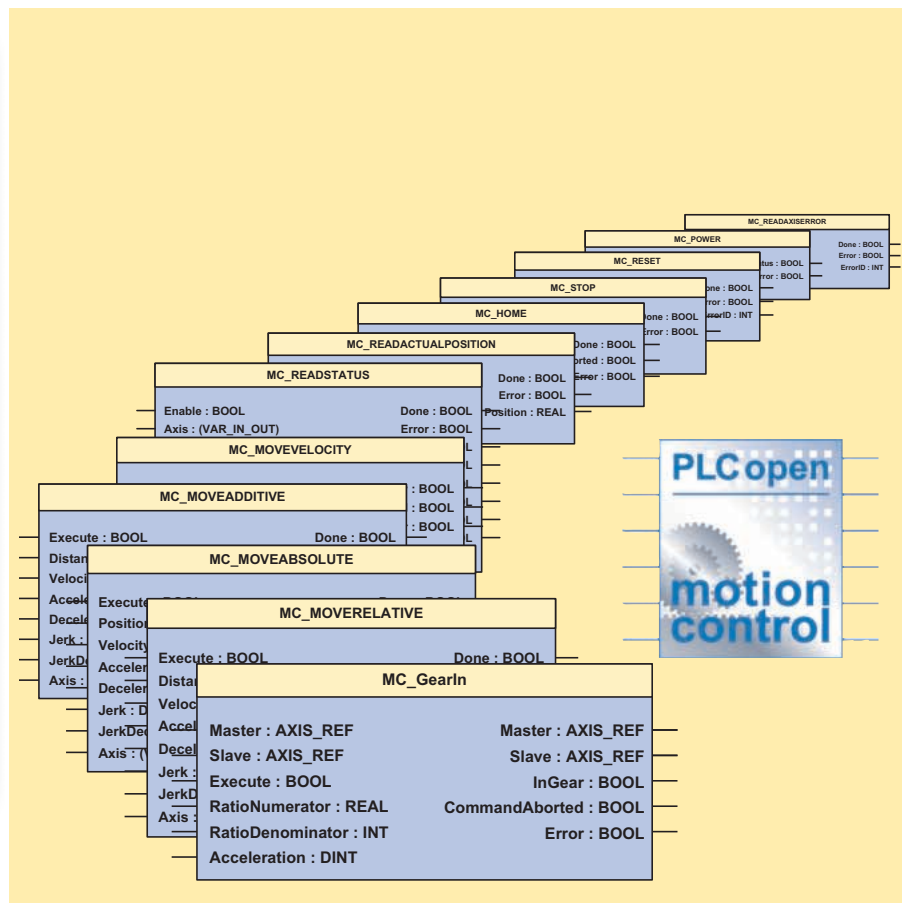
Function block diagram:



Function modules based on PLCopen

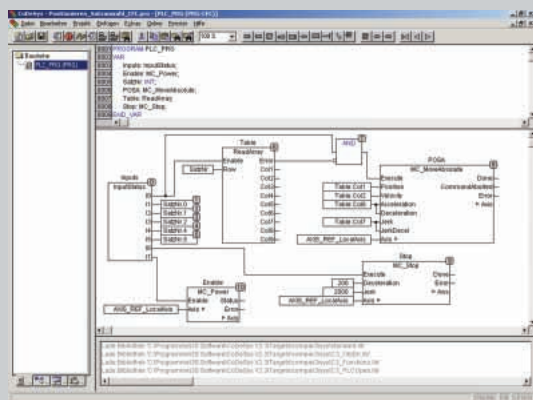
PLCopen is a product- and company-independent organization that plays a significant role in supporting the IEC61131-3 programming language. Its specific tasks also include defining basic processes relevant to motion. The PLCopen organization consists of both users and manufacturers of automation components.

Parker Hannifin is an active member of the "Motion Control" task force. This represents a great advantage to users of Parker drive technology, since they are constantly able to profit directly from the latest developments in PLCopen.



Advantages offered by international standards in programming

CoDeSys professional development tool



Program development in CFC

CoDeSys is a development environment for programming that saves a significant amount of time as applications are created.

- ⇒ One of the most powerful development environments available, established world-wide
- ⇒ Universal programming platform for various devices
- ⇒ Complete offline simulation
- ⇒ Visual elements
- ⇒ Library management for user-defined applications
- ⇒ Context-sensitive help wizard
- ⇒ Data exchange between devices from different manufacturers
- ⇒ Complete online functionality
- ⇒ Sophisticated technological features
- ⇒ ...and all this for no additional cost

Project management

- ⇒ Saving an entire project (source file) including symbols and comments to make service calls easier, because there is no need for any project data on the device itself.
- ⇒ Archiving projects as ZIP files
- ⇒ Creating user-specific libraries that can be reused as tested sections of programs
 - ✓ These libraries can be protected
 - ✓ E.g. winders, synchronisation components, etc
- ⇒ Various user levels make it possible to lock sections of the program with passwords
- ⇒ Depending on the task at hand, users can select from among 5 IEC languages plus CFC. These languages can also be mixed

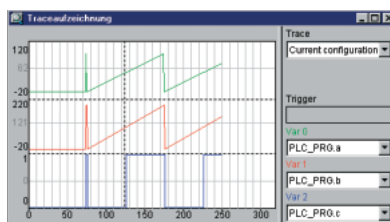
File handling

- ⇒ Files can be generated on the *powerPLmC*, for example:
 - ✓ Error logs
 - ✓ Recipes
 - ✓ Machine parameter
- ⇒ Files are available via the FTP server on a drive in C3 *powerPLmC* and can be downloaded onto a PC. (e.g. via the Wincommander, Explorer).
- ⇒ Error messages can be assigned to an error string by means of the error number and then stored together with the time of day (from an integrated clock).

Networking of controllers

- ⇒ Multiple control systems can be networked together via Ethernet
- ⇒ Exchanging information via network variables

Parker is a member of the „CoDeSys Automation Alliance“!



Trace recording





Compax3 with accessories

Connection set ZBH02/..for Compax3S

Fast, safe wiring:

Complete kit with mating plug connectors (X1, X2, X3 and X4) for Compax3 connectors and

Special shield connecting terminal:

The motor cable should be fully shielded and connected to the Compax3 housing

Motor cable MOK../..

(in various diameters), DESINA standard

Resolver cable REK../..

DESINA standard

Feedback cable GBK../..

Connections to the motor:

Under the designation „REK.. + GBK..“ (feedback cables) and „MOK..“ (motor cables) we can deliver motor connecting cables in various lengths to order.

- Prefabricated with plug and cable eye
- The plugs of the Parker motor and feedback cables contain a special surface area screening
- Cable plans, if you wish to make up your own cables

Terminal block EAM06/..

For additional wiring of the inputs/outputs:

- with or without LED display
- Can be mounted in the control cabinet via supporting rail
- Connection EAM06/.. via SSK23/.. to X11, SSK24/.. to X12

Mains filter for NF101/..

(only for motor cables longer than 10m)

For radio interference suppression and compliance with the emission limit values for CE compliant operation.

Motor output filter MDR01/..

For disturbance suppression when the motor connecting cables are long (>20m)

Braking resistor: BRM0../..

The energy generated during braking operation is initially absorbed by the Compax3 storage capacity.

If this capacity is too small, the braking energy must be dissipated via a braking resistor.





RS232 cable SSK01/..

(in various lengths)

Configuration:

Via a PC with the aid of the Compax3 ServoManager.

Communication:

Communication with Compax3 either via RS232 or via RS485 in order to read or write into objects.

Operator control module BDM01/01 for Compax3S:

For display and diagnosis purposes:

- Can be plugged in during operation
- Power supply via Compax3 servo control
- For displaying and changing values
- For duplication of device properties to another Compax3 with an identical hardware

HEDA Bus:

HEDA bus terminal connector (RJ45) BUS07/01:

- For the first and last Compax3 in the HEDA Bus

HEDA cable: SSK28/.. prefabricated in different lengths:

- Cable for HEDA bus wiring from Compax3 to Compax3 or PC to C3 *powerPLmC*

Profibus plug BUS08/01

Profibus plug:

- BUS08/01 with 2 cable inputs (1x BUS08/01 incoming, 1x BUS08/01 continuing) and screw terminals, as well as a switch for activating the terminating resistor. First and last bus node terminating resistor activated (=ON)

Profibus cable: SSL01/.. not prefabricated:

- Special cable in any length for Profibus wiring (colours according to DESINA)

CANbus plug BUS10/01

CANbus plug:

- BUS10/01 with 2 cable inputs (1x BUS10/01 incoming, 1x BUS10/01 continuing) and screw terminals, as well as a switch for activating the terminating resistor. First and last bus node terminating resistor activated (=ON)

CANbus cable: SSL02/.. not prefabricated:

- Special cable in any length for CANbus wiring (colours according to DESINA)

DeviceNet

A mating plug is included in the delivery.

PIO...: external Inputs/Outputs

For Compax3 I21 from technology function T30 via CANopen:

- Integration of additional external input and output modules (digital and analog)



Order code of the Compax3 servo axes and Compax3 powerPLmC

Example: C3S025V2F10I10T10M00	C3	S	025	V2	F10	I10	T10	M00
Device type: Compax3								
Single axis		S						
Highpower		H						
Device currents static/dynamic; supply voltage								
2.5A / 5A ; 230VAC (single phase)		S	025	V2				
6.3A / 12.6A ; 230VAC (single phase)		S	063	V2				
10A / 20A ; 230VAC (three phase)		S	100	V2				
15A / 30A ; 230VAC (three phase)		S	150	V2				
1.5A / 4.5A ; 400VAC (three phase)		S	015	V4				
3.8A / 7.5A ; 400VAC (three phase)		S	038	V4				
7.5A / 15A ; 400VAC (three phase)		S	075	V4				
15A / 30A ; 400VAC (three phase)		S	150	V4				
30A / 60A ; 400VAC (three phase)		S	300	V4				
50A / 75A ; 400VAC (three phase)		H	050	V4				
90A / 135A ; 400VAC (three phase)		H	090	V4				
125A / 187.5A ; 400VAC (three phase)*		H	125	V4				
155A / 232.5A ; 400VAC (three phase)*		H	155	V4				
Feedback:								
Resolver					F10			
SinCos© (Hiperface)					F11			
Encoder, Sine/Cosine with/without hall / EnDat2.1					F12			
Interface:								
Step/direction / analog input						I10	T10	
Positioning via inputs/outputs						I11	T11	
Positioning via inputs/outputs or RS232 / RS485						I12		
Profibus DP V0/V1/V2 (12Mbaud)						I20		
CANopen						I21		
DeviceNet						I22		
Ethernet Powerlink						I30		
C3 powerPLmC (Multi-axis control)						C10		
C3 powerPLmC (Multi-axis control) with Profibus						C13		
Technology functions:								
Positioning							T11	
Motion control programmable according to IEC61131-3							T30	
Motion control programmable according to IEC61131-3 & electronic cam extension							T40	
Options:								
without options								M00
Extension 12 digital I/Os & HEDA (Motionbus)								M10
HEDA (Motionbus)								M11
Extension 12 digital I/Os								M12

*external voltage supply for ventilator fan required. Available in two versions for single phase feed:
Standard: 220/240VAC: 140W, 2.5µF, Stator - 62W
On request: 110/120VAC: 130W, 10µF, Stator - 16W

Accessories order code

Order code for Compax3 connection sets for Compax3S							
for C3S0xxV2	ZBH 02/01			ZBH	0 2 / 0 1		
for C3S0xxV4 / S150V4 / S1xxV2	ZBH 02/02			ZBH	0 2 / 0 2		
for C3S300V4	ZBH 02/03			ZBH	0 2 / 0 3		
Order code feedback cables							
for Resolver ⁽²⁾	for MH / SMH motors			REK	4 2 / ... ⁽¹⁾		
for Resolver ⁽²⁾	for MH / SMH motors	(cable chain compatible)		REK	4 1 / ... ⁽¹⁾		
for SinCos© – Feedback ⁽²⁾	for MH / SMH motors	(cable chain compatible)		GBK	2 4 / ... ⁽¹⁾		
for EnDat2.1 ⁽²⁾	for MH / SMH motors	(cable chain compatible)		GBK	3 8 / ... ⁽¹⁾		
Encoder – Compax3				GBK	2 3 / ... ⁽¹⁾		
for LXR linear motors		(cable chain compatible)		GBK	3 3 / ... ⁽¹⁾		
for BLMA linear motors		(cable chain compatible)		GBK	3 2 / ... ⁽¹⁾		
Order code motor cables ⁽²⁾							
for SMH / MH56 / MH70 / MH105 ⁽³⁾	(1.5mm ² ; up to 13.8A)			MOK	5 5 / ... ⁽¹⁾		
for SMH / MH56 / MH70 / MH105 ⁽³⁾	(1.5mm ² ; up to 13.8A)	(cable chain compatible)		MOK	5 4 / ... ⁽¹⁾		
for SMH / MH56 / MH70 / MH105 ⁽³⁾	(2.5mm ² ; up to 18.9A)			MOK	5 6 / ... ⁽¹⁾		



for SMH / MH56 / MH70 / MH105 ³	(2.5mm ² ; up to 18.9A)	(cable chain compatible)	MOK	5 7 / ⁽¹⁾
for MH145 / MH205 ⁴	(1.5mm ² ; up to 13.8A)		MOK	6 0 / ⁽¹⁾
for MH145 / MH205 ⁴	(1.5mm ² ; up to 13.8A)	(cable chain compatible)	MOK	6 3 / ⁽¹⁾
for MH145 / MH205 ⁴	(2.5mm ² ; up to 18.9A)		MOK	5 9 / ⁽¹⁾
for MH145 / MH205 ⁴	(2.5mm ² ; up to 18.9A)	(cable chain compatible)	MOK	6 4 / ⁽¹⁾
for MH145 / MH205 ⁴	(6mm ² ; up to 32.3A)	(cable chain compatible)	MOK	6 1 / ⁽¹⁾
for MH145 / MH205 ⁴	(10mm ² ; up to 47.3A)	(cable chain compatible)	MOK	6 2 / ⁽¹⁾

Order code for braking resistors

for C3S063V2 or C3S075V4	56Ω / 0.18kW _{cont}	BRM	0 5 / 0 1
for C3S075V4	56Ω / 0.57kW _{cont}	BRM	0 5 / 0 2
for C3S025V2 or C3S038V4	100Ω / 60kW _{cont}	BRM	0 8 / 0 1
for C3S150V4	47Ω / 0.57kW _{cont}	BRM	1 0 / 0 1
for C3S150V2 and C3S300V4	4/01: 15Ω / 0.57kW _{cont} 4/02: 15Ω / 0.74kW _{cont}	BRM	0 4 / 0 ...
for C3S300V4	15Ω / 1.5kW _{cont}	BRM	0 4 / 0 3
for C3S100V2	22Ω / 0.45kW _{cont}	BRM	0 9 / 0 1
for C3H0xxV4	27Ω / 3.5kW _{cont}	BRM	1 1 / 0 1
for C3H1xxV4	18Ω / 4.5kW _{cont}	BRM	1 2 / 0 1

Order code for mains filters

for C3S025V2 or S063V2	NFI	0 1 / 0 1
for C3S0xxV4, S150V4 or S1xxV2	NFI	0 1 / 0 2
for C3S300V4	NFI	0 1 / 0 3
for C3H050V4	NFI	0 2 / 0 1
for C3H090V4	NFI	0 2 / 0 2
for C3H1xxV4	NFI	0 2 / 0 3

Order code for motor output filter (for Compax3S >20m motor cable)

up to 6.3A rated motor current	MDR	0 1 / 0 4
up to 16A rated motor current	MDR	0 1 / 0 1
up to 30A rated motor current	MDR	0 1 / 0 2

Order code for interface cables and plugs

PC – Compax3 (RS232)	SSK	0 1 / ⁽¹⁾
on X11 (Ref /Analog) with flying leads	SSK	2 1 / ⁽¹⁾
on X12 (E/As digital) with flying leads	SSK	2 2 / ⁽¹⁾
to X11 (Ref /Analog) for I/O terminal block	SSK	2 3 / ⁽¹⁾
to X12 (E/As digital) for I/O terminal block	SSK	2 4 / ⁽¹⁾
PC ⇔ POP (RS232)	SSK	2 5 / ⁽¹⁾
Compax3 ⇔ POP (RS485) with several Compax3H on request	SSK	2 7 / ⁽⁶⁾
Compax3 HEDA ⇔ Compax3 HEDA or PC ⇔ C3powerPLmC	SSK	2 8 / ⁽⁶⁾
Compax3 X11 ⇔ Compax3 X11 (encoder coupling of 2 axes)	SSK	2 9 / ⁽¹⁾
Compax3 X10 ⇔ Modem	SSK	3 1 / ...	
C3H pter cable ⇔ SSK01 (Length 15cm, delivered with the device)	SSK	3 2 / 2 0	
C3H X10 RS232 connection control ⇔ Programming interface (delivered with the device)	VBK	1 7 / 0 1	
HEDA bus termination plug (for the first and last Compax3 in the HEDA - Bus)	BUS	0 7 / 0 1	
Profibus cable ⁽²⁾ non prefabricated	SSL	0 1 / ⁽¹⁾
Profibus plug	BUS	0 8 / 0 1	
CAN-Bus cable ⁽²⁾ non prefabricated	SSL	0 2 / ⁽¹⁾
CAN-Bus plug	BUS	1 0 / 0 1	

Order code for operating module

Operating module (for Compax3S)	BDM	0 1 / 0 1
---------------------------------	-----	-----------

Order code for terminal block

for I/Os without luminous indicator for X11, X12	EAM	0 6 / 0 1
for I/Os with luminous indicator for X12	EAM	0 6 / 0 2

Order code for decentralized input terminals

PIO 2DI 24VDC 3.0ms	2-channel digital input terminal	PIO	4 0 0
PIO 4DI 24VDC 3.0ms	4-channel digital input terminal	PIO	4 0 2
PIO 8DI 24VDC 3.0ms	8-channel digital input terminal	PIO	4 3 0
PIO 2AI DC ±10V	2-channel analog input terminal (±10V differential input)	PIO	4 5 6
PIO 4AI 0-10VDC S.E.	4-channel analog input terminal (0-10V signal voltage)	PIO	4 6 8
PIO 2AI 0-20mA	2-channel analog input terminal (0-20mA differential input)	PIO	4 8 0

Order code for decentralized output terminals

PIO 2DO 24VDC 0.5A	2-channel digital output terminal (output current 0.5A)	PIO	5 0 1
PIO 4DO 24VDC 0.5A	4-channel digital output terminal (output current 0.5A)	PIO	5 0 4
PIO 8DO 24VDC 0.5A	8-channel digital output terminal (output current 0.5A)	PIO	5 3 0
PIO 2AO 0-10VDC	2-channel analog output terminal (0-10V signal voltage)	PIO	5 5 0
PIO 2AO 0-20mA	2-channel analog output terminal (0-20mA signal voltage)	PIO	5 5 2
PIO 2AO DC ±10V	2-channel analog output terminal (±10V signal voltage)	PIO	5 5 6

Order code for CANopen Fieldbus coupler

CANopen Standard	max. vectorial sum current for bus terminals 1650mA at 5V	PIO	3 3 7
CANopen ECO	max. vectorial sum current for bus terminals 650mA at 5V	PIO	3 4 7

Length code 1 (Example:SSK01/09: Length 25m)

Length [m]	1.0	2.5	5.0	7.5	10.0	12.5	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0
Code	01	02	03	04	05	06	07	08	09	10	11	12	13	14

Length code 2 for SSK28

Length [m]	0.25	0.5	1.0	3.0	5.0	10.0
Code	20	21	01	22	03	05

MOK55 and MOK54 can also be used with LXR406, LXR412 and BLMA linear motors.

⁽¹⁾Length code 1, ⁽²⁾ Colors according to DESINA, ⁽³⁾with motor connector ⁽⁴⁾ with cable eyes for motor connection box, ⁽⁵⁾ Length code 2 ⁽⁶⁾Order code: SSK27/nn/.. Number n, Length A, (Length B fixed) Length A (Pop - 1, Compax3) variable (the last two digits = Length code e.g. SSK27/nn/01) Length B (1, Compax3 - 2, Compax3 - ... -) fixedly 50cm (only with more than 1 Compax3, i.e. nn higher 01) / Number n (the two digits before last)

Technical Data Overview

Function

- **T10: Servo controller**
- **T11: Positioning**
- **T30: Motion control programmable according to IEC61131-3**
- **T40: Electronic cam generation**

Supply voltage

- 1*230VAC/240VAC, 80-253VAC / 50-60Hz (C3S)
- 3*230VAC/240VAC, 80-253VAC / 50-60Hz (C3S)
- 3*400VAC/480VAC, 80-528VAC / 50-60Hz (C3S)
- 3*400VAC/480VAC, 350-528VAC / 50-60Hz (C3H)

Control voltage

- 24VDC ±10%, ripple <1V_{SS}
 - Current requirements: 0.8A for the device.
 - digital outputs 100mA each
 - for motor holding brake (up to 1.6A)

Output data of the individual devices

Compax3 S025V2:	2.5A _{cont}	5.5A _{peak} (<5s)
Compax3 S063V2:	6.3A _{cont}	12.6A _{peak} (<5s)
Compax3 S100V2:	10A _{cont}	20A _{peak} (<5s)
Compax3 S150V2:	15A _{cont}	30A _{peak} (<5s)
Compax3 S015V4:	1.5A _{cont}	4.5A _{peak} (<5s)
Compax3 S038V4:	3.8A _{cont}	9A _{peak} (<5s)
Compax3 S075V4:	7.5A _{cont}	15A _{peak} (<5s)
Compax3 S150V4:	15A _{cont}	30A _{peak} (<5s)
Compax3 S300V4:	30A _{cont}	60A _{peak} (<5s)
Compax3 H050V4	50A _{cont}	75A _{peak} (<5s)
Compax3 H090V4	90A _{cont}	135A _{peak} (<5s)
Compax3 H125V4	125A _{cont}	187.5A _{peak} (<5s)
Compax3 H155V4	155A _{cont}	232.5A _{peak} (<5s)

Motors supported

- Sinusoidal commutated synchronous motors
 - Maximum rotating field frequency: 1,000Hz
 - Max. velocity at 8 pole motors: 15000min-1
 - General max. speed: 60*1000/number of pole pairs in [min-1]
- Sinusoidal commutated asynchronous motors
 - Maximum rotating field frequency: 1,000Hz
 - Maximum speed: 60*1000/number of pole pairs - slip in [min-1]
- 3 phase synchronous direct drives

Feedback systems supported

- Resolver (Option F10)
 - Litton: JSSBH-15-E-5, JSSBH-21-P4, RE-21-1-A05, RE-15-1-B04
 - Tamagawa: 2018N321 E64
 - Siemens: 23401-T2509-C202
- Rotary SineCosine Single- or Multiturn encoder with Hiperface®- or EnDat2.1 interface
 - SinCos® - Singleturn (Stegmann)
 - SinCos® - Multiturn (Stegmann), Absolute position up to 4096 motor revolutions
- Feedback error compensation
 - Feedback offset and gain error compensation

- Analog hall sensors
 - Sine - Cosine signal (max. 5V_{SS}; typical 1V_{SS}) 90° offset
 - U-V signal (max. 5V_{SS}; typical 1V_{SS}) 120° offset
- Encoder
 - Sine - Cosine (max. 5V_{SS}; typical 1V_{SS}) (max. 400kHz) or
 - TTL (RS422) (max. 5MHz)
 - with the following modes of commutation:
 - Automatic commutation or digital hall sensors
- Linear encoders for:
 - Absolute encoder with EnDat2.1 interface
 - Distance coded feedback systems
 - Distance coding with 1V_{SS} - Interface
 - Distance coding with RS422 - Interface

Accuracy

Positioning of the motor shaft:

- Resolver (Option F10)
 - Resolution: 16Bit (= 0.005°)
 - Absolute accuracy: +/-0.167°
- SinCos® (Option F11)
 - Resolution: 19Bit (= 0.0002°)
 - Absolute accuracy: +/-0.005°
- Direct drives (Option F12)
 - The exactitude of the position signal is above all determined by the type and exactitude of the feedback system used
- Maximum position resolution
 - Linear motor: 24Bit per motor magnet spacing
 - Rotatory motor: 24Bit per motor revolution
 - Resolution for analog hall sensors with 1V_{SS}-signal:
 - 13.5Bit / motor magnet spacing
 - For 1V_{SS}-sine-cosine encoders:
 - 13.5Bit / graduation of the scale of the encoder
 - For RS422-Encoders:
 - internal quadrature of the resolution

Regenerative braking

	Capacity	reservable energy
Compax3 S025V2:	560µF	15Ws
Compax3 S063V2:	1120µF	30Ws
Compax3 S100V2:	780µF	21Ws
Compax3 S150V2:	1170µF	31Ws
Compax3 S015V4:	235µF	37Ws
Compax3 S038V4:	235µF	37Ws
Compax3 S075V4:	470µF	75Ws
Compax3 S150V4:	690µF	110Ws
Compax3 S300V4:	1100µF	176Ws
Compax3 H050V4	2600µF	602Ws
Compax3 H090V4	3150µF	729Ws
Compax3 H125V4	5000µF	1158Ws
Compax3 H155V4	5000µF	1158Ws

Setpoint generator

- Jerk-limited ramps.
- Travel data in increments, mm, inch or variable by scale factor.
- Specification of speed, acceleration, deceleration and jerk factor

Monitoring functions

- Power/auxiliary supply range
- Motor power stage temperature/stall protection
- Following error monitoring

Inputs and outputs

- 8 control inputs: 24VDC / 10kOhm
- 4 control outputs: active HIGH/short-circuit protected, 24V/100mA
- 2 analog inputs (14Bit)
- 2 analog outputs (8Bit)

RS232 / RS485 (switchable)

- 115kBaund
- Word length 8Bit, 1 Start-, 1 Stopbit
- Hardware handshake (RTS/CTS)

Bus systems

- Profibus DP V0-V2 (I20)
 → 12MBaud
 → PROFIdrive-profile drive technology
- CANopen (CiADS402) (I21)
- DeviceNet (I22)
- Ethernet Powerlink (I30)

Housing

- Enclosed housing
- Insulation: VDE 0160 / protection class IP20 (not for C3H1xxV4)

CE-compliance

- EMC interference emission/limit values for industrial utilization according to EN 61 800-3 first environment (commercial and residential area), class C2 via integrated mains filter for up to 10m cable length, otherwise with external mains filter
- EMC immunity/limit values for industrial utilization according to EN 61 800-3



Insulation requirements

- Protection class I according to EN 50178 (VDE 0160 part 1)
- Contact protection: According to DIN VDE 0106, part 100
- Overvoltage: Voltage class III according to HD 625 (VDE 0110-1)
- Degree of contamination 2 according to HD 625 (VDE 0110 part 1) and EN 50178 (VDE 0160 part 1)

Ambient conditions

- Temperature range: 0...45°C
- Max. relative humidity as per German standard DIN 40040 class F ≤75%; non-condensing

UL - certification

- UL - certification: UL508C (E-File_Nr.: E235 342)

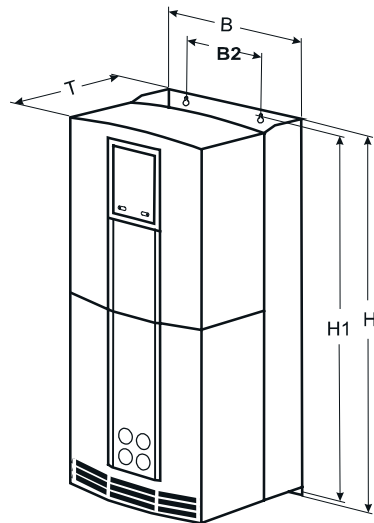


Safety technology

- Compax3S: Safe standstill as per EN 954-1 (certification according to category 3)

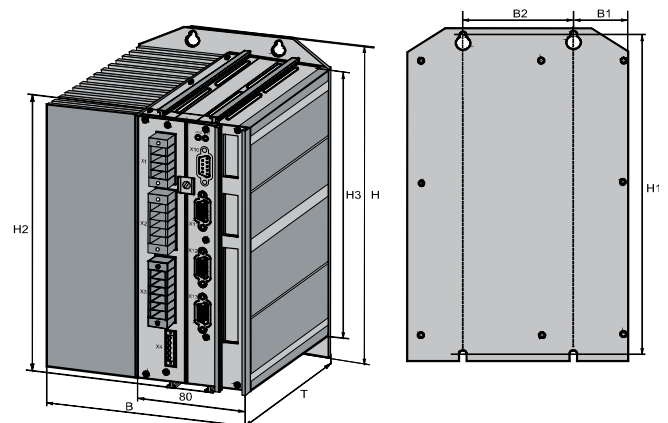
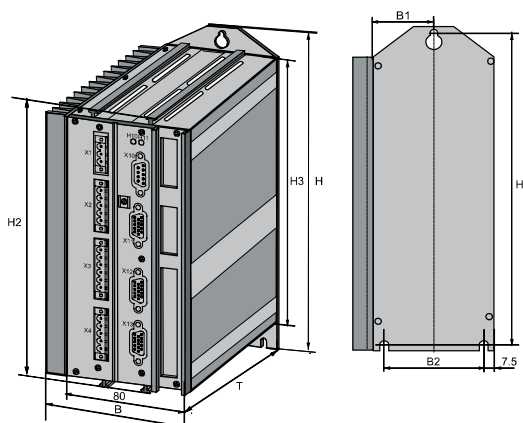


Compax3H



Device: Compax3	Dimensions [mm]					Distance [mm]			Weight [kg]
	H	B	T	H2	H3	B1	B2	H1	
S025V2	222	84	172	199	191	40	65	210	2.0
S063V2	222	100	172	199	191	40	65	210	2.5
S100V2	279	115	172	259	248	40	65	267	4.3
S150V2	279	158	172	259	248	39	80	267	6.8
S015V4	279	84	172	259	248	40	65	267	3.1
S038V4	279	100	172	259	248	40	65	267	3.5
S075V4	279	115	172	259	248	40	65	267	4.3
S150V4	279	158	172	259	248	39	80	267	6.8
S300V4	412	175	172	391	380	47.5	80	400	10.9
H050V4	453	252	245	-	-	-	150	440	17.4
H090V4	669	257	312	-	-	-	150	630	32.5
H125V4	720	257	355	-	-	-	150	700	41
H155V4	720	257	355	-	-	-	150	700	41

Compax3S





- Your partner for automation

Would you like more information?
We would be happy to send you our brochures and catalogs!
Or call us and set up a meeting.

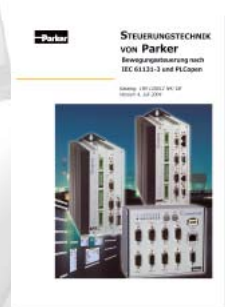
Our product program:



Visualisation



Distributed Automation



Control Technology



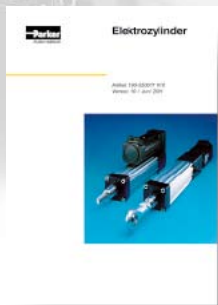
Drive Technology
Servo Drives / Stepper Drives



Motors / Gears



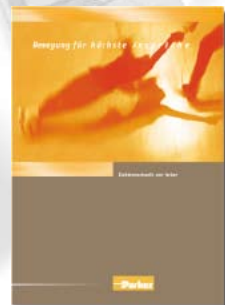
Direct Drive Technology
Linear motors / Torque motors



Handling Actuators
Cylinders / Actuators



Precision Actuators
Screw Driven / Linear Motor Driven



Parker
Electromechanical Automation

We reserve the right to make technical changes.
The information contained in this manual corresponds to the current status at the time of printing.



Parker Hannifin GmbH & Co. KG
Electromechanical Automation
Robert-Bosch-Str. 22
D-77656 Offenburg,
Germany
☎ +49 (0)781 509 0
☎ +49 (0)781 509 98176
Website: www.parker-eme.com
e-mail: sales.hauser@parker.com

Parker Hannifin S. p. A
Electromechanical Automation
Via Gounod 1
I-20092 Cinisello Balsamo (MI),
Italy
☎ +39 0266012459
☎ +39 0266012808
Website: www.parker-eme.com
e-mail: sales.sbc@parker.com

Parker Hannifin plc
Electromechanical Automation
Arena Business Centre
Holy Road Close, Poole, Dorset.
BH17 7FJ UK
☎ +44 (0)1202 606300
☎ +44 (0)1202 606301
Website: www.parker-eme.com
e-mail: sales.digiplan@parker.com