

The intelligent control system BWO / VECTOR C / CT The new compact class for CNC applications



BWO/VEKTOR C/CT (All in one)

- compact into the future
- integrated PLC
- Interfaces and BUS - system
- Immediate support via integrated remote diagnostics

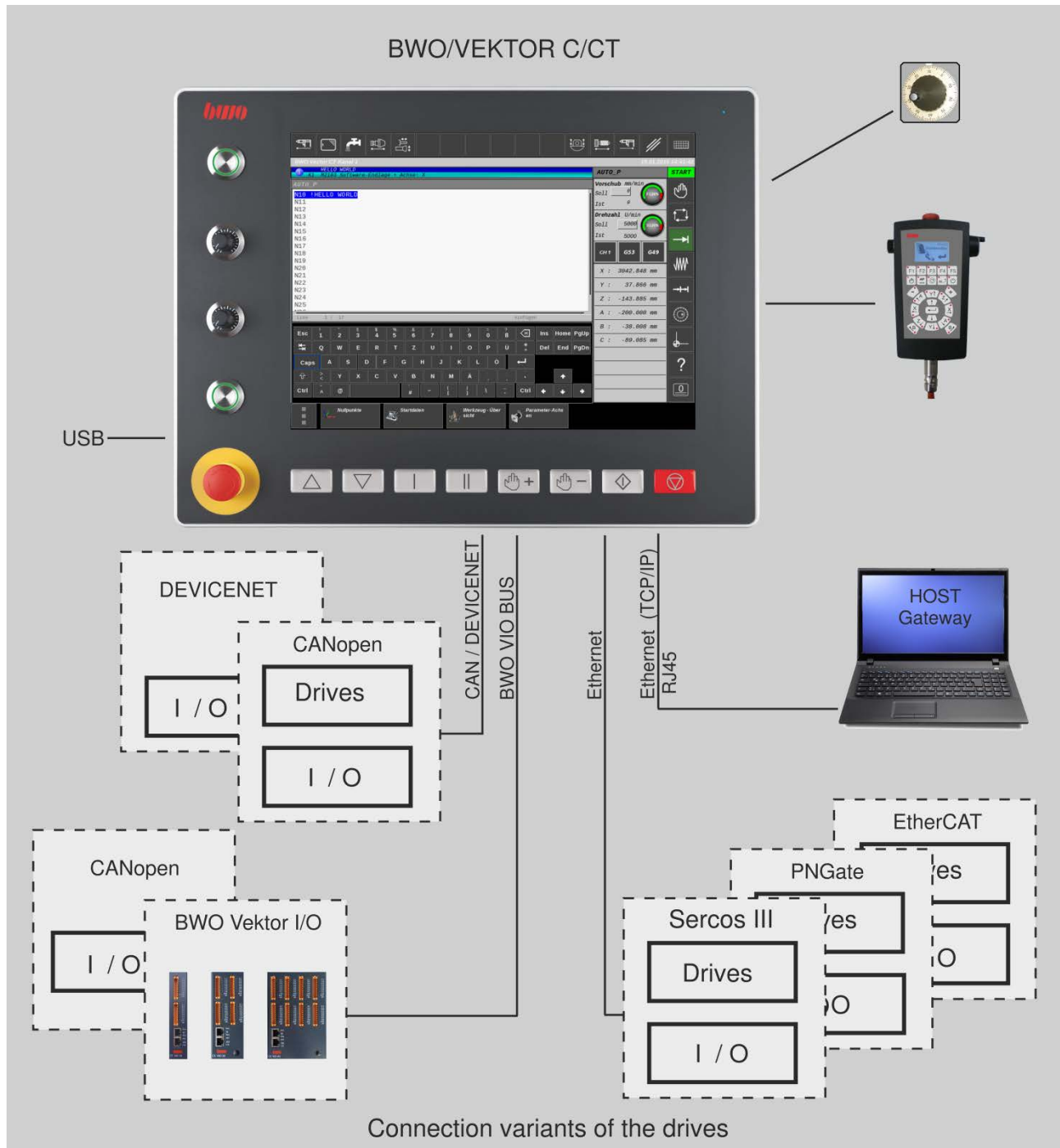
BWO/VEKTOR C/CT

Control concept

The BWO / VECTOR C/CT communicates with the drives and I/O devices via leading fieldbus systems.

The great advantages of the open- control concept are:

- Integration of user-specific functions
- Individual design of the user interface with the BWO XPROMA[®] Software
- Simple design of the PLC program with the BWO XPLC[®] Software



BWO/VEKTOR C/CT

Technical specifications

Basic Basic plus Premium Premium plus Ultra

Configuration					
Operating system BWO	●				
Channels	1	1	2	4	8
Extension 1 channel	-	□	-	-	-
Axes/spindles	4	6	8	16	32
Interpolating axes	4	6	8	16	32
CNC-user memory (MB)	8	8	256	256	256B
Additional CNC-user memory (up to a maximum of 256MB)	-	□	-	-	-
Minimal block change time (ms)	<1	<1	<0,5	<0,5	<0,5
CNC functions					
Jerk-limited acceleration and braking	●				
Travel to fixed stop / with adjustable force / torque	●				
Tangentialaxes	●				
Couple, reflect and exchange axes	●				
Restart after interruption	●				
Polar coordinate system	●				
Rotate, reflect and move coordinates	●				
Axes-/M-funktions simulation	●				
Graphic simulation	●				
Zero point / zero offset	●				
Look-ahead function and dynamic pre control	●				
Front-face machining	●				
Lateral surface machining	●				
Follow-up	●				
Parameter calculation	●				
Interrupt routines with fast retraction	●				
Spindle functions					
Oriented spindle stop	●				
Various thread cutting functions	●				
Axes synchronisation	-	□	○	○	
Interpolation					
Linear interpolation	●				
Circular interpolation	●				
Screw interpolation	●				
Akima spline	-	-	○	○	●
Polynom interpolation	-	-	○	○	●
Feed, corner, circular and contour dynamics	●				
Automatic selection of linear and circular Interpolation	●				

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	Basic	Basic plus	Premium	Premium plus	Ultra
Couplings					
Inclined axis			●		
Synchronous spindle	-	-	○	○	●
Constant velocity couple of axes pair	-	□	○	○	●
Electronic gear	-	-	○	○	●
Transformation					
Coordinate transformation and beveled processing	-	-	○	○	●
Robot transformation tool / workpiece oriented	-	-	○	○	●
Polar transformation TCP	-	-	○	○	●
Tool-oriented RTCP	-	-	○	○	●
Jointed-arm robot	-	-	○	○	
SCARA robot			●		
Measuring functions / measuring cycles					
Measuring in setup			●		
Measuring Cycles / Log measurement results			●		
Measuring system switchover / 2-measuring system directly / indirectly for high accuracy and rapid positioning			●		
Programming					
Programmable according to DIN 66025 or in high level language			●		
Jointed-arm robot programmable according to DIN 66025 or in high level language	-	-	○	○	●
Scara programmable according to DIN 66025 or in high level language			●		
Standard cycles: drilling, milling, turning, grind			●		
Contour definition short program G12			●		
Programmable acceleration			●		
Communication					
CNC management via software BWO WINBV			1)		
Connectivity to network servers / Internet			●		
Data transfer CNC <--> control panel			●		
Data transfer CNC <--> HOST via software BWO SERVER			2)		
Data transfer JOB editing via BWO SERVER			2)		
Drip-feed (Block by block transfer of the NC program via BWO SERVER)			2)		
Compensation					
Spindle pitch correction	-	□	○	○	●
Sag compensation	-	□	○	○	●
Temperature compensation	-	□	○	○	●
Open architecture					
Free forms of application images via software BWO XProma			3)		
Integration of technical know-how (for example, DLL)	-	□	●	●	●
Free programmable cycles			●		

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	Basic	Basic plus	Premium	Premium plus	Ultra
Diagnostic functions					
Alarms and messages			●		
Remote diagnostics / email (NAT protocol Prerequisite: BWO WINBV)	□	□	○	○	●
Tools					
Tool management / monitoring tool			●		
Sister tool (replacement tool)			●		
Tool radius path correction			●		
Tool length compensation			●		
PLC					
Integrated PLC			●		
Creation of machine-specific fitting programs via Software BWO XPLC			●		
Number of digital inputs (expandable)			1024		
Number of digital outputs (expandable)			1024		
Max. Number of analog inputs / outputs			255		
Sequential Function Chart (SFC) in accordance with IEC			●		
Statement List (STL)			●		
Ladder logic (LAD)			●		
High level language			●		
Software					
BWO XPLC PLC programming			●		
BWO WINBV CNC- management			1)		
BWO SERVER messaging CNC < -- > HOST			2)		
BWO service year contract			4)		

- Standard
- Basic option package
- Premium option package

1); 2); 3: Acquisition of the license necessary

4) BWO remote diagnosis year contract

BWO/VEKTOR C/CT

Option packages

Option packages Basic □

Configuration

Extension 1 channel

Additional CNC user memory up to 256MB

Spindle functions

Axes synchronisation

Couplings

Constant velocity of axes pair

Compensation

Spindle pitch correction

Sag compensation

Temperature compensation

Open architecture

Integration of technical know-how
(for example, DLL)

Diagnostic functions

Remote diagnostics / email

(NAT protocol prerequisite: BWO WINBV)

Option packages Premium ○

Spindle functions

Axes synchronisation

Interpolation

Akima-spline

Polynom-interpolation

Couplings

Synchronous spindle

Constant velocity of axes pair

Electronic gear

Transformation

Coordinate transformation and oblique
machining

Robot transformation tool / workpiece
oriented

Polar transformation TCP

Tool-oriented RTCP

Jointed-arm robot

Programming

Jointed-arm robot programmable
according to DIN 66025 or in high level
language

Communication

Data transfer JOB editing via

BWO SERVER

Drip-feed (Block by block transfer of the
NC program via BWO SERVER)

Compensation

Spindle pitch correction

Sag compensation

Temperature compensation

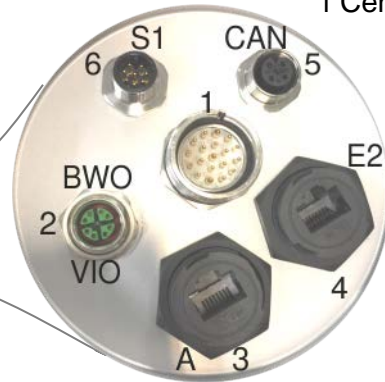
Diagnostic functions

Remote diagnostics / email

(NAT protocol prerequisite: BWO WINBV)

BWO VEKTOR

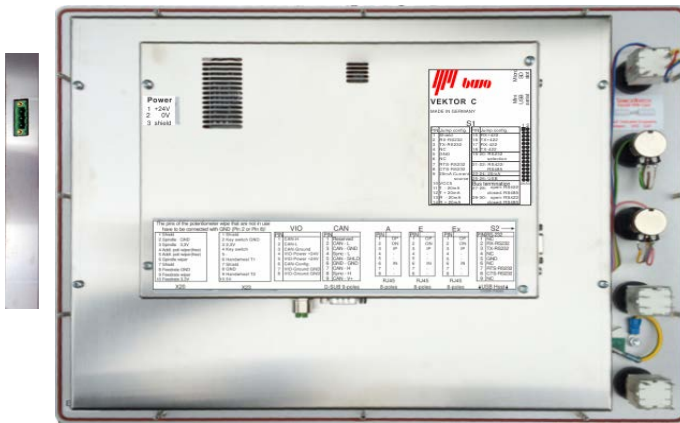
BWO/VEKTOR CT (In the housing)



Connection VEKTOR CT

- 1 Central supply cable, 19pol.
- 2 BWO VIO
- 3 Drive interface (RJ45)
- 4 Network (RJ45)
- 5 CAN (Phoenix Contact)
- 6 Universal serial interface

BWO/VEKTOR C (For control cabinet installation)



- SD Slot
- Mini USB serial
- S1 Universal interface serial
VEKTOR C: Possible adapters, (optional):
RS232, RS422, RS485, 20mA
- S2 serial Interface RS232



- x20
- x23
- BWO VIO
- CAN
- A
- E
- Ex
- USB Host
- Network (RJ45) expansion for central units
- Network (RJ45)
- Drive interface (RJ45)
- CAN bus connection
- Connection of the BWO VIO modules (VEKTOR I / O)
- Connection for illuminated pushbutton, emergency stop and other customer requirements

BWO/VEKTOR C/CT

Controller with the following features:

- Stand-alone device in housing (CT)
or
- Control cabinet installation (C)
- LCD- screen TFT 15 inch
- Resolution 1024 x 768
- Multi-Touch-Screen (capacitively)
- FPGA based multi-core processor
- RAM memory DDR SDRAM 1 GB
- Flash-memory 512 MB
for operating system and user interface

- 8 funktion keys
of which are 2 buttons freely assignable
- Virtual PLC keys with Display on the LCD
screen
- Operating voltage 24V
- Leistungsaufnahme 24W
- NC retentive memory
- no batteries
- Fanless
- Operating temperature: 0 - 55°C
- Size

VEKTOR C/CT	w x h mm	440 x 340
VEKTOR C	d mm	52
VEKTOR CT	d mm	80

- Weight
- VEKTOR C 4,20 kg
- VEKTOR CT 7,10 kg

Interfaces VEKTOR C/CT

- 1 Micro SD card slot (VEKTOR C)
- 1 Ethernet 100 Mbit for axis control
(PNGate®, Sercos III®, EtherCAT®)
- 1 Ethernet 1000 Mbit
- 1 Port USB 2.0
- 1 VIO BUS
for BWO/VEKTOR I/O
- 1 CANopen® / DeviceNet®
for CANopen drives
for I/O Fieldbus according to CANopen
specification

- S1 VECTOR C: Possible adapters, (optional):
RS232 BWO article no. 801204
RS422 BWO article no. 801203
RS485 BWO article no. 801206
20mA BWO article no. 801205

Standard operator elements VEKTOR C

- 1 Key switch
- 2 Potentiometer
- 1 Illuminated pushbutton
- 1 Emergency stop button

Standard operator elements VEKTOR CT

- 1 Key switch
- 2 Potentiometer
- 2 Illuminated pushbutton
- 1 Emergency stop button

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