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The AXS-V-03RS firmware implements the functionality provided by the hardware configuration of power section and control section. Moreover, other functions may be activated after the Productivity package has been enabled.

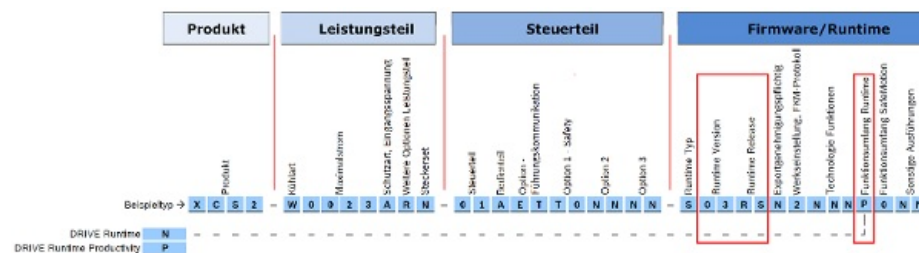


Fig. 10: Selecting the Productivity package in the type code using the example of XCS

See also ↘ “Productivity package ”

Communication

Communication, functions for AXS-V-0314

Function	Standard (N)	Productivity package (P)
Industrial Ethernet		
↘ Sercos®	yes	
↘ PROFINET®	yes	
↘ EtherCAT® (SoE)	yes	
EtherCAT® (CoE)	yes	
↘ ctrlX DRIVE clock rates	↘ see	
↘ Profiles		
FSP Drive	yes	
Servodrive profile	yes	
CiA402 and CiA301	yes	

	↘ Analog profile	yes
Industrial Ethernet additional functions	↘ Configurable signal control word	yes
	↘ Configurable signal status word	yes
	↘ Multiplex channel	yes
Engineering / diagnostic interfaces	↘ TCP/IP communication	yes
	↘ S/IP protocol	yes
	↘ Open Core Interface	yes ¹⁾
	Ethernet over EtherCAT (EoE)	yes
	File over EtherCAT (FoE)	yes
	DRIVElink	↘ “ctrIX DRIVE ^{link} ”

Legend:

1) The "Control drive" function is not part of the standard package. It is only available in the Productivity package.

Motor control

Motor control, functions for AXS-V-0314

Function		Standard (N)	Productivity package (P)
Motor principles	Rotary synchronous motors (external magnets = SPMSM)	yes	
	Rotary synchronous motors (internal magnets = IPMSM)	yes	
	Rotary asynchronous motors (ASM)	yes	
↘ Rexroth motors	↘ Supported motors and motor encoders	yes	
Supported third-party motors	↘ Supported motors and motor encoders	yes	

↳ Motor control	PWM frequency (kHz)	16, 8, 4	
	Motor control frequency > 599Hz	no	
	V/Hz (U/f) control	yes	
	Field-oriented control (with encoder)	yes	
	Field weakening for synchronous motors	yes	
	SVC (Sensorless Vector Control) for asynchronous motors	yes	
	SVC (Sensorless Vector Control) for synchronous motors	yes	
	↳ Automatic setting of motor control	yes	
	PWM switching depending on velocity	yes	
	Advanced PWM switching (frequency halving in standstill range, load-dependent and master-side switching)		yes
	Rms value generator	yes	
Motor holding brake	Motor holding brake with brake current monitoring (ECO)		yes
	Motor holding brake with brake current monitoring	yes	
	Short circuit relay replacing the brake	yes	
Commutation for synchronous motors (↳ Commutation setting)	Measuring method (for linear motors only)	yes	
	Saturation method	yes	
	Sine-wave method	yes	
	Orientation method	yes	

Axis control

Axis control, functions for AXS-V-0314

Function	Standard (N)	Productivity package (P)
Axis control		
↳ ctrlIX DRIVE clock rates	yes	
Automatic setting of axis control	yes	
Positive stop drive procedure	yes	
Measuring wheel mode		yes
Parking axis	yes	
Limitations		
Dynamic current limitation	yes	
Torque/force limitation	yes	
Velocity limitation	yes	
Position limit values	yes	
Travel range limit switch	yes	
Compensation functions/corrections		
Precision axis error correction		yes
Reversal clearance compensation		yes
Friction torque correction		yes
Compensating the load due to weight	yes	
Automatically compensating the load due to weight		yes
Temperature error correction		yes
Correction of torque/force constant	yes	
Quadrant error correction		yes
Cogging torque compensation		yes
Adaptive velocity control loop gain		yes

Hybrid velocity control (velocity mixing)		yes
Hybrid position control		yes
External torque/force feedforward		yes
Velocity control with reference model		yes
Velocity control loop filter	yes (E3)	yes (>3)
Anti-vibration filter		yes

Power supply

Power supply, functions for AXS-V-0314

Function	Standard (N)	Productivity package (P)
↳ Power supply <ul style="list-style-type: none"> ↳ Basic function of supply unit ↳ Device group 	yes	
Supply unit without active master communication	yes	
Braking resistor	yes	
Internal DC bus short circuit in case the 24V voltage fails		yes
Braking resistor to generate process heat		yes
Automatic identification of the mains choke and of the DC bus capacitor	yes	
Monitoring mains choke and DC bus capacitor	yes	
Power and energy measurement	yes	
Automatic mains synchronization	yes	
DC bus discharge	yes	
Reactive power compensation	yes ¹⁾	

	One-phase/two-phase operation (for feeding devices)	yes	
DC/DC converter	Load-dependent PWM frequency switching controlled by control unit		yes
	↳ DC control	yes	
	↳ DC voltage control	yes	
	Soft start	yes	
Island grid mode¹⁾	Island grid mode, closed-loop controlled		yes
	Island grid mode, open-loop controlled		yes
	Dynamic switching from mains operation to island grid mode		yes
	Synchronization to mains		yes
	Mains transformer		yes
	Voltage synchronization via characteristic curves		yes
	Black start		yes

Legend:

1) only possible with XVR

Encoder and mechanics

Encoder and mechanics, functions for AXS-V-0314

Function	Standard (N)	Productivity package (P)
Analog encoders	↳ Resolvers	yes
	Sin/cos encoder (1Vpp)	yes: safe
Digital encoders	↳ Acuro®link	yes: safe
	↳ ctrlX SENSEmotor	yes

	↳ EnDat 2.2	yes: safe
	↳ SSI interface	yes
Combined encoders (analog/digitally combined)	↳ HIPERFACE®	yes: safe
↳ Establishing the position data reference	Drive-controlled homing procedure	yes
	NC-controlled homing procedure	yes
	Set absolute position	yes
	Set/shift coordinate system	yes
Other encoder functions	Number of position encoders that can be evaluated simultaneously "Encoder 2 for position control" absolute encoder evaluation (absolute/modulo) redundant motor encoder measuring encoder	2
	Encoder 2 for position control	yes
	Absolute encoder evaluation (absolute / modulo)	yes
	Redundant motor encoder	yes

Operation modes

Operation modes, functions for AXS-V-0314

Function	Standard (N)	Productivity package (P)
Axis/inverter operation modes		
↳ Torque/force control	yes	
↳ Velocity control	yes	
Cyclic position control	yes	
Drive-internal interpolation	yes	
Drive-controlled positioning	yes	
↳ Modulo processing	yes	

	Positioning block mode		yes
Supply unit operation modes	↳ DC bus voltage control	yes	
	↳ Rectifier mode, load-dependent	yes	
	↳ Mains current control	yes	
DC/DC converter operation modes	↳ DC control	yes	
	↳ DC voltage control	yes	
Error reactions	↳ Torque disable	yes	
	Drive Halt	yes	
	↳ Velocity command value reset (emergency stop)	yes	
	Velocity command value reset with ramp and filter	yes	
	Emergency stop with digital input	yes	
	↳ NC reaction on error	yes	
	↳ Return motion		yes
	↳ NC reaction on error	yes	
	↳ Sensorless deceleration in the case of encoder error		yes

Application profiles and scaling

Application profiles and scaling, functions for AXS-V-0314

Function	Standard (N)	Productivity package (P)
Position, velocity, acceleration and torque/force scaling	yes	
Pressure/flow rate		S
Incremental scaling	yes	

Temperature scaling yes

Profiles ↘ Profile types yes

■ S System extension

Additional Motion functions

Additional Motion functions for AXS-V-0314

Function	Standard (N)	Productivity package (P)
Additional Motion functions	Spindle positioning	yes
	Drive-controlled oscillation	yes
Setting up/optimizing the drive	Easy startup mode	yes
	Command value generator	yes

Safety technology

Bosch Rexroth media directory:

<https://www.boschrexroth.com/mediadirectory> (<https://www.boschrexroth.com/mediadirectory>)

ctrlX AUTOMATION product information:

<https://docs.automation.boschrexroth.com/welcome/>
(<https://docs.automation.boschrexroth.com/welcome/>)

Technology Function

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Device and parameter management

Device and parameter management, functions for AXS-V-0314

Function	Standard (N)	Productivity package (P)
Device and parameter management, general		
↳ Productivity package		yes
Local I/Os	yes	
Local I/Os: Extension with DA option	yes	
Hardware/firmware change identifier	yes	
Passwords	yes	
↳ Firmware replacement	yes	
Parameter properties and handling		
Commands	yes	
Load basic parameters	yes	
Average value filter for display	yes	
Diagnostics		
Diagnostic numbers	yes	
↳ Diagnostic LED	yes	
Operating hours counter	yes	
System time	yes	
↳ Oscilloscope function	yes	
Diagnostic trace	yes	
Offline and simulation		
Simulation mode	yes	

Panel

Panel functions, functions for AXS-V-0314

Function

Panel with USB and display

Languages can be reloaded

QR code with current diagnostics