



直得科技股份有限公司
CHIEFTEK PRECISION Co., LTD.



Will -SERIES

AC Linear Motor Servo Driver

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Will

SERIES

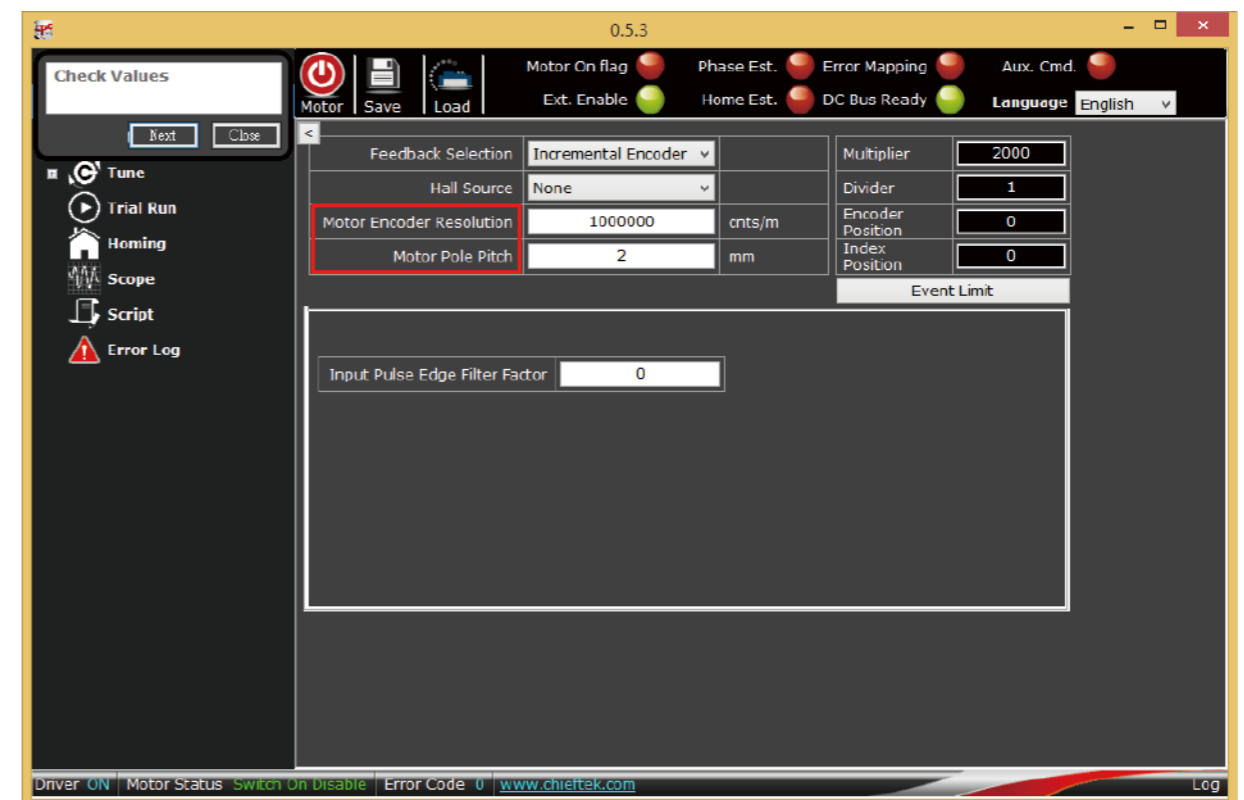
AC Servo Driver



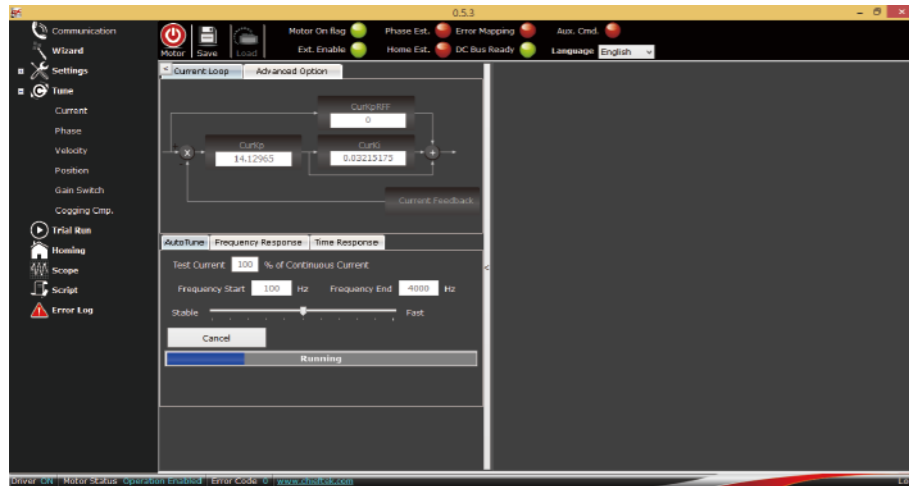
- Auto Tuning
- Auto Phasing
- Filter
- Response Bode plot
- Time response plot

Autotune

Wizard Step by step setup interface



Auto tune



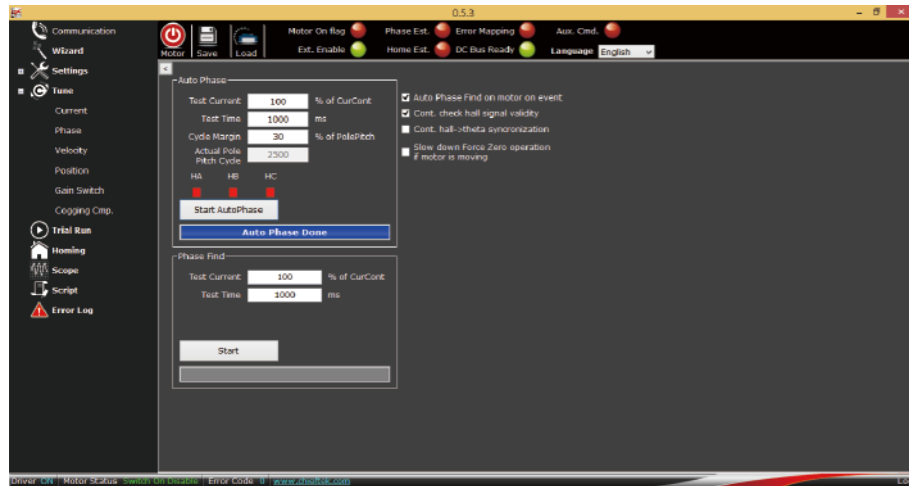
- Auto tuning
- Visualized control loop
- User-friendly interface
- Highly efficient tuning algorithm
- Short tuning time
- Can tune for stable or fast system response

Auto tune(position)



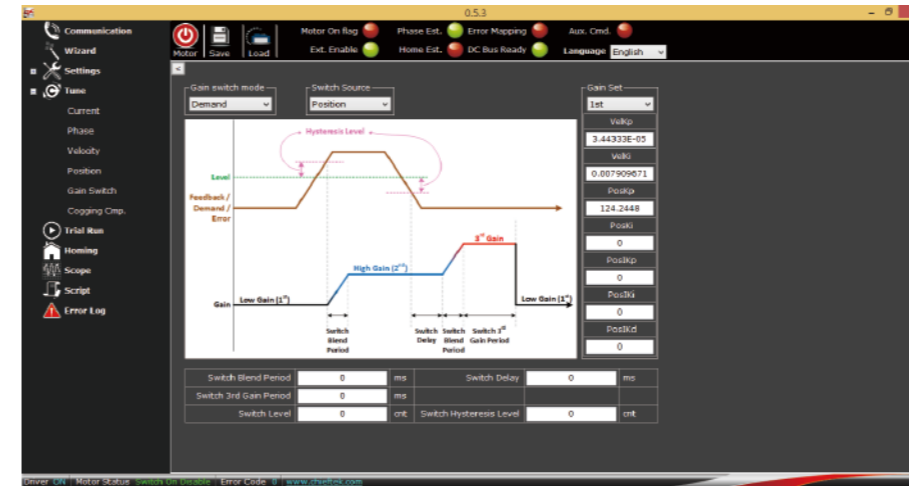
- Fast control loop up to 5k Hz
- Can test 3 groups of gain set
- Feedforward signal path
- Easy to fine tune
- Input response with profile position

Auto phasing



- Auto phasing
- Hall sensor or forcecommutation
- Step by step phasing progress prompt

Gain switch



- 3 groups of position and velocity gains can be switched
- Gain-switch rule: Demand, Feedback, Error, Target, and Digital input
- Easy to fine tune for different application

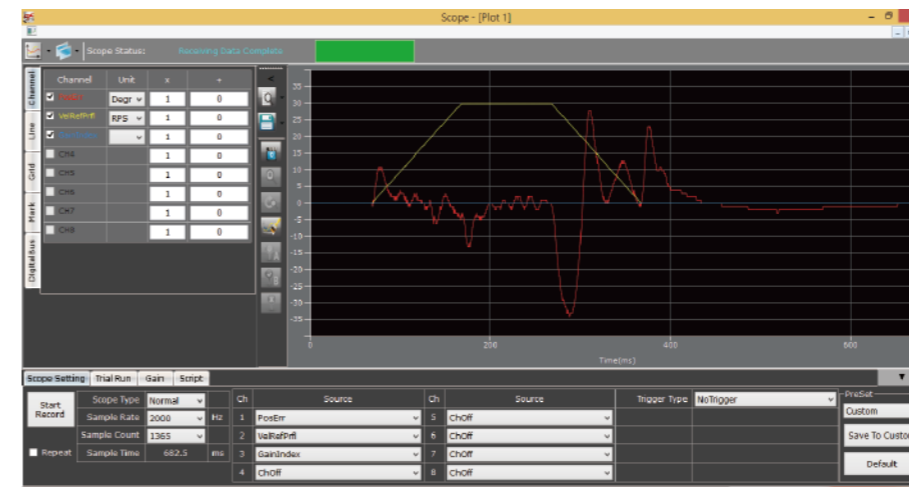
Auto tune(velocity)



- Fast control loop up to 10k Hz
- Can test 3 groups of gain set
- Easy to fine tune
- Feedforward signal path
- Response Bode plot
- Bandwidth label
- Input response test with step/sine/triangle
- 3 filters on force output

Gain switch Test

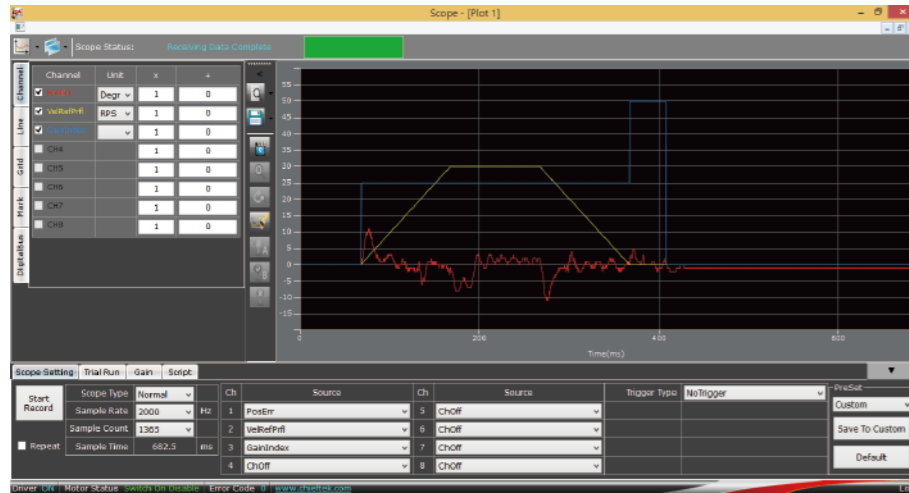
- Distance:0.6m
- Acceleration:3g
- Velocity:3m/s
- Deceleration:3g



- Performance without Gain-switch
- Yellow: velocity profile
- Red: Position Error [+ - 35 count]

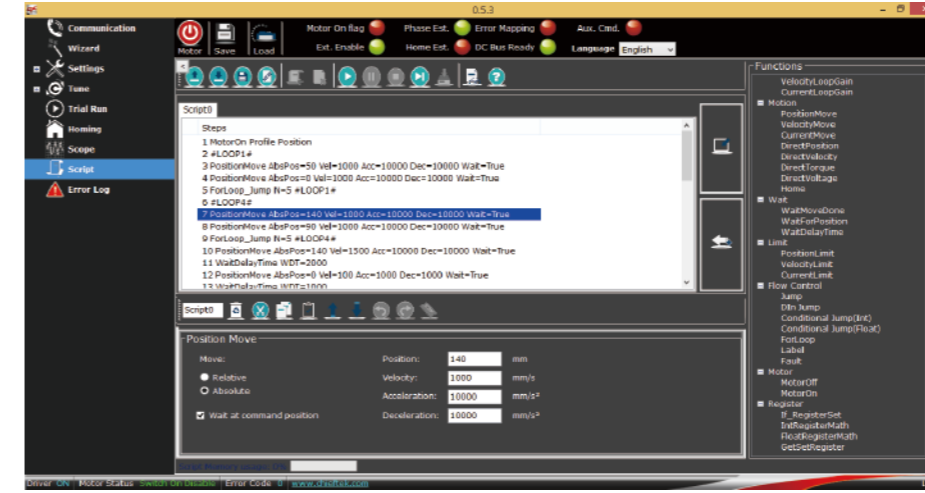
Gain switch Test

- Distance:0.6m
- Acceleration:3g
- Velocity:3m/s
- Deceleration:3g



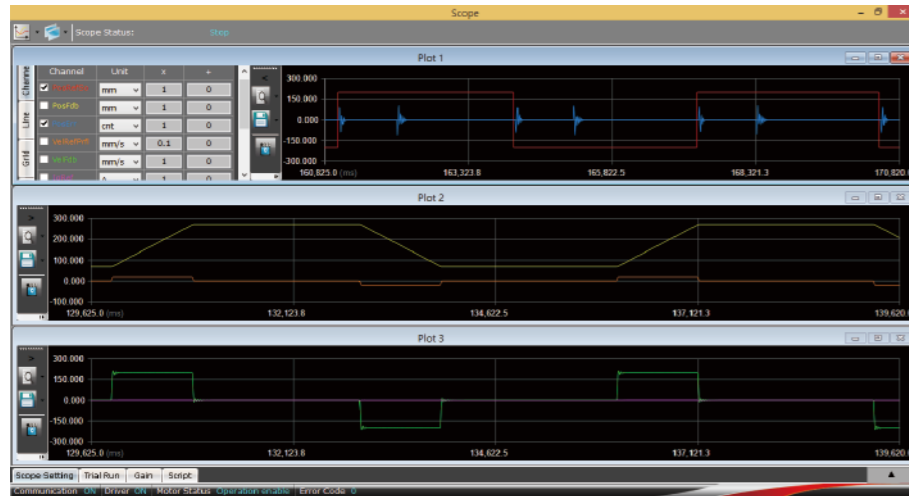
Performance with Gain-switch
 Yellow: velocity profile
 Red: Position Error [± 11 count]

Scripting



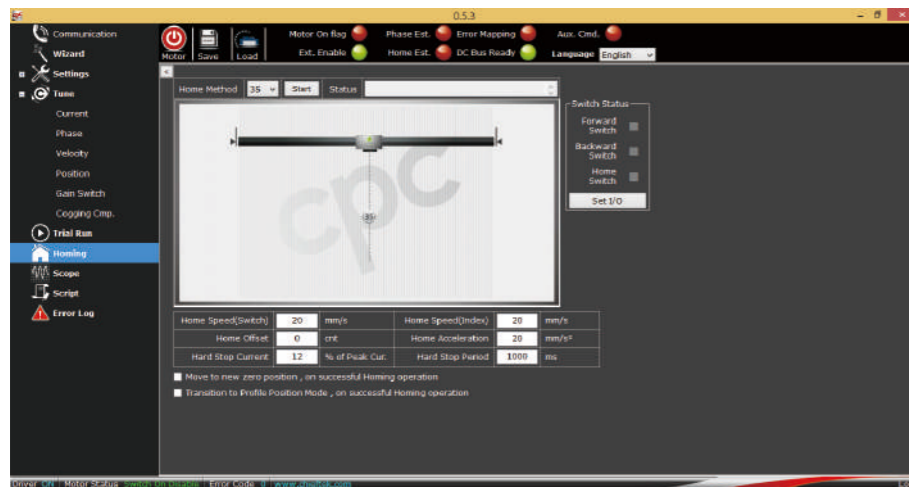
Script could program motor motion with user-friendly interface.

Scope



- Scope provides a real time monitor of driver information.
 - User could inspect motion detail without an oscilloscope.

Homing



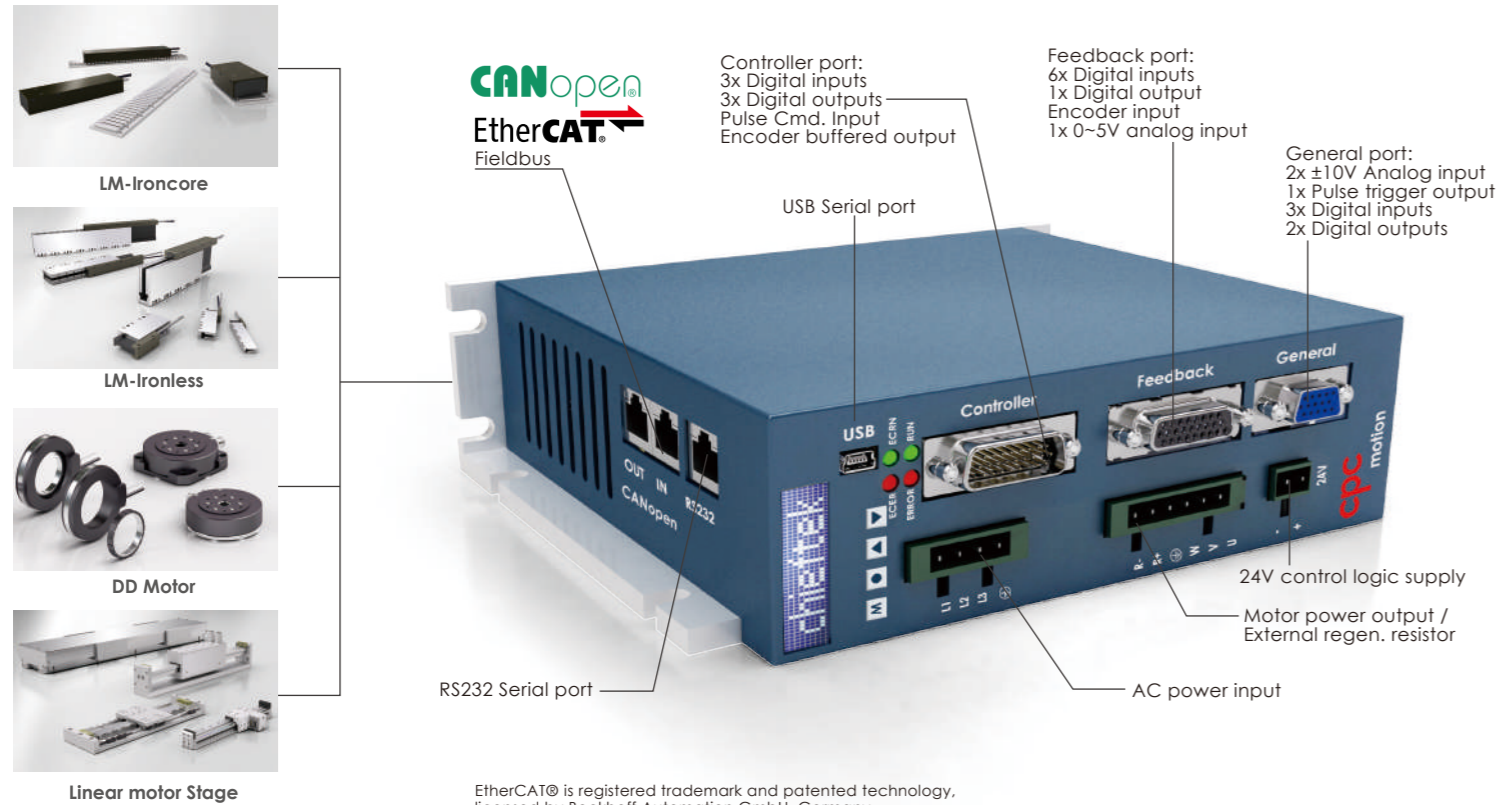
- Setup interface provides 35 kinds of homing methods.
 - Also, the vivid animations explain how a homing method is performed.

Ordering Information

Will1 -	B	9	P	/230 -	H	R	E
							□ : CANopen ^(Note1) E : EtherCAT
							□ : No Resistor ^(Note1) R : Brake Resistor
							□ : No heatsink ^(Note1) H : Passive heatsink F : Heatsink with fan
							AC supply: 230VAC
							□ : Normal P : Extended peak current ^(Note2)
							Continuous current (Amps): 3, 9, 21 (B-type only)
							B: B-type
							Servo Driver

Product Overview

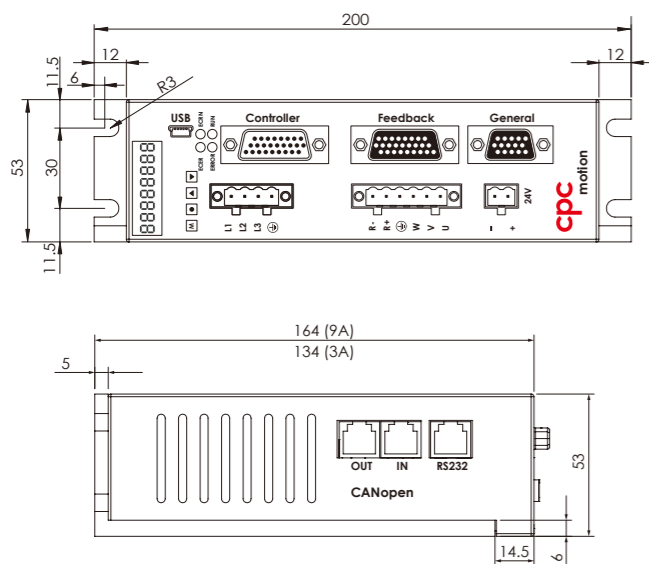
Will1-B



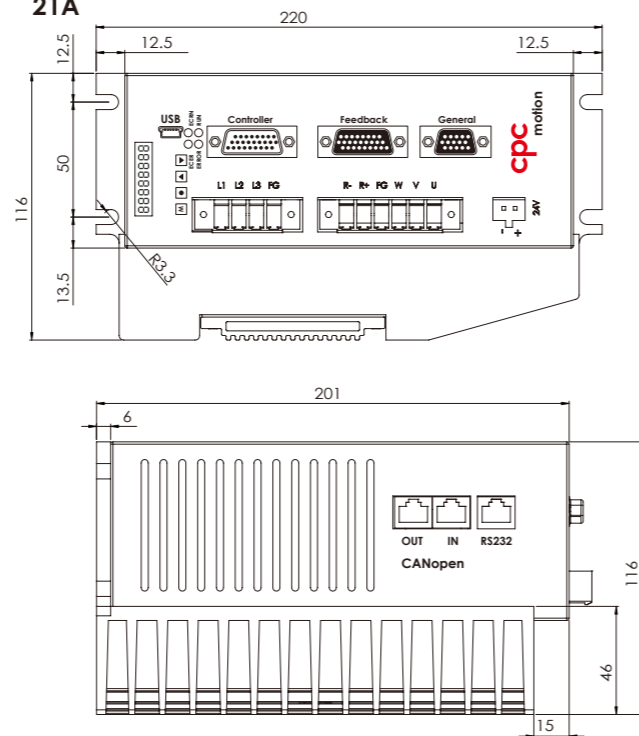
ETHERCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Dimension

3A / 9A



21A



Specification

Model		Will1-B 3/230	Will1-B 3/230-E	Will1-B 9/230	Will1-B 9/230-E	Will1-B 9P/230	Will1-B 9P/230-E	Will1-B 21/230	Will1-B 21/230-E
Input Power	Voltage and Phase	1Φ 230 VAC			3Φ 230 VAC				
	DC Bus Peak Voltage (VDC)	390							
	Frequency (Hz)	50 to 60							
	Power Rating (W)	1125			3375			7875	
Control Logi Power	Voltage Range (VDC)	24 VDC							
	Current (A)	> 0.5							
Peak power output (kW)		1.3	4.4	6.6	13.2				
Peak current output (A)		9	20	30 ^[Note2]	60				
Cont. current output (A)		3	9 ^[Note3]	9 ^[Note3]	21				
Regenerative resistor	Resistance (Ohm)	60 (option)			20				
	Continuous dissipation (Watt)	100 (option)			250				
	Pulse Braking Energy	5000 (option)			12500				
Regenerative resistor switch cont. current (A)		10			20				
Fieldbus (DS402 V3.0)		CANopen	ETHERCAT	CANopen	ETHERCAT	CANopen	ETHERCAT	CANopen	ETHERCAT
DS402 Operation modes		PP, PV, PT, HM, CST, CSV, CSP							
Serial bus		RS232							
Motor type		Linear/Rotary PMSM							
Encoder Input	Digital	Type	A/B Incremental (RS422 signaling)						
		Work Frequency	Max. 20 Mega counts/s						
	Analog (sin / cos)	Count Range	±2 ³¹ counts						
		Amplitude	1V _{P-P}						
Absolute	Work Frequency	100 kHz, 4096 Cnt/Period Interpolation							
	Type	BiSS-C, Tamagawa, EnDat 2.2, SSI							
Feedback position error mapping		Yes							
Current control	Loop Frequency	20 KHz							
	PWM modulation	SVPWM							
	Command input	Serial, Fieldbus, ±10 V Analog, internal software							
Velocity control	Loop Frequency	10 KHz							
	Command input	Serial, Fieldbus, ±10 V Analog, internal software							
	Output filter	x3 (Low-pass or Notch)							
	Counter range	-2, 147, 483, 648 to 2, 147, 483, 647 counts/second							
Position control	Loop Frequency	5 KHz							
	Command input	Pulse command (A/B, Step/Dir, CW/CCW), Serial, Fieldbus, ±10 V Analog, internal software							
	Trajectory generator	Trapezoidal with S-curve filter							
	Counter range	-2, 147, 483, 648 to 2, 147, 483, 647 counts							
Analog Input	Input type	x1 (±10 V differential), x1 (±10 V Single-end)							
	ADC resolution	12 bit							
Pulse command frequency	RS422	Max. 10 MHz							
	5V single-end	Max. 1 MHz							
	24V single-end	Max. 50 KHz							
Total Digital Inputs		x12 (5-24 V)							
Total Digital Outputs (open-collector)		x3 (24V, 400 mA), x3 (24V, 200 mA)							
High speed Position compare output		x1 (RS422)							
Autotuner		Current/Velocity/Position loop gain, motor phasing setup, sin/cos encoder calibration							
Gain switch function		Yes							
Control panel		x1 (8 digit character LCD)				x4 push buttons			
Software protection		Dynamic brake, motor over-current, over/under-position, over-velocity, Virtual/physical position limit switch, missing hall signal, externa fault trigger							
Hardware protection		Drive over-temperature (analog), 5V output short circuit, motor over-temperature (analog)							
Dimensions (LxHxW) (mm)		200 x 134 x 53			200 x 164 x 53 (excluding optional heatsink)			220 x 201 x 116	
Weight (Kg)		1.2			1.6 (excluding optional heatsink)			3.6	
Operating temperature		10-40 °C							

Note 1: Only applicable for the Will1-B series.
 Note 2: Only applicable for the Will1-B series. Current sensor with a wider input range is used at the cost of additional signal noise and reduced resolution. This arrangement is suitable for applications where the motor mostly operates in short, high current bursts.
 Note 3: Additional heatsink required to ensure continuous operation at rated output.