BAUTZ
Hochdynamische, elektromagnetische Antriebe

Compact Stepper Drives
Type 6410 + 6415

- Absolute Positioning or Velocity Mode
- Compact Size
- Operating from 24 – 75 V_{DC}
- Phase Current adjustable from 0,625 up to 5 A_{RMS}
- Microstepping Capability for up to 51200 Steps per Revolution
- Patented Circuit Design for Mid-Range Instability Compensation
- Idle Current Reduction

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Description

The stepper drives 6410 and 6415 are compact microstep power modules for 2-phase stepper motors with various input configurations for the best possible customization to the individual application.

The units are design for back panel mounting, the compact size allows their installation even in restricted mounting locations. Heat can be removed either form the rear of the drive or from the side. Those alternate methods for heat removal increase installation flexibility.

Microstepping
Mircostepping assures smooth operation and optimized system resolution. Resolution with 1,8° motors is adjustable up to 51200 steps per revolution.

4-phase PWM Chopping
A patented 4-phase PWM chopping electronically controls the motor winding currents at 20 kHz. This combines the best of recirculating and non-recirculating current regulation to provide high back EMF rejection with low ripple current. Further benefits are reduced heat dissipation, low electrical noise and improved current control during dynamic braking.

Digital Electronic Damping Circuit
A patented digital electronic damping circuit eliminates mid-range resonance and delivers full torque across the entire speed range. Combined with the 4-phase PWM control this system provides significantly more motor torque than other drives.

Idle current reduction
The idle current reduction permits an automatic 50% reduction of motor current inactive periods to minimize heating during dwell periods. If no step commands haven been received for 0,1 sec (0,05 sec or 1,0 sec, adjustable), the current is automatically reduced. Current is set to full amplitude upon incoming new step commands.

The basic model 6410 is an economical compact stepper drive with step and direction input.
Due to the integrated frequency generator (VCO), the 6415 offers the opportunity to predetermine the motor speed either via ±10V signal or with the built-in multi-turn potentiometer. Two different frequency ranges with up to max. 250 kHz or max. 500 kHz can be selected via jumper. Additionally the motor speed depends upon the adjustable step resolution. Direction is either set through the polarity of the analogue input or through a separate optically isolated direction input. The integrated slow speed function allows to switch from pure speed function into positioning control. Through a step output of the internal frequency converter an additional stepper drive (e.g. 640) can be supplied synchronously .

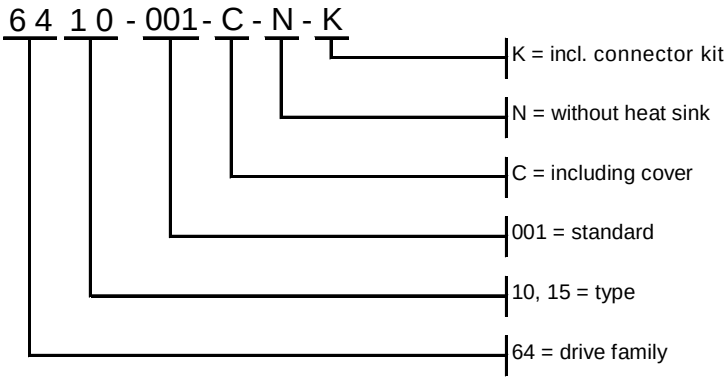
Step Size

Steps		Steps/Resolution (1,8°-Motor)	
decimal	**binary**	**decimal**	**binary**
full	half	200	400
half	¼	400	800
1/5	1/8	1000	1600
1/10	1/16	2000	3200
1/25	1/32	5000	6400
1/50	1/64	10000	12800
1/125	1/128	25000	25600
1/250	1/256	50000	51200

Technical Data

	6410	6415
Supply Voltage Range	24-75 V_{DC}	
Supply Voltage (rated)	70 V_{DC}	
Phase Current	max. 7,1 A adjustable with DIP switch from 0,625 A_{eff} to 5 A_{eff} in 0,625 A steps for 2-phase stepper motor with 4, 6, or 8 leads	
Input Interface	step and direction	±10V or internal potentiometer
Idle Current Reduction	50 % (switchable)	
Step Resolution	full-1/256 steps	
Inputs	de-activation, step and direction	start/stop, enable, ±10V, low speed, direction
Outputs	fault output	step output, VCO monitor, 8V ref. voltage
Ambient Temperature/ Motor Current	0-50°C without heat sink: max 2,5A @ 25°C / 1,25 A @ 45° C with heat sink*: max 5A @ 25°C / 2,5 A @ 45° C	
Chassis Temperature	max. 60°C, forced cooling may be necessary	
Humidity	10-90%, non-condensing	
Resonance Damping	effective during mid-range speed, enabled/disabled with DIP switch max. delay from input step to change in motor excitation: step frequency < 500 Hz full step: 500 µs step frequency > 500 Hz full step: 270° of step period	
Connectors	power supply: 3 contact plug-in screw terminal motor: 5 contact plug-in screw terminal	
	signal: 9 socket D-sub miniature	Logik: 25 socket D-sub miniature
Acceleration Ramp	-	0,4 ms – 0,4 s (exponential)
Deceleration Ramp	-	6,0 ms – 1,4 s (linear)
Frequency Range 1	-	run speed 8 – 500 kHz low speed 8 – 370 kHz
Frequency Range 2	-	run speed 4 – 250 kHz low speed 4 – 180 kHz

Order Code



* heat sink optional, order code HS6410

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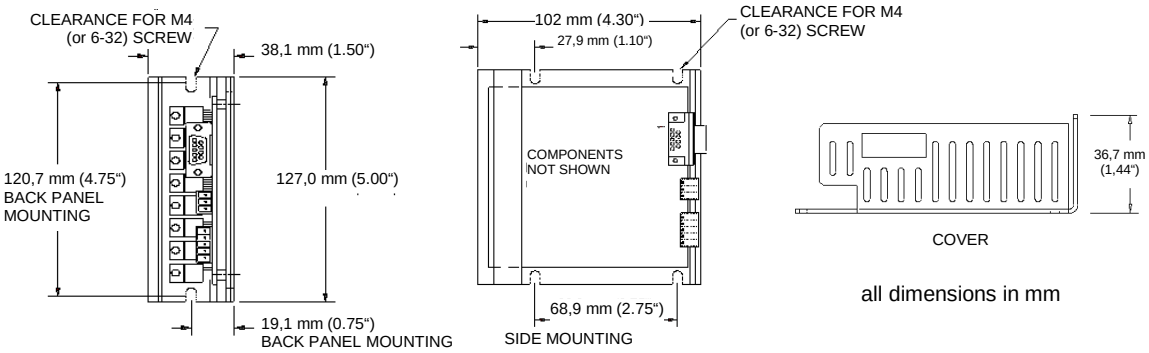
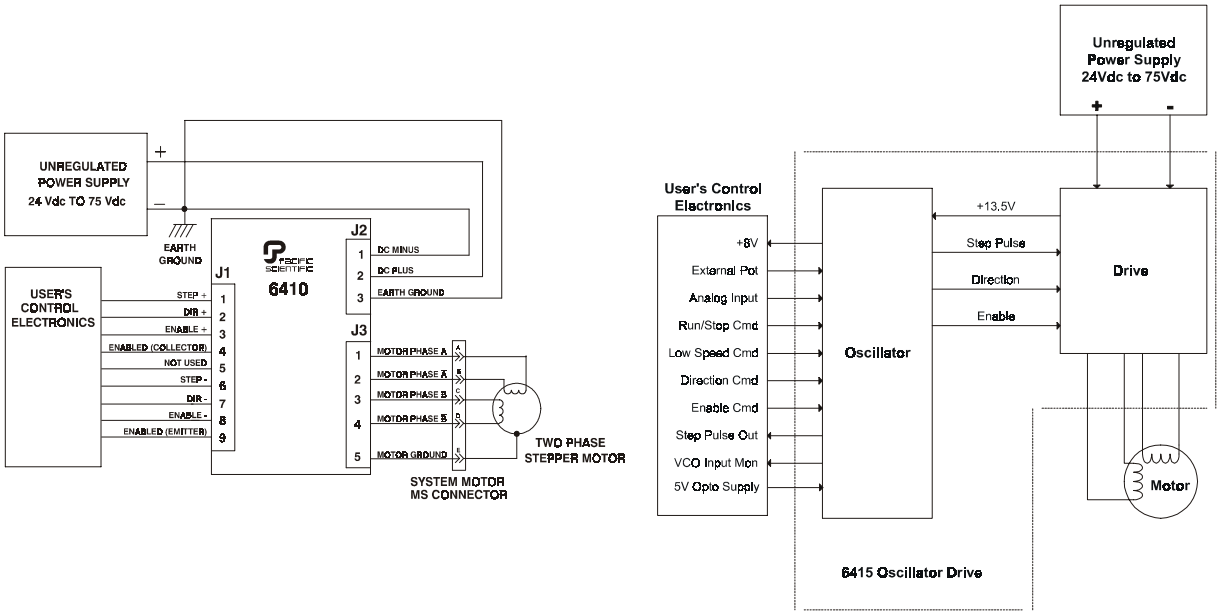
Dimensions

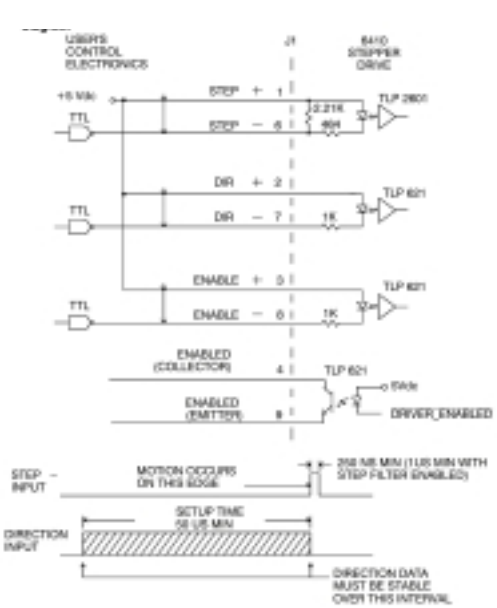


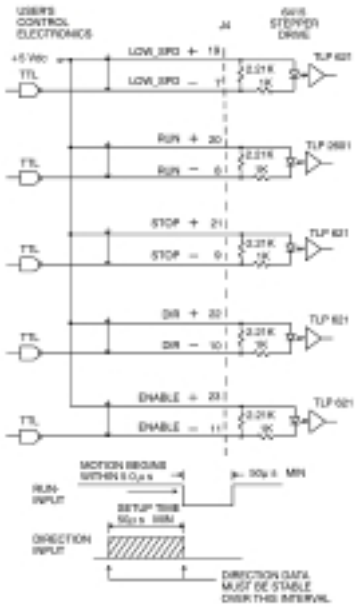
all dimensions in mm

Connections



Interfaces





subject to change without notice

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