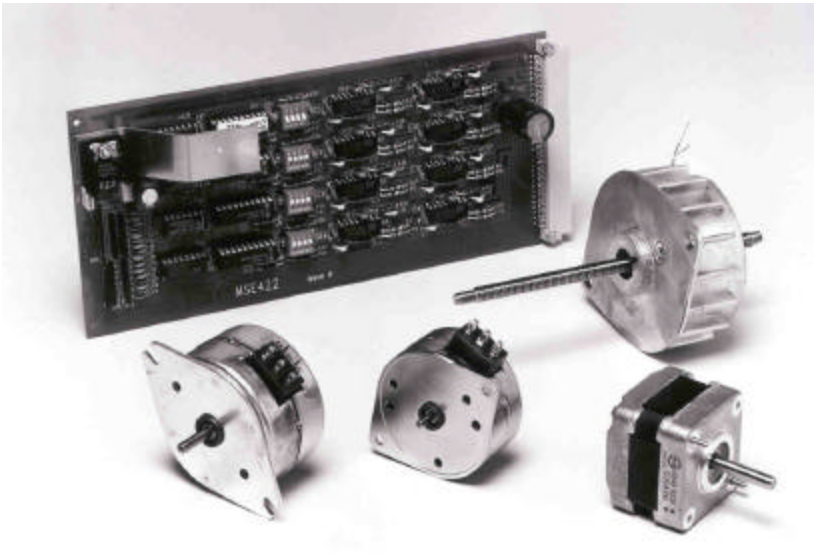
4 axis *digitran* bi-polar instrument motor drive MSE422C



control features

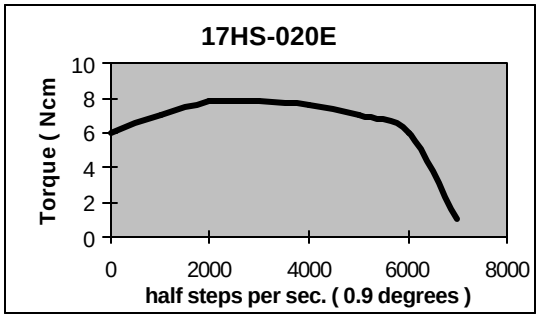
This 4 axis compact chopped constant current bi-polar drive conforms to the international extended 3U eurocard standard. It is ideally suited for use with the range of permanent magnet and 17HS series hybrid instrument motors together with the NEMA size 23 HS series hybrid stepper motors with current ratings up to 1.5 amps per phase. The ability to operate with rail voltages up to 30 Vdc provides excellent high speed performance with a choice of full step or half step phase control when improved low speed and mid range stability is achieved. The design which provides fully **independent control of 4 motors** on a single eurocard is therefore ideally suited for use in instrumentation and scientific apparatus requiring a multiple axis drive capability.

Matching motors to the **digitran** drive is simplified by the provision of a 4 position DIL switch to enable motor phase current to be set between 80 & 600 milli amps per phase. An external contact closure enables reduced current for operating the motor in a stationary condition thereby minimising motor temperature rise and system power consumption. Additionally, a 10 K Ohm potentiometer may be used to provide proportional control of motor current thereby providing the exact current setting required to suit the motor operating condition.

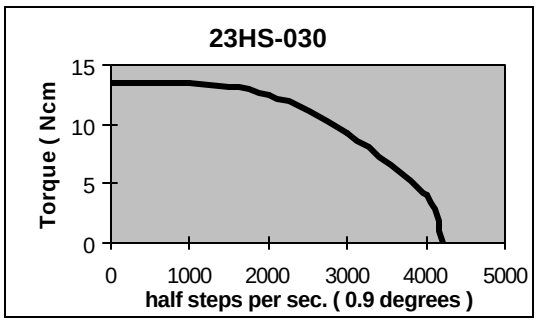
The units are controlled by clock pulses and direction signals which may either be CMOS compatible for maximum noise immunity or of the TTL open collector type.
A range of EM170 & PM 170 series 24Vdc power supply modules have been developed for use with the **MSE & PM422C digitran** drive providing a choice of power ratings sufficient for up to 24 motor axes, depending on the individual current setting for each motor.

PM 170 series power supplies are 19in x 3U high eurorack mounted units with sufficient space to fit either six **digitran** drives, providing drive for 24 motors, or an eight axis control system utilising two **digitran** PM422C drives & a PM381 based multiplexed 8 axis **digistep** controller. Control systems based on the PM422C drive therefore offer an excellent combination of performance in a compact rack mounting system.

typical performance



Single winding 0.6 amps per phase

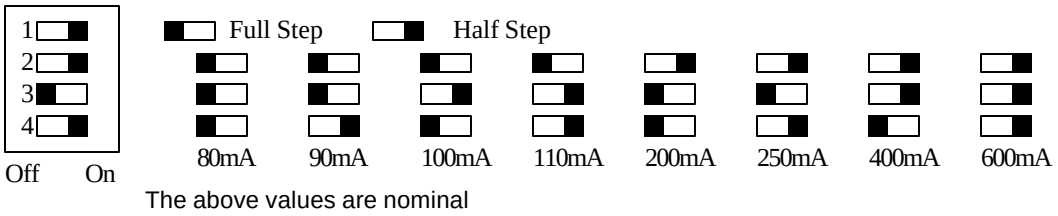


Coils in series 0.6 amps per phase

Current settings using MSE 422 drive

For each axis a 4 position DIL switch is provided to set up the drive parameters. These switches are positioned as shown below: Element 1 of each switch sets the step size while the remaining positions set the phase current. Alternatively, the phase current is set by an external potentiometer

on-board switch for current setting & step size



The above values are nominal

specification

Type without front panel Type with front panel		**MSE 422C** **PM 422C**	**notes**
motor supply	Vdc	10 - 30	Max ripple 3 V peak/peak @ pins 1a,1b & 2a.2b
Max. input current	amps	4	depending on output setting
ground		0 V	@ pins 31a,31b & 32a,32b
dimensions			
height	mm	100	fits 3U high euro-rack
width	mm	50	PM versions use 7E panel
length	mm	220	international standard
output stage		Chopped constant current	
phase control		Bi-polar	
output current per phase	amps	0.08 - 0.6	
number of drive axes		4	
phase current selection	method	on board DIL switches see above	alternative control via 10K potentiometer per axis
Full step /.half step selection		on board DIL switches	see above
external clock	CLOCK	'1' to '0' state signal	see chart below
clockwise motor rotation	DIR	'1' state signal	see chart below
counter clockwise rotation	DIR	'0' state signal	see chart below
motor current off	MIOFF	'0'state signal or ground	see chart below
20% standby current signal	PWRD	'0' state signal or ground	see chart below
external current control	XC 2	proportional to 10K potentiometer wiper signal	0-560 milli amps see chart below
potentiometer excitation	XC 1	output reference for each axis	see chart below
potentiometer connected	between	XC1 & 0v	see chart below

motor connections	**axis 1**	**axis 2**	**axis 3**	**axis 4**
phase 1	pins 3a & 3b	7a & 7b	11a & 11b	15a & 15b
phase 1'	4a & 4b	8a & 8b	12a & 12b	16a & 16b
phase 2	5a & 5b	9a & 9b	13a & 13b	17a & 17b
phase 2'	6a & 6b	10a & 10b	14a & 14b	18a & 18b
control inputs				
CLOCK	19a	22a	25a	28a
DIR	19b	22b	25b	28b
PWRD	20a	23a	26a	29a
MIOFF	20b	23b	26b	29b
external current control				
XC1	21a	24a	27a	30a
XC2	21b	24b	27b	30b