



- **No front panel setup required**
- **Limit Switch & Motor Interlock systems**
- **Slew function permits high speed 'Go To'**
- **LED's provide "at a glance" information**
- **RS232 communications standard**
- **USB adapter included**
- **Homing function with LED indicator**
- **Universal Power Input**

## MODEL 789A-4 SCAN CONTROL

The Model 789A-4 scan controller is a high resolution stepper system for control and drive of McPherson spectrometers. Easy to program and operate, this scanning system precisely positions gratings or other devices requiring accurate control.

Simple scanning! The 789A-4 drive controller includes auto-direction setup. Just connect it to a suitably equipped monochromator; There are fault indicator lights if there is a problem with drive circuitry. A complete list of ASCII commands appear on the reverse side of this data sheet. Example programs are available upon request. National Instruments LabView™ software drivers are available for download.

When ordered with a system, the Model 789A-4 comes complete with stepper motor to fit McPherson monochromators or sampling accessories. The cables for limit switches, motor, RS232 communications (with a USB adapter), and power input are included.

If ordered as a retrofit for an existing monochromator an internal switch for motor direction is provided. Indicate the model and serial number of the instrument.

McPherson Spectrometer Control Software is available, please inquire.

Specifications	
AC Input	90-240 VAC 29 Watts
Line Frequency	50/60 Hz
Motors Controlled	1
Motor Type	NEMA Size 23 2 Phase Bipolar, Low Inductance
Motor Inductance	0.2 to 80 mH
Motor Resolution	200 to 50,800steps/revolution; factory set to 36,000steps/revolution
Standard Motor Current	2.5 Amperes
Maximum Velocity	100 RPM @ 36,000 steps/revolution
Protective Circuits	Short Circuit, Under Voltage, Over Temperature, Motor Interlock, Automatic Direction Detection on Selected Monochromators
Panel Indicator LEDs	High/Low Limits, Home, Scan Status, and Fault
Rear Panel Connectors	Power, Motor, Auxiliary (Limits), RS232
Remote Control	RS232 – 9600 Baud (USB adapter included)
Line Fuse	2A/120 VAC or 1A/240 VAC
Operating Temperature	0 to 50°C
Storage Temperature	-40°C to +85°C
Dimensions (Inches)	8.38 W X 5.20 H X 12.00 D
Weight	5.5 lbs (2.5 Kg)
Optional Mounting	Rack Mounting Kit (Consult Factory)
Optional Motors	NEMA Size 17, 34, 2 Phase Bipolar (Consult Factory)
Optional Motor Current	Up to 4.8 Amperes Peak (Consult Factory)

## Command Summary

Command			Description	Result(s)
ASCII	DECIMAL	HEX		
[SPACE]	32	20	Initialize	Enables communication with scan controller
[CR]	13	0D	Carriage Return	This command must follow all commands entered
@	64	40	Soft Stop	Causes deceleration to a stop
A0	6548	4130	Set Home Switch "OFF"	Disables Home Switch for normal scanning
A8	6556	4138	Set Home Switch "ON"	Enables Home Switch
A24	655052	413234	Enable Homing Circuit	Enables Homing Circuit. Must be entered prior to "F" command
^C	3	03	Reset	(1) Stops motion. (2) Sets counter to "0" (3) Assumes "Idle" state
C1	67	43	Clear	Erases pre-programmed parameters
F1000,0	70494848484448	46313030302C30	Find Home	Searches for transition of home switch at 1000 pps
G	103	67	Run Internal Program	Executes a program stored in non-volatile memory
I	73	49	Starting Velocity	Starting and stopping speed of scan
K	75	4B	Ramp Slope	Acceleration /deceleration factor.
P	80	50	Enter & Exit Program Mode	Entering P0 through P1000 sets the 789A-3 into internal program mode
S	83	53	Save	Stores parameters to non-volatile memory
V	86	56	Scanning Velocity	Sets scan speed in steps per second. Range = 36 sps to 60000 sps
X	88	58	Examine Parameters	Sends values of "K", "I", and "V" parameters
]	93	5D	Read Limit Switch Status	0 = No limit encountered; 32 = Home Limit Encountered; 64 = High limit encountered; 128 = Low limit encountered.
+	43	2B	Index Scan in "Up" Direction	+36000 = Scan 36000 steps in upward direction
-	45	2D	Index Scan in "Down" Direction	-36000 = Scan 36000 steps in downward direction
^	94	5E	Read Moving Status	0 = No motion detected. 1 = Moving 2 = High in constant velocity. 16 = Slewing - Ramping complete.

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