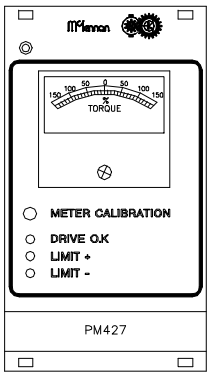
PM427 Data Sheet



The PM427 is a multi-function unit. Its main function is as a diagnostics panel unit, with LED's to show the state of the amplifier and the hard limits. It has a torque meter buffer that will use an amplifiers motor current output to be displayed on a centre zero analogue meter.

The unit will also act as an encoder buffer, receiving differential encoder signals and buffering these to three types of output; differential, open collector and TTL.

Its third function is to handle datum functions. Differential encoder index mark signals are summed with either TTL or opto-isolated auxiliary inputs and the result is output as open collector, 24V buffered signal (for opto-isolators) and a stretched open collector output that may be used for an LED so that even the smallest pulse will be seen.

Connection information

Power Supply connections.

1-2a&b	+VLL	Logic Supply
4-5a&b	+5V	Output - Very little current available
29-32a&b	0VLL	Logic Supply 0V

Torque Meter connections.

7a	TRQ-MTR+	Torque meter input.
7b	TRQ-MTR-	Torque meter 0V.

Diagnostic LED connections. These LED's can be driven by either +24V or +5V sources.

8a	+24V-DRV-OK	+24V 'DRIVE OK' LED source (anode)
8b	+5V-DRV-OK	+5V 'DRIVE OK' LED source (anode)
9a&b	0V-DRV-OK	0V for 'DRIVE OK' LED (cathode)
10a	+24V-HL+	+24V 'LIMIT+' LED source (anode)
10b	+5V-HL+	+5V 'LIMIT+' LED source (anode)
11a&b	0V-HL+	0V for 'LIMIT+' LED (cathode)
12a	+24V-HL-	+24V 'LIMIT-' LED source (anode)
12b	+5V-HL-	+5V 'LIMIT-' LED source (anode)
13a&b	0V-HL-	0V for 'LIMIT-' LED (cathode)
14a	+24V-DATUM	+24V 'DATUM' LED source (anode)
14b	+5V-DATUM	+5V 'DATUM' LED source (anode)
15a&b	0V-DATUM	0V for 'DATUM' LED (cathode)

Inverter connections. An uncommitted inverter.

16a	INV-in	Inverter input (pulled up to +5V)
16b	INV-out	Inverter output (TTL)

Encoder Input connections.

17a	Ain+	A channel non inverted complementary input.
17b	Ain-	A channel inverted complementary input.
18a	Bin+	B channel non inverted complementary input.
18b	Bin-	B channel inverted complementary input.
19a	Iin+	Index mark channel non inverted complementary input.
19b	Iin-	Index mark channel inverted complementary input.

Encoder Output connections.

22a	Aout+	A channel non inverted complementary output.
22b	Aout-	A channel inverted complementary output.
23a	Bout+	B channel non inverted complementary output.
23b	Bout-	B channel inverted complementary output.
25a	OC-Aout	A channel open collector output.
25b	OC-Bout	B channel open collector output.
26a	TTL-Aout	A channel TTL output.
26b	TTL-Bout	B channel TTL output.

Auxiliary Datum / Index input connections.

20a&b	TTL-Ix	TTL aux index input. Must be high (pulled up on board) to allow index to occur. Pulling this input low will inhibit index outputs.
21a	+24V-Ix	Opto-isolated aux index input. Applying 24V across these pins
21b	0v-Ix	will inhibit the index outputs.

Datum / Index output connections.

24a	Iout+	Index mark channel non inverted complementary output.
24b	Iout-	Index mark channel inverted complementary output.
27a	+24V-Iout	Index output for opto-isolators. This output is at +VLL and will fall to 0V when the index pulse occurs.
27b	OC-Iout	Open collector index output. This output is pulled to 0V when the index pulse occurs.
28a	Stretched Iout	This open collector output is pulled to 0V when the index pulse occurs and is held down for approx 40mS after the index has been removed. This output may be fed to the 0V-Datum input to indicate on the front panel when the index point has been crossed, and ensures that it long enough to be visible.

Calibrating the Torque Meter

The torque meter is mounted on the front panel of the PM427. It has a scale of -150% to 150% of the nominal torque of the motor, with a centre (upward) position of zero.

The zero (centre) position may be corrected if necessary by the adjusting screw within the facia of the meter (with the system power off).

The scaling of the meter may be adjusted by the METER CALIBRATION pot accessible through a hole in the front panel.

This can be done by substituting a dummy load for the motor (e.g. a stepper motor of a suitable current rating) and applying enough drive to make the amplifier fold back to its nominal current rating. If using a PM304 system this may be achieved by a move that will not cause a tracking error (i.e. less than the tracking window), but is of suitable magnitude that with the K constants used, will apply full drive. As the stepper motor will not move anywhere, you could use KP=1000, TR=4000 and a move of MR2000. The calibration pot may then be adjusted to show 100%. **DO NOT** forget to change the K constants back to safe values before re-using the dc motor.