

The PK Series

A Complete Self-Contained DTMF Encoder Assembly

PK-1K 12-Key DTMF Encoder w/Relay

PK-2K 16-Key DTMF Encoder w/Relay

The PK Series is a new design for the demanding Land Mobile Industry — an industry where a contact failure can be catastrophic. Over the years, Pipo has developed the most reliable contact system available to tolerate high and low temperature extremes over a prolonged period of cycling. These quality units are the first of their kind to feature **waterproof and dustproof sealed gold dome contacts and steel keys**. Rubber keys could never meet these demands. Operable from 4.5 to 60 VDC at temperatures from -22° to $+160^{\circ}$ F. Output Level will drive any transmitter or system and is adjustable by an extremely stable multiturn trimpot, with access from the **front** of the Encoder.

The K-Series option has a built-in keying circuit to automatically key a transmitter or other system. The keying circuit uses a S.P.S.T. Relay sealed in gas with a 3 watt contact rating (110 ma @28 VDC-resistive). The relay contacts close when any key of the Encoder is pressed, and remain closed for 0 to 3 seconds after any

key is released. The relay contact-opening delay time of the K Series Encoder is factory set at approximately 2 seconds, but the delay time can be easily adjusted from the back of the Encoder via the small trimpot. The K Series offers improved convenience and ease of operation.

The M-Series option is a special Encoder package for mounting any PK-1, PK-1K Pipo Encoder to surfaces that are inaccessible from the rear, such as walls, mobiles, dashboards, panels, systems interface and test equipment. The M-Series option consists of a detached frame which is secured to the mounting surface. The Encoder body is then press-fit into the frame.

Pipo Encoders are Rugged & Reliable

Pipo Communications is in the business of manufacturing Touch-Tone Encoders of premium quality. Encoders are increasingly being used in critical situations such as emergency communications, military, RCC's, industrial installations and others where, we believe, encoder failure cannot be tolerated.

WORKMANSHIP is superior and QUALITY CONTROL is rigid.

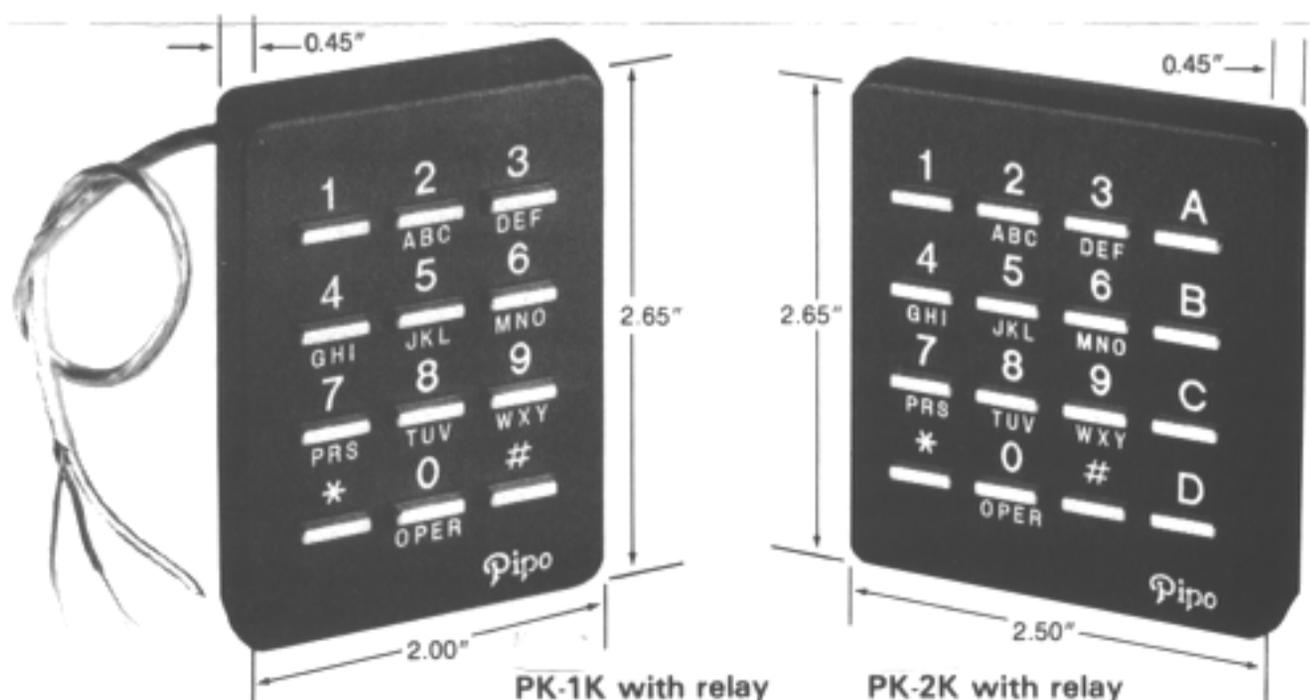
Every encoder that Pipo manufactures will perform flawlessly when installed and for many years in the future.

SAME DAY SERVICE. Normally our units are delivered straight from stock and sent the same day you order. Orders of one to five units are shipped UPS 2nd Prepaid.

Specification Sheet

PK-1K

PK-2K
M-SERIES



Mail
Order
To:

Pipo Communications
Emphasis is on Quality & Reliability

PIPO COMMUNICATIONS
1516 CASSIL PLACE
HOLLYWOOD-CALIFORNIA 90028-7106
323-466-5444

The PK Series Specifications

Features

- STEEL KEYS
- SEALED GOLD DOME CONTACTS
- WATERPROOF/DUST PROOF CONTACTS
- Completely Self-Contained — No RFI
- Simple 3 Wire Connection
- Wide Operating Range 8.5 to 16 VDC
- Wide Temperature Operating Range - 22° to + 160°F
- Easy Access to Level & Timing Adjustment

Power Connections

PK-1 & PK-2 6 - 16 V @ .1µa- 20 ma*

* 1 µa drain is when voltage is below 9.5 VDC, with key depressed 15 ma max. When above 10 VDC current drain will be 1-20 ma.

Handheld: Connect voltage input (red) to a voltage that comes on when transmitter is keyed. 6-16 VDC is fine. 10 VDC is optimum.

Mobile or Base: Connect the voltage input (red) to any voltage 6-16 VDC.

Note for special applications: 6-16 VDC Normal. 4.5-8.5 VDC operation jump 300 ohms, do not exceed 8.5 VDC with jumper. 16-60 VDC add 2K in series with supply lead (red).

PK-1K & PK-2K 8.5-16V @ .1µa - 20 ma*

* 1 µa drain is when voltage is below 9.5 VDC, with key depressed 15 ma max. When above 10 VDC current drain will be 1-20 ma.

Mobile or Base: Connect the voltage input (red) to a voltage that is always on.

Note for special applications: 8.5-16 VDC normal. 4.5-8.5 VDC operation jump 300 ohms, do not exceed 8.5 VDC with jumper. 16-30 VDC add 470 ohms in series with supply lead (red). 30-60 VDC add 1.5K in series with supply lead (red).

Relay Delay: The delay may be adjusted by the small round trimpot.

Output

Connect the audio output (black) to the microphone or audio input of the transmitter. Output level to the transmitter is adjustable through the hole at the bottom edge of unit. This is a multiturn trimpot. To adjust, use a miniature tuning tool of proper dimension. Output level is more than adequate to drive most transmitters. If more level is necessary, bridge R3, 51K with a 1K resistor. Maximum output is +2 dB @ 600 ohms (3V PP) @ IC Pin No. 16.

External Keying. Pin 2 & 10 of IC #C11603 will serve as a driver. With any key down output will be 3 to 9v @ 1 to 3ma.

LOW TONE GROUP				HIGH TONE GROUP			
ROW	SPECIFIED	PIPO	% ERROR	COL	SPECIFIED	PIPO	% ERROR
1	697 Hz	699.1 Hz	+0.30	1	1209	1215.9	+0.57
2	770	766.2	-0.49	2	1336	1331.7	-0.32
3	852	847.4	-0.54	3	1477	1471.9	-0.35
4	941	948.0	+0.74	4	1633	1645.0	-0.73

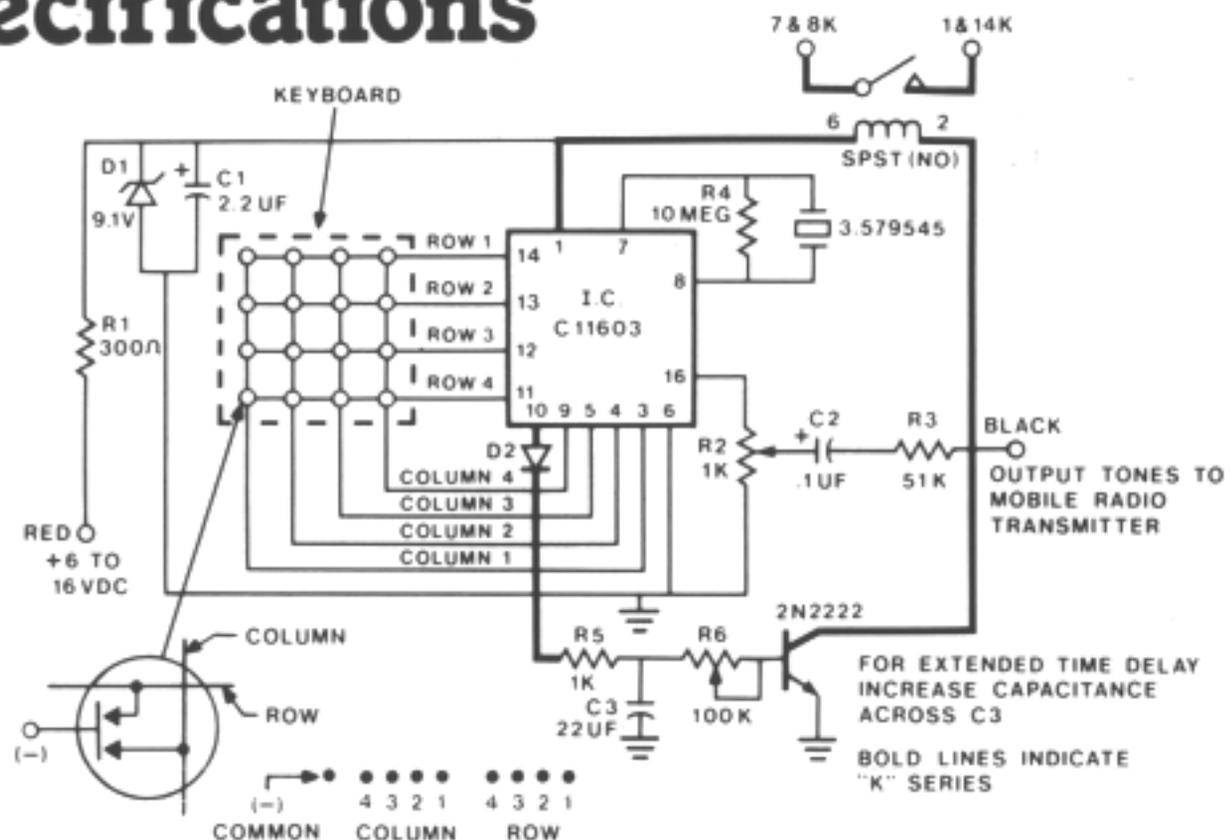
Although encoder output frequencies differ by a small amount, it will function properly and reliably because it is within the maximum Bell tolerance of ± 1-1/2%.

Mounting

The PK Series is supplied with four mounting screws for mounting to the rear of the unit. Using with supplied template, carefully arrange position of the encoder. BEFORE drilling, consider all possible positions with operator convenience in mind. For mobile operation, a convenient position may be the dashboard or glove compartment of the vehicle. Installations will vary. For mounting when inaccessible to the rear of the PK unit, see M Series mounting option.

Service

Do Not use spray or contact cleaners. Contacts on the Keyboard are sealed. To clean, use only a damp cloth. All parts of the Pipo Encoder are replaceable. If repair or replacement is necessary, return the bad part or unit, please give a description of the problem to better serve you. Unit may be returned for repair via mail or UPS.



Shield..... Negative
Red..... Positive
Black..... Audio Out
Green & White... Relay Contacts

CAUTION: OBSERVE CONTACT PROTECTION ON RELAY (110ma @ 28vdc-resistive)

- Use diode protection for inductive loads, across contacts
- Use resistor (33 ohms or higher) for capacitive load, in series with contacts

Level Setting



NOTE: Not all transmitters have an audio gain control.

1. Set the IDC or deviation control to ± 5KHz. This is done by driving the transmitter into limiting by a loud whistle or tone at the microphone. Transmitter will not go higher than 5 KHz after the deviation is set to ± 5KHz. Do not touch or disturb IDC or deviation control after it is set.
2. Some transmitters have an audio gain adjustment (do not confuse with the deviation control). Set this for your situation, depending upon background noise and your voice and microphone characteristics.
3. To set Encoder Output Level after all previous steps have been completed: Key transmitter, touch No. 2 and set output level control so the transmitter deviates ± 3 KHz. Your transmitter is now properly set.

For operation through a 2/3 system where tones will be repeated, set tone for 2.4 KHz deviation.

Dimensions

