JUMA-KB1 External Keyboard description
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General
JUMA-KB1 is a device intended to use with JUMA-TRX2 voice memory option. Keyboard hardware is not limited to be used only with JUMA-TRX2 or control JUMA-TRX2 voice memory option. JUMA-KB1 operation depends on software loaded in to the keyboard microcontroller.

Operation
The circuit is designed to consume so little power that whole keyboard can be powered from serial (RS232) interface receive signal. Receive signal idle state is about –9VDC and active state about +9VDC. KB1 power supply is designed to utilize both polarity input voltages and produce about 4,5VDC regulated operating voltage for the microcontroller. Microcontroller is a low power PIC16F628A clocked with 1,832MHz clock. Microcontroller consumes about 700uA and rest of the circuit about the same amount of current. Please see circuit diagram for details.

Software v1.01 for JUMA-TRX2 voice memory control
10 buttons + Shift are functional with this software version. Populating the shift button (SW11) is optional. Five left side buttons transmits JUMA-TRX2 voice memory commands. Five right side buttons transmits numbers from 0 to 4. If shift button (SW11) is installed and pressed right side buttons transmit numbers from 5 to 9. With external keyboard you can give all JUMA-TRX2 voice memory commands except E (erase all) command. Software source code is also available if you want to learn more about JUMA External Keyboard operation or modify it for your own needs..

JUMA-KB1 Button functions

```
M  mic rec          4,    9 w shift
R  RX rec           3,    8 w shift
P  play message     2,    7 w shift
T  TX message       1,    6 w shift
S  Stop             0,    5 w shift
```

Please see voice memory documentation for voice memory operation.