Microcomputer Controlled

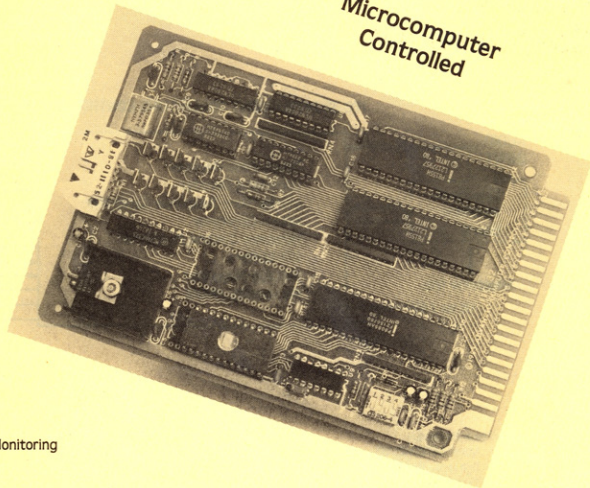# The ITC-32 Intelligent Touch-Tone™ Control Board

APPLICATIONS

- Repeaters
- Remote Receiver Sites
- Remote Bases
- Industrial Control and Monitoring
- Home Control
- Security

Remote Control and Status Monitoring Plus Basic Repeater Control Functions

TOUCH - TONE CONTROL—THE SMART WAY

The ITC-32 Intelligent Touch-Tone Control Board is the SMART answer to your Touch-Tone remote control needs. More than just a tone decoder or receiver, the ITC-32 control board interprets valid commands (sequences of digits) and responds by changing logic outputs as commanded. Morse code or tone encoded response messages verify command entry and allow interrogation of output and input logic states. The ITC-32 control board is even designed to directly drive National Digitalker speech synthesizer chips for low cost VOICE response.

STATE OF THE ART TONE DECODING

The ITC-32 control board uses the Mitel CMOS Touch-Tone receiver chip set. Crystal controlled operation and digital detection means fast and reliable decoding and no falsing. The tone receiver is field proven as a top performer in hundreds of repeater and remote control installations.

EASY TO INTERFACE

The ITC-32 control board can be connected directly to any audio source such as a radio receiver or to the telephone line through the optional Telephone Interface Board. The control board's logic outputs and inputs are designed for simplest interface to a variety of equipment and sensors.

FLEXIBLE COMMANDS

The ITC-32 control board outputs may be commanded individually allowing such functions as on/off control, antenna selection, high/low power select, squelch loose/tight and valve open/close. The outputs may also be commanded in GROUPS, opening unique control possibilities such as subaudible tone (PL) frequency select, antenna direction, and level controls. An additional control command allows BCD programming of a transceiver's frequency synthesizer for remote base applications. Additional commands control internal functions as well.

ALARM INPUTS

Alarm inputs can cause the ITC-32 control board to key the transmitter or auto-dial out over the telephone with alarm message generation. The alarm capability is valuable for site security from intrusion . . . to flood . . . to fire.

REPEATER FUNCTIONS

The ITC-32 control board has even more capability including a basic repeater COR/ID/Timer function so that it can serve as a controller for simple repeaters and remote receiver links. It can take the place of a collection of "ancient technology" repeater control boards which together can cost more than the ITC-32 with only a fraction of the capability!

FIELD REPROGRAMMABLE

The ITC-32 controller board is shipped with your custom command codes and CW ID call sign as part of the firmware. An optional Personality EPROM (separate from the firmware EPROM) lets you fully customize all command codes, response messages, auto-dial telephone numbers and timers. The format for the Personality EPROM is fully documented, so that you can change it at any time in the field allowing quick and easy modification to your system.

UNIVERSAL APPLICATIONS

The ITC-32 Intelligent Touch-Tone Control Board is perfect for applications ranging from repeaters and remote bases, to industrial control, home security, and more. Add it to your existing repeater or simplex autopatch for the additional control capability you need. Or build a new repeater or remote base around it. Even control and monitor your home from your radio or over the phone.

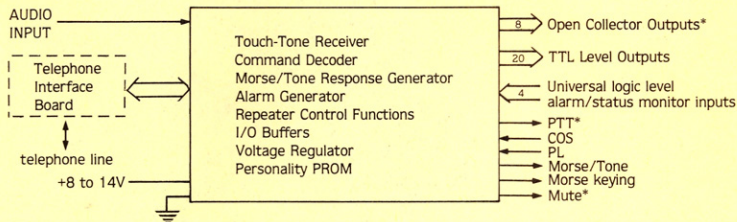The ITC-32—the COMPLETELY SMART answer to your Touch-Tone control needs.

acc
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™Touch-Tone is a registered trademark of AT&T

Features & Specifications

ITC-32 INTELLIGENT TOUCH-TONE CONTROL BOARD

AUDIO INPUT

Telephone Interface Board

telephone line

+8 to 14V

Touch-Tone Receiver
Command Decoder
Morse/Tone Response Generator
Alarm Generator
Repeater Control Functions
I/O Buffers
Voltage Regulator
Personality PROM

8 → Open Collector Outputs*
20 → TTL Level Outputs
4 → Universal logic level alarm/status monitor inputs
PTT*
COS
PL
Morse/Tone
Morse keying
Mute*

*High voltage, high current buffered

Touch-Tone Receiver:
Mitel MT8860/65
Dynamic Range - 30 dB
Twist - ±10 dB
Acceptable Signal to Noise - 12 dB
Decode time - 40 ms
Excellent voice talk-off

Audio Input:
Impedance - 100K
Level - up to 2.5V p-p

Telephone Interface (optional):
Via ACC's FCC registered or non-registered
Telephone Interface Board

Logic Outputs:
8 commandable, buffered
20 commandable, TTL levels
PUSH-TO-TALK (for response messages and
repeater functions, buffered)
MUTE (during Touch-Tone transmission,
buffered)
Morse Code Keying

Logic Output Characteristics:
Buffered - 100 mA, 60V, open
"collector" VMOS
TTL Level - low = .8 volt max.,
high = 2.4 volt min.

Logic Inputs:
4 remote status monitor/alarm
CARRIER-OPERATED-SWITCH
(repeater function)
PL (repeater function)

Logic Input Characteristics:
10K input impedance
Low = .8 volts max
High = 2.4 volts min
Compatible with TTL, 5/12 volt CMOS, etc.

Morse Code/Tone Output:
1 volt p-p, 20K output impedance

Command Codes:
Configurable up to 15 digit

Personality EPROM (optional):
Available from factory
Fully documented for user reprogramming
(requires EPROM programmer)
Compatible with 2716, 2732, and 2764
EPROM devices
Individual custom command codes for
each function
Customized response and alarm messages
Alarm auto-dial phone numbers
Repeater CW ID message
Repeater timer values

Repeater Control Functions:
COR, CW ID, courtesy tone, hang timer,
time-out timer, carrier/PL operation,
repeater on/off

Remote Base Functions:
3 digit BCD logic outputs plus offset bits for
frequency synthesizer

Alarm Generation:
Autodial phone numbers (up to 20 digit
including pauses) and alarm messages

Power: +8 to +14 volts DC, 300 mA

Size: 4.5" x 6.5"

Connector:
44 pin dual row
(Vector R644 or equiv.)

Specifications subject to change without notice.

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