TMC

KT1 Series Pushbutton Telephones LD and MF

Catalogue No.SA101DS

TMC KT1 Series pushbutton telephones meet the need for a family of inexpensive instruments which cater for the majority of applications and combine low first cost with reduced installation and maintenance costs.

In developing this new generation telephone, a radical design approach was adopted, utilising new microelectronic and packaging techniques. Important performance and operational improvements have been achieved while, at the same time, production costs have been reduced to the level of a rotary-dial instrument.

FEATURES

- Low first cost; reduced ownership costs
- Microelectronic performance and reliability – provided by a single chip (combined transmission/signalling IC) and a tone-caller chip mounted on a single pcb
- Loop-disconnect (KT1) or multi-frequency (KT1/MF) signalling
- Simple conversion from table to wall-mounted telephone
- Tone-caller volume control is standard feature
- Conductive rubber keypad: reliable operation combined with efficient dust sealing
- Light weight: typically 730g
- Modern, low-profile styling in a range of attractive colours
- British Telecom approved

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CONSTRUCTION

The KT1 design achieves a low component count within a newly styled and ergonomically more efficient case. The two-part case has a compact, pleasing design, moulded in impact-resistant ABS plastic which is also resistant to abrasion, to household detergents and to most other mild chemicals. The telephone consists basically of a single pcb, against which the elastomeric keypad and button guide are clamped by the case top; no escutcheon plate is necessary

All components except the handset transducers and the tone caller are mounted on the pcb. Similar transducers are used in the transmitter and the receiver and housed in plastic capsules for added protection. The piezo-ceramic tone caller is located in a plastic capsule on the base moulding with spring contacts to the pcb; the acoustic, rotary-vane type, volume control is installed below the base moulding.

A simple two-part ABS moulding is available for rapid conversion to wall-mounting; no modifications to the telephone are necessary The gravity switch is designed to operate efficiently in either mode.

COLOUR RANGE

The KT1 Series is produced in a range of attractive colours including light grey, stone, red, mid brown, blue and green.

INSTALLATION AND MAINTENANCE

Low first cost, rapid installation and greatly reduced maintenance were the basic criteria in the development of these low-cost pushbutton telephones. The instrument consists of a two-part case, secured by a single screw, 'sandwiching' the pcb and pushbutton assembly; all components are immediately accessible and replaceable, including the plug-in line and handset cords. However, the KT1 is intended for a policy of replacement rather than repair on site; unlike most existing designs, it can be connected immediately to exchange lines or in simple plan arrangements with no need to separate the case.

High MTBF figures are ensured because of the low piece-part count and because the components usually prone to failure – screw terminals mechanical dial, conventional gravity switch etc. – have been 'designed out' or redesigned.

Thus, this new design of pushbutton telephone combines low initial cost with fast, simple installation and a high order of reliability – that is, extremely low ownership costs.

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TYPICAL SPEECH TRANSMISSION PERFORMANCE (DEFINED AT EXCHANGE TERMINATION)

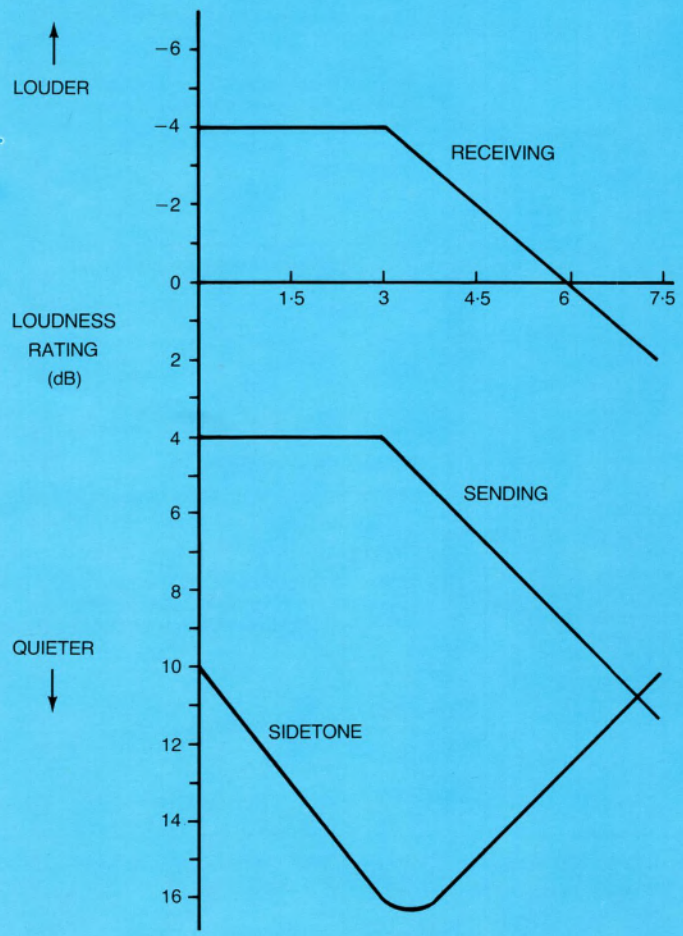

Fig 1

RECEIVING, SENDING & SIDETONE
LOUDNESS RATING VS LINE LENGTH

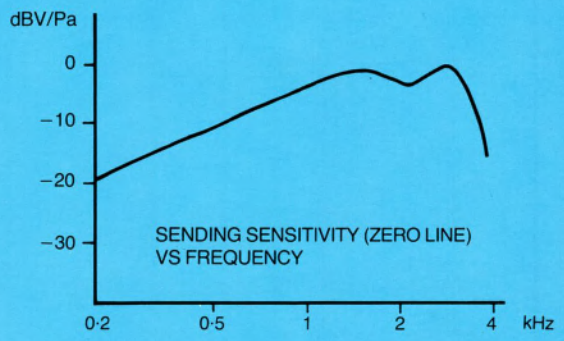

Fig 2.

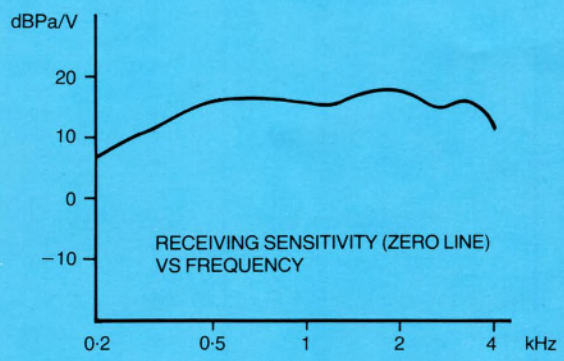

Fig 3.

FEEDING CONDITIONS:
50v EXCHANGE BATTERY
2 × 2 μF STONE BRIDGE
2 × 200 Ω RELAY
0.5mm COPPER CABLE (168Ω/km)
600 Ω JUNCTION (EXCHANGE TERMINATION)
SENDING: MOUTH POINT TO JUNCTION
RECEIVING: JUNCTION TO ARTIFICIAL EAR
SIDETONE: MOUTH TO EAR

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Technical data

Speech performance

Send and receive sensitivities are set to internationally-accepted levels and controlled electronically. Regulation by the integrated circuit automatically increases send and receive sensitivities as the line length increases. Sidetone is accurately controlled over all line lengths. Frequency response is tailored to match speech transmission over local line and trunk carrier systems.

Keypad

Comprises a silicone-rubber mat, carrying conductive rubber inserts which contact gold-plated tracks on the pcb, and ten (LD version) or 12 (MF version) two-shot moulded plastic pushbuttons, positioned to CCITT recommendations.

Recall

Loop-disconnect and MF versions are both available with the following options:
- no recall;
- earthed-loop recall;
- timed-break recall. (nom 70 m/s.)

Tone caller

Comprises an integrated circuit driving a piezo-ceramic element bonded to a large-diameter metal disc. A pleasant two-tone signal is generated, alternating between approximately 1 1 and 1.25 kHz. At the maximum volume control setting the output is at least 75 dBA at one metre.
The tone caller is muted during dialling; a 'caller mute' wire is available in the line cord to mute other callers and bells when the KT1 is dialling in parallel arrangements. The tone caller is a high-impedance device, enabling up to four telephones can be paralleled.
An acoustic type of tone-caller volume control is fitted as standard on the base of the telephone.

Loop-disconnect signalling (Types KT1)

The storage capcity is 18 decimal digits. Cyclical storage effectively extends the storage capacity. The following LD versions are available:

Speed/ratio	10 pps 2.00 1 break/make
	10 pps 1.55 1 break/make
	20 pps 2.00 1 break/make
Inter-digit pauses	10 pps 753–953 millisecs
	20 pps 377–477 millisecs

Dialling speed and ratio accuracy are maintained within ±2% over the specified temperature range throughout the lifetime of the telephone.

Transmitter/receiver inserts

The KT1 employs similar capsules – either moving-iron or rocking-armature types, according to availability.

MF signalling (Types KT1/MF)

Each digit is represented by two signalling frequencies, one from each of the low and high groups below, applied simultaneously to the line.

Low group frequency (Hz)	High group frequency (Hz) 1209	1336	1477
697	1	2	3
770	4	5	6
852	7	8	9
941	*	0	#

Guaranteed tone-burst duration and IDP· 70 millisecs each
Frequency accuracy: ±1.5% over specified temperature range for life of telephone
Sending levels:
- high-group frequency −9dBm ±2dB
- low-group frequency −11dBm ±2dB
- (high frequency component 2dB ±1dB above low-frequency component)

Environmental limitations

These telephones will operate in environments designated in IEC68 (BS2011 Part 1 1) as 10/040/21 namely, perform to specification over the range −10 to +40°C and operate without damage for 21 days of damp heat (93% RH and 40°C). Additionally, these instruments will continue to operate without damage at up to +55°C. Storage: −40 to +70°C in dry conditions.

Power requirement

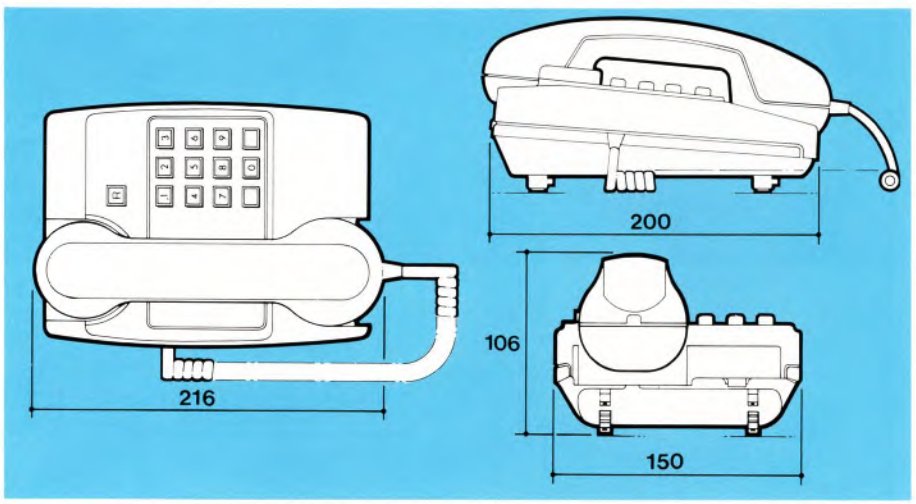
Line powered – no internal battery required.

Cords

Line and handset cords plug-connected to pcb. Line cord 3m long, terminated in either BT 431A plug or BT 52 terminal block as required.

Typical weights and dimensions

	packed	unpacked
weight	910g	730g
overall height	85mm	106mm
overall width	235mm	150mm
overall length	255mm	216mm



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