



## TECHNICAL BULLETIN NUMBER 5011

Speech-Plus-Telegraph Systems  
TMC Models STT(-)-1



- One Speech Channel Plus 1 to 5 Telegraph Channels
- Full-Duplex, Simultaneous Send and Receive
- For use on HF Radio, Cables, Scatter, Carrier and Microwave
- Modular Construction, Solid State Circuitry Throughout
- Adherence to CCITT and CIRR Requirements
- Self-Contained Power Supplies

Models STT(-)-1 are complete "Speech-Plus-Telegraph" systems offering one speech channel and up to five tone telegraph channels within an audio bandwidth of 300-3300 cps.

The systems are fully transistorized with self-contained solid state power supplies, using a maximum of 10 watts. Since heat dissipation is very low, many such units can be placed in a single rack.

## Speech-Plus-Telegraph Systems

The systems are designed for use on any audio channel that may be transmitted and/or received over a communication medium such as HF Radio, telephone or inter-site cables, carrier systems, scatter, and microwave circuits.

With the addition of 2-wire/4-wire hybrid equipment, local telephone circuits may be extended over radio or microwave paths that are also carrying up to five tone telegraph circuits.

The speech channel may also be used as an "order-wire" or intercom channel between traffic points on normal telegraph circuits.

In operation, the speech channel is band-pass limited to 300-2500 cps and standard telegraph tones are impressed on the audio band between 2700 cps and 3300 cps.

For CCITT applications, the telegraph tones are limited to the band 2700-3000 cps, and only three channels are available.

For high-speed (200 baud) operation, the system is limited to one tone telegraph channel plus the normal speech channel.

The Model STTC-2 is a special application for inter-site cable order wires where two full-duplex teleprinter circuits are used for permanently recording orders such as frequency changes, etc., and provides for use of a voice Intercom circuit. This model requires only one inter-site cable pair.

### TECHNICAL SPECIFICATIONS, TMC MODELS STT()-1

#### FILTER CHARACTERISTICS:

General:

Provides selective filtering with an equalizing pad and a low-pass section. Unit has single input and dual output, or conversely, a dual input and single output.

#### LOWPASS CHARACTERISTICS:

Less than 1 db attenuation from 300 to 2500 cps. Greater than 40 db attenuation at 2680 cps.

#### MAXIMUM VOICE INPUT:

+10 dbm.

#### INPUT AND OUTPUT

IMPEDANCE:

600 ohms unbalanced.

### TELEGRAPH EQUIPMENT CHARACTERISTICS

#### OPERATING CHARACTERISTICS:

Operating Temperatures:

-20°C to +55°C

Storage Temperatures:

-40°C to +85°C

Keying Speeds:

75 baud (100 wpm)

Frequency Stability:

± 3 cps for 10% line voltage variation. ± 3 cps for 25°C change from +25° ambient.

#### CENTER FREQUENCIES:

2700, 2820, 2940, 3060, and 3180 for 120 cps channel separation. 2805, 2975, and 3145 for 170 cps channel separation.

## TMC Models STT()-1

### INPUT CHARACTERISTICS:

Input Grounding:

Electrically floating (either side may be grounded or ungrounded).

Keying Options:

Dry Contact; Polar or Neutral Voltage Keying; Polar or Neutral Current Keying.

Input Impedance:

200 to 2,200 ohms (dependent upon keying option selected).

### OUTPUT CHARACTERISTICS:

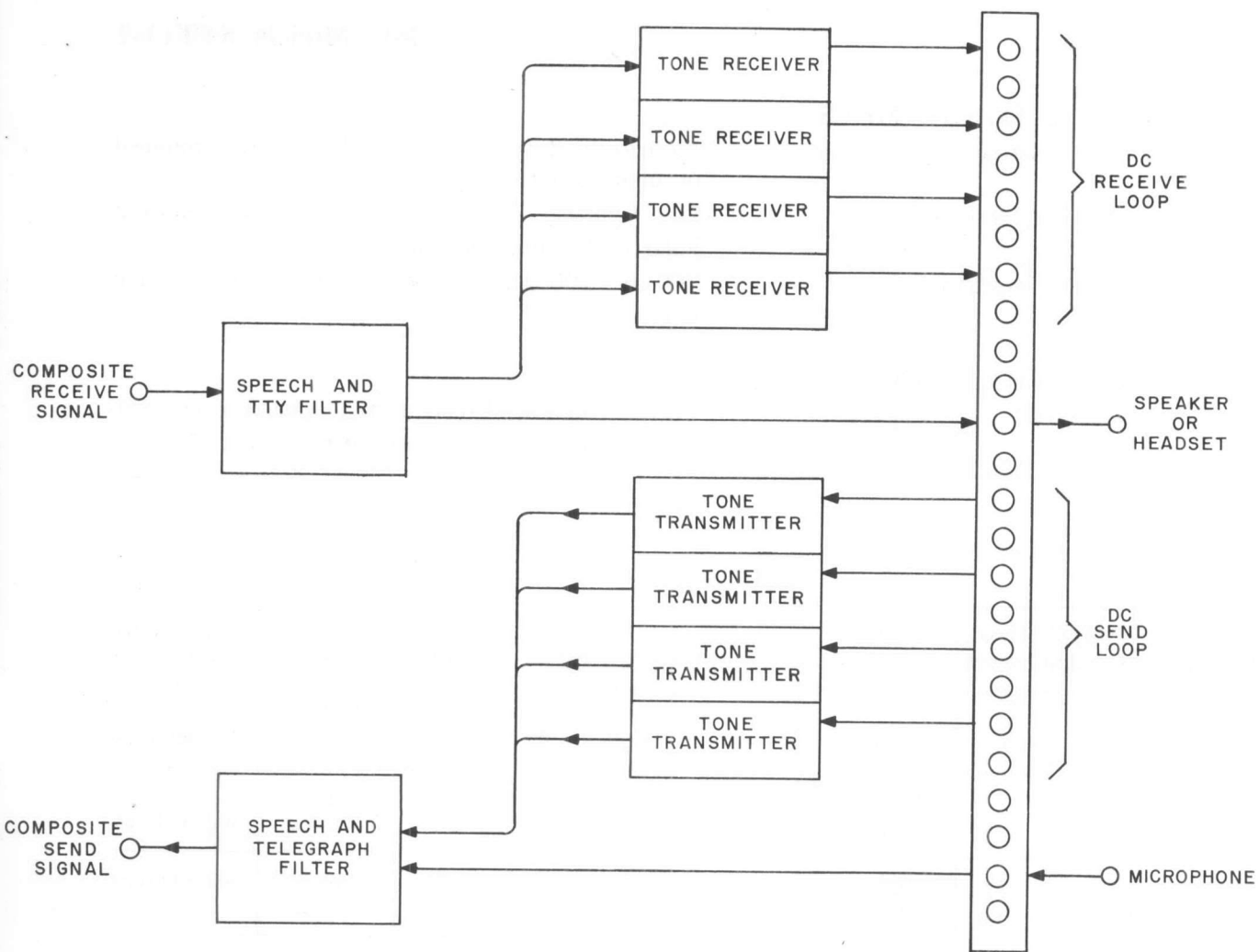
General:

Provides high level relay output contacts to key neutral or polar loops with line currents up to 100 ma DC.

### MODELS AVAILABLE

Model Number	Speech Cannel	Tone Channels	Tone Frequencies	Channel Separation	Shift	Keying Speed	Circuitry	Bandwidth Requirements
STTA-1	1	1	2940 cps	—	± 20 to ± 40 cps	*	Full Duplex	300-3000 cps
STTA-2	1	2	2820, 2940 cps	120 cps	± 20 to ± 40 cps	*	Full Duplex	300-3000 cps
STTA-3	1	3	2700, 2820, 2940 cps	120 cps	± 20 to ± 40 cps	*	Full Duplex	300-3000 cps
STTA-4	1	4	2700, 2820, 2940, 3060 cps	120 cps	± 20 to ± 40 cps	*	Full Duplex	300-3000 cps
STTA-5	1	5	2700, 2820, 2940, 3060, 3180 cps	120 cps	± 20 to ± 40 cps	*	Full Duplex	300-3000 cps
STTB-1	1	1	2975 cps	—	± 25 to ± 50 cps	*	Full Duplex	300-3300 cps
STTB-2	1	2	2805, 2975 cps	170 cps	± 25 to ± 50 cps	*	Full Duplex	300-3300 cps
STTB-3	1	3	2805, 2975, 3145 cps	170 cps	± 25 to ± 50 cps	*	Full Duplex	300-3300 cps
STTC-1#	1	1	2890 cps	—	± 30 to ± 85 cps	200 Baud	Full Duplex	300-3300 cps
STTC-2	1	2	2820, 2940, 3060, 3180 cps	120 cps	± 20 to ± 40 cps	*	Tones: Full Duplex Voice — Simplex	300-3300 cps

\*75 baud start-stop, standard  
100 baud synchronous, optional  
#Not recommended for HF radio applications.



FUNCTIONAL BLOCK DIAGRAM  
SPEECH PLUS FOUR TELEGRAPH TONES

Designed and manufactured for the  
TECHNICAL MATERIEL CORPORATION by the Tele-Signal Corporation

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