TELETYPEWRITER SIGNAL CONDITION INDICATOR

DESCRIPTION

1. GENERAL

1.01 This section contains information covering the description and application of the signal condition indicator coded SCI-1. The unit is located at customer stations to determine if the signals being received just prior to entering the teletypewriter are satisfactory. This unit shown in Figure 1 is intended primarily for use where 130- or 128-type teletypewriter subscriber sets or similar equipment is utilized. It may also be used where the station equipment is customer owned and maintained or as a trouble detecting aid on unusually long local channel facility layouts.

2. DESCRIPTION

2.01 The SCI-1 is a compact transistorized unit that can be mounted on a teletypewriter table or at a nearby location convenient to the customer's teletypewriter attendant. Although individual units are designed for a specific speed of operation, they may be obtained for any teletypewriter and teletypesetter operating speed.

2.02 The SCI-1 consists of a grey-green metal case approximately 1-1/2 inch by 5 inches by 5 inches in size and weighs two pounds. It is designed for 60 ma, dc neutral signals and has a noninductive input impedance of 80 ohms. The input circuit is isolated from both ground and enclosing case, thus permitting connection to loop circuits that are either positive ground, negative ground, or no ground.

2.03 The SCI-1 has a marking or spacing distortion threshold range of 10 per cent to 40 per cent ± 5 per cent. It will be preset at the

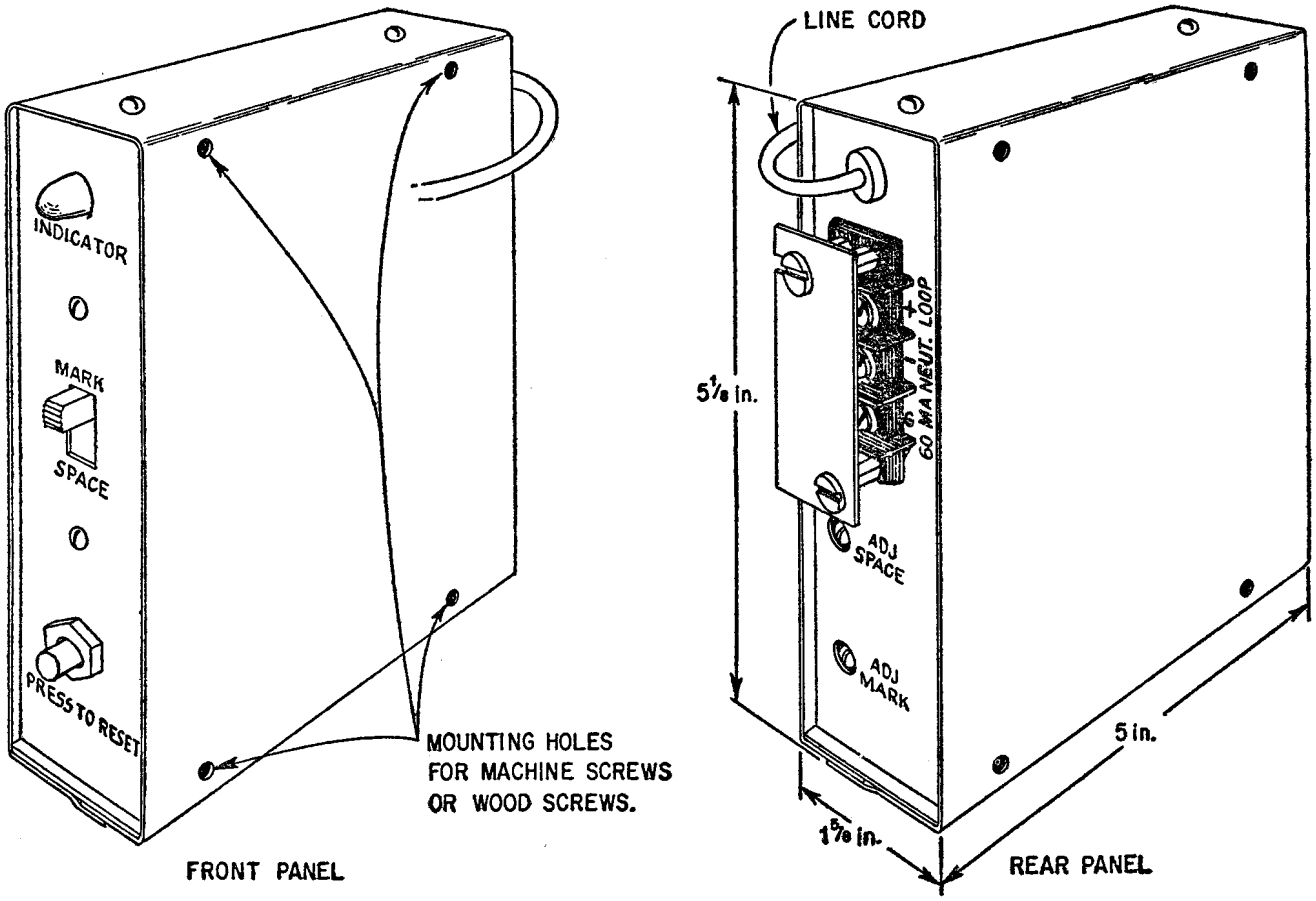

Figure 1 — SCI-1 Front and Rear Panels

factory for 25 per cent marking and spacing and shall not be changed in the field except (1) when authorized by the supervisor in charge of the test center or (2) when the preset value is found to be other than 25 percent. It is equipped with a six-foot cord having a nonpolarized plug for connection to a 115-volt, 50/60-cycle power outlet. The total power dissipation of the unit does not exceed one watt.

2.04 The front panel controls and indicators consist of the following:

(a) Neon Indicating Lamp: An amber colored lamp which remains lighted after the reset button is operated and released when satisfactory signals are being received. The lamp will be extinguished when the signal distortion (marking or spacing) is greater than the preset value of normally 25 per cent. When lamp is lighted it is an indication the SCI-1 is working properly.

(b) Mark-space Switch: Permits the monitoring of signals for either marking or spacing distortion.

(c) Reset Button: Resets the indicating circuit by lighting the amber lamp. Also this button when depressed should light the lamp regardless of type of signal being received.

2.05 The rear panel controls and external connections are as follows:

(a) Adj Mark: This is a screw driver adjustment for setting the marking distortion threshold.

(b) Adj Space: This is a screw driver adjustment for setting the spacing distortion threshold.

(c) Input +, -, G: These are screw terminals for input loop and ground connections.

(d) AC power cord.

3. FUNCTION OF THE SIGNAL CONDITION INDICATOR

3.01 The SCI-1 provides a simple convenient tool that enables personnel at the serving test center to quickly determine whether or not it is necessary to dispatch a repairman to the customer's station in order to clear a trouble condition. It is designed to monitor received teletypewriter signals and to extinguish an indicator lamp whenever the distortion exceeds 25 per cent for which the unit has been preset. It will indicate one type of distortion at a time, depending upon the position of the Mark-Space switch located on the front panel of the unit. The distortion threshold setting is adjustable by means of two high torque potentiometers, one for marking and one for spacing, which are located on the rear panel. The setting shall generally not be changed unless tests indicate the operate point of the unit is other than 25 per cent.

3.02 The method of using the SCI-1 signal condition indicator in determinating the quality of transmission at the customer station is shown in Table A.

TABLE A

Condition of Copy as Reported by Customer	Position of Mark-Space Switch	Indicator Lamp	Trouble in Teletype Machine	Trouble in Received Signals at Station	Send Repairman	Remarks
1. Garbled	Space	OFF. Remains off when reset button is pressed and released	NO	YES	*	Predominance of spacing bias indicated
	Mark	ON				
2. Garbled	Space	ON	NO	YES	*	Predominance of marking bias indicated
	Mark	OFF. Remains off when reset button is pressed and released				

TABLE A (Cont'd.)

Condition of Copy as Reported by Customer	Position of Mark-Space Switch	Indicator Lamp	Trouble in Teletype Machine	Trouble in Received Signals at Station	Send Repairman	Remarks
3. Garbled	Space	OFF. Remains off when reset button is pressed and released	NO	YES	*	Indicates predominance of distortion other than simple bias
	Mark	OFF. Remains off when reset button is pressed and released				
4. Intermittent errors	Space or Mark	OFF, but goes on when reset button is pressed and released. Goes off again about time customer sees next error	NO	YES	NO	Indicates intermittent distortion hits
5. Garbled	Space and Mark	ON or OFF, but remains ON when reset button is pressed and released	**YES	**NO	**YES	Distortion of signals is less than 25% which a machine in good condition should accept
6. Intermittent errors	Space and Mark	ON. Remains ON when reset button is pressed and released	#POSSIBLY	#NO	#POSSIBLY	

*After making all possible checks of transmission facilities and no trouble is found, send a repairman to check the teletypewriter subscriber set if one is involved.

**There could be an occasion in example 5 when the customer's copy may be garbled and the teletypewriter machine may not be at fault, eg, (a) if the transmission tape is put in backwards at the sending station or (b) a faulty regenerative repeater is feeding signals to the customer station.

A monitoring teletypewriter inserted at the serving test center can be used to check this possibility. This condition can not be detected with a transmission measuring set. If the monitor copy is not garbled, it definitely indicates that the teletypewriter machine at the customer's station should be checked by a repairman.

#It would be best to first check with a monitor teletypewriter at the serving test center. If no errors are received on the monitoring teletypewriter at the serving test center but errors are observed on the customer's teletypewriter machine although the SCI-1 indicator lamp is lighted, a repairman should be dispatched to the customer station.

4. MAINTENANCE

4.01 Units that develop trouble should be returned to the Western Electric Company marked "For repair and return." Removal of the unit will not affect service.

4.02 The Western Electric Company will return the unit to Stelma Inc. for repairs. Stelma will immediately send out a replacement unit.

4.03 When the replacement unit is received it shall be installed in place of the removed unit.

4.04 Units shall be checked and adjusted in accordance with Section 103-818-200 whenever the accuracy of the unit is questionable.

4.05 When readjustment of the unit is required to meet the 25 per cent distortion setting and the setting on the potentiometer is within the last 20 degrees of rotation of the potentiometer, the unit shall be replaced.

4.06 A quick method of checking the accuracy of the SCI-1 is to insert a 164C-type telegraph transmission measuring set in series with the line and observe the distortion (marking or spacing) for the signals being received. The lamp should be lighted for distortion below 25 per cent and extinguished for distortion greater than 25 per cent.

4.07 The two fuses in the power line (one in each side of the line) are permanently installed. If the fuses operate, the unit shall be returned to the Western Electric Company.

5. ORDERING INFORMATION

5.01 The SCI-1 signal condition indicator may be obtained in the regular manner through the Western Electric Company. Requisitions should be worded as follows:

(Quantity) Signal Condition Indicator
Model SCI-1 (Specify speed of operation)
Obtain from Stelma Inc., 190 Henry Street, Stamford, Conn.