

No: IRS; TC 38 - 97

**GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS**

**INDIAN RAILWAY
STANDARD SPECIFICATION
for
Wire Way Station Control Telephone**

**(Tentative)
Serial No. TC 38 - 97**

**RESEARCH DESIGNS & STANDARDS ORGANISATION
LUCKNOW - 226011**

**INDIAN RAILWAY
STANDARD SPECIFICATION
FOR
4 WIRE WAY STATION CONTROL TELEPHONE**

0. FOREWORD

0.1 This specification is issued under the fixed serial No. TC 38 followed by the year of adoption as standard or in the case of revision, the year of last revision.

ADOPTED, 1985.

First Revision -1997

0.2 This specification requires reference to the following Indian Railway Standard (IRS) and Indian Standard (IS), specifications:-

IRS:S 23	Electrical Signalling & Interlocking equipment.
IS:1079	Hot rolled carbon steel sheet and strip.
IS: 1300	Phenolic moulding materials.
IS : 2036	Phenolic Laminated sheets.
IRS:TC-74/97	Electrodynamic transducer.
IRS:TC-60/93	DTMF Control Office and Way Station Equipment

0.3 Whenever a reference to any specification appears in this specification, without mentioning the year of issue, it shall be taken as reference to the latest issue of the specification.

0.4 This specification is intended chiefly to cover technical provisions relating to the supply of materials and does not include all the necessary provisions of a contract.

1. SCOPE

1.1 This specification covers the requirements and provisions of tests and inspection of 4 wire way station control telephone.

1.2 This specification covers the constructional features, electrical characteristics and technical requirements of 4 wire way station control telephone.

2. TERMINOLOGY

2.1 For the purpose of this specification, the terminology given in IRS:S23 shall apply.

2.2 The term referred to in this specification but not covered in IRS:S23 is defined below:-

2.2.1 Lot: A lot is constituted by the 4 wire way station control telephones of the same type manufactured in the same factory during the same period using the same process and material.

3. GENERAL REQUIREMENTS

3.1 4 wire way station control telephone shall be of desk type.

3.2 This telephone shall work in conjunction with control way station equipment on 4 wire basis. DC power supply for the telephone shall be provided by the control way station equipment. Trans and receive amplifiers provided in the control way station equipment shall take care of matching of the impedance of transmitter and receiver with that of the line.

3.3 On receipt of a valid code, the control way station equipment shall extend an audio output and positive of battery to the piezo buzzer and LED display device respectively.

4. CONSTRUCTION AND MATERIALS

4.1 4 wire way station control telephone shall consist of the following components:-

- a) Siemens type body and base plate of the telephone made of ABS. PCB directly mounted on ABS base plate.
- b) Siemens type hand micro telephone (HMT) with micro-switch.
- c) Cradle switch mechanism
- d) Piezo Buzzer
- e) Transmitter - Electrodynamic transducer to specification IRS:TC-74/97.
- f) Receiver - Electrodynamic transducer to specification IRS:TC-74/97
- g) Screw terminals shall be directly PCB mounted.
- h) Telephone rosettee made of ABS.
- i) LED with display circuit
- j) Cords.

4.1.1 As an optional item, DTMF decoder as per specification IRS:TC-60/93 shall be housed inside the telephone.

4.2 Body of the telephone and hand micro telephone (HMT) shall be made of ABS conforming to the requirements of Annexure - I. The microswitch provided in HMT shall be of LCSO approved type.

4.3 Base plate of ABS conforming to the requirements of Annexure-I.

4.4 Cradle switch mechanism.

4.4.1 The cradle switch mechanism shall be such that when HMT is resting on the cradle, it shall completely push the plunger down to the limits of travel.

4.5 PIEZO BUZZER

4.5.1. 12V DC(with +20% and -10% variation) piezo buzzer, 40mm dia and 20mm thickness shall be fixed inside the body of the 4 wire way station control telephone. Suitable holes or grills shall be provided for audibility of sound from piezo buzzer.

4.5.2 Current consumption shall be 9mA at 12V DC and Oscillation frequency shall be 2.6 KHz to 3.2 KHz . Volume control shall be provided for giving different levels of tone.

4.6 The transmitter shall be Electrodynamic transducer to specification IRS:TC-74/97.

4.7 The receiver shall be Electrodynamic transducer to specification IRS:TC-74/97.

4.8 Terminal strip shall be made of phenolic moulding material conforming to grade 3 of IS 1300. Screw terminals provided inside the 4 wire way station control telephone shall be directly mounted on the PCB. 8 way terminal strip shall be provided inside the telephone rosettee. All incoming and outgoing wires of 8 way terminal strip shall be terminated on screw terminals.

4.9 Telephone rosettee shall be made of ABS. Suitable rubber grommet shall be provided on the wire entry holes.

4.10 LED with display circuit shall work on nominal voltage of 12V DC. The components selected for LED display circuit shall be such that it can withstand frequent operations with +20%, -10% variation in DC power supply.

4.10.1 Red LED shall be provided on the left bottom side of the telephone body. A metallic ring shall be provided for housing the LED. It shall be screwed to the body with locking screw.

4.11 The cords shall be made of tinsel wires of at least 1.5 metres length. The cord between telephone and HMT shall be coiled coil of 6 cores. The cord between 4 wire way station control telephone and telephone rosettee shall be flexible PVC of 8 cores.

4.12 Components of the LED display circuit shall be mounted on a plate made of thermosetting synthetic resin bonded lamination sheet conforming to grade P4 of IS-2036. Details of termination for LED and other circuit is given in Annexure-II.

4.13 All exposed metallic parts shall be plated, or otherwise protected from corrosion.

5. ELECTRICAL CHARACTERISTICS/TESTS:

5.1 Transmitter shall conform to requirements of IRS:TC-74/97.

5.2 Receiver shall conform to requirements of IRS:TC-74/97.

✓ 5.3 A test voltage of 12 V DC with variation of +20% and -10% shall be applied to the piezo buzzer and then it shall be checked for buzz. Volume control shall be checked for different levels of tone. The tone shall be audible even at the 'minimum' setting of the volume control.

• ✓ 5.4 Contact gap of the cradle switch spring shall not be less than 0.3mm. When HMT is lifted spring contact shall clearly make and the contact pressure shall be greater than 40 gm.

✓ 5.5 Dielectric strength

5.5.1 It shall withstand application of 1 kV, 50 Hz AC sinusoidal r.m.s. voltage for 1 minute when applied between terminals of the 8 way terminal strip and body of the telephone rosettee.

✓ 5.6 Insulation resistance.

✓ 5.6.1 The insulation resistance between the terminals of the 8 way terminal strip & body of the telephone rosettee shall not be less than 10 Mega ohms when measured with 500V DC.

✓ 5.7 The DC resistance of each core of the cord shall not be more than 1.15 ohms/m at 20°C.

• ✓ 5.8 Performance test (refer Annexure - II)

5.8.1 12V battery shall be connected to the telephone rosettee with positive at terminal number 2 and negative at terminal number 4. LED shall glow when terminal number 8 is

shorted momentarily with terminal number 2. It shall extinguish when the HMT is taken off from the cradle.

5.8.2 12V battery shall be connected to the telephone rosettee with positive at terminal number 2 and negative at terminal number 4. Piezo buzzer shall give audible sound as long as terminal number 6 is shorted with terminal number 2.

5.8.3 The operation of contacts of the cradle mechanism shall be checked by observing continuity between terminal numbers 1 and 2 when the HMT is taken off from the cradle and break when the HMT is placed on the cradle.

5.8.4 The operation of contacts of the micro-switch shall be checked by observing the continuity between terminal numbers 2 and 7 of telephone rosettee by pressing the micro-switch.

✓ 5.8.5 An audio frequency tone of 1 KHz at -10dB shall be fed to terminal numbers 5 and 2 and the tone shall be heard in the receiver.

note: Terminal numbers in clauses 5.8.1 to 5.8.5 above refer to telephone rosettee.

6. MARKING :

6.1 The following shall be legibly and indelibly marked on the outer surface of the cover of the 4 wire way station control telephone :-

- (a) Manufacturers name and identification mark.
- (b) Year of manufacture.
- (c) Legend : 4 wire way station control telephone
- (d) Specification No. IRS: TC-38.
- (e) Serial Number

6.2 A printed copy of the wiring diagram showing interconnection shall be pasted on the inner surface of the cover.

7. TESTS:

7.1 Unless otherwise specified all tests shall be carried out at prevalent ambient temperature.

7.2 TYPE TESTS.

The manufacturer shall supply 2 Nos. of 4 wire way station control telephones alongwith complete circuit, termination details and materials used. The following shall constitute type tests:-

7.2.1 Transmitter : All tests specified in clause 9 of specification IRS:TC-74/97.

7.2.2 Receiver : All tests specified in clause 9 of specification IRS:TC-74/97.

7.2.3 Visual inspection as per clause 14.2 of IRS:S 23 to the extent applicable.

7.2.4 All tests specified in clauses 5.3 to 5.8 of this specification.

7.3 ACCEPTANCE TESTS:

✓7.3.1 Visual inspection as per clause 14.2 of IRS:S 23 to the extent applicable.

7.3.2 Transmitter : All tests specified in clause 10 of specification IRS:TC-74/97.

7.3.3 Receiver : All tests specified in clause 10 of specification IRS:TC-74/97.

✓7.3.4 All tests specified in clauses 5.3 to 5.8 of this specification.

7.3.5 Any other tests as required by the Inspecting Authority to ensure that the 4 wire way station control telephone is in conformity with the requirement of this specification.

7.4 ROUTINE TESTS :

The following shall constitute the routine tests:-

7.4.1 Visual inspection as per clause 14.2 of IRS :S 23 to the extent applicable.

7.4.2 Transmitter : All tests specified in clause 11 of specification IRS:TC-74/97.

7.4.3 Receiver : All tests specified in clause 11 of specification IRS:TC-74/97.

7.4.5 Any other tests required by the manufacturer to ensure that 4 wire way station control telephone is in conformity with the requirement of this specification.

8. SAMPLING :

8.1 Unless otherwise agreed to by the purchaser and the supplier, the double sample plan given below shall be adopted:-

Lot consisting of 4 Wire way stn.control phone.	1st sample size (N1)	2nd sample size (N2)	combined sample size (N1+N2)	Acceptance Number (C1)	Rejection Number (C2)
1.	2.	3.	4.	5.	6.
Under 25	3	6	9	0	2
25 to 50	7	14	21	0	3
51 to 100	10	20	30	0	3
101 to 200	13	26	39	0	5
201 to 300	20	40	60	1	5
301 to 500	25	50	75	1	6

8.2 The number of 4 wire way station control telephone (N1) as given in col. 2 shall first be selected and subjected to the acceptance test. If in the first sample the number of defective 4 wire way station control telephone that is those failing in one or more acceptance tests, is less than/equal to the corresponding number (C1) given in Col. 5 the lot shall be considered as conforming to the requirements of the acceptance test. If the number of defective 4 wire way station control telephone in the first sample is greater than or equal to the rejection number given in Col. 6 the lot shall be considered as not conforming to the requirement of the acceptance test. If number of defective 4 wire way station control telephones in the first sample lies between (C1) and (C2) a second sample of size (N2) as given in Col. 3 shall be selected and subjected to acceptance test. If in the combined sample, the number of defective 4 wire control telephones is less than (C2) the lot shall be considered as conforming to the requirements of acceptance test.

8.3 The sample shall be selected at random from at least 10% of the packages. For random selection of packages all the packages in the lot shall be arranged in a serial order and every 'rth' package shall be selected until the requisite number of packages is obtained:-

Total number of packages in the lot.

'r' being the integral part of:

Total number of packages to be selected.

8.4 The sampling plan for conducting acceptance tests on transmitters and receivers shall be as per IRS:TC-74/97.

9. INSPECTION

9.1 The inspection and test shall be carried out to the satisfaction of the purchaser or his nominee.

9.2 The purchaser or his nominee shall have the right to be present during all stages of manufacture and shall be accorded all reasonable /complete facilities to satisfy himself that the 4 wire way station control telephones are being manufactured in accordance with the terms and conditions of the specification. The purchaser or his nominee shall have the right to reject any material that fails to conform to the specification.

9.3 When the inspection is carried out during the manufacturing process, the manufacturer shall supply the material and samples required for testing free of charge and shall at his own cost prepare and furnish the necessary test pieces and appliances for such testings as may be carried out at his own premises in accordance with the specification. If testing facilities are not available at his own works for conducting the prescribed tests, the manufacturer shall bear the cost of carrying out the tests at an approved test laboratory.

9.4 Test certificates incorporating the results of the routine tests and other manufacturing tests must be furnished in quadruplicate prior to the inspection for the use of purchaser/his nominee.

10 REJECTION

10.1 Any of the materials which do not comply with the requirements of this specification may be rejected.

11. PACKING:

11.1 4 wire way station control telephone shall have to undergo arduous transportation before reaching the destination and will have to be stored and handled in tropical climatic conditions (including monsoons) before they are put to actual use. It is, therefore, imperative that the packing is decided by taking into consideration, inter alia, the above two vital factors so as to eliminate damage/deterioration of the items in transit/transshipment/handling or during storage.

ANNEXURE-I

1. PROPERTIES :

The material shall satisfy the following properties:-

1.1 Mechanical properties :	ASTM Test Method
1.1.1 Tensile strength : 380 kg/sq.cm (MIN)	D-368
1.1.2 Flexural yield : 650 kgf/sq.cm (MIN) strength	D-790
1.1.3 Izod Impact (i) at 23°C-25 kgcm/cm (MIN) strength notched (ii) at 0°C-20 kgcm/cm (MIN)	D-256 (A)
1.1.4 Gloss% - Above 90%	

1.2 THERMAL PROPERTIES:

1.2.1 Heat deflection (i) at 18.5 kg/sq.cm 90°C (MIN) temperature (ii) at 4.6kg/sq.cm 100°C (MIN)	D-648
1.2.2 Flammability 3.81cm /minute (MAX)	D-635

1.3 ELECTRICAL PROPERTIES

1.3.1 Dielectric strength 15 KV/mm (MIN) 16	D-149
1.3.2 Volume Resistivity 10 ohm cm (MIN)	D-257

1.4 OTHER PROPERTIES:

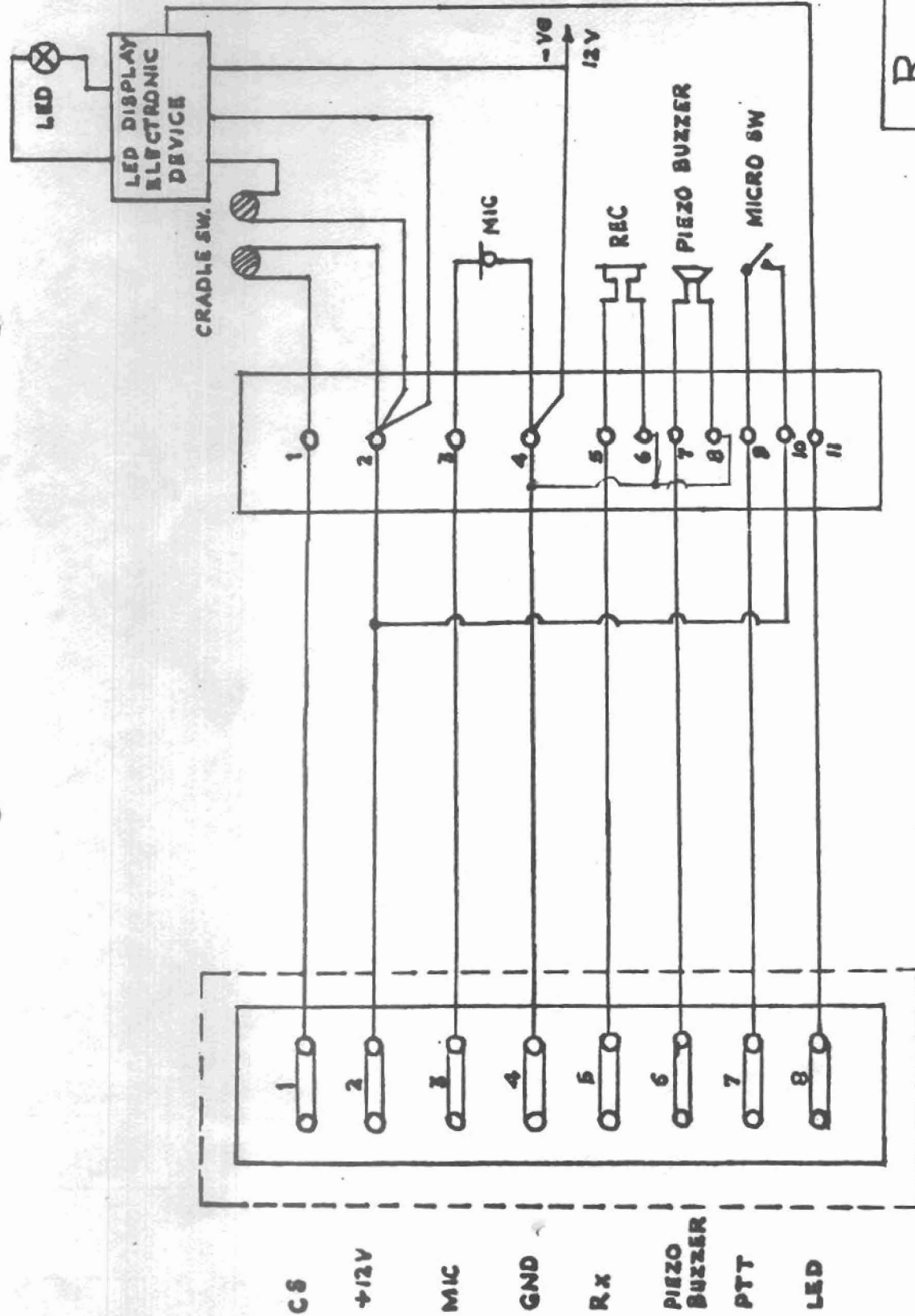
1.4.1 Hardness 95-110 on R scale	D-785
1.4.2 Mould shrinkage 0.6% (MAX)	D-955

2. FASTNESS TO LIGHT:

The moulding or a portion of it shall be exposed to light together with cutting of standard patterns. The source of light shall be either day light or a carbon arc of the enclosed type. There shall be no detectable fading or change of colour of the exposed moulding when No.7 of the standard patterns has begun to fade.

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ANNEXURE-II
IRS : TC : 38 - 97
CLAUSE. 4.12



TERMINAL STRIP OF
TELEPHONE ROSETTEE

SCREW TERMINALS DIRECTLY
MOUNTED ON PCB INSIDE
TELEPHONE

R. D. S. O.

4 WIRE WAY STATION

CONTROL TELEPHONE



सत्यमेव जयते

No. STT/G/TCSC-32 (2004)

Dated: 21.9.2005

The General Manager (S&T),

- Central Railway, CST, Mumbai
- Eastern Railway, Fairly Place, Kolkata
- Northern Railway, Baroda House, New Delhi
- North Frontier Railway, Maligaon, Guwahati
- North Eastern Railway, Gorakhpur
- Southern Railway, Park Town, Chennai
- South Central Railway, Rail Nilayam, Secunderabad
- South Eastern Railway, Garden Reach, Kolkata
- Western Railway, Churchgate, Mumbai
- East Central Railway, Hajipur
- North Western Railway, Jaipur.
- North Central Railway, Allahabad
- East Coast Railway, Bhubaneswar
- West Central Railway, Jabalpur
- South East Central Railway, Bilaspur
- South Western Railway, Hubli.

The General Manager (S&T)/CORE, Nawab Yusuf Road, Civil Lines, Allahabad

The General Manager (S&T)/Metro Railway, Kolkata.

The CPM, IRPMU, Behind Shanker Market, New Delhi

The Director/IRISET, Secunderabad.

Sub: Correction in Amendment No. 1 to Specification No. IRS: TC 38-97 for
4 Wire Way Station Control Telephone.

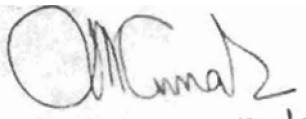
Ref: This office letter of even no. Dated 6.4.2005.

A corrected copy of the Amendment No.1 for 4 Wire Way Station Control Telephone is sent herewith for your information and reference please.

SCHEDULE OF IMPLEMENTATION

Duly corrected Amendment No.1 enclosed herewith will come into force w.e.f. 1st December, 2005. All the firms are hereby advised to submit the improved sample in the Telecom Laboratory, RDSO, Lucknow through QA/S&T, RDSO for incremental testing as per the amendment. On successful completion of the testing, the firms/manufacturers concerned will be approved with the current amendment.

Enc: As above.


(M.K. Yadav) 21/9/05
For Director General/Telecom

Copy to: 1. The Secretary (Telecom), Railway Board, Rail Bhawan, New Delhi
for information please.

2. ED/QA (S&T), 4th Floor, Annexe-II, Manak Nagar, Lucknow.

3. The Director/Inspection (S&T), RDSO: -

- i) 4th Floor, West Wing, 17, N.S. Road, Kolkata-700001
- ii) IRCOT Complex, Behind Shanker Market, Near Shivaji Bridge, New Delhi-110001.
- iii) 1st Floor, New Annexe Bldg., Churchgate Station, Western Railway, Mumbai-400020.
- iv) Ground Floor, DRM Office Bldg., Southern Railway, Bangalore-560023 for information and necessary action please.

4. Copy forwarded to the following approved firms for information, implementation and compliance thereof.

1. M/s Epsilon Electronic Equipment & Components Pvt Limited, B-2, Electronic Industrial Estate, Kushaiguda, Hyderabad-500062.

2. M/s Anu Vidyut, C-1, Industrial Estate, Roorkee-247667.

3. M/s Bentron Power Systems, 21/1, Kedarnath Chatterjee Road, Behala, Kolkata-700034

4. M/s Tummala Electronics Limited, SB-54, 2nd Cross, Peenya Industrial Estate, Bangalore-560058.

Enc: As above


(M.K. Yadav) 21/9/05
for Director General/Telecom

**CORRECTED AMENDMENT No.1 TO SPECIFICATION NO. IRS: TC 38-97
FOR 4 WIRE WAY STATION CONTROL TELEPHONE**

The following amendments are issued in IRS: TC 38-97. The existing clauses will henceforth be read as given below: -

1. Clause No. 4.1 (b) -> Siemens type **handset** with micro switch (PTT)
2. Clause No. 4.1 (c) - Transmitter - Electrodynamic Transducer type (CACT approved).
3. Clause No. 4.1 (d) - Receiver - Electrodynamic Transducer type (CACT approved).
4. Clause No. 4.2 - Body of the telephone and **hand set** shall be made of ABS material. ABS raw material will be procured from reputed manufacturers like Bhansali Polymers, Lanxess ABS Ltd, Bayers, LG & HPCL conforming to the properties mentioned in Annexure-I. Raw material manufacturers Test Certificate has to be submitted, at the time of type test. The test carried out on finish product shall be as per para 3 of Annexure-I.

The micro switch provided on **hand set** shall be procured from LCSO/CACT approved sources.

5. Clause No. 4.6 - Transmitter shall be Electrodynamic transducer type procured from **CACT approved source.**
6. Clause No. 4.7 - Receiver shall be electrodynamic transducer type procured from **CACT approved source.**
7. Clause No. 4.8 - Terminal strip shall be of **industrial grade** and shall be procured from CACT approved source. Screw terminals provided inside the 4 Wire Way Station Control Telephone shall be directly mounted on the PCB. 8 Way terminal strip shall be provided inside the telephone rosette. All incoming and outgoing wires of 8 Way terminal strip shall be terminated on screw terminals.
8. Clause ~~No.~~ 4.11 - The cords shall be made of tinsel wires of at least 1.5 meters length. The cord between telephones and **handset** shall be coiled coil of 5 cores. The cord between 4-wire way station control telephone and telephone rosette shall be flexible PVC of 8 cores.
9. Clause No. 4.12 - Components of LED Display -Circuit shall be mounted on Glass epoxy PCB of thickness 1.6 mm $\pm$ 0.2 mm and copper cladding thickness 35 micron $\pm$ 5 micron. The details of termination for LED and other circuit is given in Annexure-II.

10. Clause No. 5 - Electrical Characteristics/Tests:

11. Clause No. 5.1 - CACT approved Electrodynamic transducer shall be used as a transmitter

12. Clause No. 5.2 - CACT approved Electrodynamic transducer shall be used as a receiver

13. Clause No. 5.4 - CACT approved sealed type cradle switch shall be used.

14. Cl. No. 5.7 - DC resistance of each core of the cord shall not be more than 1.15 ohms $\pm$ 0.20 ohms per meter at room temperature

15. New Clause Annexure-I Para-3: - Test on Finished Product made of ABS material

A special sample of the size as required and mentioned in the test method ASTM D-1525 and ASTM-D-792, should be manufactured from the same raw material as used for moulding the body of Telephone or a part of the Telephone body will be cut to conduct the tests mentioned below -

<u>Properties</u>	<u>Specified values</u>	<u>Test Method</u>
1. Specific Gravity	1.04 - 1.07	ASTM D-792
2. Vicat Softening Point	100 - 108° C	ASTM D - 1525

16. Annexure-II - It is modified to keep Receiver in off condition when handset is "on hook." (Provision in Way Station Equipment).

17. Clause No. 5.8.0 (New Clause) - An internal pre amplifier is required for amplifying the transmitter signal from 5mV to 250mV (Min.) across 200 ohms

18. Clause No.4 (b), 4.2, 4.11,4.4, 5.8.3 - The word 'HMT' should be replaced by 'handset' in these clauses

19. Clause No. 7.2.1 - Transmitter- All test specified in Cl. 9 of specification IRS: TC 74/97 shall be carried out. If the transmitter is procured from CACT approved sources, proof of which is to be submitted by the firm, in that case type test of the transmitter shall not be done.

20. Clause No. 7.2.2 - Receiver- All test specified in Cl. 9 of specification IRS: TC 74/97 shall be carried out. If the receiver is procured from CACT approved sources, proof of which is to be submitted by the firm, in that case type test of the receiver shall not be done.

21. Clause No. 7.3 - Acceptance Tests:

Clause No. 7.3.2 – **Transmitter** – All tests specified in Clause 10 of specification No IRS: TC 74/97 shall be carried out. If the transmitter is procured from CACT approved source then this test need not to be carried out.

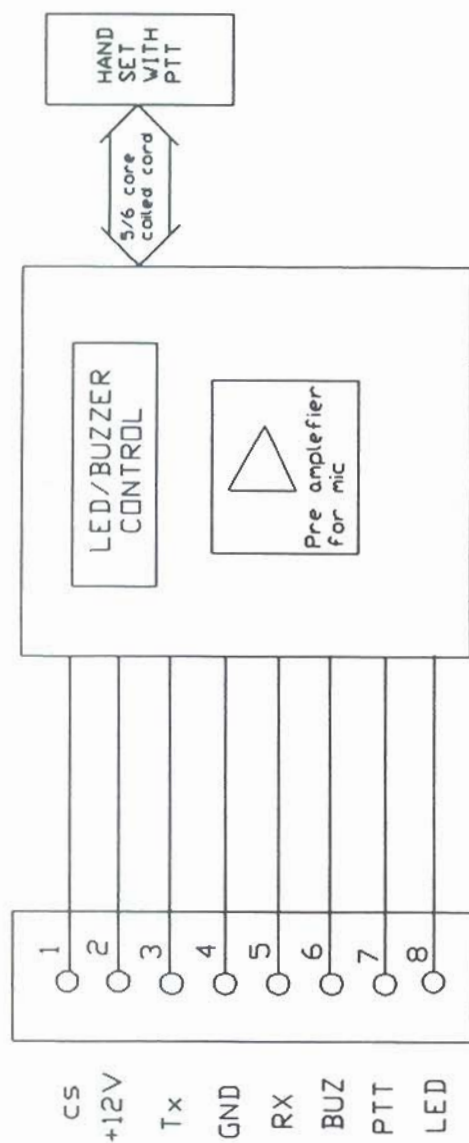
Clause No. 7.3.3 – **Receiver** – All tests specified in Clause 10 of specification No IRS: TC 74/97 shall be carried out. If the receiver is procured from CACT approved source then this test need not to be carried out.

22. Clause No. 7.4 – **Routine Tests**

Clause No. 7.4.2 – **Transmitter** – All tests specified in Clause 11 of specification no IRS: TC 74/97 shall be carried out. If the transmitter is procured from CACT approved source then this test need not be carried out.

Clause No. 7.4.3 – **Receiver** – All tests specified in Clause 11 of specification no IRS: TC 74/97 shall be carried out. If the receiver is procured from CACT approved source then this test need not be carried out.

-END OF AMENDMENT-



4 WIRE WAY STATION
CONTROL TELEPHONE

TERMINAL STRIP
OF TELEPHONE

R.D.S.D.

4 WIRE WAY STATION
CONTROL TELEPHONE

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सत्यमेव जयते

भारत सरकार, रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ-226 011

Government of India - Ministry of Railways
Research Designs & Standards
Organisation LUCKNOW - 226011



No- STT/RE/TL/CWSE/SC/342/II
To,

Date: 16.12.2016
20

महाप्रबंधक / संकेत एवं दूरसंचार,	1	GM/S&T
मध्य रेलवे, मुंबई सी.एस.टी.।	i	Central Rly, Mumbai CST-400 001
पश्चिम रेलवे, चर्च गेट, मुंबई।	ii	Western Rly, Churchgate, Mumbai-400020
पूर्व रेलवे, फेयरली प्लेस, कोलकाता।	iii	Eastern Rly, Fairlie Place, Kolkata- 700 001
दक्षिण पूर्व रेलवे, गार्डन रीच, कोलकाता।	iv	South Eastern Rly., Garden Reach, Kolkata-700043
उत्तर रेलवे, बड़ौदा हाउस, नई दिल्ली।	v	Northern Rly., Baroda House, New Delhi-110 001
पूर्वोत्तर रेलवे, गोरखपुर।	vi	Northeastern Rly., Gorakhpur -273 012
पूर्वोत्तर सीमान्त रेलवे, मालीगांव, गुवाहाटी।	vii	North Frontier Rly., Maligaon, Guwahati-781 011
दक्षिण रेलवे, पार्क टाउन, चेन्नई।	viii	Southern Rly., Park Town, Chennai -600 003
दक्षिण मध्य रेलवे, सिकन्द्राबाद।	ix	South Central Rly, Rail Nilayam, Secunderabad-500371
पूर्व मध्य रेलवे, हाजीपुर।	x	East Central Railway, Hazipur--844101
उत्तर पश्चिम रेलवे, जायपुर।	xi	North Western Railway, Jaipur-300206
पूर्व तटीय रेलवे, रेल विहार बी.डी.ए. रेंटल कालोनी, चन्द्रशेखरपुर, भुवनेश्वर।	xii	East Coast Railway, Rail Vihar, BDA, Rental Colony, Chandra shekherpur, Bhubneshwar-751023
उत्तर मध्य रेलवे, हेस्टिंग रोड, इलाहाबाद।	xiii	North Central Railway, HQ's office (S&T Branch), Ganga Parisar, Subedarganj, Allahabad-211033.
दक्षिण पश्चिम रेलवे, मुख्य कार्यालय, हुबली।	xiv	South Western Railway, Headquarter Office, Hubli-580020
पश्चिम मध्य रेलवे, ओ0एस0डी0 कार्यालय, जबलपुर।	xv	West Central Railway, OSD Office, Jabalpur-482000.
दक्षिण पूर्वोत्तर मध्य रेलवे, आर0ई0 ऑफिस कॉम्प्लेक्स, बिलासपुर।	xvi	South East Central Railway, R. E. Office Complex, Bilaspur-495004
महाप्रबंधक / संकेत एवं दूरसंचार, कोर, नवाब युसुफ रोड सिविल लाइन्स इलाहाबाद।	2	The General Manager (S&T), CORE, Nawab Yusuf Road, Civil Lines, Allahabad- 211001
महाप्रबंधक / संकेत एवं दूरसंचार, मेट्रो रेलवे, 33/1, चौरंगी रोड, कोलकाता।	3	The General Manager (S&T), Metro Railway, 33/1, Chowringhee Road, Kolkata-700 071
मुख्य प्रशासनिक अधिकारी, आईआर - पीएमयू शिवाजी ब्रिज, शंकर मार्केट के पीछे, नई दिल्ली	4	The CAO, IRPMU, Shivaji Bridge, Behind Shanker Market, New Delhi -110 001.
निदेशक / ईरीसेट, सिकन्द्राबाद।	5	Director/IRISET/Lalaguda/Secunderabad.
महाप्रबंधक, प्रोजेक्ट, रेलटेल, बैंक आफ बड़ौदा बिल्डिंग, नई दिल्ली।	6	General Manager(Projects)/RAILTEL/Bank of Baroda, Building, Parliament Street, New Delhi.

Sub: Amendment No. 2 to specification No. IRS: TC 38/97 (with Amendment no.1) for 4 Wire way station control telephone.

Amendment No. 2 to specification No. IRS: TC 38/97 (with Amendment no.1) for 4 wire way station control telephone has been finalised and is being sent herewith for your information and reference please. This amendment No. 2 is effective from 16.12.2016

21 दिसंबर 2016, 16.12.16
(राकेश सहारिया)
कृते महा निदेशक/दूरसंचार

प्रतिलिपि :

का.का. निदेशक/गुणवत्ता आश्वासन, चौथी मंजिल, एनेक्सी-2, अ. अ. मा. सं., लखनऊ।	1	ED/QA(S&T), 4 th floor, Annexee-II, RDSO, Lucknow.
निदेशक (निरीक्षण)/ गुणवत्ता आश्वासन/सिगनल एवं दूरसंचार, अ0अ0मा0सं0, निकट इरकोट, शंकर मार्केट के पीछे नई दिल्ली।	2	Director/QA/S&T/RDSO, Near IRCOT Building, 1st Floor, Behind Shanker Market, New Delhi-110001
निदेशक (निरीक्षण)/ गुणवत्ता आश्वासन / सिगनल एवं दूरसंचार अ0अ0मा0सं0, भूतल, डी0आर0एम0 ऑफिस,, बंगलोर - 560 023।	3	Director/QA/ S&T/RDSO, Ground Floor, DRM's Office, Bangalore- 560023
निदेशक (निरीक्षण)/गुणवत्ता आश्वासन/संकेत एवं दूरसंचार, अ0अ0मा0सं0, प्रथम तल, न्यू एनेक्सी बिल्डिंग, चर्चगेट, पश्चिम रेलवे, मुंबई।	4	Director/QA/S&T/RDSO, 1 st floor, New Annexe Building, Western Railway, Churchgate, Mumbai- 400020
निदेशक (निरीक्षण)/ गुणवत्ता आश्वासन/सिगनल एवं दूरसंचार, अ0अ0मा0सं0, चौथी मंजिल, 17 एन.एस. रोड, वैस्ट विंग, फेयरली प्लेस, कोलकाता - 70001	5	Director/QA/S&T/RDSO, 4 th floor, West Wing, Fairlie Place, 17 N.S. Road, Kolkata - 700001
निदेशक (निरीक्षण)/ गुणवत्ता आश्वासन/सिगनल एवं दूरसंचार, अ0अ0मा0सं0, हसनपुरा रोड, रेलवे हास्पिटल के सामने, जयपुर - 302 006	6	Director/QA/S&T/RDSO, Hasanpura Road, In front of Railway Hospital, Jaipur - 302 006.
मैसर्स एपसीलान इलेक्ट्रॉनिक इक्विपमेंट एंड कम्पोनेन्ट प्राईवेट लिमिटेड, बी-2, इलेक्ट्रॉनिक इंड्रस्ट्रियल इस्टेट, ई.सी.आई. एल. कास रोड, हैदराबाद 500 062	7	M/s Epsilon Electronic Eqpt. & Comp. Pvt. Ltd., B-2, Electronic Industrial Estate, ECIL CROSS Road, Kusaiguda, Hyderabad-500062 Ph : 040-27120436, 27144114, 27123643 Fax: 040-27143532
मैसर्स अनु विद्युत, सी-1 इंड्रस्ट्रियल इस्टेट, रुढ़की-247667	8	M/s Anu Vidyut, C-1, Industrial Estate, Roorkee-247667 Ph : 01332-262545, 268040 Fax: 01332-260869
मैसर्स वेंट्रोन पावर सिस्टम्स, 21/1, केदारनाथ चटर्जी रोड, बेहला, कोलकाता-700034	9	M/s Bentrion Power Systems, 21/1, Kedarnath Chatterjee Road, Behala, Kolkata-700034 Ph:033-23989600/23966430 Fax:033-23961663
फाइल सं. STT / G / VENDOR (75)	10	File No. STT / G / VENDOR (75)

DA : As above

21 दिसंबर 2016, 16.12.16
(राकेश सहारिया)
कृते महा निदेशक/दूरसंचार

**Amendment No. 2 in specification No. IRS: TC 38/97 with Amendment no.1 for
4 Wire way station control telephone.**

Clause No.	Existing Clause	Amended Clause
0.2	This specification requires references to the following Indian Railway Standard (IRS) and Indian Standard (IS) specifications:- IRS:S 23 Electrical Signalling & Interlocking equipment. IS : 1079 Hot rolled carbon steel sheet and strip. IS: 1300 Phenolic moulding materials. IS : 2036 phenolic Laminated sheets. IRS : TC 74-97: Electrodynamic transducers IRS:TC-60/93 : DTMF Control Office and Way Station Equipment	This specification requires references to the following Indian Railway Standard (IRS) and Indian Standard (IS) specifications:- IRS:S 23 Electrical Signalling & Interlocking equipment. IS : 1079 Hot rolled carbon steel sheet and strip. IS: 1300 Phenolic moulding materials. IS : 2036 phenolic Laminated sheets. IRS:TC-60/2007: 4 wire /2 wire train traffic control equipment with Dual Tone Multi Frequency (DTMF) Signaling.
4.1 (e)	Transmitter - Electro dynamic transducer type (CACT approved).	Electro Dynamic Transducer of 150±20% ohm impedance shall be used to perform functions of transmitter. The Manufacturer of transmitter shall have valid ISO 9000 certificate for manufacturing of these items. Transmitters shall be preferably procured from CACT / LCSO/ CDOT/ SISI (Small industries service institution) approved sources (if available). The transducers shall be fixed in the transmitter location of the handset. Proper locking arrangements shall be ensured. The transducers shall be properly protected against ingress of moisture, dust and insects. The frequency response over the range 300 to 3400 Hz shall be uniform. Howling

Clause No.	Existing Clause	Amended Clause
		shall not exist when two Telephones Instruments are connected in parallel in OFF-HOOK positions and when one of the handset is placed with the Transmitter/ Receiver in flush with a flat surface. It includes glass surface also.
4.1 (f)	Receiver : Electro dynamic transducer type (CACT pproved).	Electro Dynamic Transducer of 150±20% ohm impedance shall be used to perform functions of receiver. The Manufacturer of receiver shall have valid ISO 9000 certificate for manufacturing of these items. Receiver shall be preferably procured from CACT / LCSO/ CDOT/ SISI (Small industries service institution) approved sources (if available). The transducers shall be fixed in the receiver locations of the handset. Proper locking arrangements shall be ensured. The transducers shall be properly protected against ingress of moisture, dust and insects. The frequency response over the range 300 to 3400 Hz shall be uniform. Howling shall not exist when two Telephones Instruments are connected in parallel in OFF-HOOK positions and when one of the handset is placed with the Transmitter/ Receiver in flush with a flat surface. It includes glass surface also.
4.2	Body of the telephone and hand set shall be made of ABS material. ABS raw material will be procured from reputed manufacturers like Bhansali Polymers, Lanxess ABS Ltd., Bayers, LG & HPCL conforming to the properties mentioned in Annexure-I. Raw material manufacturers Test Certificate has to be submitted at the time of type test. The tesr carried out on	Body of the telephone and hand set shall be made of ABS material. ABS raw material will be procured from reputed manufacturers like Bhansali Polymers, Lanxess ABS Ltd., Bayers, LG & HPCL conforming to the properties mentioned in Annexure-I. Raw material manufacturers Test Certificate has to be submitted at the time of type test. The tesr carried out on finish product shall be as per para 3 of Annexure-I.

Clause No.	Existing Clause	Amended Clause
	finish product shall be as per para 3 of Annexure-I. The micro switch provided on hand set shall be procured from LCSO/CACT approved source.	The Manufacturer of “microswitch provided on handset” shall have valid ISO 9000 certificate for manufacturing of this item. It shall be preferably procured from CACT /LCSO/ CDOT/ SISI (Small industries service institution) approved sources (if available).
4.6	Transmitter shall be Electro dynamic transducer type procured from CACT approved Sources.	Deleted
4.7	Receiver shall be Electro dynamic transducer type procured from CACT approved Sources.	Deleted
4.8	Terminal strip shall be of industrial grade and shall be procured from CACT approved source . Screw terminals provided inside the 4 wire way station control telephone shall be directly mounted on the PCB. 8 way terminal strip shall be provided inside the telephone rosette. All incoming & outgoing wires of 8 way terminal strip shall be terminated on screw terminals.	The Manufacturer of “Terminal Strip” shall have valid ISO 9000 certificate for manufacturing of this item. Terminal strip shall be of industrial grade and shall be preferably procured from LCSO/ CDOT/ SISI (Small industries service institution) approved sources (if available). Screw terminals provided inside the 4 wire way station control telephone shall be directly mounted on the PCB. 8 way terminal strip shall be provided inside the telephone rosette. All incoming & outgoing wires of 8 way terminal strip shall be terminated on screw terminals.
5.1	CACT approved Electro dynamic transducer shall be used as a transmitter.	Deleted
5.2	CACT approved Electro dynamic transducer shall be used as a receiver.	Deleted
5.4	CACT approved sealed type cradle switch shall be used.	The Manufacturer of “sealed type cradle switch” shall have valid ISO 9000 certificate for manufacturing of this item.

Clause No.	Existing Clause	Amended Clause
		It shall be preferably procured from CACT /LCSO/ CDOT/ SISI (Small industries service institution) approved sources (if available).
7.2.1	Transmitter : All tests specified in Clause No. 9 of specification No. IRS: TC 74/97 shall be carried out. If the transmitter is procured from CACT approved sources, proof of which is to be submitted by the firm, in that case type test of the transmitter shall not be done.	Deleted
7.2.2	Receiver : : All tests specified in Clause No. 9 of specification No. IRS: TC 74/97 shall be carried out. If the receiver is procured from CACT approved sources, proof of which is to be submitted by the firm, in that case type test of the receiver shall not be done.	Deleted
7.3.2	Transmitter : All tests specified in Clause No. 10 of specification No. IRS: TC 74/97 shall be carried out. If the transmitter is procured from CACT approved source, then this test need not to be carried out.	Deleted
7.3.3	Receiver : All tests specified in Clause No. 10 of specification No. IRS: TC 74/97 shall be carried out. If the receiver is procured from CACT approved source, then this test need not to be carried out.	Deleted
7.4.2	Transmitter : All tests specified in Clause No. 11 of specification No. IRS: TC 74/97 shall be carried out. If the transmitter is procured from CACT approved source, then this test need not to be carried out.	Deleted

Clause No.	Existing Clause	Amended Clause
7.4.3	Receiver : All tests specified in Clause No. 11 of specification No. IRS: TC 74/97 shall be carried out. If the receiver is procured from CACT approved source, then this test need not to be carried out.	Deleted
12.	New Clause	All the provisions contained in RDSO's ISO procedures laid down in Document No. QO-D-7.1-11 dated 19.07.2016 (titled "Vendor-Changes in approved status") and subsequent versions/amendments thereof, shall be binding and applicable on the successful vendor/vendors in the contracts floated by Railways to maintain quality of products supplied to Railways

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