



Customer Interface Publication: KCOM (Hull) CIP013

Technical Characteristics of the “Kiloline” digital leased line interfaces

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Note : this document replaces KCOM Group PLC CIP010 on the same subject- see document history.

1. Scope

This document specifies the technical characteristics of the interfaces operated by KCOM Group PLC under the “Kiloline” service delivered to a customer at the Network Terminating Point (NTP).

Much of the information contained in this document has been published previously in various documents such as ITU-T, ETSI and BSI standards.

Changes to the network that affect the correct working of approved terminal equipment will be published by KCOM Group PLC in various documents made available from the address below. If the changes impact on this document then it will be updated.

Enquiries relating to the technical content of this document and the availability of other publications should be directed to:

- KCOM Group PLC Regulatory Affairs
37 Carr Lane
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- Telephone : 01482 602100
- E-mail : regulatory@kcom.com

2. General

The KCOM Group PLC “Kiloline” service is delivered to the customer via interfaces complying with ITU-T recommendations X.21[1] and X.21 bis [2].

3. The Network Termination Point

3.1 ITU-T recommendation X.21

The network termination point shall be a 15-way ‘d’ connector (as defined in ISO 4903 [3]) mounted on the Network Terminating and Test Apparatus (NTTA)/Network Terminating Equipment (NTE) based on the customer premises.

3.2 ITU-T recommendation X.21bis

The network termination point for data rates of 2.4, 4.8, 9.6 and 19.2 kbit/s shall be a 25-way connector (as defined in ISO 2110 [4]) mounted on the Network Terminating and Test Apparatus (NTTA)/Network Terminating Equipment (NTE) based on the customer premises.

The network termination point for data rates of 48 kbit/s shall be a 34-way connector (as defined in ISO 2593 [5]) mounted on the Network Terminating and Test Apparatus (NTTA)/Network Terminating Equipment (NTE) based on the customer premises.

4. Electrical Characteristics of the Interfaces

4.1 ITU-T recommendation X.21

The interchange circuits used are as follows :

ITU-T Circuit designation	Direction of signalling	Circuit Description	Pin A	Pin B
G	To DCE	Ground / CommonReturn	8	-
T	To DCE	Transmitted data	2	9
R	From DCE	Received data	4	11
C	To DCE	Control	3	10
I	From DCE	Indication	5	12
S	From DCE	Signal element timing	6	13
B	From DCE	Byte timing	7	14

A full description of the circuits can be found in ITU-T recommendation X.24[6].

The electrical characteristics of the interface are compatible with ITU-T recommendation X.27 (V.11)[7] with cable termination in the load. This condition also applies to the DTE. The interface supports data rates of 2.4, 4.8, 9.6, 19.2, 48 and 64 kbit/s.

4.2 ITU-T recommendation X.21bis

4.1 Data rates of 2.4, 4.8, 9.6 and 19.2 kbit/s

The interchange circuits used are as described in table 1 of ITU-T recommendation X.21 bis.

A full description of the interchange circuit functions can be found in ITU-T recommendation V.24[8].

The electrical characteristics of the interchange circuits are described in ITU-T recommendation V.28 [9].

4.2 Data rate of 48 kbit/s

The interchange circuits used and their electrical characteristics are as described in ITU-T recommendation V.35 [10].

5. Safety & EMC Information

5.1 Safety

The normal working voltages of the ITU-T recommendation X.21 [1] digital leased line interface are defined in ITU-T recommendation X.27 (V.11)[7].

The normal working voltages of the ITU-T recommendation X.21 bis [2] interfaces are defined in ITU-T recommendation V.28 and V.35 as appropriate.

The interface presented to the customer is classified as exposed as defined in the CENELEC Report/ETSI Guide ROBT-002/EG 201 212 [11].

5.2 EMC

The network equipment and network terminating equipment related to the provision of the interface comply with the current EMC regulations.

Whilst predominantly installed in commercial and light industrial environments, this does not preclude the interface being installed in other environments e.g. residential or industrial. This should be taken into account by the terminal equipment manufacturer when determining the limits of compliance relevant to their equipment in relation to the protection requirements of the EMC directive.

6. Terminal Equipment Specifications

The minimum recommended terminal equipment performance specifications are:

ITU-T X.21 service	:	TBR 1[12]
ITU-T X.21 bis service	:	PD7027 [13]

The minimum recommended terminal equipment EMC specifications are listed in the Official Journal of the European Communities for use under the Electromagnetic Compatibility Directive (89/336). The lists are updated regularly and the terminal manufacturer is recommended to comply with the listed standards applicable to their equipment and the target electromagnetic environment.

The minimum recommended terminal equipment electrical safety specifications are listed in the Official Journal of the European Communities for use under the Low Voltage Directive (73/23/EEC). The lists are updated regularly and the terminal manufacturer is recommended to comply with the listed standards applicable to their equipment.

7. Glossary

BS	British Standard
BSI	British Standards Institute
DCE	Data Circuit-terminating Equipment
DTE	Data Terminal Equipment
EC	European Community
EMC	Electromagnetic Compatibility
ETS	European Telecommunication Standard
ETSI	European Telecommunications Standards Institute
ITU-T	International Telecommunications Union – Telecommunications Sector
NTE	Network Termination Equipment
NTP	Network Terminating Point
NTTA	Network Terminating and Test Apparatus
BS	British Standard
PD	Published
Document TE	Terminal
Equipment TFC IN	Traffic In
TFC OUT	Traffic Out

8. References

Ref	Standard	Title	Date
[1]	ITU-T Recommendation X.21	Interface Between Data Terminal Equipment (DTE) and Data Circuit Terminating Equipment (DCE) for Synchronous Operation on Public Data Networks	1992
[2]	ITU-T Recommendation X.21 bis	Use on Public Data Networks of Equipment (DTE) which is designed for interfacing to synchronous V-series modems.	1993
[3]	ISO 4903	15 pole DTE/DCE Interface Connector and Contact Number Assignments	1989
[4]	ISO 2110 including Amendment 1	Information technology -- Data communication -- 25-pole DTE/DCE interface connector and contact number assignments for data signalling rates above 20 000 bit/s per second	1989 / 1991
[5]	ISO 2593	Information technology -- Telecommunications and information exchange between systems -- 34-pole DTE/DCE interface connector mateability dimensions and contact number assignments (available in English only)	1993
[6]	ITU-T Recommendation X.24	List of definitions for interchange circuits between data terminal equipment and data circuit-terminating equipment on public data networks	1993
[7]	ITU-T Recommendation X.27	Electrical Characteristics for Balanced Double Current Interchange Circuits for general use with Integrated Circuit Equipment in the field of Data Communication	1988
[8]	ITU-T Recommendation V.24	List of definitions for interchange circuits between data terminal equipment (DTE) and data circuit terminating equipment (DCE)	1996
[9]	ITU-T Recommendation V.28	Electrical characteristics for unbalanced double-current interchange circuits.	1993
[10]	ITU-T Recommendation V.35 1984 (Red Book)	Data transmission at 48 kilobits per second using 60-108kHz group band circuits	1984
[11]	R0BT-002/EG 201 212 V.1.2.1 (1998-11)	Electrical Safety ; Classification of interfaces for equipment to be connected to telecommunications networks	1998
[12]	ETSI TBR 1	Attachment Requirements for terminal equipment to be connected to circuit switched data networks and leased circuits using a CCITT X.21 interface	1995
[13]	PD 7027: 1995	Essential requirements for Terminal Equipment intended for connection 1995 to digital leased Digital circuits with X.21bis interfaces and rates of 2.4,	1995

The above documents may be obtained from:

- British Standards Institution
Customer Services, Sales Department
389 Chiswick High Road,
London W4 4AL
- Telephone : 0208 996 9001
- Facsimile : 0208 996 7001

9. History

Date	Issue	Comments	Author
		Precursor document Technical Characteristics of the Kiloline digital leased line interfaces [Issue 1.0 May 2000] KCL CIP010	M.Budd
December 2003	Issue 1.0	Kingston Communications Hull PLC publication to replace the above	M. D. Crowther
August 2007	Issue 1.1	KCOM Group PLC publication to replace the above and change of contact information	M. D. Crowther
April 2016	Issue1.2	KC name change to KCOM and document formatting	Amanda Woodard