



## Customer Interface Publication: KCOM (Hull) CIP019

### Technical Characteristics of the X.25 Packet Switched Interface

**Issue:1.2**

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The information in this document is provided in accordance with the requirements of the Radio Equipment and Telecommunications Terminal Equipment Regulations 2000 (Statutory Instrument 2000 No. 730) to publish (in accordance with the EC Radio and Telecommunications Terminal Equipment Directive 99/05/EC) technical characteristics of interfaces to the public fixed telephone network.

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Note : this document replaces KCL CIP 015 on the same subject – see document history.

## 1. Scope

This document specifies the technical characteristics of the X.25 packet switched line interface operated by KCOM Group PLC 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  
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- Telephone: 01482 602100
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## 2. General

The KCOM Group PLC X.25 packet switched service is delivered to the customer via interfaces complying with ITU-T recommendation X.21 bis [1] at data rates of 2.4, 9.6 and 48kbit/s. The service transports X.25 packets using a switched virtual circuit between X.25 terminals.

## 3. Network Termination Point

The network termination point for data rates of 2.4 and 9.6 kbit/s shall be a 25-way connector (as defined in ISO 2110 [2]) 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 [3]) mounted on the Network Terminating and Test Apparatus (NTTA)/Network Terminating Equipment (NTE) based on the customer premises.

## 4. Electrical Characteristics of the Interface

### 4.1 Data rates of 2.4 and 9.6 kbit/s

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

A full description of the interchange circuit functions can be found in ITU-T recommendation V.24[4].

The electrical characteristics of the interchange circuits are described in ITU-T recommendation V.28 [5]

### 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 [6].

## 5. Services

The following services are supported:

- Local closed user group facility
- National closed user group facility
- Fast select acceptance facility
- Multiline access
- Local call re-direction
- Logical channels

All facilities are in accordance with ITU-T recommendation X.25 [7].

## 6. Protocol

The link access procedures, packet layer, virtual circuit services, packet formats, and formats for facility fields are all in accordance with ITU-T recommendation X.25 [7].

## 7. Safety & EMC Information

### 7.1

#### Safety

The normal working voltages of the ITU-T recommendation X.21 bis [1] interfaces are defined in ITU-T recommendation V.28 [5] and V.35 [6] as appropriate.

The interface presented to the customer is classified as exposed as defined in CENELEC Report/ETSI Guide ROBT-002/EG 201 212 [8].

## 7.2 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, 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.

## 8. Terminal Equipment Specifications

There minimum recommended terminal equipment performance specifications are :

ITU-T X.21 bis	:	PD7027 [9]
ITU-T X.25 physical [10]	:	TBR 2
ITU-T X.25 protocol [11]	:	NET 2

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.

## 9. Glossary

BSI	British Standards Institute
EC	European Community
EMC	Electromagnetic Compatibility
IEEE	Institute of Electrical and Electronic Engineers
NTE	Network Termination Equipment
NTP	Network Terminating Point
NTTA	Network Terminating and Test Apparatus
PD	Published Document
TE	Terminal equipment

## 10. References

Ref	Standard	Title	Date
[1]	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
[2]	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
[3]	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
[4]	ITU-T Recommendation V.24	List of definitions for interchange circuits between data terminal equipment (DTE) and data circuit terminating equipment (DCE)	1996
[5]	ITU-T Recommendation V.28	Electrical characteristics for unbalanced double-current interchange circuits.	1993
[6]	ITU-T Recommendation V.35	Data transmission at 48 kilobits per second using 60-108kHz group band circuits	1984
[7]	ITU-T Recommendation X.25	Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit	1996
[8]	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
[9]	PD 7027: 1995	Essential requirements for Terminal Equipment intended for connection to digital leased Digital circuits with X.21bis interfaces and rates of 2.4, 4.8, 9.6, 19.2, 48, 56, 64 kbit/s	1995
[10]	ETSI TBR 2	Attachment requirements for Data Terminal Equipment (DTE) to connect to Packet Switched Public Data Networks (PSPDNs) for CCITT Recommendation X.25 interfaces at data signalling rates up to 1 920 kbit/s utilizing interfaces derived from CCITT Recommendations X.21 and X.21 bis	1997
[11]	CEPT NET 2 First Edition	Approval requirements for data terminal equipment to connect to packet switched public data networks using CCITT Recommendation X.25 [1], [2] and [3] interface".	1988

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 : 0209 996 7001

## 11. History

Date	Issue	Comments	Author
		Precursor document Technical Characteristics of the X25 Packet Switched line interface [Issue 1.0 May 2000] KCL CIP015	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	M. D. Crowther
April 2016	Issue1.2	KC name change to KCOM and document formatting changes	Amanda Woodard