ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *Tektronix 7KK1205-1SA11* at our website: ***Click HERE***

Protocol Tester/Plus Protocol Tester

▶ K1205

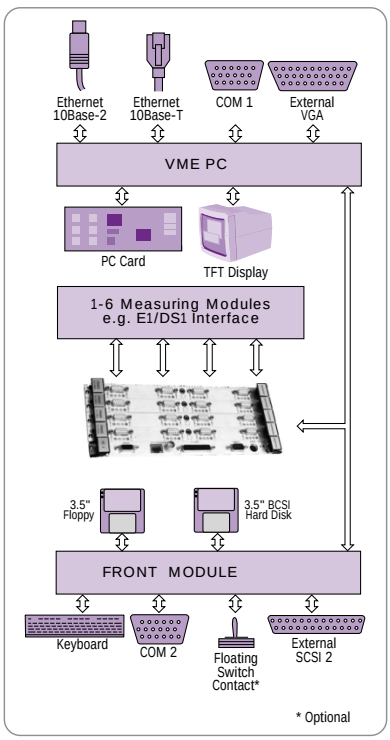


Equipment Configuration

System Components

Boasting state-of-the-art hardware design, the compact and portable K1205/K1205 Plus utilizes a VME bus system with 5/8 slots. Slot 1 is occupied by a Pentium® PC, with the card also carrying an external XVGA connection, SCSI interface, Ethernet connection for 10Base-2 and 10Base-T, as well as two serial ports and one parallel port. In addition to the system processor (PC) and application processor (AP) cards, the VME backplane also accommodates the test interface cards. The optional AP card offers a 5-10 times improvement in system performance. The K1205 features an ergonomically designed housing, complete with XVGA-compatible color display, keyboard and hard disk drive. An external CD-ROM drive is available as an option (software is supplied on a CD-ROM).

The PCMCIA slot allows the user to install various communication interfaces (e.g., a modem card to enable optional remote operation of the K1205).



▶ ***Figure 1.*** *K1205 Block Diagram.*

▶ Features & Benefits

Portable Multi-protocol Tester Monitor with a Variety of Interfaces

Simultaneous Connection of Up to 24 PCM30/PCM24 with Up to 64 Time Slots

Automatic Recognition of Measuring Configuration

Modular Design for Easy Expansion

Simple, Intuitive Operation Under Windows® NT

User-friendly Help System

Multitude Of Country– and Manufacturer-specific Protocols

Graphical, Flexible Protocol Stack Editor

Combined Testing of Complete GSM and GPRS Network – No Need to Maintain Separate Test Equipment for Each Technology

Prepared for Future GPRS Implementations based on IS136 – Today's Investment is Ready for Tomorrow's Developments

▶ Applications

Designed for Network Monitoring and Analysis of SS7, GSM900, DCS1800, PCS1900, CDMA, GPRS, ISDN D-Channel and V5.X Protocols. A Passive Unit, the K1205 Ensures Safe Usage in Operational Mode. Larger and More Complex Networks Are Easily Analyzed Due to Ability to Simultaneously Monitor its 24 Discrete Interfaces With Up to 64 Time Slots

Easily Integrates Into a LAN, and Offers the Capability of Remote Operation

Virtually All Signaling Data May Be Decoded Via the 150 (approx.) Different Implemented Protocols Currently Available, Many of These Country– and Manufacturer-specific. The Flexible Protocol Stack Editor Accommodates Every Useful Combination of All Existing Protocols

Analysis of the Communication Protocols' Different Layers is Easy, Both Online and Offline

Application-specific Measuring Tools Are Provided to Enable Efficient Measuring Tasks on Site

Tektronix

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Measuring Modules

The K1205/K1205 Plus is specifically designed to offer the user exceptional flexibility and expandability. The 4/7 slots enable a broad variety of configuration options, as well as the ability to expand as the user's needs grow.

The test hardware includes VME bus cards with DS1 (1.544 Mb/s, PCM24) and E1 (2.048 Mb/s, PCM30) interfaces (PRIMO module).

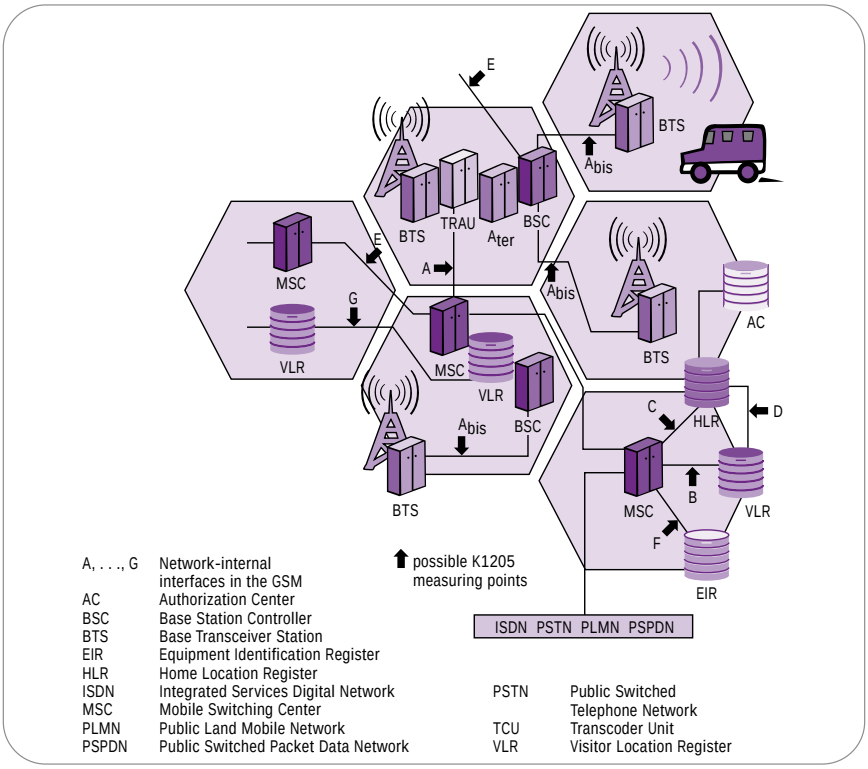
Additional modules in the narrow-band ISDN category, such as S_0, U_{2B1Q} and V./X., are also available.

E1/DS1 Interface (PRIMO)

The VME bus card with 4*DS1 or 4*E1 interfaces is designated PRIMO. Configuration as an E1 or DS1 interface is set via the supplied configuration software. The interfaces are connected to the transmission lines via DB9 connectors and matching adapter cables. In monitoring mode, the K1205 allows connection to protected or unprotected monitoring points. The PRIMO module has an integral adaptive preamplifier for testing the input signals, which the preamplifier can attenuate by user-selected increments. The software enables the user to connect test modules via either high impedance or low impedance inputs. Up to four (six for K1205 Plus) interfaces with 8 time slots (received in full-duplex operation) can be analyzed simultaneously. With six PRIMO modules installed, the K1205 is capable of simultaneously monitoring 24 interfaces with 48 time slots. Activity on the monitored lines is displayed by LEDs on the module.

BAI Board

The BAI Board (Basic Access Interface) is required for measurements on ISDN lines and connections. The supply voltage necessary for supplying power to the terminal equipment to be tested is supplied by a separate supply module which is plugged into the interface modules and connected to the base module.



▶ *Figure 2.*

The BAI Board can be fitted with two interface modules (S_0, U_{2B1Q}) depending on the purpose of application. The interface modules establish the necessary different circuits dependent on the interface standard.

The BAI Board also features the following auxiliary connections:

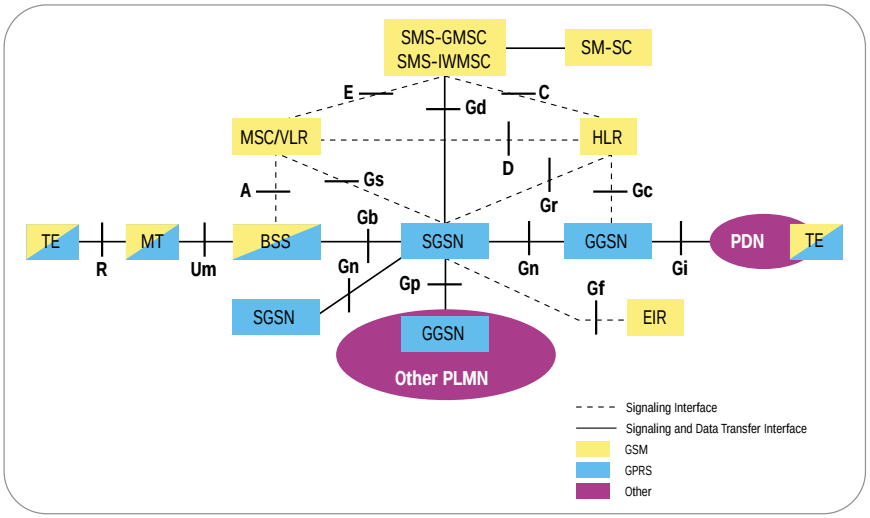
- ▶ One auxiliary connection for the supply voltage
- ▶ One B channel connection: The B channels can be accessed externally with the appropriate setting in the configuration menu

Two LEDs, "L1" (Layer-1 activated) and "PF" (Power Feeding), are assigned to each line connector which shows the line status. The U_{2B1Q} interface module responds in the line like a U-repeater.

Special Performance Features

The K1205 is remarkably easy to use! Whether it is setup of the test hardware and the software, connection to the PCM sections (E1/DS1) or narrow-band ISDN sections or protocol recognition and link selection, the K1205 is a snap to get up and running. Measuring modules are installed by simply plugging them in – no further hardware settings or configurations are necessary. When connecting the K1205 to PCM sections, the automatic configuration function determines the correct signaling channels and framing of the PCM sections. Manual pre-settings are no longer necessary. All active signaling channels are available, and may be displayed either simultaneously or separately (once the K1205 completes its automatic configuration).

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



A specific connection is selected by simply pressing a key, and data from this connection alone will be displayed. The user can then reduce this received data to the desired, essential data with the aid of the K1205's sophisticated filters.

The K1205 Protocol Tester provides several powerful display formats. Message components from random sources are decoded online. All important message components are interpreted and issued not only in binary or hexadecimal form, but also in a mnemonic form (parallel online and offline). Special search functions enable target tracking of any message components, such as an IMSI/TMSI (International/Temporary Mobile Subscriber Identification).

An important component of the K1205 is its powerful, graphical protocol stack editor. This sophisticated editor allows the user to easily compile the required protocols out of the multitude of protocols implemented in the K1205.

Application Fields

Mobile Wireless Networks

The K1205 Protocol Tester is designed for use in the following mobile wireless networks:

- ▶ GPRS
- ▶ GSM900
- ▶ DCS1800
- ▶ PCS1900
- ▶ CDMA
- ▶ NMT900

The K1205 is capable of monitoring at all line interfaces.

The layout of the interfaces between the relevant system components is shown in Figure 2.

The K1205 monitors multiple interfaces simultaneously in order to evaluate the interaction of discrete network components. Two examples are shown in Figures 3 and 4. In the application example shown in Figure 3, the K1205 analyzes the signaling from the base transceiver station (BTS) to the base station controller (BSC), from BSC to the mobile switching center (MSC) and from MSC to the public telephone network (PSTN).

Furthermore, K1205 monitoring simultaneously determines if the cellular telephone of the calling mobile subscriber is entered in the home location register (HLR), i.e., if the mobile switching center (MSC) is carrying out this request.

In the application example shown in Figure 4, the K1205 detects whether the handover of a mobile subscriber from one base transceiver station (BTS) to the other is properly functioning. In this example, the two BTSs do not share a connection to a common BSC; instead each BTS is connected to its own BSC, with both of the BSCs residing on the same MSC (Inter BSC, Intra MSC Handover).

GPRS

GPRS (General Packet Radio Services) is the key technology to increase data rates as well as radio resource efficiency in GSM based mobile radio networks. By introducing two new network nodes (SGSN, Serving GPRS Support Node and GGSN, Gateway GPRS Support node) GPRS establishes an overlay network with direct access to packet data networks.

According to the ETSI reference model, 9 new interfaces have been defined: G_b, G_i, G_n (G_p), G_c, G_d, G_f, G_r and G_s. Besides that the GSM A_{bis} interface is modified and it reflects manufacturer specific adaptations. The K1205 offers monitoring capability for all of these interfaces.

The K1205 supports all Frame Relay Modi (channelized, unchannelized, fractional) on the G_b interface without restrictions. For analysis on the G_n/G_i interface an optional Ethernet board may be used.

As the complexity of the networks grows continuously, it is important to monitor not only a single interface. The K1205 is the ideal tool to analyze GPRS traffic as it is able to monitor several different interfaces (such as G_b, G_s, A, and A_{bis}) at the same time. It displays all the traffic in one window and offers well known tools to reduce the amount of data (Filter, Zoom) as well as statistics.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

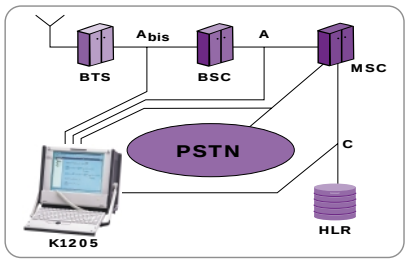


Figure 3.

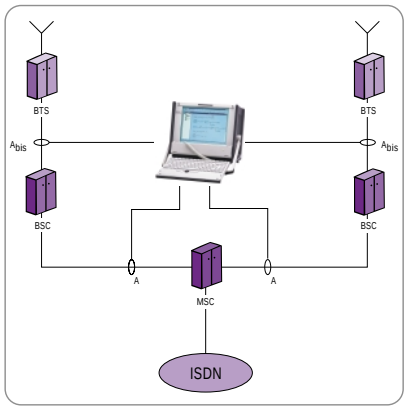


Figure 4.

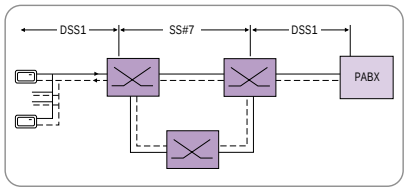


Figure 5.

Fixed Network

Signaling in the fixed network is divided into two areas (Figure 5):

- Signaling between switching center and terminal (DSS1 or also D-channel protocol)
- Signaling between switching centers (SS#7)

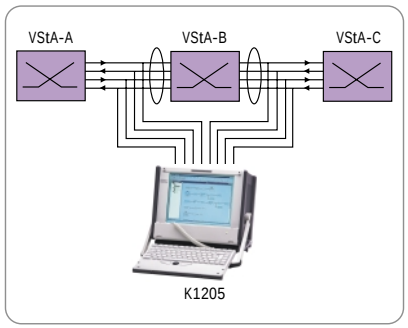


Figure 6.

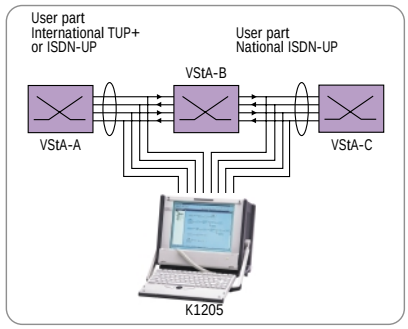


Figure 7.

Some examples of where the K1205 may be used:

- Monitoring the signaling between two switching centers. All links between the switching centers are simultaneously monitored, a vital capability given that it is impossible to predict on which link of a link set a specific call's signaling traffic will be found. This unpredictability is an inherent byproduct of the load-sharing mechanism implemented in the switching center (Figure 6).
- Simultaneous monitoring of all full duplex signaling links between two switching modes, regardless of each link set's configuration. The functionality, performance and through switching time of the switching center with input and output link sets are analyzed (Figure 7).

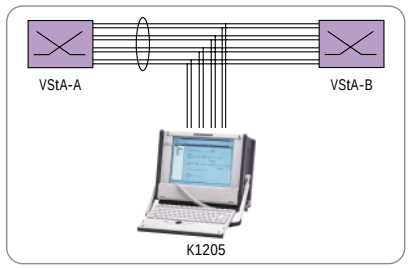


Figure 8.

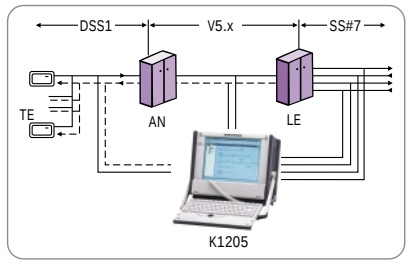


Figure 9.

- Simultaneous decoding of several protocols. The protocol tester monitors gateways from national to international networks, as well as those from the fixed network to the mobile wireless network (Figure 8).
- Signaling SC <—> TE
  The protocol tester checks the interaction of switching centers and signaling in the subscriber terminal. Here, the protocol tester simultaneously analyzes different protocols (DSS1 and SS#7) at the BRI and SS#7 interface (Figure 9).
- Access Networks
  The protocols of the V5.x interface are implemented for analysis of the access network (Figure 10).

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

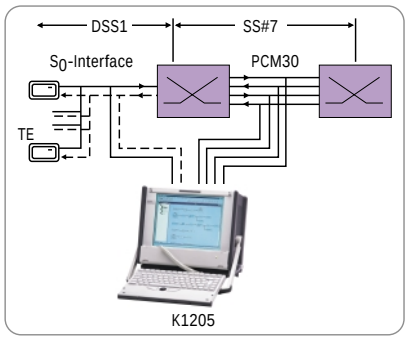


Figure 10.

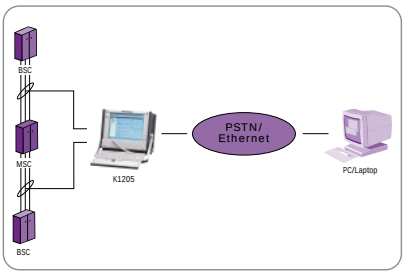


Figure 12.



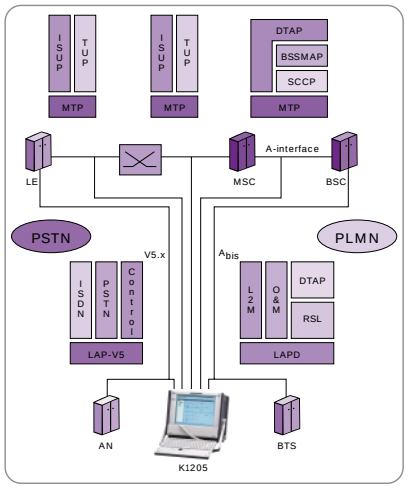


Figure 11.

Interworking

The K1205 Protocol Tester is also well suited for interworking measurements, due to its compatibility with a broad range of protocols.

With the K1205 it's easy to define the required protocol stack for any given link. An application example is shown in Figure 11.

The data decoded with different protocol stacks can be displayed in one common window.

Software-supported Solutions

The K1205 Protocol Tester offers a variety of tools to support the user:

- Graphical display of the complete channel assignment of a PCM30/PCM24. At a glance the user can see which time slot is currently occupied and where there is signaling
- Call tracing with a subscriber number or with an IMSI
- Automatic configuration facilitated by the K1205's automatic recognition of both signaling and framing
- 50 online and 200 offline counters are available for statistics; the user can define these counters as required
- Display of the signaling load per link; e.g., the Erlang value of individual signaling links may be measured and displayed

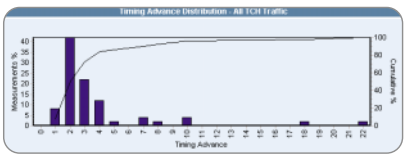
Remote Operation (optional)

The K1205 can be remotely operated via ISDN, Ethernet or modem (see Figure 12).

A_{bis} Cell Analyzer

Push-button Analysis of Base Station performance

The Tektronix Cell Analyzer is an additional software option to the Tektronix K1205, high-end, lightweight signaling protocol analyzer for telecommunication network monitoring. The software, based on the Actix A_{bis} Analyzer™ technology, provides a simple, easy to use method of using data from the A_{bis} interface to monitor and validate the radio performance of base stations, literally at the push of a button. Typical analysis tasks such as Cell Statistics, Dropped Call Analysis, Radio Link Analysis, Handover Analysis, and Traffic Analysis are preset within the software framework; simply selecting one of these tasks prompts the software to automatically perform the analysis and produce a report, which can be either printed or communicated in electronic format. Ideally suited for engineers in the field



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

▶ Outgoing Handover Analysis

Target BCCH	Target BSIC	Handover Analysis	Number of Handovers
61	17	32.4%	11
69	11	32.4%	11
72	17	2.9%	1
73	14	2.9%	1
77	16	29.4%	10

needing to check individual units contributing to network performance on a daily basis, the A_{bis} Cell Analyzer can also be implemented in a central internal location to allow managers to maintain an overview of the whole performance. The accurate detailed analyses of cell-based data available through the A_{bis} Cell Analyzer can facilitate the precise determination of possible frequency re-use and minimization of interference. Traffic hotspots can be easily identified allowing optimal positioning of micro cells in order to increase capacity at minimal cost. Handover optimization can lead to fewer dropped calls.

▶ Characteristics

Hardware

Description – Portable protocol tester with built-in color TFT display and keyboard. The K1205 is based on a VME bus with 4 (7 for K1205 Plus) slots. The first slot is reserved for a PC module, with the remaining slots intended for interface modules.

Central Computer –
CPU Pentium® with 64 MB RAM.
VME bus PC.

Connections –
2 x serial (sub D9).
1 x parallel (Centronics).
Keyboard.
SCSI.
XVGA (external monitor).
Ethernet (10Base-2, 10Base-T).
PCMCIA card interface (2 x Type II).

Mass Storage –
One 3.5 in. floppy disk drive (1.44 MB formatted overall capacity).
One SCSI hard disk drive.
(≥2 GB formatted overall capacity).

Monitor –
Built-in active TFT display (12.1 in.).
Resolution 1024 X 768 pixels.
External monitor connection (DIN).

Keyboard – PS/2-Compatible keyboard with trackball.

Power Supply

Line Adapter – Safety class I (protective grounding).

Line Voltage –
Rated Range of Use: 100 V/240 V ±10%.
Automatic changeover.

Line Frequency – Rated Range of Use: 50/60 Hz, –6% to +5%.

Power Consumption – Maximum Value: 460 VA.

Environmental Characteristics

Ambient Temperature –
Reference Value: 23°C ± 5% (73°F ± 5%).
Rated Range of Use: 4 to 40°C (39 to 104°F).
Limit Range for Storage and Transportation: –20 to +55°C (–4 to +131°F) at 85% relative humidity.

Barometric Pressure, Altitude –
Reference Value: 101.3 kPa (1013 mbar).
Rated Range of Use I: 70.0 to 106.0 kPa (up to 2200 m) (700 to 1060 mbar).
Limit Range of Operation: 53.3 to 106.0 kPa (up to 4300 m) (533 to 1060 mbar).

Interface Modules

BAI (Basic Access Interface) – Interface module for performing measurements on ISDN S_0 and U_{2B1Q} lines with the following connectors: 2 x monitoring (duplex).

E1/DS1 (PRIMO) – Interface module for performing measurements on PCM24 and PCM30 lines with the following connectors: 4x monitoring (duplex).

V./X. – Interface module for performing measurements on V.24, X.21 or V.35 lines with the following connectors: 2 x monitoring (duplex).

AP-4 – Application processor unit with 64 MB RAM.

Radio Interference Suppression – In accordance with EC guidelines 89/336/EEC and their modifications.

Safety – UL3111-1, CSA1010.1, EN61010-1, IEC61010-1.

Physical Characteristics*1

Dimensions	**mm**	**in.**
Height	344	13.5
Width	288	11.3
Depth	190	7.5
Weight	**kg**	**lbs.**
Net	approx. 8 to 10*2	17 to 20*2

*1 Keyboard attached, no carrying handle.

*2 Depending on equipment.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Software

Operating System – Windows® NT 4.0.

Application Software –
Operation of the protocol tester is via a graphical user interface system in Windows NT, context-sensitive online help.
All tools required for passive monitoring and interactive protocol testing are provided.

Automatic Configuration – Searches the signaling channels in the connected PCM sections automatically.

Protocol Stack Editor – The protocol stack can be selected from numerous supplied protocol stacks or combined with the help of a graphical editor.

Data Acquisition

Time Stamps – Received data with a resolution of 10 µs, unique assignment of the events in different channels.

Protocol Data Acquisition Buffer – max. 30 MB per PRIMO module.

Data Recording – Designation with time stamps, also with online recording on disk/hard disk.

Control Possibilities –
Identical for online and offline applications.
Pipeline at trigger event.
Acquisition of all or filtered data.
Trigger and filter depth up to every detail of every defined message (e.g., the value of the satellite indicator or the number of the called subscriber).
Trigger-controlled actions such as start/stop of the data recording.

Data Reproduction –
Cyclical, passive data monitoring/holding.
Representation of all or filtered data.
Multiple, user-selectable modes for viewing data.
Printing of a selected range.
Saving the data on disk/hard disk.
Representation of the RAM or file contents by scrolling, jump to the beginning or end.
Searching with search mask.
Positioning on time.
Display of all messages to one connection by pressing a key.

Application Programs –
Evaluation and graphic display of the signaling information in accordance with different criteria both in online and offline operation.
Several applications are carried out simultaneously.

▶ Ordering Information

K1205

Protocol Tester.

Four slot instrument, Pentium® CPU with color TFT display, 1.44 MB floppy disk drive, ≥2 GB hard disk, keyboard, autorange power supply unit 230 V/115 V, Windows® NT 4.0, transport case, basic software for monitoring applications, with English documentation. Order 7KK1200-1PM11.

K1205 Plus

Protocol Tester.

Seven slot instrument, Pentium CPU with color TFT display, 1.44 MB floppy disk drive, ≥2 GB hard disk, keyboard, autorange power supply unit 230 V/115 V, Windows NT 4.0, tranport case, basic software for monitoring applications, with English documentation. Order 7KK1200-1BM11.

Interfaces	Order No.
ISDN Basic Rate Interface Board Modules combined with power module for line feeding, different jacks for Simulation and Monitoring	7KK1200 –
RJ-45 jack type with two S-Interfaces	2SS_1
RJ-45 jack type with one S-Interface	2SQ_1
and one U_{2BIQ} Interface RJ-45 jack type with two U_{2BIQ} Interfaces	2QQ_1
Ready installed in K1205	0
Separate delivery (for later installation/reconfiguration by customer) with English documentation	1
V./X. Interface Board for V.24, X.21 and V.35 with two V./X. interfaces	7KK1200 – 2VV_1
Ready installed in K1205	0
Separate delivery (for later installation/reconfiguration by customer) with English documentation	1
PRIMO Board with 4* PCM Interfaces	7KK1200 – 2MM_1
Ready installed in K1205	0
Separate delivery (for later installation/reconfiguration by customer) with English documentation	1
Application Processor (AP-4) with 64 MB RAM	7KK1200 – 4AD_1
Ready installed in K1205	0
Separate delivery (for later installation/reconfiguration by customer) with English documentation	1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

K1205 Support

Service Options –

Service contract per year for basic device; without repair of interface boards; without calibration. Order 7KK1210-0SA10.

Service contract per year for 1 interface board; without calibration. Condition: Service Contract for the basic device 7KK1210-0SA10. Order 7KK1210-0SB10.

Calibration per year for 1 interface board. Condition: Service Contract for this board (7KK1210-0SXXX). Order 7KK1210-1CA10.

Calibration for 1 interface board. Order 7KK1210-1CB10.

Extended warranty up to 2 years. Order 7KK1210-2WA10.

Extended warranty up to 3 years. Order 7KK1210-2WB10.

Training Courses –

Please visit our Internet pages for detailed information.

Accessories

CD-ROM Drive – Order 7KK1200-5HC11.

Carrying Bag – Order 7KK1200-5BG11 for unit with 4 slots.

Transport Case – Order 7KK1200-BR11 for unit with 4 & 7 slots.

Remote Operation (optional) –

Remote Operation Software ReachOut (English). Order 7KK1229-4RR11.

PCMCIA/PC card modem for K1205. Order 7KK1200-5HP11.

External ISDN modem for K1205. Order 7KK1200-5HR11.

Cables –

Coax-unbalanced. 75 Ω. Order 7KK1200-5CC11.

Balanced, 120 Ω, open end. Order 7KK1200-5CE11.

Balanced, 120 Ω, 3-pole. Order 7KK1200-5CD11.

Balanced, 120 Ω, bantam. Order 7KK1200-5CB11.

Adapter BNC coax. Order 7KK1200-5CA11.

K1205 Software

GPRS Software Packages –

GPRS Network: 7KK1205-65Pxx.

Alcatel GPRS A_{bis}: 7KK1205-6PAxx.

Ericsson GPRS A_{bis}: 7KK1205-6PExx.

Lucent GPRS A_{bis}: 7KK1205-6PLxx.

Nokia GPRS A_{bis}: 7KK1205-6PNxx.

Siemens GPRS A_{bis}: 7KK1205-6PSxx.

Nortel GPRS A_{bis}: 7KK1205-6PTxx.

Mobile Communications Software – Contains GSM Phase 1, GSM Phase 2, GSM Phase 2+, DCS1800, PCS1900, CDMA, NTM900. Order 7KK1205-6SM11.

Access Network Software – Contains ISDN D-channel, V5.1, V5.2, PHI, DASS2, DPNSS. Order 7KK1205-6SA11.

CORE INAP Software – SS#7 & IN signaling, contains country variants, including ANSI/Bellcore. Order 7KK1205-6SC11.

Manufacturer Specific –

Motorola (A_{bis} Europe, USA). Order 7KK1205-6EA11.

Nokia (A_{bis} O&M). Order 7KK1205-6EB11.

Lucent (A_{bis} O&M). Order 7KK1205-6EC11.

Alcatel (A_{bis} O&M). Order 7KK1205-6ED11.

Ericsson (A_{bis}). Order 7KK1205-6EE11.

MCI (ISUP). Order 7KK1205-6EF11.

Siemens (A_{bis} O&M, RSL, A_{sub}). Order 7KK1205-6EG11.

A_{bis} Cell Analyzer Software – Works on K1205 or PC with one user license. Includes support contract for the first year. Order 7KK1229-1AA11.

A_{bis} Cell Analyzer Package – Includes portable K1205 with basic monitoring software for collecting transparent data (7KK1200-1PM11), E1/DS1 Interface Board (7KK1200-2MM01) and A_{bis} Cell Analyzer Software (7KK1229-1AA11). Order 7KK1269-6AA11.

Contact Tektronix:

ASEAN Countries (65) 356-3900

Australia & New Zealand 61 (2) 9888-0100

Austria, Central Eastern Europe,
Greece, Turkey, Malta & Cyprus +43 2236 8092 0

Belgium +32 (2) 715 89 70

Brazil and South America 55 (11) 3741-8360

Canada 1 (800) 661-5625

Denmark +45 (44) 850 700

Finland +358 (9) 4783 400

France & North Africa +33 1 69 86 81 81

Germany +49 (221) 94 77 400

Hong Kong (852) 2585-6688

India (91) 80-2275577

Italy +39 (2) 25086 501

Japan (Sony/Tektronix Corporation) 81 (3) 3448-3111

Mexico, Central America, & Caribbean 52 (5) 666-6333

The Netherlands +31 23 56 95555

Norway +47 22 07 07 00

People's Republic of China 86 (10) 6235 1230

Poland (48) 22 521 5340

Republic of Korea 82 (2) 528-5299

South Africa (27 11) 651-5222

Spain & Portugal +34 91 372 6000

Sweden +46 8 477 65 00

Switzerland +41 (41) 729 36 40

Taiwan 886 (2) 2722-9622

United Kingdom & Eire +44 (0)1344 392000

USA 1 (800) 426-2200

For other areas, contact: Tektronix, Inc.
Export Sales, P.O. Box 500, M/S 50-255,
Beaverton, Oregon 97077-0001, USA 1 (503) 627-1916

For the most up-to-date product information
visit our web site at www.tektronix.com

Product manufactured in ISO9001 registered facilities

Copyright © 2000, Tektronix, Inc. All rights reserved. Tektronix products are covered by U.S. and foreign patents, issued and pending. Information in this publication supersedes that in all previously published material. Specification and price change privileges reserved. TEKTRONIX and TEK are registered trademarks of Tektronix, Inc. All other trade names referenced are the service marks, trademarks or registered trademarks of their respective companies.

08/00 HB/XBS 2FW-12133-3

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP