



Enabling Australia's Field Technicians to build, troubleshoot and maintain better communications networks.



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FREECALL 1800 680 680

8635

Telecom Protocol Analyzer



Key Features

- Full range of telecom protocol decodes for UMTS incl. HSDPA, GSM/GPRS/EDGE, CDMAone, CDMA 2000, CDMA 2000 1x Ev-Do, ACCESS and SS7 networks - Suitable for all 2G, 2.5G, 3G and NGN technologies
- Rugged modular portable analyzer with integrated 15" display
- 1.8 GHz CPU main board with large disk drive and 4× USB 2.0 interfaces
- 5 slots for measurement boards available
- Measurement boards are:
 - 4× E1/T1 PCM trunks (8× Rx)
 - 2× E1/T1 PCM trunks (4× Rx)
 - 4× E1/T1 ATM trunks (8× Rx)
 - 2× 10/100 Fast Ethernet (4× Rx)
 - 1× 10/100/1000 Ethernet (2× Rx)
 - 2× STM-1/OC-3 optical trunks (4× Rx)
- Easy to operate analyzer, running under Windows XP™
- Comprehensive recorder, filter, trigger and post processing capabilities

The JDSU 8635 is a powerful, portable protocol analyzer used for effective testing of all fixed interfaces of mobile radio networks (GSM, GPRS, CDMA, UMTS), access networks (V5, ISDN, GR303) and SS#7 networks. It supports today's complex multi-technology networks like converged networks or HSDPA for UMTS and offers powerful applications for detailed analysis and statistical evaluation of signaling information on-line and off-line. The JDSU 8635 is designed for installation, maintenance, troubleshooting and network optimization.

The telecom protocol analyzer is particularly valuable for:

- integration test labs of manufacturers and operators
- professional service teams of network element manufacturers,
- engineering, planning, operation and maintenance teams of operators.

The modular concept allows to combine various test interfaces and extend their number, to add applications and decodes. The JDSU 8635 provides the platform for future technologies that grows with your needs.

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Protocol Analyzer Application

These decoding and post-processing features are the same for on-line and off-line usage and included in both packages: 8635 protocol analyzer and 8635 off-line protocol analyzer.

Protocol viewer

The protocol viewer is the main function of the analyzer. In summary and detail view the decoded information of the monitored link is displayed.

Summary view

This window provides:

- One event per line
- Event parameters listed in columns per default: Direction, physical link (trunk, timeslot), logical link, call identifier, message contents, timestamp
- User preferences for customizing the summary view:
 - Timestamp format and reference start time
 - Font
 - Display depth of "message contents" column: user-definable information at protocol, message and information element level
 - Protocol identification: different colors for different protocols
 - Signaling point code/circuit identification code display selectable (names, hex, decimal)
- User definable columns: order of columns selectable
- Columns displaying user-defined information can be added
- Display settings can be saved

Detail view

This window provides:

- Complete plain text and parametric decoding of all messages and information elements
- Binary view
- Hex view
- User preferences for customizing the detail view
 - Display depth: User definable suppression of less relevant information at protocol level, message level, and information element level
 - Binary view on/off
 - Timestamp format
 - Font
 - Protocol identification: different colors for different protocols
 - Signaling point code/circuit identification code display selectable (names, hex, decimal)
 - Hex view font and color settings
 - Settings can be saved

"Find" function

In a huge amount of data this feature helps quick and easy location of any specified parameter below.

- Protocol messages, information elements and information element contents (e.g. calling party number)
- Frame number
- Date/time

Filter

With filters down to bit level the displayed information is customized and reduced to what is of main interest for the user.

- Filter categories:

Protocol filter: on all protocol layers, at messages level, information elements level, down to information element contents level (decimal, binary or mnemonic values).

Link filter

Error filter

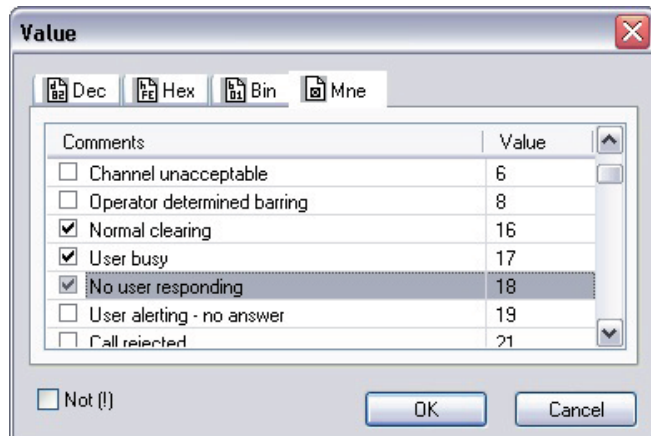
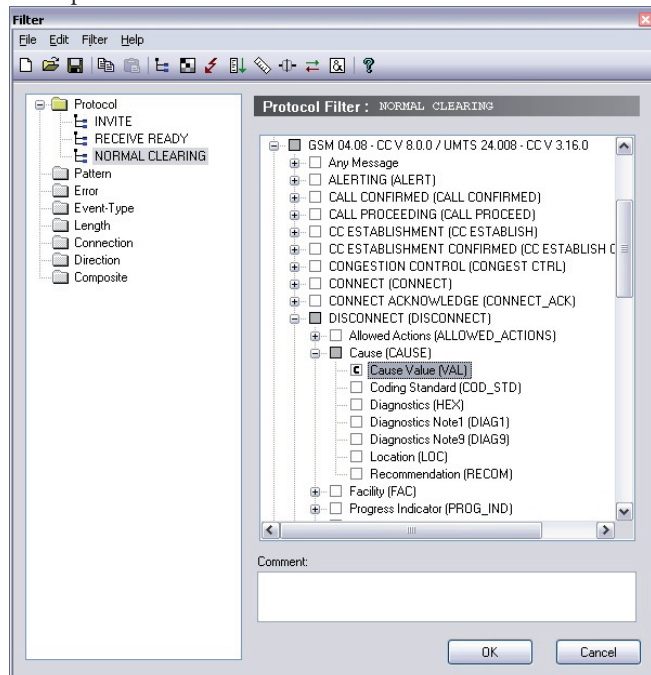
Event type filter

Pattern filter

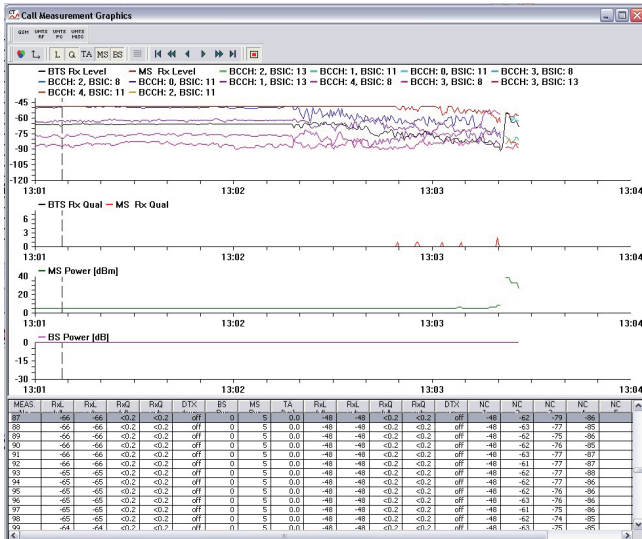
Length filter

Direction filter

Composite filter



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- Filters can be combined logically using the operators AND, OR, NOT
- Short cut buttons for frequently used filters grouped as:
 - Suppress filters
 - Show filters
- Filter settings can be saved

Data export

Frames in summary and detail view can be marked to:

- Export marked frames to ASCII
- Export marked frames to CSV
- Export marked frames to binary (8635, 8620 and MA-10 format)
- Export to Tektronix file format

Call trace

By one mouse click the call trace assembles the signaling information related to one specific call/session and displays it in a separate window.

- Can be activated for message selected in the summary view or detail view
- Can be triggered (depending on protocols) by called/ calling party number, called+calling party number, original number, redirecting number, redirection number, called/calling SCCP number, called+calling SCCP number, IMSI, TMSI, SCCP number
- Call trace result window is enhanced with Graphical window (Abis only)
 - Tabular call trace window (Abis only) and Rec. File Format (optional)
- Simultaneous graphical view for call trace on Abis interface of up to 5 parameters (axes are scalable):
 - RxLev (for BTS, MS and neighbor cells)
 - RxQual (for BTS and MS)
 - Timing Advance
 - MS Power (in dBm)
 - BS Power (in dB)

Call data records

Call data records show a summary of main information of all calls/sessions at a glance. The tabular overview provides the user with parameters on "per call" basis.

The 'CDR Summary' window displays a table of call data records for the time range 12:01:30.000.000 - 15:32:04.012.937.

S	Called Number	Calling Number	Release Cause	Time
	"900001"		Normal clearing	13:34:0>
				13:34:0>
				13:34:4>
				13:34:4>
				13:34:5>
	"0040000320"		User busy	13:34:5>
				13:35:1>
				13:35:1>
				13:35:1>
				13:35:1>

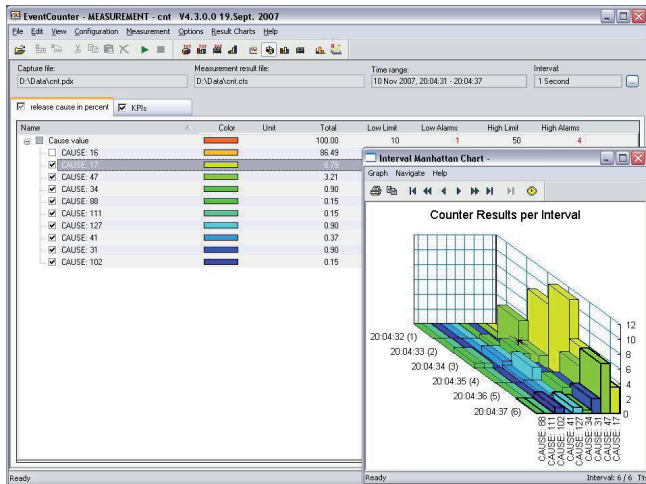
- Created on-line and off-line
- Expansion of a CDR contains all frames of a call (call trace)/session (session trace based on a PDP context).
- Contain following information elements per call, depending on monitoring interface:
 - Start time Duration
 - Stop time Status of call
 - Call setup time Call release time
 - OPC (originated point code)/DPC
- Can optionally contain:
 - Called/calling party number
 - Original/redirecting/redirection number
 - Release cause
 - Call type
 - Transmission medium requested
 - IMSI, TMSI, BVCI, TLLI, ...
- User-defined columns as in the summary view can be added
- Columns can be hidden or changed in order
- Filters on CDR information elements possible
- Event counters on CDR information elements possible

Event Counter

Event Counter is a powerful and flexible application which supports the user in reporting as well as troubleshooting tasks. Any event or message can be defined for counting. By setting thresholds to a maximum or minimum level, the occurrence of critical numbers of events are easily determined and corrective actions can be taken.

- Identical for on-line (real-time statistics) and off-line (post processing) use
- Event counters can be set per timeslot. The configured timeslots are automatically detected and displayed.
- Fully user-definable event counters, with the possibility for any element of a protocol or CDR to be counted.
- User-defined measurement interval selection down to a minimum of 1 second
- User-definable counter categories

- Counters defined using the standard filter dialog (see filter description for settings)
- Filters can be imported and used as counter definition, counters can be exported and used as filter definition.
- Counter definitions can be saved and ex- or imported to/from other 863x.
- User-definable upper and lower threshold values
- Alarm generated if the counter value exceeds the threshold. An alarm log is generated to track triggering event.
- Display formats:
Bar chart
Manhattan chart
Pie chart
Table
Timeline
- Graphical display of min/max alarm
- Data export in CSV format, for reuse of statistics in reports (spreadsheet, word processor, etc.)
- Graphical printout, for reuse of statistics in reports



Supported Counter Types

Filtered Counters, counting for occurrences of specific protocol elements. All kinds of protocol elements are possible.

Dynamical Counters, can be set to any protocol element. For each new value of the selected protocol element a new counter is generated. Thus, the total of different values will be counted.

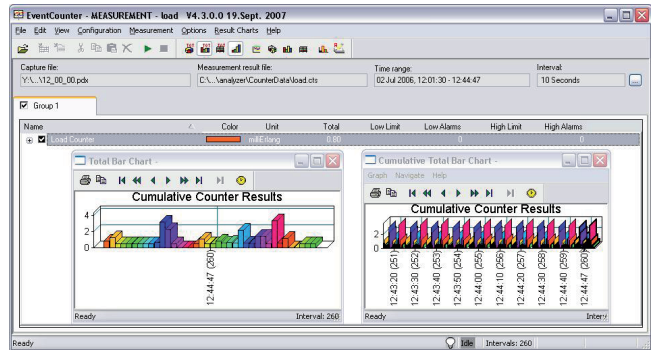
Load Counters, counter which analyses the traffic load, either in Erlang or kbit/s.

Calculated Counter, counter which results from an arithmetic operation between counters.

Field Value Counter, counter which accumulates the occurrence of one protocol element volume.

Load Analysis

Load Analysis measures the signaling load of monitored links and allows fast determination of traffic and capacity problems in the network.



- Analysis of load per signaling timeslot in mErlang
- Auto-detection and display of timeslots
- Graphical display of load:
Tabular
Bar chart
Manhattan chart
Timeline
- Displayed channels can be selected
- Graphical display of min/max alarm

Special functions for GPRS and UMTS analysis

Reassembly

This function operates at Abis and IuB interfaces. With RLC/MAC reassembling of PCU frames, these protocols can be decoded and analyzed.

IuB & Gb deciphering

In UMTS and GPRS user and control plane an encrypted mode can be transmitted over the radio access network interfaces. The 8635 decipheres the encrypted data at Gb and IuB interfaces:

- by simultaneous monitoring of Gr and Gb interface and gathering deciphering information on both interfaces
- by monitoring of the Gb interface only. The deciphering key kc has to be inserted manually by the user for the corresponding IMSI.
- by simultaneous monitoring of IuPS/IuCS and IuB.

Applications for on-line analysis

These features are included in the 8635 protocol analyzer and are only required for on-line analysis.

Recorder

Starting the recorder captures all data to HDD. By setting filters prior to recording the amount of stored data can be reduced. Several recorders can run simultaneously.

Record filters for

- PCR
- FISUs
- Messages
- Information elements
- Information element contents

Record start modes

- Manual
- Automatic at predefined start time

Record stop modes

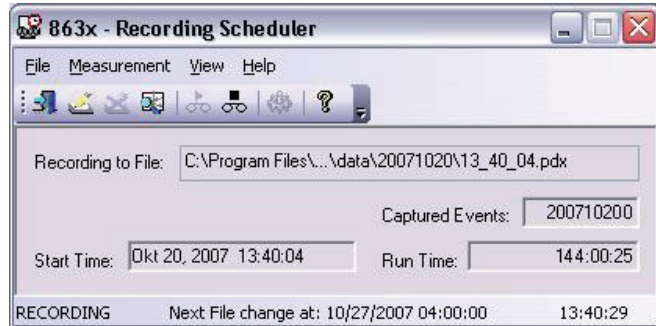
- Manual
- Automatic at predefined stop time
- Automatic when remaining hard disk space reaches predefined value

Online display information

- Elapsed time
- Start time
- Number of captured events and size of capture file
- Name of capture file

Recording scheduler

The Recording Scheduler allows a 24/7 recording, based on user-defined time interval and capture of new recording files with new file name. The completed capture file can be uploaded to a file server automatically.



With this function permanent monitoring is easy for the user. Files are generated and stored in an automated way making monitoring more efficient.

Time stamps

- The time stamp resolution is 1 μ s.
- Time stamps are synchronized across multiple interfaces, whatever the type of interface (E1/T1 PCM, FastEthernet, STM-1/OC-3).
- Time stamps per frame are displayed in the summary view. The display setting can be in absolute time or relative to a selected frame.

Automatic configuration

The 8635 automatically detects and configures the number of installed cards and interfaces. Timeslots are detected automatically if they are HDLC frames.

Configuration of

- System level
- Card level
- Interface level

Scanner

Automatic detection of signaling channel contents on Abis interface:

- 64/56 kb/s: FAS/NFAS, signaling, PCM idle pattern, static pattern
- 16 kb/s: Idle speech TRAU, speech TRAU, data TRAU, O&M TRAU, static pattern, signaling
- 8 kb/s: Speech TRAU, data TRAU, O&M TRAU, static pattern

Alarm monitor

Layer 1 problems are monitored to determine problems with the basic connection to the system under test.

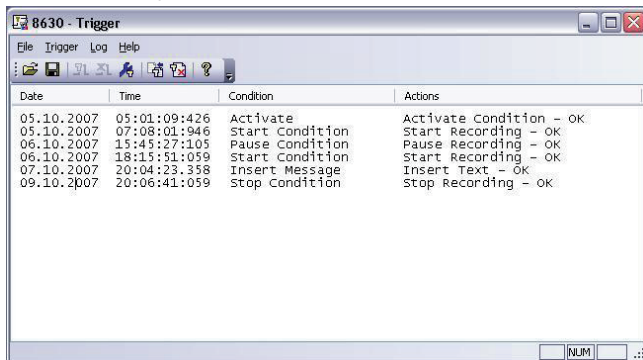
- Two software indicators (Rx1, Rx2) per PCM/Ethernet/STM-1/OC-3c link, i.e. 16 software indicators when four E1/T1 boards are fitted
- Software indicator is red if link is not connected or an alarm occurs. Software indicator is green if link is connected and no alarm occurs.
- Click on software indicator to get a receiver-specific detail view of layer 1 alarms

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Triggers

By using triggers the user is able to carry out monitoring tasks in an automated way. Recording e.g. can be started only when a certain message occurs, eliminating the capturing of non-useful information and increasing the efficiency of the evaluation.

- Combination of a specified condition and one or more predefined actions
- Conditions:
 - Length of a frame
 - Frame type
 - Errors
 - Protocol elements
- Actions:
 - Activate condition
 - Activate condition once
 - Insert text message into data file
 - Start recording
 - Stop recording
 - Pause recording



Date	Time	Condition	Actions
05.10.2007	05:01:09.426	Activate	Activate Condition - OK
05.10.2007	07:08:01.946	Start Condition	Start Recording - OK
06.10.2007	15:45:27.105	Pause Condition	Pause Recording - OK
06.10.2007	18:15:51.059	Start Condition	Start Recording - OK
07.10.2007	20:04:23.358	Insert Message	Insert Text - OK
09.10.2007	20:06:41.059	Stop Condition	Stop Recording - OK

Multi-user functionality

The 8635 can be operated in a multi-user environment. In that case the analyzer is monitoring links at a network element and creating a capture file while several users at remote PCs can look at the capture file and perform different analysis tasks.

For detailed information refer to 8635 configuration of 3G/UMTS.

Specifications

PC system

CPU Pentium M,	1.8 GHz
RAM	1 GB
Measurement board slots	5

Disk drives

2.5" hard disk	120 GB min
CD-ROM	CD Write 24x, CD Rewrite 10x
CD/DVD combo drive	

Interfaces

Serial (COM1)	V.24 (9-way subminiature D plug)
External keyboard	PS/2
External mouse	USB/PS/2
External monitor	VGA socket (15-way 3-row)
Ethernet 10/100/1000 Base-Tx	RJ 45
USB 2.0	4 × USB Single A

Display

15" TFT LCD module	1024×768 pixels
Brightness	approx. 200 cd/m ²
Integrated Touchpad	
Operating System	Windows XP

E1/T1 board – 2 trunks

Connectors on front panel	4 input connectors, unbalanced Bueschel 1.6/5.6 4 input connectors, balanced Lemosa EGG.0B.302
RAM	64 MB

Physical characteristics

Receiver input, unbalanced	
Impedance, terminated	75 Ω
Return loss (f < 3 MHz)	as per ITU-T G.703 § 9
High impedance	> 2 kΩ
Input voltage operating range	70 mV _{peak} to 3 V _{peak}
Maximum input voltage	± 7.5 V _{peak}
Jitter compatibility	as per ITU-T G.823/G.824
Max. bidirectional timeslots per card	32
Receiver input, balanced	100/120 Ω
Impedance, terminated	
Return loss (f < 3 MHz)	as per ITU-T G.703 § 9
High impedance	> 2 kΩ
Input voltage operating range	70 mV _{peak} to 3.6 V _{peak}
Maximum input voltage	± 7.5 V _{peak}
Jitter compatibility	as per ITU-T G.823/G.824

Clock input/output

One connector for clock input or clock output.

E1/T1 ATM board – 4 trunks

Connectors on front panel

8 E1/T1	RJ45
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Physical characteristics

Receiver input, unbalanced	
Impedance, terminated	100/120 Ω
Return loss	as per ITU-T G.703
High impedance	> 2 kΩ
Input voltage operating range	70 mV _{peak} to 3.3 V _{peak}
Jitter compatibility	as per ITU-T G.823/G.824

Connector pinning

Pin	Signal	Input/Output
1	RX	+ Input
2	RX	- Input
3 to 8	not connected	

Clock input/output

One connector for clock input or clock output.

Clock input connector	1.6/5.6
Impedance	< 2 kΩ
Input voltage operating range	0.5 V _{peak} to 5.0 V _{peak}
Maximum input voltage	± 10 V _{peak}

Electrical interface E1 (PCM 30 and PCM 31)

Bit rate	2.048 Mb/s
Line coding	HDB3
Connector	RJ45
Connector pinning	refer to the manual for the pinning table
Insertion loss	-18 dB
Sensitivity	-35 dB

Electrical interface T1

Bit rate	1.544 Mb/s
Line coding	B3ZS
Connector	RJ45
Insertion loss	-14 dB
Sensitivity	-35 dB

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Specifications

Functionalities

Monitoring of 4 E1/ATM or T1/ATM links
IMA capability
G.804-based HSL

10/100 Ethernet board – 2 trunks**Connectors on front panel**

4 full duplex 10/100 Mb/s Ethernet input connectors	RJ45
CPU	Intel Core 2 Duo, 2,16 GHz
RAM	1 GB
Data path	32/64 bit CPU/PCI bus
Compatibility	PCI Rev.2.1, IEEE 1386 (PMC), IEEE 802.3
Clock/Calendar	Real-time clock

10/100/1000 Ethernet board – 1 trunk**Connectors on front panel**

2 full duplex 10/100/1000 Mb/s Ethernet input connectors	RJ45
Or	1000Base SC multimode optical fiber
2 full duplex 1000 Mb/s Ethernet input connectors	
CPU	Intel Core 2 Duo, 2,16 GHz
RAM	1 GB
Data path	32/64 bit CPU/PCI bus
Compatibility	PCI Rev.2.1, IEEE 1386 (PMC), IEEE 802.3
Clock/Calendar	Real-time clock

STM-1/OC-3c board – 2 trunks**Optical****Connectors on front panel**

4 duplex connectors, optical	SC Duplex (Transmit, Receive)
1 input connector, unbalanced	Rosenberger 1.6/5.6 series

Physical Characteristics

Optical interface	Class 1 Laser product
Optical transceiver mode	Single mode duplex 155 Mb/s
Optical receiver input wavelength of operation	1100 to 1600 nm
maximum input power	-7 dBm
minimum input power	-33 dBm
signal detect hysteresis	1 to 4 dB

Optical transmitter output

Output wavelength	1261 to 1360 nm (typ. 1310 nm)
Transmit power	-15 to -7 dBm
Output spectrum width	max. 7.7 nm
Optical rise and fall time	max. 2 ns
Total jitter max	1.2 ns

or

Optical transmitter output

Output wavelength	1510 to 1590 nm (typ. 1550 nm)
Transmit power	-15 to -7 dBm
Output spectrum width	max. 7.7 nm
Optical rise and fall time	max. 2 ns
Total jitter	max 1.2 ns

E1/T1 PCM – 4 trunks**Connectors on front panel**

8 E1/T1	RJ45
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Physical characteristics

Receiver input, unbalanced

Impedance, terminated	100/120 Ω
Return loss	as per ITU-T G.703
High impedance	>2 k Ω
Input voltage operating range	70 mV _{peak} to 3.3 V _{peak}
Jitter compatibility	as per ITU-T G.823/G.824

Connector pinning

Pin	Signal	Input/Output
1	RX	+ Input
2	RX	- Input
3 to 8	not connected	

Clock input/output

One connector for clock input or clock output.

Clock input connector	1.6/5.6
Impedance	<2 k Ω
Input voltage operating range	0.5 V _{peak} to 5.0 V _{peak}
Maximum input voltage	$\pm$ 10 V _{peak}

Specifications

Electrical interface E1 (PCM 30 and PCM 31)

Bit rate	2.048 Mb/s
Line coding	HDB3
Connector	RJ45
Insertion loss	-18 dB
Sensitivity	-35 dB

Electrical interface T1

Bit rate	1.544 Mb/s
Line coding	B3ZS
Connector	RJ45
Connector pinning refer to the manual for the pinning table	
Insertion loss	-14 dB
Sensitivity	-35 dB
Max. bidirectional timeslots per card	256

General specifications

Safety	IEC 61010-1
Safety class	I
Over-voltage category (II for normal AC power supply)	II
Pollution grade (2 for normal AC PSU, non cast)	2
Power supply	from built-in switch-mode AC PSU
Maximum power consumption	255 VA
AC line frequency, operating range	47 Hz to 63 Hz
AC line voltage, nominal range	100 V to 240 V
Operating range	85 V to 264 V
EMC emission	IEC/EN 61326 1997 class B (CISPR 11 class B)
AC line feedback	IEC/EN 61000-3-2/-3
EMC immunity	IEC/EN 61326 1997

Miscellaneous data

Dimensions (width×height×depth in operating position) in mm	approx. 360×180×320
Weight excluding measurement cards	approx. 12 kg

Climatic and mechanical environmental conditions (PS 011/04/02)

Application	Environment class as per	
	IEC 721-3	ETS 300019-1
Storage	Class IE 12	Class 1.1
Transport	Class IE 23 with 2M3	Class 2.3 with 2M3
Operation	Class IE 72	Class 7.1 with 7M2

Table 1: Environmental classification for 8635.

Effect	Test standard IEC/EN	Application		
		Storage	Transport	Operation
Temperature	60068-2-1 and 60068-2-2	Extended to -25°C (± 5°C) to +45°C if required	-40°C to +70°C	+5°C to 40°C
Relative humidity	60068-2-56	<30°C: 5% to 95% ≥ 30°C: 29 g/m ³	<30°C: 5% to 95% ≥ 30°C: 29 g/m ³	<30°C: 5% to 95% ≥ 30°C: 29 g/m ³
Condensation		Permissible	Permissible	Not Permissible
Vibration	60068-2-6	9 Hz to 200 Hz: 5 m/s ²	9 Hz to 200 Hz: 5 m/s ² 200 Hz to 500 Hz: 40 m/s ²	9 Hz to 200 Hz: 10 m/s ² 200 Hz to 500 Hz: 15 m/s ²
Shock	60068-2-27		1000 m/s ² (6 ms) 300 m/s ² (11 ms)	300 m/s ² (6 ms) 100 m/s ² (11 ms)
Continuous shocks	60068-2-29		400 m/s ² (6 ms)	150 m/s ² (6 ms)
Drop	60068-2-31		1.2 m	0.05 m
Toppling	60068-2-31		All edges	All edges

Table 2: Main parameters of environmental classifications in table 1

Ordering information

BT226205 8635 Protocol Analyzer

The instrument for on-line and off-line analysis can be equipped with decoding packages for SS#7, GSM, CDMA, GPRS, UMTS, HSxPA, IMS and Access (ISDN, GR303, V5.x, GSM/GPRS/EDGE, CDMAone, CDMA 2000, CDMA, 2000, 1xEv-Do) networks.

Includes:

- 15" LCD monitor
- PCM and Ethernet alarm monitor
- Auto configuration and scanner (providing a dynamic display of the usage of every PCM timeslot)
- PDF format manual
- For all protocol decodes (requires at least one decode option):
 - Offline Analyzer
 - Powerful call trace function, Multi interface call trace
 - Comprehensive filters
 - Reassembly on Abis and IuB interface
 - Event counters
 - Call data records
 - Triggers
 - Load analysis

Interfaces

Plug in cards

BT22629001 E1/T1 PCM – 2 trunks

each plug in card includes
 4 × BTK499 measuring cables for 120 Ω systems
 (BTK499: 1× CF [m] to 1× LEMOSA [m], length 3 m)
 or
 4 × BTS230 adapters, 75 Ω, for BNC cables
 (BTS230: BNC [f] to 1.6/5.6 [m])
 or
 4 × BTK772 measuring cables for 120 Ω systems
 (BTK772: 1× plug phone to 1× LEMOSA [m], length 3 m)

BT22629002 Fast Ethernet interface 4 Rx

each plug in card includes:
 4× BTK110 measuring cables for 10Base-T, 100Base-TX
 (BTK110: 1× RJ45 to 1× RJ45, CAT6, length 3 m)

BT22629004 Gigabit Ethernet interface 2 Rx, electrical

each plug in card includes:
 2 × BTK110 measuring cables for 10Base-T, 100Base-TX
 or 1000Base-T networks
 (BTK110: 1× RJ45 to 1× RJ45, CAT6, length 3 m)

BT22629006 Gigabit Ethernet interface 2 Rx, optical

each plug in card includes
 2 × BTK120 measuring cables for 1000Base-SX networks
 (BTK120: 1× LC –Duplex to 1× SC–Duplex, multimode,
 length 3 m)
 or
 2 × BTK122 measuring cables for 1000Base-SX networks
 (BTK122: 1× SC–Duplex to 1× SC–Duplex, multimode,
 length 3 m)
 or
 2 × BTK121 measuring cables for 1000Base-SX networks
 (BTK121: 1× MTRJ–Duplex to 1× SC–Duplex, multi-
 mode, length 3 m)

BT22629011 STM-1/OC-3c – 2 trunks 1310 nm, optical

optical 1310 nm, single mode
 each plug in card includes:
 4 × BTK3110 measuring cables,
 (BTK3110: 1× SC–Duplex to 1× SC–Duplex, single mode,
 length 2 m)

BT22629012 STM-1/OC-3c – 2 trunks 1550 nm, optical

optical 1550 nm, single mode
 each plug in card includes:
 4 × BTK3110 measuring cables,
 (BTK3110: 1× SC–Duplex to 1× SC–Duplex, single mode,
 length 2 m)

BT22629014 E1/T1 ATM – 4 trunks

each plug in card includes:
 8 × BTK101
 (BTK101: 1x RJ45 [m] to Bantam [m], length 2 m)
 or
 8 × BTK102
 (BTK102: 1x RJ45 [m] to Bantam [m], length 6 m)
 or
 8 × BTK103
 (BTK103: 1x RJ45 [m] to 1× CF [m], length 2 m)
 or
 4 × BTK104 + 4× BTB106
 (BTK104: 1x RJ45 [m] to 2x RJ45 [m], length 2 m)
 (BTB106: Twin Balun 1x RJ45 [f] to 2x BNC [m])

BT22629015 E1/T1 PCM – 4 trunks

each plug in card includes:
 8× BTK101
 (BTK101: 1x RJ45 [m] to Bantam [m], length 2 m)
 or
 8× BTK102
 (BTK102: 1x RJ45 [m] to Bantam [m], length 6 m)
 or
 8× BTK103
 (BTK103: 1x RJ45 [m] to 1× CF [m], length 2 m)
 or
 4× BTK104 + 4× BTB106
 (BTK104: 1x RJ45 [m] to 2x RJ45 [m], length 2 m)
 (BTB106: Twin Balun 1x RJ45 [f] to 2x BNC [m])

Ordering information

Analyzer core software

BT22629350 Delivered with all 863x Analyzers.

For all protocol decodes (requires at least one decode option):

- Protocol viewer
- Comprehensive filters
- Reassembly
- Powerful call trace function
- Call data records
- Event counters and statistics
- Load analysis
- Trigger

Operates only with additional decode packages, to be selected from the below.

Protocol decodes

For detailed information refer to document 863x Protocol Decodes.

BT22629301 GSM decode package

Abis, A and MAP (includes CAMEL) interface protocol decoding of GSM 900/1800
Includes O&M decode ETSI base
Full manufacturer specific O&M decoding and/or Abis PCU decoding additionally requires one of the following decode extensions:

BT22629302 Lucent decode package
BT22629303 Nokia decode package
BT22629304 Ericsson decode package
BT22629305 Siemens decode package
BT22629306 Alcatel decode package
BT22629307 Motorola decode package (Mobis)
BT22629308 Huawei decode package
BT22629309 Nortel decode package
BT22629310 CS Core – SS#7 decode package

Decodes all SS#7 protocols according to ITU-T: SIGTRAN, CAMEL, MTP, SCCP, ISUP, TUP, INAP (ITU-T Q.1218), with various national variants

BT22629311 GPRS decode package

Gb, Gc, Gd, Gf, Gr, Gs, Gi, Gn, Gp interface protocol decoding, Abis decoding in combination with the manufacturer-specific Abis PCU decode package

BT22629312 Access – ISDN/V.5 decode package

Decodes all V5.1, V5.2, ISDN PRI and GR303 TMC protocols

BT22629316 HSL decode package
BT22629318 GSM-R decode package

Decoding of advanced speech call items (ASCI)
Voice group call service (VGCS)
Voice broadcast service (VBC)
European Train Control System (ETCS)
Enhanced multi-level precedence and preemption (EMCPP) requires GSM decode package BT22629301

BT22629321 Dynamic EDGE package
BT22629322 CDMA base package

Decodes A1, A2, A5, A8/A8; P-H, IS 41, ISUP

BT22629323 CDMA2000 package

Decodes A10/A11, A3/A7 interfaces

BT22629343 Payload decode package

Decodes FTP, HTTP, SMTP, WAP, DNS, DHCP, RADIUS, PPP... requires the GPRS BT22629311 decode package

BT22629345 Deciphering package (Gb&lub)

Supports on-line and off-line deciphering at Gb and lub interface according to GEA1, GEA2.

Requires GPRS decode package BT22629311 for Gb deciphering,
Requires UMTS decode package BT22629373 for lub deciphering.

BT22629346 NGN – IP decode package

Decodes Megaco, BICC, RTP, RTCP, SIP, H.323

BT22629361 IMA application package

This package enables Inverse Multiplexing over ATM Version 1.0 and 1.1, vor 2, 3 or 4 E1/T1 links (IMA2, 3, 4) enables

BT22629373 UMTS decode package

For protocol decoding at luB, luR, luCS, luPS interfaces

Additional software options

BT22629513 Recording-Scheduler software

Recording tool that allows automated capture file generation.
Various start, stop trigger conditions can be configured.

BT22629337 Off-line protocol analyzer software

Intended for stand-alone use to analyze capture files. Software can be installed on any PC with WindowsXP operating system.
For all protocol decodes (requires at least one decode option):
Protocol viewer
Comprehensive filters
Reassembly
Powerful call trace function
Call data records
Event counters
Load analysis
Trigger
Operates only with additional decode packages, to be selected from the above.

GSM/GPRS troubleshooting software

BT22629341 RAN-Scout software

Post processing software for troubleshooting, monitoring and optimization of GSM 900/1800/1900 and GPRS networks.

Cables & accessories

BT22629003	Calibration report 8635 calibration report Printed Manuals (Operating Manual: on-line help and PDF manuals are included)
BT22629827	Printed operating manual 8635 English
BT22629826	Installation manual "Getting Started" English
BTS230	Cables for 75 Ohm systems Adapter for 75 Ohm systems BNC [f] -- 1.6/5.6 [m]
BTK3110	Cables for STM-1/OC-3c interface single mode Cable 1xSC-Duplex -- 1xSC-Duplex, length 3 m
BTK122	Cables for 1000Base-SX networks multimode Cable 1xSC-Duplex -- 1xSC-Duplex, length 3 m
BTK120	Cables for 1000Base-SX networks multimode Cable 1xLC-Duplex -- 1xSC-Duplex, length 3 m
BTK121	Cables for 1000Base-SX networks multimode Cable 1xMTRJ-Duplex -- 1xSC-Duplex, length 3 m
BTK110	Cable 10Base-T, 100Base-TX or 1000Base-T networks, CAT6 RJ45 to RJ-45, length 3 m
BTK499	Cables for 120 Ohm systems Cable 1xCF [m] -- 1 LEMOSA [m], length 3 m
BTK772	Cable 1xPLUG PHONE 1 LEMOSA [m], 3000 mm
BTK792	Cable 1xRJ45 -- 1xRJ45 , length 2 m
BTK105	E1 Y-cable RJ-48 , 2xLemosa 9 mm, length 2 m
BTK103	Cable E1/T1 TF to RJ45, length 2 m
BTK104	Cable E1/T1 RJ45 to 2x RJ-45
BTK102	Cable E1/T1 Bantam to RJ45, length 6 m
BTB106	Twin Balun for bidirectional signal conversion
BTK101	Cable E1/T1 1x RJ45 [m] to Bantam [m], length 2 m
BT22629005	Additional 8635 cover plate for empty slots
BT30359202	Soft case
BT09600008	Carrying case with rolls

Training courses

8635/8632/8631 workshop
Signaling system SS#7
V5.1/V5.2 protocol seminar
GSM mobile radio communication system
GPRS - the mobile internet
UMTS - the mobile communication system of the future

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