SOHARD
EMBEDDED SYSTEMS

SH ARCALYZER

ARCNET network monitoring tools

Scope of Application

SH ARCALYZER is a universal analyzer for ARCNET networks which use bit rates from 19 kbit/s up to 10 Mbit/s. The analyzer is available as PCMCIA or USB device.

The SH ARCALYZER can be used

• during development to debug products containing error-prone ARCNET interfaces.

• during the installation of and for for the acceptance test of networks

• for error investigation in existing networks and

• for proving manipulation of network hardware and cabling

Advantages

SH ARCALYZER is available with different ARCNET interfaces for connection to ARCNET networks with various signaling methods (sine dipulse, RS-485/EIA-485 (DC and AC) and optical) via coaxial, twisted pair or fiber optic cables. It is delivered with software for Windows 2000, Windows XP, Windows Vista and Windows 7.

Common ARCNET analyzers normally use ARCNET controller chips as e.g. the COM20020, thus offering only limited functionality. On the other hand SH ARCALYZER comprehends a hardware specially developed for analyzing ARCNET networks. A 2 Mbit buffer (FIFO) on the card ensures that no data will be lost when applying high data rates and using non-real time operating systems.

Beyond that SH ARCALYZER uses an FPGA the functionality of which can be immediately upgraded only by updating the respective application. This makes SH ARCALYZER a future proof device!

Key features

Identification and monitoring of the bit rate(s) used in the network and of the timeout settings of all nodes
Recognition of corrupted protocol elements
Temporal resolution: 50 ns
Fingerprint function: Taking and comparing network fingerprints to prove subsequent manipulations of the network hardware and cabling.
Recognition of node addresses even in single-node 'networks'
Simulation mode: Captured data can be replayed any time.
Plug-in Interface: SH ARCALYZER provides plug-in interfaces that allow to process captured data with a costumer-specific software.
Packet Monitor: Packet data can be displayed in different formats like decimal, hexadecimal, ASCII, binary etc.
Configurable Sounds: Users can assign sounds to every network event.
Triggered Recording: Data capture can be triggered on single or multiple network events as well as external events (time-controlled recording is also possible).
Trigger Output. Network events can trigger outputs of the digital I/O interface.
DC 24 V alarm output
Software in German and English

Specification

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Compatibility	ANSI/ATA 878.1, PCMCIA V2.1 or USB 2.0, CE for idustrial env.
Power consumption	< 1 W (PCMCIA), < 2.5 W (USB)
Temperature range, operation	0°C to +55°C
Temperature range, storage	-20°C to +85°C
Dimensions (w/h/d) w/o conn., in mm	106/33/125 - USB 54/5/ 86 - PCMCIA
Weight	max 500 g (incl. Packaging)

Design & Functionality

Main Dialog

The Main Dialog is the Control Center of SH ARCALYZER. It provides access to various functions and allows to make global settings for bit rate and timeout.


Protocol Monitor

The Protocol Monitor captures, time-stamps and lists all of the ARCNET protocol elements (ITT, FBE, ACK, NAK, RECON and PAC) transmitted on the network as well as corrupted and thus not identifiable elements. Extensive filters allow for selective capture and displaying. A powerful search function allows to
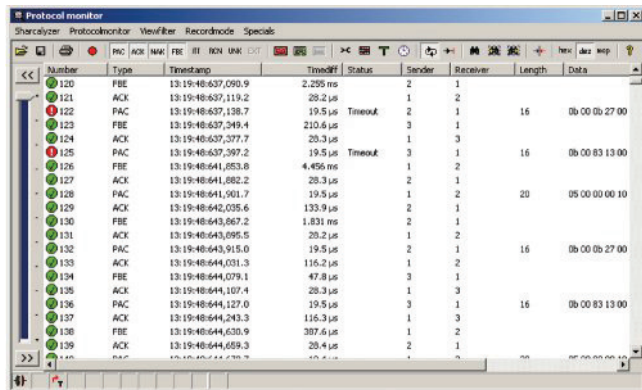
find patterns in data packets. A status column displays additional relevant information on the protocol elements such as timeouts, CRC errors, the number of transmission attempts, etc. The ARCNET data capture can be triggered by external or internal events.

Global Statistics

Numerous event counters offer a quick overview, e.g., of the number of reconfigurations, packets etc.
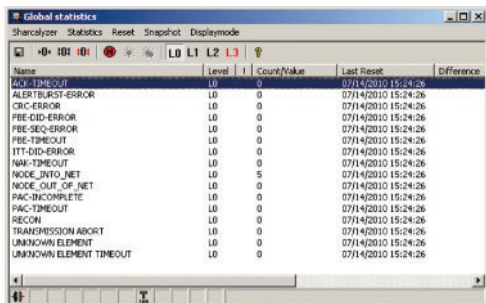
There are global counters as well as counters assigned to single nodes.

Net Map

The Net Map allows to recognize at one glance, which nodes are currently within the network as well as their current status. The snapshot function freezes the status quo. Deviations from this status will be highlighted to show if nodes have left or entered the network. Even the one node in a single-node 'network' is displayed. It is possible to visualize
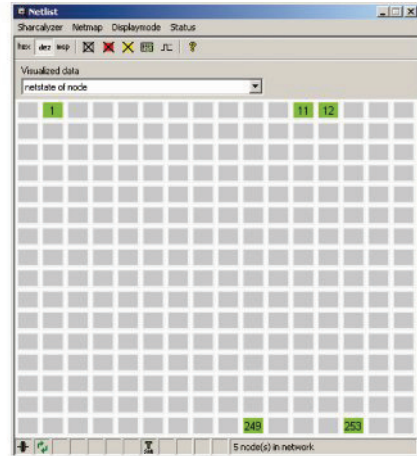
special information on each node in the Net Map, e.g. its part in the transfer of data packages (PACs), what allows to recognize which nodes stress the network at which scale. FBEs, PACs, NAKs and other protocol elements can be analyzed the same way.

Fingerprint

The Fingerprint function allows to record the characteristics of a network into a fingerprint file, e.g. during the acceptance test or when the network will handed over to the costumer. Subsequent hardware and cabling manipulations can be proved by comparing the primary fingerprint to the current fingerprint of the network.
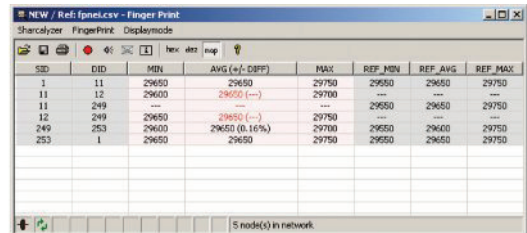
Log

The Log registers all important events in the network: reconfigurations, nodes entering or leaving the network, as well as various error messages.
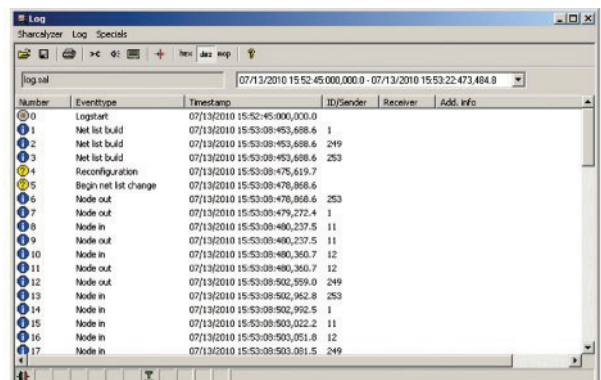
Minimal System Requirements

- 500 MHz x86 Processor
- 256 MB RAM
- 20 MB free hard disk space
- Operating System: Windows 2000
- Monitor resolution 1024 x 768
- PCMCIA slot for card of type 2 for PCMCIA-Version
- USB 2.0 port for USB-Version

Driver

- SH ARCALYZER-PCMCIA: Windows 2000/XP
- SH ARCALYZER-USB: Windows 2000/XP/Vista/7

ARCNET Interfaces

For technical information on the ARCNET interface modules usable with SH ARCALYZER-PCMCIA or the ARCNET interfaces of SH ARCALYZER-USB, please have a look at our product datasheet "ARCNET Interface Modules".

Order Information

USB - Version

Product name	Bit rate	Signal	Socket	Cable type
SH ARCALYZER-USB-K	2.5 Mbit/s	sine dipulse	BNC	coaxial cable RG-62
SH ARCALYZER-USB-LWLSMA	19.5 kbit – 2.5 Mbit/s	optical	FSMA	multi-mode fibers
SH ARCALYZER-USB-LWLST	19.5 kbit – 2.5 Mbit/s	optical	ST/BFOC	multi-mode fibers
SH ARCALYZER-USB-LWLTOS	19.5 kbit – 2.5 Mbit/s	optical	TODX296/TOSLINK	multi-mode fibers
SH ARCALYZER-USB-R	19.5 kbit – 10 Mbit/s	RS-485/EIA-485	DE-9/D-Sub	twisted pair cable
SH ARCALYZER-USB-RS485AC	2.5–10 Mbit/s	RS-485/EIA-485[1]	RJ45	twisted pair cable
SH ARCALYZER-USB-TWP	2.5 Mbit/s	sine dipulse	RJ45	twisted pair cable

[1] RS-485/EIA-485 via signal transformer (AC coupled).
USB cable, user manual, CD with software and drivers are included with "SH ARCALYZER-USB".

PCMCIA - Version

Product name	Description
SH ARCALYZER-PCMCIA	ARCNET network analyzer with interface module and extender box

Interface module for SH ARCALYZER-PCMCIA

Product name	Bit rate	Signal	Socket	Cable type
SH KOAX-PCMCIA	2.5 Mbit/s	sine dipulse	BNC	coaxial cable RG-62
SH LWLSMA-PCMCIA	156.25 kbit/s – 2.5 Mbit/s	optical	FSMA	multi-mode fibers
SH LWLST-PCMCIA	156.25 kbit/s – 2.5 Mbit/s	optical	ST/BFOC	multi-mode fibers
SH LWLTOS-PCMCIA	156.25 kbit/s – 2.5 Mbit/s	optical	TODX296/TOSLINK	multi-mode fibers
SH RS485-PCMCIA	156.25 kbit/s – 10 Mbit/s	RS-485/EIA-485	DE-9/D-Sub	twisted pair cable
SH RS485AC-PCMCIA	2.5–10 Mbit/s	RS-485/EIA-485[2]	RJ45	twisted pair cable
SH TWP-PCMCIA	2.5 Mbit/s	sine dipulse	RJ45	twisted pair cable

[2] RS-485/EIA-485 via signal transformer (AC coupled).
User manual, CD with software and drivers are included with "SH ARCALYZER-PCMCIA".