



25 YEARS
OF PC-3000
TECHNOLOGY

PC-3000

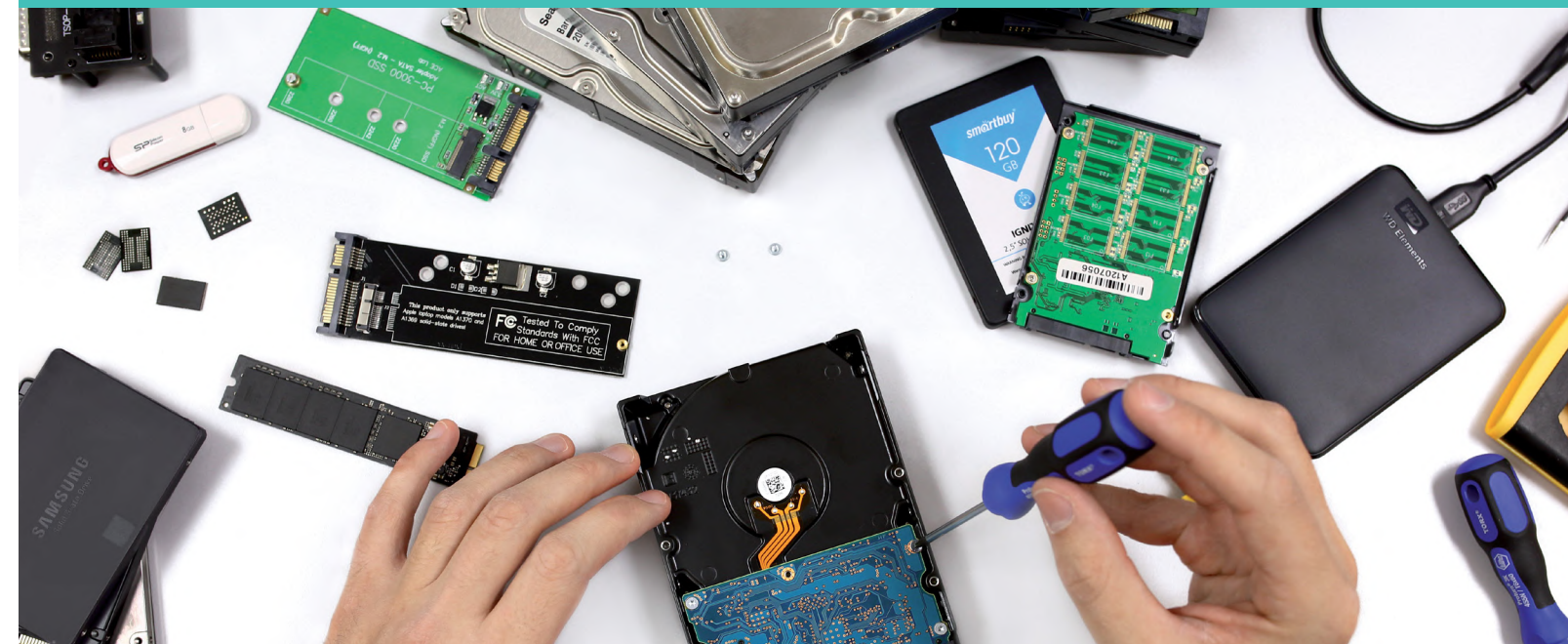
Professional Data Recovery Solutions

Product Catalogue

ACE Lab Europe s.r.o.
www.ancelab.eu.com



PC-3000 - the ultimate standard for all areas of data recovery:



SATA/IDE HDD



SAS/SCSI HDD



SSD



RAID



NAND Flash
devices



Mobile devices

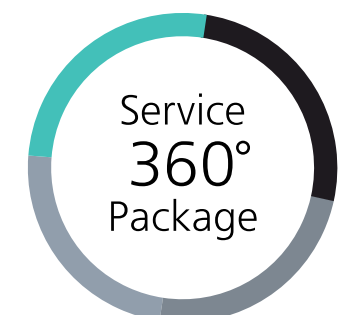
— April 2019 marks 25 years since the PC-3000 Technology was developed!

ACE Lab, being the leader of the industry, is always the first to apply all of the latest innovations. The PC-3000 Tools deliver breakthrough technologies, up-to-date methods, and techniques for data recovery and drive repair. Our products offer the highest success rates, incomparable quality, and unparalleled support. For the convenience of our users, the software is available in four languages: English, Japanese, Chinese and Korean.

PC-3000 is more than just a set of essential tools:

You may be certain that with PC-3000 you'll get the 360 degrees approach to your needs:

- ▶ Constant development and perfection of the hardware
- ▶ Regular software updates with many useful features
- ▶ Comprehensive technical support to help you with especially difficult cases
- ▶ A variety of training opportunities to master your skills in data recovery



Find PC-3000 that will suit your data recovery needs

Product name	Storage media type				SAS/SCSI HDD	NAND Flash devices	Monoliths	Mobile Devices
	SATA/IDE HDD	SSD	RAID					
PC-3000 Mobile								PC-3000 Mobile
PC-3000 Portable System	PC-3000 Portable + Data Extractor Portable							
PC-3000 Portable SSD System	PC-3000 Portable + Data Extractor Portable	PC-3000 SSD						
PC-3000 Portable RAID System	PC-3000 Portable		Data Extractor Portable RAID Edition					
PC-3000 Portable Ultimate System	PC-3000 Portable	PC-3000 SSD	Data Extractor Portable RAID Edition					
PC-3000 Express System	PC-3000 Express + Data Extractor Express							
PC-3000 Express SSD System	PC-3000 Express + Data Extractor Express	PC-3000 SSD						
PC-3000 Express RAID System	PC-3000 Express		Data Extractor Express RAID Edition					
PC-3000 Express Ultimate System	PC-3000 Express	PC-3000 SSD	Data Extractor Express RAID Edition					
PC-3000 UDMA System	PC-3000 UDMA + Data Extractor UDMA							
PC-3000 UDMA SSD System	PC-3000 UDMA + Data Extractor UDMA	PC-3000 SSD						
PC-3000 UDMA RAID System	PC-3000 UDMA		Data Extractor UDMA RAID Edition					
PC-3000 UDMA Ultimate System	PC-3000 UDMA	PC-3000 SSD	Data Extractor UDMA RAID Edition					
PC-3000 SAS System					PC-3000 SAS + Data Extractor SAS			
PC-3000 SAS RAID System			Data Extractor SAS RAID Edition		PC-3000 SAS			
PC-3000 Flash Basic Package						PC-3000 Flash + basic set of adapters		
PC-3000 Flash All-in-One Package						PC-3000 Flash + extended set of adapters	Spider Board Adapter	



PC-3000 Mobile **NEW!**



Intelligent. **EXTRA POWERFUL.** Multi-function

A new approach to data recovery from Mobile Devices

The PC-3000 Mobile is a hardware-software solution intended for recovering data from mobile devices such as mobile phones, smartphones, tablets as well as other devices that use NAND-based storage as internal memory. Depending on the condition of the device and circumstances of the exact case, PC-3000 Mobile provides several approaches to get data: high-level access by conventional means or in-depth research, that includes the disassembling of the storage media and Chip-Off methods.



What's special about PC-3000 Mobile

- ▶ USB 3.0 interface to connect the PC-3000 Mobile controller to a PC in your lab or a laptop for on-site data recovery tasks
- ▶ 2 USB ports to connect mobile devices
- ▶ USB ports overcurrent protection and analysis of USB bus errors
- ▶ Ability to control the power supply on the USB ports of the PC-3000 Mobile controller
- ▶ 2 independent extension ports to work with eMMC/eMCP chips
- ▶ Chips reading speed up to 100 MB/sec, 1, 4, 8 bits bus support
- ▶ Hardware write protection switchers for SD/MMC ports
- ▶ Algorithms to improve the quality of reading

- ▶ The built-in power control adapter
- ▶ Multifunctional extension port
- ▶ Logical recovery and data analysis capabilities
- ▶ SD/microSD memory cards support
- ▶ Support of access methods through JTAG protocol
- ▶ Specialized SD/MMC adapters to support the following types of MMC memory chips:



Type/Size	11.5 x 13	10x11	9x11	14x18	12x18	
eMMC 152/169	+	+	+	+	+	+
eMCP 162/186	+	+	+	+	+	+
eMCP 221	+	+	+	+	+	+
eMCP 529	+	+	+	+	+	+

The PC-3000 Mobile Kit:



1. PC-3000 Mobile controller	– 1 pc.	5. Micro USB cable	– 1 pc.
2. Power supply unit	– 1 pc.	6. JTAG cable	– 1 pc.
3. USB 3.0 cable	– 1 pc.	7. PC-3000 Mobile software, resource database	– 1 pc.
4. Universal eMMC adapter	– 1 pc.	8. User manual	– 1 pc.



PC-3000 Portable III Systems NEW!



—What's special about PC-3000 Portable III

- Possibility to connect the devices based on SATA-III (compatible with SATA-I/II) and USB interfaces corresponding to the Mass Storage Device classification: external USB 2.0/3.0 HDD and USB Flash drives
- Ability to use PC-3000 Portable as a standalone system to create data images that contain HDD, SSD*, and USB Flash media snapshots even without a host computer.
- All operations are logged and outputted to a report that can be saved or printed later
- A full-featured mode is available when using a host computer (similar to the PC-3000 Express and PC-3000 UDMA modes). Besides, you will be able to use a simplified mode which makes the job easier and better organized.

—The PC-3000 Portable III Kit:



All-new system for on-site data recovery tasks

4-port controller

3 HDD

Write protection

3 SATA/1 USB

ports with speed up to 360 MB/s

+

Fast imaging

SATA/USB drives

can be connected to the PC-3000 Portable at the same time.

a special jumper on the device blocks any alteration of data during the extraction or imaging with SATA 0 and USB ports.



PC-3000 Portable III System is a hardware-software solution intended for diagnostics, repair and data recovery from HDDs with issues caused by hardware malfunctions and corruption of file systems occurring on the logical level. Together with the ACE Lab's software products, PC-3000 Portable III forms the systems to recover data from SATA/USB HDD, RAID and SSD both in the lab and on-site:

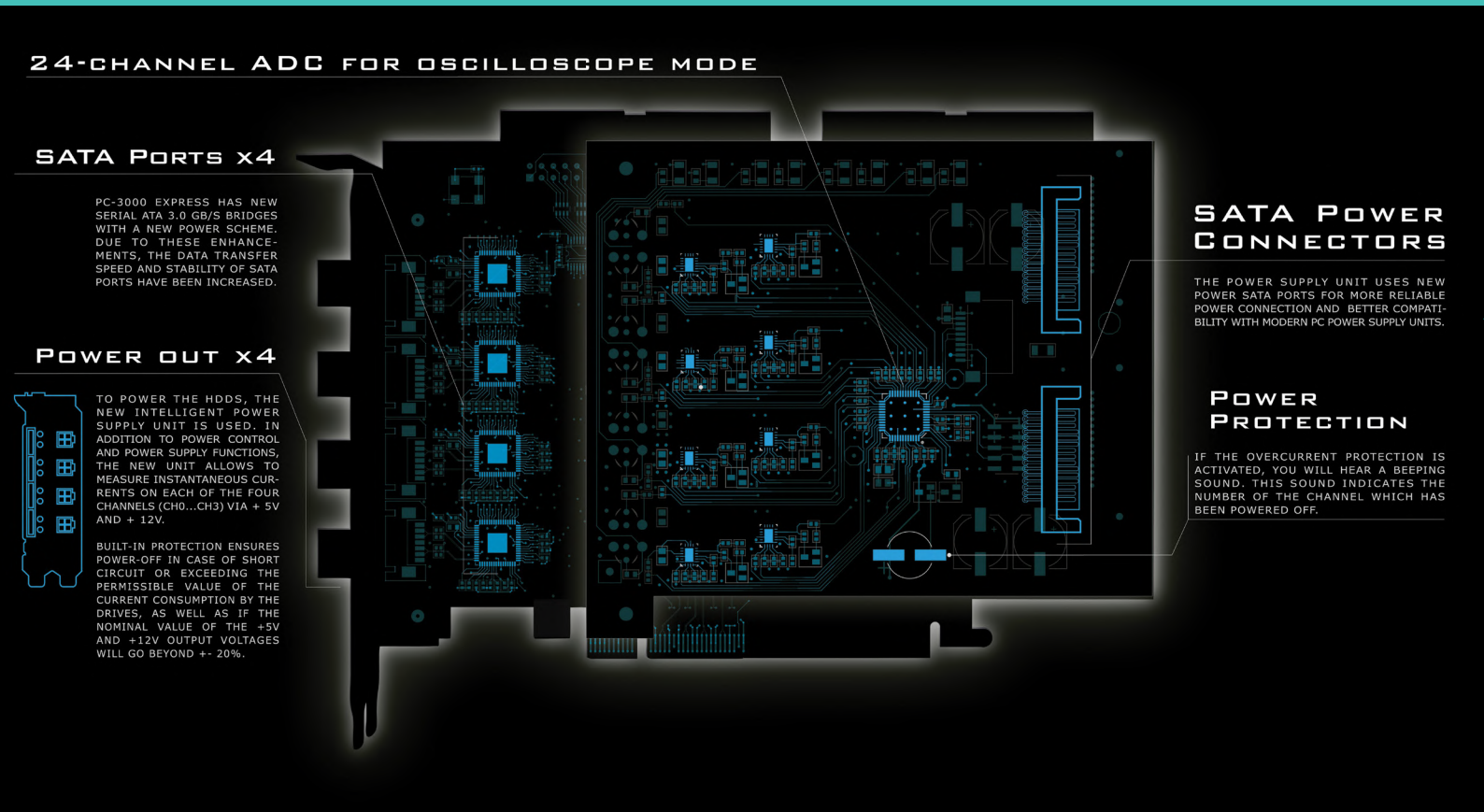
- PC-3000 Portable System (PC-3000 Portable + Data Extractor Portable)
- PC-3000 Portable RAID System (PC-3000 Portable + Data Extractor Portable RAID Edition)
- PC-3000 Portable SSD System (PC-3000 Portable + Data Extractor Portable + PC-3000 SSD)
- PC-3000 Portable Ultimate System (PC-3000 Portable + Data Extractor Portable RAID Edition + PC-3000 SSD)

1.	PC-3000 Portable III controller	– 1 pc	11.	ATCS, ATDA probe unlock	– 1 pc
2.	PC USB TERMINAL 3 adapter	– 1 pc.	12.	USB 2.0 cable	– 1 pc.
3.	SATA-micro SATA adapter	– 1 pc.	13.	USB 3.0 cable	– 1 pc
4.	PC-FUJ.SATA adapter	– 1 pc.	14.	SATA/POWER cable	– 3 pcs.
5.	PC-SAMSUNG adapter	– 1 pc	15.	Power supply unit	– 1 pcs.
6.	PC-SEAG.SATA adapter	– 1 pc.	16.	IDC10 (30 cm) cable	– 1 pc.
7.	PC-SEAGATE adapter	– 1 pc.	17.	PC-3000 Portable III software, resource database	– 1 pc
8.	PC-TOSH.SATA adapter	– 1 pc.	18.	User manual	– 1 book
9.	PC-WD 3.5" adapter	– 1 pc.			
10.	PC-WD 2.5" adapter	– 1 pc.			

* to work with Solid-State drives you need the PC-3000 solution which supports SSD: PC-3000 Portable SSD or Ultimate Systems



PC-3000 Express Systems



— The flagship data recovery solution when customers' time and the speed of data recovery are top priorities

6-port*
tester-board

4 HDDs

4 SATA
ports
with speed up to
150 MB/s

+

2 PATA
ports
with speed up to
133 MB/s

can be connected to the PC-3000 Express at the same time. Thus, you can restore either 4 SATA drives or 2 SATA and 2 PATA drives or 3 SATA and 1 PATA drives.

The PC-3000 Express is a hardware-software solution intended for diagnosing and repairing damaged SATA/IDE HDDs. Together with other ACE Lab's software products, it forms the fastest, most efficient and powerful systems to recover data from SATA/IDE HDDs, RAID and SSD that ever existed:

- ▶ PC-3000 Express System (PC-3000 Express + Data Extractor Express)
- ▶ PC-3000 Express RAID System (PC-3000 Express + Data Extractor Express RAID Edition)
- ▶ PC-3000 Express SSD System (PC-3000 Express + Data Extractor Express + PC-3000 SSD)
- ▶ PC-3000 Express Ultimate System (PC-3000 Express + Data Extractor Express RAID Edition + PC-3000 SSD)

* SATA0 and SATA1 are the primary ports, SATA2 and SATA3 ports are switchable with the PATA ports (PATA0 and PATA1).

—What's special about PC-3000 Express Rev. 2.0.

- ▶ More efficient HDD diagnostics due to the oscilloscope functions of the new Intelligent Power Supply Unit
- ▶ Better compatibility with modern PC power supply units as a result of substitution of the old 4-pin PATA Power Connectors with SATA Power connectors
- ▶ The increase of the data transfer rate and improvement of the SATA ports stability thanks to the new circuit design of the Serial ATA 3.0 GB/s bridges

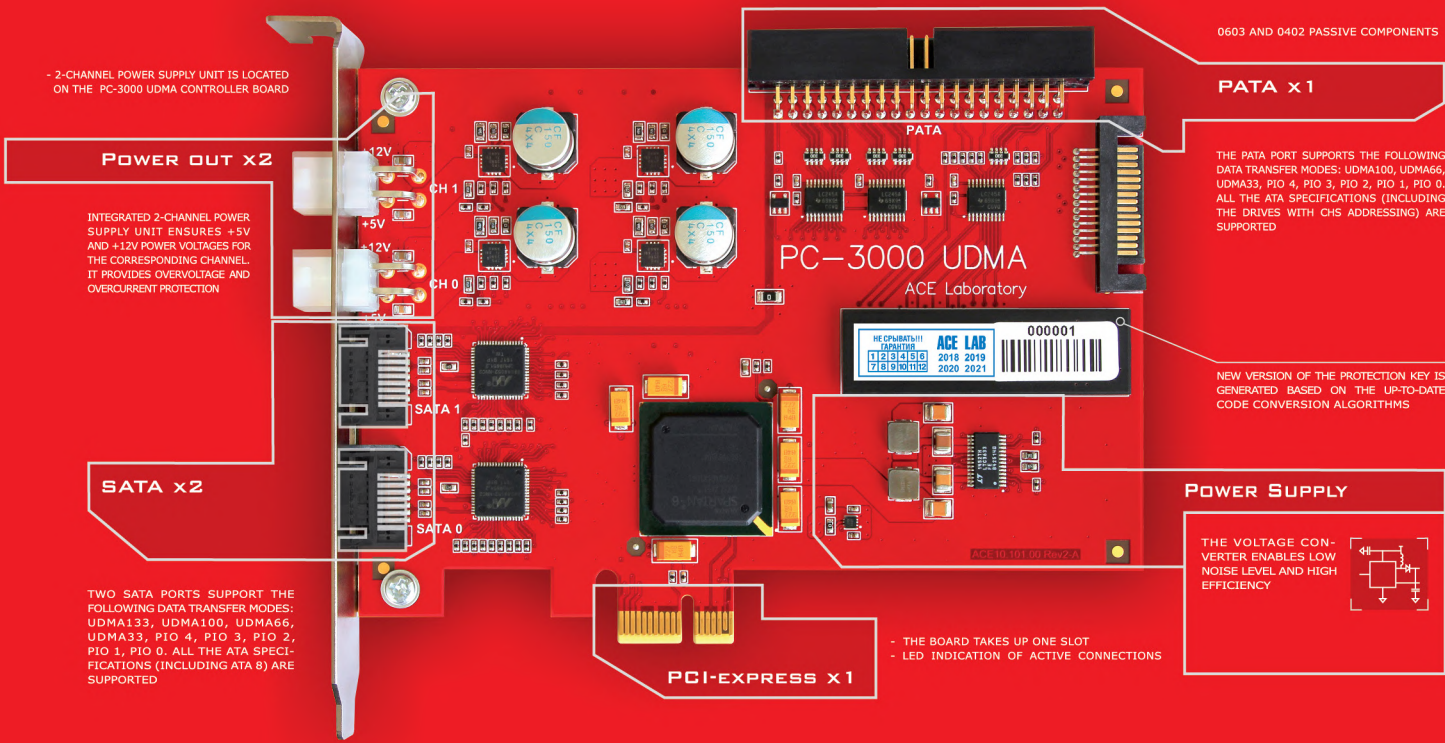
—The PC-3000 Express Kit:



1.	PC-3000 Express controller	– 1 pc.	14.	PC-WD 2.5" adapter	– 1 pc.
2.	PC-USB PWR adapter	– 1 pc.	15.	ATCS, ATDA probe unlock	– 1 pc.
3.	PC USB TERMINAL 3 adapter	– 2 pcs.	16.	USB 2.0 cable	– 2 pcs.
4.	PC-2" adapter	– 1 pc.	17.	SATA RAID edition (100 cm) cable	– 4 pcs.
5.	SATA-micro SATA adapter	– 1 pc.	18.	UDMA80 (80 cm) flat cable	– 2 pcs.
6.	MX-SAFE adapter	– 1 pc.	19.	IDC10 (30 cm) cable	– 2 pcs.
7.	PC-FUJ.SATA adapter	– 1 pc.	20.	MX-SAFE power cable	– 1 pc.
8.	PC-QUANTUM adapter	– 1 pc.	21.	SATA HDD (100 cm) power cable	– 2 pcs.
9.	PC-SAMSUNG adapter	– 2 pcs.	22.	PATA HDD (85 cm) power cable	– 2 pcs.
10.	PC-SEAG.SATA adapter	– 2 pcs.	23.	PATA-SATA (15 cm) power adapter	– 2 pcs.
11.	PC-SEAGATE adapter	– 2 pcs.	24.	PC-3000 Express software, resource database	– 1 pc
12.	PC-TOSH.SATA adapter	– 2 pcs.	25.	User manual	– 1 book
13.	PC-WD 3.5" adapter	– 1 pc.			



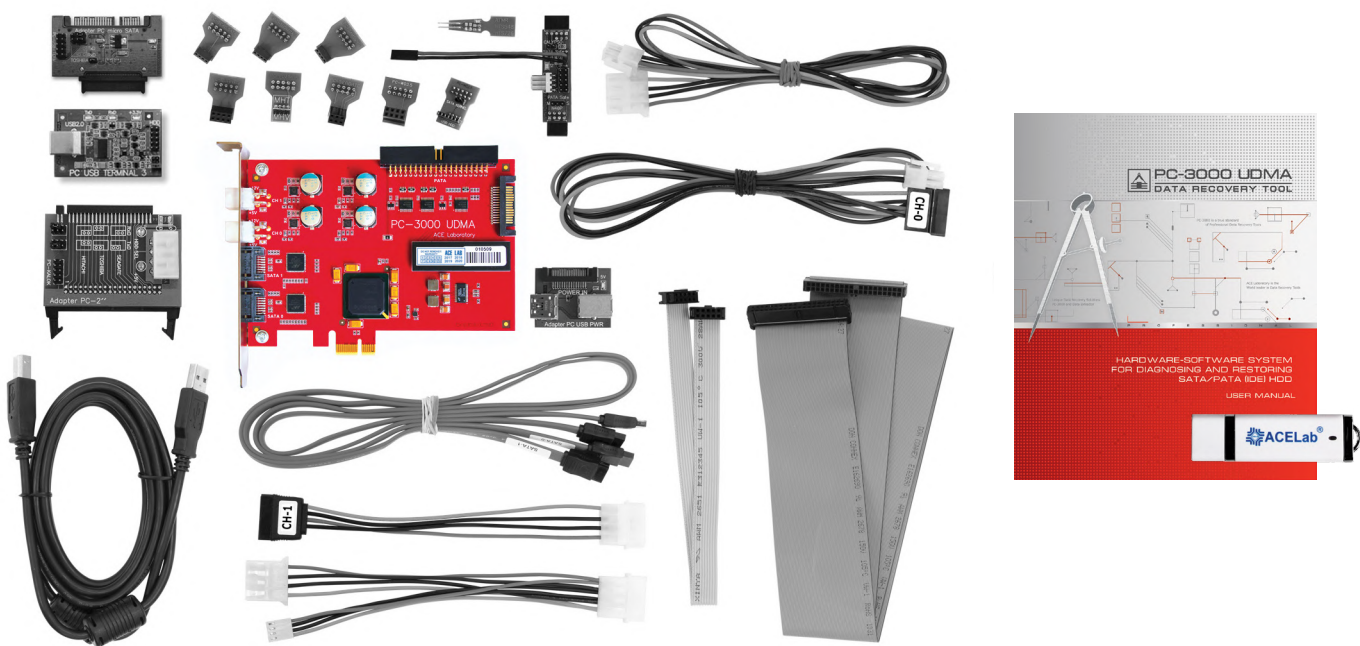
PC-3000 UDMA Systems



What’s special about PC-3000 UDMA Rev. 2.0.

- ▶ The data transfer speed and the SATA ports stability is increased with the new 88SA8052-64 QFN Serial ATA 3.0 Gb/Sec bridge chipset
- ▶ The stability of power supply and electromagnetic compatibility is improved with jam-resistant package of coils with the 1.2V and 3.3V power supply regulator on Xilinx chipset. The connection of balanced capacitors is changed. The printed board of the adapter is improved for large currents with the enhanced circuitry of the power control adapter
- ▶ The safety and stability of HDD power supply is boosted with a highly reliable power supply connector — SATA POWER

The PC-3000 UDMA Kit:



The main “workhorse” for daily use at any data recovery lab

3-port*
tester-board

2 SATA
ports
with speed up to
150 MB/s

+

1 PATA
ports
with speed up to
133 MB/s

2 HDDs

can be connected to the PC-3000 UDMA at the same time. Thus, you can restore either 2 SATA drives or 1SATA and 1 PATA drives simultaneously

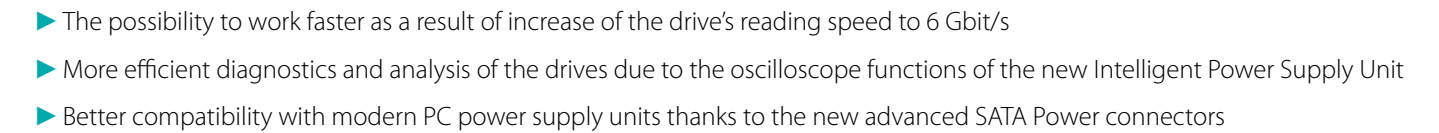
The PC-3000 UDMA is a hardware-software solution intended for diagnosing and repairing damaged SATA/IDE HDDs. Together with other ACE Lab’s software products, it represents the systems with optimal combination of high efficiency and reasonable price to recover data from SATA/IDE HDDs, RAID and SSD:

- ▶ PC-3000 UDMA System (PC-3000 UDMA + Data Extractor UDMA)
- ▶ PC-3000 UDMA RAID System (PC-3000 UDMA + Data Extractor UDMA RAID Edition)
- ▶ PC-3000 UDMA SSD System (PC-3000 UDMA + Data Extractor UDMA + PC-3000 SSD)
- ▶ PC-3000 UDMA Ultimate System (PC-3000 UDMA + Data Extractor UDMA RAID Edition + PC-3000 SSD)

1.	PC-3000 UDMA controller	– 1 pc.	14.	PC-WD 2.5" adapter	– 1 pc.
2.	PC-USB PWR adapter	– 1 pc.	15.	ATCS, ATDA probe unlock	– 1 pc.
3.	PC USB TERMINAL 3 adapter	– 1 pc.	16.	USB 2.0 cable	– 1 pc.
4.	PC-2" adapter	– 1 pc.	17.	SATA RAID edition (100 cm) cable	– 2 pc.
5.	SATA-micro SATA adapter	– 1 pc.	18.	UDMA80 (80 cm) flat cable	– 1 pc.
6.	MX-SAFE adapter	– 1 pc.	19.	IDC10 (30 cm) cable	– 1 pc.
7.	PC-FUJ.SATA adapter	– 1 pc.	20.	MX-SAFE power cable	– 1 pc.
8.	PC-QUANTUM adapter	– 1 pc.	21.	SATA HDD (100 cm) power cable	– 1 pc.
9.	PC-SAMSUNG adapter	– 1 pc.	22.	PATA HDD (85 cm) power cable	– 1 pc.
10.	PC-SEAG.SATA adapter	– 1 pc.	23.	PATA-SATA (15 cm) power adapter	– 1 pc.
11.	PC-SEAGATE adapter	– 1 pc.	24.	PC-3000 UDMA software, resource database	– 1 pc.
12.	PC-TOSH.SATA adapter	– 1 pc.	25.	User manual	– 1 book
13.	PC-WD 3.5" adapter	– 1 pc.			

* SATA0 is the primary port, SATA1 is switchable with the PATA port (PATA0).

–What's new in the PC-3000 SAS 6 Gbit/s



–The PC-3000 SAS Kit:



4 SAS drives

+

Fast imaging of healthy SCSI/SAS & SATA drives

can be connected to the PC-3000 SAS at the same time.

- | | | |
|----|---------------------------------------|----------|
| 1. | PC-3000 SAS 6 Gbit/s controller | - 1 pc. |
| 2. | SAS SFF-8482/SATA/Molex (100cm) cable | - 4 pcs. |
| 3. | HDD SCSI (50 cm) power cable | - 4 pcs. |
| 4. | PC-3000 SAS software | - 1 pc. |
| 5. | User manual | - 1 book |

- ▶ PC-3000 SAS System (PC-3000 SAS + Data Extractor SAS)
- ▶ PC-3000 SAS RAID System (PC-3000 SAS + Data Extractor SAS RAID Edition)



Data Recovery from HDD

```
0x0000: 46 49 54 20 20 20 20 20
0x0010: 41 30 09 00 9D 00 10 00
0x0020: B3 00 42 4F 4F 54 53 45
0x0030: 02 00 46 49 54 20 23 20
0x0040: 04 00 4D 4 9 53 54 20
0x0050: 00 00 46 53 49 20 20 20
0x0060: 9B 00 53 56 5F 54 42 4C
0x0070: B4 00 52 52 30 5F 54 42
0x0080: B5 00 52 45 53 4F 5F 54
0x0090: 68 00 46 44 54 5F 54 42
0x00A0: 0C 00 43 48 4E 5F 54 42
0x00B0: 06 00 43 4F 4E 46 49 47
```

DATA EXTRACTOR
THE BEST... EVER

Data recovery professionals' best choice

The Data Extractor professional software product is an essential part of the PC-3000 hardware-software systems intended for recovering data from SATA (Serial ATA), ATA (IDE) HDDs 3.5", 2.5", 1.8", 1.0", SAS (Serial Attached SCSI), SCSI, USB HDD, SSHD (Solid State Hybrid Drive), etc.

When working with a damaged drive, it is very important to read the maximum data volume in the shortest period of time,

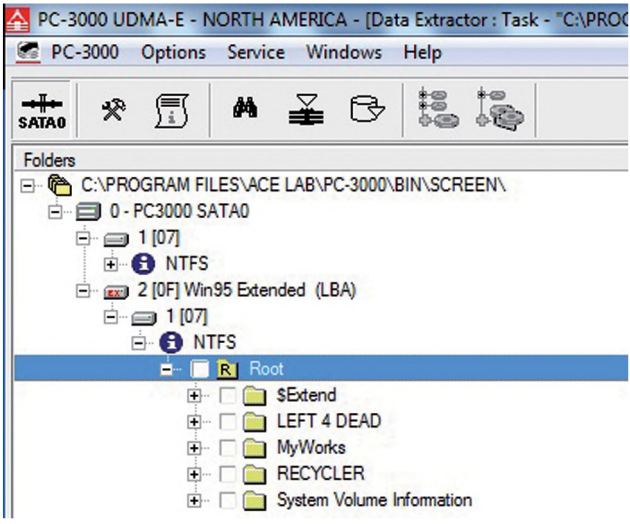
as a damaged HDD can stop functioning at any time. The Data Extractor has the powerful integrated functionality for logical analysis of file systems, which allows to read only necessary data. This advanced technology greatly reduces the volume of the read data, the workload on damaged HDDs and the time required for data recovery. Thus, you can read the data even if a drive has considerable physical damages.

To recover data from HDD you need one of the following Systems:

- ▶ PC-3000 Express/Express RAID/Express SSD/Express Ultimate System
- ▶ PC-3000 UDMA/UDMA RAID/UDMA SSD/UDMA Ultimate System
- ▶ PC-3000 Portable/Portable RAID/Portable SSD/Portable Ultimate System
- ▶ PC-3000 SAS/SAS RAID System

Supported file systems

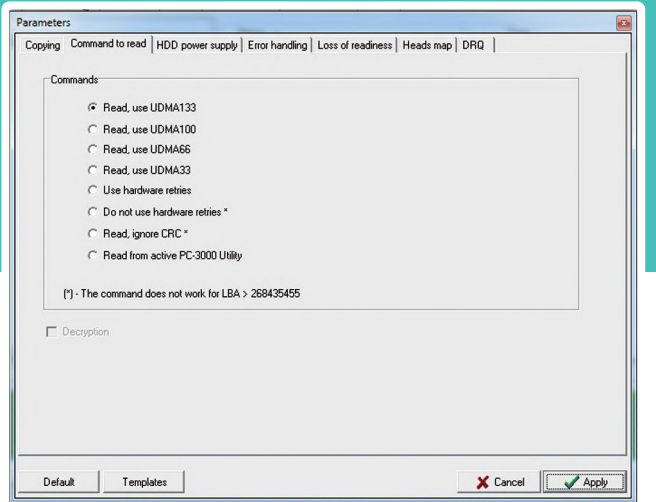
The Data Extractor supports the most popular file systems FAT, exFAT, NTFS, HFS+, APFS, EXT2/3/4, XFS, ReiserFS, BtrFS, VMFS, UFS1/2, ZFS, DHF4.1, WF50.x (Digital Video Recorder). It is possible to build the used/unused sectors map, the file system metadata map, the map of selected files and folders. The specialized modes, such as **Partition Data Analysis**, enable to recover data from the damaged file systems (data deleted by users, virus attacks, deleted metadata, software failures, etc.). Data recovery from virtual drives (flat, vmdk, vhd, vhd, dmg) and encrypted partitions (FileVault, BitLocker, TrueCrypt) are supported.



Working with damaged drives

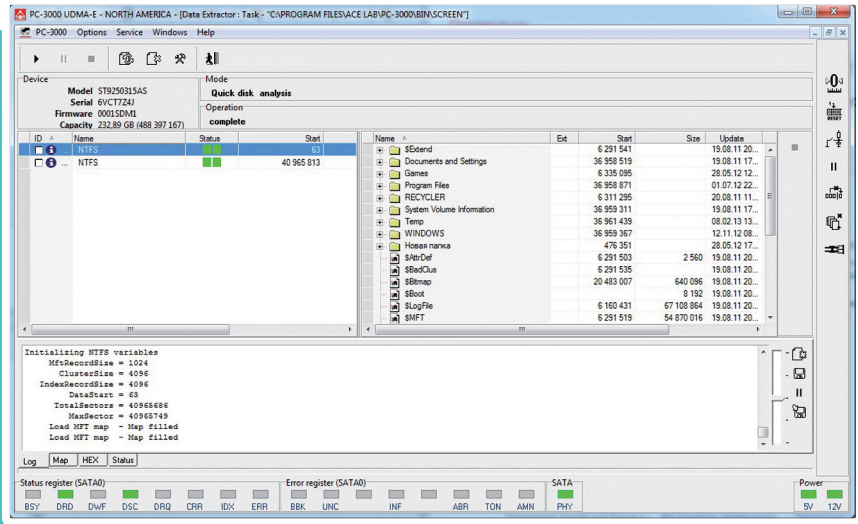
The PC-3000 hardware-software system allows to create a «shadow» copy of the read data and use this copy for the further work. It minimizes the handling of bad drives. Moreover, the Data Extractor has an extended functionality for working with damaged HDD:

- ▶ Reading HDD in technological mode
- ▶ Reading by head map
- ▶ Reading mode selection (UDMA 133/100/66/33, PIO 4/3/2/1/0)
- ▶ Read forward and backward
- ▶ Read ahead (cache function) disabling
- ▶ Autorelocation disabling
- ▶ Reading with hardware and software retries
- ▶ Reading with ignoring ECC
- ▶ Power supply control
- ▶ Software and hardware resets
- ▶ Virtual translator mode for recovering data from HDDs with corrupted dynamic translators
- ▶ Flexible map operation functionality (separate map building for heads)



Quick Disk Analysis mode

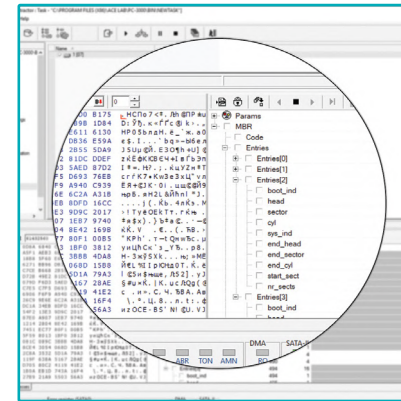
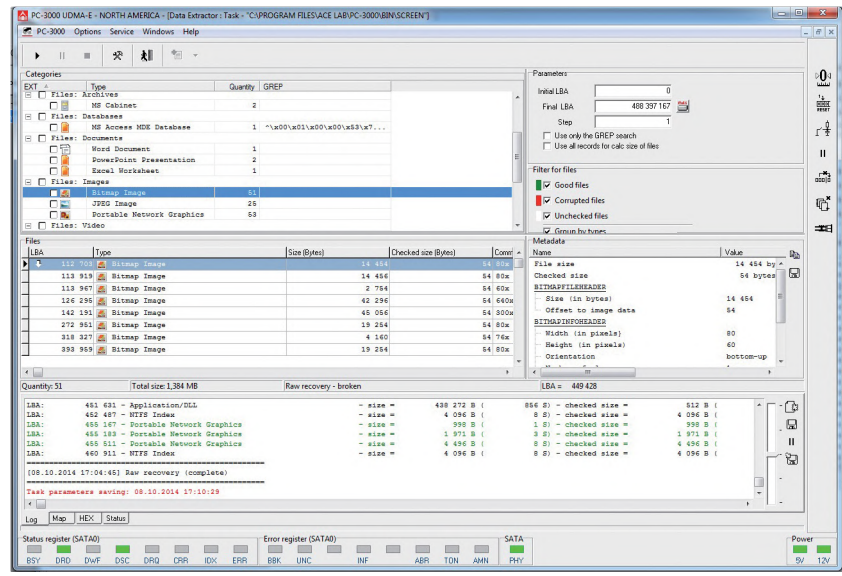
This mode allows to find the partitions which are not available anymore because the disk structure is lost: MBR, GPT, Apple partition table, etc. It enables to estimate the partition integrity and view a file/folder tree.





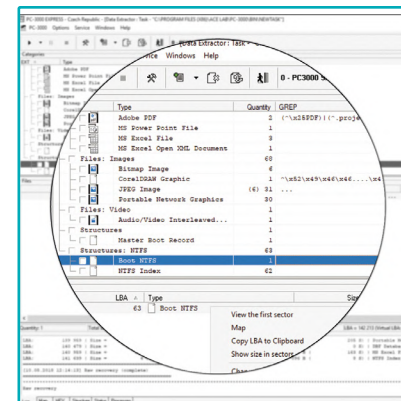
Advanced RAW Recovery mode

The mode allows to recover the most part of user data even if the file system is catastrophically damaged. The RAW Recovery mode searches and analyses the integrity of files irrespective of the file system structure. It supports a broad range of user data (images, audio/video files, archives, etc.) and file system metadata. The regular expression mechanism allows to add your personal search settings.



Data structures viewing and navigation mode

The supplied database of structures includes different filesystem and file metadata

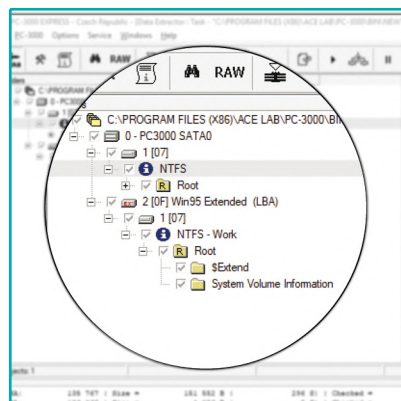


Analysis of data maps through the RAW recovery mode and GREP search

Raw recovery is advanced file carving. RAW recovery mode and GREP search support a broad range of user data (images, audio/video files, archives, etc.) and file system metadata. Using them you can:

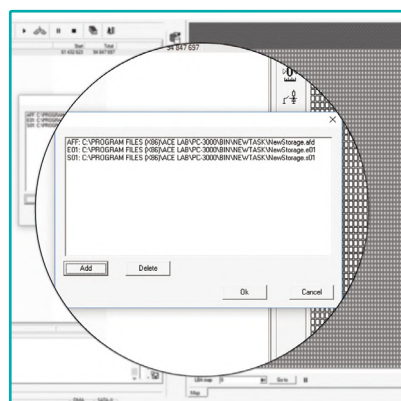
- ▶ Recognize and recover most of user data even if the file system is critically damaged
- ▶ Search and analyze the integrity of files regardless of the file system structure
- ▶ Modify your custom search reference with the regular expression method, etc.

Key features for Digital Forensics



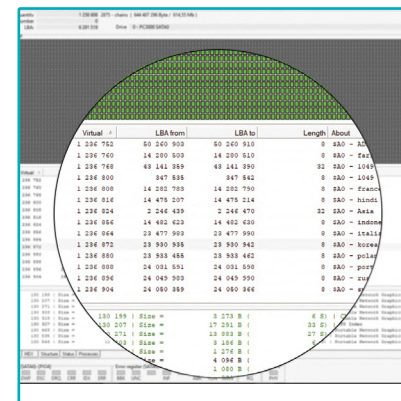
Storage Device Decryption

Possibility to decrypt software encrypted partitions (Microsoft Bitlocker, Apple FileVault, TrueCrypt) and hardware encrypted Western Digital drives (including Self-encrypting drives)



Support for forensic extensions

Support for *.E01; *.aff; *.s01; *.001 extensions for drive images and partitions. Data export possibility into *.E01; *.aff; *.s01; *.001 file extensions



Map building

The possibility to build maps for files, folders, partitions, used/unused space, file system metadata, etc.

Other powerful features of PC-3000 Systems to recover digital evidence from HDD:

- ▶ Sector-by-sector data copy to one or several healthy drive(s)
- ▶ Export data possibility for built maps
- ▶ Viewing Service Area modes for searching and recovering the lost part of data
- ▶ Drives and tasks «mounting» possibility to the OS in the Read-Only mode
- ▶ Ability to export the files and catalogues lists to the CSV format
- ▶ Hash sum calculation for files, folders, partitions, and sector chains
- ▶ Possibility to search and analyze the metadata of supported file systems
- ▶ Opportunity to group and sort the files by selected parameters (name, date, type)

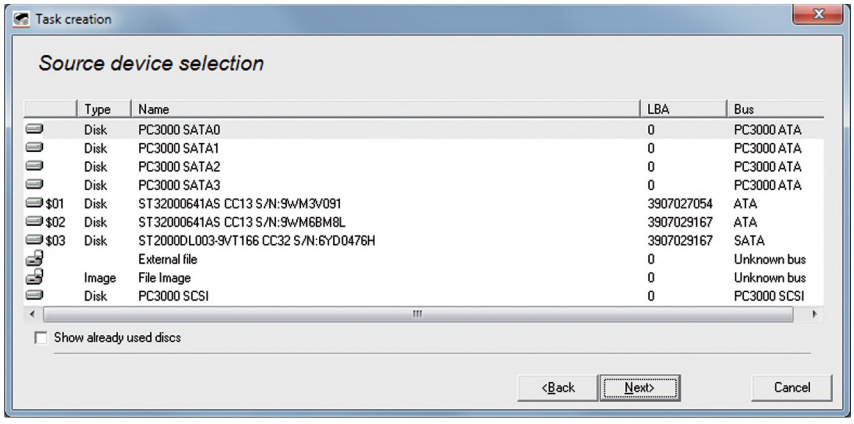


Data Recovery from RAID



Virtual RAID members

- ▶ Drives connected to the PC-3000 ports
- ▶ Storage devices connected in a standard way
- ▶ Image files
- ▶ Data Extractor tasks created previously with copies to files
- ▶ Previously created virtual RAID's



The easiest, fastest and smartest systems to recover data and digital evidence from RAID



The Data Extractor RAID Edition is an essential part of the PC-3000 Systems intended for recovering data from RAID arrays. The hardware-software combination enables to solve the most complex RAID cases when one or several drives have not only logical (deleted partitions, virus attacks, etc.) but also serious physical damages. The Data Extractor RAID Edition contains all the features of the Data Extractor.

To recover data from RAID you need one of the following Systems:

- ▶ PC-3000 Express RAID/Ultimate System
- ▶ PC-3000 UDMA RAID/Ultimate System
- ▶ PC-3000 Portable RAID/Ultimate System
- ▶ PC-3000 SAS RAID System

Working with built RAID array

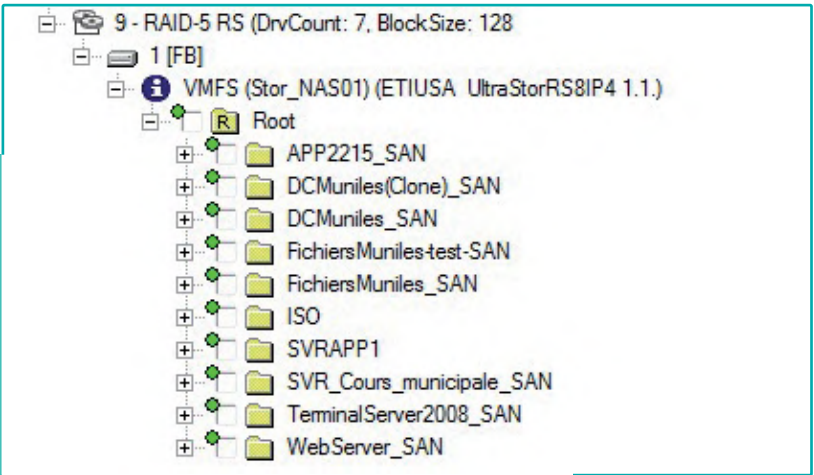
- Features:
- Ability to work with a virtual RAID array on-the fly (as with a conventional drive without need for imaging of virtual RAID):
 - ▶ Reviewing all supported file systems
 - ▶ Various logical recovery modes
 - ▶ Mounting of virtual RAID to Operating System

- Specialized features:
- ▶ Recovering data from redundant RAID arrays (block copies, XOR, Reed-Solomon)
 - ▶ Checking the integrity of data for RAID arrays with redundancy
 - ▶ Building various «Sub-maps» for specific RAID members

Supported virtual RAID levels

- ▶ 0 (Stripe), 1 (Mirror), 1E Offset and Adjacent, JBOD, 4, 5, 5E, 5EE, 6 and 6-Adaptec
- ▶ Various combined levels: 10, 50, 51, 60 and others (due to the possibility to use virtual RAID array as a member)
- ▶ Software-based RAID and multi-disk storage systems: LDM and mdadm structure analysis, WSS (Windows Storage Spaces), ZFS RAID-Z, Btrfs RAID, Apple Fusion Drive (HFS+, APFS)
- ▶ Custom configurations that are set by user with the tabular (matrix) presentation

0	1	XOR	2	3	XOR
5	XOR	4	7	XOR	6
XOR	8	9	XOR	10	11

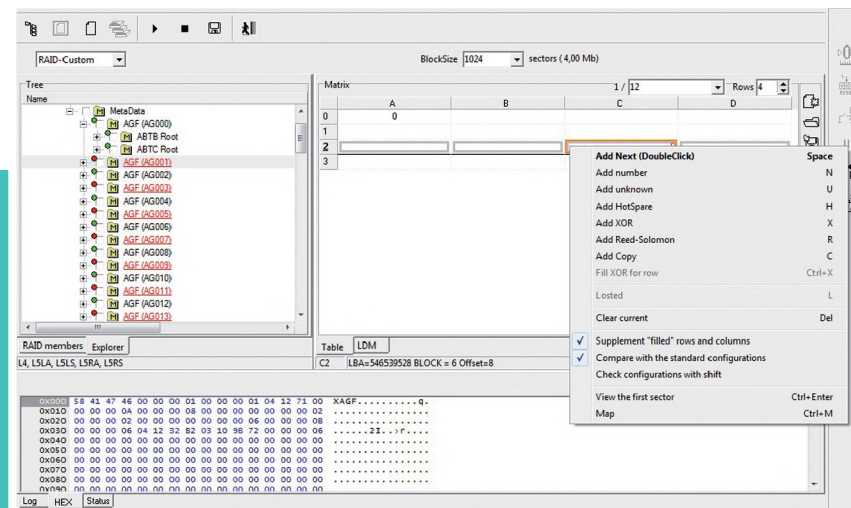




Determining the array configuration

Specialized features make it easier to determine the RAID configuration:

- ▶ Auto-detection mode based on the analysis of RAID metadata (mdamd, LDM, etc.)
- ▶ Unique auto-detection mode based on the analysis of file systems and user data
- ▶ Powerful interactive mode helping to easily determine even the unusual configurations
- ▶ RAID member statistics is effective and robust way that allows to determine RAID parameters
- ▶ Flexible automatic operations enabling the user to control the process
- ▶ Useful search tools help to define numerous RAID parameters (detecting the size, reviewing the file system structures, metadata with disk structure, analysis of the information from LDM, etc.)
- ▶ The possibility to determine the array parameters without any effect on the damaged HDDs



Working with Damaged HDDs in RAID

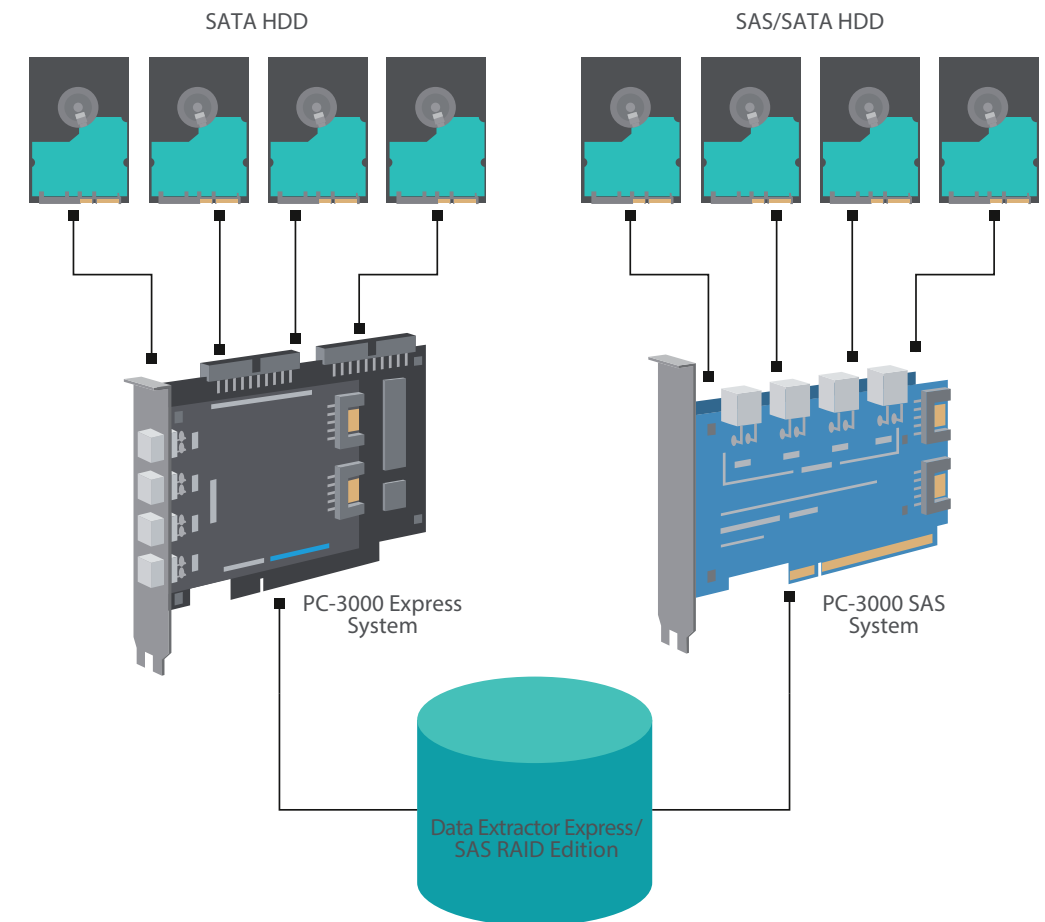
The Data Extractor RAID Edition software can work with several damaged HDDs connected to the PC-3000 ports within one task at the same time. The total number of connected HDDs can be increased by using motherboard ports and image files, as well as creating the PC-3000 Hybrid System.

Key features:

- ▶ You can make a full or partial data copy from any HDD included in the RAID
- ▶ It is possible to create and use a virtual translator for any HDD in the RAID or the whole virtual RAID
- ▶ Efficient interaction with the specialized PC-3000 Utilities for HDDs connected to the PC-3000 ports (power supply management, reset commands, choice of reading command, work in technological mode, etc.)
- ▶ Redundancy usage with the purpose of data recovery from the damaged HDDs
- ▶ The possibility to skip a damaged HDD while determining the array configuration or to use the data taken from a copy
- ▶ Integrated logical analysis features that allow to read only the minimally necessary amount of data from the storage device, thus reducing the workload and increasing the chances of successful recovery
- ▶ Advanced features for working with SCSI and SAS storage devices (full control over reading parameters, choice of reading command, building the head map, etc.)

The PC-3000 Hybrid System to Recover Data from Hybrid RAID

To work with Hybrid RAID arrays which consist of SATA and SAS/SCSI HDDs, ACE Lab has developed a powerful solution to help you in the most efficient way. A new PC-3000 SAS 6 Gbit/s System paired with PC-3000 Express RAID System or PC-3000 Express System paired with PC-3000 SAS 6 Gbit/s RAID System will turn your tools into the PC-3000 Hybrid System.



The PC-3000 Hybrid System offers you new opportunities. By using it, you will be able to:

- ▶ Recover data and evidence from hybrid RAID arrays which consist of different hard drive types: SATA and SATA/SCSI.
- ▶ Operate with big RAID arrays which contain up to 8 HDDs (4 SATA drives are connected to the PC-3000 Express board and 4 more drives — to the PC-3000 SAS board). Thus, if you have such RAID array, you will be able to connect all the drives to the PC-3000 ports and be sure that the data will not be changed during the data recovery process.
- ▶ Connect any number of devices to available ports. High-speed PC-3000 SAS 6 Gbit/s allows to connect SATA and SAS HDDs and work with them at the highest possible speed, both for reading and writing data (for example, when creating a copy).



Data Recovery from SSD



The leading-edge unique solution for recovering SSD in technological mode

The PC-3000 SSD is a professional software product which operates in tandem with one of the three up-to-date hardware-software solutions – PC-3000 Express, PC-3000 UDMA or PC-3000 Portable. It is intended for restoring SSD and recovering data from damaged SSD.

To recover data from SSD you need one of the following Systems:

- ▶ PC-3000 Express SSD/Ultimate System
- ▶ PC-3000 UDMA SSD/Ultimate System
- ▶ PC-3000 Portable SSD/Ultimate System



The PC-3000 SSD contains a set of specialized utilities which enable to deeply diagnose SSDs, perform service operations, re-write the drive microcode, get a direct access to memory chips, carry out low-level formatting blocking the damaged cells and placing their addresses into the defect table, as well as perform many other useful operations. The PC-3000 SSD is launched from the main window of the PC-3000 Express, UDMA or Portable Systems by clicking the button on the toolbar.

Supported manufacturers

OCZ, Corsair, Crucial, RunCore, A-DATA, G.Skill, Micron, Plextor, Intel, Samsung, Seagate, SanDisk, Kingston, Smartbuy, Silicon Power, PNY, AMD, Lexar, Transcend, Patriot, GoodRam, Kingspec, Toshiba, etc.

More manufacturers are added with the updates.

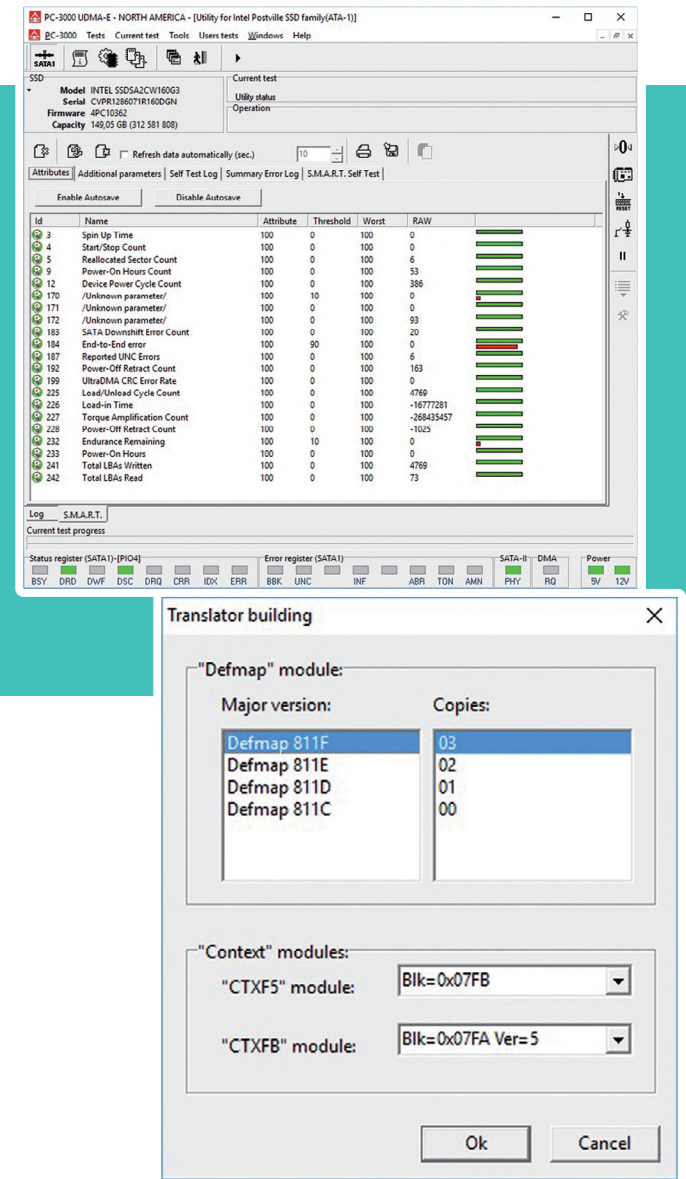
Supported interfaces

- ▶ SATA
- ▶ microSATA
- ▶ mSATA
- ▶ M.2 (NGFF)
- ▶ PATA
- ▶ LIF
- ▶ ZIF

with the capacity range of 32 GB to 2 TB

Key Features for SSD Diagnosis, Repair and Data Recovery

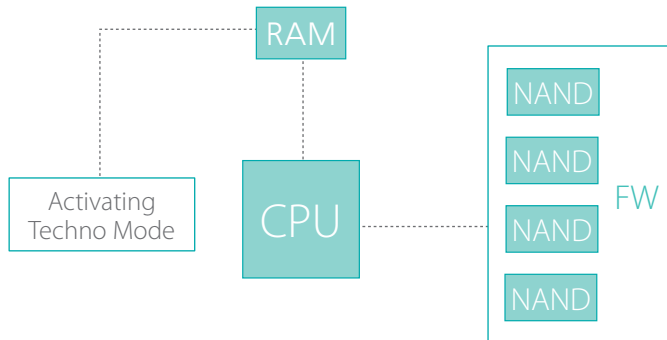
- ▶ Diagnose an SSD in technological mode
- ▶ View the logs of hidden defects (P-page, G-page)
- ▶ Perform low-level formatting to hide the discovered defects
- ▶ Reset the logs and S.M.A.R.T. parameters
- ▶ Search for the damaged memory chips
- ▶ Provide direct access to the content of memory chips so that you do not need to unsolder the chips
- ▶ Emulate the translator operation in order to get an access to user data
- ▶ Load the microcode into the drives RAM
- ▶ Read and write the content of the SSD ROM
- ▶ Verify and restore the SSD service information
- ▶ View the password and reset the password that was earlier set on the SSD
- ▶ Turn off background processes in the SSD to prevent data damage
- ▶ Work with the Data Extractor



How the Techno Mode works

Almost all present-day SSDs have the hardware data encryption. So, the chip-off method becomes useless to access the data on a damaged device. In this case, the Techno Mode is the only possible way to restore logical access to data on the SSD.

1. Loader uploading in SSD RAM

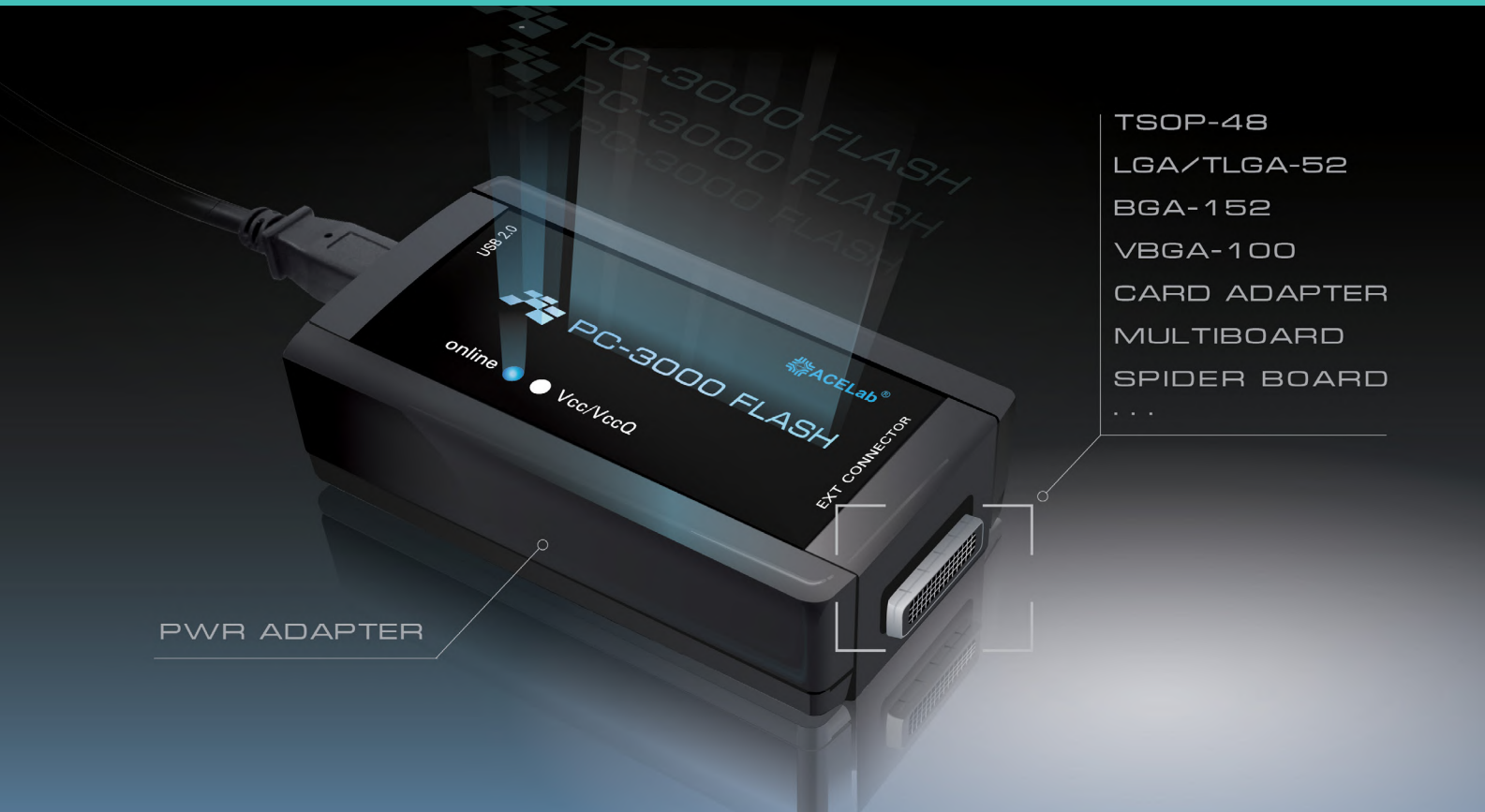


2. Access to NAND chips

- Drive works in Techno Mode
- CPU is working in single Channel mode
- SSD is using custom Translator
- Extended capacity is available
- TRIM is disabled
- Service Area is unlocked



PC-3000 Flash (4.0.)



State-of-the-art solution with the advanced modes for the most successful data recovery from NAND Flash devices

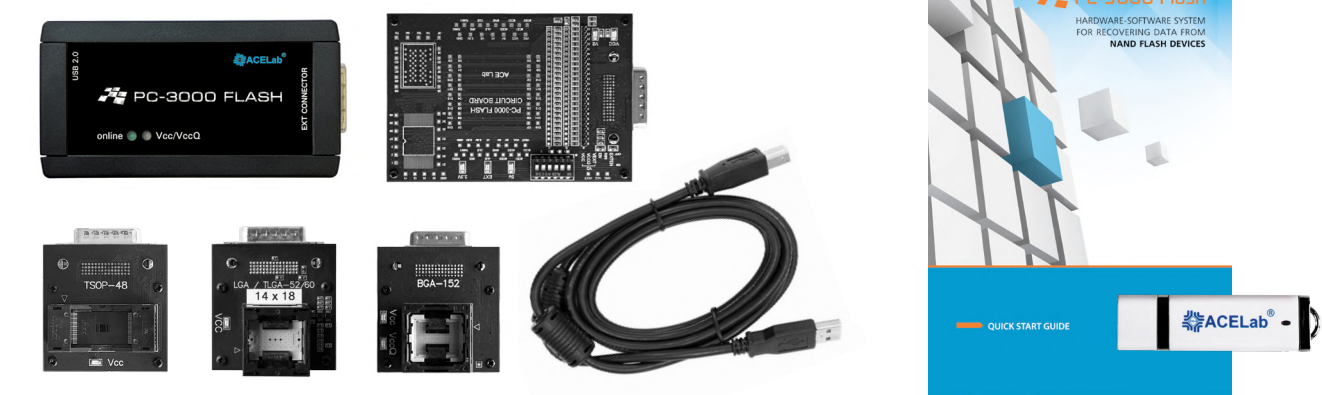
The PC-3000 Flash professional hardware-software system is well-known as the most efficient, comprehensive and user-friendly solution with the advanced modes for NAND data recovery. It is a highly-demanded product among data recovery engineers as it offers the widest range of features and newest algorithms to recover data with the maximum success rate. PC-3000 Flash will help you with both simple cases using «one-click» solutions and the most complex ones using a large selection of manual modes.

It supports various NAND-based devices such as: USB Flash drives, SD, microSD, Memory Stick (MS), xD, MMC, CF, Voice Recorder, etc. even if there is no access by conventional means. The PC-3000 Flash Reader ver.4.0 has a built-in power control adapter that allows to manage power supply for the majority of adapters. The PC-3000 Flash software is being constantly developed, providing the users with new features to solve more NAND issues than any other tool available on the market.

What is special about PC-3000 Flash:

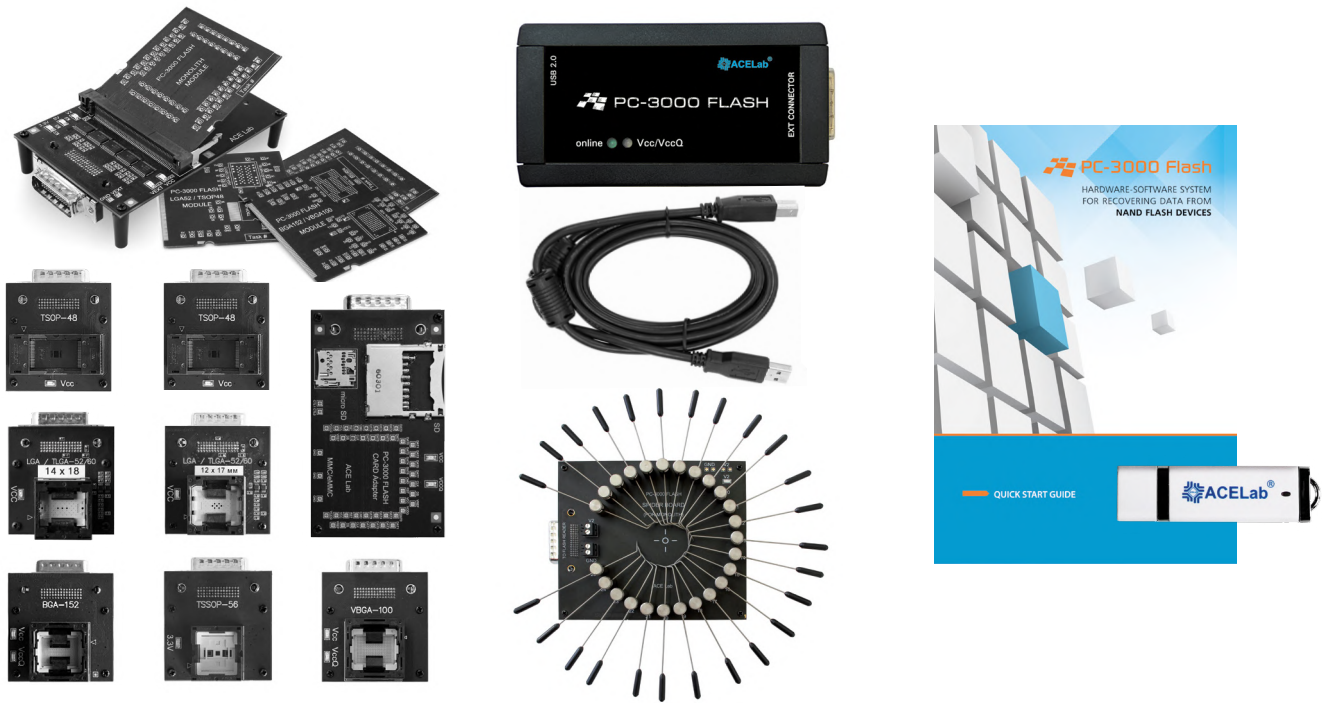
- ▶ Over 7000 «one-click» solutions in the PC-3000 Flash Global Solution Centre to recover data in 5 minutes
- ▶ The highest data recovery success rates with the Hardware Retries mode to read out damaged memory chips
- ▶ Regularly updated Online Databases (XOR, Dynamic XOR, ECC, Page Format, ReadRetry Tables) to get the latest resources for the present-day flash drives
- ▶ The most universal and affordable technologies and an extensive Monolith Database to recover data from a great variety of monoliths
- ▶ The biggest team of highly qualified Technical Support engineers ready to help with any Flash recovery case
- ▶ A huge number of articles at blog.acelaboratory.com and a separate section at forum.acelaboratory.com to find the solutions to your specific cases.

PC-3000 Flash Basic Package



- | | | | |
|-----------------------------------|---------|--------------------------|---------|
| 1. PC-3000 Flash Reader (ver.4.0) | – 1 pc. | 5. Circuit Board adapter | – 1 pc. |
| 2. TSOP-48 adapter | – 1 pc. | 6. USB 2.0 Cable | – 1 pc. |
| 3. LGA/TLGA-52/60 (14x18) adapter | – 1 pc. | 7. PC-3000 software | – 1 pc. |
| 4. BGA-152/132 adapter | – 1 pc. | 8. User manual | – 1 pc. |

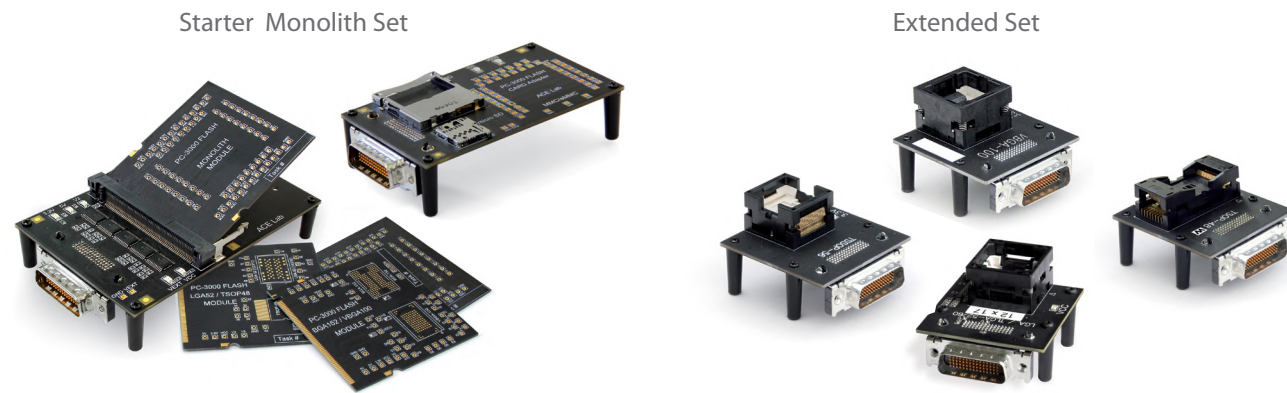
PC-3000 Flash All-in-One Package



- | | | | |
|-----------------------------------|----------|------------------------------------|---------|
| 1. PC-3000 Flash Reader (ver.4.0) | – 1 pc. | 9. LGA-52/TSOP-48 Module | – 1 pc. |
| 2. Spider Board adapter | – 1 pc. | 10. BGA-152/VBGA-100 Module | – 1 pc. |
| 3. TSOP-48 adapter | – 1 pc. | 11. BGA-152/132 adapter | – 1 pc. |
| 4. TSOP-48 W (wide) adapter | – 1 pc. | 12. TSSOP-56 adapter | – 1 pc. |
| 5. LGA/TLGA-52/60 (14x18) adapter | – 1 pc. | 13. VBGA-100 adapter | – 1 pc. |
| 6. LGA/TLGA-52/60 (12x17) adapter | – 1 pc. | 14. Card Adapter | – 1 pc. |
| 7. Multiboard Adapter | – 1 pc. | 15. USB 2.0 Cable | – 1 pc. |
| 8. Monolith Module | – 2 pcs. | 16. PC-3000 software + User manual | – 1 pc. |



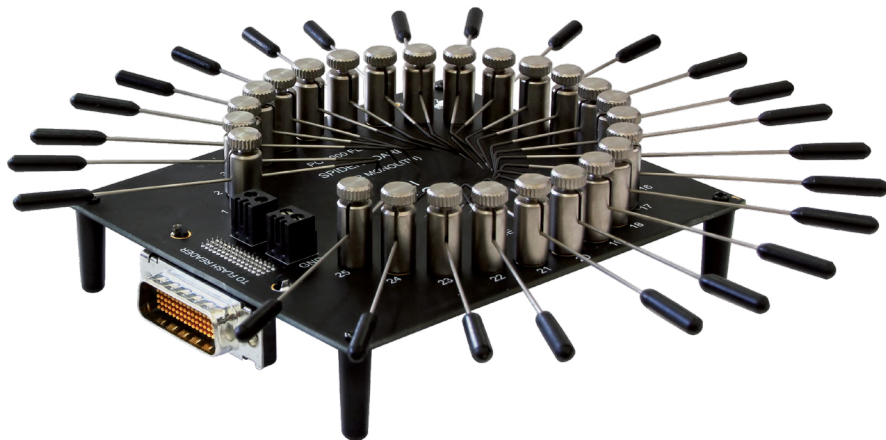
— Adapters sets – combo offers to save time and money



1. Multiboard Adapter	– 1 pc.
2. Monolith Module	– 2 pc.
3. LGA-52/TSOP-48 Module	– 1 pc.
4. BGA-152/VBGA-100 Module	– 1 pc.
5. Card Adapter	– 1 pc.

1. TSSOP-56 Adapter	– 1 pc.
2. VBGA-100 Adapter	– 1 pc.
3. LGA/TLGA-52/60 (12x17) Adapter	– 1 pc.
4. TSOP 48 W adapter	– 1 pc.

— Spider Board Adapter



Change-maker in monolith recovery. Minimal Soldering & minimal risk. Spider Board Adapter is a universal all-in-one solution for safe data recovery from monoliths.

It is designed for connection to internal contacts of NAND-based Flash drives manufactured as single-package chips (monoliths). The adapter consists of 25 universal contacts that support software configuration of their association with NAND interface signals in a corresponding task.

Using it you will forget about tedious soldering and searching for specific adapters to each monolith you deal with!

— Key Features to Recover Data from Monoliths

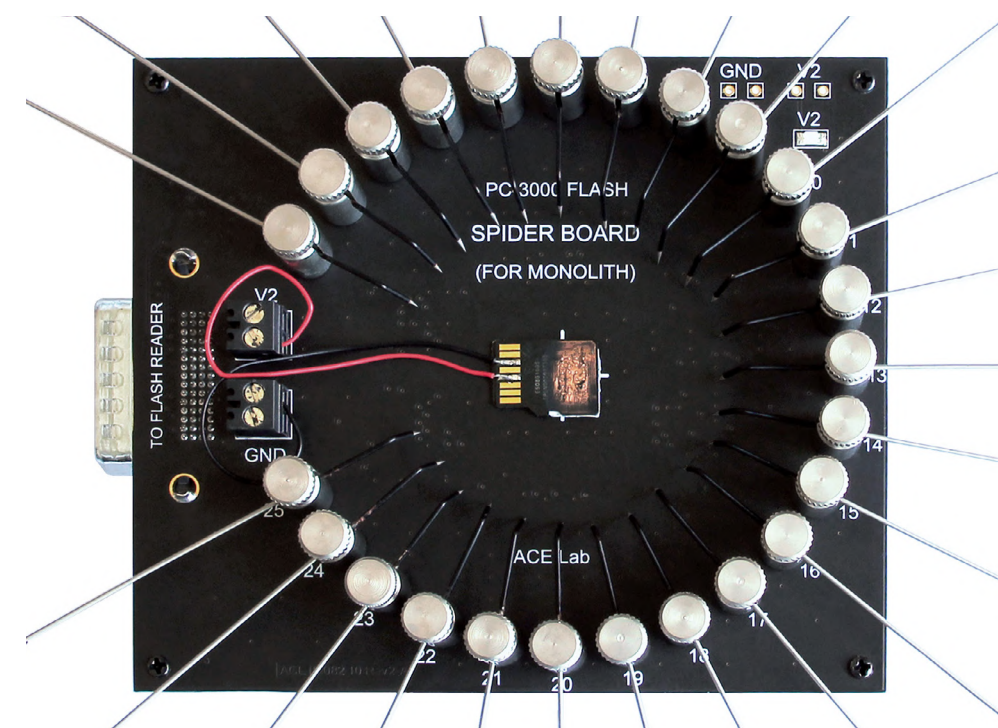
- ▶ Universal solution that doesn't require soldering to the technological pinouts. It saves time, reduces the risks and makes monolith recovery process much easier
- ▶ 25 specialized needles that help you connecting to pinouts, no matter how they are located
- ▶ GND and VCC pins are fixed by screw connectors for convenient usage
- ▶ The adapter is developed specifically for using with microscope

— With the Spider Board Adapter it is possible to



- ▶ Fine-tune the connectors on the software level
- ▶ Save the previous pinout settings in a file to use on similar cases
- ▶ Constant 5V or controlled by VCC (1.8 V-3.6 V) power supplies
- ▶ Control the adapter power supply via software
- ▶ Recover data from partially damaged SD and MicroSD cards as a fully functional Card Adapter

NAND-based devices supported: **MicroSD, SecureDigital, UFD, MemoryStick.**



Minimal soldering is required to power up the monolith.

Pinout connection is performed via 25 needles.

Professional technical support



Highly qualified engineers to help you with any data recovery cases

Taking your first steps in data recovery?
Stuck with an especially difficult case?
Want to stay ahead of the competitors?

Multiply your efficiency with the biggest team of technical support engineers!

14 hours
a day

- ▶ Professional consulting by ACE Lab engineers via the CRM Ticket System
- ▶ TeamViewer assistance with the most complex issues
- ▶ Regular software updates containing new unique features that no other tools have

FREE helpful online resources

- ▶ blog.acelaboratory.com – ACE Lab Blog with much-needed video tutorials and interesting articles
- ▶ forum.acelaboratory.com – ACE Lab Forum, where you can share your knowledge and opinions with experienced PC-3000 users and with ACE Lab engineers
- ▶ www.youtube.com/user/PC3000datarecovery – ACE Lab YouTube channel with useful video tutorials

More information at www.acelab.eu.com & ts.acelaboratory.com

Professional data recovery training



A rapid way to data recovery mastership

Recover more data with the PC-3000 Data Recovery Training:

- ▶ The most thorough and precise data recovery training – just a few days can substitute for several months of persistent self-learning
- ▶ The only training with the widest range of real case studies that you won't find anywhere else
- ▶ A great chance to understand the core of data recovery process, get the valuable techniques and become able to solve a lot of cases you couldn't handle before
- ▶ Extremely knowledgeable and experienced tutors with individual approach to every student
- ▶ The biggest vendor-provided hi-tech training classroom with fully equipped workplaces for data recovery specialists
- ▶ Possibility to attend the training in Europe, North America, Asia or at your facility
- ▶ Official certificates upon completion of the courses
- ▶ Bundle offers and bonuses for getting the training, products and service at once

Storage Type	Training Type	Level	Duration
HDD Data Recovery	PC-3000 HDD Data Recovery Expert Training	Basic	4 days
	PC-3000 HDD Data Recovery Advanced Training	Advanced	2 days
Flash Data Recovery	PC-3000 Flash Data Recovery Expert Training	Basic	4 days
	PC-3000 Flash Data Recovery Advanced Training	Advanced	2 days
SSD Data Recovery	PC-3000 SSD Data Recovery Expert Training	Basic	1 day
Monolith Data Recovery	PC-3000 Monolith Data Recovery Expert Training	Basic	1 day
RAID Data Recovery	PC-3000 RAID Data Recovery Advanced Training	Advanced	4 days

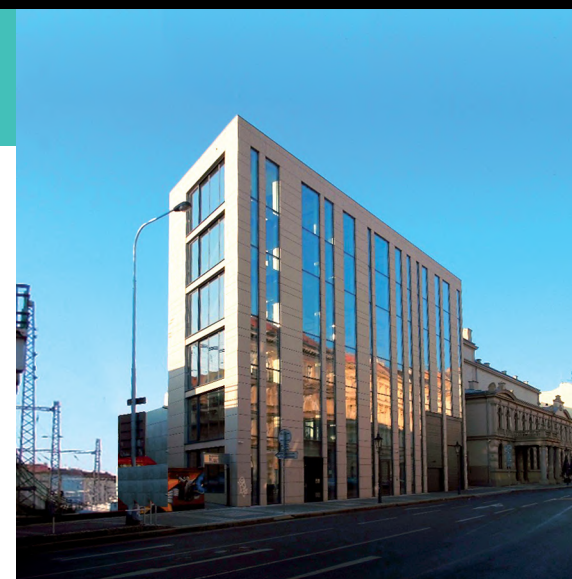
Professional Conferences

Latest technological know-how at first hand

You are always welcome to our Conferences and Meetups!

- ▶ The latest and advanced techniques shared directly by the ACE Lab developers and top engineers
- ▶ Numerous tips and tricks and even ready-to-use solutions
- ▶ Asking questions directly to the ACE Lab top engineers
- ▶ Networking with data recovery peers
- ▶ Sharing experience in the data recovery community

If you are interested in being the first to learn the latest developments in data recovery and staying on the cutting edge of technologies, check the date of our next event in the News section on our website.



About us

27+
years

117+
countries

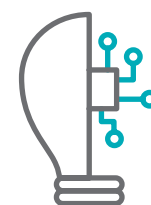
16 750+
customers

ACE Lab is internationally recognized as a pacesetter in the development of the solutions for recovering data and evidence from the widest range of storage devices. For 27 years we have been setting the benchmark and remaining the proven leader in the field by constantly perfecting our products and services. Through the PC-3000 product line we provide customers with the most comprehensive and reliable professional data recovery tools on the market. Upward of 16 750 professionals from over 117 countries award their trust to ACE Lab and get profit from the PC-3000 solutions.

Our company has been certified with ISO 9001:2015 and ISO/IEC 27001:2013. Thus, our customers can be sure that ACE Lab fully conforms to the quality management and the strictest information security requirements.

Every serious data recovery engineer uses PC-3000!

Core competencies



Professional data
recovery R&D



Products
manufacturing



Application of data
recovery techniques
in digital forensics



Full-scale
technical support
service



Training in all
areas of data
recovery

ACE Lab team

Bright minds creating technologies for you



Our team on the 25th of April 2017 | 25th Anniversary of ACE Lab Group of Companies

First founded as a two-man enterprise, in 27 years ACE Lab has evolved into the international corporation, employing more than 80 smart and motivated individuals who care a lot about perfecting everything we do.

See how ACE Lab changed the data recovery industry:

A new technology for repairing HDDs and overwriting service information is developed — the PC-2000 tester for HDDs with ST506/412 interface.

The first PC-3000 for working with IDE HDDs is developed.

The new PC-3000 PRO tester-board and the first version of the Data Extractor are developed.

1991

1992

«ACE» company specialized in manufacturing PC-2000 testers for HDD repair is registered.

1994

1998

The number of specialized utilities in the PC-3000 is increased from 5 to 20. The PC-3000 supports the most popular HDDs on the market.

2000

2003

The PC-3000 and the Data Extractor are introduced in the international market and making a breakthrough in the data recovery world.

The new PC-3000 for Windows PCI and the Data Extractor PCI products are released.

The new PC-3000 for Windows UDMA and the Data Extractor UDMA products are released.

Unique «MR-HEAD Shift technology» is developed.

Celebrating the 20th Anniversary ACE. More than 70 people work at ACE.

Release of the new generation of PC-3000 with the highest possible speeds and top efficiency: PC-3000 Express, PC-3000 UDMA, PC-3000 SAS, PC-3000 SSD.

Grand opening of the new Office and Europe's biggest Data Recovery Training Center in Prague. Breakthrough in recovering data from Seagate Self-Encrypting Drives.

PC-3000 is now in the Japanese, Chinese and Korean languages.

2005

2006

The new PC-3000 for SCSI hardware-software product for SCSI HDD repair and data recovery is developed.

ACE Lab is firmly recognized as the WORLD LEADER in data recovery solutions.

2007

2008

The fundamentally new PC-3000 Flash solution for recovering NAND based devices is released.

2010

2011

ACE Lab starts know-how data recovery training seminars.

2012

2013

ACE Lab Europe s.r.o. is opened in Prague, the Czech Republic.

The unique Data Extractor RAID Edition product for recovering data from RAID is developed.

2014

2015

The training center on the basis of ACE Lab Europe s.r.o. is opened in Prague.

2016

2017

Celebration of ACE Lab's 25th Anniversary.

Presentation of Spider Board — the revolutionary technology for monolith data recovery.

ACE Lab Europe has earned ISO 9001:2015 and ISO/IEC 27001:2013 certification.

2018

ACE Lab certificates

As a market leader in the development of data recovery technologies, we continually review and improve our Quality Management and Information Security Systems which comply with the ISO 9001:2015 and ISO/IEC 27001:2013 to ensure that we not only meet but exceed our customers' expectations.



Hear what our customers are saying

Not only does ACE Lab have the best hardware/software solutions for data recovery, but they have unmatched technical support. Their data recovery tools are priced competitively, but the usability, documentation, and support cannot be matched by the competition. We use PC-3000 tools for HDD, SSD, and Flash recovery every day at Blizzard Data Recovery

David Blizzard | [Blizzard Data Recovery](#)
UNITED STATES OF AMERICA

Simply super, the leader in the field of data recovery of all types of drives, diagnostics and hard drive repair. For 8 years we have been offering the data recovery service with its tools and we have more and more satisfied customers. I suggest all services and products of ACE Lab. In addition, its technical support is very efficient and useful to solve queries and problems.

Juan Carlos Carbajal Gomez | [DNP CORP](#)
PERU

Before getting into the data recovery field I spent a lot of time researching the available tools that would be needed to startup such a business. The PC-3000 suite was a big financial outlay, but in the first few months the product has already allowed me to almost recover that cost.

The product supports all the drives that I have had to deal with, and the support team is always ready to help when in need of a solution. I would recommend this product to anyone who is thinking seriously about data recovery.

Nick Parsons | [SOUTHBIT DATA RECOVERY](#)
SOUTH AFRICA

Excellent support of all drive brands, including not popular ones like Hitachi and Toshiba. Decryption of WD passport WITHOUT password (I did not believe it was possible). Smooth operation across all models. (We have tried other data recovery equipment but they don't work reliably across all models). Ability to quickly determine Seagate F3 headmap using the zone-head deactivation feature. Ability to solve WD slow responding issue in RAM. And of course great technical support! For non-standard issues, only ACE Lab technical support engineers know how to solve them.

Kevin Xiao | [Data Pro](#)
CANADA

I have been using PC-3000 for a number of years to analyse and recover malfunctioning Hard Disk Drives. As an Academic and a Digital Forensics Practitioner, I believe the training offered by ACE Lab are of great value to the Data Recovery Industry and can provide the Digital Forensics Practitioner with a deeper understanding of hard disk technologies and possible methods for recovery.

Gareth Davies | [UNIVERSITY OF GLAMORGAN](#)
UNITED KINGDOM

I must admit that from the moment we invested in ACE Lab products our success rates and delivery times have really increased. Nowadays I believe that no data recovery lab can be successful without ACE lab products and support. I can not compare the functions of PC-3000 complex with any other tool.

Mike Mingos | [TICTAC DATA RECOVERY LABORATORIES](#)
GREECE

... We would not be where we are today in data recovery if we were not for your tools and help.

Walmart Data Recovery Team | [Walmart](#)
UNITED STATES OF AMERICA

The best tools we ever use in data recovery with hard disk or SSD drive or flash. It's just like Ferrari cars keep up, regards from Egypt

Tawfeek Mokhtar | [Alsafwa data recovery Egypt](#)
EGYPT

Our company has been using the PC-3000 for several years now, and it has made our job of data recovery so much easier. We are now able to recover more data in less time, and our clients are even happier. The online support from ACELab has assisted us on numerous occasions and we have enjoyed working with their engineers. This product has undoubtedly become an essential tool in our business, and we are grateful to have it!

Hugo Adrián Francisconi | [Recupero Datos](#)
ARGENTINA

The detailed testimonials are provided on ACE Lab website.

Contact us

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Karlín, Prague 8
the Czech Republic, 186 00

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► +420 222 361 605

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info@acelab.eu.com

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For North and South Americas
15:00 – 23:00 GMT +02:00

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Forum:

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