NIAKWA
NEWSLETTER
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Special Edition

Altos Update

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Product Announcement

Basic-2C for Altos Announced

Niakwa Management Services of America, Inc. is pleased to announce the availability of Basic-2C on the multi-user Altos microcomputers. This implementation of Basic-2 is most significant in that, for the first time ever, a Basic-2 user will have a single shared-logic computer system to support more active users than a Wang 2200.

Altos Computer Systems of San Jose, California is not a newcomer to the data processing industry. They were the first to introduce a multi-user microcomputer (1977) as well the first to deliver a Xenix-based multi-user microcomputer (1980). Their recent annual sales volume of $134 million places them among the leaders in the field. Altos has no direct sales force and sells almost exclusively through Value Added Resellers.

Altos Perspective

Computer Systems News, in it's September issue, published its "1986 Annual Report Card Review" of 12 major computer manufacturers. They surveyed 400 qualified VARs, 49 of which handled Altos. For your review Niakwa has reprinted the overall rankings of the 12 and the breakdown of the Altos Report Card specifically. Vendors were rated on a scale of 1 to 10, with 1 being the poorest grade, 5 average, and 10 the best.

	Vendor	Grade	Overall Average
1.	Prime	B+	7.16
2.	Altos	B+	7.01
3.	Texas Instruments	C+	6.61
4.	Hewlett-Packard	C+	6.58
5.	NCR	C+	6.50
6.	AT&T	C+	6.46
7.	Datapoint	C	6.20
8.	Burroughs	C–	5.97
9.	Data General	C–	5.94
10.	DEC	C–	5.89
11.	Wang	D	5.68
12.	IBM	D	5.55
	Overall Average		6.30

Altos Report Card

1.	Breadth of product line	7.49
2.	Quality of products	8.53
3.	Availability of products	8.43
4.	Price/Performance satisfaction	8.35
5.	Satisfaction with profit margins	7.31
6.	Processes orders promptly	7.20
7.	Meets delivery schedules	7.29
8.	VAR support services	5.98
9.	Satisfaction with charges for support	5.60
10.	Provision for hardware maintenance	6.74
11.	Quality of information provided	6.63
12.	Willingness to address VAR problems	5.80
13.	Ability to address VAR problems	5.57
14.	Commitment to VAR program	6.94
15.	Interest in avoiding cross-channel conflict	6.38
16.	Overall impression of vendor	7.90
	Overall Average	7.01

Altos 686/886

The Altos 686/886 microcomputers use an Intel 80286 microprocessor running at 7.5MHz. They are expandable to two megabytes of RAM and support up to two 80MB hard disk drives (686) or three 80MB hard disk drives (886). A dedicated microprocessor is used for the support of six RS-232 I/O ports (the 686) or eight RS-232 I/O ports (the 886). The Altos 686/886 supports Xenix 3.0, allowing up to six (686) or eight (886) users to run simultaneously. A standard configuration includes a 1.2MB floppy disk drive and supports a 60MB streaming tape backup device.

Altos 1086/2086

The Altos 1086 and 2086 microcomputers support up to 10 and 20 users respectively. The only difference between the Altos 1086 and 2086 is the number of users supported. The systems utilize an Intel 80286 microprocessor running at 8MHz. Both systems support up to 8MB of RAM and a 4KB Cache of static RAM. The user ports on the systems are accommodated through a one or two board Serial Communications Subsystem. Each board includes an 8MHz, 8086 microprocessor and ten serial RS-232 asynchronous ports. The 1086 and 2086 can support up to three 80MB hard disk drives, for a total capacity of up to 240MB each. Each system comes with a 1.2MB floppy disk drive and a 60MB streaming tape drive. Both systems run Xenix 3.0

Altos 3086

The Altos 3086, while announced by Altos, has yet to ship as of this date. Niakwa will test this machine for compatibility with Basic-2C when available. It is our goal to support Basic-2C on the Altos 3086. The Altos 3086 is a high performance supermicrocomputer capable of providing support for up to 32 users. Based upon the powerful Intel 80286 microprocessor operating at 12.5 MHz with no wait states out of cache, the system offers outstanding performance at a very economical cost per user basis. The standard system includes 4 MB of RAM and a 170 MB disk drive. Memory may be expanded up to 8MB while internal mass storage may be expanded to 405MB (formatted).

Terminals Supported on an Altos System

The initial release of Basic-2C will support the Altos III terminal. Niakwa will also support DEC VT 100's as terminals on an Altos. IBM PC's (and compatibles) may be used as terminals to the system when running under "PCworks" software from Touchstone Software which emulates a standard DEC VT 100. PCworks also provides utilities for data transfer between Altos and the PC as well as many other functions.

Altos Specifications at a Glance

(all values are maximums)

Model	Memory	Disk*	Tape Storage	# of Users
686	2.5MB	126MB	60MB	6
886	2.0MB	189MB	60MB	8
1086	8.0MB	390MB	60MB	10
2086	8.0MB	390MB	60MB	20
3086	8.0MB	405MB	60MB	32

For additional technical information see the enclosed specification sheets.

*Formatted

Altos Compiler and RunTime Package Availability

The Basic-2C Compiler/Interpreter (Release II) for the Altos 1086 and 2086 will be available for international release on November 30, 1986. The Basic-2C Compiler/Interpreter (Release II) for the Altos 686 and 886 will be dependent upon a software change request made of Altos by Niakwa. The Basic-2C Compiler/Interpreter (Release II) for the Altos 3086 has not been tested. Support of Basic-2C on the Altos 3086 is dependent upon its on-time release from Altos, and the availability of a 3086 for testing with Basic-2C.

Altos Multi-User RunTime Package Information

Basic-2C RunTime Packages will be available in different versions designed specifically to meet your users' needs. Each Altos version will support a different number of simultaneous users. They are: single-user, 1-4 users, 1-8 users, 1-16 users and 1-32 users.

Niakwa will offer a 100% upgrade credit for upgrades from one multi-user RunTime Package to a RunTime Package supporting additional users.

How to License Basic-2C for the Altos Family

Niakwa has changed its licensing structure to allow for the introduction of the new Altos Basic-2C Compiler/Interpreter, as well as other anticipated Basic-2C multi-user ports. In simplified terms, Niakwa Basic-2C Distributors will only pay one annual Support and Distribution license fee and be eligible to distribute RunTime Packages from *all* product types. This method offers a significant cost savings to the Niakwa Distributor who was, or wants to be, licensed for multiple compiler product types. Niakwa will be introducing this new structure as your Niakwa Distributor's license is up for renewal. Distributors wishing to be licensed for the Altos product type will need to convert to the new license. This will not affect your annual license date and the only fee will be $20 for the Altos Basic-2C Development Software. Note: a RunTime Package is not included for the $20.

Altos Basic-2C Compiler and RunTime Pricing

Compiler and RunTime pricing will be provided for the Altos with the new licensing information. See above.

Education and Training

On a regularly scheduled basis Altos offers training classes on their hardware and software offerings. They maintain education centers in San Jose, California; Boston, Massachusetts; and Schaumburg (Chicago), Illinois.

Altos can be contacted directly via a toll-free number (1-800-AltosUS) for a brochure on available courses and scheduled class dates.

Basic-2C Memory Considerations

Memory requirements for use of Basic-2C on Altos are as follows:

	Interpretive	Non-Interpretive
OVERHEAD		
Base RunTime (Shareable)	141K	88K

Note that the Xenix operating system requires approximately 312K plus 256K for buffers (total of 568K). These numbers are based on the use of Xenix 3.3, 16-user version.

PER USER		
Non-shareable RunTime	112K	104K
User Partition	56K	56K
Total Base Requirements per user	164K	160K
Plus Optional 64K program segment	64K	64K
Plus as required for "INVOKE" feature	?	?

In calculating the memory requirements for a given installation, multiply the per user requirements by the number of users and add the overhead. For example, a four user system using the Interpreter, with no extended user partition and no allotment for the INVOKE feature, would be calculated as follows:

Per user – 164K × 8 users	=	1312K
System Overhead – 568K for Xenix + 141K for the Interpreter	=	709K
Total Requirements		2021K (2 MB)

Notes:

The minimum requirement for any Altos configuration is 1 MB.

The guidelines given here will allow for all users to operate without program swapping. If a system does not have sufficient memory to permit all users to operate without swapping, users will still be able to execute programs. However, performance will degrade substantially!

If both the Interpreter and Non-Interpreter are to be used on the same system, the "shareable" portion of both must be included in the calculations.

Xenix Requirements

The following Altos operating system software is required for the proper setup and execution of Basic-2C.

For Development Systems

Xenix RunTime System for 1-16 users – version 3.3

Xenix Development System — version 3.2 or higher

Xenix Unlinked Kernel – version 3.3 (must match version of Xenix RunTime)

For End-user Systems

Xenix RunTime for 1-16 users – version 3.3

Note:

The Xenix Software Development System and Xenix Unlinked Kernel typically will need to be purchased only for the first 1086/2086 you install. For subsequent installations of 1086/2086 machines, the end-user systems requirements should be used.

There are different versions of these products for the Altos 686/886 models as well as for the 1086/2086 models. The version numbers listed here refer to the 1086/2086 version.

It will be necessary for distributors to provide end-users with a replacement for the standard Xenix kernel. This replacement kernel is 'made' by the distributor using the Xenix Development System, Xenix Unlinked Kernel, and procedures provided by Niakwa with the Basic-2C Development package for Altos.

The Altos Unlinked Kernel is not a standard price list item and therefore can be difficult to obtain. Contact Niakwa if you need assistance in obtaining the Unlinked Kernel. North American Distributors should contact us on how you can save $1250 in system software charges.

Special Note

Not all devices and peripherals that can be attached to an Altos system are supported by Basic-2C. We recommend that you call Niakwa to determine if a particular hardware or software item is supported if it is not specifically mentioned. Niakwa will *not* support the following items:

Worknet

Worknet is used to allow two or more Altos CPUs to be networked together. Basic-2C provides no method of determining a unique terminal number in this environment. Therefore we do not support the use of Basic-2C on networked Altos CPUs.

PC Path

PC Path is an Altos product intended to allow IBM or compatible PCs to be used as terminals on al Altos CPU. PC Path requires Worknet. Basic-2C does not support the terminal emulation scheme used by PC Path. In addition, since PC Path uses Worknet, Basic-2C would not provide a unique terminal number to PCs on the network. Therefore the use of Basic-2C on PCs connected to an Altos via PC Path is not supported.

The terminal emulation software package 'PC Works' by Touchstone is supported under Basic-2C and provides an excellent method of using IBM or compatible PCs as terminals on an Altos.

Terminals

Terminals other than the Altos 3 or VT100 are not supported for use with Basic-2C. This includes the Altos 4 terminal. This also includes the Wyse 50 and Wyse 75 terminals which are sometimes offered as "Altos 3 compatible". These terminals do not fully emulate the Altos 3 control sequences and therefore are not supported for use with Basic-2C.

Altos Performance - The No Nonsense Facts

Overview

Niakwa has performed an extensive evaluation which compares the performance of an Altos System to that of the Wang 2200. The purpose of this evaluation is to give our licensees a realistic guideline as to the performance that can be expected from Basic-2C applications running on an Altos System.

The Systems used for the evaluation were:

Altos
- Altos 2086 CPU
- 4MB of main memory
- 80MB Winchester
- configured for up to 16 terminals
- terminals running at 19.2K baud except console running at 9600 baud

Wang
- Wang 2200 CPU
- 512K of main memory
- 80MB Phoenix
- configured for up to 8 terminals
- terminals running at 19.2K baud

Four tests were devised for the evaluation and each was executed on both CPUs with an increasing number of active terminals) from 1, 2, 4, 8 and 16 on Altos and from 1, 2, 4, and 8 on Wang). The tests used were:

1. CPU INTENSIVE — This test involved iterating various constructs of the Basic-2C language to test in-core operations of the CPU only. The following operations were performed:

— FOR/TO LOOP	200,000 iterations
— IF/THEN	100,000 iterations
— Scalar ADD	100,000 iterations
— CONVERT	10,000 iterations
— Alpha LET	50,000 iterations
— MAT COPY	30,000 iterations

2. SCREEN INTENSIVE — This test focused on screen speed and screen I/O system performance. 10,000 iterations of the PRINT AT instruction were performed.
3. DISK INTENSIVE — This test focused on disk and I/O system performance. 500 iterations of *random* DATALOAD BA's were performed within a 10,000 sector diskimage.
4. OVERALL MIX — This test combined all of the above tests to illustrate overall system performance. A general accounting system was used which read a disk file of customer records, sorted them according to operator supplied parameters and printed the results to the screen for the entire customer file (TOM SPEED I).

Our general interpretation and opinion of the findings, together with detailed timings of each test, follow.

General Interpretation

Test 1 — In the CPU intensive test, Altos was determined to be approximately 8 times faster than Wang. As shown, only a limited number of Basic-2C instructions were tested, however in our view it would be reasonable to expect a performance improvement for CPU intensive operations of about 4-5 times the Wang 2200 with a typical Basic-2C program instruction mix (note: for CPU intensive instructions only).

Test 2 — In the SCREEN intensive test, Altos just slightly outperformed the 2200. We would expect the 2200 to match or even surpass the Altos in SCREEN I/O speed, where a significant number of repetitive characters are being sent to the screen. This is because the 2200 will compress repetitive characters to the screen, thereby increasing the effective baud rate under these circumstances.

Test 3 — In the DISK intensive test, the 2200 proved to be slightly faster than Altos. It should be noted that in this test, Xenix's disk buffering advantage over the 2200 was completely negated due to the purely random nature of the reads. Applications which take advantage of this buffering (which is usually the case) will often experience improved performance for DISK I/O.

Test 4 — Results of this test are the most important indicator of Altos performance. This test mixes all aspects of system performance, CPU speed, SCREEN speed and DISK I/O speed (not quite so random) in a typical processing environment.

Specifically, we found that the Altos system operating a full 8 terminals performed at the same overall speed of a 2200 operating *only 4 terminals*. Further, with the same test we found that a 16 terminal Altos performed very close (and in fact faster on some terminals) to the 2200 running *only 8 terminals*.

Therefore, application performance was determined to be much improved on the Altos over the Wang 2200, and this was particularly emphasized as the number of active terminals increased.

During the evaluation one drawback to the Altos was observed and should be noted. As indicated by the test results, the Wang 2200 provides an extremely even interleave between multiple terminals. That is, the 2200 system resources are very evenly divided across each terminal on the system. On Altos, the division of system resources is not nearly as even.

For example, let's take the situation where several heavy batch jobs are executing on the system while a group of terminals are being used for interactive data entry at the same time. On a 2200, whatever amount of CPU time is available to the interactive terminals will be evenly divided across each terminal. This yields very consistent operation at each terminal.

Under the same circumstances, the Altos will clearly have more system resources available for the interactive terminals, however these resources are not divided as evenly as on the 2200. Therefore, although overall performance of the interactive terminals on Altos would be faster, from the view of an individual terminal, performance may alternatively increase and decrease from time to time. This can be disconcerting during data entry and can even create the *appearance* of slower performance under certain circumstances.

This is due to the Xenix time slicing priorities algorithm which is substantially different from the "round robin" algorithm used in the 2200. This symptom is noticed primarily when the system is heavily loaded.

Comment on Other Altos CPU's

Performance testing was only performed on the Altos 2086, however in relative terms all Altos models are anticipated to compare as follows:

Altos 3086	On the 3086, both CPU operations and DISK I/O speed will be substantially faster than on the 2086. The CPU is operating at 12.5MHz on the 3086 as opposed to 8MHz on the 2086 (i.e. about 56% faster). Also the 170MB ESDI disk drive on the 3086 employs a faster average access time (28ms vs. 35 on the 80MB drive) and a faster transfer rate (10 megabits/seconds vs. 5 megabits/seconds on the 80MB drive).
Altos 1086	Overall performance will be identical to the 2086. The only difference between the 1086 and 2086 is the number of serial ports available.
Altos 686/886	Performance will be reduced on the 686 and 886 model processors as compared to the 2086. Although the processor speed of the 6/8 series is vitually the same as the 2086, some architectural improvements on the 2086 yield higher performance. The 2086 contains 4K cache memory (which effectively reduces processor wait states) and also supports DMA for disk I/O (which improves disk I/O performance), neither of which are present on the 6/8 series.

	ALTOS			WANG 2200			FACTOR
1 - CPU INTENSIVE	**Avg**	**Low**	**High**	**Avg**	**Low**	**High**	**X 2200**
One Terminal							
FOR/TO	6.54	6.54	6.54	59	59	59	9.02
IF/THEN	11.24	11.24	11.24	80	80	80	7.12
ADD	8.52	8.52	8.52	75	75	75	8.8
CONVERT	6.66	6.66	6.66	8	8	8	1.2
ALPHA LET	2.64	2.64	2.64	42	42	42	15.91
MAT COPY	6.12	6.12	6.12	40	40	40	6.54

	ALTOS			WANG 2200			FACTOR
	Avg	Low	High	Avg	Low	High	X 2200
Two Terminals							
FOR/TO	13.07	12.52	13.62	118	117	119	9.03
IF/THEN	22.17	22.1	22.24	160	160	160	7.22
ADD	17.24	16.54	17.94	150	150	150	8.7
CONVERT	13.57	13.52	13.62	17	17	17	1.25
ALPHA LET	14.62	14.62	14.62	84	84	84	5.75
MAT COPY	12.68	12.24	13.12	80	80	80	6.31
Four Terminals							
FOR/TO	25.6	24.5	27.8	240	239	240	9.38
IF/THEN	44.93	44.12	47.34	320	320	320	7.12
ADD	34.9	32.5	36	300	300	300	8.6
CONVERT	25.3	24.5	27.5	32	32	32	1.26
ALPHA LET	30.8	28.6	31.6	169	169	169	5.49
MAT COPY	25.9	24.1	28.4	160	160	160	6.18
Eight Terminals							
FOR/TO	53.04	41.5	73.46	480	480	480	9.05
IF/THEN	86.18	81.12	103.16	640	640	640	7.43
ADD	68.13	55.5	88.5	600	600	600	8.81
CONVERT	52.58	43.5	63.5	64	64	64	1.22
ALPHA LET	62.56	51.6	81.82	340	340	340	5.43
MAT COPY	50.83	42.12	58.08	320	320	320	6.3
Sixteen Terminals							
FOR/TO	102	79	146	—	—	—	
IF/THEN	181	140	240	—	—	—	
ADD	144	102	195	—	—	—	
CONVERT	103	68	163	—	—	—	
ALPHA LET	122	85	151	—	—	—	
2 - SCREEN INTENSIVE							
One Terminal	37	37	37	49	49	49	1.32
Two Terminals	62	62	63	69	69	69	1.11
Four Terminals	121	117	125	133.5	133	134	1.1
Eight Terminals	246	201	289	198	133	260	0.8
Sixteen Terminals	435	203	671	—	—	—	
3 - RANDOM DISK I/O							
One Terminal	27	27	27	16	16	16	0.59
Two Terminals	42	41.5	42.5	31	31	31	0.74
Four Terminals	80	75	84	62	62	63	0.78
Eight Terminals	163	117	207	122.5	122	123	0.75
Sixteen Terminals	321	186	521	—	—	—	—
4 - OVERALL MIX							
One Terminal	14	14	14	22	22	22	1.57
Two Terminals	22	22	22	33.5	33	34	1.52
Four Terminals	28	26	30	64	63	65	2.29
Eight Terminals	63	55	65	108	105	112	1.71
Sixteen Terminals	113	100	125	—	—	—	—

NOTE: All values are in seconds.

Altos Hardware Announcement

Altos Hardware Available from Niakwa

Let Niakwa be your first choice when you think of distributing Altos systems. Niakwa offers a complete Altos product line without requiring annual purchase minimums, chargebacks, or establishing lines-of-credit. All systems purchased from Niakwa are available at significant discounts and come with the support you expect from Niakwa.

Niakwa is able to sell Altos systems to those Basic-2C licensees in the United States and Canada wishing to provide total solutions to their customers. Contact Niakwa for more detailed information on how you can sell a total Altos hardware and software solution to your clients. We will promptly send you a Niakwa Dealer kit.

As an added bonus to those that purchase their Altos hardware from Niakwa, a *free Basic-2C RunTime Package* will be provided with each system order. The free Basic-2C RunTime Package will support the number of CRTs ordered.

General Information

Doing business in the Altos world is different than with other vendors that you may be familiar with. When buying hardware from Niakwa you will benefit from our extensive research in the Altos community. We can help you with such essential subjects as configuring, installation, warranty support, hardware maintenance, and cables. NOTE: all information contained in this announcement refers specifically to the installation of Altos hardware within the borders of the United States. Niakwa can sell Altos systems into Canada with some minor changes to the information that follows.

Warranty

Niakwa will pass to you or your customer the 90-day warranty that Altos provides with all its equipment. The 90-day warranty provides for depot (carry-in) maintenance for all components of the Altos system. Niakwa has established a resource for on-site warranty service at a small additional charge.

Hardware Maintenance Policy

All Altos computer equipment purchased from Niakwa is eligible for a hardware maintenance contract. In the United States this service is provided by TRW, the nationally authorized Altos service organization. TRW is the world's largest independent maintenance organization. TRW has over 3000 highly-trained service and support technicians coast-to-coast working out of over 200 service repair facilities nationwide. Their principal business is the expert maintenance and repair of your system's hardware. Because they maintain a wide variety of sophisticated electronic equipment, TRW is the only source you may need to keep your hardware performing at peak efficiency.

Hardware service contracts in Canada are available from Honeywell.

Hardware Installation

Set-up and installation of your Altos system is a relatively simple task, normally we expect the licensee to be able to accept shipment of the equipment and have it operational in a few short hours. Installation is available, at an additional fee, from TRW. *TRW will install your system at no charge when the end-user signs an annual maintenance agreement*. As with any computer system we strongly encourage you to consider and recommend hardware maintenance agreements.

Diagnostics

Niakwa will guarantee that all Altos equipment shipped to you or your end-users will have been thoroughly tested before being shipped. All CPU's and peripherals will be powered on and tested for a minimum of 24 hours before being readied for shipment. Any unit found to fail this test, for any reason, is immediately returned to the factory rather than risk a failure at your end-user's site. This is *in addition* to any testing that Altos does at the factory.

Cables

Niakwa provides, at additional charge, CRT and printer cables for your Altos systems. For your convenience CRT cables are available in lengths of 25, 50, and 100 feet. Printer cables are available only for printers that Niakwa has tested and approved. Availability of cables is an important benefit as Niakwa has the cables custom-made for your Altos equipment. Cables are *not* provided by Altos directly, or by most other distributors.

Configuration Support

Niakwa has a trained staff to assist you in the configuring of Altos systems for you and your customers. We welcome the opportunity to work with you. This can be a valuable service as Niakwa has significant expertise with the Altos hardware available and can help fine tune your computing needs.

Customized Xenix

Running Niakwa's Basic-2C RunTime Package on an Altos system requires customizing the Xenix Operating System as it comes from Altos. Niakwa has special authorization from Altos to make these custom changes and distribute them to you or your end-user when the Altos system is purchased from Niakwa. Altos systems purchased from Niakwa will be provided with a no-charge copy of these custom changes. This will result in a $1250 savings (Altos Xenix Development software $1000, Unlink Kernel $250). Niakwa's familiarity with this subject is an important reason why you should satisfy all your Altos hardware and software needs with Niakwa.

Lead Time

Niakwa expects to be able to deliver any Altos system within 2 weeks of ordering. This is dependent upon many unforeseen factors and is subject to change. Please contact Niakwa for current shipping dates.

DOA Policy

Niakwa has arranged for a most superior DOA policy in the event your Altos equipment arrives inoperable. Altos equipment that arrives Dead-On-Arrival, for whatever reason, can be handled in one of three ways. As a convenience to you the option is yours. Your first option is to return the equipment to Niakwa via our return instructions. Upon receipt and testing of the defective piece of equipment a new unit will be shipped to you. Secondly, if you had purchased the 90-day on-site warranty, TRW will attempt to repair at your, or your customer's site. And lastly, the equipment can be taken to TRW's service facility for depot maintenance, covered under the 90-day warranty.

Transit Insurance

As a protection to you, transit insurance will be charged on each shipment unless covered by other means.

Education and Training

On a regularly scheduled basis, Altos offers training classes on their hardware and software offerings. They maintain education centers in San Jose, California; Boston, Massachusetts; and Schaumburg (Chicago), Illinois.

Altos can be contacted directly via a toll-free number (1-800-AltosUS) for a brochure on available courses and scheduled class dates.

Niakwa Dealer Kit

Detailed information regarding the purchase of Altos hardware from Niakwa is available in the form of a Niakwa Dealer Kit. The Dealer Kit contains price lists, discount schedules, a reseller agreement, TRW service-related information, configuration guidelines, etc. This Dealer Kit is available upon request to any Basic-2C licensee.