

# 2004 Data Collector Hardware Survey

MANUFACTURER	DAP Technologies	HP	Juniper Systems Inc.	Juniper Systems Inc.	Symbol	Thales Navigation
<b>AFTER-MARKET REMANUFACTURER</b>	Sokkia	Sokkia	Sokkia	Sokkia	POINT Inc.	
<b>PRODUCT NAME OR MODEL NUMBER</b>	Microflex CE5320	iPAQ 2215	Allegro CX - Monochrome	Allegro CX - Color	SDR8100	MobileMapper
<b>SUGGESTED RETAIL PRICE (MSRP) (in U.S. Dollars)</b>	Contact Sokkia	Contact Sokkia	Contact Sokkia	Contact Sokkia	Contact Sokkia	\$1495
Tech. Support (see notes page 56)	A, 800/255-3913	A, 800/255-3913	A, 800/255-3913	A, 800/255-3913	A	Phone and E-mail
Warranty (hardware only) (months)	12	12	12	12	12	12
Money-back guarantee (months)	1	1	1	1	N/A	
<b>SOFTWARE COMPATIBILITY</b>						
- # of compatible Data Collection programs/vendors	N/A	N/A	N/A	N/A		Yes, mobile mapping software
- If proprietary OS, is there currently surveying/GPS data collection or mapping software available for this OS/hardware?						
<b>PROGRAM/DATA STORAGE</b>						
- Primary (fastest or program) storage type	SDRAM	SDRAM	SDRAM	SDRAM	SRAM	SD card
- Primary storage size (may specify a range in megabytes)	16 MB	64 MB	64-128 MB	64-128 MB	32 MB	Up to 128 MB
- Secondary (slower or data) storage type	NAND	Flash ROM (non-volatile)	Compact Flash	Compact Flash	Compact Flash	
- Secondary storage size (may specify a range in megabytes)	16 MB - 1 GB	32 MB	128 MB - 1 GB	128 MB - 1 GB	16 MB (standard)	
- Additional storage types (specify type(s) and size(s))	16 MB - 1 GB	Compact Flash or SD	PCMCIA Type I and II	PCMCIA / Type I or II	Compact Flash	
- Does program size affect data storage capacity?	PCMCIA Type II	Yes	Yes	Yes	No	No
- Is entire data storage usable as a single file?	No	No	Yes	Yes	Yes	Yes
- Can data be recovered if unit rendered inoperable?	Yes	No	Yes, if stored to CF	Yes, if stored to CF	Yes	Yes
- Is data retained during complete power loss?	Yes	Yes [1]	Yes, if stored to CF	Yes, if stored to CF	Yes	Yes
- If yes, for how long (specify in months)?						Indefinitely
<b>HARDWARE</b>						
- Operating System?	WIN CE v3.0	Pocket PC 2003	WIN CE.NET v4.2	WIN CE.NET v4.2	PocketPC (CE 3.0)	Proprietary
- Processor type?	Intel Strong Arm	Intel X-Scale	Intel X-Scale	Intel X-Scale	MIPS	
- Processor speed? (in MHz)	190	400	400	400	131	
- Software upgradable by user or by manufacturer?	Both	Both	Both	Both	Both	Both
- Weight (including batteries)? (in pounds)	2.1 lbs	0.144 kg / 0.32 lbs	0.836 kg / 1.84 lbs	0.836 kg / 1.84 lbs	0.875 lbs	0.22 kg / 0.48 lbs
- Sound speaker? (Y/N/Optional)			Yes	Yes	Yes	Yes
- Microphone? (Y/N/Optional)			Yes	Yes	Yes	No
- Cable-free connection to data collector? (Type, e.g. Bluetooth, 900 MHz, Radio, IR)	IRDA	Bluetooth - standard	IRDA/Bluetooth optional	IRDA and Bluetooth (standard)		No
- Cable-free connection to office computer? (Type, e.g. Bluetooth, 900 MHz, Radio, IR)		Bluetooth - standard	IRDA/Bluetooth optional	IRDA and Bluetooth (standard)		No
<b>USER INTERFACE</b>						
- Display type (LCD, TFT, etc.)	LCD	TFT	LCD	LCD	TFT	Transflective LCD
- Display size?	320 x 240	240 x 320	320 x 240	320 x 240	240 x 320	[2]
- Is display B&W, grayscale, or color?	Grayscale	Color	Grayscale	Color	Grayscale	Color
- Is display touch-sensitive?	Yes	Yes	Yes	Yes	Yes	No
- Numeric keypad?	Yes	No	Yes	Yes	Yes	Yes, soft keypad
- Alphanumeric keypad?	Yes	No	Yes	Yes	Yes	Yes, soft keypad
- QWERTY keypad entry?	No	Yes, using soft keyboard	No	No	No	No
- Capable of "softkey" operations?	Yes	No	Yes	Yes	Yes	Yes
<b>BATTERY</b>						
- Type (Lithium, NiCad, NiMH, etc.)	Lithium	Lithium ion	NiMH	NiMH	Lithium	Lithium
- Operating Life, hrs. (under "normal" usage)	1350 mAh	900 mAh	3800 mAh	3800 mAh	20 hours	[3]
- Battery backup? (Y/N/Optional) If Y or O, type?	20+ hours	12 hours	14+ hours	14+ hours	No	Yes, internal dry cell
- External battery? (Y/N/Optional) If Y or O, type?	Y - Lithium Maganese	Optional	Yes, internal lithium	Yes, internal lithium	No	Yes, AC/DC adapters
- Will it power external devices?	No	No	No	No	No	Yes, external antennas
- AC charger? (Y/N/Optional)	Yes	Yes, output 5 VDC	Yes	Yes	No	Yes, external antennas
- DC charger? (Y/N/Optional)			Yes	Yes	Yes	No
- Battery capacity in Ah or Mah?	Optional		Optional	Optional	Optional	No
<b>DURABILITY</b>						
- Operating temperature range, °F	-20 to 50° C / -22 to 120° F	0 to 40° C / 32 to 104° F	-30 to 54° C / -22 to 130° F	-30 to 54° C / -22 to 130° F	-4 to 122° F	-10 to 60° C (14 to 140° F)
- Drop shock resistance (drop test, ft.)	2 m - 6.56 ft		1.83 m / 6 ft	1.83m / 6 ft	MIL-STD8100D, 3 ft.	[4]
- Dustproof, water-resistant or waterproof? (specify IPXX classification)	IP67		IP67	IP67	IP54	IPX 7 (submersible)
- Mandatory conformance? (specify FCC, CSA, CE, C-TICK, other)	FCC Part 14, CE Mark	FCC Class B	FCC Part 14 / CE Mark	FCC Part 14 / CE Mark		[5]
- Environmental case?	No	Optional	No	No		No
<b>CONNECTIVITY</b>						
- Serial Connector #1 (RS-232, etc.)	RS-232 C Lemo	RS-232	RS-232 C9-Pin	RS-232 C9-Pin	RS-232C Mini 15	RS-232
- Serial Connector #2 (RS-232, etc.)	RS-232 C Lemo		RS-232 C9-Pin	RS-232 C9-Pin	RS-232C	
- Lowest/Highest Baud Rate? (in thousands of bits)	1200 - 115200	1200 - 115200	1200 - 115200	1200 to 115200	1200-115200	115.2
- Ethernet port? ("Yes" if 10 Base-T, "Other" for other cable types)	Yes, optional	No	Other	Other	No	No
- Internal modem? (Y/N/Optional)	Optional		Optional	Optional	Optional	No
- Other ports (IR, Parallel, PC Card, etc.)	IR / PCMCIA	CF, SD Card Slots	IR, USB	IR, USB		
- Internet browsing capable?	Yes w/ optional ethernet cradle	Yes	Yes, w/ optional modem	Yes, w/ optional modem		No
- E-mail capable?	Yes w/ optional ethernet cradle	Yes	Yes, w/ optional modem	Yes, w/ optional modem		No
<b>OPTIONAL ACCESSORIES</b>						
- Accessory 1 Name & Description			USB Power Dock	USB Power Dock	Charging download cradle	External GPS antenna
- Accessory 2 Name & Description						Vehicle mounting hardware
<b>SPECIAL FEATURES (OTHER THAN COVERED ABOVE)</b>						
- Feature 1 Name & Description	(D1)		Ergonomic display and keyboard	Ergonomic display and keyboard		12-channel GPS receiver
- Feature 2 Name & Description						[6]
- Feature 3 Name & Description						[7]

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MANUFACTURER	Thales Navigation	Topcon	Topcon	Trimble	Trimble	Trimble
<b>AFTER-MARKET REMANUFACTURER</b>					N/A	N/A
<b>PRODUCT NAME OR MODEL NUMBER</b>	MobileMapper CE	FC-1000	FC-100	GeoExplorer CE series [14]	Trimble ACU	Geodimeter Control Unit
<b>SUGGESTED RETAIL PRICE (MSRP) (in U.S. Dollars)</b>	\$2195	\$2395	\$1595 (64MB)/\$1895(128MB)		Contact distributor	Contact distributor
Tech. Support (see notes page 56)	Yes	A	A	B	A	A
Warranty (hardware only) (months)	12	12	12	12	12	12
Money-back guarantee (months)						
<b>SOFTWARE COMPATIBILITY</b>						
- # of compatible Data Collection programs/vendors	Windows CE .NET 4.2	Yes	Yes	Non-proprietary OS	Yes, non-proprietary	Proprietary
- If proprietary OS, is there currently surveying/GPS data collection or mapping software available for this OS/hardware?						
<b>PROGRAM/DATA STORAGE</b>	64 MB SDRAM	CF Card	CF Card	RAM	SDRAM	EPROM/RAM
- Primary (fastest or program) storage type		128 MB	64MB/128MB	32 MB	64 MB	31 KB to 326 KB
- Primary storage size (may specify a range in megabytes)	Removable SD card/unlimited		CF Card or SD memory	Non-volatile flash	Internal Flash (non-volatile)	N/A
- Secondary (slower or data) storage type	[8]	Depends card capacity	Depends card capacity	128 or 512 MB built-in	128 MB	N/A
- Secondary storage size (may specify a range in megabytes)	64 MB Flash (non-volatile)	CF Card	CF Card			N/A
- Additional storage types (specify type(s) and size(s))	No	Yes	Yes	Yes	Yes	No
- Does program size affect data storage capacity?	Yes, SD card	Yes	Yes	No	Yes	Yes
- Is entire data storage usable as a single file?	Yes, SD card & Flash	Yes	Yes	Yes, non-volatile flash only	Yes	Yes
- Can data be recovered if unit rendered inoperable?	Yes, SD card & Flash	Yes	Yes	Yes, non-volatile flash only	Yes	Yes
- Is data retained during complete power loss?	Permanent	N/A	N/A		1200	N/A
- If yes, for how long (specify in months)?						
<b>HARDWARE</b>						
- Operating System?	Windows CE .NET 4.2	Windows CE.3.0	Windows CE.NET 4.2	Windows Embedded CE 3.0	Microsoft CE.NET, 4.0	Proprietary
- Processor type?	ARM9	HITACHI SH4	Intel XScale	StrongARM SA-1110	Intel StrongARM CPU	N/A
- Processor speed? (in MHz)		166	400	206	206	N/A
- Software upgradable by user or by manufacturer?	Yes	Both	Both	User	User	Both
- Weight (including batteries)? (in pounds)	1.01 lb / 0.46 kg	1.76 lbs (800 g)	1.28 lbs (580 g)	[15]	590 g (1.3 lbs)	170 g (0.4 lbs)
- Sound speaker? (Y/N/Optional)	Yes	Yes	Yes	Yes	Yes	Yes
- Microphone? (Y/N/Optional)	Yes	Yes	Yes	Yes	Yes	N
- Cable-free connection to data collector? (Type, e.g. Bluetooth, 900 MHz, Radio, IR)	Bluetooth	Yes, with optional accessories	Yes, with optional accessories	No, data collector is integrated	Bluetooth internal [17]	N/A
- Cable-free connection to office computer? (Type, e.g. Bluetooth, 900 MHz, Radio, IR)	Bluetooth			No		N/A
<b>USER INTERFACE</b>						
- Display type (LCD, TFT, etc.)	TFT	QVGA	TFT		Illuminated TFT-LCD	LCD
- Display size?	320 x 240	320 x 240	320 x 240	240 x 320	320 x 240 P (1/4 VGA)	20 characters x 4 lines
- Is display B&W, grayscale, or color?	Color	B & W	Color	Color	Color	B&W
- Is display touch-sensitive?	Yes, resistive touch panel	Yes	Yes	Yes	Yes	No
- Numeric keypad?		Yes	No	Yes, virtual	Yes	Yes
- Alphanumeric keypad?	Yes	Yes	No	Yes, virtual	Yes	Yes
- QWERTY keypad entry?		Yes	No	Yes, virtual	Yes [18]	No
- Capable of "softkey" operations?	Yes	Yes	Yes	Yes	Yes [18]	Yes
<b>BATTERY</b>						
- Type (Lithium, NiCad, NiMH, etc.)	Lithium	NiMH	NiMH	Lithium-ion	NiMH rechargeable	N/A [21]
- Operating Life, hrs. (under "normal" usage)	3900 mAh	2000mAh	2200mAh	21 watt-hours	Varies [19]	N/A [21]
- Battery backup? (Y/N/Optional) If Y or O, type?	8 hours	8 hours	20 hours	10 hours	Varies [19]	N/A [21]
- External battery? (Y/N/Optional) If Y or O, type?		Yes	Yes	No	Optional	Yes
- Will it power external devices?		No	No	Optional [16]	Yes [19]	Optional
- AC charger? (Y/N/Optional)	Via USB	No	No	No	No	No
- DC charger? (Y/N/Optional)	Yes	Yes	Yes	Yes	Yes	Optional
- Battery capacity in Ah or Mah?	Optional	No	No	Optional	No	No
<b>DURABILITY</b>						
- Operating temperature range, °F	-10 to 60° C	-4 to 122° F	-4 to 122° F	-10 to 50° C / -14 to 122° F	-20 to 55° C / -4 to 131° F	-20 to 55° C / -4 to 131° F
- Drop shock resistance (drop test, ft.)	4.9 ft	3.3 ft (1 m)	3.3 ft (1 m)	3 ft	0.9 m (3 ft)	Withstands 1.5 m (5 ft)
- Dustproof, water-resistant or waterproof? (specify IPXX classification)	IPX7 (1 m submersion)	IP66	IP66	IP54	IPX4	Water-resistant
- Mandatory conformance? (specify FCC, CSA, CE, C-TICK, other)	FCC, CE	FCC, CE	FCC, CE	FCC, CE, C-Tick	[20]	FCC, CE
- Environmental case?	Belt-mounted carrying case	No	No	No	Rugged design, not needed	Yes
<b>CONNECTIVITY</b>						
- Serial Connector #1 (RS-232, etc.)	Yes	9-pin RS232C	9-pin RS-232C	RS-232	RS-232 Hirose 4 pin	RS-232 4pin Hirose
- Serial Connector #2 (RS-232, etc.)		6-pin RS232C	USB type B mini		RS-232 Dsub 26 pin	N/A
- Lowest/Highest Baud Rate? (in thousands of bits)		115.2K	115.2K	110/115K	Max 1 Megabit/sec	300-19,200
- Ethernet port? ("Yes" if 10 Base-T, "Other" for other cable types)		Optional CF card	Optional CF card	No	Yes	N/A
- Internal modem? (Y/N/Optional)	Via Bluetooth dial-up networking	No	No	No	No	No
- Other ports (IR, Parallel, PC Card, etc.)	SD Card	USB, CF Card	USB, CF Card Type	No	USB	N/A [22]
- Internet browsing capable?	Yes	Yes	Yes	Yes	Yes	No
- E-mail capable?	Yes	Yes	Yes	Yes	Yes	No
<b>OPTIONAL ACCESSORIES</b>						
- Accessory 1 Name & Description	[9]	Carrying case	Carrying case	External antenna	Multiport adaptors	Contact distributor
- Accessory 2 Name & Description	[10]	Extra battery	Extra battery	External power kit	Touch screen stylus	
<b>SPECIAL FEATURES (OTHER THAN COVERED ABOVE)</b>						
- Feature 1 Name & Description	[11]			[53]	Contact distributor	Contact distributor
- Feature 2 Name & Description	[12]			[54]		
- Feature 3 Name & Description	[13]					

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MANUFACTURER	Trimble	Tripod Data Systems	Tripod Data Systems	Tripod Data Systems	Tripod Data Systems	Tripod Data Systems
<b>AFTER-MARKET REMANUFACTURER</b>	N/A			Trimble	Trimble	Trimble
<b>PRODUCT NAME OR MODEL NUMBER</b>	Zeiss Elta Control Unit	Recon 200	Ranger 200C	GIS TSCe field device	Trimble Recon	Trimble TSCe
<b>SUGGESTED RETAIL PRICE (MSRP) (in U.S. Dollars)</b>	Contact distributor	\$1499	\$2199 - \$2999	Contact distributor	Contact distributor	Contact distributor
Tech. Support (see notes page 56)	A	A	A	B	A	A
Warranty (hardware only) (months)	12	12	12	12	12	12
Money-back guarantee (months)		1	1			
<b>SOFTWARE COMPATIBILITY</b>						
- # of compatible Data Collection programs/vendors	Proprietary			Non-proprietary OS	Yes, non-proprietary	Yes, non-proprietary
- If proprietary OS, is there currently surveying/GPS data collection or mapping software available for this OS/hardware?						
<b>PROGRAM/DATA STORAGE</b>	EPROM/RAM	SDRAM	SDRAM	SDRAM	SDRAM	SDRAM
- Primary (fastest or program) storage type	8 MB	64 MB	64 MB	64 MB	64 MB	64 MB
- Primary storage size (may specify a range in megabytes)	Type I PCMCIA cards	FlashDisk	FlashDisk	Non-volatile flash	Internal NAND Flash	Internal Flash (non-volatile)
- Secondary (slower or data) storage type	Varies with card size	64 MB, 128 MB	32, 128, or 512 MB	128 MB	128 MB	512 MB
- Secondary storage size (may specify a range in megabytes)	N/A				[39]	
- Additional storage types (specify type(s) and size(s))	No	Yes	Yes	Yes	Yes	Yes
- Does program size affect data storage capacity?	Yes	Yes	Yes	Yes	Yes	Yes
- Is entire data storage usable as a single file?	Yes	Yes	Yes	Yes, non-volatile flash only	Yes	Yes
- Can data be recovered if unit rendered inoperable?	Yes	Yes	Yes	Yes, non-volatile flash only	Yes	Yes
- Is data retained during complete power loss?	N/A	1200	1200		1200	1200
- If yes, for how long (specify in months)?						
<b>HARDWARE</b>						
- Operating System?	Proprietary	Windows CE .NET	Windows CE .NET, CE 3.0	Windows Embedded CE	Windows CE.NET 4.1	Windows CE.NET 4.0
- Processor type?	N/A	Intel XScale	Intel StrongARM	Intel StrongARM CPU	Intel PXA250 XScale CPU	Intel StrongARM CPU
- Processor speed? (in MHz)	N/A	200	206	206	400	206
- Software upgradable by user or by manufacturer?	Both	User	User	User	User	User
- Weight (including batteries)? (in pounds)	660 g (1.46 lbs)	1.06 lbs	2.2 lbs	1 kg (2.2 lbs)	0.49 kg / 1.06 lbs	1.0 kg (2.2 lbs)
- Sound speaker? (Y/N/Optional)	Yes	Yes	Yes	Yes	Yes	Yes
- Microphone? (Y/N/Optional)	No	No	Yes	Yes	No	Yes
- Cable-free connection to data collector? (Type, e.g. Bluetooth, 900 MHz, Radio, IR)	N/A	Yes, with optional accessories	Bluetooth [27]		Bluetooth [40]	Bluetooth capable [44]
- Cable-free connection to office computer? (Type, e.g. Bluetooth, 900 MHz, Radio, IR)	N/A	Yes, with optional accessories	IR	IR	Bluetooth [40]	IR
<b>USER INTERFACE</b>						
- Display type (LCD, TFT, etc.)	LCD	TFT	TFT reflective	TFT	TFT	TFT reflective
- Display size?	40 columns x 8 rows	240 x 320	320 x 240	320 x 240 P (1/4 VGA)	240 x 320 P (1/4 VGA)	320 x 240 P (1/4 VGA)
- Is display B&W, grayscale, or color?	B&W	Color	Color	Color	Color	Color
- Is display touch-sensitive?	No	Yes	Yes	Yes	Yes	Yes
- Numeric keypad?	Yes	No	Yes	Yes	No [41]	Yes
- Alphanumeric keypad?	Yes	No	Yes	Yes	No [41]	Yes
- QWERTY keypad entry?	Yes	No	No	No	No [41]	Yes [45]
- Capable of "softkey" operations?	Yes	Yes	Yes	No	Yes [42]	Yes [42]
<b>BATTERY</b>						
- Type (Lithium, NiCad, NiMH, etc.)	N/A [21]	NiMH	NiMH rechargeable	NiMH rechargeable	NiMH rechargeable	NiMH rechargeable
- Operating Life, hrs. (under "normal" usage)	N/A [21]	3800 mAh	3800 mAh	3800 mAh	2.4V 3800mAh	4.8V 3800mAh
- Battery backup? (Y/N/Optional) If Y or O, type?	N/A [21]	15 hours	35 [28]	30 hours	15 hours (nominal)	35 hours (nominal)
- External battery? (Y/N/Optional) If Y or O, type?	Yes	No	No [29]	No	No	No
- Will it power external devices?	Optional	No	Optional [30]	No	No	Optional
- AC charger? (Y/N/Optional)	No	No	Yes [31]	No	No	No
- DC charger? (Y/N/Optional)	No	Yes	Yes	Yes	Yes	Yes
- Battery capacity in Ah or Mah?	No	Optional	Optional		Optional	Optional
<b>DURABILITY</b>						
- Operating temperature range, °F	-20 to 55° C / -4 to 131° F	-30 to 60° C (-22 to 140° F)	-25 to 60° C (-13 to 140° F)	-20 to 60° C / -4 to 140° F	-30 to 60° C (-22 to 140° F)	-25 to 60° C (-13 to 140° F)
- Drop shock resistance (drop test, ft.)	1m (3.3 ft)	38 drops at 4 ft	[32]	[37]	[43]	[43]
- Dustproof, water-resistant or waterproof? (specify IPXX classification)	Water-resistant	IP67	IP67	IP67	Waterproof IP67	Waterproof IP67
- Mandatory conformance? (specify FCC, CSA, CE, C-TICK, other)	FCC, CE	[23]	[33]	FCC, CE, CSA, C-tick	[33]	[33]
- Environmental case?	Yes	No [24]	No [24]		No [24]	No [24]
<b>CONNECTIVITY</b>						
- Serial Connector #1 (RS-232, etc.)	RS-232 4pin Hirose	9-pin RS-232	9-pin RS-232	9 pin RS-232 115kbs	9-pin RS-232 Dsub	RS-232 7 pin 0-shell Lemo
- Serial Connector #2 (RS-232, etc.)	N/A		26-pin [34]	26 pin		RS-232 9 pin Dsub
- Lowest/Highest Baud Rate? (in thousands of bits)	Max 57,600	115K	115 K	[38]	115 K	[38]
- Ethernet port? ("Yes" if 10 Base-T, "Other" for other cable types)	N/A	Optional card	Yes	Yes	Yes	Yes
- Internal modem? (Y/N/Optional)	No	No	No	No	No	No
- Other ports (IR, Parallel, PC Card, etc.)	PCMCIA card	USB, PC Card slots	IrDA Type 1	IrDA Type1, AC adaptor	USB Slave, PC Card slots	[46]
- Internet browsing capable?	No	Yes	Yes	Yes	Yes	Yes
- E-mail capable?	No	Yes	Yes	Yes	Yes	Yes
<b>OPTIONAL ACCESSORIES</b>						
- Accessory 1 Name & Description	Contact distributor	Carrying case	Multiport adapter	Multiport adapter	Multiport adapter	Multiport adapter
- Accessory 2 Name & Description		Neck strap	Touch screen stylus		Touch screen stylus	Touch screen stylus
<b>SPECIAL FEATURES (OTHER THAN COVERED ABOVE)</b>						
- Feature 1 Name & Description	Contact distributor	[25]	[35]		Contact distributor	Contact distributor
- Feature 2 Name & Description		[26]	[36]			
- Feature 3 Name & Description						

N/A=Not Applicable  
Numbers in brackets refer to notes (see page 5)

# 2004 Data Collector Hardware Survey

MANUFACTURER	Tripod Data Systems	Two Technologies Inc.	Two Technologies Inc.	Two Technologies Inc.	XYZworks
<b>AFTER-MARKET REMANUFACTURER</b>		Carlson Software	MicroSurvey Software Inc.	Sokkia	
<b>PRODUCT NAME OR MODEL NUMBER</b>	Recon 400	Carlson Explorer	MicroSurvey Tracker	JETT ce	XYZworks Fieldbook
<b>SUGGESTED RETAIL PRICE (MSRP) (in U.S. Dollars)</b>	\$1799	\$1795 (w/ Carlson SurvCE)	\$1795 - \$1995 [48]	Contact Sokkia	\$1350 [52]
Tech. Support (see notes page 56)	A	A	8, 90 days free from date of registration	A, 800/255-3913	A
Warranty (hardware only) (months)	12	24	24	24	24
Money-back guarantee (months)	1	N/A	15 days	1	1
<b>SOFTWARE COMPATIBILITY</b>					
- # of compatible Data Collection programs/vendors				N/A	Yes, Windows CE 4.2
- If proprietary OS, is there currently surveying/GPS data collection or mapping software available for this OS/hardware?					
<b>PROGRAM/DATA STORAGE</b>	SDRAM	SDRAM	SDRAM	Internal CF	RAM
- Primary (fastest or program) storage type	64 MB	64 MB	32 MB	64 MB total, 32 MB storage	64 MB, 128 MB optional
- Primary storage size (may specify a range in megabytes)	FlashDisk	Compact Flash	Built-in Compact Flash	Compact Flash	Flash Card
- Secondary (slower or data) storage type	64 MB, 128 MB	128 MB to 2 GB	128 MB	128 MB - 1 GB	64 MB
- Secondary storage size (may specify a range in megabytes)		Open PC card slot	Compact Flash slot		Compact Flash slot
- Additional storage types (specify type(s) and size(s))	Yes	Yes	Yes	Yes	Yes
- Does program size affect data storage capacity?	Yes	Yes	Yes	Yes	Yes
- Is entire data storage usable as a single file?	Yes	Yes	Yes	Yes	Yes [49]
- Can data be recovered if unit rendered inoperable?	Yes	Yes	Yes	Yes	Yes [49]
- Is data retained during complete power loss?	1200				Unlimited
- If yes, for how long (specify in months)?					
<b>HARDWARE</b>					
- Operating System?	Windows CE .NET	CE.net 4.2	Windows CE	WIN CE.NET v4.2	Windows CE 4.2
- Processor type?	Intel XScale	Intel X scale	XScale	Intel X-Scale	Intel Xscale
- Processor speed? (in MHz)	400	400	200/400	400	200, 400 optional
- Software upgradable by user or by manufacturer?	User	User	Yes	Both	Yes
- Weight (including batteries)? (in pounds)	1.06 lbs	822 g / 29 o	822 g / 29 o	0.822 kg / 1.81 lbs	28 o
- Sound speaker? (Y/N/Optional)	Yes	No	Yes		Yes
- Microphone? (Y/N/Optional)	No	No	No		No
- Cable-free connection to data collector? (Type, e.g. Bluetooth, 900 MHz, Radio, IR)	Yes, with option accessories	Optional	Bluetooth	Bluetooth ready	Optional Bluetooth
- Cable-free connection to office computer? (Type, e.g. Bluetooth, 900 MHz, Radio, IR)	Yes, with option accessories	Optional	Bluetooth	Bluetooth ready	Optional Bluetooth
<b>USER INTERFACE</b>					
- Display type (LCD, TFT, etc.)	TFT	QVGA-TFT color touch screen	QVGA-TFT	TFT	TFT
- Display size?	240 x 320	320 x 240	320 x 240	320 x 240	320 x 240
- Is display B&W, grayscale, or color?	Color	Color	Color	Color	Color, sunlight viewable
- Is display touch-sensitive?	Yes	Yes	Yes	Yes	Yes
- Numeric keypad?	No	Yes	45-key elastomeric	Yes	Yes
- Alphanumeric keypad?	No	Yes	Yes	Yes	Yes
- QWERTY keypad entry?	No	No	No	No	No
- Capable of "softkey" operations?	Yes	Yes, proprietary	Yes	Yes	Yes
<b>BATTERY</b>					
- Type (Lithium, NiCad, NiMH, etc.)	NiMH	NiMH, or AA batteries	NiMH	NiMH or alkaline (AA)	NiMH
- Operating Life, hrs. (under "normal" usage)	3800 mAh	1400 mAh	1400 mAh	1400 mAh	1400 mAh
- Battery backup? (Y/N/Optional) If Y or O, type?	15 hours	8 hours	10-12 hours	8+ hours	24 hours
- External battery? (Y/N/Optional) If Y or O, type?	No	No	No	Yes	Yes, lithium
- Will it power external devices?	No	No	No	No	Also operates w/ AA batteries
- AC charger? (Y/N/Optional)	No	Yes	No	No	Yes
- DC charger? (Y/N/Optional)	Yes	Yes	Yes	Yes	Yes
- Battery capacity in Ah or Mah?	Optional	Optional	Optional	Optional	No
<b>DURABILITY</b>					
- Operating temperature range, °F	-30 to 60° C (-22 to 140° F)	-20 to 50° C	-20 to 50° C / -4 to 122° F	-20 to 50° C	-10 to 50° C / 13 to 122° F
- Drop shock resistance (drop test, ft.)	[43]	Not classified	Withstands 0.9 m / 3ft	1.5 m	4 ft
- Dustproof, water-resistant or waterproof? (specify IPXX classification)	IP67	Not classified	TBD	IP54	Mil spec 810
- Mandatory conformance? (specify FCC, CSA, CE, C-TICK, other)	[33]	FCC Class A	FCC Class A , CE	FCC Class A	FCC, CSA, CE pending
- Environmental case?	No [24]	No	No [24]	Optional	No, not necessary
<b>CONNECTIVITY</b>					
- Serial Connector #1 (RS-232, etc.)	9-pin RS-232	Standard 9 pin serial	RS-232	RS232 9 Pin	RS-232 9 pin
- Serial Connector #2 (RS-232, etc.)		N/A	No	RSS422 or 485	RS-232
- Lowest/Highest Baud Rate? (in thousands of bits)	115K	N/A	.11K to 115.2 K	1200 - 115200	1200-119200
- Ethernet port? ("Yes" if 10 Base-T, "Other" for other cable types)	Optional card	No	No	No	No
- Internal modem? (Y/N/Optional)	No	No	No	Optional	No
- Other ports (IR, Parallel, PC Card, etc.)	USB, PC Card slots	PC Card	No		Compact Flash
- Internet browsing capable?	Yes	Yes	Yes	Yes, w/ optional modem	Yes
- E-mail capable?	Yes	Yes	Yes	Yes, w/ optional modem	Yes
<b>OPTIONAL ACCESSORIES</b>					
- Accessory 1 Name & Description	Carrying case	Accessory kit pending	DC adapter		[50]
- Accessory 2 Name & Description	Neck strap		Instrument brackets		220V charger
<b>SPECIAL FEATURES (OTHER THAN COVERED ABOVE)</b>					
- Feature 1 Name & Description	[47]				Full 45-key keyboard
- Feature 2 Name & Description	[26]				2 year warranty
- Feature 3 Name & Description					[51]

# 2004 Data Collector Hardware Survey Notes

## Technical support options:

- A Unlimited free technical support.
- B Technical support available by a subscription.
- C Technical support available on a per-call basis.

*POB* does not assume responsibility for any errors or omissions that may be contained within the survey.

1. If stored to Flash ROM, CF or SD.
2. 5.6 cm H x 3.9 cm W (2.2 in H x 1.6 in W); 120 x 160 pixels.
3. 8 hours (with backlight); 16 hours (without backlight).
4. Drop onto concrete, 1.5 m (4.9 feet).
5. Immunity (EN 55022 Class B); Susceptibility (EN 50082-1); FCC and CE certified.
6. Complete GIS data logging capability including editing GIS files in the field.
7. Full navigation capability including background map display.
8. Removable SD card memory - 1 GB+.
9. MobileMapper Beacon - NDGPS Beacon Receiver, Belt-worn, 4 AA batteries, Provides RTCM SC-104 corrections via Bluetooth, List price \$1,295.00 USD.
10. External GPS antennas - magnetic mount external antenna.
11. Integrated sub-meter, real-time GPS.
12. Removable SD card memory / Unlimited.
13. Field replaceable Lithium-ion battery.
14. GeoXT/GeoXM.
15. 0.72 kg / 1.59 lbs including GPS receiver, antenna, batteries and datalogger.
16. 12v camcorder or vehicle.
17. Bluetooth type approvals and regulations are country specific.
18. Available using touchscreen.
19. Uses external battery of device during field operation.
20. FCC, CSA, CE, C-tick.
21. Requires external power to operate.
22. Hot shoe to optical device.
23. FCC class B, CSA, CE, C-Tick.
24. Rgged unit - not needed.
25. 1x Type I and 1x Type II Compact Flash slots.
26. Quick-change "PowerBoot" battery module.
27. Bluetooth communications limited to other Rangers and Trimble 5800 GPS receiver.
28. 35 hours under normal conditions, 8 hours with frontlight on, 3 hours recharge time.
29. No backup needed as files are stored in non-volatile memory.
30. With appropriate cabling a variety of power sources can be used to operate or recharge internal battery.
31. The user has to provide their own custom adapter, contact Tech. Support for info.
32. 1.22 m (4 ft) for 38 drops.
33. FCC class B, CSA, CE, C-Tick.
34. With adapter: Ethernet 10-BaseT, USB client, power in/out, audio in/out.
35. Languages supported English, Spanish, German, French, Portuguese, Chinese (simplified), Japanese, Korean.
36. Electromagnetic compatibility (EMC) Certified to EN55022, Electrostatic discharge Certified to EN61000.
37. 1.22 m (4ft) for 26 drops.
38. Max rate 1 megabit/sec.
39. Compact Flash Type I and Type II.
40. Requires Bluetooth Compact Flashcard. Bluetooth type approval is required for some countries.
41. Available using touchscreen keypad.
42. Available using touchscreen.
43. 1.22 m (4 ft) for 26 drops.
44. Attachable BlueCap required Bluetooth type approval is country specific.
45. Available onscreen with Windows CE OS.
46. IrDA Type 1 and 26 Pin Multiport.
47. 1x Type I and 1x Type II Compact Flash slots.
48. Pricing includes MicroSurvey FieldGenius 2004 Basic and Pro Modules Pricing: 200MHz - \$1795, 400MHz - \$1995.
49. Backup to non-volatile flash.
50. 128MB RAM and 400Mhz for \$200.
51. Includes charger and serial cable for Activesync to desktop.
52. Bundle including Fieldworks for \$1995. Information and free demo at [www.xyzworks.com](http://www.xyzworks.com).
53. Integrated WAAS capable GPS receiver.
54. Standalone or complete GIS data collection and maintenance system options.

## Participating Companies:

### Carlson

[www.carlsonsw.com](http://www.carlsonsw.com)

### MicroSurvey

[www.microsurvey.com](http://www.microsurvey.com)

### Sokkia/POINT Inc.

[www.sokkia.com](http://www.sokkia.com)

### Thales Navigation

[www.thalesnavigation.com](http://www.thalesnavigation.com)

### Topcon

[www.topconpositioning.com](http://www.topconpositioning.com)

### Trimble

[www.trimble.com](http://www.trimble.com)

### Tripod Data Systems

[www.tdsway.com](http://www.tdsway.com)

### XYZworks

[www.xyzworks.com](http://www.xyzworks.com)