Moving Terrain

User Manual Version 6.4



Warnings

The greatest of care has been taken in the compilation of text and illustrations for this manual. Nevertheless, the possibility of errors cannot be completely excluded. No form of liability or legal responsibility can be assumed by either the publisher or the authors for incorrect information or its consequences. The publisher is grateful for comments, suggestions and corrections.

Important advice on the use and possible risks involved with Moving Terrain:

You have acquired a high-performance system for navigational support that will make flying easier than ever before. However, we feel obligated to make you aware of all the associated risks that have been identified by our test pilots.

We have made every effort to ensure that the Moving Terrain system is safe and reliable. The system has been tested under all conceivable flying conditions. However, although neither you nor we may detect any further defects, **no liability is accepted for correct functioning of the system**.

Even if our system proves to be one hundred percent error-free there may still be **dangers due to operating errors** and in particular **manipulation of GPS accuracy** by the operator, the US Ministry of Defense. We are unable to make any kind of prediction or warranty with regard to the **future licensing policy of the GPS operator**.

The Moving Terrain system is a VFR device. It is not safe to fly with this navigational aid under instrument flight conditions unless you have all the mandatory navigational equipment in operation and are flying according to instrument flight rules on instrument routes.

Any non-IFR trained and licensed pilot who flies in IMC is risking his life – with or without Moving Terrain!

Under aviation regulations you are obliged to keep the appropriate **up-to-date charts in paper form on board**. Although we place great trust in the system, our pilots always have the latest ICAO charts at hand.

Manufacturer:

Airplus Maintenance GmbH Flughafen 28 D-88046 Friedrichshafen - Germany

WARRANTY AND LIABILITY ADVICE

This software is to faciliate your terrestic navigation only. It is not a certified aviation equipment and does not replace any aircraft instrument. You are explicitly cautioned to verify that the hardware employed is functioning correctly and does not interfere with the aircraft or other vessel in a hazardous manner. Data errors and computer errors are possible. This also pertains to the Enhanced Navigation Database data and procedures implied in the respective modules. Human error can make the moving map, navdata or any supplemental information incorrect. The pilot in command remains the final authority on the accuracy and sufficiency of the hardware and software.

Warranty and Liability Disclaimer:

The manufacturer, distributor or sales agent resume no liability as to the correct function of the software, the availability of a reference signal (GPS) or the validity of the charts, navdata or any supplemental information like airport information a.o. Never will the manufacturer, producer, sales representative and neither of their staff be liable to you for any consequential incidential or indirect damages (including damages for loss of business profits, business interruption, loss of business information and the like) arising from the use of or inability to use the software even if any of the staff mentioned above has been advised.

There is no warranty, express or implied, including without limitation the implied warranties of merchantability and fitness for a particular purpose, regarding the software. The entire risk as to the results and performance of the hardware and software is assumed by you.

Notice:

For our Enhanced Navigation Database package a continuous improvement programm is being implemented. If applicable, please contact our Help Desk:

Tel: ++49 - 8376 - 9214-0

Moving Terrain ist ein registriertes Warenzeichen der: Moving Terrain Air Navigation Systems AG Sparenberg 1 D-87477 Sulzberg Tel: +49 8376 9214-0 Fax: +49 8376 9214-14

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MT-Ultra Equipment

Front View



Rear view







Getting Started

After the device is correctly plugged in and turned on:

AGREEPress keyFLTPress key

You are now in Flight Mode.



The map will now position itself via GPS, as long as sufficient satellites are available. As soon as the aircraft accelerates past 2 kts, the compass rose will turn into an airplane symbol.

Other entries are not necessary. Have a good flight!

If your system does not immediately position itself on the map, keep an eye out on the following messages in the **Info Box:**

NO DATA : There is no connection to satellites.
 SATACQ: Connection to GPS is OK, but not enough satellites to establish a good connection.
 SATFIX 11: Positioning is possible. Number indicates the satellites found.
 DISTORTED: Distorted data is received (i.e. incorrect protocol chosen)







Fundamentals / Definitions

The two basic modes are distinguished by:

Map Mode: The user controls the chart:

- Chart can be moved with direction keys (EAST/WEST/NORTH/SOUTH).
- GOTO function available at various levels.

Flight Mode: The GPS controls the chart:

- The chart cannot be moved by means of keys.
- Actual position is downloaded from sufficiently many satellites.

Saving custom settings:

Different settings can be saved on your device. They are automatically saved every 10 seconds. Therefore after simply switching off your device, all changed settings are saved. To revert to original factory settings, run the program to **AUX -> RESET.** The following settings are saved: MODE, Position, PreSelected Single Charts, Direct, Brightness, Last Route, Zoom Levels, View Settings (Off-center, etc.), Setttings for Modules.

Definitions:

- **Base Chart:** A map consisting of several pages for larger regions. Displayed on the running system (a large map), available worldwide in a variety of scales. For example: ICAO Europa 1:1500 000, Heli Austria 1:300 000.
- **Single Chart:** Single-page map for a specific field. Examples: Approach Charts, Area Charts or also self-digitalized maps. To digitalize your own charts, please contact Moving Terrain AG!
- **Navdata:** Independent database from Base and Single Chart maps, with choices of VORs, NDBs, APTs and to generate VFR flight routes.
- **Module:** Additional functions to the Moving Map function, which must separately be switched on. In the basic version, these functions are not included. Some functions are also not available with the MT-Ultra device.

Quick Reference		Position Symbol	Position in the middle of the coordinate cross only in Map Mode. While using the direction keys (NORTH, EAST, etc), the cross changes color. The direction and speed of aircraft is also indicated.
MT-Symbols	GPS NO DATA	Warning Symbol	No GPS data received, only in Flight Mode.
	GPS distorted	Warning Symbol	Distorted GPS data received, only in Flight Mode.
	\bigotimes	Positions Symbo	I Displays the actual position using at least four satellites. Only in Flight Mode, when speed is under 2 knots.
		Trend Vector	Track of the aircraft (light blue arrow).
	1 nm2 nm Maßstab 1 : 100 000	Aircraft Symbol	Lights up after speed greater than 2 knots. The position is marked by the red dot.
		Direct Vector	Cyan line = Vector from current position to selected point
		Route Vectors	White lines = route Magenta lines = active route segments
		User Waypoint	Green diamond: Identifier provided in box.
		Obstacles Dis	splayed on the map as layers if the corresponding databank exists: blue = High voltage lines (only with databank) red = Lifts (only with databank)

FLT

CHART

VIEW

NAV

DCTtmp

Direction Keys

AUX

Basic Menu- MAP MODE



The Infobox

MT-Logo MT-Mode | Zoom Level GPS Data Coordinates in WGS84 True Altitude (ft) above MSL Groundspeed (kts) | Course (M°) above ground Endpoint name of direct vector Distance to destination (nm) | Course (M°) to destination Estimated time of arrival Single chart name

Function keys (green): These keys including their functions are described in the following pages. The function keys are displayed on the left border in the next few pages on this manual for you as an aid. The corresponding category is highlighted.

Moving Terrain Map Mode Basic Layer. From here one can navigate through the several submenus.

FLIGHT MENU



FLT

VIEW

NAV

DCTtmp

Direction Keys

AUX



Flight Mode

- FLT Mode: The Moving Map is steered by GPS
- Some modules are only viewable in FLT mode (Rotating)
- The compass rose becomes viewable when activated
- The symbol changes (when speed greater than 2 kts) to the appropriate airplane or helicopter symbol

Function key	Description	Secondary Functions
MAP	Back to basic layer in Map Mode	
CHART	Chart Selection Menu	Singlecharts, Basecharts, EFB
VIEW	View Changer	Basic: Compass rose, zoom, hide infobox, off-center mode, MFD mode Modules*: Rotating Map
NAV	Nav Page	Basis: choose VFR Nav points (APT,VOR,NDB), establish User Waypoints Module*: Enhanced Navigation Database, Flight Planning, Enhanced Navigation Database Procedures (SID,STAR,APPROACH)
DCTupd	Direct Update - Direct updata of the current position to the chosen destination	
LUM-	Brightness settings	
AUX	Other settings / Switch to other MFD modules	Basic: Waypoints hide, more monitor settings, further modules reset settings, and exit program Module*: Track & Flt Log, TCAS, Stormscope, Satellite Radar

* Modules are discussed below in appropriate chapters

FLT
CHART
VIEW
NAV

CHART SELECTION PAGE MENU

CHART SELECTION PAGE	MOVING TERRAIN
AVAILABLE BASECHARTS: #00: Austria 1:50 000 WEST - [G] #01: Austria 1:50 000 WEST - [G] #02: Europe Low Altitute Enroute Charts - [F] #03: Germany 1:100 000 - [F] #04: Heli Austria - [F] #05: Heli Germany - [F] #06: ICAO Europe 1:500T 150 dpi - [F]	MODEFLT 100% UTC 09:00:55 GPS SATFIX N 47 16.204' E 010 35.832' ALT 8000 feet GS GPS 100 MT 229 DCT MC DME SINGLE
USE SING.CH	DOWN BACK

Base Chart Selection

- Switch on the Base Chart
- Also possible in FLT Mode
- In principle, any number of base charts can be installed

DCTtmp

Direction Keys

Funktionstaste	Beschreibung
USE	Activates the selected chart and closes the Chart Selection page
SIN.CH	Single Chart selection menu
UP / DOWN	Highlights selected charts
BACK	Back to the previous menu

CHART SELECTION PAGE MENU

		CHART SELECTION PAGE		
		VFR-GER HELI-GER	MODEFLT 100% UTC 09:14:40 GPS SATFIX 9	 Map selection via the keyboard frame (maps are named according to ICAO)
FLT CHART	EDMK EDME2 EDME_T EDMF EDMG EDMH EDMI EDMI EDMJ EDML EDML EDMN	SELECTED (BASE>	N 47 15.434' E 010 34.480' ALT 8000 feet GS Hell 100 MT 229 OCT DME I'm	 After a selection of several maps, the selected box contents are automatically saved every 15 seconds. The last saved selection is then kept after shutting down the device. To delete, exit program with AUX->RESET from the basic menu Confirmation in Flight Mode of the GOTO key exits the selection screen and the selected map is displayed
VIEW	EDMO EDMP EDMQ EDMS GOTO BASE	CLEAR SEL RIGHT << >> UP	DOWN BACK	- In the selected box, the entry <base/> is found by means of fading out the active single chart and displaying the base chart
	Function Key	Description		- The chart page that was last exited from the Chart
				Selection Page is always shown
NAV	GOTO	Activates the previously selected map Mode	, displays it, and ends Flight	- Only one single chart can be active at a time, but
NAV	GOTO BASE	Activates the previously selected map Mode Back to Base Chart selection	, displays it, and ends Flight	- Only one single chart can be active at a time, but several can be pre-selected
NAV DCTtmp	GOTO BASE CLEAR	Activates the previously selected map Mode Back to Base Chart selection Erases the last-typed characters	, displays it, and ends Flight	- Only one single chart can be active at a time, but several can be pre-selected - Single charts are divided into categories such as HELI-GER and VFR-GER (see figure on left)
NAV DCTtmp	GOTO BASE CLEAR SEL	Activates the previously selected map Mode Back to Base Chart selection Erases the last-typed characters Selects the previous map and copies for faster access	, displays it, and ends Flight the entry in the selected box,	 Selection Page is always snown Only one single chart can be active at a time, but several can be pre-selected Single charts are divided into categories such as HELI-GER and VFR-GER (see figure on left) If one map is pre-selected, a preview in the middle of the screen is displayed
NAV DCTtmp Direction	GOTO BASE CLEAR SEL RIGHT/LEFT	Activates the previously selected map Mode Back to Base Chart selection Erases the last-typed characters Selects the previous map and copies for faster access Changes between selected box und r	the entry in the selected box,	 Selection Page is always snown Only one single chart can be active at a time, but several can be pre-selected Single charts are divided into categories such as HELI-GER and VFR-GER (see figure on left) If one map is pre-selected, a preview in the middle of the screen is displayed
NAV DCTtmp Direction Keys	GOTO BASE CLEAR SEL RIGHT/LEFT <>	Activates the previously selected map Mode Back to Base Chart selection Erases the last-typed characters Selects the previous map and copies for faster access Changes between selected box und r Changes the Single Chart Category i.	the entry in the selected box, nap selection box e. VFR-GER and HELI-GER	 Selection Page is always snown Only one single chart can be active at a time, but several can be pre-selected Single charts are divided into categories such as HELI-GER and VFR-GER (see figure on left) If one map is pre-selected, a preview in the middle of the screen is displayed
NAV DCTtmp Direction Keys	GOTO BASE CLEAR SEL RIGHT/LEFT <>	Activates the previously selected map Mode Back to Base Chart selection Erases the last-typed characters Selects the previous map and copies for faster access Changes between selected box und r Changes the Single Chart Category i. Sets the highlighted line higher or low	the entry in the selected box, nap selection box e. VFR-GER and HELI-GER	 Selection Page is always snown Only one single chart can be active at a time, but several can be pre-selected Single charts are divided into categories such as HELI-GER and VFR-GER (see figure on left) If one map is pre-selected, a preview in the middle of the screen is displayed

Single Chart Selection

VIEW MENU



DCTtmp

Direction Keys

AUX



	Function Keys	Description
	ZOOM+ / ZOOM-	Choose from different zoom levels, from 50% to 600%
	MFD	Activate the MFD screen, display in Dedicated Mode
]	100 %	Zoom back to default setting
	CRS-/ CRS+	Fade out/in the compass rose
]	OFF-C / CENTR	Set the position symbol in the middle/off-center on the screen
	INFO+ / INFO-	Fade in/out the info box
1	BACK	Back to the previous menu

VIEW

- Display settings can be be changed in this menu
- The 50% zoom level can be used for a larger overview
- For better foresight, the "off-center" symbol can be used

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MFD MODE MENU





NAV

DCTtmp

Direction Keys



unction Key	Description
RNG+ / RNG-	Increase/Decrease range
MAP+	Close the MFD mode and display the map
RNG0	Set the range to default setting (10 nm)
ARC / 360	Change the display between a complete circle or an arc
BACK	Back to the previous menu, does not end the MFD!

MFD Screen

- Dedicated Screen: display of the MFD module without maps
- Compass rose does not turn to the direction of flight
- The track is shown over the compass rose
- Direct and routes (only with an FMS module) are displayed
- User waypoints are shown

FLT	

CHART

NAV

DCTtmp

Direction Keys

	NAV	PAGE				MOVIN	S.
VFR WAYPOINT	S			D		MODEFLT	100%
MUNCHEN_						ute 17:23	3:02
MUNCHEN (APT)			E	DDM	OPS SATE	TX
MUNICH (VOR)				M	UN	N 47 41	078'
MUNICH (NDB)				M	NE	E 000 40	2002
MUNICH (NDB)				M	NW	E 009 48	1001
MUNICH (NDB)				M	SE	ALT OUUU	Maga
ELEV 1487FT; TV	VR 118,70;		N 4	821.2	00'	[ttt] 100	229
RWY 06L/26R 400	/0m CONC;		E 01	11 47.3	200'	DCT EDD	M
HWY 08H/26L 400	IOM CONC;ILS	08H 110,90;			_	[m] 88.5	^{MC} 61
TL326L 108,30; IL	508L 110,30; II	L326H 108,/1	7; SPEE	DO	[kts]	шт 53 m	in 4 se
WAYPOINT ID	ROUTE	ALT	MC	DME	EET	SINGLE	
					_	1/1	201
						1	22
						N.	1
						\mathbb{N}	6
					_	COM.	
DBASE GOTO	DCT	EDIT		NEXT	C LIP	DOWN	BACK

Nav Page

- Entry field left: Full name search
- Entry field right: ID search
- Below: Information field including telephone number, frequencies, runway info, etc.
- Name entry on the mounted keyboard
- The lower field displays information on routes and flight planning (only with FMS module connection!)
- VFR Nav data are saved in each default start

- It's possible to set up several Nav databases with user waypoints; green stars display these on the map

Function Key	Description
DBASE	Select the highlighted database
GOTO	Jump to pre-selected Nav point (highlighted in green)
DCT	Set a direct vector to the pre-selected Nav point
EDIT	Edit a pre-selected entry (only user waypoints!)
NEXT	Switches the active field (Name -> ID)
BACK	Back the the previous menu

NAV PAGE MENU

New User Waypoint

SAVE GOTO DCT CHR CLR PREV NEXT



CHART

NAME WPT008 ID WPT008 N/S N 47 40 947 · E/W E 009 49 061 COMMENT

VIEW

NAV

DCTtmp

Direction Keys

AUX

Function Key	Description
SAVE	Save the current user waypoint
GOTO	Jump to the pre-selected point from the user database, exit the Nav Page
DCT	Display a direct vector from the current position to the pre-selected destination
CHR	Display a character that cannot be entered with the mounted keyboard i.e. point, space, etc.
CLR	Delete the last entered character
PREV	Previous field
NEXT	Next field
BACK	Back to the map, exit Nav Page

MOVING TERRAIN

MODEMAP100%

N 47 40.947

E 009 49.061

GS MT ___

DCT EDDM

BACK

EET ---SINGLE CHART

Userwaypoints

- Name and ID can be entered

- The displayed coordinates correspond to the current position

- In the comment field, further information on the current point can be entered. This info will then be displayed on the Nav Page info field.

FLT

CHART

VIEW

Direct Temp



DCTtmp

MOVING TERRAIN

- Sets up a direct vector at the current position
- Allows quick selection of a destination point on the map without specfying waypoints or loading databanks
- The DCTtmp vector head always remains in the middle of the map crosshair
- The direct is displayed as TMPFIX on the right information box



NAV

Direction Keys
 DCTupd
 This key appears in Flight Mode. The direct vector head can be set up at the current position with this key.

GLIDING MAP MENU









DCTtmp

Direction Keys



function Key	Description
EAST /	Increase/decrease speed in the easterly direction
E+ / E-	
WEST /	Increase/decrease speed in the westerly direction
W+ / W-	
SOUTH /	Increase/decrease speed in the southerly direction
S+ / S-	
NORTH /	Increase/decrease speed in the northerly direction
N+ / N-	
STOP	Stop gliding map

- This function in can be used in conjuction with the DCTtmp function to approach a specific point without the need of a database.



- The map moves with the selected speed and direction until an interruption of change from the user is entered.

- The crosshair in the middle shows the speed and direction of scrolling (red scale).

- A diagonal scrolling path can be chosen with the combination of the keys.

- The scroll speed can be stopped with the STOP button or increasingly pressing the corresponding speed reduction key i.e. with westerly movement, press the W- button.



NAV

DCTtmp

Direction Keys

FLT





AUX

- Authorized/non-authorized modules are configured here (activated/deactivated). For example TCAS; STORMSCOPE, RADAR, TRACK

- By means of the RESET key can the software be set to factory settings

- The SCR key jumps to the screen menu, in which the LUM+/LUM- adjusts the brightness, as well as the NIGHT/DAY activates the night dimming mode of the device. The screen contrast settings can also be set here.

- The settings can also be carried out in Flight Mode

Function Key	Description
AUTH	When depressed for 3 seconds, the MT License Manager pops up where on can activated additional MT modules.
DATES	In the event of an available obstacle database, its date will be shown by pressing this key
SETUP	The display of the of the user waypoint symbol is activated/ deactivated on the map
SCR	Monitor settings such as brightness, contrast, night dimming, etc.
RESET	Shuts down the MT program and resets settings to the factory settings
BACK	Back to the main level

FAQs

Frequently asked questions:

- **Q**: I have a SATFIX with several satellites but the map does not seem to move?
- A: You need to be in Flight Mode to activate the moving map display function. In order to activate this function, press the FLT key in the main menu.
- **Q**: My device does not position itself and NO DATA appears in the information box?
- **A**: When using a GPS not provided by Moving Terrain, double check that it's turned on, check that the cable connections are correctly and snuggly plugged in, and if the GPS is sending the correct protocol.
- Q: In which voltage range can the MT-VisionAir device be used?
- **A**: From 12- 36 V.
- **Q**: How much power is used with the MT-VisionAir?
- A: Approximately 15 W.
- Q: I have a chart that I would like to install into my device. Is this possible?
- A: In principle, yes. If you send us the chart, we would be glad to make you an offer.
- Q: How can I update my charts?
- A: MT-VisionAir Two possibilities:
 - 1. Via the update chip, from which you can let us install the ordered charts
 - 2. Send us your MT-VisionAir
 - MT-Ultra Two possibilities:
 - 1. You can acquire an update kit, order the appropriate chart from us and then install it on your own
 - 2. Send us your MT-Ultra

FAQs

- **Q**: How can I determine what software version I have?
- A: When you start the system, the License Agreement page appears. On this page, the software version is stated in the top right corner.
- Q. Where can I see my device's serial number?
- A: When looking at the device from the backside, the serial number is printed on a label.
- Q: When I want to acquire additional modules, do I need to send you my device?
- A: We can activate several modules simply by telephone, fax, or email, for example, FMS; TRACK; ROTATING MAP, etc. However, other modules require an initial installation (and sometimes additional hardware components) at Moving Terrain.
- **Q**: When I turn on the device, I don't see a map; only a grey background?
- A: You are outside the boundaries of the map. For example, when you set the main Germany chart to a scale of 1:200 000 and your actual position is outside the map range, a grey background will appear.

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MT FMS

MT Flight Management System

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Insert position = insPOS	FMS – 6
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MT FMS

Basics

MT Flight Management System

MT FMS consists of 3 components

- ✓ Flight planning via the Nav page
- Display of the flight plan = route on the chart
- ✓ Flight management in the FMS window

Flight planning

The flight plan consists of :

 \checkmark individual waypoints from the various databases (VFR, IFR, USER, etc.) and / or

✓ routes or route segments already saved.

Composition, storage and loading take place on the Nav Page.

Back on the chart, the FMS provides:

Flight management in FMS window (bottom right) -Alternatively this window becomes the TrackUp display.

Switch-over knob TrkUp/PLAN in VIEW menu in Flight Mode.

The flight plan is displayed on the chart as a chain of vectors.

Flight Planning

Setting up a Flight Plan

Choosing database waypoints

Every NavData point can be chosen (VFR, Enhanced Navigation Database, User).

✓ NAV Nav Page		NAV PAGE			
	VFR WAYPOINTS			D	MODEFLT 100%
				EDMK_	UTC 12:23:44
	KEMPTEN (DURAC	H) (APT)		EDMK	GPS SATFIX 9
Waypoint-Listing	LANDSHUT (APT)				N 47 31.478'
(without Umlauts, Ä=A!)	OBERPFAFFENHOR	EN (APT)		EDMO	E 013 40.156'
	VILSBIBURG (APT)	. ,		EDMP	ALT 8000 feet
Infos	ELEV 2340FT; INFO	122,00;	N 47 41.	.600'	[kts] 100 ^{MI} 228
	RWY 07/25 850m GR	ASS;	E 010 20	0.300'	DCT EDMK
	TEL: (0831)65969		000000		[nm] 135 MC273
	WAYPOINT ID		SPEED 0	[KTS]	EET 1 h 21 min
	EDPA	NOULE ALL	27 556	05:33	CHART EDMK
Speed	EDDB		203 307	03:03	
	EDMK		0	00:00	[nm] 135 MC 273
					⊞⊺ 1 h 21 min
Flight Plan					DEST EDMK
					[nm] 135
					EET 1 h 21 min
	DBASE GOTO DO	t ins edi	T insPOS NE	KT UP	DOWN BACK
Entry of names via the mounted keybo	bard		FMS	S Windo	W
✓ Make corrections with UP/DOWN keys;	allows re-entry				
•		The coordin	nates alway	e corro	spond to the
Entry of Identifier (four-letter co	de)	highlighted	lates alway	s corre	the weyneint
✓ NEYT			waypoint, e		the waypoint
 Fata of identifier in ID field 			e fiight plan	tield.	
		Coordinate	entries can	not be	distinguished
		on the page).		
Setting up waypoints in the flight plan					
	 d in the flight also	n fiold (placed	l in the heal	around	N N
• INS vvaypoints are imported	u in the hight pla	n neid (piaced		ground)

An Example

Flight Planning

		NAV PAGE	MOVING TERRAIN
Flight pla	n Augsburg EDMA to Nuremberg	VFR WAYPOINTS ID	MODEMAP 100%
EDDN	Allersberg VOR Röthenbach NDB	AUGSBURG (APT) AUGSBURG (NDB) AUGSBURG (NDB) AURILLAC (APT) AURILLAC (NDB) AR AUTUN (VOR) ATN	N 47 44.221' E 010 22.550'
✓ NAV	Nav page	ELEV 1515ft; TWR 124,97;ATIS 124,57;; RWY 07-25 1280m ASPH; ILS25 108,50; Tel.: (0821) 2708134 N 48 25.510' WAYPOINT ID ROUTE ALT MC DME EET EDMA 0 00:00	GS MT DCT MC DMI MC EET CHART CHART
Enter	"AUGS" => Augsburg (APT) will be highlighted		DME MC
✓ INS	Add to the flight plan		DEST DWI Imi EET
Enter	"WAL" => Walda (VOR) will be bigblighted	WAYPOINT ID ROUTE ALT MC	DNE EET
✓ INS	Add to the flight plan	WLD	0 00:00
Enter	"ALLERS" => Allersberg (VOR) will be highlighted	WAVPOINT ID ROUTE ALT MC EDMA 39 WLD 4	DME EET 50 00:20 38 00:15
✓ INS	Add to the flight plan	ALB	0 00:00
Enter	"ROTHE" => Rothenbach (NDB) will be highlighted	VAVPOINT ID ROUTE ALT MC EDMA 39 WLD 4	DME EET 67 00:26 54 00:21
INS	Add to the flight plan	ALB 3 RTB	16 00:06 0 00:00
✓ NEXT	Jump to ID box => database is now sorted by ID	EDMA ROUTE ALT MC	DME EET 74 00:29
Enter (APT)	"EDDN" => Nuremb	Derg WLD 4 ALB 3 RTB 276 EDDN	61 00:24 23 00:09 7 00:02 0 00:00
✓ INS	Add to the flight plan		

Flight Plan on the Nav page

	WAYPOINT ID	ROUTE	ALT	MC	DME	EET	
	EDMA			39	74	00:29	
	WLD			4	61	00:24	
	ALB			3	23	00:09	
	RTB			276	7	00:02	
	EDDN				0	00:00	
						_	1
WAYPOINT ID	Identifier entry						
ROUTE	Name of route / s	eaments.	particula	arlv impo	ortant f	for IFR i	olanning
ΔΙΤ	Minimum flight alt	titude => I	FR	J		- 1	5
	Magnetic course						
	magnetic course						
DME	Accumulative cal	culation of	(remain	iing) dist	ance	to destir	nation (= last route point in the
	flight plan) in nau	tical miles					
FFT	Estimated enrout	e time ca	culated	usina sr	heed ir	n knots (shown in the "sneed" hox. Sneed
	is entered on the			tooling op			the CDC (and shorter
	is entered on the	keyboard	orimpol	ted in fi	gnt m	ode froi	n the GPS (see chapter
	"Speed").						

=>

Flight plan on the chart



- BACK Return to chart
 Flight plan = route = white lines from one waypoint to the next
 Active leg: Active part of the route from current position (to the next waypoint), shown in magenta
 Waypoints marked with green diamonds and ID:
 - makes flight plan more comprehensible

MTUP / 16 - 02 REV L Date: 01. 06. 2005

Editing a Flight Plan

Deleting a waypoint

Inserting a waypoint

Insert Position = InsPOS

\checkmark **2 x NEXT** The highlighting bar is positioned in the flight plan box

- ✓ USER For loading, saving and deleting user routes, inverting routes
- ✓ GOTO "Jump" to the flight plan waypoint (in Map Mode) In Flight mode GOTO becomes ICPT, i.e. an interception course to the selected point is shown
 ✓ DCT Waypoint of the flight plan
- ✓ DCT Waypoint of the flight plan can become destination of the direct vector
- ✓ DEL Deletes highlighted waypoint
- ✓ DELSEG Deletes route/route segment from screen
- ✓ NEXT Goes to next box, "Speed", return to waypoint list
- ✓ UP / DOWN Selects waypoints, positions highlighting bar

	NAV	PAGE				TERRAIN
VFR WAYPOINT	S			D		MODEMAP 50%
AUGSBURG				ED	AMA	
AUGSBURG (AP	T)			EC	MA	AND DATA
BIBERACH AN D	ER RISS (APT)		EC	MB	N 49 59 600'
BLAUBEUREN (A	APT)			ED	MC	E 010 55 010
DACHAU (GROB	ENRIED) (APT	D .		EC	MD	2010 55.910
EGGENFELDEN	(APT)			EC	ME	265 MI
n/a				N 49 29.91	7'	[iiii] [iiii
			- 1	E 011 04.6	67°	DCT
			- 1		-	[m] MC
			_	SPEED 150	(kts)	EET
WAYPOINT ID	ROUTE	ALT	MC	DME	EET	SINGLI
RTR			193	67	00:29	NXT
ALB			184	50	00:20	DME MC
WLD			219	12	00:04	[m]
EDMA				0	00:00	EET
						DEST
						EET
USER	GOTO DCT	DEL	DELS	EG NEXT	UP	DOWN BACK

✓ Position colored bar on the waypoint of the flight plan *before which* the waypoint is to be inserted.

- ✓ 2 x NEXT Return to waypoint database, select point
- ✓ **INS** Insert into route.

Example

After takeoff from Augsburg, the point NOVEMBER is to be flown over. The point is not in the database.

Position highlighting bar on EDMA using **UP** / **DOWN** in the flight plan.

- NAV
 Position highlighting bar in the flight plan
- (press NEXT)
 ✓ UP/DOWN Position highlighting bar on WLD (position *before which* the waypoint is to be inserted)

Use WEST/EAST/NORTH/SOUTH buttons

to move to the point NOVEMBER on the

Return to chart (white vectors

- ✓ 2 x NEXT = replaces highlighting bar in waypoint box
- ✓ insPOS Inserts current position into plan

NAV PAGE									
VFR WAYPOINTS					D	MODEMA	P100%		
NURN						ITC	100 //		
NURNBERG (APT)				EDDN	STE NO	DATA		
NURNBERG (NDB)					NB		DATA		
NUTHAMPSTEAD (ROYSTON) (APT)						N 47 28	3.665		
NY ALESUND (NDB)					NYA	E 013 35.195			
NYIREGYHAZA (APT)					LHNY	ALT			
ELEV 1046FT: TWB 118.30:					.900'	GS [#1]	MT		
RWY 10/28 2700m CONC/ASPH:ILS10 111.30;						DCT ED	мκ		
ILS28 109,10;				E 011 04.800'		DME 100	MCOZE		
TEL: (0911)937-1279					[kts]	[m] 132	2/5		
WAVPOINT ID	BOUTE	ALT	MC	DM	E DET	CET			
EDMA	10012	1981	114	304	03:02	CHART EDI	DN		
N 47 31.534' E 013 40.255'			301	181	01:48	NXT #			
WLD			4	61	00:36	DMEAO	MC 40		
ALB			3	23	00:13	[m] 4.0	40		
RTB			276	7	00:04	EET 2 mi	n 53 se		
EDDN				0 00:00		DEST EDDN			
				_		DME 186			
						ur 1 h 5	52 min		
BASE GOTO	DCT INS	EDIZ	linsP	OS NE	XT UP	DOWN	BACK		

=> Effect on calculations

On the chart:

GOTO

chart

mark the flight plan)

 \checkmark

 \checkmark

Note:

The position determined by GPS in flight mode can also be incorporated into the flight plan with **insPOS**.



Editing a flight plan

Manual setting of the NEXT WAYPOINT

Deleting a route / route segment from the screen Pressing the key

✓ ICPT

defines the current position as the stating point for the route and the selected route point will become the next waypoint.

The route point above the selected point will be ignored

Note:

The ICPT key is only visible when FLIGHT mode is active and the cursor is in the flight planning box.

						MOVIN TERRAL	
VFR WAYPOINT	S			ID			100%
KIEL (HOLTENA		EDHK		ute 15:28	3.51		
KIEL (HOLTENA		EDHK		CPS SAT			
LUBECK (BLAN		EDHL		N 47 45	767		
HARTENHOLM (EDHM		N 47 45.707			
NEUMUNSTER (EDHN		E 010 23.879			
AHRENLOHE (A	PT)			ED	Ю	ALT 8000	teet
n/a				N 50 49.380'		[kts] 200	29
			ł	E 006 11 1	80,	DCT EDP	(A
				L 000 TT.1	-	DME 247	^{MC} 319
				SPEED 120	[kts]		4 min
WAYPOINT ID	ROUTE	ALT	MC	DME	EET	SINGLE	4 11111
EDKA			18	1975	16:27	CHART	_
AAL			178	1575	13:07	WPT EDI	Z
EDPA			356	1076	08:57	DME 51.1	^{MC} 264
EKVH			181	591	04:55	FET 15 m	in 19 s
EDDS			178	101	00:50	DEST 1 S7	н
EDIP			198	54	00:27	DME	1
		CU /I C7U	2/4	40	00:19	[nm] 91.0	
	APPROA	CHILSZH	,		_	EET 27 m	in 18 s
IFR USER	ICPT DCT	DEL	DELS	EG NEXT	UP	DOWN	BACK

✓ DELSEG
 Deletes a flight plan from the memory or loaded routes/route segments from the screen (not from the memory!) => particularly important in IFR planning.

Routes (segments) are loaded additively.

Not all dots can be made visible on the screen.

=> If the calculations in the flight plan box are not correct, please make sure that only the desired route (only 1 x) is loaded (scroll through list with **UP** / **DOWN**!)
Field speed

✓ NEXT (several times if needed) until highlighting bar is on SPEED

Enter average GS in this box ✓ using the keypad.

Calculation of EET (hh:mm) with the given speed.

					SPEEI	150 [kt	ts]		
	WAYPOINT ID	ROUTE	ALT	мс	DME	EET)
	EDMA			39	74	00:29		nm] 11.6	^{™°} 61
	WLD			4	61	00:24	E	ЕТ ——	
	ALB			з	23	00:09		EST EDD	DN
	RTB		2	!77	7	00:02		ME 72.9	
	EDDN		-		0	00:00		ET	
20	opyGS					NEXT			BACK

GS 150 kts

WAYPOINT ID	ROUTE	ALT	мс	SPEE	D 210 [kts EET	
EDMA			39	74	00:21	[nm] 11.6 ^{MC} 61
WLD			4	61	00:17	ЕЕТ
ALB			3	23	00:06	DEST EDDN
RTB			277	7	00:01	DME 72 9
EDDN				0	00:00	
opyGS					NEXT	BACK

GS 210 kts

Adjustment of EET to actual cruising speed

✓ copyGS

Accepts GS from GPS => Updates EET during the flight. CopyGS only available in flight mode (GPS signals).

Speichern und Laden von Flugplänen

Route / Routensegment speichern Preparations: Set up a flight plan

 Highlighting bar must be 	
positioned in the flight	
plan box	

plan box	USER ROUTES	
✓ USER ROUTES page	RTE-NAME to SAVE	MODEMAP 50%
 ✓ Enter a name for the route max. 8 characters Assignment of a unique name makes it easier to find Route001, Route002 => auxiliary name (predefined by system) Made an error? ✓ UP / DOWN, then re-enter 	ROUTE to LOAD / DEL DS_TEST EDMAEDDN INVI INVI2 ROUTE001 WX	GPS NO DATA N 48 47.191' E 010 47.677' ALT
	LOAD SAVE DEL INVERT	UP DOWN BACK

MOVING

✓ SAVE Adds saved route to the list

✓ **INVERT** Inverts a route already loaded into the flight planning box

✓ BACK Returns to NAV page

Loading routes / route segmets

Preparation: At least one flight plan must have been previously saved✓ Highlighting bar must in be positioned in the flight plan box

✓ **USER** USER ROUTES Page



Deleting Routes ✓ **DEL** Deletes the highlighted flight plan from the memory

Flight Management with MT FMS

FMS window

Flight management system

Mpt KPT	Next waypoint	Identifier
DME 19.3 MC 100	DME in nautical miles	Magnetic track over ground
EET 8 min 54 sec	Estimated enroute time: remain	ing time to next waypoint (at maintained GS)
Dest EDMA	Destination waypoint	Identifier
оме 80.0 вет 36 min 55 sec	DME in nm: Remaining distance EET to destination waypoint (at	e to destination on planned route in nautical miles* maintained GS)*

The information in the FMS window always relates to the current position shown on the chart, i.e.:

- 1. the position determined by the GPS receiver or
- 2. the targeted position on the chart in Map Mode.

When you switch to map mode in order to "explore" the surrounding area on the chart, waypoint data will be continuously recalculated.

Next waypoint

The waypoint ahead of your present position in the entered flight plan.

The system determines the next waypoint when it flies over or past a point in the flight plan. Specifically, flying past means flying over the bisector of the angle formed by the waypoints which are behind, level and ahead of you = next waypoint.



Destination waypoint

Calculation of navigational data DME, MC, EET The last point in flight planning (route destination).



Switching to TrackUp window

- ✓ Switch to TrackUp window in flight mode
 ✓ TrkUp return with
 ✓ FMS.
 ✓ Once a mode is active, it will always be displayed at all levels in map or flight mode.
- ✓ It will remain active until you change to another mode.

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MT Enhanced Navigation Database

MT Enhanced Navigation Database ENav Data

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MT Enhanced Navigation Database

Fundamentals

MT ENav Data

MT ENav Data based on the MT FMS module

Please read the information in the previous chapter about:

- ✓ Flight planning via the Nav page
- ✓ Flight management via the FMS window
- ✓ **Display of flight plan** = Route on the chart

In this part of the manual the emphasis is placed only on extension to include ENav Data navigation.

Stored Nav data can be retrieved in the Nav page:

✓ ΝΔV		NAVDATA SELECTION	
✓ WPT		IFR WAYPOINTS ID	MODE MAP 100%
 ✓ ENav Database consists of Enroute waypoints Airports VORs 	of: (ENR) (APT) * (VOR)	FRANKFURT (DME) FRD FRANKFURT (26L (ILS) IFWL FRANKFURT LOM RW07L (NDB) FW FRANKFURT MAIN (APT) EDDF FRANKFURT MAIN (VOR) FFM 115,90 MHz; N 50 01.828' E 008 34.023'	UTC 12:26:29 GPS SATFIX 9 N 47 41.000' E 009 08.300' ALT 12000 feet GS [kts] MT DCT [mm] MC
NDBs DME ILS TACAN	(NDB) (DME) (ILS) (TAC)	SPEED 120 [kts] WAYPOINT ID ROUTE ALT MC DME EET	EET SINGLE CHART NXT WPT DME MC [nm] EET
 * APTs with ENav Data proc RWY longer than 4000 ft 	cedure and	VFR IFR TRML USER	DEST DME [mm] EET BACK

Enhanced Navigation Database Enroute + Nav data Enhanced Navigation Database Terminal Waypoints

✓ TRML Terminal waypoints are selected through the APT*

*APTs with ENav Data procedure and RWY longer than 4000 ft

The airport must be selected on the: **IFR APT Selection Page** using the **UP** / **DOWN** keys on the integrated keypad

or

- ✓ NEXT ID box
 Enter ID, then data by ID
 = 4-letter-code
- => Highlighting bar must be on the desired airport

✓ CONT

Listing of terminal waypoints to the selected APT (by name or ID) Select a waypoint

The terminal waypoint data	abase contains
Terminal waypoints	(TRM)
Locators	(LOC)
Runway waypoints	(RWY)
The "Active APT" relates t	o the:
Terminal waypoint databa	ase
(TRML)	

IFR APT SELECT	ION	MOVING TERRAIN
AIRPORT FRANKFURT	EDDF EDNY ETHF ETSF ZSFZ ESNG	MODEMAP 100% UTC 12:27:02 OPS SATFIX 9 N 47 41.000' E 009 08.300' ALT 12000 feet
GALLIVANE GAVLE/SANDVIKEN GDANSK GECITKALE / LEFKONIKO	EICM ESSK EPGD LCGK	DCT DMIMC EET SINGUI CHART
		NXT MPT Imm MC EET DEST DMIL Imm EET
CONT	NEXT UP	DOWN BACK

NAV PAGE	(Active APT: E	DDF)	MOVING TERRAIN
IFR TERMINAL WAYPOINT	'S		MODEMAP100%
CHA-341/FFM-078_		R078	ute 12:27:23
CHA-341/FFM-078 (TRM)		R078	GPS SATFIX 9
CHA-341/FR-080 (TRM)		FR260	N 47 41 000'
DF006 (TRM)		DF006	E 009 08 300'
DF009 (TRM) DF010 (TRM)		DF010	ALT 12000 feet
n/a		N 50 05.770'	GS MT
		E 008 56.725'	DCT DMI MC
		SPEED 120 (km)	EET
WAYPOINT ID ROUTE	ALT MC	DME EET	SINGLE CHART
			NXT
			DME MC
			EET
			DEST
			[m]
			EET
WPT GOTO DCT	INS EDIT InsPC	DS NEXT UP	DOWN BACK

Enhanced Navigation Database - 3

Enhanced Navigation Database Procedures

Active Airport

Enhanced Navigation Database Procedures The "Active APT" relates to: **Terminal Waypoint Databank**

Terminal procedure

SIDs STARs Approaches

Once selected, the APT remains the "active APT" until you select a different one of quit the MT program.

"Active APT" simplifies your work: all selected the waypoints and procedures apply to this airport.
=> Your selection does not need to be repeated!

ENav Data procedures are basically treated as routes / route segments

(see FMS User Manual)

and are thus stored in their own completely separate database.

- ✓ NAV
- ✓ NEXT
- ✓ NEXT highlighting bar must be over flight plan window

✓ IFR

	NAV	PAGE				MOVING	1
VFR WAYPOINT AACHEN (MERZ AACHEN (MERZ BONN (HANGEL ALTENA (HEGEN BERGNEUSTAD HUNSBORN (AP	S BRUCK) BRUCK) (APT AR) (APT) NSCHEID) (AP T (AUF DEM E T)) T) DUMPEL) (/	APT		DKA DKA DKB DKD DKF DKF DKH	MODEMAP1 UTC 12:40: GPS SATFI N 47 41.0 E 009 08. ALT 9000 f	00% 13 X 9 00' 300' eet
	ROUTE	ALT	n/ n/ sP	a a EED 120 DME	[kts] EET	GS [kts]	⁴⁷ <u></u>
						DME A DEST	, ^{AC}
IFR LISER		DEI	DEL SEG	NEXT			BACK

SIDs **STARs Approaches**

Loading Procedures

The choice now includes:

- Standard Instrument Departures ✓ SID
- ✓ **STAR** Standard Arrival Routes
- ✓ **APPR** Approaches

Important: The SID, STAR and APPR keys are only visible if this procedure is available for the selected APT. For Eggenfelden (EDME) the STAR key would not be visible.

Example SID

The "active APT" has been preselected (in our example Friedrichshafen EDNY).

MT lists all procedures of one type (here SID)

A detailed section on the chart gives you an overview of the procedure to be flown.

Scroll through the various procedures with UP /DOWN

Select the desired procedure by entering the name or scrolling UP /DOWN

✓ LOAD Example ALAG2B

IFF	APT SELECT	ION	MOVING TERRAIN
AIRPORT		, ID	MODEMAP100%
FRIEDRICHSHAFEN		EDN	Y UTC 12:40:30
(EDIS DE DIGUESTA ESTA			GPS SATFIX 9
FRIEDRICHSHAFEN		EDN	N 47 41.000'
EUERSTENEEL DBRU	ск	ETS	E 009 08.300'
FUZHOU		ZSFZ	Z ALT 9000 feet
GALLIVARE		ESN	G GS MT
GALWAY		EICN	ОСТ
GAVLE/SANDVIKEN		ESS	MC MC
GECITKALE / LEEKON	іко	LCG	K FET
GEILENKIRCHEN		ETN	G
			NXT
			DME MC
			[m]
			EET
			DEST
			m
			EET
SID STAR APPE	3	NEXT	UP DOWN BACK
			or point bioit
SIDs	(Active APT:	EDNY)	
SIDs	(Active APT:	EDNY)	
SIDs ROUTE to LOAD	(Active APT:	EDNY)	MOVING TERRAIN MODEMAP100%
SIDs ROUTE to LOAD	(Active APT:	EDNY)	MODEMAP100%
SIDs ROUTE to LOAD	(Active APT:	EDNY)	MOVINC TERRAIN UTC 12:51:04 GPS SATFIX N 47 41.000'
SIDs ROUTE to LOAD AVAILABLE ROUTES ALAG2B (RW24)	(Active APT:	EDNY)	MOVING TERRAIN UTC 12:51:04 GPS SATFIX N 47 41.000' E 009 08.300'
SIDs ROUTE to LOAD AVAILABLE ROUTES ALAG2B (RW24) ALAG2D (RW06)	(Active APT:	EDNY)	MOVING TERRAIN UTC 12:51:04 OPS SATFIX N 47 41.000' E 009 08.300' ALT 7000 feet
SIDs ROUTE to LOAD AVAILABLE ROUTES ALAG2B (RW24) ALAG2D (RW06) ALAG2W (RW06) ALAG2W (RW06)	(Active APT:	EDNY)	MOVING TERRAIN MODEMAP100% UTC 12:51:04 GPS SATFIX N 47 41.000' E 009 08.300' ALT 7000 feet
SIDs ROUTE to LOAD AVAILABLE ROUTES ALAG2B (RW24) ALAG2D (RW06) ALAG2E (RW06) ALAG2W (RW24) HEUSIB (BW24)	(Active APT:	EDNY)	MOVING TERRAIN MODEMAP100% UTC 12:51:04 GPS SATFIX N 47 41.000' E 009 08.300' ALT 7000 feet
SIDs ROUTE to LOAD AVAILABLE ROUTES ALAG2B (RW24) ALAG2D (RW06) ALAG2E (RW06) ALAG2W (RW24) HEUS1B (RW24) HEUS1D (RW06)	(Active APT:	EDNY)	МОУІМС ТЕКЛАІМ МОДЕМАР 100% UTC 12:51:04 GPS SATFIX N 47 41.000' E 009 08.300' ALT 7000 feet IMI MT DCT
SIDs ROUTE to LOAD AVAILABLE ROUTES ALAG2B (RW24) ALAG2D (RW06) ALAG2E (RW06) ALAG2W (RW24) HEUS1B (RW24) HEUS1D (RW06) HEUS1E (RW06)	(Active APT:	EDNY)	MOVING TERRAIN UTC 12:51:04 GPS SATFIX N 47 41.000' E 009 08.300' AUT 7000 feet
SIDs ROUTE to LOAD AVAILABLE ROUTES ALAG2B (RW24) ALAG2D (RW06) ALAG2E (RW06) ALAG2W (RW24) HEUS1B (RW24) HEUS1B (RW24) HEUS1D (RW06) HEUS1E (RW06) HEUS1W (RW24)	(Active APT:	EDNY)	MODEMAP 100% UTC 12:51:04 OPS SATFIX N 47 41.000' E 009 08.300' ALT 7000 feet SM MT DCT DCT DCT DCT DCT DCT DCT DCT DCT DCT
SIDs ROUTE to LOAD AVAILABLE ROUTES ALAG2B (RW24) ALAG2D (RW06) ALAG2E (RW06) ALAG2E (RW06) ALAG2W (RW24) HEUS1B (RW24) HEUS1D (RW06) HEUS1E (RW06) HEUS1W (RW24) KPT5M (RW20)	(Active APT:	EDNY)	MODEMAP 100% UTC 12:51:04 GPS SATFIX N 47 41.000' E 009 08.300' ALT 7000 feet SET ET ET ET
SIDs ROUTE to LOAD AVAILABLE ROUTES ALAG2B (RW24) ALAG2D (RW06) ALAG2E (RW06) ALAG2W (RW24) HEUS1B (RW24) HEUS1B (RW24) HEUS1E (RW06) HEUS1W (RW24) KPT5M (RW24) KPT6B (RW24) KPT6B (RW24)	(Active APT:	EDNY)	MOVING TERRAIN MODEMAP100% UTC 12:51:04 GPS SATFIX N 47 41.000' E 009 08.300' ALT 7000 feet GET DCT DMI MC EET SINGU NAT FHA
SIDs ROUTE to LOAD AVAILABLE ROUTES ALAG2B (RW24) ALAG2D (RW06) ALAG2C (RW06) ALAG2W (RW24) HEUS1B (RW24) HEUS1D (RW06) HEUS1E (RW06) HEUS1W (RW24) KPT6B (RW24) KPT6B (RW24) KPT6D (RW06) LAG02B (RW24)	(Active APT:	EDNY)	MOVING TERRAIN MODEMAP 100% UTC 12:51:04 GPS SATFIX N 47 41.000' E 009 08.300' ALT 7000 feet DCT DCT DCT DCT DCT DCT DCT DCT DCT DCT
SIDs ROUTE to LOAD AVAILABLE ROUTES ALAG2B (RW24) ALAG2D (RW06) ALAG2E (RW06) ALAG2E (RW06) HEUS1B (RW24) HEUS1D (RW06) HEUS1E (RW06) HEUS1W (RW24) KPT6B (RW24) KPT6B (RW24) KPT6D (RW06) LAG02B (RW24) LAG02D (RW06)	(Active APT:	EDNY)	MOVING TERRAIN MODEMAP 100% UTC 12:51:04 GPS SATFIX N 47 41.000' E 009 08.300' ALT 7000 feet GPS DCT DCT DCT DCT DCT DCT DCT DCT
SIDs ROUTE to LOAD AVAILABLE ROUTES ALAG2B (RW24) ALAG2D (RW06) ALAG2E (RW06) ALAG2E (RW06) ALAG2W (RW24) HEUS1B (RW24) HEUS1B (RW24) HEUS1E (RW06) HEUS1E (RW06) HEUS1W (RW24) KPT6B (RW24) KPT6D (RW06) LAG02B (RW24) LAG02D (RW06)	(Active APT:	EDNY)	MODEMAP 100% UTC 12:51:04 GPS SATFIX N 47 41.000' E 009 08.300' ALT 7000 feet ST DCT DCT DCT DCT DCT DCT DCT DC
SIDs ROUTE to LOAD AVAILABLE ROUTES ALAG2B (RW24) ALAG2D (RW06) ALAG2E (RW06) ALAG2W (RW24) HEUS1B (RW24) HEUS1B (RW24) HEUS1E (RW06) HEUS1E (RW06) HEUS1W (RW24) KPT6B (RW24) KPT6B (RW24) KPT6D (RW06) LAG02B (RW24) LAG02D (RW06)	(Active APT:	EDNY)	MODEMAP 100% UTC 12:51:04 GPS SATFIX N 47 41.000' E 009 08.300' ALT 7000 feet Stel MT DCT DCT DCT DCT DCT DCT DCT DCT
SIDs ROUTE to LOAD AVAILABLE ROUTES ALAG2B (RW24) ALAG2D (RW06) ALAG2E (RW06) ALAG2W (RW24) HEUS1B (RW24) HEUS1B (RW24) HEUS1E (RW06) HEUS1W (RW24) KPT5M (RW26) KPT6B (RW24) KPT6D (RW06) LAG02B (RW24) LAG02D (RW06)	(Active APT:	EDNY)	MODEMAP 100% UTC 12:51:04 GPS SATFIX N 47 41.000' E 009 08.300' A.T 7000 feet GFS MC DCT DME MC EET

ENav Data Procedures

Once the procedure has been activated, you will see it in the route box as shown here.

The procedure consists of more waypoints than can be displayed in succession on the screen at one time.

Go to the start (title) of the route with **UP**

Go to the end of the route with **DOWN**

To see the route on the desired chart, press **GOTO** to jump to a point (map mode) marked with **UP/DOWN**

NAV	PAGE (Ad	ctive A	PT: E	DNY)		
VFR WAYPOINTS	S				ID	MODEMAP100%
AACHEN (MERZ	BRUCK)				EDKA	UTC 12:51:17
AACHEN (MERZ	BRUCK) (APT)				EDKA	GPS SATEIX
BONN (HANGEL	AR) (APT)				EDKB	N 47 41 000'
ALTENA (HEGEN	ISCHEID) (APT)			EDKD	E 000 08 200
BERGNEUSTAD	T (AUF DEM DU	JMPEL)	(APT		EDKF	E 009 00.300
HUNSBORN (AP	T)				EDKH	ALT 7000 Teet
n/a				n/a		[kts]
				n/a		DCT
				10.0		DME MC
				SPEED 1	20 [kts]	
WAYPOINT ID	ROUTE	ALT	MC	DM	IE EET	SINGLE
ALAG2B	SID (EDNY)				CHART
RW24	ALAG2B	1366	240	17	00:08	WPT FHA
(1800'+)	ALAG2B	1800	239	16	00:07	DME 18.6 MC 85
NY040	ALAG2B		59	13	00:06	EET 5 min 35 se
FHA	ALAG2B		339	8	00:03	DEST AL AGO
ALAGO	ALAG2B			0	00:00	DME
						[nm] 26.1
						EET 7 min 51 Se
IFR USER (GOTO DCT	DEL	DELS	EG NE	XT U	P DOWN BACK

Display of the procedure on the Nav page

Description of the flight plan box:

Title of every route (procedure) saved in the fixed database

Example: Name of the route (6 characters) **ALAG2B** Type of procedure **SID** followed by APT in brackets **(EDNY)**

Below this is the waypoint listing Waypoint ID Name of the route ALT Minimum altitude

Magnetic track

MC

DME in nm

			S	PEED 150	[kts]
WAYPOINT ID	ROUTE	ALT	MC	DME	EET
ALAG2B	SID (EDNY)				
RW24	ALAG2B	1367	240	17	00:06
(1800'+)	ALAG2B	1800	239	16	00:06
NY040	ALAG2B		59	13	00:05
FHA	ALAG2B		340	8	00:03
ALAGO	ALAG2B			0	00:00
	AATA BAT	EX.E.I	DEL OF		
IFR USER	GOTO DCT	DEL	DELSE	G NEXT	UP

Recommended/ minimum altitudes **Minimum altitudes** are provided by way of recommendation only.

EET calculated from the GS entered in the "Speed" box

EET calculation in the flight plan

ENav Data Procedures

Display of procedures on the chart Example SID ALAG2B Friedrichshafen



The route display is not a point-to-point guide, but rather the conversion of instructions into vectors that accurately project flight management onto the chart:

The display functions on charts of various scales, likewise on DFS approach charts.

Besides the green routing, the IDs of the terminal waypoints are also shown. This ensures perfect orientation. The DCT to a waypoint further ahead can easily be traced on the chart and created on the NAV page at the touch of a button.

Example of a STAR

Example**STAR LAGI1E** Kalmar (ESMQ)

on the Nav page

NA	V PAGE	(Ac	tive A	PT: E	SMC)		MOVIN	S I
VFR WAYPO	INTS					D		MODEMAP	100%
AACHEN (ME	ERZBRUCK;)				ED	KA	ute 13:23	:33
AACHEN (ME	ERZBRUCK	(APT)				ED	KA	OPS SATE	IX 9
BONN (HANG	GELAR) (AP	T)				ED	KB	N 47 46	710'
ALTENA (HE	GENSCHEI	D) (APT) 1.4051 \	ADT		ED	KD	E 009 20	243
BEHGNEUSI	ADT (AUF L	JEM DU	JMPEL)	(AP I		ED	KH I	HT 6000	feet
nonsbonn	(AFT)				Lu da	ED	<u></u>	35	MT
n/a					n/a		_	[m]	
					n/a			DOT INP	MC
					SPEED	120	Real.	[m] 0.0	
WAVPOINT ID	BOU	TE	ALT	MC	D	IE.	EET	EET	
LAGI1E	ST/	R (ESN	(Q)					CHART	
LAGIS	LAC	3I1È	2000	54	2	1	00:10	MPT LAG	ilS
(ICPT)	LAC	SI1E		5	1	8	00:08	579	MC 21
R319K	LAG	SI1E	2000	95	3	1	00:01	EET 2 h 5	4 min
(ICPT)	LAC	311E 214E	2000	150			00:00	DEST IE16	
11, 10	LAC	ALC:	2000			, 	00.00	DMI EOO	
								[m] 599	
IFR LISER		DCT	DEL	IDEL 9	EG N	EXT	LIP	DOWN	BACK

Eample **STAR LAGI1E** Kalmar (ESMQ) on the STAR page with preview





Example **STAR LAGI1E ARC DME** Kalmar (ESMQ) ARC DME on the chart

The ENav Data Flight Plan

Combining procedures to a complete flight plan



Enroute

Inserting Waypoints	 Single waypoints may be inserted into existing procedures (not complete procedures) 1. Highlight the waypoint of the RTE <i>before</i> which the new waypoint is to be inserted. 2. 2 x NEXT highlighting bar must be in the waypoint window 3. Select waypoints (name, ID or UP and DOWN) If waypoints are inserted into fixed procedures, no procedure turns can be calculated and plotted for these points on the chart.
Deleting Waypoints	An individual waypoint can be deleted with \checkmark DEL after it has been highlighted.
	Since procedural instructions may be distorted by inserted or deleted waypoints, if a misleading display appears the finished procedure should be reloaded.
Deleting Complete Procedures	Procedures no longer required can be deleted with ✓ DELSEG aus dem Flight Plan (bleiben im Speicher bestehen).
Setting up and saving your	All ENav Data waypoints can be used to put together USER routes.
own flight plans	USER routes / route segments are displayed in point-to-point routing.

The ENav Data Flight Plan

Example - Inserting a position

Waypoints may be inserted into an existing procedure **Example with InsPOS**

No procedure turns are plotted on the chart, but the point-to-point routing already familiar from VFR FMS flight management.

NAV	PAGE (/	Active A	PT: E	DDM)		TERRAIN	
IFR WAYPOINTS	5			IC.)	MODEMAP 50%	
ROKIL_				R	OKIL	urc 14:01:07	
ROKIL (ENR)				R	OKIL	OPS SATEIX 9	
ROKIM (ENR)				B	OKIM	N 49 25 277	
ROKKE (ENR)				R	OKKE	E 011 07 651	
ROKNA (ENR)				R	OKNA	E 011 07.651	
ROKNI (ENR)					OKNI	ALT SUUU Teet	
n/a				N 48 31.2	25'	[itti] ['''	
				E 011 17.	019'	DCT DMI MC	
				SPEED 120	[kb]	[m] [V
WAYPOINT ID	ROUTE	ALT	MC	DME	EET	SINGLE	
08L(NDB)	APPRO/	ACH (EDD)	vI)			CHART	
ROKIL	08L(NDE	3)	82	115	00:57	MPT DM423	
LANDU	08L(NDE	3)	230	75	00:37	C 15.7 C 307	•
DM427	08L(NDE	3)	262	63	00:31	FET 7 min 51 se	
DM423	08L(NDE	3) FL80	262	47	00:23	16DMN	
DM420	08L(NDE	3)	172	28	00:14	DEST TODMIN	-
DM430	08L(NDE	5)	82	23	00:11	m 62.5	
DIM431	USL(NDE	5) 6000	82	16	00:08	EET 31 min 14 8	5
WPT GOTO	DCT INS	S EDIT	linsP	OS NEX	T UP	DOWN BACK	



NAV	PAGE (Ac	tive A	PT: E	DDM)		MOVIN	S I	
IFR WAYPOINTS				D		A Angelie Loker	50%	
6605N / PTSQ				66	05N	une 14:01	1.42	
6605N / PTSQ (EI	NR)			66	05N	SIG 14.0	IV 0	
75KMG (ENR)				75	KMG	OPS SATT	IX 9	
A CORUNA (APT)			LE	ECO	N 48 35.	377	Detore
A1 (ENR)				A	1	E 011 0	7.651	incDO
A2 (ENR)				A	2	ALT 5000	feet	111550
n/a				N 66 00.0	00'	。 画	MT	
				W 005 00.	000'	DCT	140	
				SPEED 120	Ikal	(m)	····-	
WAYPOINT ID	ROUTE	ALT	MC	DME	EET	EET		
08L(NDB)	APPROACE	I (EDDN	(1)			CHART		
N 48 35.377' E 01	1 07.651		122	122	01:01	NAT DM4	123	
ROKIL	08L(NDB)		82	115	00:57	PME 16 Q	MC 307	
LANDU	08L(NDB)		230	75	00:37	[m] 10.3	07.00	
DM427	08L(NDB)		262	63	00:31	EET 8 min	12/ 56	
DM423	08L(NDB)	FL80	262	47	00:23	DEST 16D	MN	
DM420	08L(NDB)		172	28	00:14	63.6		
DM430	08L(NDB)		82	23	00:11	EET 31 m	in 49 s	
WPT GOTO	DCT INS	EDIT	linsP	OS NEXT	r UP	DOWN	BACK	



Example - Direct from the Flight Plan

NAV	PAGE (Ac	tive A	PT: ED	DM)		TERRAI	V K
IFR TERMINAL	WAYPOINTS			, ID		MODEFLT	50%
DM049				DN	1049	ute 14:15	:50
DM049 (TRM)				DN	1049	OPS SATE	IX 9
DM050 (TRM)				DN	1050	N 48 34	660'
DM051 (TRM)				DN	1051	E 011 00	003
DM052 (TRM)				DN	1052	E 011 00	1001
DM053 (TRM)				DN	1053	ALT 4500	Teet
n/a			N	48 19.17	2'	jiiii) 200	^{~~} 129
			E I	01128.8	90'	DCT	
				orr color		DMI Imi	MC
			SF	PEED 120	(kta)		
WAYPOINT ID	ROUTE	ALT	MC	DME	EET	SINGJ	
DM457	08R(GPS)		262	63	00:31	CHART NYT DARK	
DM453	08R(GPS)	FL80	262	47	00:23	WPT DM4	41
DM450	08R(GPS)		352	28	00:14	圖 17.8	^{MC} 155
DM440	08H(GPS)		82	23	00:11	EET 5 min	20 se
DM441	08H(GPS)	5000	82	17	80:00	DEST RW(188
BEGEN	08H(GPS)	0400	82	11	00:05	DML	Jon
DWD60	USH(GPS)	3130	82	5	00:02	[m] 34.7	
nwuon	ush(GPS)	_		U	00:00	EET 10 m	in 24 s
IFR USER	ICPT DCT	DEL	DELSE	G NEXT	UP	DOWN	BACK



Abbreviating GPS approach to waypoint BEGEN

✓ NAV Nav page

highlight **Begen** in the flight plan box

- ✓ DCT The system immediately reverts to the chart
 - ✓ Light blue vector shows the path
 - Flight management in the info box
- ✓ The course can be immediately corrected to the DCT.



Flight Management in the FMS window

Please refer to page FMS - 12 for information on flight management in the FMS window.

Fight management to the NEXT waypoint by ENav Data navigation is only really practical during the ENROUTE part.

During landing and takeoff procedures the dots are sometimes so close together that point-topoint guidance is not possible.

During turns the NEXT waypoint cannot be determined by FMS.

MT Track / Automatic Logbook

MT Flight Recorder	Track/Log – 2
Fundamentals	Track/Log – 2
Storing and replaying a track	Track/Log – 2
MT Logbook	Track/Log – 4
Automatic entries at a speed of > 40 knots	Track/Log – 4
	_
Deleting/ inserting flights	Track/Log – 5

MT Track

Fundamentals

MT Track / Automatic Logbook

MT Flight Recorder

MT Track = Flight path actually covered

- ✓ Start of recording with valid position (SATFIX) in flight mode
- ✓ Position (track points) recorded every 10 seconds
- Track is deleted when device is turned off. It must thus be saved beforehand if you wish to replay the track at some time in the future.

Retrieving the track page

✓ AUX✓ TRACK	Track Page	anfels Extrain Of A Revenue AC
Key functions:	Track-Name to SAVE TRACK009_	MODEMAP 100%
 ✓ SAVE Saves tracks you have just recorded (flown) – before switching off device! – under a unique name (or one provided by system) ✓ PLAY Replay a track ✓ DEL Delete a track ✓ UP ✓ DOWN 	Track to PLAY / DEL AP3 BADEN BASTI01 BRUCHS CHARL CHECKFH DAMME DEMOEDKB DLE EDNYEDNO EDRKEDNL EGGN ESSEN	D o n u mix n N 48 34.006' Bit Imp Reductstore N All T N Version Particular N Mix N Version Particular Particular N Mix Version Particular Particular Particular N Version Particular Particular Particular N Version Particular Particular Particular Particular Version Particular Particular Particular Particular Version
	SAVE PLAY DEL UP DOW	N LOG NORM FAST STOP BACK

Saving and replaying a track



Without interrupting replay mode you can

- ✓ **VIEW** Zoom into the chart, hide the info box
- ✓ **CHART** Change the base chart
- ✓ CHART/SIN.CHA Select a single chart
- ✓ DCT Select direct
- ✓ NAV Work with the Nav page.

Replay is ended when you change to Flight Mode.

MT Automatio	c Flight Log					LOG	BOO	(- A	AOVING ERRAIN
()		DATE	IDENT	TYPE	DEP	TIME	ARR	TIME	D-TIME	TYPE FLT	TRKFILE
✓ LOG		08.05.03	D-IMTM	C551	EDNY	15:15	EDHK	16:33	01:18	IFR	
		24.05.03	D-IMTM	C551	EDHK	12:13	EDNY	13:40	01:27	IFR	
The followin	g data is assumed	03.06.03	D-IOTA	BE58	EDDF	14:07	EDNL	15:23	01:16	NORM	
from the GPS		08.06.03	D-IHCE	BE90	EDNY	11:12	LFPB	12:53	01:41		
		12.06.03	D-GALF	PA30	EDNL	12:10	EBAW	14:15	02:05	IFRVF	
	Elight data	14.06.03	D-GALF	PA30	EBAW	11:00	EDMK	13:16	02:16		
		15.06.03	D-GALF	PA30	EDMK	10:00	EDMA	10:34	00:34	VFR	
	(Dep) IIME lakeoff time:	17.06.03	D-GALF	PA30	EDMA	12:23	LSZS	13:15	00:52	VFR	
	recorded when	28.06.03	D-IOTA	BE58	EDNL	11:00	ESSB	15:13	04:13	VFR	
	ground speed is	01.07.03	D-IOTA	BE58	ESSB	12:00	EDNL	16:33	04:33	VFR	
	greater than 40	04.07.03	D-IHCE	BE90	EDDM	11:18	EDDS	12:03	00:45	IFR	
	knots	05.07.03	D-IHCE	BE90	EDDS	10:09	EGLL	11:59	01:50	IFR	
✓ (Arr) TIME	Arrival time:	08.07.03	D-GALF	PA30	EDNL	09:30	EDHK	13:45	04:15	VFR	
(****)****=	Ground speed less	10.07.03	D-GALF	PA30	EDHK	10:00	EDMK	14:13	04:13	VFR	
	than 10 knote	13.07.03	D-IOTA	BE58	EDNL	12:11	EDNY	12:32	00:21	VFR	
✓ D-TIME	Tatal fluing times	18.07.03	D-GALF	PA30	EDMK	10:12	LOWW	12:03	01:51	VFR	
	Iotal flying time	19.07.03	D-GALF	PA30	LOWW	11:09	EDMK	13:15	02:06	VFR	
	HH:MM (calculated)	13.11.03				16:03		16:14	00:11		

Completing the logbook

MT Logbook

Automatic entries at speeds of > 40 knots

You can enter this data in the logbook:

- ✓ **IDENT** ID of your aircraft
- ✓ **TYPE** Aircraft type
- ✓ **DEP** ID of the departure airport
- ✓ **ARR** ID of the destination airport
- ✓ **TYPE FLT** 5 characters for your own notes e.g. IFR
- ✓ **TRACKFILE** Respective track stored in the MT system for replaying

Entries can be made in each line by pressing the key:

					LOG	BOOK	(î	ERRAI	
✓ EDIT	DATE	IDENT	TYPE	DEP	TIME	ARR	TIME	D-TIME	TYPE FLT	TRKFILE	46
	08.05.03	D-IMTM	C551	EDNY	15:15	EDHK	16:33	01:18	IFR		
inter data on the assigned keys	24.05.03	D-IMTM	C551	EDHK	12:13	EDNY	13:40	01:27	IFR		
of the integral keypad using the	03.06.03	D-IOTA	BE58	EDDF	14:07	EDNL	15:23	01:16	NORM		
special characters:	08.06.03	D-IHCE	BE90	EDNY	11:12	LFPB	12:53	01:41			
✓ _	12.06.03	D-GALF	PA30	EDNL	12:10	EBAW	14:15	02:05	IFRVF		
✓ :	14.06.03	D-GALF	PA30	EBAW	11:00	EDMK	13:16	02:16			
✓ .	15.06.03	D-GALF	PA30	EDMK	10:00	EDMA	10:34	00:34	VFR		
-	17.06.03	D-GALF	PA30	EDMA	12:23	LSZS	13:15	00:52	VFR		
Nove from one box to another	28.06.03	D-IOTA	BE58	EDNL	11:00	ESSB	15:13	04:13	VFR		
	01.07.03	D-IOTA	BE58	ESSB	12:00	EDNL	16:33	04:33	VFR		
	04.07.03	D-IHCE	BE90	EDDM	11:18	EDDS	12:03	00:45	IFR		
✓ PREV	05.07.03	D-IHCE	BE90	EDDS	10:09	EGLL	11:59	01:50	IFR		
✓ NEXT	08.07.03	D-GALF	PA30	EDNL	09:30	EDHK	13:45	04:15	VFR		
	10.07.03	D-GALF	PA30	EDHK	10:00	EDMK	14:13	04:13	VFR		
Confirm entries with	13.07.03	D-IOTA	BE58	EDNL	12:11	EDNY	12:32	00:21	VFR		
✓ SAVE	18.07.03	D-GALF	PA30	EDMK	10:12	LOWW	12:03	01:51	VFR		
••••	19.07.03	D-GALF	PA30	LOWW	11:09	EDMK	13:15	02:06	VFR		
	13.11.03	D			16:03		16:14	00:11			
(ou will outomatically be	SAVE	-	:						PREV	NEXT	BAC
rou win automatically be											
returned to the main page of the											
logbook.											
If you wish to edit a further page,	select it	with:									
🗸 UP 🗸 DOWN											
Delete whole entries with	In	sert flight	s with								
		J II									
		· •									
Press V IXI											
to enter the current status in a uni	versally	readable	e IXI fi	le:							
	-										

Deleting / inserting flights

Further processing as a TXT file

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MT Rotating Chart

Fundamentals	Rotating – 2
Chart in 150% ZC	OM only! Rotating – 3

MT Rotating Chart

MT Rotating Chart

Fundamentals

This module can only be activated on MT-VisionAir and MT-VisionAirEP

- ✓ VIEW
- ✓ ROTATE

In the main window the chart will rotate according to the direction in which you are flying. All charts, base charts and single charts will be rotated independently of the scale.

Chart in 150% ZOOM only! In flight mode the chart will be displayed in 150% ZOOM only (VisionAir can also display 75%).

In map mode you have the option of zooming in or out of the chart

All Nav page functions are as usual.

You may switch to NorthUp mode at any time:

- VIEW
- ✓ N-UP





✓ **75** % (upper Fig.) - VisionAir only

of the screen (upper Fig.)

or at the lower edge (lower Fig.)

in two zoom stages:

✓ **OFF-C** (in the VIEW bar)

✓ **CENTER** (in the VIEW bar)

✓ The display can be returned to NorthUp mode by pressing N-UP



130 MT 110 DOT EDHK 83.4 Mc 61 EET 38 min 30 s NAT EDWR A8.4 MC 261 EET 22 min 21 s DEST EDWR M 48.4 EET 22 min 21 s MFD 75% OFF-C BACK

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MT Charting Module

Fundamentals	Charting -	- 2
Scanning	Charting -	- 2
Referencing	Charting -	- 2
Quality	Charting	-4
Saving single cha	rts im MT system Charting -	- 5
Transferring single	e charts to MT-VisionAir with Micro Drive or Compact Flash	- 6

MT Charting

Fundamentals

Scanning

Referencing

MT Chart Program

With MT Chart you can reference your own charts (scans). Using the assigned coordinates these can be controlled from the MT main program. MT Chart is a Windows program.

Scanning

Before launching MT Chart, the needed chart must be scanned. For interfacing with Moving Terrain, the chart must be prepared as a bitmap file in Windows BMP format (files with ending *.BMP). In addition, color resolution must be 24-bit, i.e. 16 million colors = true colors.

Otherwise it does not matter whether you scan the chart with a hand-held scanner at home, at a service center close by or send it to us for conversion to this type of file. You may use any standard scanner, as long as your file is saved as a 24-bit BMP file. For good, color-accurate and undistorted results it is best to use a color flatbed scanner.

Your original charts must satisfy the following prerequisites:

- They must be **to scale** (not distorted)
- **Latitude / longitude** must be readable on the **grid** or other points must be capable of exact referencing.
- For large areas it is important to make sure that the chart is based on a **cylindrical projection** (e.g. Mercator). Conic (section) projections are not suitable.

The program also tolerates rotated scans. For the sake of clarity they should be north-up, although the software compensates for errors caused by rotation.

Referencing

Upon launching MT Chart you will see a special referencing symbol (diagonal crosshairs) in the center of the screen, an as yet empty Navdata box and three menu items. In the map (Alt + A) choose the "**Open**" function or press F2. The "**Load Custom Chart**" file dialog will appear. Now select the drive, directory and file (in BMP format!) you wish to reference. You can move within the rectangular areas with the direction arrows, to the next box by pressing the tabulator and back to the previous box by simultaneously pressing Shift and Tab.

Once you have selected the chart you wish to reference (its name must be visible in the single-line box under file name), confirm by pressing Enter. The file will then be automatically converted to the Moving Terrain MTC format. You now have the choice of deleting or saving the BMP file. From now on you will only need the MTC file. We recommend deleting the BMP file from your hard disk. If you lack the means to scan charts yourself and had the file created externally, it is advisable to make a backup copy on another storage medium before you start work.

Now comes the most important part in the preparation of your chart for using with Moving Terrain: referencing. The more carefully you perform this step, the better will be the results you achieve subsequently together with the GPS. For referencing you must exactly reference three points on the chart (longitude and latitude). Move the chart with the direction arrows or the right mouse button to place the referencing symbol at a point whose coordinates are known to you or which can be read off the chart. For visual approach charts we recommend, e.g. the grid at the edge of the chart. If no coordinates are provided on the chart (e.g. street map), you can also drive/fly/walk to several points on the chart and measure the coordinates with the GPS.

You must reference **3 points**. Please note: your reference points should be distributed as far as possible over the chart. They should not be too close together and not lie in a straight line. The MT program will also run if you have referenced only 2 points, but you will be forfeiting an important safety backup and verification of accuracy.

To create a reference point, move the desired chart point beneath the referencing symbol and select the referencing menu (Alt + R) or press F8. In the dialog that appears you can give this reference point a name and enter its coordinates (up to 1/1000 angular minute). Again you can move from one box to another by pressing the tabulator and to the previous box by simultaneously pressing Shift and Tab. The point can be saved by pressing Enter (Save). Save three points in this manner. The program will now evaluate the accuracy of your input and the deviation of the chart from the rectangular reference due to the projection. The following evaluations will be provided:

Comments:	very good	good	medium	poor but useful	unuseable
del psi *	0-1	1-2	2-6	6-10	>10

(* Del psi is an internal evaluation criterion calculated from the relative angles of rotation of the chart between

MT Charting

Quality

Confirm this message by pressing Enter. The referencing quality can also be seen at MAP/ INFO.

Now save the correctly referenced chart with the Save function in the map menu (Alt + A) or by pressing function key F3. This will save the chart in the Moving Terrain format together with your referencing and it is ready for use in the Moving Terrain program.

Further functions in MT Chart

Map menu

In addition to the functions as outlined in Chapter 3.1 – Open, for opening BMP or MTC files, Save for saving MTC files with referencing, and Info for showing the quality of your referencing – the map menu (Alt + A) also contains the following functions:

Goto...

This function is used to check the chart into which you have entered coordinates. The referencing symbol is displayed precisely over the point stipulated by you. However, if the coordinates are off the edge of your chart, an error message will be displayed.

Zoom...

As in the main Moving Terrain program you can also view your own charts, except in the standard display, at a magnification factor of 200% or a reduction factor of 50%.

The charts on your Moving Terrain system

The charts prepared with the MT Charting module are available as single charts on your system. They must first of all be copied into your system's \MOVTER.PRO\CUSTOM directory.

Saving single charts in the MT system

Importing single charts into your MT-VisionAir with a Microdrive or Compact Flash

To replay self-digitized, referenced single charts on your MT-VisionAir:

Create a ZIP file (e.g. WINZIP) from your *.MTC files and name it **SINGLECH.ZIP**

Any number of charts may be combined in this ZIP file. Now copy the SINGLECH.ZIP to the existing directory

\DATA\

on the Microdrive (Compact Flash Type II) prepared by Moving Terrain **That is all the preparation needed.**

Now insert the microdrive (Compact Flash Type II) into the **switched off** MT-VisionAir device and switch it on. The updating process will start automatically.

Wait a few minutes (depending on the size of the file) until all the charts have been loaded onto the device. Now **switch** the device **off** and remove the microdrive (Compact Flash Type II).

Upon restart you can activate your single charts with

- ✓ CHART
- ✓ SIN.CHA

In the event that this procedure does not run correctly, the most probable reason is that insufficient space is available for the charts on your device's hard drive (or partition thereof). In this case please contact us. We will be pleased to help you find a solution.

To replay self-digitized, referenced single charts on your MT-ULTRA:

Start a burn prorgram in order to burn a CDR. Create a new directory on this CDR called **CUSTOM**. Now attach the *.MTC files you made in the directory CUSTOM. Burn the CD. Using the MT UPDATE UTILITY ,corresponding to your software version, you can now install the new charts you made onto your system. Choose option 1. Update from Moving Terrain CD in the update program.

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MT Special Coordinates

Fundamentals		Special Coordinates	- 2
Additional coordina	te systems	Special Coordinates	- 2

MT Special Coordinates

Special Coordinates

latitude-longitude system.

Fundamentals

✓ NAV

✓ EDIT

✓ NEW/MODIFY

Additional coordinate systems

The choice now includes the following:	New User Waypoint	
 ✓ LAT/LON ✓ UTM ✓ SWISSG 	Geographic Coordinates (WGS84)	MODEMAP 100% UTC:: GPS NO DATA N 53 43.520' E 008 03 797'
Once selected, a coordinate system remains active until it is switched off again. The settings should be made when the system is started.	NAME WPT002 ID WPT002 N/S N 53 43 520 · E/W E 008 03 797 ·	ALT GS MT [kts] DCT DME MC [nm] EET SINGLE CHART
The coordinates must be entered into the INFO BOX in the selected format.	COMMENT SAVE GOTO DCT CHR CLR PREV NEXT UTM	NXT DME MC [m] DEST DME [m] EET SWISSG BACK

Further coordinate formats are available in addition to the coordinates displayed in the



NAV PAGE	
VFR WAYPOINTS	MODE MAP 100%
KEMPTEN (DURACH)_	EDMK UTC::
KEMPTEN (VOR)	KPT GPS NO DATA
KERKIRA (VOR)	KRK 32U ME
KERKIRA (NDB)	KEK 382 534
KERKIRA (IOANNIS KAPODISTRIAS) (AP	LGKR ALT
ELEV 2340ft; INFO 122,00;; 32	трт 🛗 —— 🏧 ——
RWY 07-25 850m GRASS; RWY 17-25 900m GRASS;	04 831 DCT
Tel.: (0831) 61206 se	FED 120 And
WAVPOINT ID ROUTE ALT MC	DME EET SINGL
	CHART
	MPT
	[m] [
	EET
	DEST
	[m]
WPT GOTO DCT INS EDIT linsPOS	NEXT UP DOWN BACK

SWISS Grid applies to Switzerland only

N	AV PAGE		
SwissGrid Coordinates		MODE MAP 100% V UTC:: [7] GPS NO DATA [7] E 008 03.797' [7]	
NAME WPT002 ID WPT002		N 53 43.520 Z	
E	N	EET W CHART NXT WPT	IAY
COMMENT		FFT	
		DEST DME (m)	
SAVE GOTO DCT C	HR CLR PREV NEXT L	ATLON UTM BACK	PT

NAV PAGE	
VFR WAYPOINTS	MODEMAP100%
ZURICH (KLOTEN)_	LSZH UTC
ZURICH (KLOTEN) (APT)	LSZH GPS NO DATA
ZURICH EAST (VOR)	EDBZ E 683.677
ZWEIBBUCKEN (VOR)	ZWN N 256.986
ZWEIBRUCKEN (NDB)	ZBN ALT
ELEV 1416ft; TWR 118,10;GND 121,90;	E 683.677
Apron 121,75;ATIS 128,52;;	N 256 986 DCT
RWY 16-34 3700m CONC;	MC
HWY 14-32 3300m CONC;	SPEED 120 (Ma)
WAYPOINT ID ROUTE ALT	MC DME EET SINGLI CHART
	NXT
	DME MC
	EET
	DEST
	imi

MTUP / 16 - 02 REV L Date: 01. 06. 2005

Special Coordinates - 3

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MT EFB

MT EFB - Electronic Flight Bag

Fundamentals		EFB - 2
Viewing Single	Charts	EFB - 3
Enhanced Nav	vigation Database Single Chart Selection Page	EFB - 4
Activating an E	nhanced Navigation Database Chart	EFB - 5
Vertical View		EFB - 5
Plan View		EFB - 6

MT EFB Fundamentals	That means that if the MT-EFB is to be the appropriate sofware modification m The initial installation of the maps can b JeppView license and an actual JeppVi The map updates can be installed on yo Navigation Database Charts. More details can be find in the EFB-Upd	used, you must be a valid holder of a JeppView oust be activated. De done at Moving Terrain and can only be proc ew CD, as well as sending us your MT VisionA our own to ensure posession of the most update date cube.	v license and essed after a ir (EP). ed Enhanced
Calling up the Enhanced Naviga- tion Database Charts	 ✓ CHART ✓ SIN.CHA ✓ GOTO jumps to selected chart. Note: functions only in MAP Mode. ✓ BASE changes Base Chart Selection Page ✓ SEL Several Enhanced Navigation Database charts can be pre- selected and are pasted in the Selected Box. The active map is always highlighted in green. ✓ <> Change the map category (SID,STAR, etc.) ✓ UP, DOWN Scroll up/down in the selected box ✓ BACK Back to the map and deactivate the Chart Selection Page. ✓ RIGHT Jump to the Selected Box 	CHART SELECTION PAGE SID STAR APPROACH APT OTHERS VFR-GER OVERVIEW HELI-GER EDDM MUNICH EGG RWYS 08R/L DEPARTURES EDDL039 EDDL034 Image: Color of the color o	MODE MAP 100% UTC 09:57:20 GPS SATFIX 9 N 47 48.834' E 010 27.655' ALT 7700 feet GS GRS SATFIX 9 MT DCT ADV DME 1826 DCT ADV DME 1826 DME 1826 MC 1 EET SINGLE CHART NYPT EDPA DME 58.1 MC 351 EET 29 min 4 set DEST ABLITA DME 1644 EET 13 h 42 min PME 13 h 42 min PME 1644

The Enhanced Navigation Database Charts are divided into 5 categories:

1. SID	=	Standard Instrumental Departures
2. STAR	=	Standard Arrivals
3. APPROACH	=	Approaches
4. APT	=	Airports
5. OTHERS	=	Noise, Parking, Take-off Minimas,

Viewing single Enhanced Navigation Database Maps:

✓ GOTO

Jump to the selected map.

The selected map is automatically entered in the Single Chart Selection Page.

Some charts are NOT TO SCALE, and therefore not suitable for referencing. In the infobox, NO GEO REFERENCE appears. The airplane symbol cannot be displayed on these non-referenced charts and the charts can only be seen in MAP MODE.



Viewing single Enhanced Navigation Database Charts





The loading of the referenced Enhanced Navigation Database Chart functions the same way as the VFR approach charts.

✓ SEL

The chart is copied and activated into the selected box. It is always the green-highlighted active chart in the Selected Box.



The active, referenced chart is automatically loaded as soon as entering the corresponding chart zone range.

A special function is available in FLT MODE when executing approaches.

✓ V VIEW

Shows the glide path during the flight. The map continues to move in the background.

MAP



MT EFB

✓ P VIEW

Cycles through the glidepath view and the previous active chart (back to previous chart view).



The supplemental Enhanced Navigation Database Package 1 considerably simplifies Enhanced Navigation Database navigation.

In the right figure a route appears where a referenced Jeppesen chart is displayed.





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Data Updates, Charts and Program Versions

Update of Charts, Data and Program Versions

MT VisionAir: Update via microdrive / Compact Flash	Updates - 2
Data updates from the Internet via microdrive / Compact Flash	Updates – 3
MT Ultra: Update via MTUpdate Utility Version 6.0:	Updates - 4
How does the installation program work?	Updates - 4
What do I need the installation program for?	Updates - 4
Preparing/connecting the two devices	Updates – 5
Installation options	Updates – 7
Installating/updating base charts from CD	Updates – 8
Installating/updating sngle charts from CD	Updates – 10
Installating/updating Navdata from CD	Updates – 10
Installing/updating obstacle data from CD	Updates – 10
Program installation/update	Updates – 10
Registering the Moving Terrain version on your device	Updates – 11
Installing/updating Navdata from diskette	Updates – 11
Installing/updating obstacles from diskette	Updates – 12
Backing up the user waypoint database	Updates – 12
Installing custom charts directly from your PC's hard drive	Updates – 13
Completing the installation process	Updates – 13
Authorization Page	Updates – 14

Updating data, charts, and program versions

MT - VisionAir

Fundamentals

MT-VisionAir

Updates are made using a **microdrive** or **Compact Flash Type II**.

The data carriers must have either been purchased directly from us or submitted to us for configuration after purchase elsewhere.

The updating procedure itself is simple and convenient:

- Insert the microdrive into the switched-off device (reverse side up)
- Switch on the device. The update will run automatically and can be monitored on the basis of status reports shown on the display.
- When the final message "Update successful" appears, switch the device off and remove the microdrive.

Your device now contains the latest data and is ready for operation.

In the event that the data carrier is not recognized when the device is switched on (this will be the case if Moving Terrain is launched!), switch the device off and try again. Data carriers sometimes have start-up problems.

During the update procedure all data will be loaded into the device from the data carrier. This may take some time. Please allow for this in your schedule and avoid performing the update at the last moment.

Data updates from the internet via Microdrive

To import data downloaded from the internet or received by e-mail to your MT-VisionAir device:

You will need a microdrive (Compact Flash) that has been **prepared by us**. Plug the microdrive into your office computer using the appropriate adapter.

We supply the data in the following forms:

VFR data: The data is named VFR60.ZIP

ENav data IFR60.ZIP

Obstacle data OBSTACLE.ZIP

This data must be copied into the

\DATA\

directory on your microdrive (Compact Flash). Do not unpack it!

Remove the microdrive (Compact Flash) from your office computer and adapter, plug it into the **switched**-**off** MT-VisionAir. When the device is switched on, the update will be started automatically. Once the procedure has been completed, switch the device off again, remove the microdrive and restart the device.

This procedure is basically the same as for single charts (*.MTC files) (see MT Charting).

MT Update Utility

MT Ultra

How the Installation Program functions

Why the Installation Program is needed

MT-Ultra: Update of Data, Charts and Program Versions

MTUpdate Utility Version 6.0: Instructions for the installation program

Basic concept:

A standard PC and the MT-Ultra device are connected via cable and software. Data is read by a PC from a CD-ROM or directory on the hard drive and transferred to MT-Ultra by cable.

To enable the two devices to be connected, the PC must be booted up in DOS mode. This is in turn enabled by the enclosed disk.

Please follow the instructions carefully and **perform the installation step by step**. It is important to adhere to the sequence of individual steps to ensure successful installation.

- The program enables the following installations from Moving Terrain CDs:

Installation of **base charts** Installation of **Navdata** (VFR and ENav Data, hospital data) Installation of **single charts** (special charts, e.g. hospital helipads) Installation of **obstacle data** Installation of later versions **= MT program updates**

- You can transfer self-generated data **from your computer's hard disk**: **single charts** (created with the MTChart program)
- You can transfer from disk:
 Navdata = Hospital helipads (SPITAL)
 = USER

Preparation

For the update you will need:

- PC or laptop with disk drive;
- Laplink cable;
- Keyboard with PS/2 connector (with MT version 3.6);
- Boot disk = MT Update Utility Disk from MT;
- CD-ROM from MT.

Important: Both devices must initially be switched off.

- Step 1: Open the service cover at the rear of your MT-ULTRA device.
- Step 2: Connect the 1st parallel port (printer port) of your PC (LPT 1) and the parallel port of the MT-Ultra device with the supplied Laplink cable.
- Step 3: Switch on your MT-Ultra device. Wait until it has completely run up. Then press the AGREE key.
- Step 4: Switch MT Ultra to the update mode:
 - a) If you have **Moving Terrain software version 5.0** or later, quit the program with **AUX** -> **QUIT** (keep pressed).
 - b) If you have 3.6x software connect a standard PS/2 keyboard (adapter for other keyboards enclosed) to the respective keyboard outlet. Quit the MT program by keeping <F12> pressed for 5 seconds. Then press <ALT-F4> <ENTER> to exit Windows. At the DOS prompt enter the following line:

C:\>intersvr /lpt1 /v /x=a: /x=b: <ENTER>

or if you have a German DOS version and a US keyboard

C:\>intersvr &lpt1 &v &x)a> &x)b> <ENTER>

Independently of your MT software version, the following screen should appear:

Setting up the connection between the devices



Your device is now ready to receive data.

- Step 5: Insert the MT Update Utility disk into the disk drive of your PC.
- Step 6: Switch on your PC.
- Step 7: Set the keyboard options:
 - '1' = German keyboard
 - '2' = US keyboard
 - <ENTER>.

The program will now look for your MT application. Once successful, it will display the main menu:

The two devices have been successfully connected.



MT Update Utility



MT Update Utility

Active menu items are marked with an X.

- Now select your desired update or installation from the categories marked with (X) by pressing number keys 1–5.
- To return to the main menu press <ESC>.
- Obstacle installation/update is for the Rega version
- Select 1: BaseChart Installation/Update

Available Selection Modes <pre></pre> <pre></pre> <pre></pre> <pre></pre> <pre>Available Selection Modes </pre> <1> Full Installation/Update <pre></pre> <pre></pre> <pre></pre> <pre></pre> <pre>// Clear installed Charts </pre> <4> Clear current Selection	ate Utility v6.0 BaseChart Installation/Update <[Country-ID]> Country-Selection <enter> start BaseChart-Update <esc> leave BaseChart-Update</esc></enter>
BaseChart: Country Selection <e> [x] 0 MB Spain ICA0 <r> [x] 0 MB Greece TPC <i> [x] 0 MB Italy ICA0 <f> [x] 0 MB France ICA0 <j> [x] 0 MB Yugoslavia TPC <c> [x] 0 MB Switzerland ICA0 <a> [x] 0 MB Austria ICA0 <h> [x] 0 MB Hungary ICA0 <g> [x] 0 MB Germany ICA0 <g> [x] 0 MB Czechoslovakia/Slova <u> [x] 0 MB United Kingdom ICA0 <l> [x] 0 MB Poland ICA0 <l> [x] 0 MB Benelux Economic Uni <f> = Scroll Up <4> = Scroll</f></l></l></u></g></g></h></c></j></f></i></r></e>	Update-Statistics CHARTS existing 1262 to repair 0 to update 0 install new 0 DISKSPACE total 2039 MB free 151 MB required 0 MB required 0 MB remaining 151 MB

Make your choice on the number keys between:

- <1> Full installation/update: Updates all existing charts and installation of new charts
- <2> Update installed charts: Updates only existing charts (recommended for limited memory space)
- <3> **Repair installed charts**: Repairs incomplete/defective charts.
- <4> Clear current selection: Deletes your current chart selection.

With this choice, a new window will open in the lower left half of the screen. Activate the desired operation by **pressing ENTER**.

Base Charts Installation/Update

- The choice of countries enables you to put together precisely the combination you need for flight planning on your MT Ultra. Since your hard disk does not have unlimited space for the charts, you may need to limit your selection. All available countries will be shown in this list. Normally the complete data will be downloaded and the basic setting now active is for all countries.
- If you wish to define an individual choice, press <4> to deactivate the choice of all countries. Now you can select the countries applicable to you by pressing the respective letters (e.g. <E> for ICAO Spain, <G> for ICAO Germany).
- Please note: Since we fit together the available ICAO charts of European countries at their borders, the border zones can only be assigned to one country. For example, if you select Switzerland, you can be sure that the selected charts will not cover the complete territory, because the system has assigned some single files to France, Italy, Austria or Germany. In this case, please select the adjacent countries as well. If you want to fly into the Pyrennees, you should not forget to load the Spanish chart into your system.
- Exception: If you select Germany, the complete ICAO Germany will be loaded onto your system.

Important:

At the bottom right of your monitor you will see how much memory space is available on your

device before and after installation (at least 10 MB must always be free!)

In this example installation cannot be started because insufficient space is available.

<pre><i> Pull Installation/Update <2> Update installed Charts <3> Repair installed Charts <4> Clear current Selection</i></pre>	<[Country-ID]> Country-Selecti <enter> start BaseChart-Upda <esc> leave BaseChart-Upda</esc></enter>
BaseChart: Country Selection (E> [x] 0 MB Spain ICAO (E> [x] 0 MB Greece TPC (I> [x] 0 MB Italy ICAO (F> [x] 0 MB France ICAO (J> [x] 0 MB France ICAO (J> [x] 0 MB Switzerland ICAO (A> [x] 0 MB Switzerland ICAO (A> [x] 0 MB Austria ICAO (H> [x] 0 MB Hungary ICAO (G> [x] 0 MB Germany ICAO (T> [x] 0 MB Germany ICAO (T> [x] 0 MB Crechoslovakia/Slo (J> [x] 0 MB United Kingdom ICZ (L> [x] 0 MB Poland ICAO (E> [x] 0 MB Benelux Boonomic M	m Update-Statistics CHARTS existing 1262 to repair 0 to update 0 install new 0 DISKSPAC total 2039 ME free 151 ME required 0 ME remaining 151 ME

MT Update Utility

Installing/updating single charts from CD

Installing/Updating Navdata from CD

Installing/updating obstacles from CD

Installing/updating program from CD

Wählen Sie 2: CustomChart Installation/Update

Sämtliche Custom Charts von einer MT CD werden installiert. Auch wenn Dateien den gleichen Namen haben, werden ältere durch neuere Versionen ersetzt. Eine Auswahl einzelner Custom Charts ist nicht möglich.

Wählen Sie 3: NavData Installation/Update Navdaten von einer MT CD werden installiert, ältere Versionen werden durch neuere ersetzt. (Gilt nur für Moving Terrain Standard VFR- und Enhanced Navigation Database-Daten)

Installation oder Update des Obstacle Layers (Option 4) (vgl. Update von Diskette)

Um auf Ihrem MT-Ultra einen Software-Update von Version 5.x auf 6.x, bzw. von Version 6.x auf eine neuere Version auszuführen, wählen Sie Option 5.

Wichtig: Die Userwaypoint-Datenbanken der beiden Grundversionen 5.x und 6.x sind inkompatibel. Es ist daher erforderlich, Ihre alte Datenbank zu löschen.

Sollten Sie bereits zahlreiche Userwaypoints angelegt haben, auf welche Sie in Zukunft nicht verzichten möchten, können Sie Ihre Datenbank auf Diskette sichern (s. hierzu auch Hauptmenüpunkt "Data Transfer from/to disk" Option "Load User Waypoints from MT System").

Zur Sicherheit erscheint nach Wahl der Option "Program Installation/Update" bei Vorhandensein einer Userwaypoint Datenbank im 5.x-Format folgendes Fenster:

```
THE USERWPT DE CAN NOT BE READ BY THE NEW PROGRAM
AND MUST BE DELETED!!!
PLEASE SPECIFY IF IT SHOULD BE SAVED ON DISK [Y/N]
OR PRESS <ESC> TO STEP BACK TO THE MAIN MENU
```

Möchten Sie Ihre Datenbank zwecks späterer Konvertierung* auf Diskette sichern, so wählen Sie "Y". Haben Sie bisher die Möglichkeit, eigene Wegpunkte aufzuzeichnen kaum verwendet oder Ihre Datenbank bereits auf Diskette gesichert, so wählen Sie "N", im Zweifelsfall können Sie mit der Taste "ESC" abbrechen und ins Hauptmenü zurückkehren. Es werden dann keinerlei Änderungen vorgenommen.

* Bei Bedarf kann bei uns ein Konvertierungs-Tool angefragt werden.

Registering the Moving Terrain version on your device

Installing/updating Navdata from disk After installing a new program version, the device must be re-authorized (see Appendix: "Authorisation page").

To install from a disk or backup of user waypoints select "Data transfer from/to disk" in the main menu 2:

vailable	Installation-Modes: Copy Customcharts from Disk
2> = [x]	Copy Waypoints from Disk
(3> = 100)	Copy Obstacles from Disk
(4) = [x]	Load User Waypoints from MT System
Please cho You want t	cose with which of the available update modes o proceed by pressing <1>, <2>, <3> or <4> ESC> to step back to the main menu

Now select the desired installation.

```
PLEASE INSERT YOUR WAYFOINT DISK
INTO DRIVE A: AND PRESS ANY KEY TO PROCEED
OR PRESS <ESC> TO RETURN TO MAIN MENU
```

The program will prompt you to insert the appropriate disk.

If you have inserted the wrong disk, the following error message will be displayed:

Inserted disk does not contain a valid waypoint database!!! Please insert Waypoint disk and press any key to proceed! Press ESC to return to main menu!

Now you may press ESC to return to the main menu or continue installation by inserting the valid disk and pressing any key.

Once installation has been completed, the program will prompt you to re-insert the update disk.

MT Update Utility

Installing/updating obstacles from disk

BackUp of USER waypoint databank

Select sub-item 3 "Copy Obstacle from Disk"

Important: Please quit the Update program only via the main menu EXIT in order to guarantee correct installation of the obstacle layer.

Please keep an empty disk at hand. Select sub-item 4 "Load user waypoints from MT system".

PLEASE INSERT AN EMPTY FLOPPY DISK INTO DRIVE A: AND PRESS ANY KEY TO PROCEED OR PRESS <ESC> TO RETURN TO MAIN MENU

Now insert the empty disk and continue.

User waypoint database succesfully backed up

PRESS ANY KEY TO PROCEED !



Important: Your referenced custom charts (*.mtc) must be stored in the directory C:\MOVTER\CUSTOM.NEW, otherwise the installation program will not find them. Please create a directory with this name on your PC's hard disk C: and save your custom charts to

it.

Choose the option <Copy Customcharts from Disk>. The other functions given in this menu are not relevant for the serial version.

Completing the installation process

To finish the installation program choose option 3 in the main menu: "Exit from Update Program"

Switch off the two devices and remove the interlink cable.

Remove the boot disk from your PC and keep it in a safe place. You will need it for further updates.

Close the service cover at the rear of your MT-Ultra with the three screws provided.

Under

✓ AUX you will find:✓ AUTH Switch to Authorization Page

This function allows you to **enable further soft and/or hardware modules** on your system. To enable these modules you will need a **code**, only obtainable from us.

 AUTH (Keep pressed for approx. 3 seconds = precaution against unintended activation!) This will take you to the Moving Terrain Licence Manager.

Starting Moving Terrain License Manager

MOVING TERRAIN: <MTPRO.EXE> License Maintenance

The base version of the MT Programm is now authorized at this site

The following OPTIONS are enabled:

FMS Track IFR Obstacles TCAS Swiss Grid

[A=Authorize] [Q=Quit] Please Select from the menu above: a Site Code: DD38 EE33 ECE6 2A80 07 Enter Site Key or '.' to quit: Confirm with "Y". Moving Terrain Licence Manager will now display information on modules currently enabled.

Close the MT License Manager by pressing "Q".

Registration

Please enter the 'site code' in the enclosed form and fax it to Moving Terrain AG (08376 - 9214-14). Moving Terrain will send you your 'site key' by return fax.

This 'site key' must be entered and confirmed with <ENTER>. If you do not have a second keyboard, you may connect your PC keyboard temporarily to your MT-Ultra and use its ENTER key.

Please note: For version 6.1 d and later you will not need a 2nd keyboard. Confirm the site key by simply pressing a function key (buttons below the screen).

Finally, press 'Q' for QUIT to terminate the registration program and launch MT 6.x.

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MT-EFB Update

MT EFB - Electronic Flight Bag Update for JeppView Version 3

Introduction	EFB	- 2
Preparation	EFB	- 2
Component connections		- 4
Update Stage 1	EFB	- 5
Update Stage 2	EFB	- 6

MT-EFB Update

Abbreviations:

EFB - Electronic Flight Bag

- CF Compact Flash
- MT Moving Terrain

Introduction

Introduction

The following manual describes the updata process for the Jeppesen Enhanced Navigation Database Charts on the Moving Terrain EFB update device.

The following hardware is included with the package: 1 x MT-VisionAir Master Unit (if not already available) 1 x MT EFB Update PC System with 220V power cord 1 x KVM switch for the 2 PC connection to one monitor/keyboard/mouse 1 x EFB-Compact Flash

It is assumed that you possess a standard office computer with PS/2 keyboard and mouse, as well as a VGAmonitor. The enclosed KVM switch serves a connection to both computers (your office computer and the EFB Update System), to a keyboard, mouse, and monitor.

Preparation

Preparation

Before the actual update of the JeppView database, please load the current EFBTools for JeppView 3 to the current update of your Jeppesen CD from our web page. You will additionally require a PC with a compact flash card reader or a notebook with a PCMCIA slot and a compact flash adapter with internet access.

The EFBTools file is found as a ZIP file at www.moving-terrain.de -> EFB Tools -> EFB Tools for JeppView 3.x Disc ...:

EFB Tools Download

Sie benötigen ein entsprechendes EFB Update Kit, das Sie von une erwerben können. Bitte laden Sie die Tools für die jeweilige JeppView Version mit der Revisionsnummer, die Ihrer aktuellsten JeppView CD entspricht.

EFB Tools Update						
MT-System	Software	Version	Format	Datei- größe		
MT-VisionAir alle Units	JeppView Version 2.x					
	EFB Tools für JeppView V2.x Disc 17-2004, Issue Date 13 AUG 04	∨ 17-2004	ZIP	508KB		
	EFB Tools für JeppView V2.x Disc 18-2004, Issue Date 27 AUG 04	∨ 18-2004	ZIP	508KB		
	EFB Tools für JeppView V2.x Disc 19-2004, Issue Date 13 SEP 04	∨ 19-2004	ZIP	508KB		
	EFB Tools für JeppView V2.x Disc 20-2004, Issue Date 24 SEP 04	∨ 20-2004	ZIP	508KB		
	EFB Tools für JeppView V2.x Disc 21-2004, Issue Date 08 Oct 04	V 21-2004	ZIP	512KB		
	EFB Tools für JeppView V2.x Disc 22-2004, Issue Date 22 Oct 04	∨ 22-2004	ZIP	512KB		
	EFB Tools für JeppView V2.x Disc 23-2004, Issue Date Nov 04	∨ 23-2004	ZIP	514KB		
	EFB Tools für JeppView V2.x Disc 24-2004, Issue Date 19 NOV 04	∨ 24-2004	ZIP	518KB		
	JeppView Version 3.x					
	EFB Tools für JeppView V3.x Disc 01-2005, Issue Date 14 JAN 2005	∨ 01-2005	ZIP	380		

Should the clicking of the download link result in an error message, please download required tools as follows:

Right-click with mouse on the desired link -> Save link as -> Choose directory, as described by the connection name -> Select.

You also need to save the EFBTools files for the Issue Nr/Date of the JeppView disc to the enclosed EFB compact flash in the main *"EFB-CF-drive*:\" directory. You also need to replace the *EFB-CF-drive* to the drive directory letter that your EFB-CF currently installed on your laptop or PC, i.e. D:\.

MT-EFB Update

Starting of the EFB Update System

Connect the EFB Update System with the power cord to the 220V-socket. Connect the EFB Update System with the KVM switch in accordance with **Figure 1** and the Instruction Manual of the KVM switch to your office computer. Now with <ScrollLock+ScrollLock+Cursor Up> key sequence it is possible to switch between computer within 2 seconds. Turn on the EFB Update System. If there is no indication of successful operation on the screen, wait 2 minutes for the computer to fully boot up, and then execute the switch key combination (<ScrollLock+ScrollLock+Cursor Up>).

Warning: The enclosed compact flash should not be inserted in the EFB Update System at this time.



Figure 1 Connection of EFB Update System, switch (middle) and office PC

The device serves exclusively for updating the Moving Terrain EFB data. Changing the hardware, operating system, or program settings could disable functionality and assistance from our MT colleagues will be needed.

Part 1 of the Update Procedure

Your EFB Update System initially starts with Windows XP operating system. First double-click on the shortcut icon "EFB-Update" on the desktop and follow the instructions on connecting the compact flash (CF) and the current JeppView Update CD (see Figure 2).

The current efbtool.zip file from our website should be located in the the compact flash main directory (in accordance with the Preparation section).



Figure 2. EFB Update System drives

After the compact flash and CD has been inserted, please do not touch or click on anything with the mouse or keyboard until the program has completely finished the updating process.

A confirmation message appears after a successful update installation. All programs will also close at this time.

Part 2 of the Update Procedure

Remove the compact flash from your PC (after being switched off), and insert the CF into the side slot of the MT-VisionAir while it is turned off. Then turn on device.

The EFB Update in the MT-VisionAir system is automatically conducted, and a confirmation message is displayed after update completion.

Important

- 1. Please notify us if you change the range zone of your JeppView area.
- 2. Do not install additional software on the EFB Update cube.
- 3. Please use Moving Terrain exclusively supplied components.