

MCNAV TX73 Excavator Guidance System

User Manual



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1 Installation & Licensing

1.1 Installation

The software is installed on the tablet by default, you can click the [upgrade] button to update to the latest version.

Upgrading by a local package is possible as well. You need to copy the package to the tablet from a USB flash drive and then install it.

Note: The TX73 software supports overwrite installation, so no need to uninstall the previous version.

Uninstall the software: Find the program icon in the tablet, press and hold the icon to move to the uninstall button in the upper left corner, and click OK to uninstall according to the pop-up wizard. (If you encounter a major version update, it is recommended to delete the CHCNAV folder in the home directory, which stores construction data and logs, please make a backup before deleting it, and operate with caution)

1.2 Operating System Requirements

TX73 excavator guidance system software is recommended to be used in Android 10 and above versions.

2 Software configuration process

2.1 Software System Diagnostics

Click on the icon con the tablet desktop, to enter the main interface of the software, the system will start the software diagnosis function after starting, you can



view the quantity of diagnostic abnormalities in the upper right corner of the main interface, click to quickly enter the system diagnosis interface.



ᠫ Back		System Status			
	Hardware		Software		
¢	Calibrate		Uncompleted		
¢	Projects		● Completed • •		
¢	Registration Status		Completed •		



2.2 Homepage



No	Name	Description	Attribute
1	LOGO	CHCNAV logo, click to enter the system information interface, and display the software version and registration validity period	Button
2	Satellite quantity	Shows the satellite quantity used (right) and the satellite quantity searched (left)	Display
3	Positioning quality (main antenna)	Displays the current positioning quality of main antenna (single, floating, fixed)	Display
4	Positioning quality (aux antenna)	Displays the current positioning quality of aux antenna (single, floating, fixed)	Display
5	Differential age	Displays the current differential age	Display
Positioning 6 accuracy		Displays the H (horizontal) accuracy and V (elevation) accuracy of the current GPS positioning accuracy index	Display
7	4G signal	Displays the current 4G signal	Display
8	Menu	Click to open the system menu, which is divided into three units secondary menus: Common/Config/Control	Button
9	Base map and design data	Click to enter the base map and design data interface, which can hide/use base map or design data	Button



		On the second se	
		💿 : Hide	
		Part of design data/basemap hided	
		: Use elevation guidance of the design data/basemap	
		: Cancel use elevation guidance of the design data/basemap	
		: Use horizontal guidance of the design data/basemap	
		: Cancel use horizontal guidance of the	
		design data/basemap	
10	Project offset	Click to enter the project offset interface, you can raise or lower the height of the design surface	Button
11	Line offset	Click to enter the line offset interface, select the target line, and you can offset the target line to the left or right	Button
		Click to enter the system status interface, displaying the	
		hardware, SN number, connection status, and upgrade	
12	System status	shortcut keys; Displays the completion status of the	Button
		software (calibration, project, registration status) and	
		shortcut buttons	
		Display the elevation difference between the current	
		bucket tip and the design data, long-time press to enter	
	Cut/Fill light	the target configuration interface, you can turn on/off	
13	target	the target display, modify the step value of the target,	Button
	-	and configure the display content of the left target,	
		right target, and upper target	



14	Line distance light target	Display the distance difference between the current shovel tip and the nearest line, press and hold to enter the target configuration interface, you can turn on/off the target display, you can modify the step value of the target, and you can configure the display content of the left target, the right target, and the upper target	Button	
15	Self-check information	Display the quantity of software self-check failures	Display	
16	Views	Displays the default view as well as the user-configured view	Display	
17	Quick icon	Display the shortcut icon of the user configuration, click to use the function, and long-time press to enter the configuration interface	the shortcut icon of the user configuration, click the function, and long-time press to enter the Button ration interface	
18	Quick drawer	Store the common shortcut icons of the default or user-configured shortcut, click to expand or collapse the drawer, click Edit then long-time press, you can drag to the shortcut icon column (17), and click Save to save the configuration	Button	
19	Positioning	Click to center the view	Button	
20	2D/3D view switching	Click to switch to 2D/3D view	Button	

2.3 Software operation



Click the menu button in the upper left corner to enter the menu interface,

which is divided into three units sub-menus: Common, Config, and Control



Common		Config	Control	
Work				
Surface Offset	← → Line Offset	3D	2D Working Mode	
Receiver Settings				
Projects				
Projects	Coordinate System	n 📀 Point Corre	ection Base Offset	
Designs	Points	Basemap	Layers	
import				

2.3.1 Common

2.3.1.1 Work

①Surface offset

After entering the value, and clicking the [Confirm] button, you can raise or lower the corresponding height of the design surface (positive value for lifting, negative value for lowering)

Click the [Reset] button to quickly remove the offset value

➡ Back	Project Offset
	Project Offset 0.00 m Reset
	× Cancel Confirm



②Line offset

Select the target line element, enter a value, and click the [Save] button to offset the target line element by the corresponding distance to the left or right (When select the [L] button, the line element is offset to the left, and when select the [L] button, the line element is offset to the right.)

You can also enter an elevation offset to raise or decrease the elevation of the line element



Click the [Reset] button to quickly remove the offset value

③Working model

Click to switch between 2D/3D working mode





④Receiver settings

Displays the current differential information: differential age, differential state of the main and auxiliary antennas, satellite quantity of using/satellite quantity of searching, RTK timeout, elevation mast angle, heading angle, base station distance, VRMS/HRMS/PDOP, longitude, latitude and elevation of the main and auxiliary antennas



Click [More] to create a base station

The differential format supports RTCM3.X

The radio protocol supports TT450S/Transparent/Satel-AS/Huace

Create [radio base station]

Enter the name, protocol, air baud rate, channel, frequency and other information of

the radio base station, and click [Confirm] to save



New Radio B	ase Station	
Name	Protocol	
Air Baudrate	Channel	
Frequency	Version	
FEC		
	X Cancel	

1) Create [CORS]

Enter the name, address and port number of the CORS network base station, click [Download] to get the source list, and enter the username and password.

If it is unable to obtain the source list, check the network, address, and port number.

New CORS	
Address	
Source List	
rei Download	
Password	
🗙 Cancel 🗸 Confirm	
	New CORS Address Please Enter Source List Password Password Please Enter

2) Create [APIS]

Enter the APIS network base station name, address, base station ID and port number, and click [Confirm] to save the base station information.



	New APIS	
Name	Address	
Station ID	Port	
	🗙 Cancel 🗸 Confirm	ı I

3) Create [External Radio]

	New External Radio	×
Name	Serial Baudrate	
	× Cancel	✓ Confirm

Select the base station you want to use and click the [Apply] button to apply the base station.

Click [Edit] to edit the base station information.

Click [Delete] to delete the base station.



Note: This function can only be used when using SATEL radio, please make sure that the SATEL external radio module is connected.

2.3.1.2 Projects

Projects

Click [More] - [Create new project] to configure the name, coordinate system, units, description, and other information of the project

⇒ Back	Create Project
	Name Please Enter Coordinate System Select Image: Coordinate System Unit Meter > Description Please Enter
	Cancel Save

1) Coordinate

Click [select] in the coordinate system box to enter the configuration page of the coordinate system, where you can configure parameters such as ellipsoid, projection, datum trans, Horz adjustment, and Vert adjustment



ᠫ Back	Coordinate System		More 🗸	Save
Name:			coord17300	61833060
Ellipsoid	Datum trans	Horz. adjustment	t Vert. ad	justment
Ellipsoid name:				WGS84 >
Semi-major axis:			6378137.0	000000 m
Reciprocal skewness:			298.25	72236000
Positive direction:			Nor	rth-East >

Click the [More]-[Preset] to select a standard coordinate system template.

Note: The standard coordinate system in some countries needs to be imported the North Grid, East Grid and geoid models, click the [Import] button, select the grid file



, and select in the list and apply

Back	Coordinate System		More 🗸	Save
Name:			coord173006	51833060
		Horz. adjustment		
Correction method			No para	meters 🚿
North grid			None	> 🕹
East Grid			None	> 🕹
	Data Type			
	None			
	HD72-VITEL2014_pv.CGD			

Note: The following formats are supported in horizontal: [.grd], [.stg], [.pxy], [.osgb], [.cgd], [.GRT], [.dat], [.DATCZ]

The following formats are supported in vertical: [ggf], [.bin], [.gsf], [.grd], [.gri], [.asc], [.stg], [.gbl], [.gxy], [.osgb], [txt], [.cgd], [.jasc], [.gsa], [.gsb], [.byn], [.grt], [.dat], [.datcz], [.gtx], [.negrid], [.gdf]

If you already have a coordinate system, you can import it through the [Preset] - [More] - [Import] button



Sack	More 🗸	
Level 1 Level 2 Customer > Customer	ق Import >	
site		
Gr3df97a Lambert 1 Raf09		

Note: The system supports coordinate systems in [.xml], [.crd], [.lok], [.dc], [.jxl], and

[.cal] formats.

If the [.cal] coordinate system requires the import of a geoid model, import and apply it in Elevation Fitting.

2) Unit

Select the unit for the project (meters, US feet, international feet)

⇒ Back	Create Project	
	Coordinate System	
	Select 🛞	
	Unit	
	Meter >	
	Description	
	Unit	
	Meter	
	U.S. Feet	
	International Feet	

Note: After setting the units on this screen, all the size units in the software will be the same as the settings

2) Other

Click [project], the list of created projects is displayed, and you can edit, delete, and apply them (the project being applied cannot be edited on the details page)



ᅿ Back	Projects	More 🗸
★ 23 coord1729184296706 : Description E Details	2024-10-18 00:58:22	
t2 coord1722599522637 Description	2024-10-18 00:57:57	
t1 coord1729184296706 2 Description	2024-08-02 19:52:06	

②Coordinate system

Refer to the coordinate system in the project

③Point correction

Coordinate system parameters can be calculated through four or more sets of control point information (GNSS point information and known point information), and all the points information can be imported, which currently supports [.loc]

5 Back	Add Pairs
Method	HV
GNSS point	Known point
Name	Please Enter
Latitude (B)	000:00:00.000000N
Longitude (L)	000:00:00.000000E
H (Ellipsoid H)	0.00 m
	Save Save Save & Continue



⊅в	ack		Point Correction		More 🗸
Vert. a	adjustment type				Constant adjustment>
	Method	GNSS point	Known point	H Resid	V Resid
	HV			0.000	0.000
	HV			0.000	0.000
 Image: A set of the set of the	ΗV			0.000	0.000
SF:					🔁 Result
				+	Add 🗸 🗸 Accept

④Base offset

This function is used in the portable mobile base station scenario, enter the N、 E high

offset, and click Save to complete the base station offset

⑤Designs

Display the list of design data and base map, you can also click [more] - [import] to import the required design data and base map, the design file currently supports: [json], [rodx], [dxf], [hct], [xml], [dwg] formats, base map files support [dwg],[dxf]



1) New plane

Place the bucket tip on the target elevation, click [Collect] button to create a new plane with that elevation, or you can select from the list of point elements and collected points



⇒ Back	New Plane	
	File Name Please Ent	ter
	Altitude	
		m
	Left Tip	> 泪 collect
	Select a	Point
		Cancel

2) New slope

Place the bucket tip at the target point (A and B points), click [collection] button, enter the slope information, or select from the list of collected points

S Back	New s	lope(1/3)			
AB	Start Point (A)		End Point (B	
	Ν	6577284.71	m	Ν	Please Enter m
		543944.33	m		Please Enter m
	н	60.01	m	н	Please Enter m
	Left Tip	> 🕅		Left Tip	>
	Se	elect a Point		R Se	elect a Point
					Next

6 Points

Manage collected or added points, export and delete them, or manually enter point information





⑦Basemap

Display the list of basemap and you can import or delete a basemap

ᅿ Back	Basemap	
teste AXE 22.dxf		
णि Delete		

1) Import

Import the required design data and basemaps, and the design files currently support: [.json], [.rodx], [.dxf], [.hct], [.xml], [.dwg] formats, basemap files support [.dwg], [.dxf]



➡ Back	Import	
I Config	Root > \$MuMu12Shared	Back
Type BaseMap >	D 12+护坡东岸.dxf 130.05 KB AM 08:40	
	BRETEA TURENI GILAU - SAPATURA KM.0+020-0+540 m3d.dxf 278.56 KB PM 03:17	
	Guidage pelle-ligne 3D.dxf 811.98 KB PM 04:08	
	Туре	
	BaseMap	
	Design File	

Note: Once a project is created, coordinate systems, point corrections, base station offsets, design management, points, basemap, and mechanical elevation offsets belong to the project

2.3.2 Config

2.3.2.1 Tiltrotator switch

The tilter switch can be turned on/off, and when the tiltrotator is removed from the

device, the switch can be turned off without recalibration

			_	CONFIG	<u>.</u>			
Ope	n Close	Tiltrotator						
Diagnos	is							
B	Tips Check	\$+	Key Points	~	System Status	٥	System Log	
*	Debug		Develop					
System	Settings							
	Antenna Offset		Buckets	0	Calibrate	۲	Views	
	Light Bar	e	Text Ribbon	•	Language and Regior	· <u>ö</u> .	Alarm	
2	Exit Admin Mode							

2.3.2.2 Diagnosis

①Bucket tip check

Displays the N, E, H, longitude, latitude, and elevation information of the guide point You can also enter the RTK's elevation check error



ᅿ Back		Coordinate Verification
Guidance Point		Measure North
Left Center	Right	6755300.0 East
System output		543946.5 East
North	6577288.47	59.99 😵
East	543941.69	
Height	59.95	Check
Latitude	31.77	
Longitude	118.73	
Altitude	49.37	Error Value 178004.22607504178

②Key points

Display the north-east-high information of key points (left bucket tip, right bucket tip, main antenna, aux antenna), and slide to the right to display longitude and latitude and elevation information

ᠫ Back	Key	Points		⊅	Back	к	ey Points	
Name	North	East	Height		Name	Latitude	Longitude	Altitude
🔶 Left Tip	6577300.628	543947.258	61.892	٠	Left Tip	31.769830903	118.727103127	48.147
🔷 Right Tip	6577299.715	543947.871	61.876	٠	Right Tip	31.769821024	118.727104133	48.130
🔶 Main Antenna	6577297.351	543940.996	58.554	٠	Main Antenna	31.769826122	118.726965042	47.932
🔷 Aux Antenna	6577299.167	543939.727	58.585	•	Aux Antenna	31.769847098	118.726963247	47.979

③System status

Display hardware, SN, connection status, and upgrade shortcuts; Displays the completion status of the software (calibration, project, registration status) and shortcut buttons



ᅿ Back		Syste	m Status		
Hard	lware				
Body Sensor	IS300		•	Connected	😴 upgrade
Boom Sensor	IS300		•	Connected	😴 upgrade
Stick Sensor	IS300		•	Connected	😴 upgrade
Attachment Sensor - Coupler	IS300		•	Connected	🝠 upgrade
Receiver	MC300			Can connected Serial connected	😴 upgrade

④System log

Select the sensor or host log, turn on the automatic log function, click the [package] button, and the log will be packaged to the root directory

10:57		系统日志		● * L & ≈ mo package
MANUAL LOG				
	START SENSOR LOC		START RECEIVER LOG	
SENSOR LOGGING				
AUTOMATIC LOG				
关闭 打开	SENSOR LOG			

⑤Debug

Real-time information on sensor angles is displayed



sensor	body	boom	secBoom	stick	rocker	bucket	sens body boo secB stick rock buck
X(°)	-0.01	39.94	27.05	-86.79	-30.38	13.39	or m oom er et
Y(°)	0.80	1.05	0.76	0.64	-0.04	-0.89	X(°) -0.01 39.9 27.0 -86.7 -30.3 13.3
Z(°)	62.16	34.30	50.34	28.74	31.98	-159.71	4 5 9 8 9
AX(g)	0.00	0.00	0.00	0.00	0.00	0.00	Y(°) 0.80 1.05 0.76 0.64 -0.04 -0.89
AY(g)	0.00	0.00	0.00	0.00	0.00	0.00	Z(°) 62.1 34.3 50.3 28.7 31.9 -159.
AZ(g)	0.00	0.00	0.00	0.00	0.00	0.00	
GX(°/s)	0.00	0.00	0.00	0.00	0.00	0.00)
GY(°/s)	0.00	0.00	0.00	0.00	0.00	0.00	AY(a 0.00 0.00 0.00 0.00 0.00 0.00
GZ(°/s)	0.00	0.00	0.00	0.00	0.00	0.00	
MOUNT	0	2	2	2	2	0	sens body boo secB stick rock buck
STATE							or m oom er et
VER.	NA	NA	NA	NA	NA	NA	X(*) -0.01 39.9 27.0 -86.7 -30.3 13.3
							Y(°) 0.80 1.05 0.76 0.64 -0.04 -0.89
							7(°) 62 1 34 3 50 3 28 7 31 9 -159
sensor	body	boom	secBoom	STICK	rocker	bucket	6 0 4 4 8 71
X(°)	-0.01	39.94	27.05	-86.79	-30.38	13.39	AX(a 0.00 0.00 0.00 0.00 0.00 0.00
Y(°)	0.80	1.05	0.76	0.64	-0.04	-0.89)
Z(°)	62.16	34.30	50.34	28.74	31.98	-159.71	AY(a 0.00 0.00 0.00 0.00 0.00 0.00
AX(g)	0.00	0.00	0.00	0.00	0.00	0.00	
AY(g)	0.00	0.00	0.00	0.00	0.00	0.00	
AZ(g)	0.00	0.00	0.00	0.00	0.00	0.00	
GX(°/s)	0.00	0.00	0.00	0.00	0.00	0.00	
GY(°/s)	0.00	0.00	0.00	0.00	0.00	0.00	
GZ(°/s)	0.00	0.00	0.00	0.00	0.00	0.00	

⑥Develop

Advanced menu, please use it under the guidance of an engineer

2.3.2.3 System settings

①Antenna offset

When there is a fixed error between the system elevation and the actual elevation, the error can be eliminated by adjusting the antenna elevation

When the system elevation is higher than the actual elevation, the antenna elevation offset is negative

When the system elevation is lower than the actual elevation, the antenna elevation offset is positive

Click [Reset] to quickly reset the antenna elevation offset to 0

Please calculate the fixed error by at least 3 attitudes

🗂 Back	Antenna Offset
	Antenna Offset — 0.00 m +
	Reset
	× Cancel



②Buckets

Preview the bucket list and bucket size information, edit/add/delete the bucket, please refer to the 《TX73 Installation and Calibration Manual》 - Bucket Configuration for details



③Calibrate

Advanced menu, hidden by default, click Admin model, enter password: mcnav2025, you can unhide the menu

Please refer to the 《TX73 Installation and Calibration Manual》 for the calibration method of the system.

④Views

According to your preference, you can configure different presets, you can choose 3D view/side view/front view/fill view



Back	Views	
Reset 1	set 2 🚱 Preset 3	+
Single view	•	
Double views	🗊 🧭 🛄 CUT Side View	
Triple views	-	
Quadruple views	🗊 🏈 🚊 CUT Front View	📦 🌒 🛄 CUT 3D View
		Cancel

⑤Light bar

The target display can be turned on/off, the target step value can be modified, and the display content of the left target, right target, and upper target can be configured

ڬ Back	Light Bar
	Left Light Bar Function Selection
	Cut/Fill - Guidance>
	Image: Right Light Bar Function Selection
Left&right light bar tolerance	Cut/Fill - Guidance
- 0.02 m O +	
Top light bar tolerance	Top Light Bar
- 0.02 m 3 +	Side - Guidance
	X Cancel V Save

⑥Text ribbon

According to your preferences, select the reference information, click the display button, you can display the reference information at the bottom of the Home, and long-time press the bottom to quickly enter the interface



	Text Ribbon	6 Show
Cut/Fill - Left	Cut/Fill - Mid	
Cut/Fill - Right	Design height	- Left
Cut/Fill-L Cut/Fill-R DH-L	Left Cut/Fill - M East - G	Angle Diff Height - G
× Cancel	~ Co	onfirm

⑦Language and region

Select the desired language and time zone to switch between language and time

ڬ Back	Language and Region
	Language English > Time Zone 中国标准时间 >

(8) Alarm

Turn on or off the alarm function for approaching the cut-and-fill amount/guide line, and configure the alarm ringtone



🗂 Back	Alarm
SURFACES	SYSTEM
Approaching Design Sound	
Alarm0	>
Approaching the side Sound	
Alarm0	>
	Cancel

④Admin model

Administrator mode, default password mcnav2025, is turning off by default, when opened, the calibration menu will appear, you can change the password according to personal needs

Admin mode	
更改密码	
取消 进入	

2.3.3 Control

2.3.3.1 Display mode

Tap to change day/night mode to adjust the brightness to protect your eyes



			CONT	ROL
Display Mode		View Preset		
	Light	Preset 1	Preset 2	Preset 3
Other settings	<u>.</u>			1. ddt d
Sounds	100 %	Brightness		10 %

2.3.3.2 View preset

Adjust the preset view, and the view display content can be modified in Configuration--View Configuration

соммон			CONT	ROL	
bisplay Mode	Light	View Preset	Preset 2	reset 3	
Other settings Sounds	100 %	Brightness		10 %	
	-				
			CONT	ROL	
Display Mode	Light	View Preset	Preset 2	reset 3	
Other settings	100 %	Drinkterer		10.%	
Sounds		Brightness		10 %	



2.3.3.3 Other

Swipe to adjust the sound and brightness

