

DATE: **August 23, 2023**

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RE: Karcher MIS User Guide

The purpose of this guide is to outline the features and functionality of our new Karcher Software Suite.

Main screen



Automatic Updates

If an update is available the application will automatically detect this and prompt the user to download the newest version. User can either install the update now or defer it until later. If the user decides to defer it an "Update" button will appear at the top-right corner of the window.

Download Documentation

The application gives the user the ability to download all relevant firmware, documentation, and drivers needed with a single button within the interface as shown below. Once a user clicks on this button a prompt comes up instructing the user to choose an appropriate place on their computer to name and save the files. Make sure to use this feature to assure that the latest firmware and documentation are being referenced.



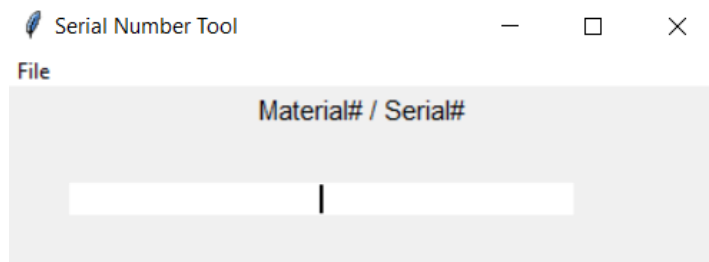
T-Rex Specific Operations

Connecting to/Programming the machine

Programming the T-Rex machine works the same as with previous software. Please refer to the Updating Firmware section of the “Field Service Programming Instructions” for the T-Rex version (Deluxe or Kira) that is being used.

Serial Number Tool

When clicking the ‘Serial Number Tool’ button on the main screen a new window will appear that lets the user program a Serial Number onto the machine. Serial number should be entered as a string of numbers with no spaces or dashes such as ‘10121010000001’.



CAN Interpret Tool

When clicking the ‘CAN Interpret Tool’ button on the main screen a new window will appear that will display any errors or lockouts that are currently active on the T-Rex Machine. Example screen shown below. When an error is active on the machine the relevant error will flash yellow until it has been cleared.

MEMORANDUM

CAN Interpret Tool							
UIDs							
00-NoUniqueError	32-BrushMotorOpenCircuit	01-BrushMotorOverHeat	02-BrushMotorOverCurrent	03-BrushMotorShort	04-BrushMotorLowFET	05-BrushMotorHighFET	06-BrushInternalMCErr
07-BrushUnknownMCErr	08-BrushExtTempSenseErr	33-BrushHighVolProtectErr	09-SideBroomOverCurrent	0A-SideBroomOverCurrent	0B-SideBroomOpenCircuit	0C-SideBroomShort	0D-SideBroomLowFET
0E-SideBroomHighFET	0F-SideBroomInternalMCErr	10-SideBroomUnknownMCErr	11-SideBroomExtTempSenseErr	1A-SideBroomHighVolProtectErr	1B-SideBroomManuallyReleased	1C-SideBroomShort	1D-SideBroomLowFET
15-DriveMotorHighFET	16-DriveMotorInternalMCErr	17-DriveMotorUnknownMCErr	18-DriveMotorExtTempSenseErr	19-DriveMotorHighVolProtectErr	20-DriveMotorManuallyReleased	21-DriveMotorOpenCircuit	22-DriveMotorOverHeat
1C-VacuumMotorShort	1D-VacuumMotorLowFET	1E-VacuumMotorHighFET	1F-VacuumMotorInternalMCErr	20-VacuumMotorUnknownMCErr	21-VacuumMotorOverCurrentErr	22-VacuumMotorHighVolProtectErr	23-VacuumMotorOpenCircuit
23-PressureSwitchTrip	24-ActOverCurrent	25-DriveMotorDMCOverTemp	26-BrushMotorDMCOverTemp	27-SideBroomDMCOverTemp	28-VacuumDMCOverTemp	29-TractionDMCFETTempErr	2A-BrushDMCFETTempErr
2B-SideBroomDMCFETTempErr	2C-VacuumDMCFETTempErr	2D-SerialNumMissing	2E-LithiumCANCommErr	2F-TooManyErrors	30-ContactorWeldErr	31-ContactorOpenErr	32-BattDeadNoFunction
31-BagMissing	32-BattDeadTransportOnly	3F-BatteryHighVoltage	40-BatteryLowVoltage	41-BatteryHighTempDischarge	42-BatteryLowTempDischarge	43-BatteryHighTempCharge	44-BatteryLowTempCharge
3D-BothDMCConnectionFailure	3E-GeneralBMSAlarm	3F-BatteryHighVoltage	40-BatteryLowVoltage	41-BatteryHighTempDischarge	42-BatteryLowTempDischarge	43-BatteryHighTempCharge	44-BatteryLowTempCharge
45-BatteryHighDischargeCurrent	46-BatteryHighChargeCurrent	47-BatteryMissing	48-BatteryInternalBMS	4A-ChargerH002	4B-ChargerH003	4C-ChargerH004	4D-ChargerH001
4E-ChargerH002	4F-ChargerH003	50-ChargerH004	51-ChargerH005	52-ChargerH006	53-ChargerH007	54-ChargerH008	55-ChargerH009
56-ChargerH001	57-ChargerH002	58-ChargerH003	59-ChargerH004	5A-ChargerH005	5B-ChargerH006	5C-ChargerH007	5D-ChargerH008
5E-ChargerH009	5F-ChargerH010	60-ChargerH011	61-ChargerH012	62-ChargerH013	63-ChargerH014	64-ChargerH015	65-ChargerH016
A0-ChargerH017	A1-ChargerH018	A2-ChargerH019	A3-ChargerH020	A4-ChargerH021	A5-ChargerH022	A6-ChargerH023	A7-ChargerH024
A8-ChargerH025	A9-ChargerH026	AA-ChargerH027	AB-ChargerH028	AC-ChargerH029	AD-ChargerH030	AE-ChargerH031	AF-ChargerH032
B0-ChargerH033	B1-ChargerH034	B2-ChargerH035	B3-ChargerH036	B4-ChargerH037	B5-ChargerH038	B6-ChargerH039	B7-ChargerH040
B8-ChargerH041	B9-ChargerH042	BA-ChargerH043	BB-ChargerH044	BC-ChargerH045	BD-ChargerH046	BE-ChargerH047	BF-ChargerH048
C0-ChargerH049	C1-ChargerH050	C2-ChargerH051	C3-ChargerH052	C4-ChargerH053	C5-ChargerH054	C6-ChargerH055	C7-ChargerH056
C8-ChargerH057	C9-ChargerH058	CA-ChargerH059	CB-ChargerH060	CC-ChargerH061	CD-ChargerH062	CE-ChargerH063	CF-ChargerH064
D0-ChargerH065	D1-ChargerH066	D2-ChargerH067	D3-ChargerH068	D4-ChargerH069	D5-ChargerH070	D6-ChargerH071	D7-ChargerH072
86-SideBroomANINLimit	87-BrushMotorPWMLimit	88-BrushMotorLimited	89-BrushMotorTempHigh	8A-BrushMotorANINLimit	8B-DriveMotorPWMLimit	8C-DriveMotorReverseLimit	8D-DriveMotorForwardLimit
8E-DriveMotorTempHigh	8F-DriveMotorANINLimit	94-DriveMotorPWMCurrentLimit	90-VacuumMotorPWMLimit	91-VacuumMotorLimited	92-BattDeadAllFunction	93-BattCharging	
Lockouts							
E-STOP	Key Switch	Door Interlock	Bag Presence	Brake Release	Reserved	Operator presence invalid state	Fault State
AC power to charger	Low Battery	Dead Battery	Stalled Actuator	Bag Full	Brake Disconnected	Error State	Missing Battery CAN Messages
Missing Serial Number	Contactor Welded	Contactor Coil	Contactor Pre-Charge	Contactor Open	Maintenance Required	CAN Timeout	CAN1 Timeout
Bitmask Error Field							
Brush Overload	Brush Stall	Brush Call for Service	Side Brush Overload	Side Brush Stall	Side Brush Call for Service	Drive Brake	Drive Over Call for Service
Drive Stall	Drive Overload	Vacuum Call for Service	Actuator Stall	Vacuum Stall	Vacuum Unknown	PCB Temperature	Unknown
Transportable error/Missing Bag	Battery Low	Battery Dead	Throttle Neutral Warning	Low Battery Warning	Serial Number	Call for Service	Error Corrected
Brush warning	Side Brush Warning	Change Path	Service Soon	Battery Charge			

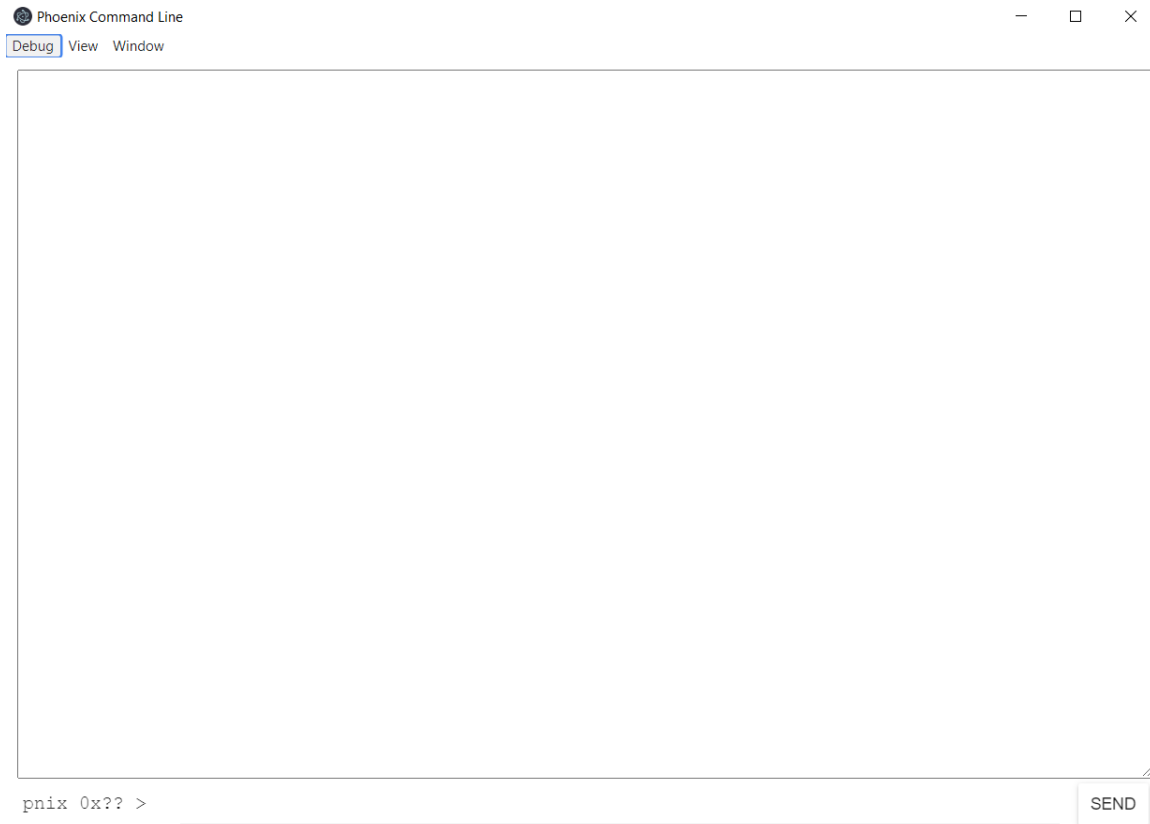
CAN Spy

This functionality is currently hidden behind 'Engineering' access. Access is granted by logging in with 'lab' in both username and password fields. When clicking on the 'CAN Spy' button a new window is launched. This window allows users to spy on the CANbus messages. This will mainly be used for diagnostic purposes for Engineering.

CLI Window

This functionality is currently hidden behind 'Engineering' access. Access is granted by logging in with 'lab' in both username and password fields. When clicking on this icon the Phoenix Command Line Interface is launched. This is primarily to be used by Engineering for diagnostic purposes.

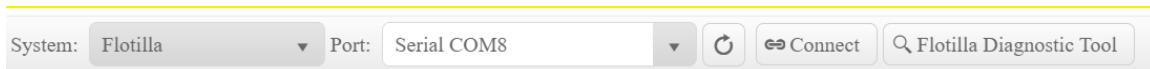
MEMORANDUM



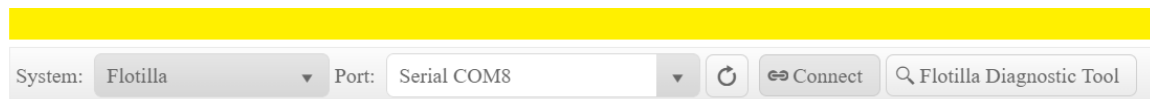
Flotilla Specific Operation

Connecting to/Programming the machine

Make sure that all other USB devices are disconnected from the computer to ensure that we do not connect to something that is not a Flotilla machine. Most computers will have a few options under the 'Port' drop-down menu. Check which ports are listed without any machine attached to determine which ones are NOT the Flotilla machine. Plug in the Flotilla machine USB and power cord and observe that a new Port is added to the drop-down list. This is the Flotilla machine port and we should select that new port in the drop-down list.



Click the 'Connect' button to open communication with the Machine for programming.



Click the 'Update Software' button to bring up the programming interface.

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Update Software

Software Update

×

File:

C:\Users\us60k20188\Documents\Flotilla Firmware\manifest.json

✓

 Controller Application

✓

 HMI Application

✓

 HMI Flash #1

Start

Cancel

Click the folder icon to open the file explorer, and navigate to and select the 'manifest.json' file that has been provided. Make sure that all options are selected as shown above. Next, hit the 'Start' button to begin programming the Flotilla device. Wait until all three sections are complete before moving on as any interruption will cause the device to fail programming and we will have to try again.

MEMORANDUM

Software Update

×

File:

C:\Users\us60k20188\Documents\Flotilla Firmware\manifest.json

☒ Controller Application

Complete

☒ HMI Application

Complete

☒ HMI Flash #1

Complete

Start

Close

Flotilla Diagnostic Tool

The Flotilla Diagnostic tool has been provided to help diagnose any possible failures or issues the machine is having. Launch the tool by hitting the 'Flotilla Diagnostics Tool' button as shown below. NOTE: If we do not hit 'Disconnect' on the main application window before opening and clicking 'Connect' on the Flotilla Diagnostic Tool we will encounter an error telling us to disconnect from all other applications. This is because the machine cannot connect to more than one tool at a time.

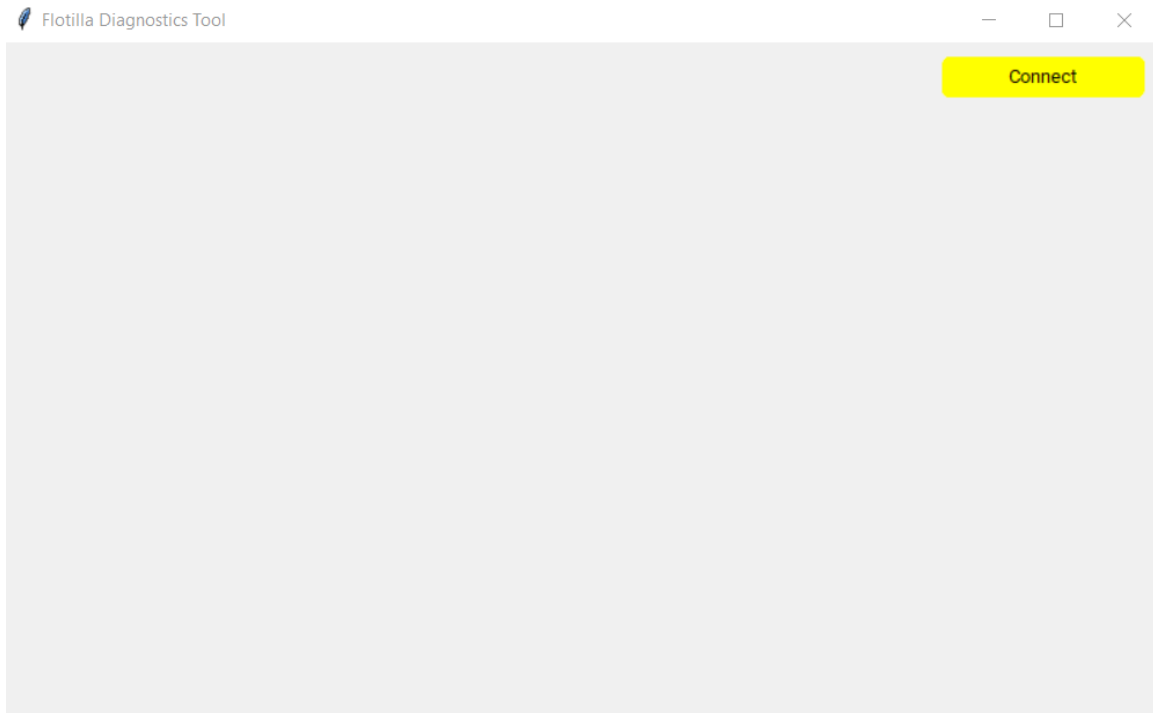
System: Flotilla Port: Serial COM8

↺ Connect

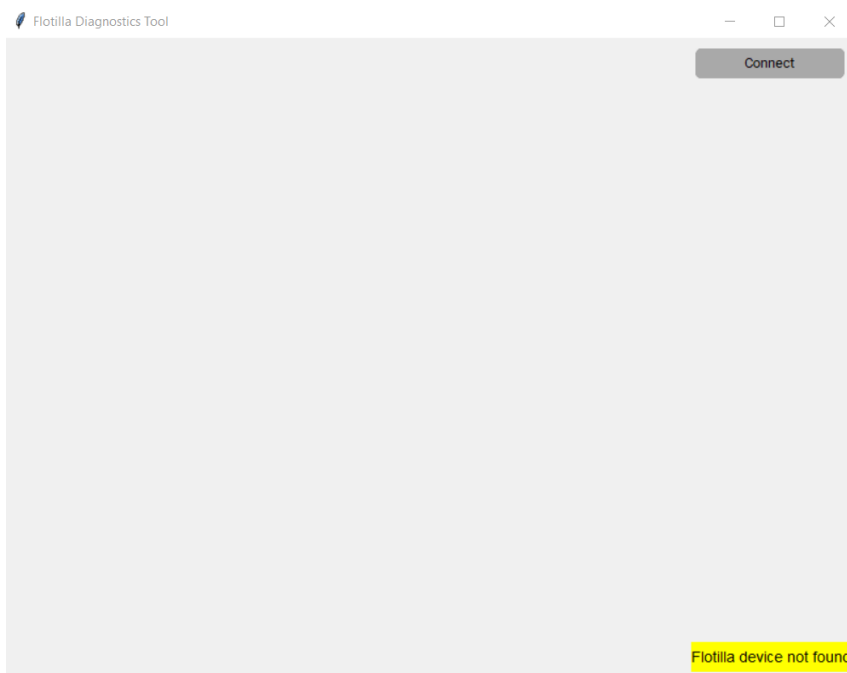
Flotilla Diagnostic Tool

Once a Flotilla machine has been plugged into the USB port on the computer we can click the 'Connect' button on the application to open the main screen.

MEMORANDUM

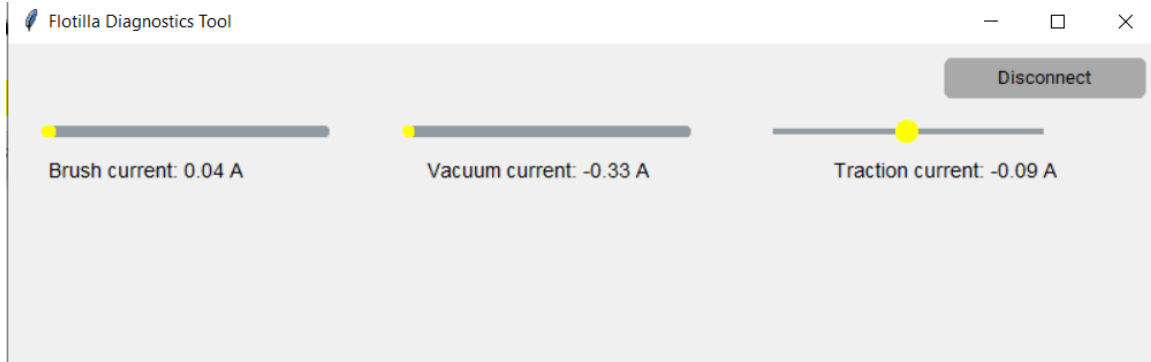


If no machine is found an error message will show on the bottom-right of the screen indicating that either the machine is not plugged in, or there is an issue with the board and it may need to be replaced or reprogrammed. This error message is shown below.



Upon successful connection to a Flotilla machine, we are greeted with another screen that will show the current draw readouts of the three motors in Amps as shown below. This is useful to determine if the motors are getting the appropriate power. The traction motor has both a forward and reverse direction, so the bar is centered to allow for representation of either direction. Left is reverse and right is forward.

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If an error is active on the machine, it will appear highlighted in yellow in the middle of the screen. If no error is present on the screen, it can be assumed that the machine is reporting no errors. An example of an error present is shown below.

