



How to use Steer Ready (Hydraulic) tractor

Introduction

With connecting to original Hydraulic **CANBUS** and **PWM** interface, users can control tractor to do auto steering in the CHCNAV software without motor drive.

Also current supported Hydraulic tractors with **CANBUS** are listed as below, pls kindly refer to this form, also pls correct them if there are something wrong.

Brand	Model
CASE	optum 2704/optum 3004/Magnum 3154/Magnum 3404/puma 230
New Holland	T7.195/T7.230/T7.255/T7.295/T7.315
Massey Ferguson	MF5600/MF5700/MF6600/MF6700/MF7600/MF8600/MF8700/5s/6s/7s/8700s/8S.205
Deutz	Series 6185/Series 7250/Series9340
Steyr	6300

Prerequisite

Demo software and firmware version:

https://chcnavigation.jianguoyun.com/p/DaMfWxgQtq_UCxjdoZMFIAA

Harness Connection

CANBUS : Two cables PN: 4103020172&4103020173



PWM: 4103020171



PLC controller PN: 4105170013





CANBUS installation

Notes

1. Different brands or different types has different Hydraulic CANBUS location and Hydraulic switch button in the cab, so it is necessary to find it correctly. For instance,

New Deutz Series9



E---CAN H F---CAN L



Turn on the first switch



Long press to turn on the second switch



Deutz Series 6



E---CAN H F---CAN L



Only turn on one switch



2. Currently the cable interface need to be made to be compatible with those tractors in some time.

Steps

1. Find CANBUS interface in the Hydraulic tractor cab correctly, here take Steyr 6300 tractor as an example,



2. Try to find the correct CAN L and CAN H pinouts (H/J, or C/D)in this interface with tractor documentation or some can tool.
3. Connect to this interface with CHC CANBUS cable or customized cable depending on H/J or C/D pinouts, also in the middle side of the CANBUS cable, there are three connectors, one is male and another two are female, pls connect one of them as well depending on H/J or C/D pinouts.





4. Connect to CHC PLC controller COM2 with another end of CANBUS cable1 (4103020173), also connect to PLC controller COM1 with another CANBUS cable2 (4103020172) connecting to motor interface of NX510 main cable for supplying power and data communication.



5. Connect to power with NX510 main cable in the tractor cab or tractor battery depending on users.



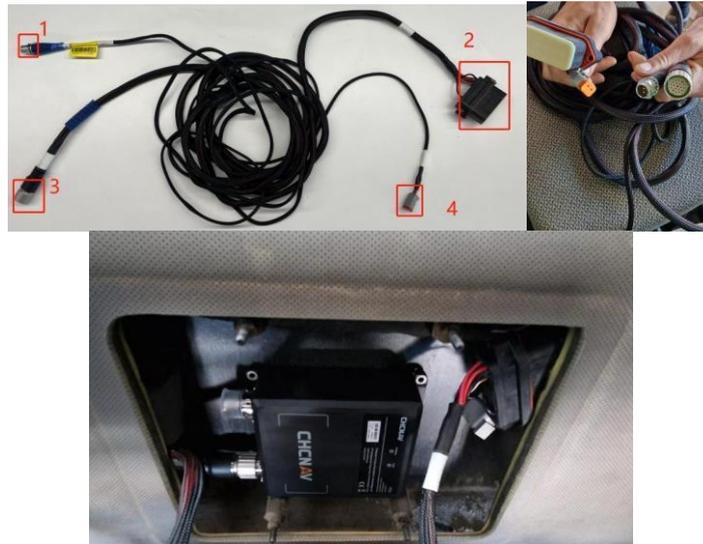
6. Install NX510 PA-3, camera and tablet, etc on the top of tractor as the regular procedure, the place is better to close to rear wheel, also PLC controller can be installed at the any place in the cab without leveling or some special notifications.



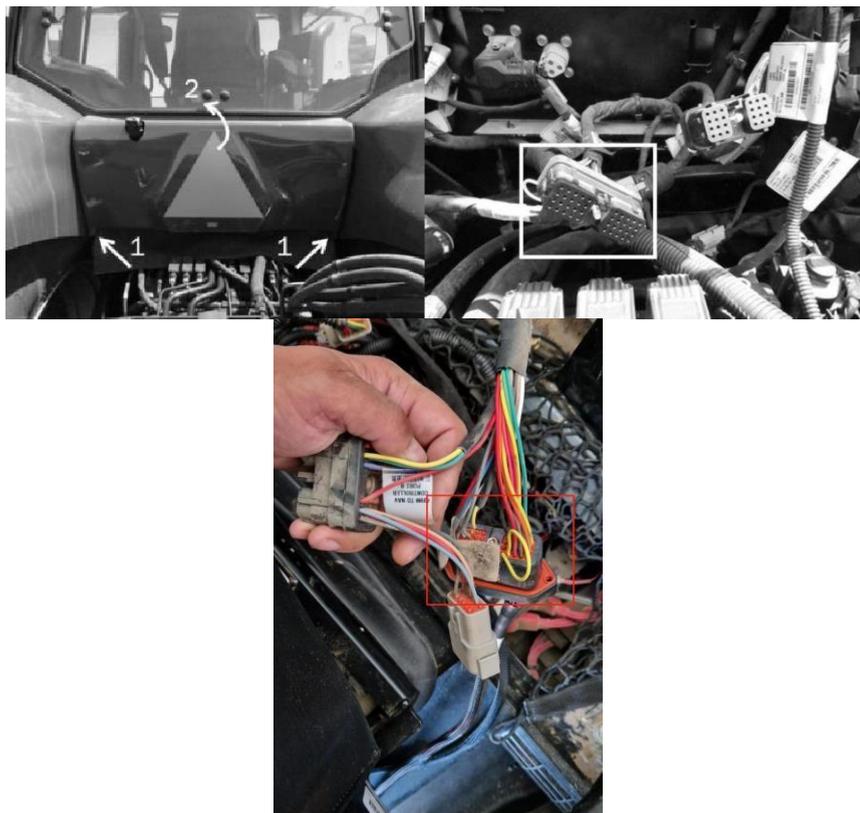
PWM installation

Steps

1. There are four connectors for PWM cable,
 Port 1 is connected to the motor connector on the NX510 main cable
 Port 2 is connected to PWM 40 pin connector on the tractor
 Port 3 is connected to CHC PLC controller
 Port 4 is connected to the enable solenoid on the tractor.



2. Find the 40-pin Deutsch connector on the tractor rear side (Different location for different vehicles)





3. Open the hood by pulling on the latch and lifting on the handle located at the front of the hood. Route the black 2-pin Deutsch enable solenoid connector on the Interface. Cable under the right side of the cab up to the factory steering valve where the enable solenoid is located.



4. From the right side of the vehicle, reach over to the left side of the factory steering valve and unplug the factory 2-pin Deutsch enable connector. Plug the 2-pin Deutsch connector in place of the factory connector.



5. The vehicle is equipped with a guidance enable rocker switch, which allows power to the steering valve. The switch is located on the right hand console. This switch must be set to the ENABLE position in order to auto steer the machine.

NOTE: If this switch is left in the ENABLE position during vehicle start up, it may need to be cycled off and on to unlock the guidance system.



6. The vehicle is equipped with a guidance engage button. Press the button to engage/disengage the auto steer system. The operator can either engage the autosteer with the button switch on the console or with the display.

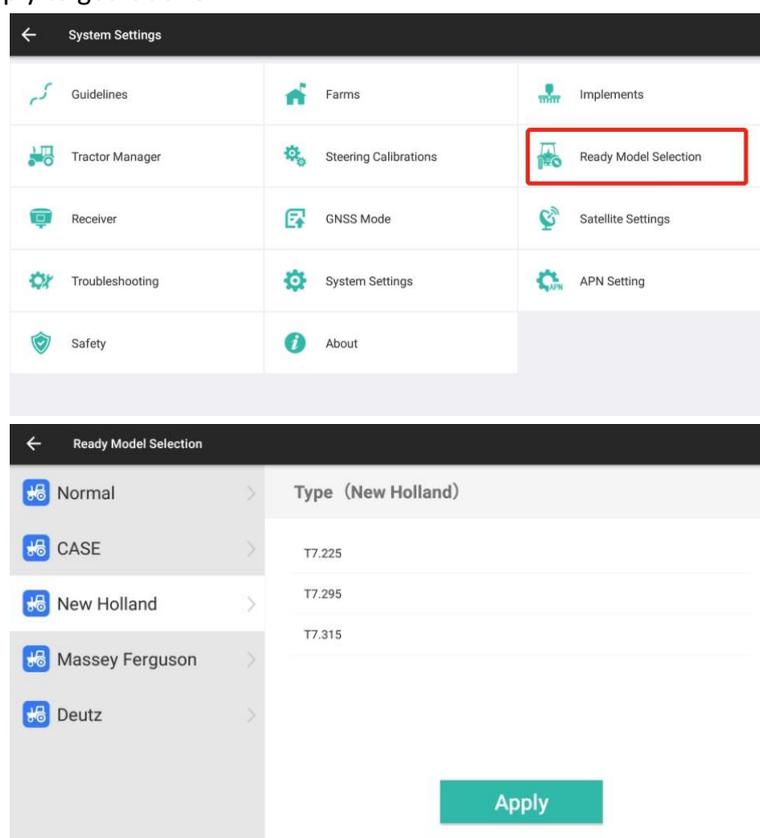


Post-Installation Checklist

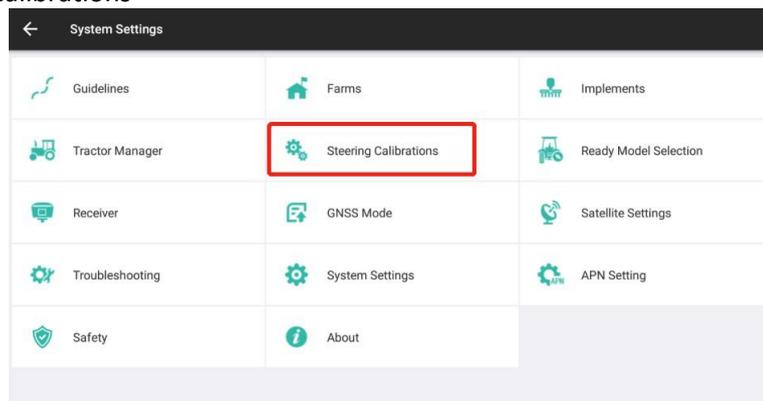
- Display Bracket and Display installed, and all fasteners are tight.
- GPS antenna is installed.
- Steering Controller Module is installed firmly to frame, and all fasteners are tight.
- All cable ends and terminations are connected.
- All cables are secured with cable ties.

Software operation

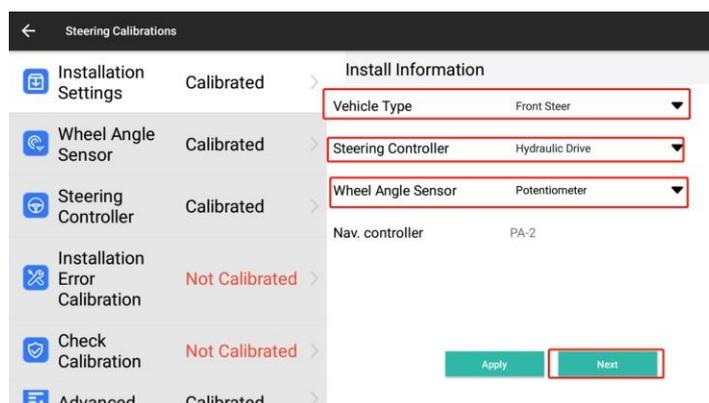
1. Start the tractor, then try to find the hydraulic button on the right side of the cab then turn it on
2. Go to settings and click Ready Model Selection, then select the correct brand and model, finally click Apply to get it done.



3. Click Steering Calibrations

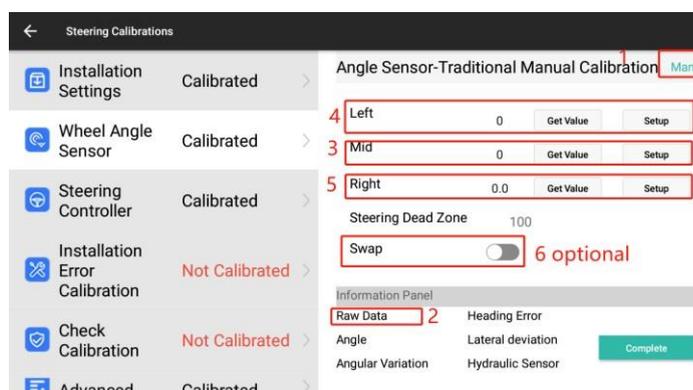


4. Select the correct vehicle type, steering controller and wheel angle sensor as the picture below

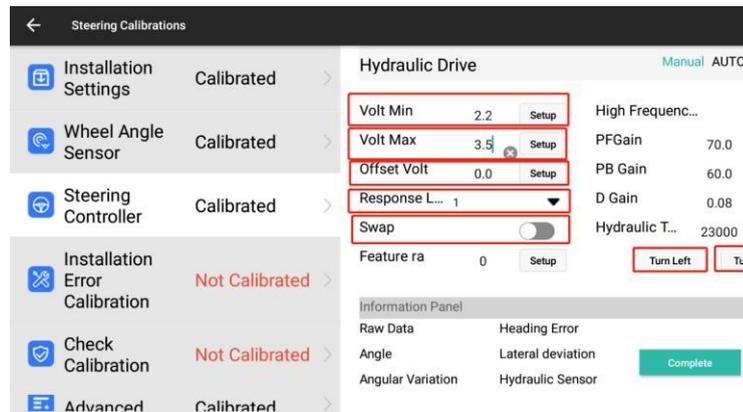


5. It is necessary to calibrate the original angle sensor manually for this tractor

- 1) Select manual mode
- 2) Turn the wheel to see if the raw data changes all the time
- 3) Turn the wheel to the middle to get a value then set up
- 4) Turn the wheel to left side with around 20 degrees to get a value then set it up
- 5) Turn the wheel to right side with around 20 degrees to get a value then set it up
- 6) Left value should be less than Mid value, if it is larger than it, pls click Swap then repeat it again



6. Also it is necessary to calibrate the hydraulic system
- 1) Set Volt Min around 2.0-3.0 and Response as 1, then try to turn left and turn right, the wheel should turn a little bit within 5 degrees or just a light vibration/shake, also the vibration/degrees to right and left should be similar. If not working properly, pls adjust Volt Min and offset volt to make it work properly.
 - 2) Set Volt Max around 3.5- 4.5 and Response as 100, then try to turn left and turn right, the wheel should turn around 20 degrees, also the degrees to right and left should be similar. If not working properly, pls adjust Volt Max and offset volt to make it work properly.



7. Finally it is necessary to do the installation calibration as regular NX510 procedure.



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