HAND–HELD PROGRAMMER

VISTA Power Chair
1st Generation
Norlha Controller

Instruction Manual

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COMPONENT COMPOSITION

LIQUID-CRYSTAL DISPLAY AREA

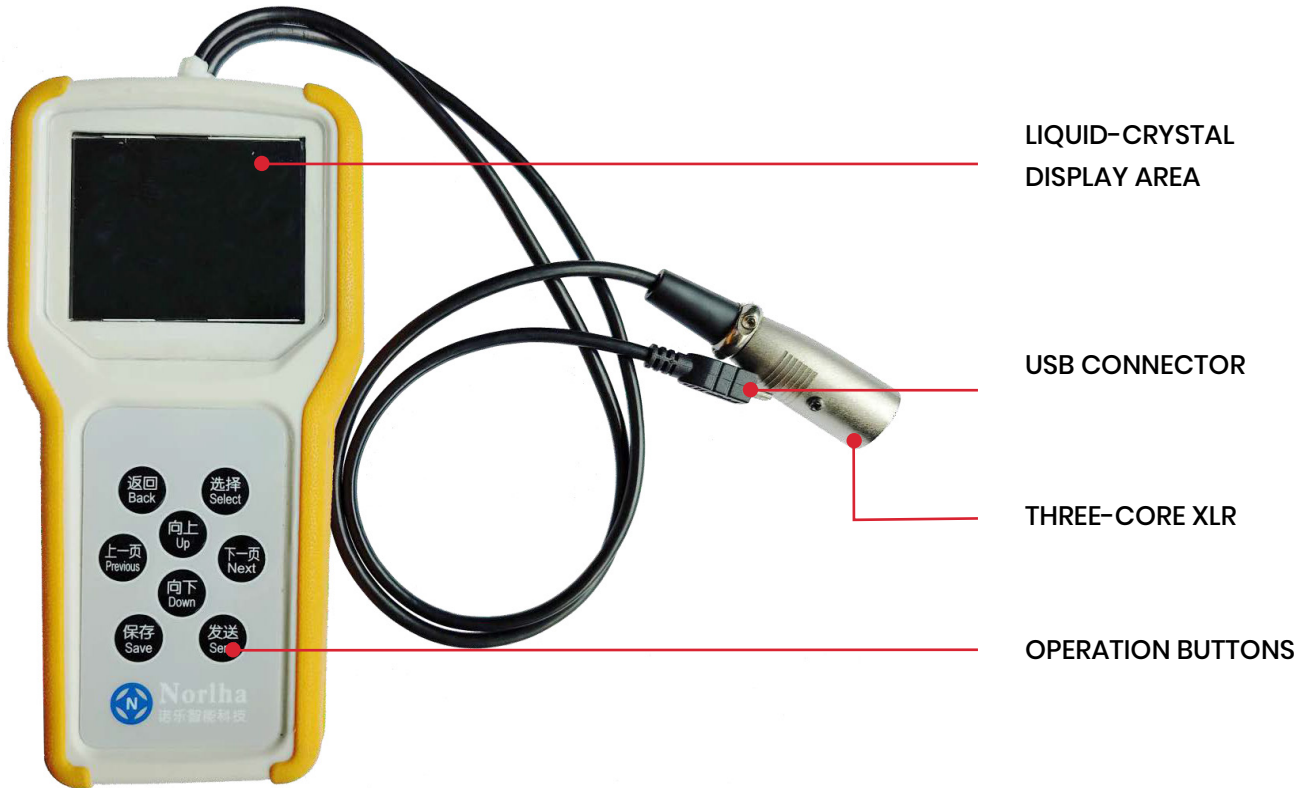USB CONNECTOR

THREE-CORE XLR

OPERATION BUTTONS

Figure 1 Appearance View

1. LIQUID-CRYSTAL DISPLAY AREA

It is used to display the interface to be operated, equipped with 2.6-inch TFT true color LCD.

2. OPERATION BUTTONS

They are taken as the man-machine interface input interface to respond to the actions required by the user.

3. USB CONNECTOR

It refers to the corresponding connector which can be plugged in the controller to supply power to the hand-held programmer and perform communication. The power supply voltage is DC-5V.

4. THREE-CORE XLR (NOT APPLICABLE)

It refers to the corresponding connector which can be plugged in the controller to supply power to the hand-held programmer and perform communication. The power supply voltage is DC-5V.

SPECIFICATION PARAMETERS

1. SCOPE OF APPLICATION

Travel Buggy in collaboration with Norlha controllers produces brushed integrated wheelchair controller (equipped with three-core XLR), brushed separated wheelchair controller (equipped with USB connector) and **brushless separated wheelchair controller** (equipped with USB connector), as well as vehicle for the disabled, scooter and stair climbing wheelchair controller, etc.

2. CONSIDERATIONS

This hand-held programmer is compatible with both brushed and brushless controllers. There will be a case where some development parameters only take effect for one product but are still allowed to be modified, as shown in the Section of Parameter Description for details.

OPERATION PROCEDURE

1. PLUG IN THE CONTROLLER

1. **Plug in the controller with power supply and turn on the device.**

2. Select the corresponding interface of the hand-held programmer according to the model of the controller. All integrated brushed controllers adopt "three-core XLR", while all separated brushed and **brushless controllers adopt "USB connector".**

3. After the LCD is lit, the category of the controller and the version number of the current software will be displayed. As shown in Figure 2:

   - Choose **BRUSHLESS**
   - Click "Select" on the keyboard to enter the next interface.

Figure 2 Start-up Interface

2. PARAMETER ADJUSTMENT

1. After entering the interface, place the cursor over **"Settings" and click "Select"** on the keyboard to enter the next interface.

2. Enter the interface shown in Figure 4

3. Switch different parameter interfaces via "Previous" and "Next" on the keyboard.

4. Select the parameter required to be adjusted and increase or decrease the parameter via "Up" and "Down" on the keyboard.

Figure 3 Function Selection

OPERATION PROCEDURE

5. After the parameter is modified, click "Send" on the keyboard to send the parameter. Waiting the sending results on the upper right.

6. After SEND is successful, then press "Save" on the keyboard to save the modified parameter

Remember, "Send" + "Save" to hold results of modification.

Figure 4 Parameter Interface

PARAMETER DESCRIPTION

Travel Buggy recommends only adjusting those parameters highlighted below. Adjusting other parameters should be done strictly through the advice of a qualified service technician or under Travel Buggy direction.

1. SPEED CONTROL

Figure 5 Speed Control Interface

Table 1 Description of Speed Control Parameters

Parameter Name	Numerical Meaning	Modification Description
Max. Forward Speed	Percentage	Max. Speed at Gear-5 Forward
Max. Backward Speed	Percentage	Max. Speed at Gear-5 Backward
Max. Turning Speed	Percentage	Max. Speed at Gear-5 Turning
Min. Forward Speed	Percentage	Max. Speed at Gear-1 Forward
Min. Turning Speed	Percentage	Max. Speed at Gear-1 Turning

⚠ **NOTE:**

1. All parameters in the above interface only represent the percentage of the controller's max. power output. The final running speed of the wheelchair is closely related to "load size", "motor power", "battery capacity", "wheel diameter of wheelchair" and "frame structure", etc. Our company cannot specify the running speed of the wheelchair when the parameter is 100. The users may select the optimal parameter according to the related parameters above.
2. When the max. forward speed is set to 100, the controller can no longer speed up. If a higher speed is required, it's necessary to replace the motor.
3. Gear 1-5 speed of the controller is evenly distributed. After setting "Max.Value" and "Min.Value" by the user, the program will automatically distribute the intermediate value.
4. "Min. Backward Speed" is 80% of "Min.Straight-ahead Running Speed" by default. This parameter does not need to be set.

PARAMETER DESCRIPTION

2. POWER REGULATION

Figure 6 Power Regulation Interface

Table 2 Description of Power Regulation Parameters

Parameter Name	Numerical Meaning	Modification Description
Forward Start Waiting	It is only limited to the acceleration frequency division of straight-ahead running when starting from still	The larger the parameter, the slower the start will be.
Turning Start Waiting	It is only limited to the acceleration frequency division of turning when starting from still	The larger the parameter, the slower the start will be.
Forward Acceleration	It refers to the acceleration in the straight-ahead direction which affects "rush" or "no rush" of the wheelchair when it goes straight ahead.	The larger the parameter, the faster the wheelchair responds; for wheelchairs with large transmission gap, the greater the value, the stronger the rough feeling will be.
Turning Acceleration	It refers to the acceleration in the turning direction which affects "rush" or "no rush" of the wheelchair when it turns.	The larger the parameter, the faster the wheelchair responds;for wheelchairs with large transmission gap, the greater the value, the stronger the rough feeling will be.

PARAMETER DESCRIPTION

Table 2 Description of Power Regulation Parameters (continue)

Parameter Name	Numerical Meaning	Modification Description
Initial Speed of Start	It refers to the min. output of the controller, which is a percentage parameter.	This parameter is only applicable to motors with electromagnetic brakes,which shall be increased when the wheelchair is started on the ramp and slides backward.
Acceleration Time of Start	It refers to slow start duration in unit of controller built-in time.	Increasing this parameter makes the wheelchair start slowly; while reducing this parameter changes the wheelchair to a rigid start.

⚠ **NOTE:**

1. Correlation between start waiting and acceleration time
   Taking the straight-ahead running as an example, with the parameters shown in Figure 7, if the wheelchair is started from still, then within the starting acceleration time (30 time units), the actual acceleration= straight-ahead acceleration/(straight-ahead start waiting+1), i.e. 40/(2+1)=17.

3. MOTOR CONFIGURATION

Figure 7 Motor Configuration Interface

PARAMETER DESCRIPTION

Table 3 Table of Motor Configuration Parameters

Parameter Name	Numerical Meaning	Modification Description
Left-motor Configuration		Choose whether the left-motor needs to be reversed
Right-motor Configuration		Choose whether the right-motor needs to be reversed
Exchange of Left- and Right-motors		Select the output of left- and right-motors for rear delivery
Braking Mode		"Electromagnetic Brake", "Electronic Brake (Hill-holding)" or "No Brake" can be selected
Braking Distance	Percentage	The larger the parameter, the longer the braking distance.

⚠ **NOTE:**

1. The factory default electromagnetic brake mode can be configured as no brake and cannot be configured as hill-holding.

2. The factory default hill-holding brake can be configured as no brake and cannot be configured as electromagnetic brake.

3. The factory default is no brake controller, which cannot be configured as electromagnetic brake and hill-holding.

4. LINEAR CALIBRATION (NOT RECOMMENDED TO ADJUST)

Figure 8 Linear Calibration Interface

PARAMETER DESCRIPTION

Table 4 Linear Calibration Parameters

Parameter Name	Numerical Meaning	Modification Description
Calibration Mode		Selection of compensation mode
Motor Selection		Selection of left- or right-motor compensation
Proportion of Compensation	Percentage	Proportion needed to be compensated

⚠ **NOTE:**

1. The current controller only supports manual linear calibration. The automatic calibration function is not yet open, and the current controller does not support it for the time being.

2. If the wheelchair deviates to the left when going straight, please add compensation to the left-motor; otherwise, add compensation to the right-motor.

5. OPERATION PARAMETERS

Figure 9 Operation Parameter Interface

PARAMETER DESCRIPTION

Table 5 Description of Operation Parameters

Parameter Name	Numerical Meaning	Modification Description
Sensitivity of Rocker	Effective value 0-5	This parameter takes effect when going straight and suddenly turning. The larger the parameter value, the faster the response speed of going straight and switching turning will be. If the parameter is too large, a rough feeling will be caused.
Battery Category		Select the battery to be matched as lead-acid battery or lithium battery
Under voltage Value	There is an error of plus or minus 0.8V between the actual value and the configuration value.	Configure under voltage protection voltage value of the controller
Audio Device		Choose whether to have an external horn
Volume Regulation		Regulate the volume of the horn
Reverse Volume		Configure the size of the reverse volume; no reverse prompt when it is 0.

⚠ **NOTE:**

1. Incorrect choice of battery type will lead to the deviation of power LED. For example,if a lead-acid battery is selected, the number of LED indicators may be less when it is configured as a lithium battery.

2. If a lithium battery is selected, the under voltage value must be greater than the protection voltage value of the lithium battery protection board, otherwise there will be a sudden power failure during operation; if a lead-acid battery is selected, please match the lowest charging voltage of the charger selected.

PARAMETER DESCRIPTION

6. ADVANCED OPTIONS (NOT RECOMMENDED TO ADJUST)

The parameters on this page are only used by the brushless controller; while they are not available after the brushed controller is connected.
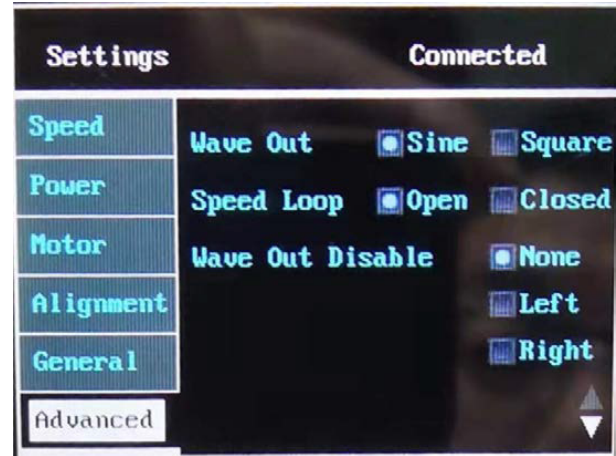

Figure 10 Advanced Option Interface-1

Figure 11 Advanced Option Interface-2

Table 6 Table of Advanced Option Parameters

Parameter Name	Numerical Meaning	Modification Description
Drive Mode		Switch "Square-wave Drive" and "Sine-wave Drive"
Speed Control Mode		Switch "Speed Open-loop" and "Speed Close-loop"
Motor Configuration Setting		Used for controller to match new motor for the first time
Phase Sequence of Left-motor	Effective value 0 -5	Regulate wire sequence of left-motor via software
Hall Sequence of Left-motor	Effective value 0 -5	Regulate Hall signal sequence of left-motor via software
Phase Sequence of Right-motor	Effective value 0 -5	Regulate wire sequence of right-motor via software
Hall Sequence of Right-motor	Effective value 0 -5	Regulate Hall signal sequence of right-motor via software

PARAMETER DESCRIPTION

⚠ **NOTE:**

1. Square-wave drive and sine-wave drive depend on the motor selected. Square-wave drive has good compatibility which can be compatible with all brushless motors;while sine-wave drive is more demanding for the motor, and not all motors can be driven.

2. Speed open-loop only means a constant voltage output is given via the controller, and the rotation speed of the motor is an uncertain value; while speed close-loop means an output voltage value is adjusted via the controller according to the rotation speed of the motor. The current controller only supports speed open-loop. Close-loop control function is not yet open, which is not supported by the current controller for the time being.

3. Motor configuration

   - *No configuration:* Both left- and right-motors output normally
   - *Left-motor configuration:* Close the output of right-motor, output only through the left-motor.
   - *Right-motor configuration:* Close the output of left-motor, output only through the right-motor.
   - *Self-learning:* The function is not yet available, which is not supported by the current controller.

4. Motor sequence: Effective value 0-5, until the motor runs normally.

5. Hall sequence: The current controller does not need to be regulated.
   For example:

   - After entering the interface, change the drive mode from "Sine" to "Square-wave".

   - After sending successfully, shut down the controller and power on again.

   - If the left-motor cannot work normally, select "Left-motor Configuration" and click to send.

   - Modify "Left-motor Phase Sequence" and click to send.

   - Shut down and restart the controller, repeating step 3 until the left-motor runs normally.

     NOTE: it's only required for the motor to run normally here, the running direction of the motor is regulated by the interface shown in Figure 8.

   - If the right-motor cannot work normally, select "Right-motor Configuration" and click to send.

   - Modify "Right-motor Phase Sequence" and click to send.

   - Shut down and restart the controller, repeat step 6 until the right-motor runs normally.

     NOTE: it's only required for the motor to run normally here, the running direction of the motor is regulated by the interface shown in Figure 8.

   - Restart again to complete the configuration.

TROUBLESHOOTING

1. THE SCREEN CANNOT BE LIT AFTER THE PROGRAMMER IS PLUGGED IN

Check whether the connector is loose and the controller is charged.

2. SEARCHING FOR DEVICE CONTINUOUSLY

Verify that the controller used is compatible with the programmer and the controller is in the power-on state while the connector is in good contact.

3. DATA TRANSMISSION FAILED

If the data transmission of a single controller fails, when the data can be sent normally after the faulty controller is replaced, it can be judged that the communication circuit of the controller is faulty, and the manufacturer shall be contacted for controller diagnosis. If the data transmission of all controllers fails, the manufacturer shall be contacted to replace the faulty hand-held programmer.

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