

NHK MEC

KE-XG

SETTINGS TOOL MANUAL

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INTRODUCTION

This manual has been prepared to ensure your correct installation and operation of the KE-XG Settings Tool via PC; this software application interfaces with the KE-XG control unit for operation settings. Please refer to KE-XG Control System Instruction Manual for details of the control system itself. In case of the KE control system transfer of ownership, please make sure to include this instruction manual.

SYSTEM REQUIREMENTS

Memory (HD)	Approx. 20MB
Memory (RAM)	Approx. 100MB
Operation System	Windows10 (32bit、 64bit) Windows11 (64bit)

※Recommend Display Size larger than 900 (pix)×720 (pix)

CAUTION: Do not move application files from installed folder

SOFTWARE DOWNLOAD

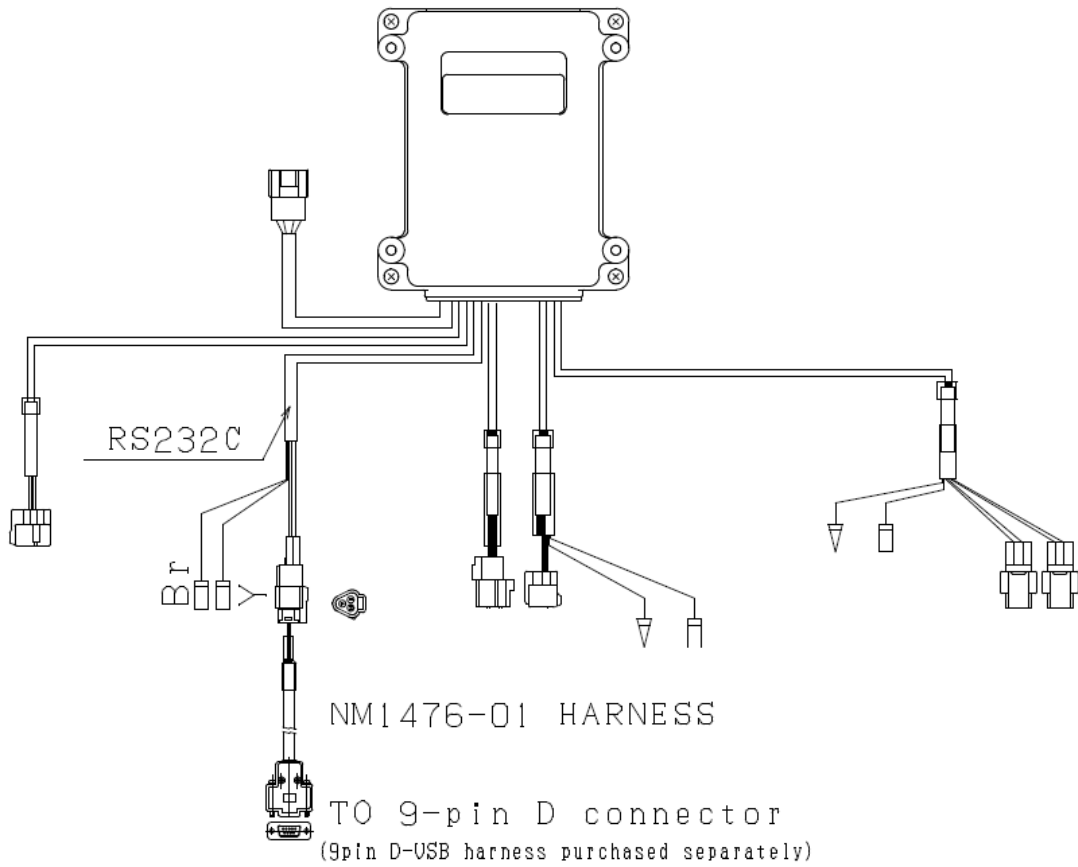
KE-XG Settings Tool software file package software can be downloaded via NHK MEC Corp. website:
<https://www.nhkmec.com/en/product/download/>

HARDWARE CONNECTION

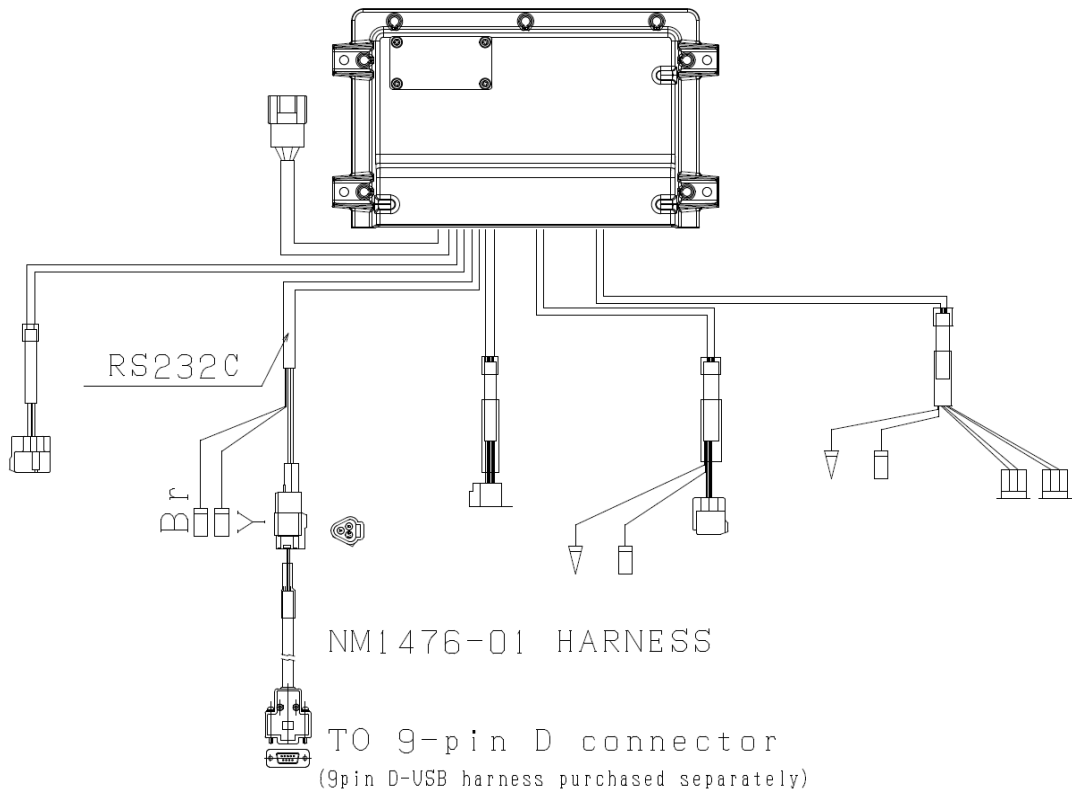
You will need a separately purchase standard USB to 9-pin D-connector serial adapter harness to connect to your PC in order to communicate with the KE-XG control unit. If necessary for your purchased adapter, download and install the driver onto your PC.

Connect one end of harness NM1476-01 to control unit RS232C connection and the other end to the separately purchased USB –serial adapter; then connect the other end of the harness to your PC USB port. Refer to the following drawings of connections to KE-XG control units

HARDWARE CONNECTION (continued)



NM1476-01 harness & D-USB extension harness connection to KE-4XG control unit



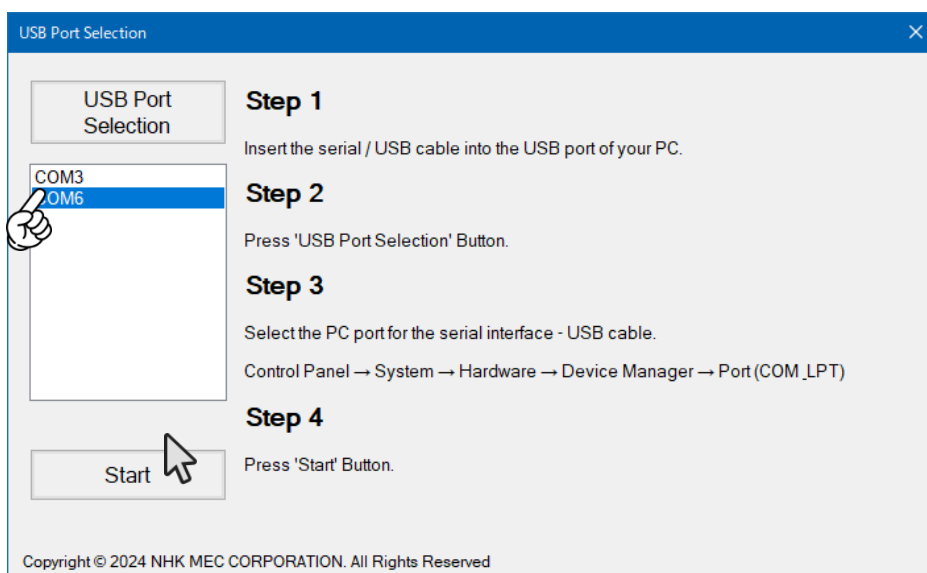
NM1476-01 harness & D-USB extension harness connection to KE-5XG or KE-6/7XG control unit.

SOFTWARE ACTIVATION

Next, open KE-XG Settings Tool software on your PC; click on Config Setting:



The software will recognize the harnesses connected between KE-XG control unit & PC, it will list available COM ports on your PC, select correct USB port ID to activate as in the example below.



KE-4XG CONTROL SYSTEM SETTINGS

Activate KE-XG Settings Tool and select Config Setting to display the following menu.

Config Setting	Operational value	Set value
Shift pause	0seconds	0seconds
Direction of shift operation	PULL	PULL
Throttle delay	0seconds	0seconds
Reverse throttle opening	Non-Linear1	Non-Linear1
Forward throttle opening	Linear	Linear
Direction of throttle movement	PULL	PULL
3 or 4 engines	Lever tracks when PORT/STBD shift outputs m...	Lever tracks when PORT/STBD shift outputs m...
Reverse stroke setting	60%	60%
Backward shift stroke	34mm	34mm
Forward shift stroke	34mm	34mm
Forward throttle stroke setting	64.0mm	64.0mm

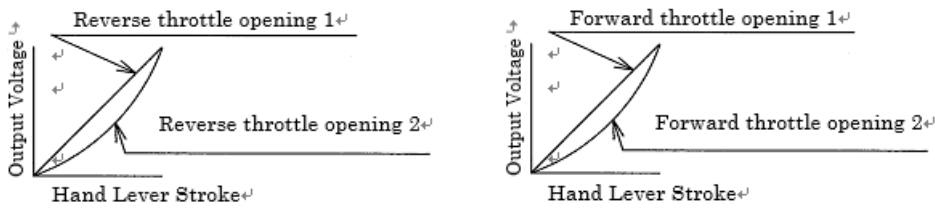
Description of [Config Setting] items:

- [Config Setting] list provides all options for KE-4XG settings via drop down menus
- [Operational Value] represents active setting
- [Set value] represents target setting in case where setting change is desired; it will be the loaded valued after power reboot of KE-XG control system
- [Initialize config settings] will reset all set values to factory default values
- [Load File] to select a previously saved file of setting values
- [Save File] to create a new file of setting values
- [Write to Unit] to download setting values into control unit of KE-XG control system

Description of [Config Setting] values for KE-4XG settings:

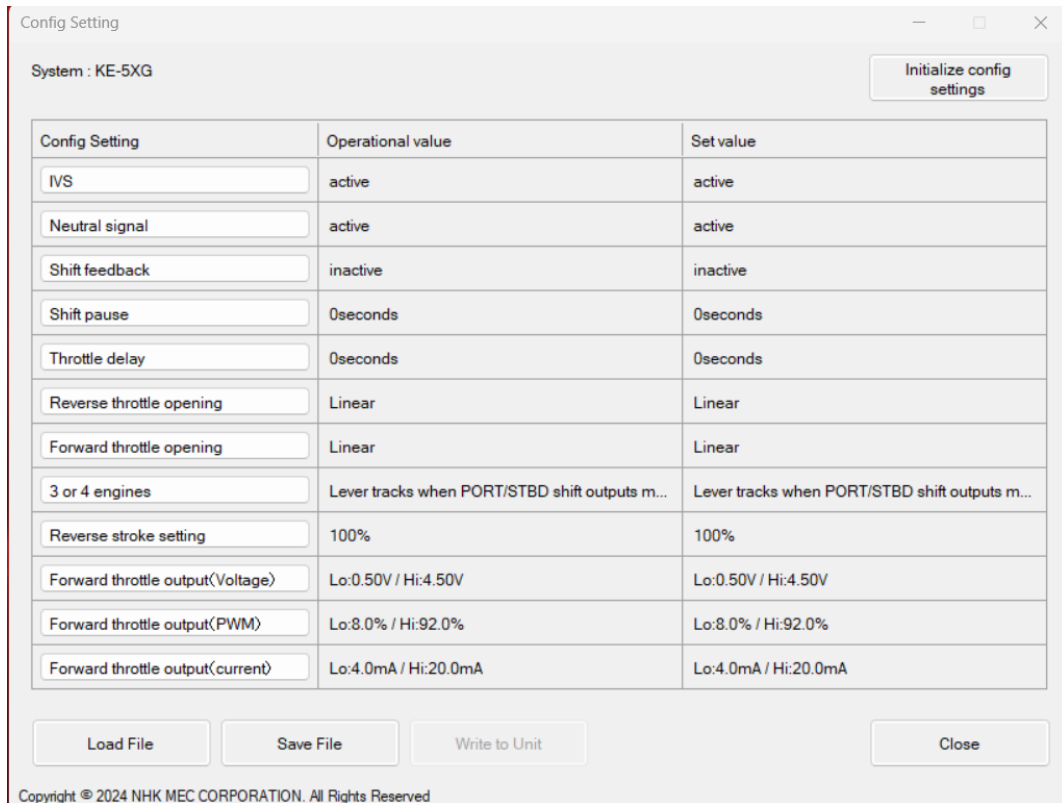
- Shift pause: delays shock effect if control lever is suddenly operated from throttle to neutral
- Direction of shift operation: push or pull to go forward
- Throttle delay: delays shock effect if control lever is suddenly operated from neutral to throttle
- Direction of throttle movement: push or pull to open throttle
- 3 or 4 engines: activate to have shift outputs of inner engines match outer engines
- Reverse (Backward) stroke: select % of full forward throttle stroke setting
- Reverse (Backward) shift stroke: distance stroke for reverse shift operation
- Forward shift stroke: distance stroke for forward shift operation

- Forward throttle stroke: distance stroke for throttle opening
- Throttle openings: select desired throttle opening based on curves below



KE-5XG CONTROL SYSTEM SETTINGS

Activate KE-XG Settings Tool and select Config Setting to display the following menu.

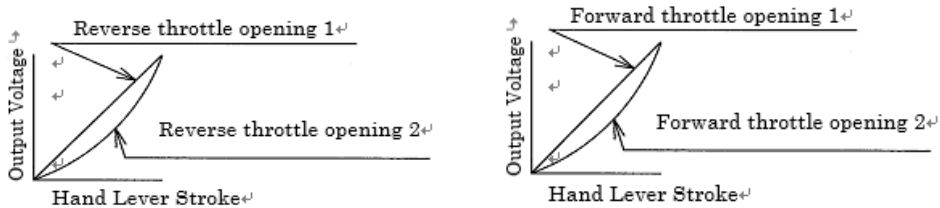


Description of [Config Setting] items:

- [Config Setting] list provides all options for KE-5XG settings via drop down menus
- [Operational Value] represents active setting
- [Set value] represents target setting in case where setting change is desired; it will be the loaded valued after power reboot of KE-XG control system
- [Initialize config settings] will reset all set values to factory default values
- [Load File] to select a previously saved file of setting values
- [Save File] to create a new file of setting values
- [Write to Unit] to download setting values into control unit of KE-XG control system

Description of [Config Setting] values for KE-5XG settings

- IVS: activate if engine model requires it
- Neutral signal: activate if marine gearbox neutral signal is required
- Shift feedback: activating means control head LED's represent control unit output (not levers)
- Shift pause: delays shock effect if control lever is suddenly operated from throttle to neutral
- Throttle delay: delays shock effect if control lever is suddenly operated from neutral to throttle
- 3 or 4 engines: activate to have shift outputs of inner engines match outer engines
- Reverse stroke: select % of full forward throttle setting
- Throttle openings: select desired throttle opening based on curves below



- Forward Throttle output (Voltage): selects desired voltage levels to match engine input throttle signal requirement for idle to max. throttle range
- Forward Throttle output (PWM): selects desired duty cycle levels to match engine input throttle signal requirement for idle to max. throttle range
- Forward Throttle output (Current): selects desired current levels (in mA) to match engine input throttle signal requirement for idle to max. throttle range

Typical Throttle settings for engines

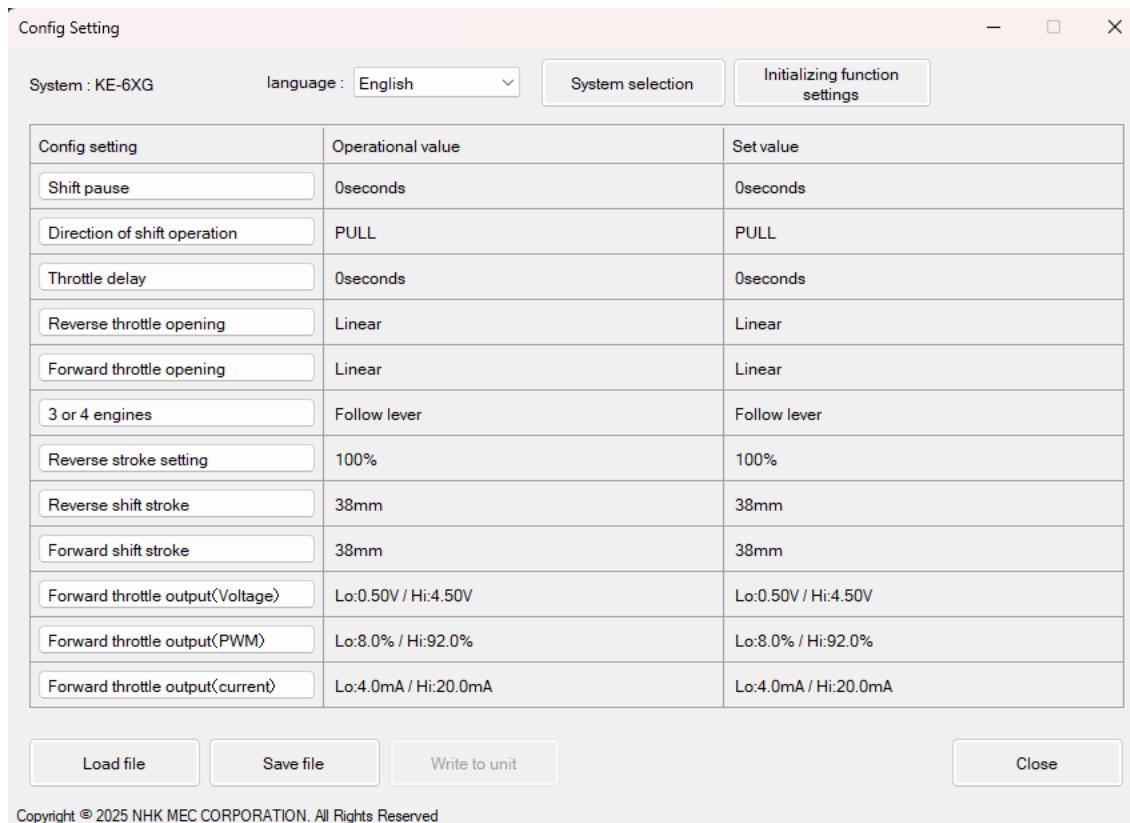
(based on information at time of print):

- Volvo, MTU, MAN Cummins (KTA): 4mA~20 mA (± 1 mA depending on model)
- Detroit Diesel, John Deere, Steyr (single input), Cummins (Quantum):
0.5V~4.50V (± 0.1 V depending on model)
- Volkswagen, Iveco FPT: 0.3V~4.40V (± 0.1 V depending on model)
- Scania D13: 0.45V~2.95V (± 0.1 V depending on model)
- CAT C7~C32: 7%~93% (± 1 % depending on model)
- Nanni Diesel (other CAN models): SAE J1939 protocol (contact dealer to review):

KE-6/7XG CONTROL SYSTEM SETTINGS

Activate KE-XG Settings Tool and select Config Setting to display the following menu.

KE-6XG will be default mode upon activation: mechanical shift / electronic throttle

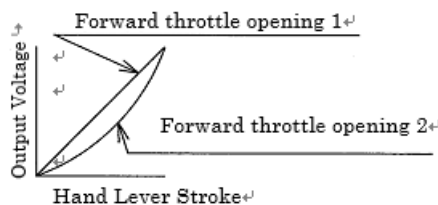
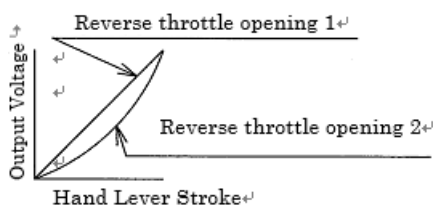


Description of [Config Setting] items:

- [Config Setting] list provides all options for KE-6XG settings via drop down menus
- [Operational Value] represents active setting
- [Set value] represents target setting in case where setting change is desired; it will be the loaded valued after power reboot of KE-XG control system
- [Initialize config settings] will reset all set values to factory default values
- [Load File] to select a previously saved file of setting values
- [Save File] to create a new file of setting values
- [Write to Unit] to download setting values into control unit of KE-XG control system

Description of [Config Setting] values for KE-4XG settings:

- Shift pause: delays shock effect if control lever is suddenly operated from throttle to neutral
- Direction of shift operation: push or pull to go forward
- Throttle delay: delays shock effect if control lever is suddenly operated from neutral to throttle
- Throttle openings: select desired throttle opening based on curves below



- 3 or 4 engines: activate to have shift outputs of inner engines match outer engines
- Reverse (Backward) stroke: select % of full forward throttle stroke setting
- Reverse (Backward) shift stroke: distance stroke for reverse shift operation
- Forward shift stroke: distance stroke for forward shift operation
- Forward Throttle output (Voltage): selects desired voltage levels to match engine input throttle signal requirement for idle to max. throttle range
- Forward Throttle output (PWM): selects desired duty cycle levels to match engine input throttle signal requirement for idle to max. throttle range
- Forward Throttle output (Current): selects desired current levels (in mA) to match engine input throttle signal requirement for idle to max. throttle range

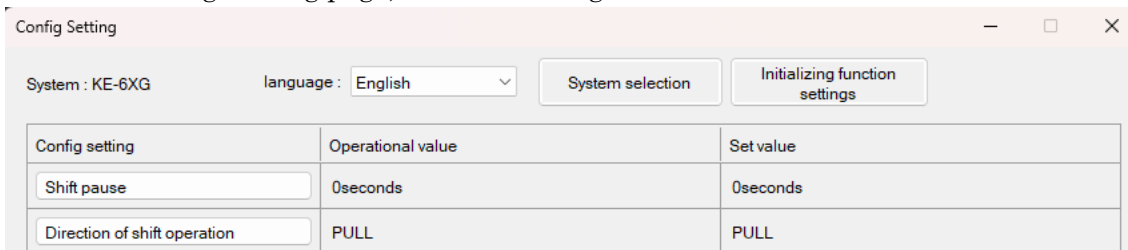
Typical Throttle settings for engines

(based on information at time of print):

- Volvo, MTU, MAN Cummins (KTA): 4mA~20 mA (± 1 mA depending on model)
- Detroit Diesel, John Deere, Steyr (single input), Cummins (Quantum):
0.5V~4.50V (± 0.1 V depending on model)
- Volkswagen, Iveco FPT: 0.3V~4.40V (± 0.1 V depending on model)
- Scania D13: 0.45V~2.95V (± 0.1 V depending on model)
- CAT C7~C32: 7%~93% (± 1 % depending on model)
- Nanni Diesel (other CAN models): SAE J1939 protocol (contact dealer to review):

Switching to KE-7XG mode: electronic shift / mechanical control

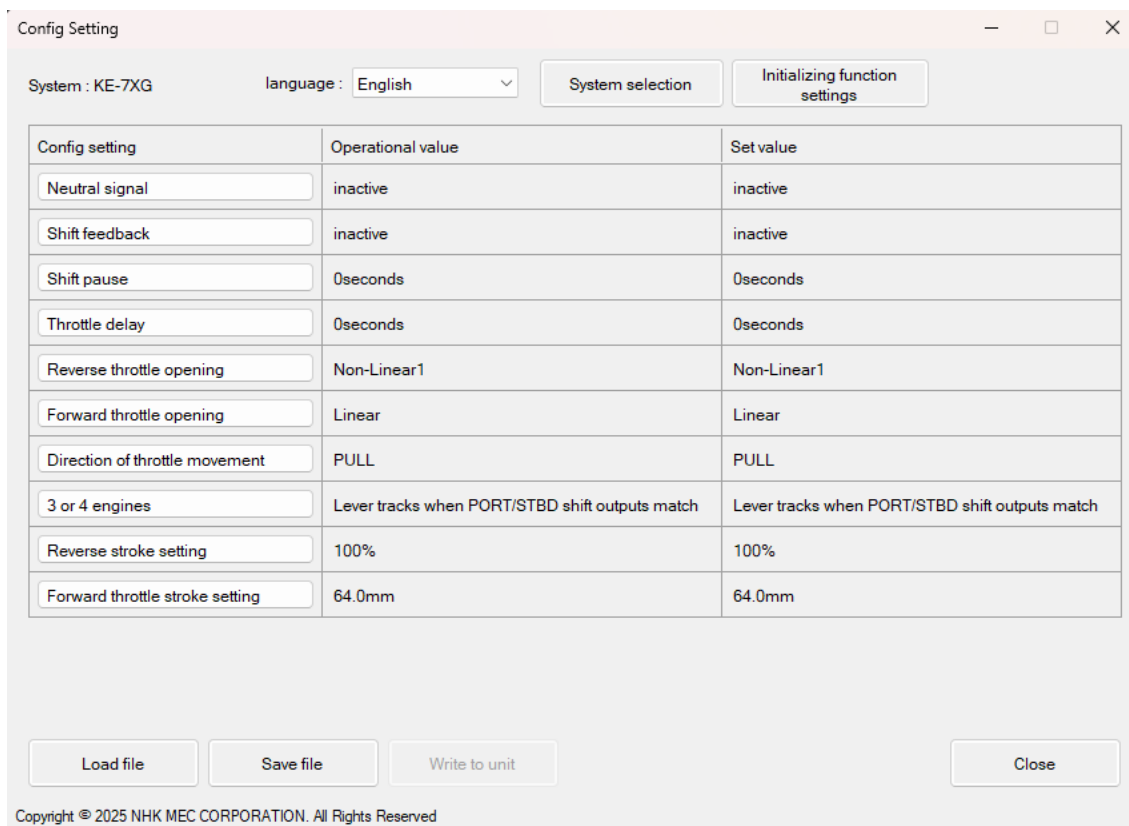
From the Config Setting page, click on Setting selection



This will bring up the following menu; click on KE-7XG



This will change the Config Setting page menu to KE-7XG mode:

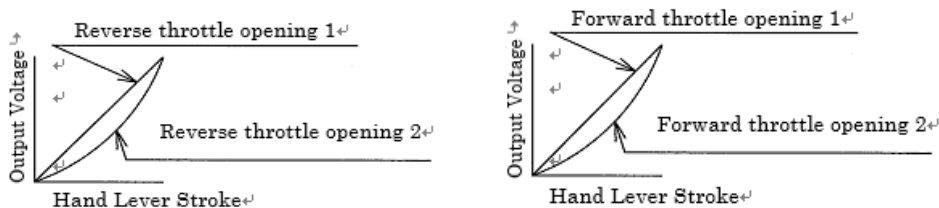


Description of [Config Setting] items:

- [Config Setting] list provides all options for KE-6XG settings via drop down menus
- [Operational Value] represents active setting
- [Set value] represents target setting in case where setting change is desired; it will be the loaded valued after power reboot of KE-XG control system
- [Initialize config settings] will reset all set values to factory default values
- [Load File] to select a previously saved file of setting values
- [Save File] to create a new file of setting values
- [Write to Unit] to download setting values into control unit of KE-XG control system

Description of [Config Setting] values for KE-5XG settings

- Neutral signal: activate if marine gearbox neutral signal is required
- Shift feedback: activating means control head LED's represent control unit output (not levers)
- Shift pause: delays shock effect if control lever is suddenly operated from throttle to neutral
- Throttle delay: delays shock effect if control lever is suddenly operated from neutral to throttle
- Throttle openings: select desired throttle opening based on curves below

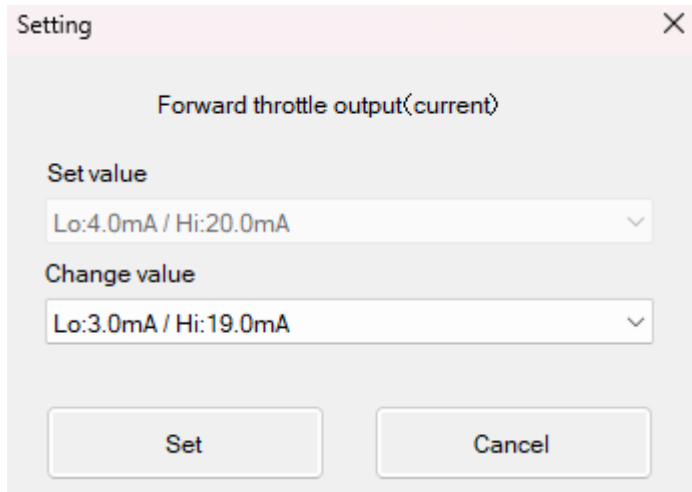


- Direction of throttle movement: push or pull to open throttle
- 3 or 4 engines: activate to have shift outputs of inner engines match outer engines
- Reverse stroke: select % of full forward throttle setting
- Forward throttle stroke: distance stroke for throttle opening

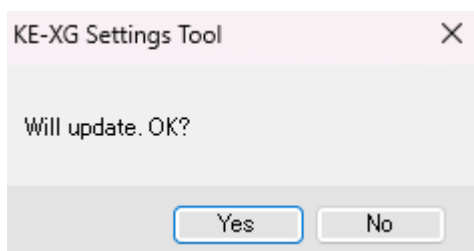
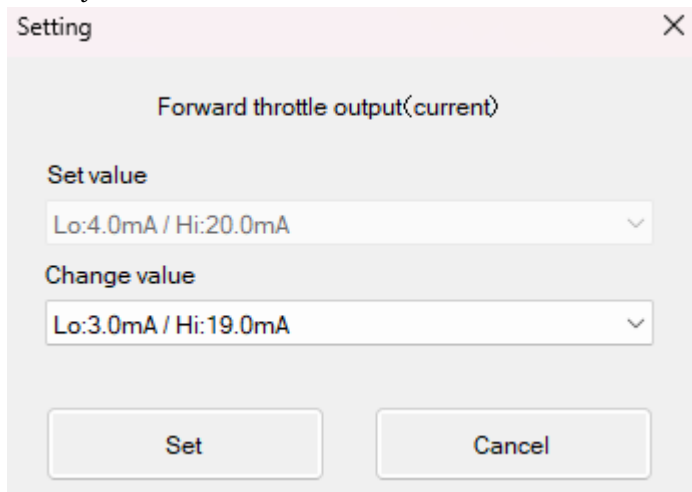
EXAMPLES OF KE-XG SETTINGS CHANGES

Example of changing a throttle setting for KE-5XG control unit:

- Click on the Forward throttle output (current) under [Config Setting]
- Change value to target value



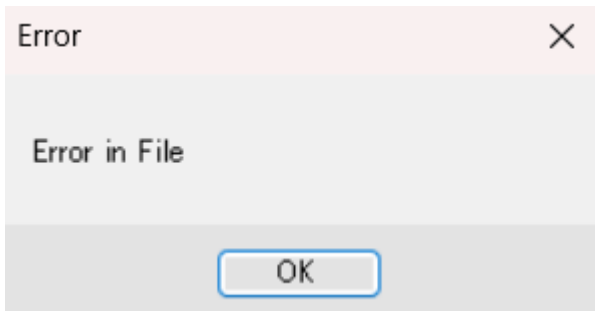
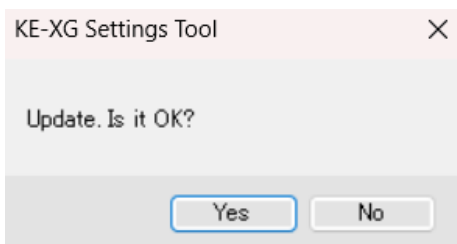
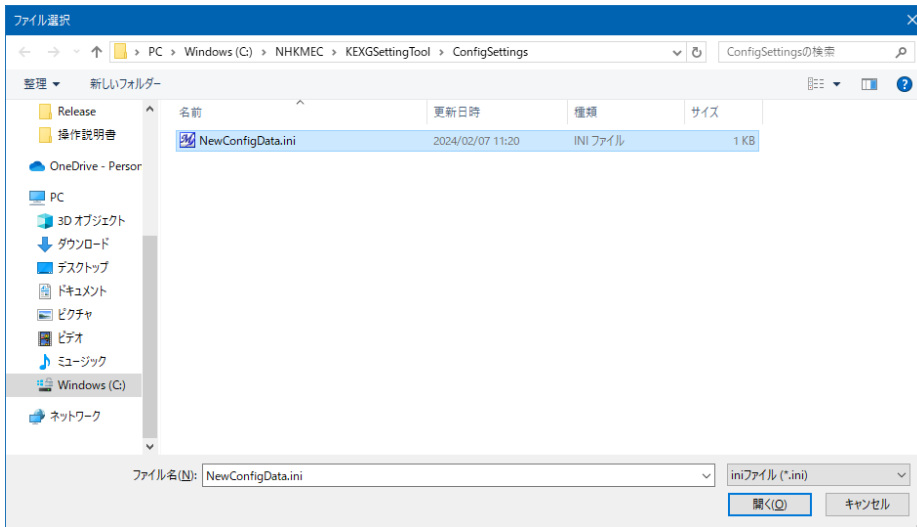
- System will ask for confirmation of new [Set value]



Once control unit settings values are entered, control unit needs to be powered OFF for a few seconds and then powered back ON to upload new settings values. For multiple engine boat, make sure to repeat the settings sequence for each control unit.

Example of PC file loading / saving via KE-XG Settings Tool:

- Select file from Settings Tool folder
- Choose file name suitable for application
- Confirm file update; error message will apply if file name or folder cannot be used



Example of Write to unit for uploading settings into a control unit:

The 'Config Setting' window displays the following table:

Config setting	Operational value	Set value
Neutral signal	inactive	inactive
Shift feedback	inactive	inactive
Shift pause	0seconds	0seconds
Throttle delay	0seconds	0seconds
Reverse throttle opening	Non-Linear1	Non-Linear1
Forward throttle opening	Linear	Linear
Direction of throttle movement	PULL	PULL
3 or 4 engines	Lever tracks when PORT/STBD shift outputs match	Lever tracks when PORT/STBD shift outputs match
Reverse stroke setting	100%	100%
Forward throttle stroke setting	29.5mm	64.0mm

Below the table, there are buttons for 'Load file', 'Save file', 'Write to unit', and 'Close'. The 'Write to unit' button is highlighted in yellow.

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The dialog box contains the text: "Will update. OK?" and two buttons: "Yes" and "No".

The message box contains the text: "The set value will be reflected when the control unit is restarted." and an "OK" button.

Once you have completed your selection of settings, close the menu, close Settings Tool software and disconnect NM1476-01 harness from the KE-XG control unit. KE-XG control system is now ready for operation.

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