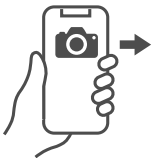




EN

NL

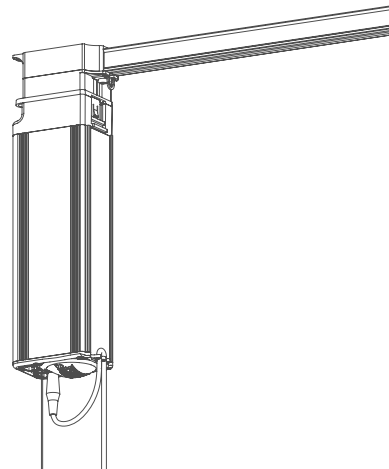
# INSTALLATION MANUAL **FOREST SHUTTLE® S / M / L RECEIVER Z-WAVE**



other  
languages

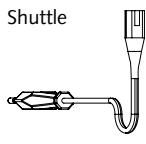


instructional  
video



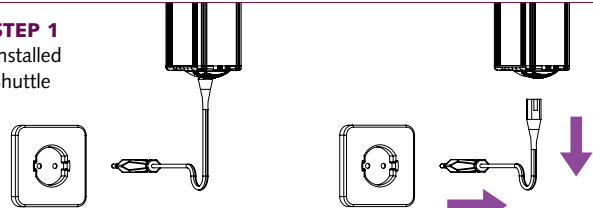
# INSTALLATION FOREST INSULATOR SERVICE KIT

**STEP 1**  
Uninstalled Shuttle



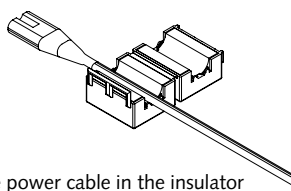
Take the power cable

**STEP 1**  
Installed Shuttle



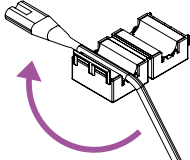
Unplug the power cable from the socket and the Shuttle motor

**STEP 2**



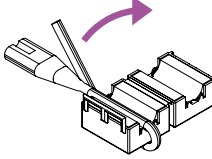
Place the power cable in the insulator

**STEP 3**



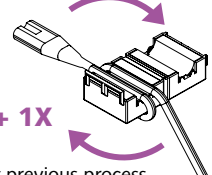
Twist the cable round the insulator core

**STEP 4**



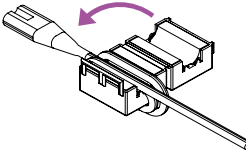
Twist the cable round the insulator core

**STEP 5**



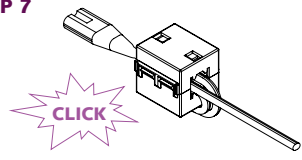
Repeat previous process

**STEP 6**



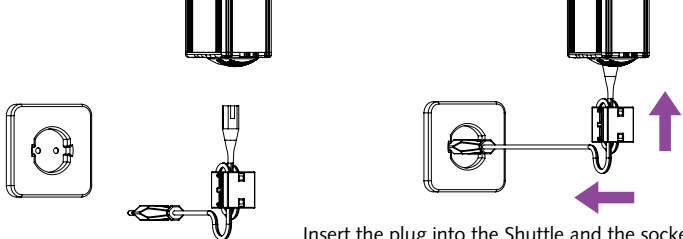
Close the insulator

**STEP 7**



CLICK

**STEP 8**



Insert the plug into the Shuttle and the socket



In case a control wire (RJ45) is used on port 1 or 2 of Shuttle -> fix an additional insulator to this control cable in similar way. Additional insulator(s) can be requested at: [info@forestgroup.com](mailto:info@forestgroup.com)



Declaration article 10.10 Directive 2014/53/EU

Declaration article 10.2 Directive 2014/53/EU

**Hereby we, the undersigned:**

Manufacturer: Forest Group Nederland B.V.  
Address: city: Teugseweg 42, 7418 AM Deventer  
Country: The Netherlands  
Telephone number: +31 570 622850

**Declare that this declaration is issued under our sole responsibility and that this product is:**

Product description: Motorized curtain system  
Type designation(s): Shuttle M Zwave  
Trademark: Forest

EN

**Object of the declaration:**



This product has been constructed so that it can operate in at least one-member state of the European Union. There are no restrictions of use of putting into services of the radio equipment.

And this product has been constructed so that it can operate in at least one-member state of the European Union without infringing applicable requirements on the use of the radio spectrum.

**Signed for and on behalf of:**

Place: Deventer  
Date: 24 October 2024

Name: A.G. ten Have  
Function: Head R&D

Signature:

A handwritten signature in blue ink, appearing to be "A.G. ten Have", written over a light blue horizontal line.



Declaration article 10.10 Directive 2014/53/EU

Declaration article 10.2 Directive 2014/53/EU

**Hereby we, the undersigned:**

Manufacturer: Forest Group Nederland B.V.  
Address: city: Teugseweg 42, 7418 AM Deventer  
Country: The Netherlands  
Telephone number: +31 570 622850

**Declare that this declaration is issued under our sole responsibility and that this product is:**

Product description: Motorized curtain system  
Type designation(s): Shuttle L Zwave  
Trademark: Forest

**Object of the declaration:**



This product has been constructed so that it can operate in at least one-member state of the European Union. There are no restrictions of use of putting into services of the radio equipment.

And this product has been constructed so that it can operate in at least one-member state of the European Union without infringing applicable requirements on the use of the radio spectrum.

**Signed for and on behalf of:**

Place: Deventer  
Date: 24 October 2024

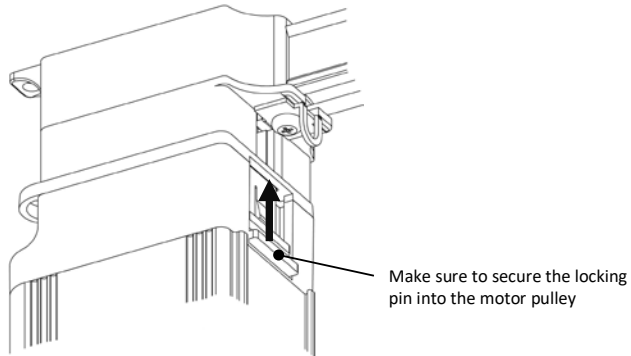
Name: A.G. ten Have  
Function: Head R&D

Signature:

A handwritten signature in blue ink, appearing to be "A.G. ten Have". The signature is stylized and somewhat cursive, written over a light blue horizontal line.

## Installing the FOREST SHUTTLE® S / M / L z-Wave

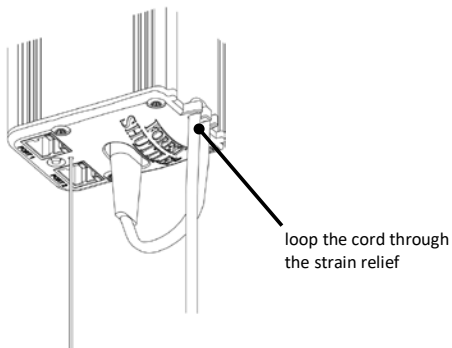
- ① Assemble the track
- ② Install the brackets and fix the track onto the brackets
- ③ Do not attach the drapery yet. Attach the drapery only after the end positions have been set.  
→ position the master carrier(s) into half open position
- ④ Attach the motor to the track



EN

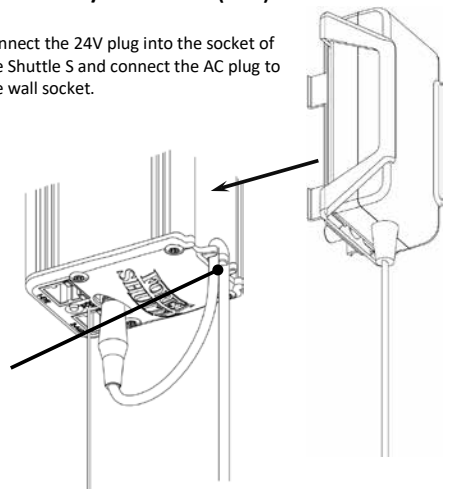
### ⑤ Shuttle® L z-Wave (EU, ANZ, IN):

Connect the AC plug (100-240V~) to the power socket of Shuttle L



### Shuttle® S / M z-Wave (USA):

Connect the 24V plug into the socket of the Shuttle S and connect the AC plug to the wall socket.



## ⑥ (Re)setting the end limits of the FOREST SHUTTLE® S / M / L z-Wave

### RESETTING LIMITS:

When there are issues regarding opening and closing of the curtains, the limits can be reset.

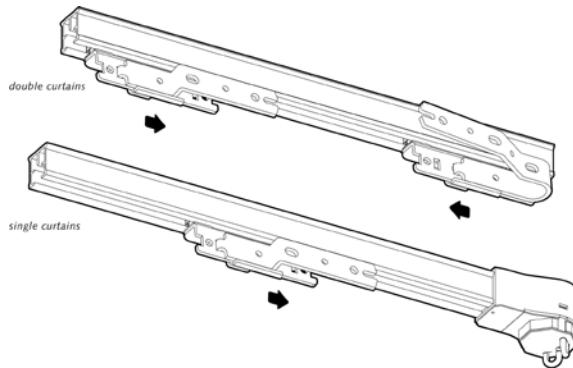
Before starting make sure:

1. The curtains or master carrier(s) are in the open position.
2. Press the configuration button on the bottom of the Shuttle 4 times and hold it down the 5<sup>th</sup> time for 4 seconds, led blinks 3 times and turns OFF.

### SETTING LIMITS AND MOTOR DIRECTION:

Before starting make sure:

1. The positions are reset (see resetting limits)
2. The curtains or master carrier(s) are in the open position.
3. Give the master carrier(s) a little push towards the close position. The Shuttle starts to move towards the close position, when the closed position is reached the master carrier(s) automatically returns to the open position.\*\*
4. When the master carrier reaches it's open position there is a 10 second timeframe to adjust the stack back, move the master carrier to the desired open position and wait till the LED on the bottom of the Shuttle turns off.



**Stack back:** The minimal automatic adjustment is 3 cm (1.2").

The first movement after resetting the limits always need to be towards the close position

If you are not satisfied with the end position setting you can reset and reset the end positions. For resetting, see the configuration table on page 5 and continue from step ⑥.

## Advanced configuration of the FOREST SHUTTLE® S / M / L Z-Wave



Use a pin to change settings in the configuration menu. Choose the setting you want to change (table below) and press the button that many times (corresponding with setting).

presses	LEDs				function	factory default
	1	2	3	4		
1	■□□□	□□□□	□□□□	□□□□	speed low	•
2	□■□□	□□□□	□□□□	□□□□	speed high	
3	□□■□	□□□□	□□□□	□□□□	Z-wave Include/Exclude	
4	□□□■	□□□□	□□□□	□□□□	reset endlimits	
5	■□□□	□□□□	□□□□	□□□□	dry-contact pulse	•
6	□□■□	□□□□	□□□□	□□□□	dry-contact continuous	
7	□□□■	□□□□	□□□□	□□□□	dry-contact single switch	
8	□□□■	□□□■	□□□□	□□□□	touch impulse sensitivity high	•
9	■□□□	□□□□	□□□□	□□□□	touch impulse sensitivity low	
10	□□□■	□□□□	□□□□	□□□□	touch impulse off	
11	□□■□	□□□□	□□□□	□□□□	IR channel 1	•
12	□□□■	□□□□	□□□□	□□□□	IR channel 2	
13	■□□□	□□□□	□□□□	□□□□	IR channel 3	
14	□□■□	□□□□	□□□□	□□□□	IR channel 4	
15	□□□■	□□□□	□□□□	□□□□	IR channel 5	
16	□□□■	□□□□	□□□□	□□□□	factory default	
25	■□□□	□□□□	□□□□	□□□□	Forced Z-wave exclusion	

Confirm the desired setting by pressing the button for 4 seconds until the led blinks 3 times and turns OFF. These settings can also be done when finishing the installation.

EN

### Speed:

Standard speed is 14cm/s. Fast speed is 17cm/s.

Press the configuration button 2 times and hold it down the 3th time for 4 seconds until the led blinks 3 times and turns OFF.

### Including/Excluding Shuttle® S/M/L Z-Wave to a Z-Wave network:

Activate the inclusion mode on your main Z-Wave controller (see manual controller). Press the configuration button on the Shuttle 3 times and hold it down the 4<sup>th</sup> time for 4 seconds. LED starts to blink for 10 seconds.

The Shuttle Z-Wave motor will be detected by the Z-Wave controller and included into the Z-Wave network.

### Forced Z-Wave exclusion (Device reset locally):

This way of excluding is less preferred.

Use this procedure only when the network primary controller is missing or otherwise inoperable.

Press the configuration button on the Shuttle 25 times and hold it down the 26<sup>th</sup> time for 4 seconds. LED 2 blinks and LED 3 turns on for 5 seconds.

### Resetting end limits:

Press the configuration button 4x and hold it down the 5<sup>th</sup> time for 4 seconds. The led blinks 3 times and turns OFF.

### Dry contact inputs:

Make sure the input is free of voltage!

Standard input is pulse contact. To set to continuous or single switch, press button 6 or 7 times respectively. To confirm, press button once more for 4 seconds until the led blinks 3 times and turns OFF.

See page 7 for detailed explanation.

### Touch Impulse:

The Shuttle recognizes when the curtain is pulled by hand to open or close. When the curtain is pulled the Shuttle will open or close the curtain all the way. Default sensitivity is high. Touch Impulse can be set to be less sensitive or turned off, with 9 or 10 presses respectively. To confirm, press button once more for 4 seconds until the led blinks 3 times and turns OFF.

***IR channel setting:***

The IR receiver can only be connected to port 1.

For infrared control an IR remote and an IR receiver is required. Standard the Shuttle is set to channel 1 and 'ALL'. To change to channel 2, 3, 4 or 5, press resp. 12x, 13x, 14x or 15x button and confirm by pressing button once more for 4 seconds until the led blinks 3 times and turns OFF.

Place the eye of the receiver cord in view of the IR remote.

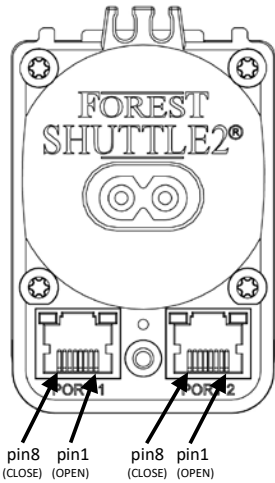
If necessary, change the IR channel as shown on page 5.

***Factory default:***

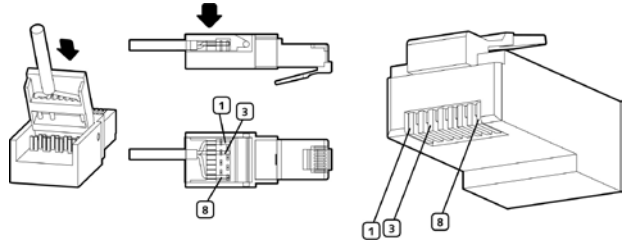
To reset all settings, press the configuration button 16x and hold it down the 17<sup>th</sup> time for 4 seconds, the led blinks 3 times and turns OFF.



## Dry Contact input of the FOREST SHUTTLE® S / M / L z-Wave



do-it-yourself plug



EN

### MANUAL SWITCH CONNECTED TO DRY CONTACT INPUTS

A manual switch or a relay output of a Home Automation System can be connected to the Shuttle. Be sure the switch/relay is potential free. Use pins 1, 3 and 8 of PORT1 or PORT2.

OPEN: when pin 1 is connected to pin 3 (COMMON) the Shuttle will open the curtain.

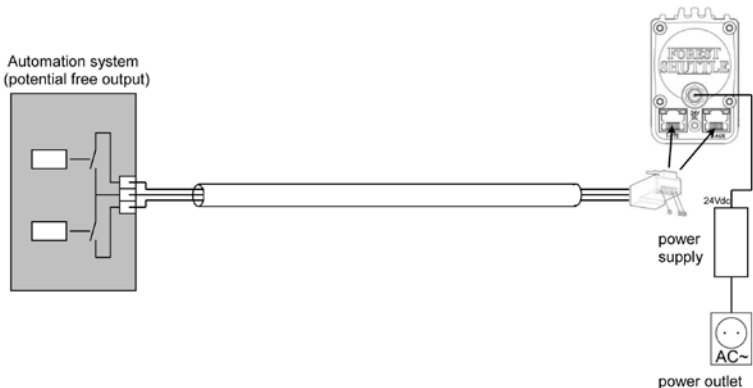
CLOSE: when pin 8 is connected to pin 3 (COMMON) the Shuttle will close the curtain.

STOP: when pin 1 and 8 are connected to pin 3 (COMMON) the Shuttle will stop moving the curtain.

Different modes can be set:

- Pulse: when short contact is made the curtain will open or close fully (default setting)
- Continuous: the curtain will move as long as the contact is made (mostly used for Home Automation Systems)
- Single button switch (doorbell principle): either one of the four inputs will act as following: open → stop → close → stop  
→ open → stop → close → stop etc.

To change input settings see page 5.



## Advanced Z-Wave configuration of the FOREST SHUTTLE® S / M / L Z-Wave

Z-Wave Plus: Yes  
Z+ Plus Role type: ROLE\_TYPE\_SLAVE\_ALWAYS\_ON  
Z+ Device type: WINDOW\_COVERING\_POSITION\_ENDPOINT\_AWARE  
Basic type: BASIC\_TYPE\_ROUTING\_SLAVE  
Generic type: GENERIC\_TYPE\_SWITCH\_MULTILEVEL  
Specific type: SPECIFIC\_TYPE\_CLASS\_C\_MOTOR\_CONTROL  
Listening: TRUE  
Z-Wave Lib: 6.51.10

### Supporting command classes

class: 0x5E COMMAND\_CLASS\_ZWAVEPLUS\_INFO\_V2  
class: 0x85 COMMAND\_CLASS\_ASSOCIATION\_V2  
class: 0x59 COMMAND\_CLASS\_ASSOCIATION\_GRP\_INFO  
class: 0x25 COMMAND\_CLASS\_SWITCH\_BINARY  
class: 0x26 COMMAND\_CLASS\_SWITCH\_MULTILEVEL\_V3  
class: 0x86 COMMAND\_CLASS\_VERSION\_V2  
class: 0x72 COMMAND\_CLASS\_MANUFACTURER\_SPECIFIC\_V2  
class: 0x5A COMMAND\_CLASS\_DEVICE\_RESET\_LOCALLY  
class: 0x27 COMMAND\_CLASS\_SWITCH\_ALL  
class: 0x73 COMMAND\_CLASS\_POWERLEVEL  
class: 0x7A COMMAND\_CLASS\_FIRMWARE\_UPDATE\_MD\_V2

### Routing slave

This Z-Wave product will be used as slave. Slave nodes are nodes in a Z-Wave network that receive commands and perform actions based on the command. A routing slave can route Z-Wave messages to other nodes in the network.

### Always on slave

The Z-Wave plus role type of this routing slave product is 'slave always on'.

That means that this device is always awake and does not go to sleep mode because it is an AC powered device. It is always available for communication with a controller.

This device can also act as a wireless repeater to forward commands for another device in the Z - Wave network to expand the range of the network. This function works for every Z - Wave device from any manufacturer when included into the same Z - Wave network. Unlike a normal slave a routing slave can store a number of static routes which he uses to send a routed RF frame to another node.

### Include initiator

The include initiator is used when Primary and Inclusion Controllers include nodes into the network. When both the include initiator have been activated simultaneously the new node will be included to the network ( if the node was not included previously)

### Exclude initiator

The exclude initiator is used by Primary Controllers to exclude nodes from the network. When the exclude initiator and a slave initiator are activated simultaneously, it will result in the slave being excluded from the network (and reset to Node ID zero). Even if the slave was not part of the network it will still be reset by this action.

### Z-Wave compatibility

Because this is a Z-Wave device, it means it can co-operate with other Z-Wave devices of other manufacturers. It can co-exist in a Z-Wave network existing with product from other manufacturers.

### Hops & retries

The Z-Wave range has a range of up to 40 meters in line of sight. This signal is not limited to the 40 meters range due to routing the Z-Wave message to other nodes in the network. This way the range of the Z-Wave network can be expanded to 160 meters indoors (limit of 4 hops).

**COMMAND\_CLASS\_ZWAVEPLUS\_INFO\_V2**

With the Z-Wave plus info get command you can request the Z-Wave plus information of the Shuttle LZ. The information contains

- Role Type: Always On Slave
- Node Type: Z-Wave Plus Node
- Installer Icon: Window Covering Endpoint Aware  
This will be shown on a GUI as the following icon:



- Installer Icon: Window Covering Endpoint Aware  
This will be shown on a GUI as the following icon:



EN

**0x20 COMMAND\_CLASS\_BASIC**

The basic command class has a supporting role.

The supporting role of the basic command class is mapped to the switch multilevel command class. Where

- 0x00 is fully closed
- 0x01 – 0x63 is a curtain rail position.

However there is one exception compared to the switch multilevel command class.

- 0xFF is always fully open (regardless of the current position or last known active state)

**COMMAND\_CLASS\_ASSOCIATION\_V2**

The Association Command Class is used to associate other devices with the Shuttle LZ.

The Shuttle LZ only has 1 supported association group. This group holds the lifeline to the controller according to Z-Wave Plus standards.

Group 1: lifeline**Maximum supported nodes per group: 1**

The node associated in this group will receive an unsolicited SWITCH\_MULTILEVEL\_REPORT frame every time the position of the curtain rail is changed, where the value represents the (changed) position.

It is most likely that a controller or screen is associated in this group to (unsolicited) report any changes to the curtain rail position.

Specific group report

Because there is only association group the reported group with this command is always group 1.

## COMMAND\_CLASS\_ASSOCIATION\_GRP\_INFO

The Shuttle LZ supports only 1 association group.

Group 1 Name:

- Size: 8
- Name: 'Lifeline'

Group 1 Info

- Mode: 0
- Profile: 0x0001
  - o Main profile : General (0x00)
  - o Sub profile : Lifeline (0x01)
- Event Code: 0

Group 1 command list

- List length: 1
- COMMAND\_CLASS\_SWITCH\_MULTILEVEL

**NOTE:** All other groups report list length 0.

## COMMAND\_CLASS\_SWITCH\_BINARY

The Switch Binary command class can be used to turn the Shuttle LZ fully open or fully closed.

Value:

- 0x00: Close
- 0xFF: Open

## COMMAND\_CLASS\_SWITCH\_MULTILEVEL\_V3

The switch multilevel set command class is used to set the light to a preferred position.

- Values 0 – 99 (%) are used to set the position

The switch multilevel start level change command is used to start open/close the curtain.

This level change is stopped when

- Stop multilevel start level command is received
- The curtain reached an end position (fully open or full closed)

## Supported Report

Because of version 3 of this command class the Shuttle LZ responds with the following types.

- Primary Switch Type: 0x03
  - o 0xFF is Open
  - o 0x00 is Closed
- Secondary Switch Type: 0x00  
(NOT SUPPORTED)

**NOTE 1:** due to the limitations of this type of multilevel, a curtain rail the *Duration* byte of the SWITCH\_MULTILEVEL\_SET and SWITCH\_MULTILEVEL\_START\_LEVEL\_CHANGE command is used as an timeout offset to start the changed position

Example 1:

- Curtain rail has position 50%
- Shuttle LZ receives SWITCH\_MULTILEVEL\_SET command with *value* 80% and *duration* 0 seconds.
- The curtain rail is directly moved to position 80%

Example 2:

- Curtain rail has position 50%
- Shuttle LZ receives SWITCH\_MULTILEVEL\_SET command with *value* 20% and *duration* 10 seconds.
- The curtain rail is moved to position 20% after 10 seconds.

**NOTE 2:** due to the limitations of this type of multilevel, a curtain rail the *Start Level* byte of the SWITCH\_MULTILEVEL\_START\_LEVEL\_CHANGE command is ignored in all cases.

**COMMAND\_CLASS\_VERSION\_V2**

This command class is used to obtain information about the Shuttle LZ. The Z-Wave library type, the Z-Wave protocol version and the application version will be reported.

Because this product supports version 2 it reports the additional information: hardware version and number of firmware targets.

**COMMAND\_CLASS\_MANUFACTURER\_SPECIFIC\_V2**

This will report information about the manufacturer. This product will contain the manufacturer ID of Forest Group NL.

Manufacturer ID of Forest Group NL is 0x0207, the ID of this product is 39.

Because the version 2 is supported this command class can also be used to request the serial number of the device with the DEVICE\_SPECIFIC\_GET command.

**COMMAND\_CLASS\_DEVICE\_RESET\_LOCALLY**

When the product is excluded manually the DEVICE\_RESET\_LOCALLY\_NOTIFICATION command is sent to node associated in the lifeline association group.

**COMMAND\_CLASS\_SWITCH\_ALL**

The Shuttle LZ supports switch all functionality and therefore can be included in a switch all broadcast.

If Shuttle LZ is configured to switch all mode:

0x00 : is excluded from all switch on/off functionality.

0x01 : is excluded from the all on but not the all off.

0x02 : is excluded from the all off but not the all on.

0xFF : All on and all off are both included.

**COMMAND\_CLASS\_POWERLEVEL**

The Power level Command Class defines the RF transmitting power. This command is used to test the connectivity of a network. This command class makes it possible for supporting controllers to SET/GET the RF transmitting power level of a node and test specific links between nodes in the network.

**COMMAND\_CLASS\_FIRMWARE\_UPDATE\_MD\_V2**

The Shuttle LZ supports OTA (Over-The-Air) update.

This means that it is possible to update your firmware using Z-Wave. To accomplish this a capable controller is needed.

*Technical specification of the FOREST SHUTTLE® S / M / L Z-Wave*

Region	Frequency	Shuttle® S Z-wave	Shuttle® M Z-wave	Shuttle® L Z-wave
EU	868.4MHz:	N/A	5232000004	5232000002
US	908.4MHz:	5232000005	5232000006	N/A
ANZ	921.4MHz:	N/A	5232000008 (no stock)	5232000007
IN	865.2MHz:	N/A	5232000010 (no stock)	5232000009
Voltage Shuttle®:		24V DC	24V DC	100 - 240V~ 50 - 60Hz 0.8A
Max. power:		40W	72W	40W
Torque:		1.0Nm	1.5Nm	1.0Nm
Speed 1:		14 cm/s	14cm/s	14 cm/s
Speed 2:		17 cm/s	17cm/s	17 cm/s
Max. curtain weight:		40kg (straight track)	70kg (straight track)	40kg (straight track)
Length:		20cm (7.9")	25 (10")	28cm (11")
Net. weight motor:		700 gr.	980gr.	930 gr.
Protection degree:		IP20	IP20	IP20
Max. running time (in one direction):		240 sec.	240 sec.	240 sec.
Sound level:		< 40dB	< 40dB	< 40dB
Ambient temperature:		0 - 40°C (32 - 104°F)	0 - 40°C (32 - 104°F)	0 - 40°C (32 - 104°F)
Relative humidity:		10 – 80%	10 – 80%	10 – 80%
Maximum useable altitude above sea level:		2000m (6561ft.)	2000m (6561ft.)	2000m (6561ft.)
Certification & Marking:		CE	CE	CE

TECHNICAL SPECIFICATION POWER SUPPLY:

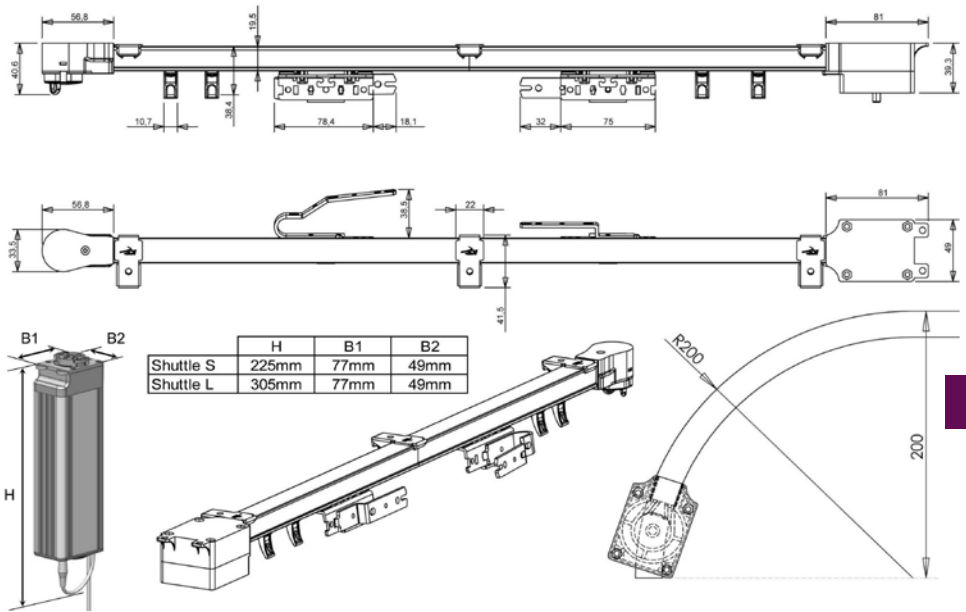
	Shuttle® S:	Shuttle® M Receiver:
Model:	ZDA240150	ZF120A-2403000
Voltage input:	100 - 240V~ 50 - 60Hz 0.8A	100 - 240V~ 50 - 60Hz 1.2A
Voltage output:	24V DC	24V DC
Insulation class:	II	II
Certification & Marking:	CE, cULus, FCC, CCC	CE, cULus, FCC, CCC

When using any other or a central power supply, each Shuttle® S needs to be fused using a 2.5A slow fuse. Each Shuttle® M Receiver needs to be fused using a 4A slow fuse.

*Country/Region of the FOREST SHUTTLE® S / M / L Z-Wave*

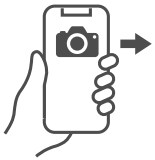
EU	868.4MHz	Europe (CEPT), China, Malaysia, UAE
US	908.4MHz	USA, Canada, Brazil
ANZ	921.4MHz	Australia, New Zealand
IN	865.2MHz	India

Sizes and dimensions of the track and FOREST SHUTTLE® S / M / L z-Wave



EN

# CONTACT & SUPPORT



FAQ and more  
technical support

## MAINTENANCE INSTRUCTIONS FOR FOREST FMS MOTORISED TRACK SYSTEM WITH FOREST SHUTTLE® S/M/L Z-WAVE MOTOR

Ensure the tracks and motors have been installed according to the product manual, and have at all times been protected from dust and humidity, prior to and after installation, before and after the project handover. The motors must be connected to a 230V mains at all time; power to the motor may not be cut via the building management system or hotel room key card slot. If this is the case, the warranty will not be valid.

Curtains made up with the Forest Easyfold® system must have been manufactured in such a way that the top heading doesn't slide against the track profile itself, which would act as a brake and increase friction and strain the motor.

The motorised systems should be inspected by housekeeping services on a regular basis, at least once every 3 months, to ensure a smooth operation of the curtains. A full operating cycle of opening/closing/opening is sufficient for this.

The Forest® motorised track systems require an annual re-lubrication with the patented Forest® dry lubricant spray, article 5109010000. Do not use a different type of lubricant like WD-40 or grease, as these react with the factory applied lubricant. Apply the lubricant spray on the inside of the track profile, with the curtains fully opened. After lubrication, wait a few minutes for the lubricant to settle, then initiate a complete cycle, by closing and opening the curtains fully. Repeat this procedure on annual basis. No further maintenance procedures are required.



Follow the instructions in this document to ensure safe operation of the Forest Shuttle S/M/L. Keep this document close to the product at all times. Use the product only as intended. This product is not suitable for use in humid spaces such as bathrooms or outdoors. In order for the Forest Shuttle S/M/L Receiver to function correct and safe, the complete curtain track system must be assembled with original & undamaged parts and devices of Forest Group Nederland B.V.

This product is not suitable for use by children, it is not a toy. Keep (the remote control) out of the reach of children at all times. Frequently examine the installation for imbalance and signs of wear or damage.

In case of ESD pulse (static discharge), when a person touches the Shuttle motor, the motor might stop working. When this happens, disconnect and connect the power plug, and the motor will work as normal again.

Forest Group does not assume liability for resulting damages to persons, animals and/or property, defects, labour on location, service calls, reinstallation or expenses involved shipping, packing or returning goods, if the product has been abused/modified in any way or damaged by improper use or failure to observe these operating instructions. In such situation, the right to any form of warranty, service and reimbursement of expenses shall cease.