How To Use Lintronic Variables

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... Lintronic is the best tool to integrate NON B&O devices into a B&O installation

Lintronic customer

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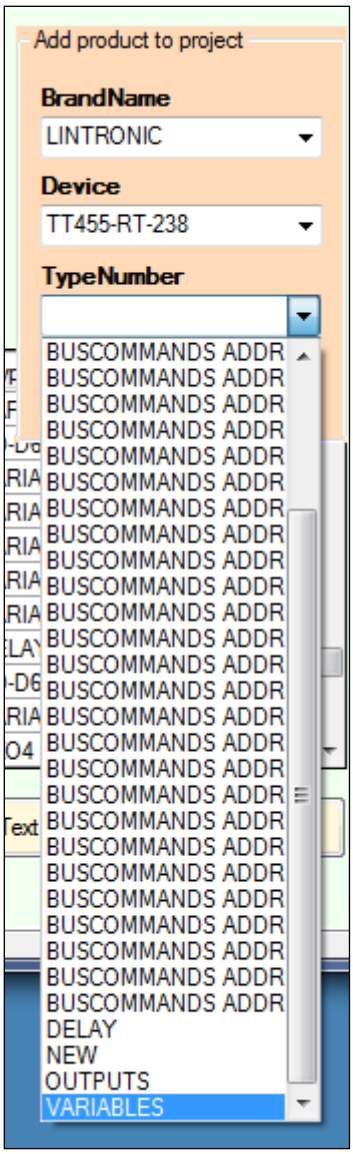
Sometimes when integrating NON B&O devices into a B&O installation you may find situations, where a simple mapping of keys to IR codes is not sufficient. A typical situation is the lack of discrete On/Off IR commands for the device to integrate. Another Situation is when you want to build a memory map for a "GO+<number>" mechanism as B&O use in their PUC.

How to include variables into your Memory Map

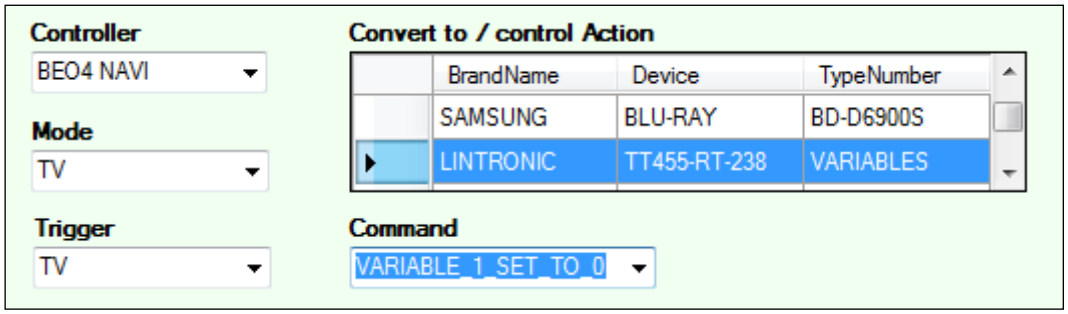
First of all you have to include the "Lintronic Product TT455-RT-238 VARIABLES" into your project exactly the same way you do for your device to be controlled.



Screenshot add Variables

Variable action

After this you will be able to assign actions to modify the values from 0 to 10 for individual variables VARIABLE_1 to VARIABLE_10. You can set the value of a variable to a specific value or you add and subtract from a value.

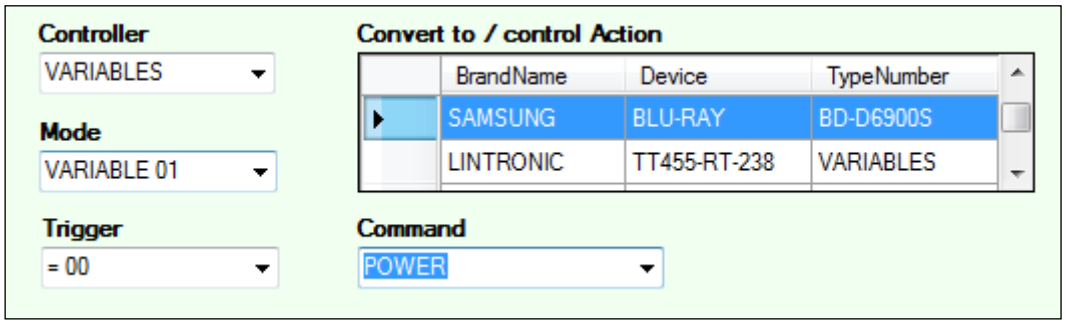


Screenshot set Variable

You can mix any number of variable action and other actions in a macro. There is no limitation specific to variables.

Variable Trigger

Modifying the value of a variable, fires a trigger exactly the same way the reception of an IR signal, generated by the remote control does.



Screenshot variable trigger

All variable triggers generated during a macro are fired in the order of variable numbers after the completion of the macro. We will see later in the examples.

CONTROLLING POWER ON/OFF

Controlling one single device

To control the power on/off of one single device is the simplest use of variables possible.

Mode	Trigger	Action	Comment
DVD	DVD	VARIABLE_01_SET_TO_1	After "powering on" the -238 the value of variable 01 is 0
….	….	….	Other commands
ANY BEO	Power	VARIABLE_01_SET_TO_0	Trigger Power down
VARIABLE 01	=00	Your device/Power	Powering down your device
	=01	Your device/Power	Starting up your device

At the first press of DVD on your B&O remote your device will power up. If you press DVD again, nothing will happen, as the value of VARIABLE 01 is not changed. The device will power down when you press the standby button on your remote.

If you want to power down when you switch to other modes as well, you modify your memory map as follows:

Mode	Trigger	Action	Comment
DVD	DVD	VARIABLE_01_SET_TO_1	After "powering on" the -238 the value of variable 01 is 0
….	….	….	Other commands
TV	TV	VARIABLE_01_SET_TO_0	Add lines for any mode you like to power down your device
ANY BEO	Power	VARIABLE_01_SET_TO_0	Trigger Power down
VARIABLE 01	=00	Your device/Power	Powering down your device
	=01	Your device/Power	Starting up your device

Controlling more than one device

Sometimes you have to control the power on state of more than one device four your different modes. This is a quite simple extension of the above Memory Map. Simply assign a variable to every device you want to control.

Mode	Trigger	Action	Comment
DVD	DVD	VARIABLE_01_SET_TO_1	Power on device 1
		VARIABLE_02_SET_TO_1	Power on device 2
….	….	….	Other commands
TV	TV	VARIABLE_01_SET_TO_0	Power down device 1
		VARIABLE_02_SET_TO_1	Power up device 2
ANY BEO	Power	VARIABLE_01_SET_TO_0	Trigger Power down

		VARIABLE_02_SET_TO_0	Trigger Power down
VARIABLE 01	=00	Your device/Power	Powering down your device 1
	=01	Your device/Power	Starting up your device 1
VARIABLE 02	=00	Your device/Power	Powering down your device 2
	=01	Your device/Power	Starting up your device 2

Controlling specific device modes

At this point, I think the principle is very clear. But in case device 2 should be an AV-receiver, for example, simply powering on is not sufficient. You will need to set a specific input channel. This can be done very easily by extending the values used of the assigned variable, instead of using simply 0 and 1.

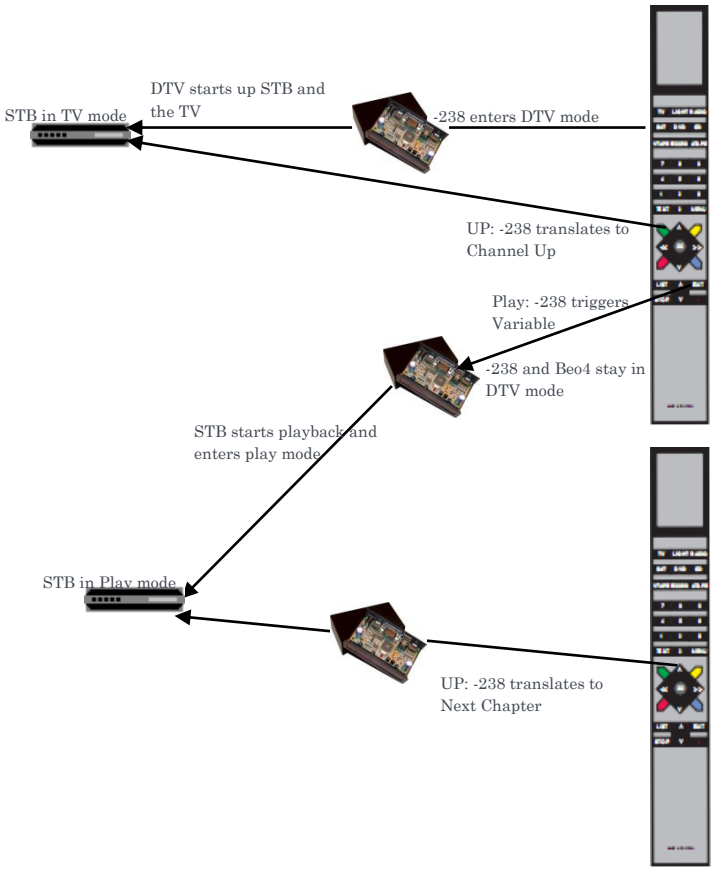
Mode	Trigger	Action	Comment
DVD	DVD	VARIABLE_01_SET_TO_1	Power on device 1
		VARIABLE_02_SET_TO_2	Power on device 2 and switch to input channel 2
….	….	….	Other commands
TV	TV	VARIABLE_01_SET_TO_0	Power down device 1
		VARIABLE_02_SET_TO_1	Power on device 2 and switch to input channel 1
ANY BEO	Power	VARIABLE_01_SET_TO_0	Trigger Power down
		VARIABLE_02_SET_TO_0	Trigger Power down
VARIABLE 01	=00	Your device/Power	Powering down your device 1
	=01	Your device/Power	Starting up your device 1
VARIABLE 02	=00	Your device/Power	Powering down your device 2
	=01	Your device/Channel 1	Starting up your device 2 and set input to channel 1
	=02	Your device/Channel 2	Starting up your device 2 and set input to channel 2

In case your AV-receiver doesn't power up on setting an input channel you will have to use another variable (any maybe a delay). The variable number used for controlling the channel needs to be at least one above the number used for controlling the power on state, to ensure channel switching occurs after powering up. So this example uses VARIABLE 3.

Mode	Trigger	Action	Comment
DVD	DVD	VARIABLE_01_SET_TO_1	Power on device 1
		VARIABLE_02_SET_TO_1	Power on device 2
		VARIABLE_03_SET_TO_2	device 2 channel 2
….	….	….	Other commands
TV	TV	VARIABLE_01_SET_TO_0	Power down device 1
		VARIABLE_02_SET_TO_1	Power on device 2
		VARIABLE_03_SET_TO_1	device 2 channel 1
ANY BEO	Power	VARIABLE_01_SET_TO_0	Trigger Power down
		VARIABLE_02_SET_TO_0	Trigger Power down
VARIABLE 01	=00	Your device/Power	Powering down your device 1
	=01	Your device/Power	Starting up your device 1
VARIABLE 02	=00	Your device/Power	Powering down your device 2
	=01	Your device/Power	Powering up your device 2
VARIABLE 03	=01	Lintronic Delay x	Give device time to start up
		Your device/Channel 1	set to channel 1
	=02	Lintronic Delay x	Give device time to start up
	=02	Your device/Channel 2	set to channel 2

SENDING VARIABLE IR-CODES AT A KEY PRESS

When you take a look at the remotes of non B&O devices you will see a lot of keys. Much more than the Beo4 has. So it is quite tricky to map all necessary keys to one available on the Beo4. B&O usually does by matching functions to Go+number key. But sometimes it isn't as intuitive as you would like it to be. It's more intuitive to match the necessary functions to the available keys of the Beo4 depending on the operation mode. As example you may assign Channel Up/Down to the Up/Down keys when in your STB is in TV mode, when you play a recording on your STB you may assign Skip Chapter Next/Prev to the Up/Down key. The whole operation is done within the B&O mode TV. To solve this you again will need the variables.



This solution - simply using the up/down keys during replaying a recording - is far more intuitive than having to use Go+<number>.

Toggling between two operation modes for a key

Sometimes you have the need to toggle between two IR codes for a specific key or for a group of keys. As shown in the example above for the keys Up, Down, Left and Right. Using one variable you can manage this for up to four keys:

Mode	Trigger	Action	Comment
TV	TV	VARIABLE_01_SET_TO_0	Set Up, Down, Left, Right to normal operation
….	….	….	Other commands
TV	UP	VARIABLE_01_PLUS_1	Trigger command 1/6
	DOWN	VARIABLE_01_PLUS_2	Trigger command 2/7
	LEFT	VARIABLE_01_PLUS_3	Trigger command 3/8
	RIGHT	VARIABLE_01_PLUS_4	Trigger command 4/9
….	….	….	Other commands
TV	PLAY	Your Device/Play	Start Playing Recordings
		VARIABLE_01_SET_TO_5	On a Beo4 Navi it's a good choice to activate Play mode on PLAY
….	….	….	Other commands
TV	STOP	Your Device/Stop	Stop Playing Recordings
		VARIABLE_01_SET_TO_0	Stop Play Mode
….	….	….	Other commands
TV	<BEO-Key>	VARIABLE_01_SET_TO_10	Disable Arrow Keys
….	….	….	Other commands
VARIABLE 01	=01	Your Device/UP	Sending UP
		VARIABLE_01_SET_TO_0	Default mode
	=02	Your Device /DOWN	Sending DOWN
		VARIABLE_01_SET_TO_0	Default mode
	=03	Your Device /Left	Sending LEFT
		VARIABLE_01_SET_TO_0	Default mode
	=04	Your Device /Right	Sending RIGHT
		VARIABLE_01_SET_TO_0	Default mode
	=06	Your Device/Next	Sending Next Chapter
		VARIABLE_01_SET_TO_5	Play mode
	=07	Your Device /Prev	Sending Prev Chapter
		VARIABLE_01_SET_TO_5	Play mode
	=08	Your Device /Rewind	Sending Rewind
		VARIABLE_01_SET_TO_5	Play mode
	=09	Your Device /Forward	Sending Forward
		VARIABLE_01_SET_TO_5	Play mode

When TV mode is entered the mode of the arrow keys is set to normal operation, as you would do by simply mapping the keys. When the key for playing recordings is pressed Variable 1 is set to 5. No trigger is defined for the value 5, so nothing else happens. Only

the mode for the arrow keys is changed. In addition you can use the value 10 for the Variable 1 for disabling the keys.

Switching between more than two operation modes for a key

Sometimes you have the need to switch between more than simply two IR codes for a key. By using one variable per key, you can distinct between 5 different modes of each key. You can use the even values to hold the values for key modes and the odd values for the triggers.

Mode	Trigger	Action	Comment
TV	TV	VARIABLE_01_SET_TO_0	Set key to normal operation
….	….	….	Other commands
TV	<BEO-Key>	VARIABLE_01_PLUS_1	Trigger command
TV	<BEO-Trigger>	VARIABLE_01_SET_TO_even	Set to even number 0,2,4,6,8 to change mode
TV	<BEO-Trigger>	VARIABLE_01_SET_TO_10	Disable key
….	….	….	Other commands
VARIABLE 01	=01	Your Device/IR Mode 1	
		VARIABLE_01_MINUS_1	Stay in Mode
	=03	Your Device/IR Mode 2	
		VARIABLE_01_MINUS_1	Stay in Mode
	=05	Your Device / IR Mode 3	
		VARIABLE_01_MINUS_1	Stay in Mode
	=07	Your Device / IR Mode 4	
		VARIABLE_01_MINUS_1	Stay in Mode
	=09	Your Device/ IR Mode 5	
		VARIABLE_01_SET_TO_0	Reset Mode

Adding 1 to the variable, fires a trigger for the desired IR function. Setting the variable to the desired mode value doesn't fire any trigger. You can again use additionally the value 10, for disabling the key. If you want to automatically switch to a specific mode after a certain operation, you can do this by setting the desired mode in the correlated trigger. In the above example after mode 5 operation is completed, the key mode switches automatically to default mode, by setting the variable to 0. You can use this on any variable trigger and change to any of the modes 0, 2, 4, 6, 8.

MAKING GO+<NUMBER> WORK

If you're familiar with the GO+<number> mechanism as you are using it on PUC sources on your system you can configure your -238 box to do it in the same way. All you need to know is already shown in the examples above:

- We use "Controlling Power on/off for a single device"
- We use "Toggling between two operation modes" for the number keys.

First we have to think about the variables to use. Variable 1 will control the power on/off of the device. Variable 2 will control number keys 0 to 3 and GO, Variable 3 number keys 4 to 7, Variable 4 number keys 8 and 9.

There are two variable values in spare for variable 4. It may be a good idea to use Go+Exit and Go+Stop for additional functions.

Mode	Trigger	Action	Comment
DVD	DVD	VARIABLE_01_SET_TO_1	Power on the device
		VARIABLE_02_SET_TO_0	Set to number mode
		VARIABLE_03_SET_TO_0	Set to number mode
		VARIABLE_04_SET_TO_0	Set to number mode
….	….	….	Other commands
DVD	0	VARIABLE_02_PLUS_1	0, GO+0
	1	VARIABLE_02_PLUS_2	1, GO+1
	2	VARIABLE_02_PLUS_3	2, GO+2
	3	VARIABLE_02_PLUS_4	3, GO+3
	4	VARIABLE_03_PLUS_1	4, GO+4
	5	VARIABLE_03_PLUS_2	5, GO+5
	6	VARIABLE_03_PLUS_3	6, GO+6
	7	VARIABLE_03_PLUS_4	7, GO+7
	8	VARIABLE_04_PLUS_1	8, GO+8
	9	VARIABLE_04_PLUS_2	9, GO+9
	Exit	VARIABLE_04_PLUS_3	Exit,GO+Exit
	Stop	VARIABLE_04_PLUS_4	Stop,GO+Stop
….	….	….	Other commands
DVD	GO	VARIABLE_02_PLUS_5 VARIABLE_03_SET_TO_5 VARIABLE_04_SET_TO_5	To function mode
….	….	….	Other commands
VARIABLE 01	=00	Your device/Power	Powering down your device
	=01	Your device/Power	Starting up your device
VARIABLE 02	=01	Your Device/0	Number 0
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=02	Your Device /1	Number 1
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=03	Your Device /2	Number 2
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0	Default mode

		VARIABLE_04_SET_TO_0	
	=04	Your Device /3	Number 3
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=06	Your Device/Power	B&O often use Power for GO+0 to enable manual power on/off
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=07	Your Device /Your IR Code	IR for GO+1
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=08	Your Device /Your IR Code	IR for GO+2
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=09	Your Device /Your IR Code	IR for GO+3
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=10	Your Device /OK	IR for GO+GO
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
VARIABLE 03	=01	Your Device/4	Number 4
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=02	Your Device /5	Number 5
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=03	Your Device /6	Number 6
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=04	Your Device /7	Number 7
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=06	Your Device /Your IR Code	IR for GO+4
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=07	Your Device /Your IR Code	IR for GO+5
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=08	Your Device /Your IR Code	IR for GO+6
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=09	Your Device /Your IR Code	IR for GO+7

		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
VARIABLE 04	=01	Your Device/8	Number 8
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=02	Your Device /9	Number 9
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=03	Your Device /Exit	Exit
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=04	Your Device /Stop	Stop
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=06	Your Device /Your IR Code	IR for GO+8
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=07	Your Device /Your IR Code	IR for GO+9
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=08	Your Device /Your IR Code	IR for GO+Exit
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode
	=09	Your Device /Your IR Code	IR for GO+Stop
		VARIABLE_02_SET_TO_0 VARIABLE_03_SET_TO_0 VARIABLE_04_SET_TO_0	Default mode

The only functional difference between the memory map shown above and the B&O PUC GO+Number function is, that you have to press GO+GO to achieve a OK command. Simply timing out GO+x to trigger OK with a certain delay, does not work. If you have no need in using Go+Exit, you could use GO+Exit, without triggering any IR code, to quit a GO+x function.