BNCS Range Control

Qt Custom Control

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Description

This is a control to deal with range parameters such as gain.

A “range” is defined as any number that can be accommodated in a variable type “double”. Its range is “range is +/–1.7E308 with at least 15 digits of precision”. This is slightly inefficient as everything is handled as a double even if it’s only controlling a byte value, but handles just about all eventualities – even when numbers are expressed as exponentials such as Bit Error Rate e.g. 1e-4.

There are multiple presentations for this control – either up/down buttons, sliders, button, label or keypad. This makes it suitable for most range applications e.g. Video Gain, Receiver frequency.

This control can be used in Qt Designer directly but only the default presentation will appear. The full editing capabilities of this control are only available in the BNCS Visual Designer.

Settings

You can pass any of the following settings to this control in the format:

<parameter>=<value>

Parameter	**Value**	**Type**	**Notes**
reset		Base	Used to reset the control back to its default state
id		Base	numeric or alphanumeric identifier for this button
style	bigupdown updown popup_bigupdown popup_updown button	Base	

	label		
return	any of the other settings	Base	Return a named parameter from this control e.g. send this to the control `return=text` will return a value of the text setting in the format text=This is the text
device		Base	BNCS device number
slot		Base	BNCS slot number index registered for=slot+offset
offset		Base	BNCS offset index registered for=slot+offset
instance		Base	BNCS instance Tells the button to use a specific instance, this overrides slot and offset, if a named parameter is used this will also look up the slot.
parameter		Base	BNCS parameter Targets the button at a parameter on the current instance, this can overrides slot, offset and slot.
min	**0**	Base	The minimum value of the range value on this control
max	**100**	Base	The maximum value of the range value on this control
defaultvalue	**0**	Base	The default value of the range value on this control
step	**1**	Base	The small step size
bigstep	**10**	Base	The big step size
units		Base	The units e.g 123.456*MHz*

inoffset	**0**	Base	What numeric offset is applied to get a display value before other calculations are applied.
outoffset	**0**	Base	What numeric offset is applied to get a display value after other calculations are applied.
multiplier	**1**	Base	What multiplier to use to get a display value
dp	**0**	Base	The number of decimal places to display. **Note:** setting this resets dp_sent to the same value (this is a backwards compatibility issue for when dp_sent did not exist as a separate parameter)
dp_sent (version 4.5.11.0 onwards)	**0**	Base	The number of decimal places to send to the device See note for "dp" parameter.
notify.valuechanged	**false**	Base	Whether to notify our parent that the value on this control has changed
width	**0**	Base	Minimum width of this control
height	**0**	Base	Maximum width of this control
colour.text colour.background		Button	Colours used on this control use any valid Qt colour
doublepush	**false**	Button	Whether the button should only activate on a double press
settodefault	**false**	Button	Whether activating this button should set the range to its default value
notify	**false**	Button	Whether the button should notify it has been released
navigate	**false**	Button	Whether this button should navigate to the *navigatedest*

			when pressed
navigatedest		Button	The adjustable device to navigate to
showdefaultbutton	**false**	Up/Down	Whether to display the “set to default” button
autorepeat	**true**	Up/Down	Whether pressing and holding the button should increment the value
deviceDescription		Base	Takes device description file and interprets it for this control.
value		Base	The current value in the infodriver
stylesheet.button stylesheet.label		Button/ Label	Set the stylesheet of the button or label

Notifications

Notifications are also in the format:

<parameter> = <value>

Parameter	**Value**	**Notes**
value		current value of the range parameter
button	pressed	

Device Description

The format of the device description file entry is:

```
<param name="BER" slot="26" class="range" style="label" access="readonly">
        <values min="0" max="0" step="0" bigstep="1" defaultvalue="0"/>
        <display inoffset="0" multiplier="0" outoffset="0" units="E-1" dp="1"/>
</param>
```

If the slot is 0 this indicates it is a complex type and the actual parameter is got at run time from instances and the complex instance data.

Version Information

Version	Notes
4.5.11.0	Now uses up_big.bmp and down_big.bmp on the big up/down button. These bitmaps

	are created (by copying up.bmp and down.bmp respectively) if they don't exist.
	Now has two decimal point parameters – one for display, one for how to send to the device

Developers Notes

This control has a number of different presentations – i.e. up/down button, keypad, single button etc.

There is a base control that deals with the fundamentals of the data type and maintains things like the min max, default, step etc. etc. It also has the connection to the network. This control has no screen presentation at all.

To make us of the control you require a "skin". This is one or many buttons that sit on the base control and provide the user interface. There can be many different types of "skin". The skins can have their own logic (eg. colouring the Default button when the value of the parameter is in the default state). The control could shed it's skin and use a completely different presentation if required.