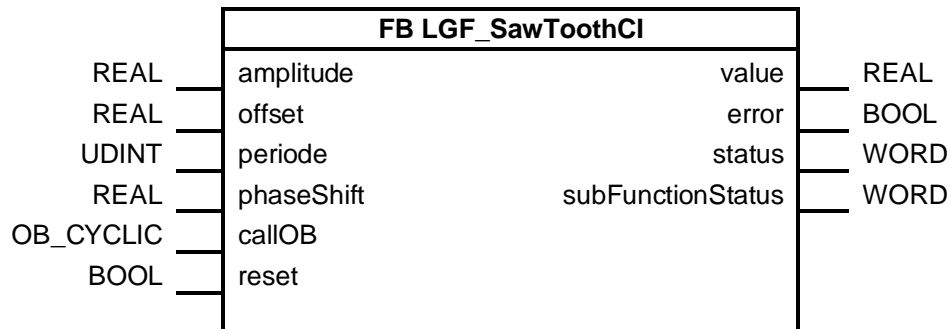## LGF_SawToothCI

Short description

This block generates a sawtooth-shaped signal profile. For this it uses the time interval of the calling **C**yclic **I**nterrupt OB.

Block

```
                      ┌─────────────────────────────────────────┐
                      │          FB LGF_SawToothCI               │
         REAL  ───────┤ amplitude                        value   ├─────── REAL
         REAL  ───────┤ offset                           error   ├─────── BOOL
        UDINT  ───────┤ periode                         status   ├─────── WORD
         REAL  ───────┤ phaseShift             subFunctionStatus ├─────── WORD
    OB_CYCLIC  ───────┤ callOB                                   │
         BOOL  ───────┤ reset                                    │
                      └─────────────────────────────────────────┘
```

Input parameters

Parameters	Data type	Description
amplitude	REAL	Amplitude of the signal profile.
offset	REAL	Offset of the signal profile in the Y-direction.
period	UDINT	Period duration of the signal profile in [ms]
phaseShift	REAL	Phase offset in [ms]
callOB	OB_CYCLIC	Calling wake-alarm interrupt OB (cyclic interrupt OB)
reset	BOOL	Reset of the signal profile.

Note	Changes in the input parameters will be effective immediately.

Output parameters

Parameters	Data type	Description
value	REAL	Current value of the sawtooth signal.
error	BOOL	FALSE: No error TRUE: An error occurred during the execution of the FB.
status	WORD	16#0000-16#7FFF: Status of the FB, 16#8000-16#FFFF: Error identification (see following Table).
subFunctionStatus	WORD	Status or return value of the called FCs and system blocks.

Status and error displays

status	Meaning	Remedy / notes
16#0000	No error	-
16#8600	OB on input "callOB" is not configured / present.	Interconnect the constant name of a configured cyclic interrupt OB at the input "callOB".
16#8601	Error in "QRY_CINT" command.	Check the error code in "subFunctionStatus"

| Note	The status of called commands is output in "subFunctionStatus". In this case, the output value in "status" indicates which command caused the error. In this case, refer to the TIA Portal Online Help section for information on the respective commands.

Principle of operation

The block calculates the values for a sawtooth-shaped signal profile, which is output to the output parameter "value".

The "amplitude", the "offset" in the Y-direction, the "period", and the "phase shift" can be set at the input parameters.

The input parameter "reset" resets the signal profile. At the "value" output parameter, the value "0" is output as long as "reset" is set to "TRUE".

The block must be called in a cyclic interrupt OB. The time interval of the calling cyclic interrupt OB is determined in the FB with the command "QRY_CINT". For this, the constant name of the calling cyclic interrupt OB must be interconnected at the input parameter "callOB".
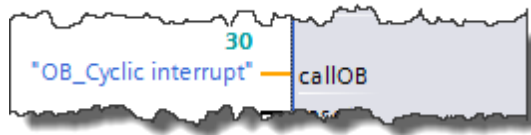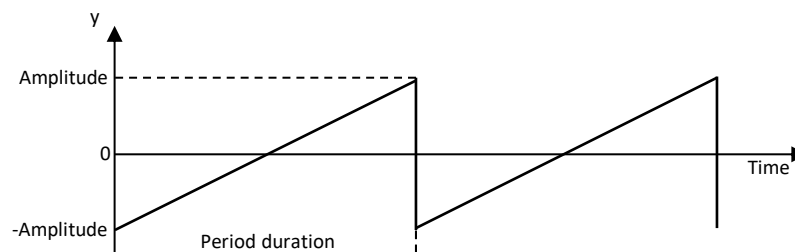

The number of calculated values of the signal profile per period duration is calculated as follows:

$$Quantity\ Values = \frac{Period\ duration}{Time\ interval\ Cyclic\ interrupt\ OB}$$

Note	To obtain a continuous signal profile of the curve, the time interval of the cyclic interrupt OB should not be selected too large depending on the period duration.

The Figure below shows the signal profile of the calculated values.

Further information on libraries in TIA Portal:

- Topic page libraries
  https://support.industry.siemens.com/cs/ww/en/view/109738702
- Guideline on Library Handling
  https://support.industry.siemens.com/cs/ww/en/view/109747503
- Programming Guideline for S7-1200/1500 in chapter "Libraries"
  https://support.industry.siemens.com/cs/ww/en/view/81318674
- Programming Styleguide
  https://support.industry.siemens.com/cs/ww/en/view/81318674