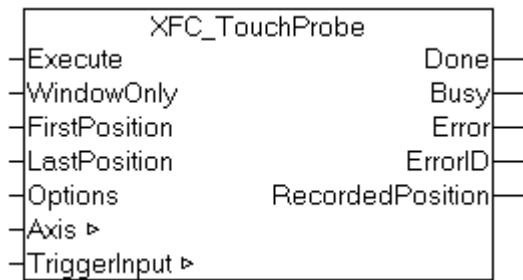


TwinCAT PLC Library: TcMC2 XFC

XFC_TouchProbe



The *XFC_TouchProbe* function block records an axis position at the time of the edge of a digital input signal (measuring probe function).

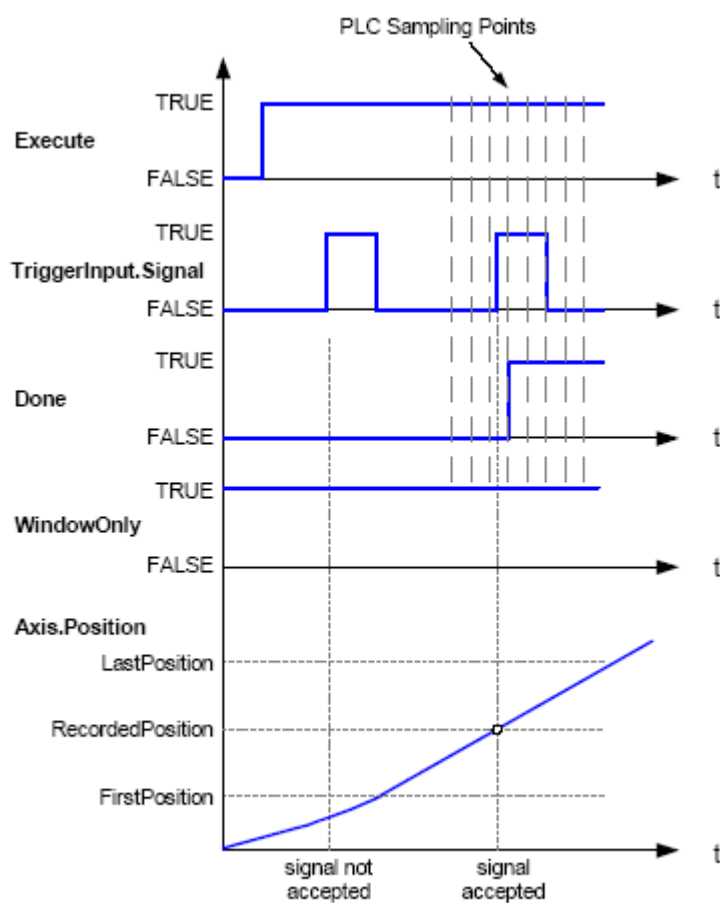
The digital input signal is recorded with an XFC input terminal (e.g. EL1252) with time stamps for the falling and rising signal edge. The function block determines the axis position at which the edge change occurred and issues it as *RecordedPosition*.

In contrast to the conventional TouchProbe function [MC_TouchProbe](#) the digital input is not directly linked to the drive hardware. The position of each EtherCAT or Sercos axis in the system can be recorded via the time stamp of the input. This axis is exactly synchronised via [Dead time compensation](#).

The function block can be used in free-running or single-shot mode. In free-running mode each edge of the input signal is recorded (maximum one edge per PLC cycle). In single-shot mode the next edge is only recorded once until the function block is triggered again.

The optional window function can be used to ignore signal edges outside the defined position filter.

Signal curve



Timing example TouchProbe

Inputs

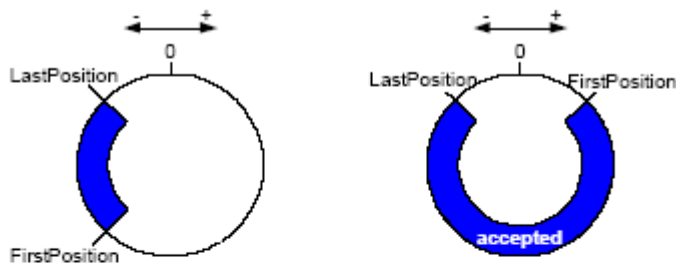
```

VAR_INPUT
    Execute          : BOOL;
    WindowOnly       : BOOL;
    FirstPosition    : LREAL;
    LastPosition     : LREAL;
END_VAR

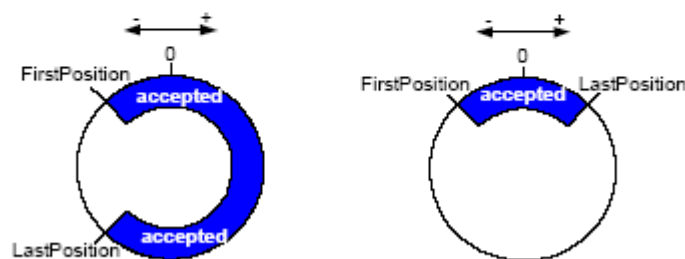
```

- Execute** If *Execute* is active, the axis position is recorded at the defined signal edge of the input signal. A falling edge at *Execute* terminates the process immediately. Depending on the configuration in [TriggerInput.FreeRun](#) the next signal edge is recorded and evaluated once. If FreeRun is TRUE, a new position value is recorded continuously with each defined edge of the input signal, while Execute remains TRUE.
- WindowOnly** If this option is active, only one position inside the window between *FirstPosition* and *LastPosition* is recorded. Positions outside the window are discarded. Only if the recorded position lies inside the window does *Done* become TRUE. The recording window can be interpreted in terms of absolute or modulo values. In this connection the flag [ModuloPositions](#) in the structure [TriggerInput](#) is to be set accordingly. In the case of absolute value positions there is exactly one window. In the case of modulo value positions the window repeats itself within the modulo cycle defined in the axis parameters (e.g. 0 to 360 degrees).
- FirstPosition** Initial position of the recording window, if WindowOnly is TRUE. This position can be interpreted as an absolute or modulo value. In this connection the flag [ModuloPositions](#) is to be set appropriately in the structure *TriggerInput* (see below).
- LastPosition** Final position of the recording window, if WindowOnly is TRUE. This position can be interpreted as an absolute or modulo value. In this connection the flag [ModuloPositions](#) is to be set appropriately in the structure *TriggerInput* (see below).
- Options** Optional parameters
- Options. **UseAcceleration** *UseAcceleration* can be enabled to take the axis acceleration into account for position calculations. There will be an advantage if the acceleration set value can be used. If the axis is an encoder axis, the position data may be noisy and the acceleration value will be noisy as well. In this case *UseAcceleration* is supposed to be false.

A. FirstPosition < LastPosition



B. FirstPosition > LastPosition



examples of windows, where trigger events are accepted (for modulo axes)

Outputs

```

VAR_OUTPUT
    Done           : BOOL;
    Busy           : BOOL;
    Error          : BOOL;
    ErrorID        : UDINT;
    RecordedPosition : LREAL;
END_VAR

```

Done	The value <i>RecordedPosition</i> is valid. If <i>TriggerInput.FreeRun</i> is TRUE, <i>Done</i> only remains TRUE only for one PLC cycle and is then reset automatically, since <i>TouchProbe</i> is automatically reactivated.
Busy	Becomes TRUE as soon as the function block is active, and becomes FALSE when it has returned to its initial state. If <i>TriggerInput.FreeRun</i> is TRUE, <i>Busy</i> remains TRUE continuously, even if <i>Done</i> or <i>Error</i> become TRUE, since <i>TouchProbe</i> is automatically reactivated.
Error	Becomes TRUE, as soon as an error occurs.
ErrorID	If the error output is set, this parameter supplies the error number .
RecordedPosition	Axis position recorded at the point in time of the trigger signal. If <i>TriggerInput.FreeRun</i> is TRUE, the function block operates in free-running mode, so that each valid change in the input signal leads to a new <i>RecordedPosition</i> . The position can be analysed, if <i>Done</i> becomes TRUE.

Inputs/outputs

```

VAR_IN_OUT
    Axis           : AXIS\_REF;
    TriggerInput   : XFC\_TRIGGER\_REF;
END_VAR

```

Axis	Axis data structure
TriggerInput	<i>TriggerInput</i> is a data structure for describing the trigger source and for feeding the state and time stamp of a digital input signal.

The axis data structure of type [AXIS_REF](#) addresses an axis uniquely within the system. Among other parameters it contains the current axis status, including position, velocity or error status.