SPT NC Homing

Last updated by | Nick Higgins | Oct 11, 2022 at 1:05 PM EDT

Contents

Overview

Collection of homing sequences that can be applied to function blocks implementing `I_BasicAxis`. All function blocks implement `I_MotionSequence` and therefore only basic parameterization is required. Sequencing and axis assignment occurs in the property setter of the consuming `I_BasicAxis` implementation.

Function Blocks

FB_HomeRoutine_HardStop

```
FUNCTION_BLOCK FINAL FB_HomeRoutine_HardStop EXTENDS FB_BaseFB IMPLEMENTS I_MotionSequence
```

Sets torque limit and moves axis at a set velocity toward specified end of travel. When a mechanical interference is detected via increasing position lag, sets home to interference position.

Properties

Property	Type	Access	Description
HomePosition	LREAL	RW	Get/Set position that should be set once hard stop is detected
Parameters	ST_StepBlockLagBasedParameters	RW	Get/Set parameter structure

FB_HomeRoutine_SetPosition

```
FUNCTION_BLOCK FINAL FB_HomeRoutine_SetPosition EXTENDS FB_BaseFB IMPLEMENTS I_MotionSequence
```

Sets current axis position equal to `HomePosition` property.

Properties

Property	Type	Access	Description
HomePosition	LREAL	RW	Get/Set position that should be set

FB_HomeRoutine_SetZeroHere

```
FUNCTION_BLOCK FINAL FB_HomeRoutine_SetZeroHere EXTENDS FB_BaseFB IMPLEMENTS I_MotionSequence
```

Sets current axis position to 0.0

DUTs

ST_StepBlockLagBasedParameters

```
TYPE ST_StepBlockLagBasedParameters :
    STRUCT
        Direction              : MC_Home_Direction := mcNegativeDirection;
        Velocity               : LREAL             := 10;
        Acceleration           : LREAL             := 100;
        Deceleration           : LREAL             := 100;
        Jerk                   : LREAL             := 1000;
        DetectionVelocityLimit : LREAL             := 5;
        DetectionVelocityTime  : TIME              := T#500MS;
        TimeLimit              : TIME;
        DistanceLimit          : LREAL;
        TorqueLimit            : LREAL            := 10;
        LagLimit               : LREAL            := 10;
        Options                : ST_Home_Options3 := (InstantLagReduction := TRUE);
    END_STRUCT
END_TYPE
```

Property	Type	Description
Direction	LREAL	Enumeration that defines the initial direction of movement for the search procedure
Velocity	LREAL	Maximum travel velocity (>0).
Acceleration	LREAL	Acceleration (≥0). If the value is 0, the standard acceleration from the axis configuration in the System Manager is used.
Deceleration	LREAL	Deceleration (≥0). If the value is 0, the standard deceleration from the axis configuration in the System Manager is used.
Jerk	LREAL	Jerk (≥0). If the value is 0, the standard jerk from the axis configuration in the System Manager is used.
DetectionVelocityLimit	LREAL	Velocity that must be fallen below for the time DetectionVelocityTime in order to detect driving against the fixed stop
DetectionVelocityTime	LREAL	Time for detecting the velocity undershoot when driving against the fixed stop.
TimeLimit	LREAL	Exceeding this time leads to the search procedure being aborted.
DistanceLimit	LREAL	Exceeding this distance in relation to the start position leads to the search procedure being aborted.
TorqueLimit	LREAL	The motor torque is limited to this value, in relation to the weight counterbalance that is possibly parameterized in the drive, in order to avoid mechanical damage.
LagLimit	LREAL	Position lag value which, if exceeded, leads to detection of driving against the fixed stop

Property	Type	Description
Options	ST_Home_Options3	InstantLagReduction: When referencing to a mechanical fixed stop, the sudden stop produces a position lag in the NC axis, which is dissipated with the parameterized dynamic values in the further course. This can lead to an assumed delay when observing the sequence, but it is purposeful in particular with "soft" fixed stops. The position lag is dissipated abruptly by setting this flag