



Twincat Library: Using TIOB

Application Note

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1 Target and Purpose

The Triamec TwinCat library comes with basic sample codes for NCI and CNC. This application note describes additional functions available in this library on using the TIOB board.

2 PLC Code

The following declaration is made in the global definition "Global_Variables_Triamec"

```
tiob      : TL_Tiob;
```

add the following code to the task MAIN_SLOW

```
(* The data received and sent depends on the parameter subAxis. *)
(* - subAxis=0  receive encoder position of axis 0 and Ain1 and Ain2. Send AO1 if publish=true *)
(* - subAxis=1  receive encoder position of axis 1 and Ain3 and Ain4. Send AO2 if publish=true *)
(* The parameter iAxis specifies the logical axis number with the same behavior as for drive axes. *)
tiob.iAxis := 5;
tiob.station := 30;
tiob.subAxis := 0;
(* an auxiliary register to be published (TIOB to master) *)
tiob.RegInAux := tiob.register.GeneralCommandsAnalogOutput1;
tiob.CallSlow(Trialink:=Trialink);
```

add the following declaration to the task MAIN_FAST

```
ToTiob      : TL_AxisFast;
TiobRoundtripTicks : REAL;
```

and the code

```
(* receive from TIOB: *)
(* tiob.encoder is encoder of the subAxis specified in slow task *)
(* tiob.AIn1or3 is Analog input 1 for subAxis0 and 3 for subAxis 1 *)
(* tiob.AIn2or4 is Analog input 2 for subAxis0 and 4 for subAxis 1 *)
(* send analog values as axis iAxis = unique axis number *)

tiob.CallFast(Trialink:=Trialink);

(* ToTiob.PosIn := 4.33; *) (* value to be sent *)
ToTiob.filter.freq_corner := 2000;
ToTiob.iAxis := tiob.iAxis;
ToTiob( Trialink := Trialink );

(* The rest is a way to calculate TIOB data roundtrip *)
TiobRoundtripTicks := (FromTiob.aux-ToTiob.PosIn)/0.001;
ToTiob.PosIn := ToTiob.PosIn + 0.001;
IF ToTiob.PosIn>=5 THEN
  ToTiob.PosIn := 0;
END_IF
(* Measured Roundtrip ticks are FastHandler.pll.BufferTicks + 1/f/Ts/6.3 of filter *)
(* BufferTick=3, 200Hz =1.6 x=2.3 gives 6.9 Ticks *)
(* BufferTick=3, 2000Hz=0.2 x=2.3 gives 5.5 Ticks *)
(* with BufferTicks=2.5 and Ts=0.5ms we do not get any Sync warnings *)
```