

TADC

Type *TADC* defines the properties of an analogue input or output, and the signal type as well.

Member	Format	Explanation
Resolution	INT	ADC / DAC resolution 0 = 16 Bit 1 = 12 Bit 2 = Module of SIMATIC S7
SignalType	INT	Type and range of analogue signal 0 = -10 .. +10V 1 = 0 .. +10 V, applied to a -10..+10V terminal 2 = 0 .. 20 mA 3 = 4 .. 20 mA, applied to a 0..20mA terminal

Generally, the library assumes to use -10..+10V resp 0..20mA terminals only. In this context, -10V corresponds to 0x8000, 0V (0 mA) to 0x0000 and +10V (20 mA) to 0x7FFF.

Member *SignalType* defines the analogue signal range.

- Do not use the Beckhoff TwinCAT System Manager capabilities to set analogue input properties. Leave voltage inputs at -10..+10V resp current inputs at 0..20mA.
This will keep the signal in a format, which is good for signal processing by this library (e.g. automatic wire break detection on 4..20mA inputs).

TRange

TRange defines the range of a physical value, corresponding to the range of analogue inputs/outputs.

Element	Format	Beschreibung
Anfang	REAL	Physical value, corresponding to smallest possible analogue signal value : CASE TADC.SignalType OF 0 ➔ corresponding to -10V 1 ➔ corresponding to 0 V 2 ➔ corresponding to 0 mA 3 ➔ corresponding to 4 mA
Ende	REAL	Physical value, corresponding to largest possible analogue signal value : CASE TADC.SignalType OF 0 ➔ corresponding to +10V 1 ➔ corresponding to +10 V 2 ➔ corresponding to 20 mA 3 ➔ corresponding to 20 mA

FB AnalogIn

This function block converts a got from an analogue input WORD into an appropriate physical value.

Interface :

VAR_INPUT	Format	Beschreibung
lwn	WORD	ADC result bit pattern, got from the analogue input
isADC	TADC	Properties of AD converter and analogue signal. See description of <i>TADC</i>

isRange	TRange	Physical value range, corresponding to the range of analogue input
---------	--------	--

VAR_OUTPUT	Format	Beschreibung
qrValue	REAL	Analogue signal value, converted into a physical value according to <i>TRange</i> setting
QbError	BYTE	Error state 0 = no error Bit 0 = wrong setting of AD converter or Signal • <i>isADC.Resolution</i> out of [0..2] • <i>isADC.SignalType</i> out of [0..3] Bit 1 = Wire break (for 4..20mA signals only) Bit 2 = <i>iwIn</i> out of range (e.g. found a 16 bit signal, but 12 bit only expected)