

A - Analog Comparator/Threshold Value Switch

Can be used for	
Device	From version no.:
EASY500	01
EASY700	01

General

The devices provide 16 analog value comparators/threshold value switches A01...A16.

An analog value comparator or threshold switch enables you, for example, to compare analog input values with a setpoint, another analog value or the actual value of another function relay. In this way, you can implement simple closed-loop control tasks such as for two-point controllers.

You must use an analog value comparator in your circuit diagram exclusively as a contact. This switches if the condition of the comparison mode you have selected is fulfilled.

All AB, DA and DC versions of the device concerned are equipped with analog inputs.

Analog inputs for EASY500: I 7 and I 8

Analog inputs for EASY700: I 7, I 8, I 11 and I 12

Compatibility with EASY400 and EASY600

If you wish to load an existing EASY400 or EASY600 circuit diagram, the available comparison functions and parameters are retained. The analog value comparator of an EASY500 or EASY700 operates in the same way as the function relay of an EASY400 or EASY600.

The entered setpoints are automatically converted to the improved resolution of the EASY500/700 analog inputs. For example, the EASY400/600 setpoint "5.0" is converted to the EASY500/700 setpoint "511".

Function

The possible analog comparisons are shown in the table below. Parameters of the function relay in the section [Operating mode](#).

Factors F1 and F2 can be used as input values in order to boost or adjust the values of the function relay inputs.

Input OS can be used as an offset for input I 1.

The input HY is used as a switch hysteresis for I 2 and is applied to both positive and negative values.

Linking and Parameter Assignment of an Analog Value Comparator

Requirements: You have included a control relay in the project and have switched to Circuit Diagram View.

Note: An analog value comparator function relay does not have to be activated by a coil function. The comparison is carried out automatically as soon as the device is in Run mode. This function relay is only linked as a contact that switches according to the comparison result.

- Position an A analog value comparator operand in the circuit diagram on a contact field.
- In the Properties field window select the required function block number between 1 and 16 on the Circuit Diagram Element tab.
- If required, change the switch function of the contact from break to make contact.
- In the Parameters tab enter the required parameters of the setpoints and the Mode.
- Connect the contact Axx with an appropriate coil.

► If required, change the enable of the parameter display and/or write a [comment](#) for the selected operand.

Circuit diagram elements and parameters

	Description	Note
Function relay input (setpoint)		
I1	Comparison value 1	
F1	Gain factor for I1 ($I1 = F1 * \text{value}$)	There is no default Factor setting
I2	Comparison value 2	
F2	Gain factor for I2 ($I2 = F2 * \text{value}$)	There is no default Factor setting
OS	Offset for the value at I1, $I1_{OS} = OS + \text{actual value at I1};$	There is no default Offset setting
HY	Switch hysteresis for value at I2 (value HY is used for both positive and negative hysteresis.) $I2_{HY} = \text{Actual value at I2} + HY,$ $I2_{HY} = \text{Actual value at I2} - HY;$	There is no default Hysteresis setting
Contact		
Ax	Status 1 if condition is fulfilled (e.g. $I1 < I2$ with LT mode active)	The function block operates in the integer value range from -2 147 483 648...+2 147 483 647.
Coil		
-	-	
Mode		
LT	Less than ($I1 < I2$)	The only difference with comparison modes GT, GE, LT and LE is that GE and LE also switch on the setpoint. EASY500 and EASY700 support five comparison modes so that all analog value comparators from EASY400 to EASY800 are compatible.
LE	Less than or equal to ($I1 \leq I2$)	
EQ	Equal to ($I1 = I2$)	
GT	Greater than ($I1 > I2$)	
GE	Greater than or equal to ($I1 \geq I2$)	
Parameter display		
Call enabled	The parameters can be viewed on the device.	
Simulation		
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Operand Selection for the Inputs I1, I2, F1, F2, OS and HY

Operand	Description
Constant	0...9999
C	Output of a counter relay (e.g. C3QV)
IA	Analog input of the device ($I7 = IA1, I8 = IA2, I11 = IA3, I12 = IA4$), if available
T	Output of a timing relay (e.g. T4QV)

Tip: Refer to the EASY500/700 manual (AWB 2528-1508x) for more information on the function block (e.g. signal diagram).