Greenhouse Temperature Controls

Task definition

easy is required to control the sunblinds and the heating according to the indoor temperature in the greenhouse. The blinds are also pulled up when the wind is strong.

Selector switch S1 enables you to switch the system to Automatic or Manual mode (e.g. for servicing).

In **Automatic mode** a temperature sensor compares the measured temperature with the preset value via the analog input:

- If the measured temperature is above 19 °C the blinds are pulled down.
- If the temperature is below 15 °C, the blinds are pulled up and the heating switches on after a ten-minute delay (T01).
- The heating is then switched off again once the indoor temperature reaches 17 °C.

Note!

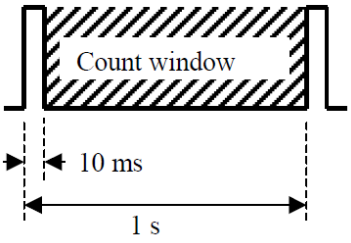
In Automatic mode the blinds can only be pulled up when the time switch is activated
(Mo . Su, 8:00 - 18:00).

Time switch H01 = Channel A: Mo - Su 08:00 - 18:00

If the time switch is deactivated, the temperature inside the greenhouse is only regulated directly via the heating: at 15 °C ON and at 17 °C OFF.

To prevent the blinds from being damaged, these should be pulled up when there are strong winds. For this a wind meter measures the wind strength and supplies pulses to counter C01 by the rotation of the wind wheel.

The counter is parameterised so that it counts the pulses generated within 1 second (count window). After this second, the counter is reset by means of a 10 ms signal and starts to count the pulses again.



If the counter receives 10 pulses or more within the count window, it interprets this as a strong wind and activates marker M06 that initiates the pulling up of the blinds. The marker stays active for 20 seconds irrespective of the pulses counted during this time. The count window is not evaluated again until after the 20 second period has elapsed. If the wind is still too strong, the marker remains activated and the blinds remain pulled up. If less than 10 pulses are output during the count window, the marker becomes inactive. In this case, only the measured temperature determines whether the blinds are pulled up or down.

In **Manual mode** you can move the blinds up or down in jog mode via the P buttons on the easy.

P2 (Jog up)

P4 (Jog down)

Note!

The installed limit switches stop the motors for the blinds both for opening and closing the blinds.

Device class used

easy500

Wiring

Inputs

I01 = S1 Selector switch (System: MANUAL/AUTOMATIC)
I02 = S2 Wind speed signal
I07 = Analog signal of the temperature sensor (A01, A02, A03)

Outputs

Q01 = M1 Motor 1 down
Q02 = M1 Motor 1 up
Q03 = E1 Heating system

Parameters

T01 = 10-minute on delay for heating system E1.
T02 = 20 s up signal with wind.
T03 = 1s signal for counting the pulses of the wind meter
C01 = Wind counter
A01 = I07 ≥ 6.0V = 619 (= 19 °C Blinds down)
A02 = I07 ≥ 5.8V = 599 (= 17 °C Heating OFF)
A03 = I07 ≤ 5.6V = 578 (= 15 °C Blinds up and heating ON)
H01 = Time switch for blinds opening times