10005/1/1 Watchdog module (WD)

Description

The watchdog module monitors system parameters including:

- the application loop maximum execution time in order to detect if the process is executing its program correctly and is not looping (hang-up).
- the application loop minimum execution time in order to detect if the processor is executing its program correctly and is not skipping program parts.
- 5 Vdc voltage monitoring for overvoltage and undervoltage (5 Vdc ± 5 %).
- memory error logic from CPU, COM and MEM modules. In case of a memory error, the watchdog output is de-energized.
- ESD input to de-energize the watchdog output independently from the processor. This ESD input is 24 Vdc and galvanically isolated from the internal 5 Vdc.

In order to be able to test the WD module for all functions, the WD module itself is a 2-out-of-3-voting system. Each section monitors the parameters described above.

The maximum WDG OUT output current is 900 mA (fuse 1A) 5 Vdc. If the number of output modules on the same 5 Vdc supply require a higher current (total of WD input currents of the output modules), then a watchdog repeater (WDR, 10302/1/1) must be used, and the load must be divided over the WD and the WDR.

Connections

For safety-relevant applications, the plant ESD can be connected directly to the WD module. In case of an ESD, the outputs will be de-energized independently from the processor.

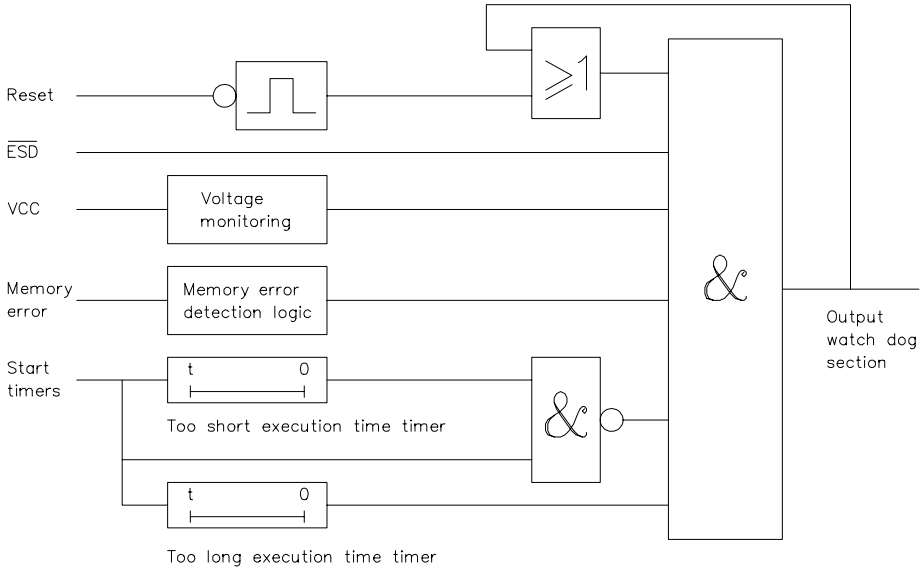

Figure 1 Watchdog section

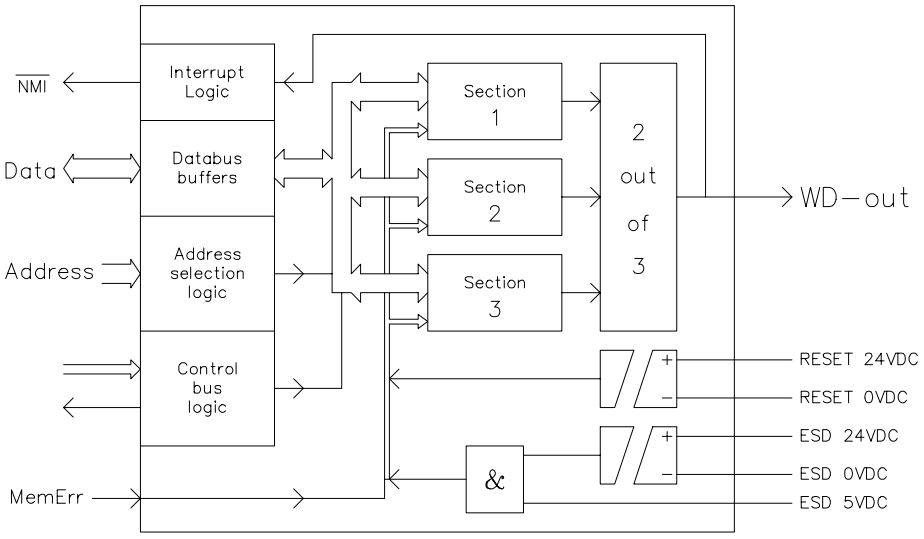

Figure 2 Watchdog module

The watchdog module terminates on the front to the 10005/O/1 module or the S-BUS located on top of the Central Part rack.

Jumpers

The jumper settings of the 10005/1/1 module are as follows:

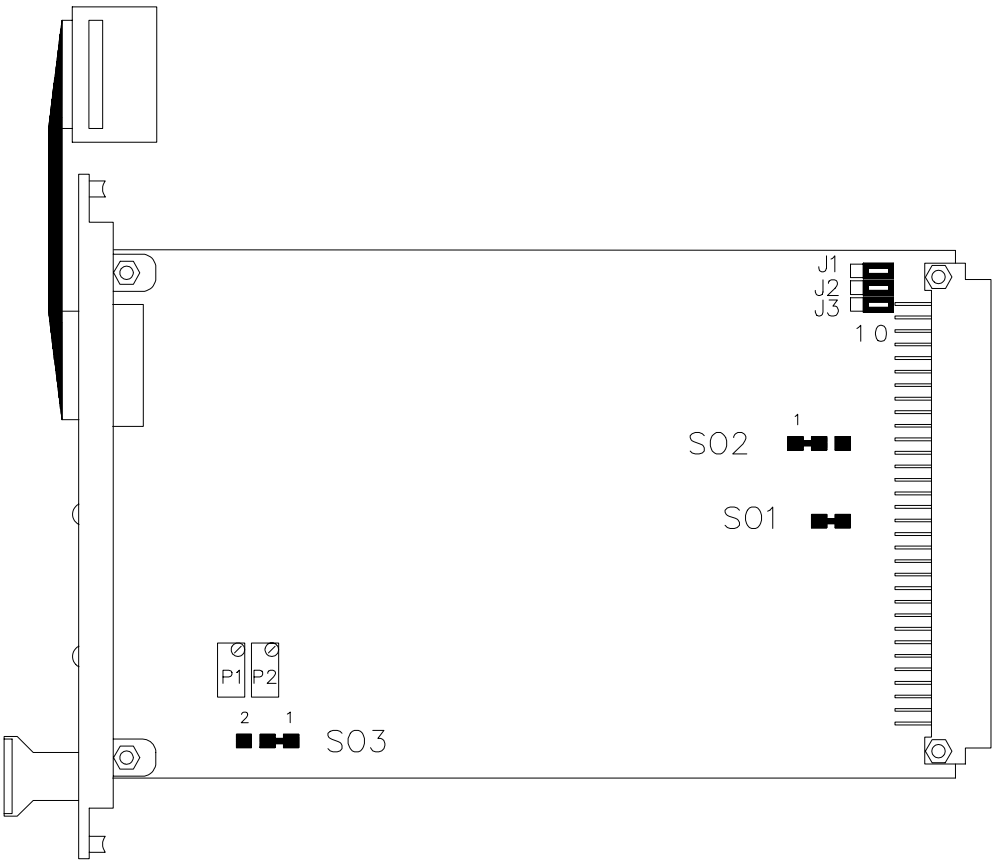

Figure 3 Jumper settings on 10005/1/1 module

The solder jumpers SO1 and SO2 are factory-set.

Position 1 (as shown in Figure 3) of the solder jumper SO3 is used for those applications that always require a manual start command.
The solder jumper SO3 in position 2 is used for those applications that have to start automatically after power-up (warm start). In the latter case, a manual reset is still required after a system trip. An automatic start is not executed if the system was powered off with a fault present (VDE 0116). In that case it still requires a manual reset (resulting in cold start).

Jumpers J1 to J3 must be positioned as shown in Figure 3.

Technical data

The 10005/1/1 module has the following specifications:

General

Type number:	10005/1/1 01301*
Approvals:	CE, TÜV, UL
Software versions:	all
Space requirements:	4 TE, 3 HE (= 4 HP, 3U)

Power

Power requirements:	5 Vdc 175 mA (without WDGOUT output current)
Ripple content:	< 50 mV p-p

Input

ESD1 input:	24 Vdc 5 mA
Reset input:	24 Vdc 10 mA
ESD2 input:	5 Vdc 10 mA

*** Note:**
10005/1/1 modules with suffix code 01301 are functionally identical to 10005/1/1 modules without a suffix code. The changes involve improved production yield and reliability.

Note:
Do not remove or replace this module while the power on its Central Part is on.