

Data Sheet no. 1.59/1

Fast Switch-Off Circuit with Control, Type H404-DP

1. Application

The fast switch-off circuit is applied for HVAC test systems based on test transformers. It enables the fast reduction (within less than 1 ms) of the primary voltage of the test transformer (to about 50% of previous value) in case of a breakdown of the test object until the circuit breaker switches off. This causes the early extinction of the breakdown arc and avoids multiple ignitions of the arc as well as related overvoltages. The stress of the test object and the damage of its insulation are reduced.

2. Principle

The fast switch-off control H404-DP is used for the fast detection of breakdowns, based on measuring the voltage gradient du/dt . It generates the necessary signals to trigger a thyristor module. This module switches an additional high inductive load (reactor for low-voltage power supply of the HVAC test system or transformer for high-voltage power supply of the HVAC test system) in parallel to the primary winding of the test transformer and reduces in combination with the impedance of the power supply the primary voltage to approx. 50 % (see Fig. 1).

A microcontroller in the fast switch-off control H404-DP measures the incoming AC voltage in periods of

50 μ s and calculates the voltage amplitude and the du/dt . If the measured du/dt exceeds an adjustable limit and the test voltage is higher than a given limit, the microcontroller generates the ignition signals for the thyristors (SCRs) and switches-off the operating switch of the AC control system via a relay contact.

3. Design

The control H404-DP communicates with the overall AC control system via a Profibus-DP interface. Therefore it contains no operating elements like switches or trimmers to set its parameters and can be used in combination with a PROFIBUS master device only.

The input of the control H404-DP has a high impedance and can be connected directly to the output of the capacitive voltage divider in the HV circuit.

The thyristor interface can drive up to three thyristor modules via the ignition boards TSA-1. The readiness of the thyristor modules is supervised by digital inputs. In case of thyristor modules malfunction, the control H404-DP prevents the switching-on of the operating switch relay of the AC control system.

The inductive load is selected according to the data of the test system.

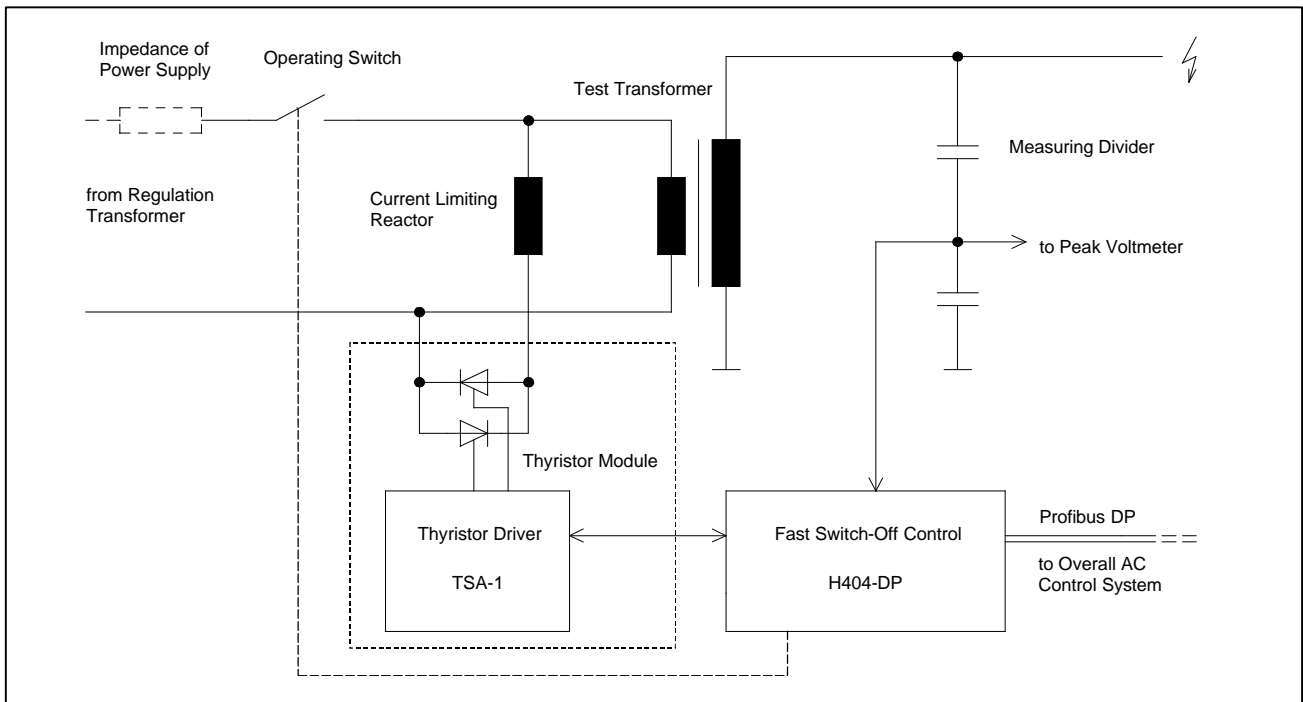


Fig. 1: Application of the control H404-DP in an AC test system

Technical parameters			
Power Supply	24 V DC / 200 mA	Relay output	250 VAC / 3 A max. change-over contact, potential free
Signal input		Thyristor interface	
Impedance	10 MOhm / 33 pF	Numbers	3
Voltage range	20 ... 1000 V (peak)	Output (open collector)	max. 30 V / 40 mA
Frequency range	20 ... 300 Hz	Input (supervision)	24 VDC / 10 mA
Connector type	N	Dimensions	
Monitor output		Length	190 mm
Impedance	300 Ohm	Height	125 mm
Output voltage	Input voltage : 100	Width	65 mm
Delay after breakdown			
SCR ignition impulse	< 100 µs		
Relay contact	< 3 ms		

For further information please contact:

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