

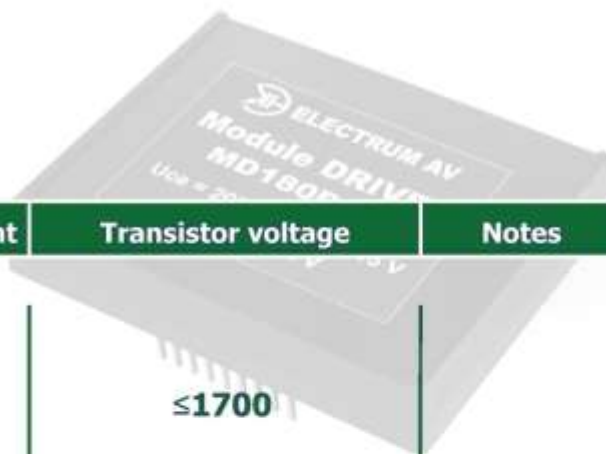
ELECTRUM



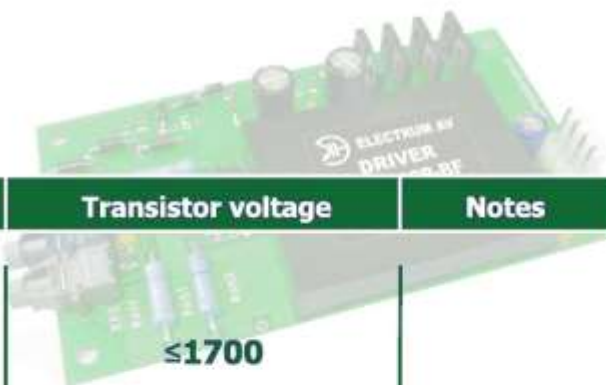
NEW SEMICONDUCTOR POWER IS COMING...

PRODUCTION

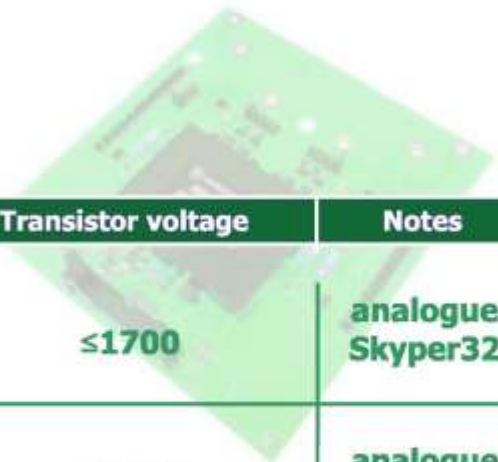
ELECTRUM AV



	Output current	Transistor voltage	Notes
 MD180П-B(1)	1	8	≤1700
 MD280П-B(1)	2	8	≤1700
 2MD180П-B(1)	2	8	≤1700
 MD2160П-B(1)	2	8	≤1700
 MD150A	1	5	≤1700 analogue M57962
 MD1120П-A(1)	1	12	≤1700 analogue VLA500-01



Type	Channels	Output current	Transistor voltage	Notes
 DR180P-B(1)	1	8	≤1700	
 DRA180P-B(1)	1	8	≤3300	analogue SKHI10
 DR280P-B(1)	2	8	≤1700	analogue SKHI23
 2DR180P-B(1)	2	8	≤1700	analogue SKHI23
 DRB280P-B(1)	2	8	≤1700	
 DR1300P-BF	1	30	≤1700	
 DR6120P-A	6	12	≤1700	



Type	Channels	Output current	Transistor voltage	Notes
 DR2160P-B(1)	2	16	≤1700	analogue Skyper32
 DR1480P-B(1)	1	48	≤1700	analogue ISD1548AI
 DR1280P-BF	1	28	≤6500	analogue ISP0635, ISD536F2, ISD418F2
 DR2180P-B(1)	2	18	≤1700	analogue 2SD315AI
 DR2180P-B(2)	2	18	≤1700	analogue 2SD300C
 DR2180P-B(3)	2	18	≤1700	analogue 2SP0320T
 DR2180P-B(4)	2	18	≤1700	analogue 2SP0115
 DR2180P-B(5)	2	18	≤3300	analogue 2SB315A
 DR2180P-BF	2	18	≤3300	analogue 2SD315B
 DR2180P-BF(1)	2	18	≤1700	analogue 2SP0320V(S)

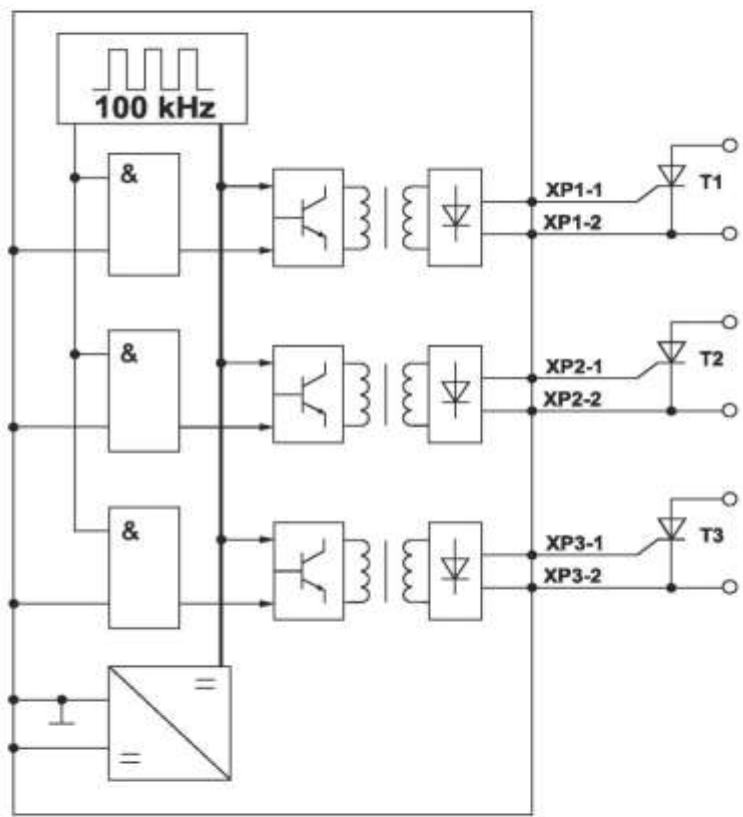


TTMD-T3, three-channel driver
is intended for independent control of three thyristors in compose of three-phase bridges.

TTMD-T3 provides galvanic isolation of control circuits.

In TTMD-T3 is used transfere method of «wide» control impulse trough transformer by high-frequency filling.

Range of logical control signal	5...15 V
Supply voltage	15...27 V
Current consumption	200 mA
Output current of control output	200 mA
DC isolation voltage	4000 V



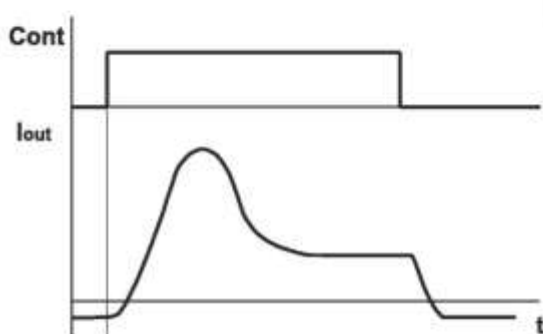
- Purpose:
- three-phase rectifiers (also reverse) which works on load with high inductance;
 - power regulators (also with regulation of transformers primary processing).

- TTMD-T3 main advantages:
- small mass and size rates by using highly reliable component base;
 - using of output stage on base of small size high frequency transformers provide high voltage rate of electrical isolation strength «input-output» and low current consumption from power supply.

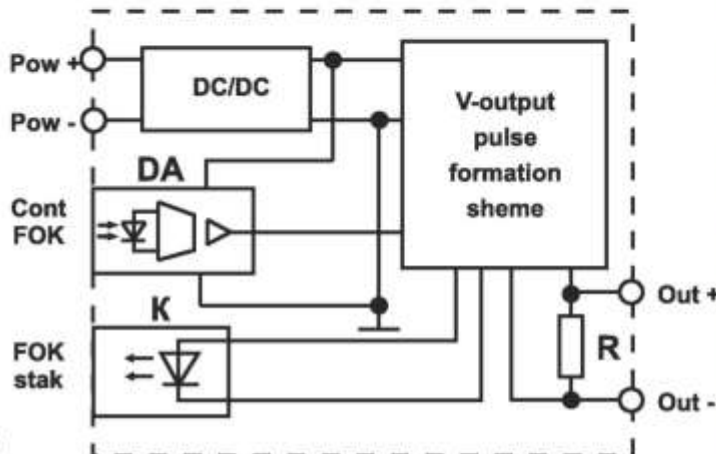
Thyristor driver TD is intended to control power thyristors with current $320 \div 5000$ A. TD is produced in two design decisions with different variants of control that allows to use TD to control big thyristors range with almost all current ratings.



Functioning diagram



Structural circuit

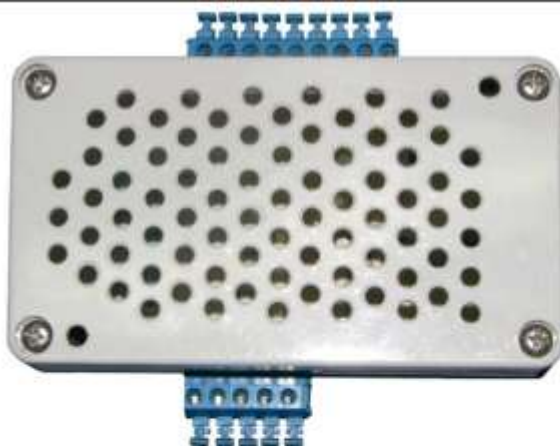


Control signal tyres	10, 50 mA; 5, 15, 24, 27 V; FOK
Voltage supply	15-30 V
Switching frequency, kHz	0,25, 5, 10, 20
Amplitude of the reheat impulse	5 A
Amplitude of the positive long-term supporting current	1 A
Voltage of electrical isolation strength	to 15000 V

Purpose: intermediate between thyristor modules and motor control scheme, voltage converters, alternative energy systems.

TD main advantages:

- small mass and size rates by using of highly reliable component base;
- high efficiency of built-in converter;
- low thermal losses;
- high impulse current.



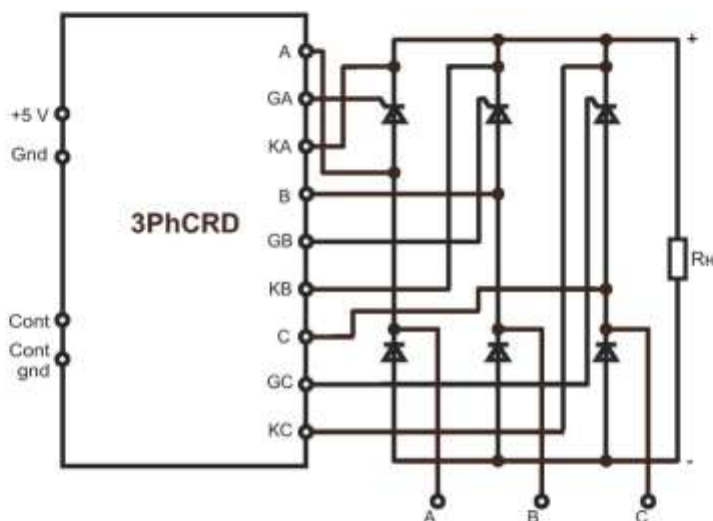
Three-phase controlled rectifier driver

3PhCRD is intended for control of three-phase thyristor-diode bridge and in common allows to build three-phase controlled rectifier.

Three-phase controlled rectifier driver provides galvanic isolation of control circuits and thyristor control circuits.

In the driver the phase regulation method of rectified voltage is used, whereby effective value change of one of the connected thyristor during a power frequency half-cycle.

Connection circuit



Types of control signals	0...5 V, 0...10 V, 4...20 V, 0...5 mA, 0...20 mA
Supply voltage	5 V
Effective value of line voltage	100...500 V
Output current of control output	1 A
DC isolation voltage	4000 V

Purpose:

- power supply for electrolytic and galvanic plants;
- power supply for charging batteries;
- power supply for anticorrosive protection of metal devices.

3PhCRD main and advantages:

- small mass and size rates by using highly reliable component base;
- using output stages on base of solid relays provides high voltage rate of electrical insulation strength «output-input» and low voltage consumption from power supply.



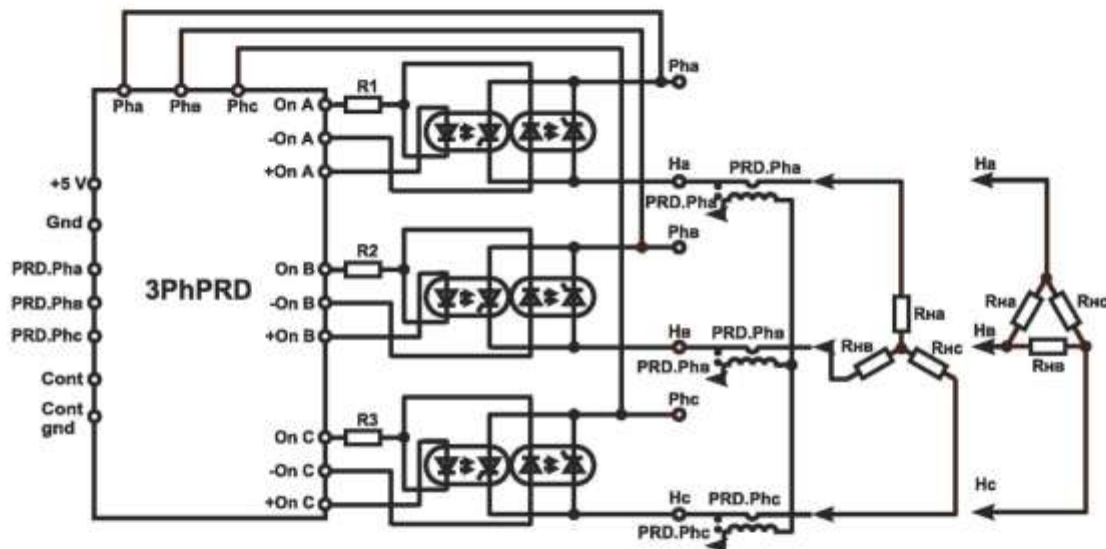
Three-phase power regulator driver (3PhPRD)

is intended for control three pair of optothyristor modules and in couple with them allows to build three phase power regulator.

Driver has protection scheme in its assembly which can be reconstructed to specific module type at maximum current and has smooth start excluding high starting current.

3PhPRD provides galvanic isolation of thyristor control circuits.

Phase regulated method of active voltage is used in 3PhPRD where changing of load active value is done by duration change of thyristor open state during the half-period.



Control signal types	0...5 V, 0...10 V, 4...20 V, 0...5 mA, 0...20 mA
Supply voltage	15V, 24V, 36V
Effective value of line voltage	100...500 V
Output impulse current of optothyristor control	100 mA
Supply of electrical isolation strength	4000 V

Purpose: three-phase power regulators (including, with regulation at primary transformer winding) are intended different technical processions.

3PhPRD main advantages:

- small mass and size by using highly reliable electronic;
- application of output stages on base or small size high-freynquy transformers provides high voltage rate of dielectric strength of «input-output» and low current consumption from power supply.

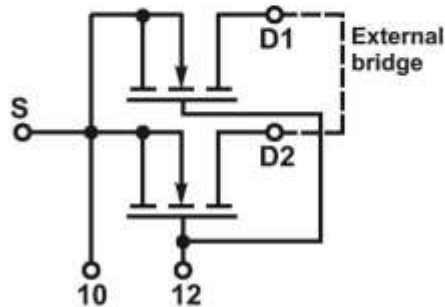
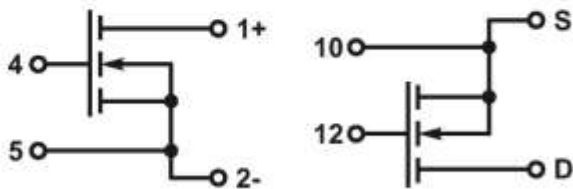


Single MOSFET key module of M9

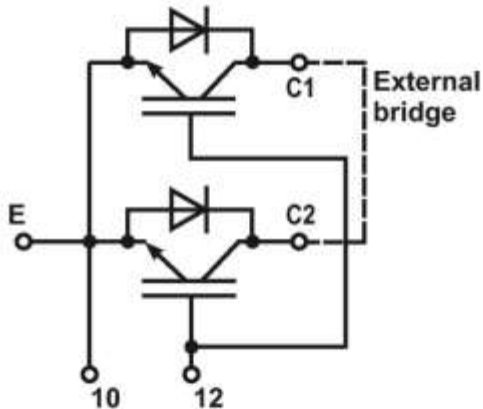
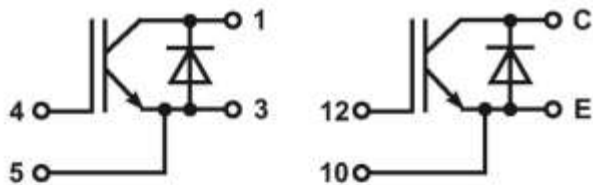
is intended for commutation of powerful loads and usage in assembly of powerful converters with high switching frequency.

Assembly types

MOSFET



IGBT



U, V \ I, A	100	120	150	160	200	240	250	300	350	360	400	450	500
40	x				x			x			x		x
60			x		x			x		x		x	
100		x		x	x		x	x			x		
200		x		x	x		x		x		x		
250		x	x		x	x		x					

M9 are used in circuits of converter devices, appliances of drive technics, in executive machinery of industrial automatation, in power supplies.

Module has following advantages:

- low R_{ds} resistance;
- high dynamic characteristics;
- high load capability.



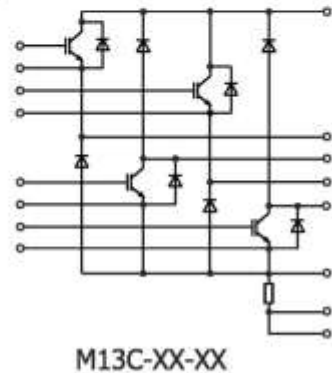
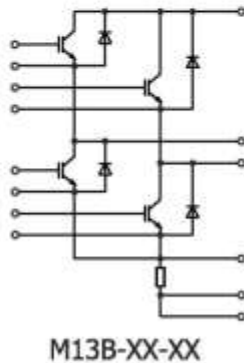
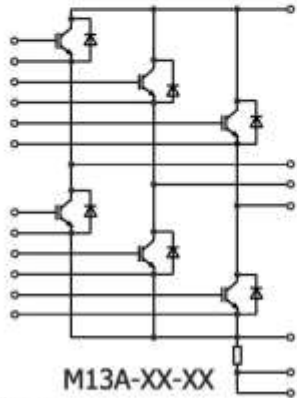
TRANSISTOR MODULE M13

Transistor module M13

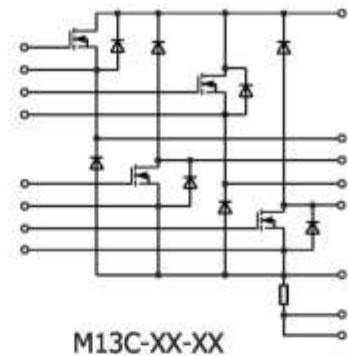
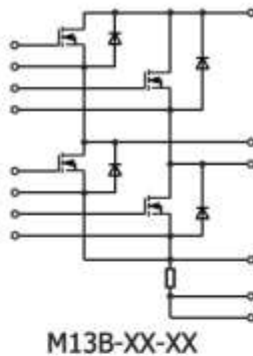
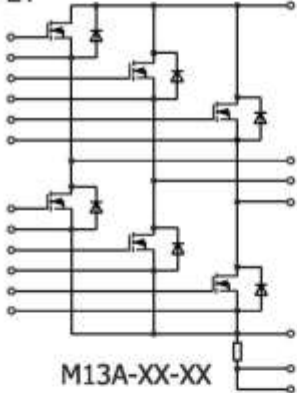
is intended to commute power full loads.

Assembly types

IGBT



MOSFET

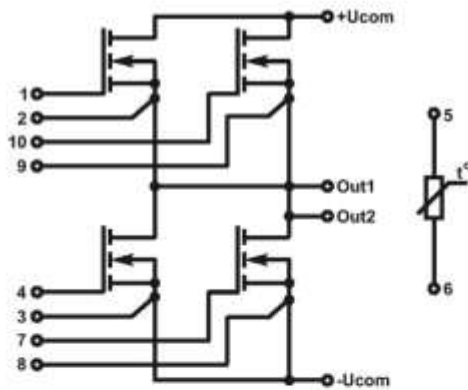


U, V \ I, A	1	2	5	10	20	30	40	50
60			DM	DM	DM		DM	DM
100	ПП4	ПП4	M / DM	M / DM	M / DM		DM	DM
200	ПП4	ПП4	M / DM	M / DM	M / DM	DM		
250			DM	DM	DM	DM		
600	ПП4	ПП4	M / DM	M / DM	DM	DM	DM	DM
1200			DM	DM	DM	DM	DM	DM

M13 are used in circuits of converter devices, appliances of drive technics, in executive machinery of industrial automatation, in power supplies.

Module has following advantages:

- high dynamic characteristics;
- high load capability.



Transistor module M13.1

is intended to commutate power full loads.

Maximum current (100 °C)	250 A
Maximum voltage	40 V
DC isolation voltage	4000 V



Purpose:

- circuits of converter appliances;
- devices of drive machinery;
- executive devices of industrial automatation;
- power supplies.

Module has following advantages:

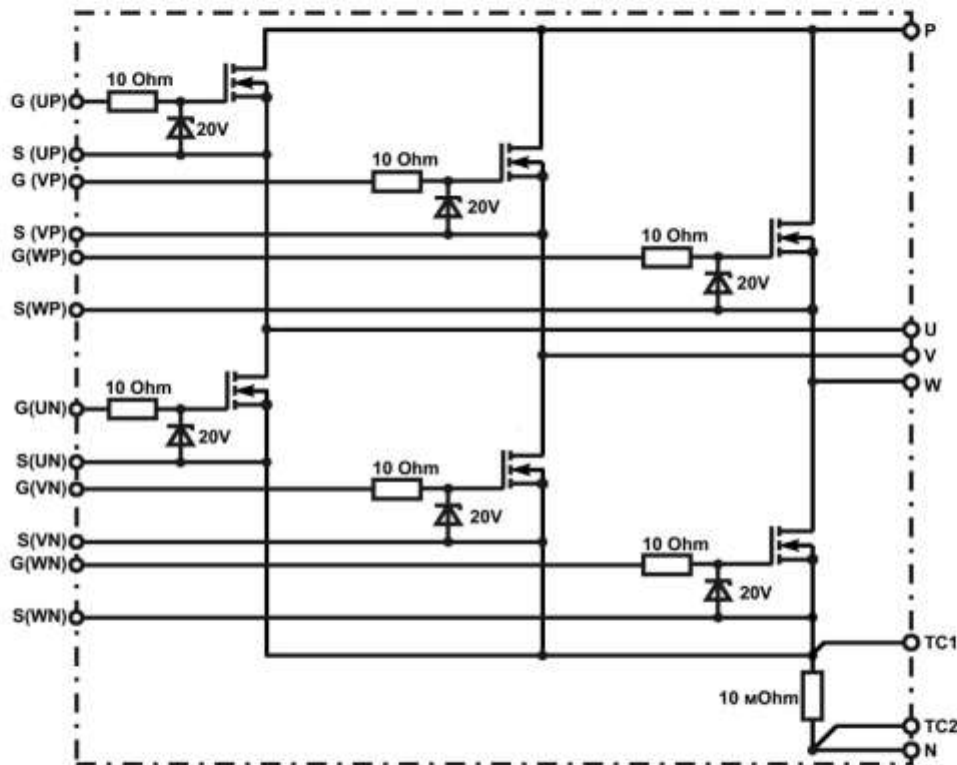
- high dynamic characteristics;
- high load capability.



TRANSISTOR MODULE M13M

Module M13M - three-phase inverter designed on MOSFET transistors is intended for commutation of power loads.

Functional module scheme



Voltage	100, 200, 600 V
Current	5A, 10 A

Purpose:

- circuits of converter appliances;
- devices of drive machinery;
- executive devices of industrial automatation;
- power supplies.

Module has following advantages:

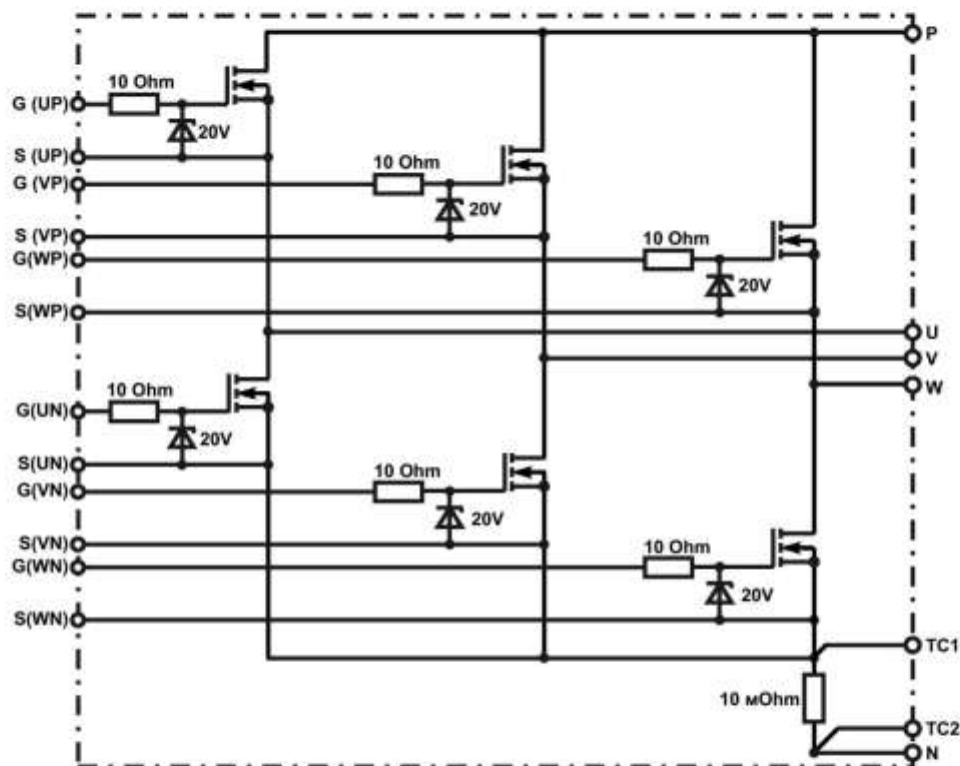
- small sizes;
- high dynamic characteristics;
- high load capability.



Module M13A - three-phase inverter designed at MOSFET transistors in corps for mounting onto printed circuit board.

Is intended for commutation high loads.

Functional module scheme



Voltage	100, 200, 600 V
Current	1A, 2 A

Purpose:

- circuits of converter appliances;
- devices of drive machinery;
- executive devices of industrial automatation;
- power supplies.

Module has following advantages:

- small sizes;
- high dynamic characteristics;
- high load capability.

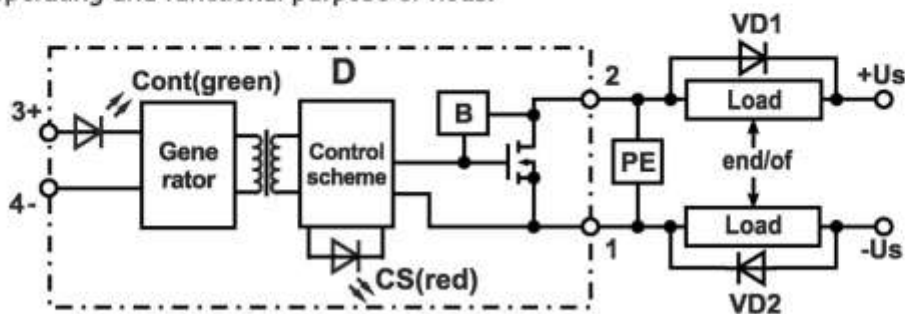


Switching DC module with protection from SD in load MT14PT

is semiconductor normal open unipolar relay with transformer decoupling, small currents and switching time.

MT15PT is intended for usage in automatic devices as switching element.

Principle of operating and functional purpose of nodes.



Control voltage	from 4 V to 200 V
Current control	not above 70 mA
Commutation current	to 400 A
Protection from overload on current and SC in load	

U, V	I, A	5	10	20	30	40	50	60	90	120	150	180	240	320	400
40			✓	✓				✓	✓	✓	✓		✓	✓	✓
60			✓	✓				✓	✓	✓	✓		✓	✓	✓
100		✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	
200		✓	✓	✓				✓	✓	✓	✓		✓	✓	
250		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Module is used as change of electromechanical relay, switching element of electromechanical relay, solenoids, heaters, etc.

Purpose:

- circuits of converter appliances;
- devices of drive machinery;
- executive devices of industrial automatation;
- power supplies.

Module has following advantages:

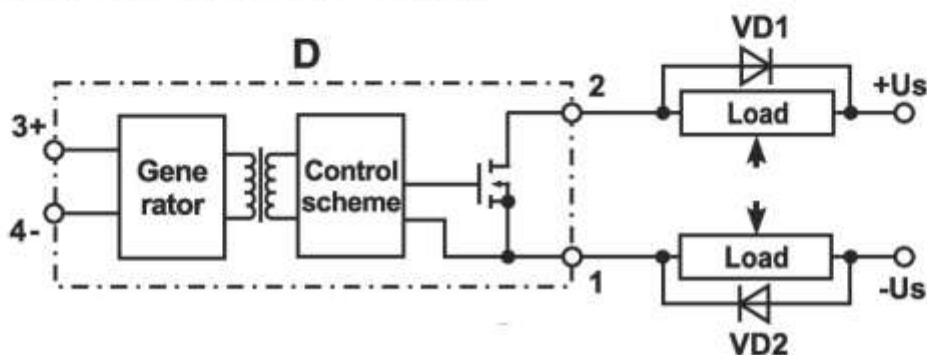
- small sizes;
- high performance level of integral converter;
- low thermal losses;
- high impulse current;
- inbuilt current protection;
- light signaling of device operation.



Switching DC module with protection from SD in load MT14PT - small sized semiconductor normally open unipolar relay with transformer decoupling, small currents and switching time.

Is intended for usage in automatic devices as commutated element for mounting on circuit board.

Principle of operating and functional purpose of nodes.



Control voltage	from 4 V to 200 V
Control current	not above 70 mA
Commutation current	to 400 A
Protection from overload on current and SC in load	

I, A \ U, V	60	100	200	400
2,5		✓	✓	✓
5	✓	✓	✓	✓
8			✓	
10	✓	✓		

Module is used as change of electromechanical relay, switching element of electromechanical relay, solenoids, heaters, etc.

Purpose:

- circuits of converter appliances;
- devices of drive machinery;
- executive devices of industrial automatation;
- power supplies.

Module has following advantages:

- small sizes;
- high performance level of integral converter;
- low thermal losses;
- high impulse current;
- inbuilt current protection.

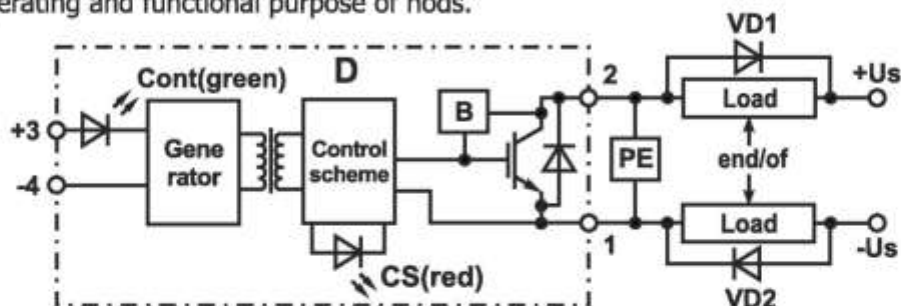


Switching DC module with protection from SD in load MT15PT

is semiconductor normal open unipolar relay with transformer decoupling, small currents and switching time.

MT15PT is intended for usage in automatic devices as switching element.

Principle of operating and functional purpose of nodes.



Control voltage	from 4 V to 200 V
Current control	not above 70 mA
Commutation current	to 300 A
Protection from overload on current and SC in load	

U, V \ I, A	5	10	20	30	40	50	60	80	120	160	180	240	300
600	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1200	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓

Module is used as change of electromechanical relay, switching element of electromechanical relay, solenoids, heaters, etc.

Purpose:

- circuits of converter appliances;
- devices of drive machinery;
- executive devices of industrial automatation;
- power supplies.

Module has following advantages:

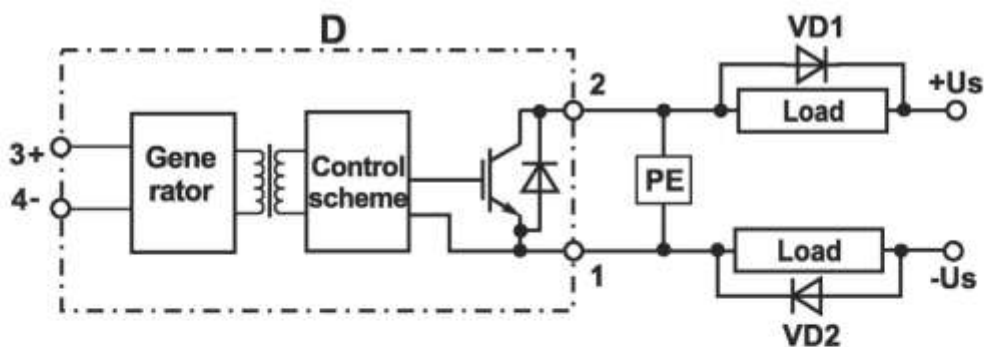
- small sizes;
- high performance level of integral converter;
- low thermal losses;
- high impulse current;
- inbuilt current protection;
- light signaling of device operation.



Switching DC module with protection from SD in load MT15PT - small sized semiconductor normally open unipolar relay with transformer decoupling, small currents and switching time.

Is intended for usage in automatic devices as commutated element for mounting on circuit board.

Principle of operating and functional purpose of nodes.



Control voltage	from 4 V to 200 V
Control current	not above 70 mA
Commutation current	to 300 A
Protection from overload on current and SC in load	

$U, V \backslash I, A$	2	4
600	✓	✓
1200	✓	✓

Module is used as change of electromechanical relay, switching element of electromechanical relay, solenoids, heaters, etc.

Purpose:

- circuits of converter appliances;
- devices of drive machinery;
- executive devices of industrial automation;
- power supplies.

Module has following advantages:

- small sizes;
- high performance level of integral converter;
- low thermal losses;
- high impulse current;
- inbuilt current protection.

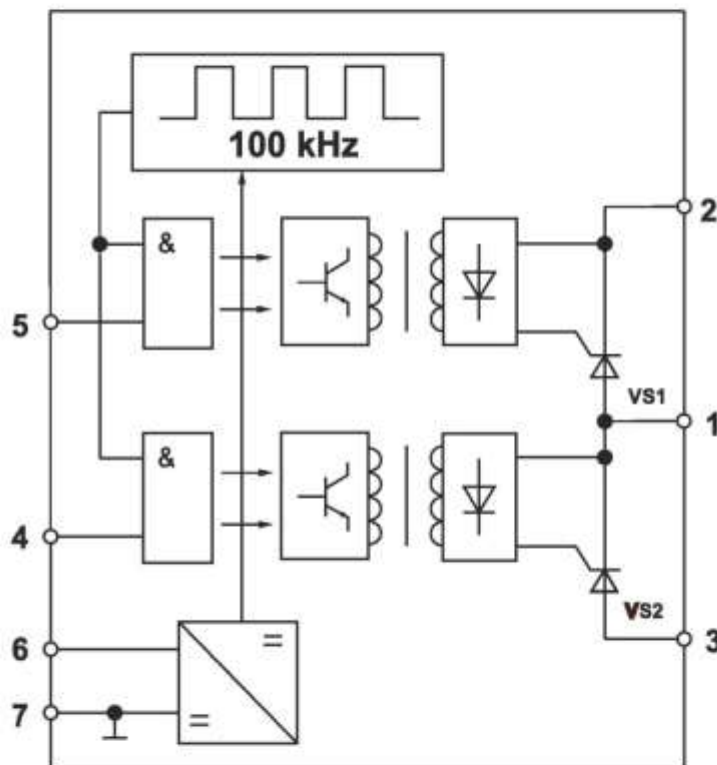


Thyristor module TM1

with transformer isolation is intended for application as key element of controlled rectifiers, invertors, power regulation for power loads AC and DC.

The transfer method of «wide» control impulse is done through transformer by high-frequency filling.

Logical range of control signal	5...15 V
Supply voltage	15...27 V
Consumption	200 mA
Average current in open state	25, 40, 63, 100, 120, 160,
DC isolation voltage	4000 V



Purpose:

- three-phase (including reversible) working on load with high inductance;
- power regulators (including the regulation by primary transformer winding) for different technical proceedings.

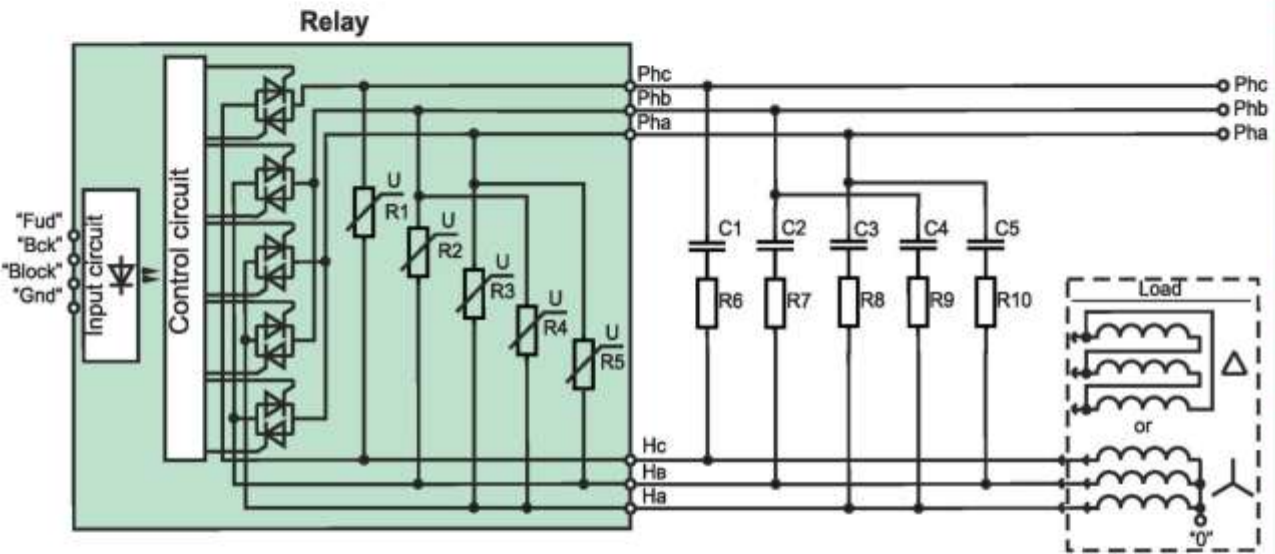
TM1 main advantages:

- small mass and size by using highly reliable electronic;
- application of output stages on base of small size high-frequency transformers provides high voltage rate of dielectric strength of «input - output» insulation and low current consumption from power supply.



Three-phase reserve relay M027 – three-phase optoelectronic semiconductor AC solid state with zero transient control. It is intended to control three-phase AC motor. Relay contains optron decoupling of control signals from power circuits as well as block input of relay turn-on.

Overall drawing and connection circuit



Current	25, 40, 63 A
Maximum voltage	to 1200 V
Load of control	from 6 to 200 V

Relay has optron isolation of control signal from power circuits and also input of block signal. Relay provides complete isolation from the supply chan and tree-phase load commutation with ability of reversing voltage on the load.

MO 27 is used in industry automatic devices, in driving technics devices.



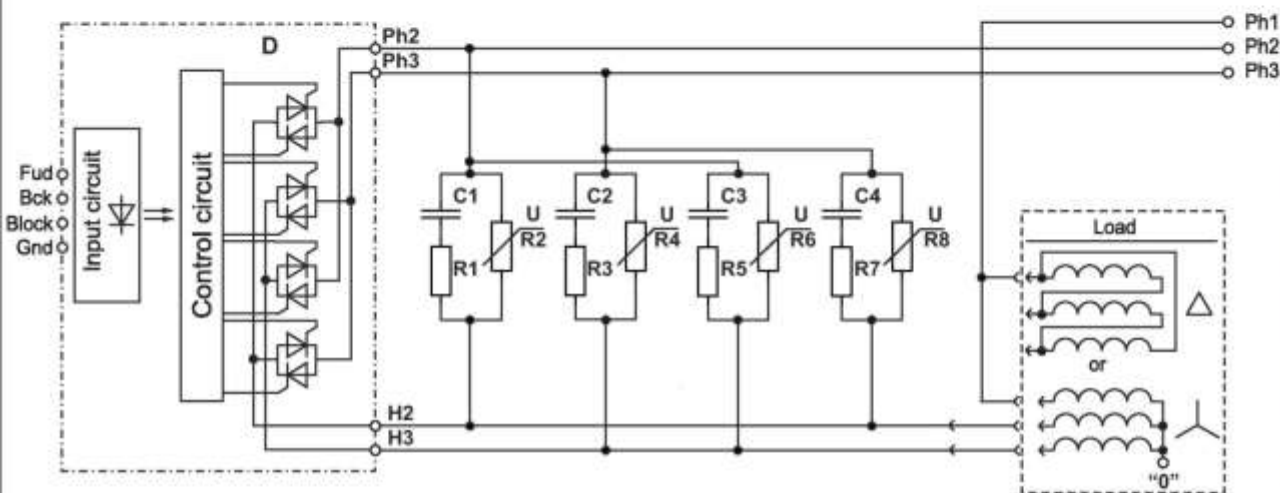
Three-phase reserve relay MO27.1 –

three-phase optoelectronic semiconductor AC solid state with zero transient control.

It is intended to control of the three-phase AC motor.

Relay contains optron decoupling of control signals from power circuits as well as block input of relay turn-on.

Overall drawing and connection circuit



Current	80, 120 A
Maximum voltage	до 1200 V
Load of control	от 6 до 200 V

Relay has optron isolation of control signal from power circuits and also input of block signal.

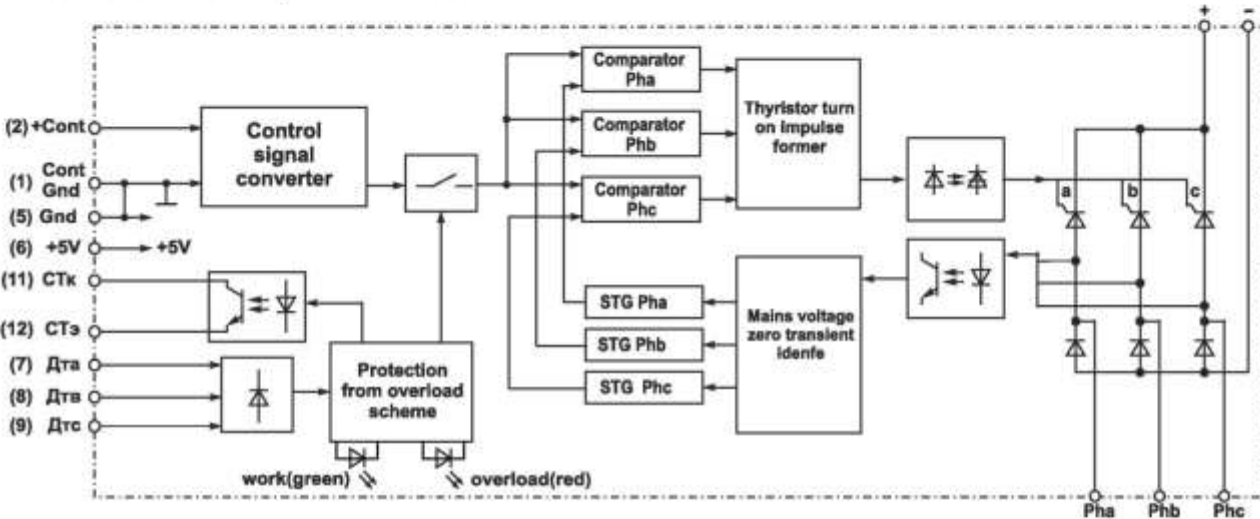
Relay provides complete isolation from the supply chan and tree-phase load commutation with ability of reversing voltage on the load.

MO 27 is used in automatic devices industry, in driving technics devices.



Three-phase regulated rectifier module MO30 is intended for forming from three-phase main voltage 500 or 400 Hz rectifier pulsating voltage, controlled by phase method.

Action and functionality of knots MO30



Current	63, 100, 160, 200, 250 A
Maximum voltage	to 1200 V
PC isolation voltage	4000 V

Value of load is controlled by sending standard type of control signal (0÷5 V, 0÷10 V, 4÷20 mA, 0÷5 mA, 0÷20mA), which variation from minimum to maximum changes the rms value of rectifier load in range from 0 to 100%.

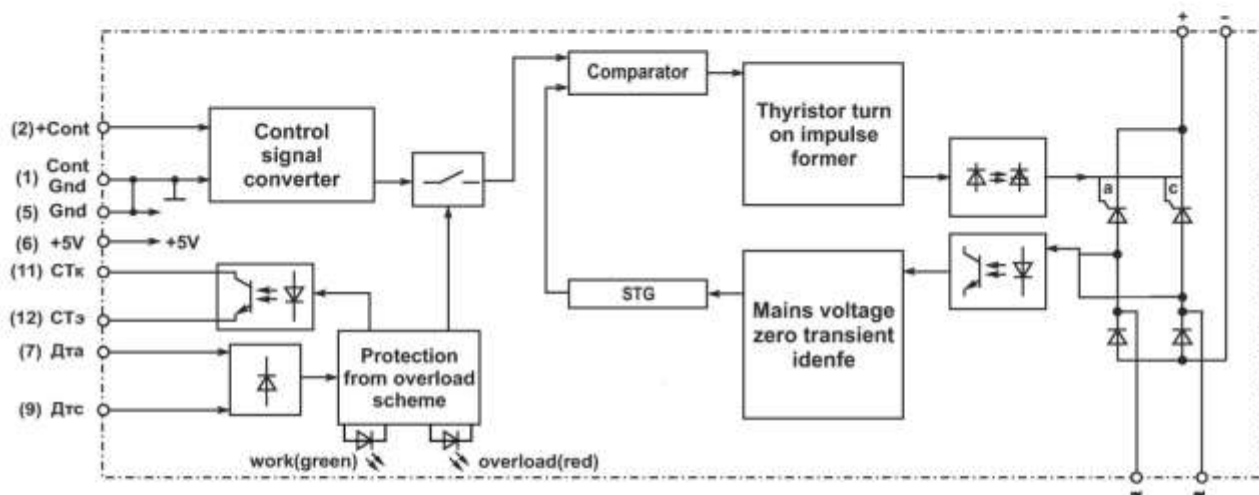
In module provides galvanic isolation of control circuits and power circuits, also these is built in overload protection system.

MO30 is used in industrial power systems, in heating systems.



Single-phase regulated rectifier module MO30.1 is intended for forming from single-phase main voltage 500 or 400 Hz rectifier pulsating voltage, controlled by phase method.

Action and functionality of knots MO30.1



Current	63, 100, 160, 200, 250 A
Maximum voltage	to 1200 V
PC isolation voltage	4000 V

Value of load is controlled by sending standard type of control signal (0÷5 B, 0÷10 B, 4÷20 mA, 0÷5 mA, 0÷20mA), which variation from minimum to maximum changes the rms value of rectifier load in range from 0 to 100%.

In module provides galvanic isolation of control circuits and power circuits, also these is built in overload protection system.

MO30.1 is used in industrial power systems, in heating systems.

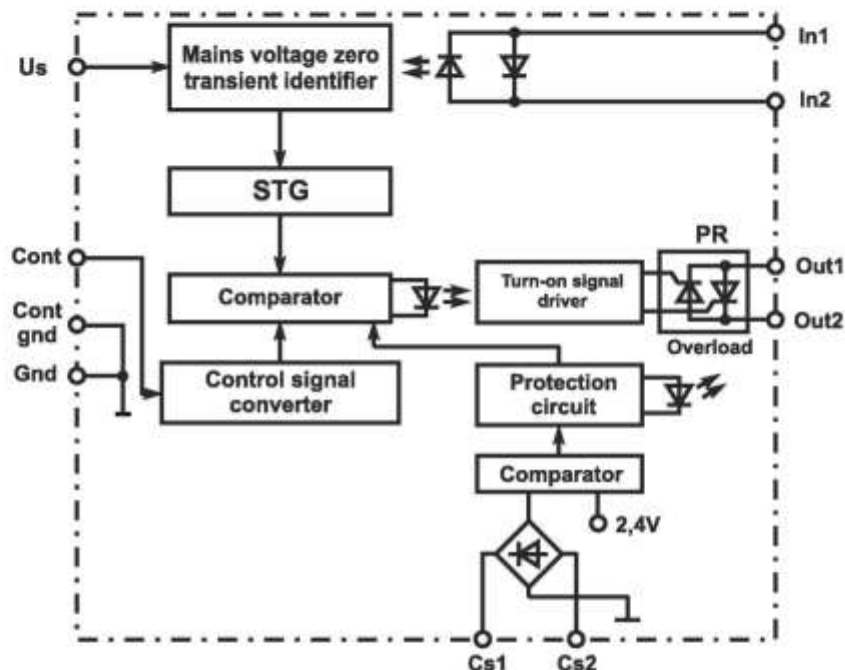


Power regulator module M25T

is intended for power regulation of resistive load in AC circuits of voltage 220/380 V.

Phase method of load is used in the module, so change of load power is performed by opposite parallel connected thyristors during corresponding half period of line voltage.

Module structure



Types of control signals	0...5 V, 0...10 V, 4...20 V, 0...5 mA, 0...20 mA
Supply voltage	5 V
Effective value or line voltage	150...500 V
Current active value	25, 40, 63, 80, 100, 120, 160, 250, 320 A
DC isolation voltage	4000 V

Purpose: power regulators for different technical operations.

M25N main advantage:

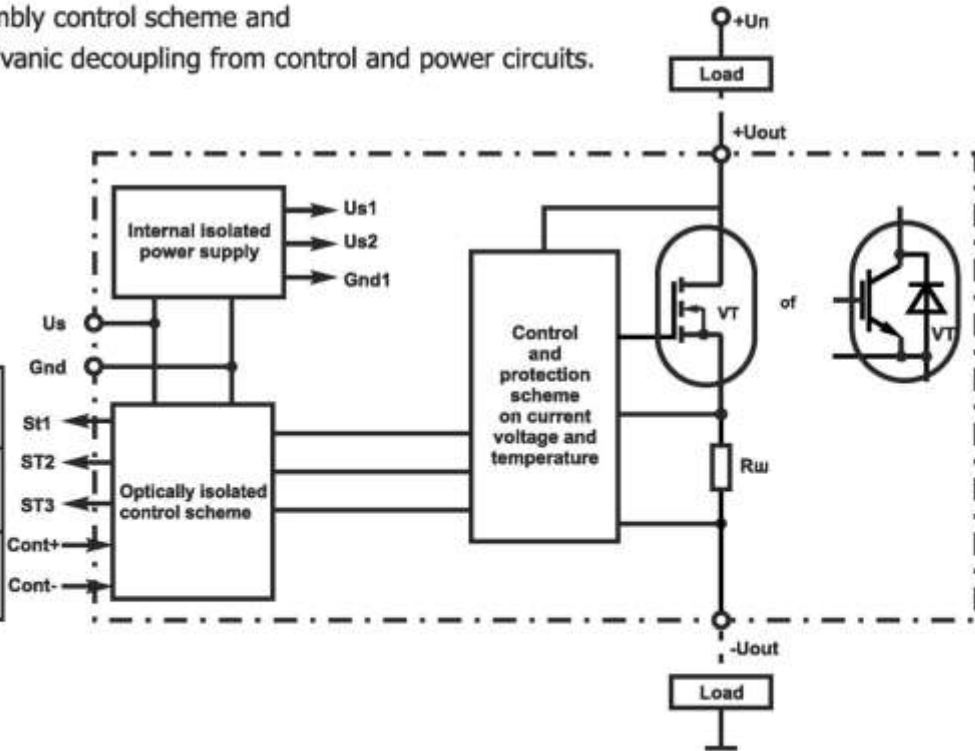
- small mass and size rates by using highly reliable component base;
- using output stages on base of solid state relays provides high voltage rate of electrical insulation strength «output-input» and low voltage consumption from power supply;
- regulator allows to control power in three-phase load load at the connection scheme «star with neutral» and «open six-wire connection to the triangle».



Switching current control modules SSPC1 are intended for DC load commutation, protecting of the load and switching transistor from current overload (by I^2t), on temperature and from inductive ejections in the load circuits.

Module has in its assembly control scheme and power scheme with galvanic decoupling from control and power circuits.

SSPC1 block diagram



Supply voltage	15V, 24V, 36V
Consumption current	no more 120mA
Isolation voltage	4000 V

U, V \ I, A	2	5	10	20	30	40	50	60	75	90	120	150	180	240	320
60	M	M	M	M	M	M	DM	DM	DM	DM	DM	DM	DM	DM	DM
100	M	M	M	M	M	M	DM	DM	DM	DM	DM	DM	DM	DM	DM
200	M	M	M	M	M	M	DM	DM	DM	DM	DM	DM	DM	DM	DM
400	M	M	M				DM	DM	DM	DM	DM				
600	M	M	M	M	M	M	DM	DM	DM	DM	DM	DM	DM	DM	DM
1200	M	M	M	M	M	M	DM	DM	DM	DM	DM	DM	DM	DM	DM

SSPC1 is used in the systems of secondary electrical power, ranging and load reserving as powerful recovering fuse and provides:

- controlling of the current load by I^2t with protection from current overload;
- issuance of the status signals at exceeding maximum volume of the current load;
- issuance of the status signal at overheating of controlling transistor;
- protection of the controlling transistor from overheating of collector-emitter (drain - source);
- issuance of the signal by $I > 0,1 I_{nom}$.



Solid state power controller modernized

is intended for commutation and control of voltage load.

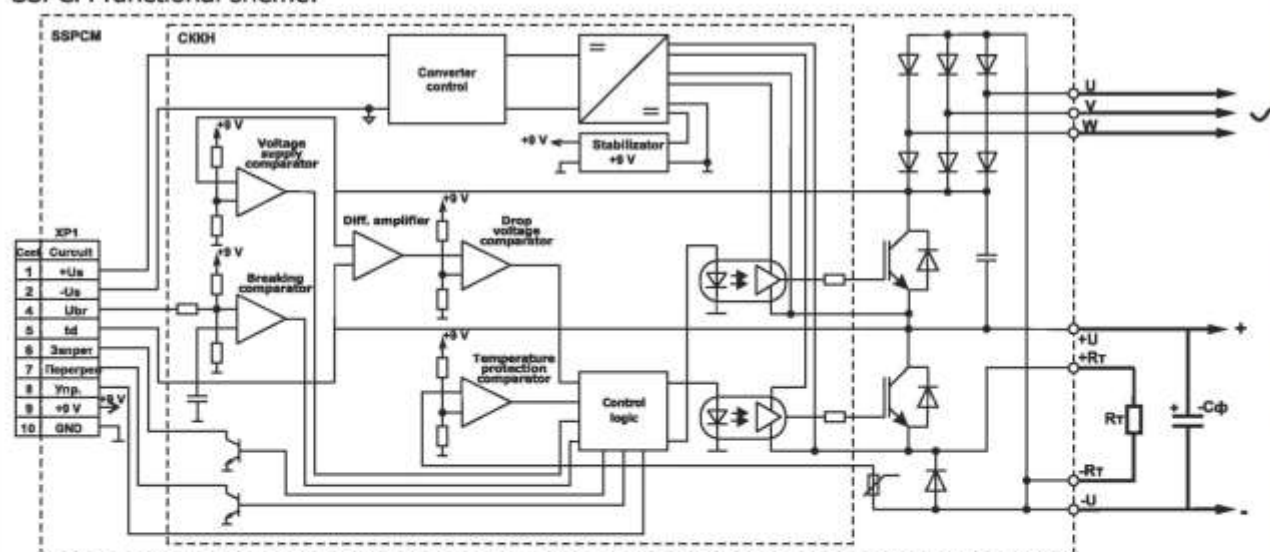
SSPCM is intended for use in circuits which require

a smooth charge of filtering condensers, voltage surge removal generated by load and, in particular, in motor control circuits of different types.

SSPCM performs the following function:

- AC rectification;
- power voltage commutation;
- load protection from low-voltage;
- load protection from high-voltage;
- load protection in SD mode;
- self-overheating protection;
- turn-on / turn-off threshold regulation of bracking transistor;
- delay time of bracking transistor activation;
- signaling of prohibition signal transistor work;
- signaling about module overheating;
- external control of activation/deactivation of charging.

SSPCM functional scheme:



SSPCM provides and load protection up to 15 kW on current to 100A and load up to 1200 V (maximum value).

SSPCM is produced with different radiator what allows use module for solving general industrial problems, and for private cases.

Power and control circuits are galvanically isolated from each other and from control circuits of power transistors with isolation strength not less than 4000 V on DC.

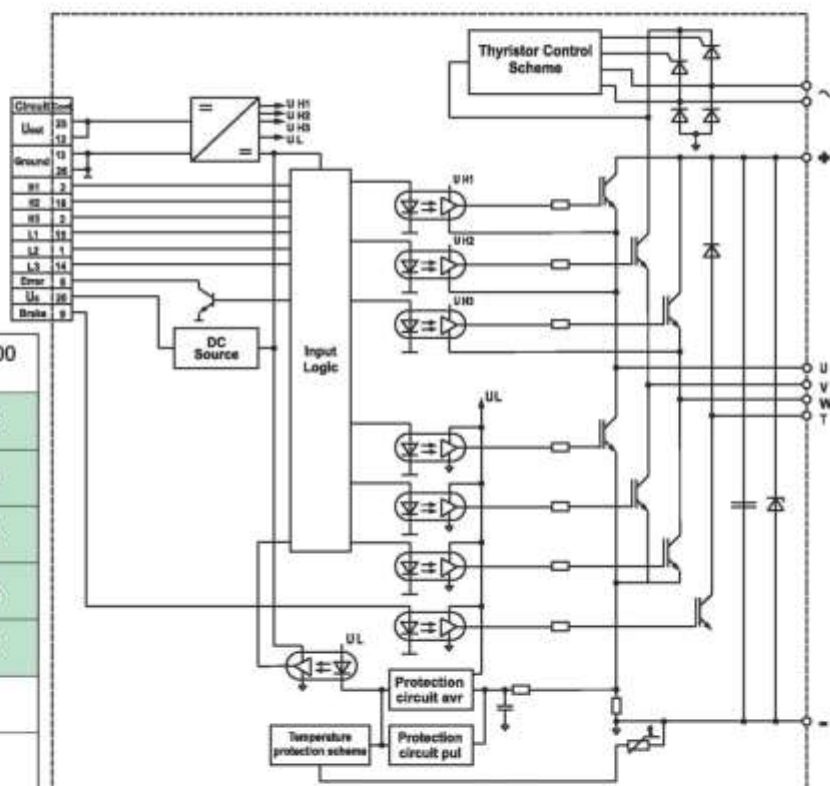


Intellectual module inverter M31 is assembly of power transistors with control and protection circuits.

Module is intended for control of powerful load also different kinds of electric motors.

M31 provides the following functions and possibilities: control of any load type in accordance with control signal; protection from current overloads and short circuit; protection from impulse current jumps; threshold regulation of current protection activation; protection from overheating; protection from simultaneous operation of transistors upper and lower inverter arm; external alarm about failure; control for internal power supply; allows to power the external schemes by own stabilization 15V and protection from current overload.

Structural circuit



U, V \ I, A	100	200	600	1200
5	x	x	x	x
10	x	x	x	x
20	x	x	x	x
30	x	x	x	x
50	x	x	x	x
70	x	x		
100	x			

Module provides work and load protection by power up to 15 kW on points to 100 A and voltage to 1200 V (maximum rate). M31 is produced with different types of radiators, what allows to use module for common industrial tasks and for private cases.

Control and supply circuits are galvanically isolated from power circuits with isolation strength not less 4000 V on DC.

M31 is differ by small sizes, simplicity of connection scheme, configuration flexibility and by big number of protection that makes this module reliable knot in frequency inverter for rang type of motor control.

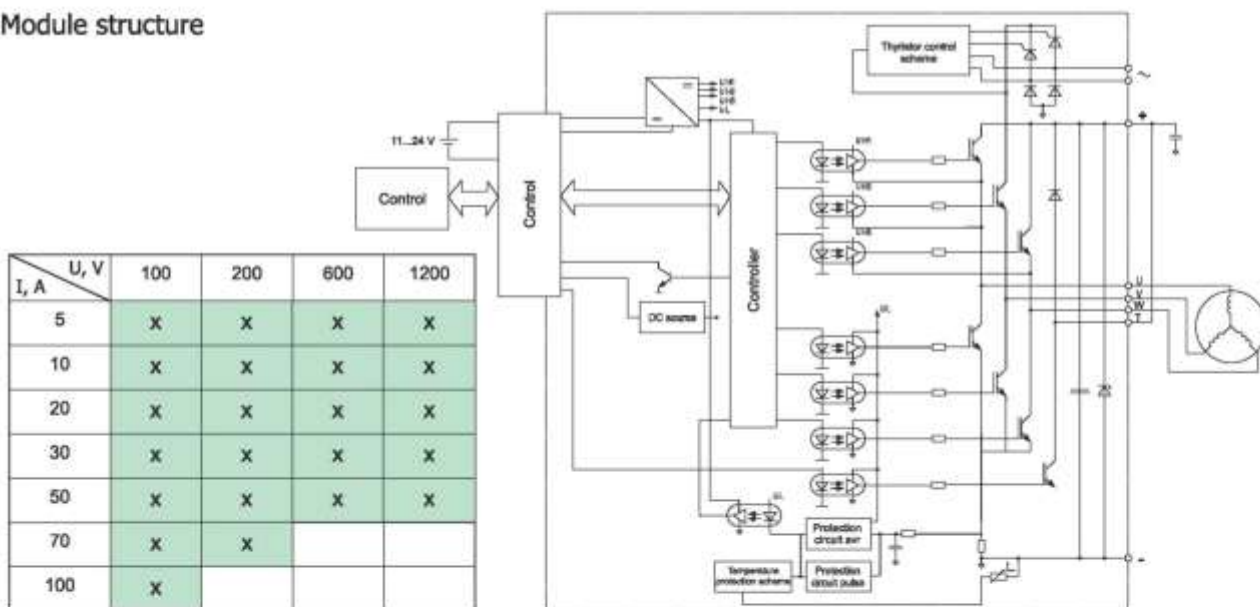


Three-phase brushless DC motor drive (3PhBLDCDMM), brush DC driver module (BDCDM), three-phase AC motor drive (3PhACDM) and AC motor drive are intended to build frequency to control appropriate motor.

Modules provide the following function and possibilities: controlled start / stop of motor, changing of motor shaft rotation direction with safety stop at bluntly change of rotation direction, speed stabilization at motor supply voltage change (3PhBDCDM, BDCDM), smooth start and stop (3PhACDM), motor protection from current overloads and short - circuit, protection from impulse surges, threshold regulation of current protection acting, protection from overheating, protection from simultaneous transistors switching of upper and lower arm, external signaling in case of failure, internal voltage supply control.

Allows to power external ships by itself stability voltage of +5 V and +15 V with protection from current overload.

Module structure



Modules build on base of M31 module and provide work and motor protection by power up to 5 kW on current to 100 A and voltage up to 1200 V (maximum value).

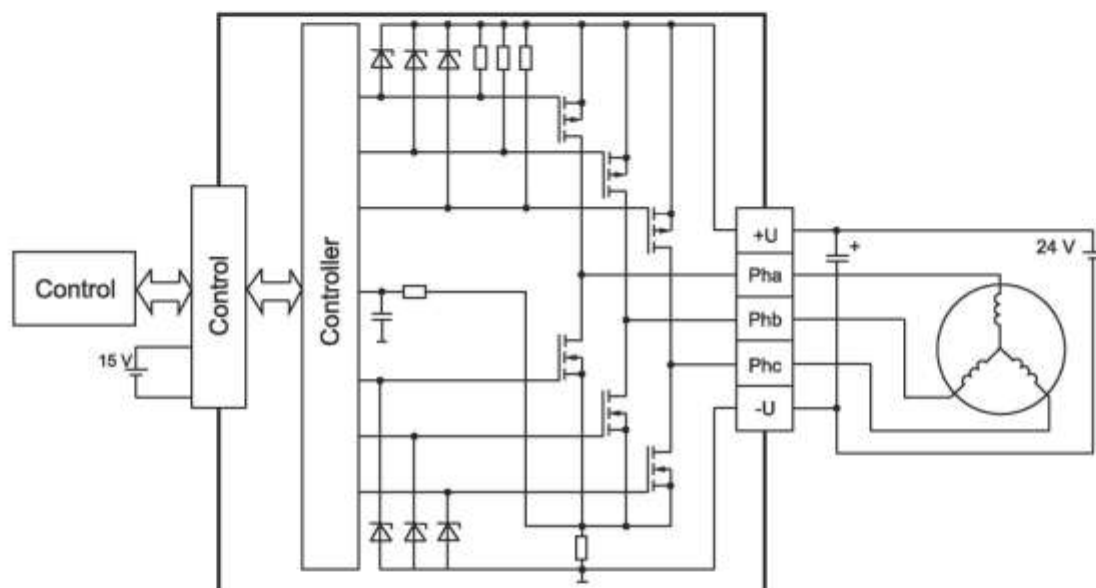
Module produce with different radiator types and with different control types (digital - analogue, digital bipolar analogue), that allows to use module for solving common industrial tasks and for private cases. Supply and control circuits of modules are galvanically isolated from power circuits with isolation strength not less then 4000 V DC.

Modules for current up to 10 A and frequency up to 600 V may contain rectifier bridge and chopper, in its assembly that allows to use these modules as frequency converter. For high currents and voltages modules can be used in couple with SSDCM forming the same frequency converter with power up to 15 kW.



Semiconductor module designed for control, regulation and stabilization of BL motor rotation speed is intended to control three-phase brushless motor on permanent magnets with rotor position sensor or with brush DC motor.

Modules are intended to control motors with work frequency 11...30V with current to 5 A.



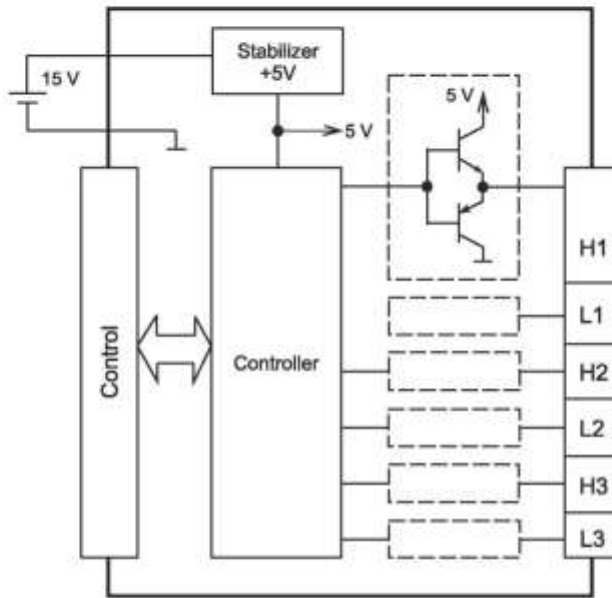
Modules provide following functions and capabilities:

- controlled start and stop of motor;
- change of rotation sense direction;
- speed regulation;
- speed stabilization at change of load amplitude of motor supply;
- motor protection from current overloads and SC;
- protection from simultaneous switching of upper and lower inverter arm;
- protection from start in case of incorrect signals combination from rotor position;
- external alarm in case of failure;
- possibility of module supply from power circuit.

Low-power motor control modules differ by easy control, small sizes and don't need additional cooling, providing work and protection of the motors to 200V. Modules are designed with different control variants, that allow to use module for solving industrial problems and for private cases.



BL Motor Commutator module, AC Motor Commutator module and BD Motor Commutator module are intended to form control signals, in accordance with given signal, inverter transistor to control the motors.



Controllers provide the following functions and capabilities:

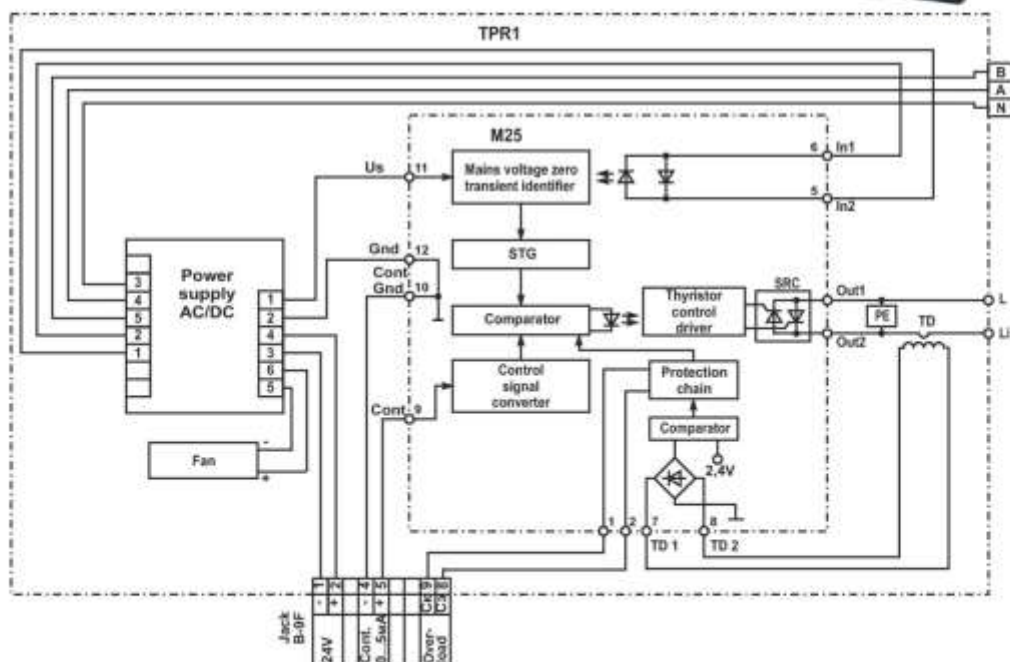
- forming the signal of the power inverter;
- controlled start / motor stop ;
- changing of the motor rotation sense;
- speed regulation;
- shaft rotation speed stabilization during changing of the AC line power supply (3PhbldCCM, BDCCM);
- soft acceleration and stop (2PhaCCM);
- protection against braking by opposition;
- giving signals by TTL- level inverter.

Controllers are differ by ease of operation and small sizes. They are produced with different variants of operating (digital to analog, digital, bipolar analog), what allows to use them to solve industrial problems and for solving private cases.

Controllers can be used for building control systems of power ful motors: forming of control signals is done by controller, which signals control drivers (for example, Dm280, Dr2180 and other) which in their turn control inverter of power transistors.



Thyristor power regulation TPR1 is intended for active load power control in AC circuit of voltage 220/380 V and frequency 50 Hz. In controller the phase regulation method is used for regulation power in load, where power changing on the load by changing of open state duration by pair of back-to-parallel connected thyristors during current period of mains voltage.



Types of control signal	0...5 V, 0...10 V, 4...20 V, 0...5 mA, 0...20 mA
Supply voltage	220 V
Effective value of line voltage	220/380 V
Output circuit characteristic	25, 40, 63, 80, 100, 120, 160, 250, 320 A
DC isolation voltage	4000 V

Purpose three-phase power regulators for different technical processes.

Main TPR1 advantages:

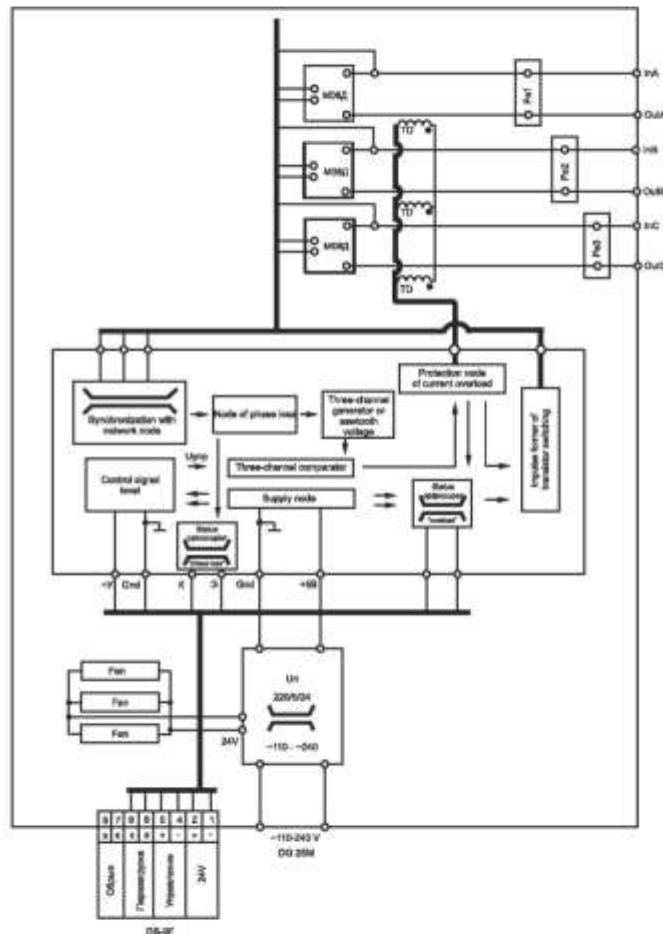
- small mass and size rates by using highly reliable component base;
- application of output stages on base of small size-frequency transformers provides high voltage rate of dielectric strength of «input-output» insulation and low current consumption from power supply;
- regulators allow to control power in three-phase load in connection of «open six-wire triangle connection»



Thyristor power regulation TPR3 is intended for active load in AC circuit of voltage 220/380 V and frequency 50 Hz. In controller the phase regulation method is used for regulation power in load, where power changing on the load by changing of divation of open state by pair of back-to-parallel connected thyristors during current period of mains voltage.

TPR3 connection scheme

Types of control signal	0...5 V, 0...10 V, 4...20 V 0...5 mA, 0...20 mA
Supply voltage	220 V
Effective value of line voltage	220/380 V
Output circuit characteristic	25, 40, 63, 80, 100, 120, 160, 250, 320 A
DC isolation voltage	4000 V



Purpose three-phase power regulators for different technical processes including control by the primary transformer winding.

Main TPR3 advantages:

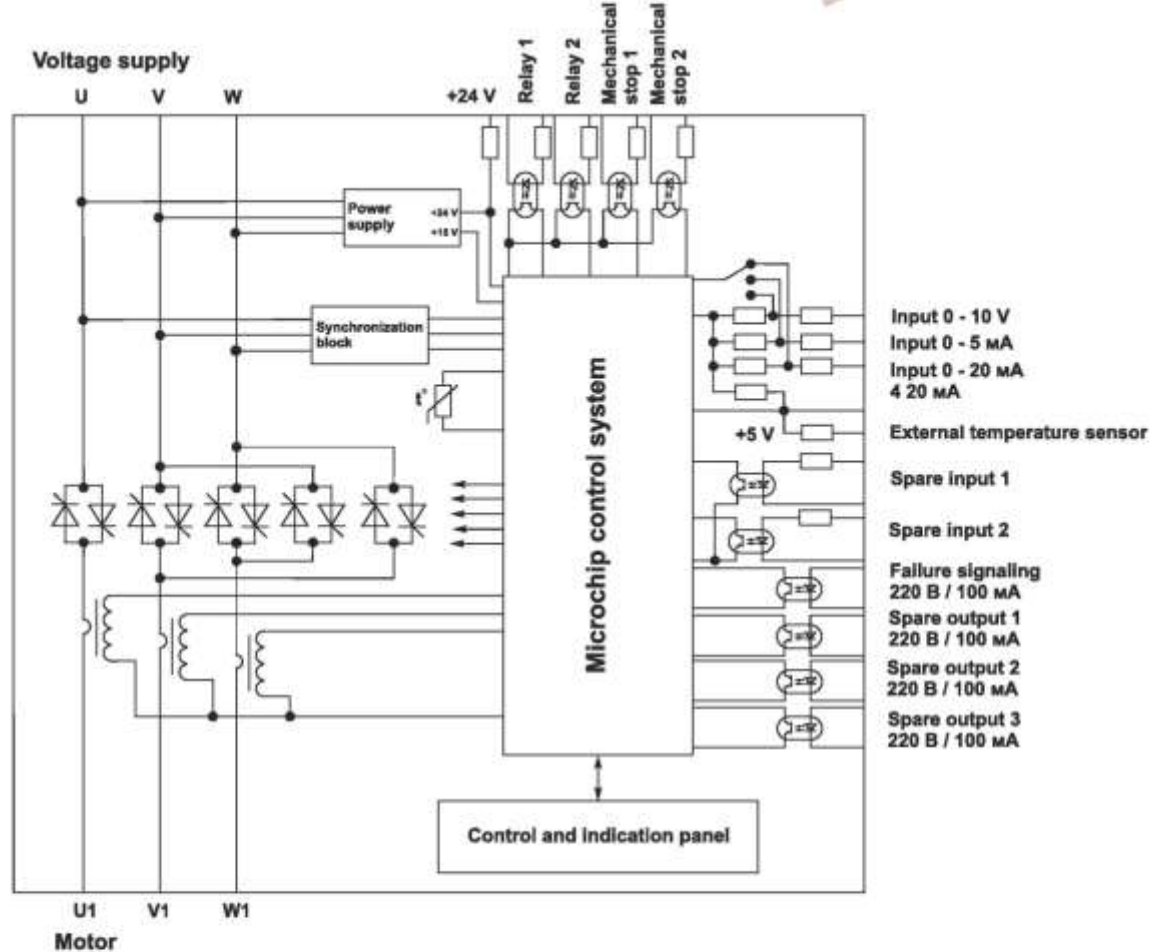
- small mass and size rates by using highly reliable component base;
- application of output stages on base of small size-frequency transformers provides high voltage rate of dielectric strenght of «input-output» insulation and low current consumption from power supply;
- regulators allow to control power in three-phase load in connection to «star» and «triangle».



THYRISTOR CONTROL REVERSE BLOCK - TCRB

Thyristor control reverse block –
 multifunctional thyristor starter with microprocessor control is intended for soft start, braking and reserve of three-phase induction motor up to 15 kW. With switching frequency of rotation control to 30 second per minute.

Block scheme TCRB



The scope of the thyristor control reserve block is regulating and shutoff gates of pipeline valves, cranes, rollers, machines and other mechanisms, where is necessary reserve drive controlling. Maintain of the given liquid level in tank by the sensor signal. Control driver microcontroller provides high work accuracy and ease of control. Number and options range of the reverse control thyristor block allow to adapted used electric drive for necessary modes for consumer.

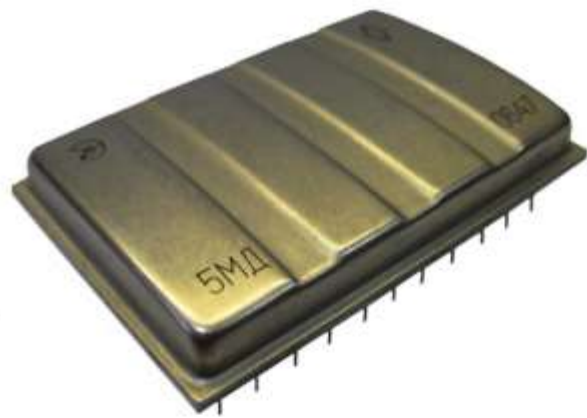
Specification TCRB

Voltage supply	380 V
Consumption current	не более 100 mA
Commutated DC	до 30 A
Setting accelerations time	0 - 99 s
Setting stop time	1 - 99 s
Setting the maximum motor current	1 - 30 A
Setting the initial moment	0 - 100%
Setting of the protection operation value from external temperature sensor	1 - 99 °C
Setting of the reclosing block «acceleration time» (coasting stop)	0 - 99 s
Choosing of the analogue sensor (analogue controlling)	0-10 V, 0 - 55 A, 0 - 20 mA, 4 - 20 mA
Setting acceleration time	1 - 99 s

- Enabling of the push mode at starting
- Ability of working in three control types:
 1. Manual control
 2. Analogue control
 3. Discrete control
- Selection of the start conditions:
 1. Start on set time
 2. Start with current
- Selection of the braking conditions:
 1. Braking on the set time
 2. Coasting stop
- Setting of the six modes:
 1. Three for analogue control
 2. Three for discrete control
- Setting threshold of analogue sensor
- Dynamic DC braking
- Information about motor condition, selected modes, emergency stops and about entered options is shown on the two-line LCD display
- Emergency motor disconnection:
 1. In excess of motor maximum current
 2. In excess of interphase current more than 50%
 3. In case of disappearance one of the phases
 4. In case of power module radiator overheating (programmatically set value)
 5. In excess of the set threshold remote temperature sensor



NEW SEMICONDUCTOR POWER IS COMING...

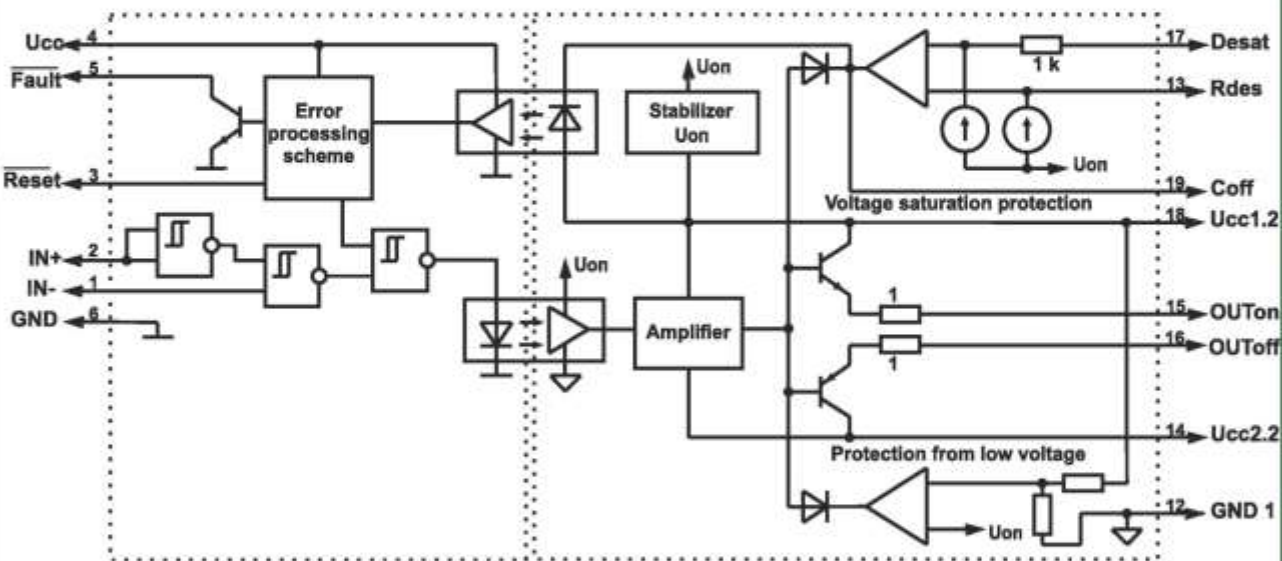


SPECIAL PURPOSE DRIVER OF IGBT AND MOSFET TRANSISTORS

Integral multichip fast module, produced by bipolar technology with galvanic decoupling. It is intended for control of isolated gate power MOS- and bipolar transistors as well as power integral modules.

Module provides matching of current and voltage level with the majority of IGBT and power FET with maximum permissible voltage up to 1700 V, carries out overload and CS protection, as well as protection against insufficient transistor gate voltage level. In ease of protection from overload and CS there is soft disconnection of power transistors.

Functional driver scheme



2005XX1 drivers are intended for using in a special purpose converter types based on transistors with field control: transformers, converters of voltage supply, induction ovens, motor control and etc.

Driver is differ by small sizes, big output power and flexibility in options.

Driver supply maybe done by sources or customer, and from special DC/DC converter which is intended to work in pair with 2005EU1.

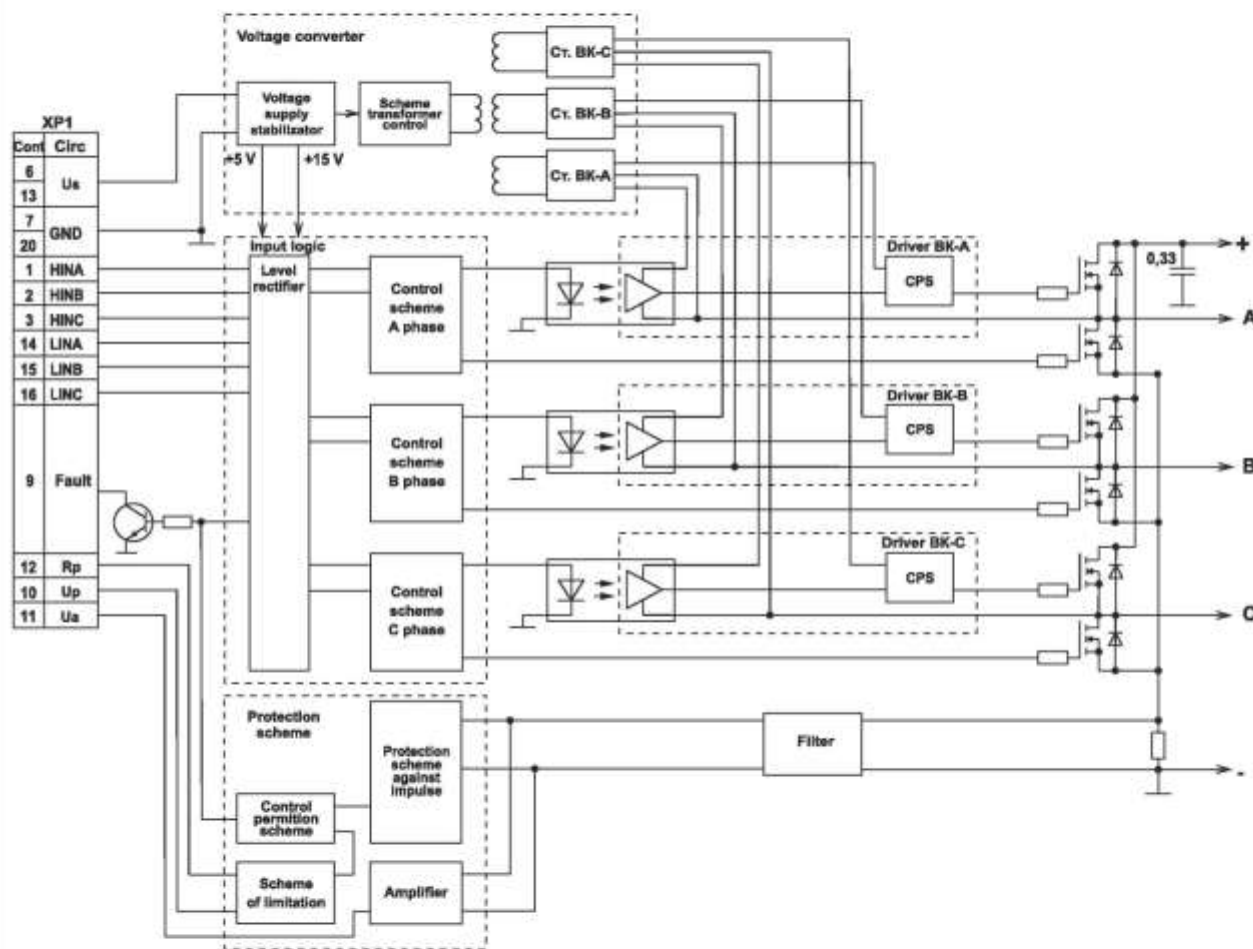


Special Purpose module 3PhIM13B-B2

is a power transistor assembly with control circuits and protection circuits.

The module is intended for load control at deal-pick value of power to 200 V and at current to 45 A in particular of different electric motors.

Module schematics



3PhIM13B-B2 module support the following featives and capabilities:

- control of any load type in accordance with control signals;
- protection from current overload and short circuit;
- protection from impulse current surges;
- regulation of current protection threshold;
- protection of upper and lower invertor arm from simultaneous operation transistors;
- external failure alarm.



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