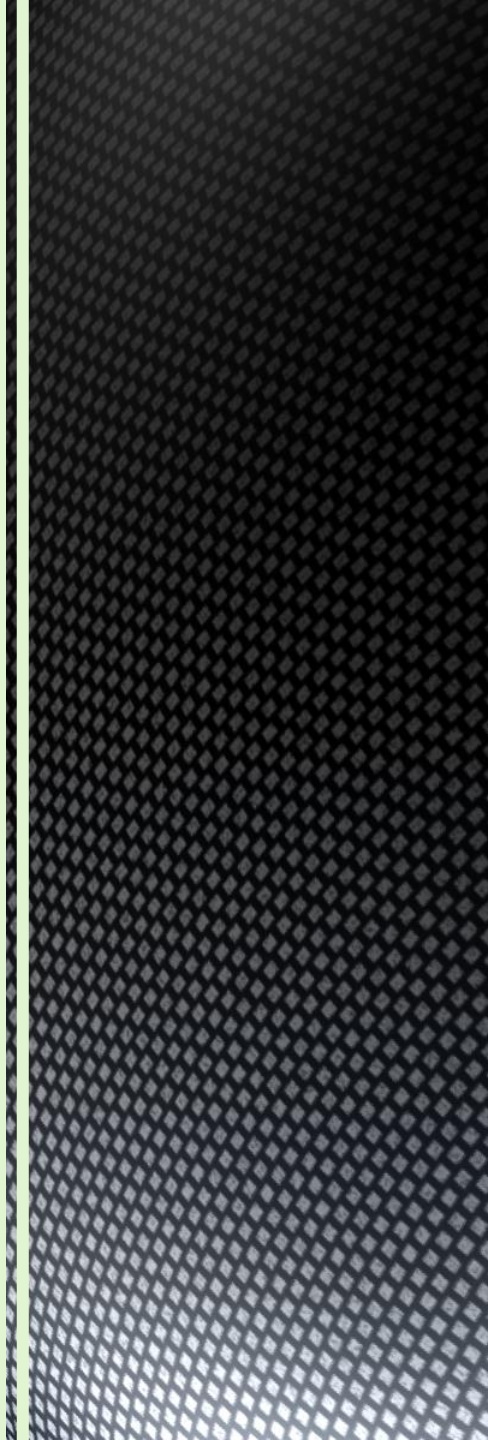


Electrum AV

Power electronics



Certificates



CERTIFICATE
IQNet and Certification Association "Russian Register" hereby certify that the organization

Electrum AV, LTD
5, Naugorkoie shosse, 302020, Orel, Russia

for the following field of activities

development, production and sales of power semiconductor devices, integrated modules and system solutions

has implemented and maintains a Management System which fulfills the requirements of the following standard

ISO 9001:2008
Issued on : 21st November, 2011
Validity date : 21st November, 2014
Registration Number : RU-11.0936.026

Michael Drechsel, President of IQNet; Arkady Vladimirov, General director of Russian Register

IQNet Partners: AENOR Spain, AFNOR Certification, France, ABS-Vietnam International, Belgium, ANCC, ANCC AFNOR, Portugal, CCC, China, CIBO, Italy, CCC, China, CQM, China, CQC, Czech Republic, CxI, Cert, Croatia, DQS, Holding GmbH, Germany, DIB, Denmark, ECOC, Canada, PCV, Brazil, FPO/ISO/9001, Venezuela, IEC/EA, Hong Kong, China, ICE/TCO, Cambodia, IMC, Mexico, Intertek, Switzerland, Pirella Göttsche, Italy, ALTA, Algeria, DQS Korea, KOSIR, Hungary, Hellenic AD, Norway, NBNQ, Poland, PCCC, Poland, Quality Assurance, Austria, IAF, Russia, IEC, Slovenia, ISO/IEC, Canada, International, Maldives, KQI, Switzerland, IMAC, Slovenia, IIR, St. Petersburg, Russia, The Quality TQS, Austria

IQNet is represented in the USA by AFNOR Certification, CIBO, DQS, Holding GmbH and WMI Inc.
* The list of IQNet partners is held at the top of each of the certificate. Updated information is available under www.iqnet-certification.com

Certificate IQNet

СИСТЕМА ДОБРОВОЛЬНОЙ СЕРТИФИКАЦИИ ПРОДУКЦИИ И СИСТЕМ КАЧЕСТВА ПРЕДПРИЯТИЙ ОБОРОНЫХ ОТРАСЛЕЙ ПРОМЫШЛЕННОСТИ (Система «Оборонсертификат»)

Зарегистрирована Государственным Росреестром
Свидетельство № РОСС.РУ.0001.040600 от 26 мая 1998 г.

ОРГАН ПО СЕРТИФИКАЦИИ СИСТЕМ КАЧЕСТВА «РУССКИЙ РЕЕСТР»
Аттестат аккредитации RU.40600.7101.63 0004

СЕРТИФИКАТ СООТВЕТСТВИЯ
ВС № 11.332.026 от 01.12.2011 г.

выдан

Закрытому акционерному обществу «Электрум АВ»
Россиа, 302020, г. Орёл, Наугорское шоссе, 5

НАСТОЯЩИЙ СЕРТИФИКАТ УДОСТОВЕРЯЕТ, ЧТО СИСТЕМА МЕНЕДЖМЕНТА КАЧЕСТВА ПРИМЕНЯЕТСЯ К:

разработке и производству продукции:
силловых электронных модулей (класс 5961 ЕКТС);
силловых интегральных и гибридных микросхем с гальванической развязкой (класс 5962 ЕКТС);
электронных цифровых модулей для управления и контроля (класс 5963 ЕКТС)

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ ГОСТ Р ИСО 9001-2008, ГОСТ РВ 15.002 (за исключением пп. 7.5.4, 7.5.1.14—7.5.1.16)

Изначально выдан до «01» декабря 2014 г.

Руководитель органа по сертификации: А.В. Владимиров

Зарегистрировано в Едином Реестре № 5361-02 « 6 » декабря 2011 г.

Номер бланка ВС № 00379

Certificate GOST RV 15.002

RUSSIAN REGISTER CERTIFICATION SYSTEM

CERTIFICATE OF QUALITY MANAGEMENT SYSTEM CONFORMITY

This is to certify that the Quality Management System of

Electrum AV, LTD
5, Naugorkoie shosse, 302020, Orel, Russia

has been assessed and found to be in accordance with the requirements of

ISO 9001:2008

in respect of development, production and sales of power semiconductor devices, integrated modules and system solutions

No: 11.0936.026
of 21st November, 2011

Chief director (of Certification Association "Russian Register")

This certificate is valid until 21st November, 2014

Specification of the certification scope is provided in Annex
This certificate becomes invalid if conditions of certification are not fulfilled
Conditions for Certification are located on official Website on <http://www.russregister.ru/doc/004.00-105.pdf>

IAF, IEC, IEC, IAF, IQNet

Certificate ISO 9001

Electrum AV – this is:



Assembly Workshop



Electronics Dept.



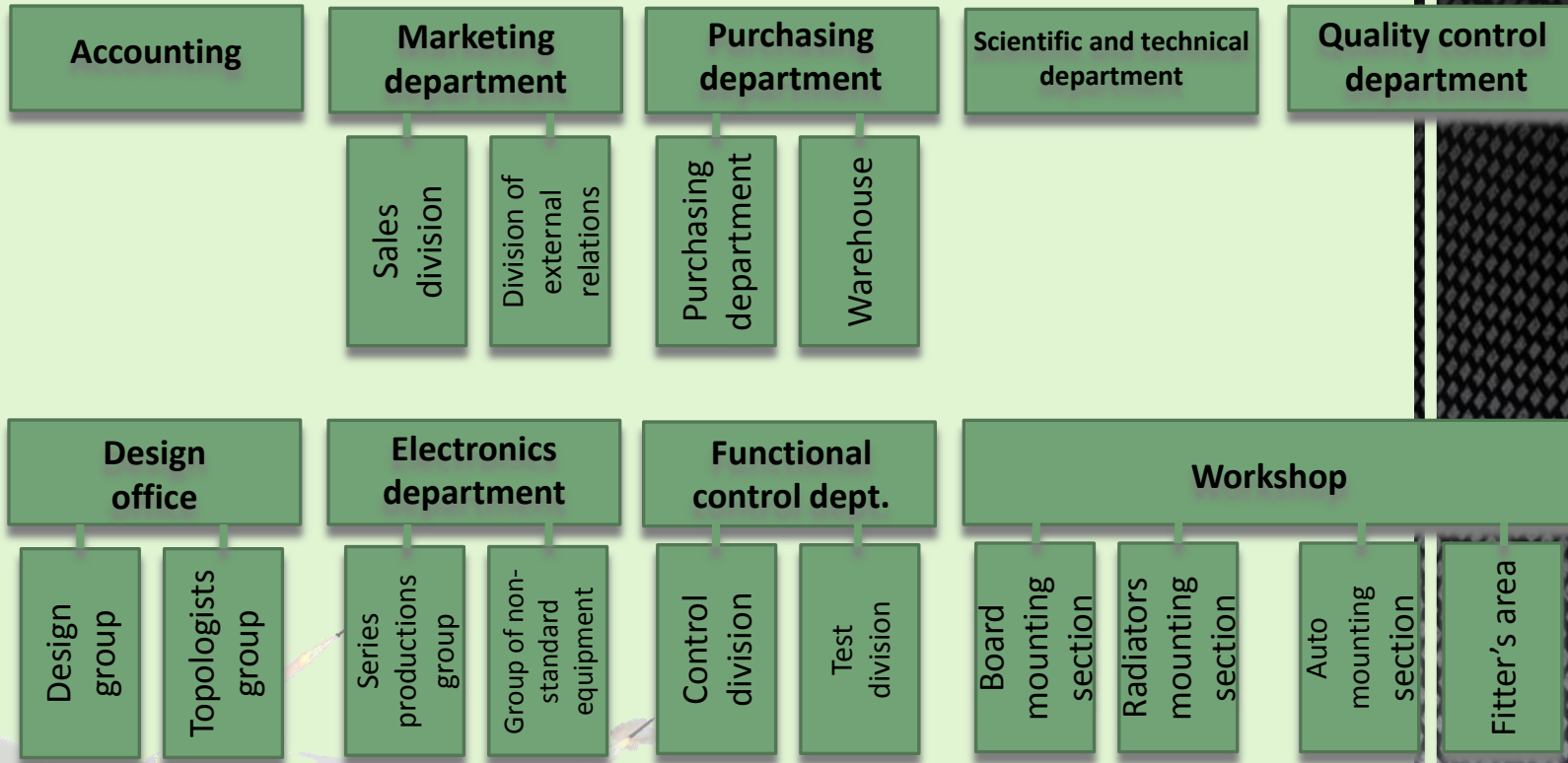
Functional Control Department

Number of employees– 105 persons

Occupied area – 1200 m²

Monthly turnover – \$300 000

Structure



Basic products list



MODULES WITHOUT INBUILT CONTROL

- MODULES OF IGBT-TRANSISTORS UP TO 6500 V / 400 A
- MODULES OF MOSFET-TRANSISTORS UP TO 250 V / 500 A
- MODULES OF THYRISTORS AND DIODES UP TO 1600 V / 320 A
- MODULES OF SCHOTTKY DIODES UP TO 200 V / 400 A

MODULES WITH INBUILT CONTROL

- DC AND AC RELAYS UP TO 1600 V / 400 A
- MODULES FOR DC CONTROL UP TO 1200 V / 320 A
- MODULES FOR POWER CONTROL UP TO 1600 V / 320 A
- MODULES OF REGULATED RECTIFIERS UP TO 1600 V / 320 A
- MODULES FOR ELECTRIC MOTORS CONTROL UP TO 1200 V / 100 A

CONTROL CIRCUITS

- DRIVERS OF IGBT- AND MOSFET-TRANSISTORS UP TO 6500 V / 400 A
- DRIVERS OF POWER THYRISTORS
- DRIVERS OF TYPICAL THYRISTORS UNITS
- AC/DC VOLTAGE CONVERTERS

POWER UNITS

- POWER REGULATORS UNITS UP TO 1200 V / 1000 A
- ELECTRIC MOTORS CONTROL UNITS

Basic directions



Industry



Transport



Energy production



**Control
electric motors**



**Special
purpose equipment**



**Converters,
sources**

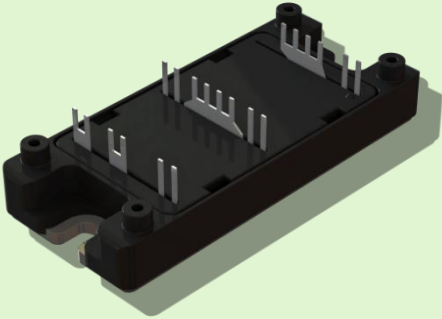
Energy production



Unit of current protection MPT-200 in switchgear cabinets



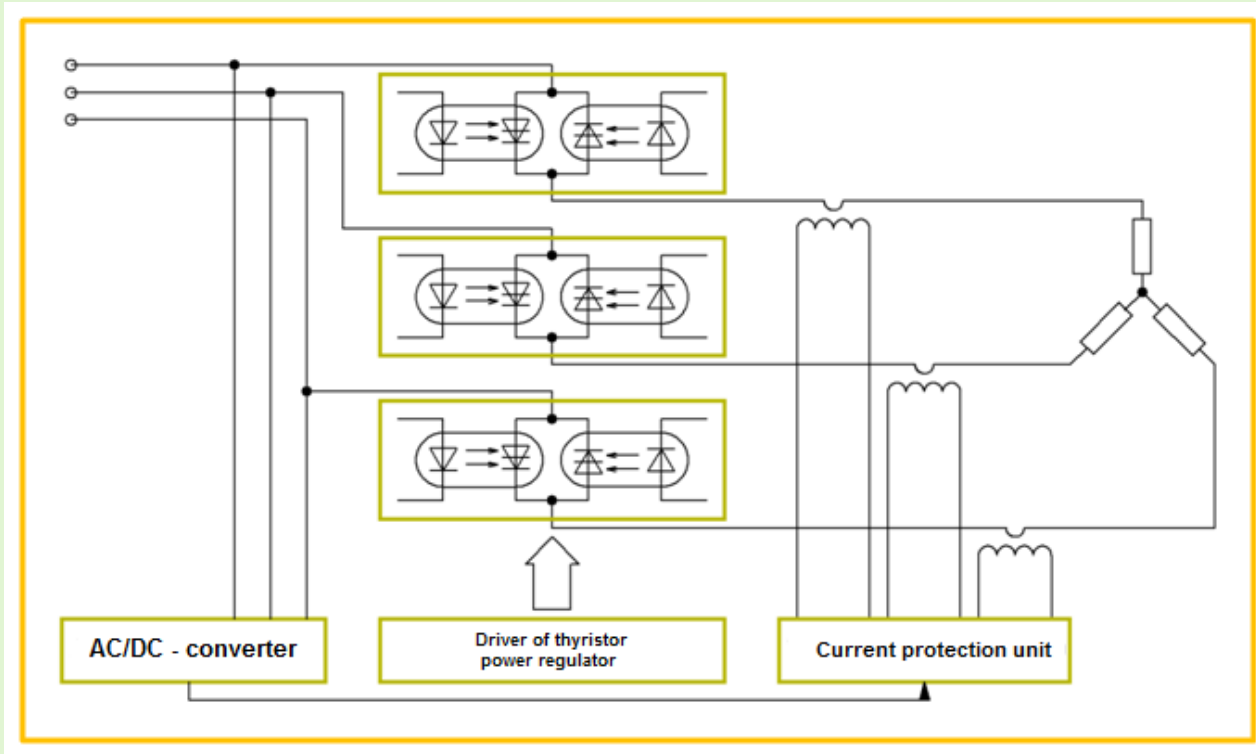
IGBT-module of three-level inverter in converters of solar batteries



Opto thyristor relay MO8 in transformer substations



Example of power thyristor commutator



POWER MODULES -

SINGLE-PHASE OPTO
THYRISTOR MODULES
MO8D



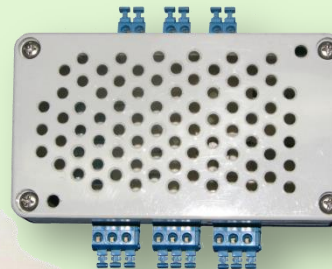
MIP 380-15



3phPRD



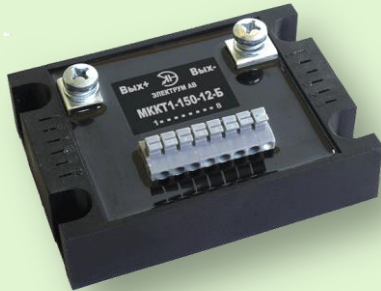
MPT-200MK



Industry



Module of commutation and current control SSPC in conveyor control system



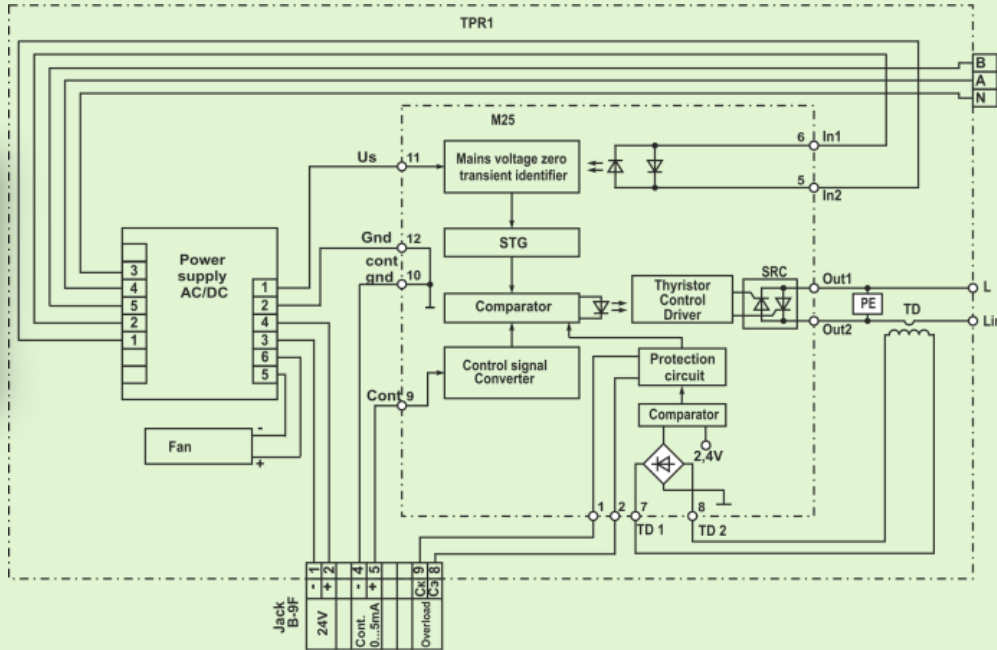
Module of power regulator M25 in industry drying oven



Driver IGBT-transistors DR280 in induction oven control



Unit of industry thyristor power regulator TPR



Units of thyristor power regulators (TPR) are an assembly of power supply, thyristors' control circuit and power thyristors based on modules M25 or power thyristor modules (for TPR3-T). The units are produced with maximum reverse thyristors' voltage 1200 V and an amount of maximum rms current 25,40,63,100,160,250 A for TPR1(3) or an amount of current 400,500,600,800,1000 A for TPR3-T.

Quantity of phases	Current, A	
	≤250	400...1000
1	TPR1	-
3	TPR3	TPR3-T

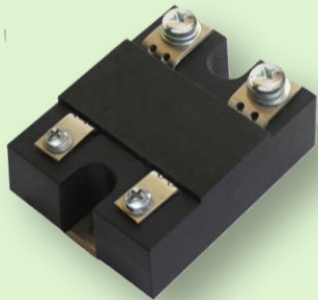
Converters



Module of half-bridge M12 in industry power supply



Module of rectifier bridge on Schottky diodes in diesel-generator



Module of regulated rectifier MO30 in power voltage stabilizer



Example of power pulsing power supply



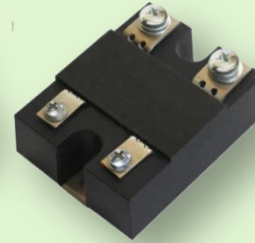
MO23



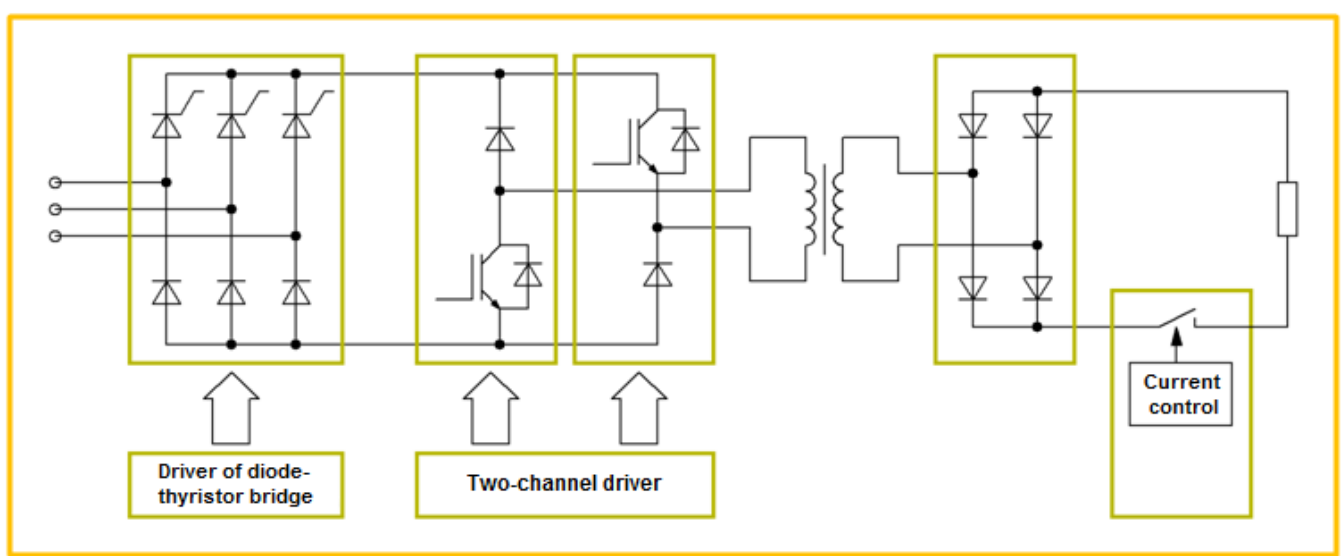
M10



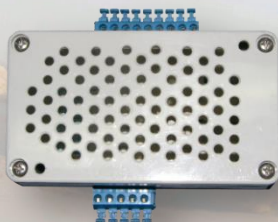
M11



M5Sch



3phCRD



DR280



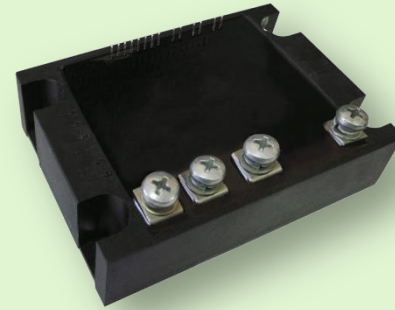
MT14PT



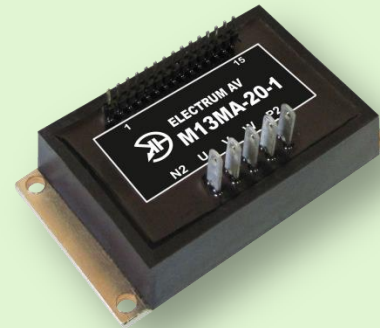
Transport



**MOSFET-module of three-phase inverter M13
in tractor fan drive**



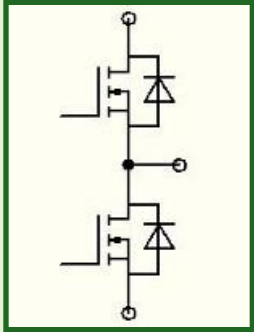
**Module of intelligent inverter M31
in control of trolleybus compressor**



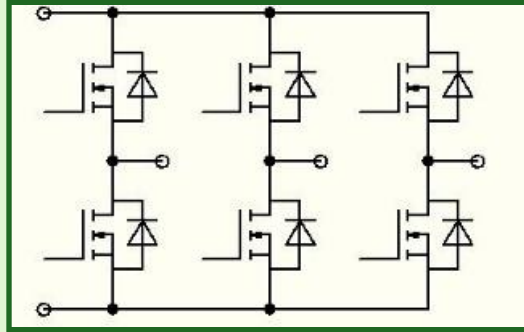
**DC relay MT14
in supply circuits of subway wagons**



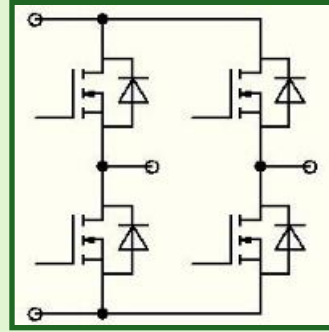
Series of low-voltage MOSFET-modules



M12



M13A

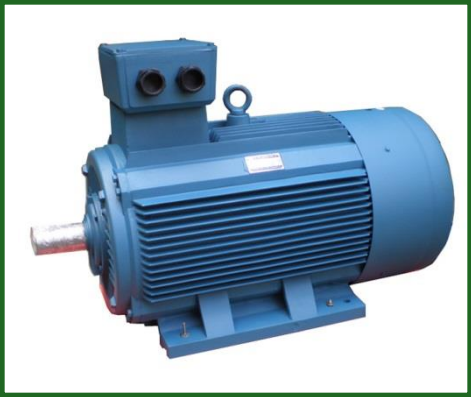


M13B

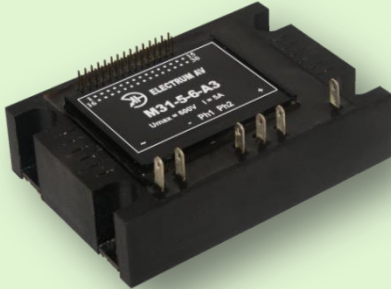
Parameter	Unit	M12T-500-0,4	M12T-500-0,75	M13A(B)-200-0,4	M13A(B)-200-0,75
Breakdown drain-source voltage, $U_{(BR)DSS}$, min	V	40	75	40	75
Maximum permissible DC of drain, I_D , max	A	500	500	200	200
Maximum permissible pulse drain current, I_{DM} , max	A	1500	1600	1500	1600
Drain-source resistance in on-state, $R_{DS(on)}$, max	m Ω	0.4	0.9	1.2	1.8



Motors control



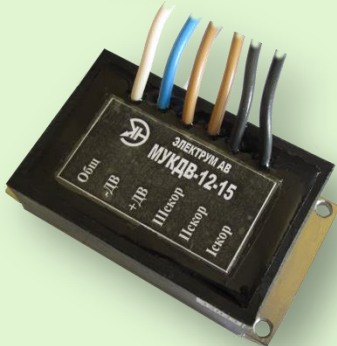
Module for control of asynchronous motor 3phACDMM in frequency converter



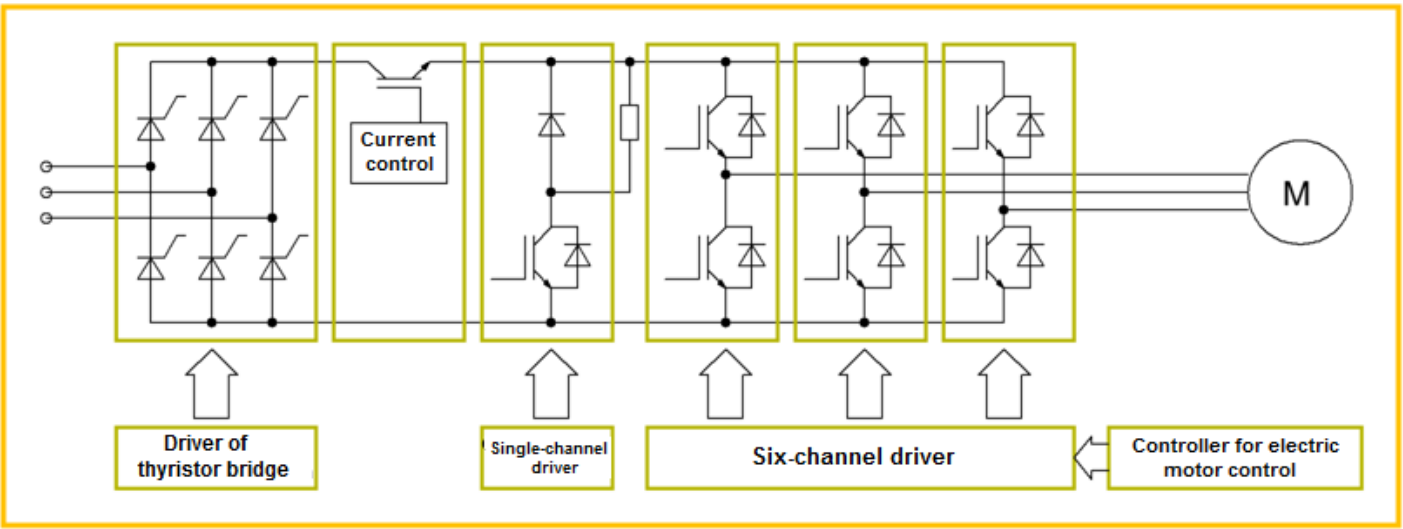
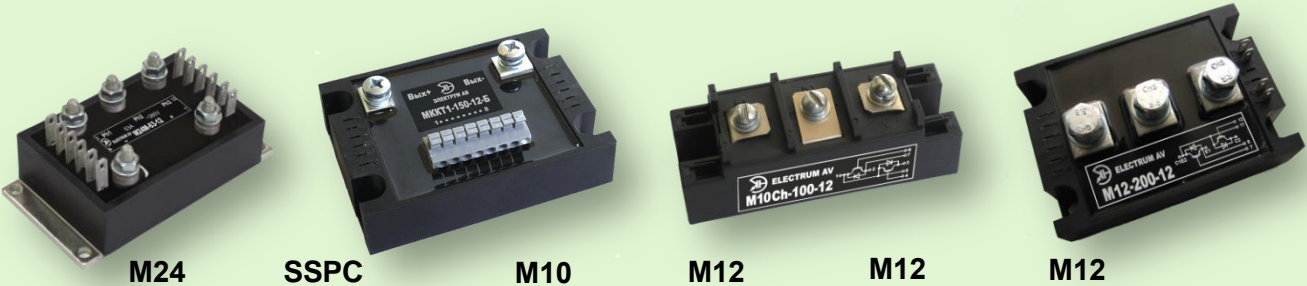
Control unit SWPC of brushless DC motor of well pump



Module for control of DC motor BDCDM in servo drives



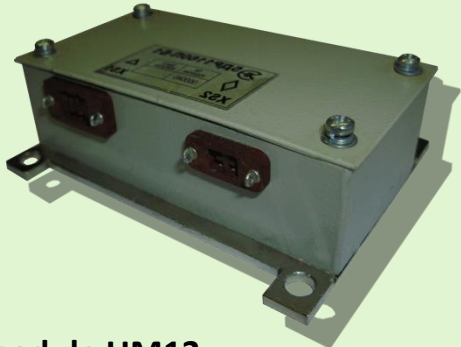
Example of electric motor control converter



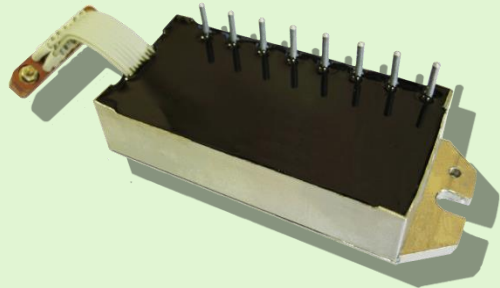
Military technology



**Driver of MOSFET-switch 5DR1160
in supply unit of guided missile system**



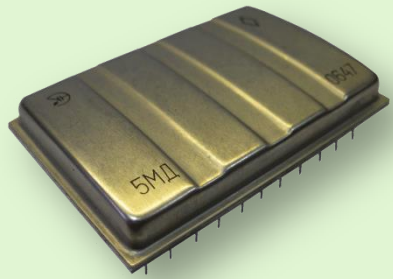
**Motor control module UM13
in missiles «air-to-air»**



**Module for voltage control 5SSVC
in mobile platform of Air Defense**

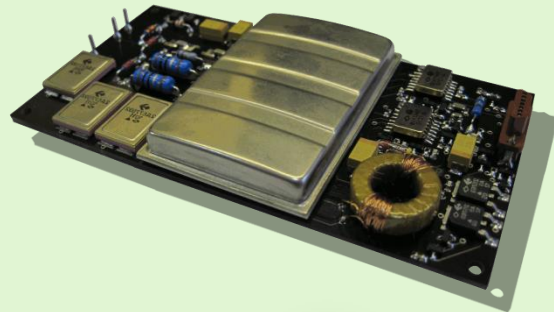


Series of special purpose drivers of IGBT-transistors



Single-channel driver module 5DM1110

$U_{sup} = 5 \text{ V}$
 $U_{out} = +15/-10 \text{ V}$
 $I_{out} = \pm 12 \text{ A}$
 $T_j = -60 \dots +85 \text{ }^\circ\text{C}$



Single-channel driver 5DR1120

$U_{sup} = 15 \text{ V}$
 $U_{out} = +15/-10 \text{ V}$
 $I_{out} = \pm 12 \text{ A}$
 $T_j = -60 \dots +85 \text{ }^\circ\text{C}$



Two-channel driver 5DR2120

$U_{sup} = 15 \text{ V}$
 $U_{out} = +15/-10 \text{ V (2 channels)}$
 $I_{out} = \pm 12 \text{ A (2 channels)}$
 $T_j = -60 \dots +85 \text{ }^\circ\text{C}$

«Electrum AV» – this is:

- Development of products according to customer TR
- Modernization of stock-produced items on designer request
- Tens of realized development work including military purpose



For fighters of 5-th generation



For APS



For public lighting



Power module for converter of solar batteries

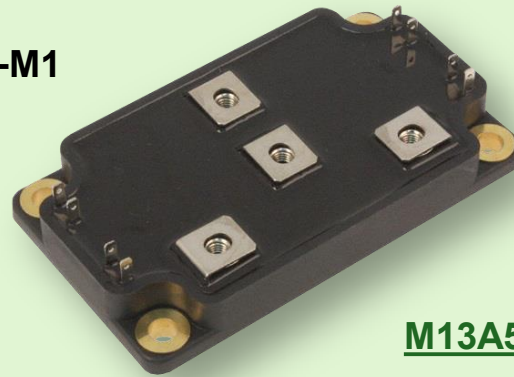
Task:

To develop a power module based on IGBT-transistors that is an analogue of module APTGT150TL60G («Microsemi») for solar battery converter

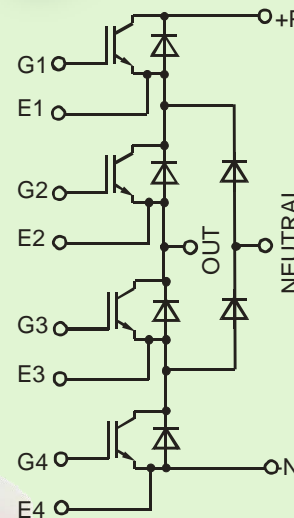
Solution:

Module of three-phase inverter M13A5-150-6-M1

Switched current: up to 150 A
Peak voltage: up to 600 V
Saturation voltage: 1.7 V (typ.)



M13A5



Driver for converter of wind generator

Task:

To develop a special six-channel driver for control of power module 6MBI1000VXB-170E-50 («Infineon») in wind generator converter

Solution:

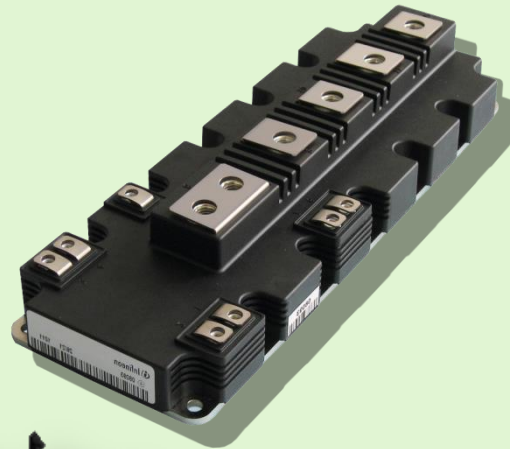
Special driver IGBT-transistors DR6180P-B

Six adjustable channels

Output pulse current: ± 18 A

Transistors control up to 1700 V / 1200 A

All typical driver protections + temperature protection



DR6180



Unit for control by pump and solar battery system

Task:

To develop a unit to control well pump based on brushless DC motor operating from a compact solar battery

Solution:

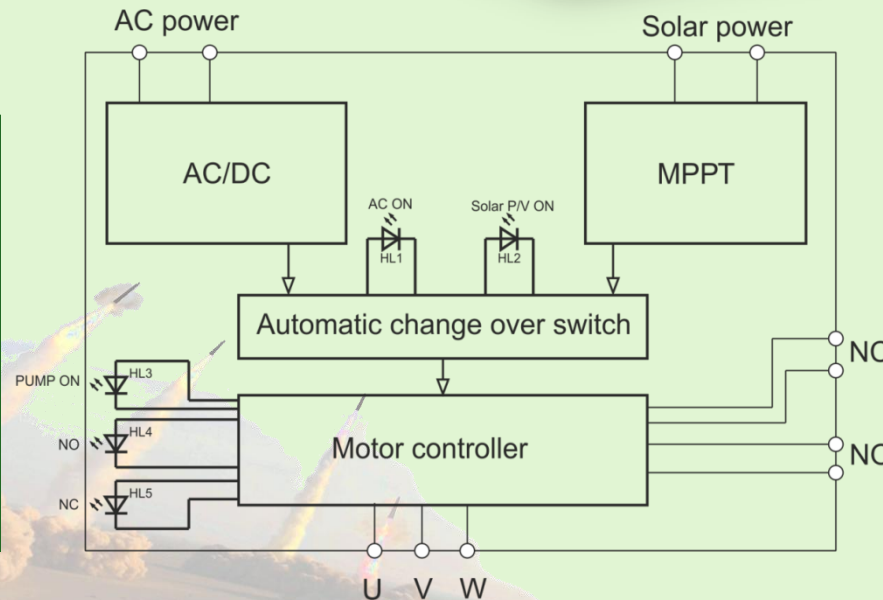
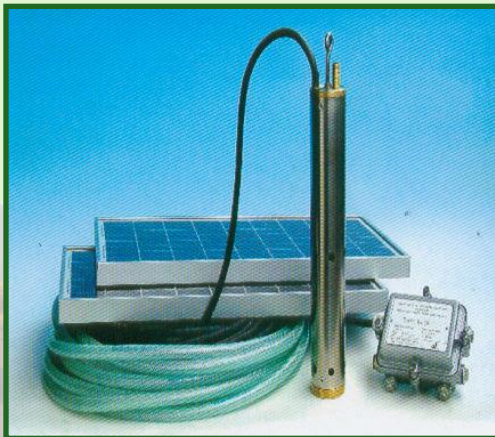
Control unit SWPC – solar water pump controller

Supply and load: up to 150 V / 20 A

Nominal motor power: 0.8 kW

Fully autonomous operation

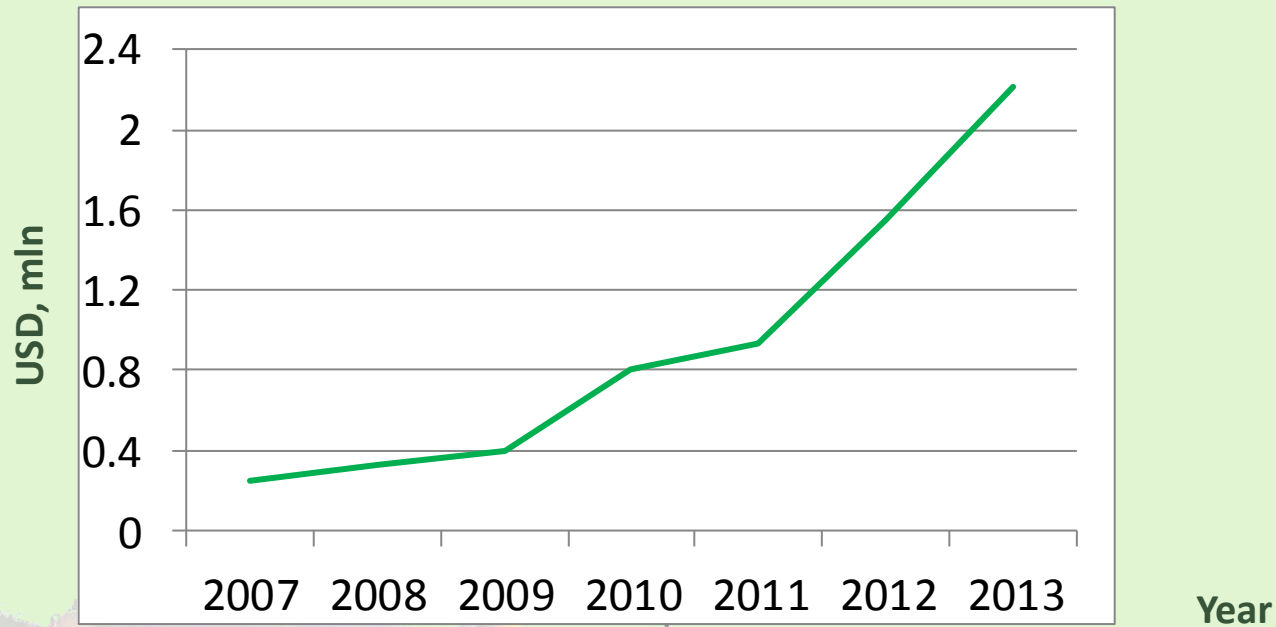
Built-in: current protections, voltage protections, start protections, etc



Our volumes



Volume of shipped products



Contact details

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Engineering Dept.: +7(4862) 44-03-91

Electronics Dept.: +7(4862) 44-03-94

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