Presidency of the Islamic Republic of Iran
Vice Presidency for Science and Technology

Seventeenth Volume

POWER AND CONTROL ENGINEERING

Knowledge-Based Products and Equipment


بسم الله الرحمن الرحيم

SEVENTEENTH VOLUME

Knowledge-Based Products and Equipment

Power & Control Engineering

Presidency of the Islamic Republic of Iran Vice Presidency for Science and Technology

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Knowledge-Based Products and Equipment
Seventeenth Volume: **Power & Control Engineering**

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Preface

One of the key factors in a nation's industrialization and economic complexity is technology. Complex economies can connect vast networks of individuals with relevant information to produce a variety of knowledge-based goods. Indeed, the types of goods or products that are ultimately supplied to international markets are taken into account when determining the complexity of an economy.

A knowledge-based economy is one in which the application of knowledge and information plays a significant role in shaping production and distribution, and where investments in knowledge-based businesses have drawn particular attention. Along with enhancing nations' competitiveness, the transformation of economies into knowledge-based economies has the potential to have a significant impact on international trade.

7000 knowledge-based businesses in Iran provide knowledge-based goods that are the result of the expertise and experience of professionals and university graduates. These businesses, which occasionally resemble enormous technology factories, sold more than 10$ billion worth of goods last year and exported 1$ billion or so to various nations. The Presidential Deputy for Science and Technology is recognized as the most significant authority for direction, leadership, and development of the technology area in Iran. It serves as a support organization for startups and knowledge-based businesses by finding and selecting these enterprises. This book, along with 19 other books, is a carefully curated selection of goods with a track record or export potential that was put together using data provided by chosen businesses for presentation to foreign clients, business people, and government and academic officials interested in using these goods. To review the company's manufacturing and distribution records, access to technical knowledge and specialized human resources, production and export capacities, and after-sales services, two specialized and commercial committees were formed separately, and each committee reviewed the products in detail with the participation of technical and commercial experts.

In this procedure, specialized committees were held with the collaboration of the experts of the center of companies and knowledge-based institutions of the Deputy for Science and Technology, headed by ***Dr Reza Asadi Fard*** and Coordinated by ***Engineer Mojtaba Houshmandzadeh***. In addition, ***Engineer Mehdi Ghaleh Noei*** and ***Engineer Ruhollah Estiri*** presided over commercial committee meetings, which also included businessmen from the private sector, and I want to express my gratitude to these two groups for their work and assistance.

I also want to appreciate the project manager, ***Zahra Afzali***, who has taken on a lot of responsibility and given close attention to the project's design and development from the beginning with innovative ideas.

I also think it's important to recognize and express my gratitude to my other colleagues for their efforts in gathering, reviewing, contacting firms, selecting, and rewriting texts, and finally editing and creating this book:

Project monitoring and editing team: ***Mohammad Torabi, Fereshte Elahi***

Evaluation team: ***Seyed Rasoul Hosseininia, Mehran Zeinalipour, Yaser Shadan***

Editorial team: ***Fatemeh Mohammadi Siani, Mohammad Matin Shirzad***

Design team: ***Mohammad Hossein Pourdabbaq, Masoud Khalili***

I want to underline that the aforementioned goods may be offered in a variety of ways in the country of destination, including export of end products, export of semi-finished and assembled products at the destination, joint production in the destination country and other economic cooperation. In each of the aforementioned scenarios, the Export Development and Technology Exchange Fund is prepared to co-invest in the target countries and guarantee the purchases as a financial sponsor of knowledge-based export enterprises.

The book's conclusion also includes a list of export management firms authorized by the Deputy for Science and Technology for communication, Iran Houses of Innovation & Technology (iHiTs), located in several countries, and commercialization and technology transfer agencies. Finally, I am hoping that this book will be beneficial to the readers and provide them with a thorough grasp of Iranian technological advancements.

Regards,
Mehrdad Amani Aghdam
CEO of Export Development and Technology Transfer Fund

Power & Control Engineering

Knowledge-Based Products and Equipment

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Industrial Control & Automation

Introduction

The Origin of Industry and Export in The Eyes of Iranians

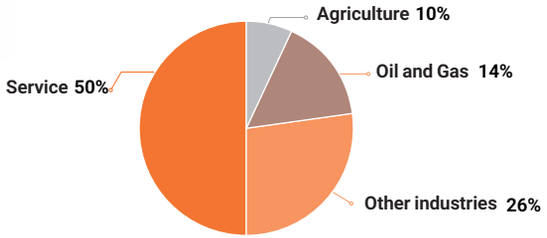
The ancient land of Iran has long been the source of knowledge and industry, and Iranians have played a significant role in the development, evolution and promotion of science and human awareness. Most historians of the world believe that most of the advances in science and human civilization are owed to Iranian civilization and the most brilliant works of art and the highest industrial levels has come from the minds of Iranians. Metalworking industries, agricultural industry, pharmacy and alchemy with themes including tile glazing, carpet dyeing, fabrics and glass were some of the industries that were considered by ancient Iranians. In parallel with the special attention to the development of industry, the history of mutual trade relations between Iranians and other civilizations in East and Central Asia, Europe and Africa has a long history, and Iranians have played a significant role in the expansion of global altruism since long ago by being on the route of the Silk Road and maritime trade.

We Iranians today, like our ancestors, consider industry, art and production in our ancient land to be a transformative and constructive place, and we consider the development of technological interactions and the trade of knowledge-based industrial products with other countries as an opportunity for friendship and the expansion of ties.

Industry and Export in Today's Iran

Industrial development has a very important place in the plans and policies of the Islamic Republic of Iran due to the creation of value added, job creation, increase in exports and reduction in imports, and the transition from an economy dependent on oil and mineral raw materials to an industrial and manufacturing economy, especially an economy dependent on new technologies, is a grand plan that has been adopted for this purpose. Currently, 50% of Iran's gross domestic product is allocated to services and another 50% to industry and manufacturing, which includes 10% agriculture and food industry, 14% oil and gas industry, and 26% other manufacturing industries.

The Share of Various Activities in Iran's GDP

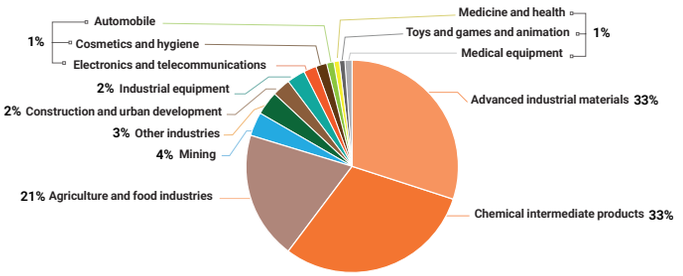


In the meantime, various industries such as pharmaceuticals, medical equipment, construction, communications and telecommunications, energy, mining, chemicals, etc. have a special share of Iran's gross domestic product, and their production, in addition to covering a considerable amount of country's domestic needs, are exported to various destinations.

According to World Customs Organization data, in 2021, the Islamic Republic of Iran had exports equal to 75 billion dollars, almost half of which is allocated to non-oil industries and processed industrial products. Advanced industrial materials, chemical intermediate products, agricultural products and food industry are all among the biggest exporting industries with more exports.

Iran's Exports in 2021

Ref: Trade Statistics for International Business Development [1]



[1] www.trademap.org

Regarding the main export destinations of Iran, it should be noted that **China, India, Indonesia, Russia, Uzbekistan, Ghana, Germany and South Africa**, as well as among the regional neighbours, **Iraq, Turkey, UAE, Afghanistan, Pakistan, Oman, Turkmenistan, and Azerbaijan** account for the largest dollar value of imports from Iran.

Where the New Technologies Stand in Iran's Industry

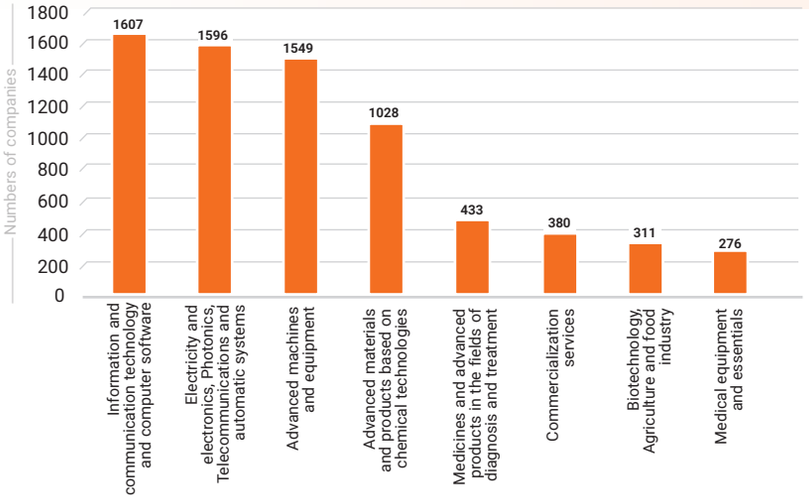
Paying attention to the development of new technologies, commercialization and its influence on manufacturing industries has caused the Islamic Republic of Iran to experience a growing progress in this field in the last decade; An issue that has taken place in Iran in the form of the development of knowledge-based enterprises. Based on this, the meaning behind knowledge-based enterprise is as follows:

A private company that produces products or provides services that have the following three features:

1. The product or service provided by the company has a high or medium to high technology level and its technical knowledge has a significant technical complexity (technology level condition).
2. The product or service design in the company is based on internal research and development or technology transfer (Research and development-based design condition).
3. The company is able to produce and provide the mentioned goods or services to the market (production condition).

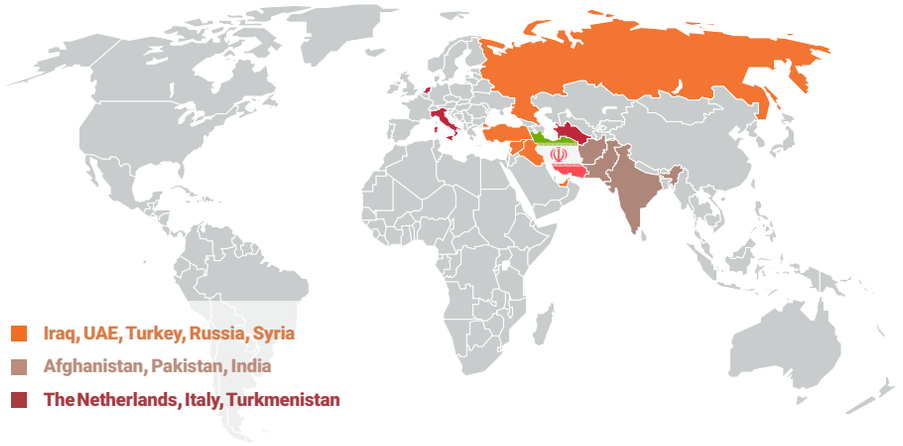
Currently, more than 7 thousand knowledge-based enterprises in Iran are producing products and providing services in the field of various technologies. These companies produce more than 15,000 products or services in total, and their direct employees, which generally include people with a high level of education, are around 250,000 people.

The Number of Knowledge-Based Companies - Technology Fields



The export of Iran's knowledge-based enterprises has been growing in the last 5 years, and these companies currently account for about %2 of Iran's non-oil exports.

The Largest Export Destinations of Iranian Knowledge-Based Enterprises in the Last 5 Years



The Status of Knowledge-Based Products in Power & Control Engineering

No industry, production, or even daily interactions of people can, without a doubt, continue and develop without electricity. This position is so fundamental and important that the management and development of the electrical grid in the Islamic Republic of Iran (like many other countries) have an independent structure and position, and the development of this industry and its related technologies has long been considered in Iran.

According to the reports of the Central Bank, the share of the energy sector (which also includes electricity industry) in the GDP is around %8.2 and this industry a fundamental position and is of utmost importance in other sectors (especially the industries with %26 share of GDP). Furthermore, other industries such as petrochemicals, steel, construction, medical equipment, automotive, oil and gas, etc., are heavily dependent on this sector.

The vast majority of commodities in this industry are consumed in Iranian domestic industries. However, in the last few years, almost 260 million dollars, which accounts for 0.5 percent of Iran›s total export has been allocated annually to the electricity industry, whose significant portion is related to power and control engineering equipment.

Due to the great consumer market and the dependence of all industries without exception on the electricity industry and the power grid (which also include the products

and equipment related to power and control engineering), the foundations for the growth of many knowledge-based technologies and products have been provided therein. The activity of more than 950 Iranian knowledge enterprises and the supply of more than 1600 technological products demonstrates this point.

In the last few years, considering the special attention to the self-sufficiency and maximum development of country on national scale, the activity and production of knowledge enterprises related to the electricity industry, which also includes the power and control engineering sector, has been accompanied by good growth, and allocation of about %12 of Iran›s knowledge-based production and employment to this field confirms this issue.

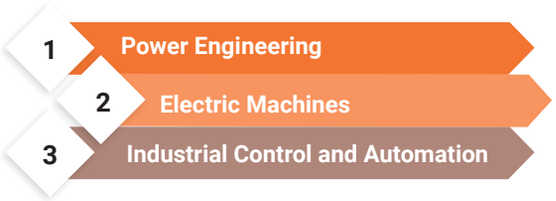
Finally, regarding the export of knowledge-based products of this industry, it needs to be mentioned that a total of 210 million dollars worth of products of knowledge enterprises active in the field of power and control engineering have been exported outside Iran in the last 5 years.

The Percentage of Power & Control Engineering Companies from All the Knowledge-Based Enterprises

The Main Export Destinations of Iranian Knowledge-Based Enterprises in the Field of Power & Control Engineering

The Division of Knowledge-Based Products in Power & Control Engineering

As previously mentioned, the great consumer market and the dependence of all industries without exception on the electricity industry and the power grid (which also include the products and equipment related to power and control engineering) have provided the foundations for the growth of many knowledge-based technologies and products in it. In this book, products have been collected that can be divided into the following categories:



The following describes each category and their subcategories in order to give a general understanding of these areas.

1 Power Engineering

Power engineering involves generation of electric power in various ways and the transmission and distribution of this power with high efficiency and reliability. There are some knowledge-based products related to this area produced by Iranian companies, many of which already have a good export record. These products can be categorized as follows:

- **First Section | Generation:**

In this subcategory, all the products related to the generation of electric power, which are produced with the lowest cost and the highest efficiency by Iran›s knowledge-based enterprises, are presented. Among these products can be mentioned: various generators with different powers and their simulators, power plants and services related to their construction and operation.

- **Second Section | Transmission Line Equipment:**

Designing transmission networks, transmission lines, distribution of load on the network, devices related to the reliability and stability of the power grid, network protection design, etc., are among the products and services produced by knowledge-based companies and introduced in this subcategory.

- **Third Section | Distribution and Consumption Equipment:**

The equipment used for transmission of the generated electricity and for distribution between consumption centers are presented in this subcategory. Among this equipment can be mentioned the control devices of distribution substations, current protection relays and electricity meters.

- **Fourth Section | Test and Measurement Equipment:**

In the process of generating and distributing electricity, testing and measuring equipment are of great use and importance. Due to their different quantities of power, there are a wide variety of knowledge-based products in this subcategory such as voltmeters, ammeters and power meters.

- **Fifth Section | Power Supply:**

Considering the electrification of many industrial and urban equipment as well as the importance of portability, power supplies are essential for development of modern industries. Various types of batteries and power supplies and their related equipment such as charges are included in this subcategory.

Start chapter at page 22 »

2 Electric Machines

Iranian knowledge enterprises produce plenty of electric machines which are used in several industries. In the other volumes of this book series, these products are classified and introduced separately according to each specific industry. Therefore, only the ones with a common application between the industries are presented here which can be classified as follows:

- **First Section | Electric Equipment:**

In this subcategory, knowledge-based electrical equipment that are used in various industries and are based on processes such as magnetic induction, resistance welding, DC current, etc., are presented.

- **Second Section | Motor Drive:**

Drives are the pieces of equipment used to control voltage or frequency. Drives can turn the motor on and off smoothly and fully controlled. Knowledge-based motor drives are presented in this subcategory.

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3 Industrial Control and Automation

Industrial automation means using electrical control tools instead of human in order to direct and control different processes. In this subcategory, various electricity-powered equipment and systems that are used as all or part of an industrial automation system and are used in the electrical industry have been presented.

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Power & Control Engineering

First Chapter

Power Engineering

- Generation
- Transmission Line Equipment
- Distribution and Consumption Equipment
- Test and Measurement Equipment
- Power Supply
- Battery Management System

Second Chapter

Electric Machines

- Induction Motors
- DC Motors
- Motor Drive

Third Chapter

Industrial Control and Automation

- Industrial Automation

First Chapter

Power Engineering

1st CHAPTER

First Chapter | Second Chapter | Third Chapter

Power Engineering

Sections

Types of Generators

MAPNA Generator Engineering and Manufacturing (PARS) Co.
www.mapnagenerator.com

Product Introduction:

In this machine, the magnetic field resulting from the passage of direct electric current through a number of coils formed on the rotor of the generator and rotated by a steam turbine driver, diesel engine gas turbine or kinetic energy of wind, creates a rotating magnetic field. When this rotating field is interrupted by (usually several) three sets of fixed windings (stator), According to Faraday's law of induction, an alternating electric current is created in the stationary winding of the stator. The alternating electric current created in each set of coils, which are called phases, depending on the network conditions in different parts of the world, has a frequency of 50 or 60 cycles per second (Hz), and each phase differs by 120 degrees from the other phase, which means that in a sinusoidal waveform, when the U phase reaches its maximum point, the W phase reaches its maximum point with an angular difference of 120 degrees. Mapna Pars generator engineering and manufacturing company produces various generators, which include: 160 MW gas generator MGG55 - 173 MW gas generator MGG57 - 185 MW gas generator MGG58 - 160 MW steam generator MGS55 - 160 MW steam generator (TX) MGS54 - 45 MW steam generator MGG41 - Gas generator 25 MW MGG30 - Steam generator 5.10 MW MGS23 - Steam generator 6 MW MGS21 - Wind generator 5.2 MW MGW13

Main Export Destinations:
Germany, Italy, Austria, The Czech Republic

Export History:
Up to 500,000 $

Founded:
1998

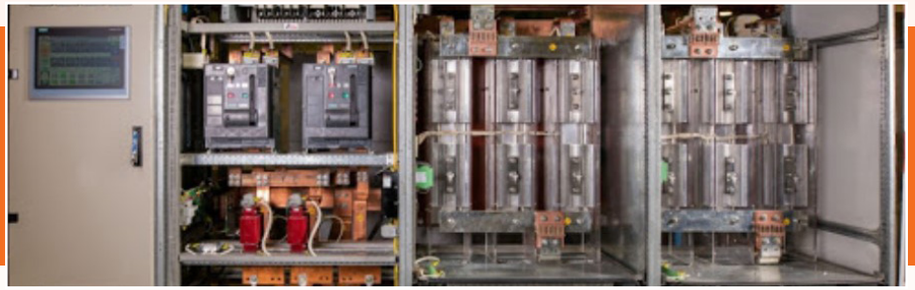
Application:

Electric energy generation

This product is final B2B equipment.

Technical Specifications:

- **Moving:** Gas turbine, Steam turbine, Wind turbine
- **Cooling system:** Air cooling
- **Excitation system;** Static, Dynamic



Generator Static Excitation System

MAPEX-E Class

Mapna Electric & Control, Engineering & Manufacturing CO. (MECO)

www.mapnaec.com

Product Introduction:

The rotor of power plant generators should be fed by a DC current that is suitable for the generator's working conditions. In case of an error in the network, the rotor circuit undergoes many changes and its current and voltage increase greatly. The excitation system has the task of controlling the electrical parameters of the rotor circuit in normal conditions or faults in the network, and if the excitation system operates correctly, maintaining the health of the generator in different working conditions is guaranteed. Since the changes of the electrical parameters of an electrical circuit can be very fast, the excitation system must determine the status of the rotor circuit and the generator at a high speed and ensure the safety of the generator operation with a suitable reaction. The control system consists of a control loop that has protective parts called current and excitation voltage limiters, stator, PSS, etc.

Founded:
2004

Application:

used In thermal, hydroelectric and gas power plants to control the operation of the generator (class E) and regulate its voltage and reactive power

This product is final B2B equipment.

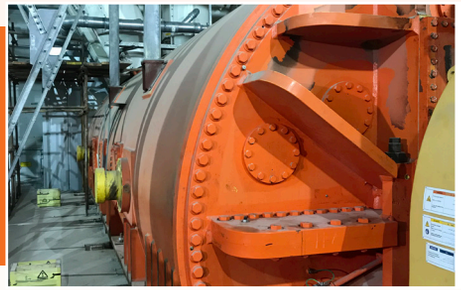
Technical Specifications:

- **Maximum current:** 2300 ADC
- **Maximum voltage:** 590 VDC
- **Response time:** 20 ms

Advantages:

- 15 inch color display with touch control capability to receive reference values and user commands
- Live display of single-line diagram of the excitation system and its working status
- Air cooling system of thyristors to prevent heat loss

International Standards or Permissions:
IEEE 421.5



Real Time Simulator of Synchronous Generator and Power Network

Mapna Electric & Control, Engineering & Manufacturing CO. (MECO)

www.mapnaec.com

Product Introduction:

In this product, by writing the dynamic equations, the desired equipment is used in REAL TIME and closed loop in HIL hardware.
In fact, this piece of equipment is a hardware system in the loop (Hardware In the Loop) that simulates a synchronous generator in the power grid in real time. Its hardware is processing boards based on FPGA (ALTERA company) and DSP. This board was purchased together with a sampling board from another company; Therefore, the company has only been active in the field of software and firmware.

Founded:
2004

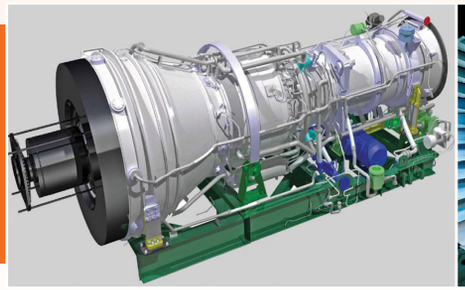
Application:

- Research centers, test stations of companies and factories for testing equipment - universities
- Testing of manufactured and designed equipment
- Training personnel and operating forces
- Use as industrial controllers
- Improving the control and protection parameters of the produced equipment

This product is final B2B equipment.

Technical Specifications:

- **Outputs:** 8 analog outputs ±10 volts (16 bits)
- **Inputs:** 4 analog inputs ±10 volts (12 bits)
- Equipped with DSP 5509A



25 MW Turbocompressor Control System (TC)

Mapna Electric & Control, Engineering & Manufacturing CO. (MECO)

www.mapnaec.com

Product Introduction:

This product, a complete set of turbocompressor control system boards, includes governor and anti-surge valve control loops along with the program test simulator to ensure the accuracy of the program before launching it in real conditions. In this product, the control system of a three-shaft gas turbine (which is supposed to act as a mechanical drive for the compressors of the gas pressure boosting lines, refinery, etc.) and also the control system of the centrifugal compressor of the refinery gas transfer have been designed, built and dynamically tested.

Founded:
2004

Application:

used In the gas refinery and gas transmission lines to control turbocompressors or software test of the control system of turbocompressors before starting the unit.

This product is final B2B equipment.

Technical Specifications:

- **Controllers:** Process equipment (PLC)
- **Input/Output cards:** I/O modules in analog and digital types
- **Communication switches:** OLM, SCALANCE switch

Advantages:

- Ability to protect against speed increase and prevent injuries
- Ability to protect against temperature rise and prevent injury
- Ability to control SURGE in turbocompressors and apply appropriate control logic

Island Mode Simulator (Mapsim)

Monenco Iran Co.

www.monencogroup.com

Monenco Iran

Product Introduction:

The dynamic response of power plant units to load changes and frequency changes is very important in the stability of power grids. The control part responsible for responding to load changes and frequency changes in power plant units is the governor. Determining the dynamic parameters of the governor of power plant units in island mode is necessary to check the stability of the network in different events. Since power plant units are generally operated while connected to the national grid, dynamic testing of these units in the island mode is not possible or is associated with a very high risk. This device enables dynamic testing of the power plant unit in island mode when the power plant unit is still connected to the national grid. The basis of the operation of this equipment is based on the modeling of power changes with respect to frequency changes.

Founded:
1973

Application:

- Manufacturers of power plant units (to perform dynamic testing during unit start-up)
- Power plant repair companies (to perform dynamic tests after major repairs of the unit)
- Industrial complexes with power plant units (for dynamic verification of power plant units)

This product is final B2B equipment.

Technical Specifications:

- **Power supply:** 220 V mains electricity
- **Number of input channels:**
  - 30 analog channels
  - 2 digital channels
- **Number of output channels:**
  - 4 analog channels
  - 2 digital channels
- **Sampling frequency:** 250 kHz

Advantages:

- The possibility of measuring and simulating in real time
- Ability to measure and record data with a sampling frequency of 250 kHz
- Isolation of input and output signals
- Ability to measure current and voltage and remove noise during measurement

Power Plant Busbar Up to 18 kV

Roshd Sanat Niroo (RSN) Co.

www.roshdsanatniroo.com

Product Introduction:

All generators, transformers, wires and cables of a power plant or transformer substation that have the same voltage are connected together with a bar or a conductor called a busbar in each phase. In the busbar, all the energy of the generators, transformers or both is connected and then with the same voltage or with the help of a step-up or step-down transformer with a different voltage it is distributed directly to consumers or other busbars. Therefore, it can be said that the busbar is a means of collecting and distributing energy in the same unit. This product is one of the high-tech products used in power plant generators with high voltage level. Insulation technology, production methods and how to install and assemble these busbars are among the most important parts of this product's technology.

Main Export Destinations:
Turkey

Export History:
Up to 500,000 $

Founded:
2005

Application:

Electric current conduction in 18 kV power plant generators

This product is final B2B equipment.

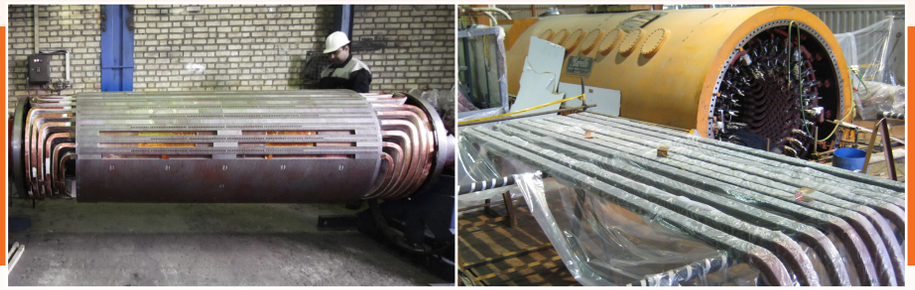
Technical Specifications:

- **Voltage:** 150-400 V
- **Current:** 60-100 A
- **Power:** 10000-30000 kW
- **Speed:** 60-600 rpm

Advantages:

- Significant Factor of safety compared to similar samples
- Taking into account the problems and methods of operation by the final consumer in the design and construction process
- Designing and manufacturing the product according to the special climatic conditions of the place of use

International Standards or Permissions:
IEC 60034



11 kV and 20 kV Power Plant Busbar

Shahroud Turbogenerator Co.

www.turbogen.co.ir

Product Introduction:

All generators, transformers, wires and cables of a power plant or transformer station that have the same voltage are connected with a bar or a conductor called a busbar in each phase. All the energy of the generators, transformers or both are connected in the busbar, and are directed to consumers or other busbars directly with the same voltage or with the help of a step-up or step-down transformer with a different voltage. Therefore, it can be said that the busbar is a means of collecting and distributing energy in the unit.
In this unit, all types of transposed busbars for Roebel Bas power plant generators with voltages of 18KV and 11KV, various types of transposed with coils of high pressure electric motors up to 11KV voltage, coils of direct current rotors and coils related to the main and auxiliary poles of direct current machines are designed and manufactured with modern methods.

Main Export Destinations:
Iraq

Export History:
Up to 500,000 $

Founded:
2002

Application:

used As windings of high pressure electric motors in all power plant generators with a power of more than 400 MVA

This product is final B2B equipment.

Technical Specifications:

- **Methods:**
  - Resin rich (RR)
  - under vacuum and pressure (VPI)
- **Voltage:** 11 and 20 kV

Advantages:

Use of advanced insulation and modern winding devices

International Standards or Permissions:

- ISO 9001
- IEC 60034

Solar Power Plant Construction Services

Up to 10 Megawatts

Noursun Energy Aria Co.

www.noursun.com

Product Introduction:

Solar power plant has the task of converting solar energy into electrical energy. This energy conversion takes place in solar panels. The output voltage of solar panels is of DC type. This voltage is converted into AC power by an inverter after being amplified by the MPPT converter. Photovoltaic power plants include one or more inverters based on rated capacity. The electricity generated by the inverters is injected into the national grid using switchboards and transformers. The optimization in the power plant of Noursan Company is such that the Levelized Cost of Electricity in the production of power output of the power plant is minimal and the performance factor of the power plant independent of environmental parameters such as sunlight with a performance ratio of over 80% is guaranteed by Noursan Company.

Founded:

2012

Application:

- Converting solar energy into electrical energy in places like:
- Energy-intensive industrial plants such as cement and steel industries
- Investors in the field of cryptocurrency mining
- Companies that own fossil power plants that must reduce greenhouse gas emissions in their investment development plans

This product is final B2B equipment and sevices.

Technical Specifications:

- **Capacity:** From 1 kW to megawatt blocks
- **Range of solar panels:** 330-600 W
- **Nominal power range of inverters:** 50-150 kW

Advantages:

High efficiency and capacity of inverters

International Standards or Permissions:

- IEC 61724
- IEC/BS 62548

Application:

- Electric energy distribution network
- Factories
- Regional electricity

Modular Substation

Fan Avaran Sane Shargh Co.

www.saneshargh.ir

This product is final B2B equipment.

Product Introduction:

This product is a combination of fixed transmission substations and mobile substations produced by Sane Shargh Group whose technical knowledge has been carried out with research and development in vibration calculations and static resistance resulting from transportation and movement stresses used to make this product. This product includes structure, chassis, current and voltage transformers, lightning rod, command and control booth, interior panels and enclosure.

Advantages:

- Cost reduction compared to fixed substations
- Much shorter construction time than fixed substations
- Anti-earthquake and vibration floor

Main Export Destinations:

Turkey

Export History:

Up to 500,000 $

Founded:

2006

International Standards or Permissions:

- Cable Box panel manufacturing standard
- IEC 62271-200

SF6 Gas GIS Medium Pressure Switchboard

Lavan Tablo Co.

www.lavantablo.com

Product Introduction:

AIS type medium pressure switchboards, besides being bulky and occupying a lot of space and having air insulation, arc during disconnection and connection when under load and cause damage to the equipment. In order to eliminate the above defects, GAS INSULATED SWITCH GIS switchboards can be used; In these boards, SF6 gas is used as insulation, and as a result, it is possible for the phase busbars to be two-thirds closer to each other, and likewise, other pieces of equipment to be installed with a smaller distance from each other, and finally, this board becomes a small compact board that can be installed in a small space. In addition, these boards are more efficient in polluted and humid environments than other boards. According to the types of available mechanisms (V, C and F) as well as the number of required cells and the arrangement of different mechanisms next to each other, this product is produced in different models.

Main Export Destinations:

Italy, Iraq

Export History:

Between 1,000,000 - 10,000,000 $

Founded:

2003

Application:

Oil, gas, petrochemical, steel, cement, power plants, mining, textile industries

This product is final B2B equipment.

Technical Specifications:

- **Rated voltage:** 24 kV
- **Rated frequency:** 50 Hz
- **Rated normal current (busbars):** 630 A
- **Rated peak withstand current:** 50 kA

Advantages:

- Lifespan of more than 30 years
- Suitable for areas with high humidity and pollution
- No need for maintenance and repair for 5-year periods
- Equipped with an indicator of voltage and status of earth contacts
- Two-year warranty and 10-year after-sales service

International Standards or Permissions:

- ISO 140001
- IEC 60694
- IEC 62271
- IEC 60265
- IEC 60529

Intelligent Medium Pressure Compact Panel
with SF6 Gas Insulation

Niroo Sahel Bushehr Co.

www.niroosahel.com

Product Introduction:

The importance of the stability of power supply grids and the health of the employees of this industry and the value of the location in different areas stress the need for small-sized panels with a high reliability factor and more safety. Therefore, Niro Sahel company has designed and produced medium pressure gas compact panels with NBP brand using modern technologies and international standards.

NBP panels are mostly used in hot and humid areas and areas with a lot of dust (areas with heavy and super heavy pollution). All electrical equipment and busbars are located in a steel tank filled with SF6 gas, and SF6 gas is used as an electrical insulation that cools and extinguishes the electric arc. This feature has caused the equipment inside the steel tank to not need periodic service and maintenance. Due to the lack of access to electric parts and busbars, these types of panels have high safety. The small dimensions of these types of panels have caused them to be used in all types of compact substations and so on.

Founded:
1998

Application:

- All types of electrical substations
- Wind power plants
- Solar power plants
- CHP gas power plants
- Hotels, shopping centers and residential and office complexes
- Tunnels and subways
- Large military and commercial ships

This product is final B2B equipment.

Technical Specifications:

- **Rated Voltage:** 24 kV
- **Rated Current:** 630 A
- **Rated Frequency:** 50 Hz
- **Making Capacity:** 40 KA

Advantages:

- Resistant to corrosion in highly polluted areas
- Diversity in the place of use
- Produced in various arrangements
- Small product volume

International Standards or Permissions:

- IEC 60694
- IEC 62271
- IEC 60282

Types of Disconnectors and Recloser

Pars Switch Co.

www.parsswitch.com

Product Introduction:

In general, the disconnector can be considered a protective device that prevents the operator from being electrocuted, and can be called a communicator, and its main task is to cut the lines objectively. The sectioner is produced in the following three models:

- **PGL Pole Mounted Load-break switch:** This product is a load-break switch that can be disconnected under load, and unlike power switches that have the ability to cut short circuit, they only have the ability to cut off the load current. It is also called Load break switch or LBS.
- **Panel load break switch (LBS-P):** This product is a load break switch and, unlike power switches, which have the ability to cut short circuit, it only has the ability to cut off the load current. It is also called Load break switch or LBS.
- **PVR:** This switch is able to disconnect and connect the line several times with a short time interval according to the conditions. The main task of Auto-recloser is to remove transient faults from transmission lines.

Application:

- **PGL:** Disconnection and connection of load flow in overhead lines and automation systems of distribution networks
- **LBS:** Used in low-width medium pressure switchgears, used in output feeders of electric substation of small gas power plants, used in private substations of buildings and large commercial spaces, etc.
- **PVR:** Interruption of normal and fault currents in overhead lines and substations

Founded:
1992

This product is final B2B equipment.

Technical Specifications:

PGL

- **Calculated voltage:** 24 kV
- **Frequency:** 50 Hz
- **Rated normal current:** 630 A
- **Weight:** 103 kg

LBS

- **Rated current:** 630 A
- **Resistance to short circuit current:** 20KA-3S
- **Capacity Building:** 50 kA

PVR

- **Voltage:** 24 kV
- **Normal current:** 630 A
- **Frequency:** 50 Hz

Advantages:

PGL:

- Low noise level and suitable for installation in residential areas
- Simple installation and set-up due to conducting all tests in the factory and delivery in the form of easy-to-connect sets.
- High earthquake tolerance due to optimal design

LBS:

- The presence of SF6 gas as an arc quencher
- The ability to interrupt the flow of the load

PVR:

- Lower price than similar products
- Using silicone coating for waterproofing and long life of bridges in different environmentalconditions
- The use of a magnetic control mechanism with the ability to operate without time limits

Export History:
The Netherlands, Azerbaijan, Armenia, Iraq, Nigeria

Export History:
Between 1,000,000 - 10,000,000 $

International Standards or Permissions:
IEC 62271
IEC 60255
IEC 61000

Types of Breakers

Pars Switch Co.

www.parsswitch.com

Product Introduction:

CIRCUIT BREAKER or power switch is a type of automatic switch designed to protect the power grid or transformer from dangers caused by overload or short circuit. These breakers are produced in the following different models:

- **FPS:** FPS shutdown chamber is gas (SF6) and puffer type.
- **VP4E:** VP4E disconnecting chamber is of vacuum bottle type.
- **VCB outdoor:** VCB outdoor disconnection chamber is vacuum.
- **LTB:** The pressure switch is capable of suppressing the arc caused by interruption of alternating current in a time interval of 10 to 20 milliseconds.
- **HPL245KV63-KA:** The HPL switch is a separate SF6 gas switch, which is also called the puffer type.

Main Export Destinations:

The Netherlands, Azerbaijan, Armenia, Iraq, Nigeria

Export History:

Between 1,000,000 - 10,000,000 $

Founded:

1992

Application:

Disconnection and connection of load flow and short-circuit current of the electrical network inside the switchboard and in the indoor environments of various industries and power companies

This product is final B2B equipment.

Technical Specifications:

FPS

- **Voltage rate:** 24 kV
- **Rated normal current:** 630-1250-1600-2000
- **Frequency rate:** 50 Hz

VP4E

- **Frequency rate:** 50/60 Hz
- **Voltage rate:** 24 kV
- **Rated power-frequency withstand voltage:** 50 kV

VCB outdoor

- **Voltage rate:** 36 kV
- **Power Freq. withstand voltage:** 70 kVrms
- **Impulse withstand voltage:** 170 Kvpeak

LTB

- **Frequency rate:** 50 Hz
- **Voltage rate:** 72.5 kV
- **Making current:** 100 kA

HPL245KV-63KA

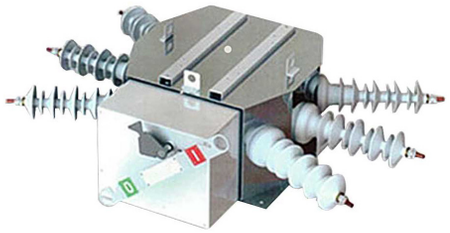
- **Voltage:** 245 kV
- **Frequency:** 50 Hz
- **Making current:** 36 kA

Advantages:

Increasing the voltage range and power

International Standards or Permissions:

- Sample approval from CESI
- Sample approval from kema



24 kV Gas-Insulated Switch Disconnector

Tablo Sanat Tavan Co.

www.tablosanattavan.com

Product Introduction:

A disconnector is a device for disconnecting systems that are almost without current. In other words, the disconnector separates the parts and devices that are only under voltage from the network. Almost no load means that with the help of the disconnector, the capacitive currents of insulators, busbars and electrical installations, short cables and lines, as well as the current of the voltage transformer can be cut off, or even low-power transformers can be cut off with the disconnector. The reason for the disconnector not having current when disconnecting or connecting is that the disconnector is not equipped with a spark extinguisher; Therefore, in general, it can be concluded that disconnecting and connecting the disconnector should be done without spark or with a small spark. Hence, according to this definition, if current passes through the disconnector and there is no potential difference between the two contacts at the time of disconnection, it is safe to disconnect the disconnector. Also, connecting a disconnector that does not have a potential difference between its two contacts is allowed. even though it allows current to pass as soon as it is connected.

Application:

Comprehensive management of electrical energy distribution systems and network control and reduction of blackouts

This product is final B2B equipment.

Technical Specifications:

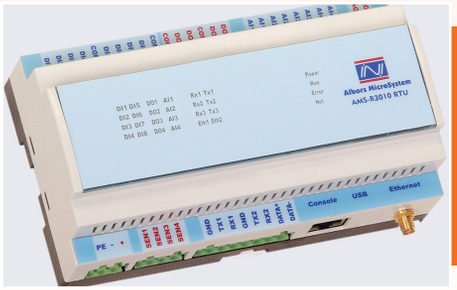
- **Rated frequency:** 60/50 Hz
- **Rated current (40 °C):** 630 A
- **Rated short-time withstand current:** 20 kA (3s)
- **Rated voltage:** 24 kV

Advantages:

- The ability to place the contacts in three positions: closed, open and ground in order to ensure safety and prevent improper operation.
- Has a front cover to protect the operation mechanism
- Easy installation and operation
- Working in harsh environmental conditions

International Standards or Permissions:

IEC 62271



20 kV Electronic Sectionalizer

with Internal RTU System with SCADA Modem Module

Fartak Control Co.

www.icdnteam.com

Product Introduction:

This device is designed and built for local and remote control of all types of 20 kV motorized air circuit breakers. This control panel is used in overhead medium-pressure distribution networks and is specially used along with 20 kV air circuit breakers and the operator will be able to control and monitor the disconnector switch online. One of the important and prominent features of the control panel is the ability to automatically isolate the fault area in power distribution networks.

Founded:
2009

Application:

- Connecting and disconnecting the disconnector switch remotely online by all SCADA pieces of software
- Monitoring network dynamic parameters such as current, voltage, active and reactive power, frequency and power factor
- Isolation of the fault area automatically
- Persistent and transient fault detection
- Sending parameters related to the state of the disconnector switch, such as the state of the mechanical lock and gas pressure of the disconnector

This product is final B2B equipment.

Technical Specifications:

This product has the following features:

- Phase and ground fault detection
- Autosectionalizing (automatic isolation of the fault area)
- Unbalanced load current and voltage detection
- Line overload detection
- Definite detection of phase
- Detection of power transmission direction
- Detection of lack of synchrony

Advantages:

- Complete equipment pack for implementation in the automation platform
- Separate input protection system
- Free SCADA software

International Standards or Permissions:

- IEC 60255-5
- IEEE C37.90.1
- IEEE C37.90.2
- IEC61000-4-2
- IEC61000-4-3

Gas House Switch

with and without Automation

Kian Transfo Industries Co.

www.kti-co.ir

Product Introduction:

In the distribution network, the house switch is used to disconnect and connect the voltage, transmit the information of voltage, current, power and in general the status of electricity. According to the type and amount of voltage and power, it is used in a fused, non-fused and gaseous form. Some switch houses have an RTU system to transmit information. In the switch of big houses, special GIS keys and circuit breakers are used. Meters, disconenctors, relays and measuring equipment are also used in switch houses.

Main Export Destinations:

Iraq

Export History:

Between 500,000 - 1,00,000 $

Founded:

2006

Application:

To disconnect and connect the voltage, to transmit the information of voltage, current, power and the status of electricity

This product is final B2B equipment.

Technical Specifications:

- **Release current:** 16 kA-20 kA
- **Key modules:**
  - Fuse
  - RTU
  - GIS switches and circuit breaker
  - Measuring equipment

20 kV Gas-Insulated Load-Break Switch
that Can Be Turned Off under Load

Baset Pajooh Tehran Co.

www.pazhuh.basetgroup.com

Product Introduction:

The main function of electric switches is to cut off the electric current. At high voltages and currents, cutting off the electric current causes a strong arc. In this sort of switches, the intensity of the arc can be reduced to a great extent by using SF6 insulating gas enclosed in a steel case. This piece of equipment can be used in all medium pressure networks (20 KV) and is designed for disconnecting and connecting and maneuvering in distribution networks with a disconnecting power of 630 amps, along with an intelligent automation system, quick start-up and low cost of automation. On the other hand, all conditions and commands can be managed in the control center using the electronic intelligent system.

Founded:
1998

Application:

- All electricity distribution companies for use in medium-pressure overhead networks
- Oil and gas companies using overhead lines
- All industrial plants that have medium pressure electricity branch connection

This product is final B2B equipment.

Technical Specifications:

- **The type of insulation of the disconnecting chamber and the switch environment:** SF6 gas
- **Input supply voltage of the panel:** 110 Vac, 220 Vac
- **Nominal frequency of the system:** 50 Hz
- **Nominal current:** 630 A

Advantages:

- Does not transmit the impact of the contact function to the bushings
- Fault detection system with bright LED on the control panel
- Touch control panel and the possibility of portable use
- 5 years warranty

International Standards or Permissions:

- IEC62271
- IEC 60060
- IEC 60265
- ISO 9001

Medium Pressure Switch RTU
in Ground Models R612 and Air R603

Mashhad Tadbir Engineering Design Co.

www.mashhadtadbir.com

MASHHAD TADBIR

Product Introduction:

RTU devices are the microcomputer control system of the gas-insulated overhead disconnector that has the function of sectionalizer and can be connected to the automatic overhead switches in the voltage grid. By using sensors installed in the switch, while measuring voltage and current parameters and electrical parameters, this device can support various functions such as fault indicator and automatic sectionalizer.

These devices include an additional power supply system during power outages to operate the switch, system, modem, and additional devices. It also has a panel for device settings, displaying values and statuses, and a keyboard and communication module with the center.

The R603 is a remote terminal unit for distribution automation that controls, monitors and measures the Load Break switch. Different values of electricity from the power line and data transmitted to the control center through remote communication can be monitored. In R612, the controller is located in the switch control panel and acts as a switch controller, that sends information to the control center and receives commands.

Founded:
1996

Application:

- Local and remote control (Local/Remote) of 20KV aerial switch
- Turning the switch off and on (Open/Close)
- Measurement of electrical parameters
- Detection of current error in the power distribution network
- Sending and receiving electrical parameters and switch status in the power distribution network

This product is final B2B equipment.

Technical Specifications:

- **Relative humidity:** <95%RH
- **Ambient temperature:** -25 to 70℃
- **Input voltage:** 220 V
- **Battery voltage:** 24 V

Advantages:

- Fast calculation
- High resolution
- Complete HMI and user-friendly environment
- Debounce filtering with 1 millisecond accuracy
- Filtering and removing disturbance
- Detecting network faults with an accuracy of 100 milliseconds

International Standards or Permissions:

- IEC 60255
- IEEE C37
- IEC 61000
- IEC 60068

Ground and Air Three-Phase Fault Indicator on 24 kV

Rasnesh Energy Noivn (RASAN) Co.

www.rasan-eng.com

Product Introduction:

This Network fault indicators are in the category of network maintenance and protection equipment. The basis of the work of the fault indicators is based on the influence of the magnetic force of the network; In this way, the magnetic force resulting from the electric current is received by the equipment and therefore they continuously control the current and voltage of the line. These indicators are produced in two three-phase ground and air fault indicator models.

Application:

- Use for troubleshooting of power distribution networks.

This product is final B2B equipment.

Main Export Destinations:
Romania, Kazakhstan

Export History:
Up to 500,000

Founded:
2001

Fault Recorder Device and Event Recorder of Transmission Substations and Distribution Substations

Pardisan Engineering Co.

www.pardisan-co.com

Product Introduction:

Event recording system: The Event Recorder system made by Pardisan Engineering Company was designed and produced in order to collect, record and store and display of information, change the state of digital parameters by accurately recording the time of their occurrence for the substations of the power distribution and transmission substations. Fast processing of information and displaying the list of sequence of events by this system is an effective tool for investigating events and analyzing them. The analysis of incidents that occurred in the substation is done more accurately and quickly with the help of this device, and therefore, the maintenance and support operations and the repair of its equipment are done better and with less time and cost.

Fault recording system: Fault recorder system made by Pardisan Computer Engineering Company is designed and produced to receive, store and display the information of the faults that have occurred to the country's electricity transmission and distribution substations lines. This system is able to prepare various reports based on user requests along with displaying and creating a database of current values of input parameters. It is also possible to create reports and display them remotely.

The architecture of this system is modular and it is possible to easily decrease or increase the number of input channels. We have tried to utilise the latest hardware and software technical knowledge and take advantage of the available and accessible facilities to produce this system so as not to create any special dependence.

Founded:
1994

Application:

- Used for monitoring and troubleshooting the operation of protection and control equipment of production, transmission and distribution grids of electricity, oil, gas and petrochemical steel and iron
- Management and planning of maintenance and repairs of equipment related to the protection and control of the aforementioned networks
- Observing and supervising the performance of protection and control equipment in dispatching centers

This product is final B2B equipment.

Technical Specifications:

- **Fault recorder:**
  - Adjustable sampling frequency in the range of 0.8 to 12.8 kHz
  - Based on Windows operating system
  - Menu Driven feature
- **Event recorder:**
  - Each module (digital input card) has 60 input channels
  - Has the capacity to increase up to 960 channels
  - Accuracy of reading each input channel with a time of 1 millisecond

Advantages:

- Redundancy feature with the available substation equipment
- Expandability according to the removal or installation of new equipment in the substation

International Standards or Permissions:

- Type Test Certificate from EPIL
- IEC 68
- IEC 255
- ANSI/IEEE C37.90.1
- IEC 1000

Intelligent System

for Detecting Vandalism Events of Power Transmission Towers Using MEMS Technology

Barsam Energy Ariya (Mabna) Co.

Product Introduction:

This system is capable of monitoring data and mechanical signals of the structure of the power transmission tower by means of micro-electromechanical sensors and signal processing and detection of vandalism events and collection of relevant data in the network management center of this system, with the detection of acts caused by vandalism or technical defects of the towers, the possibility of sending messages in GSM/GPRS telecommunication networks and is also compatible with Internet of Things communication infrastructures such as Lora/NB-IoT.

Founded:
2016

Application:

Preventing the occurrence of vandalism in power transmission towers

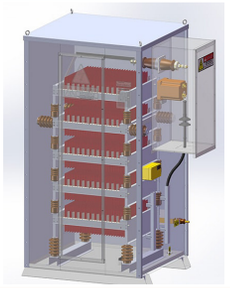
This product is final B2B equipment and sevices.

Technical Specifications:

- **Average life:** 10 years
- **Energy storage:** 4x2200 mAh
- **Mechanical measurement range:** ±18 g
- **Ability to store energy in minimal radiation conditions:** 10 μW per cm²

Advantages:

- No need to connect to the power grid, energy supply through solar energy
- Very low system energy consumption
- Application of machine learning in automatic adjustment of event detection parameters



Transformer Earth Resistance Device

NGR, NER and NGT and Biennial Spare Parts Sale, Setup Spare Parts (Services)

PAARSUN Co.

www.paarsun.com

Product Introduction:

NGR resistor is a piece of equipment that is used to protect the transformer or generator by installing it in the neutral connection path to the ground. The main purpose of installing this equipment is to limit the maximum ground fault current so that the power system equipment is not damaged and protective relays can operate within a certain time limit. The NGR resistor is considered a backup piece of equipment for the main protection system, which reduces the risks of errors for the equipment and its users.

Main Export Destinations:

Iraq

Export History:

up to 500,000 $

Founded:

2006

This product is final B2B equipment.

Technical Specifications:

- **Working voltage:** Maximum up to 63/√3 KV
- **Nominal time:** 10s– 1m– 10m– long term

Advantages:

- Reducing the effects of burns and melting of faulty equipment such as switchgear, transformers of rotating electric machines (generator and motor), cables, etc.
- Reducing the risk of electric shock caused by stray fault current to people
- Safe control of generated overvoltages and preventing blackouts in circuits with ground faults

International Standards or Permissions:

- IEC 60071-1
- ANSI/IEC 60529-2004
- ANSI/NETA-ATS-2009
- IEEE 32

Data Concentrator Sending Unit of Electricity Network Counters and Meters (DCU)

Baset Pajooh Tehran Co.

www.pazhuh.basetgroup.com

Product Introduction:

Considering the need of the electricity industry to collect information about the meters of the electricity market installed in the subtransmission substations, Baset Pazhuh Tehran Company has designed and built a data collection and transmission system (DCU). Data collection and transmission center model B451 with the ability to read all types of meters and sending their information in an encrypted form on different communication platforms is a suitable solution to meet the needs of all stakeholders of this data concentration system. Model B851 measuring center with the ability to measure various parameters of power, energy and harmonics, having various inputs and outputs and communication ports, the ability to record information and GPRS modem (as requested) is a suitable alternative to all external meters and analog meters.

Founded:
1998

Application:

- In all regional power stations, power plants, distribution and subtransmission up to the voltage level of 400KV
- All industrial centers such as oil and gas refineries, petrochemical, steel, cement, copper, agriculture and industry, etc.

This product is final B2B equipment.

Technical Specifications:

- Data collection:
- RS۴۸۵ port in two forms, screw terminal and RJ۴۵ with the ability to adjust A and B signals
- Having six isolated RS۴۸۵ ports with the ability to adjust sending speed and Parity
- Ability to transparently connect RS۴۸۵ ports from the center
- **Data storage:**
- Registering all information and settings in the MySQL database inside DCU
- Simultaneous storage of information as a binary file for Sama monitoring software and other software
- Saving settings regarding DCU reading methods, sending and accesses in the database
- Sending the information:
- Sending alarms and events via SMS to the system manager
- Ability to send information to different data centers with different access capabilities
- Sending and receiving files through FTP

Advantages:

- High security of information and communication
- High resistance and stability in harsh weather conditions
- Has internal memory and database
- 3 years warranty
- 10 years after sales service

International Standards or Permissions:
ISO 9001

Software for Testing and Inspecting Measuring Devices
Electricity Meters

Sanjesh Afzar Asia Co.

www.saa.ir

S.A.A

Product Introduction:

This software is designed using exclusive hardware to gain access to all the important parameters in electricity meters and in short, manage the correctness of the function of these meters and control and validate their correctness. Furthermore, it can save and report any functional or appearance defects and recommend standard routines (revisiting, replacing the meter, etc.) based on the received parameters for any defects.

Main Export Destinations:

Germany

Export History:

up to 500,000 $

Founded:

1999

Application:

Diagnosing and correcting the operation of electricity meters

This product is final B2B equipment.

Technical Specifications:

- **System platform:** Device Independent Web Base , Browser
- **Database:** Microsoft SQL Server 2014 R2 , Oracle 11G , Oracle 12C
- **Programming language:** C # .NET , ASP.NET ,Silver Light
- **Development framework:** Net Framework 4.5

Advantages:

Technical approval of test and inspection software from Tavanir company

Single-Phase and Three-Phase Stabilizer up to 75 KVAR

Electronic power sources production CO.

www.psp.ir

PSP
تولید منابع
تغذیه الکترونیک

Product Introduction:

This This product is a three-phase series active filter, known as Dynamic Voltage Restorer, which aims to compensate the voltage range in the final consumer. In addition to the above capability, this product has the ability to reduce voltage harmonics by several percent, which is one of the capabilities of FACTS devices. In 400V three-phase voltage consumers sensitive to amplitude and voltage THD, it is very necessary to have a device with high amplitude compensation speed and harmonic reduction. The use of power electronics to improve energy transmission systems, under the concept of flexible power transmission systems (FACTS), has become almost ubiquitous. In recent years, due to the ever-increasing expansion of electronic equipment in all levels of consumers (industrial, commercial and domestic consumers) and the high sensitivity of these devices to various voltage disturbances, the need to have high-quality voltage has been felt. One of the solutions to improve the quality of voltage is the use of facts tools. DVR (Dynamic Voltage Recovery) is one of the most effective and modern equipment that is placed in series with the network and can protect sensitive loads against network voltage problems by injecting the appropriate voltage.

This product is final B2B equipment.

Founded:
1982

Application:

- Steel and iron smelting
- Petroleum products
- Powerhouse
- Electric substations
- Mining (extraction, exploitation and processing)

This product is final B2B equipment.

Technical Specifications:

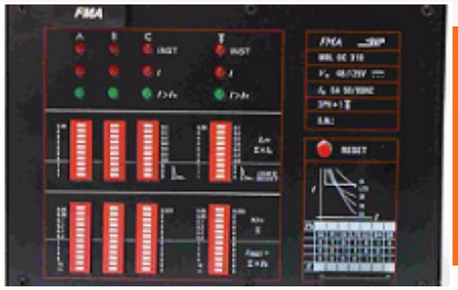
- **Temprture:** -20 - 60 ^{0}C
- **Dimensions:** 60*60*210
- **Weight:** 300 Kg
- **Display:** color touch

Advantages:

- Fast troubleshooting with failure detection capability
- Can be used in indoor and outdoor environments
- Resistant to dust and water penetration (IP42)
- Voltage harmonics below %3

International Standards or Permissions:

- NEMA PE5
- IEC 62040



Numerical High Current Relays
with Recloser and Ground Current Measurement

Hamian Fan Engineering Co.

www.hamianfan.com

Product Introduction:

The high current relay is a type of protection relay that, by sampling the line current and comparing it with the regulation current, gives commands to the power switch according to the standard curves and causes it to be cut off, and protects different parts of the power system (transformer and line) from damage caused by fault and overcurrent.

Founded:
1991

Application:

- Diagnosing faults in the power distribution network.

This product is final B2B equipment.

Technical Specifications:

- Three-phase overcurrent protection
- Earth fault protection
- Has RS485 and RS232
- Has two regulatory groups

Advantages:

- Ability to measure the current and display through LCD
- Ability to adjust through the keyboard on the panel and computer
- Ability to give command to the output relays, outside the protection channel

Overcurrent and Short Circuit Relay Equipped with RTU GPRS_GSM

Hadid Sanaat Co.

www.hadidsanaat.ir

Product Introduction:

This GSM/GPRS overcurrent and earth fault relay product is a combined overcurrent and earth fault relay and is used in distribution and transmission substations. This relay works with numerical technique and based on microcontroller performance. The product is programmable and the output relays measure and display the current passing through each phase, as well as record and display error values. It has a graphic screen to display waveforms and other parameters and the ability to work with current transformers with 1 and 5 amp outputs, and it is possible to program outputs and inputs using RS485 and ETHERNET communication ports. It is also possible to send error information and network monitoring to the dispatching center using the internal modem.

Founded:
2013

Application:

Detecting earthing errors and short circuit in the electricity network and sending information via GPRS to the dispatching center in the distribution and transmission substations.

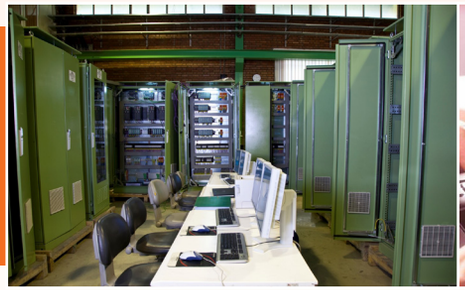
This product is final B2B equipment.

Technical Specifications:

- Numerical multi-user relay
- Phase overcurrent and earth fault protection
- Four IDMT curves
- Measurement of phase current and earth fault
- Recording 20 errors
- flexible programmable outputs
- 8 multi-user digital inputs

Advantages:

Utilization of the three-phase simultaneous monitoring system and the using special sampling method



Power Management System (PMS)

Mapna Electric & Control, Engineering & Manufacturing CO. (MECO)

www.mapnaec.com

Product Introduction:

Large industries, including petrochemicals, oil and gas refineries, oil and gas platforms, as well as steel industries, use both the national grid and their local power plants to supply electricity to their consumers. The local networks of these industries are operated in island mode, in other words, independently and disconnected from the national network. In these operating conditions, the stability management of the island grid, which is achieved by creating and maintaining the balance between production and consumption, is carried out by the PMS (Power Management System). In fact, this system not only enables the operator to monitor and supervise network components, including local power plants, industrial consumers, and island grid equipment, but also manages network stability and prevents blackout in the island grid automatically and functionally. In fact, without the presence of the PMS system, it is not possible to operate and maintain island grids and in case of any imbalance between production and consumption in such grids, blackout is very likely, which itself leads to emergency shutdowns of large industries.

Founded:
2004

Application:

- Power management including three basic functions of power sharing and load shedding (Load Sharing / Load Shedding / Generation Shedding)
- Synchronization of island grids with each other or with the national grid
- Online and moment-by-moment network monitoring
- Controling the network and apply remote commands, etc. automatically/manually

This product is final B2B sevices.

Technical Specifications:

- **Practical Load Shedding / Generation:** Less than 100 ms
- **Shedding Time:** 250~500ms
- **Control Loop Run Time:** 1ms
- **Synchronization Time Resolution (Via Gps Dcs Planet):** 1 ms

Advantages:

Centralization of the analyst and decision-making system

Packaging of SWAS 17 Power Plant Steam Purity Measurement System

Piramoon System Qeshm Co.

www.piramoonco.com

Product Introduction:

This system receives water and steam samples from different points of the boiler of a steam power plant with different pressures and temperatures (from atmospheric pressure to pressures above 100 bar (High Pressure) and from 25 to 500 degrees Celsius (High Temperature)) and after adjusting the pressure and temperature of steam and converting it into liquid phase, measures its physical and chemical parameters such as electrical conductivity, acidity, dissolved oxygen, sodium, silica, etc., and sends it to the control room of the power plant through a control panel.

This device informs the operators and the chemical department of the power plant about the presence of impurities and corrosive compounds in the water and steam cycle of the power plant and injects the required chemicals at any point and brings the conditions to the optimal level in order to prevent corrosion in the steam pipes and steam turbine blades. The incorrect operation of this device causes the turbine blades and boiler tubes to wear out in less than a year and cost the power plant dearly.

Main Export Destinations:

The UAE

Export History:

up to 500,000 $

Founded:

2007

Application:

Measuring and ensuring the quality and purity of water and steam in power plants

This product is final B2B equipment.

Technical Specifications:

- **Maximum pressure:** 150 bar
- **Maximum temperature:** 620 ℃
- **pH:** 0~14
- **Na+:** 0~100 ppm

International Standards or Permissions:

- ISO 9001
- ISO/TS 29001
- API 555
- Standard of heavy boiler manufacturers of Germany V

AMT105 Multi-Purpose Device
for Testing Relays, Transformers, Power Switches

Vebko Amirkabir Co.

www.vebko.ir

Product Introduction:

This device is used to test all types of protection relays in power substations and power plants and other companies such as petrochemicals, steel, etc. Also, with the help of this device, you can carry out tests of high pressure equipment such as power transformers and power switches and cable resistance, which plays an essential role in the electricity transmission system in the country. These tests should be done periodically in order to avoid unforeseen heavy damages. This device is the only one that can perform both relay testing and high pressure equipment testing in one case.

Main Export Destinations:

Croatia

Export History:

up to 500,000 $

Founded:

2014

Application:

- Comprehensive testing of all types of relays
- Testing the power transformers
- Testing the power switches
- Ability to carry out current transformer tests
- Ability to test all types of meters and transducers

This product is final B2B equipment.

Technical Specifications:

- **Hardware specifications:**
  - 6 current outputs
  - 4 voltage outputs
  - 8 binary/analog inputs with the ability to measure and record the transient state and 4 binary outputs
- **Software specifications:** It has 2 versions of Test and Stable software that can be installed on all Windows platforms

Advantages:

- Minimizing the device by using smaller parts and special heatsinks
- Programming in 1 microprocessor instead of using several microprocessors
- Combining different tests in one device

International Standards or Permissions:

- CE certificate
- EMC TEST Report

Testing Dynamic Parameters of Power Plant Units

Hesam Intelligent Monitoring Systems Co.

www.hims.co.ir

Product Introduction:

The safe operation of the power grid is one of the most important concerns of the esteemed experts of the electricity industry. Currently, due to the ever-increasing demand, the network is very close to its operational limits, and this has complicated the safe operation of the network. The first step is to conduct accurate and timely studies on the network to prevent possible outages. However, conducting any detailed study on the network requires an accurate static and dynamic model of the network, whose accuracy has been evaluated periodically. Having a model that matches the network and conducting various studies can lead to reducing the number of unwanted exits, increasing the life of equipment, optimal utilization of the available capabilities of power plants, and improving the quality of electricity. Among the network components, produced components are of special importance. Currently, the available models of these units are not accurate enough and do not represent the actual performance of the power plants in any way. Therefore, it has been decided that all power plant units should conduct identification tests in order to finally obtain a complete and accurate model of the production network.

Founded:
2015

Application:

- Validation and identification of synchronous generator
- Validation and identification of the stimulation and voltage regulator (AVR) system
- Validation and identification of the turbine-governor and boiler system (steam units)
- Validation and identification of the boiler system and HRSG (combined cycle units)

This product is final B2B equipment.

Technical Specifications:

- Using isolated data logging devices (Data Logger) with a high sampling rate (1 KHz)
- Measuring the load angle of the synchronous generator using a load angle measuring device (Load Angle Meter)
- Simulation of integrated model of power plant units in DIgSILENT software

Advantages:

- Accurate mathematical modeling of all parts of power plant units, suitable for dynamic studies
- Having an error below 2% in validation tests
- Load angle measurement technology using a load angle meter

International Standards or Permissions:

- IEEE 115-2009
- IEC 60034-4-2018

W106 Series of Products

System for Measuring and Recording Electrical Parameters of the Power Grid (Power Analyzer)

Mashhad Tadbir Engineering Design Co.

www.mashhadtadbir.com

MASHHAD TADBIR

Product Introduction:

W106 is a powerful measurement and monitoring center that can calculate qualitative parameters of power using DSP processor. In addition to measuring the main parameters, 2nd to 31st harmonics of voltages and currents and neutral current, THD of voltages and currents, TDD of currents, Crest Factor of voltages and currents, Crest Factor of currents, TPF, DPF, DhPF and Sag and Swell of voltages are calculated. Also, zero current measurement is done directly through the fourth current input. By using the qualitative parameters of the measured power, it will be possible to monitor and fully review the power systems to improve performance.

The W106 series of products of Mashhad Tadbir Engineering Company are produced in the following models:

- W۱۰۶ E, W۱۰۶ S, W۱۰۶ L, and W۱۰۶ R

Founded:
1996

Application:

Recording and measuring a wide range of quantitative and qualitative electrical parameters of transmission lines and electricity distribution network

This product is final B2B equipment.

Technical Specifications:

- **Display screen:** 160 × 160 points
- **Service temperature:** -20 to +70 degrees Celsius
- **Dimensions:** 103 × 103 × 70 mm
- **Switchboard cutting dimensions:** 92 × 92 mm
- **Weight:** 400 g

Advantages:

- Using smart algorithms to calculate the main components of voltage and current
- Implementation of Sliding Window of RMS information of voltages and currents for a period of 30 seconds in order to accurately record events
- Automatic calibration for 10 devices at the same time

International Standards or Permissions:

- IEC 62053-22
- IEC 62052-11

Laboratory 3-Phase Power Analyzer

Atron Electronic Systems designs Co.

www.atronic.ir

Product Introduction:

This device allows the user to measure the values of four voltage channels and four current channels simultaneously. By using the USB port, all data is transferred to the computer and through the relevant software, the user can save all the data in addition to viewing the voltage and current values, power parameters and waveforms.
Also, the possibility of fast sampling of the input signal and FFT calculation is also considered for special cases such as observing the inrush current of the transformer. Due to the fact that the use of multiple and sometimes complex measuring equipment, in addition to increasing costs, complicates the work process, DI-108 is a suitable option for integrating measuring equipment.

Founded:
2012

Application:

Replacement of multiple measuring equipment and integration of the measurement system in electrical training laboratories

This product is final B2B equipment.

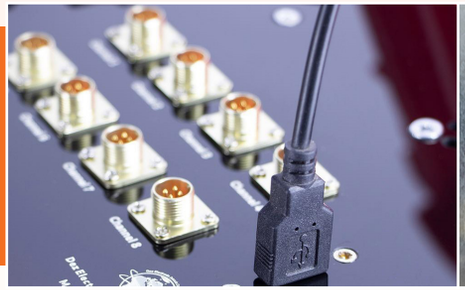
Technical Specifications:

- **Voltage measurement range:**
  - 500 volts with an accuracy of 0.5 volts
  - 250 volts with an accuracy of 0.1 volts
- **Current measurement range:**
  - 10 amps with an accuracy of 10 milliamps
  - 1 amp with 1 milliamp accuracy
- **Input signal storage:** With a rate of 4000 sps and a duration of 2000 milliseconds
- **Measurement of signals:** Direct and alternating

Advantages:

- Designing electronic circuits in two layers
- Designing a virtual measurement system with the ability to measure and display the waveform of various signals

International Standards or Permissions:
IEC 1010-2-031



Data Logger of Voltage and Current Parameters
of mains Electricity

Mad Sanjeshgaran Asia Co.

Product Introduction:

This device is used to measure and store three-phase electricity parameters. Also, this device is installed in electrical panels and stores all the city's electricity information in an internal memory, and then after a while, the operator saves the information on a flash memory through the USB port and then the information stored on the flash memory is given to a piece of software for analysis.
Based on the information of this device, the desired graphs of the electricity distribution department are obtained, based on which, low load - heavy load hours, errors, network problems, etc., are analyzed and checked; Therefore, the accuracy of this type of device is very important.

Founded:
2016

Application:

- Electrical panel
- Elevator panels
- Power quality monitoring
- Calculation of capacitor banks for electrical panels

This product is final B2B equipment.

Technical Specifications:

- **Service temperature:** -20 to +70 degrees Celsius
- **Display:** LCD
- **Dimensions:** 9.5 × 9.5 × 10 cm
- **Weight:** Around 650 g
- **Accuracy:** 0.3 % Error

Advantages:

- Saving information in the internal memory (SD card) for 5 years
- Selecting the sampling time by the user
- Has an accurate clock and calendar
- Lower price than similar products

Three-Phase Power Analyzer

to Display Voltage and Current and Cosine Phi

Khatam Specialist Electronic Systems Co.

www.kses.ir

Product Introduction:

This device is actually an accurate measuring device for temperature, humidity and air pressure, which is small and portable, and a rechargeable battery is used in the system. In this device, 2 separate sensors are used to measure temperature and wet-bulb temperature, as well as a temperature and humidity sensor that measures temperature and relative humidity at the same time which can communicate with a pressure sensor that can display air pressure which is directly proportional to altitude. There is also a 1050 mA lithium battery in it, which has a constant voltage and constant current charging algorithm that is controlled by the main processor.

Founded:
2017

Application:

Hatcheries, poultry halls, morgues, cool warehouses and homeless shelters

This product is final B2B equipment.

Technical Specifications:

- **Temperature and wet-bulb temperature measurement sensors:**
  Includes a 6-cm long 5mm steel tube
- **Temperature and relative humidity measurement sensor:**
  15-SHT
- **Pressure measurement sensor:**
  BMP085

Advantages:

- Calibration stability
- Display variety

Voltmeter and Ammeter (20-33 kV)

Maeraj Tarh Yaran Co.

www.maeraj.ir

Product Introduction:

In order to collect and record correct information from network load distribution, Maeraj Engineering Company has designed and built a voltmeter device for the aerial network. This device provides the voltage value of the distribution network with an accuracy of better than 1%. For the convenience of the user of these products, radio communication (RF) between the meter and the display of the device, as well as the storage of up to 400 measured values, have been incorporated in this product.

Founded:
2005

Application:

Used In electricity distribution overhead lines in order to collect and record correct information about grid voltage

This product is final B2B equipment.

Technical Specifications:

High-pressure voltmeter (20-33 kV):

- **Voltage measurement range:** 1 to 25 kV AC
- **Accuracy:** ±2 %
- **The type of insulation of the pressure chamber:** Dry
- **Recording voltage values:** Recording 1000 data

High-pressure ammeter (20-33 kV):

- **Rated voltage range:** 36 kV
- **Current measurement range:** 1 to 500 A
- **Frequency range:** 50-60 Hz
- **Measurement accuracy:** 0.1 A

Advantages:

- The high accuracy of the device is about 1%
- Using a smart tablet to receive information using Android software as well as storing and recording the read information for secondary analysis.

Industrial UPS in NG Model

Porsoo Electronic Ind. Co.

www.porsoo.ir

Product Introduction:

UPS stands for Uninterruptible power supply. UPS is an electronic power supply whose main task is to provide uninterrupted power to the load. This system is placed between the mains electricity and the consumer's device and in addition to stabilizing and regulating the network electricity, it prevents noise and network disturbances from penetrating the consumer's sensitive equipment. Also, as a source of uninterrupted power, the UPS provides the electricity needed by the consumer equipment using the energy stored in the battery.

Founded:
1991

Application:

- Use in industries and data centers
- Supplying electricity needed for various equipment and systems in various industries and during power outages
- Industrial automation systems

This product is final B2B equipment.

Technical Specifications:

- **Power:** 1-100 kVA
- **Approximate weight:** 6-200 kg
- **Rated AC input voltage:**
  - 220 V single-phase
  - 380 V three-phase
- **Average efficiency:** 93%

Advantages:

- Utilizing the PFC (Power Factor Correction) system at the UPS input
- Use of PWM High Frequency technology with Microprocessor control system
- Design with maximum efficiency

International Standards or Permissions:

- IEC 60529
- EN 620-40-1-1
- EN 62040-3
- EN 500 91-2
- IEC 62040-2

50kW Fast Multi-Protocol Electric Vehicle Charging

Mapna Electric & Control, Engineering & Manufacturing CO.(MECO)

www.mapnaec.com

Product Introduction:

Electric vehicles use socket-based methods (with AC or DC power) or non-contact methods without direct connection to charge their batteries. In non-contact methods using the transformer method, an AC wave is transferred from the source side to the receiver located in the vehicle magnetically and using the effect of coupled inductors. In order to reduce the dimensions of the core and increase the transmission efficiency, high frequency AC waves (about 100 kHz) are usually used in these systems. In the fast charging method, a DC power source with high voltage (between 500 and 1000 volts) is given to the car; Of course, in addition to power transmission, a communication protocol is also used to coordinate between the receiver and the transmitter in parallel to ensure the safety of the battery charging process. In this case, the charger adjusts its voltage and current level according to the information received from the car so that the battery charging can be done correctly in its working cycles.

Founded:
2004

Application:

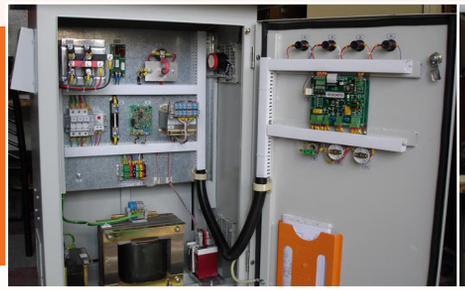
Charging stations for electric cars and charging electric cars quickly, such as:

- Public parking lots
- Commercial and administrative centers, offices
- Electric vehicle charging stations
- Hotels
- Airports

This product is final B2B equipment.

Technical Specifications:

- **Input voltage:** 380 VAC
- **Maximum efficiency:** 97 %
- **Maximum input current:** 96 A
- **THD:** Less than 5 %



Battery Charger

Up to 220 Volts Voltage and 400 Amperes Current

Tolid Manabe Taghziyeh Electronic (PSP) Co.

www.psp.ir

Product Introduction:

This product is a part of a device that is produced under the brand name of battery charger and industrial rectifier. Battery chargers generally have a voltage corresponding to the battery charging mode in their output, which have different amplitudes in FLOAT, BOOST and INITIAL operation modes. Consumers that are powered by these battery chargers have a allowed range of voltage that require a converter to convert the variable and out-of-range voltage to their permitted range. In the input part of this product, a voltage higher than the working range of consumers is applied, and this product enables feeding the loads by reducing and regulating the voltage within the allowed 1% range of DC loads. The output voltages are 48 volts, 110 volts and 220 volts, which can be adjusted in the range of ±5%, and the current can be adjusted and limited in the range of 0 to the nominal value.

Founded:
1984

Application:

- Steel and iron smelting
- Petroleum products
- Power plant
- Electric substations
- Mining (extraction, exploitation and processing)

This product is final B2B equipment.

Technical Specifications:

- **Service temperature:** From -20 to +60 degrees Celsius
- **Dimensions:**
- **Length:** 60-120 cm
- **Width:** 60-100 cm
- **Height:** 210 cm
- **Device Weight:** 300-2000 kg

Advantages:

- Can be used indoors and outdoors
- Resistant to dust and water penetration (IP42)
- Compensation in below 5 milliseconds
- Achieving an efficiency higher than 95%

Industrial Battery Chargers
with 50 to 1000 amps Chopper Stabilizer

Sepahan Method Electronic Co.

www.smeir.com

Product Introduction:

Most industrial centers and places that have protective measuring equipment are powered by direct current electricity. Therefore, momentary interruption of these protections damages the system like power plants and substations. Also, disconnecting the system leads to many security risks; such as telecommunication sites that require an uninterrupted source of direct current. The characteristics of these resources are defined in international standards. The safe storage source of these sites is the battery, whose charging and preparation is defined for the lifetime and has a specific mechanism based on the type of battery and its capacity. This battery can apply a higher voltage on the load during charging, and this issue is solved by the chopper stabilizer.

Founded:
1990

Application:

- High pressure and medium pressure substations
- Power plants
- Telecommunication sites
- Traffic control stations
- Subway and city train stations

This product is final B2B equipment.

Technical Specifications:

- **Input voltage:** 380 volts with +10% error
- **Input frequency:** 50 Hz with +5% error
- **Phase:** Three-phase
- **Device capacity:** 100 to 1000 ampere hours

Advantages:

- Lower price than similar products
- Increased battery life

International Standards or Permissions:

- CEI
- ISO-9001
- EN 60146-4 & 5
- EN 60204-1
- EN 60204-1
- Operation license from the Ministry of Industries and Mines of Iran

Industrial Charger

Hoorpendar Electric Co.

www.hoorpendar.com

Product Introduction:

SMART-128 series battery chargers are equipped with HP-PC128 model controller and have the ability to select the type and number of batteries. These battery chargers are selected according to the charging curve of the selected battery, which follows the charging curve with simultaneous feedback from the voltage, charging current and controlling them and brings the batteries to the maximum charge volume in the best protection conditions. The mentioned battery charger for the simultaneous use of load and battery charging, in addition to controlling the current and voltage of the battery, it also controls the voltage and current of the load by multi-layer dropper diodes with small voltage levels. In addition to complete protection, this system has the ability to record and display possible errors caused by input voltage drop, output short circuit, output and input overvoltage and battery overcharging by time and date. Another feature of this charger is Load Sharing at the output, in order to parallel the chargers with each other and feed larger loads, which allows possible future changes for industrial units.

Founded:
1999

Application:

- Industrial units

This product is final B2B equipment.

Technical Specifications:

- **Device modules:**
  - Main power transformer
  - Rectifier
  - Main PID controller and HMI screen and Dropper Diode

Advantages:

- Ability to send battery charging status, load consumption and recorded errors
- LOAD SHARING capability at the output, to parallel the chargers with each other and feed larger loads

Three-Phase and Single-Phase Inverter

Up to 100 KVA

Tolid Manabe Taghziyeh Electronic (PSP) Co.

www.psp.ir

Product Introduction:

This product is placed between the power supply and the motor. Energy enters the inverter from the power source and enters the motor after applying the necessary settings. Inside the drive, the incoming AC power is converted to DC power by a rectifier. Then the DC power enters the capacitors inside the drive, which is done to smooth the DC waveform, then the energy from the capacitors enters an inverter, where the DC power is converted to AC and enters the motor. In this stage, the drive adjusts the frequency and voltage of the motor based on the required torque. This means that the AC motor is started at the speed and torque required by the device. In terms of application, the product in question has widely used in all industries that use electric motors.

Founded:
1984

Application:

- Steel and iron smelting
- Petroleum products
- Power plant
- Electric substations
- Mining (extraction, exploitation and processing)

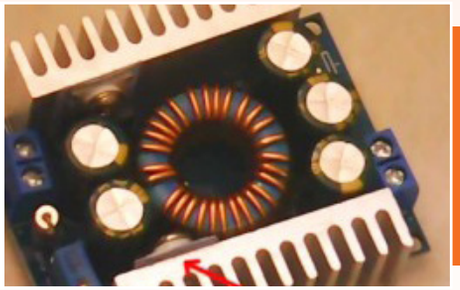
This product is final B2B equipment.

Technical Specifications:

- **Frequency:** 60/50 Hz
- **AC Voltage:** 230 V (220 V, 240 V)
- **Recovery time:** Less than 4 ms

Advantages:

- Compensation below 5 milliseconds
- Voltage harmonics below 1%
- Three-phase unbalanced load feeding capability
- Providing up to 300 kVA power



Inverter Module of Back to Back Power Converter-330 KVA

Sadrafan Pardaz Co.

www.sadrafan-co.com

Product Introduction:

This product is one of the AC to AC converter modules of underground train.

Founded:
2006

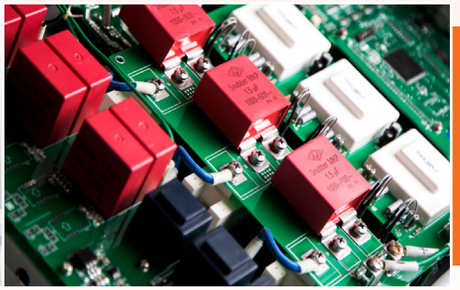
Application:

Used In auxiliary converter devices in subway locomotives

This product is final B2B equipment.

Technical Specifications:

- **Input:** 750-1000 VDC
- **Output:**
  - 3 ϕ
  - 380 V
  - REGULATED
  - 50 HZ
  - 330KVA
- **THD:** < 5%
- **Service temperature:** -25°C to +55°C



Programmable DC Power Supplies

NIKA Family

Tavan Pajoohan Fanavar Pasargad Co.

www.tpfpco.com

Product Introduction:

Programmable DC power supplies are one of the basic essential equipment in research, educational and quality control laboratories. These power supplies receive the input power and phase that is usually supplied from the mains electricity. DC voltage (or current) is programmable, fully regulated, accurate, reliable, and very fast in dynamics at the output. In addition to the output voltage (or current), many other electrical, control, time, and protection quantities of the device can also be programmed and monitored.

Founded:
2012

Application:

Programmable power supply in research laboratories, aerospace industries, telecommunications, medical equipment, etc.

This product is final B2B equipment.

Technical Specifications:

- **The number of input phases:** 3
- **power:** Single-phase AC

Advantages:

- Designing soft switching circuits
- Designing advanced control systems for device stability
- Designing accurate analog and digital circuit
- Reducing ripple and output noise and techniques of earthing, shielding, etc.
- Efficiency above 90%

International Standards or Permissions:

- EMC
- Safety

DC Switching Power Supply

Up to 20 kW Output

SBT electric (Sana Bargh Tavan) Co.

www.sbt.co.ir

Product Introduction:

A power supply is a general term to describe circuits that produce a DC voltage of fixed or controlled magnitude from an available voltage source. Therefore, the switching power supply is an electrical industrial equipment that is used in many electrical devices and machines. This device processes the electrical energy required by the machine or the process that is supplied from the national electricity network to match the needs of the same machine.

Founded:
2013

Application:

This power supply used in electrochemical, aerospace, industrial automation, welding, etc.

This product is final B2B equipment.

Technical Specifications:

- **Controller:** Digital high speed lead-lag controlle
- **Output voltage ripple:** <1%
- **Power factor:** > 99%
- **Output power:** 0.5 – 20 KW
- **Output voltage:** 0 – 100 V DC

Advantages:

- Permanent tolerance of output short circuit
- The ability to control converters with a switching frequency of 250 kHz
- Can be used as a powerful and intelligent charger by quickly determining the voltage-current working point
- Ability to navigate current and voltage curves at high speed (I-V curve control)
- Can be used as a high-power charger for lithium, lead-acid, nickel-cadmium, etc. batteries with high capacity.

International Standards or Permissions:

- EN61000
- EN55032

1 kW Pulsed and Sinusoidal Power Supply

Related to Laboratory-Research Plasma Equipment

Satia Co.

www.satiaco.com

SATIACO

Product Introduction:

A power supply is a device that provides the required electric power for an electric consumer or an electric load.
The power supply may be a separate device or part of another device. All electronic devices that we use on a daily basis use some kind of power supply. The power supplies produced in the company are of two types: pulsed and sinusoidal, which are used to start up various types of plasma systems, such as DBD plate (Plate to Plate), atmospheric plasma jet, plasmas under vacuum and low pressure. The frequency of this device varies from 20 to 70 kHz. The power of the device is 1000 watts, which can be upgraded to 6 kilowatts based on the order of customers. The ability to adjust the duration of operation leads to increased accuracy and ease of work.

Founded:
2014

Application:

Starting up various types of plasma systems such as DBD plate (Plate to Plate), atmospheric plasma jet, plasmas under vacuum and low pressure

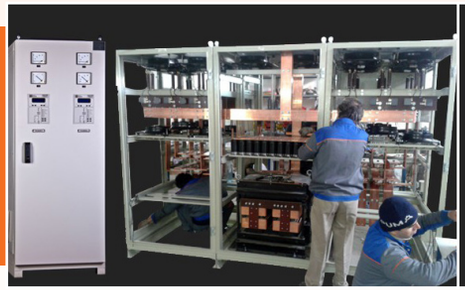
This product is final B2B equipment.

Technical Specifications:

- **Power input:** 220 V
- **Working frequency:** 10-30 kHz with resolution of 500 Hz
- **PF:** 0.8
- **Working power:** 1 kW
- **Output voltage:** Up to 60 kV

Advantages:

Lower price than similar products



Airport Power Supplies

Tavan Eelectric Pooyesh Co.

www.tep.co.ir

Product Introduction:

The ground power supply unit is used to provide electrical power to airplanes and helicopters on the runway or hangar spaces. GPUs have been provided in two dynamic ways, including the engine-generator system, and statically in recent years. Due to their low price, high reliability, high efficiency and low maintenance cost, static GPUs have been continuously widely accepted in recent years. One of the basic features of static power converters is the standard performance capability in all conditions in terms of amount and type of load.

Founded:
2005

Application:

Uninterrupted power supply for starting power generation and other types of helicopter and airplane power supply

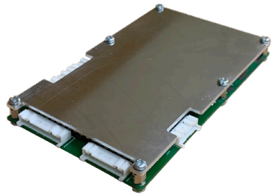
This product is final B2B equipment.

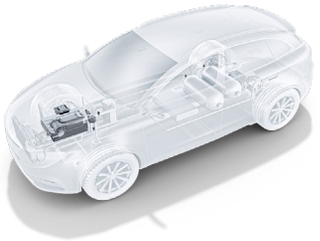
Technical Specifications:

- **Frequency:** 400 Hz
- **Power:** 120 KVA, 28 V DC
- **Current:** 1500 A
- **Software:** AVR, ATMEGA128

Advantages:

- Designing SNABBER section
- Keying with the ASP (ANTI SATURATION PROTECTION) method to prevent unwanted keying errors and losses caused by DV/DT
- SPACE VECTOR PWM switching method to achieve THD below 3%





Application:

Voltage control, current control, temperature control, charging rate calculation, operating time prediction and balancing of electric vehicle battery cells.

Battery Management System (BMS)

Pakran Electronic Co.

www.pakran.com

pakran

This product is final B2B equipment and sevices.

Product Introduction:

There is a chance of damaging lithium-ion batteries if they are inappropriately used. The battery management system prevents damage to the batteries by controlling how they are used. This system, in case of damage and error, cuts off the battery output current path to prevent damage to the batteries. In addition, it balances the batteries connected to each other for better use of the battery pack capacity. The battery management system reports the battery performance information through the isolated CAN port, and through this, the parameters of the battery management system can be adjusted. BMS circuit is an advanced and intelligent type of battery controller circuit. This module plays a vital role in the performance and life of battery cells. Due to the higher energy density of lithium-ion batteries, the use of these types of batteries has significantly increased. For the safe use of battery packs made with this type of batteries and also, to increase their life, it is necessary to use a battery management system.

Founded:
2017

Technical Specifications:

- **Input voltage:** Nominal 72V
- **Maximum current consumption:** 25 mAp
- **Average current consumption:** < 4 mA
- **Cimensions:** 15 × 95 × 150 mm

Advantages:

- ARM microcontroller coding technology using CMSIS library
- Hardware automatic troubleshooting technology
- Bootloader technology to update the firmware of the board
- Wireless firmware update technology using Bluetooth connection with cellphone application

Second Chapter

Electric Machines

2nd CHAPTER

Electric Machines

Sections

Induction Motors
DC Motors
Motor Drive

Magnetic Coil of Medium Pressure Motors

Shahroud turbogennerator Co.

www.turbogen.co.ir

Product Introduction:

A magnetic coil is actually a coil that when the current passes through it by generating a magnetic field, the parts that are passed through this coil can be seen by creating cracks and defects that can be seen perpendicularly to the current created inside the coil.

Main Export Destinations:

Iraq

Export History:

up to 500,000 $

Founded:

2002

Application:

Testing of magnetic particles and surface defects

This product is final B2B equipment.

Technical Specifications:

- **Methods:** Resin rich (RR), under vacuum and pressure (VPI)
- **Voltage:** 11 and 20 kV

Advantages:

Use of advanced insulation and modern winding devices

International Standards or Permissions:

IEC 60034

Integrated Brushless Permanent Magnet Electromotor

Mehr Sanat Diar Noon Co.

www.mehr-sanat.com

Product Introduction:

Brush-less DC motors, known as BLDC, are the new generation of industrial electric motors. In fact, BLDC motors have replaced old generation DC or induction motors. Like other motors in the industry, the BLDC motor consists of two main parts: rotor and stator. In BLDC motors, the motor phases are controlled electronically. In order to continuously rotate the rotor and produce torque, each phase of the motor is stimulated according to the momentary position of the rotor; Therefore, in a three-phase BLDC motor, three Hall effect sensors are generally used, which are usually embedded in the stator teeth. The hall effect sensor displays a positive or negative voltage signal at the output based on the experience of the north or south pole of the magnet. In this case, by analyzing the output signal of three hall effect sensors, the instantanous position of the rotor can be recognized and the stator windings can be stimulated based on it.

Application:

- Types of water coolers
- Types of blowing or suction fans
- Washing machine
- Types of refrigeration compressors
- Motorcycles and electric bicycles

This product is final B2B equipment.

Technical Specifications:

- **Rated voltage:** 170-240 V
- **Rated torque:** 3 N.m
- **Variable speed:** 600-1800 rpm
- **Starting current:** 0.4 A
- **Efficiency:** 91%

Advantages:

- Reducing electricity and water consumption
- Easy installation

International Standards or Permissions:

ISIRI 4911,17907,4910-2

Mega Drive

MV Electric Motors Drive

Borna Electronics Co.

www.borna-co.com

Product Introduction:

Today, the economic and commercial state warns that there should be an optimization plan for the consumption of different energy sources. It is obvious that the optimal use of energy resources, in addition to preserving these resources for future generations, also results in reducing production costs, preserving the environment, etc. In industries, about 60% of the total electrical energy is consumed by 3-phase electric motors, as a result, by optimizing the consumption of electric motors, considerable savings can be made in electrical energy. Therefore, the solution to reduce energy consumption is to use a variable frequency drive.

Main Export Destinations:

Iraq

Export History:

up to 500,000 $

Founded:

1988

Application:

- Oil and gas industry
- Water and sewage industries
- Steel Industry
- Petrochemical and chemical industries
- Iron smelting, mining and cement industries
- Power plants

This product is final B2B equipment.

Technical Specifications:

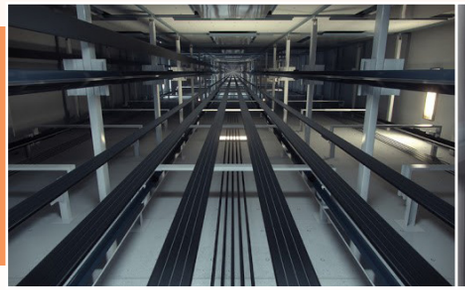
- **Voltage range (kV):** 3-11
- **Power range (kW):** 250-15000
- **Input frequency (Hz):** 45-65
- **THD input current:** Less than 5% at rated load
- **Input power factor:** More than 95% (more than 20% of rated load)
- **Efficiency:** More than 96% (at rated load)

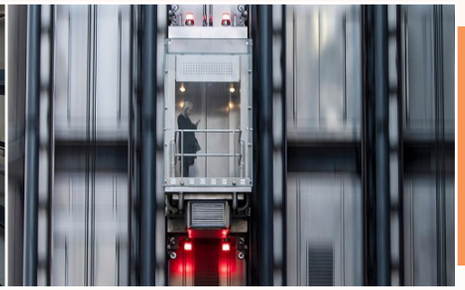
Advantages:

- High reliability
- Energy saving
- Low maintenance and repair required
- Very little pollution
- Reduction of demand and startup current
- Engine soft start and power factor correction

International Standards or Permissions:

- IEC 61800-4
- IEC 61800-5-2
- IEC 62271
- IEC 60146-2
- IEC 60529:2013





Elevator Drive Motors
of Synchronous and Asynchronous Type

Isatis Elevator Co.

www.isatiselevator.com

Product Introduction:

The device is used to start and control the engine speed of the elevator cabin. Elevator driving motors are usually three-phase (synchronous or asynchronous) motors that need this device for their operation in order to control the speed and torque. Also, in order to increase the quality of movement and the user satisfaction, this device replaces the previous methods of controlling the engine speed.

Founded:
2005

Application:

- Cabin speed control
- Cabin acceleration control
- Cabin movement control along the entire movement path
- Measurement of motor parameters including current, voltage, etc.
- Increasing the quality of elevator motion

This product is final B2B equipment.

Technical Specifications:

- **Input:** Three phases without neutral
- **Output power:** Up to 12.5 kilowatt-hours
- **Noise:** Less than 20 dB

Advantages:

- Suitable performance for engines with and without gearbox
- Digitally controllable through panel, computer and mobile phone
- Efficiency above 85%

International Standards or Permissions:

- IEC 61800
- IEEE 519
- AC 156
- IEC 60068
- NEMA ICS7
- CSA C22.2 NO.247

Traction Motor in Two Types: Bus and Subway

Mana Co.

Product Introduction:

One of the main parts of underground train and car parts is their electric propulsion system. Also, one of the most important subsets of this system, which is of great importance in terms of technology and price, is the traction motor. The main task of this set is to control the traction motors and provide the required traction of the train and car (bus) according to the commands sent by the train thrust control system. In each train, there are twice as many driving cars as this set. In each bus, there are as many engines as this set.
Mana`s traction drivers are produced in two models: 150 kW (bus) and 200 kW (subway).

Founded:
2010

Application:

Traction motors (Traction) of the induction type of buses and subway trains

This product is final B2B equipment.

Technical Specifications:

- **Input DC voltage:** 100-900 V
- **Rated power:** 210 kW
- **Maximum output power:** 250 kW
- **The maximum frequency of the main harmony:** 200 Hz

Advantages:

Development and improvement of control algorithms of high power electric motors with adjustable speed and torque

International Standards or Permissions:

- IEC 60502
- IEC 60747
- IEC 60099
- IEC 60850
- IEC 60664
- IEC 61374

Third Chapter

Industrial Control and Automation

3rd CHAPTER

First Chapter | Second Chapter | Third Chapter

Industrial Control and Automation

TAM SCADA Monitoring

Control and Data Collection Software

TAM Irankhodro Co.

www.tam.co.ir

Product Introduction:

TAM SCADA software is a comprehensive solution for collecting, storing, monitoring, controlling and analyzing information needed in various industrial automation applications.
SCADA refers to a central system that monitors a distribution site or a distributed system over long distances. Information from substations and stations is collected by microprocessor devices called RTU or DCU and sent to control centers. These monitoring, measurement and control systems can cover a scale of several kilometers and even a scale the size of a country. This same extent and breadth of the system, as well as the system's conflict with the hardware and the control and decision-making of the human factor, have made this category of vast cyber-physical systems very vital and sensitive, and also the reliability of the system's performance, as well as attention to cyber defense, have become extremely important.

Founded:
1997

Application:

Remote monitoring and control of electricity distribution networks, oil, gas, water, large industries, factories, railways and subways

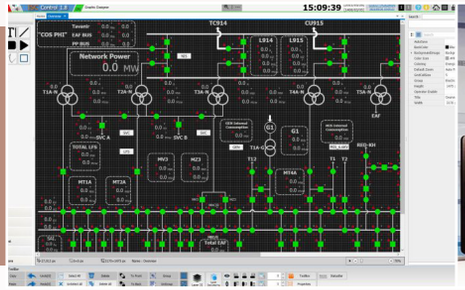
This product is final B2B service.

Technical Specifications:

- OPC support
- Providing dynamic TRENDS at runtime with the ability to display data types
- Providing a real-time alarm notification system, providing tools for displaying and controlling alarms

Advantages:

- Real-time monitoring and control of the field
- Providing an easy user interface to control and monitor the designed plants



IRISA-SCADA Control Center Software

Irisa Co.

www.irisaco.com

Product Introduction:

In urban and industrial electricity networks, the generated electricity is transferred to the distribution networks through the transmission network. In these networks, a monitoring and control data collection system is needed through which the network can be controlled manually or by designing programs. Iranian SCADA system IRISA - SCADA is considered as a SCADA system, which originates from Iran's steel industries. This system has been built with full knowledge of prominent European systems that are very reliable and efficient, and its foundations are based on the concepts of this field with deep understanding. This system is also used in water networks and other fluids with appropriate libraries and features.

Founded:
1992

Application:

Collecting data from RTUs and monitoring them on the dispatching centers of electricity, fluid and transportation networks.

This product is final B2B service.

Technical Specifications:

- **Databases:** SQL server
- **Linux codes:** C++
- **Windows codes:** C#
- **FE services, Real Time:** As a Console Application
- **Clients:** Microsoft WPF

Advantages:

- Possibility of customer specific development on SCADA infrastructure
- Various communication features with other systems at the factory level, such as information management systems and production unit management systems
- Managing load shedding in overload conditions automatically

International Standards or Permissions:

- CIM (61970, 61968)
- C.37

SCADA Comprehensive System

Nican Niroo Aban Co.

www.niknaco.ir

Product Introduction:

SCADA, is a piece of software used in the field of electricity for recording information of industrial automation systems for monitoring and controlling networks and electrical equipment, which is usually composed of a database containing tags or points, which is created by a set of PLCs and DCS and smart sensors along with RTU stations and various industrial networks and host and server computers. Among the merits of this software are (planned and easy disconnection and connection of electricity, facilitating and efficient investigation of electrical network defects, load forecasting by experts, logical monitoring and control from a place outside the industrial environment, monitoring of all types of exclusive devices).

Founded:
2008

Application:

Recording the information of industrial automation systems, monitoring, and control of electrical networks and equipment

This product is final B2B service.

Technical Specifications:

- **System database:** Microsoft SqlServer 2017, upgradable to the newly released version 2019
- **Software infrastructure:** DotNet Framework 6.4
- **SCADA client programming model:** MVVM
- **Development methodology:** Agile Scrum

Advantages:

- Using the shadow system to protect the system and backup to prevent the loss of data stored in the system.
- Independence of different modules (microservices) of the system depending on the type of application and different priorities
- Similarity of architecture, coding model and use of a single pattern in all subsystems

Application:

- Oil and gas industries
- Petrochemical
- Water and Wastewater
- High voltage substations
- Electricity distribution substations

RTU (Remote Teminal Unit)

Arian Kelid Pars Co.

www.ariankelid.ir

This product is final B2B equipment.

Product Introduction:

With the advancement of communication technology, many ways such as Modbus RTU were designed and implemented in order to measure, control and manage remote terminals. The RTU terminal is a microprocessor that is used to collect and process information in different places. Modbus RTU transmits information through telecommunication systems to fiber optic stations. The RTU also categorizes the commands sent from the control center to the posts and sends them to the desired location. The variety of data that can be processed in RTU is large. The RTU module receives measurable inputs such as switches, disconnectors and alarms, etc., at various points and returns control commands such as turning off and on, sending commands, etc. to the system. Digital inputs include the status of switches or disconnectors related to high-pressure station equipment, oil pressure status and the size of warnings inside the terminal. Interpretation and processing of digital inputs is different in RTU.

Technical Specifications:

- **Supply voltage:** 9-36 V and 18-72 V (based on the type of project)
- **Working temperature:** From -40 to 85 ℃
- **Sampling rate:** 5 GB per second
- **Ability to separate consecutive events in terms of time:** With an accuracy and sensitivity of less than 1 millisecond

Advantages:

- Intelligent power supply equipped with testing and automatic error detection
- Easy and user-friendly software on Windows and web platforms
- Custom design according to request
- Displaying the status and key parameters of the network online
- Remote control of all equipment

International Standards or Permissions:

- IEC/EN 61000
- CISPR 22/EN55022

RTU (Remote Teminal Unit)

Brand Name: AZARTU

Azar Kelid Co.

www.azarkelid.com

Product Introduction:

RTU (Remote Terminal Unit) is a microprocessor system installed in substations and stations that collects all the necessary information and parameters from different places and after processing, sends them to the control center through telecommunication systems. It also transfers the commands sent from the control center to the substations to the desired point after sorting.

Main Export Destinations:

China

Export History:

up to 500,000 $

Founded:

2003

Application:

It will be used in places such as power plants, high pressure substations, distribution and transmission substations, refineries and in general wherever automation system (SCADA) is needed.

This product is final B2B equipment.

Technical Specifications:

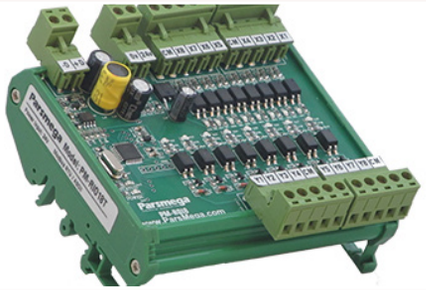
- **Frequency:** 50 Hz
- **Rated voltage:** 20 kV
- **Maximum rated voltage:** 24 kV
- **Phase:** 3

Advantages:

- Ability to configure or personalize RTU with config software
- Providing an automatic test environment to test all parts and functions of RTU

International Standards or Permissions:

- IEC 61000
- IEC 60870
- IEC 60068



RTU Cards

Talieh Shargh Co.

www.taliehshargh.ir

Product Introduction:

RTU-IR is a remote terminal (Remote Terminal Unit) for controlling and monitoring various industrial processes. This system collects various analog and digital information from defined points and after processing, sends them to the control center with a standard communication protocol and also applies the commands issued from the control center to the desired hardware. The modular structure and wide range of input and output boards of this system, as well as the ability to connect to other RTUs and subsystems, make it possible to use this system for processes with different numbers and types of inputs and outputs. We know that the main product is the remote terminal unit.

Founded:

2006

Application:

- Controling and monitoring of electrical substations
- Controling and monitoring of power plants
- Controling and monitoring of steel and aluminum factories and other large factories
- Controling and monitoring of petrochemicals and refineries
- Controling and monitoring of water and sewage industry
- Controling and monitoring of pumping stations of water wells and water treatment plants

This product is final B2B equipment.

Technical Specifications:

- **Communication protocols:** Supporting various communication protocols such as DNP3, MODBUS, etc.
- **Serial port:** Two serial ports for RS232 and RS485 serial communication
- **Power of digital boards:** 5V, 130 ma
- **Power of analog boards:** 5V, 230 ma

Advantages:

- Design and production of six and four layer boards
- Access to locked cpld codes of I/O boards
- Designing an extrusion mold and a plastic injection mold to make a 19-inch aluminum subrack

International Standards or Permissions:

- IEC 60870-5-101
- DNP 3
- IEC 60870-5-104

Data Logging System

Data Logger

Pardisan Engineering Co.

www.pardisan-co.com

Product Introduction:

The industrial data logging device or Data Logger is one of the necessary devices for the operation, troubleshooting and repairs of systems, machines and equipment of production lines or industrial processes, and it enables experts to monitor or study the behavior of the system. The operation of the industrial data logging device is actually data collection and adjustment of input signal levels, measurement and recording of input signals in a specific and repeatable time frame. These input signals, which are of analog or digital type, are indicators of different measurable physical, mechanical or electrical quantities and parameters, which are finally converted into voltage or current electrical signals by special converters. Some of these parameters are temperature, pressure, flow changes, length of liquid levels, amount, humidity, speed, force, torque, vibration, and the status of various types of switch, sensor, key and relay, and electrical parameters such as effective voltage, effective current, frequency, power factor, energy and harmonic components. Today, in addition to logging, data loggers have many more tasks in the world of industry, including online analysis, offline analysis, graphical display of data, debriefing and data sharing.

Founded:
1994

Application:

Fixing system defects and line repairs in industries such as oil, gas and petrochemicals, power plants, steel, cement, textile, automobile manufacturing, etc.

This product is final B2B equipment.

Technical Specifications:

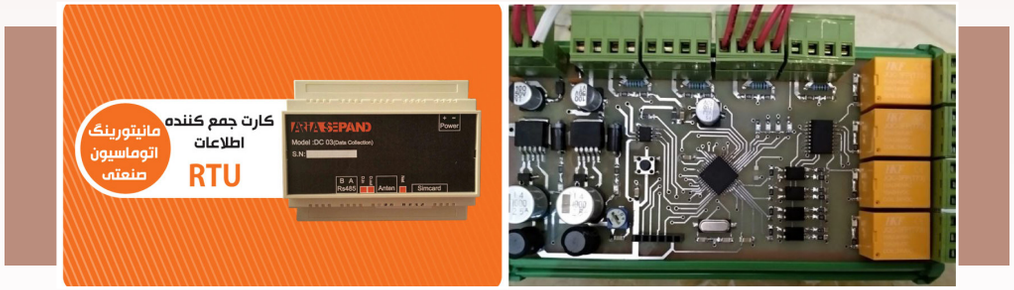
- **The number of input channels of analog models:** Each module has 16 differential channels or 32 single ended channels
- **Insulation protection:** It has isolation protection up to 2500 Vdc level for all analog input channels
- **Accuracy:** At least 0.1% for the range of ±10 and ±5 volts
- **Service temperature:** 0-60 ℃

Advantages:

- Very strong processing capability, 40 megahertz processing speed
- Use of standard protocols to communicate with interface equipment
- Compatibility with instrumentation and measurement equipment installed in the process

International Standards or Permissions:

- IEC 68
- IEC 255
- ANSI/IEEE C37
- IEC 1000



Analog and Digital data Collector Card
on Modbus Protocol

Aria Sepand Engineering Co.

www.ariasepand.ir

آریا سپند
راهگشای صنعت
شرکت فنی و مهندسی
ARIASEPAND

Product Introduction:

This card is used to collect information (information from sensors, PLCs, power meters, analog input and output cards, digital input and output cards and any equipment that has a standard output) and send it to the computer for real-time display, processing, analysis, storage and applying control commands to the equipment. The RTU collector card has the ability to connect to its equipment and subset cards through the RS485 serial communication port and can simultaneously receive, store and send information to the central software. In addition to the local monitoring system using the LAN network, this card has the ability to send information remotely using the GPRS platform. Also, this card has an analog input, a digital input and a digital output independently and can directly receive information and apply commands to the equipment.

Founded:
2008

Application:

- Use in remote monitoring and control systems and warning systems
- Collecting information on all types of sensors and equipment available in:
  - Oil Company
  - Refinery
  - Petrochemical
  - Water and sewage company
  - Gas company

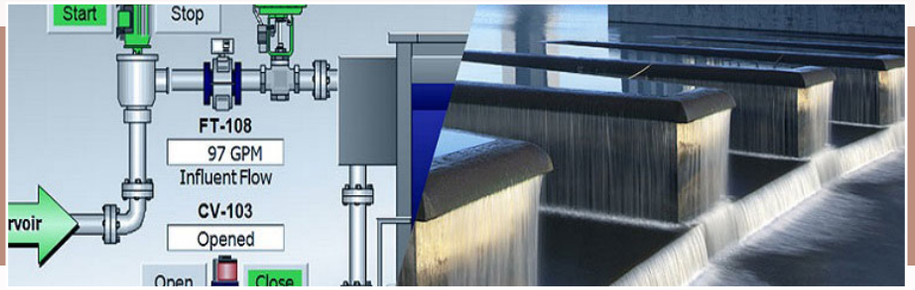
This product is final B2B equipment.

Technical Specifications:

- **Communication with central software:** Through the mobile phone network internet platform (GPRS) or through the LAN network
- **Communication of the RTU card with the central software:** Using the MOD-BUS TCP communication protocol
- **GPRS communication platform:** Online
- **Inputs:**
  - Has an analog input with instrumentation standards
  - Has an isolated digital input
- **Output:** Has an isolated digital output (relay)

Advantages:

- Optionality and the ability to add input cards based on customer needs
- Intelligent control through the GSM platform locally without the need for central software
- Has standard communication protocols to communicate with all kinds of standard monitoring software
- Collecting information of digital and analog input cards
- Sending information to digital and analog output cards



Data Logger and RTU

Negar Electronic Bamdad Co.

www.negarelec.com

نگار الکترونیک

Product Introduction:

SCADA and telemetry systems play a significant role in the water and sewage industry. Among its applications in water and sewage companies and regional waters are control of water production and distribution, control and monitoring of water quality parameters, the amount of water flowing on the ground, hydrometry, flow rate and pressure of water passing through pipes, water level of wells and reservoirs, detection of leakage and its degree in distribution networks and management of pressure reducing stations. In order to implement these things, devices called RTU are used in the water and sewage industry. The function of a remote terminal (RTU) is to collect data and send it to the control center. In addition, according to the programming done, RTU has the ability to make intelligent decisions automatically or to be commanded from the control center to create a control loop between pieces of equipment such as pump, actuator, valve, pressure and flow regulation, protection of mechanical and electrical equipment such as transformer and other necessary commands.

Founded:
2013

Application:

As one of the components of the automation system for telemetry of drinking water wells

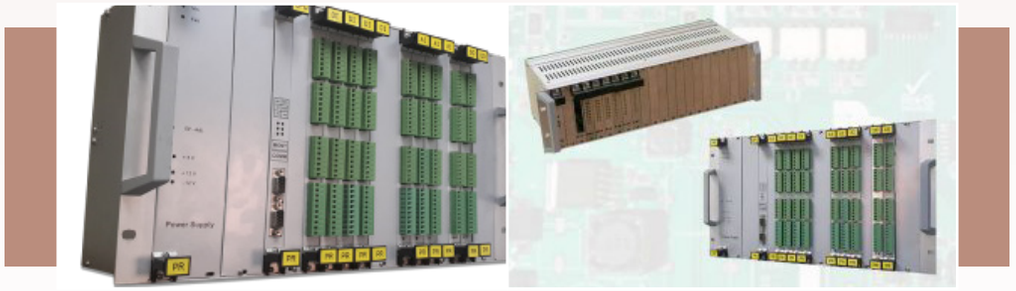
This product is final B2B equipment.

Technical Specifications:

- **Number of analog inputs:** 8
- **Number of digital inputs:** 12
- **Number of digital outputs:** 8
- **CPU Architecture:** ARM Cortex M4
- **Pulse counters:** 2

Advantages:

- Sending information of flowmeters and hours of analog functions to verify production and consumption statistics
- Lower price than similar products



RTU (Remote Teminal Unit)

Paya Ravesh Aria Co.

www.payaravesh.com

Product Introduction:

Remote control and monitoring systems include one or more control centers as controller stations and a number of terminals as controlled stations. Terminals are installed in remote stations and collect the required information and prepare it for the access of the center. This information is recorded and processed in the center and control commands are sent. These commands are received in the terminal and are applied to the controlled systems through interface equipment. RTUs are widely used in industries. Wherever the control of a process is done centrally in one or more control centers, the exchange of information between the center and the process is established through RTUs that are installed at appropriate points and connected to the process.

Founded:
2018

Application:

- Control of electricity transmission and distribution networks
- Control of rail transport networks such as railways and subway
- Process control in refineries and petrochemical facilities
- Gas transmission and distribution network control and water and sewage network control, etc.

This product is final B2B equipment.

Technical Specifications:

- **IOC card:**
  - 2MB flash memory
  - 2MB RAM memory
  - Battery backup for Real Time Clock
- **UPC card:**
  - Up to four synchronous RS232 serial ports
  - Up to 7 asynchronous RS232 serial ports
  - Up to two Ethernet ports
- **Analog input card:**
  - 12Bit accuracy
  - Input ranges 420mA, 0-20mA, ±1mA, ±10mA
  - Temperature coefficient less than 20 ppm/°C
- **Digital entry card:**
  - 32 entry points for each card
  - Up to 15 DI cards for each subrack
- **Input scan time:** 1msec

Advantages:

- Supporting various protocols and telecommunication systems, both synchronous and asynchronous
- Supporting 1 to 15 IO cards per subrack and up to 15 subracks in one system
- Fully modular structure with suitable facilities for easy and efficient maintenance and repairs

International Standards or Permissions:
IEC 60870-5-101

RTU LMD

Avisan Co.

www.avisanco.ir

Product Introduction:

It is a device for collecting and processing information, as well as reading the exact amount of consumption and remote control of large industrial loads, which consists of hardware and software parts. The hardware connected to the industrial board receives the information and sends it to the GUI software installed in the desired organ, and the GUI software allows the user to read and control remotely.

Founded:
2007

Application:

- Oil and gas industries
- Distribution network
- Electricity distribution stations
- Steel and cement industries
- Agriculture

This product is final B2B equipment.

Technical Specifications:

- **Service temperature:** -15 to +60 degrees Celsius
- **Dimensions:** 280 × 120 × 80 mm
- **Weight:** 300 g
- **Analog input:** 0 to 10 V and 4 to 20 mA

Advantages:

- Application and customization of IEC101, IEC60870, DNP3 and IEC104 protocols.
- Eliminating the current costs of using operators› communication platforms due to the high volume of exchange information
- Adaptation of the equipment for extremely harsh environmental conditions

International Standards or Permissions:
CE Certificate

Remote Terminal RTU

Paya Sepanda Madar Co.

Product Introduction:

In order to replace the traditional methods of controlling equipment and facilities and in line with intelligent management and optimal use of water resources, it is necessary to use intelligent control equipment. RTUs are intelligent units for performing automation and control tasks in telemetry systems. RTUs have the task of collecting information related to pumping stations as well as information sent from transmitters and receivers in tanks, and they are prepared by telecommunication equipment in a suitable form for the use of telecommunication protocols and for transmission on the telecommunication network; Also, these commands of the control center are applied through the output relays to turn off and on the controllable pumps.

Founded:
2015

Application:

Collecting information related to pumping stations as well as information sent from transmitters and receivers in reservoirs in rural, urban, regional water and municipal water and sewage companies.

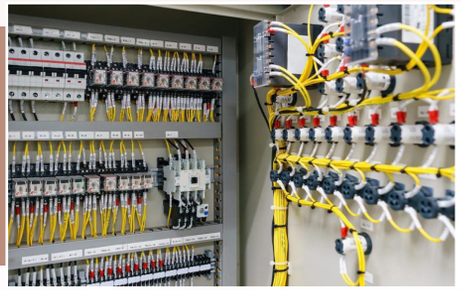
This product is final B2B equipment.

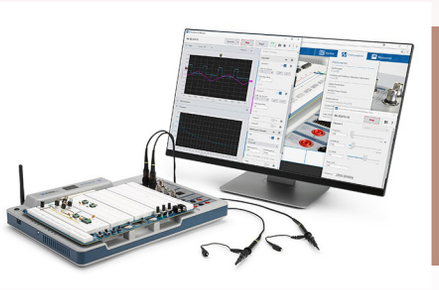
Technical Specifications:

- **Inputs:**
  - 8 digital inputs
  - 4 analog inputs
  - 2 sensor inputs
  - Battery input
  - 220V power input
- **Output:** 8 open outputs
- **Main processor board:** An Atmega128 processor
- **RF board:** Low power RF 500mW

Advantages:

- More reasonable price than similar products
- Higher security than similar products
- Easier to use





SDAQ Data Acquisition System

Rahpooyan Aflak Co.

www.sdra.co.ir

صنعت و دانش
رهپویان افلاک

Product Introduction:

The SDAQ data acquisition card is able to receive the signal of a wide range of sensors and send digital data at a high speed to the central processor through various communication interfaces. In addition to receiving electrical signals, the said card also drives digital (corresponding to the card's power type) and analog actuators. Since the analog output signal of the sensors can be in the form of voltage or current, the customer can choose the range of its input analog voltage when purchasing the product.

Founded:
2011

Application:

- Research and educational laboratories
- Industrial automation and robotics
- Measurement, data acquisition and real time control
- Monitoring and recording information

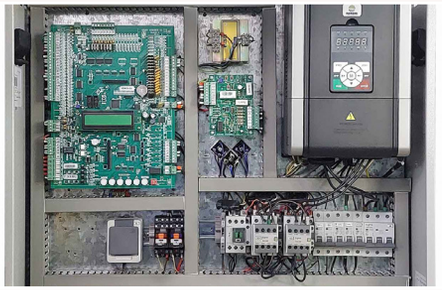
This product is final B2B equipment.

Technical Specifications:

- **Supply voltage:** 5 or 12 volts (based on customer needs)
- **Box dimensions:** 15 × 10 × 4 cm
- **Accessories:** USB and LAN cable, suitable adapter, manual and product CD
- **Power consumption:** 200 mW

Advantages:

- Wide voltage range coverage for digital inputs/outputs
- High flexibility in communication interfaces
- Varied user interface software
- Low power consumption and easy to use
- Reasonable price compared to similar products



Elevator Control Panel

Including Inverter Up to 7.5 kW and UPS Up to 1.5 kW

Arta Pishro Arash Faraz Co.

Product Introduction:

One of the most important parts of the elevator is the elevator control panel, which can actually be considered the processing center of the system, because the necessary commands are sent to the motor through the control circuit, and the operation of the motor and the elevator assembly depends on the commands of the control panel. In fact, the control panel is the brain of an elevator. There are different types of elevator control panels, including two-speed control panels and drive control panels. The control panel of this company can be used from special elevator UPS as an optional option.

- **Inverter:** Everyone who has ridden an elevator has sometimes felt jolts in the elevator. These jolts occur both when the elevator starts to move and when it stops, which sometimes disturbs the balance of people. The reason for this jolt is the change in the elevator's acceleration or the direction of the elevator's motor, and this change in acceleration is why a jolt occurs at the beginning of the movement and at the end of the movement when the motor changes its acceleration. The elevator's starter or drive or inverter has the task of making the elevator move smoothly. In fact, the elevator drive can control its speed by changing the frequency and voltage it gives to the elevator motor.
- **UPS:** Elevator emergency power is one of the most important devices currently used in every elevator, which can provide power to the entire system for a very short time when someone is using the elevator and the power to the entire elevator system is cut off for any reason. It will bring the elevator cabin to a lighter floor and open the door and lock all the safety items until the main power of the elevator is restored, and will return to the standby mode after the main power is reconnected. UPS stands for uninterruptible power supply. UPS is an electronic power supply, whose main task is to provide uninterrupted power to the load. This system is placed between the mains electricity and the consumer's device, and in addition to stabilizing and regulating the network power, it can prevent noise and network disturbances from penetrating the consumer's sensitive equipment.

Founded:
2012

Application:

- Elevator motor speed control
- Controling the direction of movement
- Electrical protection of equipment
- Real-time recognition of cabin position

This product is final B2B equipment.

Technical Specifications:

- **Main parts:**
  - Drive section
  - Manual control section and supply board
  - Inputs and outputs section
  - Main board
- **Box dimensions:** 75 × 58 × 25 cm
- **Inverter power:** 50 Hz and 380 V

Advantages:

- Very high functionality and user-friendly
- The possibility of many inputs and different outputs
- It has a microcontroller with a very powerful program with many lines and the ability to process 72 million commands per second.

Application:

Energy conversion, automotive, plastic, chemical, food, heavy machine and transportation industries

PLC Programmable Controller System

FAHM Co.

www.faraboard.com

FAHM CO.
Industrial Automation

This product is final B2B equipment.

Product Introduction:

PLC or programmable logic controller is a programmable device of logic type that can receive data as input, process them and finally create commands in the output or display information.
PLC is an industrial digital computer designed for use in industrial applications and includes industrial processes such as control of production processes, control of assembly lines, control of robotic devices or any process that requires precise, reliable control and simple troubleshooting.

Technical Specifications:

- **Output:** 0-20 mA & 4-20 mA
- **Service temperature:** -40°C to 85°C
- **Electricity consumption:** 1W @ 24VDC
- **I/O connection type:** 4 pin plug-in terminal × 8

Advantages:

- Easy installation and programming
- Short response time
- High control speed
- High reliability

Founded:
2002

International Standards or Permissions:

- IEEE 802.3
- ISO 9001:2015

Intelligent Boiler Room Control
in SES, SES.NET and SES.PRO Models

Fara Electric Co.

www.faraelectric.com

Product Introduction:

The available heating systems are very old, and the temperature of hot water produced in them is controlled manually, and the adjusted temperature usually does not change in different seasons of the year, and this issue will cause a high waste of energy. Due to the significant increase in the price of energy carriers, in order to reduce the cost, it is necessary to move towards the modification of the boiler room system.

Smartification of the boiler room is a process that leads to optimal energy consumption by controlling burners and pumps. The ultra-electric smart boiler room system is not related to the number of floors and building units, and there is no need to destroy the building or change the engine room for its installation; Therefore, it will have the lowest cost in reducing energy consumption. A significant reduction in gas consumption (between 15 and 40%) has been observed in the projects carried out by this company.

The intelligent control of the engine room of Shahr Far Electric company is produced in the following models:

- SES
- SES . NET
-SES . PRO

Founded:
2001

Application:

- Residential buildings
- Office and commercial buildings
- Educational centers, schools and universities
- Industrial companies
- Hotels
- Hospitals
- Shopping centers

This product is final B2B equipment.

Technical Specifications:

- **V_{in}:** 12 Vdc
- **I_{in}:** < 2a
- **Output relay:** 220Vac/16A
- **Service temperature:** 50 degrees Celsius

Advantages:

- Completely exclusive software of the device
- Protection of relays against possible noise and transient errors
- Ability to turn on boiler room equipment in turn
- Easy and functional keyboard design
- Lower price than similar products

Industrial Control and Monitoring System

Tamam Tadbir Co.

www.tamamtadbir.ir

Product Introduction:

Industrial control and monitoring systems provide automatic control and constant moment-by-moment observation of the conditions of industrial processes and activates the stop command and alarms in case of problems. Monitoring software is a program with the facilities of storing, categorizing and analyzing information, and documents and analyzes the quality of work of machinery and personnel. High amount of waste, non-uniformity in product quality, premature failure of facilities, sudden burning of electric motors, wasted energy, low efficiency and losses caused by human error are among the important challenges of industrial units. Industrial control and monitoring is an effective solution to prevent and track these cases.
The control and monitoring system manufactured by Tamam Tadbir company includes three models of controller and data collection devices with models MIR6030, MIR6080, MIR6016 and computer monitoring software. Also, complementary hardware And its software includes modules for collecting, storing and transferring data to the MIR computer; monitoring software; ACT320 – AC; LCD in 1602S-NSW and LCM1602S-MI models; Converter cards in serial types to Modbus TR700, and Modbus RTU; AMD11 ammonia detector; and PTHV, PTMA and PPT-DRV transmitter cards

Founded:
1999

Application:

Control and monitoring of industrial, laboratory and research processes

This product is final B2B equipment.

Technical Specifications:

- **Output port:** RS485
- **Display:** LCD
- **Calibration:** Software
- **Information storage:** In the SQL Server software bank

Advantages:

- Data protection in case of power outage
- Supporting all types of standard transmitters
- Ability to perform software calibration
- Ability to define access levels for different users
- The possibility of simultaneous access of several users to the software

International Standards or Permissions:

- IEC 60300
- IEC 60706
- IEC 60812
- IEC 62541
- IEC 62264

All Kinds of Smart Relay Modules

Along with Smartification Software

Zeitoon Smart Algorithm Co.

www.zeitoon.io

Product Introduction:

Smart relays are usually located along the path of the phase wires like electrical switches. These relays turn electrical devices on and off. Relays have different uses. Therefore, an effective controller, special controller, etc. can be used for protection. In this product, a set of modules along with software provides a strong platform for building automation and intelligence, which allows the user to implement various scenarios and plans for intelligence and automation.
The examined modules include: 4-channel 16-amp relay module 0416-ZR, 4-channel 10-amp relay module 0410-ZR, 8-channel 16-amp smart relay module, 8-channel 10-amp smart relay module, smart relay module amp, mix, smart network port module BUS-Pro comes with comprehensive smart building management software.

Founded:
2016

Application:

- Customization for specific purposes and buildings, smartification and automation of all types of buildings, office, commercial, residential, hotel, hospital, etc.
- Building lighting control, cooling - heating and electric curtains
- Audio, entrance and exit and security systems

This product is final B2B equipment.

Technical Specifications:

- **Usage control:** Up to 16 amps and 250 volts
- **Output:** It has 10 and 16 amp outputs and combined

Advantages:

- Remote update capability
- Possibility of customization for specific purposes and buildings
- Lower price than similar products

System of Electronic Device

Limiting the Capacity of Regulators of Pressure Reduction Stations

Tara Tech Shargh Co.

www.taratech.ir

Product Introduction:

This device is used to control the flow rate of gas from the regulators in gas pressure reduction stations. Regulators are the main equipment in gas pressure reduction stations, which only have the task of reducing and controlling gas pressure and do not have control over gas flow rate. Since the flow rate of gas usually increases greatly beyond the permissible limit during the cold seasons of the year and the peak time of gas consumption, this increase leads to a lot of noise and damage to the track equipment such as the regulator itself, filters, etc.
By adding this device to the existing regulators, it is possible to control the flow rate of the line and divide the gas flow to other gas transmission lines so that, in addition to the gas pressure control which is done by the regulator itself, the flow rate through the route is also controlled according to the allowed range and other gas passageways are put into service, if the flow rate increases.

Founded:
2013

Application:

- All intra-city gas pressure reduction stations (TBS)
- Gas pressure reduction stations for large industries and factories
- Gas pressure reduction stations outside the city (CGS)

This product is final B2B equipment.

Technical Specifications:

- **Body material:** Stainless steel
- **Orifice size:** 2.5 mm according to the orifice size of pilot regulator
- **Temperature range:** -10 to 60 ^{0}C

Advantages:

- Special placement of the device on the regulator
- Linear valve control from 0 to 100% with EX standard and small and light size
- Fuzzy control system

International Standards or Permissions:
ATEX standard

iHiT

Iran House of Innovation and Technology (iHiT)

Iran House of Innovation and Technology (iHIT) is one of the types of export intermediaries that launched under the auspices of the Vice President for Science and Technology in Kenya, China, Russia, Turkey, Syria and Iraq. In addition to accessing the export instructions, these houses provide variety of services for companies to enter the interactional service markets such as: private and shared workspace, permanent exhibition of products, finding business partners and investing in the target countries of export, company registration, product registration, medicine, medical equipment and trademarks registration, dispatch and admission of business delegations, hiring local specialists to present products and service.

TEHRAN iHiT

Manager: Mohammad Karami

Field of Activity: Permanent International Exhibition | Export of products and services of knowledge-based, creative and technology companies in Tehran

Country: Islamic Republic of Iran – Tehran

Services:

- Holding permanent exhibition of knowledge-based products and services
- Holding specialized events and meetings
- Providing dedicated and shared workspace in Tehran
- Identifying export opportunities
- Identifying opportunities for scientific, technological and industrial cooperation

Address: Hall 37A, Tehran International Exhibition, Tehran, Iran
website: www.ihit-expo.com
Tel No: (+98) 912 444 9958 / (+98) 21 910 737 37
Supervisor: Mohammad Mahdi Agharafiee
Office Phone: (+98) 912 706 9611

NAIROBI iHiT

Manager: Ali Baniamerian

Field of Activity: Export of products and services of knowledge-based, creative and technology companies

Country: Republic of Kenya – Nairobi

Services:

- Holding Permanent exhibition of products and services
- Providing dedicated and co-working space
- Holding the National Pavilion of the Islamic Republic of Iran in international exhibitions
- Export development of knowledge-based products
- Identifying opportunities for scientific, technological and industrial cooperation
- Providing export instructions of the Center for International Science and Technology Cooperation

Address: Dennis Pritt Road, Next to Maalim Juma Road, Kilimani, Nairobi, Kenya
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Tel No: (+254) 111 606 113
Supervisor: Fahime Zabihi
Office Phone: (+98) 21 910 700 80 INT 130

SUZHOU iHiT

Manager: Amir Ghorbanali

Field of Activity: Export of products and services of knowledge-based, creative and technology companies

Country: People's Republic of China - Shanghai

Services:

- Holding Permanent exhibition of products and services
- Export development of knowledge-based products
- Providing dedicated and co-working space
- Identifying opportunities for scientific, technological and industrial cooperation
- Holding the National Pavilion of the Islamic Republic of Iran in international exhibitions
- Providing export instructions of the Center for International Science and Technology Cooperation

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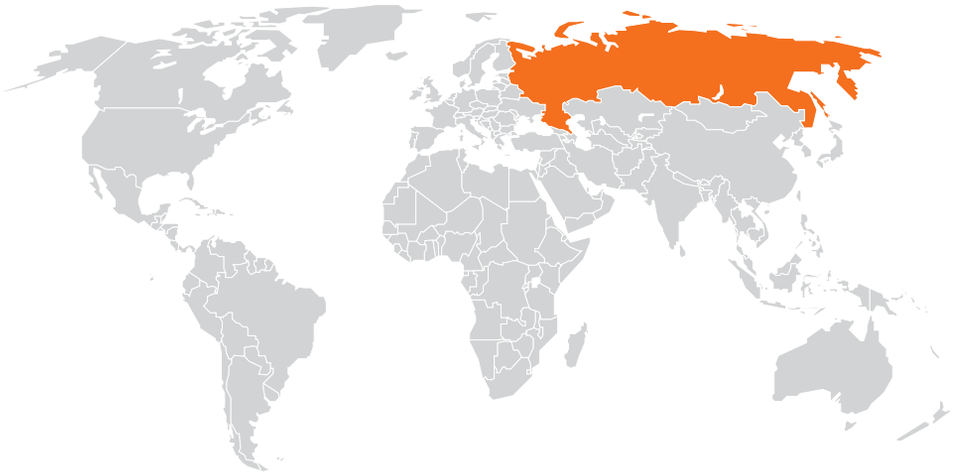

MOSCOW iHiT

Manager: Mahdi Deilam Salehi

Field of Activity: Export of products and services of knowledge-based, creative and technology companies

Country: Russian Federation – Moscow

Services:

- Holding Permanent exhibition of products and services
- Providing dedicated and co-working space
- Holding the National Pavilion of the Islamic Republic of Iran in international exhibitions
- Export development of knowledge-based products
- Identifying opportunities for scientific, technological and industrial cooperation
- Providing export instructions of the Center for International Science and Technology Cooperation

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ISTANBUL iHiT

Manager: Masoud Hasani

Field of Activity: Export of products and services of knowledge-based, creative and technology companies

Country: Turkey – Istanbul

Services:

- Holding Permanent exhibition of products and services
- Providing dedicated and co-working space
- Holding the National Pavilion of the Islamic Republic of Iran in international exhibitions
- Export development of knowledge-based products
- Identifying opportunities for scientific, technological and industrial cooperation
- Providing export instructions of the Center for International Science and Technology Cooperation

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Office Phone: (+98) 21 882 227 55

DAMASCUS iHiT

Manager: Mohammad Hadi Zeighami

Field of Activity: Export of products and services of knowledge-based, creative and technology companies

Country: Syria – Damascus

Services:

- Holding Permanent exhibition of products and services
- Providing dedicated and co-working space
- Export development of knowledge-based products
- Identifying opportunities for scientific, technological and industrial cooperation
- Holding the National Pavilion of the Islamic Republic of Iran in international exhibitions
- Providing export instructions of the Center for International Science and Technology Cooperation

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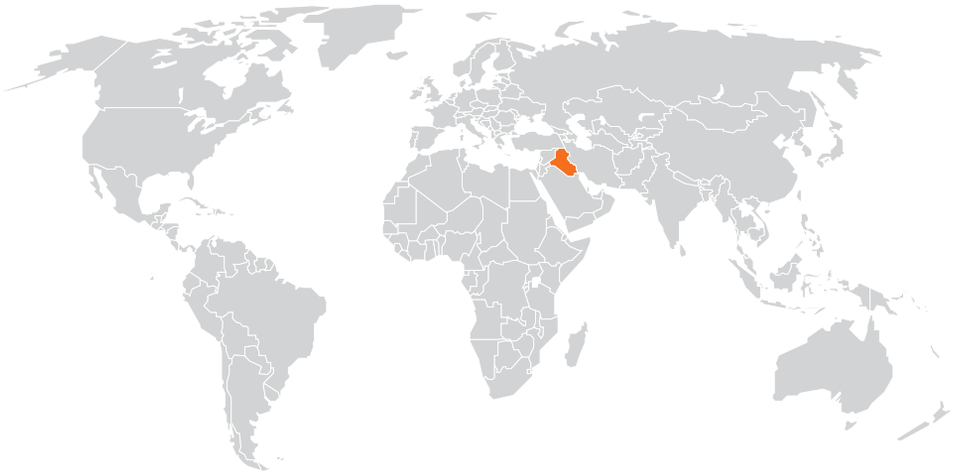

Iraq (Sulaymaniyah) iHiT

Manager: Hossein Salmani

Field of Activity: Export of products and services of knowledge-based, creative and technology companies

Country: Iraq – Sulaymaniyah

Services:

- Holding Permanent exhibition of products and services
- Providing dedicated and co-working space
- Holding the National Pavilion of the Islamic Republic of Iran in international exhibitions
- Export development of knowledge-based products
- Identifying opportunities for scientific, technological and industrial cooperation
- Providing export instructions of the Center for International Science and Technology Cooperation

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This book includes
selected knowledge-based Iranian products
in the field of

POWER AND CONTROL ENGINEERING

which is prepared for promotion in other countries.

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