

- شرکت مهندسی پویا کنترل الکترونیک «دانش بنیان»
- طراحی - ساخت - بروز رسانی و تعمیرات پیشرفته
- الکترونیک - کنترل - اتوماسیون صنعتی - مکاترونیک

- **POYA CONTROL ELECTRONIC**, Knowledge base,
- **Design-Manufacturing-Advanced repairs**
- **Electronics-Control-Industrial Automation-Mechatronics**

## Introduction

Poya Control Electronic Engineering Company was established in ۲۰۰۵ with the aim of providing technical and engineering services in the fields of electronics, control, instrumentation and industrial automation with the help of a group of technical experts active in the field of industry and ports. And with the help of experienced technical staff, it has started its operations.

The company is proud to have made a small contribution to the country's industry through the efforts of executives and experts.

Due to the technical and engineering potentials in these fields, and the company executives' backgrounds in the field of industrial and port equipment, it therefore focuses on specialized activities in these sectors and on providing specialized technical and engineering services in the field of port industrial equipment and strategic equipment. It has taken effective steps. And for the services provided in the field of designing and manufacturing parts and sub-sets of equipment, in September ۲۰۱۸, it has obtained the approval of the knowledge base of the Presidential Scientific and Technological Institute.

### The main activities of the company are as follows:

۱. Design and manufacturing and reverse engineering of equipment, parts and industrial sectors based on electrical, electronic and mechatronic systems
۲. Advanced repairs of electrical, electronic, control and instrument systems
۳. Update of control systems, electronics and mechatronics
۴. Maintenance and assembly of industrial equipment
۵. Consulting and supplying industrial parts and equipment

## مقدمه

شرکت مهندسی پویا کنترل الکترونیک با هدف ارائه خدمات فنی و مهندسی در زمینه های الکترونیک ، کنترل ، ابزار دقیق و اتوماسیون صنعتی به همت گروهی از کارشناسان فنی فعال در حوزه صنعت و بنادر کشور ، در سال ۱۳۸۴ تاسیس و با همکاری کادر فنی مجرب، فعالیت خود را آغاز نموده و مفتخر است که با تلاش مدیران و کارشناسان توانسته تاکنون سهم کوچکی در صنعت کشور ایفا نماید.

به جهت پتانسیل های فنی و مهندسی در این حوزه ها ، و سوابق مدیران این شرکت در زمینه تجهیزات صنعتی و بندری، لذا فعالیتهای تخصصی را معطوف این بخش ها نموده و در خصوص ارائه خدمات فنی و مهندسی تخصصی در زمینه تجهیزات صنعتی کشور و همچنین تجهیزات استراتژیک بندری گامهای موثری برداشته است. و به جهت خدمات ارائه شده در حوزه طراحی و ساخت قطعات و زیر مجموعه های تجهیزات ، در شهریور ماه ۹۷ موفق به دریافت تائیدیه دانش بنیان از نهاد علمی و فن آوری ریاست جمهوری گردیده است.

شاخه های اصلی فعالیت شرکت به شرح ذیل میباشد:

۱. طراحی و ساخت و مهندسی معکوس تجهیزات ،قطعات و بخش های صنعتی مبتنی بر سیستمهای برق و الکترونیک و مکاترونیک
۲. تعمیرات پیشرفته سیستم های برق ، الکترونیک ، کنترل و ابزار دقیق
۳. بروز رسانی سیستم های کنترل ، الکترونیک و مکاترونیک
۴. تعمیر و نگهداری و مونتاژ تجهیزات صنعتی
۵. مشاوره و تامین قطعات و تجهیزات صنعتی

## Facilities and equipment:

Poya Control Electronic Engineering Company has an experienced expert staff .It is also equipped with all specialized equipment And it has a complete platform for technical-engineering projects, design, installation, maintenance consulting and equipment repairs.

## Branches and workshops:

1. **Tehran:** Includes management, technical and engineering, R&D and business departments
2. **Bandar Imam Khomeini:** Includes technical and engineering unit - specialized workshop and laboratory for electronics (design , construction, reverse engineering and advanced repairs of electronic systems)
3. **Shahid Rajaei:** Managing the VTS contract of Shahid Rajaei port and the specialized workshop and laboratory of electronics (advanced repairs of electronic systems)

## امکانات و تجهیزات :

شرکت مهندسی پویا کنترل الکترونیک دارای کادر کارشناسی مجرب و مجهز به کلیه تجهیزات تخصصی (تجهیزات کارگاهی و آزمایشگاهی) و بستر کامل جهت انجام پروژه های فنی-مهندسی ، ساخت ، طراحی ، نصب ، مشاوره نگهداری و تعمیرات تجهیزات میباشد.

## شعب و کارگاهها :

شعبه تهران : شامل بخش های مدیریت ، فنی و مهندسی ، R&D و بازرگانی  
شعبه بندرامام خمینی : شامل واحد فنی و مهندسی - کارگاه آزمایشگاه تخصصی الکترونیک (طراحی - ساخت ، مهندسی معکوس و تعمیرات پیشرفته سیستم های الکترونیک)  
شعبه شهید رجایی : راهبری قرارداد VTS بندر شهید رجایی و کارگاه و آزمایشگاه تخصصی الکترونیک (تعمیرات پیشرفته سیستم های الکترونیک)

## Activities and capabilities:

Regarding the technical and engineering services and capabilities of Poya Control Electronic Company in this field, the following can be mentioned:

۱- ۱۵ years of experience and knowledge in the field of maintenance and specialized repairs of LHM strategic equipment in the country's ports, including electrical systems, industrial and mechanical control and automation, and hydraulics by professional and trained experts.

۲- ۱۵ years of experience and knowledge in the field of maintenance and specialized repairs of pneumatic tower equipment, unloading of grains and mechanical loaders, including electrical systems, control and industrial and mechanical automation.

۳- Implementation of corrective plans and updating of electrical and control systems and instrumentation in industrial and strategic equipment of ports

۴- Designing and manufacturing control and automation sections and electronic and mechatronic systems used in industrial and port equipment.

۵- Advanced repairs of electrical, electronic, precision instruments, control and mechatronics systems in industrial and port equipment

۶- Provide advanced technical and engineering services for construction and repair in the maritime traffic system (VTS) ports

۷- Reverse engineering and construction in control systems and precision and mechatronic equipment of port equipment in case of sanctions

۸- Supplying spare parts required for strategic equipment in case of sanctions, relying on technical knowledge and ordering manufacturing to component manufacturers

۹- Providing technical and engineering services regarding the maintenance and repair of industrial equipment

۱۰- Providing technical and specialized training services in the fields of electricity, hydraulics, electronics and strategic port equipment management by experts.

۱۱- Designing and manufacturing test devices used in maintenance and repair

۱۲- Consulting in the design and engineering department of electrical equipment, control and instrumentation and installation of systems

۱۳- Providing technical and engineering services in the form of maintenance contracts for port equipment such as telecommunication equipment and VTS

## فعالیت ها و توانمندی ها:

در خصوص خدمات فنی و مهندسی و توانمندی های شرکت پویا کنترل الکترونیک در این زمینه ، میتوان به موارد ذیل اشاره نمود:

۱- ۱۵ سال تجربه و دانش در زمینه نگهداری و تعمیرات تخصصی تجهیزات استراتژیک LHM در بنادر کشور شامل سیستم های برق، کنترل و اتوماسیون صنعتی و مکانیک و هیدرولیک توسط کارشناسان حرفه ای و آموزش دیده

۲- ۱۵ سال تجربه و دانش در زمینه نگهداری و تعمیرات تخصصی تجهیزات برج پنوماتیکی تخلیه غلات و انلودرهای مکانیکی شامل سیستم های برق، کنترل و اتوماسیون صنعتی و مکانیک

۳- اجرای طرح های اصلاحی و بروز رسانی سیستم های برق و کنترل و ابزار دقیق در تجهیزات صنعتی و استراتژیک بنادر

۴- طراحی و ساخت بخش های کنترل و اتوماسیون و سیستمهای الکترونیک و مکاترونیک مورد استفاده در تجهیزات صنعتی و بندری

۵- تعمیرات پیشرفته سیستمهای مبتنی بر برق ، الکترونیک ، ابزار دقیق ، کنترل و مکاترونیک در تجهیزات صنعتی و بندری

۶- ارائه خدمات فنی و مهندسی ساخت و تعمیرات پیشرفته در سیستم ترافیک دریایی (VTS) بنادر

۷- مهندسی معکوس و ساخت در سیستمهای کنترل و ابزار دقیق و مکاترونیک تجهیزات بنادر در شرایط تحریم

۸- تامین قطعات یدکی مورد نیاز تجهیزات استراتژیک در شرایط تحریم با اتکا به دانش فنی و سفارش ساخت به سازندگان قطعات

۹- ارائه خدمات فنی و مهندسی در خصوص نگهداری و تعمیرات تجهیزات صنعتی

۱۰- ارائه خدمات آموزش فنی و تخصصی در زمینه های برق ، هیدرولیک ، الکترونیک و راهبری تجهیزات استراتژیک بندری توسط کارشناسان خبره.

۱۱- طراحی و ساخت دستگاههای تست مورد استفاده در بخش نگهداری و تعمیرات

۱۲- مشاوره در بخش طراحی و مهندسی تجهیزات برق، کنترل و ابزار دقیق و نصب و راه اندازی سیستم ها

۱۳- ارائه خدمات فنی و مهندسی در قالب قراردادهای نگهداری و تعمیرات تجهیزات بنادر مانند تجهیزات مخابراتی و VTS

## **Designed and manufacture INDEX**

1. Designed and manufacture Multi Turn Angle Sensor
2. Design and manufacture I / O modules of equipment
3. Design and manufacture of joystick controller for equipment
4. Design and manufacture of tachometer in equipment
5. Design and manufacture of industrial keyboards
6. Design and manufacture of electronic controller of diesel engine (ECU)
7. Design and manufacture of boom angle sensor
8. Design and installation of intelligent control systems for engines and diesel generators
9. Design and manufacture of analog and digital control cards
10. Design and manufacture of load protection systems in loading equipment
11. Design, installation and implementation of triple boom protection system for grain drainage equipment
12. Design and Implementation of Vertical Pipe Protection System against Crash and Traction
13. Design and manufacture of analog sensors for measuring the level of fuel and hydraulic tanks
14. design and manufacture of hydraulic proportional amplifire
15. design and manufacture of VTS radar motherboards & Power Assembly
16. design and manufacture of VTS radar Modulator

# Designed and manufacture Multi Turn Angle Sensor Model $\gamma \cdot A-24-01$

- These parts are precise tools for measuring angles up to  $\gamma$  turn ( $25.200$  degree) in equipment and due to many used and necessity of the same parameters, it is important in terms of angular precision, so the company designed and manufactured these parts as needed

## Specifications:

- $\gamma$  turn angle sensor ( $25,200^\circ$ )
- Output:  $4-20$  mA
- Power supply:  $24$  vdc  $\pm 2\%$
- IP66 (EN60529)
- temp drift:  $0,02\% / 1^\circ\text{C}$
- Temp ambient:  $-40$  to  $+75^\circ\text{C}$
- Linearity error:  $\pm 0,1\%$
- Sensitivity:  $0,22857$  mA/revolution
- Measurement accuracy:  $\pm 1^\circ$  based on  $25,200^\circ$
- Repeatability: better than  $1^\circ$
- Lifetime: typical  $100$  million revolution
- Casing: al anodized
- shaft: stainless steel
- Shaft bearings: rolling bearings
- Weight:  $120$  g
- Electrical connection: CA  $2102E$   $14S-VP-B$  bayonet
- Free wheel revolution
- Dimensions:  $\Phi 88, L 105$  mm

## Applications:

- Multi turn angle measurement
- Gearbox angle measurement
- Wheel set angle measurement
- Absolute Measurement



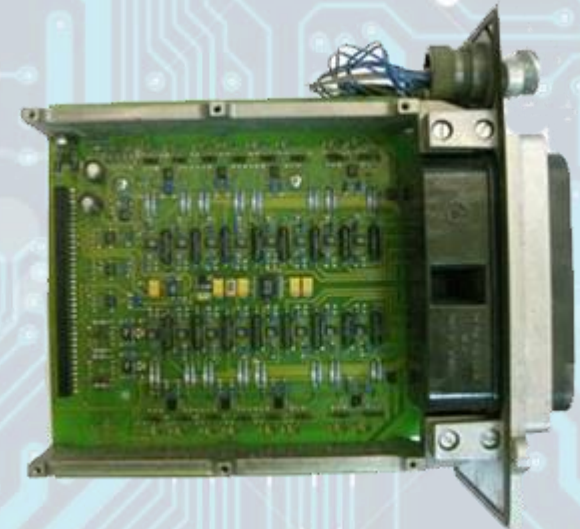
- I/O modules are among the most important control components in port equipment. Due to the number and variety of usages and foreign exchange costs as well as the lack of access to sources of supply, so with all the technical feasibility and feasibility studies, all stages of design and manufacture of these modules have been completed internally.

**Specifications:**

- CANBUS CONECTION
- DIGITAL INPUT MODULE
- DIGITAL OUTPUT MODULE
- ANALOGUE INPUT MODULE
- ANALOGUE OUTPUT MODULE
- COUNTER MODULE
- POWER 9-36VDC
- TEMP -40,+85°C
- BAYONET CONECTOR
- IP 67

**Applications:**

- LHM100
- LHM150
- LHM250
- LHM320
- LHM400
- LHM500



# Design and manufacture of joystick controller for equipment

- Operator controllers are one of the most applicable parts of equipment operations and have a high depreciation in mechanical and electromechanical parts as well as inadequate resources and currency costs, so the company is planning to reform. The complete design of these parts has taken action.

## Specifications:

- multi-axis controller
- CAN-Bus interface
- Power supply: 18-36vdc
- IP54
- Temp ambient: -40 to +85°C
- Sensitivity: 1/1000 (each direction)
- Measurement range: 1000 (each direction)
- Ordering feature with a variety of voltage and current outputs
- Lifetime: typical 10 million cycle
- Electrical Connection: D-SUB 9, IP 68 (male) CAN in +, D-SUB 9, IP 68 (female) CAN out
- software zero contact
- 1 digital switch (Installed on the handle)
- Redundancy architect
- Left/right side

## Applications:

- Multi-axis controller
- Electro-hydraulic applications
- Used in systems with high reliability
- UAV control
- Crane applications





## Design and manufacture of tachometer in equipment

- Tachometers are one of the most important tool components in systems to measure displacement and velocity. It is also stimulated by a gearbox that reduces the distance by a certain proportion and switches that are placed on the shaft to limit the upper and lower limit of the operator.

### Specifications:

- Power supply: 18-24vdc
- Temp ambient: -20 to +55°C
- Sensitivity: 1/1600 (each turn)
- gearbox: 1/35
- Outputs: pulse a, b (1600 pulse per 1 turn), c (1 pulse per 1 turn), 4 cam switch
- Electrical Connection: terminal

### Applications:

- Wire winch Crane displacement
- Speed meter of rotating machines
- Up/down limitation
- Crane applications



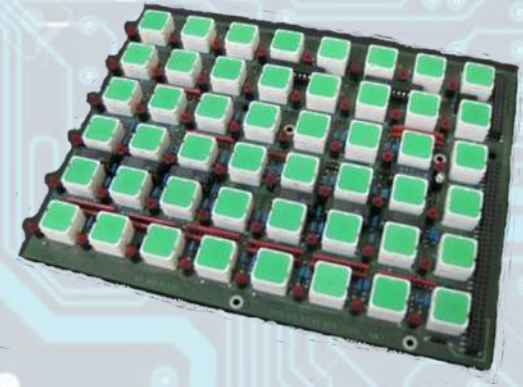
- Industrial keyboards are an important part of equipment operation. That They are used as one of the ports of data entry to equip. And because of the connection Direct the operator, they are important.

### Specifications:

- Power supply: 18-29vdc
- Temp ambient: -40 to +85°C
- Outputs : canbus , digital out
- Electrical Connection: D9
- IP 65
- 48 KEY
- EMG SWITCH

### Applications:

- INDUSTRIAL EQUIPMENT
- Crane applications



# Design and manufacture of electronic controller of diesel engine (ECU)

- ECUs are an important part of diesel engine control systems. Due to their special importance in the equipment and their importance for the complete dependence of the equipment on the operation of these units, so in addition to their 100% hardware and software repairs, the company has also designed and manufactured them.

## Specifications:

- Power supply: 18-26vdc
- ambient temp: -40 to +125°C
- Outputs: canbus

## Applications:

- OM444LA



- These components are precision instruments for measuring angles in equipment and are of great importance in terms of operation and measurement accuracy. Therefore, with the investigation of these components, steps are taken to design and manufacture these components and sensors. These sensors are available in two types of gravity and MEMS.

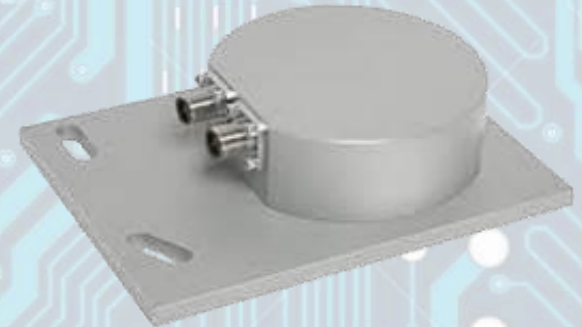
## Specifications:

- $-90^{\circ}$  angle sensor
- Resolution:  $0.1^{\circ}$
- Output:  $4-20\text{ mA}$
- Power supply:  $24\text{ vdc} \pm 2\%$
- IP67
- temp drift:  $0.3\% / ^{\circ}\text{C}$
- Temp ambient:  $-40$  to  $+80^{\circ}\text{C}$
- Linearity error:  $\pm 0.1^{\circ}$

- Sensitivity:  $0.177\text{ mA}/^{\circ}$
- Measurement accuracy:  $\pm 0.3^{\circ}$
- Repeatability: better than  $\pm 0.1^{\circ}$
- Long Lifetime
- Casing : aluminum
- Electrical connection: CA2102E 14S-VP-B bayonet

## Applications:

- cranes
- Construction machines



# Design and installation of intelligent control systems for engines and diesel generators

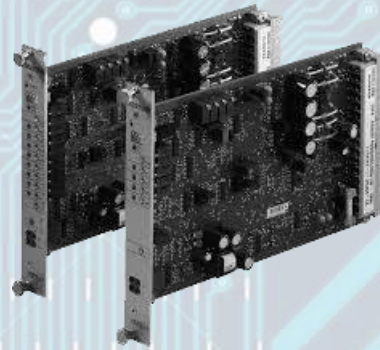
- Intelligent control systems have been used to display critical parameters, register and issue alarms as well as control commands at appropriate times, and the company has designed and installed these systems for diesel engines and generators of a variety of equipment, such as port equipment and vessels. And related services include paralleling and load share generators.

## Specifications:

- 3 phase AMF function
- 3 phase generator protections
- Power measurements
- Event and performance log
- User interface Graphic display
- Inputs and outputs
- engine support: Modbus, J1939
- SMS or E-mails
- Support of telecom applications
- Communication interfaces
  - Optional RS232, RS485
  - USB plug-in interface
  - Modbus RTU/ TCP
  - Internet/Ethernet
- On-line control and monitoring over web
- GSM modem/wireless



- One of the services offered by this company can be design and manufacture of various types of control cards by analog processing.
١. Design and manufacture of voltage protection card in control panels
  ٢. Design and manufacture of hardware of analog and digital control cards
  ٣. Designing and manufacturing airlock protection card
  ٤. Design and manufacture of joystick tester card
  ٥. Designing and manufacturing of grating control card
  ٦. Design and manufacture of CANBUS converters



# Design and manufacture of load protection systems in loading equipment

- This system is designed to protect the load of lattice and telescopic cranes against adverse loading conditions in terms of boom angle, load, radius, etc. The corresponding interrupt commands are issued and the required alarms are activated.



## Specifications:

- **BOOM ANGLE & LENGTH MEASUREMENT** • IP 65
- **LOAD SENSOR** • Lattice boom & telescopic boom
- **8" LED DISPLAY** • Ambient temp 55°C
- **TOP LIMIT SWITCH**
- **POWER 24VDC OR 220VAC**
- **DIGITAL OUTPUTS**
- **Digital inputs**
- **Analogue inputs**
- **SENSOR CALIBRATION**



## Design, installation and implementation of triple boom protection system for grain drainage equipment

- Due to the importance of the equipment (grain drainage tower) in the discharge operations of the grain carrier ship and in the event of accidents and damage caused by the collapse of the boom and the vertical and horizontal telescopic sections of the equipment, the company therefore has to protect the triple sections. Boom of this equipment designed precision protection system against unwanted operations due to technical defects (such as failure to disconnect power contactors, etc.) and human fault lines. And by designing and supplying the interface equipment needed to execute the design as well as build the Interface converter needed, on four equipment sets The drainage tower has been installed and the system performs very well.

### Specifications:

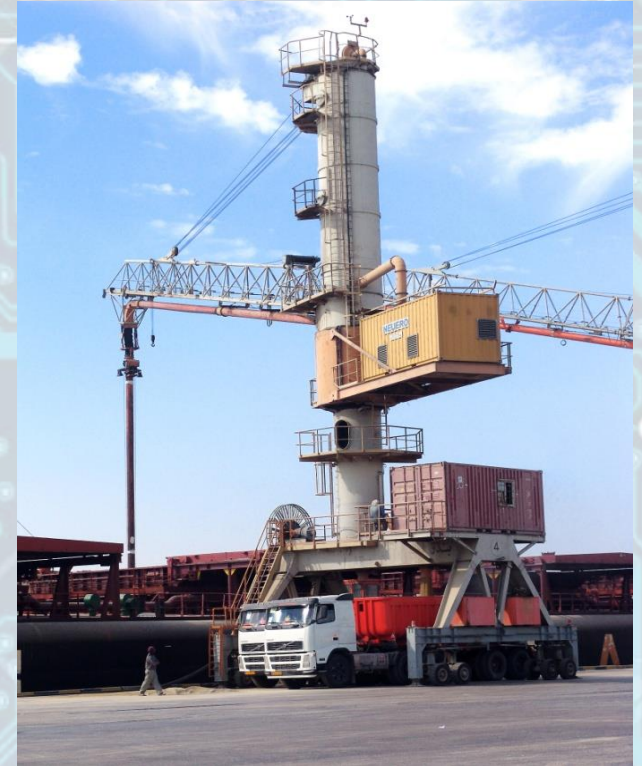
- BOOM , VERT & HORIZ PIPE UNWANTED OPERATION PROTECTION
- MINI PLC CONTROLLER
- JOYSTIC FEEDBACK
- OUTPUT STAGE FEEDBACK & CONTROL
- POWER 24VDC OR 220VAC
- 2 DIGITAL OUTPUTS
- MAIN BREAKER CONROL
- IP 65





# Design and Implementation of Vertical Pipe Protection System against Crash and Traction

- This system is designed to protect equipment (grain drainage tower) against vertical pipe collapse caused by wiring cuts. According to the measurement of wiring tension, a shutdown function will be issued if the controller exceeds the desired optimum traction. Alarms are also activated



## Specifications:

- VERT PIPE TENSION PROTECTION
- TENSION CONTROLLER & DISPLY
- TENSION METER
- SIGNAL CONVERTER
- POWER 24VDC OR 220VAC
- 2 DIGITAL OUTPUTS
- IP 65



## Design and manufacture of analog sensors for measuring the level of fuel and hydraulic tanks

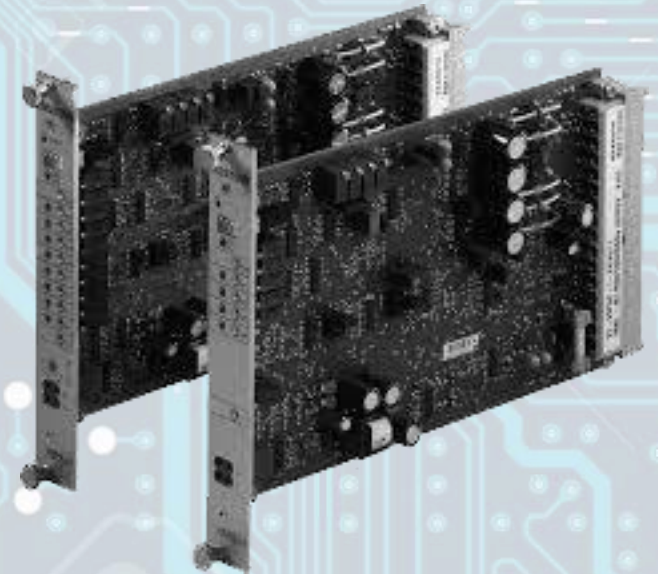
- In industrial equipment, floating sensors with varying lengths are used to measure the level and volume of fluids such as fuel, water, and oils. These sensors have good accuracy, performance and longevity

### Specifications:

- POWER SUPPLY: 24VDC OR CUSTOMERS REQUEST
- RESOLUTION: 20 mm
- OUTPUT: 4-20 mA OR CUSTOMERS REQUEST
- LENGTH: CUSTOMERS REQUEST (MAX 200 CM)
- STAINLESS STEEL
- MAX OPERATING TEMP: 80 °C
- IP 65



- **Hydraulic proportional amplifier model VT-5, 1, 2**
- for valve type 4WRE 6 ...-1X
- for valve type 4WRE 10 ...-1X
- Customizable for All types of proportional hydraulic valves

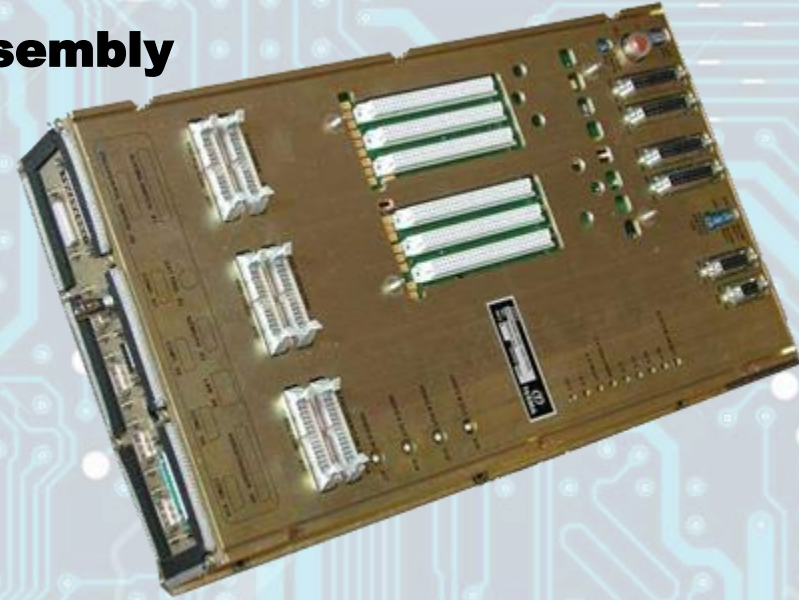


## Specifications:

- Suitable for controlling direct operated proportional directional valves with electrical position feedback (type 4WRE, series 1X)
- Differential input
- Enable input with LED lamp
- "Readiness for operation" is signaled by LED lamp
- Step function generator and ramp generator
- Five ramp times can be set with the help of potentiometers
- Four command values that can be adjusted by means of potentiometers
- call-ups are signaled by LEDs
- Controller for valve spool position
- Two clocked current output stages
- Oscillator and demodulator for inductive position measurement
- with cable break detection
- Polarity reversal protection for voltage supply
- power 24 VDC + 40 % - 5 %, >50 VA
- Output stage 2,2 A +/-20%, 2,4V-16,8V
- operating temperature range 0 to 50 °C
- Weight 0,15 kg

• **VTS radar motherboards & Power Assembly**

- Provide DC power to all other units
- System timing (triggers)
- Interface for other units (receiver, RSD etc.)
- Status requests from other units
- Safety loop control
- Antenna correction
- Control of the CAN-bus



**Specifications:**

- X1 AUX/WG Switch connection & control
- X2 Ext. Trigger connection & control
- X3 Azimuth X12 Blower, crate
- X4 LAN connection & control
- X5 Video/Trigger connection & control
- X6 COM 0 connection & control
- X7 COM 1 connection & control
- X8 COM 2 connection & control
- X9 COM 3 connection & control
- X10 COM 4 connection & control
- X11 RSD POL/CAN connection & control
- X12 RSD Power connection & control
- X13 RSD COM connection & control
- X14 RSD Encoder/COM 5 connection & control
- X15 RSD Video connection & control
- X16 RSD Video/Trigger
- X17 Video A in connection & control
- X18 Video A out connection & control
- X19 Video B out connection & control
- X20 Video B out connection & control
- X21 Blower, crate connection & control
- X22 LED
- X23 Receiver A connection & control
- X24 Modulator A connection & control
- X25 Receiver B connection & control
- X26 Modulator B connection & control
- X27 Safety Switch connection & control
- X28 Blower 2 mid. connection & control
- X29 Blower 1 mid. connection & control
- X30 MD STAT connection & control
- X31 MD COM connection & control

### • VTS radar Modulator (V<sub>r</sub>)

- Drive Filament for the magnetron
- Pulse shaping
- High voltage



### Specifications:

- Generate a voltage of more than 1 kV
- Resistant to weather conditions
- Cool with oil
- Impermeable to dust in the HV section

