unidor
TR systems GmbH

# UNIDOR – The program

## Everything for perfect punching & forming

_ Process monitoring systems

_ Controls

_ Retrofit

_ Sensors

_ smart Protection

_ ioCONTROLLER

_ Service

_ Services / project management

_ Distribution

www.unidor.info

# TRsystems GmbH, Unidor System Division in Pforzheim




# Company history

### 1948 – Establishment of Kiefer KG, watch and metal goods factory, Pforzheim

Creation of the UNiDOR brand name. Through automation of punching processes. In-house development of the first tool protection systems (UN series) and optical sensors.

### 1971 – Sale to Thurn and Taxis

Further development of systems, driven by constantly new challenges. Introduction of the first force monitoring systems. Creation of the APS system, development of the first axis automations (stroke adjustments; ram adjustments).

### 1990 – Acquisition by the Prym Group

Further development of the APS system, first industrial PC systems are used. Customer-specific solutions are increasingly implemented.

### 1996 – Acquisition by TR-Electronic GmbH

Creation of the Aplus system. In 2000 creation of the compactPRESS system. 2012 integration intoTRsystem GmbH.

# Systems

## compactPRESS – the process monitoring system for punching and forming technology

A wide variety of controls ensure the broad range of functionality and universality of compactPRESS. Everything that is important for an optimal and continuous production process is displayed, reported and monitored by compactPRESS with the utmost precision. compactPRESS, comprehensive insurance for machines and tools.

## compactPRESS

_ is your all-round assistant for practically everything, a professional for measuring, controlling and rationalizing punching & forming. Ultra-fast up to the highest number of strokes,

_ protects your machines and dies, ensures regular maintenance and service, manages, logs and archives all production and quality data,

_ offers simple touch-pad operation that everyone can easily understand. Icons instead of buttons guide and inform the operator in every situation. Knowing what's going on has never been easier,

_ is based on an extremely reliable IPC. The best solution for continuous machine-level operation in harsh conditions,

_ displays what is going on in the machine and die directly at the machine or via a central control panel. No matter where your machine is producing, you have everything in view at all times,

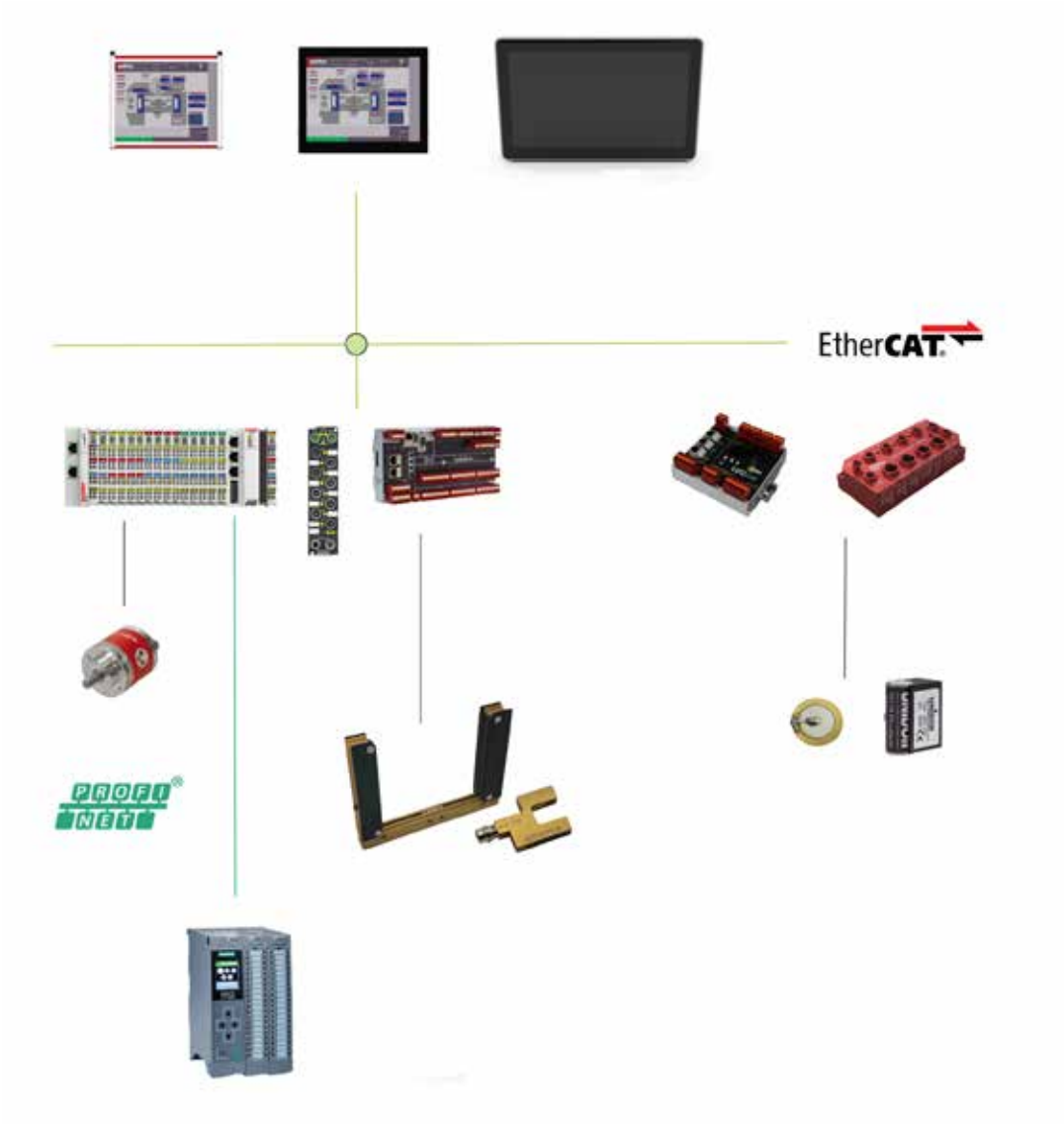
_ understands all analog or digital sensors and combines them as required, functionally, logically or mathematically,

_ as a standalone system primarily in retrofitting or as PLC subsystem of a control in the initial equipment,

_ increases the availability of tool and machine and ensures greater transparency, praricularly in critical production processes with difficult materials.

However, the immense range of functionality and performance of compactPRESS is determined by the extremely flexible controls. Controls are software-based action and functional units, special „tools" for all tasks and applications in punching & forming.
The controls determine the numerous features for visualizing, measuring, optimizing, monitoring and logging. With the compactPRESS controls you always know exactly what is going on; production processes, machine and die become so transparent that they take you to the limits of the possible.
Whatever the task in hand, with compactPRESS you will find the right control or controls. Each of the many controls is designed for a specific task. Tasks which you can easily solve in many areas by means of parameterization.

In conjunction with specific sensors you now have a set of tools that will provide you with comprehensive support in all customer requirements for greater complexity, precision, productivity and quality, defining entirely new production dimensions in punching and forming.
After an overview of all currently available controls for ecoline+starline, we will provide detailed examples of our own controls and show practical applications.
Two software packages, compactPRESS ecoline and compactPRESS starline, are available. Ecoline is the entry-level class, starline is the high-end performance class. Upward compatibility for data and variables from ecoline to starline
is guaranteed.
compactPRESS understands all sensors, regardless of whether digital or analog sensor signals are involved. The same applies for a wide range of absolute rotary encoders, whose inputs are easy to parameterize.
This also applies for digital and analog outputs.
Ample scope for convenient I/O handling.




## compactPress

The future of punching and forming is changing rapidly: more complex, faster, more precise and everything documented seamlessly, right up to the highest stroke rate. Your customers' innovative product requirements and constant cost pressure are forcing you to push the limits of what is feasible with your product and tools. It is therefore becoming increasingly important to visualize the stamping and forming process comprehensively in order to precisely optimize and control each work step on this basis.

Only those who understand exactly what is going on can meet customer demands for perfect production and quality products and create a technological edge that secures orders today and even more so tomorrow.

The machine control system only meets these requirements to a limited extent. This requires intelligent monitoring devices such as compactPRESS.

Here, state-of-the-art IPC technology is combined with a large selection of intelligent software controls. Nothing remains hidden, compactPRESS reacts at lightning speed to all irregularities and thus ensures continuously monitored production and controlled quality. The constant careful use of machine and tool resources. compactPRESS is neither costly nor complicated, but extremely powerful and highly flexible in every situation. The all-rounder completes any task quickly and reliably, completely individually and simply with easy-to-understand instructions. compactPRESS integrates seamlessly into the machine and control system environment. Assembly and installation are completed quickly, so that nothing stands in the way of rapid availability of the system.

# Controls

## Basic Controls
The heart of every compactPRESS is the integrated smartPLC. It links the controls, coordinates the timing and organizes all processes of compactPRESS.
Visualization and parameterization of the controls occur in the control itself, depending on the function and task. The real-time core guarantees correct execution of all time-relevant tasks. All controls included in this group organize and manage compactPRESS.

## Digital Controls
This group includes all controls for digital signal processing. All common digital sensors may be used as signal transmitters.

## Analog Controls
This group includes all controls for analog signal processing. Special analog sensors are increasingly used in punching and forming technology, and compactPRESS provides the optimal evaluation.

## Measuring Controls
This group includes all controls which continuously measure and monitor the supplied material and the production process. Important controls for quality optimization and comprehensive QA certification.

## Process Controls
This group includes all controls relating to the production process. Intelligent controls which leave nothing to chance, from material supply through to product selection.

## Management Controls
This group includes all controls which manage data, information and actions: Tool log, maintenance organization, import and export, automatic action timing ...

## Interface Controls
This group includes all controls which guarantee simple and safe communication between compactPRESS and peripheral systems.

## OEM Controls
This group includes all controls which ensure problem-free connection of external equipment (OEM systems).

## Tool Controls
This group includes all controls which produce variable products completely automatically with intelligent tools. Ideally suited for automating die controls.

## Position Controls
This group includes all controls which can be used as position encoders in compactPRESS.



# The right control for every task, a wide selection

| | |
|---|---|
| **Basic Controls** | |
| User administration | System log-on, user identification |
| Die management | Creation of up to 1000 tools, configuration, saving and backup of tool data |
| Message management | Internal information, warnings, error display, acknowledgement and deletion |
| Color management | Free color design of cP screens |
| Language management | Language file and language selection |
| System setting | System management, language selection, machine type, machine ID, date/time |
| Help system | Context-sensitive help for all processes |
| **Digital Controls** | |
| Cam switchgear | Up to 128 cams assignable |
| Tool protection | Up to 64 digital tool protection devices |
| Counter | Up to 32 universal counters, counting pulse source is freely selectable |
| Positioning | Up to 8 positioning axes (multi-turn encoder): ram, strip inlet, feed etc. |
| **AnalogControls** | |
| Force angle | Up to 32 channels for machine and tool force |
| PSA (Piezo Signal Analysis) | Up to 20-channel individual measurement in the tool for force and deformation |
| Double blank (slug) monitoring | Up to 32 channels for double blank or slug detection. UT measurement and more |
| Addl channels | Up to 32 analog channels |
| **Measuring Controls** | |
| Analog feed measurement | Measurement of feed travel, strip position in tool |
| Strip width measurement | Check strip material for parallelism, curvature, etc. |
| Strip thickness measurement | Absolute measurement of strip thickness |
| Part measurement | Measure 100% parts in the process: height, thickness, diameter, angle etc. |
| Dimensional check | Check parts in the feed phase |
| **Process Controls** | |
| TDC stop | Controlled stop at TDC (top dead center) |
| Stroke adjustment | Automatic adjustment of stroke height |
| Stroke table | Stroke-dependent angle correction |
| Ram adjustment and display | Automatic adjustment of the ram axis |
| External die change | Automatic transfer of the tool number from higher-level systems |
| Sorting | Intelligent separation of bad parts (shift register principle) |
| External error message | Records all external errors or faults, as binary or 1 from n coded messages |

| | |
|---|---|
| **µBDE** | Operating and production data for central EDP |
| Management Controls | |
| Notebook | Prolog, space for any information on machine and tool |
| Data import and data export | Import drawings and export cP docs to any host systems |
| Archiving of process data | Export of information and data in Excel csv or QS-Stat format |
| Maintenance & service | Interactive management and schedule for functions and actions |
| **Interface Controls** | |
| Lubricating system control | Programming, visualization and measurement of lubricant quantity |
| Open OPC interface | OPC client for communication with peripheral systems |
| **Feed interfaces** | Transfer of feed parameters, display of values and control buttons |
| Zehnder & Sommer | |
| Indramat | |
| Bosch Rexroth | |
| P.A. Automation | |
| Esitron | |
| **Interfaces for PLC control** | For communication with S7-PLC (hard or soft PLC) |
| Profibus | |
| Profinet | |
| IBH Netlink | |
| **Tool Controls** | |
| Tool-dependent PLC | Customized signal combination |
| Die control | Order-dependent calculation of die control and feeds |
| Cylinder monitoring | Cylinder control with limit position monitoring |
| Servo positioning | Up to 4 axes in the tool |
| **Position Controls** | |
| Rotary | Recording of X axis in 0.1° |
| Linear | Recording of X axis in 0.01 mm |
| Temporal | Recording of X axis in 200 µsec |
| Virtual encoder | Simulation of a rotary encoder via an input signal |

# Retrofit

## Renovate instead of new - always a good alternative



### Talk to us

Together with competent mechanical specialists, we ensure a compact mechanical, hydraulic and electrical complete overhaul of your machine. of your machine.

_ short interruption to operation
_ no structural changes (foundations)
_ expenditure immediately depreciable

### Those who calculate need us

_ current machine status
_ Expertise for general electrical overhaul
_ Control cabinet + control panel
_ PLC S7 control system
_ compactPRESS
_ Complete electrics + installation
_ Handover + acceptance with safety check
_ Training + service + spare parts



Fig. 3

Presses and punching machines are durable capital goods whose life cyclecontrol, peripherals, actuators and sensors. Why always think about a new machine when the old one can be used for a whole when there is still a lot of money to be made with the old one at modest cost!

This solution also has tax advantages.

Towards customers and end users, a reconditioned automatic punching press acts as an as an image-enhancing reference object just as well as a new one! An optimally overhauled automatic punching press is in no way inferior performance and appearance of a new one!

Whether electronics or mechanics, with UNiDOR and its partners you are in good hands when it comes to modernization!

**A general overhaul is always worthwhile.**

## 1. Status & Expertise

**First, the machine status is determined, then the concept for modernization is...**

We determine the current status of your machine. In a subsequent expert discussion, we then show you the various options for a global refurbishment and subsequent modernization.

In an expert report, we describe all expenses, work processes and provide a detailed schedule for the project.

## 2. Realization

**... followed by the conversion and commissioning on a fixed schedule...**

The top priority of the general overhaul is a short interruption to the machine's operation.

From project planning, the timely scheduling of all new units and components, the complete pre-assembly of the control cabinet and operating unit, the rapid conversion on site to the commissioning and trial operation of the machine, we have experienced project management and a well-coordinated, qualified team of specialists.

## 3. Handover and operation

**... and finally the handover of the machine and control system to you**

We take particular care when handing over the machine to your maintenance or production department: Together with your authorized employees, we carry out the acceptance test, the proof of function, performance and conformity, including a comprehensive safety check (the current safety standards BG, EN.... always apply to our work). All relevant processes and data are recorded in an acceptance report.

Training, long-term service agreements and a spare parts package round off the modernization.

## More information:

**Contact person:**

Jürgen Kasper
Tel: +49 7231/315242
E-Mail: juergen.kasper@trsystems.de

## References

Our users include leading, well-known manufacturers from the automotive, electrical and medical industries as well as a large number of their suppliers.

# Overview - Sensors

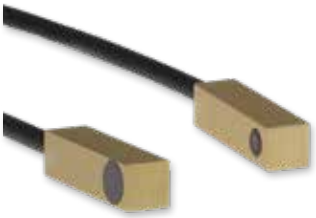
## Sensors

Very close to the action Sensors mechanical variables such as ...
_ Strength
_ Pressure
_ Sound
_ Vibrations
_ Paths
_ Positions
_ Motion
... into digital or analog signals.
They are the basis for precise visualization, optimization, measurement, control and logging of all stamping and of all punching and forming processes. Our sensors have been specially developed for punching and forming.
Unidor supplies a wide range of sensors in various designs, complete with the appropriate mounting equipment.

## Digital single-beam sensors



**Fork light barriers**



**Split light barriers**



**Bar light barriers**

## Digital multi-beam sensors



**Variable fork light barriers**



**Fork light barriers**



**Frame light barriers**

## Reflex scanner



**Reflected light barriers/fiber optics**

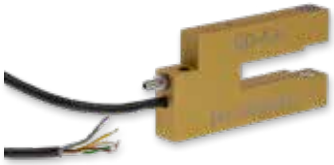


**Reflected light barriers**

## Analog Sensors



**Eddy current sensors**



**Analog fork light barriers**

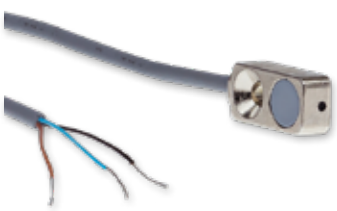


**Analog frame light barriers**

## Digital, inductive sensors



**Bar shape**



**Cuboid shape**

## Piezoelectric sensors



**JZT 127**



**PSA**



**QMD**

## Other sensors



**Feeler pin GM**



**Contrast detection**

# smartProtection

## The low-cost monitoring devices:

Plug it in, switch it on and start checking and monitoring tools and machines: it's all very easy.

In many thousands of applications for complaint-free service to protect tools and machines.

# Press force measuring device PKM 02

## Areas of application: Press force monitoring

_low-cost press force measuring device
_Mounting variant
_Quick and easy installation
_Easy to operate
_Continuous monitoring
_2 measuring channels
_Peak value memory



# smartPKM

_ 2-channel press force measuring system with min/max monitoring
_ Min/max monitoring also active without trigger signal
_ Graphic event display
_ Touch operation
_ Integrated user administration
_ Tool memory for 1,000 tools (alphanumeric)
_ Operating system WIN 10IoT® Ent. 2019
_ Data backup on USB stick
_ 1 cam input (trigger signal)
_ 1 clutch input
_ 1 Stop output
_ PRK Channel and totalizer display
_ Angle display (virtual encoder)
_ Display of the current stroke rate
_ 2x JZT 127/S pressing force sensors (optional)




# smartDIE-PRO 6

**6-channel digital tool protection with teach-in function and graphic event display**

Secure hardware, secure software. This dual security concept concept ensures maximum system availability and problem-free function. Redundant, fault-tolerant data storage management and intelligent power control ensure an extremely secure system.

All at a price that will convince you of our entry-level system for tool monitoring.



_ Inexpensive monitoring system
_ Quick and easy installation
_ Fully equipped with sensor connection and cam socket
_ Monitoring of multiple signal changes per hub
_ Multi-stroke monitoring
_ Inversion of the input signals
_ Automatic sensor type detection
_ Monitoring the intrinsic safety of sensors and cams
_ 8-digit preset counter
_ Stop the machine at a specified quantity
_ Teach-in mode for different types of monitoring
_ Error image retention
_ Bridging tool protection
_ Operator guidance via touch screen
_ Language switching German/English/French

# Force amplifier

The UNDOR charge amplifiers are high-precision measuring amplifiers on which all types of piezoelectronic sensors can be operated. This allows 4-channel measurements of force, tonnage, pressure, acceleration, vibration and torsion to be realized. The high sampling rate and high resolution enable the evaluation of very fast processes. The robust aluminum housing enables use in harsh industrial environments and guarantees reliable and durable functionality.

# LVCnet digital charge amplifier

The LVCnet charge amplifier cassette is a digital 2/4-channel charge amplifier with integrated multiprotocol fieldbus interface for measuring force, tonnage, pressure, acceleration, vibration and torsion using piezoelectric sensors.

The high sampling rate and high resolution enable the evaluation of very fast processes for all types of piezoelectric sensors.

The robust aluminum housing for DIN rail mounting allows the LVCnet to be used in harsh industrial environments and guarantees reliable and long-lasting functionality.

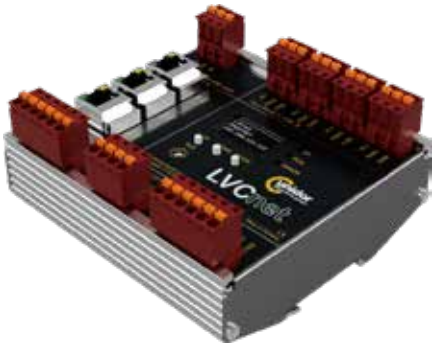
The low drift of the input stages and the digital processing of the charge signal are very precise and therefore also allow quasi-static measurements.

The product has analog outputs that allow it to be used without a fieldbus. In this operating mode, the digitized charge signal is made available again as an analogue signal (+/-10V) via a 16-bit DAC for processing by higher-level control systems. In this operating mode, triggering takes place via one of the 4 available digital inputs.

The integrated digital outputs make it possible to implement trigger monitoring, wire break monitoring and min/max monitoring of the sensor signals independently of a higher-level controller.

The status of the device and all I/O interfaces can be visualized via the integrated OLED display and the associated buttons.

This offers the advantage that, for example, the commissioning engineer can check the device status, IP address, piezo inputs, digital inputs and outputs, as well as the analog outputs.



# Components / Standalone devices

## LVCpro 02-S Charge amplifier

### LVCpro 02-S suitable for dynamic and quasi-static measurement processes.

With the newly designed, compact LVCpro 02-S charge amplifier cassette, multi-channel measurement of the press force can be carried out cost-effectively using piezo sensors. Evaluation can be carried out via any higher-level control system with analog input, e.g. Unidor systems (powerPRESS & compactPRESS) or external PC and PLC systems.

### Applications

For machines and devices to measure dynamic and quasi-static forces, preferably in press construction. The required piezo sensors are supplied ready assembled in various designs by TRsystems GmbH, Unidor system division.

### Advantages

_ Easy installation and wiring
_ 24 VDC supply voltage
_ 2 measuring channels
_ Peak value and instantaneous value outputs (2+2)
_ Switchable filter for suppressing interference
_ Adjustable amplification via code switch
_ Low-impedance analog signal outputs
_ Simple connection of signals and encoders on the front panel



## Digital charge amplifier PSA4eC

The Piezo Signal Amplifier PSA4 is a digital 4-channel charge amplifier with integrated EtherCAT fieldbus interface for measuring force, tonnage, pressure, acceleration, vibration and torsion using piezoelectric sensors.

The high sampling rate and high resolution enable the evaluation of very fast processes for all types of piezoelectric sensors.

The robust aluminum housing and IP67 protection class allow the PSA4 to be used in harsh industrial environments and guarantee reliable and long-lasting functionality.

The low drift of the input stages and the digital processing of the charge signal are very precise and therefore also allow quasi-static measurements.

### Advantages

_ Very large measuring range
_ High accuracy
_ Very fast measurement
_ EtherCAT



# Digital charge amplifier PSA4T

The Piezo Signal Amplifier PSA4T is a digital 4-channel charge/temperature measuring amplifier with integrated multi-protocol fieldbus interface for measuring force, tonnage, pressure, acceleration, vibration and torsion using piezoelectric sensors.

The high sampling rate and high resolution enable the evaluation of very fast processes for all types of piezo sensors. The combination of charge and thermocouple amplifiers makes the amplifier particularly suitable for use in the injection molding industry and mechanical engineering.

The integrated thermocouple measuring amplifiers are suitable for type J or K thermocouples.

They have wire break detection and are already calibrated at the factory. The measured value is output (configurable) in °K or °C. A "substitute value" or error value can be configured for wire break detection.

The robust aluminum housing and IP67 protection class allow the PSA4T to be used in harsh industrial environments and guarantee reliable and durable functionality.

The extremely low drift of the input stages and the digital processing of the charge signal are very precise and therefore also allow quasi-static measurements.

The multiprotocol fieldbus interface allows all Ethernet-based fieldbuses such as EtherCAT/Profinet/POWERLINK/Ethernet IP as well as Profibus to be used. The desired fieldbus can be easily (pre-)set by the customer using a code switch or configuration via the diagnostic interface.

## Advantages

_ Very large measuring range
_ High accuracy
_ Very fast measurement
_ Oversampling
_ EtherCAT, Profinet, Powerlink, Ethernet IP, Profibus



# ioController

**The turbo for automation, ultraspeed automation as an active Bus Terminal or embeddedUNIT**

Automation is increasingly demanding faster and more complex processes. As a result, the available control systems are increasingly reaching their technical and economic limits. As a rule, however, the ultra-speed requirements do not apply to the entire control system, but only to certain functional areas.

The ioCONTROLLER can be quickly mounted and easily installed using a mounting rail and is available in two versions:

ioCONTROLLER multi (c-BoxM)

ioCONTROLLER digital (c-BoxD)

**Accelerates every PLC by a factor of 100**

The ioCONTROLLER sets new standards in ultraspeed automation as an active Bus Terminal or embedded UNIT. While PLC systems today achieve 2,000 I/O handling operations per second, the ioCONTROLLER, for example, generates 200,000 analog measurement values in the same time, making it around 100 times faster than any PLC.

If these areas are isolated and replaced by the ioCONTROLLER as an independent subsystem, there are significant advantages:

_ Ultra-fast processes where this makes sense

_ Maximum relief of the control system

_ Shorter project planning due to more transparent software

Stand-alone control unit or perfect partner for the PLC, if it has to be ultra-fast, highly accurate and extremely flexible, then the ioCONTROLLER is just the thing.

## ioCONTROLLER digital/multi (c-BoxD/c-BoxM)

The ioCONTROLLER was specially designed for fast, analog and digital signal processing and can be cascaded as required as a bus terminal. It is equally suitable for stationary and mobile use.

**Up to 200x oversampling**

It has 12 UltraSpeedProcessing analog inputs with 16-bit resolution including sign. The maximum sampling rate of the AD converters is 200 kSPS per channel or 5µs/sample: i.e. a real sampling rate of 200 kHz. This is unprecedented precision and dynamics in analog signal processing. These impressive response times are based on the direct logical linking of all inputs and outputs via FPGA in conjunction with a high-speed controller. 200 measurements per PLC cycle corresponds to an oversampling of 200. Due to the enormous amount of data, it is possible to reduce the oversampling to 100 kSPS or 50 kSPS. In addition to the current measured values, the ioCONTROLLER also generates intelligent process variables such as mean value, min/max value and difference value (range) per PLC cycle.

The process variables are stored in Process Data Objects PDOs. Fixed and freely configurable PDOs are available for this purpose. Fixed PDOs are, for example, the measured values of the oversampling of analog inputs 9...12. Free PDOs can be filled with intelligent variables as required by the user. In contrast to the fixed PDOs, the resulting total size of the free PDOs is variable.

As a standalone embedded UNIT, it also operates entirely without a PLC. As a standalone controller, the ioCONTROLLER is suitable for almost any compact real-time application, especially when high-speed signal processing of analog signals is essential.

In combination with an industrial PC, the ioCONTROLLER is the perfect hardware for small to medium-sized, extremely fast automation systems:

_ Taxes

_ Positioning

_ Measure & control

_ Controlling, monitoring, checking and testing

The following interfaces are available for communication with the peripherals:

_ EtherCAT

_ PROFINET

_ PROFIBUS

This means that the ioCONTROLLER can be easily integrated into almost any process or system.

The connection to the PLC is made by cable in terms of hardware and by Device Description File in terms of software. The PLC application and ioCONTROLLER application communicate with each other without any problems.

Each communication profile has its own device description file, which is loaded as open source software together with the respective description on the web.



# Service

**Do you have questions or need help?**

You can reach our service department at:

Service manager

**Michael Huschka**
Tel: +49 7231/3152-33 | Mobile : +49 172/9974140
E-Mail : michael.huschka@trsystems.de

Service is very important to us. With us, service begins where it ends with others, and you can continue to count on us even after successful commissioning and instruction of your personnel, thanks to our highly motivated, qualified team both in-house and on site.

unidor - we make things different -- but always better

Service around the product, from application consulting to commissioning and training to service. unidor is simply more than the sum of its products.

## Remote maintenance

Remote maintenance enables us to access your compactPRESS systems. With the help of this diagnostic option, the causes of faults can be localized online and software changes or updates can be carried out. Remote maintenance enables us to take action on system errors and problems very quickly. Experience has shown that costly on-site service calls can often be avoided. Remote maintenance can also considerably reduce system downtimes. This saves you considerable time and money. Remote maintenance requires an ISDN modem integrated in the cP controller and a telephone connection. Alternatively, you can order a USB remote maintenance stick from us, which gives you and us temporary access to the control system via a "wireless connection".

## Training program

We offer a comprehensive training program that we can flexibly adapt to your needs. The following units are available individually or in combination

_ Operator and set-up training
_ Maintenance training courses
_ Technology training courses

The training course can be held at Unidor in Pforzheim or directly at your premises. For inquiries and further information, please call +49 7231 3152-0 or send an e-mail to unidor@trsystems.de

## Maintenance contract

As part of a maintenance contract, we carry out preventive maintenance and, if necessary, calibration on our control systems at regular intervals. The service modules Remote Maintenance & Free Updates are automatically included for you when you conclude a maintenance contract. The service spectrum of the maintenance contract includes the following points:

_ Inspection of the control systems,
  Carrying out the actual condition analysis
_ Systematic maintenance according to maintenance list
_ Determining the required spare and wear parts
_ Software update if necessary and appropriate
_ Performing and logging a data backup
_ Final meeting / final protocol /
  Determination of further measures

We will be happy to prepare a customized offer for you.

# Notizen

# Germany

TRsystems GmbH
Systembereich Unidor
Stammhaus Pforzheim

Freiburger Straße 3
D-75179 Pforzheim

Tel.: +49(0)7231-3152-0
Fax: +49(0)7231-3152-99

unidor@trsystems.de
www.unidor.info

# Sales addresses Germany

## VC West

**Mirco Wolf**

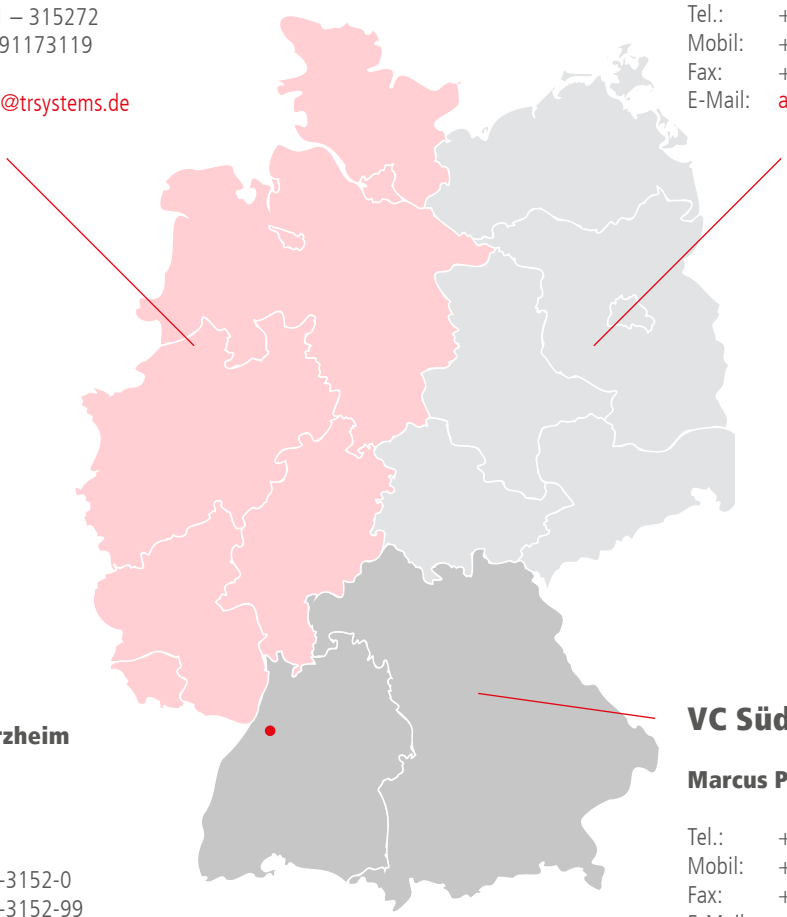
Tel.: +49 7231 – 315272
mobil: +49 160 91173119

E-Mail: mirco.wolf@trsystems.de

## VC Ost

**Andreas Eger**

Tel.: +49 7425 228-505
Mobil: +49 172 9962824
Fax: +49 7425 228-35 505
E-Mail: andreas.eger@tr-electronic.de



## Unidor

**Stammhaus Pforzheim**

Freiburger Straße 3
D-75179 Pforzheim

Tel.: +49 7231-3152-0
Fax: +49 7231-3152-99
E-Mail: unidor@trsystems.de

## VC Süd/Vertriebsleitung

**Marcus Pleßnitzer**

Tel.: +49 7231-315262
Mobil: +49 172 9255866
Fax: +49 7231-315248
E-Mail: marcus.plessnitzer@trsystems.de

Stand: 11/2023

# Sales – Export

**Sascha Schäfer**
Phone +49 7231 315271
Mobile: +49 172 5994092
Fax: +49 7231 315248
E-Mail: sascha.schaefer@trsystems.de

# Europe

**AUSTRIA**
TR-Electronic GmbH
Tragösserstraße 117
A-8600 Bruck / Mur

Phone: +43 (0)3862-550 06
Fax: +43(0)3862-55006 33
info@tr-electronic.at

**CZECH Republic / SLOWAKIA**
**DEL A. S.**
Biskupsky dvur 1146/7,
Nove Mesto
CZ - 110 00 Praha 1

Phone: +420 566 657 111
E-Mail: tr-electronic@del.cz
Homepage: www.del.cz

**DANMARK**
TR-Electronic Danmark ApS
Hustedgardvej 22
DK-8722 Hedensted

Phone: +45 (0)75 89 06 03
Fax: +45 (0)75 89 06 36
cbj@tr-electronic.dk

**ESPAÑA / PORTUGAL**
Intertronic Internacional, S.L.
Azagador de la Torre, 67
E-46006 Valencia

Phone: +34 (96) 3 75 80 50
Fax: +34 (96) 3 75 10 22
info@intertronic.es
Phone: +41 (0)22-7 94 21 50
Fax: +41 (0)22-7 94 21 71
info@tr-electronic.ch

**FRANCE**
TR-Electronic France
56, Boulevard du Courcerin
F-77183 Croissy- Beaubourg

Phone: +33 (0) 16462-1313
Fax: +33 (0) 16462-2002
info@tr-electronic.fr

**GREAT BRITAIN**
BRUDERER UK LTD.
Unit 8, Hortonwood West
Telford, Shropshire, TF1 6AH

Phone: +44 (0)1582 560 300
Fax: +44 (0)1582 570 611
mail@bruderer.co.uk

**ITALIA**
Telestar S.r.l.
Via C. Colombo 13
I-22069 Rovellasca (Co)

Phone: +39 (0)2 96 74 02 68
Fax: +39 (0)2 96 74 02 73
telestar@telestar-automation.it

**NEDERLAND/BELGIQUE**
Hoffmann-Metalcare
Sedumweg 6
NL-3343 LL Hendrik-Ido-Ambacht

Phone: +31 (0)78-610 23 88
info@hofmann-metalcare.nl

**POLAND**
Stoltronic-Polska Sp.z.o.o
ul. Pontiatowskiego 9/4
PL-87-100 Torun

Tel. +48 56 651 0385
Fax: +48 56 651 0384
stoltronic@stoltronic.pl

**SUOMI**
OYE.Sarlin AB
P.O.Box 750
SF-00101 Helsinki 10

Phone: +358 (0 )950 44 41
Fax: +358 (0)9563 32 27

**SWEDEN**
Sjöarps Automationselektronik AB
Marieströmsvägen 15
335 32 Gnosjö
Sweden

Phone: +46 (0)70 624 32 35
tony@sae.se
www.sae.se

**SWITZERLAND**
TR-Electronic SA
14, Ch. Pré-Fleuri

CH-1228 Plan-les- Ouates/Genève
Phone: +41 (0)22-7 94 21 50
Fax: +41 (0)22-7 94 21 71
info@tr-electronic.ch

**TÜRKEI**
ÜNİVERSA İÇ ve DIŞ TİC. MAK. SAN. LTD. ŞTİ.
Cemal Gürsel Caddesi No: 11/7
TR-35600 Karşıyaka-IZMIR

Phone: +90 232 382 23 14
Fax: +90 232 382 23 24
info@universa.com.tr
www.universa.com.tr

## America

**BRASIL**
Autron Automação Indústria
Comércio Ltda.
Rua Cons. Brotero, 589 - 10°a
BR-04105-001 São Paulo - SP

Phone: +55 (011) 824-01 09
+55 (011)825-04 69
Fax: +55 (011) 825-23 83
info@ctecnolgia.com.br

**CANADA/Mexico**
TR Electronic Inc.
P.O.Box 2543 ,Station B
London , Ontario
N6A 4G9

Phone: +1 519 4 52-19 99
Fax: +1 519 4 52-11 77
customercare@trelectronic.com

**USA**
TR-Electronic
P.O. Box 4448
USA-Troy, MI 48099

Phone: + 1 248 244-2280
Fax: + 1 248 244-2283
customercare@trelectronic.com

## Asia

**CHINA**
TR-Elecronic(Beijing) CO., LTD
RM. 1613, Side A, Lucky Tower
No. 3 Dongsanhuan North Road
Chaoyang District
CN-100027 Beijing, P.R.China

Phone: +86 10 646 131 96
Fax: +86 10 646 135 51
lu.yu@tr-electronic.de

**JAPAN**
Unitechnology Co. LTD
Fuji-jingu Bldg. 902
1-11-6 Yokota
Atsuta-ku NAGOYA 456-0022

Phone: +81 52 678 8002
Fax:+81 52 678 8003
info@unitechnology.biz

**MALAYSIA/THAILAND**
Mongkol Engineering
Block 204
Hougang Str. 21
Singapore 530204

Phone: +65 648 13678
Fax: +65 648 13679
mongkol@singnet.com.sg

**SINGAPORE**
Globaltec Pte. Ltd
50, Bukit Batok Street 23
#06-27 Midview Building
Singapore 659578

Phone: +65 626 79188
Fax: +65 626 78011
globaltec@pacific.net.sg

## Middle East / Oceania

**AUSTRALIA**
BRUDERER PTY LTD.
Unit 18/2
Railway Parade
AUS-Lidcombe NSW 2141

Phone: +61 (0)29 749 2700
Fax: +61 (0)29 749 227

**ISRAEL**
DOR Drive Systems L.T.D.
P.O.B. 6 Kibbuz Einat
49910 Israel

Phone: +972 3 9007595
Fax: +972 3 9007599
sales@dor1.co.il

**TRsystems GmbH,**
**system area Unidor**
Freiburger Str. 3
D - 75179 Pforzheim

Tel. +49 7231 3152- 0
Fax +49 7231 3152- 99

unidor@trsystems.de
www.unidor.de

Last update: 07 / 2026
68105118 · UNI-V-PR-GB-0001v03
Subject to technical and design changes.
Hintergrund Titelfoto: ©kras99-fotolia.com