



IconTrust® - Safe TFT Indicators

# IconTrust® - You can trust!



IconTrust®

# Safe TFT-Indicators

**TFT Indicators in safety relevant processes**

When TFT based indicator systems are used as human-machine interfaces, they mainly make use of PC computer architecture to represent ergonomic graphic user interfaces.

For cost reasons, it is common to resort to standardised hardware and software PC components during the implementation of TFT indicator systems. Verification of potential indicator and visualisation errors is difficult.

For example, the trade mark rights of chip manufacturers do not allow for verification or expert appraisal of the micro codes of the CISC microprocessor in use today. For the visualization of safety relevant information or data input, the complexity of the indicator requires, however, additional measures, such as, monitoring and checking circuits, in order to comply with standards required by SIL (Safety Integrity Level).

**IconTrust® Technology**

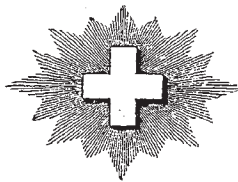
With IconTrust®, a technology is now available which monitors and reveals these errors using a circuit which is independent of the PC.

IconTrust® derives the data sets as a finger print of the information currently being displayed. In this way, discrete pieces of information can be monitored independently in various areas of the screen as graphics, symbols, text or colour coding.

Cost-effective IconTrust® technology is universally suited for all applications with safety relevant display of information, for example, in the cockpits of modern trains, in control rooms or manned surveillance systems. IconTrust® can be used as a panel PC, a TFT monitor and a projector. It can also be integrated easily as an add-on into existing devices.

SCHWEIZERISCHE EIDGENOSSENSCHAFT

EIDGEN. AMT FÜR



GEISTIGES EIGENTUM

PATENTCHRIFT

Patent Nr. 35464

9. November 1905, 7<sup>1</sup>/<sub>2</sub> Uhr p.

Klasse 61

Deutsche Tachometerwerke G. m. b. H., in Berlin (Deutschland).

Examples DEUTA Terminals with IconTrust®

# Experts from Experience

From the beginning the name DEUTA-WERKE has been synonymous with precision and robustness in indicator instruments. Throughout the company's history, innovation and tradition have gone hand in hand for over 100 years. It started with the motorcar, but soon afterwards, trains were using DEUTA speedometers. Using the eddy current principle, the 'drive shaft for locomotive speedometers' was developed and perfected based on two patents.



DEUTA Automobile speedometer

## Human Machine Interfaces for more safety

Precise indicator technology is the central theme running through DEUTA's product history. Examples include flight navigation, wind measurement and monitoring of engines, revolutions and machines. Today, DEUTA indicators and terminals travel the globe in high speed trains: safe displays as the interface between human and machine.



**MFT S11**  
**Multifunction Terminal**



**ESG 14**  
**Stepper Motor Indicator**

### **DEUTA-WERKE - Global integrity and security of information**

In collaboration with our business partners, increased awareness of the themes of system integration and project coordination forms the basis for ambitious project development, along with a strong consciousness of appropriate risk management. The skill of our staff as well as the reliability of our products means that the advice and expertise of DEUTA experts is sought in international task forces.

Knowledge of standards specific to industry sectors and countries, as well as approval procedures are as much part of the company's body of experience as knowledge of the current state of the art and a deep understanding of application areas and their particular requirements.



DEUTA Wind velocity indicator

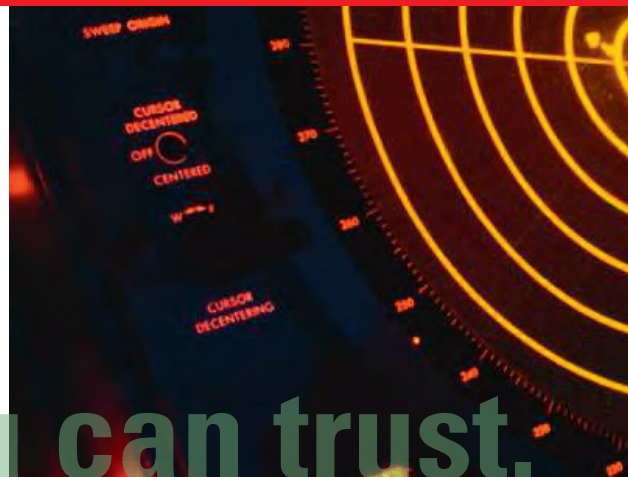


DEUTA Machine data  
collection terminal



IconTrust - You can trust.

# IconTrust® - You can trust.



*People make decisions based on what is displayed on TFT Panels; these decisions have consequences for the safety or endangerment of people and material property. If distorted process signals are displayed, accidents will happen. Safety can only be guaranteed when correct values are also correctly displayed. This is the task and the achievement of IconTrust®.*

#### **How safe are traditional TFT Indicators?**

There are many techniques in use today for safely displaying information on TFT Panels. Many, however, are not satisfactory. Potential errors remain undiscovered. These can originate from various error sources, i.e.:

- Data corruption during transfer
- Error in graphics control
- Error in visualisation software
- Data corruption in graphics memory
- Distortion caused by graphics processor or its software
- Unexpected performance of operating system
- TFT signal driver non-responsive
- Microprocessor in error status

#### **IconTrust® – the highest degree of safety**

**IconTrust®** is the solution for all TFT Panels which need to be safe and which therefore, must conform to a certain Safety Integrity Level (SIL). Included in this are indicators in the cockpit of modern trains, in control rooms or manned process monitoring stations



### From safe information to safe indicators

The safe circuit IconTrust® monitors dedicated areas on the TFT panel and distinguishes between safety and non-safety relevant information. To display areas of the screen containing critical safety information, rectangular windows are configured in IconTrust® as a monitoring area.



Up to 100 monitored areas on the TFT

IconTrust® can simultaneously and independently, monitor over 100 areas, including overlapping areas. When anomalies occur, a corresponding safety reaction is triggered.

For each individual area in each image refresh cycle in IconTrust®, the displayed image is analysed, the finger print is calculated and through the application of IconTrust® PLUS is compared with the value of the respective input signal.

The patent pending system IconTrust® ensures the information is demonstrably up-to-date and correct without the actual application for displaying the information being subject to a verification procedure. Because of this independence IconTrust® enjoys almost limitless applicability.

Safe display with **IconTrust®**  
not only in vehicles but also  
in control centres.

### Which input signals does IconTrust® monitor?

In principle, all types of input signals can be monitored with IconTrust® technology. These can be represented as symbols, needle instruments or bar graphs, letters, text or colour play. If required, it is possible to allow different screen representations for one and the same value of the same input signal (equivalent representations). Alongside, the configuration of an error counter for the delayed triggering of the safety reaction can be selected.

### IconTrust® – design

IconTrust® can be integrated as an option within the DEUTA MFT family. IconTrust® is integrated into the MFT appliances with no need for changes to dimensions or external interfaces. Externally, it is discernible only by an identification plate: the DEUTA MFT S11 is equipped with IconTrust® as standard.



### IconTrust® as Safety Upgrade

As a rule, panels and panel applications can be upgraded with IconTrust®. In the new DEUTA display generations, IconTrust® can be retrofitted later as a 'safety upgrade' easily and with a minimum effort.

Where the client is using PC technology but not yet using established DEUTA technology, the application can be ported to a DEUTA PC compatible platform. It can subsequently be upgraded and secured with IconTrust®. Safe indicators with IconTrust® in process monitoring, control centres and cockpits.



### **Simply safer**

Unlike conventional systems, IconTrust® offers more safety as the indicators in the safety areas of a TFT deliver a reliable representation of the determined values. The user can detect anomalies as soon as they occur. The functional safety requirements are implementable and verifiable up to the highest level.

### **Considerably more flexible**

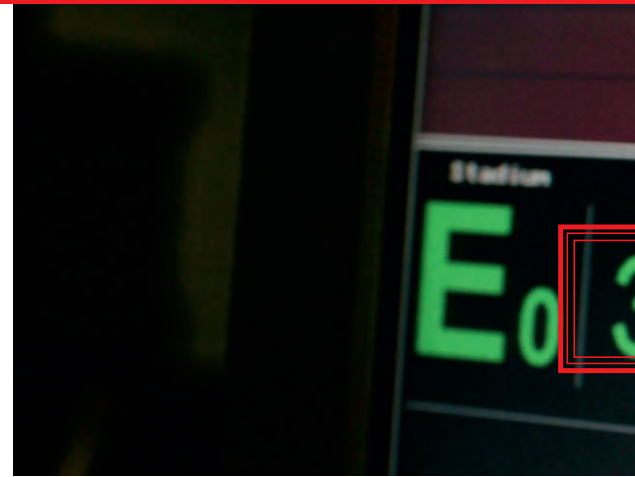
With IconTrust® display type and layout can also be modified in a flexible and uncomplicated way in safety relevant areas. If the application is in the process of being developed or adapted for a new requirement, safety can be reconfirmed without a lengthy qualification process.

### **Permanently more reliable**

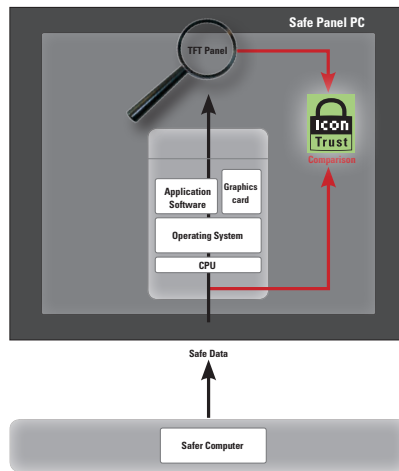
Through the independence of IconTrust®, DEUTA manages once again to combine the application of cutting edge technology and its associated, possibly short-term availability of components with long-term sustainable applications which require more investment.

**IconTrust®** is the safe, reliable yet flexible, cost-effective technology for use with TFT panels in situations which are critical to safety – and has been for decades now.

# Versions



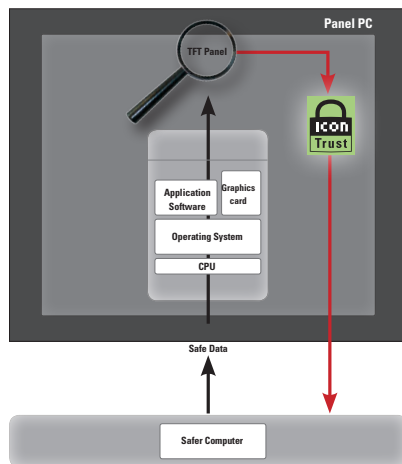
## IconTrust® PLUS



**With IconTrust® PLUS** data is safely displayed without software changes of the system structures. The panel PC receives the data; these are processed internally by the PC and displayed on the TFT using the corresponding application. Integrated into the PC, IconTrust® PLUS controls the image data of the defined monitored areas and activates the desired reaction. Since this protective mechanism functions independently of the complete system, it requires no additional monitoring through a computer unit. Panel PCs equipped with IconTrust® PLUS can be integrated as a compact unit into existing system environments.

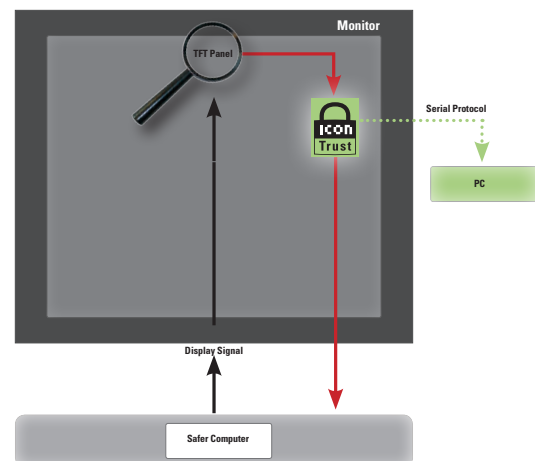


## IconTrust® *GENERICS*



In the IconTrust® *GENERICS* version illustrated above, the panel PC receives the safe data from a safe computer. The data is processed and displayed by the panel PC.

IconTrust® *GENERICS* monitors the displayed image areas on the TFT panel and transmits the fingerprint to the safe computer. The safe computer activates a defined reaction in case of error. In this way, IconTrust® *GENERICS* complements a safe data system with a safe display. If the system needs to go through an approval procedure, later system changes will require only that the modifications made to the safe computer be newly certified.



In this IconTrust® *GENERICS* version, the monitor receives the display signals as well as the monitored areas through the standard monitor interface of a safe computer. IconTrust® *GENERICS* checks the monitored areas and transmits the information simultaneously to the safe computer.

The system structure, applications and defined monitored areas are bundled on the safe computer. Monitored areas for dynamic applications with many process signals are easily adapted and software is easily updated. In this area too, IconTrust® *GENERICS* enables a simplified approval process.



*IconTrust - You can trust.*

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