DEUTA

Multifunctional Terminals

IconTrust® – You can Trust.

DEUTA-WERKE

Technology under Control

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»DEUTA Multifunctional Terminal – The Future of Vision«

The future of longevity lies in the vision ...
Sustainable innovations form the brand essence of our products. The huge experience and creative potential of our employees are the drivers of progress.

DEUTA IPC-based terminals were first used on rail vehicles in 1994. This long-term experience flows into our visionary product ideas.

Terminals from DEUTA are synonymous with a forward-looking generation of displays that are always in touch with the latest trends, yet still remain flexible and economical.

During the development of our MFTs, we make the latest technology available for applications in rail vehicle traffic. SIL-capable terminals with patented IconTrust® technology are the global standard in terms of driving safety for displays which correspond to the safety standards of today and tomorrow.

... with unique vertical integration
Product development is therefore reliably supported by our accredited test laboratory. The state-of-the-art laboratory fulfils the highest technical standards and offers a wide range of testing options, such as electro-magnetic compatibility and climatic and mechanical influences, for instance.

As a supplier of operating and display devices with long-term delivery commitments, DEUTA has been manufacturing circuit boards at the company's in-house production facility at its main site since the mid-1990s. From PCB layout to logistics, all milestones are part of our certified ISO 9000:2015 and IRIS processes.

... optically bonded
New terminal ranges from DEUTA are optically bonded as standard. This additional finishing process optimises image quality and reading angle by increasing the contrast and minimising reflections.

... and Safety-Level
DEUTA offers the Multifunctional-Terminals optional with the safety technologies IconTrust® for the safe data display up to SIL2 and SelectTrust® for the safe data entry up to SIL2.

»IconTrust® & SelectTrust® -

The worldwide leading solution for SIL terminals!«

IconTrust® & SelectTrust®

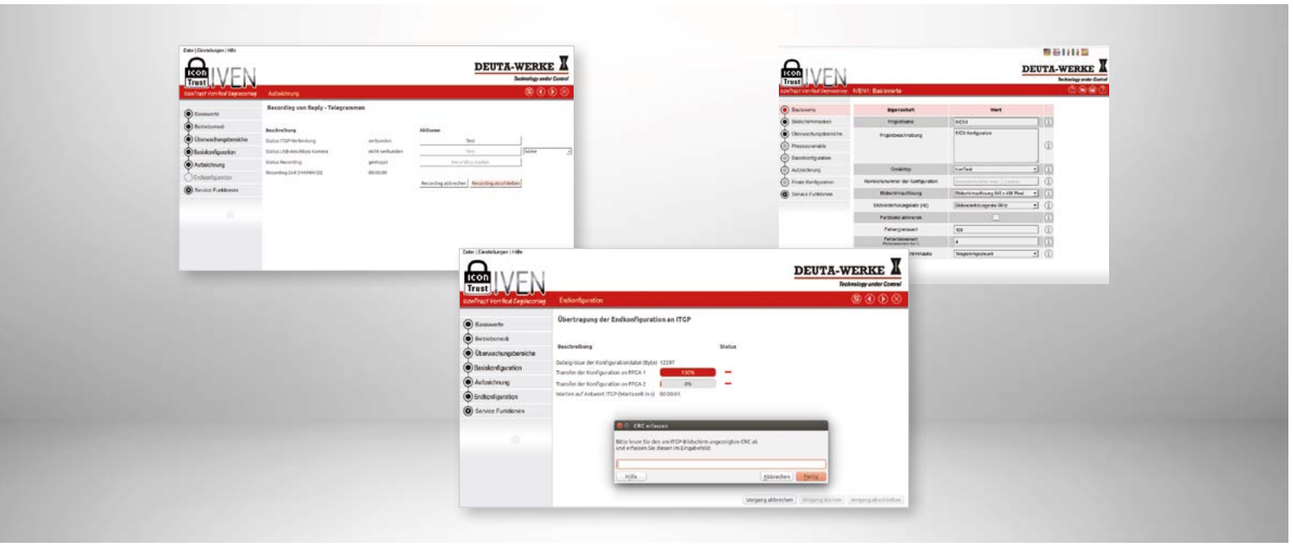
Within the scope of Baseline 3 and its safety requirements for technical interoperability, main focus is on the mandatory specification of the Driver Machine Interface (DMI) as SIL component.

The monitoring of valid display and input areas on a touch panel as required in Subset-091 is monitored with IconTrust® and SelectTrust® on DEUTA Multi-Functional Terminals. These safety functions detect representation errors of the unsafe PC system and differentiate between valid and invalid input areas on the TFT.

The SelectTrust® function checks the activation or release of the touch area as well as the single or permanent transmission of the activation. Our technology thus complies with the requirements of Subset-091 with a safe, flexible and cost-efficient solution.

IconTrust® & SelectTrust®

- Proved safey technology in many worldwide projects
- Can be implemented and demonstrated up to SIL 3 and completely appraised upon request
- Monitoring unit independent from PC with long service life
- Can be easily retrofitted as add-on in every terminal



»IVEN - Makes SIL configuration of terminals easy!«

Application changes and project-specific adaptations can be easily implemented with the universal IVEN configuration tool. Safety-relevant changes of the supervised areas or adaptations to new display parameters can be configured project-specifically with the engineering tool IVEN and prepared for assessment.

IVEN does not only check the configuration for consistency but provides also a preview of the configured supervised areas. In doing so, IVEN records all process values with a corresponding screen shot, transmits the configuration to the IconTrust® module and automatically generates a PDF-validation report as documentation for the assessment.

IVEN

Select the Trust technology and the screen parameters → pixel accurate definition and configuration of SIL relevant supervision areas → determination and storage of check sums for all permitted elements → transmission of data and configuration to the IconTrust® board

IconTrust® – for safe display

IconTrust® monitors predefined areas on the TFT display and differentiates between valid and invalid information. IconTrust® uses a safe computer to transmit the data to the panel PC, where they are processed and displayed. IconTrust® monitors the represented screen areas on the TFT display and transmits the confirmation back to the safe computer. The comparison occurs in the safe computer, e.g. in the EVC (European Vital Computer).

SelectTrust® – for safe touch input

SelectTrust® is the first certified technology worldwide to demonstrably enable safe manual input of information via touch screen or a softkey.
The entry and visualisation at this position are checked in the functional safe SelectTrust® solution.
In case of total correctness, a functionally safe entry action will be transmitted to a safe computer.

Independent and cost-effective solutions

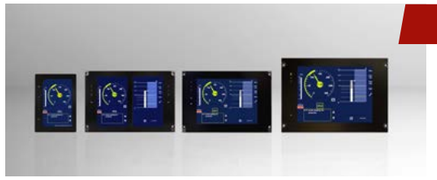
Along with IconTrust®, SelectTrust® provides a cost-effective solution for safety consideration respectively for the proof of compliance with current safety requirements. Both monitoring systems work fully decoupled from the display- and operating function making them unique in their mode of operation.

Product Overview

D-SmartView®

High quality and sophisticated

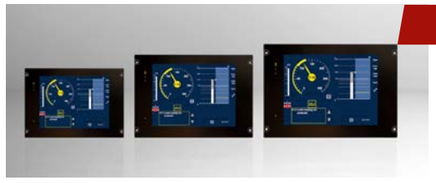
- 12.1“
- Quadcore INTEL® processor ATOM, 4x 1,6 GHZ
- PROFINET CC-B/PROFIsafe
- Standard VESA mount



D-EcoView®

High performance with low power consumption

- 8“, 10.4“, 12.1“
- IMX8X Quadcore ARM64 A35, 1.2GHz
- IconTrust® & SelectTrust®



D-PowerView®

Maximum power

- 10.4“, 12.1“, 15“
- Intel Atom x64 13E 1.5 GHz Quad Core
- IconTrust® & SelectTrust®

Wide-Terminals

More Space for your Information

- 12.1“ Wide
- D-EcoView®: IMX8X Quad Core ARM64 A35, 1.2GHz
- D-PowerView®: Intel Atom x64 13E 1.5 GHz Quad Core
- IconTrust® & SelectTrust®

MFTR

Redundant display solutions

- Two redundant 8“ colour terminals
- 10.4“ total surface
- ARM, 500 MHz processor
- Optimised for ETCS and LZBB

DAT

Individual & redundant

- 8“ WVGA terminals
- ARM, 500 MHz processor
- optional with patented IconTrust® safety technology

MFT5

The successful compact terminal

- 6.5“
- Geode, LX 800, 500 MHz processor
- Resistive touch screen

MFT6

Space for a lot of information

- 12.1“
- Geode, LX 800, 500 MHz processor
- Platform concept

MFTS11

Safety and reliability

- 10.4“
- Geode, LX 800, 500 MHz processor
- IconTrust® & SelectTrust®

MFT102

Flexible, powerful and low-maintenance

- 10.4“
- AMD Fusion, Dual Core processor
- Approved for „EBuLa“

Head-Up Display

Redundant display solutions

- Important travel data at a glance
- One generic HUD platform for all railway projects
- HUD & IconTrust® = SIL2

»D-SmartView® -

As Elegant as a Consumer Tablet with PROFINET & PROFIsafe«

D-SmartView®

In modern rail vehicles, the driver's cab terminal is not only a control instrument in the driver's line of vision, but also a visual component in the overall impression of the vehicle. The D-SmartView® terminal underlines the modernity of the vehicles with its very flat design, narrow rounded display edges and a brilliant optically-bonded surface.

The D-SmartView® terminal will not longer be embedded inside the surface of the driver's desk, as it is designed to be mounted on a Vesa monitor system. Depending on the seating position and size of the drivers, the height of the terminal can be positioned variably.

PROFINET

The unit is equipped with PROFINET:

- Compact field unit
- CC-B support
- Dual port
- PNIO_version: V2.43
- Status LED for „DCP signal"

PROFIsafe (only MFTS204)

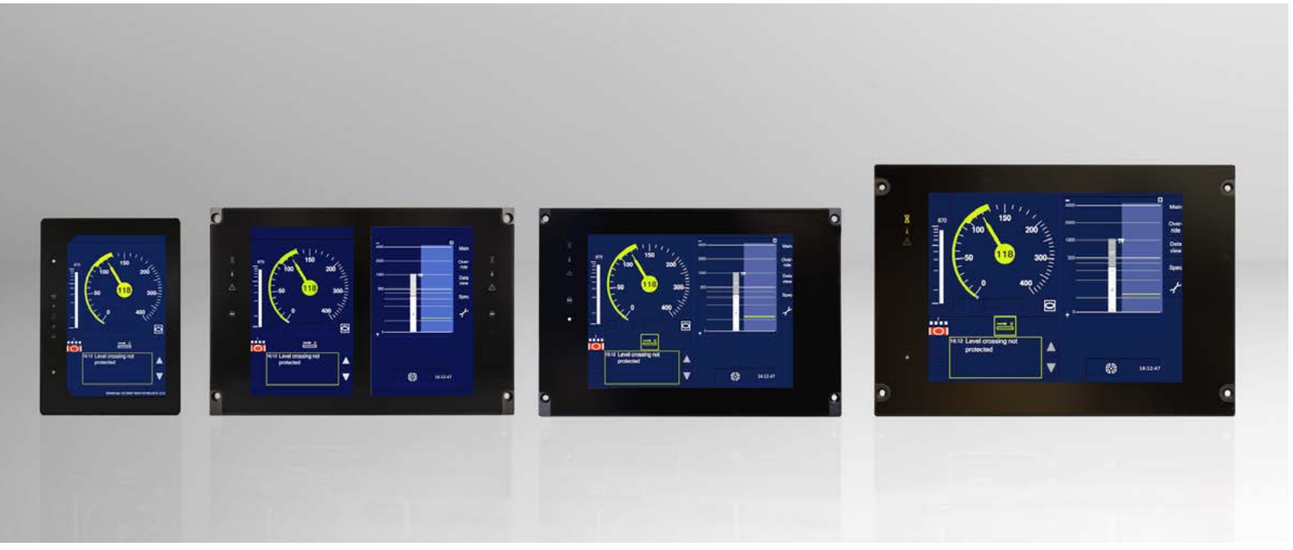
- PROFIsafe Version: V2.4 and V2.6
- Adress Type 2
- Without iPar-Server support



D-SmartView®	
Display backlight	LED backlight
Dimmable lighting	0 to 800 cd/m2
Status LEDs	3
CPU/clock frequency	Quadcore INTEL® ATOM processor®, 4x 1.6 GHz
RAM memory	8 GB
Graphics	INTEL® HD Graphics 500
Bulk memory	up to 64 GB
Additional controller	Environment Controller
Buzzer	yes
Temperature management	yes
Ambient light sensor	front side
Voltage	prepared for external 24 VDC power supply unit compliant with railway standard
Power consumption	typ. 25 W
Display type/size	Colour TFT / 12.1"
Display resolution, colour depth	1024 x 768 bit
Read angle	±85° in horiz. (left -, right +) and vert. (lower -, upper +) direction
Ethernet	1x 10/100 Base T as M12 d-coded[1)] 2x PROFINET plug connector
PROFINET	2x CC-B, dual port, M12 D-coded PNIO_version: V2.34, status LED for "DCP signal"
Audio out	Class-D stereo audio amplifier min. 5 W at 8 Ohm
USB interfaces	2 x USB2.0 (M8 a-coded[1)])
Vehicle bus	1x Ethernet, 1x PROFINET, on request: CAN, MVB, RS422, RS485
Device coding	4 codings possible
Touch screen	capacitive, optically bonded
Front dimension (W x H)	318 mm x 234 mm
Weight	approx. 3.6 kg
Protection category front/rear	IP42 (resistant to dusts and water sprays)
Operating temperature	full functionality: -25°C to +55 °C
Safe Supervision Function (optionally)	with IconTrust® up to SIL2 with SelectTrust® up to SIL2
Operating system	LINUX
Applications	variable, depends on area of application
Mounting	prepared for the VESA 75 Standard
Standard	EN 45545, EN 50155, EN 50121-3-2, EN55011, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6

[1)]Available as accessories from DEUTA: Connector for 5-pole power supply, Scha151 redundancy switch, USB service cable - M8 to standard USB adapter, cable length 1 m, Ethernet service cable - M12 to RJ45 adapter cable, cable length 0.5 m, when used as redundant dual display: Vehicle bus connector cable DSUB9 4/40 UNC, ETH/ETC M12/M1





»D-EcoView®/D-EcoView® R Trust - Sustainability in Focus«

D-EcoView®

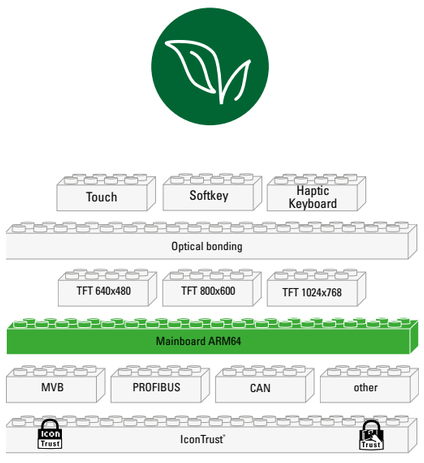
High performance, low power consumption and long-term availability are the three goals we have combined to make the D-EcoView®.

The IMX8X quad core A35 processor with 64 bit is synonymous with high performance, long-term availability but with a 30% lower power consumption in comparance with Intel ATOM or AMD Fusion and groundbreaking security features.

The D-EcoView® is designed as modular system. Inside the D-EcoView®, the ARM mainboard forms the basis for a wide range of terminal variants. The position of the interfaces remains the same on every terminals size.

D-EcoView® Trust

The D-EcoView® Trust Terminals are optionally available with the safety functions IconTrust® and SelectTrust®.



D-EcoView®

Display type	Colour TFT 8" / 10.4"/ 12.1"
Display resolution	480 x 800 / 1024 x 768/ up to full HD
Display backlight	LED backlight
Dimmable lighting	0 to 1,000 cd/m²
Status LEDs	4 LEDs
Ambient light sensor	front side
Input unit	capacitive touch
CPU/clock frequency	IMX8X Quad Core ARM64 A35, 1.2GHz
RAM memory	3 GB RAM DDR4
Flash memory	64 GB SD card
Extensibility	upon request
Additional controller	Environment Controller
Voltage range	24 VDC to 110 VDC (± 30%)
Ethernet interfaces	2x 10/100 BaseT (M12 d-coded)[1)]
USB interfaces	2 x USB2.0 (M8 a-coded)[1)]
Vehicle bus I/O	RS 422/485, MVB, CAN, RS232, PROFIBUS
Device coding	4
Audio out	1 x 10 W, 8 Ohm, amplifier
Weight	approx. 3 kg
Protection category front/rear	IP65 / IP30
Temperature range operation	-25 °C to +70 °C classification
Temperature range for storage	-40 °C to +85 °C
Safe Supervision Function (optional)	with IconTrust® up to SIL2 with SelectTrust® up to SIL2
Operating system	LINUX
Project software	DEUTA (QDMI) or customer specific
Application software	In accordance with ETCS Baseline 3 and national train protection requirements
EN standards	EN45545-2 2013, EN50016, EN50155, EN50121, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61373
CE	yes

[1)] Available as accessories from DEUTA: Connector for 7-pole power supply, Scha151 redundancy switch, USB service cable - M8 to standard USB adapter, cable length 1 m, Ethernet service cable - M12 to RJ45 adapter cable, cable length 0.5 m, when used as redundant dual display: Vehicle bus connector cable DSUB9 4/40 UNC, ETH/ETC M12/M1

»D-PowerView® -

High Performance Displays«

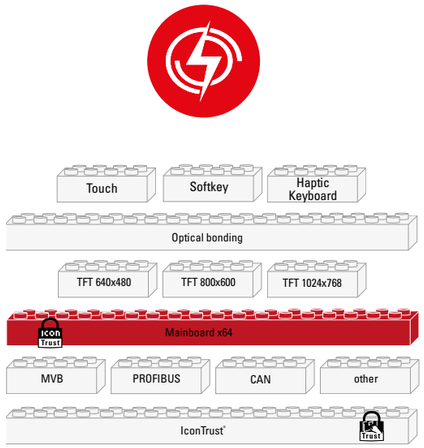
D-PowerView®

In the D-PowerView®, the x64Intel Elkhart Lake delivers the performance required for demanding applications. Its 8 GB RAM memory capacity delivers sufficient future-proofing.

The D-PowerView® is designed as modular system. Inside the D-PowerView®, the x64 mainboard forms the basis for a wide range of terminal variants.
The position of the interfaces remains the same on every terminals size.

D-PowerView® Trust

The D-PowerView® Trust Terminals are optionally available with the security functions IconTrust® and SelectTrust®.



D-PowerView®

Display type	Colour TFT 10.4" / 12.1"/ 15"
Display resolution	480 x 800 / 1024 x 768/ up to full HD
Display backlight	LED backlight
Dimmable lighting	0 to 1,000 cd/m²
Status LEDs	4 LEDs
Ambient light sensor	front side
Input unit	capacitive touch
CPU/clock frequency	Intel Atom x6413E series 1.5 GHz Quad Core
RAM memory	8 GB RAM DDR4
Flash memory	64 GB SD card
Extensibility	upon request
Additional controller	Environment Controller
Buzzer	70 dB measured at 50 cm
Voltage range	24 VDC to 110 VDC (± 30%)
Power consumption	< 20 W
Ethernet interfaces	2x 10/100 BaseT (M12 d-coded)[1]
USB interfaces	2 x USB2.0 (M8 a-coded)[1]
Vehicle bus I/O	RS 422/485, MVB, CAN, RS232, PROFIBUS
Device coding	4
Audio out	1 x 10 W, 8 Ohm, amplifier
Weight	approx. 3 kg
Protection category front/rear	IP65 / IP30
Temperature range operation	-25 °C to +70 °C classification
Temperature range storage	-40 °C to + 85 °C
Safe Supervision Function (optional)	with IconTrust® up to SIL2 with SelectTrust® up to SIL2
Operating system	LINUX
Project software	DEUTA (QDMI) or customer specific
Application software	In accordance with ETCS Baseline 3 and national train protection requirements
EN standards	EN45545-2 2013, EN50016, EN50155, EN50121, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61373
CE	yes

[1] Available as accessories from DEUTA: Connector for 7-pole power supply, Scha151 redundancy switch, USB service cable - M8 to standard USB adapter, cable length 1 m, Ethernet service cable - M12 to RJ45 adapter cable, cable length 0.5 m, when used as redundant dual display: Vehicle bus connector cable DSUB9 4/40 UNC, ETH/ETC M12/M1

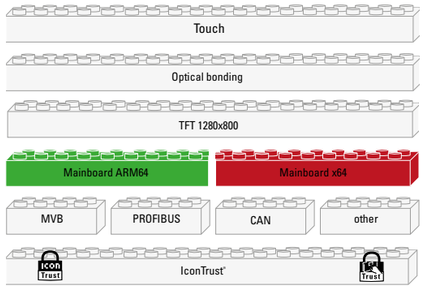
»DEUTA Wide Terminals -

Everything at a glance!«

More Space for your Information

DEUTA Wide Terminals feature the compact installation dimensions of a 10" housing combined with a 12.1" display. The optically bonded surface offers space to display travel and vehicle data in parallel.
The Wide Terminals are optionally available with the IconTrust® and SelectTrust® safety functions to ensure secure display and input.

Depending on your requirements, the high-performance Intel Quad Core Elkhart Lake x64 or the sustainable IMX8X Quad Core A35 64-bit processors are available.



DEUTA Wide Terminals - 12.1"

Display type	Colour TFT 12.1" Wide
Display resolution	1280 x 800
Display backlight	LED backlight
Dimmable lighting	0 to 1,000 cd/m²
Status LEDs	4 LEDs
Ambient light sensor	front side
Input unit	capacitive touch
CPU/clock frequency	D-EcoView®: IMX8X Quad Core ARM64 A35, 1.2GHz D-PowerView®: Intel Atom x64 13E 1.5 GHz Quad Core
RAM memory	D-EcoView®: 3 GB RAM DDR4 D-PowerView®: 8 GB RAM DDR4
Flash memory	64 GB SD card
Extensibility	upon request
Additional controller	Environment Controller
Voltage range	24 VDC to 110 VDC (± 30%)
Ethernet interfaces	2x 10/100 BaseT (M12 d-coded)[1]
USB interfaces	2 x USB2.0 (M8 a-coded)[1]
Vehicle bus I/O	RS 422/485, MVB, CAN, PROFIBUS
Device coding	4
Audio out	1 x 10 W, 8 Ohm, amplifier
Cut-out	282 mm x 206 mm
Weight	approx. 3 kg
Protection category front/rear	IP65 / IP30
Temperature range operation	-25 °C to +70 °C OT3 classification
Temperature range for storage	-40 °C to +85 °C
Safe Supervision Function (optional)	with IconTrust® up to SIL2 with SelectTrust® up to SIL2
Operating system	LINUX
Project software	DEUTA (QDMI) or customer specific
Application software	In accordance with ETCS Baseline 3 and national train protection requirements
EN standards	EN45545-2 2013, EN50016, EN50155, EN50121, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61373
CE	yes

[1] Available as accessories from DEUTA: Connector for 7-pole power supply, Scha151 redundancy switch, USB service cable - M8 to standard USB adapter, cable length 1 m, Ethernet service cable - M12 to RJ45 adapter cable, cable length 0.5 m, when used as redundant dual display: Vehicle bus connector cable DSUB9 4/40 UNC, ETH/ETC M12/M1


D-EcoView®


D-PowerView®

»DEUTA MFTR -

Redundant display solutions!«

MFTR8/2

Two redundant full-valued 8" vertical terminals with a total surface of 10.4" optimise the display availability of the MFTR8/2.

Each of the two displays are full-valued, individually replaceable function modules, thus satisfying the requirement towards minimised life-cycle costs. The train driver can manually switch between the terminals. For train protection applications such as ETCS, LZB, and of course any customer application.

MFTRS1080

Would you like to replace your 10" driver's cab terminal with a redundant terminal equipped with IconTrust® ? DEUTA proves that two redundant terminals fit into the MFTRS1080. This way, you simply replace a 10" terminal with a redundant terminal concept and without any modifications to the driver's console.

DEUTA MFTR

- Two redundant 8" colour terminals
- 10.4" total surface
- ARM , 500 MHz processor
- optimised for ETCS and LZB

DEUTA MFTR8/2 / MFTRS1080

consisting out of 2 DATS2080kwe respectively 2 DATS1080kwa

Display type	Colour TFT 8" WVGA
Display resolution	480 x 800 pixel
Display lighting	LED backlight
Dimmable lighting	0 to 500 cd/m2
Status LEDs	3 LEDs
Ambient light sensor	2 front face
Input unit	capacitive touch
CPU/clock frequency	ARM CPU, >500MHz
Memory	512MB, DDR RAM
Flash memory	Internal Flash Drive min. 4GB
Voltage range	24V DC to 110 V DC (±30%)
Power consumption	max. 40 W
Vehicle bus	various buses possible (MVB, CAN, Ethernet, RS485)
Ethernet interfaces	2x Ethernet interfaces, standard: as per IEEE 802.3 10BaseT and 100BaseTx [1)]
USB interfaces	2x USB interfaces, standard: as per USB2.0, up to 480 MBit/s (for service purposes) [1)]
RS422/485 interfaces	1x RS 422/485, standard: as per IEEE RS422 or IEEE RS485
Audio	1x 8 W at 8 ohm (others as option)
Mounting dimension (W x H x D)	240 mm x 150 mm x <100 mm, with plug
Weight	Approx. 3.5 kg
Protection category front/rear	IP65 / IP50
Temperature range operation	-25 °C to +70 °C
Temperature range storage	-40 °C to +85 °C
MTBF value	approx. 89,000 hrs.
Safe Supervision Function (optional)	safe display: IconTrust®, up to SIL2 safe input: SelectTrust®, up to SIL2
Operating system	LINUX
Project software	customer-specific
Application software	In accordance with ETCS Baseline 3 and national train protection requirements
EN standards	EN45545-2 2013, EN50016, EN50155, EN50121, EN61000-4-2, EN61000-4-3,EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61373
CE	Yes

[1)] Available as accessory: Plug for power supply 12-pole, redundant switch Scha151, USB service cable - M8 to standard USB adapter, cable length 1 m, Ethernet service cable - M12 zu RJ45 adapter cable, cable length 0.5 m, When used as redundant double display: Connecting cable vehicle bus DSUB9 4/40 UNC, ETH/ETC M12/M12

MFTR8S3

MFTRS1080

D-EcoView® R Trust

»DEUTA DAT1080/2080 – Optional with IconTrust® and SelectTrust® up to SIL3«

DAT1080/2080

The DAT can be used optionally as single display or as redundant double display to increase the availability. With its compact housing shape, the DAT in the redundant double display variant is compatible with the standard 10" displays.

As an option the DAT series can be equipped with the patented IconTrust® technology as standard. IconTrust® **monitors predefined areas on the TFT display,** analyses the displayed image and compares the image data with the value of the initial input variable. In the event of deviations, IconTrust® triggers a safety-oriented response. SelectTrust is the first technology worldwide to demonstrably **secure correct manual input of information** via touchscreen.

Absolutely safe

Equipped with IconTrust® & SelectTrust®, the DATS offers a maximum of safety.

DAT1080/2080

- 8" WVGA terminals
- ARM, 500 MHz processor
- as redundant version in use for ETCS applications with STM/NTC (Specific Transmission Module)/(National Train Control)
- optional with patented IconTrust® safety technology

DAT1080/2080

Display type	Colour TFT 8" WVGA
Display resolution	480 x 800 pixel
Display lighting	LED backlight
Dimmable lighting	0 to 500 cd/m2
Status LEDs	3 LEDs
Ambient light sensor	2 front face
Input unit	capacitive touch, optional optically bonded
CPU/clock frequency	ARM CPU, 1GHz
RAM memory	512MB, DDR 3
Flash memory	min. 4GB
Voltage range	24V DC to 110 V DC (±30%)
Power consumption	max. 20 W
Ethernet interfaces	2x Ethernet interfaces, standard: as per IEEE 802.3 10BaseT and 100BaseTx
USB interfaces	2x USB interfaces, standard: as per USB2.0, up to 480 MBit/s (for service purposes)
RS422/485 interfaces	1x RS 422/485, standard: as per IEEE RS422 or IEEE RS485
Vehicle bus	Diverse buses possible (MVB, CAN, Ethernet, RS485)
Audio	1x 8 W at 8 ohm (others as option)
Mounting dimension (W x H x D)	240 x 150 x ca. 100 mm with plug
Weight	Approx. 3 kg
Protection category front/rear	IP65 / IP50
Temperature range operation	-25 °C to +70 °C
Temperature range storage	-40 °C to +85 °C
MTBF value	approx. 89,000 h
Safe Supervision Function (optional)	safe display: IconTrust® Plus Generic, up to SIL3 safe input: SelectTrust®, up to SIL2
Operating system	LINUX
Project software	customer-specific
Application software	In accordance with ETCS Baseline 3 and national train protection requirements
EN standards	EN45545-2 2013, EN50016, EN50155, EN50121, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61373
CE	Yes

[1] Available as accessory: Plug for power supply 12-pole, redundant switch Scha151, USB service cable - M8 to standard USB adapter, cable length 1 m, Ethernet service cable - M12 zu RJ45 adapter cable, cable length 0.5 m, When used as redundant double display: Connecting cable vehicle bus DSUB9 4/40 UNC, ETH/ETC M12/M12

DAT1080

DAT2080

»DEUTA MFT5/2 -

The successful compact terminal in its third generation!«

MFT5/2

Compact displays with 6.5" had already been deployed in trams and metro projects since the mid 1990s. The first MFD5 was delivered in 1996; the displays are now in their third generation. The use of the MFT5 as successor to the MFD5 increases the service life of the display in a form-fit-function compatible manner.

DEUTA MFT5/2

- 6,5"colour
- Geode, LX 800, 500 MHz processor
- Resistive touch screen

MFT5/2

Display type/size	Colour TFT/6.5" (16,5 cm)
Display resolution, colour intensity	640 x 480, 18 bit
Display lighting	LED backlight
Backlight dimmable	0 to 350 cd/m²
Status LEDs	2-3 device-dependent
CPU/clock frequency	Geode, LX 800, 500 MHz
RAM memory	256 MB
Flash memory	min. 2 GB
Flash-EPROM	1 MB
Video memory	4 MB
Extensibility	upon request
PC keyboard connection	USB keyboard
Additional controller	Environment Controller
Voltage range	24 or 74 - 110V (DC ± 30%)
Power consumption	typ. 25 W
Temperature management	yes
Ambient light sensor	front side
Ethernet interfaces	10/100 Base T as M12 d-coded[1)]
USB interfaces	2 x USB1.1 (M8 a-coded[1)])
Serial interfaces	RS 442/RS 485, IBIS upon request
Vehicle bus	MVB on board (EMD)
Video in	1 x FBAS (analogue)
Audio out	2 x Line Out
Buzzer	yes
Device address	3 bit
Keypad device front	Short-stroke membrane keypad
Keypad backlight	LED
Front dimension (W x H)	275 mm x 144 mm
Mounting dimension (W x H x D)	248 mm x 140 mm x 65 mm
Weight	approx. 2.3 kg
Protection class front/rear	IP65 / IP54
Temperature range operation	-25°C to 70°C (full functionality)
Temperature range storage	-35°C to 85°C
MTBF-Wert	ca. 100.000 h
Operating system	OS LINUX, QNX™, Windows™

[1)] Available as accessory from DEUTA: Adapters/ cables/loudspeaker front plates/serial switch box/USB Ethernet adapter/ power supply

MFT5/2

»DEUTA MFT6/2 -

Much information on 12.1" «

MFT6/2

The Multifunctional Terminal MFT6/2 with its 12.1" SVGA TFT display is the largest in the DEUTA product range. For much useful information in the driver's desk.

DEUTA MFT6/2

- 12.1" colour TFT with 800 x 600, 16 bit, LED lighting
- Geode, LX 800, 500 MHz processor
- Easy portability of customer application due to platform concept

MFT6/2

Display type/size	colour TFT / 12.1"
Display resolution, colour intensity	800 x 600, 16 bit
Display lighting	LED backlight
Dimmable lighting	0 to 350 cd/m²
Status LEDs	2-3 device-dependent
CPU/clock frequency	Geode, LX 800, 500 MHz
RAM memory	256 MB
Flash memory	min. 2 GB
Flash-EPROM	1 MB
Video memory	4 MB
Extensibility	upon request
PC keyboard connection	USB keyboard
Additional controller	Environment Controller
Voltage range	24 od. 74 - 110V (DC ± 30%)
Power consumption	typ. 25 W
Temperature management	yes
Ambient light sensor	front side
Ethernet interfaces	10/100 Base T as M12 d-coded[1)]
USB interfaces	2 x USB2.0 (M8 a-coded[1)])
Serial interfaces	1 x RS 422/RS 485
Vehicle bus	MVB on board (EMD or ESD), Ethernet
Video in	1x FBAS (analogue)
Audio out	2 x line out
Buzzer	yes
Device address	3 bit
Keypad device front	short-stroke membrane keypad
Keypad backlight	LED
Front dimension (W x H)	349 mm x 245 mm
Mounting dimension (W x H x D)	334 mm x 200 mm x 44 mm
Weight	approx. 2.3 kg
Protection class front/rear	IP65 / IP54
Temperature range operation	-25°C to 70°C
Temperature range storage	-35°C to 85°C
MTBF value	approx. 100,000 h
Operating system	OS LINUX, QNX™, Windows™

[1)] Available as accessory from DEUTA: Adapters/cables/loudspeaker front plates/ serial switchbox/USB Ethernet adapter/ power supplyg

MFT 6/2

»DEUTA MFT11/2 & MFTS11/2 - Safety and reliability with IconTrust®«

Patented safety

The MFTS11/2 is equipped with the patented IconTrust® technology as standard. IconTrust® monitors dedicated areas on the TFT panel and differentiates between safety-related and non safety-related information.

Each of the individual areas of the displayed image are analysed and compared to the value of the respective input variable during every image refresh cycle in **IconTrust®**. The patented procedure demonstrably ensures topicality and correctness. The generic verification is certifiable up to the SIL 3 level. If the application changes, our customers can easily modify the monitoring areas with the **IVEN** Engineering Tool and document it for the experts

Absolutely safe

Equipped with IconTrust® & SelectTrust®, the MFTs offer a maximum of safety.

DEUTA MFT 111

- 10.4" colour TFT with 640 x 480, 18 Bit
- Geode, LX 800, 500 MHz Processor
- Safe Supervision Function: IconTrust® & SelectTrust®

MFT11/2 & MFTS11/2

Display type/size	colour TFT 10.4" (26.4 cm), additional sizes upon request
Display resolution, colour intensity	640 x 480, additional resolutions upon request
Display lighting	LED backlight
Dimmable lighting	0 bis 350 cd/m²
Status LEDs	3 LEDs
CPU/clock frequency	Geode, LX 800, 500 MHz
RAM memory	256 MB (incl. video memory)
Flash memory	min. 4 GB
PC keyboard connection	USB keyboard
Additional controller	Environment Controller
Voltage range	24, 48 or 74 - 110 V (DC ±30 %)
Power consumption	typ. 25 W
Ambient light sensor	front side
Service Interface	USB and Ethernet
Ethernet interfaces	2x 10/100 BaseT as (M12 d-coded[1)])
USB interfaces	2x USB 2.0 (M8 a-coded[1)])
Vehicle bus, I/O	Ethernet, RS 422, RS 485, MVB, CAN, RS 232, Profibus
Audio out	2x Line-Out or 2x2 W loudspeakers
Buzzer	yes
Device address	3 bit
Keypad device front	upon request
Keypad backlight	upon request
Touch screen	yes, resistive, scratch-proof
Front dimension (W x H)	310 mm x 214 mm
Mounting dimension (W x H x D)	280 mm x 204 mm x 65 mm
Weight	approx. 3.6 kg
Protection category front/rear	IP65 / IP54
Temperature range operation	-25°C to +70°C
Temperature range storage	-35°C to +85°C
Temperature management	yes
MTBF value	calculated approx. 100.000 hrs.
Operating system	LINUX, QNX™, Windows™
Applications	ETCS, diagnostics, brake control, etc.
Safe Supervision Function (optional)	Version MFTS11/2: with IconTrust® with SelectTrust®

[1)] Available as accessory from DEUTA: Adapter/Cables/ Loudspeaker front plates/serial switchbox/USB Ethernet adapter/Power supply

MFTS11/2

»DEUTA MFT102 - EBuLa Display -

Flexible, powerful and low-maintenance!«

Low-maintenance structure
The EBuLa display has omitted the accumulator block, fan, CD-ROM and hard disk, thus making the MFT102 a nearly maintenance free device.

Reduced installation depth
More room in the driver's console thanks to the reduced installation depth of 88.5 mm.

Environmental Controller
Simplified operating time diagnostics, optimally scheduled maintenance intervals and screen contents that can be read out at any time, and keyboard confirmations.

Flexible system
Easily expandable system with integrated PC 104 interface. Next to the main EBuLa application under WIN XP Embedded®, additional applications can be used simultaneously under different operating systems such as, e.g. LINUX, QNX™ or WINDOWS™.

DEUTA MFT102
- 10.4" TFT with 640 x 480, 256 K colours, LED lighted
- AMD Fusion, Dual-Core processor 1 GHz
- Internal Flash disk with 2 GB
- Environmental Controlle
- Approved for the "EBuLa" application by the DB AG"

DEUTA MFT102

Screen diagonal	10.4", 26.4 cm
Resolution	640 x 480
Display lighting	LED backlight
Dimmable lighting	automatic regulation
CPU/clock frequency	AMD Fusion, Dual-Core processor, 1 GHz
Ambient light sensor	front side
RAM memory	1 GB
CFastTM Card	2 GB
Additional controller	yes
Voltage range	24 - 110 VDC
Power consumption	< 30 W
Slot for vehicle bus	optional onboard (e.g. CAN)
Expansion options	optional
Ethernet interfaces	10 BASE-T; 100 BASE-Tx M 12d
Serial interfaces	RS 232 for service, RS 422 for train data, LZB, PzP 2x RS 422 for EBuLA radio approved for GSM-R by the DB AG
USB connection	D-Sub front and rear
PC card (PCMCIA)	yes
Keypad device at front	Short-stroke membrane keypad
Keypad backlight	LED
PC keyboard connection	yes, front face
Mounting dimension (W x H x D)	310 mm x 214 mm x 88.5 mm
Temperature range operation	-25°C to +70°C
Temperature range storage	-40°C to +85°C
Weight	approx. 4.5 kg
Protection class front/rear	IP54 / IP21
MTBF value	approx. 100,000 hrs.
EN standards	EN 50155-V.2001, EN50121-3-2, EN61000-6-4, EN61000-6-2, LESDB

MFT102

»DEUTA Head-Up-Display -

With IconTrust® DMI Safety«

Important travel data at a glance

Head-Up-Displays are state-of-the-art-technology in automotive and aviation. DEUTA developed a Head-Up-Display solution for railway vehicles, presenting forward travel information from the driver machine instruments onto a combiner display in front of the vehicle wind-shield upgraded with IconTrust® safety up to SIL2.

One generic HUD platform for all railway projects

Finding the best Head-Up-Display position - even in narrow installation spaces is a complex challenge in new and refurbishment railway vehicle projects. DEUTA designed a generic HUD platform, combining flexible installation options, advanced safety and more operating and driving comfort in a compact space-saving design. The Head-Up-Display architecture fits even in narrow drivers desks.

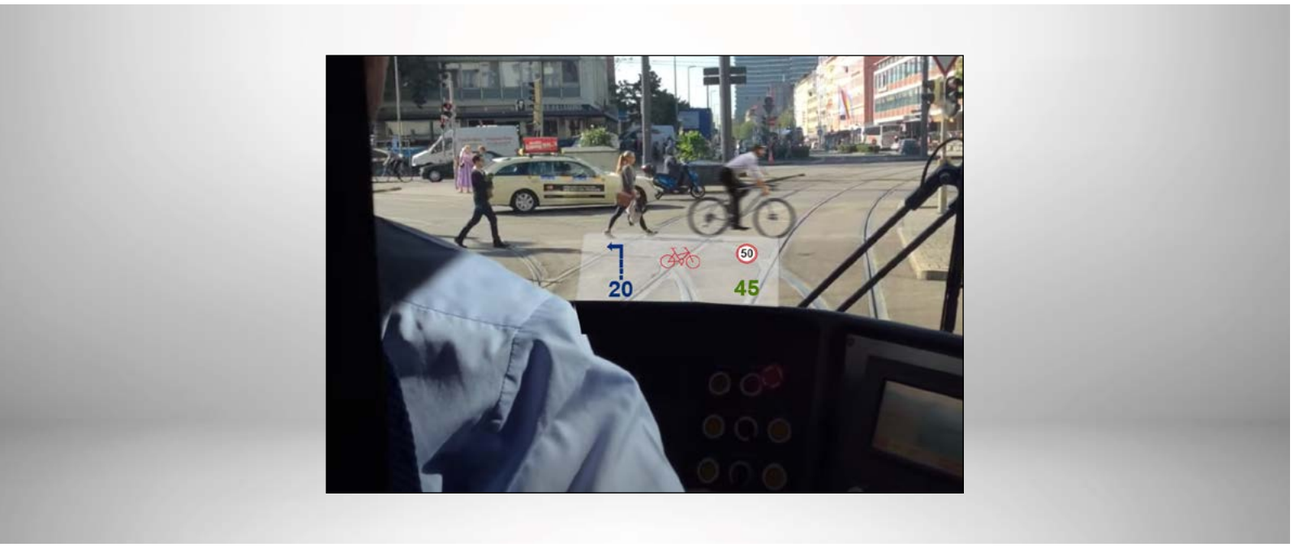
Improvement of safety

The most important information are mirrored parallel at the Head-Up-Display combiner surface. The driver keeps continuously the visual axis between the Head-Up-Display and the track. The Multifunctional Terminal communicates via the vehicle computer and generates the information for the Head-Up-Display without changing the vehicle architecture.

HUD & IconTrust® = SIL2

In combination with an IconTrust® Multifunctional Terminal the DEUTA Head-Up-Display can reach a safety level up to SIL2. IconTrust® monitors dedicated areas on the TFT panel and differentiates between safety related and non-safety related information.

Each of the individual areas of the displayed image are analysed and compared to the value of the respective input variable during every image refresh cycle in IconTrust®.



»DEUTA Head-Up-Displays – All safety information at a glance!«

The most relevant information:

- Warning notices
- Navigation instructions
- Speed
- Signal lamps

With highest quality:

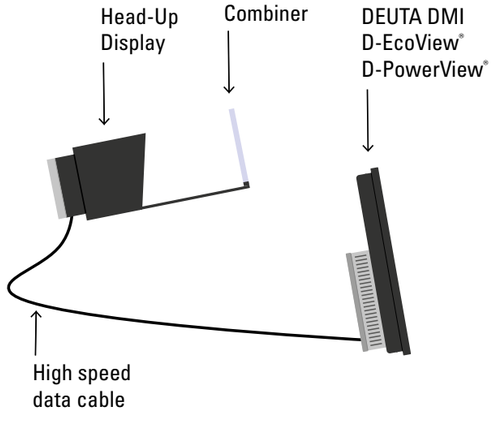
- Excellent brightness
- High contrast
- Large virtual image size
- Compact dimensions
- Great colour scale

Head-Up-Display & DMI

HUD type	**Combiner**
Brightness	>15,000 cd/m²
Contrast	1700:1
Resolution	800 x 480
Vehicle bus	MVB, Profibus, CAN, Ethernet
Power Supply	Wide range, 24 - 100 VDC
Safe Supervision Function (opt.)	In combination with IconTrust® DMI up to SIL2

DMI type	**D-PowerView®**
CPU/clock frequency	Intel Atom x64XX series 1.5 GHz Quad Core
Display type	Colour TFT 10.4" / 12.1"/ 15"
Safe Supervision Function (opt.)	With IconTrust® up to SIL2

DMI type	**D-EcoView®**
CPU/clock frequency	IMX8X Quadcore ARM A35, 1.2GHz
Display type	Colour TFT 8" / 10.4"/ 12.1"
Safe Supervision Function (opt.)	With IconTrust® up to SIL2



- Generic HUD platform
- Projection on a transparent combiner in front of the windshield
- Independent of the angle and geometry of the windshield
- The view angle of the driver keeps unchanged

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DEUTA – The Home of Trust-Technology:

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MouseTrust®

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Represented by the Managing Directors: Mr. Dr. Rudolf Ganz and Mr. Thomas Blau | Register court: Amtsgericht Köln, Register number: HRB Köln 67 107 | Value added tax identification number: DE 265417448 |