

# DC13 – Rugged 8.4" Panel PC with Front Keys

- **8.4" 4:3 TFT LCD panel**
- **800 x 600 pixels resolution**
- **Intel® Atom™ E600 series**
- **1 USB 2.0 Type A**
- **1 Fast Ethernet on M12**
- **Power supply via PoE Class 0**
- **-30 to +85°C operating temperature**
- **Fanless and maintenance-free design**
- **IP65 compliant**
- **EN 50155 railway compliant**



The DC13 panel PC is a rugged, fanless and maintenance-free human-machine interface (HMI) for interactive railway applications with a power consumption of less than 13 W. It is designed as a stand-alone panel and equipped with a 8.4" TFT LCD display with 20 backlit front keys with tactile feedback.

The DC13 is controlled by the Intel® Atom™ E620T running at 0.6 GHz and comes with 512 MB of DDR2 SDRAM and a microSD™ card slot. The standard interfaces comprise 1 Fast Ethernet (via M12 connector) for Power over Ethernet and 1 USB port. A temperature sensor is provided to monitor and control the display.

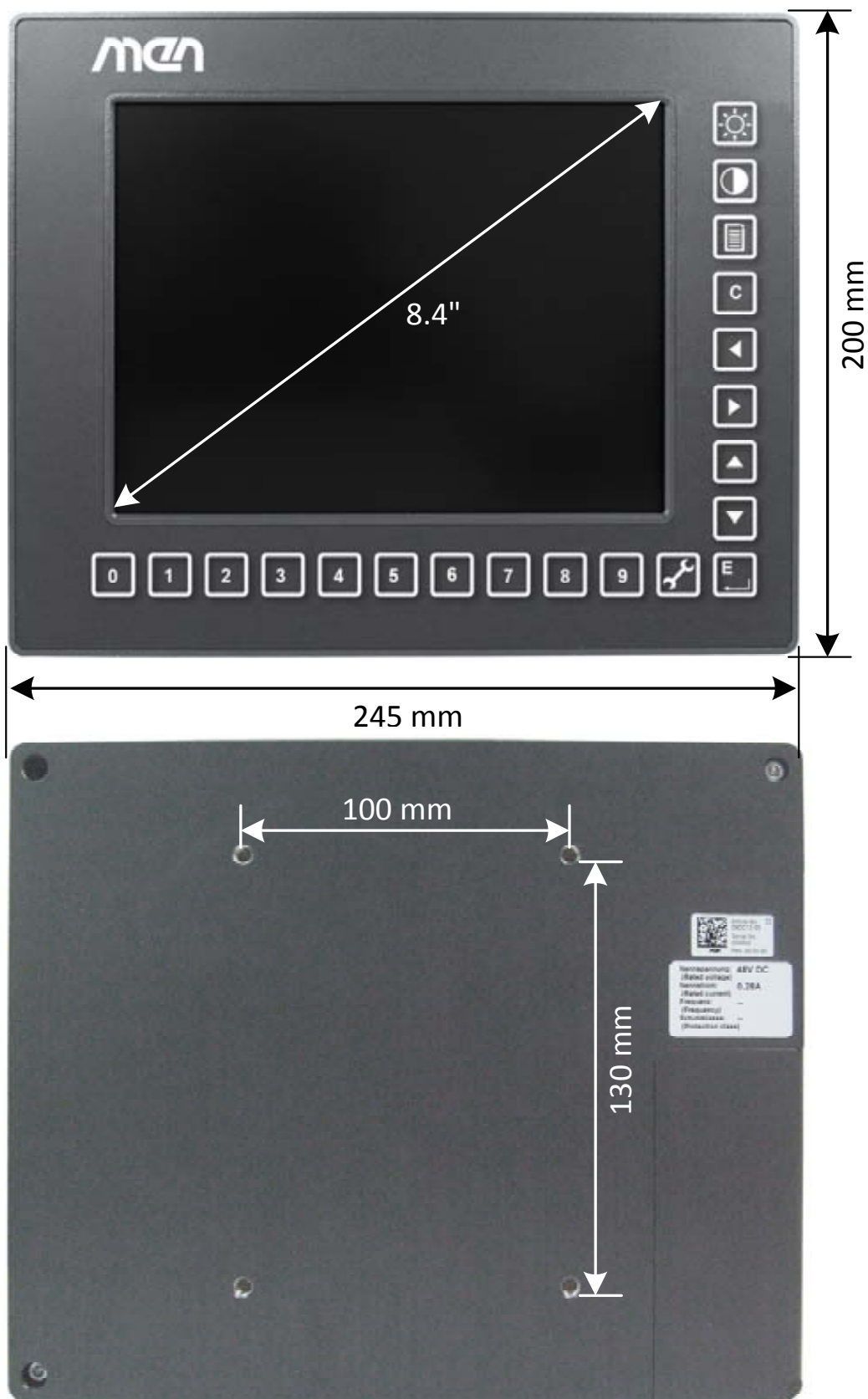
The DC13 is powered over a Power over Ethernet source with a power range of 37 V to 57 V (48 VDC

nom.) and is able to operate in a -30 to +70°C environment (+85°C for 10 minutes). It complies with the EN 50155, class Tx railway standard. The display housing is extremely rugged and compliant with IP65. All electronic components are soldered to withstand shock and vibration and prepared for conformal coating.

A PCI Express® Mini Card slot (supported by a microSIM card slot) in combination with an external antenna can be optionally made available to incorporate wireless functions like Wi-Fi, WIMAX, GSM/GPRS, UMTS, HSDPA and LTE. GNSS (GPS/GLONASS) functionality can also be provided on request.

Other screen sizes (7" to 15") or other aspect ratios can be realized easily. Further options include other types of the Intel® Atom™ processor or a larger memory.

## Diagram



## Technical Data

<b>CPU</b>	<ul style="list-style-type: none"> <li>■ Intel® Atom™ E620T             <ul style="list-style-type: none"> <li>□ 0.6 GHz processor core frequency</li> </ul> </li> <li>■ Chipset             <ul style="list-style-type: none"> <li>□ Intel® EG20T Platform Controller Hub (PCH)</li> </ul> </li> </ul>
<b>Display</b>	<ul style="list-style-type: none"> <li>■ Screen size: 8.4"</li> <li>■ Resolution: 800 x 600 with aspect ratio 4:3</li> <li>■ Luminance: 350 cd/m<sup>2</sup></li> <li>■ Contrast: 400:1</li> <li>■ Response time: Ton+Toff average 10 ms (from white to black)</li> <li>■ Viewing angle: 60°(H)/50°(V)</li> <li>■ LED backlight with brightness control</li> <li>■ Monitored and controlled by a board management controller (display is turned off at extreme temperatures)</li> </ul>
<b>Front Keys</b>	<ul style="list-style-type: none"> <li>■ 20 buttons with tactile feedback</li> </ul>
<b>Memory</b>	<ul style="list-style-type: none"> <li>■ 512 MB DDR2 SDRAM system memory             <ul style="list-style-type: none"> <li>□ Soldered</li> <li>□ 800 MHz memory bus frequency</li> </ul> </li> <li>■ microSD™ card slot</li> <li>■ 4 GB mSATA disk</li> </ul>
<b>I/O</b>	<ul style="list-style-type: none"> <li>■ USB             <ul style="list-style-type: none"> <li>□ One USB 2.0 type A interface</li> <li>□ EHCI implementation</li> </ul> </li> <li>■ Ethernet             <ul style="list-style-type: none"> <li>□ One 10/100Base-T Ethernet channel</li> <li>□ Accessible via M12 connector</li> </ul> </li> </ul>
<b>Intelligent Power Supply with Board Management Controller</b>	<ul style="list-style-type: none"> <li>■ Voltage supervision</li> <li>■ Temperature supervision via sensor</li> <li>■ Backlight control (turns off display at configurable temperatures)             <ul style="list-style-type: none"> <li>□ 12 V backlight control</li> <li>□ Backlight enable, backlight dimming</li> </ul> </li> <li>■ Real-time clock with buffer functionality via supercapacitor</li> <li>■ Watchdog</li> <li>■ Accessible via SMBus</li> </ul>
<b>Power over Ethernet Features</b>	<ul style="list-style-type: none"> <li>■ PD (powered device)</li> <li>■ Supply class 0</li> </ul>
<b>Electrical Specifications</b>	<ul style="list-style-type: none"> <li>■ Supply voltage/power consumption:             <ul style="list-style-type: none"> <li>□ +48 VDC nom. (37..57 V), less than 13 W typ</li> </ul> </li> </ul>
<b>Mechanical Specifications</b>	<ul style="list-style-type: none"> <li>■ Dimensions: 245 mm x 200 mm x 50 mm</li> <li>■ Weight: approx. 2200 g</li> <li>■ Protected according to IP65</li> </ul>

## Technical Data

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### Environmental Specifications

- Temperature range (operation):
  - -30..+70°C for the display panel
  - -40..+70°C, with up to +85°C for 10 minutes according to class Tx (EN 50155) for the computer
  - Display is turned off at extreme temperatures
  - Convection cooling
  - Fanless operation
- Temperature range (storage): -40..+85°C
- Relative humidity (operation): max. 95% non-condensing
- Relative humidity (storage): max. 95% non-condensing
- Altitude: -300 m to +3000 m
- Shock: 50 m/s<sup>2</sup>, 30 ms (EN 61373)
- Vibration (function): 1 m/s<sup>2</sup>, 5 Hz - 150 Hz (EN 61373)
- Vibration (lifetime): 7.9 m/s<sup>2</sup>, 5 Hz - 150 Hz (EN 61373)
- Conformal coating of internal components on request

### MTBF

- 640 000 h @ 40°C according to IEC/TR 62380 (RDF 2000)

### EMC Conformity

- EN 55011 (radio disturbance)
- IEC 61000-4-2 (ESD)
- IEC 61000-4-4 (burst)
- IEC 61000-4-5 (surge)

### Software Support

- Windows® (Windows® XP Embedded image included on request)
- Linux

## Configuration & Options

### Standard Configurations

Article No.	Display	Size	Power Supply	Processor	Memory	Interfaces
09DC13-01	8.4"	275 mm x 200 mm x 50 mm	48 VDC nom. (37..57 VDC)	E680T, 0.6 GHz	512MB SDRAM	1 PoE (M12), 1 USB

### Options

<b>CPU</b>	<ul style="list-style-type: none"> <li>■ Intel® Atom™ E620, 0.6 GHz, 320 MHz graphics frequency, 3.3 W</li> <li>■ Intel® Atom™ E620T, 0.6 GHz, 320 MHz graphics frequency, 3.3 W</li> <li>■ Intel® Atom™ E640, 1.0 GHz, 320 MHz graphics frequency, 3.6 W</li> <li>■ Intel® Atom™ E640T, 1.0 GHz, 320 MHz graphics frequency, 3.6 W</li> <li>■ Intel® Atom™ E660, 1.3 GHz, 400 MHz graphics frequency, 3.6 W</li> <li>■ Intel® Atom™ E660T, 1.3 GHz, 400 MHz graphics frequency, 3.6 W</li> <li>■ Intel® Atom™ E680, 1.6 GHz, 400 MHz graphics frequency, 4.5 W</li> <li>■ Intel® Atom™ E680T, 1.6 GHz, 400 MHz graphics frequency, 4.5 W</li> </ul>
<b>Display</b>	<ul style="list-style-type: none"> <li>■ Screen size from 7" to 15"</li> <li>■ Other aspect ratios</li> <li>■ Various resolutions up to 1280 x 768</li> </ul>
<b>Memory</b>	<ul style="list-style-type: none"> <li>■ 512 MB, 1 GB or 2 GB system RAM</li> </ul>
<b>I/O</b>	<ul style="list-style-type: none"> <li>■ GPS/GLONASS interface</li> <li>■ Second USB 2.0 interface</li> <li>■ RS232 UART interface</li> <li>■ GPI line (General Purpose Input)</li> <li>■ PCI Express® Mini Card slot                             <ul style="list-style-type: none"> <li>□ For wireless functions like Wi-Fi, WIMAX, GSM/GPRS, UMTS, HSDPA and LTE</li> <li>□ Includes microSIM card slot</li> </ul> </li> <li>■ SA-Adapter™ slot                             <ul style="list-style-type: none"> <li>□ Supports one UART SA-Adapter™ (SA1, SA2, SA3 or SA22) or one CAN SA-Adapter™ (SA8)</li> </ul> </li> </ul>
<b>Power Supply</b>	<ul style="list-style-type: none"> <li>■ Internal wide-range PSU instead of Power over Ethernet</li> </ul>

As the product concept is very flexible, there are many other configuration possibilities. Please contact our sales team if you do not find your required function in the options. Please note that some of these options may only be available for large volumes.

## Ordering Information

<b>Standard DC13 Models</b>	<b>09DC13-01</b>	8.4" display, Intel® Atom™ E620T 0.6 GHz, 512 MB DDR2, 20 buttons, 1x PoE 100 Mbit/s, 1x µSD card slot, 1x mSATA slot, -30°C..+70°C, IP65
<b>Related Hardware</b>	<b>02G301-00</b>	4-port unmanaged Gigabit Ethernet Switch with PoE, RJ45, -40..+70(+85)°C with qualified components
	<b>02G301-01</b>	4-port unmanaged Gigabit Ethernet Switch with PoE, M12, -40..+70(+85)°C with qualified components, conformal coating
	<b>06RS01-01</b>	Managed, 8 x 100BaseT, 1 x Gbit Uplink Port, 2 x PoE, PSU 24V (9-36V), -40...+70°C screened, EN50155 compliant, IP67
	<b>06RS01-05</b>	Managed, 8 x 100BaseT, 1 x Gbit Uplink Port, 2 x PoE, PSU 110V (77-150V), -40...+70°C screened, EN50155 compliant, IP67
	<b>19SF01-00</b>	Unmanaged Switch with 8 Fast Ethernet ports on RJ45, PSU, 18HP, -40..+85°C with qualified components
<b>Memory</b>	<b>0751-0046</b>	MicroSD card, 2 GB, -40..+85°C
	<b>0751-0051</b>	SSD mSATA, 8 GB, -40..+85°C
	<b>0751-0052</b>	MicroSD card, 4 GB, -40..+85°C
	<b>0754-0007</b>	SSD SATA 256 GB, 2.5" MLC, 0..+70°C
<b>Documentation</b>	Compare Chart Standard and Custom Panel PCs » <a href="#">Download</a>	

## Contact Information

### Germany

MEN Mikro Elektronik GmbH  
Neuwieder Straße 3-7  
90411 Nuremberg  
Phone +49-911-99 33 5-0  
Fax +49-911-99 33 5-901

info@men.de  
www.men.de

### France

MEN Mikro Elektronik SA  
18, rue René Cassin  
ZA de la Châtelaine  
74240 Gaillard  
Phone +33 (0) 450-955-312  
Fax +33 (0) 450-955-211

info@men-france.fr  
www.men-france.fr

### USA

MEN Micro Inc.  
860 Penllyn Blue Bell Pike  
Blue Bell, PA 19422  
Phone (215) 542-9575  
Fax (215) 542-9577

sales@menmicro.com  
www.menmicro.com

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