



New: The CP3918 version combines a 18.5" multi-touch display with electro-mechanical keys.

Modular expansion of the CP2xxx and CP3xxx multi-touch Control Panel and Panel PC series

# The ideal HMI Panel offers multi-touch functionality and much more

With the CP2xxx and CP3xxx Control Panel and Panel PC series with multi-touch functionality from Beckhoff, industrial applications can utilize the familiar features from smartphones and touch pads for machine operation. In order to obtain a truly optimum HMI, a wide range of application-specific industrial requirements must be met. This Panel series already offers a practical and highly versatile HMI hardware toolkit, which will be complemented with further mechanical push-button extensions, display sizes and Panel PC options, all to be shown at SPS IPC Drives 2012 trade show in Nuremberg, Germany.



The Beckhoff CP2xxx and CP3xxx Control Panel and Panel PC series with multi-touch functionality are extended with 7", 12" and 21.5" TFT display versions.

These days a robust, industry-standard design is expected as a matter of course for advanced HMI panels. However, operating units can only achieve genuine added value and the associated competitive advantage for machine manufacturers if they offer innovative technologies coupled with comprehensive application expertise. The implementation of technologies that are familiar from the consumer world, such as multi-touch and widescreen displays, paves the way for new operating concepts. In addition, an elegant, ergonomic HMI design that matches the respective application contributes to user-friendly, error-free machine operation.

The built-in CP2xxx Panels and the CP3xxx Panels for mounting arm installation from Beckhoff are perfect examples for such HMI concepts. Originally introduced in November 2011, they are now available with 20 housing options, and the product range continues to expand. The latest additions are three further display sizes, offering eight new device options in total, in the form of built-in Panel PCs along with built-in and IP 65 Control Panels:

- 7" (16:9.6, WVGA, 800 x 480 resolution) as Control Panels
- 12" (4:3, SVGA, 800 x 600) for all Panel versions
- 21.5" (16:9, Full-HD, 1920 x 1080) for all Panel versions

They complement the existing Panel range in the following sizes:

- 15" (4:3, XGA, 1024 x 768)
- 15.6" (16:9, HD-ready, 1366 x 768)
- 18.5" (16:9, HD-ready, 1366 x 768)
- 19" (5:4, SXGA 1280 x 1024)
- 24" (16:9, Full HD, 1920 x 1080)

The expansion of the modular multi-touch product range is complemented by additional electromechanical keys for existing standard devices. This C9900-G0xx push-button extension includes an emergency stop button and several push buttons keys with a signal lamp that can be labeled individually. Selection and key switches, and other elements can also be integrated. The range of processors will be expanded continuously. For example, two completely new ARM-based Panel

PC series, CP26xx and CP36xx, will become available in the second quarter of 2013. These Control Panels with Ethernet connection are based on the ARM Cortex™ A8 processor and therefore offer higher performance than the devices with Intel® IXP 420 533 MHz. According to Roland van Mark, Product & Marketing Management, Industrial PC, Beckhoff, this highly versatile HMI toolkit offers immense application potential: "It is the Panel and Panel PC platform of the future, suitable for all machines and plant operation tasks as well as in building automation."

#### Clear practical benefits – cost-effective and convenient

Although widescreen (16:9) formats and multi-touch technology are new in the Panel market, many machine manufacturers still prefer conventional 4:3 displays and single-touch operation. The wide range of devices offered with the new product lines not only meets this demand, but offers customers significant benefits for such applications. Roland van Mark explains: "The two series are characterized by elegant and slim housing designs. In addition, they offer an optimized price/performance ratio, resulting in cost savings up to 28 % compared with existing devices. The machine manufacturer therefore benefits in terms of design effort and investment costs and is able to use their existing visualization without additional engineering effort."

As a result of their excellent technical features, multi-touch-capable displays offer fundamentally increased operator comfort: with their continuously dimmable LED backlight in combination with Beckhoff's own controller technology the displays are bright, with high contrast. The backlight can automatically be switched to energy-saving mode if no touch operation is detected after a set time, e.g. after 10 minutes. A good viewing angle ensures optimum image visibility, even if the display is viewed from the side.

#### Multi-touch toolkits meet all user requirements

IPC expert Roland van Mark describes a further important market requirement: "Notwithstanding all the benefits offered by multi-touch

operation, many machine manufacturers still want to retain the option of electromechanical buttons, e.g. for emergency stop. The reason is the desire for real mechanical actuation feedback." The concept of milling the Panel housings from solid aluminum, which Beckhoff introduced with the first Control Panel generation as early as 1998, is ideal for this purpose. This principle offers numerous benefits such as low weight, high strength, environmental resistance, a wealth of processing options and full recyclability. The key is that no forming tools are used, which means that Beckhoff is able to respond flexibly to customer enquiries with low production runs. In addition, Beckhoff is now able to offer cost-effective multi-touch devices equipped with the C9900-G0xx extension and basic buttons as standard, which will be presented at this year's SPS IPC Drives show.

The comprehensive application expertise, which Beckhoff has realized in custom solutions in the past, can also be utilized in the new multi-touch Panel series. Key switches, membrane keys and ring-illuminated short-stroke keys, for example, can not only be integrated via the standard USB port, but also via EtherCAT or other fieldbuses, and directly in the TwinCAT environment, if required. Of course all functions can be leaded out with a connector. But in order to avoid complex wiring, the emergency stop button can be integrated via TwinSAFE, the flexible safety solution from Beckhoff. Thanks to the openness of the Beckhoff control system, integration into other "fieldbus worlds" is also quite straightforward, e.g. for implementing safety features via PROFINET.

A key feature is that the CP2xxx and CP3xxx product lines are able to implement conventional and innovative operating concepts, with different display options. It is this wide range of options that offers machine manufacturers genuine design freedom. Roland van Mark explains: "Only with such a versatile range of options are we able to talk to customers in the most open-minded manner about their machine operation. For users, the bottom line is that they are able to choose the most suitable solution, without being limited by what is offered from the supplier."



### Multi-touch opens up new opportunities for machine operation

Single-touch screens are well-established in industrial applications. Driven by smartphones and Windows 7 touch pads, multi-touch will soon become the norm here. For Roland van Mark the question is therefore not whether, but how quickly this operating philosophy will prevail. For example, there are customers today who want two-finger operation, i.e. pressing a button and operation via a second button on-screen. Further options are offered by functions such as zooming for detailed information, browsing in a user guide or gesture (pattern) recognition in 5-finger mode. All this can be achieved with low engineering effort. In one case, a user was able to realize two-finger operation and gesture recognition within just a few days, using only the basic Windows 7 functionality.

Several tangible application benefits illustrate that these aren't just marketing gimmicks, as Roland van Mark explains: "Multi-touch may force the operator to use two hands, which means that the Panel automatically requires full attention, which can increase safety." Visualization becomes significantly more user-friendly, particularly in the case of large and extensive machines or systems, since the operator is able

## The highlights of the Control Panel/ Panel PC series:

- Display sizes of 7, 12, 15, 15.6, 18.5, 19, 21.5 and 24"
- Formats: 16:9, 5:4, 4:3
- Multi-touch: e.g. for 5-finger touch with high resolution
- High-quality aluminum housing, milled from a solid block
- Metal perimeter protection for the display front
- LED backlight technology
- Landscape and portrait format
- Built-in and compact devices
- Control Panels with DVI/USB Extended connection
- Panel PCs with choice of processors: ARM, Intel® Celeron®, Core™ i7
- Cost-optimized panel design
- Optional electromechanical push-button extension
- Customer-specified versions

to view the inside of the machine on the display and zoom into details via gestures. Genuine added value is also offered by the zoom function familiar from smartphones, e.g. as support for an inexperienced machine operator who is able to zoom into an error message and view the associated instructions. In addition, the multi-touch solution may make all or some of the electromechanical operating panel buttons redundant.

### The choice of touch technology is crucial

The resistive touch technology is widespread and has generally become accepted but – according to Roland van Mark –, because it is based on a sensitive film it is less robust than capacitive touching directly via the glass pane. To ensure suitability for industrial applications Beckhoff therefore uses what is known as projective capacitive touch screen (PCT) technology. The high touch-point density offered by this technology enables exact and reliable operation with short reaction times. Even virtually continuous touch operation in very small steps is possible in a jerk-free manner.

The touch controller developed by Beckhoff enables the sensitivity of the touch surface – an antireflective glass pane – to be programmed individually and parameterized such that it can also be operated with thin work gloves (e.g. Latex). For most applications this eliminates the common PCT disadvantage that capacitive touch screens cannot be operated with (normal) work gloves. In addition, the touch controller automatically prevents faulty operation, e.g. caused by water drops or the operator's ball of the hand.

### New options through Windows 8

Multi-touch functionality is available from Windows 7 and already offers excellent application options in conjunction with this reliable basic software. Further innovation potential is expected with Windows 8, which is optimized for touch pads. The programs – now referred to as apps – are visible on the start screen as individually placeable "tiles." The benefits of this new interface include convenient and fast access to regularly used applications via the new Metro interface.

Windows 8 runs on all Windows 7 computers, so that no new hardware is required. Beckhoff experts were able to confirm this in initial tests for the embedded WES8-CTP version. The Metro UI options are particularly useful for multi-touch systems. A gesture filter, for example, can be used to catch touch actions, similar to the keyboard or dialog filter for suppressing Windows dialogs.

### Future-proof technology

Innovations offer new opportunities, but also uncertainty: Is the technology really future-proof? For the multi-touch Panel series from Beckhoff the answer is a clear "Yes." In any case, multi-touch is certainly not a passing fad, but has already become the norm in many areas. And the CP2xxx and CP3xxx Panel series certainly offer future-proof technology: This is ensured by the Beckhoff electronics, high-quality and robust glass panes, the elegant and timeless design and the long-term availability of display sizes and resolutions.

Further Information:

[www.beckhoff.com/Multitouch](http://www.beckhoff.com/Multitouch)

### Product announcement

Estimated market release of the news:  
CP29xx and CP39xx with display sizes of 7, 12 und 24":  
2<sup>nd</sup> quarter 2013.  
CP26xx and CP36xx with ARM processor:  
2<sup>nd</sup> quarter 2013.