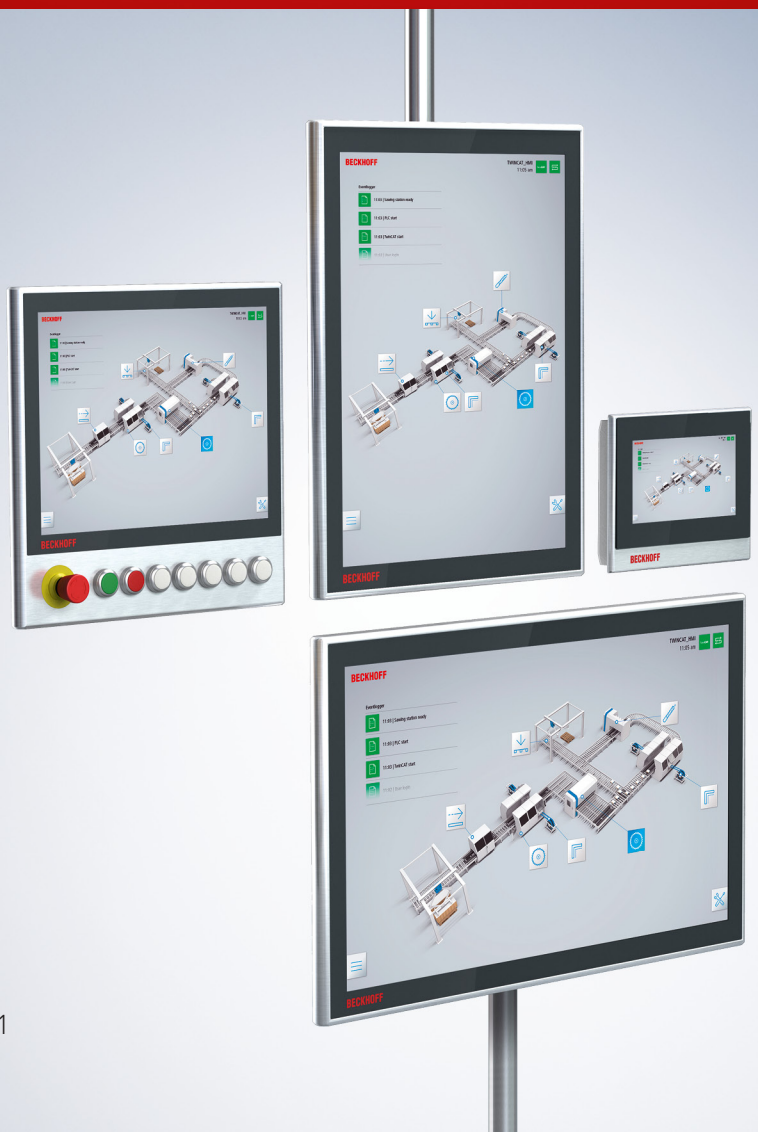
BECKHOFF New Automation Technology

Manual | EN

Panel Configuration Tools



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1 Notes on the documentation

This description is intended exclusively for trained specialists in control and automation technology who are familiar with the applicable national standards.
For installation and commissioning of the components, it is absolutely necessary to observe the documentation and the following notes and explanations.
The qualified personnel is obliged to always use the currently valid documentation.

The responsible staff must ensure that the application or use of the products described satisfies all requirements for safety, including all the relevant laws, regulations, guidelines, and standards.

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The documentation has been prepared with care. The products described are, however, constantly under development.
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2 Security

The Security chapter provides information on how to reduce the risk of unauthorized access.

Fundamental safety instructions

As a rule, it is important to prevent unauthorized persons from accessing the system. Various security measures are available for this purpose.

- Secure access to the system by means of certificates (e.g. ssh or OPC UA). Note that this only secures this type of access. If you want to prevent unauthorized access to the website, close TCP port 443 (https) in the system firewall. Please refer to the documentation for your operating system.
- Protect the system physically by keeping control cabinets locked and allowing access only to administrators and technicians. This reduces attacks on the system via data carriers.
- Train employees in the general handling of passwords and data carriers.

For more information, refer to the IPC security documentation.

Secure passwords

Strong passwords are an important prerequisite for a secure system.

Please note the following points when assigning new passwords:

- Passwords should be unique for each user and service.
- Only change passwords after an incident in which passwords have become known without authorization.
- Train the device users in the use of passwords.

A secure password has the following characteristics:

- Password complexity: the password should contain capital and lower-case letters, numbers, punctuation marks and special characters.
- Password length: the password should be at least 10 characters long.

You can generate the password in different ways. An example is shown in the following table:

Table 1: Password generation

Procedure	Example
Start with one or two sentences.	Complex passwords are more secure
Remove the spaces.	Complexpasswordsaremoresecure
Abbreviate words or add spelling mistakes.	Complxpasswordsarmorescure
Insert numbers and special characters to extend the password.	KomlxPasswörtersinsicerer#529954#

The following passwords are not secure:

- Words from a dictionary
- Words written backwards, common spelling mistakes, and abbreviations
- Repetitive sequences, e.g. 123456789 or abcdefgh
- Personal information, e.g. birthdays, ID numbers, telephone numbers

3 Display Control Tool

The Display Control Tool supports optimum operability of Beckhoff Panel PCs and Control Panels. The intuitive menu ensures quick and easy adaptation to individual user needs and environmental requirements. The free tool is integrated in all standard images and is supported by the following devices with display unit:

- CP2xxx
- CP3xxx
- CP62xx
- CP67xx
- CP69xx
- CP77xx
- CP79xx
- CPXxxxx

Basic functions

The tool includes three basic functions: Dimming, Screensaver and Cleaning mode. These functions can be used with only one display connected as well as with multiple panels.

In the delivery state, the Display Control Tool does not start automatically when the PC is started. You need to click the icon on your desktop first. The tool will start and a small sun will appear in the bottom right corner of your taskbar. If you left-click on the sun, you can adjust the brightness manually. Right-click to display the various functions that you can activate by clicking on them, as well as the "Options" area (see Fig. 1).

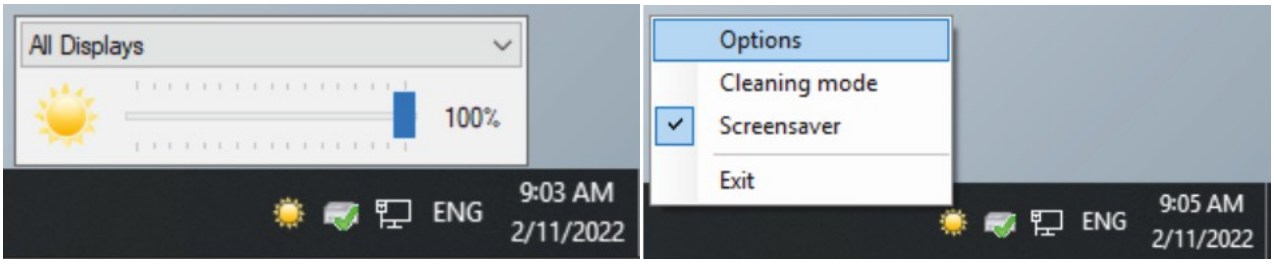

Fig. 1: Possibilities sun symbol

Under "Options" you have the possibility to choose between the connected displays and to identify them (1). To do this, select a display and click **Identify**. The corresponding display flashes. You can also configure the Cleaning Mode (2) and Screensaver (3) functions yourself.

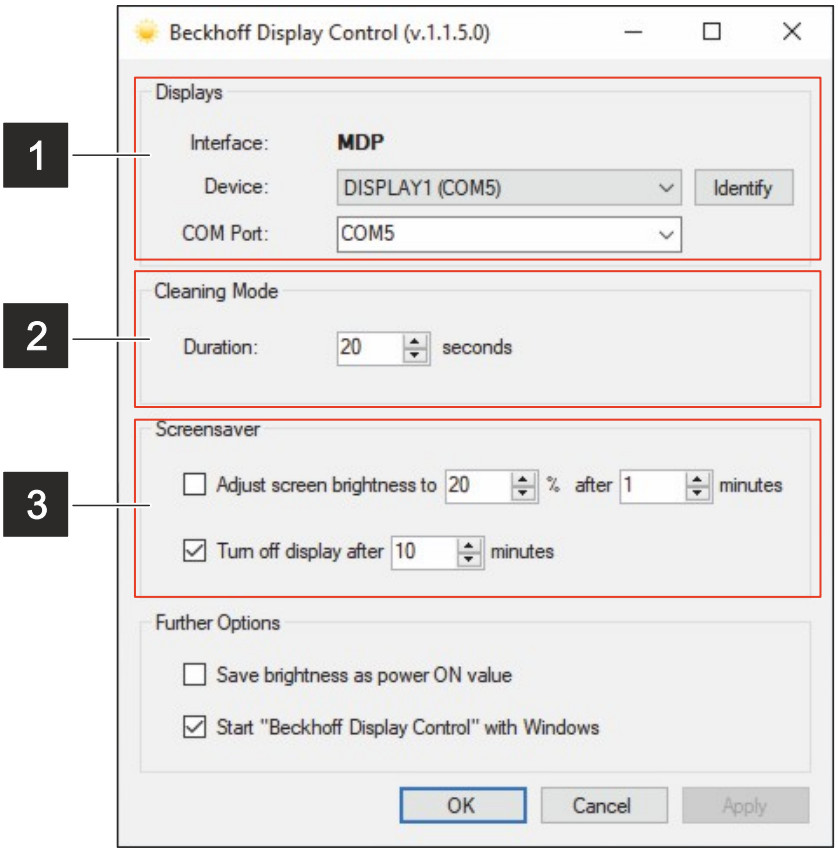

Fig. 2: Options

Dimming function

Using this function, you can set the desired brightness of the connected displays in 1-percent increments from 20 % to 100 %. You can dim the brightness in three different ways:

- Manually: by left-clicking on the sun in the taskbar (see Fig. 1). You can additionally select which displays are to be dimmed.
- Automatic: when the PC is not in use (see Screensaver)
- Via MDP: dimming via the Modular Device Profile (MDP) by addressing the "Brightness" value in the Display Device Table

Screensaver

You can use the screensaver to set a specific period of time when the display brightness will decrease or the display will turn off. You can also select the brightness level between 20 and 100 % to which the display is to be dimmed in the specified time period.

Note that the use of the screensaver affects the PC_ON function of Beckhoff power supply units. When the screensaver is active, an additional 24 V pulse is required to shut down the IPC.

Cleaning Mode

You can use the Cleaning Mode to define a specific timespan in which the touch input function is disabled. This allows you to clean the display during operation and avoid unintentional touch inputs. The selectable period for the duration of the Cleaning Mode is between 5 and 120 seconds.

4 TcTouchLock

The Touch Lock feature is used to avoid simultaneous inputs via several multi-touch Panels connected to an IPC, which would be disruptive. To this end, the focus is placed on one of the connected Panels, while inputs from all other connected Panels are blocked.

The devices are configured manually, including transfer of parameters, via the executable file of the TcTouchLock service. The focus can also be set via the executable file or via an ADS command and the function block FB_TcTouchLock_AcquireFocus.

4.1 Preparation

Requirements

The function block FB_TcTouchLock_AcquireFocus and the TCTouchLock service can only be used under Windows 7 and Windows 10. The function is supported by multi-touch Control Panels and Panel PCs from the PCT-V03 touch screen version. The functionality is not available with other touch panels.

The touch screen version of your device can be found on the name plate (see Fig. 3).

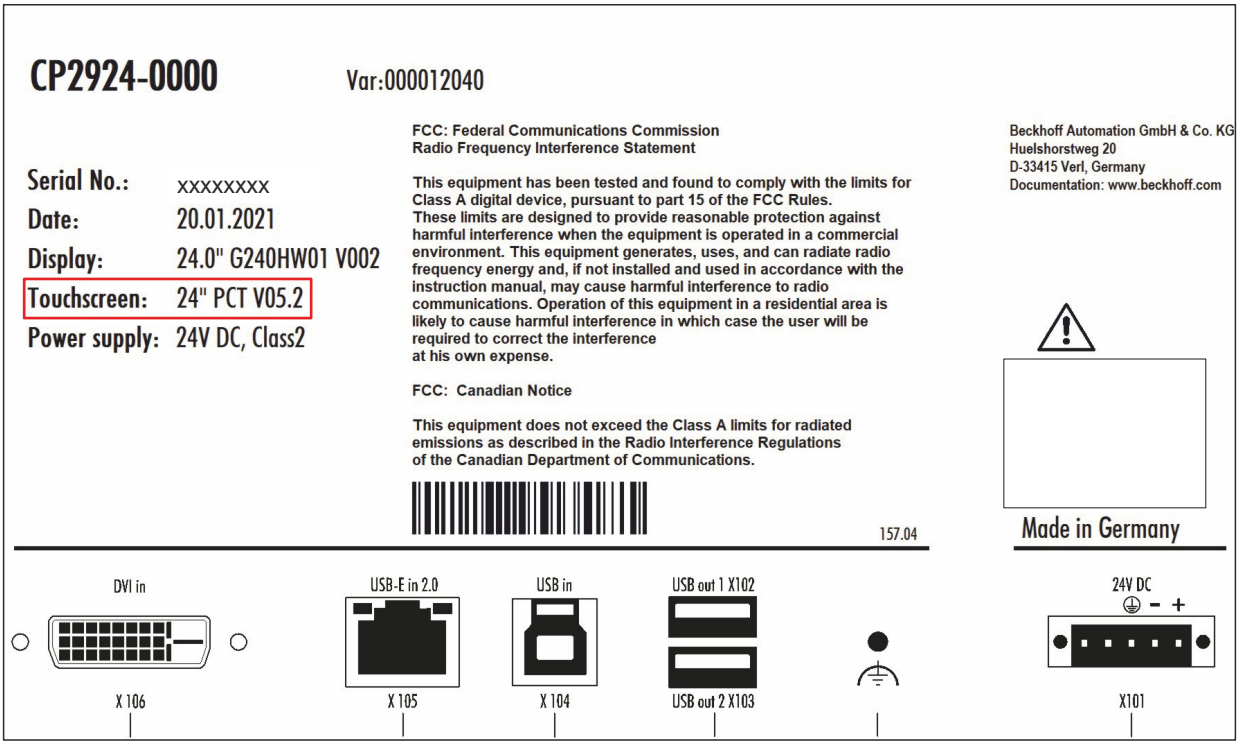

Fig. 3: Example nameplate with touch screen version

The devices to be controlled must be connected to the same IPC. In addition, the use of an input option for requesting/releasing the touch focus, which can also be used with a locked touch screen, must be taken into account. Also consider a hardware input for unlocking.

Installation

To use the Touch Lock, you must first download the command line application.

Command line application download:
https://www.beckhoff.com/en-en/support/download-finder/software-and-tools/

Search for: TcTouchLock

You can store the included files in the directory C:\TwinCAT\TCTouchLock. From there you can use the command line application directly.

4.2 Application

The following commands can be transferred to the TcTouchLockCLI via parameters:

Table 2: TcTouchLockCLI commands

Command	Function
-silent	Optional: the TcTouchLockCLI does not return any output.
-list	Lists all connected devices with name, ID and touch status.
-setID	Sets the entered ID. If only one device is connected, the entered ID is set automatically. If several devices are used, the desired device must be selected by touching the monitor.
-setFocus	Places the touch focus on the device specified with the ID. All other devices will be locked.
-unlockAll	Unlocks all devices.
-help/-?	Lists the functions of the TcTouchLockCLI.

Table 3: Exit Codes

Meaning	Code
No error	0
Incorrect/no parameter input	1
Incorrect/no identification number	2
No device found	3

If all multi-touch panel devices are connected to the IPC, individual IDs can be assigned to the connected devices. The **–setID** command can be used to automatically set the ID of a connected device. If several devices are connected, you must touch the touch screen to be assigned after entering the command **-setID**.

You can now lock specific touch screens via TwinCAT or the command line application. A separate function block is available for use in the PLC for this purpose (see below).

In the command line application you can set the focus to an ID using the command **-setFocus**. Subsequently, input is only possible via the device that is in focus. If the **–setFocus** command is used to specify an unavailable ID, all connected touch screens are locked. With the command **-unlockAll** you can remove this focus.

FB_TcTouchLock_AquireFocus

Fig. 4: FB_TcTouchLock_AquireFocus

You can alternatively request and release the focus on connected Panels with the function block FB_TcTouchLock_AcquireFocus. You must observe the following requirements:

- Development environment: TwinCAT v3.1. >= 4022.31
- Target platform: PC or CX (x86, x64)
- PLC libraries to be integrated (category group): Tc2_IoFunctions (IO)

If the focus is requested from a Panel when another Panel currently has the focus, the focus must first be released by this Panel. Once the release has taken place, the focus is automatically set to the device that is waiting for it.

The Panels accessed by the function block must be configured beforehand by the TcTouchLockCLI.exe command line application. You must assign a specific identification number to each device (see above).

VAR_INPUT

```
VAR_INPUT
    bEnable     : BOOL;
    sSetID      : STRING(32);
    tLEDTime    : TIME := 200;
END_VAR
```

bEnable: TRUE = request focus, FALSE = release focus

sSetID: ID of the device

tLEDTime: the output LED flashes at the specified interval (100 ms – 1 s) while the focus is requested

VAR_OUTPUT

```
VAR_OUTPUT
    bAcquired   : BOOL := FALSE;(* Focus status information *)
    bLED        : BOOL := FALSE;(* LED control output *)
    bBusy       : BOOL;(* TRUE => function in progress *)
    bError:     : BOOL;(* Error flag *)
    nErrID      : UDINT;(* Error code *)
END_VAR
```

bAcquired: TRUE if the client has the focus; FALSE if the client loses the focus.

bLED: this output has the following meaning, depending on the mode:

Mode	Meaning
Constant TRUE	The Panel has the focus
Constant FALSE	The Panel does not have the focus
Toggeles	The Panel is waiting for the focus

bBusy: TRUE as long as the function block is active.

bError: TRUE if an ADS error occurs during transmission of the command. The bBusy output is reset beforehand.

nErrId: supplies the ADS error number or the command-specific error code (table) when the *bError* output is set.

Error Codes	Error description
0x0000	No error
0x0006	Target port not found

Example: control of touch focus via special key

For example, you can set the focus using a special key on the Panel. Since it must be possible to request the focus via the touch screen when the input is locked, an input option outside the lockable touchscreen must be provided. The special key is linked to the corresponding input variable in the PLC program through the TwinCAT System Manager. One FB_TcTouchLock_AquireFocus instance is created per Panel and configured with the Panel ID. After pressing the special key on a Panel, the function block R_TRIG detects the rising edge, and the PLC program tries to set the touch focus via the corresponding FB_TcTouchLock_AquireFocus instance. The function block can also control an output (e.g. an LED), which signals whether the touch focus has been set successfully or whether an attempt is still being made to obtain the focus. Pressing the special key again resets the touch focus, allowing the touch focus to be set to another Panel.

Fig. 5: Panel example

For two Panels the PLC program looks like this:

```
PROGRAM MAIN
VAR
    button1 AT%IX0.0 : BOOL;
    button2 AT%IX0.1 : BOOL;

    led1 AT%QX0.0 : BOOL;
    led2 AT%QX0.1 : BOOL;

    fbPanel1 : FB_TcTouchLock_AcquireFocus := ( sSetID := 'A' );
    fbPanel2 : FB_TcTouchLock_AcquireFocus := ( sSetID := 'B' );

    trigger1 : R_TRIG;
    trigger2 : R_TRIG;
END_VAR
```

```
(* Panel 1 *)
trigger1( CLK := button1 );
IF trigger1.Q THEN
fbPanel1.bEnable := NOT fbPanel1.bEnable;
END_IF
fbPanel1(bLED=>LED1);

(* Panel 2 *)
trigger2( CLK := button2 );
IF trigger2.Q THEN
fbPanel2.bEnable := NOT fbPanel2.bEnable;
END_IF
fbPanel2(bLED=>LED2 );
```

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List of figures

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