



Evaluation of the Connection Box ID for the KTP Mobile Panel

WinCC (TIA Portal) / V14 SP1 / KTP Mobile

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1 Evaluation of the Connection Box ID

1.1 General information

You can read out the connection box ID via an integrated function on the KTP Mobile. For this you configure an internal tag in the editor "Runtime settings > General > Identification".

If the KTP Mobile Panel is connected to a connection box, then the ID set in the connection box is written to this internal tag.

The purpose is to evaluate the read-out value in the PLC.

1.2 Solution

The read-out value of the "Box ID" is transferred to a tag with controller connection via a clock memory and the system function "SetTag". The clock memory byte defined in the hardware configuration of the CPU is used as the clock memory.

A comparison of the preset "Box ID" and the read-out "Box ID" generates a signal.

The connection is monitored in the second step: If the KTP Mobile is disconnected from the connection box, the signal or the evaluation of the "Box ID" has to be reset.

A system alarm also documents the connection box to which the KTP Mobile has been connected.

Sample program

The attached sample program is available

- As a separate WinCC (TIA Portal) configuration.
- In a project library entitled "ConnectionBoxEvaluationLib".
- In the version for STEP 7 V5.5 (SIMATIC Manager) in conjunction with a "Proxy PLC".

Software versions used

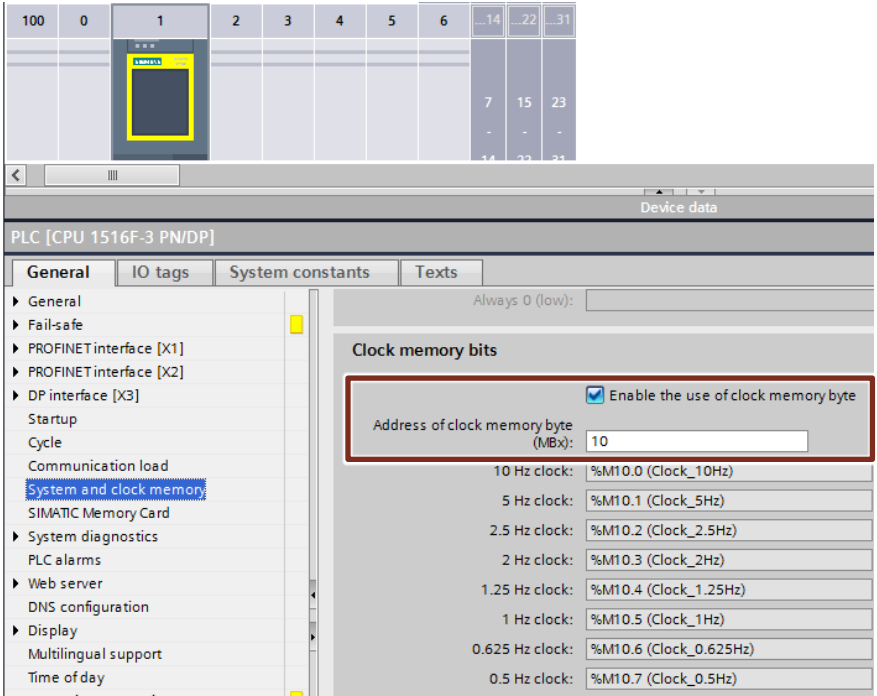
- WinCC (TIA Portal) V14 SP1.
- STEP 7 V5.5 and WinCC Advanced V14 SP1 in conjunction with a "Proxy PLC".

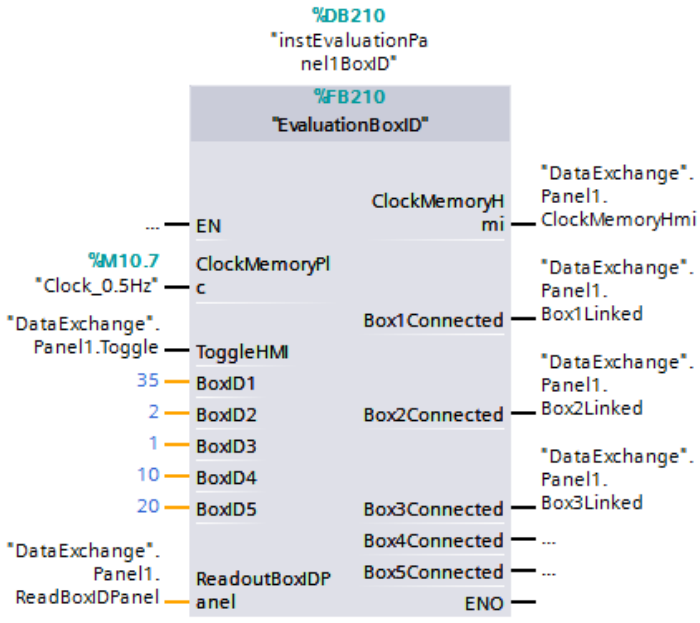
1.2.1 STEP 7 Program Section, FB210 "EvaluationBoxID"

The FB210 "EvaluationBoxID" evaluates the "Box ID" of up to five connection boxes. If there are more connection boxes, you can modify the FB accordingly. The following description applies for WinCC (TIA Portal).

Note All the functions described in the following are implemented in the attached sample project.

Table 1-1

No.	Description
1.	<p>Device configuration</p> <p>In the device configuration of the PLC, in the menu item "General > System and clock memory" you enable the option "Enable the use of clock memory byte". The "MB10" is used as clock memory byte.</p> 

No.	Description
2.	<p>Parameterizable "FB210, EvaluationBoxID"</p> <p>You can evaluate up to five connection boxes via the "FB210". You can change the FB number as required. The FB is created in each case for one KTP Mobile.</p>  <p>Function: A comparison of the preset "BoxID1 - BoxID5" and the read-out Box ID sends a signal to the outputs "Box1Connected - Box5Connected". The signal from the "clock memory" serves to monitor the connection between the KTP Mobile and the connection box. The signal from the "clock memory" is transferred directly to the output "ClockMemoryHMI" and processed in the HMI configuration. The system function "SetTag" transfers the signal of the "ClockMemoryHMI" to the "ToggleHMI" tag. As long as the KTP Mobile is connected to the connection box, the value of the "ToggleHMI" tag toggles between "0 and 1". The "ToggleHMI" tag triggers two timers ("switch-on delay"). If the "trigger signal" does not change within 3 seconds, the output of the timer is set and the read-out Box ID is overwritten with "Null".</p>

Block description

Figure 1-1 EvaluationBoxID

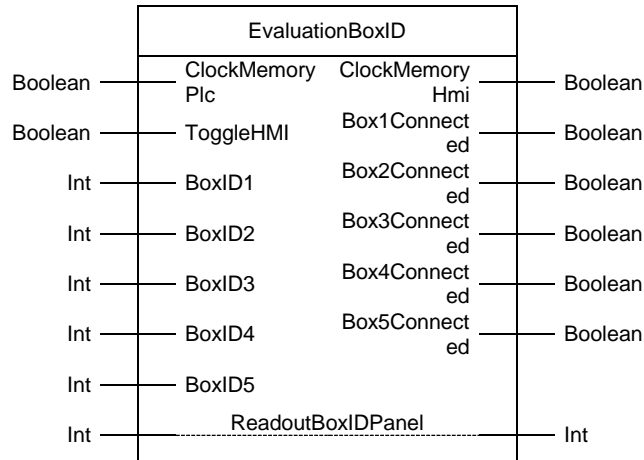
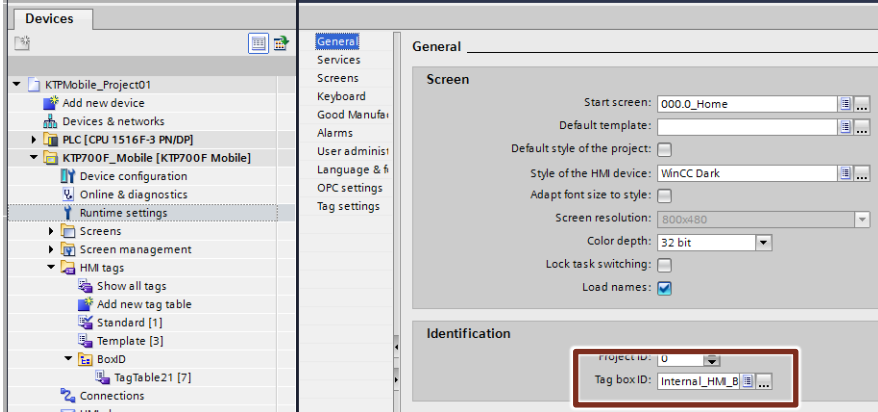


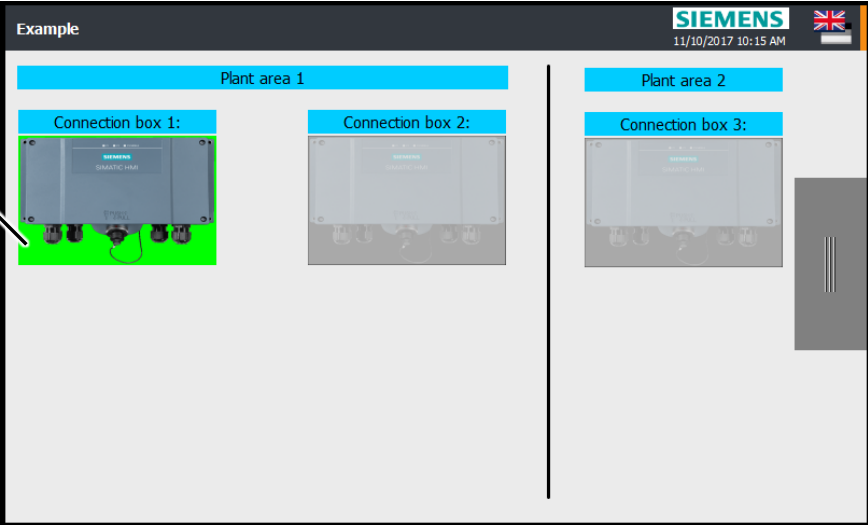
Table 1-2: Parameters of EvaluationBoxID

Name	P type	Data type	Comment
ClockMemoryPlc	IN	Boolean	Clock memory. Serves to monitor the connection between the KTP Mobile and the connection box. Note: Default "0.5Hz" (2 seconds). If you want to increase the frequency (to 1 second, for example), then in the HMI configuration you have to likewise increase the acquisition cycle of the tag for the connection monitoring (from 1 second to 100ms, for example).
Uwnez	IN	Boolean	Clock memory. Serves to monitor the connection between the KTP Mobile and the connection box.
BoxID1 to BoxID5	IN	Int	Comparison value for five connection boxes. The "Box ID" is given in the "Decimal" number format. The value can be predefined on the block or be a variable.
ClockMemoryHmi	OUT	Boolean	Clock memory. Receives the signal directly from the "ClockMemoryPLC" tag. The system function "SetTag" is configured on the tag.
Box1Connected to Box5Connected	OUT	Boolean	If the specified "Box ID" matches the read-out "Box ID", a "1 Signal" is output.
ReadoutBoxIDPanel	IN_OUT	Int	Output of the current read-out "Box ID number".

1.2.2 HMI Configuration

Table 1-3

No.	Description
1.	<p>Box ID tag</p> <p>You create an internal tag for identifying/reading out the Box ID. Then you open the "Runtime settings" in the project navigation. Under "General > Identification" you enter the previously created internal tag in the "Tag box ID" field.</p> 
2.	<p>The following tags are required for the evaluation</p> <p>"_Panel1_Box1Linked - _Panel1_Box5Linked"</p> <ul style="list-style-type: none"> - Serves to display the "Status" in the HMI screen (green= KTP Mobile connected to connection box). <p>"_Panel1_ClockMemoryHMI"</p> <ul style="list-style-type: none"> • "Properties > Properties > Settings". <ul style="list-style-type: none"> - Acquisition mode: Cyclic continuous - Acquisition cycle: 1s • "Properties > Events > Change value". <ul style="list-style-type: none"> - System function "SetTag" Parameter: "_Panel1_ReadBoxIDPanel" "Internal_BoxID" <p>System function "SetTag"</p> <p>Parameter: "_Panel1_Toggle"</p> <p>"_Panel1_ClockmemoryHmi".</p> <p>"_Panel1_ReadBoxIDPanel"</p> <ul style="list-style-type: none"> • "Properties > Properties > Settings". <ul style="list-style-type: none"> - Acquisition mode: Cyclic continuous - Acquisition cycle: 1s <p>"_Panel1_Toggle"</p> <ul style="list-style-type: none"> • "Properties > Properties > Settings". <ul style="list-style-type: none"> - Acquisition mode: Cyclic continuous - Acquisition cycle: 1s <p>"Internal_HMI_BoxID"</p> <ul style="list-style-type: none"> - Internal tag

No.	Description
3.	<p>Output of System Alarm with Specification of the Box ID</p> <p>Zones "Project navigation > Zones" As parameter you enter the Box ID number for each connection box. Under "Properties > Events > Connected" you call the script "WriteBoxIDToPLC" in which the system alarm is generated.</p> <p>Script Go to "Project navigation > Scripts > VB Scripts" to find the "WriteBoxIDToPLC" script. The system function "ShowSystemAlarm" is executed via the script. The text is the read-out Box ID.</p>
4.	<p>Plant picture</p>  <p>The screenshot shows a Siemens mobile application interface titled 'Example' with a date and time of 11/10/2017 10:15 AM. It displays two plant areas: 'Plant area 1' and 'Plant area 2'. Under 'Plant area 1', there are three connection boxes: 'Connection box 1', 'Connection box 2', and 'Connection box 3'. 'Connection box 1' is highlighted in green, and a circled '1' points to it. 'Connection box 2' and 'Connection box 3' are shown in a faded state. The interface also includes a Siemens logo and a UK flag in the top right corner.</p> <p>"Attachment 1" includes two connection boxes. "Attachment 2" includes one connection box. If a KTP Mobile Panel is connected to a connection box, this is shown in color (1).</p>

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1.2.3 Extending the configuration

You have to parameterize an FB210 "EvaluationBoxID" for each KTP Mobile Panel. The attached DB300 "DataExchange" is prepared for five KTP Mobile Panels.

1.2.4 Troubleshooting

If the evaluation does not run, then check the following settings.

HMI

Tag properties

Check the "Acquisition mode" of the tags marked in the figure. It must be set to "Cyclic continuous".

Check the "Acquisition cycle" of the HMI tags. If you are using a higher frequency than the default clock memory (0.5 Hz = 2 seconds), then change the "Acquisition cycle" of the HMI tags accordingly. HMI acquisition cycle = Frequency / 2.

Figure 1-2

TagTable21					
Name	Data type	Connection	PLC name	PLC tag	
DataExchange_Panel1_Box1Linked	Bool	HMI_Verbindun...	PLC	DataExchange.Panel1.Bo...	
DataExchange_Panel1_Box2Linked	Bool	HMI_Verbindun...	PLC	DataExchange.Panel1.Bo...	
DataExchange_Panel1_Box3Linked	Bool	HMI_Verbindun...	PLC	DataExchange.Panel1.Bo...	
DataExchange_Panel1_ClockMemoryHmi	Bool	HMI_Verbin...	PLC	DataExchange.Panel1.	
DataExchange_Panel1_ReadBoxIDPanel	Int	HMI_Verbindun...	PLC	DataExchange.Panel1.Re...	
DataExchange_Panel1_Toggle	Bool	HMI_Verbindun...	PLC	DataExchange.Panel1.To...	
Internal_HMI_BoxID	Int	<Internal tag>		<Undefined>	

Check the "Events" (SetTag) stored at the "ClockMemoryHMI" tag.

STEP 7

In OB1, check the called FB210 "EvaluationBoxID".

If the KTP Mobile is connected to the connection box, then the value at the "ToggleHMI" input must toggle between 0 and 1 like the clock memory. Check the default clock memory. This should be 0.5Hz.

The CPU indicates a fault

Bear in mind that the PROFINET name was also be transferred to the controller. Compare the PROFINET address used on the KTP Mobile Panel with the value set in the configuration (F_Dest_Add).

1.3 Example "SIMATIC Manager"

The function corresponds to the example described previously.

Password

The password used for the F program in the configuration is "100".

Further Information

- Information about "Shared configuration with WinCC (TIA Portal) and STEP 7 V5.x" or how in STEP 7 V5.5 you incorporate a GSDML file for the KTP Mobile Panel in the hardware configuration is available in Entry ID: [73502293](#)
- How to evaluate the "RUN / STOP" mode of the CPU via an HMI operator panel is described in Entry ID: [109481628](#)