

# Integrated System Test-Procedure Protocol and Checklist(ISTPAC)

Test 1	Connection between Front- and Backend				
Precondition		Procedure description			
RasPi with installed Backend together with the Front-End application is placed in the same network.		After the Textbox gets an input the Connect button is clicked. Then, the Table shows system messages or the Textbox reacts differently.			
Components used during test		Checklist			
Component	Purpose / Label	No	Cases	Expected	Result
Table	System message	1.1	Textbox input is the IP of the Backend	Table shows connection established	
Textbox	User Input (Backend IP)	1.2	Textbox input is not the IP of the Backend	Table shows connection failed	
Button	Connect	1.3	Textbox input is not related to numbers	Textbox remains empty	
		1.4	Textbox is empty	Tooltip pops on the screen indicating to input an IP-Address.	

Test 2	Sending of requests from Frontend to Backend via I2C				
Precondition		Procedure description			
RasPi with installed Backend together with the Front-End application are successfully connected. Besides, the MCP4018 and a LED are correctly wired and connected via I2C.		The Analog Volume input will be used to test whether requests via I2C were successfully received and executed or not. Depending on which Button will be clicked or volume set, the LED is going to light up differently.			
Components used during test		Checklist			
Component	Purpose / Label	No	Cases	Expected	Result
Button	Volume On	2.1	Volume On is clicked	LED lights up brightly	
Button	Volume Off	2.2	Volume Off is clicked	LED turns off	
Slider	Volume Control	2.3	Slider tab is moved to 90%	no further state changes	
Button	Set Volume	2.4	Set Volume is clicked	LED lights up weekly	
Hardware	LED				
Hardware	MCP4018				

Test 3	User Control of GPIO Pins via GUI				
Precondition		Procedure description			
RasPi with installed Backend together with the Front-End application are successfully connected. Besides, Hardware-Components are directly or indirectly connected with GPIO Pins. Default Configuration: Pin6 is connected to a LED.		A random discrete number between 0 and 29 will be typed in the Textbox. After clicking a certain Button the referenced operation will be executed on the provided Pin ID. The operation result will be indicated in the Table by showing different System messages.			
Components used during test		Checklist			
Component	Purpose / Label	No	Cases	Expected	Result
Textbox	Input of Pin ID under Test	3.1	6 is typed in the Textbox	Textbox shows "6"	
Button	Read Pin	3.2	Read Pin is clicked	Table shows "HIGH"	
Button	Write Pin	3.3	Write Pin is clicked	LED lights up	
Button	Reset	3.4	Reset is clicked	LED turns off	
Table	System message	3.5	Value < 0 is typed in	Textbox remains empty	
Hardware	LED	3.6	Value >30 is typed in	Textbox remains empty	

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Test 4	User Control of LCD				
Precondition		Procedure description			
RasPi with installed Backend together with the Front-End application are successfully connected. Besides, a LCD Modul is correctly wired to the RasPi and connected via I2C.		In LCD Control, different GUI-Elements will be used which invokes request to the Backend which are respectively processed on the LCD.			
Components used during test		Checklist			
Component	Purpose / Label	No	Cases	Expected	Result
Textbox	Text Input which shall be displayed on the LCD	4.1	A <Text> will be typed in the Textbox	Textbox displays <Text>	
Button	Reset	4.2	Reset is clicked	Display blinks off and on then remains cleared	
Button	Toggle Backlight	4.3	Toggle Backlight is clicked	LCD backlight turns off	
Button	SampleText 16 C	4.4	SampleText 16 C is clicked	Textbox displays „Das ist ein Text“	
Button	SampleText 32 C	4.4	SampleText 32 C is clicked	Textbox displays shows <„SampleText 32“>	
Button	SampleText >32 C	4.6	SampleText >32 C is clicked	Textbox displays <SampleText >32 C>	
Button	Send	4.7	Send is clicked	<SampleText >32 C> is scrolling on the first LCD line	
Button	Cancel	4.8	Cancel is clicked	LCD stops scrolling <SampleText >32 C>	
Hardware	LCD				