

TSI® FMS 5 SOFTWARE

HOW TO USE A KEY SWITCH TO CYCLE RECIPES

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Description

The purpose of this document is to provide instructions on how to setup a Recipe Switch and a physical switch to change a specified Sample Point's "**Cleaning Cycle**" and "**In Operation**" alarm limits.

To eliminate particle and flow alarms during the cleaning cycle of a Grade A room (ISO 5), turn off the alarm parameters without having to reconfigure the sample points when the cleaning cycle starts. *TCC-123, "How to Configure In Operation and Cleaning Cycle Recipes,"* explains how to create sample points. For each set the "In Operation" alarm limits per EU GMP Annex 1, and no limits when "**Cleaning Cycle**" is run. First review that document to understand how recipes work in FMS. You will build from that document to automate the changing of the recipes, based on a physical toggle switch. Note, the same general ideas of using a physical toggle switch could also be applied to using a software switch within FMS, by invoking a controllable digital output, wired to a digital input.

Units will need to be configured for both "**In Operation**" and "**Cleaning Cycle**" conditions and recipes for "**In Operation**," "**Cleaning Cycle**" and "**Default**" will need to be configured. Careful consideration must be made to determine what the parameters of the "**Default**" recipe for the unit should be. In most cases, the "**Default**" recipe should **NOT** enable the unit. There is a reason for this.



Suppose the “**Default**” recipe is set to enable the unit and you are using an AeroTrak® Remote Particle Counter with Pump, an AeroTrak® Portable Particle Counter, or a BioTrak® Real-Time Viable Particle Counter. If “**Default**” is left to enable the unit and FMS does a reset during a cleaning cycle, the unit will turn on and possibly be contaminated by cleaning solutions when the pump on the unit starts up.

Requirements

- FMS 5.2.1 or later must be installed.
- A switch must be installed and wired to a digital input on an FMS compatible module. (This instruction will assume a Phoenix Contact Bus Controller is being used.)

Assumptions

It is assumed that the Communication Channel and the Unit are already configured within FMS 5. The configuration example shown in this note will use the following consideration:

Room Classification.....	ISO 5
Communication Channel for a Model 6510	TCP_192.168.1.90
Unit Name	Room28
Phoenix Contact Digital Input.....	Slot 0-1
Sample Point Name for CF.....	Room_28_Cf
Alarm Limits for CF “In Operation”	
Upper Alarm Limit > 0,5 µm.....	100
Upper Alarm Limit > 5,0 µm.....	1
Sample Point Name for m ³	Room_28_m3
Alarm Limits for CF & m ³ “Cleaning Cycle”	None
Recipe Name for Cleaning	Cleaning_Cycle
Recipe Name for Operation	In Operation
Alarm Group.....	CleaningRoom_28
Cleaning Recipe Switch Trigger	Cleaning_Trigger

Configuration Considerations

It is important to have an understanding how the recipe switch driver works and implications of different settings that work within the recipe switch driver before attempting to configure the driver.

The Recipe Switch driver is used to create a different circumstance based on the state of a trigger sample point. This trigger sample point can be a normal sample point such as a temperature or particle count. To use it to change recipes for Cleaning or Operation cycles, you will use a special trigger sample point based on a Phoenix Contact digital input sample point. When the trigger sample point changes state, the Recipe Switch Driver acts on the sample points or units indicated in the affected Alarm Group.

In the following example, the trigger switch will either disable or enable an AeroTrak 6510 Remote Particle Counter with Pump, depending on the trigger state. You could also use a switch to disable alarms or change alarm parameters, turn on or off filing the data, etc. There are many ways to use a recipe switch that is too comprehensive to cover in this document. This document will concentrate on turning off and on a particle counter for cleaning and operation cycles.

Configuration Summary

Below is a summary of the steps needed to create a physical switch interfacing with FMS's Recipe Switch. These steps will be detailed later in this document.

1. Install a Normally Open (NO) switch with the wires connecting the switch terminals to Slot 1-1 and 1-2 on the Phoenix Contact Bus Controller. (1st digital input).
2. Make sure the AeroTrak Remote Particle Counter with Pump sample point is part of an alarm group. A typical setup would have all the sensors that would be controlled with the physical switch in one alarm group.
3. Set up the recipes for default, cleaning, and operation.
4. Set up the AeroTrak Remote Particle Counter with Pump recipes for Default (Disabled), Cleaning (Disabled), and Operation (Enabled).
5. Set up the switch trigger sample point.
6. Set up the Recipe Switch unit.

Configuration Detail

1. Wire a switch to the Phoenix Contact Digital Input Slot 1-1. See the wiring diagrams included with the Phoenix Contact Bus Controller for details.

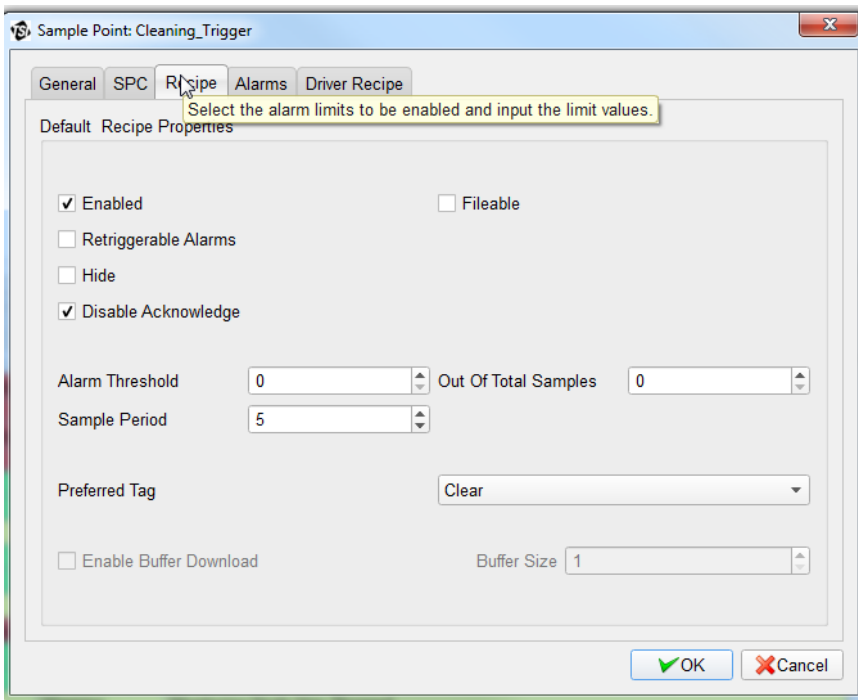
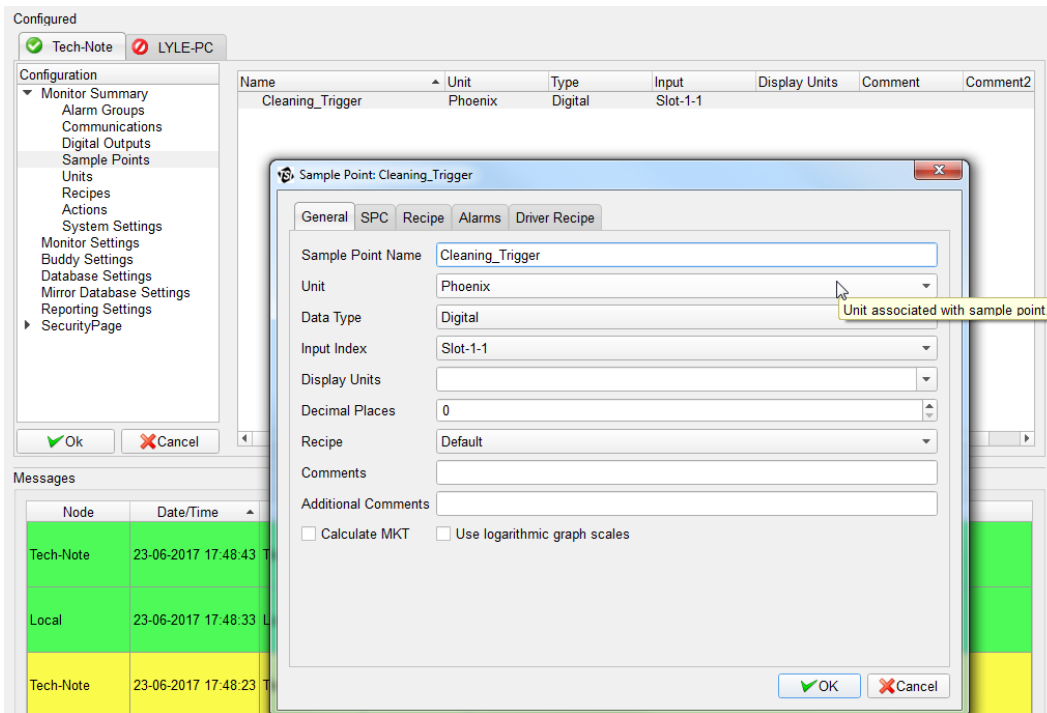
The switch can be either a "Normally Open" or "Normally Closed" switch, but caution must be taken to set up the trigger sample point correctly. A "Normally Open" switch will be open in the OFF position. This setup will assume the OFF position is used for normal operations and ON is used for cleaning operations. This will result in the **Cleaning_Trigger** sample point showing a "0" for a value in OK (Green) condition.

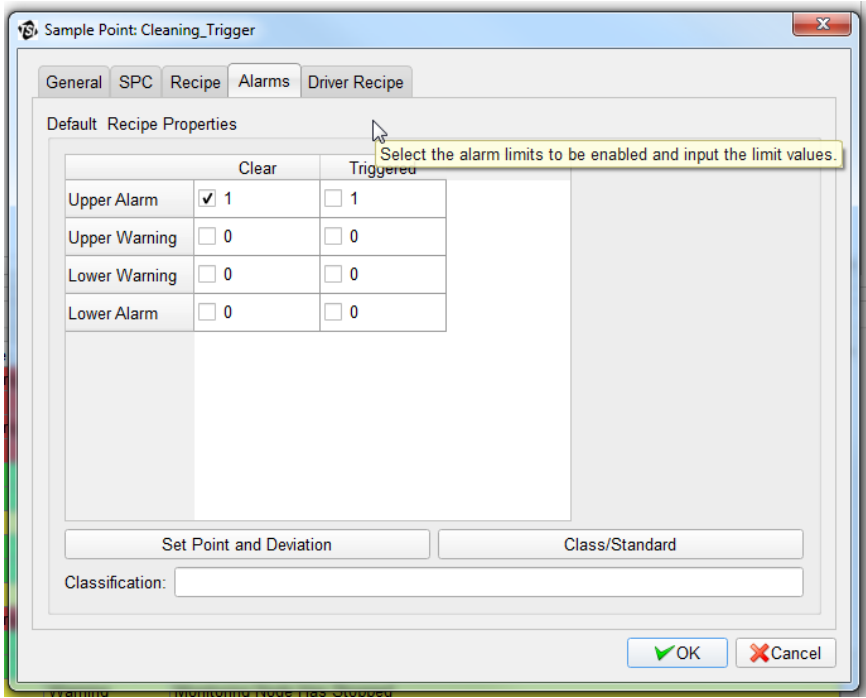
Care must be given in configuring the sample point to set up correct usage. For example, the trigger may be set up to file each sample, with 5- or even 10-second samples which will result in filling the database quicker. In most cases, the individual sample records for the trigger will not be filed. The alarm created by closing the switch will get entered into the alarm log. If alarm acknowledgment is required, there would be an audit log entry detailing who acknowledged the alarm. The typical setup is "**Not Fileable**" and "**Disable Acknowledge**" is checked.

Set the Alarms tab for "1" in the upper alarm of the **Cleared** column. This will result in an alarm condition when the physical cleaning switch is closed. This alarm condition triggers the recipe switch to disable the AeroTrak 6510 Remote Particle Counter with Pump, stopping the pump from running. When the switch is turned OFF, the trigger sample point will return to OK condition and the recipe switch will enable the AeroTrak 6510 Remote Particle Counter with Pump, starting the pump.

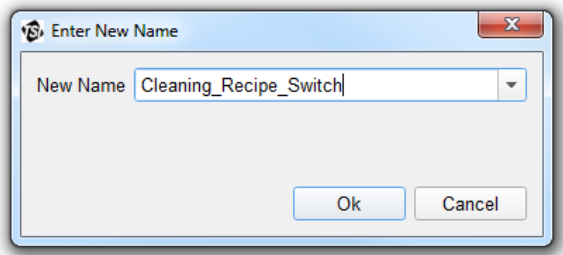
2. An alarm report will list each time the switch was turned on or off.

3. Within FMS 5 Configuration, create a “trigger” sample point called **Cleaning_Trigger**.





4. Within FMS 5 Configuration create a Unit called **“Cleaning_Recipe_Switch.”**



5. Select the “**RecipeSwitch**” driver and check “**Enabled.**” Click **OK** and then open the newly created unit to see the Driver tab.

Unit:Cleaning_Recipe_Switch

General Driver

Unit Name: Cleaning_Recipe_Switch

Driver: RecipeSwitch

Recipe: Default

Calibration Alarm Enabled 1/1/2000

Enabled

OK Cancel

Unit:Cleaning_Recipe_Switch

General Driver

Input Sample Point: Cleaning_Trigger

Trigger State: Alarm

Target Group: CleaningRoom_28

Normal Recipe: In_Operation

Switch Recipe: Cleaning_Cycle

Poll Interval(s): 10

Apply Recipe to: Unit

Optional Items

Run Up Recipe

Run Up Time(s): 60

Run Down Recipe

Run Down Time(s): 60

Override Run-up/Run-Down on Input State Change

OK Cancel

6. Save the changes and reboot the Guard Service.

Summary

- Have a good understanding of the use of recipes and how to configure them in FMS. A review of *TCC-123, “How to Configure In Operation and Cleaning Cycle Recipes”* will be helpful.
- Understand Alarm Groups and how to configure them.
- Understand configuration of Digital Input sample points in FMS, including alarm settings.
- Understand basic wiring of electrical switches and concepts of Normally Open and Normally Closed switches.

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