

INSYS Smart Device Monitoring App

Synchronising Time-
Triggered Applications

Introduction

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1 Introduction

General

The present publication refers to a combination of selected hardware and software components of INSYS icom GmbH as well as other manufacturers. All components have been combined with the target to realize certain results and effects for certain applications in the field of professional data transfer.

The exact descriptions of all used components, to which this publication refers, are described in the tables *Hardware*, *Accessories* and *Software* at the end of this publication.

The symbols and formatings used in this publication are explained in the correspondent section of the device manual.

Some configurations or preparations, which are precondition in this publication, are described in other publications. Therefore, always refer to the related device manuals. INSYS Smart Devices with web interface provide you with helpful information about the configuration possibilities, if you click on "display help text" in the header.

Target of this Publication

An exemplary configuration for a typical fault monitor application is presented here. If your application has similar requirements, you may modify the configuration on the basis of this Configuration Guide.

A Siemens LOGO! micro controller controls various time-dependent functions like school gongs or church bells. The clock integrated into the control would deviate more and more from the actual time in the course of time during daily operation. Since a regular manual setting of the integrated clock is too time-consuming and error-prone, the time synchronisation is to be accomplished using an INSYS IMON that updates its clock regularly via an NTP server.

Various counters will be set up in the control for this that are triggered by the signal from a pulse generator. These counters will be reset regularly at a certain time by the IMON. If, for example, the pulse generator issues a signal to the counters every second and the IMON resets the counters at 0:00, a counter can trigger a gong exactly at 8:00 after 28,800 signals have added up (60 seconds x 60 minutes x 8 hours).

The counters will be reset by a pulse at an input of the control. The IMON will issue a pulse at an output for this. The detailed configuration of the control will not be covered here. Please take this from the manufacturer's documentation.

The following describes how to configure the Monitoring App of an INSYS IMON fault monitor such that it fulfils above described task. It is prerequisite here that the fault monitor is ready for operation, i.e. a SIM card is inserted and it is configured accordingly. It must be observed in particular that the IMON updates its time regularly via an NTP server.



Figure 1: Synchronising time-critical applications – overview

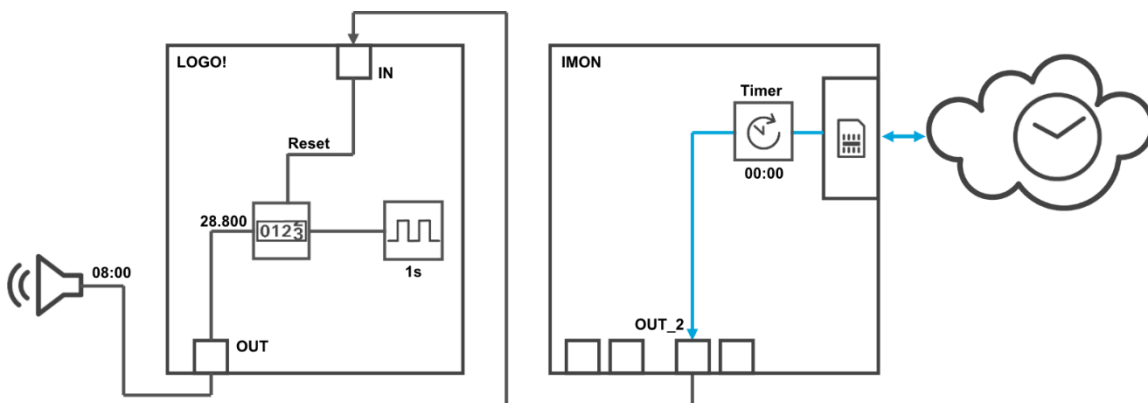


Figure 2: Synchronising time-critical applications – simplified diagram

2 Summary

Fault monitor configuration for synchronising time-critical applications

How to configure an INSYS fault monitor for synchronising time-critical applications of a micro controller. You will find detailed step by step instructions in the following section.

- Add device "IMON" with the type I/O
- Add element "Timer" as "time of day" timer of the IMON
- Add element "OUT_2" as output 2 of the IMON
- Add monitoring "Timer_00:00" as monitoring of the timer for reaching the time 00:00
- Add action "OUT_2_pulse" as pulse at output 2 of the IMON
- Add assignment "Timer_00:00" to "OUT_2_pulse"

3 Configuration

Provisions

It is recommended to commission the router as suggested in the Quick Installation Guide. Different settings of the router may result in necessary adjustments of the settings described in the following. Please prepare the following items before starting the configuration of the application:

- **Connection to the router**

- You have access to the Monitoring App of the router via your web browser.

- **Configurations in the router**

- The router is logged in to the cellular network (configuration via startup wizard or in "GSM / GPRS" or "UMTS" menu).

Monitoring App Configuration

A functional Monitoring App requires to add the individual devices, elements, logic operations, recipients, monitorings and actions as well as the assignment of actions to monitorings.

Perform the following steps for this:

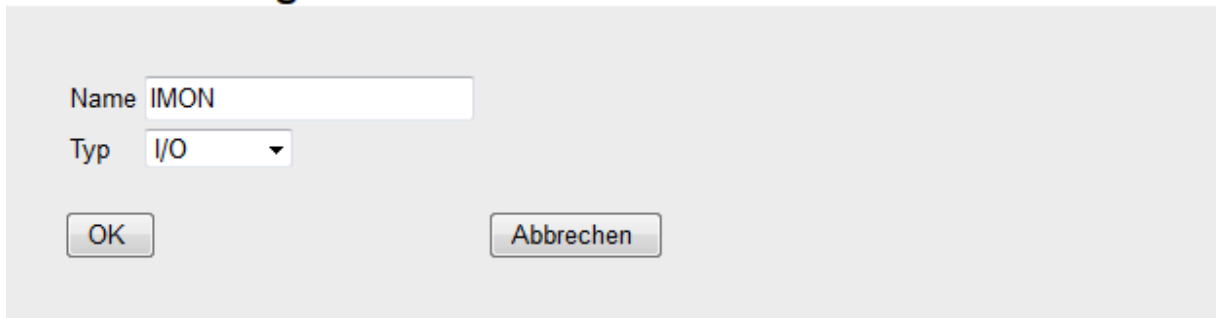
- **Adding devices**
- **Adding elements**
- **Adding monitorings**
- **Adding actions**
- **Adding assignments**

■ Adding devices

How to add the necessary devices for the Monitoring App. It is necessary to add the inputs and outputs of the fault monitor as a device for this application.

1. Select in the menu the page → Setup application → Devices
2. Select the **Add device** button
 - ✓ The "Add device" page appears.
3. Enter "IMON" as name and select the type "I/O"

Gerät hinzufügen



The screenshot shows a dialog box titled "Gerät hinzufügen". It has two input fields: "Name" with the value "IMON" and "Typ" with a dropdown menu showing "I/O". Below the fields are two buttons: "OK" and "Abbrechen".

4. Click on **OK**
 - ✓ You have added the devices that are necessary for the application with this.

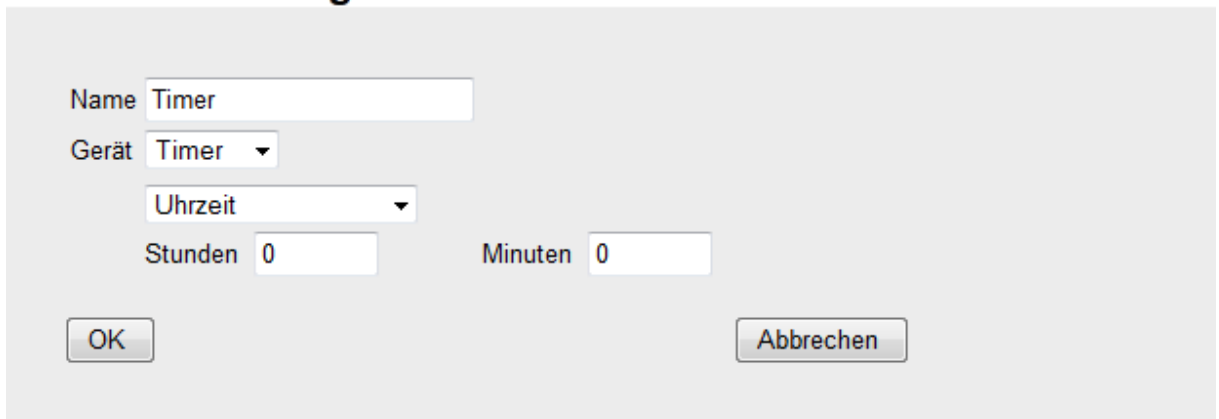
Configuration

■ Adding elements

How to add the necessary elements for the Monitoring App. It is necessary to add a "time of day" timer and output 2 of the fault monitor as elements for this application.

1. Select in the menu the page → Setup application → Elements
2. Select the **Add Element** button
 - ✓ The "Add element" page appears.
3. Enter "Timer" as name and select "Timer" and "time of day" under Device
4. Enter 0 hours and 0 minutes (00:00) as time

Element hinzufügen



Name

Gerät

Uhrzeit

Stunden Minuten

5. Click on **OK**
6. Select the **Add element** button again and enter "OUT_2" as name and select under Device "IO", "IMON", "Output" and enter the Number "2"

Element hinzufügen



Name

Gerät

IMON

Ausgang

Nummer

- ✓ You have added the elements that are necessary for the application with this.

■ Adding monitoring operations

How to add the monitoring operations for the Monitoring App. It is necessary to monitor the timer for reaching the time "00:00" for this application.

1. Select in the menu the page → Monitoring
2. Select the **Add monitoring** button
 - ✓ The "Add monitoring" page appears.
3. Enter "Time_00:00" as name and select "Element", "Timer" and "finished" under Source

Überwachung hinzufügen



The screenshot shows a dialog box titled "Überwachung hinzufügen". It contains the following fields and controls:

- Name:** A text input field containing "Timer_00:00".
- Quelle:** A dropdown menu currently showing "Element".
- Timer:** A dropdown menu currently showing "abgelaufen".
- Buttons:** "OK" and "Abbrechen" buttons are located at the bottom of the dialog.

4. Click on **OK**
 - ✓ You have added the monitoring operations that are necessary for the application with this.

Configuration

■ Adding actions

How to add the actions for the Monitoring App. A pulse at output 2 is necessary for this application.

1. Select in the menu the page → Actions → Definitions
2. Select the **Add action** button
 - ✓ The "Add action" page appears.
3. Enter "OUT_2_pulse" as name and select "Element", "OUT_2" and "1 pulse" under Source

Aktion hinzufügen



4. Click on **OK**
 - ✓ You have added the actions that are necessary for the application with this.

■ Adding assignments

How to add the assignments for the Monitoring App. It is necessary to assign the respective actions to the monitorings for this application.

1. Select in the menu the page → Actions → Assignments
2. Select the **Add assignment** button
 - ✓ The "Add assignment" page appears.
3. Select "Timer_00:00" as Monitoring and "OUT_2_pulse" as Action

Zuordnung hinzufügen



4. Click on **OK**
 - ✓ You have added the assignments that are necessary for the application with this.

4 Test

Testing the application

The Monitoring App is active directly after configuration. You can check the correct function directly by closing one or both inputs of the fault monitor.

The current status of the defined elements (output and timers) is indicated directly on the status page of the web interface of the Monitoring App (consider update interval). The desired time is not reached and the output is not active in the following figure. When reaching the desired time, the output must be enabled to signal the micro controller that the counter(s) must be reset. The functionality itself must be realised in the micro controller. A SIM card must be inserted and the fault monitor must be configured accordingly (PIN, SCN, NTP server) for updating the time regularly.

Status

Aktualisierung alle <input type="text" value="5"/> Sekunden <input type="button" value="OK"/>		
IMON		
IO	OUT_2	0
Timer		
	Timer	15:58:39

5 Used Components

Please observe: The power supply units required to operate devices are not listed here in detail. Take care for a provision at the site, if they are not part of the scope of delivery.

Hardware

Description	Manufacturer	Type	Version
Fault monitor	INSYS	IMON-G100 IMON-G200 IMON-U300	Firmware 2.12.5 Monitoring 2.2.0
Micro controller	Siemens	LOGO!	0BA7

Table 1: Used hardware

Software

Description	Manufacturer	Type	Version
Operating system	Microsoft	Windows 7	Ultimate SP1
Browser	Mozilla	Firefox	39

Table 2: Used software

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