

Track and Trace Analytics Lite

Software for Integration

SICK
Sensor Intelligence.



Described product

Track and Trace Analytics Lite

Software version: 1.0

Manufacturer

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Original document

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1 About this document

1.1 Information on the operating instructions

Read these operating instructions carefully to familiarize yourself with the product and its functions before commencing any work.

The operating instructions are an integral part of the product. Store the instructions so they remain accessible to staff at all times. If the product is passed on to a third party, these operating instructions should be handed over with it.

These operating instructions do not provide information on the handling and safe operation of the machine or system in which the product is integrated. Information on this can be found in the operating instructions for the machine or system.

1.2 Target groups

This document is intended for qualified persons who install, commission, operate and maintain the product.

1.3 Further information

The product page with further information can be found at: [www.sick.com/\[PART NUMBER\]](http://www.sick.com/[PART NUMBER]).

The following information is available depending on the product:

- Data sheets
- This document in all available language versions
- CAD files and dimensional drawings
- Certificates (e.g., declaration of conformity)
- Other publications
- Software
- Accessories

1.4 Related applicable documents

Related applicable documents from SICK

Document	Title	Part number	Source
Technical information	ICD8xx Image-based code readers	8023775	www.sick.com/8023775
Operating instructions	SIM2000ST-E Sensor Integration Machine	8025454	www.sick.com/8025454
Technical information	Track and trace systems	8027018	www.sick.com/8027018

1.5 Symbols and document conventions

Warnings and other notes



DANGER

Indicates a situation presenting imminent danger, which will lead to death or serious injuries if not prevented.



WARNING

Indicates a situation presenting possible danger, which may lead to death or serious injuries if not prevented.

**CAUTION**

Indicates a situation presenting possible danger, which may lead to moderate or minor injuries if not prevented.

**NOTICE**

Indicates a situation presenting possible danger, which may lead to property damage if not prevented.

**NOTE**

Highlights useful tips and recommendations as well as information for efficient and trouble-free operation.

Instructions to action

- ▶ The arrow denotes instructions to action.
- 1. The sequence of instructions is numbered.
- 2. Follow the order in which the numbered instructions are given.
- ✓ The tick denotes the results of an action.

2 Safety information

2.1 Basic safety instructions

Please observe the safety notes and the warnings listed here and in other sections of this product documentation to reduce the possibility of risks to health and avoid dangerous situations.



CAUTION

Failure to observe the relevant work safety regulations may lead to physical injury or cause damage to the system.

Storage of documents

- ▶ This document and further technical documentation/information
 - Must be kept available for reference.
 - Must be handed on to new operating entities/new specialist personnel.

2.2 Intended use

Track and Trace Analytics Lite (TTAL) is used to analyze and monitor a track and trace system in the application intended for the system.

The product must only be used within the limits of the prescribed and specified technical specifications and operating conditions at all times.

Incorrect use, improper modification or manipulation of the product will invalidate any warranty from SICK; in addition, any responsibility and liability of SICK for damage and secondary damage caused by this is excluded.

The software and its components may not be analyzed, modified or copied.

2.3 Requirements for the qualification of personnel

- Qualified persons have the specialist training, skills, experience and knowledge of the relevant regulations and standards needed to be able to perform work assigned to them and to identify and avoid any potential dangers independently.
- Electricians have the professional training, skills, experience and knowledge of the relevant standards and provisions needed to work on electrical systems and to detect and avoid any potential dangers independently.

Activities	Qualification
Installation Maintenance	<ul style="list-style-type: none"> • Knowledge of the operation and use of the software in the particular application • Knowledge of the software and hardware environment in the particular application
Commissioning Configuration	<ul style="list-style-type: none"> • Knowledge of the computer operating system used • Knowledge of the design and setup of the described connections and interfaces • Basic knowledge of data transmission
Operation	<ul style="list-style-type: none"> • Knowledge of the operation and use of the software in the particular application

2.4 Cybersecurity

Overview

To protect against cybersecurity threats, it is necessary to continuously monitor and maintain a comprehensive cybersecurity concept. A suitable concept consists of organizational, technical, procedural, electronic, and physical levels of defense and considers suitable measures for different types of risks. The measures implemented in this product can only support protection against cybersecurity threats if the product is used as part of such a concept.

You will find further information at www.sick.com/psirt, e.g.:

- General information on cybersecurity
- Contact option for reporting vulnerabilities
- Information on known vulnerabilities (security advisories)

3 Product description

3.1 Product identification

The version number of the installed TTAL instance can be found in the menu item: **Configuration > About System**.

The TTAL version number is composed as follows:

Patches/Fixes	1.X.X.X
Cumulative patches	1.X.X.X
Minor version	1.X.X.X
Major version	2.X.X.X

3.2 Product characteristics

Overview

Track and Trace Analytics Lite (TTAL) is used to analyze and monitor a track and trace system in the application intended for the system.

The software can collect, store and process processing and condition data of the system and the components installed in it. The processed data is displayed to users via various dashboards, which can be used to analyze the data in greater depth.

Additional functions related to image processing can be developed on request.

The runtime environment also runs on the SIM2000-2 P and can be added and customized later.

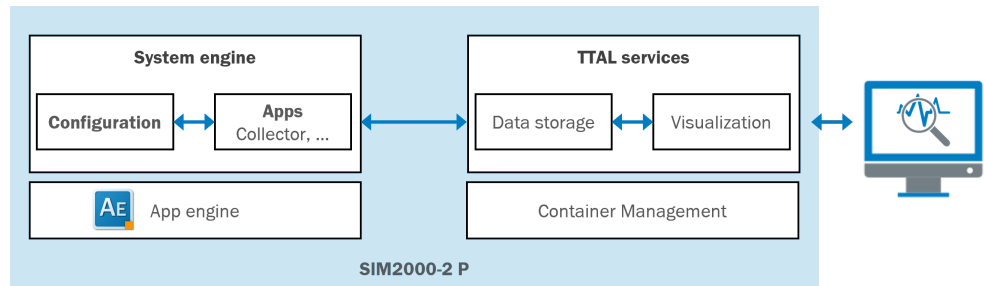


Figure 1: Structure of Track and Trace Analytics Lite (TTAL)

Additional functions

The collected object data can be supplemented with the captured image of the respective object when using a suitable product variant and hardware (ICR890-4 and SSD).

If several track-and-trace systems are located in the same building or network, the hub functionality can be used to generate an overview page of all systems with their respective performance indicators. A hub master instance is required for this in the network (“Hub” product variant). Systems that require a paid variant of TTAL can then be added to this overview.

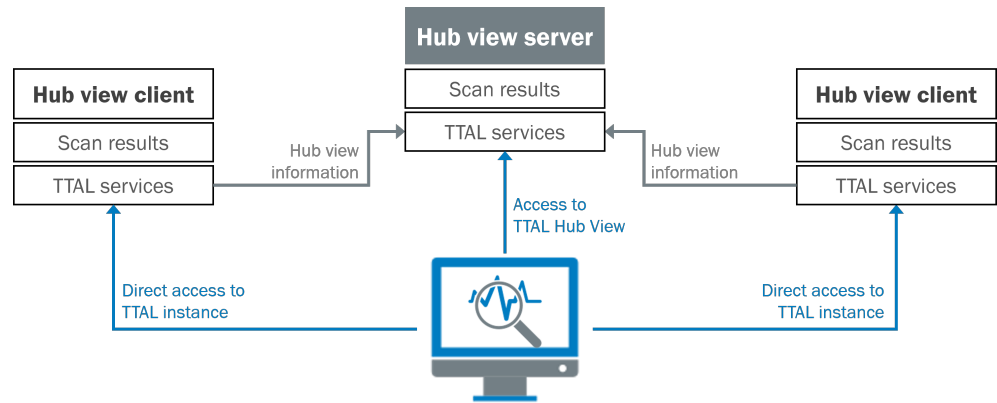


Figure 2: Hub master instance and client instances

Interfaces

Depending on the product variant (“Connect” product variant), TTAL offers the possibility to query object information via dedicated endpoints. This requires the data consumer to be within the same network as the installation hardware.

Communication occurs via REST endpoints using TCP.

Prerequisites

- Port 443 available

3.3 Software variants

The available software variants differ in the features described below.

The features of the variants can be combined with each other:

- Hub Connect
- Image Hub
- Image Connect
- Image Hub Connect

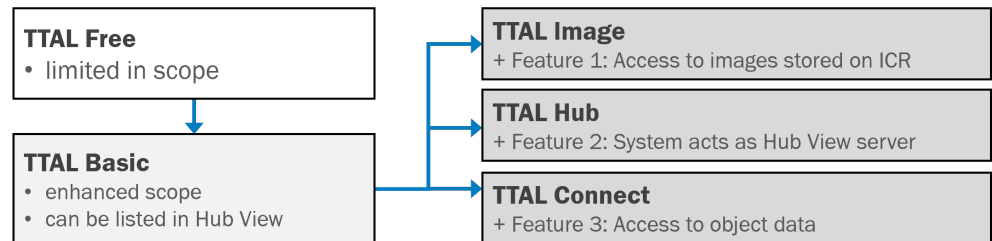


Figure 3: Software variants

	Supplementing the object data with a captured image*	Hub server instance	Hub client instance
TTAL Free	-	-	-
	Customer can access the information, but the scope and storage capacity are limited.		
TTAL Basic	-	-	✓
	Customer can access more information and integrate this system into a hub view (if accessible).		

3 PRODUCT DESCRIPTION

	Supplementing the object data with a captured image*	Hub server instance	Hub client instance
TTAL Hub	-	✓	-
	Customer can access more information and hosts the hub view.		
TTAL Image	✓	-	✓
	Customer can access more information, retrieve ICR images, and integrate this system into a hub view (if accessible).		
TTAL Image Hub	✓	✓	-
	Customer can access more information, retrieve ICR images, and hosts the hub view.		

* when using suitable hardware (ICR890-4 and SSD)

4 Installation

Overview

SICK Service carries out the installation of TTAL via SOPAS on the SIM2000-2 P system controller on which the software instance is to run.

If TTAL should not be installed yet, the installation can be done later on the system controller. The installation package required for this can be requested or purchased from the local SICK office.

After installing the package, the system controller should be restarted.

The following activities are performed by default in SOPAS:

- Parameterization: tailoring other device parameters to the application
- Error analysis and determination of the cause
- Uploading of updates

Prerequisites

- System with SIM2000-2 P system controller
- Ethernet connection to the SIM2000-2 P system controller
- Firmware version ≥ 35
- Computer with the SOPAS ET configuration software installed
 - ① **NOTE** | The latest version of the SOPAS ET software can be downloaded from www.sick.com/SOPAS_ET.
- Device description file for the device (SDD file)
 - ① **NOTE** | The SDD file can be installed using the device catalog in SOPAS ET. The SDD file is saved on the device and can be installed from there. Alternatively, installation is possible from the SICK website (Internet connection required).

5 Operation

5.1 Opening a TTAL instance

Overview

The TTAL instance of a track-and-trace system can be accessed via a browser on the same network.

Approach

- ▶ Enter the IP address of the system controller and append `/ttal` to it.
e.g.: `xxx.xxx.xxx.xxx/ttal`
- ✓ The Landing Page is displayed. This is where authentication occurs.
- ▶ Log in with the required user level.



NOTE

The required access data can be obtained from the local SICK office.

- ✓ The landing page of the client (the TTAL instance) is displayed. Or, if a Hub View instance is installed, the overview page of the connected systems is displayed. This can be used to select the relevant TTAL instance.

5.2 User interface

Landing page

As an entry point, the landing page offers various information at a glance.

Starting from the landing page, each user role (after appropriate authentication and depending on the TTAL version installed) can access relevant more detailed information in each case. The information is arranged hierarchically. The granularity becomes correspondingly finer towards the bottom.

Navigation area

The navigation area is located on the left side. It is used to navigate within the software. This overview is accessible from all dashboards. It shows the available areas depending on the product variant.

- **Hub View**
- **Landing page**
- **Live Monitoring**
- **Statistics**
 - Longterm
 - Shift Overview
- **Health**
 - System status
 - Customer Protocols
 - TTAL Diagnosis
- **Configuration**
 - About System
 - User Settings
 - Shift Configuration
 - Object Configuration
 - Object Details
 - Thresholds & Alerts

Navigation

- ▶ To return to the landing page from a detail page, click the system name in the title bar.
- ▶ To return to the **Hub View** view, click on the SICK icon.

5.2.1 Hub View



Figure 4: Hub View

Depending on the product variant, the **Hub View** display allows all connected track-and-trace systems with a TTAL instance to be monitored from one central entry point. In this case the designated server aggregates information from the connected clients and displays it.

To access the overview, open the TTAL instance on the server. From there, you can access any local TTAL instance of any client. Each client instance can still be opened directly as usual.

The displayed period and the displayed systems can be set in the header area.

All connected systems report the recorded process characteristic values at regular intervals, e.g.:

- Monitored conditions
- Throughput
- Current speed

The system utilization and trend indicators are also calculated. Utilization is calculated by dividing the time the system was in operational mode by the total time.

The trend indicators for each characteristic value are obtained by comparing the selected period being displayed to the previous period (e.g.: selecting **1 day** provides a trend indicator in comparison to the previous day).

Further topics

- [Opening a TTAL instance](#)

5.2.2 Landing page

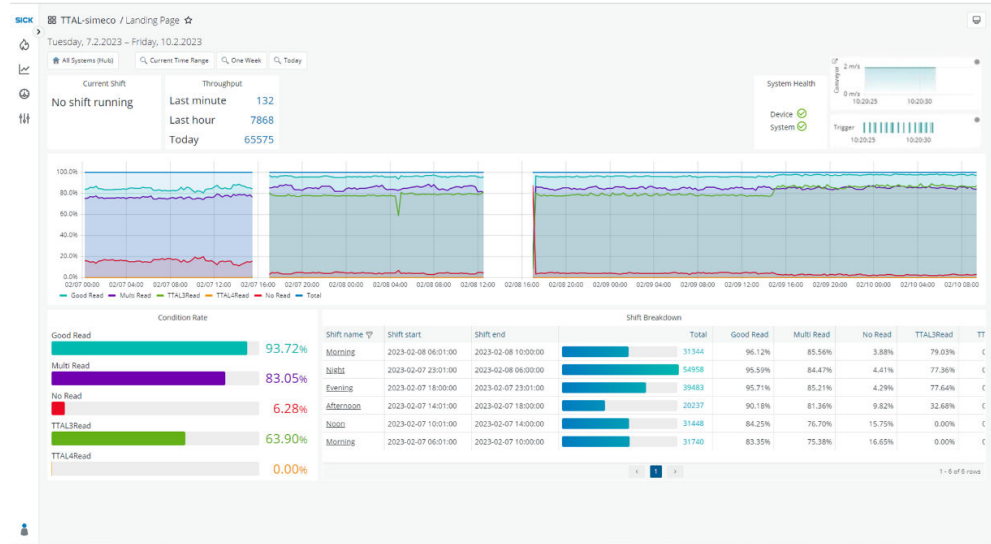


Figure 5: Landing page

The landing page displays an overview of the available information for the respective system. The subordinate sections are linked from the Landing Page.

The displayed period and the displayed systems can be set in the header area. All underlying information is displayed according to the selection. In addition, predefined time horizons can be examined in more detail.

The top section provides an overview of the current status of the monitored system:

- Current shift
- Throughput
- Alerts
- Status of the system

The middle section shows the time course of the monitored characteristic values of the monitored system. To visualize a specific condition on its own, it can be selected in the legend.

To enlarge a certain area in the diagram and display it in more detail, a window can be opened in the diagram. A further analysis is available via the **Current Time Range** button.

The bottom section shows the percentage value of the monitored conditions and the characteristic values broken down by shift.

5.2.3 Live Monitoring

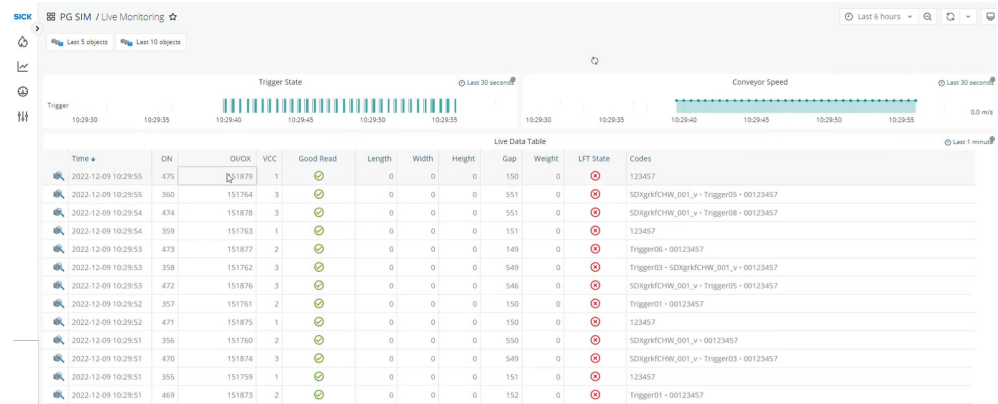


Figure 6: Live Monitoring

The **Live Monitoring** page displays the real-time transmission of the processed objects of the system. The view can be restricted to the last n objects or the last n minutes.

The displayed condition as well as the displayed codes can be configured via SOPAS.

The detailed view of the respective object can be accessed via the icon in the first column:



5.2.4 Statistics

Longterm

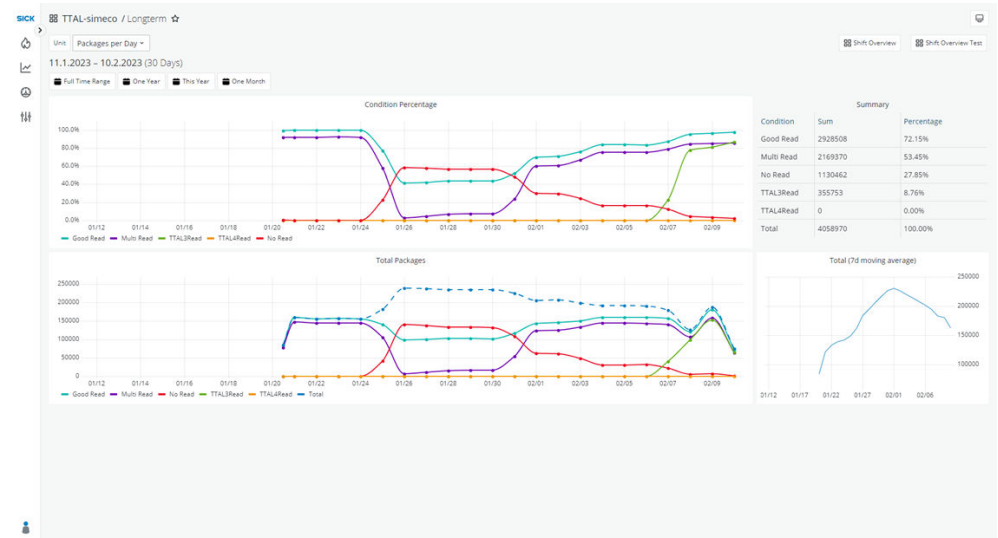


Figure 7: Statistics / Longterm

The long-term statistics include all historical data points recorded during operation. The values are available as an absolute value as well as a percentage of the total throughput.

Predefined performance indicators can be listed in detail for the selected period. If a specific time period has been selected via zoom, it can be examined in more detail using the **Analyze this time range** button.

Daily Statistics

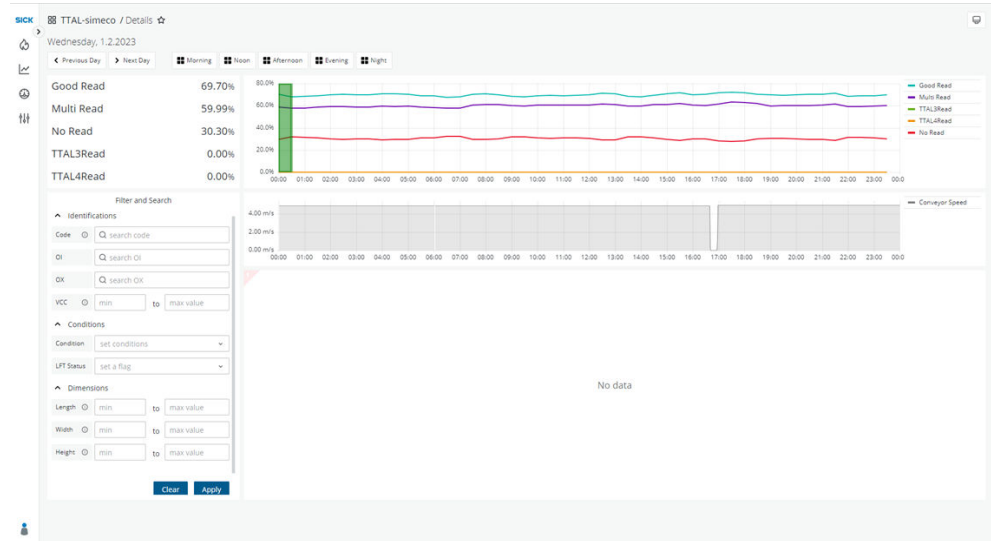


Figure 8: Statistics / Daily Statistics

In the **Daily Statistics** area, all information about the selected day is displayed and entered shifts for this day can be selected. The percentage value of the monitored conditions is displayed. Next to this, the course of the monitored rates can be found as a time sequence. The table lists all objects for the selected period. The displayed objects can be narrowed down by filters and search options.

Identifications	Search for code content, object indexing, and number of validly read codes on the object
Conditions	Filtering of objects based on the results of the conditions (True/False)
Dimensions	Filtering of objects by minimum and maximum size

Shift Overview

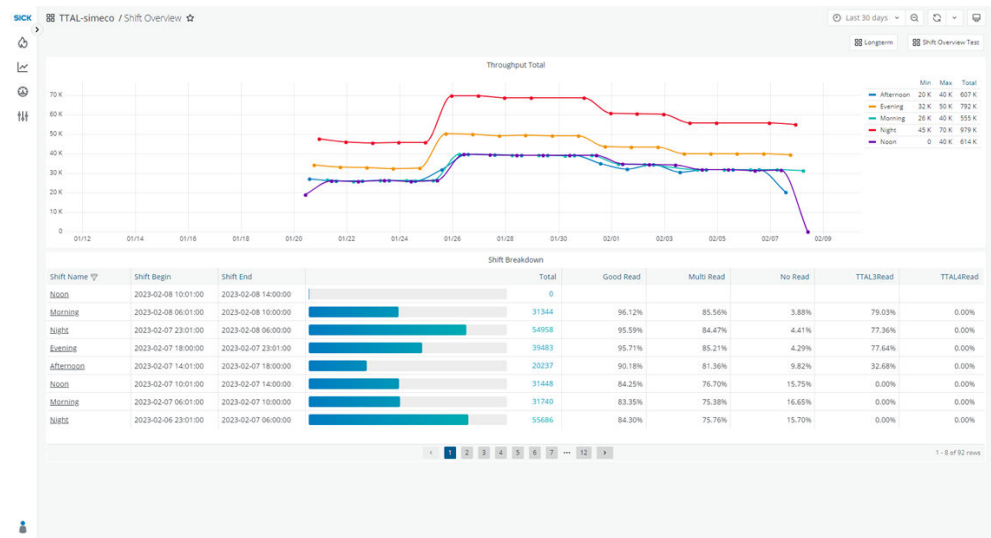


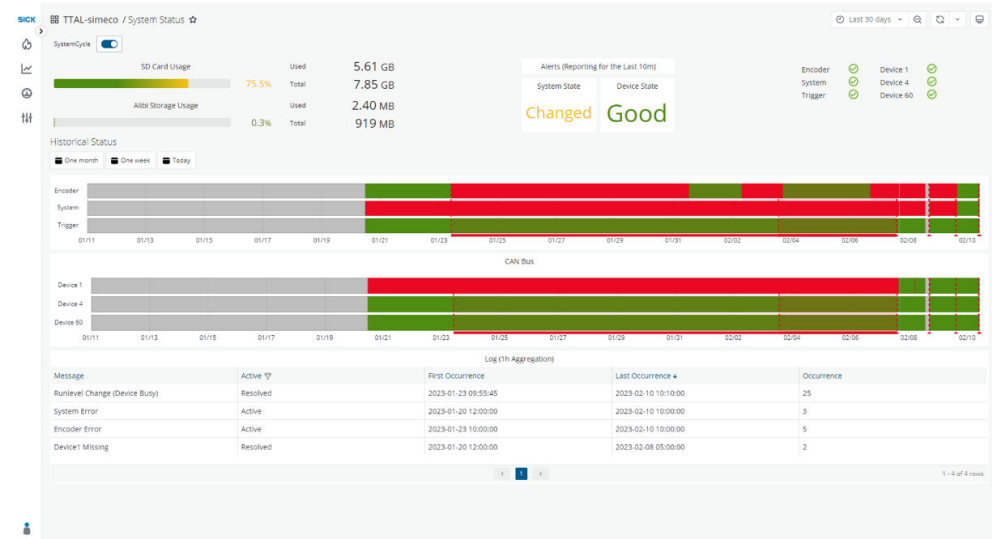
Figure 9: Shift Overview

The **Shift Overview** view contains all information aggregated to the respective shifts. Using this representation, individual shifts can be analyzed in more detail. Predefined performance indicators for the shift can be recorded and evaluated. Selected shifts can be compared with each other.

In the display of a single shift, the previous or the next same shift as well as the previous or next shift can be selected in the header area.

5.2.5 Health

System status



The system status is used to check the condition of the track-and-trace system on which the respective TTAL instance is installed. The system status shows the current utilization and the available memory of the MicroSD cards used on the system controller. Depending on the user level, information can be accessed for error analysis, e.g.:

- Timeline display, in which the conditions are displayed chronologically
- History, in which status events are logged

Next to it you will find the overview of alerts. Below this, the time history of the system and device status can be seen. In the **History Log** area, all system logs that were issued by the system for this period are displayed.

Customer Protocols

The **Customer Protocols** area is used to monitor the apps running on the system controller.

TTAL Diagnosis

The **TTAL Diagnosis** overview page provides diagnostic information about TTAL, such as memory capacity or CPU utilization. This information is mainly for support purposes.

5.2.6 Configuration

Overview

In the **Configuration** area, the installed TTAL full version can be tailored to the specific task and specific installation location and purpose by means of application- and process-specific parameters.

These customizations are not available in the **TTAL Free** variant.

About System

In the **About System** area, details such as the license, version, and connection information are displayed.

User Settings

In the **Object Configuration** area, additional values for the object situation on site can be entered. These values define what is shown in the **Object Details**. In this area, the object and its associated code position, amongst other things, are graphically displayed. If no values are entered, default values are used for visualization.

Object Conditions

- Definition of which conditions are visible and which color they are drawn in
- Newly added conditions are visible by default

Thresholds & Alerts

- Tailoring of notification settings to the application and expected performance
- Output of warnings in the event of changes in status or when certain threshold values are exceeded or not reached

Observation Time	<ul style="list-style-type: none"> • Monitoring time in which an existing notification is to be sent again
System	<ul style="list-style-type: none"> • General settings • The notifications are displayed in the Notifications area on the Landing Page.
Performance	<ul style="list-style-type: none"> • Settings for the monitored Object Conditions • Notifications can be activated individually for each aspect, and threshold values for the display of warning or error messages can be defined depending on the parameters.

Shift Configuration

In the **Shift Configuration** area, different shifts and their time periods can be entered.

Clicking on a period opens an editor for the shift, where the name, times and weekdays can be entered.

The entered shift times are used in the overview (menu **Statistics > Shift Overview**) to compare shifts with each other and to derive characteristics values from them.

5.2.7 Object Details

The **Object Details** view allows you to retrieve the entire record assigned to the object. This view includes, but is not limited to:

- All conditions
- Object information
 - Tracking
 - Identification
 - Dimensions
 - Weight
- Object image
- Position, content and type of codes

5.3 Data Backup and Recovery

MicroSD memory card

The process and status information are stored on the MicroSD memory card inside the system controller.

When replacing the controller, all saved information can be transferred to the new controller by replacing the MicroSD memory card.

Backing up the parameter set outside the device memory

- Manual backup: Configuration file on the computer
- Semi-automated backup: optional external storage media (e.g. MicroSD memory card)

The configuration of the ICR camera is transferred to the new camera by replacing the MicroSD memory card.

SSD

Image information is stored remotely on the SSD on the ICR camera.

When replacing the ICR camera, the previously used SSD can be transferred to the new camera. This enables the captured and saved object images to be retained. The SSD can also be replaced when the controller is exchanged.

6 Troubleshooting

Problem	Troubleshooting
<ul style="list-style-type: none"> • TTAL is not displayed as desired in the browser 	<ul style="list-style-type: none"> ▶ Check the address entered. ▶ Check the IP address entered. ▶ Check the availability of the system controller (network and voltage). ▶ Check the browser used (browser support and version).
<ul style="list-style-type: none"> • No display of camera images (image access included in installed TTAL instance) 	<ul style="list-style-type: none"> ▶ Check availability of object images on the camera. To do this, enter the following in the address line in the browser: <code>http://[ICR-IP]:8084/2.0/media/icr/[IMAGE FILE NAME].jpg</code> ✓ If the image is available on the camera, the requested image will be downloaded. If the image is not available on the camera, an HTML error code is displayed on the screen. ▶ Ensure network availability between the two components via SOPAS Info.
<ul style="list-style-type: none"> • Software feature not available 	<ul style="list-style-type: none"> ▶ Check product variant under Configuration > About System. ▶ If the product variant is different to the product variant ordered, contact the local SICK office.

7 Decommissioning

7.1 Deactivation

TTAL is deactivated via SOPAS ET on the **Protocol** screen.

- ▶ In the **Overview** tab in the **Available Protocols** area, deactivate the **Track & Trace Analytics Lite** entry. To do this, set the switch to **OFF**.

8 Technical data

Product type	Software license
Language	English
Supported products	SIM2000-2 P in combination with: <ul style="list-style-type: none"> • Image-based code readers • Fixed mount barcode scanners • RFID read/write device • DWS systems
Hosting	SIM2000-2 P
Firmware	≥ 35.00
Memory size	Depending on the application: <ul style="list-style-type: none"> • Number of systems • Number of parcels per day • Duration of storage in days
Storage medium	Process data are stored on the SD card provided.
Minimum screen resolution	1,920 px × 1,080 px
Supported browsers	
Google Chrome	Version ≥ 65
Mozilla Firefox	Version ≥ 59
Microsoft Edge	Version ≥ 41

9 Accessories

9.1 Accessories

SSD hard drive for image archiving

Part number	Description
4114371	256 GB SATA III SSD 2.50" A. DSP
4114372	512 GB SATA III SSD 2.50" A. DSP
4114373	1 TB SATA III SSD 2.50" A. DSP
4114374	2 TB SATA III SSD 2.50" A. DSP
4114375	4 TB SATA III SSD 2.50" A. DSP

10 Annex

10.1 User Management

The default passwords as delivered can be obtained from the local SICK office.



NOTICE

- ▶ Change the standard passwords during initial commissioning!

User level	Password required	Available functions
Operator	Yes	<ul style="list-style-type: none"> • All application parameters • Standard diagnostic information
Service	Yes	<ul style="list-style-type: none"> • All application parameters • Extended diagnostic information • Extended logging features

10.2 List of abbreviations

Abbreviation	Meaning
ON	Internal Object Number
OI	Object Index Integer
OX	Object Index String
VCC	Valid Code Count

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1800 33 48 02 – tollfree
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