

System Description

CRYSSMA

1 Introduction

CRYSSMA (Sistema de Centralización de Registradores y Supervisión de Seguridad y Mantenimiento) is the *Centralisation System of Recorders and Supervision of Security and Maintenance*.

What it does...

- **Collects** information from critical elements of level crossing protection facilities.
- **Stores** that information for subsequent operation.
- Its expert system **analyzes** it for real-time detection of possible incidents that may occur in these facilities.

Objectives...

- To **record and store** any state changes in the monitored critical elements of a level crossing protection facility.
- To **detect** possible malfunction or incidences that take place in the supervised facilities.
- To immediately **inform** system users of this incident by SMS or e-mail.
- To ease **access** to stored information for its evaluation.
- To provide information on the **status** of level crossing protection systems.

2 References

[CRYSSMA-MA-E7] Manual de Aplicación Cryssma.

[CRYSSMA-NSC-MA-E1R0] Manual de Aplicación del Nodo Servidor de Centralización.

[CRYSSTINE CENTRALIZACION-MU-E2R0] Manual de Usuario Crysstine Centralización.

[CRYSSTINE EVALUACION DATOS-MU-E2R0] Manual de Usuario Crysstine Evaluación de Datos.

[RDX5020-CT] Características Técnicas del RDX5020.

3 Architecture

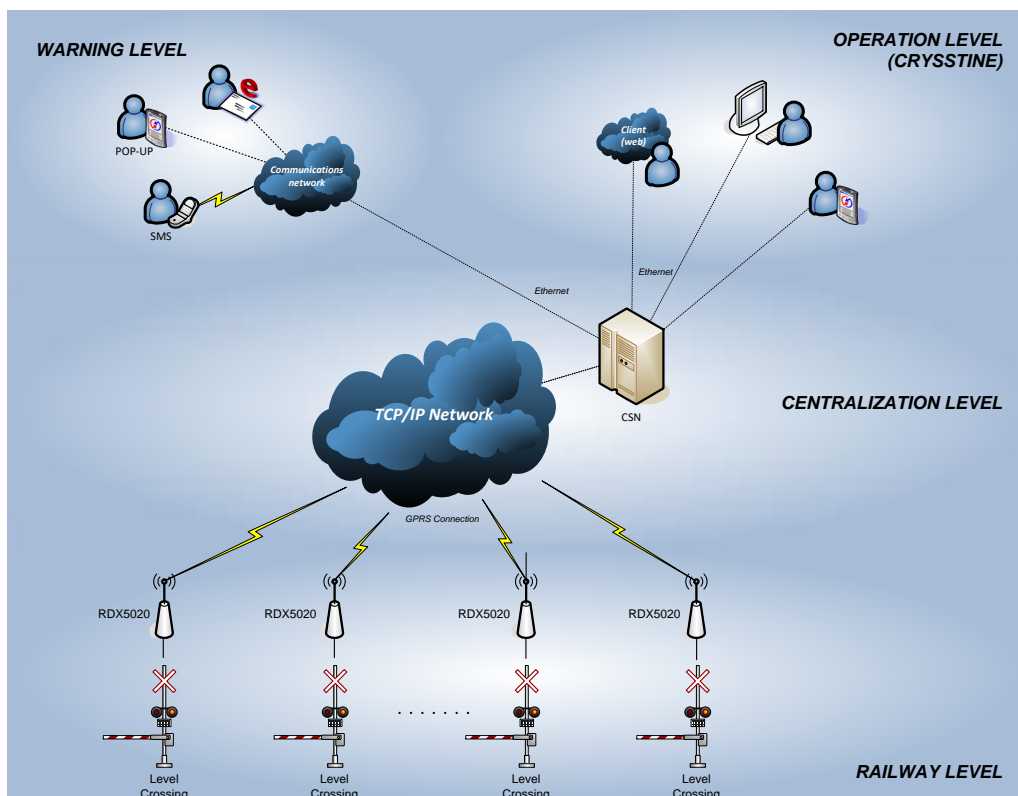
The basic architecture of the system consists of four levels:

Railway Level: includes all the equipment needed to collect information from level crossings.

Operation Level: includes all the necessary equipment for the presentation of the stored information and the results of the Centralization Level analysis. The Exploitation Terminals are part of this level, which will be connected to the CSN to show the stored information, as well as the results of its analysis.

Centralization Level: includes the necessary equipment to obtain, analyse and store the information collected at the Track Level. It will basically consist of a Centralization Server Node (CSN) connected to a TCP/IP interface.

Warning Level: includes all the necessary equipment for the management of the results of the analysis of the Centralization Level by means of mobile telephony, mail or messaging services.



Within this architecture, the main elements of the system are:

RDX5020

Equipment located at each level crossing protection facility that collects, records and stores locally, and finally transmits to the server, any change of state in the critical elements of the facility.

Locally stored records can be viewed from a PC connected to the RDX5020.

Crysstine

Friendly interface provided to the end user for consulting and exploiting the information stored at the CSN.

Crysstine shows the list of incidents at any given moment in the set of monitored Level Crossings.

It is possible to consult the records stored on the server relating to any centralized step for expert analysis by qualified personnel.

Centralization Server Node (CSN)

Equipment that collects and stores information from records transmitted by each of the supervised (centralized) facilities:

- It analyzes this information to detect if there has been any breakdown or incident in any of the supervised crossings.
- Monitors the communications status of the entire network and reports on that status.
- Finally, its subsystem SICONA transmits to the programmed destinations the existence of an incidence as well as its nature.

4 RDX5020

What it is...

Equipment specifically designed for installation in industrial environments with low consumption needs, such as photovoltaic installations.

In charge of collecting the status of the installation, keeping a history of its operation (either to improve predictive maintenance or significantly improve corrective maintenance) and transmitting that information to Cryssma.

Responsible for providing valid legal information in case of serious incidents.

(Detailed information can be found in [RDX5020-CT])

Characteristics...

- GPRS, ETHERNET or telephone quad connection for remote transmission of your data.
- Remote debugging of the level crossing protection system.
- USB or Bluetooth connection for local data extraction.
- Cryssma integration.
- SD memory cards for backup of installation records.
- Legal registration of your data. vUltra low power consumption for photovoltaic installations.
- Average consumption at rest of 100mW.

5 Centralization Server Node

El **Centralization Server Node (CSN)** is the equipment that collects and stores the information from records transmitted to it by each of the supervised (centralized) facilities.

How it is...

Highly configurable in your installation, depending on the specific needs:

- Cluster installation to ensure system availability,
- installation in virtual environments,
- backup copies,
- etc...

What it provides...

- Highly configurable **storage** of received data.
- Intelligent **analysis** of received data.
- **Incidence generation** for each level crossing or for the entire system.
- RDX5020 specific **data request**.

(Detailed information can be found in [CRYSSMA-NSC-MA-E1R0])

6 Crysstine

CRYSSTINE application (*Integrated Terminal of Exploitation of the System of Centralization of Recorders and Supervision of Security*) allows the reading and exploitation of the data captured by the RDX equipment of ENA Tecnología.

It is possible to use the equipment locally (*Crysstine Data Evaluation*) and for remote data exploitation (*Crysstine Centralization*).

6.1 Crysstine Data Evaluation

Crysstine Data Evaluation application installed on a PC and connected by USB or Bluetooth to the RDX5020 allows:

- Records directly dump to PC.
- Storage in the PC of the read records for later analysis.
- On-screen presentation of records in text and synoptic mode.
- Log files exportation.
- Reading of data files stored in SD memory cards installed in the Recorders.
- Generation of reports from the stored records.

(Detailed information can be found in [CRYSSTINE EVALUACION DATOS-MU-E2R0])

6.2 Crysstine Centralization

La aplicación **Crysstine Centralización** instalada en un PC y con conexión TCP/IP al NSC permite:

- Filtrado por Usuarios y Jerarquías (líneas, sectores, etc.).
- Visualización jerárquica de los pasos a nivel.
- Visualización del estado de las comunicaciones.
- Visualización en modo texto o sinóptico del estado de un paso, incidencias, históricos, etc.
- Filtrado de incidencias por fecha, tipo, paso a nivel, etc.
- Generación de informes.

Así mismo, se pueden visualizar y explotar los datos desde un explorador WEB (ver figura).

(Detailed information can be found in [CRYSSTINE CENTRALIZACION-MU-E2R0])

