SIEMENS

Cerberus® LMSmodular Interface to IMS 2000 NISE Pad Ver. 5

Engineering Guidelines

Cerberus
Security
for People
and Assets

Siemens Building Technologies
Cerberus Division

1 Introduction

1.1 Who will use this manual

The Engineering Guideline is addressed to Cerberus & Landis&Staefa technical supervisors who will manage the IMS2000 installation. It is a document of concepts and it is aimed to give you a better understanding of IMS2000 operation.
The description about how to install hardware and software components will be found in other manuals, and namely in those listed in Par. 1.3.

1.2 Versions of this document

This is the fourth release of the IMS2000 V 2.1 Engineering Guidelines. Previous releases were dated 4.93, 7.93 and 10.93.

1.3 Related documents

For further information about specific products mentioned in this manual please refer to the following Landis&Staefa and Cerberus documents. In these manuals you will also find information about how to install and/or configure software and hardware that compose the IMS2000.
This document is consistent with NISE V5 firmware.
Cerberus Dati documents:

- GW-20 Technical Manual e1478
- NISE Configuration Manual e1150
- LMSmodular Installation Manual e1862
- LMSmodular User Manual e1865
- LMSmodular Configuration Guide e1863
- LMSmodular Configuration Reference e1864

Landis&Staefa documents

- E21 Landis&Staefa Integral MS2000 Installation Guide
- E22 Landis&Staefa Integral MS2000 Software Manual Landis&Staefa Vision
- E23 Landis&Staefa Integral MS2000 Software Manual Landis&Staefa Access
- E24 System Manager

1.4 Document description

This manual is composed of 8 chapters and 4 appendixes.

- Chapter 1 describes the document structure.
- Chapter 2 deals with the IMS2000 system basic concepts. You should read this manual to get a system overview and to understand how technological and security data are represented in LMS and MS2000 systems. Chapter 2 also lists the system limits.
- Chapter 3 describes how the MS2000 monitors and manages the security points
- Chapter 4 conversely describes the way LMS handles the technological points.
- Chapter 5 describes the interactions among the control panels as well as their limits.
- Chapter 6 describes the coherency controls performed by MS2000 and NISE Pad.
- Chapter 7 contains some notes about configuration that mainly apply to Landis&Staefa technical personnel.
- Chapter 8 Glossary

You are strongly encouraged to read carefully the second chapter that gives you the basic concepts to deal with the integrated system, and then to go through the document's parts that best fit your need. If you are a Landis&Staefa technician, you should read the Chapter 3 and the Par. 4.4, and 4.5 while as a Cerberus technician you will find most useful the Chapter 4. Remember anyway that this document describes an integrated system and no sharp boundary can be defined between the two systems !

The Appendixes have been inserted for reference, and they show some templates to be used during integrated system engineering.

2 Basic concepts of integrated system

2.1 System architecture

IMS2000 is a system designed to integrate technological and security plant management systems. It does not replace either the existing security system or the existing technological plant management system. It links the technological plant items to the security system and it links the security points to the technological system.
IMS2000 is based on two already marketed and well established products: Cerberus' LMS and Landis&Staefa's MS2000. The first manages security systems, the second technological plants. Both use a front-end processor, called Gateway GW-20 in the Cerberus' LMS System and NCRS in the Landis&Staefa MS2000 system. Adding a dedicated piece of hardware (the NISE Pad) and the firmware residing on it, to GW-20, you can send security messages to NCRS and receive technological messages from it. The scheme of Fig. 1 shows the system architecture.

2.1.1 LMS

The LMS system is composed of security and safety control panels such as CZ10 (fire detection) and CZ12 (and CS4 used in CZ12 emulation mode) - for intrusion detection and security - that acquire data from field. Actually LMS can be interfaced to various electronic devices, but only data from CZ10, CZ12 and CC-11 can be integrated in the IMS2000 system. The security and safety control panels (called collectively subsystems) are interfaced to field devices such as smoke detectors, intrusion detectors, contacts etc.

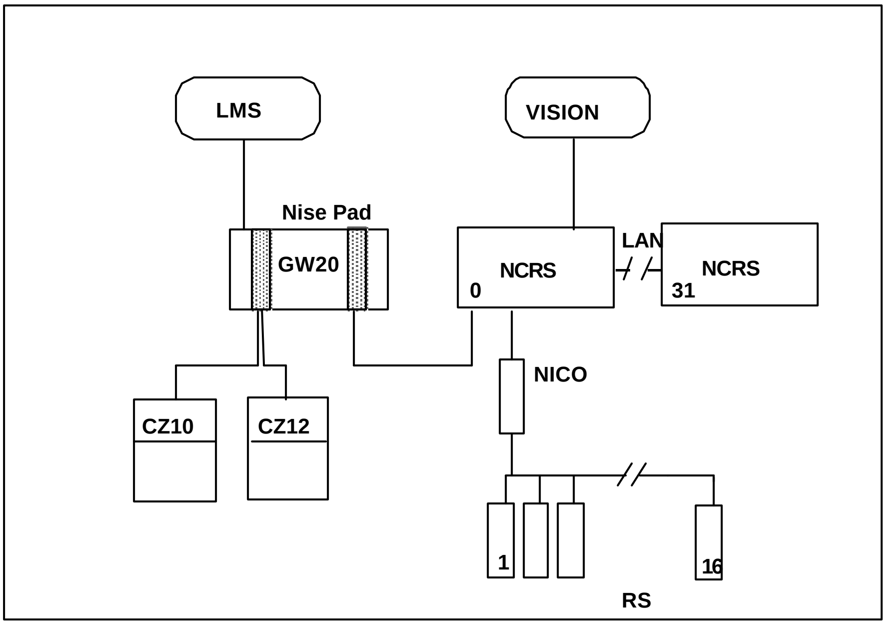

Fig. 1 System Architecture

A status change of one of these devices is called an event. According to the software configuration, the control panel sends a message that reflects the new device status to the management station. Up to 16 different states are available for each security/safety device. The messages coming from up to 16 control panels are collected by a dedicated front-end processor, the Gateway GW-20. This microprocessor-based device polls the control panel, operates a logging printer, stores messages, and communicates with the PC-based monitoring center. The Gateway can be programmed to initiate automatic interactions between the connected control systems. i.e. an event generated on one subsystem can trigger an action on a different subsystem. On the PC-based monitoring station runs LMS (Local Monitoring System) that displays the field devices states, shows events to the operator and accepts commands and actions to manage the events.

2.1.2 MS2000

The Landis&Staefa MS2000 system is a PC-based energy management system. It is used to manage and monitor building services installation. The system information sources are the peripheral devices that convert the physical devices states (pump on/off, temperature, fan speed and so on) into electrical signals. These signals are collected by local processing level units, called RS that are connected in a bus structure and are interfaced to a NICO. The NICO belongs to a higher order processing level, can receive data from up to 16 RS's and is connected to the NCRS. NCRS is an intelligent module which can operate either in stand-alone mode or connected to a PC-based supervising system. It is able to process, store and handle a large volume of data, generated by the RS's. Up to 32 NCRS System Controllers can be connected in a LAN (Local Area Network). The LAN could be connected, through one of its NCRS, to a PC-based monitoring station, running Landis&Staefa Vision - as a graphical interface - and/or Landis&Staefa Access Software - as a numerical interface. Any device that can be connected and is supported by the hardware/software of each system separately is described in the manuals cited in Par. 1.3.

2.1.3 NISE Pad

The integration between the two systems is performed at Gateway-NCRS level. Cerberus Dati developed a specific electronic board (called NISE Pad) that can be plugged into a GW-20. The NISE Pad has a serial port tom which an NCRS can be connected. By this link a communication is established between LMS and MS2000: the two previously separated system are now integrated and they are called with the collective name of IMS2000.

The NISE Pad permits synchronisation of the NCRS contains firmware that lets you convert data in the format used by NCRS to the format used by LMS and conversely converts data from LMS to NCRS in order to let the two systems understand each other. Moreover, the NISE Pad contains firmware that can be configured to perform interactions among the security/safety subsystems and the technological plant items installed.

The NISE Pad permits synchronisation of the NCRS date and time to the LMS date and time. If the W18 jumper is ON, the NISE Pad sends the date and time to NCRS every midnight in order to have a unique date and time all over the IMS2000 system.

The actual system can be configured without either the LMS or the VISION monitoring station (but not without both of them !). If one of the two monitoring station is not installed, the monitoring capabilities are somewhat limited as described below. For instance, the operator working on an IMS2000 system equipped with an LMS only will be able to detect the alarms coming from analog technological item but he will not be aware of the analog values measured.

2.2 Data flow

The data flow inside the IMS2000 is shown in Fig. 2 by the black arrows.
The integrated IMS2000 adds functionalities to the existing systems, however, the bi-directional data flow to (and from) field devices to their own monitoring systems is still active. LMS controls and receives information from the safety/security control panels and VISION or ACCESS software monitors and send commands to and from technological plant items through NCRS, NICO and RS.

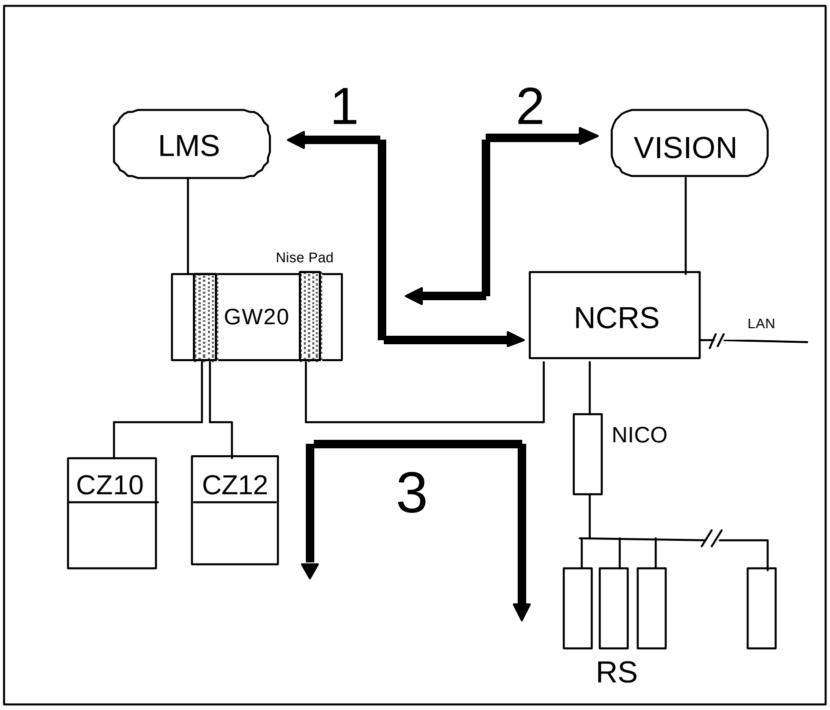

Fig. 2 Data flow inside the IMS2000

In addition to this, LMS can receive technological data and send commands to and from NCRS (black arrow numbered 1). Similarly, VISION (or ACCESS) is able to monitor and command CZ10 and CZ12 control panels through the gateway (black arrow numbered 2). The details of the exchanged information are shown in Chapters 3 and 4 of this manual.
The integration requires that from the software point of view the technological devices to be seen by LMS have been also properly configured. LMS Configuration Manual describes how to configure the software in order to interact with MS2000.
In the same way, MS2000 software must be configured in order to understand the meaning and to properly display information about the security points connected to it (See Par. 3.3).
Moreover, the black arrow numbered 3 shows that between CZ10/CZ12 and NICO there could be a data flow that does not involve higher levels. This interaction between subsystems is performed at the level of Subsystem Pad and it must be configured locally, using the DOGGY package.
When a security/safety device changes its status, the control panel detects it and sends upward a message that contains information about:

- the device that underwent the change of status
- the status it entered, its position and its type.

The gateway receives that message and it undertakes the following actions, according to what it has been configured to do:

- send the message to the LMS supervising system (always)
- send the message to the NCRS and VISION system.

- send commands/information to Landis&Staefa's NICO to perform actions on the technological plant (only if interactions have been configured).

The message received at LMS and VISION (or ACCESS) monitoring level is treated according to the software configuration.

The security/safety operator can react to events (displayed on the screen) by indicating that he has received the message, and/or he can send commands to change the control panel status. For instance, as a consequence of a fire alarm, he can deactivate part of the security system and he can send commands to technological devices connected to MS2000. The operator acts on on-screen software objects and the software converts them into messages, which are sent to the gateway and on to the control panel.

The data flow is similar for a message coming from a technological plant item. The message is received by the NCRS, which sends the message to the VISION (or ACCESS) software and through the NISE Pad to the LMS.

The symmetry however is not perfect. At the present implementation phase, the technological plant analog values are not managed by LMS. Only a technological operator on MS2000 can change set up values and display analog data. The technological plant operator cannot however reset a security/safety control panel. This operation, that cancels the alarms pending is a very sensitive one and must be be carried out by a specifically trained operator.

2.3 Data representation

Each physical device connected to the Cerberus or Landis&Staefa control panels has a finite set of states. These states, such as normal operation, alarm, fault and so on, are modeled and internally reproduced by the monitoring software.

2.3.1 Security points

The way LMS manages the security events is based on the use of a number of tables. The tables connect each physical event (e.g. the door opening signaled by a magnetic contact) with a logical description of such an event (the place in which the event took place, the type of description to be associated to it and eventually how the event must be managed by LMS itself). This procedure, summarized in Fig. 3, is specific to LMS. Only the outputs of the procedure are significant for the integrated system IMS2000.

Inside LMS each possible source of information installed in the field (such as a smoke detector, a magnetic contact or a microwave intrusion detection sensor) is modeled as a point. Up to 16 different numerical values can be associated to each point and each value (called template by Landis&Staefa) corresponds to a state. A table, called Description Table, lets the operator configure the type of event associated to a specific value.

Five types of events can be configured:

- SEVERE ALARM
- ALARM
- FAULT
- WARNING
- ANOMALY

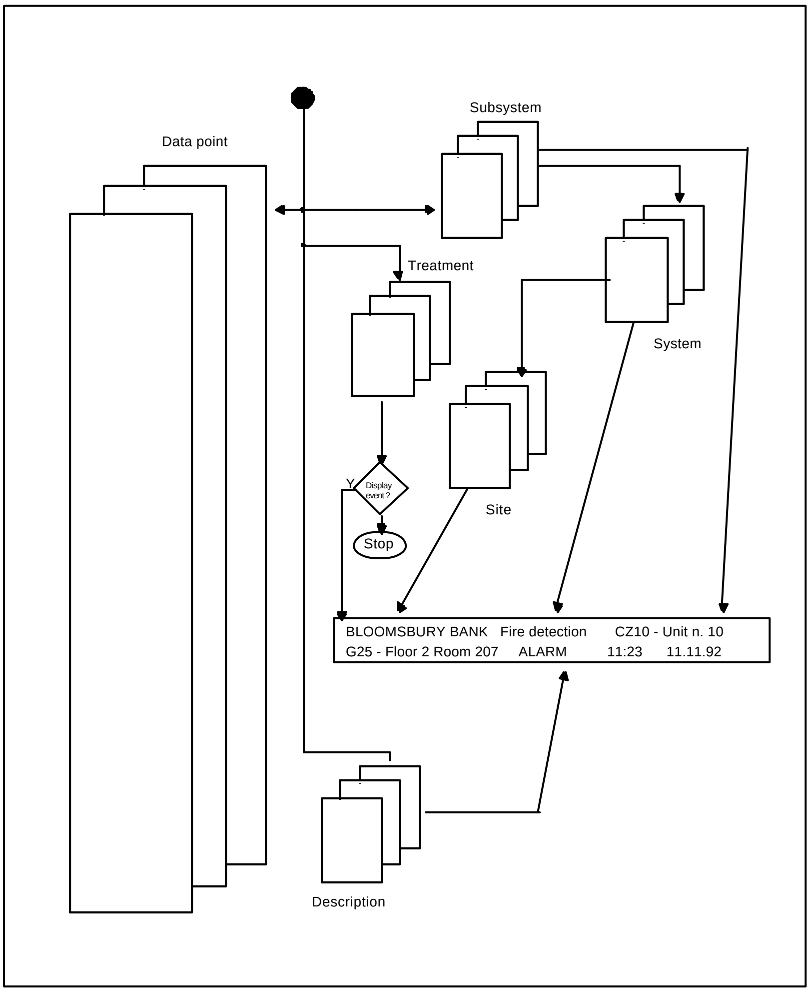

Fig. 3 LMS Database Organisation

A further table, called Treatment table lets the operator to decide which action to perform as an answer to the state change.
User operation (such as alarm acknowledge and reset) or field events (e.g. automatic or manual control panel reset) can change the points' state. In this case the new point value is displayed accordingly to the description and treatment tables as configured.
In the integrated system IMS2000 the technological operator is able to see all the states of a security point, but not all the commands that cause a status change are available to him. Particularly, the reset command can be issued only from an LMS station and never from a MS2000 station.

2.3.2 Technological blocks

In MS2000 the basic unit of information is called a "block". A block can be either the representation of a physical device installed in the field or it can be an elementary operation on it. There are various types of blocks, according to their function and meaning inside the system:

- Static value blocks

  These blocks contain fixed digital and analog values for use by the control blocks. The digital value conveys digital information, i.e. ON/OFF states. The analog value blocks convey analog information (i.e. values which are continuously changing).
- Time function blocks

  These blocks are used to provide the elements required to initiate events (switch on/switch off delays, etc.)

- Maths/logic blocks
  These are used for mathematical calculations and for the logical connection of control elements (inversion, sign, absolute value, sine, cosine, decimal and neperian logarithms, root, +, -, /, *, sum, extreme values, AND, OR, NOT, etc.)
- Information storage blocks
  These blocks store data over a given period of time (history, analog and digital counters, etc.)
- Information blocks
  These provide information to supplement the standard values available from the system. The uni blocks belong to this type.
- Networks blocks
  Network blocks are used to define virtual data points in the network.
- Alarm blocks
  Alarms can be generated with these blocks (for example: alarms indicating limit values exceeded, feedback alarms signaling control failure or undesirable change of state, modem direct dialing alarm, etc.)
- NICO blocks
  These enable individual RS module data points to be read and/or overwritten
- RS blocks
  These enable individual RS module data points to be read and/or overwritten
- Pronto blocks
  The pronto blocks are used to monitor individual room control units called IRC

Each block is identified by a short coded name and a decimal code. Each block has a read/write function that enables MS2000 to write, read or read/write it and it has a set of attributes, used internally by the software.

In the integrated system IMS2000, only alarm blocks and digital value blocks can be seen from the LMS.

2.4 Limits

The implementation of technological plant control on LMS and of security system on MS2000 has some limits. These limits belong to three categories:

- limits that are linked to design.
  Some controls, functions or data that are available in one of the two systems (MS2000 or LMS) are not transferred by the NISE Pad to the other. This means that the technological system seen by LMS is only a subset of the system as seen by MS2000. The same apply to security systems seen by MS2000.
- limits that are linked to implementation.
  IMS2000 is a complex project that will be accomplished by phases. Some functions that are not available in early phases will be in future phases.
- configuration limits.
  These are determined by database dimensions and the addressing capabilities of the system. They are intrinsic to system implementation.

2.4.1 Devices supported by Link 2.xx-xx/P2

The security/safety control panels supported by IMS2000 are:

- Cerberus CZ10 with firmware version V27
- Cerberus CZ12 with firmware version V5
- Cerberus CS4 and CS4-40 with firmware version V6, V7, and V8
- Cerberus CS11 with firmware version EP4 and EP5
- Cerberus CC60

The technological plant management device supported by IMS2000 is:

- Landis&Staefa NCRS with firmware version 2.0

The higher levels must comply with the following specifications:

- NCRS V 2.0
- Cerberus Dati LMS2-DOS V2.42 or later
- Cerberus Dati LMSmodular V2.x or later
- Gateway GW-20 version 5.25 or later
- NISE Pad firmware version 2.1
- Doggy utility version 4.2 or later
- NISE Configuration version 2.1 or later

2.4.2 Devices supported by Link 3.xx-xx/P3

The security/safety control panels supported by IMS2000 are:

- Cerberus CZ10 with firmware version V27
- Cerberus CZ12 with firmware version V5
- Cerberus CS4 and CS4-40 with firmware version V6, V7, and V8
- Cerberus CS11 with firmware version EP4 and EP5
- Cerberus CC60

The technological plant management device supported by IMS2000 is:

- Staefa NCRS with firmware version 3.0

The higher levels must comply with the following specifications:

- NCRS V 3.0
- Cerberus Dati LMS2 V2.42 or later
- Cerberus Dati LMSmodular V2.x or later
- Gateway GW-20 version 5.25 or later
- NISE Pad firmware version 2.1
- Doggy utility version 4.2 or later
- NISE Configuration version 2.1 or later

2.4.3 Configuration limits

The IMS2000 can manage:

- up to 768 technological points
- up to 4000 security points.
- up to 16 security (i.e. CZ12/CS4/CS4-40) & safety (i.e. CZ10/CC11/CC60) control units.

2.4.4 Summary of functions and performances

The following functions are supported by the integrated system IMS2000:

- Interactions from security/safety control panels to MS2000. An event can trigger some predefined action on the technological plant management system.
- Commands from MS2000 to security control units (Switch to night, include a fire zone, etc.).
- Ack command from MS2000 to security control units. The technological plant operator can acknowledge alarms coming from the security system
- Interactions from MS2000 to security control units.
- From LMS point of view only digital and alarm NCRS blocks are available.
- NCRS network management. More than one NCRS can be connected to the NISE Pad installed in the Gateway, through the NCRS Local Area Network.
- WBC, WBT and WBN block management to signal NCRS blocks which are declared at NISE level but that are not declared at NCRS level.
- NISE existence block management. The NCRS system is able to detect autonomously if a NISE Pad is installed and working, i.e. if it is part of an integrated IMS2000 system.

- Data and time distribution to NCRS with LMS present. In an IMS2000 system, the LMS has an active role sending date and time to the technological plant management system.
- Acknowledge of COS, RCOS, ALA and FBK blocks from LMS. The security/safety plant operator can acknowledge these blocks received from the MS2000.
- NCRS LAN status at LMS2.
- NCRS General status at LMS2.
- Date and time distribution to control units without LMS2

The integrated system IMS2000 does not support :

- PRONTO and all Analog blocks of NCRS
- The PLC (Programmable Logic Control).

During restart the IMS2000 can get into an instability condition that last about 1 -1.5 minutes. This time can be longer if alarms arise in the meanwhile.

The NCRS answer to a status request from the monitoring station must be issued within a time window. The width of this time window is defined using the NISE_CNF package. After three trials (each one lasting the full time window) a "line fault" condition is triggered. Please note that the timeout entered in the NISE_CNF should be multiplied by 3 to get the time during which a line fault condition could exist without being detected.

2.4.5 NCRS blocks supported

Only the blocks listed below can be managed by the LMS part of an IMS2000 system.

DIGITAL BLOCK	READ FUNC.	WRITE FUNC.	FUNCTION DESCRIPTION
VDO	yes	yes	Sends a digital inter-NCRS value
DIG	yes	yes	Stores a digital value
RSDI	yes	no	Reads a digital input register
RSDO	yes	yes	Drives a digital output reg. (NIPLC)
RSDZ	yes	no	Reads digital calculated value register
RSUDI	yes	no	Reads universal digital input register
RSUDO	yes	yes	Drives universal digital output register.
NIDA	yes	yes	Sends a digital Inter-RS value
RSDS	yes	yes	Drives a digital set-point register
RSDP	yes	yes	Drives a digital parameter register
NIS	yes	no	Provides NICO status information
LG2	yes	yes	Performs one of six logical (Boolean) functions on two inputs
LG1	yes	yes	Performs one of several logical (Boolean) functions on one single input
VDI	yes	no	Receives a digital inter_NCRS value
LAN	yes	no	Represents the NCRS-LAN
NODE	yes	no	NCRS current operational status

ALARM BLOCK	READ FUNC.	WRITE FUNC.	FUNCTION DESCRIPTION
ALA	yes	yes	Monitors an analog input value and generates high/low limit alarms
COS	yes	yes	Monitors digital input and generate a change of status
RSCOS	yes	yes	Controls an alarm handler register
FBK	yes	yes	Monitors the link between a control point and it's feedback status

Please note that the "Read Function" in the following tables complies with the Landis&Staefa terminology and it is equivalent to the Cerberus term "message from field". The "write function" is instead equivalent to Cerberus "command".

2.4.6 Security/safety points supported by IMS2000

All the security/safety points belonging to the supported control panels are supported by IMS2000. Other peripheral devices supported independently by LMS (refer to LMS documentation) cannot be managed by IMS2000, technological side. Note, however, that only the most meaningful subset of telegrams and commands exchanged between the control panels and the gateway is managed by IMS2000.

CZ10 POINT DESCRIPTION
Gateway_link_status
General_fault
Power_fault
Fire_alarm
Fire_organization
Fire_part_off
Fire_groups
Line_elements
Technical_digital_inputs
Fault_xmit
Fire_alarm_xmit

CZ12/CS4 (Pad V5.20) POINT DESCRIPTION
Gateway_link_status
General_fault
Power_fault
Intrusion_alarm_tx
Line_sabotage
Panel_sabotage
Organization
Part_off
Addresses
Groups
Duress_Alarm
Time_Program
Fault_xmit
Address_lock

CS4 version 6a (Pad V5.25) POINT DESCRIPTION
Addresses [zones]
Address_lock [zones]

CS4 version 7 (Pad V5.25) POINT DESCRIPTION
Addresses [zones]
Group [section]
Time program
Address_lock [zones]

CS4-40 version 6a and 7 (Pad V5.25) POINT DESCRIPTION
addresses [zones]
address [zone] lock

CT411 power supply
address [zone] masking

CC-11 (Pad V5.20) POINT DESCRIPTION
Gateway link status
Control Unit
Power supplies (1-16)
Function unit alarm/status (1-16)
Remote trasmission alarms (1-8)
Remote trasmission faults(1-8)
Area general alarm (1-16)
Area fire organization (1-16)
Detection zone status
Control zone status
Detection element (input)
Control element (output) without feedback
Control element (output) with feedback
Element status

CC-11 (Pad V5.21) POINT DESCRIPTION
Control unit
Remote terminal
Line interface (1-16)
Remote transmission device (1-8)
CI11 fire unit
CI11 control unit
Fire area (1-16)
Fire section (1-99)
Digital zone
Element status

CC-11 (Pad V5-25) POINT DESCRIPTION
Extinguish section
Multi logic zone (exting)
Programmable control zone
Interhorn element
Externhorn element
Remote transmission other element
Alarmhorn element
Alarmhorn element
Extinguish subsystem
Lon interface 1
Lon interface 2
Remote control unit

CC60 (Pad V5.25) POINT DESCRIPTION
Gateway link status
Power supply
Control sector faults
Terminal 1
Terminal 2
Gas organizat.
Gas sector faults
Gas sector excluded
General alarm
Alarm remote tx
Gas zone
Gas detectors
Tech sector faults
Tech out

CZ10 SUPPORTED COMMANDS
Status request
Reset
Acknowledgment
Switch Organization to Night
Switch Organization to Day
Include a fire group
Exclude a fire group
Include a technological group
Exclude a technological group
Switch tech. Dig. Output ON
Switch tech. Dig. Output OFF

CZ12/CS4/CS4-40 SUPPORTED COMMANDS
Status request
Reset
Acknowledgment
Switch Organization to Night
Switch Organization to Day
Include group/section
Exclude group/section

CC-11 SUPPORTED COMMANDS
Status request
General reset
General acknowledge
Section acknowledge
Section reset
Exclude all zones of a section
Include all zones of a section
Night switch over
Day switch over
Control element on
Control element off
Exclude zone
Include zone

CC-60 SUPPORTED COMMANDS
Status request
Reset
Acknowledge
Night switch over
Day switch over
Include gas detector
Exclude gas detector
Technical output on
Technical output off

3 Security control units points managed by MS2000

3.1 Naming conventions

In MS2000 the basic unit of information is called a “block”. A block can be either the representation of a physical device installed in the field or it can be an elementary operation on it. There are various types of blocks, according to their function and meaning inside the system. In IMS2000 the only block types used are digital value blocks, ALA blocks, COS, RSCOS and FBK blocks.

Inside LMS each possible source of information installed in the field (such as a smoke detector, a magnetic contact or a microwave intrusion detection sensor) is modeled as a point. Up to 16 different numerical values can be associated to each point and each value (called template by Landis&Staefa) corresponds to a state.

To represent security/safety points in an MS2000 systems, you need to model them as ALA blocks, adopting the conversion and modeling procedure described below.

MS2000 must be configured to print out both the alarm and the normal statuses. This is necessary otherwise the log print-out will show only the alarm condition and never the "back to normal status" condition that should follow the event treatment.

3.2 Supported subsystems

The security/safety control panels supported by IMS2000 are:

- Cerberus CZ10 with firmware version V27
- Cerberus CZ12 with firmware version V5
- Cerberus CS4 with firmware V6, and V7
- Cerberus CS4-40 with firmware V6a, V7, and V8
- Cerberus CC-11 with firmware version EP4 and EP5
- Cerberus CC60 with firmware …

3.3 MS2000 security point modeling

Each security control unit will be represented in the NCRS by a group of ALA blocks. Each ALA block represents an information item of the control panel.

All the ALA blocks which represent a certain subsystem must reside on the same NCRS. Moreover, the ALA block numbers must be in a range which is exclusively reserved for this subsystem and which must not be used by other alarm blocks (see also chapter 7.2). This simplifies the NISE configuration and improves performance.

The following scheme represents the ALA block and the relevant information parameters.

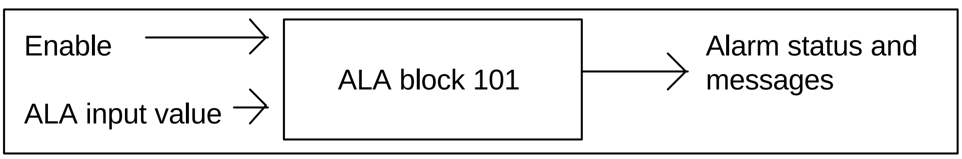

Fig. 4 ALA block and parameters

To transmit a security point status change to the NCRS, the NISE will force a specific ALA value into the ALA block which represents the point. Alarm conditions will be determined by comparing the ALA input value with the high and low limits.
NISE will read the attributes of the ALA block continuously to receive specific commands that must be sent to the control panel
The ALA block used to represent security points must be defined as described in Par. 3.4.3 and Par. 3.4.4.

3.4 Messages management

Two templates are needed for each ALA block to fully represent a security point, one to represent the Ai and the other the Al attribute.
The Al attribute shows the state of the ALA block (alarm, unack, etc.).
The Ai attribute is used to show the status of the input value. It requires the definition of a custom digital template.

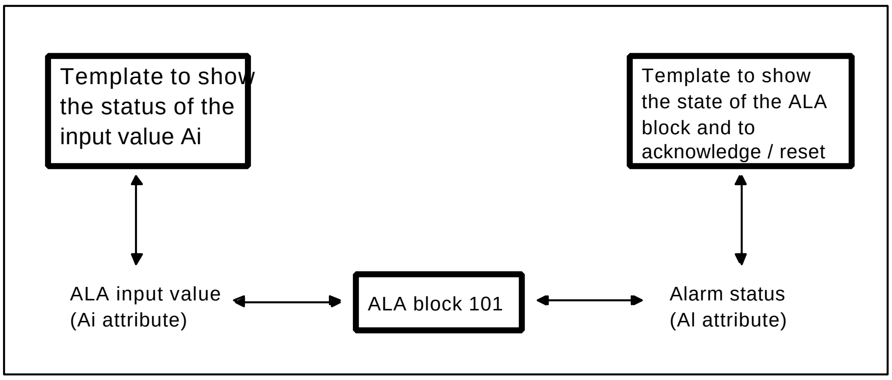

Fig. 5 Messages management

3.4.1 Al attribute

The template used to define these attributes has 9 states and is used to acknowledge alarms and faults.
Appendix A lists the templates for CZ10 fire control panels and Appendix B lists the templates for CZ12 security control panels.

3.4.2 Ai attribute

These templates are defined with 16 states and show the status of the corresponding Cerberus object. States from 9 to 16 correspond to an ALA input value of 0 through 7. If the input value is not an integer, the fractional part will be truncated before the state value is sent to the VISION host by the NCRS System Controller. It is advisable to create separate templates for each of the security point types (see below, par. 3.4.3 and 3.4.4). Appendix A lists the templates for CZ10 fire control panel and Appendix B lists the templates for CZ12 security control panel.

3.4.3 CZ10 points representation

The Alarm block below shows the definitions common to all CZ10 points. All the others are listed separately for each point.
Ai means Analog input value, written by NISE and reflecting the CZ10 status.
HL is the High Limit value and is a constant (similarly LL represents the Low Limit value.
The number in the figure points to the items explained below:
1. Block number. Its range is from 1 to 2040, so you can have ALA1...ALA2040 blocks.
2. the block name can have up to 15 characters

3. the uni block number that contains the desired text or engineering units (up to 15 characters long)
4. the message block number that contains the desired message (up to 40 characters long)
5. the message block number that contains the name of the associated report, if it is foreseen.
6. The Help -block number, which contains the helpful information in an alarm message (up to 40 characters).

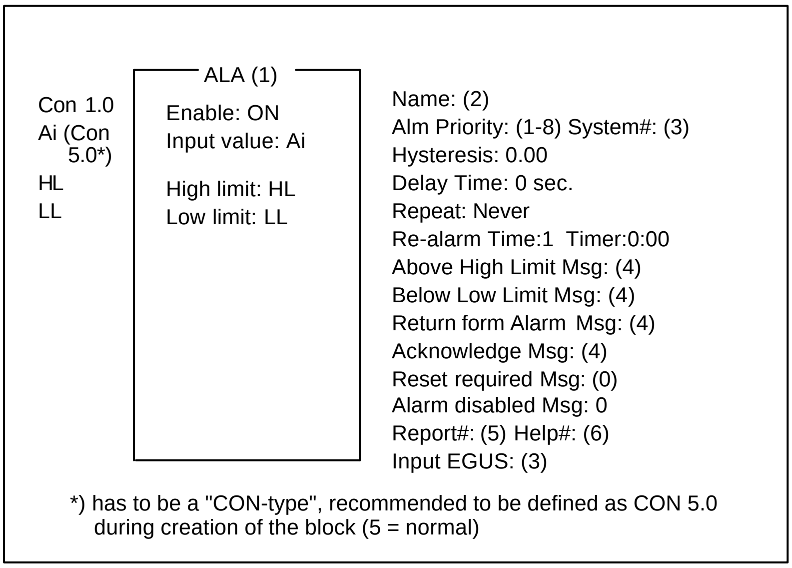

Fig. 6 CZ10 point representation

Please note that the Above High Limit and the Below Low Limit messages ***must*** be defined for all alarm blocks.

NOTE: It is important that the system is configured to print both the alarm detection and the "back to normal status" condition. This configuration will log on paper and/or on disk the full evolution of the monitored system, and it will allow the operator to understand easily what happened in the past.
The number in parentheses in the following point list is the LMS point number, as listed in the LMS configuration Manual, Appendix A.

Gateway_link_status (1)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Fault	0
Net fault	2

An acknowledge message must be defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

General fault (3)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Fault	0

An acknowledge message must be defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Fault_xmit (6)

STATUS	ANALOG INPUT VALUE (Ai)
OFF	5
ON	4

No acknowledge message is defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Power fault (5)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Battery fault	0
Battery Operated	7

An acknowledge message must be defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Fire alarm status (8)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Local alarm	6
General alarm	7

An acknowledge message must be defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	6
LL	1

You would not be able to distinguish between the local alarm and general alarm states because there is only one message for the above high limit condition.

Fire_alarm_xmit (7)

STATUS	ANALOG INPUT VALUE (Ai)
OFF	5
ON	4

No acknowledge message is defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Fire organization (10)

STATUS	ANALOG INPUT VALUE (Ai)
Night	5
Day	4

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Fire part off (11)

STATUS	ANALOG INPUT VALUE (AI)
Normal	5
Excluded	6

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Fire zones (from 16 to 111)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	4
Fault	0
Test	3
Alarm	7
Testalarm	6

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Line elements (from 264 to 1463)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Active	6
Fault	2

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Technical digital inputs (from 168 to 263)

STATUS	ANALOG INPUT VALUE (Ai)
Off	5
On	6

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

The Analog Input (Ai) value is the value that corresponds to the specific status. It is written by the NISE Pad to the ALA input. Status is the description of the state for security point representation. For each CZ10 only the needed blocks must be configured.

3.4.4 CC-11 points representation

The Alarm block below shows the definitions common to all CC-11 points. All the others are listed separately for each point.
Ai means Analog input value, written by NISE and reflecting the CC-11 status.
HL is the High Limit value and it is a constant; similarly LL represents the Low Limit value.
The number in the figure points to the items explained below:

7. Block number. Its range is from 1 to 2040, so you can have ALA1...ALA2040 blocks.
8. the block name can have up to 15 characters
9. the uni block number that contains the desired text or engineering units (up to 15 characters long)
10. the message block number that contains the desired message (up to 40 characters long)
11. the message block number that contains the name of the associated report, if it is foreseen.
12. The Help -block number, which contains the help information in an alarm message (up to 40 characters).

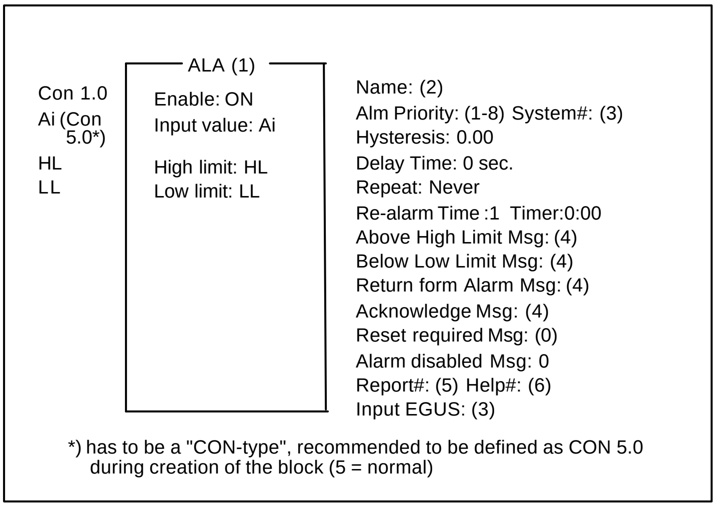

Fig. 7 CC-11 point representation

Please note that the Above High Limit and the Below Low Limit messages ***must*** be defined for all alarm blocks.

NOTE: It is important that the system is configured to print both the alarm detection and the "back to normal status" condition. This configuration will log on paper and/or on disk the full evolution of the monitored system, and it will allow the operator to understand easily what happened in the past.
The number in parentheses in the following point list refer to the structure number.

Gateway link status

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Fault	0
Part Discon	2

An acknowledge message must be defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Control Unit (1201)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Fault	0

An acknowledge message must be defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Power supplies 1-16 (1340)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Battery fault	0
Battery Operated	7

An acknowledge message must be defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Function unit alarm/status 1-16 (1301, 1310, 1320)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Fault	0
Alarm	7

An acknowledge message must be defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Remote trasmission alarms 1-8 (1562)

STATUS	ANALOG INPUT VALUE (Ai)
Inactive	5
Active	6

No acknowledge message is defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Remote trasmission faults 1-8 (1562)

STATUS	ANALOG INPUT VALUE (Ai)
Inactive	5
Active	6

No acknowledge message is defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Area general alarm 1-16 (1801)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
General alarm	7

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Area fire organization 1-16 (1801)

STATUS	ANALOG INPUT VALUE (Ai)
Night	5
Day	4

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Detection zone status (1601, 1602, 1605)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	4
Warning	0
Test	3
Alarm auto	7
Not ready	2
Alarm manual	7

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	2

Control zone status (1654, 1651)

STATUS	ANALOG INPUT VALUE (AI)
Normal	5
Active	6
Off	4

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Detection element (input) (1525)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Active	6
Fault	3
Excluded	4

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

The Analog Input (Ai) value is the value that corresponds to the specific status. It is written by the NISE Pad to the ALA input. Status is the description of the state for security point representation. For each CC-11 only the needed blocks must be configured.

Control element (output) without feedback (1551)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Active	6
Fault	3
Excluded	4

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Control element (output) with feedback (1552)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Active	6
Fault	3
Excluded	4

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Element status (1501, 1502, 1510, 1520, 1503)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Active	6
Fault	0
Drift	1
Excluded	4
Testalarm	3

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

The pad version 5.21 supports the following structure numbers (EP3/A) more:

Control unit (1201)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Alarm	7

An acknowledge message must be defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Remote terminal (1202)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Fault	0

An acknowledge message must be defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Line interface 1-16 (1302, 1303)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Fault	0

An acknowledge message must be defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Remote transmission device 1-8 (1563)

STATUS	ANALOG INPUT VALUE (Ai)
Inactine	5
Disabled	6
Fault	0

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

CI11 fire unit (1210)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Alarm	7

An acknowledge message must be defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

CI11 control unit (1210)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Fault	0

An acknowledge message must be defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Fire area 1-16 (1801)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	4
Fault	0

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Fire section 1-99 (1701)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Alarm	7

An acknowledge message must be defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Digital zone (1610)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	4
Test	3
Alarm auto	7
Not ready	2

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	2

Element status (1508,1511, 1512, 1521)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Active	6
Fault	0
Drift	1
Excluded	4
Testalarm	3

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

The pad version 5.25 supports the following structure numbers (EP4) more:

Extinguish section (1702)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Alarm	7
Active	6
Disable	4
Fault	0

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Multi logic zone exting (1602)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	4
Warning	0
Test	3
Alarm	7
Not ready	2

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Programmable control zone (1656)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Active	6
Excluded	4

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Internhorn element (1560)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Active	6
Fault	0
Excluded	4

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Externhorn element (1561)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Active	6
Fault	0
Excluded	4

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Remote trasmission other element (1562)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Active	6
Fault	0
Excluded	4

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Alarmhorn element (1564)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Active	6
Fault	0
Excluded	4

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Alarmhorn element (1565)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Active	6
Fault	0
Excluded	4

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Extinguish subsystem (1395)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Fault	0

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Lon interface 1 (1396)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Fault	0

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Lon interface 2 (1397)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Fault	0

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Remote control unit (1211)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Fault	0

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

3.4.5 CZ12 points representation

The alarm block below shows the definitions common to all CZ12 version 05 points. All the objects are listed separately for each point.
Ai means Analog input value, written by NISE and reflecting the CZ10 status.
HL is the High Limit value and it is a constant; similarly LL represents the Low Limit value.
The number in the figure points to the items explained below:

1. Block number. Its range is from 1 to 2040, so you can ALA1...ALA2040 blocks.
2. the block name can have up to 15 characters
3. the uni block number that contains the desired text or engineering units (up to 15 characters long)
4. the message block number that contains the desired message (up to 40 characters long)
5. the message block number that contains the name of the associated report, if it is foreseen.
6. The Help -block number, which contains the help information in an alarm message (up to 40 characters).

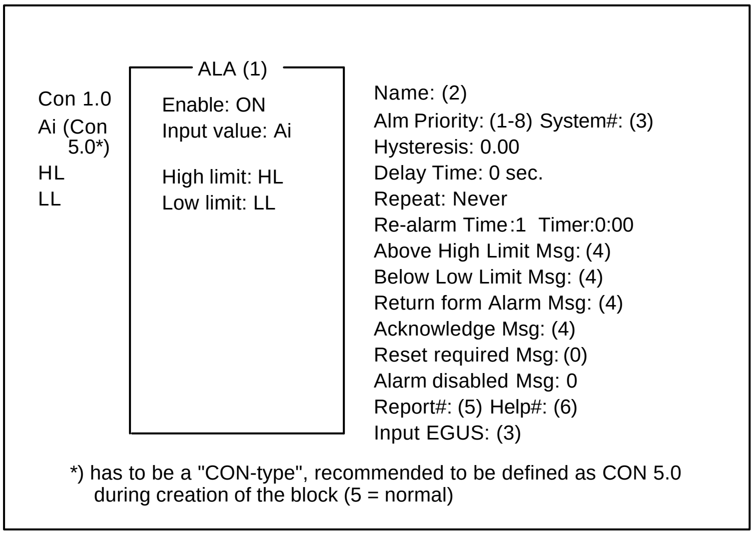

Fig. 8 CZ12 point representation

Please note that the Above High Limit and the Below Low Limit messages ***must*** be defined for all alarm blocks and the ACK message must be defined for those blocks which generate alarms.
NOTE: It is important that the system is configured to print both the alarm detection and the "back to normal status" condition. This configuration will log on paper and/or on disk the full evolution of the monitored system, and it will allow the operator to understand easily what happened in the past.
The number in parentheses in the following point list refer to the LMS point number, as it is listed in the LMS configuration Manual, Appendix A.

According to the LMS organization, the CZ12 is managed with the following subsystem subtype:

- 0 CZ12 with Cerban protocol (decimal, 96 zones)
- 1 CZ12 V5 with Cerban protocol (decimal, 96 lock zones)

For CZ12 version 05 the pad version 5.20 supports the following points with the related messages: Gateway_link_status (1)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Fault	0
Fault net	2

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

General fault (4)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Fault	0

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Fault_xmit (6)

STATUS	ANALOG INPUT VALUE (Ai)
OFF	5
ON	1
Delay	2

An acknowledge message must be defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Power fault (5)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Battery fault	0
Battery operated	7

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Organization (119)

STATUS	ANALOG INPUT VALUE (Ai)
Night	5
Day	4
Not ready	1

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Intrusion_alarm_tx (7)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
On	4
Delay	6

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Line sabotage (115)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	4
Sabotage	0

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Panel sabotage (116)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	4
Sabotage	0

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Part off (117)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	1

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Addresses (from 15 to 110)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	4
Test	3
Not ready	2
Sabotage	0
Alarm + sabotage	1
Testalarm	6
Alarm	7

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	2

You cannot distinguish the 0, 1 and 2 states since there is only one message type, (below low limit).

Groups (from 121 to 184)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	4

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Duress alarm (111)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Alarm	4

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Time programs (from 187 to 194)

STATUS	ANALOG INPUT VALUE (Ai)
On	4
Off	5

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Address_lock (from 221 to 316)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
ON	4

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

3.4.6 CS4 points representation

The alarm block below shows the definitions common to all CS4 points. All the objects are listed separately for each point.
Ai means Analog input value, written by NISE and reflecting the CS4 status.
HL is the High Limit value and it is a constant; similarly LL represents the Low Limit value.
The number in the figure points to the items explained below:

1. Block number. Its range is from 1 to 2040, so you can ALA1...ALA2040 blocks.
2. the block name can have up to 15 characters
3. the uni block number that contains the desired text or engineering units (up to 15 characters long)
4. the message block number that contains the desired message (up to 40 characters long)
5. the message block number that contains the name of the associated report, if it is foreseen.
6. The Help -block number, which contains the help information in an alarm message (up to 40 characters).

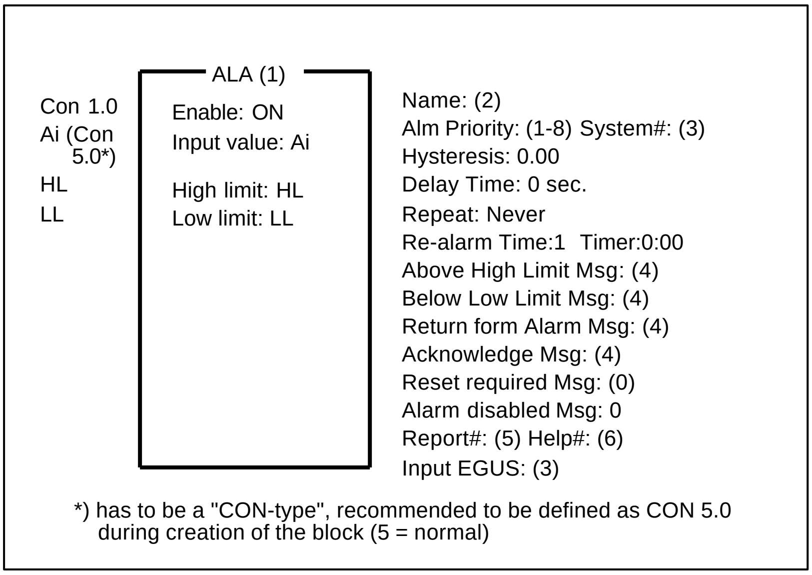

Fig. 9 CS4 point representation

Please note that the Above High Limit and the Below Low Limit messages ***must*** be defined for all alarm blocks and the ACK message must be defined for those blocks which generate alarms.

NOTE: It is important that the system is configured to print both the alarm detection and the "back to normal status" condition. This configuration will log on paper and/or on disk the full evolution of the monitored system, and it will allow the operator to understand easily what happened in the past.
The number in parentheses in the following point list refer to the LMS point number, as it is listed in the LMS configuration Manual, Appendix A.

According to LMS organization, the CS4 is managed with the following subsystem subtype:

- 2 CS4 v6 with Cerban protocol (decimal, 50 users)
- 3 CS4 V6a andV7 with Cerban/hex protocol (hexadecimal, 128 zones and lock zones)

For CS4 version 6 (Subtype 2), the pad version 5.20 supports the following points with the related messages:

Gateway_link_status (1)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Fault	0
Fault net	2

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

General fault (4)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Fault	0

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Fault_xmit (6)

STATUS	ANALOG INPUT VALUE (Ai)
OFF	5
ON	1
Delay	2

An acknowledge message must be defined; the HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Power fault (5)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Battery fault	0
Battery operated	7

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Organization (119)

STATUS	ANALOG INPUT VALUE (Ai)
Night	5
Day	4
Not ready	1

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Intrusion_alarm_tx (7)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
On	4
Delay	6

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Line sabotage (115)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	4
Sabotage	0

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Panel sabotage (116)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	4
Sabotage	0

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Part off (117)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	1

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Zones (see table below for the zone relative address)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	4
Test	3
Not ready	2
Sabotage	0
Alarm + sabotage	1
Testalarm	6
Alarm	7

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	2

You cannot distinguish the 0, 1 and 2 states since there is only one message type, (below low limit).

Zone	Point relative
1	15
96	110

Sections (see table below for the section relative address)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	4

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Section	Point relative
1	121
64	184

Duress alarm (111)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Alarm	4

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Time programs (see table below for the time program relative address)

STATUS	ANALOG INPUT VALUE (Ai)
On	4
Off	5

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Time program	Point relative
1	187
8	194

Zone_lock (see table below for the address lock relative address)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
ON	4

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Zone lock	Point relative
1	221
96	316

For CS4 version 6a (subtype 3), the pad version 5.25 supports the subtypes 2 and the following points with the related messages:

Addresses (from 358 to 389)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	4
Test	3
Not ready	2
Sabotage	0
Alarm + sabotage	1
Testalarm	6
Alarm	7

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	2

Address_lock (from 390 to 421)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
ON	4

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

For CS4 version 7 , the pad version 5.25 supports the subtypes 3 and the following points with the related messages:

Addresses (from 459 to 584)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	4
Test	3
Not ready	2
Sabotage	0
Alarm + sabotage	1
Testalarm	6
Alarm	7

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	2

Group [section] (from 423 to 457)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	4

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Time program (422)

STATUS	ANALOG INPUT VALUE (Ai)
On	4
Off	5

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Address_lock (from 585 to 710)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
ON	4

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

3.4.7 CS4-40 points representation

According to LMS organization, the CS4-40 is managed with the following subsystem subtype:

- CS4-40 v6a with Cerban protocol
  (hexadecimal, 254 zones, lock zones, masking zones)
- CS4-40 v7 with Cerban protocol
  (hexadecimal, 512 zones, lock zones, masking zones)

For CS4-40 version 6a and 7 , the pad version 5.25 supports the subtypes 4 and 5 and the following points with the related messages:

Addresses (714, 715 and from 974 to 1229)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Excluded	4
Test	3
Not ready	2
Sabotage	0
Alarm + sabotage	1
Testalarm	6
Alarm	7

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	2

Address_lock (716,717 and from 1230 to 1485)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
ON	4

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

ct411 power supply (713)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Fault	0
Battery	1

An acknowledge message must be defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

Address_masking (from 718 to 973 and from 1486 to 1741)

STATUS	ANALOG INPUT VALUE (Ai)
Normal	5
Temper	7

No acknowledge message is defined. The HL and LL values are the following:

CONSTANT	VALUE
HL	7
LL	1

As the CS4-40 can support up to 512 zones, it requires two new control unit subtypes: 4 and 5.
To discriminate between the varius zone ranges, the following rule applies to the two identification data block fields (1 and 2):

Identification data block	Zona range
0401-04FA	1-250
0501-05FA	251-500
0601-06FA	501-750
0701-07FA	751-1000

Identification data block	Zona range
0801-08FA	1-250
0901-09FA	251-500
0A01-0AFA	501-750
0B01-0BFA	751-1000

Identification data block	Zona range
0C01-0CFA	1-250
0D01-0DFA	251-500
0E01-0EFA	501-750
0F01-0FFA	751-1000

For Zones, Section, Time program, ZoneLock and ZoneMasking the following correspondences are valid:

LMS point number	iten range
15-110	Zones 1-96
121-184	Section 1-64
187-194	Time program 1-8
221-316	ZoneLock 1-96
358-389	Zone 97-128
390-421	ZoneLock 97-198
422	Time program 9
423-457	Section 65-99
459-584	Zone 129-254
585-710	ZoneLock 129-254
714-715	Zone 255-256
716-717	ZoneLock 255-256
718-973	ZoneMas 1-256
974-1229	Zone 257-512
1230-1485	ZoneLock 257-512
1486-1741	ZoneMas 257-512

3.4.8 CC60 points representation

The following table presents the CC60 image in terms of blocks and the specific values representing the different statuses.

Point number	Point description	Status	Block value	Constant	Value
1	Gateway link status	normal	5	HL	7
		fault	0	LL	1
		PartDisct	2		
3	Power supply	normal	5	HL	7
		battery	7	LL	1
		fault	0		
4	Control sector faults	normal	5	HL	7
		fault	0	LL	1
5	Terminal 1	normal	5	HL	7
		fault	0	LL	1
6	Terminal 2	normal	5	HL	7
		fault	0	LL	1
8	Gas organizat.	night	5	HL	7
		day	4	LL	1
9	Gas sector faults	normal	5	HL	7
		fault	0	LL	1
10	Gas sector excluded	normal	5	HL	7
		anomaly	6	LL	1
11	General alarm	normal	5	HL	6
		loc. alarm	6	LL	1
		alarm	7		
12	Alarm remote tx	inactive	5	HL	7
		active	4	LL	1
13-68	Gas zone	normal	5	HL	7
		warning	4	LL	1
		preAlarm	6		
		alarm	7		
69-124	Gas detectors	normal	5	HL	6
		excluded	4	LL	1
		test	3		
		fault	0		
		preAlarm	6		
		alarm	7		
125	Tech sector faults	normal	5	HL	7
		fault	0	LL	1
126-253	Tech out	normal	5	HL	7
		fault	0	LL	1
		active	6		

3.5 Command management

NISE V2.1 supports two kinds of commands which differ in their implementation:

- An MS2000 operator is able to send an acknowledge command to the CZ10, CZ12, CS4, CC11, and CC60.

Principle of operation:

If an alarm block is acknowledged in MS2000, an entry is made in the NCRS alarms queue (given that the acknowledge message is defined for this block). The NISE detects this immediately (interrupt), reads the alarms queue and acknowledges the corresponding control unit.
Therefore its important that the acknowledge message is defined for a security point which needs to be acknowledged by the MS2000 Operator! (If not, no entry will be made in the queue!).

Remark: Although technically possible an MS2000 operator is not allowed to reset a security alarm. This must be done by the security operator (via LMS2 or locally on the CZ1x).

- Moreover the following switching commands are available to the MS2000 operator.

CZ10 control panel:

Command description and command number (= command number in LMS2)
Status Request (0)
Reset (2)*
Acknowledge (1)
Night switch over (7)
Day switch over (8)
Include a fire group (9)
Exclude a fire group (10)
Include a technical group (17)
Exclude a technical group (18)
Technical (digital?)output ON (20)
Technical out(digital?)put OFF (21)

CZ12/CS4control panel:

Command description and command number (= command number in LMS2)
Status Request (0)
Reset (2)*
Acknowledge (1)
Night switch over (29)
Day switch over (30)
Include a group (24)
Exclude a group (25)

CS4, CS4-40 control panel:

Command description and command number (= command number in LMS2)
Status Request (0)
Reset (2)*
Acknowledge (1)
Night switch over (29)
Day switch over (30)
Include section (24)
Exclude section (25)

CC11 control panel:

Command description and command number (= command number in LMS2)
Status Request (0)
General reset (2)*
General acknowledge (1)
Section acknowledge (1)
Section reset (2)
Exclude all zones of a section (40)
Include all zones of a section (41)
Night switch over (21)
Day switch over (22)
Control element on (52)
Control element off (53)
Exclude zone (40)
Include zone (41)

CC60 control panel:

Command description and command number (= command number in LMS2)
Status Request (0)
Reset (2)*
Acknowledge (1)
Night switch over (6)
Day switch over (7)
Include gas detector (27)
Exclude gas detector (26)
Technical output ON (30)
Technical output OFF (31)

(*) Before version 5.25 the Reset command is available only for the FHI pad, since version 5.25, the Reset command is available for both NISE and FHI pad

The implementation of these commands is totally different to the previous ones and has some impact on the engineering. (It uses the Landis&Staefa Vision List).

Function Principle:

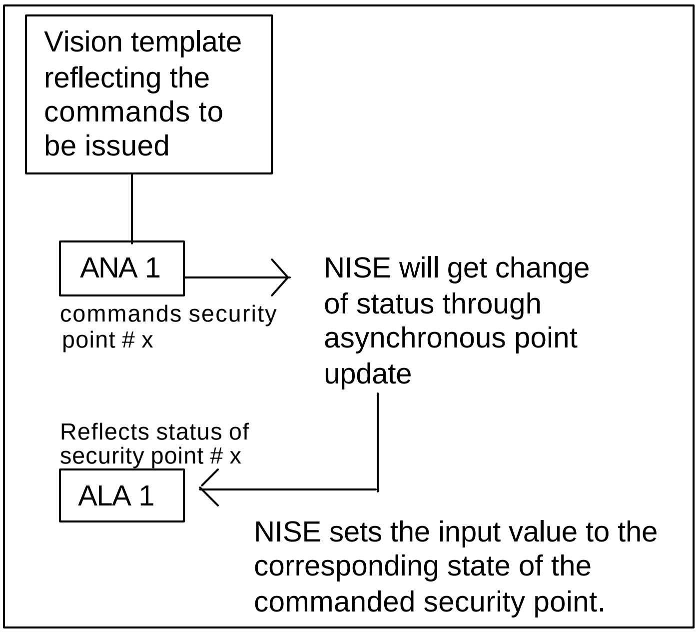

Fig. 10 Function principle

An additional ANA block is used per switching command using its As (Analog state) attribute in Vision. In this way you are able to command the Analog result of the ANA block from Vision. (Template status 9....16 equal the Analog Result (Ra) - 1...6).

Since there is only one Landis&Staefa Vision list per Host Port with 254 entries, the number of switching commands is limited to 254 (for all controllers, because there is only one NISE).
NISE expects, that the ANA block and its related ALA block are defined in the same NCRS and that they have the same block number. (This is because it simplifies the NISE-configuration and for performance reasons).
Beware of an inconsistency existing between the CZ10 point relative numbers and the type of messages issued. The message is a COMMAND (acting on an output point) while the CZ10 relative number in the range 168 to 263 refers to digital INPUT points.
So, if you select in the NISE_CNF a relative point number higher than 168, for example 171, the software first asks you to associate an ALA block and then asks if you want to associate a switch command to it. If you answer is Yes, an ANA block is associated to a point described in the point list as a digital input.

Impact:

- The maximum number of switching commands for the whole MS2000 configuration is limited to 254.
- The ANA blocks and their related ALA-blocks ***must*** defined on the same NCRS and their block numbers must be the same!

Configuration of ANA blocks used for switched commands:

ANA 100
-1

Name: Switch to Night

Fig. 11 ANA block for switched commands

The initial value of the block is set to -1 which means "no command". You just have to attach the templates shown in Appendix C to the As-attribute of the block - that's all.
For information only:
Cross reference table for switching commands implementation with Stäfa Vision list:

Vision template: As-Attribute of ANA block	**Analog Result (RA) of ANA block**	**Command Description**
9	-1	No command
10	0	Switch to Night
11	1	Include group/zone, section (CS11)
12	2	Technical Outp. ON, control element (CS11)
13	3	Technical Outp. OFF, control element (CS11)
14	4	Switch to Day
15	5	Exclude group/zone, section (CS11)
16	6	Spare

Example: The block ALA 100 on NCRS00 represents the point CZ10 Fire Organization. Via the block ANA100 on NCRS00 you are able to switch the CZ10 to Night mode.
In Appendix C you will find the templates used for the switch commands.

4 Technological control units points managed by LMS

4.1 Naming conventions

Inside LMS each possible source of information installed in the field (such as a smoke detector, a magnetic contact or a microwave intrusion detection sensor) is modeled as a point. Up to 16 different numerical values can be associated to each point and each value (called template by Landis&Staefa) corresponds to a state.

In MS2000 the basic unit of information is called a “block”. A block can be either the representation of a physical device installed in the field or it can be an elementary operation on it. There are various types of blocks, according to their function and meaning inside the system; in IMS2000 the only block types used are digital value blocks, ALA blocks, COS, RSCOS and FKB blocks.

To represent technological plant items in an LMS system, you need to model them as CMXs, a general purpose peripheral device supported by LMS.

This allows you to convert information stored in blocks into the sixteen states used by LMS. The following paragraphs describe how.

4.2 4.2 Supported technological plant items

The energy management and building automation system supported by IMS2000 is the Landis&Staefa MS2000 system composed by the following devices:

- RS units, that collect data from peripheral devices
- NICO interfaces between the RS bus and the NCRS System controllers
- MS2000 V2.0 running under Desqview on a MS DOS PC

4.3 LMS technological point modeling

An LMS workstation may be allowed to access a subset of the data points configured in the MS2000 system through the NISE Pad interface. This subset of points will be modeled for LMS by NISE in order to emulate a Cerberus Dati CMX cluster. CMX cluster support is available with LMS version 2.42 and later.

If you wish to manage different subsystems (for instance a lift control and an HVAC) as separate entities you must configure them as belonging to different CMXs. This means that if you have two subsystems with four points each, you must configure two CMX’s to control both subsystems fully and independently.

A CMX cluster is composed of 32 CMX modules. Each CMX module has 24 digital points and there are four types of CMX modules.

4: 24 digital inputs
5: 16 digital inputs & 8 digital outputs
6: 8 digital inputs & 16 digital outputs *)
7: 24 digital outputs

*) HW not available

Each type is a subsystem subtype for LMS2. This means LMS2 "sees" the technological points from the NCRS as a subsystem.

The following table shows how the technological points are modelled in the CMX data structure:

CMX# x (x = 2...32; local address 01H...1FH)

Point #	Point Description
01	Link status with NCRS
02	Subsystem scan status
03	Not used
04	1st digital input or output
05	2nd digital input or output
06	3rd digital input or output
:	:
:	:
:	:
27	24th digital input or output

Link status with NCRS: represents the communication status between NCRS and NISE (LG2047 see 6.1) (0 = normal; 1 = down 2 = unknown, when LMS2 - GW-20 link is down)

Subsystem Scan Status: Used by LMS2 to indicate the scan status of the connected subsystems (0 = normal; 1 = down)

The first CMX - module is reserved for diagnostic of the MS2000 system. It's points are defined in Chapter 6.3 (NISE control of NCRS General Status).

In order to access the value of the controlled subset of points, a scanning procedure is established between NISE and NCRS.

4.4 Technical alarms management

Both LMS and MS2000 can handle technological alarms in an IMS2000 integrated system. If an alarm is acknowledged or reset by LMS, VISION/ACCESS automatically changes the template displayed. Conversely, if the ACCESS/VISION acknowledges the alarm, this is displayed immediately on the LMS screen.

Only the following MS2000 blocks can create alarms and are supported by IMS2000:

- ALA
- COS
- RSCOS
- FBK

The alarm blocks coming from the technological plant items will be represented in LMS as points, that will undertake the status changes shown in Fig. 12 (if all the messages for the alarm block have been defined).

If not all the messages are defined, the status diagram gets simpler (see Fig. 13) - in this example only the alarm messages are defined.

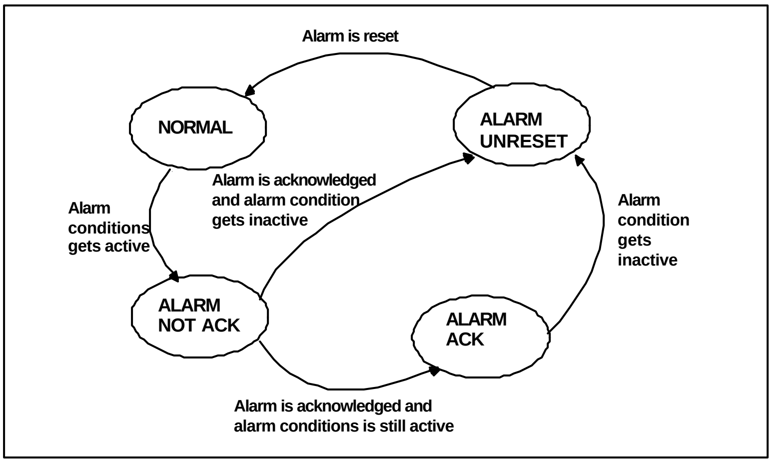

Fig. 12 Possible states of an ALA block

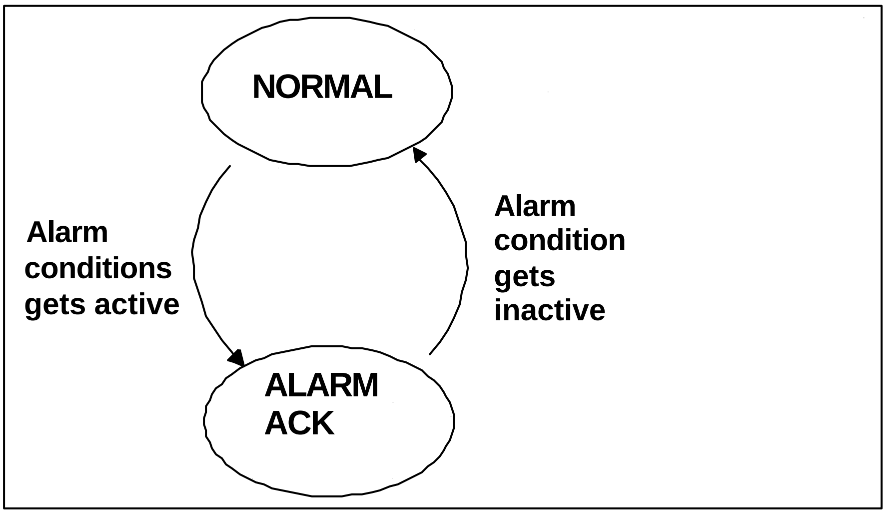

Fig. 13 States of an ALA block if only the alarm message is defined

The table below shows the cross reference between Vision and LMS2 for technological alarms.

Vision states	LMS 2 states
1 = Not updated *)	actual NCRS block status
2 = point doesn't exist	4 = not existing
3 = comm. fail	5 = not available
4 = normal	0 = normal
5 = alarm not ack.	1 = alarm not ack.
6 = alarm ack.	2 = alarm ack.
7 = alarm reset required	3 = alarm reset required
8 = bad trace	5 = not available
9 = alarm disabled	6 = alarm disabled

*) not updated in a Vision (inherent default status of all the items which are currently not displayed). However, these points (blocks) will still be updated in the NCRS and can have a state between 2 and 9. Therefore, in LMS2 you will see the correct NCRS block status.

Remark: For other Alarm types (related to e.g. FBK-blocks) the LMS2 states are as follows:

14 =	Feedback failure	(FBK-Block)
15 =	Uncommanded COS	(FBK-Block)
7 =	Low Alarm	(ALA-Block)
8 =	High Alarm	(ALA-Block)

Technological alarms which have to be monitored by LMS2 are defined in the same manner as for a normal MS2000 application. However, one must consider the following:

Important! To receive a status change of any supported alarm type block as fast as possible, NISE reads the NCRS alarms queue. Therefore its important to define all the messages in order that the NCRS puts an entry into the queue which can be read by NISE. If a message is not defined, the corresponding change of status (e.g. alarm was acknowledged) will be lost!

Example COS-block:

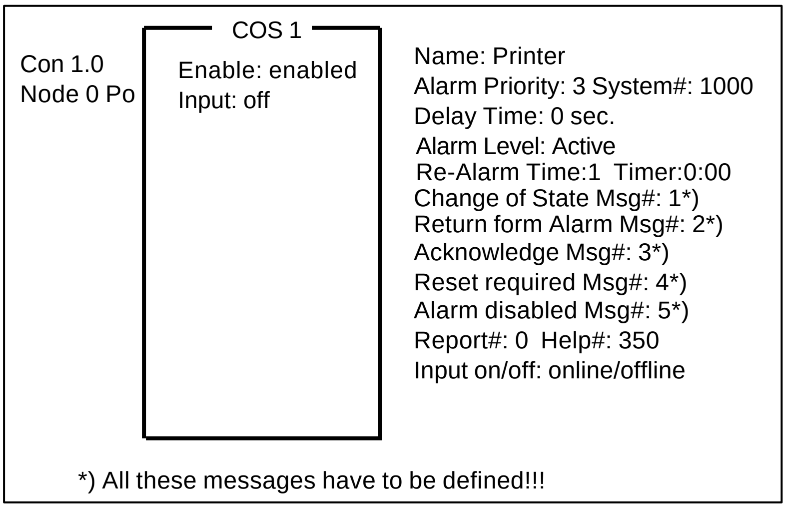

Fig. 14 Example COS-block

This COS-block supervises the status of the printer connected to NCRS00. If the printer goes off-line the COS-block goes to alarm.
For a more detailed description about alarm blocks consult the Landis&Staefa Access software manual (E23).
To configure the NCRS to transmit alarms to the NISE Pad, it is necessary to define an additional ALDEV block per NCRS, pointing to Host port A or B (depending on which NISE is connected).

Example:

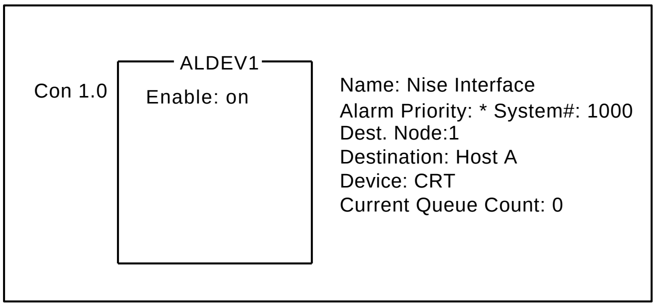

Fig. 15 ALDEV- block

In this example all the alarm blocks with system uni # 1000 and any Alarm priority will be fed to the NISE, which is connected on NCRS 1 on Host A, because the * acts as a wildcard and it means any Alarm priority.

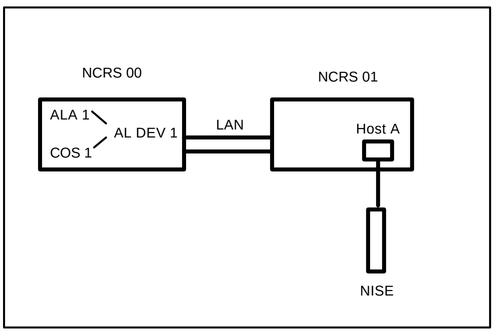

Fig. 16 ALDEV for technological Alarms

Remember that all points should not have a high priority.

4.5 Digital point representation

As previously described, NISE provides a model of the technological points for the LMS, emulating one cluster of CMXs (Cerberus Dati Multiplexer). CMX communicates using CDSF (Cerberus Dati standard format) and the technological points are grouped together according to the CMX data structure.
Each CMX cluster is composed of up to 32 CMX modules and each CMX module has 24 digital points in the following combination:

SUBTYPE	DESCRIPTION	NOTE
4	24 digital input	
5	16 digital input and 08 digital output	
6	08 digital input and 16 digital output	(*)
7	24 digital output	

(*) the hardware for this configuration is not presently available
The subtype shown in the table corresponds to the subtype to be configured in LMS.
The table below shows the cross reference between Vision and LMS2 for digital type blocks.

Vision states	LMS 2 states
1 = Not updated *)	actual NCRS block status
2 = point doesn't exist	4 = not existing
3 = comm. fail	5 = not available
4 = auto on	10 = auto on
5 = auto off	9 = auto off
6 = manual on.	12 = manual on.
7 = manual off	11 = manual off
8 = bad trace (structing error)	5 = not available

*) not updated in a Vision (inherent default status of all the items which are currently not displayed). However, these points (blocks) will still be updated in the NCRS and can have a state between 2 and 8. Therefore, in LMS2 you will see the correct NCRS block status.
As previously mentioned the number of technological points is limited to 768. To keep the configured technological points updated, NISE scans them periodically. Obviously the "updating time" depends on the number of technological points defined. Reporting of a status change for such a point will be much slower than for an alarm, because it does not use an event driven mechanism.

Remark: "Not existing" means that the block is not configured in the NCRS.
"Not available" means that the NCRS containing the corresponding block is without power supply.

Technological points which have to be monitored by LMS are created in the same manner as for stand-alone MS2000 applications. For technological points which can be commanded from LMS, you should consider that NISE sets the block to manual and writes directly to the block output. The write timing restrictions that normally apply to NCRS when commanded by MS2000 does not apply to this case. Beware that too frequent writing operations to the EEPROM can damage it.

4.6 Analog point representation

Not implemented. At the current development stage, it is possible to display, acknowledge and reset on LMS alarms generated by analog plant Items. It is not possible, however, to display the analog value measured.

4.7 Command management

Commands are issued by LMS via a CMX cluster. They are transmitted to the NISE Pad using the CDSF protocol and are then converted into the corresponding Access commands by the Pad itself.
The following table lists all the commands foreseen

COMMAND NUMBER	DESCRIPTION
00	Unit Status request
00	Modify date-time
01	Reserved
02	Reserved
03	Deactivate digital manual
04	Activate digital manual
05	Reserved
06	Reserved
07	Reserved
08	Reserved
09	Reserved
10	Reserved
11	Set to auto
12	Reserved
13	Acknowledge digital block
14	Acknowledge analog block
15	Reset digital block
16	Reset analog block
17	Modify analog

- Command 0 "Unit Status Request" is never available to the user; it is automatically issued by LMS at system restart.
- Command 0 "Modify date-time" is used to synchronize LMS2 and MS2000 systems This command is optionally issued by the NISE Pad to NCRS if jumper W18 on the NISE Pad has been set.
- Command 17, Modify analog, is not currently available because analog points are not yet managed.

If a digital point is set to manual on/off or auto from LMS, this is displayed in VISION by automatic change of the displayed template. Conversely, a command issued by VI-SION will produce a change of status immediately shown on the LMS screen.

Among the digital blocks supported by IMS2000 (see Par. 2.4.4), those marked read/write can be used to set parameters in RS, flags in NCRS, broadcast a digital value on the inter NCRS or inter RS bus.

The following table describes the valid commands per NCRS block type which can be issued by LMS2.

BLOCK TYPE	ACK	RESET.	MANUAL COMMAND (switch ON/OFF)	SET TO AUTO
VDO	NO	NO	YES	YES
DIG	NO	NO	YES	NO
RSDI	NO	NO	NO	NO
RSDO	NO	NO	YES	YES
RSDZ	NO	NO	NO	NO
RSUDI	NO	NO	NO	NO
RSUDO	NO	NO	YES	YES
NIDA	NO	NO	NO	NO
RSDS	NO	NO	YES	NO
RSDP	NO	NO	YES	NO
NIS	NO	NO	NO	NO
LG2	NO	NO	YES	YES
LG1	NO	NO	YES	YES
VDI	NO	NO	NO	NO
LAN	NO	NO	NO	NO
NODE	NO	NO	NO	NO

5 Interactions between subsystems

We can distinguish between two interaction directions:

- from security control units (mainly CZ10) to NCRS;
- from NCRS to security control units (mainly CZ10).

The first type can be further subdivided into:

- degraded mode interactions
- intelligent interactions

Degraded mode interaction implies that the CZ10 directly commands the actuating devices, such as fire dampers etc. Here, directly means that a physical CZ10 output is wired , for instance, to the main switch of the air handling unit, to switch it off in case of fire. This solution offers a very high reliability, but it requires additional cable installation and engineering.

Intelligent interactions do not require additional wiring: these interaction are performed through software links inside the IMS2000. The CZ10 detects a fire, it signals the danger condition to the NISE Pad, that transfers the message to NCRS and a command to switch off the air handling unit is issued by the NCRS to the NICO and RS units responsible for it. This solution has obvious advantages: it is much more flexible (you can switch off only the plant section relevant to your event), it does not require additional hardware activities, it can be changed whenever needed, and so on. It is however a solution with a lower reliability standard: its proper functioning depends on the operating status of various elements, although very reliable by themselves.

If needed, an interaction from MS2000 to CZ10 can be used to trigger a degraded interaction mode in case the intelligent interaction should fail.

5.1 Interactions from NCRS to security/safety control panels

All digital and alarm blocks supported by NISE (see 2.4.4) can be assigned to a DO (Digital Output) of the CZ10 or to one of the GW-20 supported interactions.

The Doggy SW-Tool lets you configure up to 289 short standard message or 106 standard messages as a source and up to 90 Cerban messages as reactions.

Remark: Note that if you start up an interaction from an alarm block type (ALA, COS, FBK, RSCOS) the speed will be much higher than if you start it up from a digital block type (LG1,...).

Remember that in case of alarm an entry is made into the NCRS alarms queue and NISE is informed about this immediately, while a "normal" change of status of a digital block is detected by NISE through its scanner for the technological points. This type of interaction could typically be used to trigger a degraded mode interaction in case an intelligent interaction from CZ10 to NCRS should fail. For this purpose the FBK-block offers an easy solution.

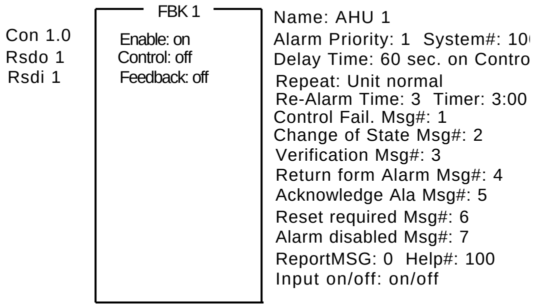

Fig. 17 Example Success control of intelligent interaction

RSDO 1 represents the status of the air handling unit (AHU)1, which is switched off in case of a fire via an intelligent interaction (AHU1 is switched of by RSDO1, the Control ID).
If the AHU1 is switched off (in case of fire), the FBK block expects to see the feedback input (RSDI1) become inactive within the "Delay Time" (60s). If it does not the FBK block will generate an alarm message (control failure message). This alarm would then trigger the degraded mode interaction. E.G. switch off the entire ventilation via an CZ10 Digital Output (hard wired).

5.2 Interactions from security/safety control panels to NCRS

This type of interaction is already performed by the GW-20 on the various Subsystem Pads, which support interactions between the security/safety control panels.
On Subsystem Pads there are both firmware and management tables, which are able to send the commands destined for the NCRS to NISE board.
The NISE Pad receives these commands (which have the Standard format), translates them into a compatible Access Protocol format and passes them on to the NCRS.
NISE supports five blocks for interaction from the fire control panel to the MS2000 system:

- NIDA
- VDO
- LG1
- LG2
- DIG

Actually the NIDA block does not work with the present software version. A workaround must be employed, in which a DIG block is used to accept data from the NISE and this passes the information on to the NIDA (See Fig. 18).
The number of interactions that can be configured depends on the GW-20 configuration and on the kind (i.e. the length) of CERBAN telegrams used to communicate between CZ10 and GW-20.
The worst case foresees 23 interactions per CZ10, assuming a source telegram memory 1 KB wide, Cerban telegrams 11 characters long and 4 CZ10 per GW-20 Pad.

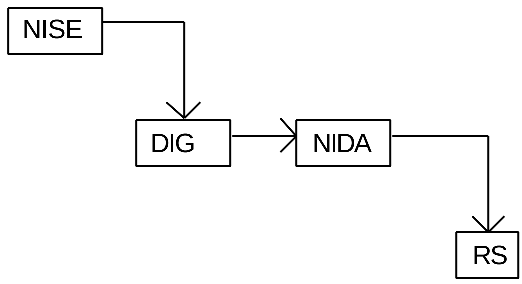

Fig. 18 NIDA workaround

5.3 Direct interaction

In many cases it is possible to substitute interactions from safety/security control panels to NCRS using the so-called direct interaction. This procedure uses the Hi (High alarm) and Lo (Low alarm) attributes of the ALA block to trigger an action within MS2000 in case of alarm.
The CZ10 detects the anomalous condition, and it signals it to the NISE Pad. Following the standard procedure to send alarms from LMS to MS2000, NISE Pad forces an ALA block into alarm. To start up a direct interaction, the MS2000 should be configured to trigger the desired actions set when the alarm is detected.
For instance, when the CZ10 fire zone goes into alarm, it is possible to stop the ventilation of the corresponding zone by direct interaction. Or, after an intrusion alarm detection, lights can be switched on in that part of the building the where alarm was detected.
These direct interactions can be implemented by associating a NIDA block with the corresponding alarm.
Remember that if the alarm is acknowledged, the Hi and Lo attributes remain active.

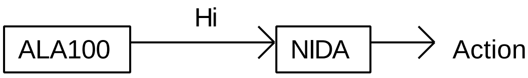

Fig. 19 Direct interaction

Example of direct interaction

As an example of direct interaction, we will examine the case of an interaction between a CZ10 and an RS module when a fire is detected.
In case of fire an air handling unit (AHU) must be switched off, following this procedure:

- The NISE Pad puts an ALA block (which is connected to a NIDA block) into alarm.
- The value of the NIDA is broadcast over the inter-RS bus (the NICO address must be 16) and is received by the DE registers in the RS module.
- The DE value is transferred to the page selection register DW. The page 1 (operating mode 1) is selected, where this page contains the program to be executed if a fire is detected.

If the intelligent interaction described above fails, an MS2000-to-CZ10 interaction can be used to trigger a degraded mode interaction.

6 Coherency controls

6.1 Control of NISE existence by MS2000

NISE will change periodically the value of the DIG block 2047, switching between the value 1 and value 0. Each transition from 0 to 1 and from 1 to 0 is detected by the blocks DLY 2046, DLY 2047, LG 2047 and a pulse is generated to reset the time count of block COS 2047. If the value of DIG 2047 does not change for a time longer that the specified delay time, an alarm is generated in COS 2047. The alarm is displayed on MS2000 management station (See following figures).

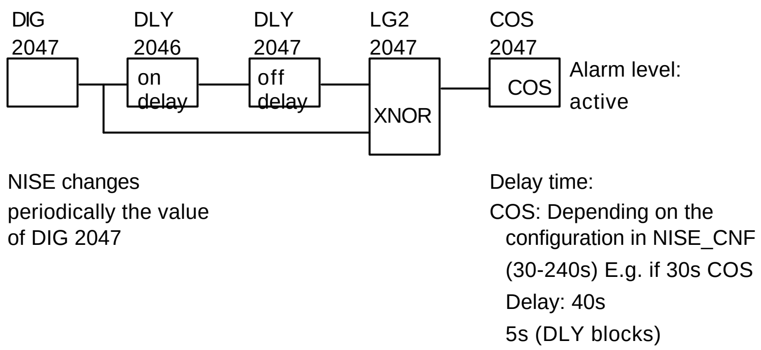

Fig. 20 Control of NISE existence by MS2000

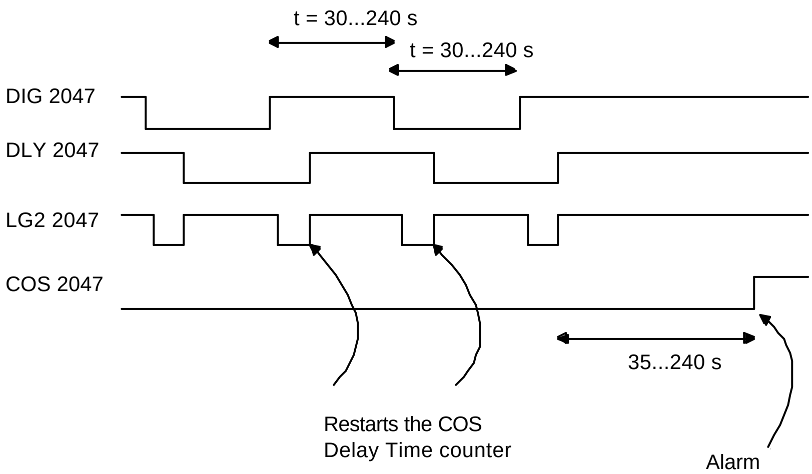

Fig. 21 Control of NISE existence by MS2000

Remark: The "Nise existence" block (LG 2047) is created by default in the NISE_CNF.

6.2 Control of missing/wrong blocks by NISE

All the NCRS blocks used by NISE are periodically scanned. If NISE detects a non existing block (a block which is defined in NISE_CNF but not in the NCRS) it will be treated as an anomaly event on LMS.

NISE will also provide a report of the anomaly to the MS2000 station. In order to do that, NISE will record the number of the first non existing block detected during the scan cycle as an analog value on the dedicated ALA block to be defined during configuration, but created by default as ALA 2047 in NISE_CNF. This block, called wrong block counter (WBC) will generate an anomaly alarm to the MS2000 station and its value will indicate the number of the first missing block. The type of the missing block will be written into the ALA block called wrong block type WBT to be defined in LMS during the configuration but created by default as ALA 2046 in NISE_CNF. The node# where the block is missing will be written into the ALA block called Wrong Block Node to be defined during configuration but created by default as ALA 2045 (in Nise_cnf). NISE will record the block reported in WBC in an internal variable. NISE will also set an internal status flag indicating that one missing block has already been detected. All the subsequently detected missing blocks will not be reported to MS2000.

When NISE detects a return to "existing" of the block currently reported in WBC, it will write the -1 value in the WBC ALA block and in the internal variable, and will reset its internal flag (See Fig. 22).

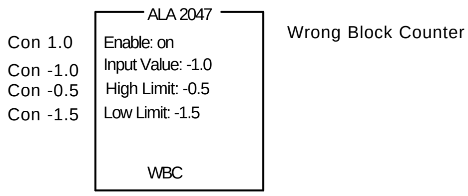

Fig. 22 Wrong Block Counter

During configuration the Input value is set to Con -1 (block is in normal). When NISE detects the first missing block, it writes its block number to the Input value.

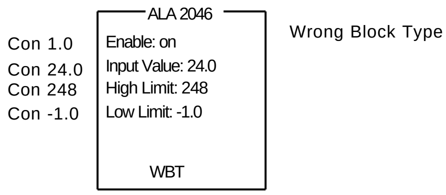

Fig. 23 Wrong Block Type

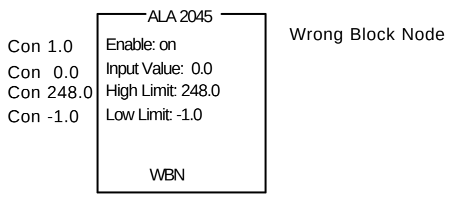

Fig. 24 Wrong Block Node

6.3 NISE control of NCRS General Status

NISE must be informed about a possible problem in the MS2000 system. For this purpose it uses the LAN and Node blocks. (The LAN & Node blocks in MS2000 V2.0 provide more information than was the case in V1.3)

The first cluster module is used for diagnostics of the MS2000 system.

The cluster points are defined as follows and must be configured like this in LMS2 (Point 4 to 27).

Cluster module # 1 (local address 00H)

Point #	**Point Description**
01	Link status with NCRS
02	Subsystem scam status
03	LAN blocks status
04	Node block status (Node # 0)
05	Node block status (Node # 1)
06	Node block status (Node # 2)
:	
:	
:	
26	Node block status (Node # 22)
27	"OR" of Node block status # 23...31

Link status with NCRS: Represents the status of the NISE-NCRS link monitored by NISE (see 6.1)
0 = normal
1 = down
2 = unknown (when link LMS2-GW-20 is down)

LAN block status: Indicates the overall NCRS-LAN status
0 = normal
1 = not normal (of one or several NCRS)

Node Block status: Indicates the NCRS Node block diagnostics
0 = normal
1 = Watchdog
2 = Power Fail
3 = Pushbutton
4 = Pushbutton & Power Fail
5 = Printer disconnected
6 = Printer Jam / Printer Off Line
7 = Printer Out of Paper
8 = Power Failure Pending
9 = RAM Lockout
10 = Battery Failure
11 = Anomaly

(Subsystem Scan Status: This point is managed by LMS2 only and shows the On-Off scan of the subsystems).
0 = on scan
1 = off scan

With these points LMS2 has a good image of the current status of the whole MS2000 configuration.

Remark: If more than one status of the Node block is active at the same time, only one status is displayed giving priority to the less significant bits. (E.g. in case of Watchdog and RAM Lockout, Watchdog is displayed).

7 Configuration notes

7.1 NCRS Default database

No IMS2000 specific default database is needed, but the following points should be observed:
Reserved block for IMS2000

LG2 2047	
DIG 2047	
DLY 2047	Control of NISE Existence by MS2000
DLY 2046	
COS2047	
ALA 2045 WBN	
ALA 2046 WBT	Control of missing/wrong blocks by NISE
ALA 2047 WBC	

Port block for communication setup with NISE communication parameters: 9600 baud (NISE supports 1200..9600 bauds, see NISE Technical manual for details).
The communication time-out used by NISE varies according to the baud rate. You must set the proper time out value listed in the following table using NISE_CNF package.

Baud rate (bps)	**Time out value (milliseconds)**
1200	4800
2400	2400
4800	1200
9600	600

7.2 Engineering aspects

Blocks representing technological points for LMS and security points of MS2000 must be defined in a range which may not overlap with the other MS2000 blocks.
Example: ALA blocks 1800..2000 are reserved for security points representation
COS blocks 1800..2000 are reserved to represent the status change of technological points in LMS2.
The definition of this range is project specific, depending on the number of security points to be monitored by MS2000 and the number of technological points to be monitored by LMS.
It is important not to mix these ranges, i.e. a normal ALA block (used in MS2000 only) may not have a number belonging to the range reserved for security point representation.
The same applies to different subsystems (CZ10 # 1, CZ10 # 2, CZ12 # 1...).
I.e. each subsystem occupies a reserved range of ALA blocks. If there are gaps, these free points cannot be used by other subsystems. (This is necessary let NISE initialize the system more quickly).

Example:

CZ10 # 1 uses ALA1...ALA50 and ALA100...ALA150 for its security point representation. The ALA blocks 51...99 may not be used by another subsystem. Of course one would in practice not leave a big gap of unused points like this. Nevertheless it can make sense to leave a certain amount of points free. This makes the changes easier when additional points have to be added in the future.

Recommendations for better performance:

- If there is an network of several controllers, its better to connect the NISE and the MS2000 Host to different nodes.
  (The Landis&Staefa Vision asynchronous point update will be faster because one controller must manage only one Landis&Staefa Vision List).
- One important question arises with the use of a lot of Math blocks. These block types require floating point arithmetic operations and therefore use considerable CPU time. In the NCRS these blocks are scanned by the application scanner. Apart from other non time critical blocks also the ALA blocks are updated by this scanner. Generally speaking, a lot of Math blocks cause long scan intervals of the application scanner. One direct impact of this is that the NCRS alarm reporting will be slower. Also there is less CPU time left for other tasks. For NISE this means that if it makes a request for a block in the NCRS, the response time will increase. This can lead to time-outs if the "NISE Time OUT" is too short. (The time-out of NISE is configurable using the NISE_CNF V2.1).

Recommendations:

Generally the NISE should be connected to the least heavily loaded NCRS.

If possible, keep the number of Math blocks on the NCRS (to which the NISE is connected) as low as possible. If you have several NCRSs, spread them evenly across the other controllers.

To help the Landis&Staefa engineer to configure the MS2000 inserted in an IMS2000 system, we remind you that two attributes per ALA block are needed to represent a security point in MS2000:

The Al attribute (Alarm attribute) is used to display the state of the ALA block (e.g. alarm, alarm acknowledged, etc.) and to acknowledge a security alarm from VISION

The Ai attribute (Analog Input value attribute) displays the block status (e.g. test, excluded, not ready, etc.)

From the MS2000 point of view, this means that the item (smoke detector, door lock, etc.) that represents a Cerberus object in VISION has two templates assigned to it.

It is now up to the engineer to define two independent symbols (one for the status and one to acknowledge the alarm) or to use the same symbol twice, one covering the other.

By adopting the second solution (two identical symbols) you cannot tell which attribute is on top and you may have to click twice on the symbol to access the desired function.

It is also important to organize the data points on the screen in a logical and clear way. The best way to represent security points of a building is to use floor plans. They allow the operator to access the place where the alarm occurred easily and quickly. Fig. 25 shows you a scheme about how to organize the relevant data for easy event handling.

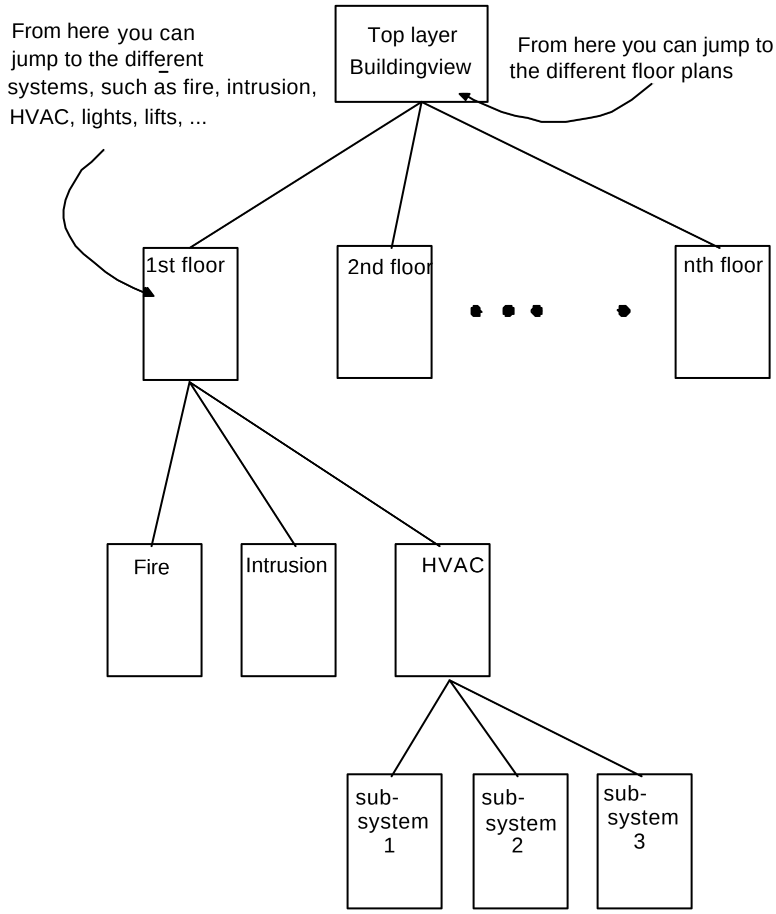

Fig. 25 Engineering

8 GLOSSARY

ADDRESS	In the CZ12 subsystem, individual detectors are called addresses.
ALARM	One of the five event categories. (See Event). The color associated to it in LMS is Magenta.
ANOMALY	One of the five event categories. (See Event). The color associated to it in LMS is Green.
AUTOMATIC RESET	When an event is reset in the field by a command from the control panel. From the point of view of the operator, the event simply disappears from the screen.
CC-11	A fire detection subsystem managed by LMS.
CMX	An electronic device, produced by Cerberus Dati, that receives digital inputs from the field and activates dry contacts. It is one of the subsystems managed by LMS.
CHANGE OF STATUS	Any change in the value of a point.
CONFIGURATION	The process that allows the operator to introduce the data of the actual plant which the LMS software will monitor.
CONTROL PANEL	The part of each security device which contains the buttons, switches, etc. that control the device; the meaning of this term is extended to indicate the whole security device., i.e. the CZ10, CZ12 etc.
CONTROL UNIT	(see Control Panel)
CS4	An intrusion detection subsystem managed by LMS.
CZ10	A fire detection subsystem managed by LMS. In addition to alarms, it can contain gas detectors, sprinklers, and digital inputs.
CZ12	An intrusion detection subsystem managed by LMS.
DIGITAL INPUTS	Two-phase sensors controlled by the CZ10 subsystem and the Landis&Staefa MS2000 system. A digital input can indicate, for example, whether a vent is open or shut.
EVENT	Any abnormal condition in the security environment that requires the operator's attention; an event is always generated by the change of status of a point. There are five types of event, and each is associated with a color used when presenting the event on the video screen. The five areas, beginning with the most urgent, are:
FAULT	One of the five event categories. (See Event). The color associated to it is Yellow

Event type	**Color**
Severe Alarm	Red
Alarm	Magenta
Fault	Yellow
Warning	Light blue
Anomaly	Green

FAULT STATUS	Each subsystem contains points that monitor conditions such as electrical connections and power supply. The values assumed by these points is referred to as the fault status, depending on system configuration.
FIRE DETECTORS	Sensors that are triggered by the presence of fire. These sensors are a part of the fire detection subsystem and are connected to a CZ10.
GAS DETECTORS	Sensors that are triggered by the presence of flammable or noxious gases. A fire detection subsystem may contain gas detectors.
GATEWAY	A modular, multiprocessor electronic device that interfaces the peripheral control units with the personal computer. The gateway also allows subsystem interactions.
GROUP ALARMS	In the CZ10 subsystem, alarms are generated by groups of detectors. Detectors do not give rise to alarms individually.
LINE	An electrical line. In the CZ10 subsystem, detectors can be viewed according to the line on which they are installed.
LMS	Local Monitoring System. A PC-based supervisory program that manages the security environment of a particular geographical area from a central location.
POINT	A source of information at the lowest level. All of the subsystems are composed of points, and all of the information received by LMS from the field is received on the level of the points. For example, there is a point associated with the status of the connection of a subsystem with LMS.
POWER SUPPLY	The electrical current that runs the security devices. The fault status of the point associated with the power supply is constantly monitored by LMS.
SEVERE ALARM	The most serious of the five event categories. (See Event). The color associated to it is Red.
SPURIOUS ALARM	An alarm generated by purely mechanical causes, for example, during maintenance or repair work.
SUBSYSTEM	A physical device that controls a specific function. For example, a CZ10 fire detection control unit.
SYSTEM	Consists of all of the similar devices that are necessary to carry out one homogeneous function (i.e., a fire detection system or an intrusion detection system).
TREATMENT OF EVENTS	The process in which an operator selects an event, calls up the associated treatment pages, and executes the procedures detailed on those pages. The treatment process is terminated by a Reset or Suspend command. After a reset, the operator has the option of writing a short report for the Historical Data file.
WARNING	One of the five event categories. (See Event) The color associated to it is Blue.
WARNING SUBSYSTEM	One of the default subsystems foreseen by LMS. To this system belong 1000 virtual points. The warning subsystem lets you generate events (typically warnings) on the basis of the PC internal clock. Warnings can be triggered daily, weekly, monthly or yearly.

Appendix A - Security points Table

LMS							
Control Unit Type :							
Subcontrol Pad Number :							
Control Unit Local Address :							
Control Unit Subtype :							
Serial line Number				NCRS			
N.	Point Number	Point Description	Point Type		Node Number	Block Number	Block Type
1							ALA
2							ALA
3							ALA
4							ALA
5							ALA
6							ALA
7							ALA
8							ALA
9							ALA
10							ALA
12							ALA
13							ALA
14							ALA
15							ALA
16							ALA
17							ALA
18							ALA
19							ALA
20							ALA
21							ALA
22							ALA
23							ALA
24							ALA
25							ALA
26							ALA
27							ALA
28							ALA
29							ALA
30							ALA
31							ALA
32							ALA
33							ALA
34							ALA
35							ALA

Control Unit Type could be CZ10, CZ12, CS4. CS4-40, CS11, CC60
Control Unit Subtype please refer to LMS Configuration Manual (Appendix A) for a list of subtypes available

Point Type for a CZ10: 0 = Fire Sector; 1 = Technological Sector
for a CZ12 addresses: Group Number
for CS4 and CS4-40 zones: Section number
for CS11 zones: Section number

Important: for CS-11 and CS4-40, metafiles (output file of lister) should be supplied

Node Number 0-31
Block Number 0-2040

Appendix B - Technological points table

	LMS INFORMATION
Cluster Number	:
CMX Subtype	:
Subsystem description	:

	NISE	LMS			NCRS		
N.	Priority	Point Number		Point Description	Node Number	Block Number	Block Type
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							

Point Number 4-27
Cluster Number 0-31
CMX Subtype 4 = 24 Digital Inputs
5 = 16 Digital Inputs and 8 Digital Outputs
6 = 24 Digital Outputs

Priority *(for NISE scan)* 0 = High
1 = Low
2 = Out of scan

Subsystem Description Name of subsystem to which technological points are associated
Node Number 0 - 31
Block Number 0 - 2047
Block Type please refer to Chap. 2.4.4.

Appendix C - Miscellaneous points table

Physical Node (0-31) :
Subsystem pad Number:

MS2000 presence (Yes / No):
LMS presence (Yes / No):

Define NISE existence blocks	Node Number	
	Block Type	DIG
	Block Number	2047
	Timer (sec.)	

Define WBC block	Node Number	
	Block Type	ALA
	Block Number	2047

Define WBT block	Node Number	
	Block Type	ALA
	Block Number	2046

Define WBN block	Node Number	
	Block Type	ALA
	Block Number	2045

Remark: These blocks ***must*** be defined in the NCRS.

Appendix D - Interaction table

	INTERACTIONS
System	:
Gateway #	:
Subsystem/NISE Pad - Slot #	:

	SOURCE SUBSYSTEM			Source Event	Interaction
Row#	Description	Number	Type		Program #
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					

	INTERACTIONS
System	:
Gateway #	:
Subsystem/NISE Pad - Slot #	:

Row#	Interaction Program #		Comments:		
	Target subsystem			Command	
	Description	#	Type		
1					
2					
3					
4					
5					
6					
7					

Row#	Interaction Program #		Comments:		
	Target subsystem			Command	
	Description	#	Type		
1					
2					
3					
4					
5					
6					
7					

Each row can deal with a different subsystem. The target subsystem number must be in the range 0 - 16 even on GW-20.20 because the NISE Pad takes one slot, i.e. the place of four lines.

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