

MC - server

(Protocol handler designed for Emk's devices family)



DDE
interface
programmer's
guide

Version 2.0 Edition A



MC - server

DDE interface Programmer's Guide

Revision table

Ed.	Rev.	Date	Modified sheets
1.0	A	23-09-97	All
1.0	B	20-02-98	1, 2, 26, 30
1.0	C	17-06-98	1, 2, 3, 6, 7, 8, 11, 31, 79, 87, 88
1.0	D	08-02-2000	1, 2, 55, 56

ENK s.r.l. reserve the right to modify this document without obligation of notice.

Microsoft® and Visual Basic® are registered trademarks of Microsoft Corporation.



Contents

Revision table	2
Contents	3
Introduction	5
Software architecture	6
Getting started	7
Installing the Software	7
Testing & initialising your device's configuration	7
DDE commands	9
DDE references	9
Command interface	10
MC Commands	11
MC unsolicited reply	15
TDL/TDLBC Commands	16
TDL/TDLBC unsolicited messages	32
SWIPER Commands	38
SWIPER unsolicited message	43
DIGITAL I/O Commands	45
DIGITAL I/O unsolicited message	53
SERIAL ADAPTER Commands	55
SERIAL ADAPTER unsolicited messages	67
PROXIMITY READER Commands	71
PXR unsolicited message	76
MOTORISED ENCODER Commands	77
MOTORISED ENCODER unsolicited message	85
Commands summary	88
Distribution diskette contents	98





CHAPTER 1

Introduction

The MC-net Interface Library that interfaces a PC (host) with the entire Emk's peripheral devices family, is based on a software module, called "MCserver", designed to manage the communication protocol under the Windows (32 bit) environment. It controls the commands, the replies and the unsolicited messages coming from the external network by using the standard DDE interface designed for Windows applications.

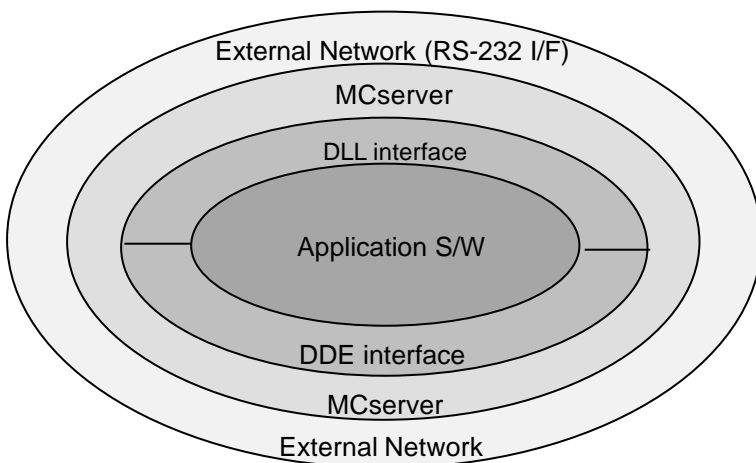
The developers which develop applications in either the *C* or *Visual Basic* programming languages can manage the external devices functionality without knowing the multipoint protocol characteristics; they only have to follow this simple rule: **to avoid missing messages (writing a Client program by using, for example, the Visual-Basic language) it is useful to synchronise the DDE messages from/to the MCserver by using proprietary flags (if the POKE directive is used) or by using the EXECUTE directive.**

This guide describes how to install your MCserver program and how to develop applications using the DDE level commands.

Software architecture

The MC-net Interface Library (completely described within a different document) is a software layer provided to quickly develop applications based on the device's family produced by **ENK**...

The MCNET.DLL library communicates, in DDE mode, with the *MCserver* program able to manage the physical communication (transport layer) with the external Master-Controller (connected to the PC via RS-232 interface); the 32 bit server program properly works under Windows-95 or Windows-NT operating systems.



The application program can directly communicate with the *MCserver* via DDE interface.



CHAPTER 2

Getting started

This section describes how to install the “*MCserver*” software into your PC’s hard disk, and how to test and initialise your device’s configuration. After you have performed the instructions in this section, you will be ready to start developing applications using the *MCserver* program.

Installing the Software

Your “MCserver” package includes a diskette which holds the Windows environment software.

To install its contents to your PC’s hard disk, please perform the following steps:

1. Insert the diskette labelled ‘*MCserver*’ into your PC’s floppy drive
2. Open the floppy drive folder and copy the *MCserver.exe* program inside your working directory
3. Double click the *MCserver.exe* icon to start the program

Testing & initialising your device’s configuration

The *MCserver* program includes the ability to test the networked external devices.

After running the *MCserver.exe* program, you can start the following operations.



To initialise or change the serial communication parameters, you can select the *MCserver* icon and then you can choose the desired sub-menu; when prompted, you can select the serial port to which the external network is connected and its baud rate.

To check the network configuration, you can select the *Devices* menu; if the external devices are properly connected, a window containing the map of that devices appears.

The “present devices” are shown on the left while on the right you can declare the installed devices in order to check every undesired disconnection (or fault).



CHAPTER 3

DDE commands

This section describes how to interface the *MCserver* program, how to build the DDE commands and how to understand the messages contents.

DDE references

In order to communicate with the *MCserver* program, the following DDE references must be used:

✍ Application (SERVICE):	MCSERVER
✍ TOPIC:	MC
✍ ITEM:	MSG

Command interface

The command interface between the *MCserver* and related Clients (DLL included) is based on the following rules:

? Message format:

Header (2)	Length (2)	[data]
------------	------------	----------

Every message must be sent to the DDE-interface-layer after the conversion of each byte into two ASCII characters (for example, to transmit the byte 0x6D, you would transmit the values 0x36 followed by 0x44).

- <Header> contains the address that qualifies the desired device (0x00 = MC, 0x01 ... 0x7F = dev.)
- <Length> contains the length of the <data> field (0x00 ? 0xFF)
- <data> contains the optional message sent to or received from the external device

The REPLY format is as follows:

Header (2)	Length (2)	Status (2)	[data]	command-echo
------------	------------	------------	--------	--------------

- <Status> may contain 0x00 (OK) or a different value (specific for each command)
- <command-echo> contains the echo of the first byte of the previously received <data> field

When a message cannot be properly managed by the *MCserver*, the response becomes:

- ? <aa> 02 A1 <cmd-echo> not valid address or parameter
- ? <aa> 02 A2 <cmd-echo> a Time-Out-error is occurred transmitting the message to the netw.
- ? <aa> 02 A3 <cmd-echo> a Retry-error is occurred transmitting the message to the netw.

where <aa> is the device address (ranging from 00 to 7F).



MC Commands

These are the commands that may be sent to the external *MasterController* device (address = **00**) or directly managed by the *MCserver* program; the commands remarked by (*) cannot be used when the external device isn't present.

Warm RESET (*)

This command allows the possibility to “reset-by-software” the external *MasterController* device.

Format	00 01 52
Reply	00 02 00 52

(after the command is sent to the external device)

Get CONFIG

This command requires the entire map of the connected devices.

Format	00 01 43
Reply	00 82 00 7F <dt001> <dt127> 43

Parameter out The table below lists the “device types” that you can receive after this command is executed:

<dt> Parameter	Definition
00	no device
01	TDL module (with bar-code option)
02	Keyboard(19) & LCD
03	rfu
04	rfu
05	SWIPER
06	SWIPER & LCD
07	rfu
08	Keyb.19) & LCD & BC
09	Motorised Encoder
0A	Digital I/O (16 in / 8 out)
0B	rfu
0C	RS-232 / RS-485 adapter
0D	Proximity reader
0E	rfu
0F	rfu

Set TIME & DATE (*)

This command sends the TIME and DATE to the external Clock-Calendar chip.

Format	00 07 44 <u>yy mm dd hh mm ss</u>
Reply	00 02 00 44



Read TIME & DATE (*)

This command gets the TIME and DATE from the external Clock-Calendar chip.

Format	00 01 64
Reply	00 08 00 <u>yy mm dd hh mm ss</u> 64

DOWN-LOAD (*)

This command sends data to the external MC memory.

Format	00 <u>ll</u> 0E <u>aa aa nn nn</u>
Reply	00 02 00 0E

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>ll</i>	length
<i>aaaa</i>	absolute address
<i>nn</i>	up to 64 hexadecimal bytes

UP-LOAD (*)

This command gets data from the external MC memory.

Format	00 03 0F <u>aa aa</u>
Reply	00 44 00 <u>aa aa nn</u> <u>nn</u> 0F

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aaaa</i>	absolute address

Parameter out The table below lists the parameters that you can receive after this command is executed:

Parameter	Definition
<i>aaaa</i>	absolute address
<i>nn</i>	up to 64 hexadecimal bytes

Read STATUS

This command requires the STATUS of the external MC in order to understand if the communication is on.

Format	00 01 60
Reply	00 03 00 7F 60



MC unsolicited reply

This is the unsolicited message that can be sent to the application after a network variation is detected (either when a device falls or rises-up).

Format	00 04 00 <u>aa ss</u> 63
---------------	--------------------------

Parameter out The table below lists the parameters that you can receive after this message is sent:

Parameter	Definition
<i>aa</i>	hexadec. device address
<i>ss</i>	device status (00 = no dev.)

TDL/TDLBC Commands

These are the commands that may be sent to the external module called TDL (Keyboard & Display & Swiper) or TDLBC (Keyboard & Display & Swiper & Bar-code-Pen).

Read STATUS

This command requires the STATUS of the external device in order to understand if it is properly working.

Format	<u>aa</u> 01 60
Reply	<u>aa</u> 03 00 <u>ss</u> 60

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address

Parameter out The table below lists the parameters that you can receive after this message is sent:

Parameter	Definition
<i>aa</i>	hexadec. device address
<i>ss</i>	device status: default = 61
?	bit 6 = inhib. Status: 1=on
?	bit 5 = dig.inp.sts:1 = open
?	bit 4 = inhib. Level: 0 or 1



SWIPER Enable

This command enables the swiper reading badges (after this command is received, the red led blinks if the hardware inhibition logic isn't active).

Format	<u>aa</u> 01 61
Reply	<u>aa</u> 02 00 61

Parameter in/out The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address

SWIPER Disable

This command disables the swiper reading badges (after this command is received, the red led is fixed on just as well as the hardware inhibition logic is active).

Format	<u>aa</u> 01 62
Reply	<u>aa</u> 02 00 62

Parameter in/out The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address

Temporary SWIPER Disable (with Red led ‘on’)

This command temporary disables the swiper reading badges and then enables it; after this command is received, the red led lights on until the programmed time-out expires, and then it will blink.

Format	<u>aa</u> 02 63 <u>to</u>
Reply	<u>aa</u> 02 00 63

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>to</i>	time-out:
	? 00 = no time-out
	? 01 = 100 msec.
	? 7E = 12,5 sec.
	? 7F = fixed

Temporary SWIPER Disable (with Green led ‘on’)

This command temporary disables the swiper reading badges and then enables it; after this command is received, the green led lights on until the programmed time-out expires, and then it will light off.

Format	<u>aa</u> 02 64 <u>to</u>
Reply	<u>aa</u> 02 00 64

See the above “Parameter in”.



Temporary SWIPER Disable (with green led 'on' & relay)

This command temporary disables the swiper reading badges and then enables it; after this command is received, the green led lights on until the programmed time-out expires, and then it will light off; also the relay contacts are activated until the related time-out expires too.

Format	<u>aa</u> 03 65 <u>lto rto</u>
Reply	<u>aa</u> 02 00 65

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>lto</i>	led time-out: ? 00 = no time-out ? 01 = 100 msec. ? 7E = 12,5 sec. ? 7F = fixed
<i>rto</i>	relay time-out: ? 00 = no time-out ? 01 = 100 msec. ? 7E = 12,5 sec. ? 7F = fixed

Set INHIBIT LOGIC

This command can be used to set the ‘inhibition logic’ related to the available digital-input which can be used like ‘hardware inhibitor’ or simply like a ‘digital-input’.

Format	<i>aa</i> 02 66 <i>par</i>
Reply	<i>aa</i> 02 00 66

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>par</i>	logic definition:
	? 00 : true level = close contact
	? 01 : true level = open contact
	? 03 : contact input = inhibitor
	? 04 : contact input = status inp.
	Default: closed contact = inhibit.



KEYBOARD Enable & Display message

This command enables the keyboard accepting user operations; after this command is received, the related display message is visualised and every typed key is immediately sent to the host.

Format	<u>aa ll 61 dd..... dd</u>
Reply	<u>aa 02 00 61</u>

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>ll</i>	message length
<i>dd</i>	data sent to the 2 x 20 LCD: ? 20 ? 7F = Ascii charcters ? 0D = cursor home ? 0A = c. home & scroll down ? 0C = clear display & c. home ? 07 = 1 sec. bell activation

KEYBOARD Disable & Display message

This command disables the keyboard accepting user operations; after this command is received, the related display message is visualised and every typed key activates a long bell signalling (error).

Format	<u>aa ll 62 dd..... dd</u>
Reply	<u>aa 02 00 62</u>

See the above parameter definitions.

Set EDIT-MODE-1 (ECHO) & Display message

This command enables the keyboard accepting an entire user string (closed by the Enter key); after this command is received, the related display message is visualised and every typed key is shown (echo mode) within the input field delimited by (); after the Enter key is typed by the user, the string is immediately sent to the host.

Format	<i>aa ll 63 to dd28.....29..... dd</i>
Reply	<i>aa 02 00 63</i>

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>ll</i>	message length
<i>to</i>	time-out: ? 00 = no time-out ? 01 = 500 msec. ? 7F = 63,5 sec.
<i>dd</i>	data sent to the 2 x 20 LCD: ? 20 ? 7F = Ascii characters ? 28, 29 = field delimiters ? 23 inside: num., fixed length, left justified ? 20 inside: num., variab. length, right justified ? 5E inside: alfanum., fixed length, left justified ? 2D inside: alfanum., variab. length, right justified ? 2E inside: the decimal point must be typed in that position ? nothing inside: every typed



key aborts the procedure

Set EDIT-MODE-2 (HIDDEN) & Display message

This command enables the keyboard accepting an entire user string (closed by the Enter key); after this command is received, the related display message is visualised and every typed key is hidden (by using the decimal point) within the input field delimited by (); after the Enter key is typed by the user, the string is immediately sent to the host.

Format	<i>aa ll 66 to dd28.....29..... dd</i>
Reply	<i>aa 02 00 66</i>

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>ll</i>	message length
<i>to</i>	time-out: ? 00 = no time-out ? 01 = 500 msec. ? 7F = 63,5 sec.
<i>dd</i>	data sent to the 2 x 20 LCD: see the previous command description



BACKLIGHT ON & Display message

This command is sent to the external device to power-on the LCD backlighting panel; it must contain at least two printable characters.

Format	<u>aa ll 64 dd..... dd</u>
Reply	<u>aa 02 00 64</u>

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>ll</i>	message length
<i>dd</i>	data sent to the 2 x 20 LCD:
?	20 ? 7F = Ascii charcters
?	0D = cursor home
?	0A = c. home & scroll down
?	0C = clear display & c. home
?	07 = 1 sec. bell activation

BACKLIGHT OFF & Display message

This command is sent to the external device to power-off the LCD backlighting panel; it must contain at least three printable characters.

Format	<u>aa ll 65 dd..... dd</u>
Reply	<u>aa 02 00 65</u>

See the above parameter definitions.



Set DEFAULT MESSAGE

This command is sent to the external device to set the message that will be visualised every time the unit goes to the stand-by mode; it must contain at least three printable characters.

Format	<u>aa ll 70 dd..... dd</u>
Reply	<u>aa 02 00 70</u>

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>ll</i>	message length
<i>dd</i>	data sent to the 2 x 20 LCD:
?	20 ? 7F = Ascii charcters
?	0D = cursor home
?	0A = c. home & scroll down
?	0C = clear display & c. home
?	07 = 1 sec. bell activation

LCD Controller commands

These commands may be sent to directly control the LCD controller chip.

Format	<i>aa ll 0F p1..... p#</i>
Reply	<i>aa 02 00 0F</i>

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>ll</i>	message length
<i>P1 ... P#</i>	parameters: see LCD controller document



BELL (100 msec.)

This command may be sent to obtain a beep (100 msec. long) from the Bar-code controller chip (if it is present).

Format	<u>aa</u> 02 77 42
Reply	<u>aa</u> 02 00 77

Set BELL frequency

This command may be sent to change the working frequency of the Bell; it is executed only if the bar-code option is present.

Format	<u>aa</u> 03 77 46 <u>par</u>
Reply	<u>aa</u> 02 00 77

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>par</i>	40 = 4.700 Hz (max freq.) 5A = 2.600 Hz (default) 7E = 1.600 Hz (min. freq.) 7F = 41 KHz (silent)

BAR-CODE selection

This command may be sent to select one or more bar-code algorithms (if the bar-code option is present); it is executed only if the bar-code option is present.

Format	<u>aa</u> 03 77 43 <u>bc</u>
Reply	<u>aa</u> 02 00 77

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>bc</i>	7F = disable all bit 7 = 0 bit 6 = 1 bit 5 = Add-on code bit 4 = EAN/UPC/JAN bit 3 = CODE 39 bit 2 = 2/5 bit 1 = 2/5 Interleaved bit 0 = CODABAR

The EAN/UPC/JAN with ADD-ON code may be done only by directly scanning that bar-codes; in such a case the EAN/UPC/JAN codes without ADD-ON code are automatically ignored.



Set BAR-CODE options

This command may be sent to set one of the following bar-code reading options (if the bar-code option is present).

Format	<i>aa 03 77 4F opt</i>
Reply	<i>aa 02 00 77</i>

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>opt</i>	bit 7 = 0 bit 6 = 1 bit 5 = Check-digit bit 4 = Cut-off bit 3 = don't care bit 2 = don't care bit 1 = don't care bit 0 = don't care

TDL/TDLBC unsolicited messages

These are the messages that may be sent from the external module called TDL (Keyboard & Display & Swiper) or TDLBC (Keyboard & Display & Swiper & Bar-code-Pen) to the Host.

MAGNETIC TRACK reading (ISO-2)

This is the message sent after a badge is correctly read; the last character of the message contains the “immediate status” useful to report some more information like “reading sense” and “digital-input status”. After this message is correctly sent, the reader is automatically disabled.

Format	<i>aa ll 00 dd (Ascii data)dd is 72</i>
---------------	---

Parameter out The table below lists the parameters that you can receive within this message:

Parameter	Definition
<i>aa</i>	device address
<i>ll</i>	message length
<i>dd dd</i>	data field (37 char. max)
<i>is</i>	immediate status:
	bit 7 = 0
	bit 6 = 0
	bit 5 = 1
	bit 4 = 1
	bit 3 = reading sense:
	0 = from Left to R.
	1 = from R. to Left
	bit 2 = inhibition status:
	0 = disabled
	1 = enabled
	bit 1 = digital input status:
	0 = closed contact
	1 = opened contact



bit 0 = prog. inhib. level

SINGLE KEY

This is the message sent after a key is depressed on the keyboard when the unit works in single-key mode.

Format	<i>aa</i> 03 00 <i>key</i> 74
---------------	-------------------------------

Parameter out The table below lists the parameters that you can receive within this message:

Parameter	Definition
<i>aa</i>	device address
<i>key</i>	30 = '0' key 39 = '9' key
	64 = Enter
	65 = ?
	62 = F1 (Break key) [?]
	6E = F2 [?]
	6C = F3
	68 = F4
	6F = F5
	6D = F6



KEY STREAM (Edit mode)

This is the message sent after an edited field is complete by the Enter key. After this message is correctly sent, the module is automatically disabled (starting from the f/w rel. TDL07).

Format	<u>aa</u> // 00 <u>dd</u> (<i>key stream</i>) <u>dd</u> 54
---------------	--

Parameter out The table below lists the parameters that you can receive within this message:

Parameter	Definition
<i>aa</i>	device address
//	message length
<i>dd ... dd</i>	key stream (37 char. max.)

Edit mode exception #1 (EMPTY EDIT-FIELD):

Format	<u>aa</u> 03 00 29 54
---------------	------------------------------

Edit mode exception #2 (BREAK from the USER):

Format	<u>aa</u> 03 00 62 54
---------------	------------------------------

Edit mode exception #3 (EDITING TIME-OUT):

Format	<u>aa</u> 03 00 67 54
---------------	------------------------------

BAR-CODE STREAM

This is the message sent after reading a bar-code.

Format	<i>aa ll 00 dd (bar-code stream) dd 11</i>
---------------	--

Parameter out The table below lists the parameters that you can receive within this message:

Parameter	Definition
<i>aa</i>	device address
<i>ll</i>	message length
<i>dd ... dd</i>	bar-code stream



This page is intentionally left blank

SWIPER Commands

These are the commands that may be sent to the external module called LME (Swiper for external environment).

Read STATUS

This command requires the STATUS of the external device in order to understand if it is properly working.

Format	<i>aa</i> 01 60
Reply	<i>aa</i> 03 00 <i>ss</i> 60

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address

Parameter out The table below lists the parameters that you can receive after this message is sent:

Parameter	Definition
<i>aa</i>	hexadec. device address
<i>ss</i>	device status: default = 65
?	bit 6 = inhib. Status: 1=on
?	bit 5 = dig.inp.sts:1 = open
?	bit 4 = inhib. Level: 0 or 1



SWIPER Enable

This command enables the swiper reading badges (after this command is received, the red led blinks if the hardware inhibition logic isn't active).

Format	<u>aa</u> 01 61
Reply	<u>aa</u> 02 00 61

Parameter in/out The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address

SWIPER Disable

This command disables the swiper reading badges (after this command is received, the red led is fixed on just as well as the hardware inhibition logic is active).

Format	<u>aa</u> 01 62
Reply	<u>aa</u> 02 00 62

Parameter in/out The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address

Temporary SWIPER Disable (with Red led ‘on’)

This command temporary disables the swiper reading badges and then enables it; after this command is received, the red led lights on until the programmed time-out expires, and then it will blink.

Format	<u>aa</u> 02 63 <u>to</u>
Reply	<u>aa</u> 02 00 63

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>to</i>	time-out:
	? 00 = no time-out
	? 01 = 100 msec.
	? 7E = 12,5 sec.
	? 7F = fixed

Temporary SWIPER Disable (with Green led ‘on’)

This command temporary disables the swiper reading badges and then enables it; after this command is received, the green led lights on until the programmed time-out expires, and then it will light off.

Format	<u>aa</u> 02 64 <u>to</u>
Reply	<u>aa</u> 02 00 64

See the above “Parameter in”.

Temporary SWIPER Disable (with green led 'on' & relay)

This command temporary disables the swiper reading badges and then enables it; after this command is received, the green led lights on until the programmed time-out expires, and then it will light off; also the relay contacts are activated until the related time-out expires too.

Formats	<u>aa</u> 03 65 <u>lto rto</u> Relay #1
	<u>aa</u> 03 45 <u>lto rto</u> Relay #2
Replies	<u>aa</u> 02 00 65 (Relay #1)
	<u>aa</u> 02 00 45 (Relay #2)

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>lto</i>	led time-out: ? 00 = no time-out ? 01 = 100 msec. ? 7E = 12,5 sec. ? 7F = fixed
<i>rto</i>	relay time-out: ? 00 = no time-out ? 01 = 100 msec. ? 7E = 12,5 sec. ? 7F = fixed

Set INHIBIT LOGIC

This command can be used to set the 'inhibition logic' related to the available digital-input which can be used like 'hardware inhibitor' or simply like a 'digital-input'.

Format	<i>aa</i> 02 66 <i>par</i>
Reply	<i>aa</i> 02 00 66

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>par</i>	logic definition:
	? 00 : true level = close contact
	? 01 : true level = open contact
	? 03 : contact input = inhibitor
	? 04 : contact input = status inp.
	Default: closed contact = inhibit.

SWIPER unsolicited message

This is the message that may be sent from the external module called LME (Swiper) to the Host.

MAGNETIC TRACK reading (ISO-2)

This is the message sent after a badge is correctly read; the last character of the message contains the “immediate status” useful to report some more information like “reading sense” and “digital-input status”. After this message is correctly sent, the reader is automatically disabled.

Format	<i>aa ll 00 dd (Ascii data) dd is 72</i>
---------------	--

Parameter out The table below lists the parameters that you can receive within this message:

Parameter	Definition
<i>aa</i>	device address
<i>ll</i>	message length
<i>dd dd</i>	data field (37 char. max)
<i>is</i>	immediate status: bit 7 = 0 bit 6 = 0 bit 5 = 1 bit 4 = 1 bit 3 = reading sense: 0 = from Sx to Dx 1 = from Dx to Sx bit 2 = inhibition status: 0 = disabled 1 = enabled bit 1 = digital input status: 0 = closed contact 1 = opened contact

bit 0 = prog. inhib. level



DIGITAL I/O Commands

These are the commands that may be sent to the external module called MIO (16 inputs - 8 output module).

Read STATUS

This command requires the STATUS of the external device in order to understand if it is properly working.

Format	<u>aa</u> 01 60
Reply	<u>aa</u> 03 00 <u>ss</u> 60

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address

Parameter out The table below lists the parameters that you can receive after this message is sent:

Parameter	Definition
<i>aa</i>	hexadec. device address
<i>ss</i>	device status: default = 0A
?	bit 6 = diagn. Flag#1: 1= error 0= ok
?	bit 5 = diagn. Flag#2: 1= error 0= ok

OUTPUT SET

This command activates one or more digital outputs following the directives specified by the “masks” and “set-time” fields.

Format	<i>aa</i> 04 63 <i>msb</i> <i>lsb</i> <i>to</i>
Reply	<i>aa</i> 02 00 63

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>msb</i>	mask for the 4 most sign. bits: ? bit 7 = bit 6 = 0 ? bit 5 = bit 4 = 1 ? bit 3 = output bit # 8 ? bit 2 = output bit # 7 ? bit 1 = output bit # 6 ? bit 0 = output bit # 5 - level ‘1’ means “output set” - level ‘0’ means “don’t affect”
<i>lsb</i>	mask for the 4 most sign. bits: ? bit 7 = bit 6 = 0 ? bit 5 = bit 4 = 1 ? bit 3 = output bit # 4 ? bit 2 = output bit # 3 ? bit 1 = output bit # 2 ? bit 0 = output bit # 1 - level ‘1’ means “output set” - level ‘0’ means “don’t affect”
<i>to</i>	time out settings: ? bit 7 = 0 ? bit 6, 5 = scale factor: 00 = 1 msec. 01 = 10 msec. 10 = 100 msec. 11 = 1 sec. ? bit 4, 3, 2, 1, 0 = time-out: 00000 = no time-out (fixed)



11111 = 31 * scale (31 s.
max)

OUTPUT RESET

This command deactivates one or more digital outputs following the directives specified by the “masks” and “set-time” fields.

Format	<i>aa</i> 04 64 <i>msb</i> <i>lsb</i> <i>to</i>
Reply	<i>aa</i> 02 00 64

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>msb</i>	mask for the 4 most sign. bits: ? bit 7 = bit 6 = 0 ? bit 5 = bit 4 = 1 ? bit 3 = output bit # 8 ? bit 2 = output bit # 7 ? bit 1 = output bit # 6 ? bit 0 = output bit # 5 - level '1' means “output reset” - level '0' means “don't affect”
<i>lsb</i>	mask for the 4 most sign. bits: ? bit 7 = bit 6 = 0 ? bit 5 = bit 4 = 1 ? bit 3 = output bit # 4 ? bit 2 = output bit # 3 ? bit 1 = output bit # 2 ? bit 0 = output bit # 1 - level '1' means “output reset” - level '0' means “don't affect”
<i>to</i>	time out settings: ? bit 7 = 0 ? bit 6, 5 = scale factor: 00 = 1 msec. 01 = 10 msec. 10 = 100 msec. 11 = 1 sec.



? bit 4, 3, 2, 1, 0 = time-out:
00000 = no time-out (fixed)
11111 = 31 * scale (31 s.
max)

READ INPUT

This command requires the immediate reading of the digital inputs.

Format	<u>aa</u> 01 65
Reply	<u>aa</u> 06 00 <u>is1</u> <u>is2</u> <u>is3</u> <u>is4</u> 65

Parameter out The table below lists the parameters that you can manage after the response is received:

Parameter	Definition
<i>aa</i>	hexadec. device address
<i>is1</i>	status related to 4 dig. inputs: ? bit 7 = bit 6 = 0 ? bit 5 = bit 4 = 1 ? bit 3 = input bit # 8 ? bit 2 = input bit # 7 ? bit 1 = input bit # 6 ? bit 0 = input bit # 5 level '0' means: "current inside the photodiode"
<i>is2</i>	? bit 7, 6, 5, 4 = see above ? bit 3 = input bit # 4 ? bit 2 = input bit # 3 ? bit 1 = input bit # 2 ? bit 0 = input bit # 1
<i>is3</i>	? bit 7, 6, 5, 4 = see above ? bit 3 = input bit # 16 ? bit 2 = input bit # 15 ? bit 1 = input bit # 14 ? bit 0 = input bit # 13
<i>is4</i>	? bit 7, 6, 5, 4 = see above ? bit 3 = input bit # 12 ? bit 2 = input bit # 11 ? bit 1 = input bit # 10 ? bit 0 = input bit # 09

**INPUT VARIATION setting**

This command activates the monitoring phase to detect the input variation like specified by the following “masks” and “slopes” fields.

Format	<i>aa</i> 0A 66 <i>m1 m0 m3 m2 s1 s0 s3 s2 to</i>
Reply	<i>aa</i> 02 00 66

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>m1</i>	mask for the 4 input bits: ? bit 7 = bit 6 = 0 ? bit 5 = bit 4 = 1 ? bit 3 = input bit # 8 ? bit 2 = input bit # 7 ? bit 1 = input bit # 6 ? bit 0 = input bit # 5 - level '1' means “monitor”
<i>m0, m3, m2</i>	masks for other input bits: m0 = mask for inp. 4, 3, 2, 1 m3 = mask for inp. 16, 15, 14, 13 m2 = mask for inp. 12, 11, 10, 09
<i>s1</i>	slope for the 4 input bits: ? bit 7 = bit 6 = 0 ? bit 5 = bit 4 = 1 ? bit 3 = input bit # 8 ? bit 2 = input bit # 7 ? bit 1 = input bit # 6 ? bit 0 = input bit # 5 - level '1' means “positive variation”
<i>s0, s3, s2</i>	slopes for other input bits: s0 = slope for inp. 4, 3, 2, 1 s3 = slope for inp. 16, 15, 14,

to 13
sl2 = slope for inp. 12, 11, 10,
09
see OUTPUT SET or RESET
command descriptions

DIGITAL I/O unsolicited message

This is the message that may be sent from the external module called MIO (Digital I/O) to the Host.

INPUT VARIATION

This is the message sent after one or more digital input variations are detected following the rules previously programmed by means of the “INPUT VARIATION setting” command.

Format	<u>aa</u> 0A 00 <u>m1</u> <u>m0</u> <u>m3</u> <u>m2</u> <u>s1</u> <u>s0</u> <u>s3</u> <u>s2</u> 66
---------------	--

Parameter out The table below lists the parameters that you can receive within this message:

Parameter	Definition
<i>aa</i>	device address
<i>m1, m0, m3, m2</i>	masks for input bits: m1 = mask of inp. 8, 7, 6, 5 m0 = mask for inp. 4, 3, 2, 1 m3 = mask for inp. 16, 15, 14, 13 m2 = mask for inp. 12, 11, 10, 09 - level '1' means “digital input affected”
<i>s/1</i>	slope for the 4 input bits: ? bit 7 = bit 6 = 0 ? bit 5 = bit 4 = 1 ? bit 3 = input bit # 8 ? bit 2 = input bit # 7 ? bit 1 = input bit # 6 ? bit 0 = input bit # 5 - level '1' means “positive variation”
<i>s1, s0, s3, s2</i>	statuses reached by the digital inputs after variation: s1 = status of inp. 8, 7, 6, 5

s0 = status of inp. 4, 3, 2, 1
s3 = status of inp. 16, 15, 14, 13
s2 = status of inp. 12, 11, 10, 09



SERIAL ADAPTER Commands

These are the commands that may be sent to the external module called ADSER that is an intelligent device able to adapt the RS-485 multipoint protocol to external serial devices like serial printers, PLCs and so on.

It can be programmed to locally manage the handshaking lines of the RS-232 interface.

The ADSER module contains the following services:

Red led	to signal if the device is active (blink) or disabled (red)
Green led	to signal the positive acknowledge to an Host command
output Relay	to activate, for example, an external actuator
Opto-Input	may be used like an “inhibitor input” or “digital-input”

Read STATUS

This command requires the STATUS of the external device in order to understand if it is properly working.

Format	<i>aa</i> 01 60
Reply	<i>aa</i> 03 00 <i>ss</i> 60

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address

Parameter out The table below lists the parameters that you can receive after this message is sent:

Parameter	Definition
<i>aa</i>	hexadec. device address
<i>ss</i>	device status: default = 6C ? bit 6 = inhib. Status: 1=on ? bit 5 = dig.inp.sts:1 = open ? bit 4 = inhib. Level: 0 or 1

DEVICE Enable

This command enables the module to work following the directives described by means of the “ADSER SET-UP“ command. After this command is received, the red led blinks if the hardware inhibition logic isn’t active.

Format	<i>aa</i> 01 61
Reply	<i>aa</i> 02 00 61

Parameter in/out The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address



DEVICE Disable

This command disables the device working with the external serial channel (after this command is received, the red led is fixed on just as well as the hardware inhibition logic is active).

Format	<u>aa</u> 01 62
Reply	<u>aa</u> 02 00 62

Parameter in/out The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address

Temporary DEVICE Disable (with Red led ‘on’)

This command temporary disables the module working with the external serial channel and then enables it; after this command is received, the red led lights on until the programmed time-out expires, and then it will blink.

Format	<u>aa</u> 02 63 <u>to</u>
Reply	<u>aa</u> 02 00 63

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>to</i>	time-out:
?	00 = no time-out
?	01 = 100 msec.
?	7E = 12,5 sec.
?	7F = fixed

Temporary DEVICE Disable (with Green led ‘on’)

This command temporary disables the the module working with the external serial channel and then enables it; after this command is received, the green led lights on until the programmed time-out expires, and then it will light off.

Format	<i>aa</i> 02 64 <i>to</i>
Reply	<i>aa</i> 02 00 64

See the above “Parameter in”.

**Temporary DEVICE Disable (with green led 'on' & relay)**

This command temporary disables the module working with the external serial channel and then enables it; after this command is received, the green led lights on until the programmed time-out expires, and then it will light off; also the relay contacts are activated until the related time-out expires too.

Formats	<u>aa</u> 03 65 <u>lto rto</u>
Replies	<u>aa</u> 02 00 65

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>lto</i>	led time-out: ? 00 = no time-out ? 01 = 100 msec. ? 7E = 12,5 sec. ? 7F = fixed
<i>rto</i>	relay time-out: ? 00 = no time-out ? 01 = 100 msec. ? 7E = 12,5 sec. ? 7F = fixed

Set INHIBIT LOGIC

This command can be used to set the 'inhibition logic' related to the available digital-input which can be used like 'hardware inhibitor' or simply like a 'digital-input'.

Format	<i>aa</i> 02 66 <i>par</i>
Reply	<i>aa</i> 02 00 66

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>par</i>	logic definition:
	? 00 : true level = close contact
	? 01 : true level = open contact
	? 03 : contact input = inhibitor
	? 04 : contact input = status inp.
	Default: closed contact = inhibit.



Read CONFIG

This command requires the dip-switch configuration in order to control and verify its setting status.

Format	<i>aa</i> 01 67
Reply	<i>aa</i> 03 00 <i>cfg</i> 67

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address

Parameter out The table below lists the parameters that you can receive after this message is sent:

Parameter	Definition
<i>aa</i>	hexadec. device address
<i>cfg</i>	? bit 7 = 0
	? bit 6 = 1
	? bit 5 = 0
	? bit 4 = 0
	? bit 3 = switch 8
	? bit 2 = switch 7
	? bit 1 = switch 6
	? bit 0 = switch 5

Set INPUT T.O.

This command can be used to set the time-out that qualifies the digital input variation (when the digital input doesn't work like hardware-inhibitor input).

Format	<i>aa</i> 02 68 <i>to</i>
Reply	<i>aa</i> 02 00 68

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>to</i>	time-out:
	? 00 = no time-out (default)
	? 01 = 100 msec.
	? 7E = 12,5 sec.
	? 7F = fixed



SEND-DATA (& Enable)

This command can be used to send data to the external device; sending this command the Host automatically enables the external serial line activity.

Format	<i>aa ll 69 dd.....(Ascii message).....dd</i>
Reply	<i>aa 02 00 69</i>

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>ll</i>	message length
<i>dd dd</i>	message to the external serial line (it must be properly formatted like programmed by the “ADSER SET-UP” command)

ADSER SET-UP

This command must be used to prepare the required parameters in order to control the external serial line protocol.

Format	<i>aa 10 70 v fo ll1 ll2 stx etx fu ex to rf1 rf2 rf3 rf4 rf5 rf6</i>
Reply	OK: <i>aa 02 00 70</i> KO: <i>aa 02 01 70</i>

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>v</i>	external baud-rate: - 00 = 38.400 - ... - 05 = 2.400 - ... - 08 = 150
<i>fo</i>	character format: - bit 7 = 0 - bit 6 = 1 - bit 5, 4: 00 = 5 bit, 01 = 6 bit 10 = 7 bit, 11 = 8 bit - bit 3, 2: 00 = 1 stop 01 = 1,5 stop 10 = 2 stop - bit 1, 0: 00 = no parity 01 = odd par. 10 = even par.
<i>l1 l2</i>	frame length: - 40 40 = variable length - 40 41 = character mode (l1=1) - 4x 4y = fixed length (l1=xy)
<i>stx</i>	Start of Text definition: - 00 = STX doesn't exist - xx = desired STX character
<i>etx</i>	End of Text definition: - 00 = ETX doesn't exist - xx = desired ETX character

continue



Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>fu</i>	setting the Functionality: - bit 7 = 0 - bit 6 = 1 - bit 5 = don't care - bit 4 = 0 data aren't packed 1 Host data are packed (1 nibble per char. OR 0x40) - bit 3 = 0 No Wake-up 1 Wake-up enabled (when the dig.-inp. Reaches the programmed level, the adapter sends a message to the Host) - bit 2 = 0 Wake-up signal level = 0 1 Wake-up signal level = 1 - bit 1 = 0 Green led is off 1 Green led blinks (until the Wake-up signal is on) - bit 0 = 0 NO ECHO 1 ECHO
<i>extra</i>	Extra-characters definition: - 0 = nothing - 1 to 9 = extra characters that the external device may send after ETX
<i>to</i>	Inter-character time-out: - 00 = no time-out - xx = 50 msec. * xx (bin.)
<i>rf1 rf6</i>	Reserved Future Use param.

Set OUTPUT

This command can be used to set the digital output at the desired level; when the relative time-out will expire, the signal level will be complemented.

Format	<i>aa</i> 03 6F <i>lev to</i>
Reply	<i>aa</i> 02 00 6F

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>lev</i>	output level: - 30 to set '0' level - 31 to set '1' level
<i>to</i>	time-out: ? 00 = not used ? 01 = 10 msec. (default) ? 7E = 1,26 sec. ? 7F = fixed



SERIAL ADAPTER unsolicited messages

These are the messages that may be sent to the Host by the ADSER module.

RECEIVING DATA

This is the message sent to the Host after receiving a message from the external serial line; this message contains also the optional control characters. If the character format referred to the external communication line is 8 bit based, the data will be unpacked before sending to the Host line.

Format	<i>aa ll 00 dd.....(received data message)....dd 72</i>
---------------	---

Parameter out The table below lists the parameters that you can receive within this message:

Parameter	Definition
<i>aa</i>	device address
<i>ll</i>	message length
<i>dd dd</i>	received data (eventually unpacked)

DATA RECEIVED before T.O.

This is the message sent to the Host after receiving data when the inter-character time-out expires; this message contains all the received data.

Format	<i>aa ll 00 dd.....(received data message)....dd 74</i>
---------------	---

Parameter out The table below lists the parameters that you can receive within this message:

Parameter	Definition
<i>aa</i>	device address
<i>ll</i>	message length
<i>dd dd</i>	received data (eventually unpacked) before time-out

DATA RECEIVED before LINE ERROR

This is the message sent to the Host after receiving wrong data (framing, parity, overrun errors); this message contains all the received correct data.

Format	<i>aa ll 00 dd.....(received data message)....dd 76</i>
---------------	---

Parameter out The table below lists the parameters that you can receive within this message:

Parameter	Definition
<i>aa</i>	device address
<i>ll</i>	message length
<i>dd dd</i>	received data (eventually unpacked) before error



DIGITAL-INPUT VARIATION

This is the message sent to the Host after detecting the programmed 'true' condition for the digital-input.

Format	<u>aa</u> 02 00 73
---------------	--------------------

Parameter out The table below lists the parameters that you can receive within this message:

Parameter	Definition
<i>aa</i>	device address

INPUT VARIATION T.O.

This is the message sent to the Host after the time-out, programmed to detect the desired level on the digital-input, expires.

Format	<u>aa</u> 02 00 75
---------------	--------------------

Parameter out The table below lists the parameters that you can receive within this message:

Parameter	Definition
<i>aa</i>	device address

BREAK from EXTERNAL LINE

This is the message sent to the Host after detecting the Break condition on the external communication line.

Format	<i>aa</i> 02 00 71
---------------	--------------------

Parameter out The table below lists the parameters that you can receive within this message:

Parameter	Definition
<i>aa</i>	device address



PROXIMITY READER Commands

These are the commands that may be sent to the external module called PXR (Proximity reader able to read passive badges).

Read STATUS

This command requires the STATUS of the external device in order to understand if it is properly working.

Format	<u>aa</u> 01 60
Reply	<u>aa</u> 03 00 <u>ss</u> 60

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address

Parameter out The table below lists the parameters that you can receive after this message is sent:

Parameter	Definition
<i>aa</i>	hexadec. device address
<i>ss</i>	device status: default = 6D
?	bit 6 = inhib. Status: 1=on
?	bit 5 = dig.inp.sts:1 = open
?	bit 4 = inhib. Level: 0 or 1

PXR Enable

This command enables the module reading badges (after this command is received, the red led blinks if the hardware inhibition logic isn't active).

Format	<i>aa</i> 01 61
Reply	<i>aa</i> 02 00 61

Parameter in/out The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address

PXR Disable

This command disables the module reading badges (after this command is received, the red led is fixed on just as well as the hardware inhibition logic is active).

Format	<i>aa</i> 01 62
Reply	<i>aa</i> 02 00 62

Parameter in/out The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address



Temporary PXR Disable (with Red led ‘on’)

This command temporarily disables the module reading badges and then enables it; after this command is received, the red led lights on until the programmed time-out expires, and then it will blink.

Format	<u>aa</u> 02 63 <u>to</u>
Reply	<u>aa</u> 02 00 63

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>to</i>	time-out:
? 00	= no time-out
? 01	= 100 msec.
? 7E	= 12,5 sec.
? 7F	= fixed

Temporary PXR Disable (with Green led ‘on’)

This command temporarily disables the module reading badges and then enables it; after this command is received, the green led lights on until the programmed time-out expires, and then it will light off.

Format	<u>aa</u> 02 64 <u>to</u>
Reply	<u>aa</u> 02 00 64

See the above “Parameter in”.

Temporary PXR Disable (with green led 'on' & relay)

This command temporary disables the module reading badges and then enables it; after this command is received, the green led lights on until the programmed time-out expires, and then it will light off; also the relay contacts are activated until the related time-out expires too.

Formats	<u>aa</u> 03 65 <u>lto rto</u> Relay #1
	<u>aa</u> 03 45 <u>lto rto</u> Relay #2
Replies	<u>aa</u> 02 00 65 (Relay #1)
	<u>aa</u> 02 00 45 (Relay #2)

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>lto</i>	led time-out: ? 00 = no time-out ? 01 = 100 msec. ? 7E = 12,5 sec. ? 7F = fixed
<i>rto</i>	relay time-out: ? 00 = no time-out ? 01 = 100 msec. ? 7E = 12,5 sec. ? 7F = fixed



Set INHIBIT LOGIC

This command can be used to set the ‘inhibition logic’ related to the available digital-input which can be used like ‘hardware inhibitor’ or simply like a ‘digital-input’.

Format	<u>aa</u> 02 66 <u>par</u>
Reply	<u>aa</u> 02 00 66

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>par</i>	logic definition: ? 00 : true level = close contact ? 01 : true level = open contact ? 03 : contact input = inhibitor ? 04 : contact input = status inp. Default: closed contact = inhibit.

PXR unsolicited message

This is the message that may be sent from the external module called PXR to the Host.

PROXIMITY BADGE reading

This is the message sent after a badge is correctly read; the last character of the message contains the “immediate status” useful to report some more information like “digital-input status”. After this message is correctly sent, the reader is automatically disabled.

Format	<i>aa</i> 0D 00 <i>gc1</i> ... <i>gc3</i> <i>id1</i> ... <i>id7</i> <i>chk</i> <i>is</i> 52
---------------	---

Parameter out The table below lists the parameters that you can receive within this message:

Parameter	Definition
<i>aa</i>	device address
<i>gc1</i> <i>gc3</i>	Group-code (3 bytes)
<i>id1</i> <i>id7</i>	ID number (7 bytes)
<i>chk</i>	Check-digit (1 byte)
<i>is</i>	immediate status: bit 7 = 0 bit 6 = 0 bit 5 = 1 bit 4 = 1 bit 3 = 1 bit 2 = inhibition status: 0 = disabled 1 = enabled bit 1 = digital input status: 0 = closed contact 1 = opened contact bit 0 = prog. inhib. level



MOTORISED ENCODER Commands

These are the commands that may be sent to the external module called MTW (Motorised magnetic encoder).

Read STATUS

This command requires the STATUS of the external device in order to understand if it is properly working.

Format	<u>aa</u> 01 60
Reply	<u>aa</u> 03 00 <u>ss</u> 60

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address

Parameter out The table below lists the parameters that you can receive after this message is sent:

Parameter	Definition
<i>aa</i>	hexadec. device address
<i>ss</i>	device status: default = 69
?	bit 6 = inhib. Status: 1=on
?	bit 5 = dig.inp.sts:1 = open
?	bit 4 = inhib. Level: 0 or 1

MTW Enable

This command enables the module accepting badges (after this command is received, the red led blinks if the hardware inhibition logic isn't active).

Format	<i>aa</i> 01 61
Reply	<i>aa</i> 02 00 61

Parameter in/out The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address

MTW Disable

This command disables the module accepting badges (after this command is received, the red led is fixed on just as well as the hardware inhibition logic is active). After receiving this command, the badge eventually present under the head is immediately ejected.

Format	<i>aa</i> 01 62
Reply	<i>aa</i> 02 00 62

Parameter in/out The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address



Temporary MTW Disable (with Red led ‘on’)

This command temporary disables the module accepting badges and then enables it; after this command is received, the red led lights on until the programmed time-out expires, and then it will blink. After receiving this command, the badge eventually present under the head is immediately ejected.

Format	<u>aa</u> 02 63 <u>to</u>
Reply	<u>aa</u> 02 00 63

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>to</i>	time-out:
? 00	= no time-out
? 01	= 100 msec.
? 7E	= 12,5 sec.
? 7F	= fixed

Temporary MTW Disable (with Green led ‘on’)

This command temporary disables the module accepting badges and then enables it; after this command is received, the green led lights on until the programmed time-out expires, and then it will light off.

Format	<u>aa</u> 02 64 <u>to</u>
Reply	<u>aa</u> 02 00 64

See the above “Parameter in” field.

Temporary MTW Disable (with green led 'on' & relay)

This command temporary disables the module accepting badges and then enables it; after this command is received, the green led lights on until the programmed time-out expires, and then it will light off; also the relay contacts are activated until the related time-out expires too. After receiving this command, the badge eventually present under the head is immediately ejected.

Formats	<u>aa</u> 03 65 <u>lto rto</u> Relay #1
	<u>aa</u> 03 45 <u>lto rto</u> Relay #2
Replies	<u>aa</u> 02 00 65 (Relay #1)
	<u>aa</u> 02 00 45 (Relay #2)

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>lto</i>	led time-out: ? 00 = no time-out ? 01 = 100 msec. ? 7E = 12,5 sec. ? 7F = fixed
<i>rto</i>	relay time-out: ? 00 = no time-out ? 01 = 100 msec. ? 7E = 12,5 sec. ? 7F = fixed



Set INHIBIT LOGIC

This command can be used to set the ‘inhibition logic’ related to the available digital-input which can be used like ‘hardware inhibitor’ or simply like a ‘digital-input’.

Format	<u>aa</u> 02 66 <u>par</u>
Reply	<u>aa</u> 02 00 66

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>par</i>	logic definition: ? 00 : true level = close contact ? 01 : true level = open contact ? 03 : contact input = inhibitor ? 04 : contact input = status inp. Default: closed contact = inhibit.

Read CONFIG

This command requires the dip-switch configuration in order to control and verify its setting status.

Format	<u>aa</u> 01 67
Reply	<u>aa</u> 04 00 <u>cfg1</u> <u>cfg2</u> 67

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address

Parameter out The table below lists the parameters that you can receive after this message is sent:

Parameter	Definition
<i>aa</i>	hexadec. device address
<i>cfg1</i>	? bit 7 = 0
	? bit 6 = 1
	? bit 5 = switch 2.6
	? bit 4 = switch 2.5
	? bit 3 = switch 2.4
	? bit 2 = switch 2.3
	? bit 1 = switch 2.2
	? bit 0 = switch 2.1
<i>cfg2</i>	? bit 7 = 0
	? bit 6 = 1
	? bit 5 = 0
	? bit 4 = 0
	? bit 3 = switch 2.7
	? bit 2 = not used
	? bit 1 = photo #2
	? bit 0 = photo #1



WRITE MAGNETIC BADGE

This command can be used to send data to be registered and then to write them on the badge. The data related to each specific standard track are optional; to skip the undesired tracks, please insert the separator character. Sending out-of-range data implies wrong registered characters on the badge.

Format	<u>aa</u> <u>//</u> <u>77</u> <u>d1...</u> <i>[trk-1 data]</i> <u>...d1</u> 1E <u>d2...</u> <i>[trk-2 data]</i> <u>...d2</u> 1E <u>d3...</u> <i>[trk-3 data]</i> <u>...d3</u>	
Reply	OK:	<u>aa</u> 02 00 77
	KO:	<u>aa</u> 02 01 77

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address
<i>//</i>	message length
<i>d1.....d1</i>	max 76 alfanum. characters ISO-1
<i>d2.....d2</i>	max 37 num. characters ISO-2
<i>d3.....d3</i>	max 104 num. characters ISO-3

EJECT MAGNETIC BADGE

This command can be used to eject a badge after reading.

Format	<u>aa</u> 01 45
Reply	<u>aa</u> 02 00 45

Parameter in The table below lists the parameters that you can specify for this command:

Parameter	Definition
<i>aa</i>	device address

CAPTURE MAGNETIC BADGE

This command can be used to capture the badge after reading, on the rear of the unit.

Format	<u>aa</u> 01 43
Reply	<u>aa</u> 02 00 43

CAPTURE & CANCEL MAGNETIC BADGE

This command can be used to capture the badge after reading, on the rear of the unit, cleaning that badge.

Format	<u>aa</u> 01 44
Reply	<u>aa</u> 02 00 44



MOTORISED ENCODER unsolicited message

This is the message that may be sent from the external module called MTW to the Host.

MTW BADGE reading

This is the message sent after a badge is correctly read; the last character of the message contains the “immediate status” useful to report some more information like “digital-input status”. After this message is correctly sent, the reader is automatically disabled.

Format	<i>aa</i> <i>ll</i> 00 <i>d1</i> ... <i>[trk-1 data]</i> ... <i>d1</i> 1E <i>d2</i> ... <i>[trk-2 data]</i> ... <i>d2</i> 1E <i>d3</i> ... <i>[trk-3 data]</i> ... <i>d3</i> 72
---------------	--

Parameter out The table below lists the parameters that you can receive within this message:

Parameter	Definition
<i>aa</i>	device address
<i>ll</i>	message length
<i>d1</i> <i>d1</i>	max 76 alfanum. characters ISO-1
<i>d2</i> <i>d2</i>	max 37 num. characters ISO-2
<i>d3</i> <i>d3</i>	max 104 num. characters ISO-3
<i>is</i>	immediate status: bit 7 = bit 6 = 0 bit 5 = bit 4 = bit 3 = 1 bit 2 = inhibition status: 0 = disabled 1 = enabled bit 1 = digital input status: 0 = closed contact 1 = opened contact

bit 0 = prog. inhib. level



This page is intentionally left blank



APPENDIX A

Commands summary

This appendix lists the commands available for the following peripheral devices connectable on the RS-485 network:

DEVICES	DEVICE-TYPES
MC	0x7F
TDL (NTS)	0x01
TDLBC	0x08
LME	0x05
MIO	0x0A
ADSER	0x0C
PXR	0x0D
MTW	0x09

MC-commands	length
Warm RESET (*)	01
Get CONFIG	01
Set TIME & DATE (*)	07
Read TIME & DATE (*)	01
DOWN-LOAD (*)	variable
UP-LOAD (*)	03
READ STATUS	01

MC-unsolicited message	length
Network Variation	04

TDL/TDLBC commands	length
READ STATUS	01
SWIPER Enable	01
SWIPER Disable	01
Temp. SWIPER Disab.(red led)	02
Temp. SWIPER Disab. (green)	02
Temp. SWIPER Disab.(led+rel)	03
Set INHIBIT LOGIC	02
Keyboard Enable & Display	variable
Keyboard Disable & Display	variable
Set EDIT-MODE-1 & Display	variable
Set EDIT-MODE-2 & Display	variable
BACKLIGHT ON & Display	variable
BACKLIGHT OFF & Display	variable
SET DEFAULT MESSAGE	variable
LCD controller commands	variable
BELL (100 msec.)	02
Set BELL frequency	03
BAR-CODE selection	03
Set BAR-CODE option	03

TDL/TDLBC unsolicited msg	length
MAGNETIC TRACK reading	variable
SINGLE KEY	03
KEY STREAM	variable
BAR-CODE STREAM	variable

LME (swiper) commands	length
READ STATUS	01
SWIPER Enable	01
SWIPER Disable	01
Temp. SWIPER Disab.(red led)	02
Temp. SWIPER Disab. (green)	02
Temp. SWIPER Disab.(led+rel)	03
Set INHIBIT LOGIC	02

LME unsolicited message	length
MAGNETIC TRACK reading	variable

DIGITAL I/O commands	length
READ STATUS	01
OUTPUT SET	04
OUTPUT RESET	04
READ INPUT	01
INPUT VARIATION setting	0A

DIGITAL I/O unsolicited msg	length
INPUT VARIATION	0A

ADSER commands	length
READ STATUS	01
DEVICE Enable	01
DEVICE Disable	01
Temp. DEVICE Disab.(red led)	02
Temp. DEVICE Disab. (green)	02
Temp. DEVICE Disab.(led+rel)	03
Set INHIBIT LOGIC	02
READ CONFIG	01
Set INPUT T.O.	02
SEND-DATA (& Enable)	variable
ADSER SET-UP	0F
Set OUTPUT	03

ADSER unsolicited msg's	length
RECEIVING DATA	variable
DATA RECEIVED before T.O.	variable
DATA RECEIVED before Error	variable
DIGITAL-INPUT VARIATION	02
INPUT VARIATION T.O.	02
BREAK from EXTERNAL LINE	02

PXR (proximity) commands	length
READ STATUS	01
PXR Enable	01
PXR Disable	01
Temp. PXR Disab.(red led)	02
Temp. PXR Disab. (green led)	02
Temp. PXR Disab.(g.led+relay)	03
Set INHIBIT LOGIC	02

PXR unsolicited message	length
PROXIMITY BADGE reading	0D

MTW (encoder) commands	length
READ STATUS	01
MTW Enable	01
MTW Disable	01
Temp. MTW Disab.(red led)	02
Temp. MTW Disab. (green led)	02
Temp. MTW Disab.(led+relay)	03
Set INHIBIT LOGIC	02
READ CONFIG	01
WRITE MAGNETIC BADGE	variable
EJECT MAGNETIC BADGE	01
CAPTURE MAGN. BADGE	01
CAPTURE & CANCEL	01
EJECT MAGNETIC BADGE	01

MTW unsolicited message	length
MAGNETIC TRACK reading	variable



APPENDIX B

Distribution diskette contents

This appendix lists and describes the files which comprise the MC-Server pack and their default paths, after they have been installed.

? *Mcserver rel. 1.0.0 1.0.6*

Default installation file structure for Windows-32-bit environment

Path	File	Description
\Programs\Emk\MCnet\server	MCserver.exe	Communication server
\Programs\Emk\MCnet\demo	clientdde.exe readme.txt	Demo program Demo program instructions

? *Mcserver rel. 2.0.0*

Default installation file structure for Windows-32-bit environment

Path	File	Description
User selectable	MCserver.exe	Communication server

Head Office: via Cuneo - 10090 S. BERNARDO D'IVREA (TO)
Tel. 0125 - 631887
Fax 0125 - 631935
E-Mail: ufficio.tecnico@emk.it - ufficio.commerciale@emk.it

REPORT FORM

To: **EMK** (Technical support)

Fax: +39 125 631935

Tel: +39 125 631887

Your support is essential to us. Please use this form for the following:

- ? to report any problems you encounter with the product or its documentation
- ? to suggest improvements or new features for subsequent versions

Thank you for your co-operation.

Your details:

Name _____ Ext _____
Company _____ Tel _____
Address _____ Fax _____
_____ E-mail _____
_____ Country _____

Report details:

Product _____ Version _____
Number of pages _____ Date _____

Please describe your problem or suggestion here:
