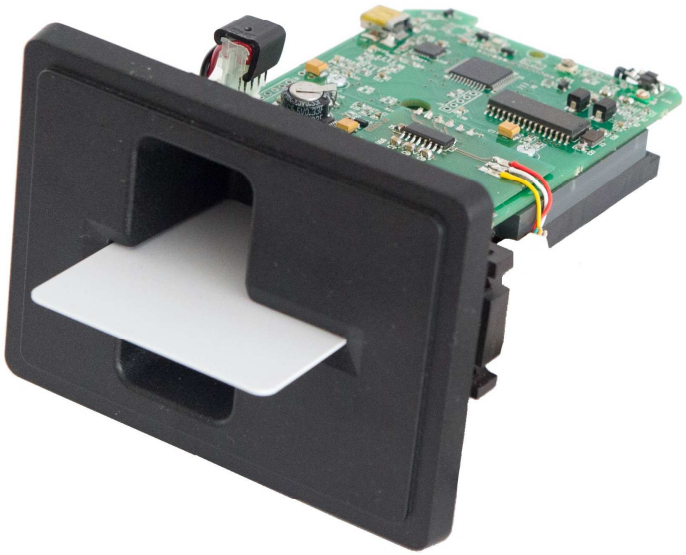
DOC. 368-R1-EN

EK20-IDPAYI USER MANUAL

EK20-IDPAYI (here named READER) is a fixed RFID device suitable to exec payment with the insertion method.

-Exec all the operations of payment on High Security RFID CARDS MIFARE CLASSIC.
-Operate on CARDS created using the IDPAYM mobile and the IDONE-PAY program:
  -PREPAID can be used only in subtract
  -FREE can be used as in add as in subtract.
  -SUBSCRIPTION verify only the expiry date
-Configured to exec operations under HOST CONTROL:
  -When a CARD has been inserted the READER wait for an AUTHORIZATION from the HOST.
  -Exec the PAY operation on CARD.
  -Send the LOG to HOST and save it in the LOG memory.
-2500 event LOG memory.
-Wireless connection via RADIO UHF (range 200mt) or BLUETOOTH (OPTIONAL) or cable connection TTL/RS232.
-USB connection available for Firmware upgrade, Configuration and deferred Logs transfer.
-Demo and Doc to explain the communication protocol to be implemented on the HOST
-Power supply 9 to 14VDC stabilized.



INDEX

1.0 FIRST INSTALL
2.0 HOW TO WORK WITH PAYM
3.0 PROTOCOL
4.0 AVAILABLE MODELS
5.0 TECHNICAL SPECIFICATION
6.0 HOW TO UPGRADE THE FIRMWARE

1.0 FIRST INSTALL

INSTALL USB DRIVERS

1) Copy into the PC the folder "MCP2200WindowsDriver".
2) In "DriverInstallationTool" select the folder "X64" for 64Bit or "X86" for 32bit platforms.
   Launch "MCP2200DriverIstallationTool". Press "Install" and wait to the end of drivers installation.

INSTALL USB ON YOUR PC

1) Turn off the READER. Insert the USB plug and turn on the READER.
2) The PC begin the new device install. Wait for the complete install of the assigned COM PORT.

INSTALL RADIO-PEN-UHF ON YOUR HOST –(IF USED)

1) Insert the supplied RADIO-PEN-UHF into the USB connector of the PC.
3) The PC begin the new device install. Wait for the complete install of the assigned COM PORT.

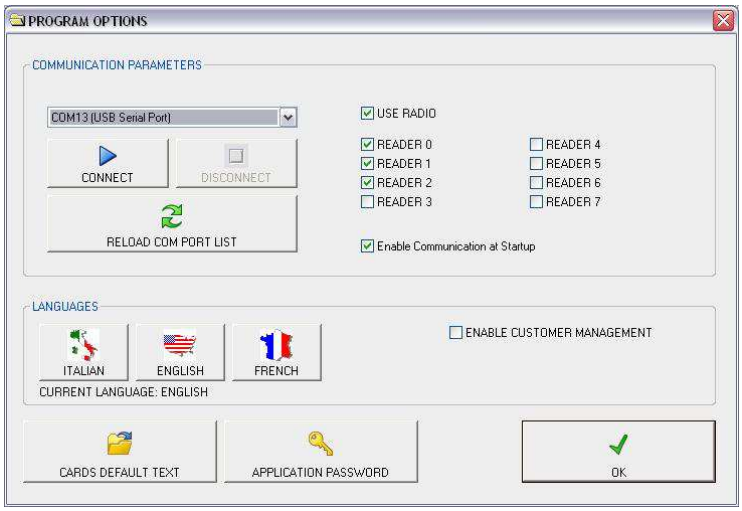
INSTALL IDONE-PAY SOFTWARE ON YOUR PC

Dowload the IDONE_PAY setup from the site:www.zetanetweb.....
Launch "IDONE_PAY_40x_Setup" and follow the instructions to end.
Will be created an icon on your desktop.

CONFIGURE IDPAYI USING THE PROGRAM IDONE PAY

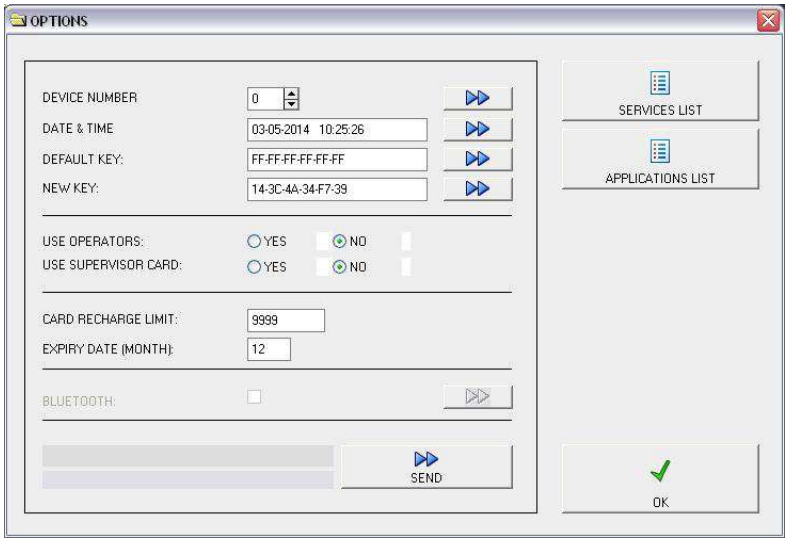
Connect the USB CABLE.
Launch the program IDONE-PAY

Click "PROGRAM OPTIONS"



-Uncheck "USE RADIO".
-Set the USB COM PORT .
-Click " CONNECT" and click OK to exit.

Now click “READER SETTINGS”



-Set the “DEVICE NUMBER” =0 and click the button to send to the READER.
-Click the button to send the actual “DATE & TIME” to the READER.
-The DEFAULT KEY is preset with the code (FF-FF-FF-FF-FF-FF). Do not change.
Press the button to send it to the READER.
-The “SECRET KEY” protects your CARDS against fraud and duplication.
Enter 12 digits with numbers from 0 to 9 and letters from A to F. Example: 3C-26-D9-67-FA-59.
For safety reasons, the “SECRET KEY” will not appear again, you will see always FF-FF-FF-FF-FF-FF.
Press the button to send it to the READER.
IMPORTANT: Write this code and keep it in a safe place.
-Click “SEND” to transmit the other parameters to IDPAYI. A bar indicates the good transfer.
Now IDPAYI is ready to operate.

2.0 HOW TO WORK WITH IDPAYI

The HOST will be connected by cable or wireless at a bit rate 19200 N-8-1.

1)HOST can send a READ command to the READER:
-If a CARD is inserted the READER read the **CARD UID**.
Ex. to verify if this code exists into a DATABASE or into a BLACK LIST.
NOTE: This command is optional.
In many cases don’t serve because the main parameters are tested by the AUTHORIZATION command.

2)HOST send the AUTHORIZATION command that contains:
-**POINTS** to be added or subtracted for the VALUE in the CARD.
-**TIMEOUT** in seconds.
-**SIGN** ‘+’ or ‘ –‘.
-**APPLICATION** number from 1 to 14.

After this command the READER verify for a CARD present during the **TIMEOUT** period.
-If no replay send a #TIMEOUT ERROR string to the HOST.
-If verify a correct SECRET KEY and a valid EXPIRY DATE in the defined **APPLICATION**, exec the **SIGN** operation for the quantity specified in **POINTS** on the actual CARD VALUE.
Send an #EVENT LOG string to the HOST resuming the PAY operation data.
-In case of error the READER send an EVENT STATUS string with warnings:

TIMEOUT ERR	The command was not executed because out of time limit. This error may be caused by : -No tag present. -A Tag is present but the CRYPTO KEY is uncorrect.
DATA_ERR	The Tag is authenticated but some internal data are corrupted.
CLOCK_ERROR	The Tag is authenticated but the IDPAYI calendar clock has a corrupted date. Send a COMMAND#0 to update the calendar clock.
EXPIRY_DATE	The Tag is authenticated but the Expiry Date read on the tag is out of limit.
OUTOFLIMIT	The VALUE is out of limit. In PREPAYED mode the limit is 0000.

The pay session will be internally terminated. The HOST can retry a new AUTHORIZATION command.

We suggest to send the SET DATE command after any EVENT LOG for a good date alignement.

3.0 PROTOCOL

IDPAYI operates in polling mode. The HOST is Master.

STX	Start of string synchronization code.
ADX	Is the address of the radio device.(from 00H to 07H)
LENGTH	Is the number of bytes from the LENGTH to BCC comprise. Example: STX-ADX-LENGTH-FUNCTION-DATA0....DATA11-BCC The length is 14 DEC = 0D HEX.
FUNCTION /STATUS	Is the FUNCTION to be executed or the STATUS of an operation executed.
DATA0 to DATAn	Are the data exchanged.
BCC	Is calculated as the XOR of all bytes from STX included to last DATA, BCC exluded. Ex: STX-ADX-LENGTH-STATUS-BCC → 02H-00H-02H-01H-BCC BCC= 01H.

In case IDPAYI detects a BCC error on the received string, don't exec the Command and don't transmit any reply.

STRINGS DESCRIPTION TO EXEC A PAY OPERATION

COMMAND#P : POLL UID

DESCRIPTION	STX	ADX	LENGTH	FUNCTION	BLOCK	N-BLOCKS	TAG TYPE	BCC
HEX VALUE	02H	HEX	05H	See below	00H	00H	08H	HEX

NAME	FUNCTION	DESCRIPTION
POLL UID	04H	BLOCK=0 N-BLOCKS=0 TAG TYPE=08H Read for a valid SERIAL CODE. Replay with a READ UID string.

REPLY#C : READ UID

DESCRIPTION	STX	ADX	LENGTH	STATUS	DATA0-1-2-3-4	BCC
HEX VALUE	02H	HEX	07H	See below	HEX	HEX

NAME	STATUS	DESCRIPTION
READ UID	04H	Contains the Serial Code Number (first 5 bytes) read from the TAG.

COMMAND#AUTH : AUTHORIZATION

DESCRIPTION	STX	ADX	LENGTH	FUNCTION	POINTH	POINTL	TIMEOUT	SIGN	APPLICATION	BCC
HEX VALUE	02H	HEX	07H	7EH	HEX	HEX	HEX	2B-2D	01H to 0DH	HEX

NAME	FUNCTION	DESCRIPTION	
AUTHORIZATION	7EH	POINTH-L	insert in HEX the number of points to be decremented. Example: 00-0EH for 14 points decrement.
		TIMEOUT	insert in HEX the seconds to wait for a full PAY operation to be completed. Example: 0FH for 15 seconds timeout.
		SIGN	insert the operation type 2BH for increment or 2DH for decrement.
		APPLICATION	insert the APPLICATION (SECTOR) number on which make the operations. (from 01H to 0DH).

Replay with an EVENT LOG or an EVENT STATUS string.

REPLY#E: EVENT LOG

DESCRIPTION	STX	ADX	LENGTH	FUNCTION	C/T	E/S1	E/S0	CODE	DATE	TEXT	BCC
HEX VALUE	02H	HEX	30H	04H	08H	HEX	HEX	5 bytes	6 bytes	32 bytes	HEX

FUNCTION	VALUE	DESCRIPTION	
READ OK	04H	C/T	always 08H.
		E/S1	Indicate the operation performed on the CARD.(can be 10H or 20H)
			0 0
			1 0
			2 0
			3 0
			4 INCREMENT
			5 DECREMENT
			6 0
			7 0

E/S0 Indicate the CARD TYPE. (can be 41H-44H-84H)
Bit0 FREE
Bit1 POSTPAY
Bit2 PREPAY
Bit3 BONUS
Bit4 USER
Bit5 SUPERVISOR
Bit6 1=PAY IDENTIFIER
Bit7 SUBSCRIPTION

CODE is the UID Card Code read on the Tag (5 bytes HEX).

DATE is the Event Date: Day-Month-Year Hour-Minutes-Seconds in BCD
TEXT 32 bytes HEX (Pay operation descriptor)
Format example: HEX 0A-8C-0A-28-18-01-20-16-46-02
Pos 0 2 4 8 9

Pos 0-1 PREVIOUS AMOUNT 2 bytes HEX (0x0A8C)
Pos 2-3 FINAL AMOUNT 2 bytes HEX (0x0A28)
Pos 4 to 7 EXPIRY DATE Day/Month/Year 3 bytes BCD (0x18012016)
Pos 8 CARD TYPE FREE=46H PRE=2DH SUBSCRIPTION=41H
Pos 9 APPLICATION SECTOR HEX (0x02)
Other bytes to Pos 31 all 0x00.

REPLY#S : EVENT STATUS

DESCRIPTION	STX	ADX	LENGTH	STATUS	BCC
HEX VALUE	02H	HEX	02H	See below	HEX

STATUS	VALUE	DESCRIPTION
TIMEOUT ERR	30H	The command was not executed because out of time limit. This error may be caused by: No tag is present. A Tag Mifare is present but the CRYPTO KEY is uncorrect.
CMD_OK	04H	A command has been correctly executed.
DATA_ERR	01H	The Tag data are corrupted.
CLOCK_ERROR	31H	The Tag is authenticated but IDPAR calendar clock has a corrupted date. Send a COMMAND#0 to update the calendar clock.
EXPIRY_DATE	32H	The Tag is authenticated but the Expiry Date read on the tag is out of limit.
BLACK_LIST	33H	The Tag is authenticated but the tag code is present into a Black List.
OUTOFLIMIT	34H	The VALUE is out of limit. In PREPAYED mode the limit is 0000.

COMMAND#0 : SET DATE

DESCRIPTION	STX	ADX	LENGTH	FUNCTION	SPARE (6)	DATE (6)	BCC
HEX VALUE	02H	HEX	0EH	79H	00H	BCD	HEX

NAME	FUNCTION	DESCRIPTION
SET DATE	79H	Change the DATE Day-Mon-Year Hour-Min-Sec on the READER.(BCD format). DATE Ex: 31H-12H-12H 15H-59H-59H

STRINGS DESCRIPTION TO EXEC CONFIGURATION

COMMAND#APP : SET APPLICATION SECTOR

DESCRIPTION	STX	ADX	LENGTH	FUNCTION	APPLICATION	Spare	BCC
HEX VALUE	02H	0	04H	32H	01H to 0EH	00H	HEX

NAME	FUNCTION	DESCRIPTION
SET APPL	32H	Enables all the read and write operations on the specific APPLICATION SECTOR.

COMMAND#WKC : WKEY_ON_ CHIP

DESCRIPTION	STX	ADX	LENGTH	FUNCTION	SECTOR	Spare (6 bytes)	N_KEY (6 bytes)	BCC
HEX VALUE	02H	HEX	0FH	B0H	00H	00H	HEX	HEX

NAME	FUNCTION	DESCRIPTION
WKEY_ON_CHIP	B0H	This command write the N_KEY in ALL the SECTORs (1 to 15) into the KEY memory of the READER.

4.0 AVAILABLE MODELS

EK20-IDPAYI-R **Basic model** with USB and RADIO UHF.
EK20-IDPAYI-TTL **Basic model** with USB and SERIAL TTL.
EK20-IDPAYI-232 **Basic model** with USB and SERIAL RS232.

For other options: BLUETOOTH-WIFI contact us.

RADIO PEN UHF

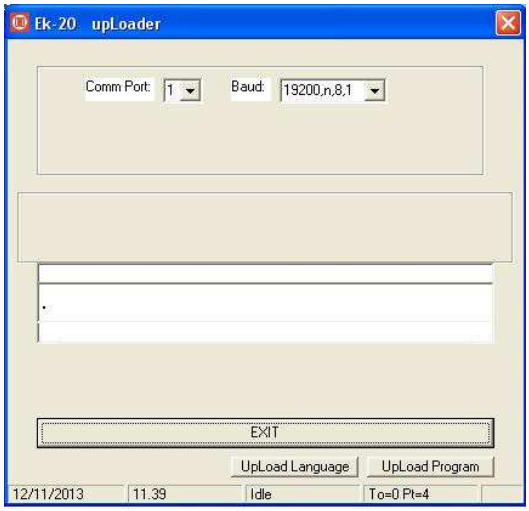
The RADIO PEN UHF is quoted a part.

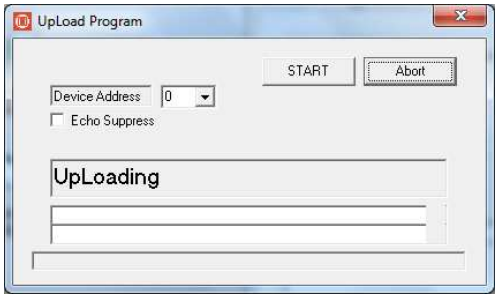
5.0 TECHNICAL SPECIFICATION

RFID FREQUENCY	13.56Mhz MIFARE 1K-ISO14443A
LOG MEMORY	2500 records
ACOUSTIC WARNIG	Buzzer
DATA TRANSMISSION 19200-8-N-1	USB2.0 - RADIO UHF- SERIAL TTL/RS232
DIMENSIONS WEIGHT	125mm x 70mm x 23mm 170 g

6.0 HOW TO UPGRADE THE FIRMWARE ON READER

- Connect the USB cable to the READER.
- Turn on the READER.
- Click on the icon of the program **EK20-UPLOADER** found in the folder "IDPAYI_CD".
- Select the USB COM PORT and the bitrate at 19200.
- Click "UPLOAD PROGRAM".
- Take the file IDPAYI*.BIN
- Select the number of the READER to be programmed.
- Click START and wait the end of programming "Upload OK".
- Turn off the READER.





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