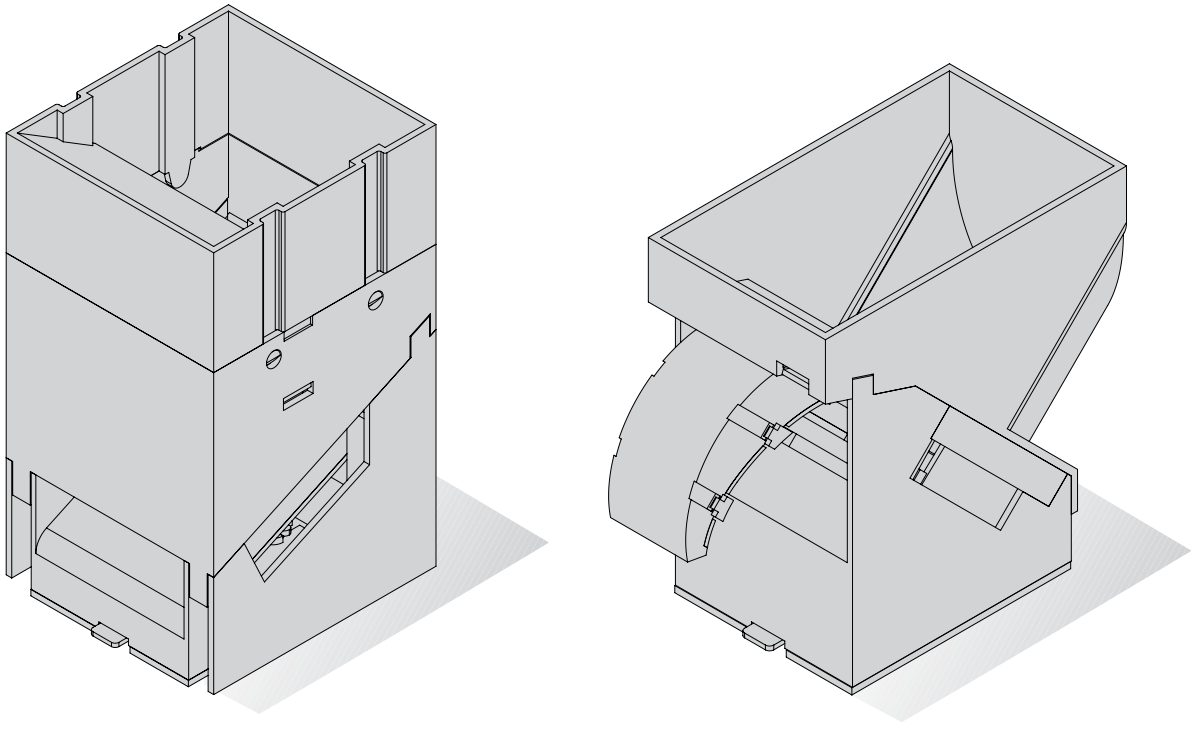
MICROHARD
VENDING PROJECTS

COIN AND/OR TOKEN DISTRIBUTOR

X3

ccTalk protocol/AES



PENDING PATENTED PENDING

TECHNICAL MANUAL

rev. 0-10-05-13

INDEX

1 GENERAL INFORMATION

1.1 DESCRIPTION

X3 is a new coin and token distributor and can be used in various applications such as payment kiosks, automatic cash registers, slot machines and money changing and coin recycler machines

1.2 MAIN FEATURES

5 product configurations and operating modes

1.2.1 COIN OUTPUT

By using various accessories provided with **X3** you can choose from 5 different coin or token output modes by diverting the flow from the pre-set position.

1.2.2 ERROR CODE

When the yellow LED on the **X3** turns on it means the following: that the device has power; the error code is indicated by means of a series of different flashes, enabling rapid identification of the causes of the malfunction or counting the coins paid according to ordinary operation.

1.2.3 PCB POSITION

The PCB enables all the **X3** functions -**Pay-out** can be updated from the outside without have to dismantle the distributor's parts.

1.2.4 ccTALK STANDARD

In versions X3 Pay-out the unit operates using the standard ccTalk.

1.2.5 CONNECTOR POSITIONS

The connector for operation ccTalk can be housed in two different positions:
- side opposite coin output window
- side of coin output window (reverse)

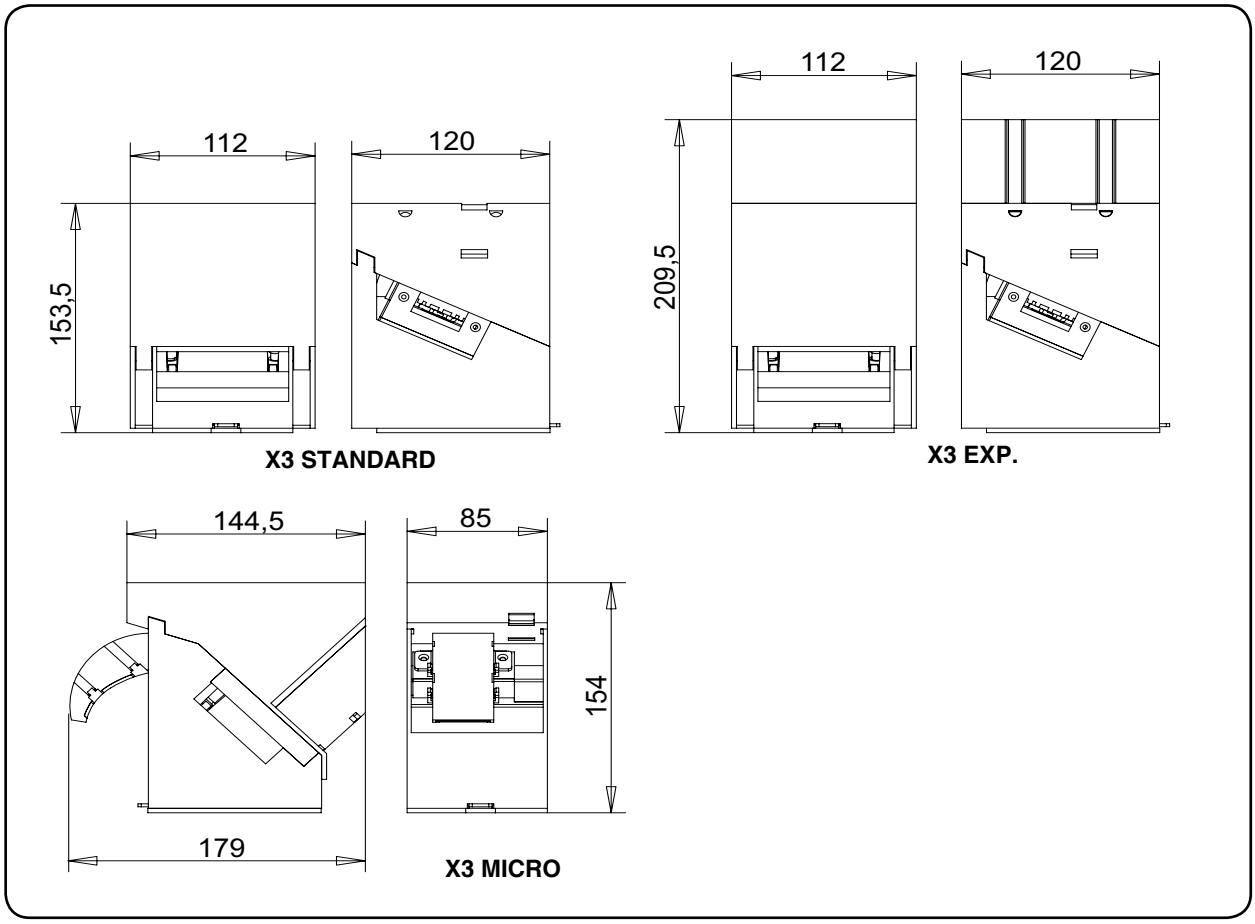
1.2.6 ANTI-JAM SYSTEM

If the motor or belt jams the motor stops and subsequently restarts in reverse; it then stops again and restarts in the correct direction. If this does not occur the operation will be repeated with 3 tries.

1.3 SAFETY

X3 should not be connected/disconnected from the slide base with the power supply on.
Do not insert hands into the X3 while operating as there are moving mechanical parts.

1.4 DIMENSIONS



1.5 TECHNICAL DATA

Distribution speed	3 - 8 coins/sec
Coin capacity	200- 900 pieces of 1.00 €
Weight (empty)	0,5 kg
Diameter coins dispensed	from 15 to 29 mm (from 22 to 29 mm with standard disk)
Thickness coins dispensed	from 1.25 to 3,1 mm (from 1,6 to 2,2 mm with standard disk)

NB: On request we manufacture adapters disks standard and special disks.

1.6 POWER SUPPLY

	standby	***empty***	***max load***	***forced stop***
MOTOR 24Vdc ± 10%	0 mA	80 mA	500 mA	(transient) 500 mA
LOGIC 12Vdc ± 10%	80 mA	80 mA	80 mA	-

N.B .: Upon request 12Vdc.

standby: ***X3*** *stopped but with power on*
empty: *normal operation*
max load: *operation with coin hopper full*
forced stop: *refers to value of current absorbed by motor over which it is jammed, and the anti-jam procedure begins.*

2 INSTALLATION

DO NOT SUPPLY X3 WITH POWER UNTIL ASSEMBLY AND DUE INSPECTION ARE COMPLETED

- Affix the **X3**'s slide to the machine.
- Check that it is properly plugged in if using 12 pin standard connector.
- Hook up the flat or 12 pin connector, following the instructions for each single pin as shown in paragraph 4.1, using a suitable cable to support currents and maximum voltages.
- Insert **X3** onto the slide until it is totally inserted.
- Turn on electric power.

3 ELECTRICAL INFORMATION

3.1 GENERAL DESCRIPTION

The operating modes of **X3** are guided by a microprocessor:

ccTalk/AES protocol
parallel protocol
multi coin protocol
coin counter and divider

3.2 POWER SUPPLY

X3 is equipped with a 24 v continuous feed motor.

3.3 OPERATING MODES

X3-cc-Talk/AES MOD.
Functions with ccTALK/AES protocol.

3.4 OPTICAL SENSORS

There is a pair of optical sensors to determine the coins paid (including coins with a central hole) and a pair of inductive sensors for the multi-coin models.

X3-ccTalk/AES MOD.
By means of the data line, ccTalk/AES protocol monitors all the sensors' functions.

3.5 LED INDICATORS

X3-ccTalk MOD.
This has just one flashing green LED:
rapid flashing indicates that the **X3** is distributing one coin per flash
flashes with longer intervals indicates that the **X3** is in on
led constantly on means **X3** is in error: this can include photocell error or corrupt data in EEProm or insufficient power supply.

3.6 COIN LEVEL PLATES

Inside the X3 are of brass plates for the detection of the level of coins (Micro version), while they are optional for the Standard and Exp.

X3-cc-Talk/AES MOD.
Plate signals are internally operated by the ccTalk/AES protocoll.

4- ELECTRICAL SPECIFICATIONS

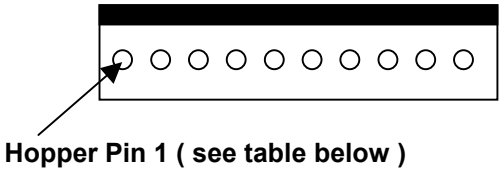
N.B. TO CONNECT THE X3 USE A 22AWG CABLE.

4.1 SERIAL CONNECTOR

PCB connector

2,54 mm pitch with locking wall.

Keying information



Hopper Pin 1 (see table below)

View of Connector from top

4.1.1 SERIAL CONNECTOR FROM TOP

Pin	Function
1	Address select 3 - MSB
2	Adderss select 2
3	Address select 1 -LSB
4	+Vs
5	+Vs
6	0V
7	0V
8	/DATA (cctalk)
9	N/C
10	N/C

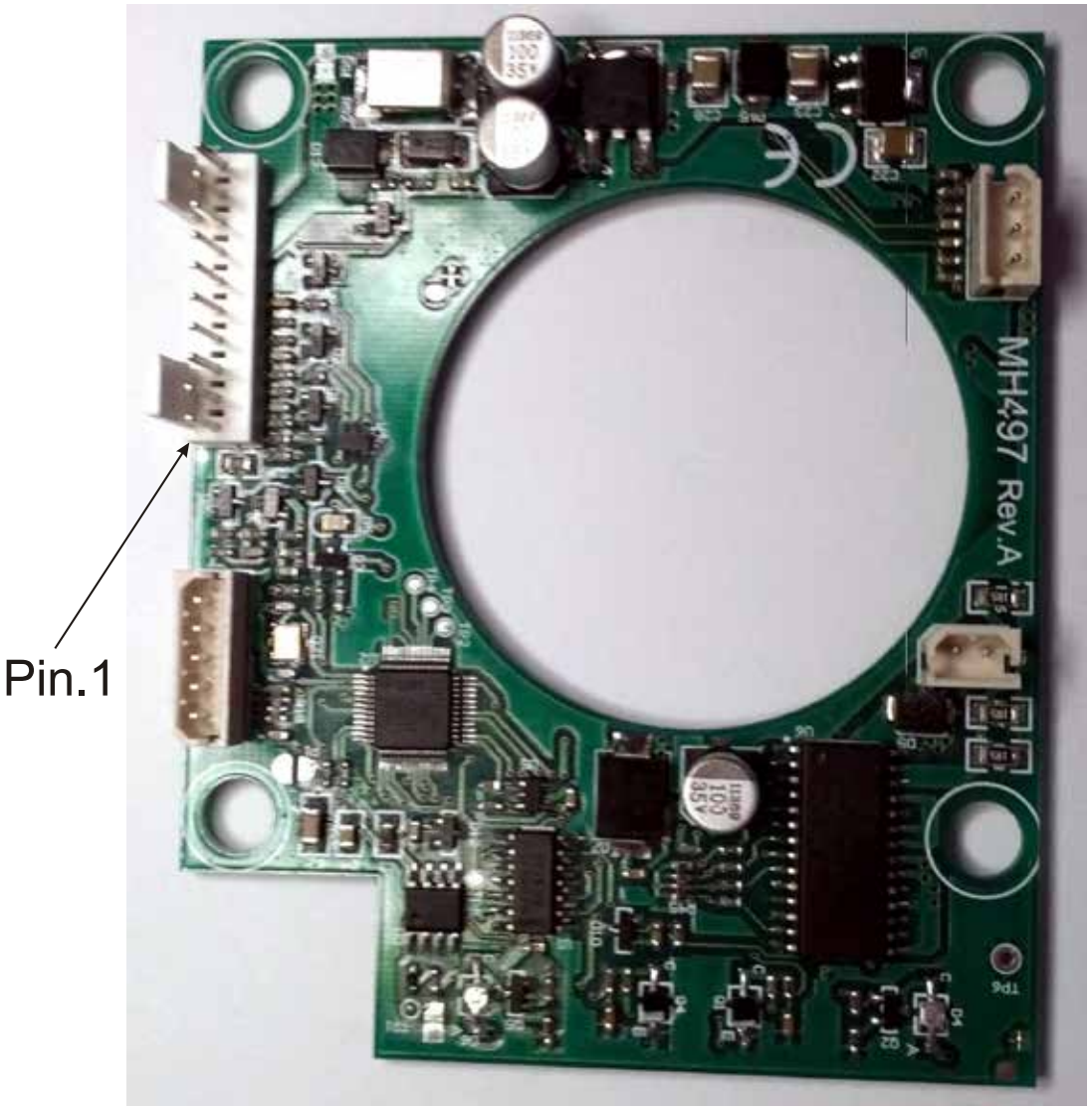
Operation can be achieved with just 3 wires.
> +Vs to Pin4
> 0V to Pin 6
> Bi-directional serial data line to Pin 8

+Vs is either +12V or 24v depending on the build of the hopper.

Pins 4 and 5, and Pins 6 ans /, are linked internallu. The provision of extra Pins is to semplify the manufacture of a multi.drop cable using thicker wire for the power leads.
There can be a “power-in” and a “power-out2 pin, and the hoppers daisy-chained.

4.2 X3-cc-Talk/AES MOD. ADDRESS SELECTION

Recommended connector
MOLEX 10 Pin serie KK6471 cod.22-01-2105
Contatti: PK100 22-30AWG cod.08-50-0032



4.3 cc.talk/AES SUPPORTED COMMANDS

Header 254 Simple poll
Header 253 Address poll
Header 252 Address clash
Header 251 Address change
Header 250 Address random
Header 247 Request variable set
Header 246 Request manufacturer id
Header 245 Request equipment category id
Header 244 Request product code
Header 242 Request serial number
Header 241 Request software revision
Header 236 Read opto states
Header 219 Enter new PIN number
Header 218 Enter PIN number
Header 217 Request payout high / low status
Header 216 Request data storage availability
Header 215 Read data block
Header 214 Write data block
Header 192 Request build code
Header 172 Emergency stop
Header 171 Request hopper coin
Header 169 Request address mode
Header 168 Request hopper dispense count
Header 167 Dispense hopper coins
Header 166 Request hopper status
Header 165 Modify variable set
Header 164 Enable hopper
Header 163 Test hopper
Header 161 Pump RNG
Header 160 Request cipher key
Header 004 Request comms revision
Header 003 Clear comms status variables
Header 002 Request comms status variables
Header 001 Reset device

Setting pay out speed in X3 Hoppers

Since the latest firmware version 4.80 of the X3 and X5 AES Hoppers, it is possible to tune pay out speed by means of three new commands, which control motor power and, consequently, the pay out speed. Implemented commands:

- Read motor power value (expressed as a percentage 0-100%)
- Write motor power to RAM (expressed as a percentage 0-100%)
- Write motor power to EEPROM (expressed as a percentage 0-100%)

By default, hopper power is set to 95%, although it is possible to adjust the speed parameter to a value in the 0-100% range. In any case, it is advised to not go below the 50% threshold.

In the following we give a brief example of the three commands:

Header 255 Factory set-up and test Function

Read motor power value
Transmitted data : [ID command] = **55 AA 02** Read Power Value (0-100%)
TX – 00 03 01 FF [**55 AA 02**] FC
RX – 01 01 03 00 [**32**] C9 (return 32 = 50%)

Write motor power value (50%) to RAM
Transmitted data : [ID command] <Parameter> Write Power Value to RAM (0-100%)
55 AA 01 = ID Command Write Power Value to RAM
32 = Data 50%

TX – 00 04 01 FF [55 AA 01] [32] CA
RX – 01 00 03 00 FC (ACK)

Write motor power value (50%) to EEPROM
Transmitted data : [ID command] <Parameter> Write Power Value to EEPROM (0-100%)
55 AA 03 = ID Command Write Power Value to EEPROM
32 = Data 50%

TX – 00 04 01 FF [**55 AA 03**] [**32**] C8
RX – 01 00 03 00 FC (ACK)

4.5 AES COMMANDS

Basic commands

254	Simple poll	Hopper, Validator
251	Address change	Hopper, Validator
249	Request polling priority	Validator
245	Request equipment category id	Hopper, Validator
235	Read DH public key	Hopper, Validator
(*)		
234	Send DH public key	Hopper, Validator
(*)		
230	Request inhibit status	Validator (*)
229	Read buffered credit or error codes	Validator
223	Modify inhibit and override registers	Validator
210	Modify sorter path	Validator
209	Request sorter path	Validator
206	Request sorter path	Hopper, Validator
200	Request product parameters	Hopper, Validator
192	Request build code	Hopper, Validator
172	Emergency stop	Hopper
167	Dispense hopper coins	Hopper
166	Request hopper status	Hopper
164	Enable hopper	Hopper
160	Request cipher key	Hopper, Validator
3	Clear comms status variables	Hopper, Validator
2	Request comms status variables	Hopper, Validator
1	Reset device	Hopper, Validator

(*) comando non cifrato

Optional commands

244	Request product code	Hopper
242	Request serial number	Hopper
241	Request software revision	Hopper
236	Read opto states	Hopper
217	Request payout high/low status	Hopper
205	Modify bus baude rate	Hopper
168	Request hopper dispense count	Hopper
163	Test hopper	Hopper

5 SPARE PARTS

Use exclusively original spare parts to replace any components.

Use of non-original and/or non conform parts (if not authorized exclusively by the assistance center in writing) release the manufacturer from all liability.

To request spare parts, photocopy the page of the pertinent spare parts table and fill out the table completely, indicating the table containing the part, its reference number on the drawing and the quantity of parts requested, and your details.

Requests lacking the above data will not be taken into consideration.

Send the copy/ies by fax to the number +39 0547 81247

MICROHARD VENDING PROJECTS

SPARE PARTS REQUEST FORM
Send copy by fax to the number +39 0547 81247

CUSTOMER DATA

Company name _____

Address _____

City/Town _____

Tel. _____

Fax _____

Date of request _____

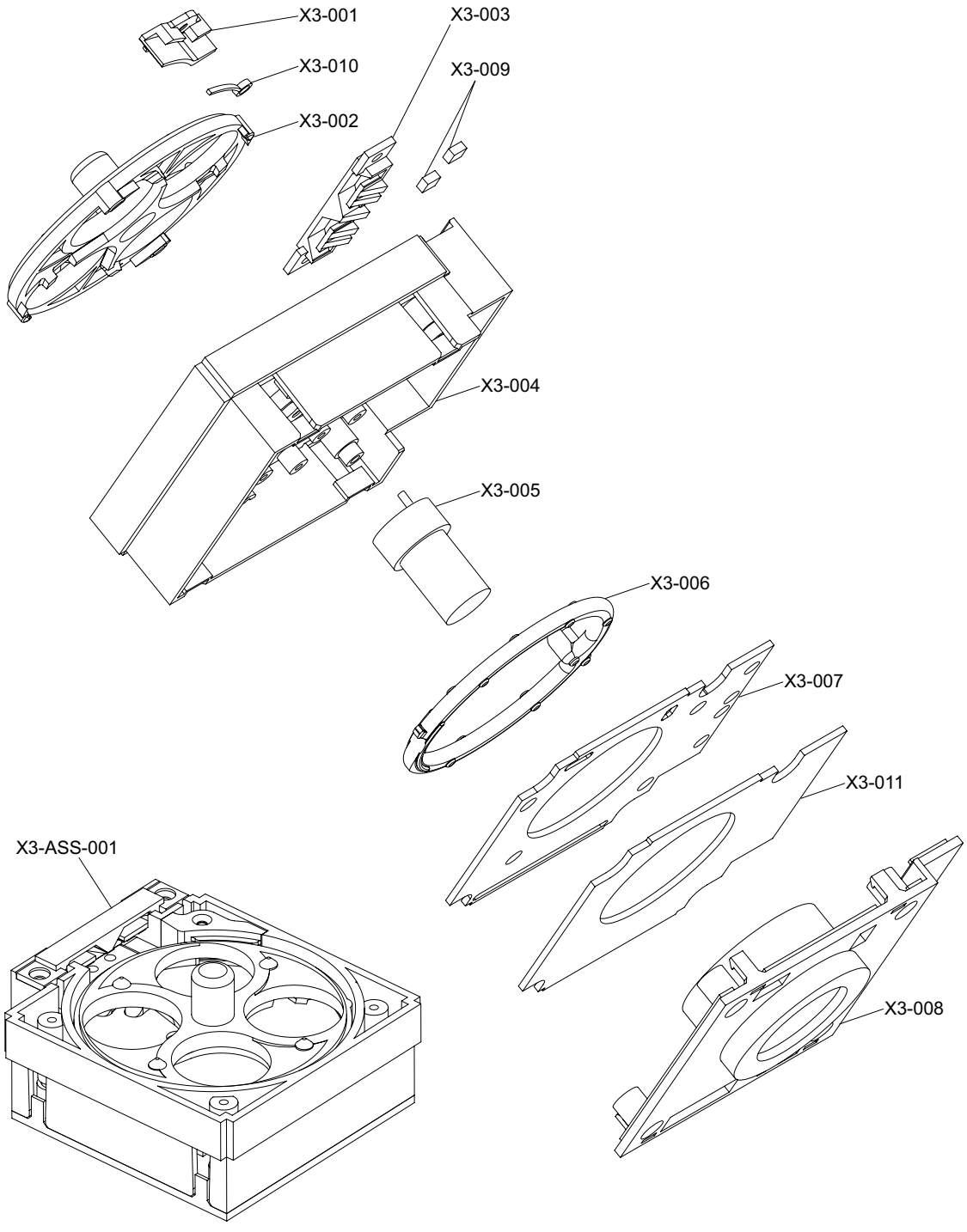
Stamp/Signature

_____

TABLE	NUMBER	QUANTITY

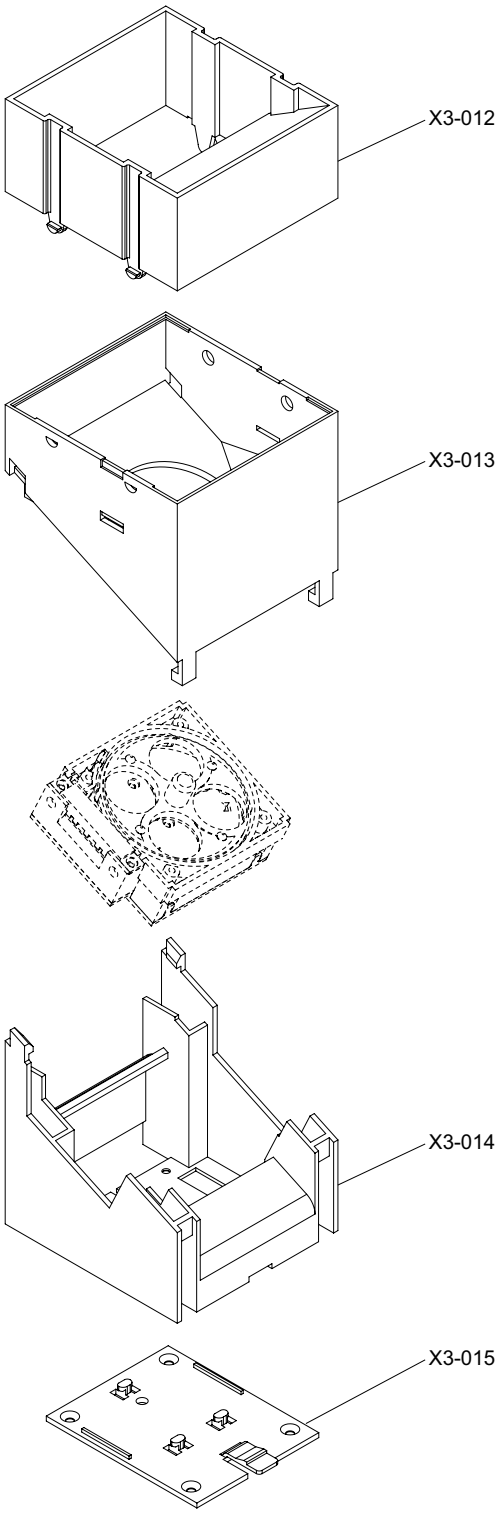
TABLE	NUMBER	QUANTITY

TABLE	NUMBER	QUANTITY



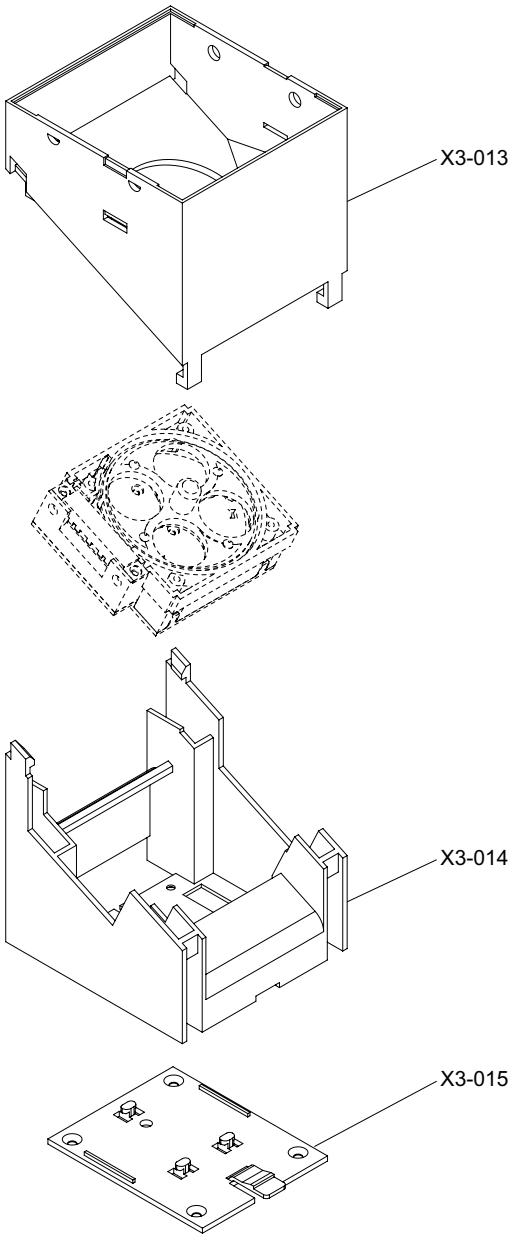
TAV. 1 - HEART

X3-001 – Coin ejector chute
X3-002 - Disc
X3-003 – Prism holder
X3-004 – Disc holder body
X3-005 – Gear motor
X3-006 – Coin ejector ring
X3-007 – Electronic cover
X3-008 – Casing cover
X3-009 - Prisms
X3-010 - Spring
X3-011 – Printed Circuit Board
X3-ASS-001 - X3 Assembly



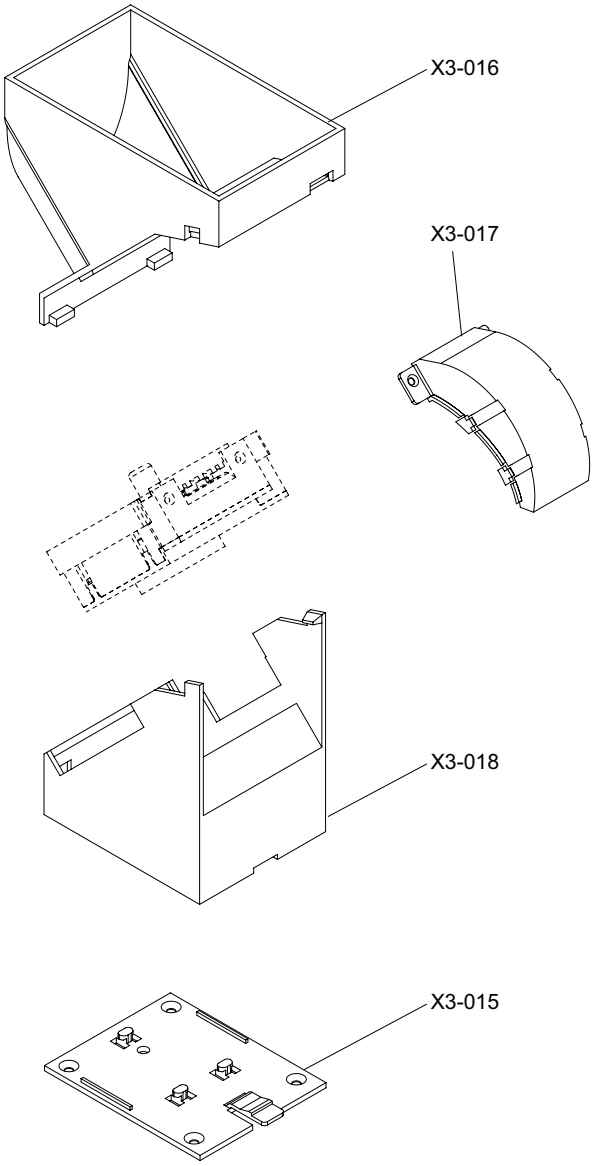
TAV. 2 - X3 EXP.

X3-012 - Expansion
X3-013 – Coin hopper
X3-014 - Dispenser support
X3-015 – Mounting slide



TAV. 3 - X3 STANDARD

X3-013 – Coin hopper
X3-014 - Dispenser support
X3-015 – Mounting slide



TAV. 4 - X3 MICRO

X3-016 – Micro mod. hopper
X3-017 – Coin conveyor
X3-018 – Micro mod. dispenser support
X3-015 – Mounting slide

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