AUTOMATIC GATE MACHINE

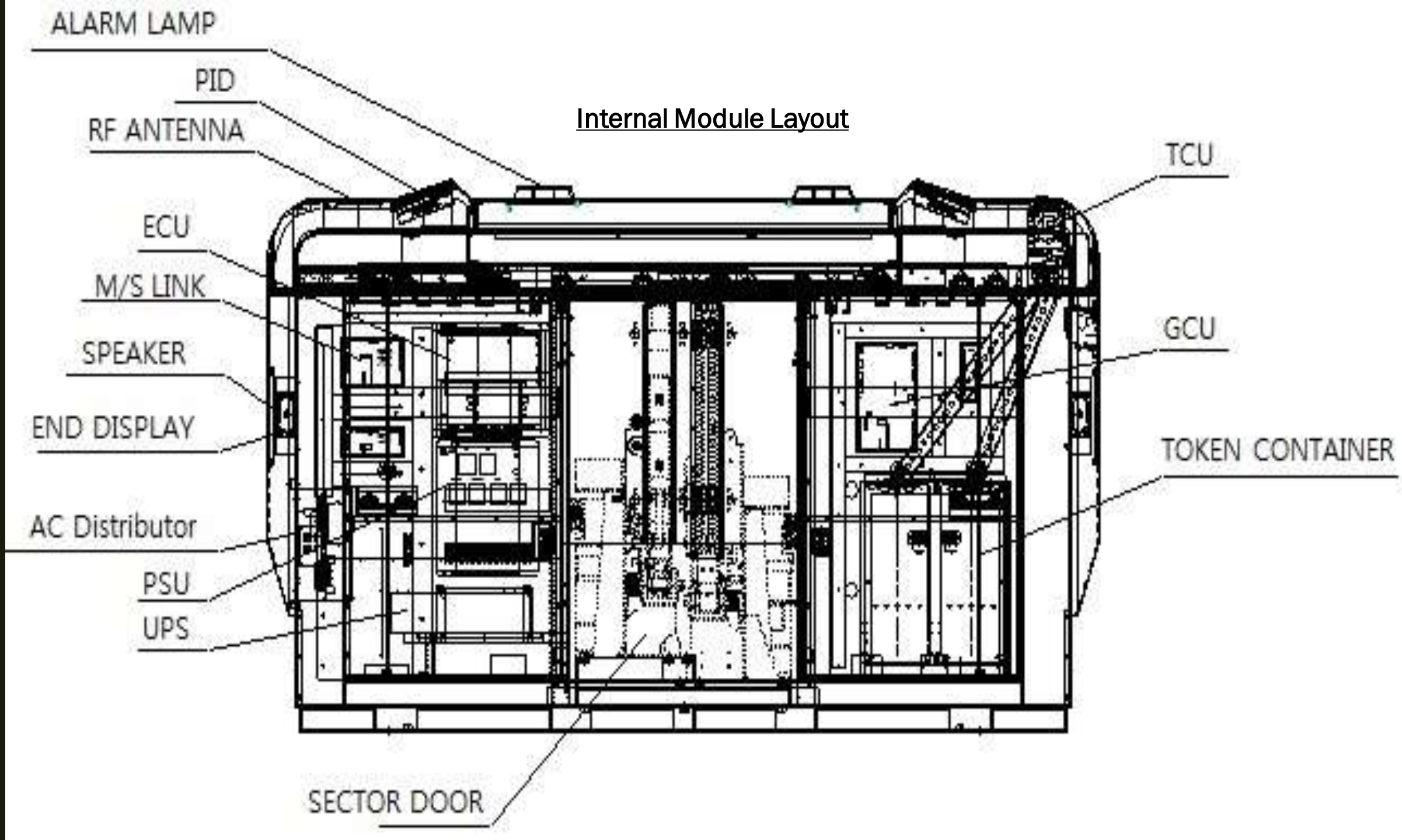
Detail Hardware Specification

Overview

General Description

Automatic Gate (AG) will be installed between the free area and paid area. It will enable passenger to pass through the passage between the free area and the paid area with a ticket issued by Ticket Office Machine or Ticket Vending Machine. AG reads, checks, and verifies data on ticket and re-encodes new data and allows passengers to pass by releasing a barrier when the ticket is valid. AG is classified into the following four types: Entry, Exit, Reversible, and Wide gate.

Internal Module Layout

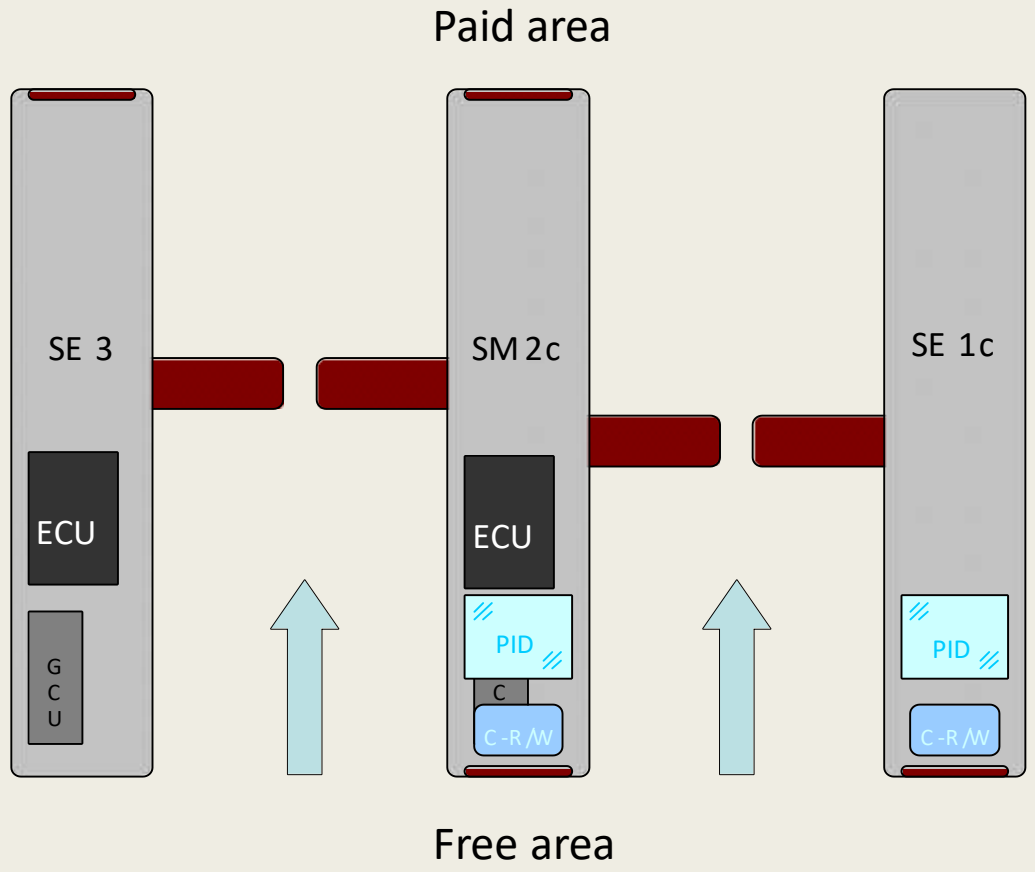


Gate Type Definition

The AG is categorized into basic 4 types Entry, Exit, Reversible and wide gate according to function and style.

1. Entry Gate

The Passenger Entry Gate shall control the entry of passengers into the paid area by validating the fare media. Entry AG will be able to convert to Exit AG by changing some modules for exit AG and vice versa

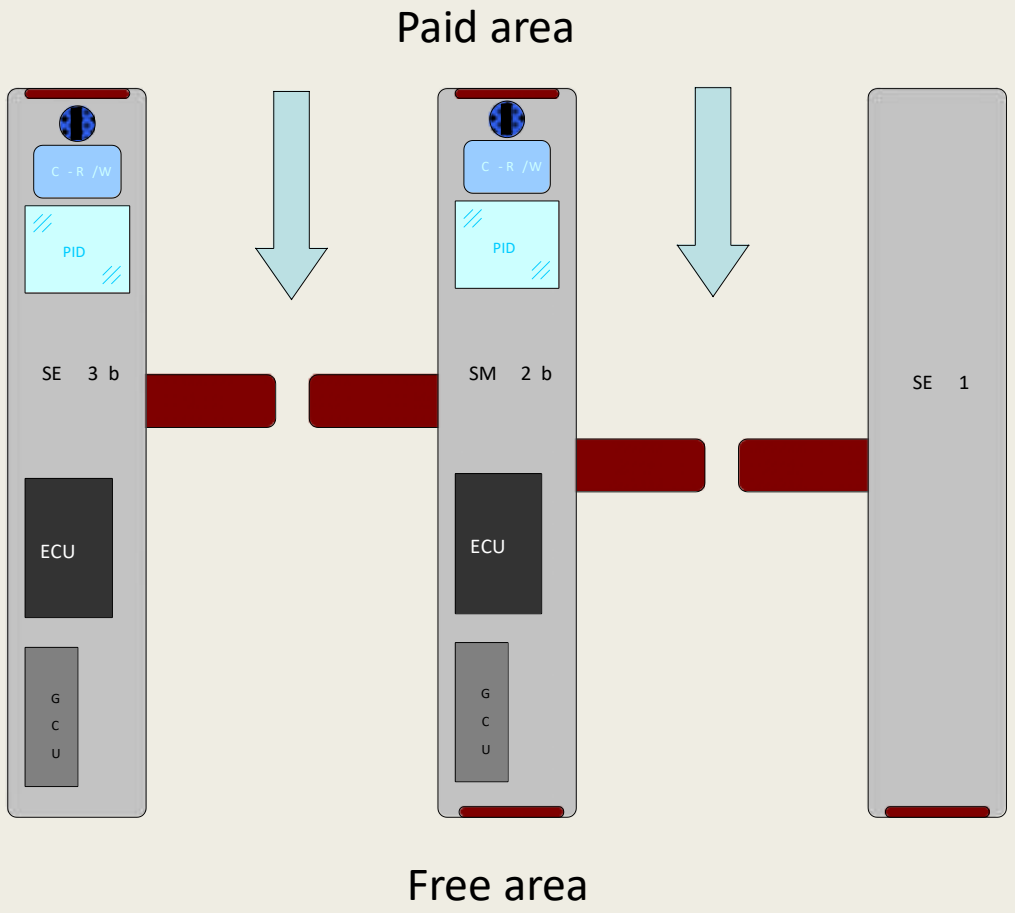


2.Exit Gate

The Passenger Exit Gate shall control the exit from the paid area by validating the fare media, and where necessary, processing the fare media, capturing the fare media.

The Exit Gate shall be identical to the Entry Gate except with the addition of a token collection mechanism and associated equipments.

The gate shall be programmed as an Exit Gate which shall determine the mode of operation and graphic responses of the top display and end displays.

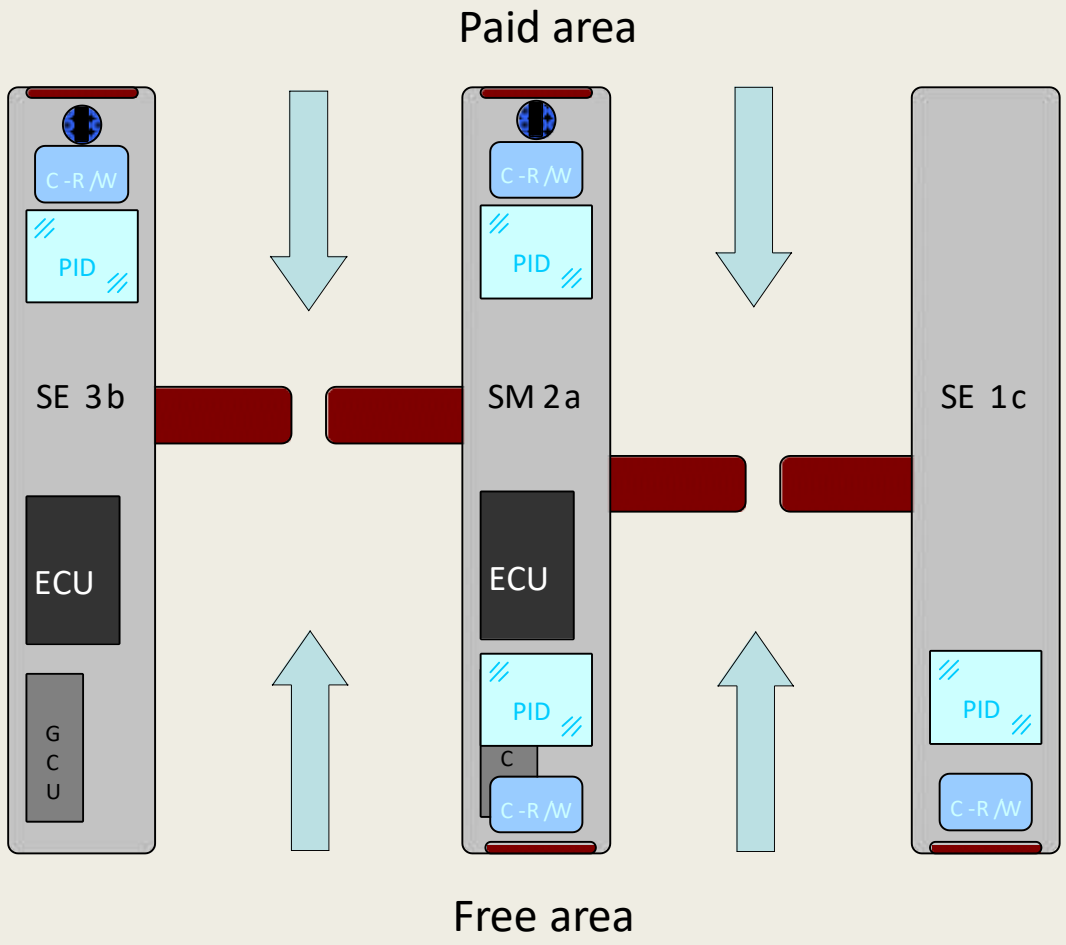


3. Reversible Gate

The Reversible Gate shall combine the features of the Entry and Exit gates in one gate enclosure and can operate in Bi-Directional/Uni-Directional mode depending on the operational requirements of passenger flow. This can be done from SC, CC or Gate itself.

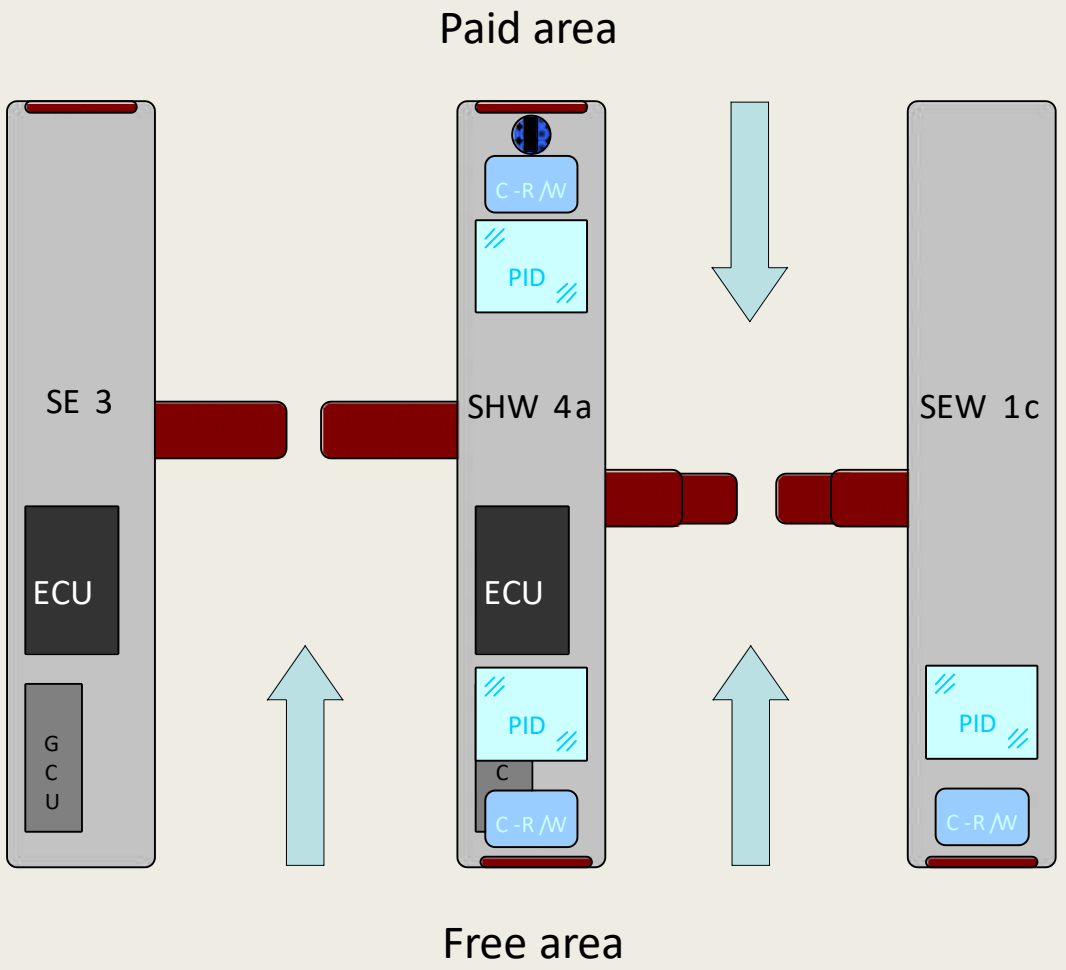
The Reversible Gate shall be a double ended gate incorporating two passenger display modules, two CSC targets, barrier mechanism and support electronics.

The Gate mode is also determined by the passenger presenting a ticket on a “first-comefirst-served’ basis i.e. simultaneously it serves both directions.



4.Wide Gate

Wide Gate shall be provided normally adjacent to the Excess Fare office, will allow those passengers in wheel chairs to validate their ticket and gain access to, or exit from the paid area. This can also be used as luggage gate.



GATE TYPE CONVERSION

Entry AG will be able to convert to Exit AG by replacing Entry module with Exit module and vice versa. Refer to the Table 7 about Entry/Exit module and Dummy module. Dummy module has only top cover. At the Entry/Exit AG, there are one Entry/Exit module and one Dummy module. But at the reversible AG, there are both Entry module and Exit module. AG converting order (Entry to Exit, vice versa)

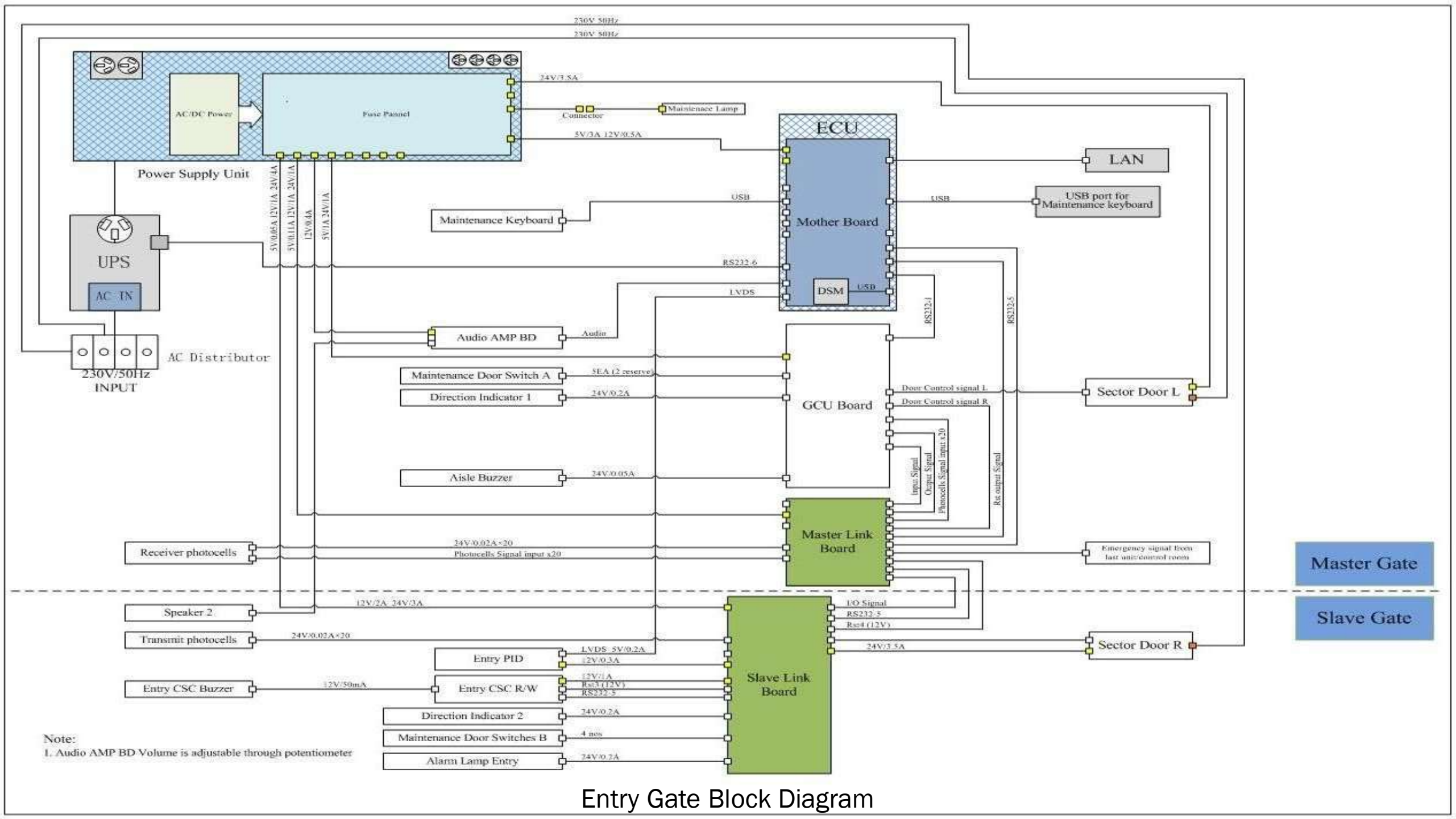
1) In Entry/Exit aisle, replace the Entry module with the Dummy module.

2) On coupled AG, replace the Dummy module with the Exit module.

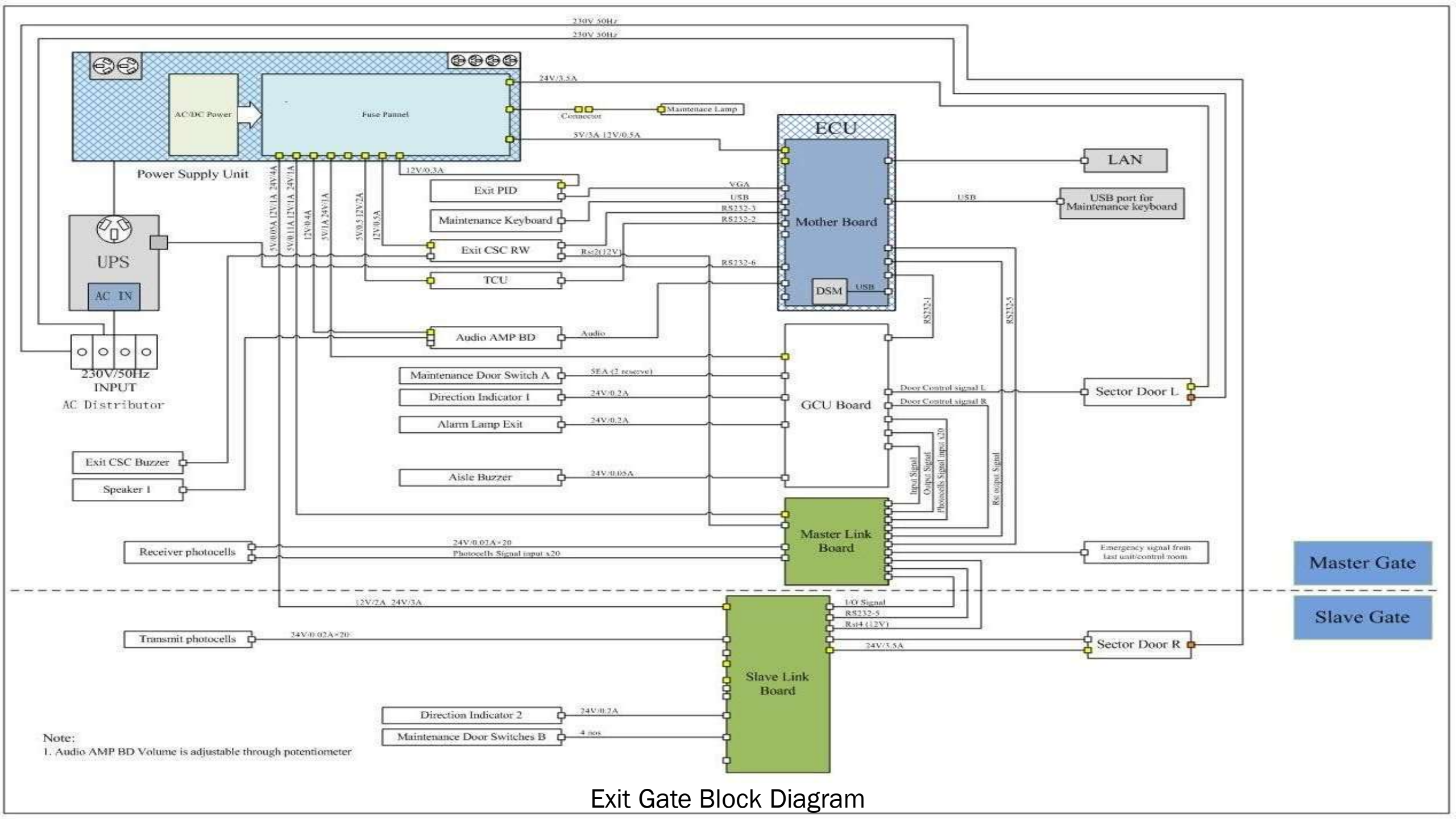
3) About cable connectivity, refer to the next clause.

Item	Entry Module	Exit Module	Dummy Module
Top Cover	O	O	O
Passenger Information Display(PID)	O	O	X
Card R-W	O	O	X
Buzzer	O	O	X
Speaker	O	O	X
TCU	X	O	X
TCU Link PBA	X	O	X
Token Container(including tray)	X	O	X
Return Cup	X	O	X

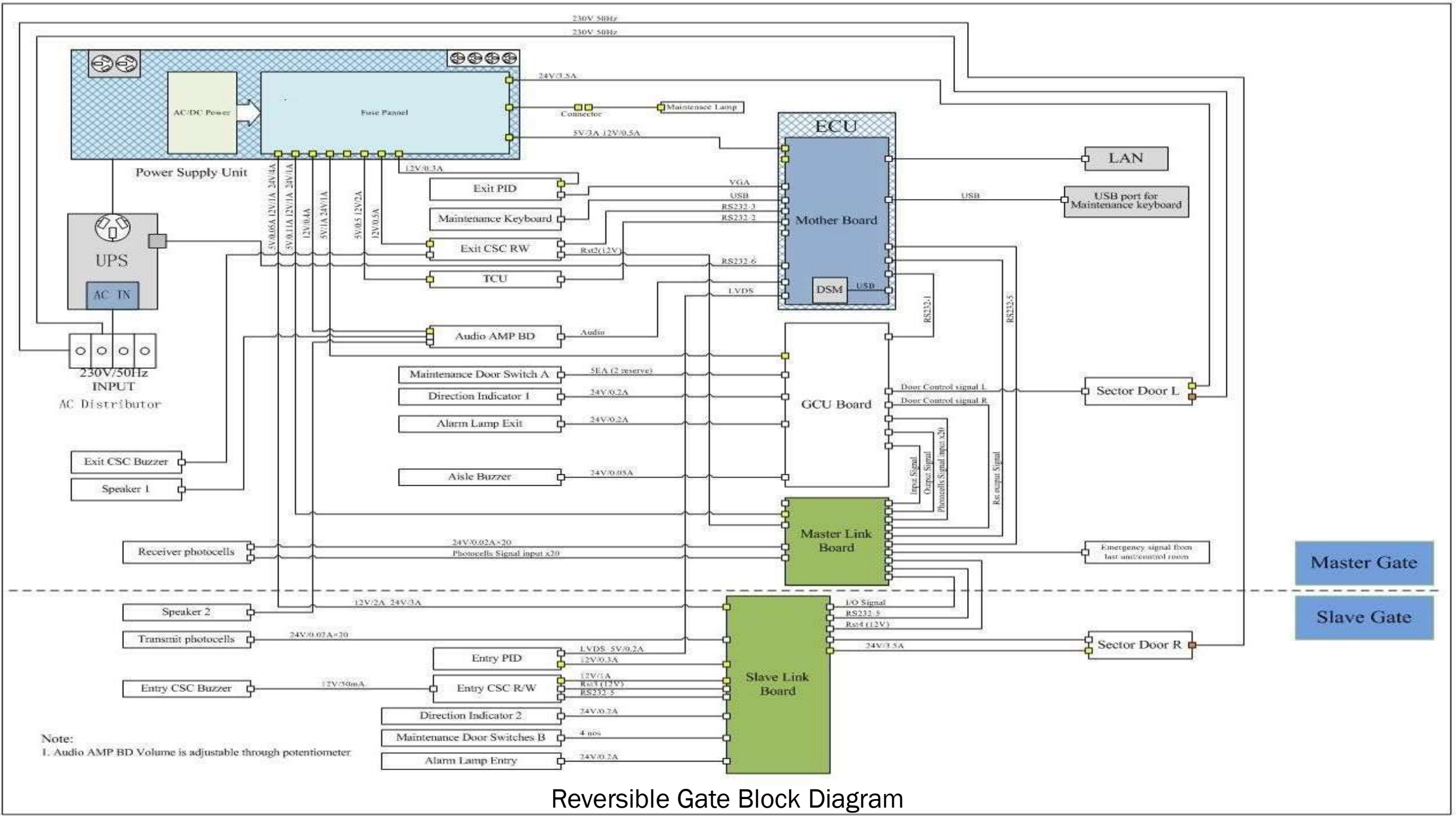
SYSTEM CONFIGURATION



Entry Gate Block Diagram



Exit Gate Block Diagram



Reversible Gate Block Diagram

General Specification

System	Item	Specification
Cabinet (Enclosure)	Dimension(mm)	1900±2.0(W) * 1100±2.0(H) * 300±2.0(D)
	Width of aisle	550mm(Normal), 900mm(Wide)
	Material, Color	1) Outside steel of enclosure • Material: ANSI 304 grade Stainless steel 2.0 mm • Finishing: Hairline Brushed 2) Plastic top cover (for Entry, Exit, Dummy) • Material: PC-ABS • Color: Pantone 2425c
	Control method	Sector Door barrier
	Passenger Sensing	20 infrared sensors Sensor height : 910mm
Electronic Control Unit (ECU)	Processor	ULV Celeron-600M CPU
	Memory	512MB
	Disk	1GB CF Card, 256MB DOM
Gate Control Unit(GCU)	Processor	32 Bit Processor (ARM7TDMI) Internal clock – 44.2368Mhz About 40MIPS (Million Instructions Per Second: MIPS is processing time of instruction. This specification is provided by processor manufacturer.)
	Memory	256KB Flash, 64KB SRAM

Card Reader / Writer	CPU	32bit RISC	
	Communication Protocol with Host	RS232 or RS422	
	RF Module Method	ISO14443 TYPE A	
Sector Door	Type	Normal Type	Wide Type
	Operation speed of Door	≤ 0.5 sec	≤ 0.7 sec
	Dimension	-Open 270.0 ±4.0(D) * 703.7 ±1.5(H) * 290.4±1.5(W) mm -Close 526.7±4.0(D) * 703.7±1.5(H) * 290.4±1.5(W) mm	– Open 292.2±4.0 (D) * 753.7±1.5 (H) * 291.4±1.5 (W) mm – Close 665±6.0 (D) * 753.7±1.5 (H) * 291.4±1.5 (W) mm
	Weight	< 18 Kg	< 30 Kg
	Material, Color	• Material: Outer layer of flaps constructed from polyurethane foam • Color : Pantone 361c	
Token Capture Unit(TCU)	TCU Size(mm)	135±0.5(W)*175.6±0.5(H)*110±0.5(D)	
	Token Container Capacity	2000 pieces/container, We can be designed according client requirements	
Passenger Information Display(PID)	PID is a LCD screen type.		
	Screen Size	6.4 Inch (Diagonal)	
	Display Format	640(W) * 480(H)	

System	Item	Specification	
End display	LED	Red, Green, Yellow lamp	
Passenger Detecting Sensor	Sensor	20 sets	
	Weight	17g	
Buzzer	Min. Sound Pressure Level	90dB at 12VDC/30cm	
Speaker	Type	YDT5090-1	
	Output S.P.L	84±3Db	
Power Supply Unit(PSU)	Input voltage (V)	AC176 ~ 265	
	Output Rated Voltage (V)	5.3, 12.5, 24 (according to Input voltage)	
Uninterrupted Power Supply(UPS)	Rated Capacity	500VA (300Wat)	
Alarm Lamp	LED	Yellow/ Red/ Green LED	
Power Consumption	Power Consumption of AG	Normal Operation -Voltage: 220.00 AC -Current: 1.22 A -Power: 199.12W	Peak Operation -Voltage: 221.00 AC -Current: 1.71 A -Power: 331W
Environment	Operation temperature	0° to +65°C external Operation Humidity: Within Relative Humidity 95% at 35°C(Without condensation)	
	Storage temperature	-20° to +70°C external Operation Humidity : Within Relative Humidity 95%(Without condensation)	

Sub Assembly List of AG

Item	Entry	Exit	Reversible
ECU	O	O	O
Power supply	O	O	O
UPS	O	O	O
GCU	O	O	O
AC distributor	O	O	O
TCU	X	O	O
Card R-W	O	O	O
Sector door	O	O	O

Item	Entry	Exit	Reversible
PID	O	O	O
Token container	X	O	O
Return cup	X	O	O
End display	O	O	O
Alarm lamp	O	O	O
Amp PBA	O	O	O
Speaker	O	O	O
Buzzer	O	O	O
MLB(Master Link PBA)	O	O	O
SLB(Slave Link PBA)	O	O	O

Module Configuration

The configuration of AG (Automatic Gate) is as follows:

- Equipment Control Unit(ECU)
- Gate Controller Unit (GCU)
- Entry Module
- Exit Module
- Sector Door (Normal Type, Wide Type)
- Token capture Unit (TCU)
- Passenger Information Display (PID)
- End Display
- Passenger Detecting Sensor
- Buzzer
- Speaker
- Power Supply Unit (PSU)
- Uninterrupted Power Supply (UPS)
- AC Distributor (AC input ass'y)
- DSM(Data Security Module)
- Alarm Lamp

Equipment Controller Unit (ECU)

Equipment Control Unit (ECU) will control all sub-modules within AG.

Main specification, interface and other parameter of ECU is the following tables.

ECU specification

Item	specification
Processor	Intel ULV Celeron- 600M CPU
Chipset	Intel 852GM+82801DB
Memory slot	1x200 pin SODIMM DDR, 1GB max
BIOS	PnP BIOS
Video	Embedded in Intel 852GM chip, support CRT + LVDS display, sharing up to 32MB dynamic video memory
LAN	Intel 82562 100M Ethernet controller
Audio	AC97 audio
Power Supply	4-pin AT power interface

ECU Interface

Item	specification
LAN	RJ-45 100Mbps
Audio	Audio-Out, Mic-IN, Line IN.
IDE	1 * 40-pin ATA100, support two EIDE devices
I/O Interface	4 * USB 2.0 ports, 1 * parallel port, 8 * serial ports 1 * PS/2 Y-cable keyboard/mouse interface, 1 * 115kbps IrDA interface. 1 * VGA (for Exit PID) 1 * LVDS (for Entry PID)
Disk	Compact Flash socket
Digital I/O	4 channels digital input, 4 channels digital output
Expansion Interface	4 * 30-pin PC104 Plus PCI expansion bus

ECU Electrical Parameter

Item		specification
Input Voltage	12V	
Consumed Current	3A	

ECU Other Parameter

Item	specification
Operating Temp.	0° C ~ 70° C
Operating Humidity	5% ~ 95% RH, non-condensing
Store Temp.	-55° C ~ 85° C
Store Humidity	5% ~ 95% RH, non-condensing
MCBF	15,000H

Module Composition

Module	Mode/Specification
Mother board	CDM-1351
Memory	On-board DDR 512MB
Disk	256MB DOM for usage data, parameter, audit register data storage and application
Memory Card	1GB Compact Flash for OS, backup data storage
OS	Win XP Embedded

Gate Controller Unit (GCU)

GCU board is actual controller of Sector door. It performs major functions of gate controlling and guaranties high performance and reliability of Sector door. GCU is connected to ECU through RS232 interface physically. Also, all of other components GCU controls are connected to GCU through digital input/output.

Main Functions

Gate Passage Control for Passenger

- Gate passage control with passenger detection algorithm
- Receiving authorization command from host controller like an AG ECU
- Allowing authorized passenger to pass AG
- Detecting illegal entrance, wrong way entrance, and tail-gating
- Inhibiting illegal passenger from passing AG Managing Operation Mode
- Entry, Exit, Reversible
- Out of Service, Maintenance, Emergency, Free Pass
- Normal Open, Normal Close

Features

Flexible Passenger Detection Algorithm

- Passenger safety is best priority of gate function.
- Adopting 4 safety sensors around the range of sector door operation.
- Passenger safety algorithm retrieves the barrier when safety sensor is sensed while barrier is operating.

Passenger Safety

- Passenger safety is best priority of gate function.
- Adopting 4 safety sensors around the range of sector door operation.
- Passenger safety algorithm retrieves the barrier when safety sensor is sensed while barrier is operating. Parameterized Control
- It gives a flexibility of operation and user can easily change the rule of gate operation without a program modification

Online/Offline Program Update

- Using simple Y-Modem protocol.
- On-Line Update: program update using serial interface for AG ECU is supported. Once the On-Line Update function is developed at AG main application, it can guarantee that the same version of program is running at one site, and provides concurrent updates of many gates.
- Off-Line Update: program update using debug serial port is supported. Two Available

Types of GCU Command Interface

- Hybrid Type: IO + Serial

IO for 2 passage authorizations and 2 passage acknowledges. Serial line

for gate configuration and monitoring

- Fully Serial Control

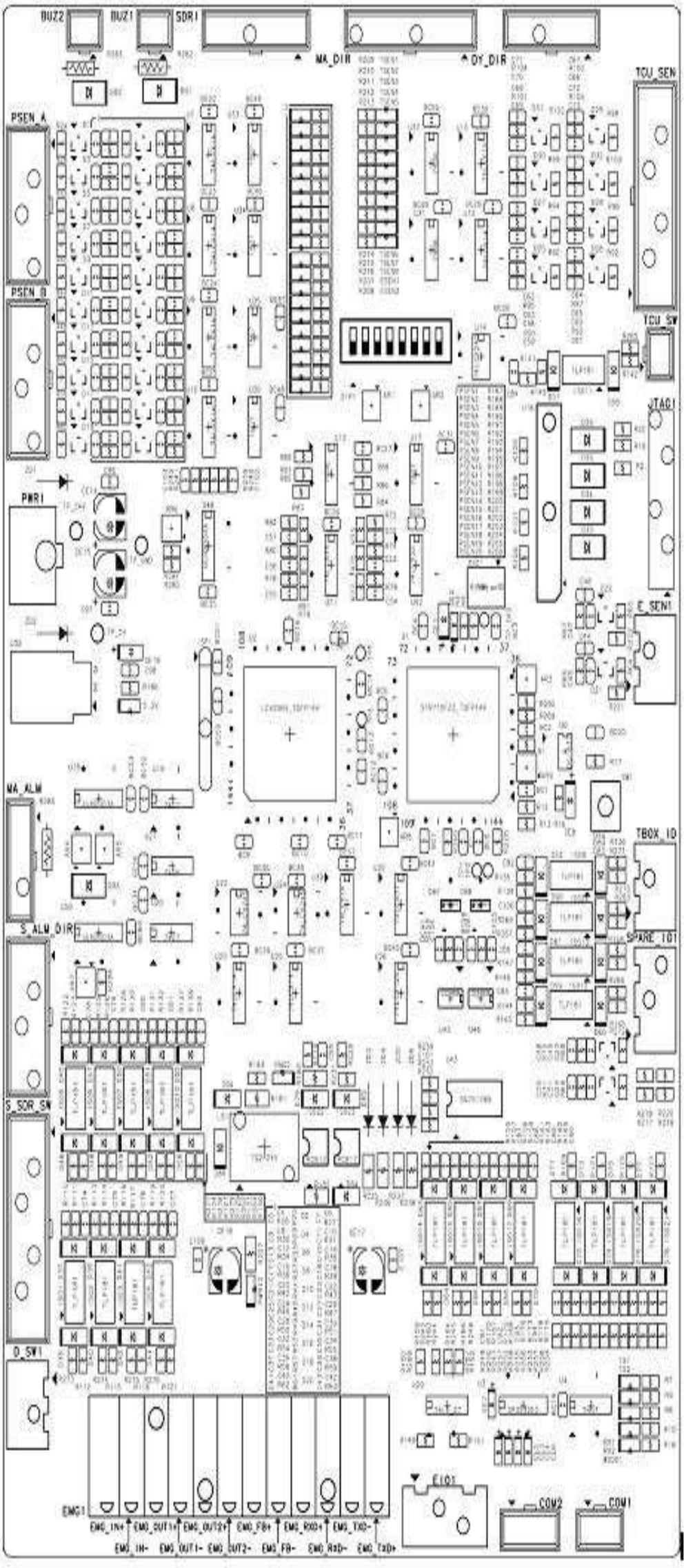
Passage authorization and acknowledge command is sent and received via serial line, so as to saves additional 4 IO lines.

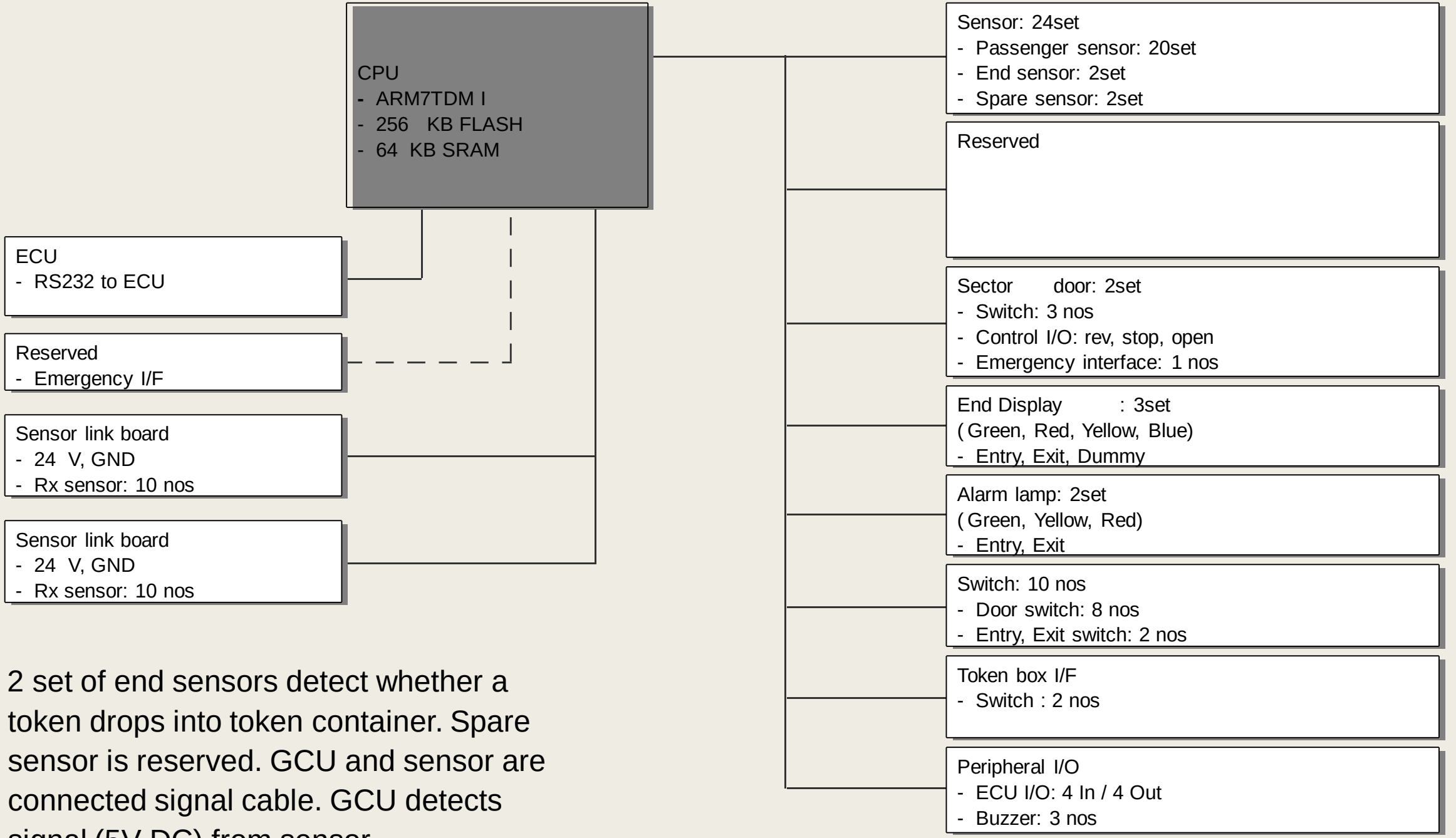
Specification

Electrical specification

Item	Specification
Processor	32 Bit Processor (ARM7TDMI) Internal clock – 44.2368Mhz About 40MIPS (Million Instructions Per Second)
Flash	256KB
SRAM	64KB
Serial Interface	1 External communication(Half-duplex, 57600 bps) 1 Debugging port
Program Download	Program download by serial communication (External port or Debug port)
Command IO	2 Passage authorizations, 2 Passage acknowledges (CPU DIO)
Sub-module IO	20 Inputs for basic passenger sensor 4 spare inputs for optional sensor 2 Groups of 3 outputs for barrier control 2 Groups of 3 inputs for barrier monitoring 2 Groups of 4 outputs for End Display (inc. lamp bar) 2 Groups of 3 outputs for Alarm lamp 1 Input for Emergency input 3 Output for Buzzer 10 Inputs for Door switch and Module switch
Power	DC +5V, +24V

LAYOUT of GCU





2 set of end sensors detect whether a token drops into token container. Spare sensor is reserved. GCU and sensor are connected signal cable. GCU detects signal (5V DC) from sensor.

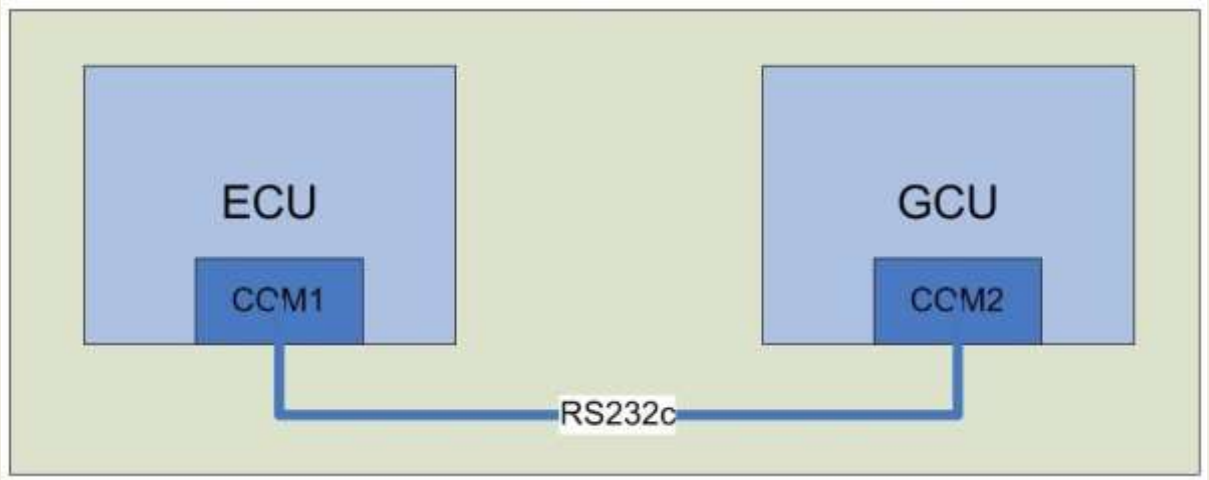
Block Diagram for GCU

Interface with ECU

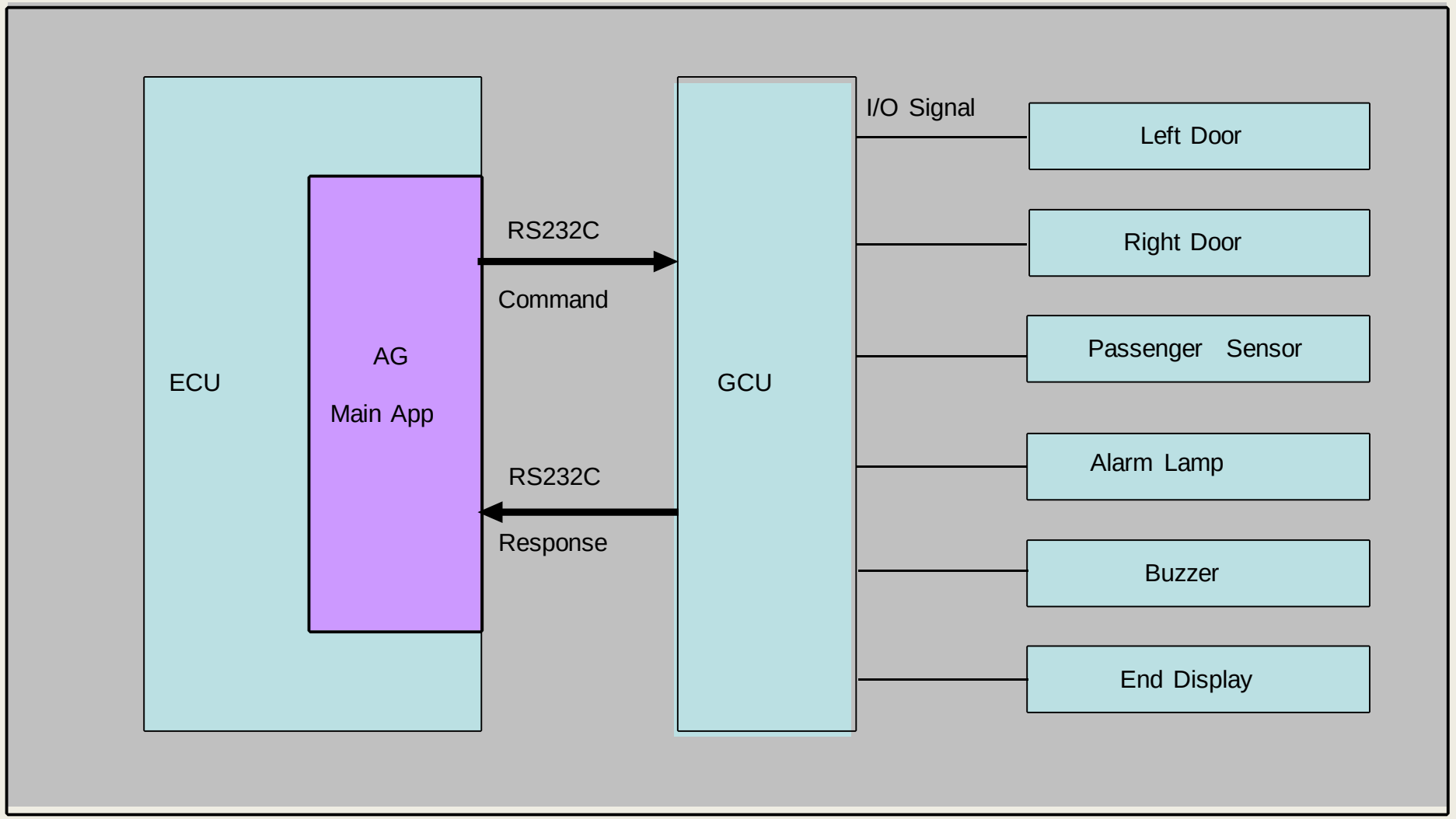
Hardware interface

The interface method between ECU and GCU is RS232. RS232(Recommended Standard 232) is a standard.

The below is an interface block diagram between ECU and GCU:



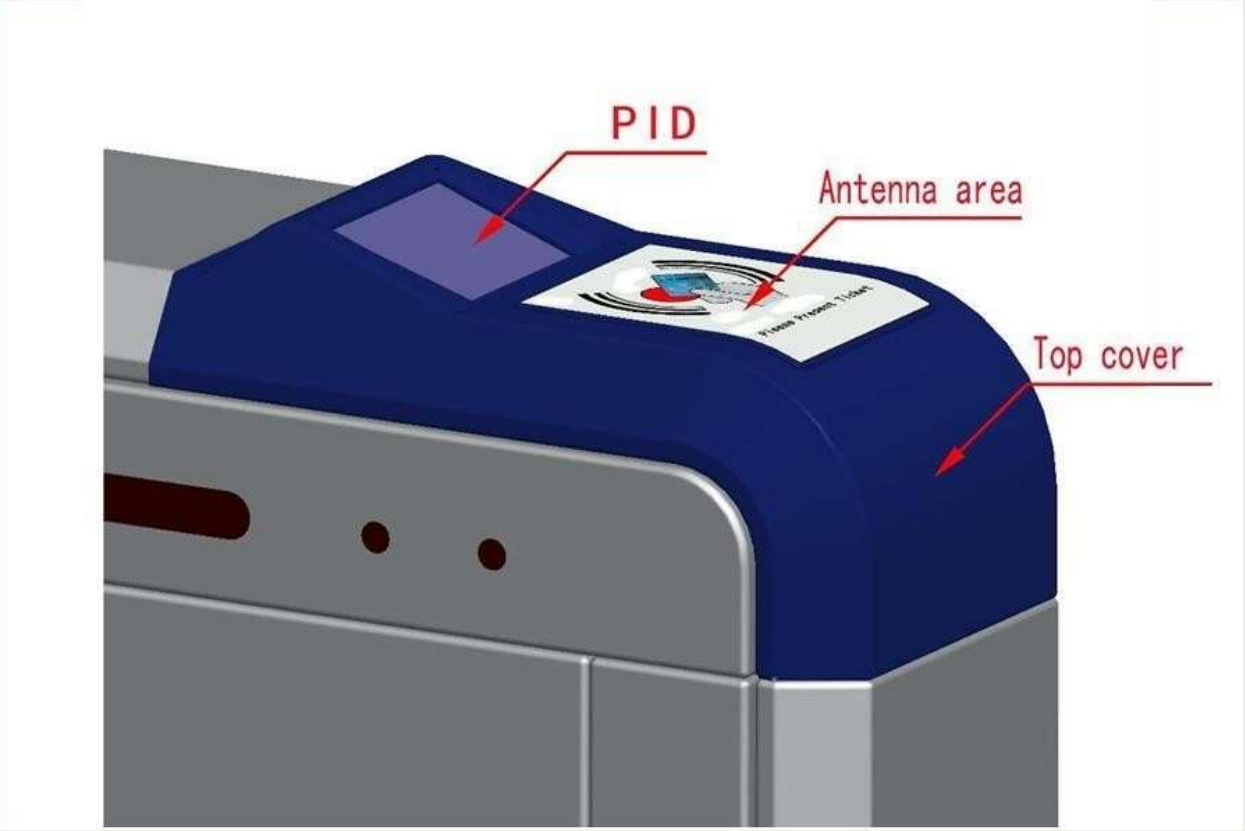
Software interface



ENTRY MODULE

Entry module consists of entry top cover, contactless card reader/writer for CST/CSC, PID (Passenger Information Display).

Entry Top Cover



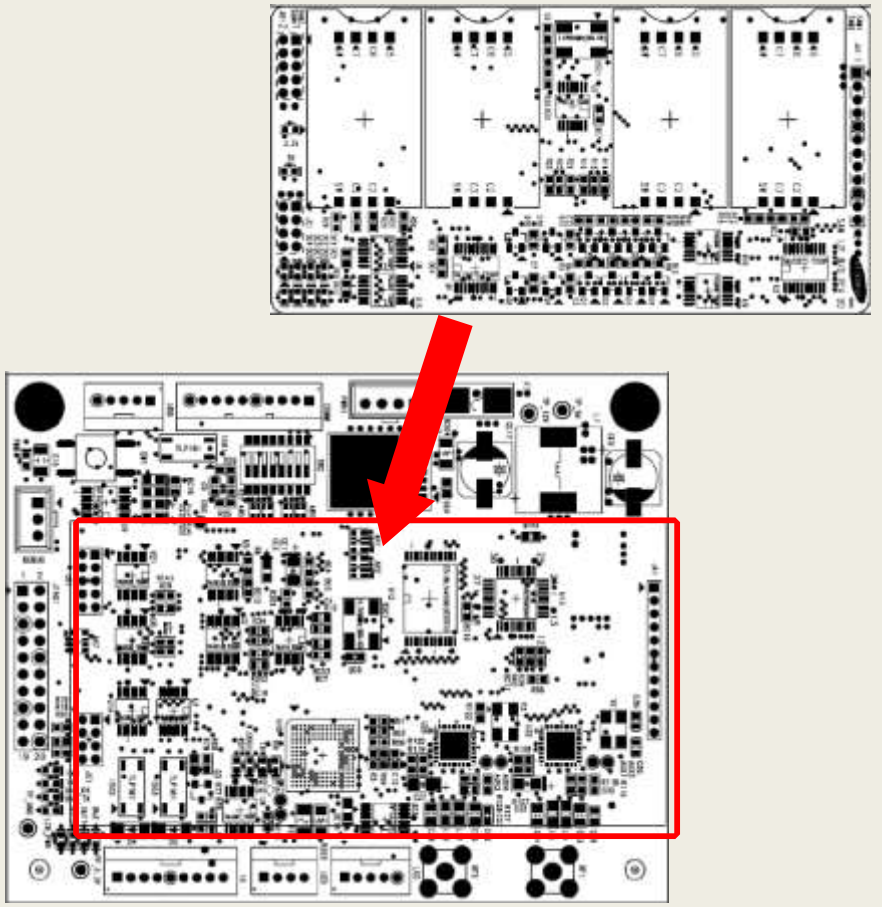
Card Reader-Writer

RF chip is equipped in CSC and CST. Therefore, AG has a Card reader/writer that supports ISO 14443 TYPE A .

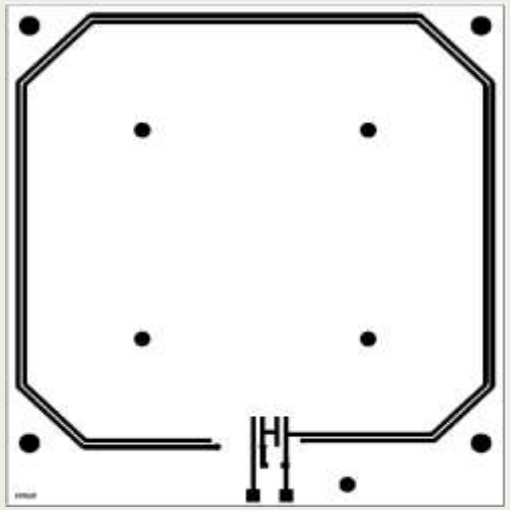
Item	Description
CPU	32bit RISC Internal Flash : 256KB Internal SRAM : 64KB
Communication	RS232 or RS422
Standard support	ISO14443 TYPE A/B Sony FeliCa
Operation Frequency	13.56MHz
Sub-carrier Frequency	847.5KHz
Input Power	DC 12V
Internal Module	4 SIM Socket on SAM Board

SAM Interface

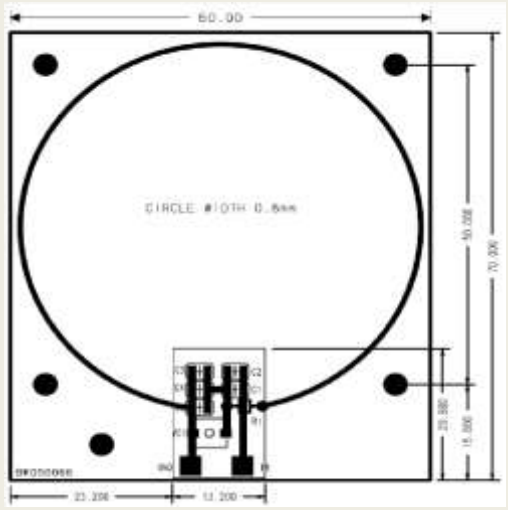
This module includes SAM Interface Board that embeds 4 SIM sockets for each SAM and it will secure and keep key data of the RF card. Each SAM connects to different communication channel. It is processed independently without interference when reads a ticket because it communicates only with related SAM.



Antenna



Panel antenna



Capture antenna

Item	Description
Antenna Type	Loop Antenna for PCB
PCB Dimension	Large: 110.00(W) * 120.00(H)mm Small: 60.00(W) * 70.00(H)mm
Carrier Frequency	13.56MHz
Impedance Matching	50Ω

EXIT MODULE

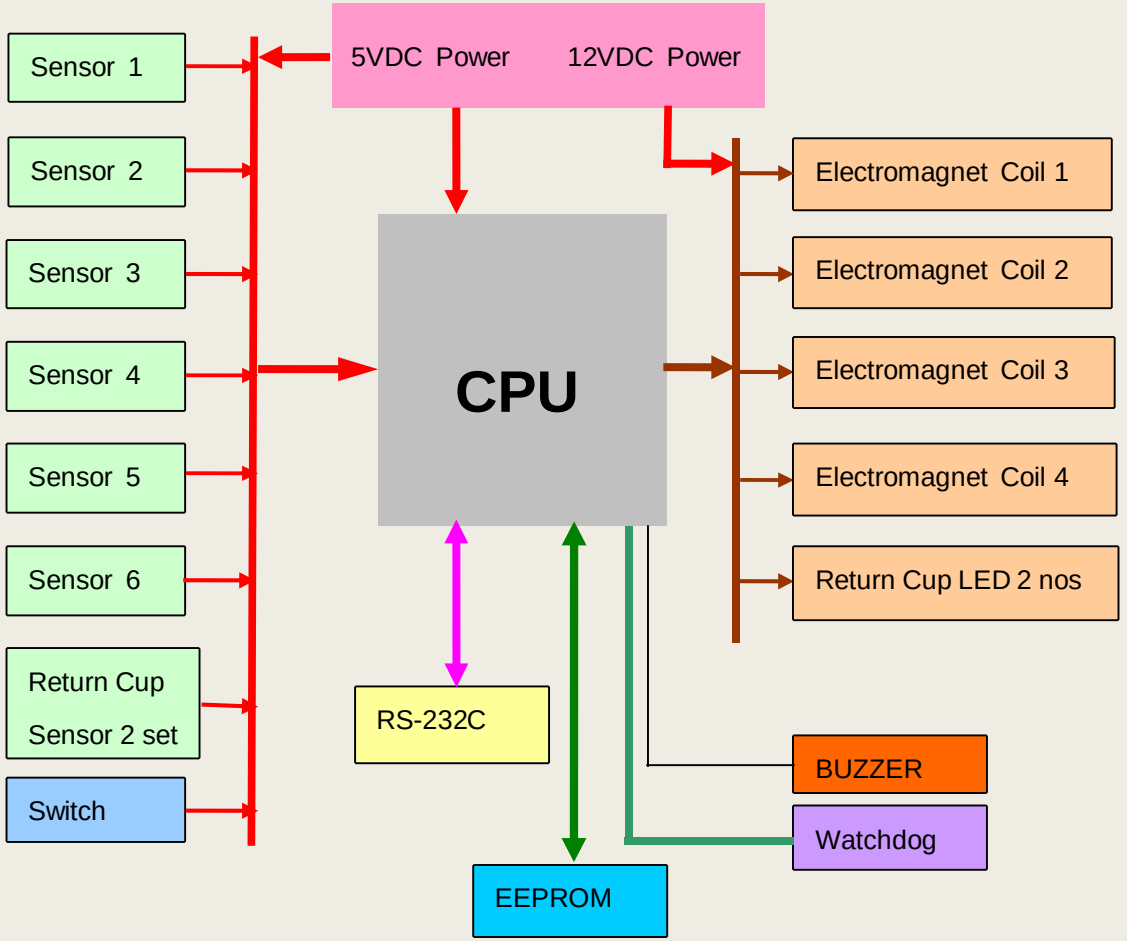
Exit module consists of exit top cover, contactless card reader/writer, TCU (Token Capture Unit), PID (Passenger Information Display). The Exit module is different from the Entry module. It has a token slot and a return cup to collect tokens. If a passenger inserts the invalid token, it is returned to the passenger by return cup

Exit Top Cover

Token capture Unit (TCU)

Token Capture Unit (TCU) will be capable of reading and writing data on token inserted by passenger. It will return or collect a token after checking the validity of token. TCU will be mounted at the Exit Gate.

TCU Block Diagram



FEATURES

The Token Capture Unit (TCU) which is used for capturing the token owns many characteristics as follows

- **Token Slot**
  - Under Out of Service mode, the slot is closed to prevent passenger insert token. The same time, against foreign objects into interior.
  - A passenger can’t push more than two tokens in the slot, because width of slot is only 4mm.
  - After detecting an object, a shutter of TCU is opened.
- **Return Cup**
  - The return cup of TCU module is mounted under the slot.
  - The return cup faced to the passenger, which is obvious and convenient for operation
  - The return cup can prevent token form dropping out of return cup.
  - If a token is returned to cup, relatively message will be displayed to PID for passenger. The PID displays “Remove token from return cup” message and beep and light in return cup.

- **Token Processing**

  - Capture valid CST.
  - Return invalid CST to the passenger.
  - TCU can detect automatically a token jam.
  - Token jam can be easily and quickly resolved by handwork.
  - Single ticket can be processed quickly

  Token captured at Exit AG will be counted and recorded in audit register • Token count accuracy is more than 99.8% in normal operation

- **Token Container**

  - There are two token containers in each Exit AG, which can contain two types of CST. If there are two different token type of CST (Ex. SJT-A, SJT-B) adopted by the Jaipur AFC system, then the Card Reader-Writer of gate will distinguish them and the TCU will direct and properly deposit the CST into the assigned token container only. Therefore, first container will contain only SJT-A, and second container will contain only SJT-B. It can be configurable by local file.
  - If the single type of CST is adopted by the JMRC, AG will deposit the CST in to the second container when first container becomes full.
  - In case of all token containers full, AG stops to operate CST and only operates CSC.
  - Each token container can keep maximum 2000 token.
  - TCU can detect the token captured in the container.
  - When a container is nearly full, (general 75%, changed by parameter), a warning message will be sent to SC.
  - When a container is full, token slot will be closed and a warning message will be sent to SC, AG will stop usage of CST. But in this case, AG can continue to operate CSC.

Principle

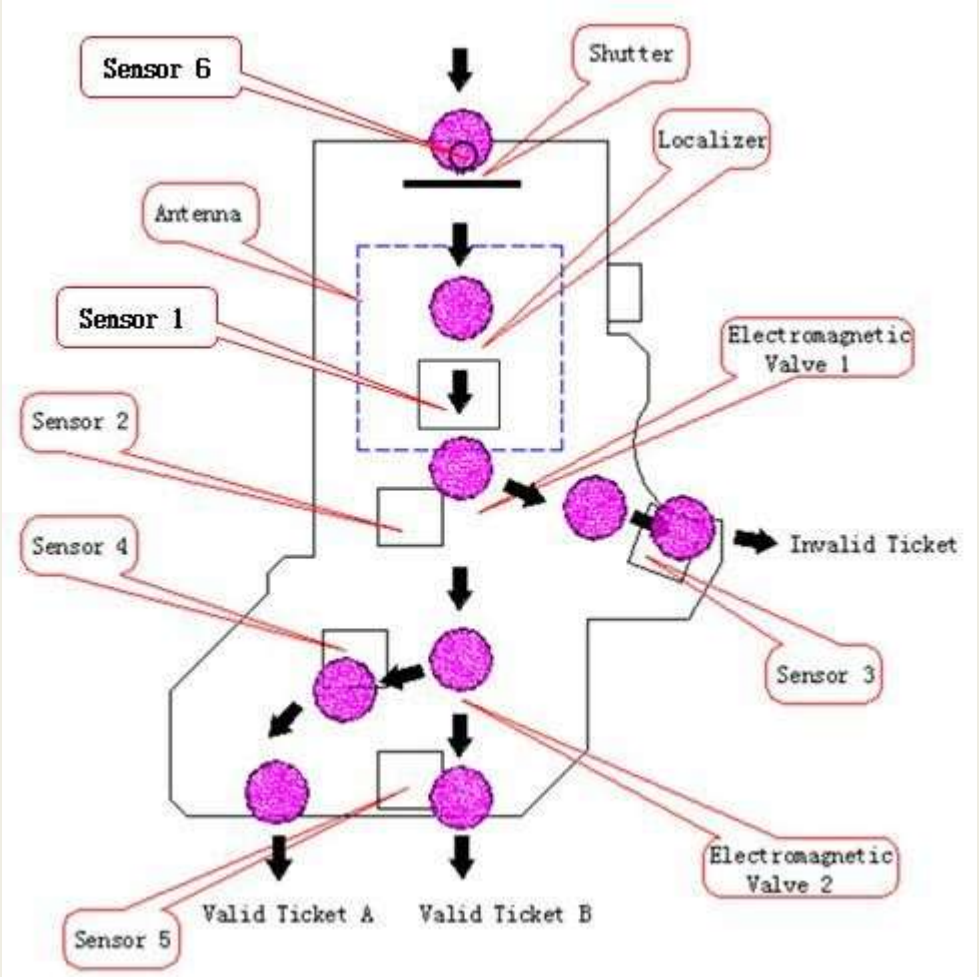
The shutter of TCU is opened only when the Sensor-(6) in figure detects an object.

A token can be inserted into the capturing hole while the TCU enables and the token falls inside of TCU. The falling path is separated into valid and invalid by the shutter. That is, the antenna detects the inserted token. After the Sensor-(1) in figure below detects that the inserted token is placed on the Localizer area, the controller of TCU will process and judge whether the token is valid or not. When the token is judged as valid, the shutter is opened by the Electromagnetic Valve-(1) and the token continues falling down into the token container. The Electromagnetic Valve-(1) keeps forcing the shutter open in order to let the token fall directly while the next tokens are valid.

The Sensor-(2) detects the valid token passing through into the token container. The Electromagnetic Valve-(2) diverts the valid token into the token container 1 and 2. The Sensor-(4) and (5) detects the token passing the path to the token container1 and container 2 respectively.

The Electromagnetic Valve-(1) starts up to let the token falling to the return cup if it’s invalid and the sensor 3 will detect the token passing

- Token Processing Processor



Sector Door

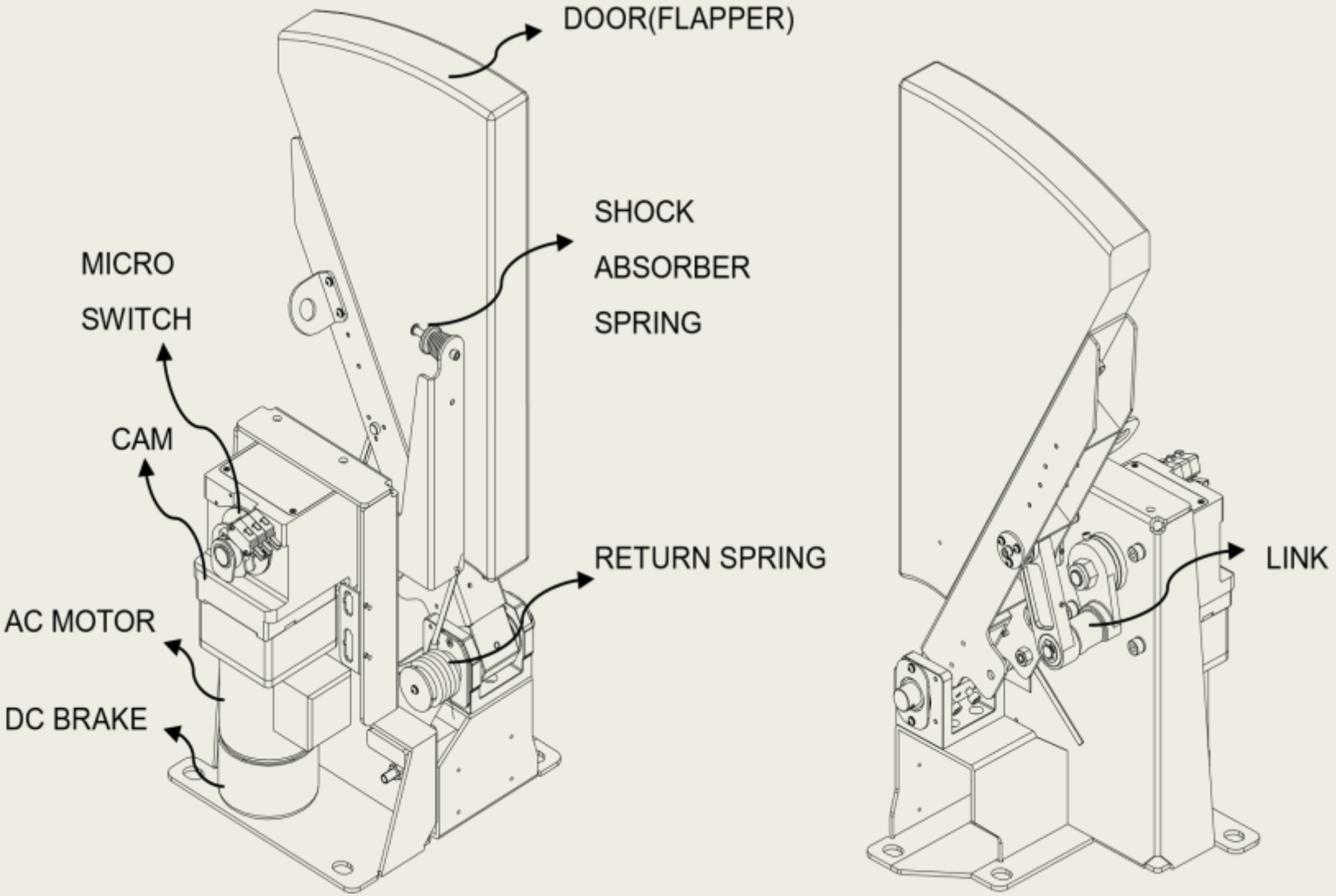
General Description

SECTOR DOOR is used in AGM (Automatic Gate Module) and enables to control passenger in the gate.
It is two kinds of RIGHT and LEFT TYPE, and it is operated by HOST COMMAND SIGNAL of AGM. HOST COMMAND SIGNAL is 4 kinds of OPEN, CLOSE, FREE, LOCK, and it is decided to operate and stop as command of internal three Micro- switches.

Power is supplied AC220V (EXTERNAL AC220V) for driving motor and +24V(HOST DC POWER) for circuit control from outside.

SECTOR DOOR is convenience to set in AGM by simple mechanism and to maintenance and control passenger by fast operation. Also, Function of it is re-operated by AC fail sensor when power breaks by power failure.

Layout of Sector Door



SPECIFICATION

General Specification

Item	Description
Driving Type	LINK, CRANK, MECHANISIM
Opening and Shutting Type	BI-PARTING TYPE
DRIVE UNIT	GEARED AC MOTOR & DC BRAKE
Mode of DOOR operation	NORMAL OPEN & NORMAL CLOSE
Position control method	Three of MICRO LIMIT SWITCHES
Command Type	INPUT SIGNAL of TTL-LEVEL
EMERGENCY Type	Emergency Switch Operation / Automatic Door Open

Electrical Specification

Item	Description
MCU	16-Bit Microprocessor (dsPIC30F4011, Microchip)
MEMORY(Internal)	48 Kbytes on-chip Flash program (16K instruction words) 2 Kbytes of on-chip data RAM 1 Kbyte of nonvolatile data EEPROM
Serial Interface	1 Debugging Port
Command I/O	3 Control Signal(Input), 3 Micro-switch status(Output) 1 Emergency Signal(Input)
Motor	Speed control Drive of AC Motor
Brake	ON/OFF, Chopping Control Drive
Motor Drive Power	External AC 220V / 50Hz
Board Power	External DC +24V(±3%) / 3.5A
AC Fail Detection	Fail detection of AC 220V Level by comparator using
Emergency	Detection of Emergency ON/OFF

MAIN FUNCTION

❑ NORMAL OPERATION

Door is opened and closed through rotation of Link by HOST COMMAND OPEN / CLOSE SIGNAL of AC GEARED MOTOR.

Operation of opening and closing is with BRAKE control by COMMAND SIGNAL of Host, status of three MICRO switches and AC Power.

(Reference: “HOST COMMAND INTERFACE“ for Command signal and Interface.)

❑ AC FAIL OPERATION

AC FAIL DETECTION is checked of Normality operation for EXTERNAL AC220V to supply the SECTOR DOOR, and if it is AC FAIL(Power failure or Power instability), it is changed to “FREE status” regardless of external Command Signal, and if is normally operated, it is operated again by Command Signal.

❑ SAFETY AND CONVENIENCE

SECTOR DOOR consists of followings for stability and convenience for passenger and system.

- Polyurethane material of non-flammable
- Internal reinforcement structure of high elastic material
- The DOOR edge of flexible material for the passenger protection and safety.
- Structure design for the convenient maintenance

❑ MONITORING

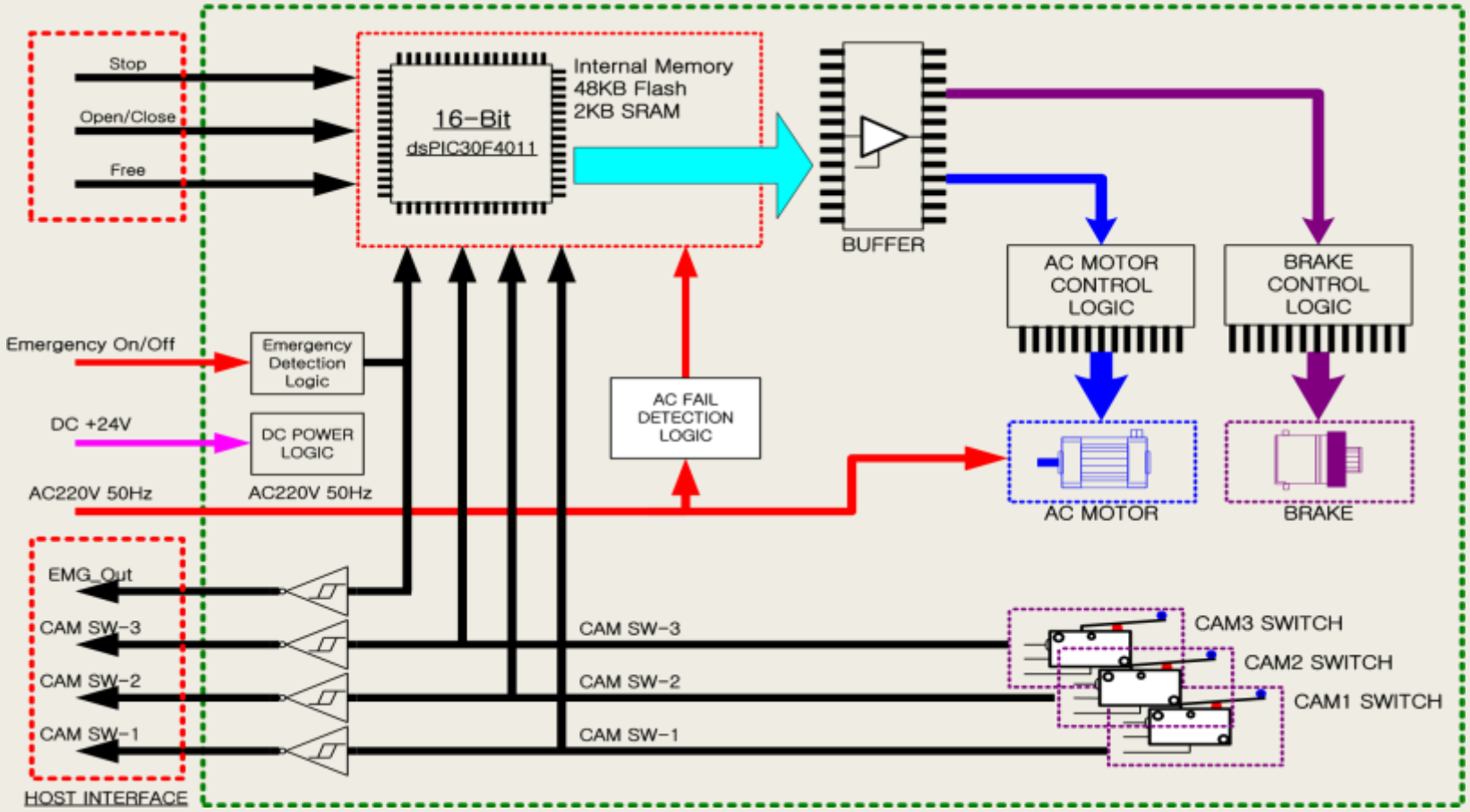
It is used RS232C of communication port to monitor the operation of SECTER DOOR (status of MICRO SWITCH and operation).

- PARAMETER SETTING
- BAUD RATE : 19200 bps
- DATA bits : 8 bit
- PARITY : NO PARITY
- STOP bit : 1 STOP bit

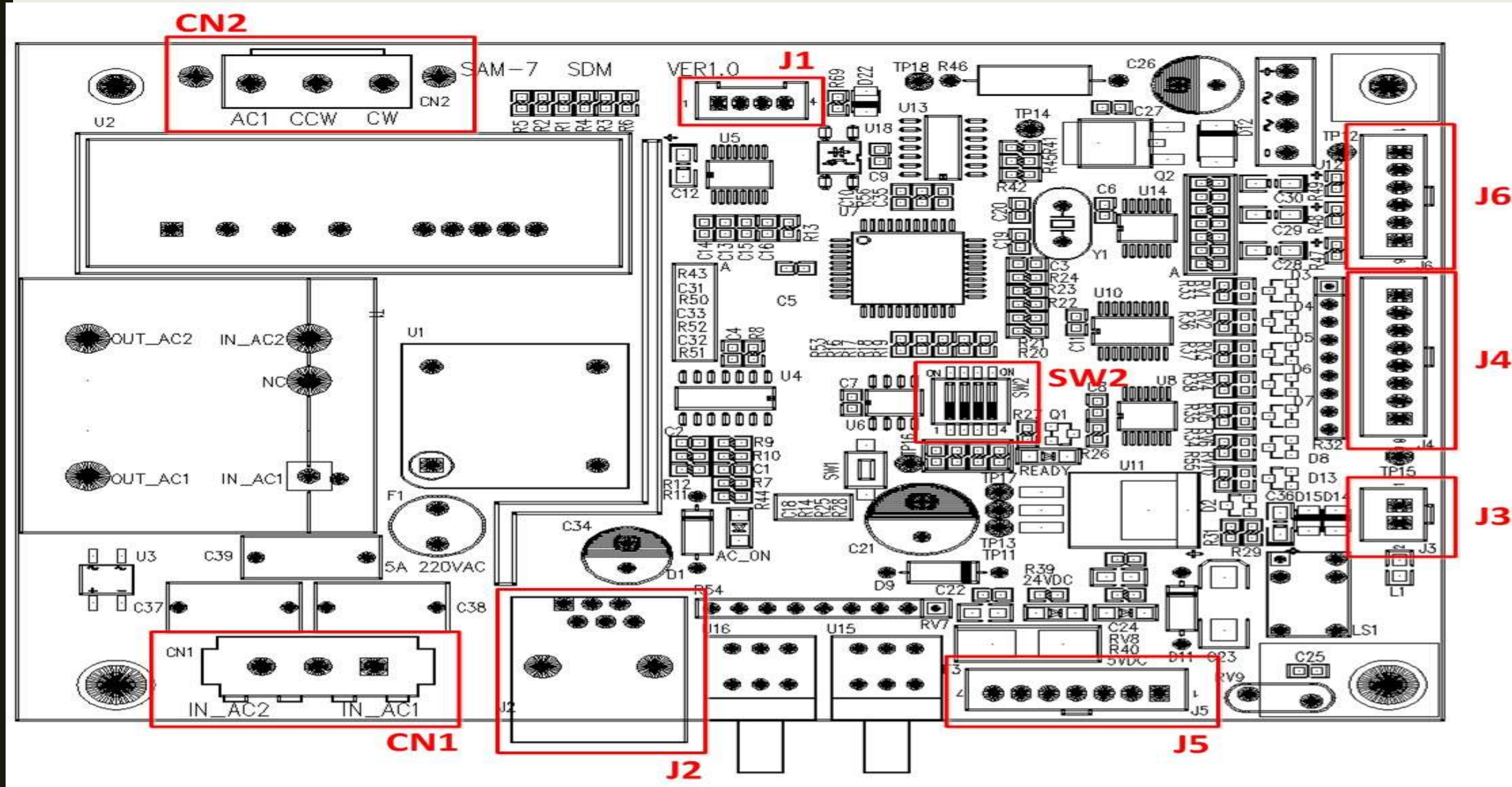
❑ LOW NOISE & LOW VIBRATION

4.0 T thickness fame, and spiral bevel gear of Motor assy, and AC motor that is possible fourth / backlashing minimize noises and vibrations by the least operation area of the link and retardation section

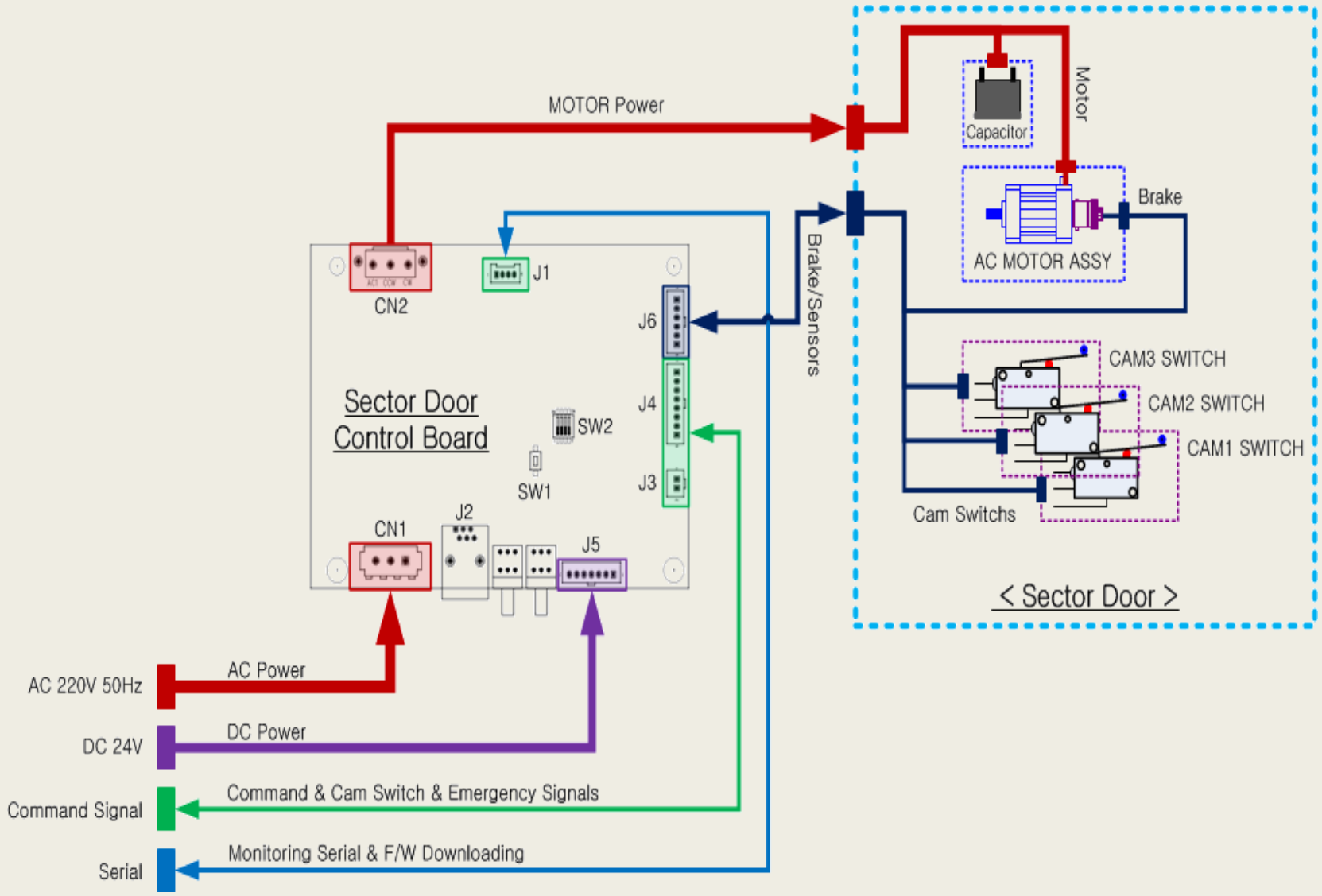
❑ BLOCK DIAGRAM (Hardware)



❑ INTERFACE AND CONNECTORS



❑ CONNECTION DIAGRAM / CABLES

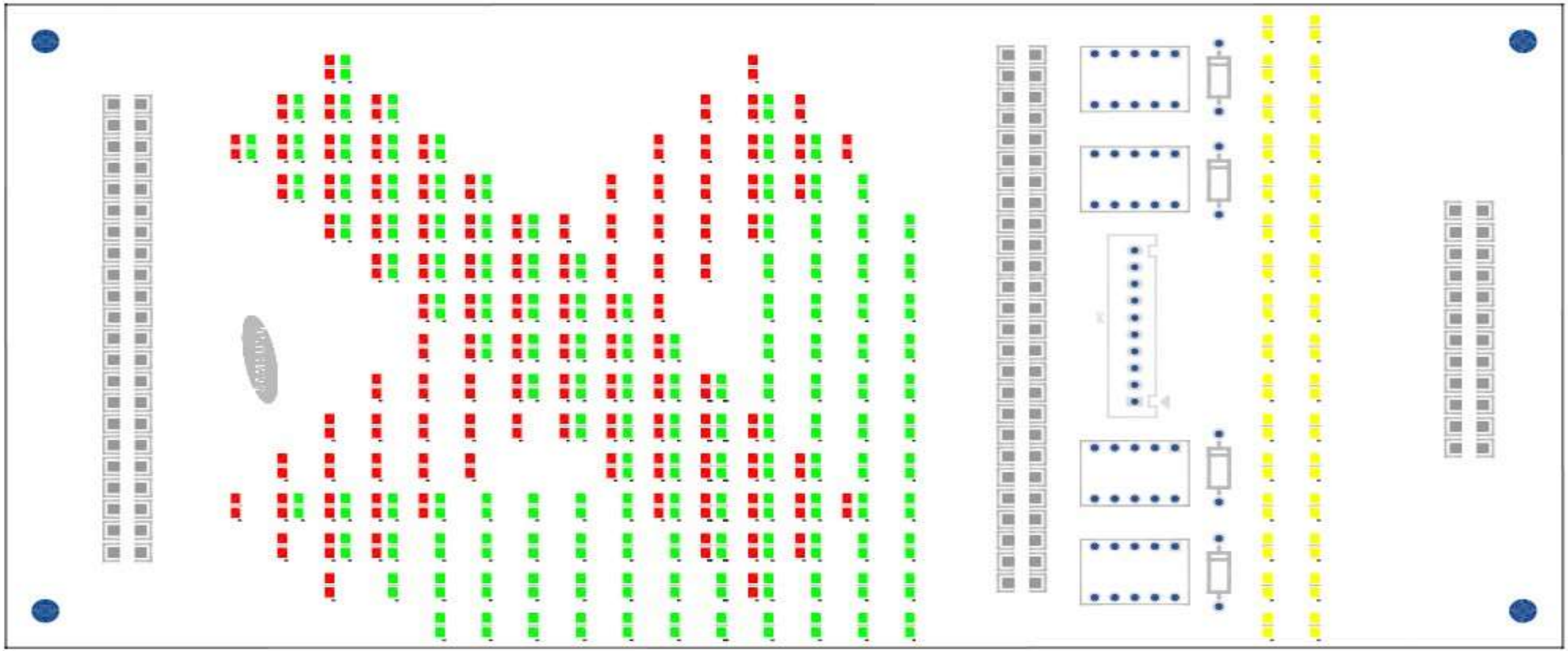


END DISPLAY

General Description

A purpose of the End Display is to verify entering and no entering by the eye.

In other words, at a processing state, End Display displays “X” which means no entering. At a idle state, it displays “↙” which means entering.



PCB Layout of End display

PASSENGER DETECTING SENSOR

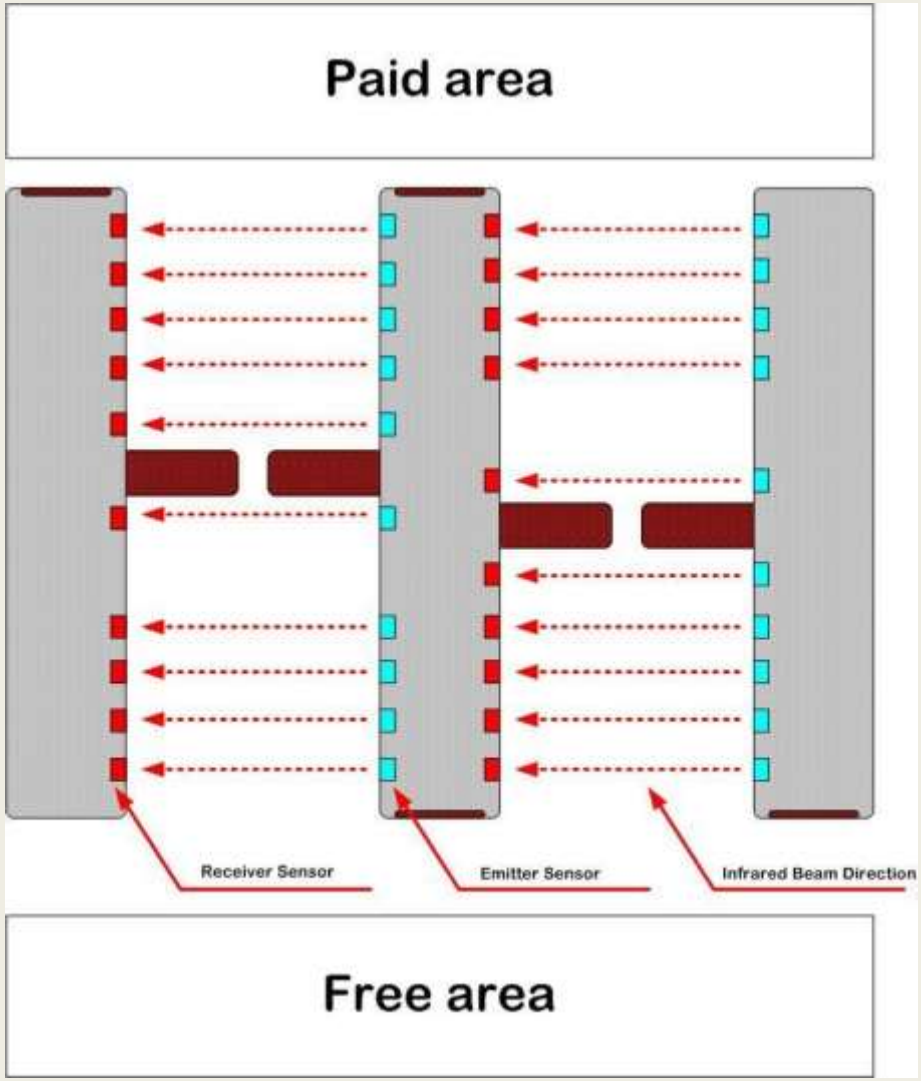
❑ Sensor Configuration

Passage detection sensors are located on the gate to detect the position and the direction of the passengers. The passenger detection is performed by through beam photoelectric sensors. A material of sensor detecting is infrared beam.

A set of emitters and receivers are attached in the aisle side of the gate as shown in the above Figure and they detect the cut off of the optical beam by receivers when passenger passes.

The photocells are positioned in such a way that they can discriminate between the passage of one or more passengers.

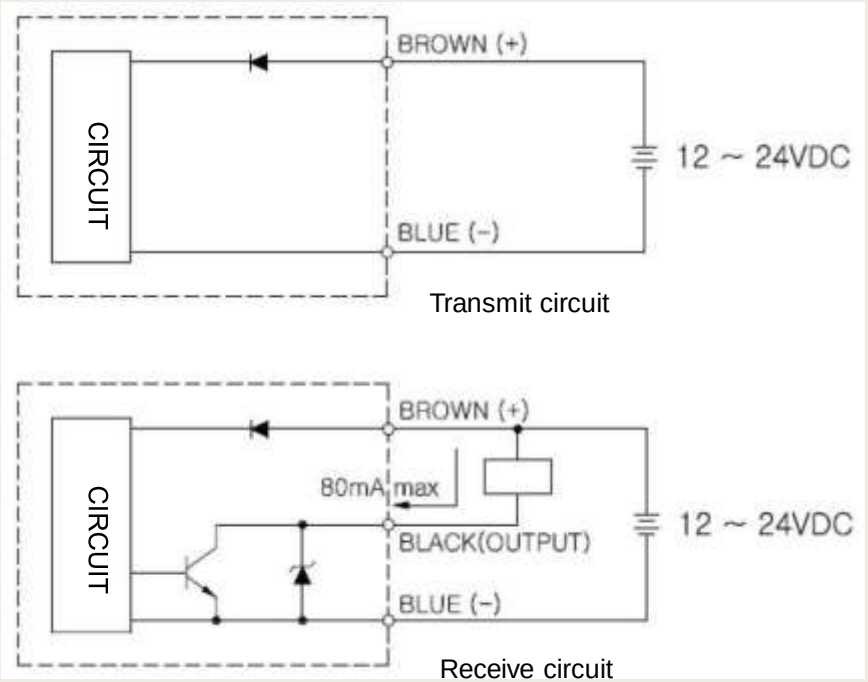
GCU is using 20 sets of photoelectric sensors for correct monitoring the passenger who pass the gate.



❑ Specification

Sensor Layout

Sensor Circuit



BUZZER

A purpose of the buzzer is to verify passenger's card processing by hearing. If it is valid, there is a one beep sound. If not, there are three beep sounds. If illegal passenger is detected, there are continuous beep sounds.

Specification

No.	Item	Specifications
1	Rated Voltage	12VDC
2	Operating Voltage	3~20VDC
3	Max. Rated Current	20mA at 12VDC
4	Min. Sound Pressure Level	90dB at 12VDC/30cm
5	Resonant Frequency	2.8±0.5KHz
6	Tone Nature	Continuous
7	Case Material	ABS
8	Operating Temperature	-20~+60℃
9	Store Temperature	-30~+70℃
10	Weight	13g

ALARM LAMP

A purpose of the Alarm lamp is to display whether a passenger's card processing is valid or not. There are three colors. A "Green color" is for the valid card processing and A "Red color" is for the invalid card processing. A "Orange (Yellow) color" is for special case like high security.

Specification

Item	Description
LED Colors	Yellow (Orange) / Red / Green LED
Display Dimension	210 (L) x 30 (W) mm Diode Outside : 5 mm
Lamp Cover Dimension	154.6 (L) x 46.6 (W) x 17.0 (H) mm
Lamp Cover Material	PC
Input Voltage	DC24V

Power Supply Unit (PSU)

General Description

Power Supply Unit (PSU) converts AC into DC power. It supplies source of electricity for module to operate reliability. Following function will be provided:

- Input protection
- Output regulation
- Output protection
- Power supply

Power supply unit (PSU) was designed to a module in order to mount and maintenance easily.

Specification

	Model		Specification		
Input	Voltage (V)		AC176 ~ 265		
	Frequency (Hz)		50/60Hz ±2.5Hz		
	Inrush Current (A)		I≤30A @Io = 100% at cold start		
	Leakage Current (mA)		0.3 max ACIN 230V 50Hz According to IEC60950-1		
Output	Rated Voltage (V)		5.3	12.5	24
	Rated Current (A)		10	12	12
	Line Regulation		1%	1%	1%
	Load Regulation (Load: 0~100%)		1%	2%	2%
	Ripple & Noise (mVp-p)	0 to 55℃	1%	1%	1%
	Drift (mV)		1%	1%	1%
	Output Voltage Setting (V)		5.0 to 5.3	11.5 to 12.5	23.5 to 25
	Voltage Tolerance (%)		±1%		
	Start-up Time (ms)		100ms @230V AC		
	Hold-up Time (ms)		10ms @230V AC Io = 100%		

DSM (Data Security Module)

Specification

DSM is made up of DSM READER and SIM CARD. SIM CARD which is used in DSM complies with ISO7816.

DSM READER provides DSM function by inserting SIM TYPE CARD inside itself and connecting it to PC or ECU.

THANK YOU