PM-100

Rev.1

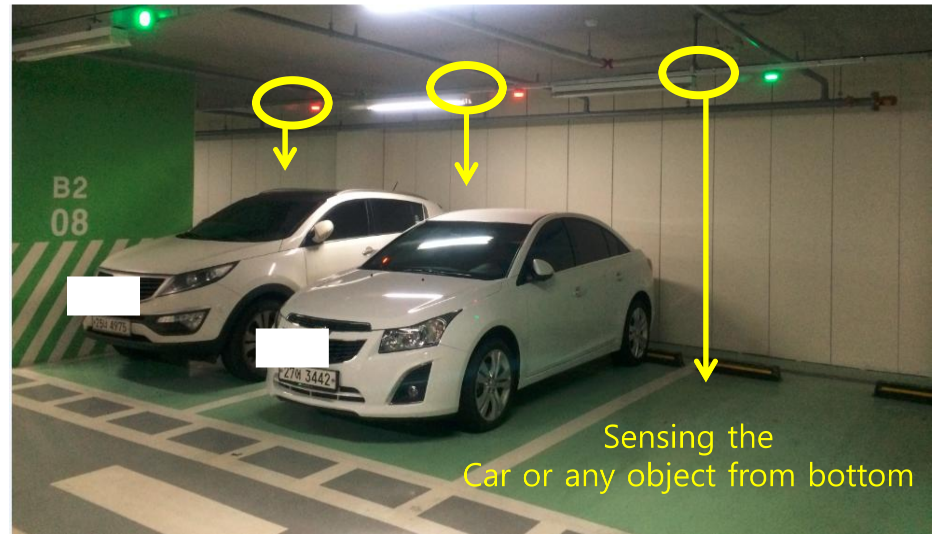
2014.12.03

■ Introduction

- This product installed at top of celling or inside building that sensing the object there are something or not by color of the lamp (Red: Occupied / Green: Vacant) and signal to communicate to controller.

■ Feature

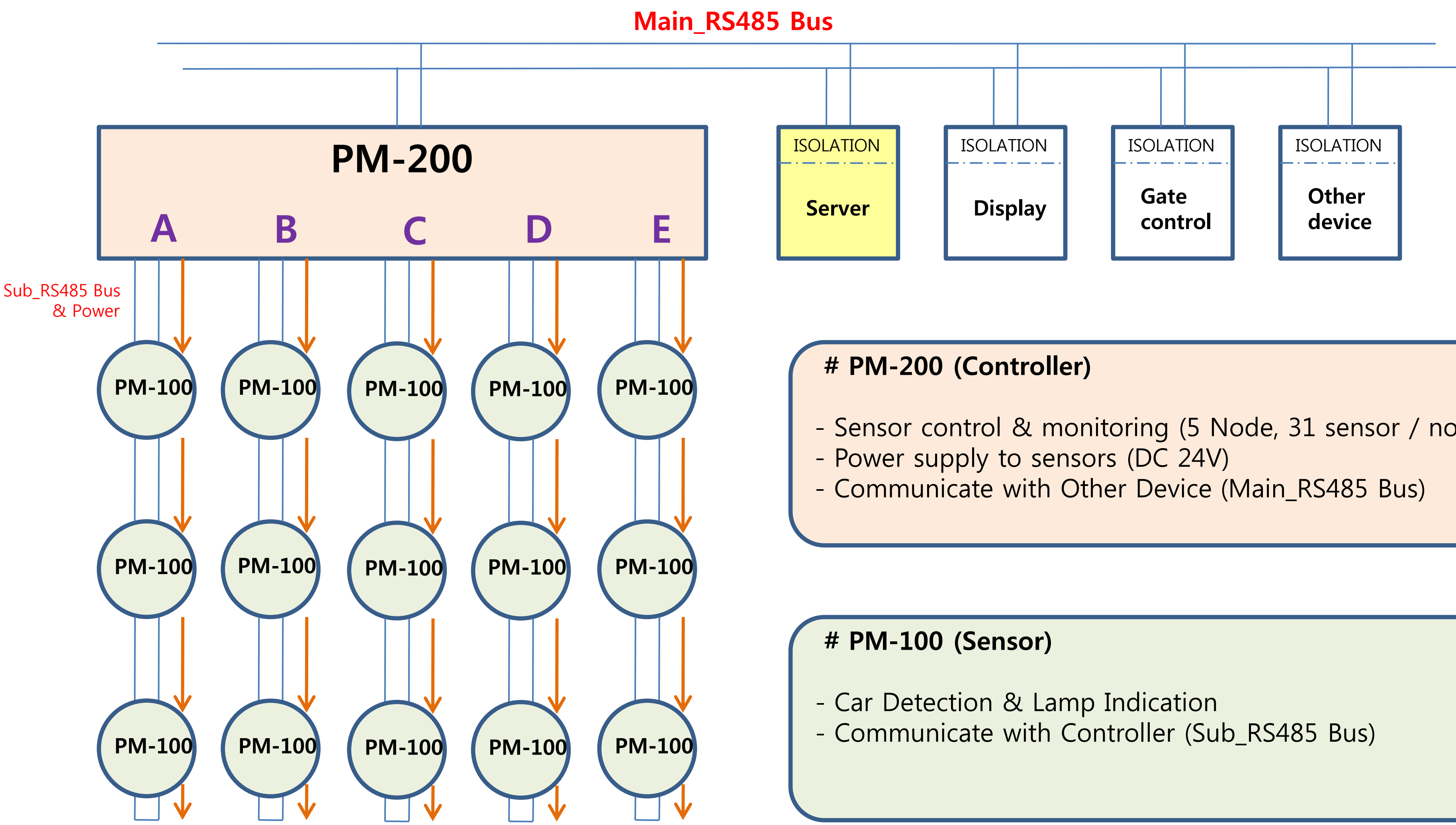
- Temperature Compensation.
- Controller & each sensor connect with 4P Cable
- Mostly no error of using sensor detecting the bottom
- Extend cable available of using RS485 communication
- PM-100 (Sensor with LED) support [R, G, B] 3 color built in



■ 사 양

항 목	사 양	비 고
Sensing method	초음파 감지	48KHz
Installing position	주차면 상단 Race-Way	옥내
Installing height	1 ~ 4 m	
Operating temperature	-30 ~ 70 ℃	
동작 전압	DC 24V	10 ~ 25V
소비 전력	0.5 ~ 1.5 W	
표시 방식	3색 램프	(R, G, B) LED 내장
연결 방식	4P 케이블	커넥터 사용
통신 방식	RS485	Max 32 unit / node
배선 거리	최대 300 m	
동작 모드	원격 제어	
설정 방식	통신 명령	
ID 설정	5P Dip Switch	0 ~ 31
외형 치수	지름 85 mm 원형 x 높이 60 mm	

■ 시스템 구조



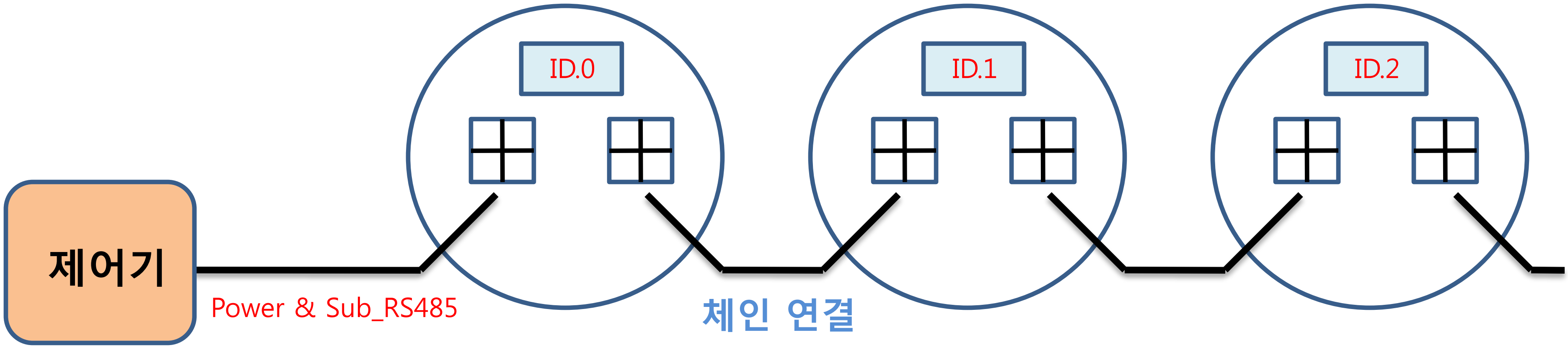
 # PM-200 (Controller)

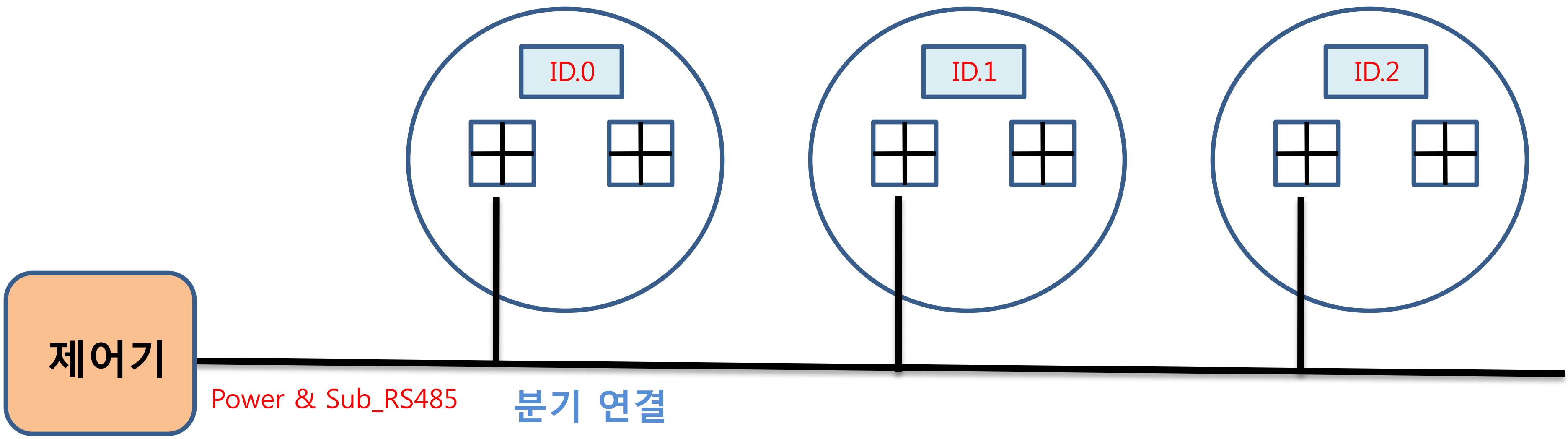
- Sensor control & monitoring (5 Node, 31 sensor / node)
- Power supply to sensors (DC 24V)
- Communicate with Other Device (Main_RS485 Bus)

 # PM-100 (Sensor)

- Car Detection & Lamp Indication
- Communicate with Controller (Sub_RS485 Bus)

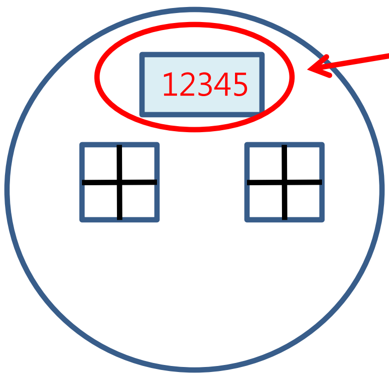
■ 배선 방식


ID.0
ID.1
ID.2
제어기
Power & Sub_RS485
체인 연결


ID.0
ID.1
ID.2
제어기
Power & Sub_RS485
분기 연결

■ 센서 ID 설정

- 5p Dip SW 로 [ID.0 ~ ID.31] 까지 <u>배선 연결 순서에 맞춰 센서마다 1씩 증가시키며 설정</u>

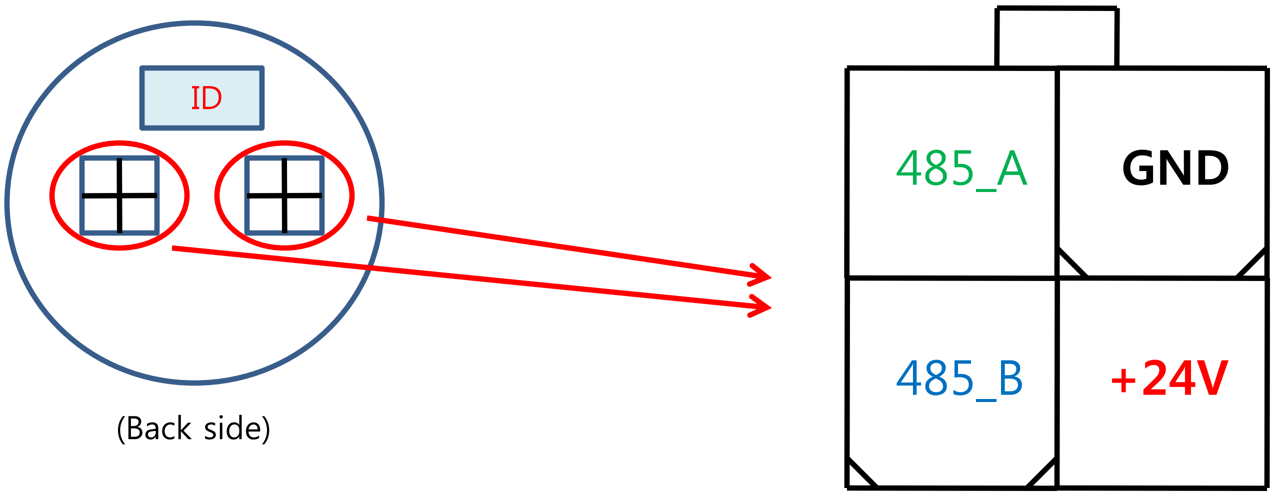


12345	ID	12345	ID
00000	0	10000	16
00001	1	10001	17
00010	2	10010	18
00011	3	10011	19
00100	4	10100	20
00101	5	10101	21
00110	6	10110	22
00111	7	10111	23
01000	8	11000	24
01001	9	11001	25
01010	10	11010	26
01011	11	11011	27
01100	12	11100	28
01101	13	11101	29
01110	14	11110	30
01111	15	11111	31

※ 1: Switch ON, 초기상태: 00000

■ 케이블 신호

- 설비의 배선으로 장치들간에 연결되는 4P 케이블의 신호 내역은 다음과 같다



■ 통신 사양

- RS485 통신 라인에 연결된 각 장치들은 반이중 방식으로 통신한다

- 19200 bps, 1 Start, 8 bit Data, NO Parity, 1 Stop, NO Flow Control

- 송/수신 데이터 패킷은 아스키 텍스트 코드로만 이루어진다 (터미널 에뮬레이터 사용 가능)

■ 제어기(PM-200) → PM-100 통신 패킷 구조

Byte	1	2	3	4	5	6	7	8	9	10
	'M'	'0'	'0'	'0'	'0'	'0'	'0'	'0'	'0'	[CR]
	Start Mark	TARGET ('00' ~ '31') or ('99') Broadcast		CMD	DATA ('000' ~ '999')			CheckSum (00 ~ FF) Byte 1 ~ 7 sum (Hexa Text)		End Mark (0x0D)

Lamp Mode	차량 무	차량 유
0	GREEN	RED
1	GREEN	OFF
2	OFF	OFF
3	BLUE	RED
4	BULE	OFF
5		
6		
7	RED	RED
8	GREEN	GREEN
9	BLUE	BLUE

CMD		DATA	
'1'	Ground Set	0	→ Require 3 Valid Sensing before this command
'2'	Ground Time Manual Set	50 ~ 260	→ 5 ~ 26 msec (0.1 msec unit)
'3'	Saved Ground Time Report	0	
'4'	Active Time Set (0.1 msec)	1 ~ 50	→ ± [0.1 ~ 5.0] msec
'5'	Saved Active Time Report	0	
'6'	Lamp Mode Set	0 ~ 9	
'7'	**Remote Control Command**	0 ~ 9	→→→→ '0' : Sensing & No Report '1' ~ '4' : Sensing & Status Data Report '5' : Sensing & Raw Data Upload '6' : Instant Lamp OFF '7' : Instant RED ON '8' : Instant GREEN ON '9' : Instant BLUE ON
'8'	Firmware Version Report	0	

※ 수신된 패킷의 Start Mark 가 **소문자 'm'** 일 경우, 센서는 뒤의 CheckSum 확인 과정 건너뜀 (CheckSum 값 무시)

SENSORTEC
ULTRASONIC SENSOR TECHNOLOGY

■ 제어기(PM-200) ← PM-100 통신 패킷 구조

Byte	1	2	3	4	5	6	7	8	9	10
	'S'	'0'	'0'	'0'	'0'	'0'	'0'	'0'	'0'	[CR]
	Start Mark	Device ID [00 ~ 31]		TYPE	DATA (000 ~ 999)			CheckSum (00 ~ FF)		End Mark
								Byte 1 ~ 7 sum (Hexa Text)		(0x0D)

TYPE		DATA
'1'	Ground Setting Result	xxx
'2'	Ground Time Manual Setting Result	xxx
'3'	Saved Ground Time Reply	xxx
'4'	Active Time Setting Result	1 ~ 50
'5'	Saved Active Time Reply	1 ~ 50
'6'	Lamp Mode Setting Result	0 ~ 9
'7'	**Remote Control Result**	xxx
'8'	Firmware Version Reply	xxx

→

Remote Control	
0	Sensing & No Report (Lamp Control Only)
1	**Sensing & Parking State Report (0 or 1)**
2	Sensing & Object Distance Report [cm]
3	Sensing & Detect Time Report [0.1 msec]
4	Sensing & TEST DATA Report
5	Sensing & AD RAW DATA Report
6	Instant Lamp OFF
7	Instant RED ON
8	Instant GREEN ON
9	Instant BLUE ON

■ Dimension [mm]