PD/SW ECR PROTOCOL

(V1.4)

Update : 2013/04/01
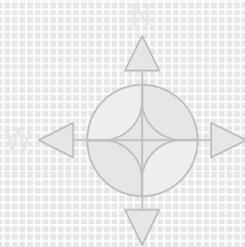
CHANGE HISTORY

Date	Version	Issue
2011/10/17	1.0	Type-7 추가 - R&D Center 김광현
2012/11/07	1.1	Type#6 Weight에 Decimal Point 추가 – AP Protocol과 동일하게 함
2013/02/13	1.2	Type#4,6 PD-2와 동일하게 Weight Unit(kg, lb, oz, g) 소문자로 변경
2013/02/22	1.3	Type#12 Dialog6 프로토콜 추가
2013/06/13	1.4	Type#5 프로토콜 추가
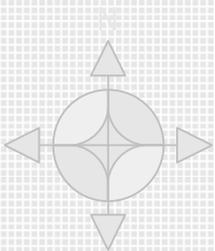
Transmission Data Description

Data	Hex	Description
SOH	01h	Start of heading
STX	02h	Start of Text
STA	53h, 55h	S(53h) : Stable, U(55h): Unstable
SIGN	2Dh, 20h	Sign of the weight data(2Dh-'-', 20h-' ')
W5~W0		Weight data
P7~P0		Total Price data
U7~U0		Unit Price Data
PN4~PN0		PLU number data

Data	Hex	Description
UN1~UN2	KG, LB	Unit of weight
BCC		Block check character(exclusive or - ^)
ETX	03h	End of text
EOT	04h	End of transmission
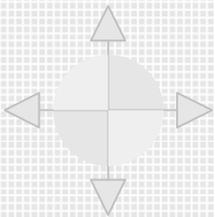
ECR Type#0, #1

ECR

SCALE

1byte
ENQ (05h)

→

1byte
ACK (06h)

Or

1byte
NAK (15h)

←

1byte
DC2 (12h)

→

Prefix(1byte)	1byte	Weight(5byte)	Subfix(2byte)	
STX (02h)	ID	W4 ~ W0	BCC	ETX

Weight Value Data Format

←

BCC has all data bytes except
STX and ETX through exclusive OR(XOR)

Or

2kg : G(47h)   5lb   : K(4Bh)
5kg : H(48h)   10lb : L(4Ch)
6kg : C(43h)   15lb : F(46h)
10kg : I(49h)   20lb : M(4Dh)
15kg : A(41h)   30lb : D(44h)
20kg : J(4Ah)   50lb : N(4Eh)
25kg : P(50h)   60lb : E(45h)
30kg : B(42h)
60kg : O(4Fh)

Scale Type Identifier

1byte
BEL (07h)

When weight is zero.

Or

1byte
NAK (15h)

RS-232c Configuration	
Databit	7
Parity	Even
Stop Bit	1
Baudrate	9600bps

★ Response time : Typicaly 50ms, max 150ms

Most P.O.S, ECRs and Some TEC P.O.S system

ECR Type#2

ECR   **SCALE**

1byte
'W' (57h)

Request Weight Value →

← Weight Value Data Format

Prefix(1byte)	Weight(6byte)	Subfix(1byte)
STX (02h)	W5 ~W0	CR (0Dh)

Or

← Error Value Data Format

Prefix(1byte)	1byte	1byte	Subfix(1byte)
STX (02h)	'?' (3Fh)	STAT	CR (0Dh)

STATus Byte

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
PARITY Bit	Always 1	X	ZERO	X	Minus	Over Load	Motion

Or

1byte
'X'

Wrong Request Command

RS-232c Configuration	
Databit	7
Parity	Even
Stop Bit	1
Baudrate	9600bps

★ Response time : Typicaly 50ms, max 150ms

SHARP ER-Axxx, ER-A450T, New SANYO ECRs using RS-232, TOLEDO 3212, etc.

ECR Type#4

Unit of Weight

kg : 6Bh 67h
lb : 6Ch 62h
oz : 6Fh 7Ah
g : 67h 20h

ECR

1byte	1byte
'W' (57h)	CR (0Dh)

SCALE

Request Weight Value →

Weight Value Data Format ←

Prefix(1byte)	1byte	1byte	1byte	1byte	1byte	1byte	1byte	1byte	Subfix(1byte)
LF (0Ah)	W4	W3	'.' (2Eh)	W2	W1	W0	UN1	UN2	CR (0Dh)

Variable Position

And

STATUS DATA Format ←

Prefix(1byte)	1byte	1byte	1byte	Subfix(2byte)	
LF (0Ah)	'S' (53h)	B1	B2	CR (0Dh)	ETX (03h)

Simplified Status Codes

B1	B2	Status Definition
'0'(30h)	'0'(30h)	OK
'1'(31h)	'0'(30h)	Motion
'2'(32h)	'0'(30h)	Scale at Zero
'0'(30h)	'1'(31h)	Under Capacity
'0'(30h)	'2'(32h)	Over Capacity

RS-232c Configuration

Databit	7
Parity	Even
Stop Bit	1
Baudrate	9600bps

★ Response time : Typically 50ms, max 150ms

CRS, NCR2170, SAMAUNG ER-5100, ER5115 and Many other ECRs

ECR Type#5

ECR → **SCALE**

Unit of Weight

KG	: 4Bh 47h
LB	: 4Ch 42h
OZ	: 4Fh 5Ah
G	: 47h 20h

Request Weight Value

1byte	1byte
'W' (57h)	CR (0Dh)

Weight Value Data Format

Prefix(1byte)	1byte	1byte	1byte	1byte	1byte	1byte	1byte	1byte	Subfix(1byte)
LF (0Ah)	W4	W3	'.' (2Eh)	W2	W1	W0	UN1	UN2	CR (0Dh)

Variable Position

And

STATUS DATA Format

Prefix(1byte)	1byte	1byte	Subfix(2byte)	
LF (0Ah)	B1	B2	CR (0dh)	ETX (03h)

Simplified Status Codes

B1	B2	Status Definition
'0'(30h)	'0'(30h)	OK
'1'(31h)	'0'(30h)	Motion
'2'(32h)	'0'(30h)	Scale at Zero
'0'(30h)	'1'(31h)	Under Capacity
'0'(30h)	'2'(32h)	Over Capacity

RS-232c Configuration

Databit	7
Parity	Even
Stop Bit	1
Baudrate	9600bps

★ Response time : Typicaly 50ms, max 150ms

페이지 **7**

NCI General, SAMSUNG ER-5100, ER-5115, Most P.O.S System

ECR Type#6

ECR

SCALE

1byte
ENQ (05h)

1byte
ACK (06h)

1byte
DC1 (11h)

Weight Value Data Format

Unit of Weight

kg : 6Bh 67h
lb : 6Ch 62h
oz : 6Fh 7Ah
g : 67h 20h

Prefix(2byte)		1byte	1byte	Weight(6byte)						1byte	1byte	Subfix(3byte)		
SOH (01h)	STX (02h)	STA	SIGN	W4	W3	'.' (2Eh)	W2	W1	W0	UN1	UN2	BCC	ETX (03h)	EOT (04h)

Variable Position

BCC has all data bytes except
Prifix and Subfix through exclusive OR(XOR)

Symbol	Char.	Definition
STA	'S'(53h)	Scale is stable
	'U'(55h)	Scale is unstable
SIGN	' '(20h)	Zero and positive weight
	'-'(2Dh)	Negative weight
	'F'(46h)	Over load

RS-232c Configuration	
Databit	8
Parity	None
Stop Bit	1
Baudrate	9600bps

★ Response time : Typicaly 50ms, max 150ms

Samsung ER-670

ECR Type#7

ECR

SCALE
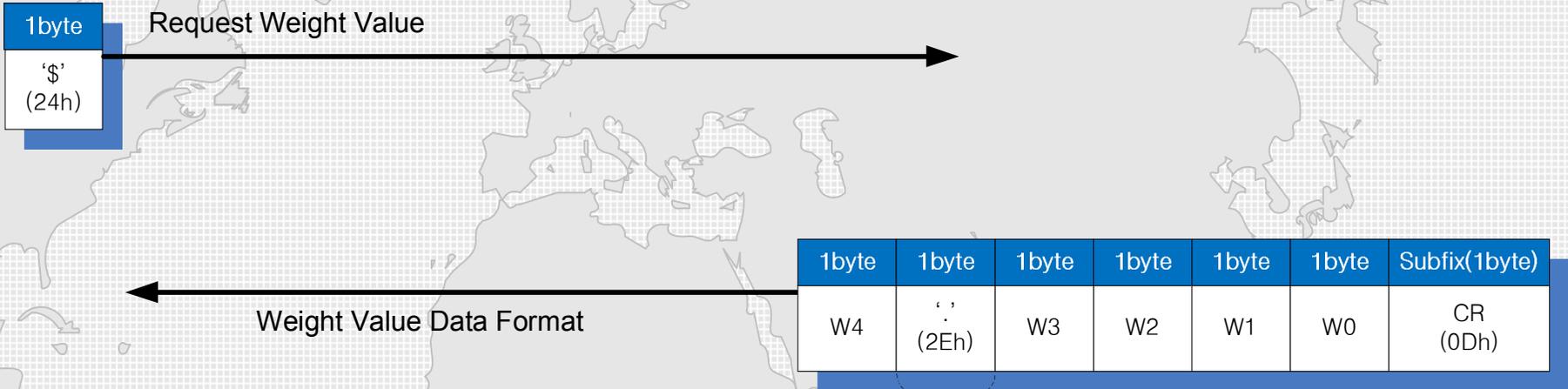
1byte
'$' (24h)

Request Weight Value →

← Weight Value Data Format

1byte	1byte	1byte	1byte	1byte	1byte	Subfix(1byte)
W4	'.' (2Eh)	W3	W2	W1	W0	CR (0Dh)

Variable
Position

RS-232c Configuration	
Databit	8
Parity	None
Stop Bit	1
Baudrate	9600bps

★ Response time : Typicaly 50ms, max 150ms

Samsung ECR(SPAIN)

ECR Type#12(Change Scale information – Unit Price)

ECR

SCALE

Prefix(4byte)				1byte	Unit Price(6byte)	Subfix(1byte)
EOT (04h)	STX (02h)	'0' (30h)	'1' (31h)	ESC (1Bh)	U5~U0	ETX (03h)

Request to change scale information →

Scale Action

1. Active Unit Price change

Communication Good

1byte
ACK (06h)

←

Communication no Good

1byte
NAK (15h)

SW can't change

RS-232c Configuration	
Databit	7
Parity	Odd
Stop Bit	1
Baudrate	9600bps

★ Response time : Typicaly 50ms, max 150ms

Most P.O.S System
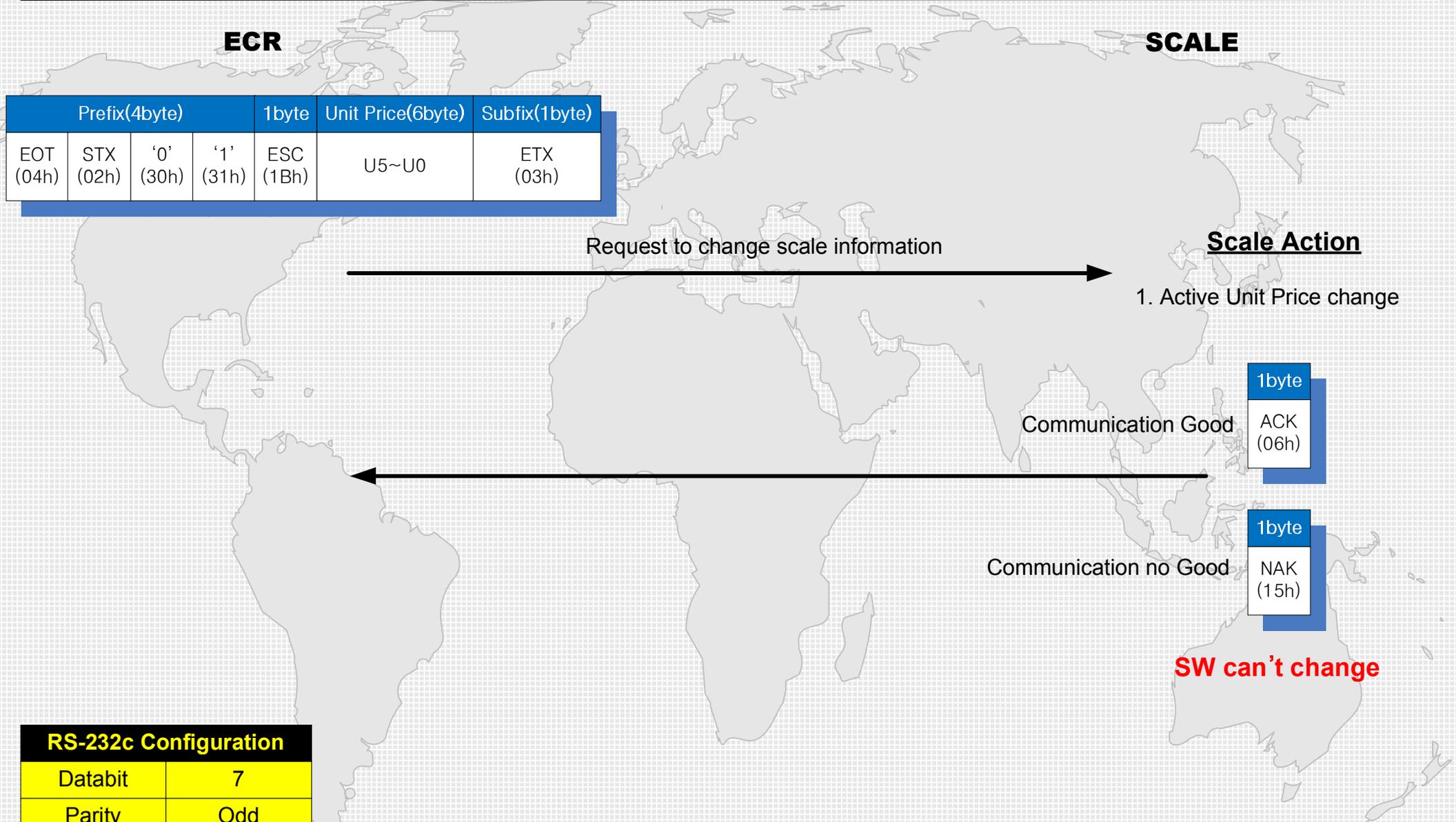
ECR Type#12(Change Scale information – Unit Price, Tare)

ECR   **TARE ONLY**   **SCALE**

Prefix(4byte)				1byte	Unit Price(6byte)	1byte	Tare value(4byte)	Subfix(1byte)
EOT (04h)	STX (02h)	'0' (30h)	'3' (33h)	ESC (1Bh)	U5~U0	ESC (1Bh)	T3~T0	ETX (03h)

Scale Action

Request to change scale information →

1. Active Unit Price change
2. Tare value change

1byte
ACK (06h)

Communication Good

1byte
NAK (15h)

Communication no Good

RS-232c Configuration

Databit	7
Parity	Odd
Stop Bit	1
Baudrate	9600bps

★ Response time : Typicaly 50ms, max 150ms

페이지 **11**

Most P.O.S System

ECR

SCALE

Prefix(4byte)				1byte	Unit Price(6byte)	1byte	Text(13byte)	Subfix(1byte)
EOT (04h)	STX (02h)	'0' (30h)	'4' (34h)	ESC (1Bh)	U5~U0	ESC (1Bh)	Txt12~Txt0	ETX (03h)

Scale Action

Request to change scale information →

1. Active Unit Price change
2. Active PLU Name change
   (only 6byte)

Communication Good

1byte
ACK (06h)

Communication no Good

1byte
NAK (15h)

SW can't change

RS-232c Configuration	
Databit	7
Parity	Odd
Stop Bit	1
Baudrate	9600bps

★ Response time : Typicaly 50ms, max 150ms

Most P.O.S System
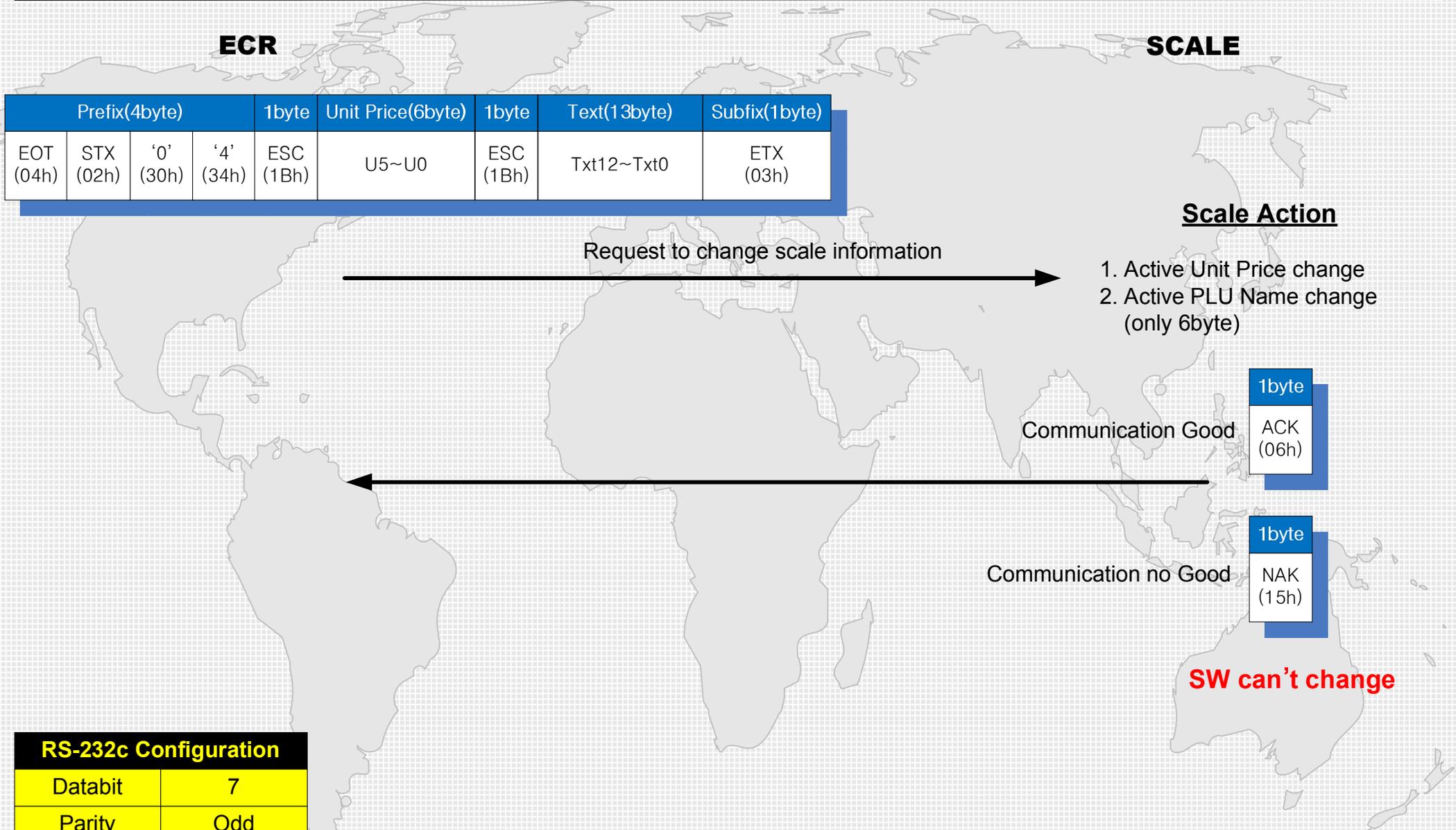
ECR   **SCALE**

Prefix(4byte)				1byte	Unit Price(6byte)	1byte
EOT (04h)	STX (02h)	'0' (30h)	'5' (35h)	ESC (1Bh)	U5~U0	ESC (1Bh)

(Continue)

Tare value(4byte)	1byte	Text(13byte)	Subfix(1byte)
T3~T0	ESC (1Bh)	Txt12~Txt0	ETX (03h)

Request to change scale information →

Scale Action

1. Active Unit Price change
2. Tare Value change
2. Active PLU Name change
   (only 6byte)

Communication Good

1byte
ACK (06h)

←

Communication no Good

1byte
NAK (15h)

SW can't change

RS-232c Configuration	
Databit	7
Parity	Odd
Stop Bit	1
Baudrate	9600bps

★ Response time : Typically 50ms, max 150ms

페이지 **13**

Most P.O.S System

ECR   **SCALE**

1byte	1byte
EOT (04h)	ENQ (05h)

Request scale information →

Prefix(3byte)			1byte	1byte	1byte	Weight(5byte)
STX (02h)	'0' (30h)	'2' (32h)	ESC (1Bh)	STA	ESC (1Bh)	W4 ~ W0

← Weight Value Data Format

Weight Unit	STA
kg	3
g	2
oz	1
lb	0

(Continue)

1byte	Unit Price(6byte)	1byte	Total Price(6byte)	Subfix(1byte)
ESC (1Bh)	U5~U0	ESC (1Bh)	P5 ~ P0	ETX (03h)

Simple weighting sclae: 30h 30h 30h 30h 30h 30h

Or

1byte
NAK (15h)

← Communication no Good

RS-232c Configuration	
Databit	7
Parity	Odd
Stop Bit	1
Baudrate	9600bps

★ Response time : Typicaly 50ms, max 150ms

Most P.O.S System

ECR

SCALE

Prefix(4byte)				Subfix(1byte)
EOT (04h)	STX (02h)	'0' (30h)	'8' (38h)	ETX (03h)

→ Request Status information

← Send Status information

Prefix(3byte)			1byte	Status(2byte)		Subfix(1byte)
STX (02h)	'0' (30h)	'9' (39h)	ESC (1Bh)	S1	S0	ETX (03h)

S1	S0	Description
'0'(30h)	'0'(30h)	There is no error present
'0'(30h)	'1'(31h)	GENERAL error on the scales
'0'(30h)	'2'(32h)	PARITY error, or more characters than permitted
'1'(31h)	'0'(30h)	Incorrect record number detected
'1'(30h)	'1'(31h)	No valid unit price
'1'(31h)	'2'(32h)	No valid tare value received
'1'(30h)	'3'(33h)	No valid text received
'2'(32h)	'0'(30h)	Scale still in motion (no equilibrium)
'3'(33h)	'0'(30h)	Scale in MIN range
'3'(33h)	'1'(31h)	Scale in underload range or negative weight display
'3'(33h)	'2'(32h)	Scale in overload range

SW don't change

★ Response time : Typicaly 50ms, max 150ms

RS-232c Configuration	
Databit	7
Parity	Odd
Stop Bit	1
Baudrate	9600bps

Most P.O.S System