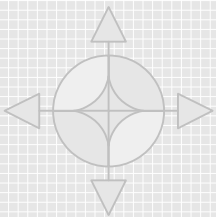


ER ECR PROTOCOL

(V2.4)

Update : 2015/06/25

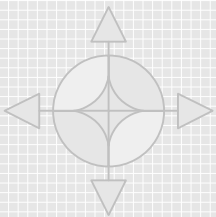


CHANGE HISTORY

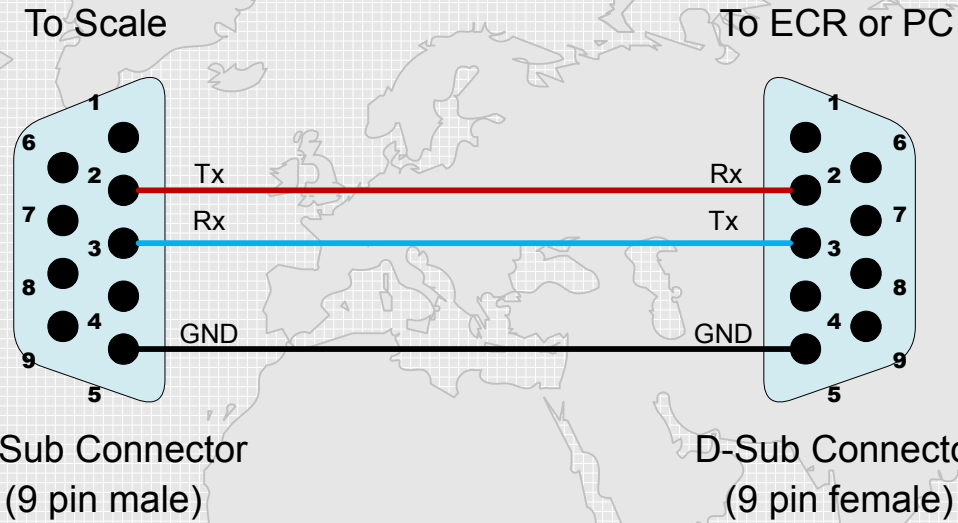
Date	Version	Issue
2011/04/12	1.0	R&D Center 윤여철
2011/04/21	1.1	Typo revision - R&D Center 윤여철
2011/09/08	1.2	Correct Description Error
2011/10/26	1.3	Type#9 Buadrate revision(9600 -> 2400)
2012/01/13	1.4	Type#14 added
2012/01/31	1.5	Type#11 Delete(type#12 is including type#11)
2012/08/16	1.6	Type#12 : Add Recode No. 08(request for status information after receipt of NAK (response = record 09)
2012/09/06	1.7	Type#12-1 :Delete ESC ECR TYPE 0,1,8,9,13 : '-' Value -> Nak ECR TYPE 2,3,4,5,6,10 : Correct '-'Value When Zero
2012/10/25	1.8	Type#14 프로토콜 문서 변경(실제 저울과 같이 STA를 제일 앞으로 옮김) Type#15 추가(Type#14에서 일부 변경, Type#14를 사용할 수도 있기에 추가 하였음)
2012/11/07	1.9	Type#6 Weight에 Decimal Point 추가 – AP Protocol과 동일하게 함 Type#15 STA1, STA2를 SAT1, STA2, STA3로 변경
2012/11/15	2.0	Type#15 STA2에서 Real Zero이하에서 'L'상태바이트 추가 STA2가 'L' 또는 'O'일때, 무게전송은 '-----'으로 변경
2013/04/01	2.1	Type#12 - 4 오타수정 Type#12 - 5 Weight(6byte) -> Weight(5byte) 변경
2013/07/22	2.2	Type#16 – ANKER cash register protocol 추가

CHANGE HISTORY

Date	Version	Issue
2015/06/02	2.3	Type#4,5,7,8,14,15 Unstable, Minus Weight, Overload에서 무게전송 '-----'으로 변경 Type#16-ANKER cash register protocol 삭제(펌웨어에 적용 안 됨) ECR Type 설정 방법 설명 추가(SettingMethod)
2015/06/25	2.4	Type#4,5 Unstable 무게전송으로 변경(OIML인증변경)
2016/01/22	2.5	Type#12 Unit Price protocol에 ESC 추가(Dialog 6 protocol과 비교하여 누락부분 추가하여 맞춤)



The Wire Specification



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

Type Setting Method

User Setting Table

Display	Value	Function Description
"A-oFF"	No/10/30/60	Auto power off
"bL"	OFF/ON/3/5/10	LCD Backlight On/Off (3sec/5sec/10sec)
"briG"	1~7	Backlight Brightness(1: Dark)
"Lowbt"	BL-ON/BL-OFF	Low battery backlight auto off
"Ecr"	TYPE 0~15	ECR Protocol type
"P CLr"	Yes/No	Price Clear or Save
"t CLr"	Yes/No	Tare Clear or Save

Key Input Method

- ① ZERO + ON/OFF → "U-SET" entry (While Holding 'ZERO', push 'ON/OFF')
- ② ZERO → Menu switching (& Current value save)
- ③ TARE → Value switching

※ Ex) ECR Type 2 Setting

ZERO + ON/OFF => "A-oFF", ZERO x 4Times => "ECR", TARE x 2Times => "TYPE 2", ZERO x 3Times => Normal Mode

ECR Type#0, #1

ECR

SCALE

1byte
ENQ
(05h)

1byte
ACK
(06h)

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)

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

Scale Type Identifier

1byte
BEL
(07h)

When weight is zero.

1byte
NAK
(15h)

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

★ Response time : Typically 50ms, max 150ms

ECR Type#2

ECR

1 byte
'W'
(57h)

Request Weight Value

SCALE

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

Weight Value Data Format

Or

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

Error Value Data Format

STATus Byte

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

Or

1 byte
'X'

Wrong Request Command

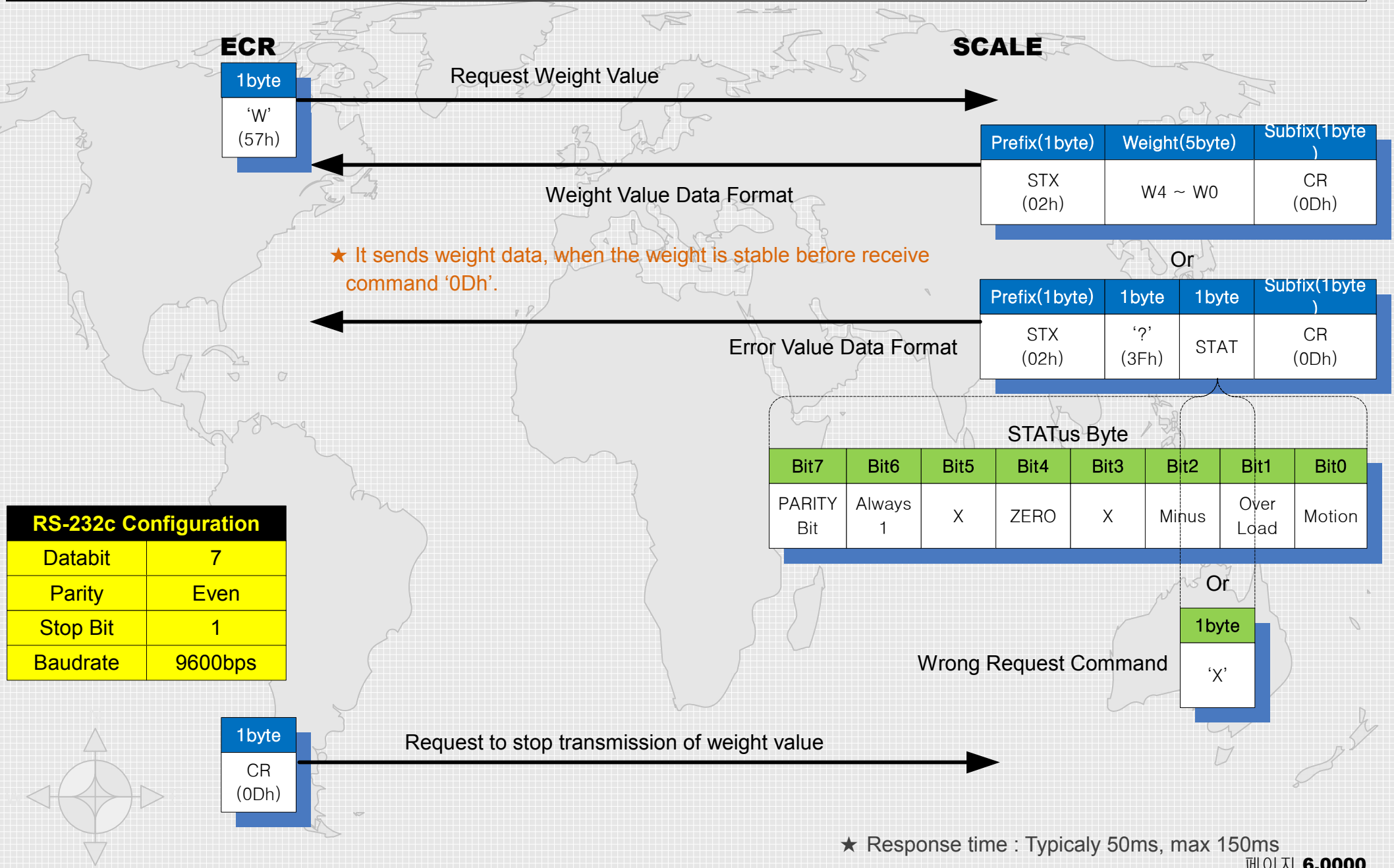
★ Response time : Typaly 50ms, max 150ms

페이지 **5.0000**

RS-232c Configuration

Databit	7
Parity	Even
Stop Bit	1
Baudrate	9600bps

ECR Type#3



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

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

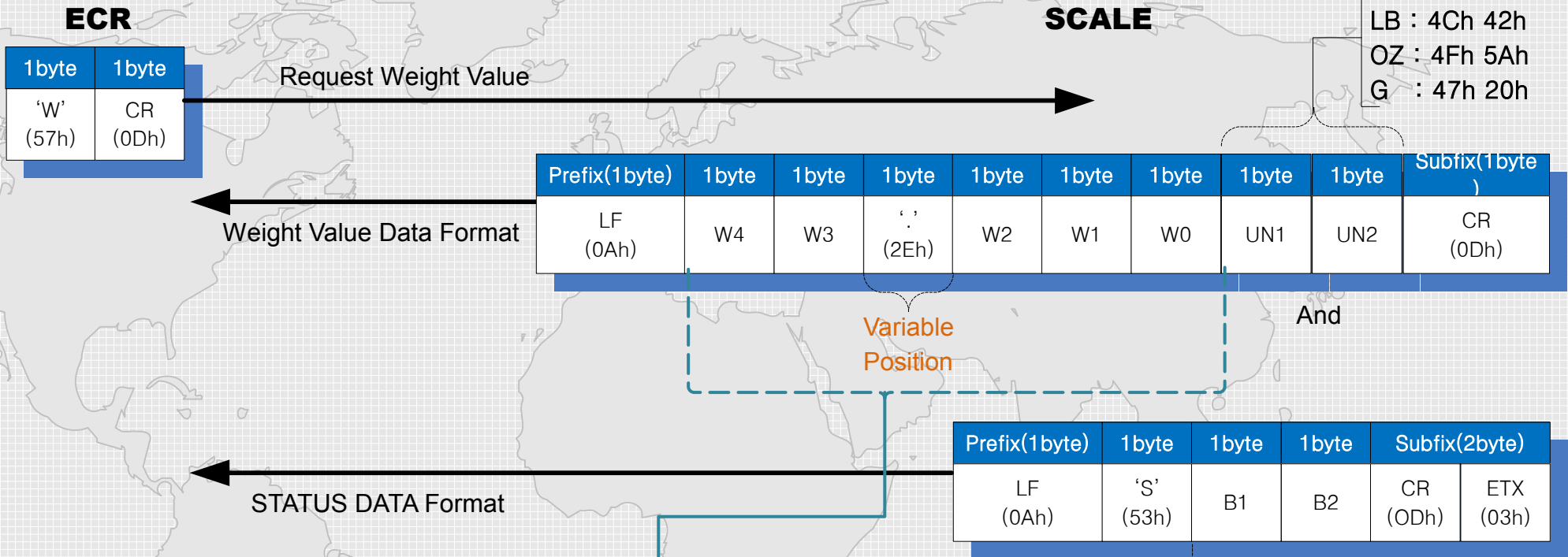
Or

1byte
'X'

★ Response time : Typaly 50ms, max 150ms

ECR Type#4

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



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

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

★ Response time : Typaly 50ms, max 150ms
 페이지 7.0000

ECR Type#5

Unit of Weight

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

ECR

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

Request Weight Value

SCALE

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

Weight Value Data Format

Variable Position

And

STATUS DATA Format

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

When Weight is Overload or Minus weight, Weight value is '-----'.

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

페이지 8.0000

ECR Type#6

ECR

1byte
ENQ
(05h)

1byte
DC1
(11h)

SCALE

1byte
ACK
(06h)

Unit of Weight

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

Weight Value Data Format

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	CRC1	CRC2

1byte 1byte
CR LF

Variable Position

BCC has all data bytes except Prefix 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 : Typically 50ms, max 150ms

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

When Weight is Unstable or Overload or Minus weight, Weight value is '-----'.

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

★ Response time : Typically 50ms, max 150ms

ECR Type#8

ECR

SCALE

Unit of Weight

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

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

Request Weight Value

Weight Value Data Format

Prefix(1byte)	1byte	1byte	1byte	1byte	1byte	1byte	1byte	1byte	Subfix(1byte)
LF (0Ah)	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)	'0' (30h)	'0' (30h)	CR (0Dh)	ETX (03h)

Or

1 byte
NAK (15h)

When Weight is Unstable or Overload or Minus weight, Weight value is '---'.

★ Response time : Typically 50ms, max 150ms

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

ECR Type#9

ECR

1byte
ETX
(03h)

1byte
ENQ
(05h)

SCALE

1byte
ACK
(06h)

1byte
NAK
(15h)

Or

Weight Value Data Format

Prefix(3byte)			1byte	1byte	1byte	Weight(5byte)	1byte	Unit Price(6byte)
STX (02h)	'0' (30h)	'2' (32h)	ESC (1Bh)	STA	ESC (1Bh)	W4 ~ W0	ESC (1Bh)	U5 ~ U0

(Continue)

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

Or

1byte
NAK
(15h)

Weight Unit	STA
kg	3
g	2
oz	1
lb	0

RS-232c Configuration	
Databit	8
Parity	None
Stop Bit	1
Baudrate	2400bps

★ Response time : Typically 50ms, max 150ms

ECR Type#10

ECR

1 byte
'W' (57h)

Request Weight Value

SCALE

Weight Value Data Format

Prefix(1byte)	Weight(6byte; decimal point included)						Subfix(1byte)
STX (02h)	W4	'.' (2Eh)	W3	W2	W1	W0	CR (0Dh)

Variable Position

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	8
Parity	None
Stop Bit	1
Baudrate	9600bps

★ Response time : Typically 50ms, max 150ms

ESC Type#11 (Change Scale information)

ECR

SCALE

Prefix(1byte)				Unit Price(6byte)		1byte	Tare(4byte)
EOT (04h)	STX (02h)	'0' (30h)	'5' (35h)	ESC (1Bh)	U0	ESC (1Bh)	T3 ~ T0

(Continue)

1byte	Subfix(1byte)
ESC (1Bh)	TXT12 ~

Request information



Scale Action

1. Active Unit Price change
2. Tare Value change
3. Don't change the text

Communication Good

1byte
ACK (06h)

Communication Good

1byte
NAK (15h)

RS-232c Configuration	
Databit	8
Parity	None
Stop bit	1
Flow Control	9600bps

★ Response time : Typicly 50ms, max 150ms

Request Type#11 (Request Scale information)

Checkout-Dial

ECN

SCALE

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

Request scale information

Weight Value Data Format

Price (1byte)	1byte	1byte	Weight (1byte)	Unit Price (6byte)
'0' (00h)	'2' (20h)	ESC (1Bh)	STA	W4 ~ W0
				ESC (1Bh)
				U5 ~ U0

(Continue)

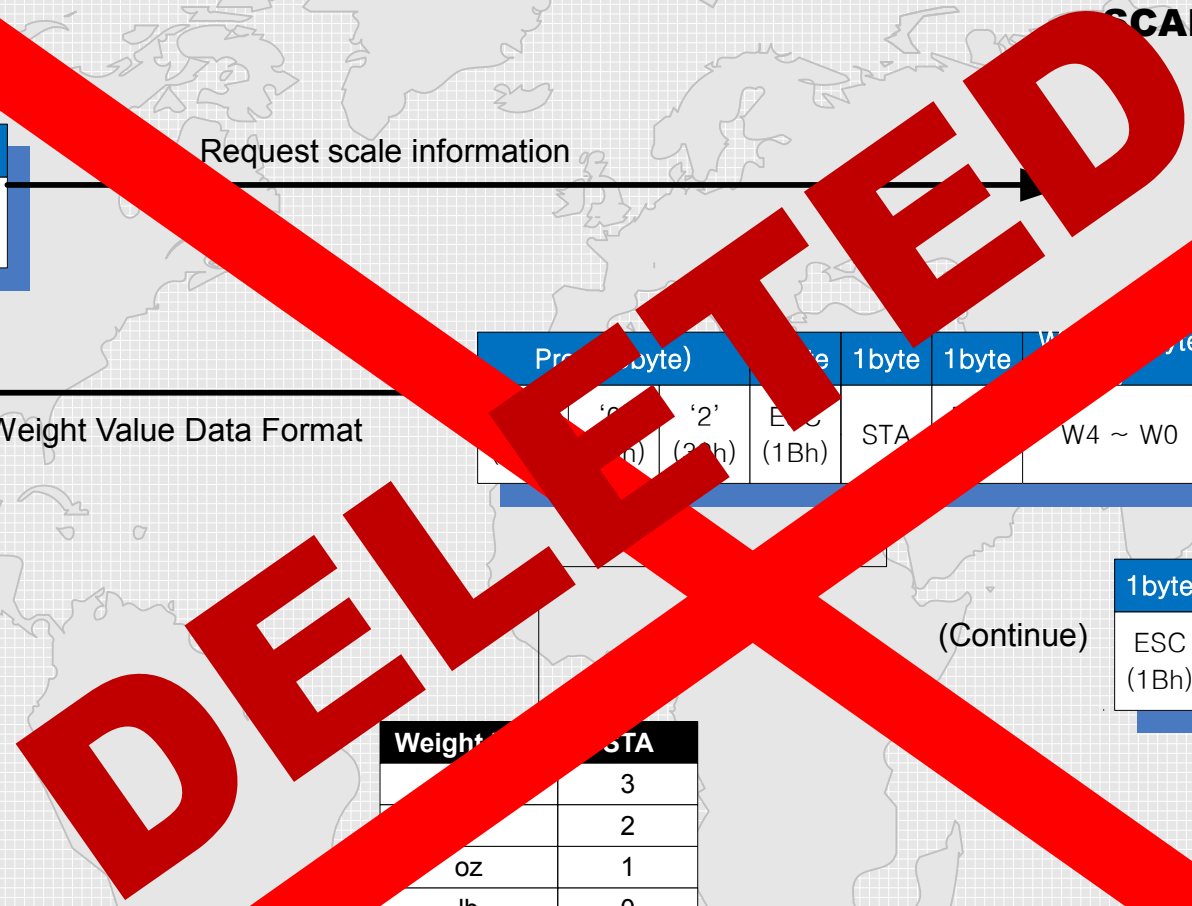
1byte	Total Price (6byte)	Suffix (2byte)	
ESC (1Bh)	P5 ~ P0	ESC (1Bh)	ETX (03h)

Weight	STA
	3
	2
oz	1
lb	0

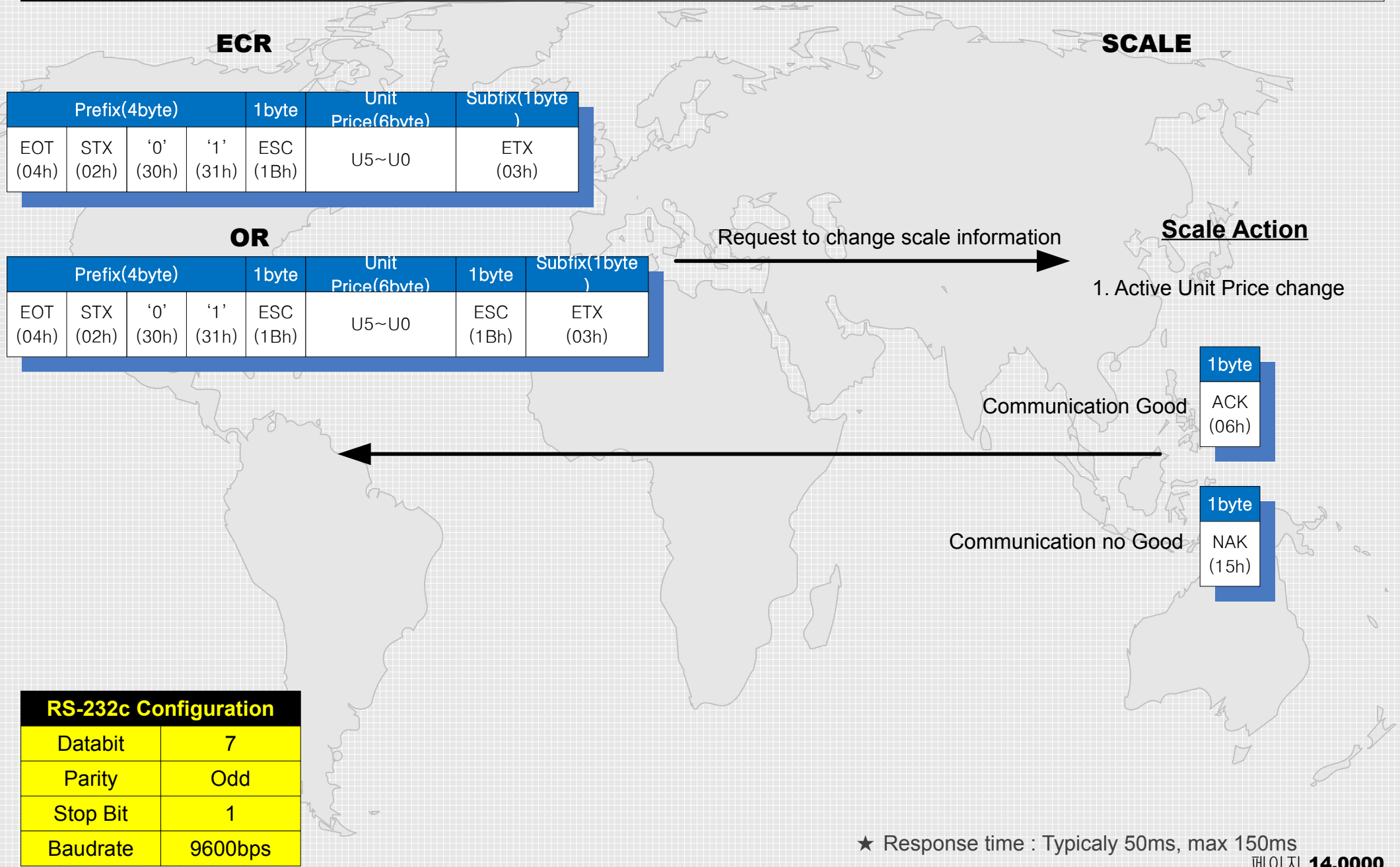
RS-232c Configuration	
Databit	
Parity	One
Stop	1
Flow Control	9600bps

★ Response time : Typically 50ms, max 150ms

페이지



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



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

★ Response time : Typaly 50ms, max 150ms

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

ECR

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

Communication Good

1 byte
ACK
(06h)

Communication no Good

1 byte
NAK
(15h)

RS-232c Configuration

Databit	7
Parity	Odd
Stop Bit	1
Baudrate	9600bps

★ Response time : Typically 50ms, max 150ms

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

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

1 byte
ACK (06h)

Communication no Good

1 byte
NAK (15h)

RS-232c Configuration

Databit	7
Parity	Odd
Stop Bit	1
Baudrate	9600bps

★ Response time : Typically 50ms, max 150ms

ECR Type#12(Change Scale information – Unit Price, Tare, PLU Name)

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

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

Communication Good

1 byte
ACK (06h)

Communication no Good

1 byte
NAK (15h)

RS-232c Configuration

Databit	7
Parity	Odd
Stop Bit	1
Baudrate	9600bps

★ Response time : Typaly 50ms, max 150ms

ECR Type#12(Request Scale information)

ECR

SCALE

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

Request scale information

Weight Value Data Format

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

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)

(Continue)

1byte	1byte	1byte	1byte
CRC1	CRC2	CR	LF

Or

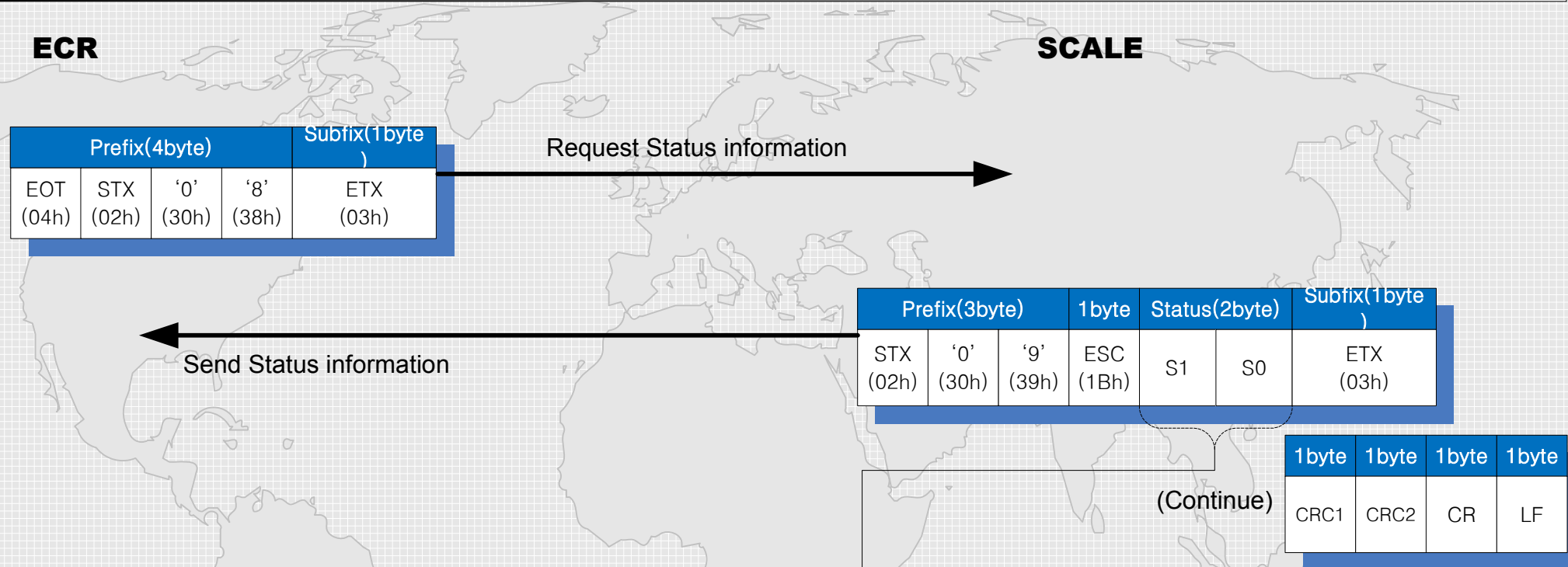
1byte
NAK (15h)

Communication no Good

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

★ Response time : Typically 50ms, max 150ms

ECR Type#12(Request for status information after receipt of NAK)



S1	S0	Description
'0'(30h)	'0'(30h)	There is no error present
'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

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

★ Response time : Typically 50ms, max 150ms

ECR Type#13

ECR

1 byte
ENQ
(05h)

Request Weight Value

SCALE

Weight(5byte)	Subfix(1byte)
W4 ~ W0	RS (1Eh)

Weight Value Data Format

Or

Communication no Good

1 byte
NAK
(15h)

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

★ Response time : Typaly 50ms, max 150ms

ECR Type#14

ECR

SCALE

Send weight value continuously when the scale finished initialize.

Status(1byte)	Weight(5byte)	Subfix(1byte)
STA	W4 ~ W0	RS (1Eh)

When STA is 'O' or '-' or 'U',
Weight value is '-----'.

Symbol	Char.	Definition
STA	'O'(4Fh)	Over load
	'-'(2Dh)	Negative weight
	'S'(53h)	Scale is stable
	'U'(55h)	Scale is unstable

RS-232c Configuration

Databit	8
Parity	None
Stop Bit	1
Baudrate	9600bps

★ Data transfer cycle : Typically 300ms

페이지 21.0000

ECR Type#15

ECR

SCALE

Send weight value continuously when the scale finished initialize.

Status(1byte)	Status(1byte)	Status(1byte)	Weight(5byte)	Subfix(1byte)
STA1	STA2	STA3	W4 ~ W0	RS (1Eh)

When STA2 is 'L' or 'O' or 'U', Weight value is '-----'.

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

Symbol	Char.	Definition
STA1	'N'(4Eh)	Tare applied
	' '(20h)	No Tare applied
STA2	'O'(4Fh)	Over load
	'S'(53h)	Scale is stable
	'U'(55h)	Scale is unstable
	'Z'(5Ah)	Scale is Zero
	'L'(5Ah)	when below real zero.
STA3	' '(20h)	Positive weight
	'-'(2Dh)	Negative weight

★ Data transfer cycle : Typically 300ms

Type#16(Change Scale information - Unit Price)

ANKER cash register protocol

ECR

SCALE

Prefix(4byte)				Unit Price(5byte)	Subfix(1byte)
STX (02h)	'0' (30h)	'1' (31h)	(1Bh)	U4~U0	ETX (03h)

Request for scale information

Scale Action

1. Active Unit Price change

Communication Good

1 byte
ACK (06h)

Communication no Good

1 byte
NAK (15h)

DELETED

RS-232c Configuration

Databit	7
Parity	Even
Stop Bit	1
Base Rate	9600bps

★ Response time : Typically 50ms, max 1000ms

Type#16(Request Scale information)

ANKER cash register protocol

1byte
ENQ
(05h)

Request scale information

Weight Value Data Format

Prefix(3byte)	Unit(1byte)	1byte	1byte	Weight(5byte)
STX (02h)	(32h)	ESC (1Bh)	STA (1Bh)	W4 ~ W0

Weight	STA
kg	2
g	1
oz	0

1byte	Unit Price(5byte)	1byte	Total Price(6byte)	Subfix(1byte)
ESC (1Bh)	U4~U0	ESC (1Bh)	P5 ~ P0	ETX (03h)

Communication no Good

1byte
NAK
(15h)

RS-232c Configuration	
Databit	7
Parity	
Stop Bit	1
Baud Rate	9600bps

★ Response time : Typically 50ms, max 100ms

ANKER CASH REGISTER

