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THANK YOU FOR YOUR A&D PURCHASE

This manual will tell you in simple language how this option works and how to get the most out of it in terms of performance.

OP-03 RS-232C is the serial interface to connect the price computing scale to a cash register, to a personal computer, or to a label printer. Before use, set the desired output mode in the price computing scale "F" functions mode.

Internal Circuit

Price computing scale internal circuit

- - - - - - - - - - - -
RXD (pin 2)          Connector used: D-Sub 9 pin (male)

- - - - - - - - - - - -
TXD (pin 3)

- - - - - - - - - - - -
CTS (pin 8)

- - - - - - - - - - - -
RTS (pin 7)

- - - - - - - - - - - -
DTR (pin 4)

- - - - - - - - - - - -
GND/FG (pin 5)

\[ \text{Diagram of internal circuit connections.} \]
Installation (OP-03)

(1) Turn the price computing scale to expose the bottom. Cut off the connector cover using a pair of nippers.

(2) Connect the RS-232C to the price computing scale with the cable provided.

(3) Secure the RS-232C to the price computing scale with the screws provided.

Screws provided:
M3 X 8 self tapping screws 2pcs
Output Mode

The price computing scale is provided with four output modes; Key Trigger Mode, Command Mode, Stream Mode, and Label Printer Mode.

Key Trigger Mode

When the [x] key on the price computing scale is pressed, data is output one time in the format specified by the "F" function output mode. Data is output only during the weighing operation.

[Output format]
Three output formats are available.
Output format 1 (F3=0): Price/Weight/Unit Price

```
SOH STX P7 P6 P5 P4 P3 P2 P1 P0 ETX BCC
```

Price

```
STX STA  SIG W5 W4 W3 W2 W1 W0 UN1 UN0 BCC ETX
```

Weight

```
STX U7 U6 U5 U4 U3 U2 U1 U0 ETX BCC SOH
```

Unit Price

Output format 2 (F3=1): PLU number/Price

```
STX 41h 32h M4 M3 M2 M1 M0 P5 P4 P3 P2 P1 P0 C ETX
```

Output format 3 (F3=4): With delay time
(This is for a printer that doesn’t have a memory buffer.)

Output format 3 (F3=5): Without delay time between data
(This is for a printer that has a memory buffer.)
Please use a printer that can print more than 25 characters on one line. (An A&D printer AD-8120 can be connected to the SF/SF.)

(1) Single transaction

<table>
<thead>
<tr>
<th>kg</th>
<th>$/ kg</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.345</td>
<td>100.00</td>
<td>12345.00</td>
</tr>
</tbody>
</table>

Weigh 12.345 kg and press [M+].

<table>
<thead>
<tr>
<th>kg</th>
<th>$/100g</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.345</td>
<td>100.00</td>
<td>12345.00</td>
</tr>
</tbody>
</table>

Weigh 12.345 kg and press [M+].

<table>
<thead>
<tr>
<th>Qty</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Enter a unit price, press [X], press [5] and press [M+].

(2) Using with a totaling function

<table>
<thead>
<tr>
<th>kg</th>
<th>$/ kg</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.00</td>
<td>2.00</td>
<td>10.00</td>
</tr>
<tr>
<td>4.00</td>
<td>5.00</td>
<td>20.00</td>
</tr>
<tr>
<td>5.00</td>
<td>3.00</td>
<td>15.00</td>
</tr>
<tr>
<td>6.00</td>
<td>3.00</td>
<td>18.00</td>
</tr>
</tbody>
</table>

Weigh 5 kg and press [M+].
Weigh 4 kg and press [M+].
Weigh 5 kg and press [M+].
Press [MODE] & [CE]. (Cancel the last entry.)
Weigh 6 kg and press [M+].
Enter a unit price, press [X], press [5] and press [M+]. (Non-weighed article)

<table>
<thead>
<tr>
<th>Qty</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Weigh 6 kg and press [M+].

<table>
<thead>
<tr>
<th>kg</th>
<th>$/ kg</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.00</td>
<td>1.23</td>
<td>7.38</td>
</tr>
</tbody>
</table>

TOTAL 555.38

Press [MODE] to show total amount.
Enter the money received and press [CHANGE], then press [*] (Total amount is cleared.)
If [*] is pressed while showing TOTAL amount, TOTAL amount is printed and cleared.

<table>
<thead>
<tr>
<th>TENDERED</th>
<th>600.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANGE</td>
<td>44.62</td>
</tr>
</tbody>
</table>
Command Mode

When the price computing scale receives the command to request data from cash register (or from the personal computer), data is output one time in the format as required.

[Command list]

- ENQ : "05h"
- DC1 : "11h"
- DC2 : "12h"
- ACK : "06h"

[Communication protocol]

<table>
<thead>
<tr>
<th>Cash register</th>
<th>#1</th>
<th>#3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price computing scale</td>
<td>ENQ</td>
<td>DC1/DC2</td>
</tr>
<tr>
<td></td>
<td>← A →</td>
<td>← A →</td>
</tr>
<tr>
<td></td>
<td>← B →</td>
<td>DATA OUTPUT</td>
</tr>
<tr>
<td>MAX</td>
<td>0.5sec #2</td>
<td>MAX</td>
</tr>
</tbody>
</table>

#1: The cash register sends the "ENQ" command.
#2: The price computing scale sends "ACK" in response to "ENQ".
#3: The cash register sends "DC1/DC2", the command to request data.
#4: The price computing scale outputs data as requested in response to "DC1/DC2".

Notes  The price computing scale ignores any command other than those listed above if received. Any command received in the duration indicated by ← A → will be ignored.

The duration of ← B → is approximately three seconds. If the price computing scale does not receive "DC1/DC2" within three seconds, it will be in the state waiting for "ENQ".

The maximum time the price computing scale needs to send back a command in response to the command received is 0.5 second.

The price computing scale responds to a command only during the weighing operation.
[Output format]
Two output formats are available.
Output format 1 (F3=2) : Weight

| SOH | STX | STA | SIGN | W5  | W4  | W3  | W2  | W1  | W0  | UN1 | UN0 | BCC | ETX | EOT |

Output format 2 (F3=2) : Price/Weight/Unit Price

| SOH | STX | P7  | P6  | P5  | P4  | P3  | P2  | P1  | P0  | ETX | BCC |
| STX | STA | SIGN | W5  | W4  | W3  | W2  | W1  | W0  | UN1 | UN0 | BCC | ETX |
| STX | U7  | U6  | U5  | U4  | U3  | U2  | U1  | U0  | ETX | BCC | SOH |

[Data requesting command]
DC1: Outputs data in output format 1.
DC2: Outputs data in output format 2.

Stream Mode

Data is output at a constant rate of one time per second. Data is output regardless of the weight value status, but only during the weighing operation.

[Output format]
Output format (F3=3) : Price/Weight/Unit Price

| SOH | STX | P7  | P6  | P5  | P4  | P3  | P2  | P1  | P0  | ETX | BCC |
| STX | STA | SIGN | W5  | W4  | W3  | W2  | W1  | W0  | UN1 | UN0 | BCC | ETX |
| STX | U7  | U6  | U5  | U4  | U3  | U2  | U1  | U0  | ETX | BCC | SOH |

Price

Weight

Unit Price
Label Printer Mode

When the [×] key on the price computing scale is pressed, data is output one time in the format specified by the "F" function output mode. Data is output only during the weighing operation.

[Output format]
Output format (F3=8): PLU number/Unit Price/Weight/Price

<table>
<thead>
<tr>
<th>STX</th>
<th>MA</th>
<th>M3</th>
<th>M2</th>
<th>M1</th>
<th>M0</th>
<th>U7</th>
<th>U6</th>
<th>U5</th>
<th>U4</th>
<th>U3</th>
<th>U2</th>
<th>U1</th>
</tr>
</thead>
<tbody>
<tr>
<td>U0</td>
<td>STA</td>
<td>SIGN</td>
<td>W5</td>
<td>W4</td>
<td>W3</td>
<td>W2</td>
<td>W1</td>
<td>W0</td>
<td>UN1</td>
<td>UN0</td>
<td>P7</td>
<td>P6</td>
</tr>
<tr>
<td>P5</td>
<td>P4</td>
<td>P3</td>
<td>P2</td>
<td>P1</td>
<td>P0</td>
<td>ETX</td>
<td>BCC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Format description

SOH : Command            "01h"
STX : Command            "02h"
STA : Weight value status Stable="53h"(S) Unstable="55h"(U)
SIGN : Weight value polarity Zero or positive="20h"(SP) Negative="2dh"(-)
W5-W0 : Weight value     All"46h"(F) when overload
UN1 : Unit 1             g="20h"(SP) kg="6bh"(K) lb="6ch"(l)
UN0 : Unit 2             "67h"(g) "67h"(g) "62h"(b)
BCC : Parity             even
ETX : Command            "03h"
EOT : Command            "04h"
Px-P0 : Price
U7-U0 : Unit Price
M4-M0 : PLU number       "99999" when PLU numbers are not used.
C : Check point(Check digit)
RS-232C Baud Rate/Character Bit/Parity Bit

Use the price computing scale "F" functions mode to specify baud rate, character bit, and Parity bit. Stop bit is fixed to 1 bit.

[Baud Rate]
Available bits are 600 bps, 1200 bps, 2400 bps, 4800 bps and 9600 bps.

[Character bit/Parity bit]
Available bits are 7 bits/Even and 8 bits/Non parity.
Price Computing Scale "F" Function

Settings are performed in the "F" functions (user) mode.

"F" Function Mode

F1 : Auto display off
    0: Yes  1: No
F2 : Changing the setting of "unit price cancellation near zero"
    0: Yes  1: Not canceled  2: Cancel
F3 : Output mode
    0: Key trigger mode: Output format 1
    1: Key trigger mode: Output format 2
    2: Command mode
    3: Stream mode
    4: Key trigger mode: Output format 3 with delay
    5: Key trigger mode: Output format 3 without delay
    6: Not used
    7: Not used
    8: Label printer mode
F4 : Baud rate
    0: 600 bps
    1: 1200 bps
    2: 2400 bps
    3: 4800 bps
    4: 9600 bps
F5 : Character bit/Parity bit
    0: 7bit / even
    1: 8bit / non party
F6 and F7 : Not used
    Normally F6=0, F7=1

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Setting "F" Functions

While holding down the [ZERO] key, turn on the power switch located on the left side. "F 1-" appears in the unit price display, indicating that the price computing scale is in the "F" functions mode.

Use the following keys as described to specify the desired "F" function number.

[Numeric key pad] :Enters a "F" function number. (Up to two digits)

[*] :Confirms the "F" function number entered. Pressing the [*] key displays "FXX-YY" with the current setting in YY when the correct function number is entered with the numeric key pad; or displays "Err 1" for approximately two seconds and returns to the previous display if a non-existing function number is entered.

[C] :Clears the number entered with the numeric key pad and returns to the previous display.

[MEM] :Writes the settings into EEPROM (memory) and terminates the "F" functions mode.

With "FXX-YY" displayed as described above, set data (YY) for the selected function number (FXX) using the following keys.

[Numeric key pad] :Enters a data number. (Up to two digits)

[*] :Confirms the data number. Pressing the [*] key proceeds to the next setting when the correct data number is entered with the numeric key pad; or displays "Err 2" for approximately two seconds and returns to the previous display if a non-existing data number is entered.

[C] :Clears the number entered with the numeric key pad and returns to the previous display.

[MEM] :Writes the setting into EEPROM (memory) and terminates the "F" functions mode. The [MEM] key is not valid during entering operation with the numeric key pad.

"FXX-" :Indicates the "F" function number.

"FXX-YY" :Indicates the data number.