



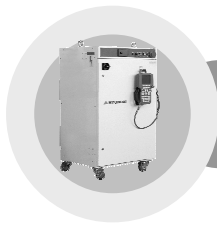
WARNING



**THE INSTALLATION SHALL BE
MADE BY QUALIFIED INSTALLATION
PERSONNEL AND SHOULD
CONFORM TO ALL NATIONAL AND
LOCAL CODES**

Hyundai Robot

Hi4aPC071001FMEN3



Hi4a Controller Function Manual

External Palletize Counter



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1 Overview



1. Overview

External Palletize Counter

The robot is operating using the frequency or the palletize counter, user can put a few work temporarily or also can lift a few work out from pallet. It can reset the frequency or the palletize counter at teaching pendant in this case but confirming and setting at the external control panel is a frequency/palletize external counter preset function.



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DIO Signal Setting



2. DIO Signal Setting

External Palletize Counter

2.1. Input signal setting

Action that defines the signal about each port of input connector that is mounted on I/O board means setting up the input signal. In manual mode, input signal can set up at 『PF2: System』 → 『2: Controller parameter』 → 『1: Setting input & output signal』 → 『7: Input signal assigning』.

```
00:02:16** DI Sig assignment ** A:D S:2
Collision sensor          = [ 0]
Welding Enable/Disable   = [ 0]
Conveyor running         = [ 0]
Conveyor data clear      = [ 0]
Consumption reset(move-tip) = [ 0]
Consumption reset(fix-tip) = [ 0]
Weld stick of spot gun    = [ 0]
Servo gun large open     = [ 0]
Servo gun small open     = [ 0]
Welding system error     = [ 0]
Freq/Palletize(OFF->Freq) = [ 0]
Select and Enter number, Press [SET]
>[0 - 256]
All FormOne FormPrevious Next Complete
```

```
00:01:29** DI Sig assignment ** A:D S:2
Freq/Palletize count confirm = [ 0]
Freq/Palletize count preset = [ 0]
Freq/Palletize Reg Num select= [ 0]
Freq/Palletize count setup = [ 0]
Data bit                    = B01[ 0] B02[ 0]
                           B03[ 0] B04[ 0]
                           B05[ 0] B06[ 0]
                           B07[ 0] B08[ 0]
                           B09[ 0] B10[ 0]
Gun manual connection require= [ 0]
Gun manual disconnect require= [ 0]
Select and Enter number, Press [SET]
>[0 - 256]
All FormOne FormPrevious Next Complete
```

- **Freq/Palletize(OFF->Freq)**
It's the signal to determine selecting either palletize counter or frequency counter.
- **Freq/Palletize count confirm**
It's the signal to confirm the frequency/palletize counter value at external control panel.
- **Freq/Palletize count preset**
It's the signal to set up the frequency/palletize counter value at external control panel.
- **Freq/Palletize Reg Num select**
It's the signal to select the register number of frequency/palletize.
- **Freq/Palletize count setup**
It's the signal to set up the frequency/palletize counter value.
- **Data Bit**
It's the signal to set up the register number or counter value.

2.2. Output signal setting

Action that defines the signal about each port of output connector that is mounted on I/O board means setting up the output signal. In manual mode, output signal can set up at 『[PF2]: System』 → 『2: Controller parameter』 → 『1: DIO signal setting』 → 『6: Assign output signals』.

```
00:20:05** DO Sig assignment ** A:0 S:2
Servo gun output method(Wd-On)= [ 0]
Frequency count ACK           = [ 0]
Palletize count ACK           = [ 0]
Freq/Palletize count error    = [ 0]
Count output Bit = B01[ 0] B02[ 0]
                        B03[ 0] B04[ 0]
                        B05[ 0] B06[ 0]
                        B07[ 0] B08[ 0]
                        B09[ 0] B10[ 0]
Robot lock status(Enable=ON)= [ 0]
Fieldbus trouble              = [ 0]
Select and Enter number. Press [SET]
>[0 - 256]
All FormOne FormPrevious Next Complete
```

- **Frequency Counter ACK**

It's the confirming signal regarding the case of confirming the frequency counter or setting it up.

- **Palletize Counter ACK**

It's the confirming signal regarding the case of confirming the palletize counter or setting it up.

- **Freq/Palletize count error**

It's the confirming signal regarding the case of error while setting up the frequency or palletize counter.

- **Count output Bit**

It's the responding signal regarding the case of requiring frequency/palletize counter value or setting up the frequency/palletize counter value.



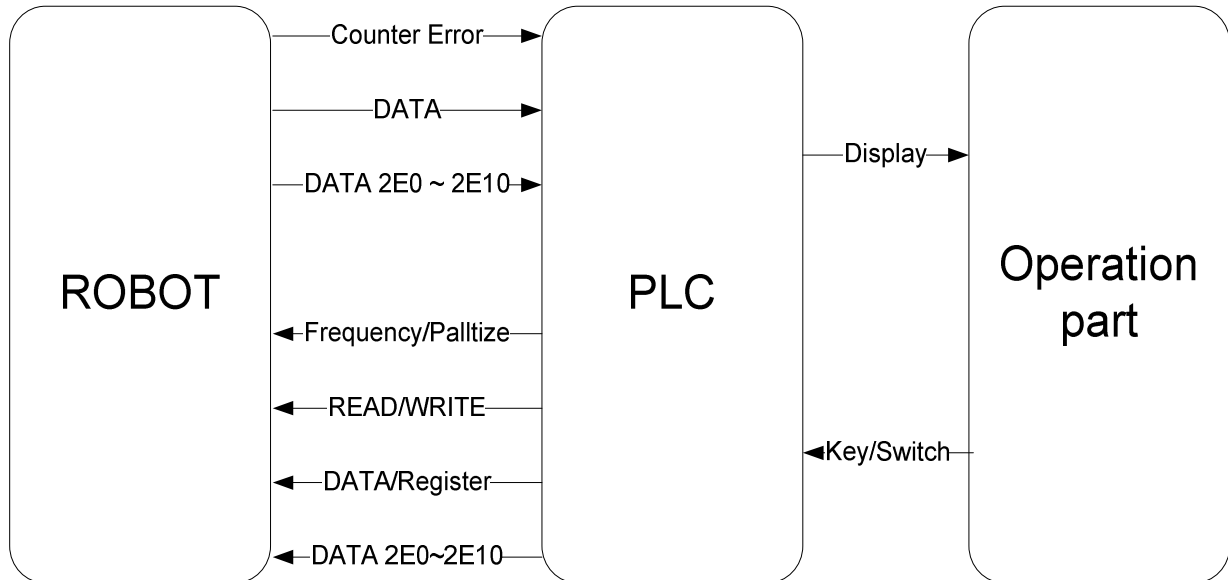
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Signal Arrangement between Robot and PLC



3. Signal Arrangement between Robot and PLC

External Palletize Counter





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Timing Diagram

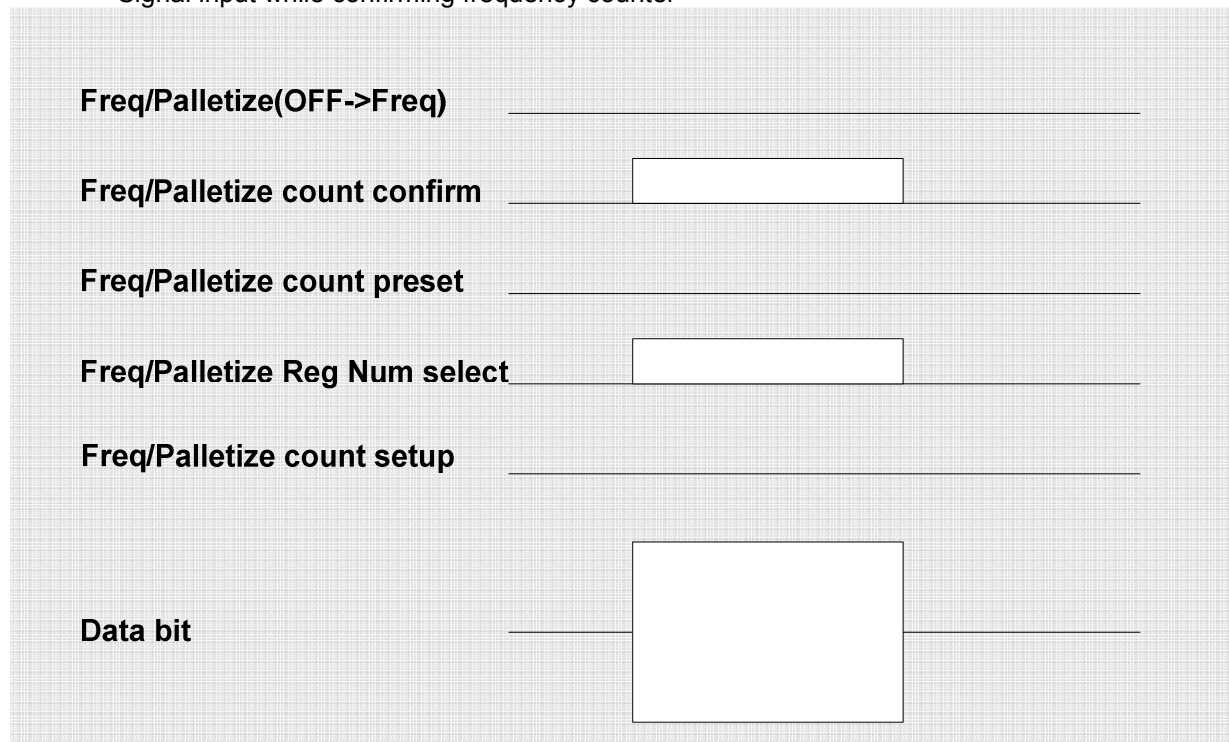


4. Timing Diagram

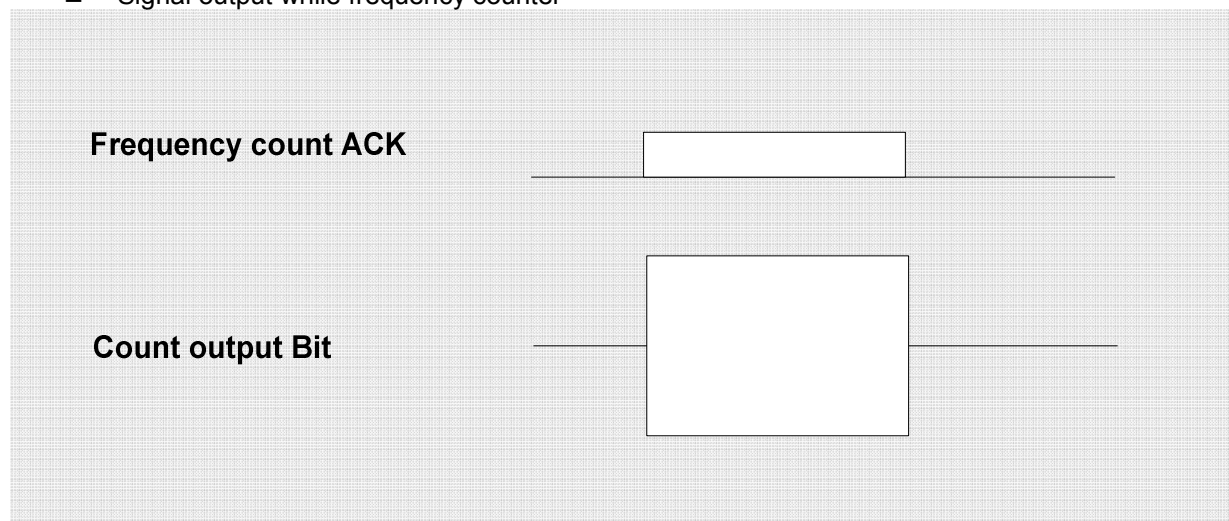
External Palletize Counter

4.1. When confirming frequency counter from outside

- Signal input while confirming frequency counter

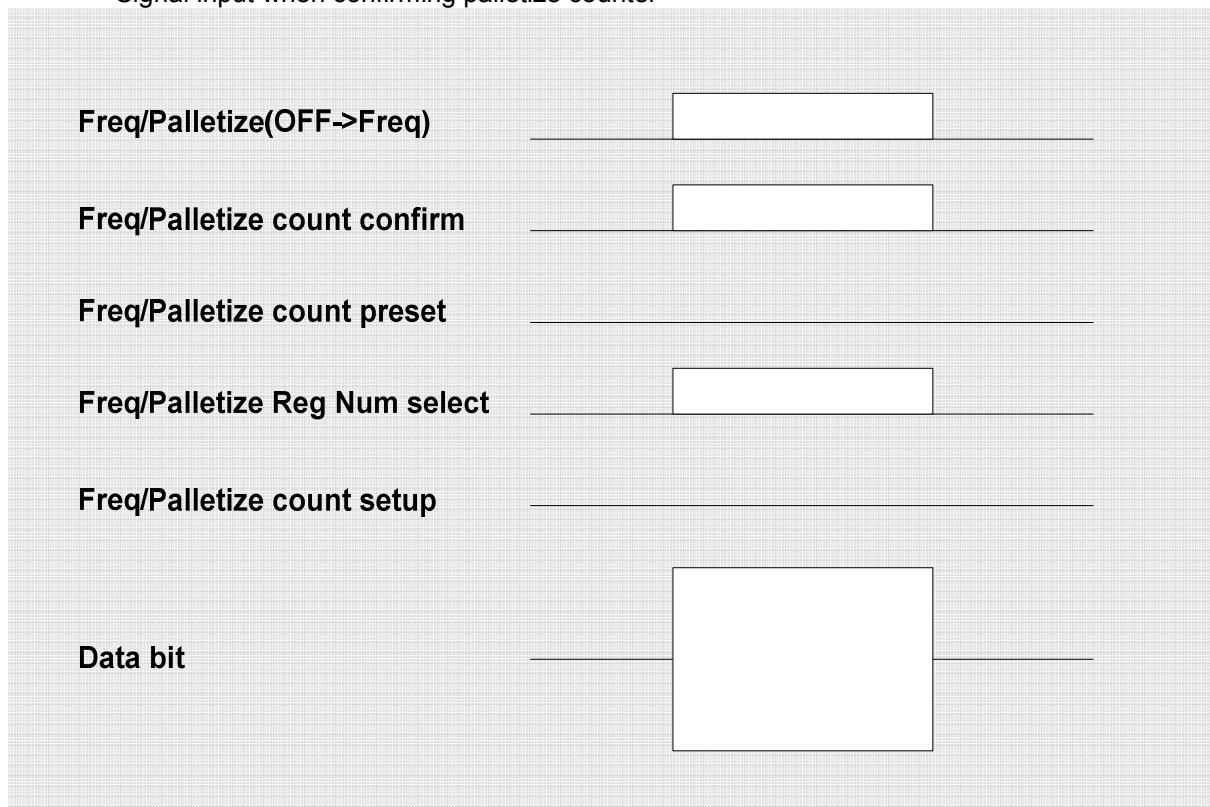


- Signal output while frequency counter

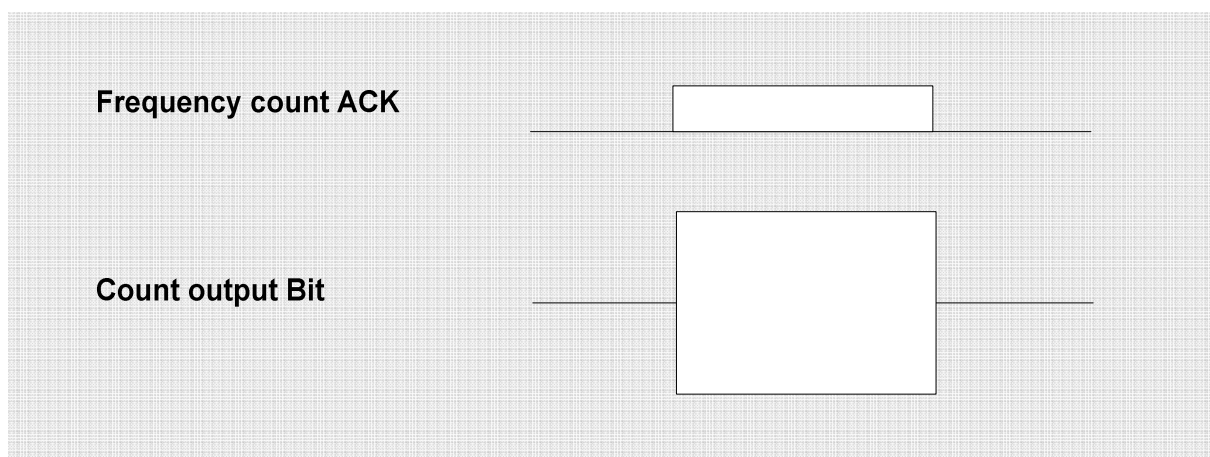


4.2. When confirming palletize counter

■ Signal input when confirming palletize counter

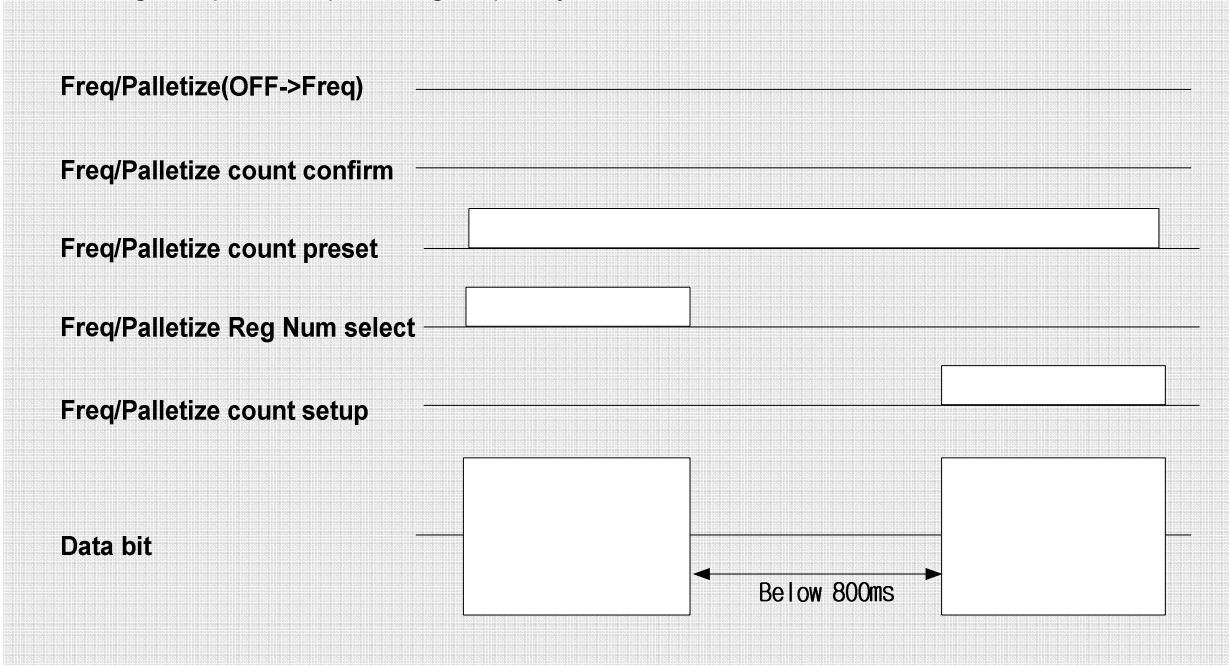


■ Signal output when confirming palletize counter

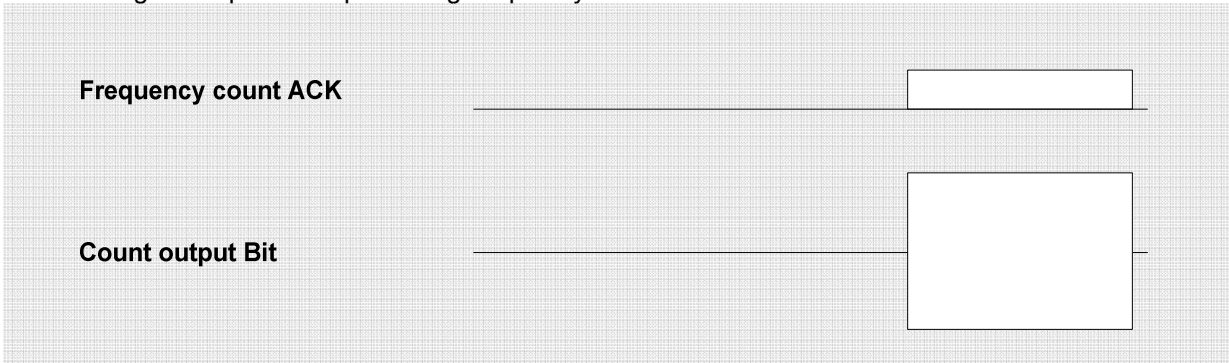


4.3. When setting frequency counter

■ Signal input when presetting frequency counter

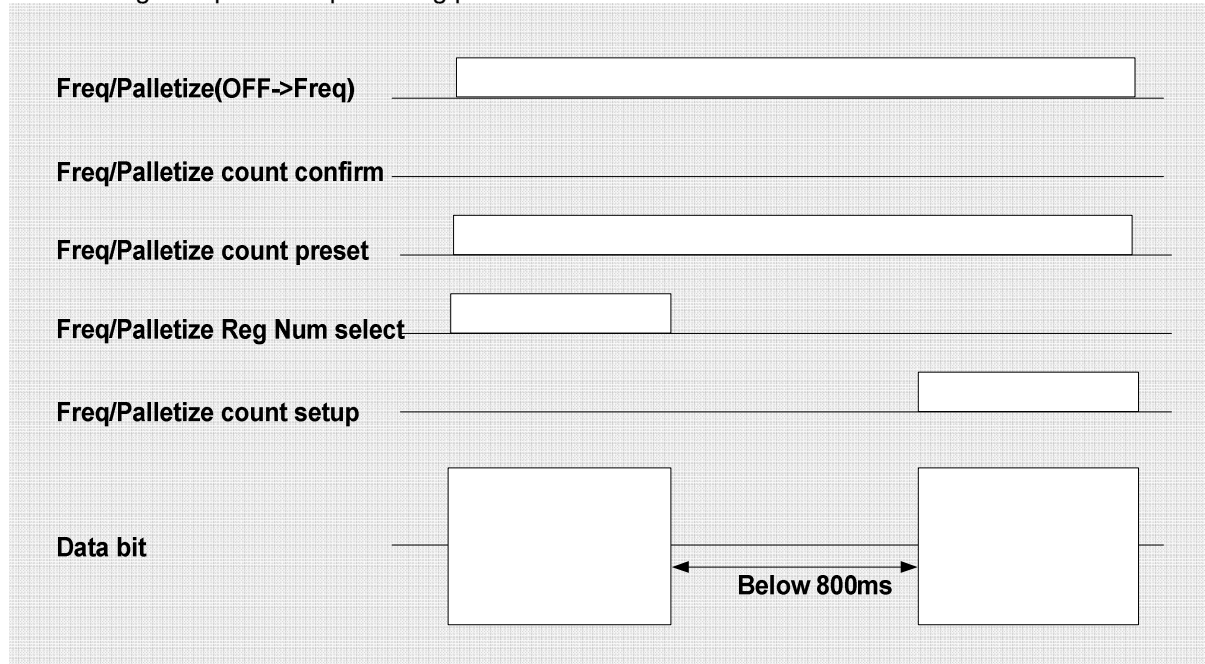


■ Signal output when presetting frequency counter

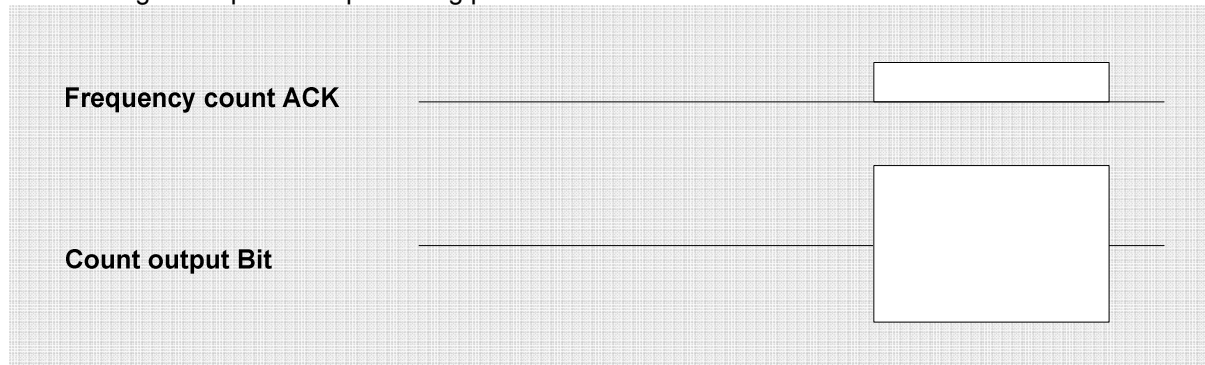


4.4. When setting frequency counter

- Signal input when presetting palletize counter



- Signal output when presetting palletize counter





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Troubleshooting



5. Troubleshooting

External Palletize Counter

5.1. Error occurrence point of view and expression

- In the case that there is no input of counter selection signal within 800ms as the register selection input signal is off after selecting the frequency/palletize register number
→ 『E1045 Not input freq/palletize count』 . Put allocated output signal ON as occurring error or counter error Bit.
- In the case of stopping the robot while operating palletize and presetting the palletize counter about the pallet number that is currently
→ Put allocated output signal ON as counter error Bit.
- In the case of setting up more counter than total work to be operated at indicated pallet
→ Put allocated output signal ON as counter error Bit.

5.2. Clear point of view of counter error Bit

- (1) In the case of setting up normal counter as resetting the frequency/palletize counter
- (2) In the case of pressing [R..(ESC)]+[SET] key of teaching pendant



- **Head Office**

Tel. 82-52-202-7901 / Fax. 82-52-202-7900
1, Jeonha-dong, Dong-gu, Ulsan, Korea

- **A/S Center**

Tel. 82-52-202-5041 / Fax. 82-52-202-7960

- **Seoul Office**

Tel. 82-2-746-4711 / Fax. 82-2-746-4720
140-2, Gye-dong, Jongno-gu, Seoul, Korea

- **Ansan Office**

Tel. 82-31-409-4945 / Fax. 82-31-409-4946
1431-2, Sa-dong, Sangnok-gu, Ansan-si, Gyeonggi-do, Korea

- **Cheonan Office**

Tel. 82-41-576-4294 / Fax. 82-41-576-4296
355-15, Daga-dong, Cheonan-si, Chungcheongnam-do, Korea

- **Daegu Office**

Tel. 82-53-746-6232 / Fax. 82-53-746-6231
223-5, Beomeo 2-dong, Suseong-gu, Daegu, Korea

- **Gwangju Office**

Tel. 82-62-363-5272 / Fax. 82-62-363-5273
415-2, Nongseong-dong, Seo-gu, Gwangju, Korea

- **본사**

Tel. 052-202-7901 / Fax. 052-202-7900
울산광역시 동구 전하동 1번지

- **A/S 센터**

Tel. 82-52-202-5041 / Fax. 82-52-202-7960

- **서울 사무소**

Tel. 02-746-4711 / Fax. 02-746-4720
서울특별시 종로구 계동 140-2번지

- **안산 사무소**

Tel. 031-409-4959 / Fax. 031-409-4946
경기도 안산시 상록구 사동 1431-2번지

- **천안 사무소**

Tel. 041-576-4294 / Fax. 041-576-4296
충남 천안시 다가동 355-15번지

- **대구 사무소**

Tel. 053-746-6232 / Fax. 053-746-6231
대구광역시 수성구 범어 2동 223-5번지

- **광주 사무소**

Tel. 062-363-5272 / Fax. 062-363-5273
광주광역시 서구 농성동 415-2번지