



### 용도 Application

1. 산업용  
Industrial application
2. 계측용 장비  
Measuring instruments

### 특징 Feature

1. 축경 소형  
Small shaft
2. 광범위한 전압  
Wide ranging power source
3. 다양한 펄스 구현  
Various Pulses Built in

### 형 식 Model

#### WJE62S15

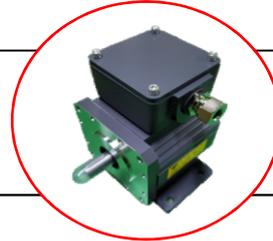
- WJE  
FAE Encoder
- S : 실축  
Solid shaft
- 15 : 축경  
Shaft size

#### 분 해 능 (Resolution)

|         |         |         |         |
|---------|---------|---------|---------|
| ① 25.   | ① 100.  | ② 120.  | ③ 200.  |
| ④ 300.  | ⑤ 400.  | ⑥ 500.  | ⑦ 600.  |
| ⑧ 900.  | ⑨ 1200. | Ⓐ 1500. | Ⓑ 1536. |
| Ⓒ 2000. | Ⓓ 2048. | Ⓔ 2400. | Ⓕ 2500. |

HEIDENHAIN (구, SUMTAK) 대체품

ROD 1931-1200, 1536, 2048, 2400, 3600

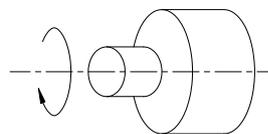
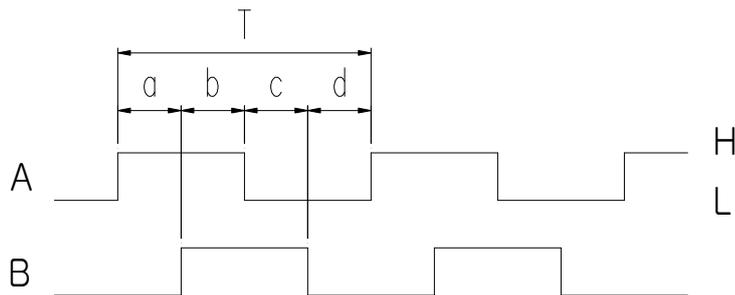


### 주요 특성 Specification

| 전기적 특성 Electrical spec                     |                      |                     |                                |
|--|----------------------|---------------------|--------------------------------|
| 분 해 능<br>Rsolution                         |                      | 25~2500 P/R         |                                |
| 출력<br>방식                                   | 출력 형태<br>Output form | 전 원<br>Power supply | 소 비 전 류<br>Current consumption |
|  | Line Drive           | DC<br>10.8~26.4V    | 150mA 이하                       |
| Output phase                               |                      | A-phase, B-phase    |                                |
| High Level Output Voltage                  |                      | Vcc-3.5V            |                                |
| Low Level Output Voltage                   |                      | 2V or Less          |                                |
| 최대 응답 주파수<br>Maximum<br>response frequency |                      | 300 KHz             |                                |

| 기계적 특성 Mechanical spec           |                                      |
|----------------------------------|--------------------------------------|
| 기동 토크<br>Starting torque         | 0.04 Nm                              |
| 최대 회전수<br>Maximum rotating speed | 6000 rpm                             |
| 허용 축 하중<br>Allowable shaft load  | Radial 방향 : 70 N<br>Thrust 방향 : 50 N |
| 사용 온도<br>Operating temp. rtange  | -20 ~ 80 °C                          |
| 내 진 동<br>Vibration               | 200 m/S <sup>2</sup>                 |
| 내 충 격<br>Shock                   | 2000 m/S <sup>2</sup>                |
| 중 량<br>Weight                    | 2.5Kg                                |

출력파형 *Output phase*

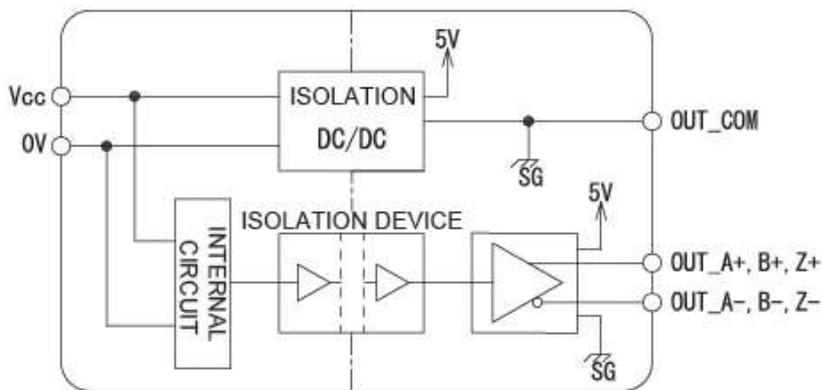


CW Sensor  
 $a+b, c+d = T/2 \pm T/8$   
 $a, b, c, d = T/4 \pm T/8$

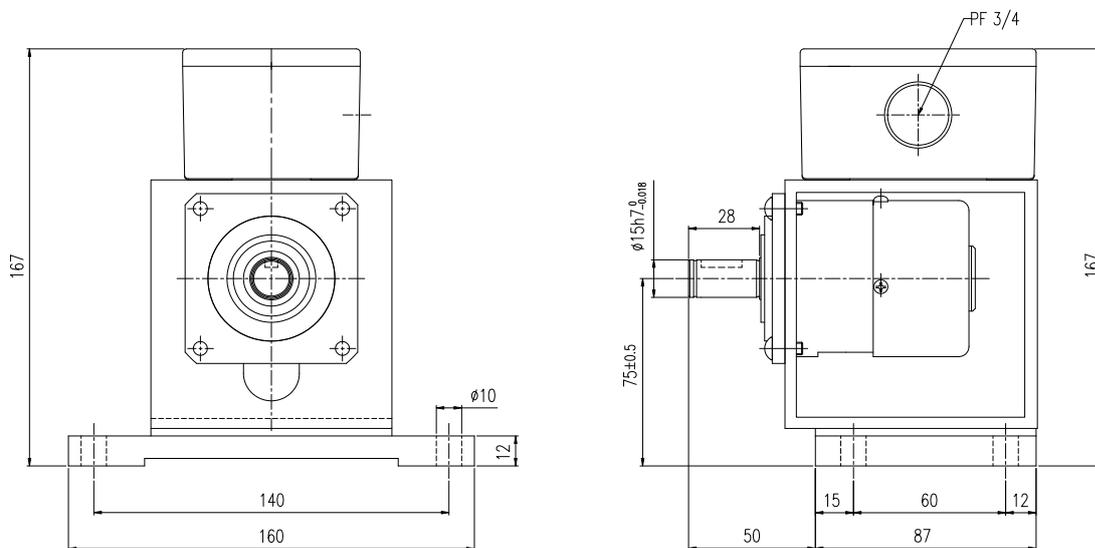
결선도 *Connection table*

| 단 자<br>구 분 | 신 호<br>Signal name |
|------------|--------------------|
| 1          | Vcc                |
| 2          | 0V                 |
| 3          | A+                 |
| 4          | A-                 |
| 5          | B+                 |
| 6          | B-                 |
| Shield     | Shield             |

출력회로 *Output circuit*



외형도 *External Dimension*





### 용도 Application

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Measuring instruments

### 특징 Feature

1. 축경 소형  
Small shaft
2. 광범위한 전압  
Wide ranging power source
3. 다양한 펄스 구현  
Various Pulses Built in

### 형 식 Model

**WJE66S08**  
**(LEC, ROD400)**  
**[ERN 1300]**

- WJE  
FAE Encoder
- S : 실축  
Solid shaft
- 08 : 축경  
Shaft size

### 분해능(P/R)

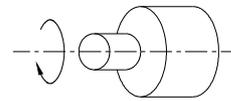
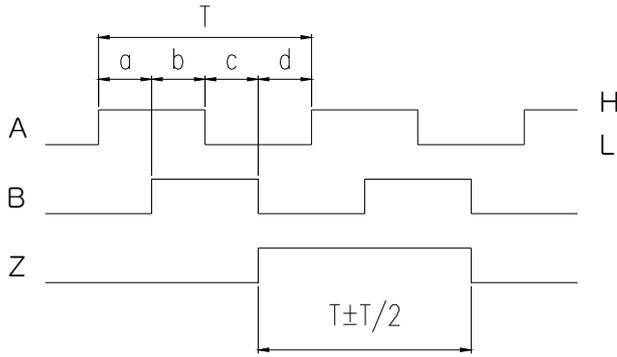
|          |         |         |         |         |
|----------|---------|---------|---------|---------|
| <b>A</b> | ① 100.  | ① 200.  | ② 300.  | ③ 500.  |
|          | ④ 512.  | ⑤ 600.  | ⑥ 1000. | ⑦ 1024. |
|          | ⑧ 1200. | ⑨ 1500. | A 1536. | B 2000. |
|          | C 2048. | D 2400. | E 3600. | F 4096. |
| <b>B</b> | ① 10.   | ① 128.  | ② 192.  | ③ 256.  |
|          | ④ 360.  | ⑤ 384.  | ⑥ 400.  | ⑦ 720.  |
|          | ⑧ 800.  | ⑨ 900.  | A 1600. | B 1800. |
|          | C 2500. | D 2560. | E 3000. | F 8192. |
| <b>C</b> | ① 25.   | ① 100.  | ② 120.  | ③ 200.  |
|          | ④ 300.  | ⑤ 400.  | ⑥ 500.  | ⑦ 600.  |
|          | ⑧ 900.  | ⑨ 1200. | A 1500. | B 1536. |
|          | C 2000. | D 2048. | E 2400. | F 2500. |
| <b>D</b> | ① 3.    | ① 4.    | ② 20.   | ③ 24.   |
|          | ④ 30.   | ⑤ 40.   | ⑥ 60.   | ⑦ 150.  |
|          | ⑧ 250.  | ⑨ 600.  | A 750.  | B 900.  |
|          | C 1200. | D 2800. | E 5000. | F 6000. |

### 주요 특성 Specification

| 전기적 특성 Electrical spec                  |                 |                           |                             |
|---|-----------------|---------------------------|-----------------------------|
| 분해능<br>Resolution                       |                 | 10~8192 P/R               |                             |
| 출력 방식<br>Output form                    | 출력 형태           | 전원<br>Power supply        | 소비전류<br>Current consumption |
|   | Push-pull (HTL) | DC<br>10.8~26.4V          | 150mA 이하                    |
| Output phase                            |                 | A-phase, B-phase, Z-phase |                             |
| High Level Output Voltage               |                 | Vcc 3.5V                  |                             |
| Low Level Output Voltage                |                 | 2V or Less                |                             |
| 최대 응답 주파수<br>Maximum response frequency |                 | 200 KHz                   |                             |
| 전선길이<br>Cable Length                    |                 | 1 m                       |                             |

| 기계적 특성 Mechanical spec           |                                      |
|----------------------------------|--------------------------------------|
| 기동 토크<br>Starting torque         | 0.02 Nm                              |
| 최대 회전수<br>Maximum rotating speed | 6000 rpm                             |
| 허용 축 하중<br>Allowable shaft load  | Radial 방향 : 40 N<br>Thrust 방향 : 20 N |
| 사용 온도<br>Operating temp. range   | -20 ~ 80 °C                          |
| 내진동<br>Vibration                 | 200 m/S <sup>2</sup>                 |
| 내충격<br>Shock                     | 2000 m/S <sup>2</sup>                |
| 중량<br>Weight                     | 1.5Kg                                |

출력파형 *Output phase*

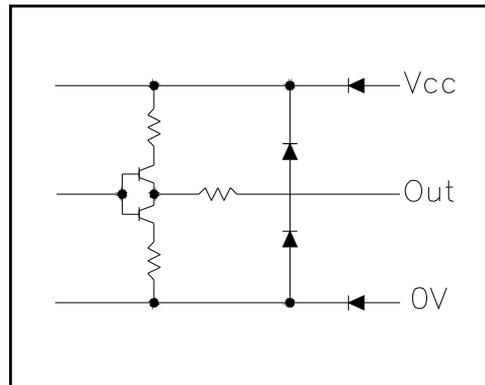


CW Sensor  
 $a+b, c+d=T/2 \pm T/10$   
 $a, b, c, d=T/4 \pm T/10$

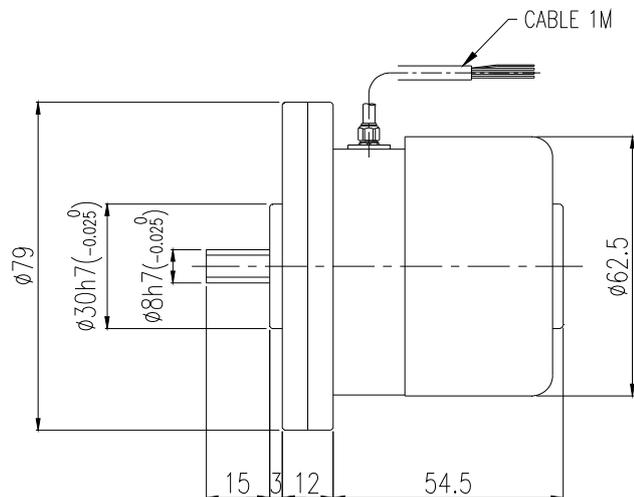
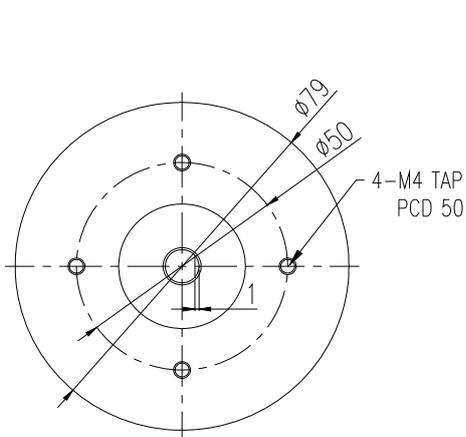
결선도 *Connection table*

| 신 호         | 전선 색상      |
|-------------|------------|
| Signal name | Wire Color |
| Vcc         | Brown      |
| 0V          | Red        |
| A           | Orange     |
| 0V          | Yellow     |
| B           | Green      |
| 0V          | Blue       |
| Z           | Purple     |
| 0V          | Gray       |
| Check+      | White      |
| Check -     | Black      |
| Shield      | Shield     |

출력회로 *Output circuit*



외형도 *External Dimension*





### 용도 Application

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Industrial application
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Measuring instruments

### 특징 Feature

1. 축경 소형  
Small shaft
2. 광범위한 전압  
Wide ranging power source

### 형 식 Model

#### WJE67S15 (FDP-06BE)

- WJE  
FAE Encoder
- S : 실축  
Solid shaft
- 15 : 축경  
Shaft size

#### 분해능(P/R)

|          |          |       |      |       |      |       |      |       |      |
|----------|----------|-------|------|-------|------|-------|------|-------|------|
| <b>A</b> | ①        | 100.  | ①    | 200.  | ②    | 300.  | ③    | 500.  |      |
|          | ④        | 512.  | ⑤    | 600.  | ⑥    | 1000. | ⑦    | 1024. |      |
|          | ⑧        | 1200. | ⑨    | 1500. | Ⓐ    | 1536. | Ⓑ    | 2000. |      |
|          | Ⓒ        | 2048. | Ⓓ    | 2400. | Ⓔ    | 3600. | Ⓕ    | 4096. |      |
|          | ①        | 10.   | ①    | 128.  | ②    | 192.  | ③    | 256.  |      |
| <b>B</b> | ④        | 360.  | ⑤    | 384.  | ⑥    | 400.  | ⑦    | 720.  |      |
|          | ⑧        | 800.  | ⑨    | 900.  | Ⓐ    | 1600. | Ⓑ    | 1800. |      |
|          | Ⓒ        | 2500. | Ⓓ    | 2560. | Ⓔ    | 3000. | Ⓕ    | 8192. |      |
|          | <b>C</b> | ①     | 25.  | ①     | 100. | ②     | 120. | ③     | 200. |
|          |          | ④     | 300. | ⑤     | 400. | ⑥     | 500. | ⑦     | 600. |
| ⑧        |          | 900.  | ⑨    | 1200. | Ⓐ    | 1500. | Ⓑ    | 1536. |      |
| Ⓒ        |          | 2000. | Ⓓ    | 2048. | Ⓔ    | 2400. | Ⓕ    | 2500. |      |
| <b>D</b> |          | ①     | 3.   | ①     | 4.   | ②     | 20.  | ③     | 24.  |
|          | ④        | 30.   | ⑤    | 40.   | ⑥    | 60.   | ⑦    | 150.  |      |
|          | ⑧        | 250.  | ⑨    | 600.  | Ⓐ    | 750.  | Ⓑ    | 900.  |      |
|          | Ⓒ        | 1200. | Ⓓ    | 2800. | Ⓔ    | 5000. | Ⓕ    | 6000. |      |

#### 결 선 방 식

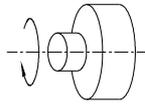
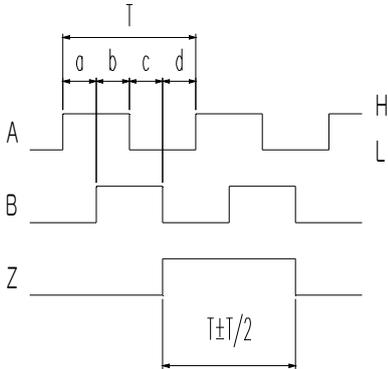
C : CONNECTOR  
T : TERMINAL

### 주요 특성 Specification

| 전기적 특성 Electrical spec                  |                      |                           |                             |
|---|----------------------|---------------------------|-----------------------------|
| 분해능<br>Resolution                       |                      | 10~8192 P/R               |                             |
| 출력 방식<br>Output form                    | 출력 형태<br>Output form | 전원<br>Power supply        | 소비전류<br>Current consumption |
|   | Push-pull (HTL)      | DC<br>10.8~26.4V          | 150mA 이하                    |
| Output phase                            |                      | A-phase, B-phase, Z-phase |                             |
| High Level Output Voltage               |                      | Vcc 3.5V                  |                             |
| Low Level Output Voltage                |                      | 2V or Less                |                             |
| 최대 응답 주파수<br>Maximum response frequency |                      | 200 KHz                   |                             |
| 전선길이<br>Cable Length                    |                      | 1 m                       |                             |

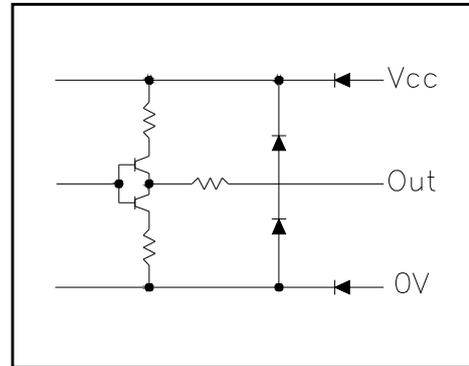
| 기계적 특성 Mechanical spec           |                                      |
|----------------------------------|--------------------------------------|
| 기동 토크<br>Starting torque         | 0.04 Nm                              |
| 최대 회전수<br>Maximum rotating speed | 6000 rpm                             |
| 허용 축 하중<br>Allowable shaft load  | Radial 방향 : 70 N<br>Thrust 방향 : 50 N |
| 사용 온도<br>Operating temp. range   | -20 ~ 80 °C                          |
| 내진동<br>Vibration                 | 200 m/S <sup>2</sup>                 |
| 내충격<br>Shock                     | 2000 m/S <sup>2</sup>                |
| 중량<br>Weight                     | 1.5Kg                                |

출력파형 *Output phase*



CW Sensor  
 $a+b, c+d=T/2 \pm T/10$   
 $a, b, c, d=T/4 \pm T/10$

출력회로 *Output circuit*



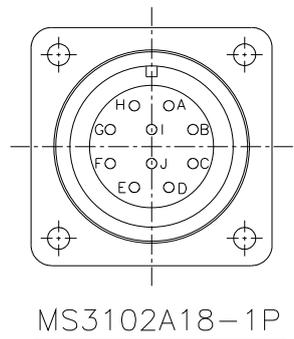
결선도 *Connection table*

TERMINAL 방식

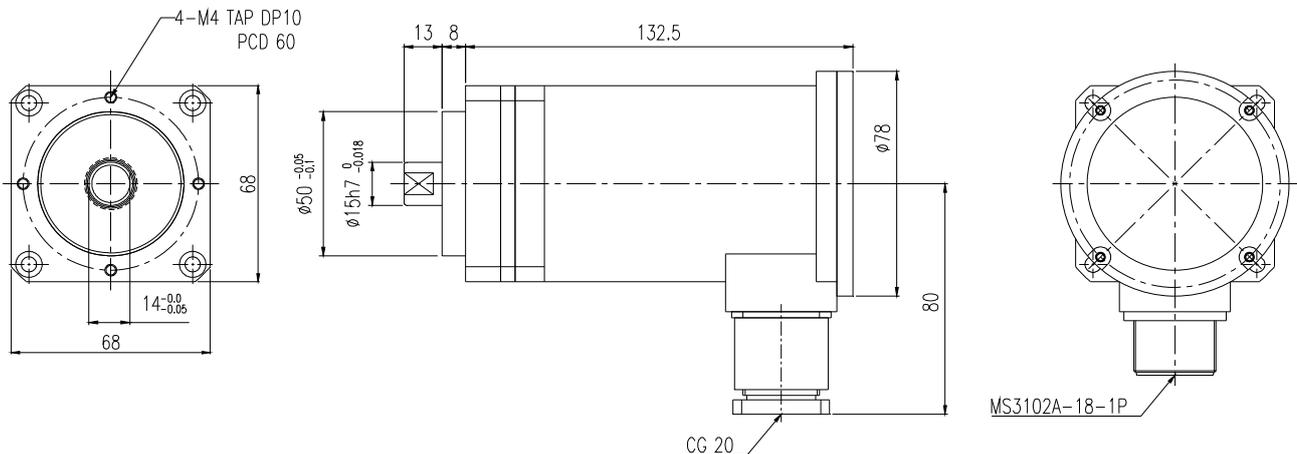
| 핀 구분<br>Pin Code | 신 호<br>Signal name |
|------------------|--------------------|
| 1                | TV                 |
| 2                | TG                 |
| 3                | A0                 |
| 4                | G                  |
| 5                | B0                 |
| 6                | G                  |

CONNECTOR 방식

| 핀 구분<br>Pin Code | PIN명칭<br>POMPLEMENTAL |
|------------------|-----------------------|
| D                | TV                    |
| H                | TG                    |
| A                | A0                    |
| I                | G                     |
| B                | B0                    |
| F                | G                     |
| C                | Z0                    |
| E                | G                     |
| J                | Shield                |



외형도 *External Dimension*







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### 특징 Feature

1. 축경 소형  
Small shaft
2. 광범위한 전압  
Wide ranging power source
3. 다양한 펄스 구현  
Various Pulses Built in

### 형 식 Model

**WJE68S15**  
**(LF-000B)**  
**[IRS600(ROD600)]**

- WJE  
FAE Encoder
- S : 실축  
Solid shaft
- 15 : 축경  
Shaft size

### 분 해 능 (P/R)

|          |   |       |   |       |   |       |   |       |
|----------|---|-------|---|-------|---|-------|---|-------|
| <b>A</b> | ① | 100.  | ① | 200.  | ② | 300.  | ③ | 500.  |
|          | ④ | 512.  | ⑤ | 600.  | ⑥ | 1000. | ⑦ | 1024. |
|          | ⑧ | 1200. | ⑨ | 1500. | Ⓐ | 1536. | Ⓑ | 2000. |
|          | Ⓒ | 2048. | Ⓓ | 2400. | Ⓔ | 3600. | Ⓕ | 4096. |

|          |   |       |   |       |   |       |   |       |
|----------|---|-------|---|-------|---|-------|---|-------|
| <b>B</b> | ① | 10.   | ① | 128.  | ② | 192.  | ③ | 256.  |
|          | ④ | 360.  | ⑤ | 384.  | ⑥ | 400.  | ⑦ | 720.  |
|          | ⑧ | 800.  | ⑨ | 900.  | Ⓐ | 1600. | Ⓑ | 1800. |
|          | Ⓒ | 2500. | Ⓓ | 2560. | Ⓔ | 3000. | Ⓕ | 8192. |

|          |   |       |   |       |   |       |   |       |
|----------|---|-------|---|-------|---|-------|---|-------|
| <b>C</b> | ① | 25.   | ① | 100.  | ② | 120.  | ③ | 200.  |
|          | ④ | 300.  | ⑤ | 400.  | ⑥ | 500.  | ⑦ | 600.  |
|          | ⑧ | 900.  | ⑨ | 1200. | Ⓐ | 1500. | Ⓑ | 1536. |
|          | Ⓒ | 2000. | Ⓓ | 2048. | Ⓔ | 2400. | Ⓕ | 2500. |

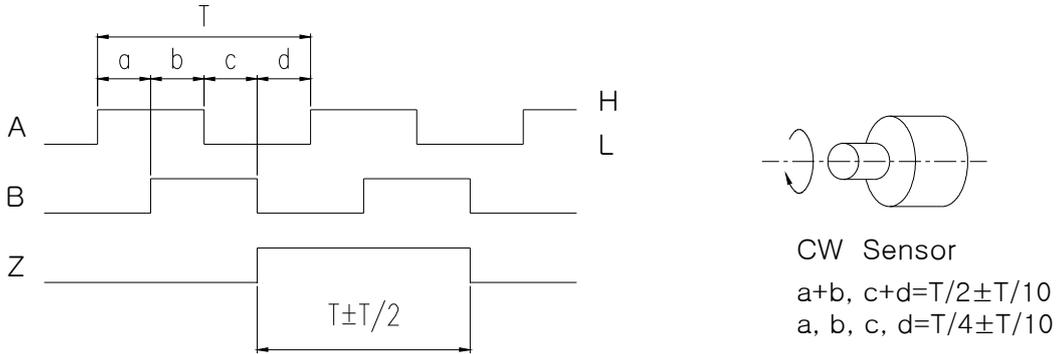
|          |   |       |   |       |   |       |   |       |
|----------|---|-------|---|-------|---|-------|---|-------|
| <b>D</b> | ① | 3.    | ① | 4.    | ② | 20.   | ③ | 24.   |
|          | ④ | 30.   | ⑤ | 40.   | ⑥ | 60.   | ⑦ | 150.  |
|          | ⑧ | 250.  | ⑨ | 600.  | Ⓐ | 750.  | Ⓑ | 900.  |
|          | Ⓒ | 1200. | Ⓓ | 2800. | Ⓔ | 5000. | Ⓕ | 6000. |

### 주요 특성 Specification

| 전기적 특성 Electrical spec                  |                      |                           |                                |
|---|----------------------|---------------------------|--------------------------------|
| 분 해 능<br>Resolution                     |                      | 10~8192 P/R               |                                |
| 출력 방식<br>Output form                    | 출력 형태<br>Output form | 전 원<br>Power supply       | 소 비 전 류<br>Current consumption |
|   | Push-pull (HTL)      | DC<br>10.8~26.4V          | 150mA 이하                       |
| Output phase                            |                      | A-phase, B-phase, Z-phase |                                |
| High Level Output Voltage               |                      | Vcc 3.5V                  |                                |
| Low Level Output Voltage                |                      | 2V or Less                |                                |
| 최대 응답 주파수<br>Maximum response frequency |                      | 200 KHz                   |                                |
| 전선길이<br>Cable Length                    |                      | 1 m                       |                                |

| 기계적 특성 Mechanical spec           |                                      |
|----------------------------------|--------------------------------------|
| 기동 토크<br>Starting torque         | 0.04 Nm                              |
| 최대 회전수<br>Maximum rotating speed | 6000 rpm                             |
| 허용 축 하중<br>Allowable shaft load  | Radial 방향 : 70 N<br>Thrust 방향 : 50 N |
| 사용 온도<br>Operating temp. rtange  | -20 ~ 80 °C                          |
| 내 진 동<br>Vibration               | 200 m/S <sup>2</sup>                 |
| 내 충 격<br>Shock                   | 2000 m/S <sup>2</sup>                |
| 중 량<br>Weight                    | 1.5Kg                                |

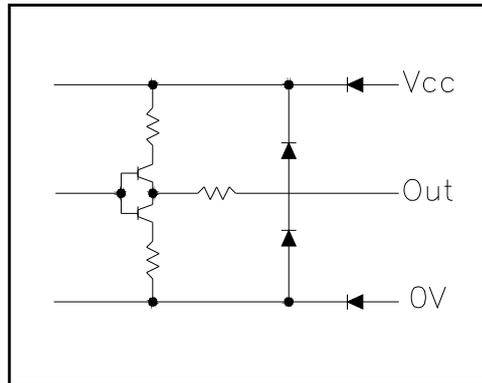
출력파형 *Output phase*



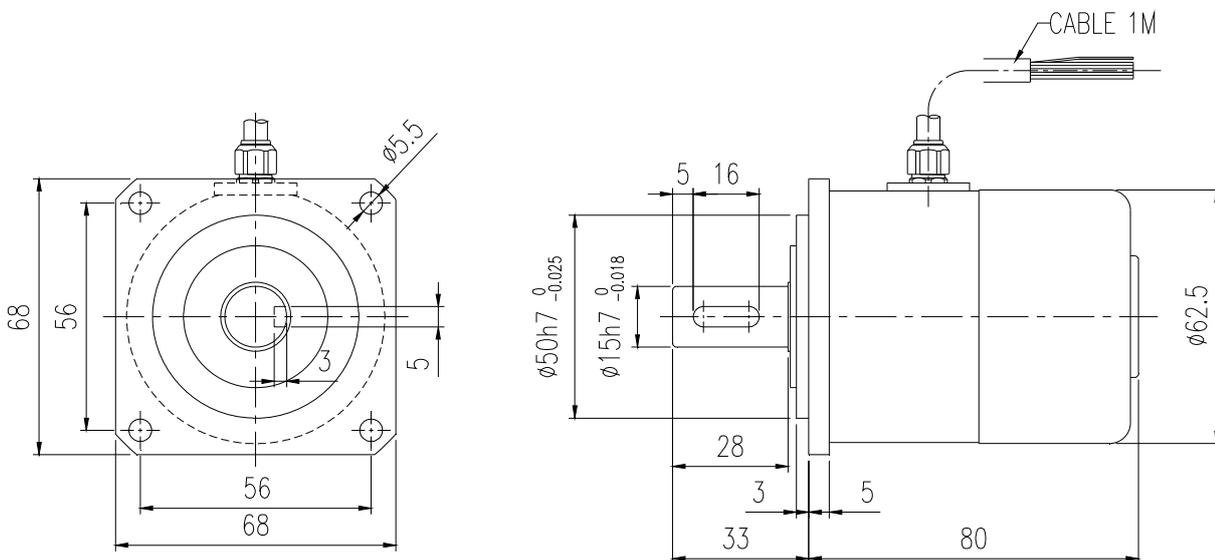
결선도 *Connection table*

| 신 호<br>Signal name | 전선 색상<br>Wire Color |
|--------------------|---------------------|
| Vcc                | Brown               |
| 0V                 | Red                 |
| A                  | Orange              |
| 0V                 | Yellow              |
| B                  | Green               |
| 0V                 | Blue                |
| Z                  | Purple              |
| 0V                 | Gray                |
| Check+             | White               |
| Check -            | Black               |
| Shield             | Shield              |

출력회로 *Output circuit*



외형도 *External Dimension*





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Measuring instruments

### 특징 Feature

1. 축경 소형  
Small shaft
2. 광범위한 전압  
Wide ranging power source
3. 다양한 펄스 구현  
Various Pulses Built in

### 형 식 Model

#### WJE90S08 (POG9.DN)

- WJE  
FAE Encoder
- S : 실축  
Solid shaft
- 08 : 축경  
Shaft size

#### 분 해 능 (P/R)

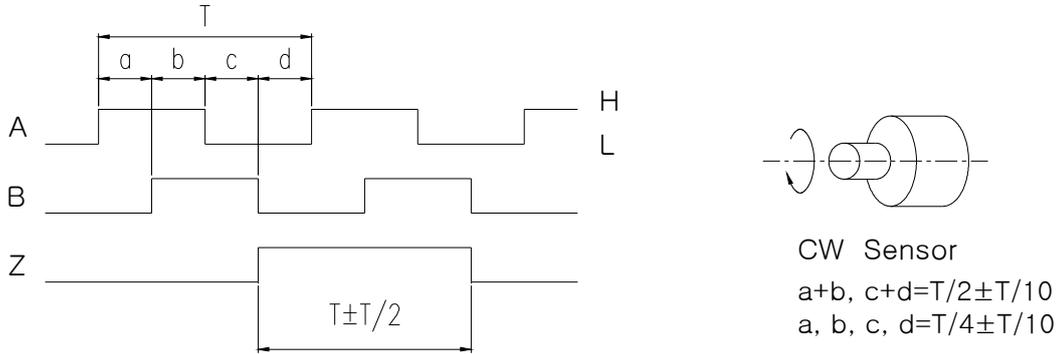
|          |   |       |   |       |   |       |   |       |
|----------|---|-------|---|-------|---|-------|---|-------|
| <b>A</b> | ① | 100.  | ① | 200.  | ② | 300.  | ③ | 500.  |
|          | ④ | 512.  | ⑤ | 600.  | ⑥ | 1000. | ⑦ | 1024. |
|          | ⑧ | 1200. | ⑨ | 1500. | Ⓐ | 1536. | Ⓑ | 2000. |
|          | Ⓒ | 2048. | Ⓓ | 2400. | Ⓔ | 3600. | Ⓕ | 4096. |
| <b>B</b> | ① | 10.   | ① | 128.  | ② | 192.  | ③ | 256.  |
|          | ④ | 360.  | ⑤ | 384.  | ⑥ | 400.  | ⑦ | 720.  |
|          | ⑧ | 800.  | ⑨ | 900.  | Ⓐ | 1600. | Ⓑ | 1800. |
|          | Ⓒ | 2500. | Ⓓ | 2560. | Ⓔ | 3000. | Ⓕ | 8192. |
| <b>C</b> | ① | 25.   | ① | 100.  | ② | 120.  | ③ | 200.  |
|          | ④ | 300.  | ⑤ | 400.  | ⑥ | 500.  | ⑦ | 600.  |
|          | ⑧ | 900.  | ⑨ | 1200. | Ⓐ | 1500. | Ⓑ | 1536. |
|          | Ⓒ | 2000. | Ⓓ | 2048. | Ⓔ | 2400. | Ⓕ | 2500. |
| <b>D</b> | ① | 3.    | ① | 4.    | ② | 20.   | ③ | 24.   |
|          | ④ | 30.   | ⑤ | 40.   | ⑥ | 60.   | ⑦ | 150.  |
|          | ⑧ | 250.  | ⑨ | 600.  | Ⓐ | 750.  | Ⓑ | 900.  |
|          | Ⓒ | 1200. | Ⓓ | 2800. | Ⓔ | 5000. | Ⓕ | 6000. |

### 주요 특성 Specification

| 전기적 특성 Electrical spec                  |                 |                           |                                |
|---|-----------------|---------------------------|--------------------------------|
| 분 해 능<br>Resolution                     |                 | 10~8192 P/R               |                                |
| 출력 방식<br>Output form                    | 출력 형태           | 전 원<br>Power supply       | 소 비 전 류<br>Current consumption |
|   | Push-pull (HTL) | DC<br>10.8~26.4V          | 150mA 이하                       |
| Output phase                            |                 | A-phase, B-phase, Z-phase |                                |
| High Level Output Voltage               |                 | Vcc 3.5V                  |                                |
| Low Level Output Voltage                |                 | 2V or Less                |                                |
| 최대 응답 주파수<br>Maximum response frequency |                 | 200 KHz                   |                                |
| 전선길이<br>Cable Length                    |                 | 1 m                       |                                |

| 기계적 특성 Mechanical spec           |                                      |
|----------------------------------|--------------------------------------|
| 기동 토크<br>Starting torque         | 0.02 Nm                              |
| 최대 회전수<br>Maximum rotating speed | 6000 rpm                             |
| 허용 축 하중<br>Allowable shaft load  | Radial 방향 : 40 N<br>Thrust 방향 : 20 N |
| 사용 온도<br>Operating temp. rtange  | -20 ~ 80 °C                          |
| 내 진 동<br>Vibration               | 200 m/S <sup>2</sup>                 |
| 내 충 격<br>Shock                   | 2000 m/S <sup>2</sup>                |
| 중 량<br>Weight                    | 1.5Kg                                |

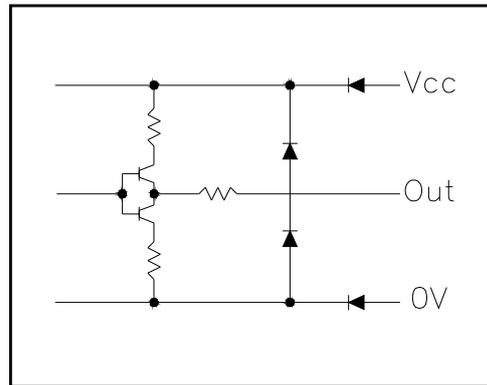
출력파형 *Output phase*



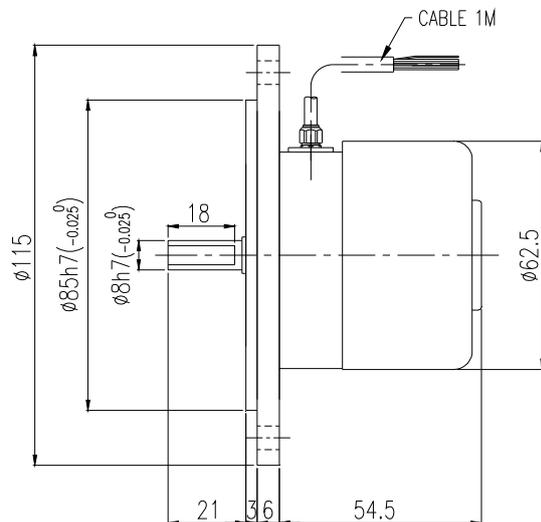
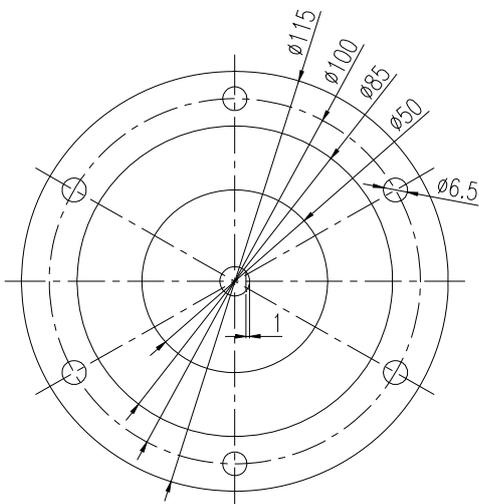
결선도 *Connection table*

| 신 호<br>Signal name | 전선 색상<br>Wire Color |
|--------------------|---------------------|
| Vcc                | Brown               |
| 0V                 | Red                 |
| A                  | Orange              |
| 0V                 | Yellow              |
| B                  | Green               |
| 0V                 | Blue                |
| Z                  | Purple              |
| 0V                 | Gray                |
| Check+             | White               |
| Check -            | Black               |
| Shield             | Shield              |

출력회로 *Output circuit*



외형도 *External Dimension*



# ROTARY ENCODER

WJE112S15



## 용도 Application

1. 산업용  
Industrial application
2. 계측용 장비  
Measuring instruments

## 특징 Feature

1. 축경 소형  
Small shaft
2. 광범위한 전압  
Wide ranging power source
3. 다양한 펄스 구성  
Various Pulses Built in

형 식 Model

**WJE112S15  
( RP112 )**

- WJE  
FAE Encoder
- S : 실축  
Solid shaft
- 15 : 축경  
Shaft size

## 분 해 능 (P/R)

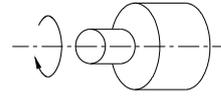
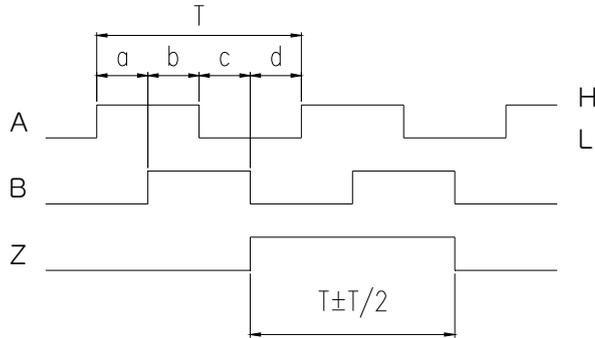
|          |       |       |   |       |   |       |   |       |
|----------|-------|-------|---|-------|---|-------|---|-------|
| <b>A</b> | ①     | 100.  | ① | 200.  | ② | 300.  | ③ | 500.  |
|          | ④     | 512.  | ⑤ | 600.  | ⑥ | 1000. | ⑦ | 1024. |
|          | ⑧     | 1200. | ⑨ | 1500. | Ⓐ | 1536. | Ⓑ | 2000. |
|          | Ⓒ     | 2048. | Ⓓ | 2400. | Ⓔ | 3600. | Ⓕ | 4096. |
|          | <hr/> |       |   |       |   |       |   |       |
| <b>B</b> | ①     | 10.   | ① | 128.  | ② | 192.  | ③ | 256.  |
|          | ④     | 360.  | ⑤ | 384.  | ⑥ | 400.  | ⑦ | 720.  |
|          | ⑧     | 800.  | ⑨ | 900.  | Ⓐ | 1600. | Ⓑ | 1800. |
|          | Ⓒ     | 2500. | Ⓓ | 2560. | Ⓔ | 3000. | Ⓕ | 8192. |
|          | <hr/> |       |   |       |   |       |   |       |
| <b>C</b> | ①     | 25.   | ① | 100.  | ② | 120.  | ③ | 200.  |
|          | ④     | 300.  | ⑤ | 400.  | ⑥ | 500.  | ⑦ | 600.  |
|          | ⑧     | 900.  | ⑨ | 1200. | Ⓐ | 1500. | Ⓑ | 1536. |
|          | Ⓒ     | 2000. | Ⓓ | 2048. | Ⓔ | 2400. | Ⓕ | 2500. |
|          | <hr/> |       |   |       |   |       |   |       |
| <b>D</b> | ①     | 3.    | ① | 4.    | ② | 20.   | ③ | 24.   |
|          | ④     | 30.   | ⑤ | 40.   | ⑥ | 60.   | ⑦ | 150.  |
|          | ⑧     | 250.  | ⑨ | 600.  | Ⓐ | 750.  | Ⓑ | 900.  |
|          | Ⓒ     | 1200. | Ⓓ | 2800. | Ⓔ | 5000. | Ⓕ | 6000. |

## 주요 특성 Specification

| 전기적 특성 Electrical spec                  |                        |                           |                                |
|---|------------------------|---------------------------|--------------------------------|
| 분 해 능<br>Resolution                     |                        | 10~8192 P/R               |                                |
| 출 력 방 식<br>Output form                  | 출 력 형 태<br>Output form | 전 원<br>Power supply       | 소 비 전 류<br>Current consumption |
|   | Push-pull (HTL)        | DC<br>10.8~26.4V          | 150mA 이하                       |
| Output phase                            |                        | A-phase, B-phase, Z-phase |                                |
| High Level Output Voltage               |                        | Vcc 3.5V                  |                                |
| Low Level Output Voltage                |                        | 2V or Less                |                                |
| 최대 응답 주파수<br>Maximum response frequency |                        | 200 KHz                   |                                |
| 전선길이<br>Cable Length                    |                        | 1 m                       |                                |

| 기계적 특성 Mechanical spec           |                                      |
|----------------------------------|--------------------------------------|
| 기동 토크<br>Starting torque         | 0.04 Nm                              |
| 최대 회전수<br>Maximum rotating speed | 6000 rpm                             |
| 허용 축 하중<br>Allowable shaft load  | Radial 방향 : 70 N<br>Thrust 방향 : 50 N |
| 사용 온도<br>Operating temp. range   | -20 ~ 80 °C                          |
| 내 진 동<br>Vibration               | 200 m/S <sup>2</sup>                 |
| 내 충 격<br>Shock                   | 2000 m/S <sup>2</sup>                |
| 중 량<br>Weight                    | 3.5Kg                                |

출력파형 Output phase



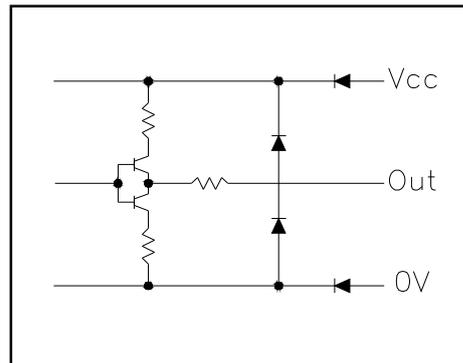
CW Sensor

$a+b, c+d=T/2 \pm T/10$   
 $a, b, c, d=T/4 \pm T/10$

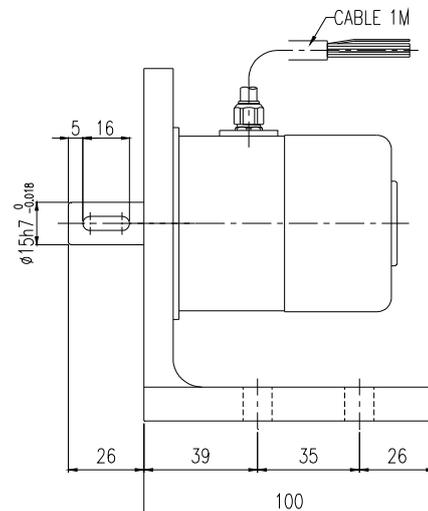
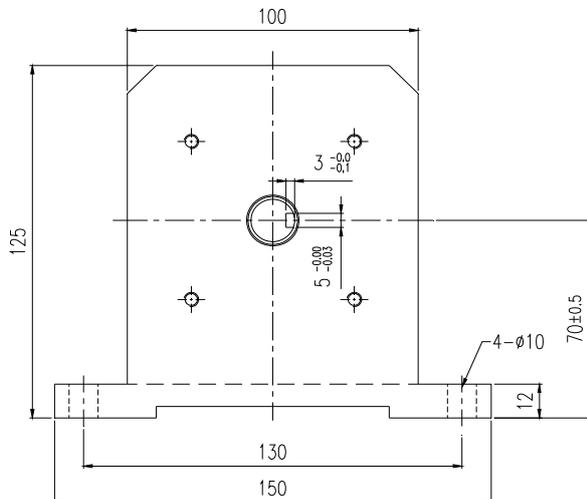
결선도 Connection table

| 신 호<br>Signal name | 전선 색상<br>Wire Color |
|--------------------|---------------------|
| Vcc                | Brown               |
| 0V                 | Red                 |
| A                  | Orange              |
| 0V                 | Yellow              |
| B                  | Green               |
| 0V                 | Blue                |
| Z                  | Purple              |
| 0V                 | Gray                |
| Check+             | White               |
| Check -            | Black               |
| Shield             | Shield              |

출력회로 Output circuit



외형도 External Dimension





### 용도 Application

1. 산업용  
Industrial application
2. 계측용 장비  
Measuring instruments

### 특징 Feature

1. 축경 소형  
Small shaft
2. 광범위한 전압  
Wide ranging power source
3. 다양한 펄스 구현  
Various Pulses Built in

### 형 식 Model

**WJE120S15**  
[LEJ, LEM]  
[ROD19xx, IRS960]

- WJE  
FAE Encoder
- S : 실축  
Solid shaft
- 15 : 축경  
Shaft size

### 분해능(P/R)

|      |       |       |       |      |       |       |       |      |       |       |       |      |       |       |
|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|-------|------|-------|-------|
| E    | ①     | ②     | ③     | ④    | ⑤     | ⑥     | ⑦     | ⑧    | ⑨     | Ⓐ     | Ⓑ     | Ⓒ    | Ⓓ     | Ⓔ     |
| 600. | 1200. | 2400. | 2400. | 600. | 1200. | 2400. | 2400. | 600. | 1200. | 2400. | 2400. | 600. | 1200. | 2400. |

### 사용 전압

DC : 10.8~26.4V  
AC : 110/220V

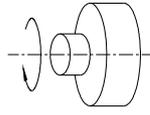
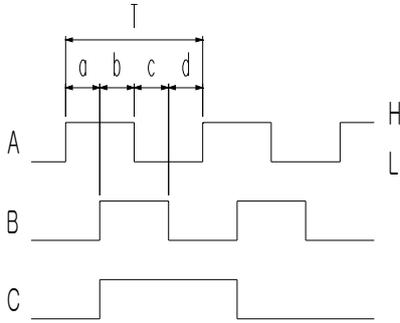
### 주요 특성 Specification

| 전기적 특성 Electrical spec                  |                      |                              |                             |
|---|----------------------|------------------------------|-----------------------------|
| 분해능<br>Resolution                       |                      | 10~8192 P/R                  |                             |
| 출력 방식                                   | 출력 형태<br>Output form | 전원<br>Power supply           | 소비전류<br>Current consumption |
|   | Push-pull (HTL)      | DC 10.8~26.4V<br>AC 110/220V | 150mA 이하                    |
| Output phase                            |                      | A-phase, B-phase, C-phase    |                             |
| High Level Output Voltage               |                      | Vcc 3.5V                     |                             |
| Low Level Output Voltage                |                      | 2V or Less                   |                             |
| 최대 응답 주파수<br>Maximum response frequency |                      | 200 KHz                      |                             |
| 결선<br>Connection                        |                      | 단자대 (Terminal)               |                             |

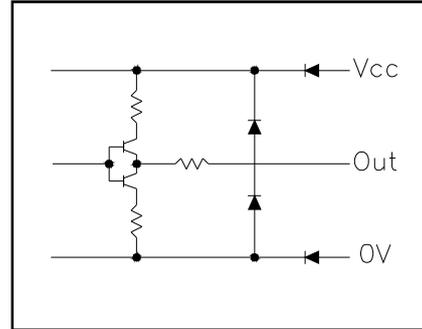
| 기계적 특성 Mechanical spec           |                                      |
|----------------------------------|--------------------------------------|
| 기동 토크<br>Starting torque         | 0.04 Nm                              |
| 최대 회전수<br>Maximum rotating speed | 6000 rpm                             |
| 허용 축 하중<br>Allowable shaft load  | Radial 방향 : 70 N<br>Thrust 방향 : 50 N |
| 사용 온도<br>Operating temp. range   | -20 ~ 80 °C                          |
| 내진동<br>Vibration                 | 200 m/S <sup>2</sup>                 |
| 내충격<br>Shock                     | 2000 m/S <sup>2</sup>                |
| 중량<br>Weight                     | 4.7Kg                                |

출력파형 Output phase

출력회로 Output circuit



CW Sensor  
 $a+b, c+d=T/2 \pm T/10$   
 $a, b, c, d=T/4 \pm T/10$



결선도 Connection table

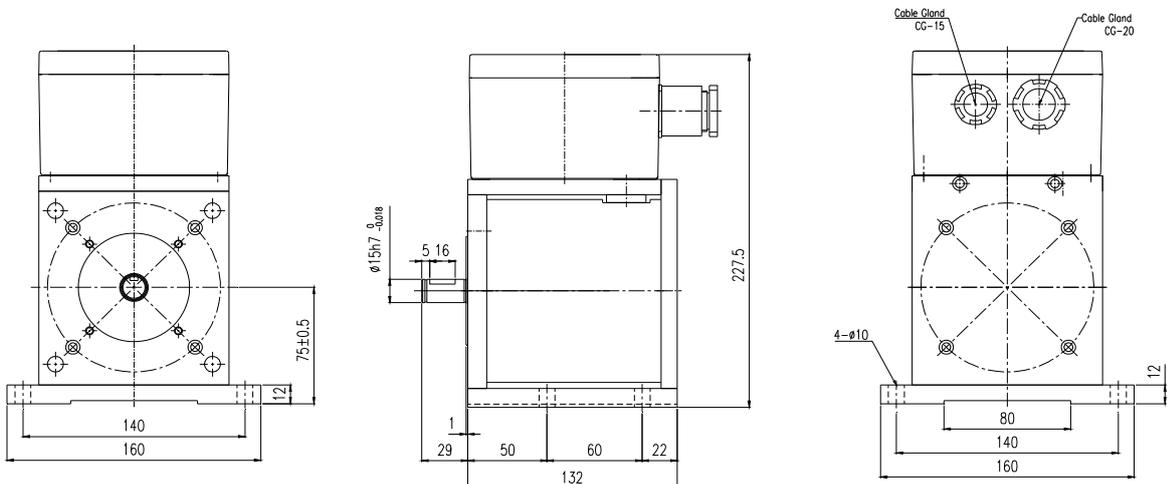
1) DC type

| No. | 신 호<br>Signal name |
|-----|--------------------|
| 1   | Vcc                |
| 2   | 0V                 |
| 3   | A                  |
| 4   | 0V                 |
| 5   | B                  |
| 6   | 0V                 |
| 7   | C                  |
| 8   | 0V                 |
| 9   | Shield             |

2) AC type

| No. | Screw Terminal<br>Blocks 단자명 | No. | Screw Terminal<br>Blocks 단자명 |
|-----|------------------------------|-----|------------------------------|
| 1   | -                            | 7   | A +                          |
| 2   | -                            | 8   | A -                          |
| 3   | FG                           | 9   | B +                          |
| 4   | 0V                           | 10  | B -                          |
| 5   | 110V                         | 11  | C +                          |
| 6   | 220V                         | 12  | C -                          |

외형도 External Dimension



대체품 비교 *Substitute Comparison*

| SUMTAK (HEIDENHAIN)  | FAE (NSD)   |
|--|---|
|  |  |
| LEH-120BMH-S1  | WJE120S15-E-AC  |
| LEH-240BMH-S1  |   |
| LEH-60BMH-S1   |   |
| ROD1992 1200 (SN:689892-01)  |   |



### 용도 Application

1. 산업용  
Industrial application
2. 계측용 장비  
Measuring instruments

### 특징 Feature

1. 축경 소형  
Small shaft
2. 광범위한 전압  
Wide ranging power source
3. 다양한 펄스 구현  
Various Pulses Built in

### 형 식 Model

**WJE125S15**  
[LEJ, LEM]  
[ROD1900, IRS960]

- WJE  
FAE Encoder
- S : 실축  
Solid shaft
- 15 : 축경  
Shaft size

### 분해능(P/R)

|          |   |       |   |       |   |       |   |       |
|----------|---|-------|---|-------|---|-------|---|-------|
| <b>A</b> | ① | 100.  | ① | 200.  | ② | 300.  | ③ | 500.  |
|          | ④ | 512.  | ⑤ | 600.  | ⑥ | 1000. | ⑦ | 1024. |
|          | ⑧ | 1200. | ⑨ | 1500. | Ⓐ | 1536. | Ⓑ | 2000. |
|          | Ⓒ | 2048. | Ⓓ | 2400. | Ⓔ | 3600. | Ⓕ | 4096. |
| <b>B</b> | ① | 10.   | ① | 128.  | ② | 192.  | ③ | 256.  |
|          | ④ | 360.  | ⑤ | 384.  | ⑥ | 400.  | ⑦ | 720.  |
|          | ⑧ | 800.  | ⑨ | 900.  | Ⓐ | 1600. | Ⓑ | 1800. |
|          | Ⓒ | 2500. | Ⓓ | 2560. | Ⓔ | 3000. | Ⓕ | 8192. |
| <b>C</b> | ① | 25.   | ① | 100.  | ② | 120.  | ③ | 200.  |
|          | ④ | 300.  | ⑤ | 400.  | ⑥ | 500.  | ⑦ | 600.  |
|          | ⑧ | 900.  | ⑨ | 1200. | Ⓐ | 1500. | Ⓑ | 1536. |
|          | Ⓒ | 2000. | Ⓓ | 2048. | Ⓔ | 2400. | Ⓕ | 2500. |
| <b>D</b> | ① | 3.    | ① | 4.    | ② | 20.   | ③ | 24.   |
|          | ④ | 30.   | ⑤ | 40.   | ⑥ | 60.   | ⑦ | 150.  |
|          | ⑧ | 250.  | ⑨ | 600.  | Ⓐ | 750.  | Ⓑ | 900.  |
|          | Ⓒ | 1200. | Ⓓ | 2800. | Ⓔ | 5000. | Ⓕ | 6000. |

### 사용 전압

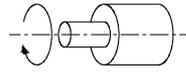
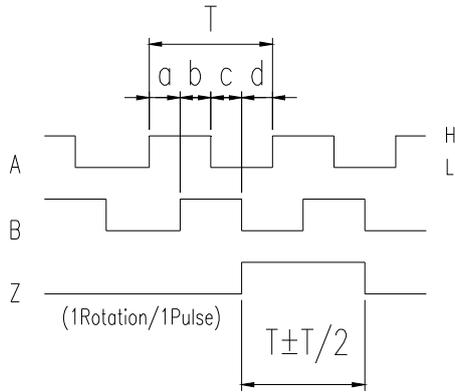
DC : 10.8~26.4V  
AC : 110/220V

### 주요 특성 Specification

| 전기적 특성 Electrical spec                  |                      |                              |                             |
|---|----------------------|------------------------------|-----------------------------|
| 분해능<br>Resolution                       |                      | 10~8192 P/R                  |                             |
| 출력 방식                                   | 출력 형태<br>Output form | 전원<br>Power supply           | 소비전류<br>Current consumption |
|   | Push-pull (HTL)      | DC 10.8~26.4V<br>AC 110/220V | 150mA 이하                    |
| Output phase                            |                      | A-phase, B-phase, Z-phase    |                             |
| High Level Output Voltage               |                      | Vcc 3.5V                     |                             |
| Low Level Output Voltage                |                      | 2V or Less                   |                             |
| 최대 응답 주파수<br>Maximum response frequency |                      | 200 KHz                      |                             |
| 결선<br>Connection                        |                      | 단자대 (Terminal)               |                             |

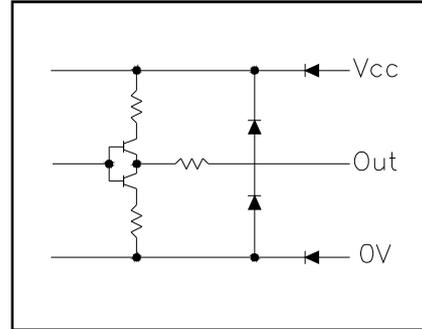
| 기계적 특성 Mechanical spec           |                                      |
|----------------------------------|--------------------------------------|
| 기동 토크<br>Starting torque         | 0.04 Nm                              |
| 최대 회전수<br>Maximum rotating speed | 6000 rpm                             |
| 허용 축 하중<br>Allowable shaft load  | Radial 방향 : 70 N<br>Thrust 방향 : 50 N |
| 사용 온도<br>Operating temp. range   | -20 ~ 80 °C                          |
| 내진동<br>Vibration                 | 200 m/S <sup>2</sup>                 |
| 내충격<br>Shock                     | 2000 m/S <sup>2</sup>                |
| 중량<br>Weight                     | 4.7Kg                                |

출력파형 Output phase



CW Sensor  
 $a+b, c+d=T/2\pm T/10$   
 $a, b, c, d=T/4\pm T/10$

출력회로 Output circuit



결선도 Connection table

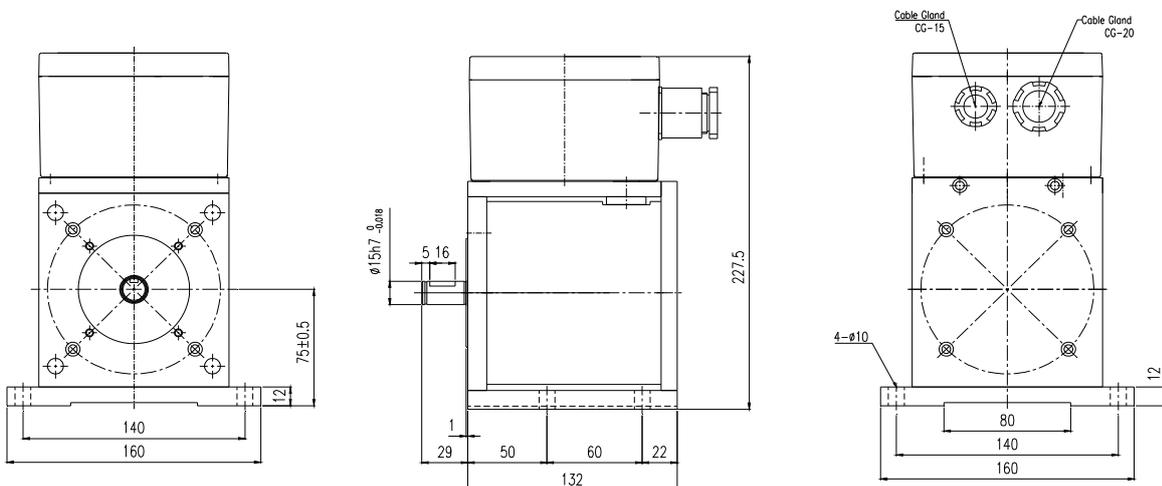
1) DC type

| No. | 신 호<br>Signal name |
|-----|--------------------|
| 1   | Vcc                |
| 2   | 0V                 |
| 3   | A                  |
| 4   | 0V                 |
| 5   | B                  |
| 6   | 0V                 |
| 7   | Z                  |
| 8   | 0V                 |
| 9   | Shield             |

2) AC type

| No. | Screw Terminal<br>Blocks 단자명 | No. | Screw Terminal<br>Blocks 단자명 |
|-----|------------------------------|-----|------------------------------|
| 1   | -                            | 7   | A +                          |
| 2   | -                            | 8   | A -                          |
| 3   | FG                           | 9   | B +                          |
| 4   | 0V                           | 10  | B -                          |
| 5   | 110V                         | 11  | Z +                          |
| 6   | 220V                         | 12  | Z -                          |

외형도 External Dimension



대체품 비교 *Substitute Comparison*

| SUMTAK (HEIDENHAIN)  | FAE (NSD)   |
|--|---|
|  |  |
| <p>IRS960-600 (ID : 651003-37)</p>   | <p>WJE125S15-C-AC</p>   |
| <p>IRS960-1536 (ID : 651003-38)</p>  |   |
| <p>IRS960-2048 (ID : 651003-39)</p>  |   |
| <p>IRS960-3600 (ID : 651003-41)</p>  |   |
| <p>ROD1992 2400 (SN : 689893-01)</p>   |   |



### 용도 Application

1. 산업용  
Industrial application
2. 계측용 장비  
Measuring instruments

### 특징 Feature

1. 축경 소형  
Small shaft
2. 광범위한 전압  
Wide ranging power source
3. 다양한 펄스 구현  
Various Pulses Built in

## 형 식 Model

**WJE128S16**  
(MSP, MNP)  
(TS5080)

- WJE  
FAE Encoder
- S: 실축  
Solid shaft
- 16: 축경  
Shaft size

### 분해능(P/R)

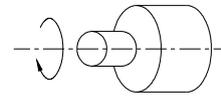
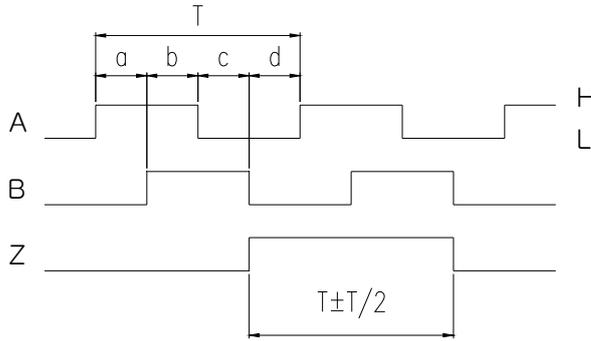
|          |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |
|----------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| <b>A</b> | ① 100. | ① 200. | ② 300. | ③ 500. | ④ 512. | ⑤ 600. | ⑥ 1000. | ⑦ 1024. | ⑧ 1200. | ⑨ 1500. | Ⓐ 1536. | Ⓑ 2000. | Ⓒ 2048. | Ⓓ 2400. | Ⓔ 3600. | Ⓕ 4096. |
| <b>B</b> | ① 10.  | ① 128. | ② 192. | ③ 256. | ④ 360. | ⑤ 384. | ⑥ 400.  | ⑦ 720.  | ⑧ 800.  | ⑨ 900.  | Ⓐ 1600. | Ⓑ 1800. | Ⓒ 2500. | Ⓓ 2560. | Ⓔ 3000. | Ⓕ 8192. |
| <b>C</b> | ① 25.  | ① 100. | ② 120. | ③ 200. | ④ 300. | ⑤ 400. | ⑥ 500.  | ⑦ 600.  | ⑧ 900.  | ⑨ 1200. | Ⓐ 1500. | Ⓑ 1536. | Ⓒ 2000. | Ⓓ 2048. | Ⓔ 2400. | Ⓕ 2500. |
| <b>D</b> | ① 3.   | ① 4.   | ② 20.  | ③ 24.  | ④ 30.  | ⑤ 40.  | ⑥ 60.   | ⑦ 150.  | ⑧ 250.  | ⑨ 600.  | Ⓐ 750.  | Ⓑ 900.  | Ⓒ 1200. | Ⓓ 2800. | Ⓔ 5000. | Ⓕ 6000. |

## 주요 특성 Specification

| 전기적 특성 Electrical spec                  |                      |                           |                             |
|---|----------------------|---------------------------|-----------------------------|
| 분해능<br>Resolution                       |                      | 10~8192 P/R               |                             |
| 출력 방식<br>Output form                    | 출력 형태<br>Output form | 전원<br>Power supply        | 소비전류<br>Current consumption |
|   | Push-pull (HTL)      | DC<br>10.8~26.4V          | 150mA 이하                    |
| Output phase                            |                      | A-phase, B-phase, Z-phase |                             |
| High Level Output Voltage               |                      | Vcc 3.5V                  |                             |
| Low Level Output Voltage                |                      | 2V or Less                |                             |
| 최대 응답 주파수<br>Maximum response frequency |                      | 200 KHz                   |                             |
| 결선<br>Connection                        |                      | 단자대 (Terminal)            |                             |

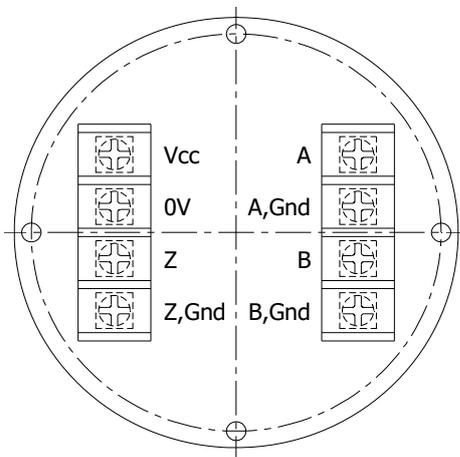
| 기계적 특성 Mechanical spec           |                                      |
|----------------------------------|--------------------------------------|
| 기동 토크<br>Starting torque         | 0.04 Nm                              |
| 최대 회전수<br>Maximum rotating speed | 6000 rpm                             |
| 허용 축 하중<br>Allowable shaft load  | Radial 방향 : 70 N<br>Thrust 방향 : 50 N |
| 사용 온도<br>Operating temp. range   | -20 ~ 80 °C                          |
| 내진동<br>Vibration                 | 200 m/S <sup>2</sup>                 |
| 내충격<br>Shock                     | 2000 m/S <sup>2</sup>                |
| 중량<br>Weight                     | 8Kg                                  |

출력파형 *Output phase*

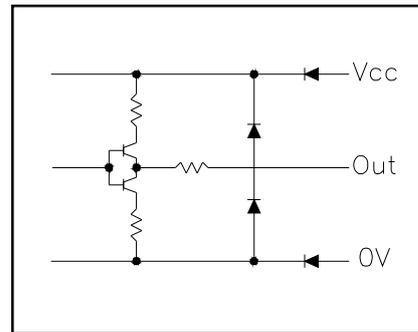


CW Sensor  
 $a+b, c+d=T/2 \pm T/10$   
 $a, b, c, d=T/4 \pm T/10$

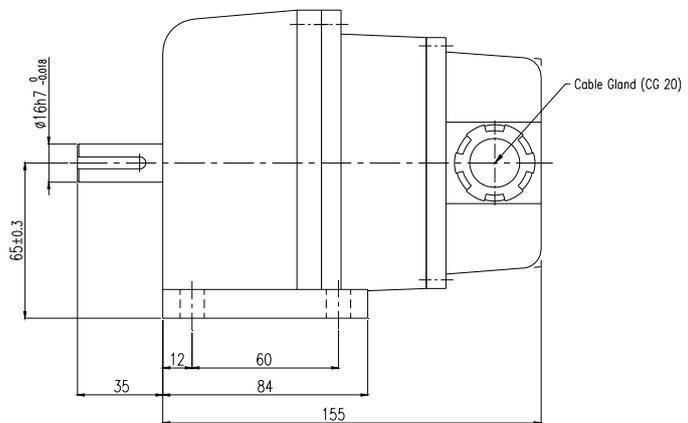
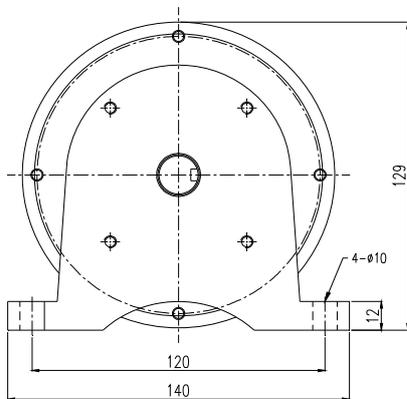
결선도 *Connection table*



출력회로 *Output circuit*



외형도 *External Dimension*



대체품 비교 *Substitute Comparison*

| TAMAGAWA (MITSUBISHI OEM)  | FAE (NSD)   |
|--|---|
|  |  |
| TS5080 N15 (MSP-25)  | WJE128S16-C   |
| TS5081 N153 (MNP-02G)  |   |
| TS5081 N15 (MSP200)  |   |
| TS5083 N15 (MSP-600)   |   |
| TS5083 N156 (MNP-06G)  |   |
| TS5084 N156 (MNP-09G)  |   |
| TS5084 N157 (MNP-12G)  |   |



### 용도 Application

1. 산업용  
Industrial application
2. 계측용 장비  
Measuring instruments

### 특징 Feature

1. 축경 소형  
Small shaft
2. 광범위한 전압  
Wide ranging power source
3. 다양한 펄스 구현  
Various Pulses Built in
4. 라인 드라이브 출력  
Line Driver

## 형 식 Model

**WJE129S16**  
(MSP, MNP)  
(TS5080)

- WJE  
FAE Encoder
- S: 실축  
Solid shaft
- 16: 축경  
Shaft size

### 분해능(P/R)

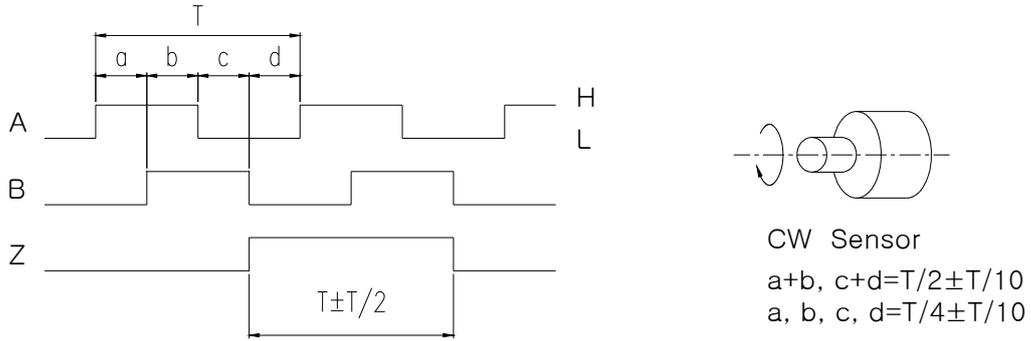
|          |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |
|----------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| <b>A</b> | ① 100. | ① 200. | ② 300. | ③ 500. | ④ 512. | ⑤ 600. | ⑥ 1000. | ⑦ 1024. | ⑧ 1200. | ⑨ 1500. | Ⓐ 1536. | Ⓑ 2000. | Ⓒ 2048. | Ⓓ 2400. | Ⓔ 3600. | Ⓕ 4096. |
| <b>B</b> | ① 10.  | ① 128. | ② 192. | ③ 256. | ④ 360. | ⑤ 384. | ⑥ 400.  | ⑦ 720.  | ⑧ 800.  | ⑨ 900.  | Ⓐ 1600. | Ⓑ 1800. | Ⓒ 2500. | Ⓓ 2560. | Ⓔ 3000. | Ⓕ 8192. |
| <b>C</b> | ① 25.  | ① 100. | ② 120. | ③ 200. | ④ 300. | ⑤ 400. | ⑥ 500.  | ⑦ 600.  | ⑧ 900.  | ⑨ 1200. | Ⓐ 1500. | Ⓑ 1536. | Ⓒ 2000. | Ⓓ 2048. | Ⓔ 2400. | Ⓕ 2500. |
| <b>D</b> | ① 3.   | ① 4.   | ② 20.  | ③ 24.  | ④ 30.  | ⑤ 40.  | ⑥ 60.   | ⑦ 150.  | ⑧ 250.  | ⑨ 600.  | Ⓐ 750.  | Ⓑ 900.  | Ⓒ 1200. | Ⓓ 2800. | Ⓔ 5000. | Ⓕ 6000. |

## 주요 특성 Specification

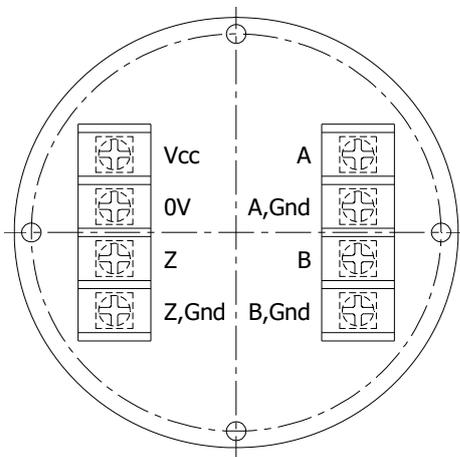
| 전기적 특성 Electrical spec                  |                      |                           |                             |
|---|----------------------|---------------------------|-----------------------------|
| 분해능<br>Resolution                       |                      | 10~8192 P/R               |                             |
| 출력 방식<br>Output form                    | 출력 형태<br>Line Driver | 전원<br>Power supply        | 소비전류<br>Current consumption |
|   |                      | DC<br>10.8~26.4V          | 150mA 이하                    |
| Output phase                            |                      | A-phase, B-phase, Z-phase |                             |
| High Level Output Voltage               |                      | -                         |                             |
| Low Level Output Voltage                |                      | -                         |                             |
| 최대 응답 주파수<br>Maximum response frequency |                      | 300 KHz                   |                             |
| 사용 소자<br>Element used                   |                      | AM26C31                   |                             |
| 결선<br>Connection                        |                      | 단자대 (Terminal)            |                             |

| 기계적 특성 Mechanical spec           |                                      |
|----------------------------------|--------------------------------------|
| 기동 토크<br>Starting torque         | 0.04 Nm                              |
| 최대 회전수<br>Maximum rotating speed | 6000 rpm                             |
| 허용 축 하중<br>Allowable shaft load  | Radial 방향 : 70 N<br>Thrust 방향 : 50 N |
| 사용 온도<br>Operating temp. range   | -20 ~ 80 °C                          |
| 내진동<br>Vibration                 | 200 m/S <sup>2</sup>                 |
| 내충격<br>Shock                     | 2000 m/S <sup>2</sup>                |
| 중량<br>Weight                     | 8Kg                                  |

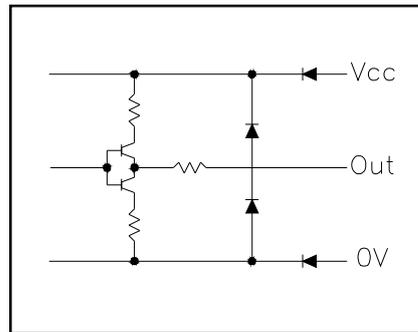
출력파형 *Output phase*



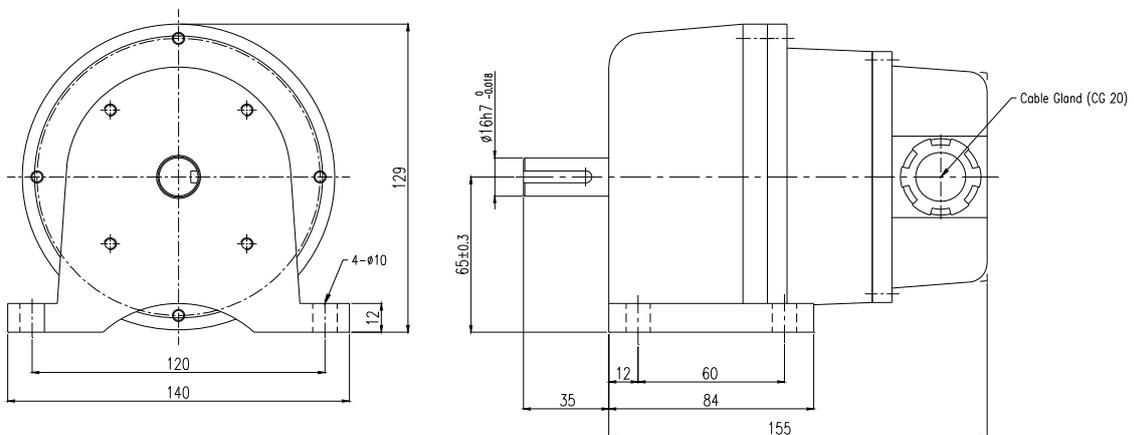
결선도 *Connection table*



출력회로 *Output circuit*



외형도 *External Dimension*





### 용도 Application

1. 산업용  
Industrial application
2. 계측용 장비  
Measuring instruments

### 특징 Feature

1. 축경 소형  
Small shaft
2. 광범위한 전압  
Wide ranging power source
3. 다양한 펄스 구현  
Various Pulses Built in

## 형 식 Model

**WJE130S16**  
**MSP, MNP**  
**( TS5080 )**

- WJE  
FAE Encoder
- S: 실축  
Solid shaft
- 16: 축경  
Shaft size

### 분해능(P/R)

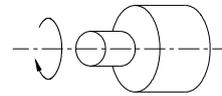
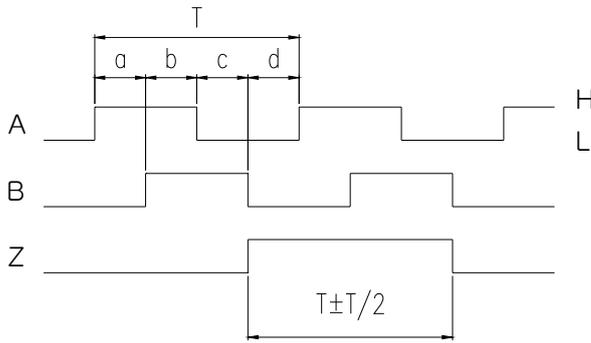
|          |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |
|----------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| <b>A</b> | ① 100. | ① 200. | ② 300. | ③ 500. | ④ 512. | ⑤ 600. | ⑥ 1000. | ⑦ 1024. | ⑧ 1200. | ⑨ 1500. | Ⓐ 1536. | Ⓑ 2000. | Ⓒ 2048. | Ⓓ 2400. | Ⓔ 3600. | Ⓕ 4096. |
| <b>B</b> | ① 10.  | ① 128. | ② 192. | ③ 256. | ④ 360. | ⑤ 384. | ⑥ 400.  | ⑦ 720.  | ⑧ 800.  | ⑨ 900.  | Ⓐ 1600. | Ⓑ 1800. | Ⓒ 2500. | Ⓓ 2560. | Ⓔ 3000. | Ⓕ 8192. |
| <b>C</b> | ① 25.  | ① 100. | ② 120. | ③ 200. | ④ 300. | ⑤ 400. | ⑥ 500.  | ⑦ 600.  | ⑧ 900.  | ⑨ 1200. | Ⓐ 1500. | Ⓑ 1536. | Ⓒ 2000. | Ⓓ 2048. | Ⓔ 2400. | Ⓕ 2500. |
| <b>D</b> | ① 3.   | ① 4.   | ② 20.  | ③ 24.  | ④ 30.  | ⑤ 40.  | ⑥ 60.   | ⑦ 150.  | ⑧ 250.  | ⑨ 600.  | Ⓐ 750.  | Ⓑ 900.  | Ⓒ 1200. | Ⓓ 2800. | Ⓔ 5000. | Ⓕ 6000. |

## 주요 특성 Specification

| 전기적 특성 Electrical spec                  |                      |                           |                             |
|---|----------------------|---------------------------|-----------------------------|
| 분해능<br>Resolution                       |                      | 10~8192 P/R               |                             |
| 출력 방식<br>Output form                    | 출력 형태<br>Output form | 전원<br>Power supply        | 소비전류<br>Current consumption |
|   | Push-pull (HTL)      | DC<br>10.8~26.4V          | 150mA 이하                    |
| Output phase                            |                      | A-phase, B-phase, Z-phase |                             |
| High Level Output Voltage               |                      | Vcc 3.5V                  |                             |
| Low Level Output Voltage                |                      | 2V or Less                |                             |
| 최대 응답 주파수<br>Maximum response frequency |                      | 200 KHz                   |                             |
| 결선<br>Connection                        |                      | 단자대 (Terminal)            |                             |

| 기계적 특성 Mechanical spec           |                                      |
|----------------------------------|--------------------------------------|
| 기동 토크<br>Starting torque         | 0.04 Nm                              |
| 최대 회전수<br>Maximum rotating speed | 6000 rpm                             |
| 허용 축 하중<br>Allowable shaft load  | Radial 방향 : 70 N<br>Thrust 방향 : 50 N |
| 사용 온도<br>Operating temp. range   | -20 ~ 80 °C                          |
| 내진동<br>Vibration                 | 200 m/S <sup>2</sup>                 |
| 내충격<br>Shock                     | 2000 m/S <sup>2</sup>                |
| 중량<br>Weight                     | 7.5Kg                                |

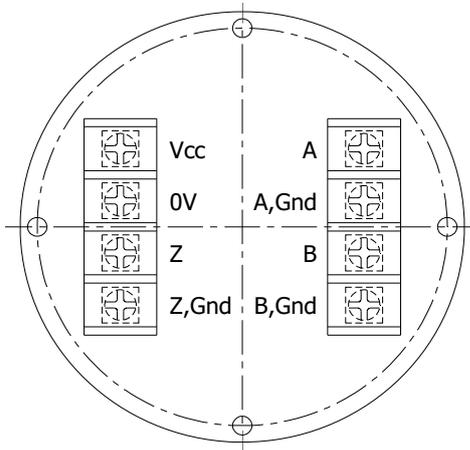
출력파형 *Output phase*



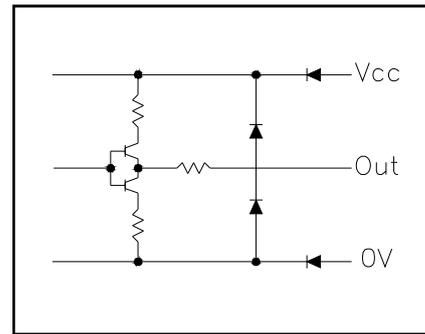
CW Sensor

$a+b, c+d=T/2 \pm T/10$   
 $a, b, c, d=T/4 \pm T/10$

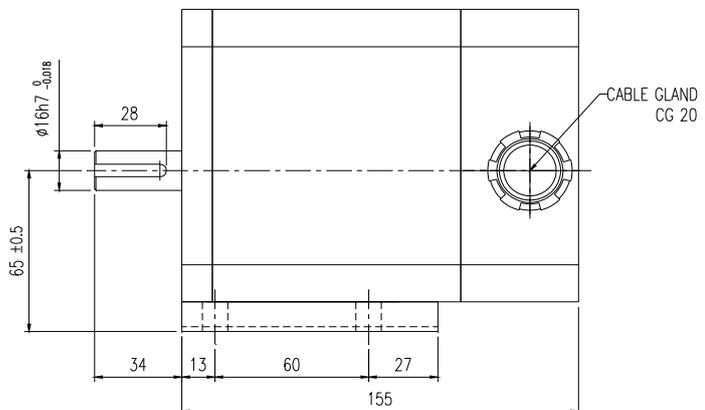
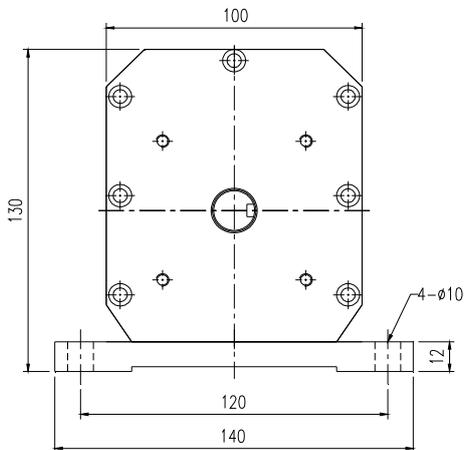
결선도 *Connection table*



출력회로 *Output circuit*



외형도 *External Dimension*





### 용도 Application

1. 산업용  
Industrial application
2. 계측용 장비  
Measuring instruments

### 특징 Feature

1. 축경 소형  
Small shaft
2. 광범위한 전압  
Wide ranging power source
3. 다양한 펄스 구현  
Various Pulses Built in

## 형 식 Model

### WJE138S16 (EW-D)

- WJE  
FAE Encoder
- S: 실축  
Solid shaft
- 16: 축경  
Shaft size

### 분해능(P/R)

|          |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |
|----------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| <b>A</b> | ① 100. | ① 200. | ② 300. | ③ 500. | ④ 512. | ⑤ 600. | ⑥ 1000. | ⑦ 1024. | ⑧ 1200. | ⑨ 1500. | Ⓐ 1536. | Ⓑ 2000. | Ⓒ 2048. | Ⓓ 2400. | Ⓔ 3600. | Ⓕ 4096. |
| <b>B</b> | ① 10.  | ① 128. | ② 192. | ③ 256. | ④ 360. | ⑤ 384. | ⑥ 400.  | ⑦ 720.  | ⑧ 800.  | ⑨ 900.  | Ⓐ 1600. | Ⓑ 1800. | Ⓒ 2500. | Ⓓ 2560. | Ⓔ 3000. | Ⓕ 8192. |
| <b>C</b> | ① 25.  | ① 100. | ② 120. | ③ 200. | ④ 300. | ⑤ 400. | ⑥ 500.  | ⑦ 600.  | ⑧ 900.  | ⑨ 1200. | Ⓐ 1500. | Ⓑ 1536. | Ⓒ 2000. | Ⓓ 2048. | Ⓔ 2400. | Ⓕ 2500. |
| <b>D</b> | ① 3.   | ① 4.   | ② 20.  | ③ 24.  | ④ 30.  | ⑤ 40.  | ⑥ 60.   | ⑦ 150.  | ⑧ 250.  | ⑨ 600.  | Ⓐ 750.  | Ⓑ 900.  | Ⓒ 1200. | Ⓓ 2800. | Ⓔ 5000. | Ⓕ 6000. |

## 주요 특성 Specification

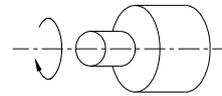
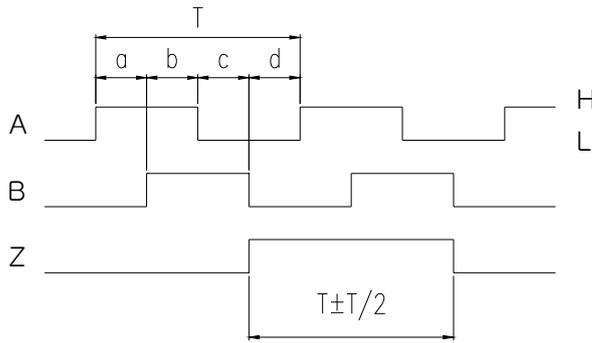
### 전기적 특성 Electrical spec

|   |                      |                           |                             |
|---|----------------------|---------------------------|-----------------------------|
| 분해능<br>Resolution                       |                      | 10~8192 P/R               |                             |
| 출력 방식<br>Output form                    | 출력 형태<br>Output form | 전원<br>Power supply        | 소비전류<br>Current consumption |
|   | Push-pull (HTL)      | DC<br>10.8~26.4V          | 150mA 이하                    |
| Output phase                            |                      | A-phase, B-phase, Z-phase |                             |
| High Level Output Voltage               |                      | Vcc 3.5V                  |                             |
| Low Level Output Voltage                |                      | 2V or Less                |                             |
| 최대 응답 주파수<br>Maximum response frequency |                      | 200 KHz                   |                             |
| 결선<br>Connection                        |                      | 단자대 (Terminal)            |                             |

### 기계적 특성 Mechanical spec

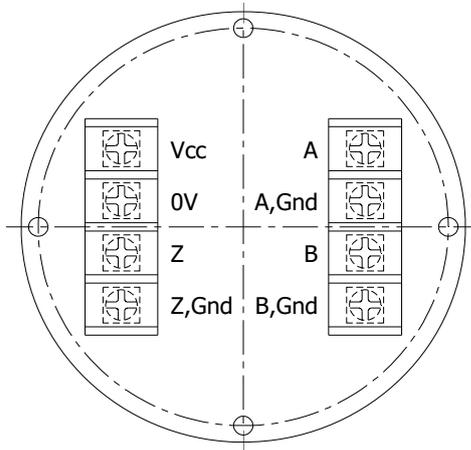
|                                  |                                      |
|----------------------------------|--------------------------------------|
| 기동 토크<br>Starting torque         | 0.04 Nm                              |
| 최대 회전수<br>Maximum rotating speed | 6000 rpm                             |
| 허용 축 하중<br>Allowable shaft load  | Radial 방향 : 70 N<br>Thrust 방향 : 50 N |
| 사용 온도<br>Operating temp. range   | -20 ~ 80 °C                          |
| 내진동<br>Vibration                 | 200 m/S <sup>2</sup>                 |
| 내충격<br>Shock                     | 2000 m/S <sup>2</sup>                |
| 중량<br>Weight                     | 7.5Kg                                |

출력파형 *Output phase*

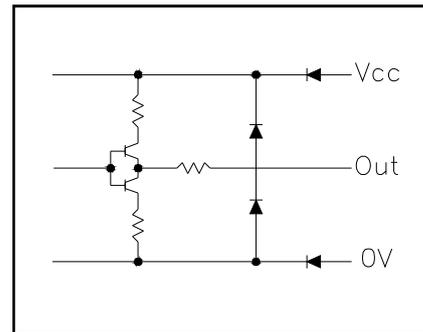


CW Sensor  
 $a+b, c+d=T/2 \pm T/10$   
 $a, b, c, d=T/4 \pm T/10$

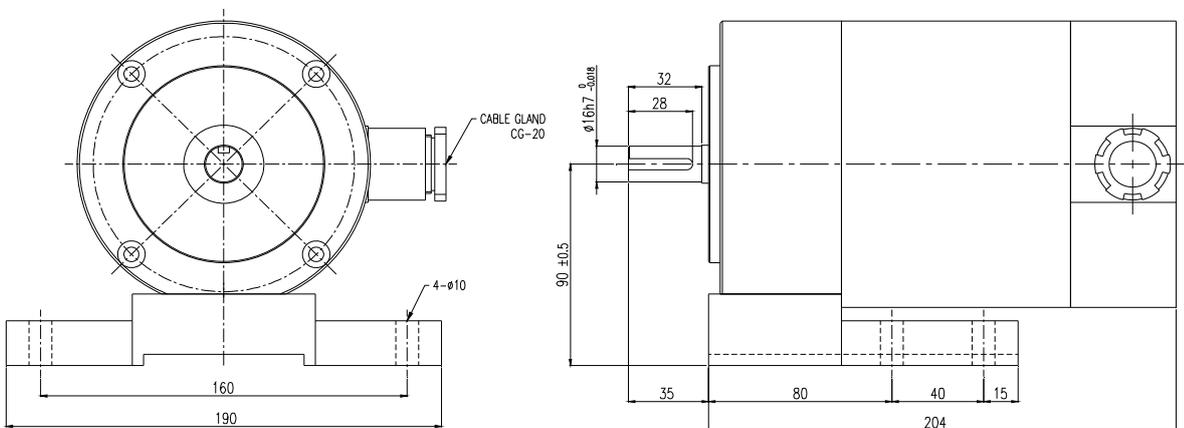
결선도 *Connection table*



출력회로 *Output circuit*



외형도 *External Dimension*





### 용도 Application

1. 산업용  
Industrial application
2. 계측용 장비  
Measuring instruments

### 특징 Feature

1. 축경 소형  
Small shaft
2. 광범위한 전압  
Wide ranging power source
3. 다양한 펄스 구현  
Various Pulses Built in

## 형 식 Model

### WJE148S16 ( TS5080 )

- WJE  
FAE Encoder
- S: 실축  
Solid shaft
- 16: 축경  
Shaft size

### 분해능(P/R)

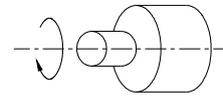
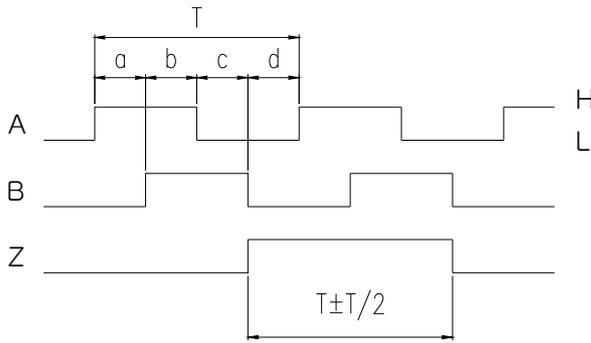
|          |  |  |   |   |
|----------|--|--|---|---|
| <b>A</b> | ① 100.<br>④ 512.<br>⑧ 1200.<br>⑫ 2048. | ① 200.<br>⑤ 600.<br>⑨ 1500.<br>⑬ 2400. | ② 300.<br>⑥ 1000.<br>⑬ 1536.<br>⑭ 3600. | ③ 500.<br>⑦ 1024.<br>⑯ 2000.<br>⑰ 4096. |
| <b>B</b> | ① 10.<br>④ 360.<br>⑧ 800.<br>⑫ 2500.   | ① 128.<br>⑤ 384.<br>⑨ 900.<br>⑬ 2560.  | ② 192.<br>⑥ 400.<br>⑬ 1600.<br>⑭ 3000.  | ③ 256.<br>⑦ 720.<br>⑯ 1800.<br>⑰ 8192.  |
| <b>C</b> | ① 25.<br>④ 300.<br>⑧ 900.<br>⑫ 2000.   | ① 100.<br>⑤ 400.<br>⑨ 1200.<br>⑬ 2048. | ② 120.<br>⑥ 500.<br>⑬ 1500.<br>⑭ 2400.  | ③ 200.<br>⑦ 600.<br>⑯ 1536.<br>⑰ 2500.  |
| <b>D</b> | ① 3.<br>④ 30.<br>⑧ 250.<br>⑫ 1200.     | ① 4.<br>⑤ 40.<br>⑨ 600.<br>⑬ 2800.     | ② 20.<br>⑥ 60.<br>⑬ 750.<br>⑭ 5000.     | ③ 24.<br>⑦ 150.<br>⑯ 900.<br>⑰ 6000.    |

## 주요 특성 Specification

| 전기적 특성 Electrical spec                  |                      |                           |                             |
|---|----------------------|---------------------------|-----------------------------|
| 분해능<br>Resolution                       |                      | 10~8192 P/R               |                             |
| 출력 방식<br>Output form                    | 출력 형태<br>Output form | 전원<br>Power supply        | 소비전류<br>Current consumption |
|   | Push-pull (HTL)      | DC<br>10.8~26.4V          | 150mA 이하                    |
| Output phase                            |                      | A-phase, B-phase, Z-phase |                             |
| High Level Output Voltage               |                      | Vcc 3.5V                  |                             |
| Low Level Output Voltage                |                      | 2V or Less                |                             |
| 최대 응답 주파수<br>Maximum response frequency |                      | 200 KHz                   |                             |
| 전선길이<br>Cable Length                    |                      | 1 m                       |                             |

| 기계적 특성 Mechanical spec           |                                      |
|----------------------------------|--------------------------------------|
| 기동 토크<br>Starting torque         | 0.04 Nm                              |
| 최대 회전수<br>Maximum rotating speed | 6000 rpm                             |
| 허용 축 하중<br>Allowable shaft load  | Radial 방향 : 70 N<br>Thrust 방향 : 50 N |
| 사용 온도<br>Operating temp. range   | -20 ~ 80 °C                          |
| 내진동<br>Vibration                 | 200 m/S <sup>2</sup>                 |
| 내충격<br>Shock                     | 2000 m/S <sup>2</sup>                |
| 중량<br>Weight                     | 3.5Kg                                |

출력파형 *Output phase*

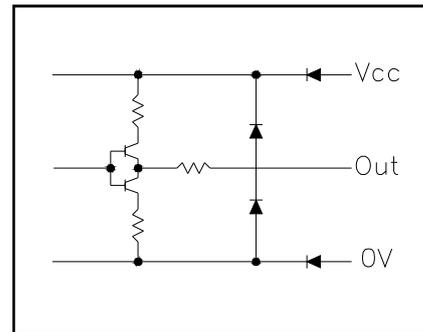


CW Sensor  
 $a+b, c+d=T/2 \pm T/10$   
 $a, b, c, d=T/4 \pm T/10$

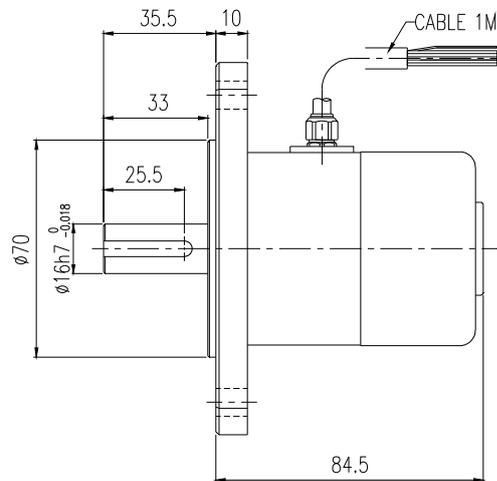
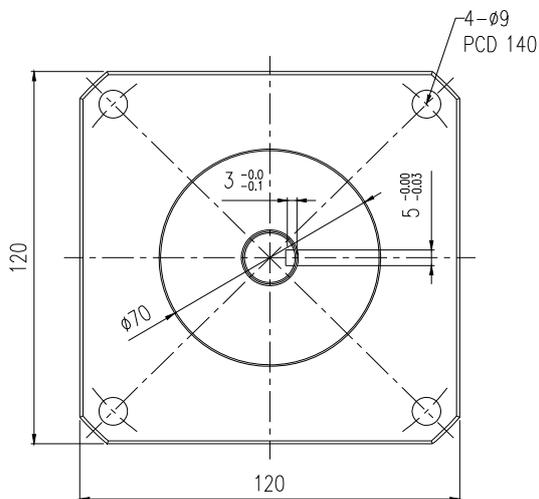
결선도 *Connection table*

| 신 호<br>Signal name | 전선 색상<br>Wire Color |
|--------------------|---------------------|
| Vcc                | Brown               |
| 0V                 | Red                 |
| A                  | Orange              |
| 0V                 | Yellow              |
| B                  | Green               |
| 0V                 | Blue                |
| Z                  | Purple              |
| 0V                 | Gray                |
| Check+             | White               |
| Check -            | Black               |
| Shield             | Shield              |

출력회로 *Output circuit*



외형도 *External Dimension*





### 용도 Application

1. 산업용  
Industrial application
2. 구동모터 속도검출  
Rotate motor speed detector

### 특징 Feature

1. 축경 소형  
Small shaft
2. 광범위한 전압  
Wide ranging power source
3. 다양한 펄스 구현  
Various Pulses Built in

### 형 식 Model

**WJE150S16**  
**(MDP-G,MHP-G)**  
**(TA1663)**

- WJE  
FAE Encoder
- S : 실축  
Solid shaft
- 16 : 축경  
Shaft size

### 분 해 능 (P/R)

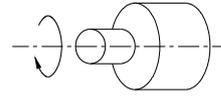
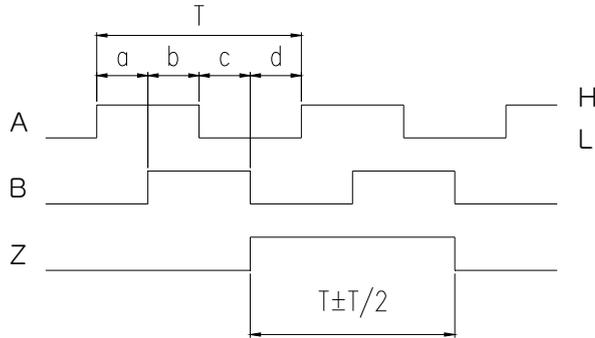
|          |         |         |         |         |
|----------|---------|---------|---------|---------|
| <b>A</b> | ① 100.  | ① 200.  | ② 300.  | ③ 500.  |
|          | ④ 512.  | ⑤ 600.  | ⑥ 1000. | ⑦ 1024. |
|          | ⑧ 1200. | ⑨ 1500. | Ⓐ 1536. | Ⓑ 2000. |
|          | Ⓒ 2048. | Ⓓ 2400. | Ⓔ 3600. | Ⓕ 4096. |
| <b>B</b> | ① 10.   | ① 128.  | ② 192.  | ③ 256.  |
|          | ④ 360.  | ⑤ 384.  | ⑥ 400.  | ⑦ 720.  |
|          | ⑧ 800.  | ⑨ 900.  | Ⓐ 1600. | Ⓑ 1800. |
|          | Ⓒ 2500. | Ⓓ 2560. | Ⓔ 3000. | Ⓕ 8192. |
| <b>C</b> | ① 25.   | ① 100.  | ② 120.  | ③ 200.  |
|          | ④ 300.  | ⑤ 400.  | ⑥ 500.  | ⑦ 600.  |
|          | ⑧ 900.  | ⑨ 1200. | Ⓐ 1500. | Ⓑ 1536. |
|          | Ⓒ 2000. | Ⓓ 2048. | Ⓔ 2400. | Ⓕ 2500. |
| <b>D</b> | ① 3.    | ① 4.    | ② 20.   | ③ 24.   |
|          | ④ 30.   | ⑤ 40.   | ⑥ 60.   | ⑦ 150.  |
|          | ⑧ 250.  | ⑨ 600.  | Ⓐ 750.  | Ⓑ 900.  |
|          | Ⓒ 1200. | Ⓓ 2800. | Ⓔ 5000. | Ⓕ 6000. |

### 주요 특성 Specification

| 전기적 특성 Electrical spec                  |                        |                           |                                |
|---|------------------------|---------------------------|--------------------------------|
| 분 해 능<br>Resolution                     |                        | 10~8192 P/R               |                                |
| 출 력 방 식<br>Output form                  | 출 력 형 태<br>Output form | 전 원<br>Power supply       | 소 비 전 류<br>Current consumption |
|   | Push-pull (HTL)        | DC<br>10.8~26.4V          | 150mA 이하                       |
| Output phase                            |                        | A-phase, B-phase, Z-phase |                                |
| High Level Output Voltage               |                        | Vcc 3.5V                  |                                |
| Low Level Output Voltage                |                        | 2V or Less                |                                |
| 최대 응답 주파수<br>Maximum response frequency |                        | 200 KHz                   |                                |
| 결 선<br>Connection                       |                        | 6P 단자대 (Terminal)         |                                |

| 기계적 특성 Mechanical spec           |                                      |
|----------------------------------|--------------------------------------|
| 기동 토크<br>Starting torque         | 0.04 Nm                              |
| 최대 회전수<br>Maximum rotating speed | 6000 rpm                             |
| 허용 축 하중<br>Allowable shaft load  | Radial 방향 : 70 N<br>Thrust 방향 : 50 N |
| 사용 온도<br>Operating temp. range   | -20 ~ 80 °C                          |
| 내 진 동<br>Vibration               | 200 m/S <sup>2</sup>                 |
| 내 충 격<br>Shock                   | 2000 m/S <sup>2</sup>                |
| 중 량<br>Weight                    | 5Kg                                  |

출력파형 *Output phase*



CW Sensor

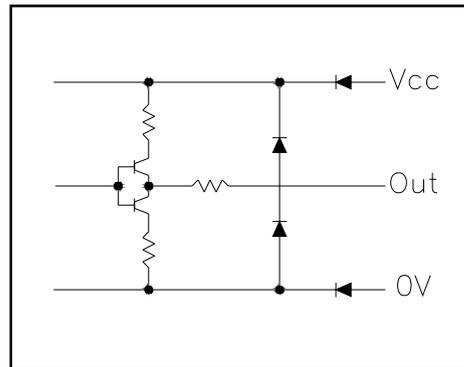
$a+b, c+d=T/2 \pm T/10$

$a, b, c, d=T/4 \pm T/10$

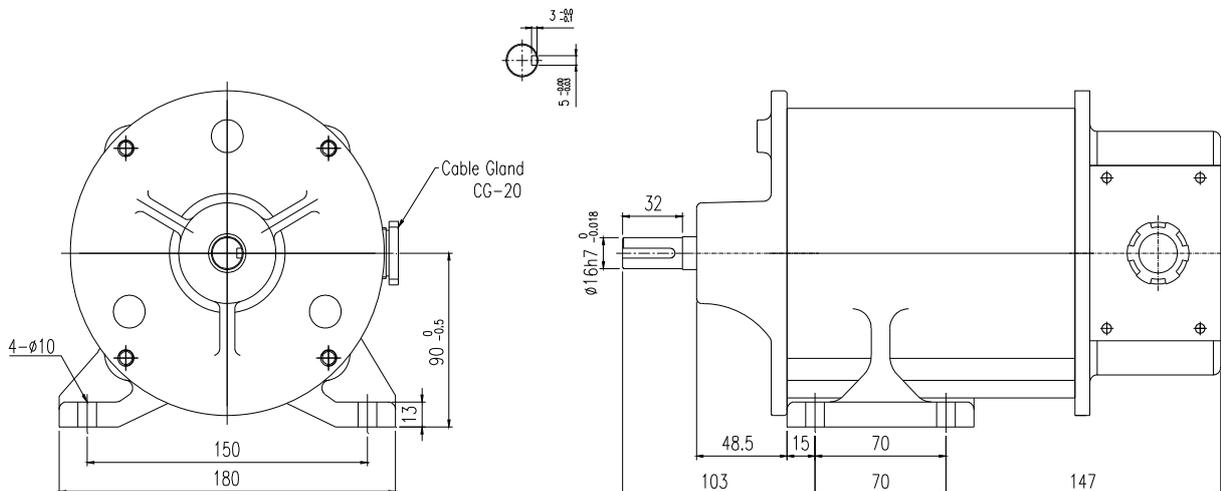
결선도 *Connection table*

| 단자구분 | 명 칭          |
|------|--------------|
| 6    | Vcc (+24V)   |
| 5    | GND          |
| 4    | GND          |
| 3    | Vcc (+24V)   |
| 2    | B SIG (LAG)  |
| 1    | A SIG (LEAD) |

출력회로 *Output circuit*



외형도 *External Dimension*



대체품 비교 *Substitute Comparison*

| TAMAGAWA (MITSUBISHI OEM)  | FAE (NSD)  |
|--|--|
|  |  |
| TA1663 N601 (MDP-06H)  | WJE150S16-C  |
| TA1663 N1201 (MDP-12H)   |  |
| TA1663 N1501 (MDP-15H)   |  |
| TA1663 N1801 (MDP-18H)   |  |
| TA1663 N2501 (MDP-25H)   |  |
| TA1663 N302 (MDP-03G)  |  |
| TA1663 N602 (MDP-06G)  |  |
| TA1663 N605 (MDP-06GA)   |  |
| TA1663 N902 (MDP-09G)  |  |
| TA1663 N1202 (MDP-12G)   |  |
| TA1663 N1802 (MDP-18G)   |  |
| TA1663 N209 (MHP-200)  |  |
| TA1663 N609 (MHP-600)  |  |
| TA1663 N5001 (MDP-50H)   |  |



### 용도 Application

1. 산업용  
Industrial application
2. 계측용 장비  
Measuring instruments

### 특징 Feature

1. 축경 소형  
Small shaft
2. 광범위한 전압  
Wide ranging power source
3. 다양한 펄스 구현  
Various Pulses Built in

### 형 식 Model

**WJE350S15**  
**(LF-000B)**  
**[IRS600(ROD600)]**

- WJE  
FAE Encoder
- S : 실축  
Solid shaft
- 15 : 축경  
Shaft size

### 분 해 능 (P/R)

|          |   |       |   |       |   |       |   |       |
|----------|---|-------|---|-------|---|-------|---|-------|
| <b>A</b> | ① | 100.  | ① | 200.  | ② | 300.  | ③ | 500.  |
|          | ④ | 512.  | ⑤ | 600.  | ⑥ | 1000. | ⑦ | 1024. |
|          | ⑧ | 1200. | ⑨ | 1500. | Ⓐ | 1536. | Ⓑ | 2000. |
|          | Ⓒ | 2048. | Ⓓ | 2400. | Ⓔ | 3600. | Ⓕ | 4096. |

|          |   |       |   |       |   |       |   |       |
|----------|---|-------|---|-------|---|-------|---|-------|
| <b>B</b> | ① | 10.   | ① | 128.  | ② | 192.  | ③ | 256.  |
|          | ④ | 360.  | ⑤ | 384.  | ⑥ | 400.  | ⑦ | 720.  |
|          | ⑧ | 800.  | ⑨ | 900.  | Ⓐ | 1600. | Ⓑ | 1800. |
|          | Ⓒ | 2500. | Ⓓ | 2560. | Ⓔ | 3000. | Ⓕ | 8192. |

|          |   |       |   |       |   |       |   |       |
|----------|---|-------|---|-------|---|-------|---|-------|
| <b>C</b> | ① | 25.   | ① | 100.  | ② | 120.  | ③ | 200.  |
|          | ④ | 300.  | ⑤ | 400.  | ⑥ | 500.  | ⑦ | 600.  |
|          | ⑧ | 900.  | ⑨ | 1200. | Ⓐ | 1500. | Ⓑ | 1536. |
|          | Ⓒ | 2000. | Ⓓ | 2048. | Ⓔ | 2400. | Ⓕ | 2500. |

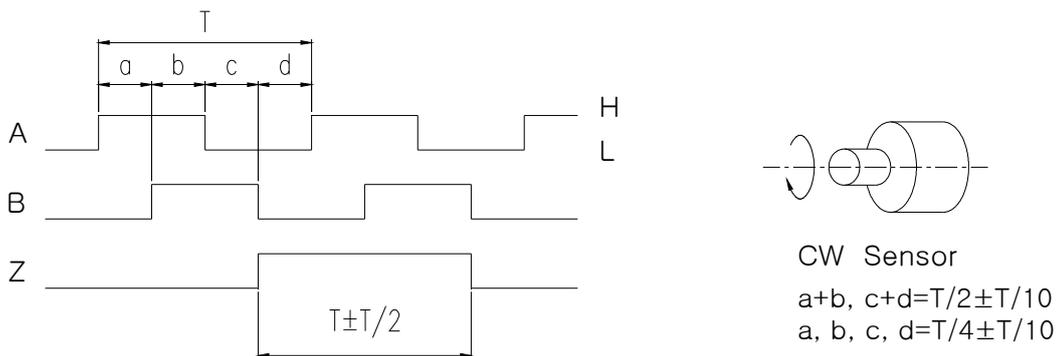
|          |   |       |   |       |   |       |   |       |
|----------|---|-------|---|-------|---|-------|---|-------|
| <b>D</b> | ① | 3.    | ① | 4.    | ② | 20.   | ③ | 24.   |
|          | ④ | 30.   | ⑤ | 40.   | ⑥ | 60.   | ⑦ | 150.  |
|          | ⑧ | 250.  | ⑨ | 600.  | Ⓐ | 750.  | Ⓑ | 900.  |
|          | Ⓒ | 1200. | Ⓓ | 2800. | Ⓔ | 5000. | Ⓕ | 6000. |

### 주요 특성 Specification

| 전기적 특성 Electrical spec                  |                      |                           |                                |
|---|----------------------|---------------------------|--------------------------------|
| 분 해 능<br>Resolution                     |                      | 10~8192 P/R               |                                |
| 출력 방식<br>Output form                    | 출력 형태<br>Output form | 전 원<br>Power supply       | 소 비 전 류<br>Current consumption |
|   | Push-pull (HTL)      | DC<br>10.8~26.4V          | 150mA 이하                       |
| Output phase                            |                      | A-phase, B-phase, Z-phase |                                |
| High Level Output Voltage               |                      | Vcc 3.5V                  |                                |
| Low Level Output Voltage                |                      | 2V or Less                |                                |
| 최대 응답 주파수<br>Maximum response frequency |                      | 200 KHz                   |                                |
| 전선길이<br>Cable Length                    |                      | 1 m                       |                                |

| 기계적 특성 Mechanical spec           |                                      |
|----------------------------------|--------------------------------------|
| 기동 토크<br>Starting torque         | 0.04 Nm                              |
| 최대 회전수<br>Maximum rotating speed | 6000 rpm                             |
| 허용 축 하중<br>Allowable shaft load  | Radial 방향 : 70 N<br>Thrust 방향 : 50 N |
| 사용 온도<br>Operating temp. rtange  | -20 ~ 80 °C                          |
| 내 진 동<br>Vibration               | 200 m/S <sup>2</sup>                 |
| 내 충 격<br>Shock                   | 2000 m/S <sup>2</sup>                |
| 중 량<br>Weight                    | 1.5Kg                                |

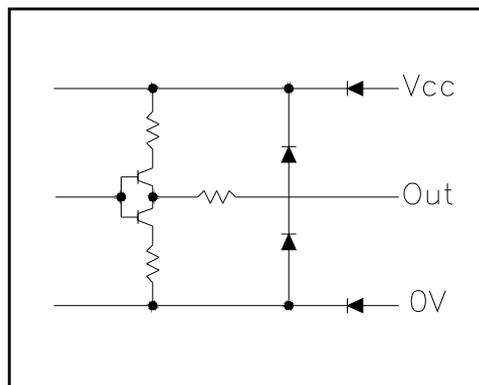
출력파형 *Output phase*



결선도 *Connection table*

| 신 호<br>Signal name | 전선 색상<br>Wire Color |
|--------------------|---------------------|
| Vcc                | Brown               |
| 0V                 | Red                 |
| A                  | Orange              |
| 0V                 | Yellow              |
| B                  | Green               |
| 0V                 | Blue                |
| Z                  | Purple              |
| 0V                 | Gray                |
| Check+             | White               |
| Check -            | Black               |
| Shield             | Shield              |

출력회로 *Output circuit*



외형도 *External Dimension*

