

1. 一般事項 General

1-1 適用範囲 Scope

この仕様書は主として電子機器に用いる微小電流回路用11形薄形ロータリーエンコーダに適用する。  
This specification applies to 11mm size low-profile rotary encoder (incremental type) for microscopic current circuits, used in electronic equipment.

1-2 標準状態 Standard atmospheric conditions

測定は特に指定のない限り、次の状態で行なう。  
Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests is as follows:

温度 Ambient temperature : 15°C to 35°C

相対湿度 Relative humidity : 25% to 85%

気圧 Air pressure : 86kPa to 106kPa

但し、疑義を生じた場合は、次の基準状態で行なう。  
If there is any doubt about the results, measurements shall be made within the following limits:

温度 Ambient temperature : 20 ± 1°C

相対湿度 Relative humidity : 63% to 67%

気圧 Air pressure : 86kPa to 106kPa

1-3 使用温度範囲

Operating temperature range : -40°C to +85°C

1-4 保存温度範囲

Storage temperature range : -40°C to +85°C

2. 構造 Construction

2-1 寸法 Dimensions

添付組立図による。  
Refer to attached drawing.

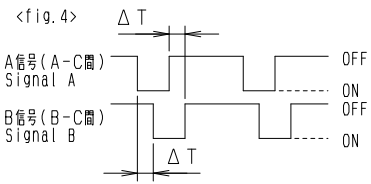
3. 定格 Rating

3-1 定格容量 Rating : D.C. 5V 10mA (1mA MIN)

4. 電気的性能 Electrical characteristics

|                                     | 項目<br>Item                      | 条 件<br>Conditions                                                                                                                                                                                                                                                                     | 規 格<br>Specifications                                                                                                                                                          |
|-------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4-1                                 | 出力信号<br>Output signal<br>format | 注意事項：ハ <sup>*</sup> ルス出力は2クリックで1ハ <sup>*</sup> ルス出力となっております。又、クリック位置にてA-C端子出力がON、又はOFFとなっており、B-C端子出力のクリック位置での規定はしてありません。<br>Note:Output signal is 1pulse per 2detents.And terminal A-C is pulse ON or OFF at detent position. No specified output of terminal B-C at detent position. | A、B2信号の位相差出力とし、詳細は<fig. 1>の通りとする。<br>破線はクリックの位置を示す。<br><br>2 Phase-different signals (SignalA, signalB)<br>Details shown in <fig.1>.<br>The broken line shows detent position. |
| <Fig 1>                             |                                 |                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                |
| 軸回転方向<br>Shaft rotational direction |                                 | 信 号<br>Signal                                                                                                                                                                                                                                                                         | 出力波<br>Output                                                                                                                                                                  |
| 時計方向<br>C. W.                       |                                 | A (A-C端子間)<br>A(Terminal A-C)                                                                                                                                                                                                                                                         | OFF<br>ON                                                                                                                                                                      |
|                                     |                                 | B (B-C端子間)<br>B(Terminal B-C)                                                                                                                                                                                                                                                         | OFF<br>ON                                                                                                                                                                      |
| 反時計方向<br>C. C. W.                   |                                 | A (A-C端子間)<br>A(Terminal A-C)                                                                                                                                                                                                                                                         | OFF<br>ON                                                                                                                                                                      |
|                                     |                                 | B (B-C端子間)<br>B(Terminal B-C)                                                                                                                                                                                                                                                         | OFF<br>ON                                                                                                                                                                      |

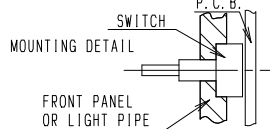
|     | 項目<br>Item                                                 | 条 件<br>Conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 規 格<br>Specifications                                                                                                                                                                                                                                                        |
|-----|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4-2 | 分解能<br>Resolution                                          | 1回転にて出力されるパルス数<br>Number of pulses in 360° rotation.                                                                                                                                                                                                                                                                                                                                                                                                                                               | 各相18パルス/360°<br>18 pulses/360°<br>for each phase<br><br>2クリック/1パルス<br>2click/1pulse                                                                                                                                                                                          |
| 4-3 | スイッチング特性<br>Switching<br>characteris-<br>tics              | 下記測定回路<fig. 2>を用い、回転軸を360°・s <sup>-1</sup> の速さで回転し測定する。<br>Measurement shall be made under the condition as follows.<br>1)Shaft rotational speed : 360°・s <sup>-1</sup><br>2)Test circuit : <fig.2>                                                                                                                                                                                                                                                                                                | <div>&lt;fig. 2&gt;</div> <div>&lt;fig. 3&gt;</div> <div>(注記) コードOFF状態 : 出力電圧が3. 5V以上の状態を言う。<br/>コードON状態 : 出力電圧が1. 5V以下の状態を言う。<br/>(note) Code-OFF area : The area which the voltage is 3. 5V or more.<br/>code-ON area : The area which the voltage is 1. 5V or less.</div> |
| 1)  | チャタリング<br>Chattering                                       | コードのOFF→ON及びON→OFFの際の、出力1. 5V～3. 5Vの通過時間に規定する<br>Specified by the signal's passage time from 3. 5V to 1. 5V or from 1. 5V to 3. 5V of each switching position (code OFF→ON or ON→OFF).                                                                                                                                                                                                                                                                                                             | t <sub>1</sub> , t <sub>3</sub> ≤ 3ms                                                                                                                                                                                                                                        |
| 2)  | 揺動ノイズ<br>(ハ <sup>*</sup> フンス)<br>Sliding noise<br>(Bounce) | コードONの部分の1. 5V以上の電圧変動時間とし、チャタリングt <sub>1</sub> , t <sub>3</sub> 両者との間に1ms以上の1. 5V以下のON部分を有するものとする。また、揺動ノイズ間に1. 5V以下の範囲が1msある場合は、別の揺動ノイズと判断する。<br>Specified by the time of voltage change exceed 1. 5V in code-ON area.<br>When the bounce has code-ON time less than 1ms between chatterings (t <sub>1</sub> or t <sub>3</sub> ), the voltage change shall be regarded as a part of chattering.<br>When the code-ON time between 2 bounces is less than 1ms, they are regarded as 1 linked bounce. | t <sub>2</sub> ≤ 2ms                                                                                                                                                                                                                                                         |
| 3)  | 揺動ノイズ<br>Sliding noise                                     | コードOFFの部分の電圧変動<br>The voltage change in code-OFF area.                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3. 5V以上<br>3. 5V MIN                                                                                                                                                                                                                                                         |

| CLASS No.  |                               | TITLE<br>1 1 形回転形エンコーダ規格書<br>11mm Size Rotary Encoder Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                        |
|------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| 項目<br>Item |                               | 条 件<br>Conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 規 格<br>Specifications                                                  |
| 4-4        | 位相差<br>Phase-difference       | <p>360°・s<sup>-1</sup>の定速にて操作軸を回転する。<br/>Measurement shall be made under the condition which the shaft is rotated in 360°・s<sup>-1</sup> (constant speed).</p> <p>&lt;fig. 4&gt;</p>  <p>A信号(A-C間)<br/>Signal A</p> <p>B信号(B-C間)<br/>Signal B</p> <p>OFF<br/>ON<br/>OFF<br/>ON</p> <p>注意事項：揺動接点ですので手動操作時の出力波形はご使用されるツマミ径、軸の回転速度によって変化致します。回路設計時は実装にて確認願います。<br/>Note: Above specification (4-4) is changeable. When operate by manual. Please check performance using actual circuit and knob.</p> | <fig. 4>において<br>ΔT≥6ms<br>In<fig. 4>                                   |
| 4-5        | 絶縁抵抗<br>Insulation resistance | 端子-軸受間にD. C. 250V印加する。<br>Measurement shall be made under the condition which a voltage of 250V D.C. is applied between individual terminals and bushing.                                                                                                                                                                                                                                                                                                                                                                                                                           | 端子-軸受間に100MΩ以上<br>Between individual terminals and bushing: 100MΩ MIN. |
| 4-6        | 耐電圧<br>Dielectric strength    | 端子-軸受間にA. C. 300V1分間又は、A. C. 360V2秒間印加する。<br>(リーク電流1mA)<br>A voltage of 300V A.C. shall be applied for 1min or a voltage of 360V A.C. shall be applied for 2s between individual terminals and bushing. (Leak current: 1mA)                                                                                                                                                                                                                                                                                                                                                         | 損傷・アーク・絶縁破壊がないこと。<br>Without damage to parts, arcing or breakdown.     |

5. 機械的性能 Mechanical characteristics

| 項目<br>Item                                        | 条 件<br>Conditions                                                                                            |  | 規 格<br>Specifications                                                                                                    |  |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------|--|
| 5-1 全回転角度<br>Total rotational angle               |                                                                                                              |  | 360° (エンドレス)<br>360° (Endless)                                                                                           |  |
| 5-2 クリックトルク<br>Detent torque                      |                                                                                                              |  | 10±7mN・m                                                                                                                 |  |
| 5-3 クリック点数及び位置<br>Number and position of detents. |                                                                                                              |  | 36点クリック<br>36 detents<br>(ステップ角度: 10°±3°)<br>(Step angle: 10°±3°)                                                        |  |
| 5-4 端子強度<br>Terminal strength                     | 端子先端の任意の一方に5Nの力を1分間加える。<br>A static load of 5N be applied to the tip of terminals for 1min in any direction. |  | 端子の破損、著しいカクタがないこと。<br>但し、端子の曲がりは可とする。<br>Without damage or excessive looseness of terminals. Terminal bend is permitted. |  |

|      |      |      |      |      |                             |              |              |                                                    |  |
|------|------|------|------|------|-----------------------------|--------------|--------------|----------------------------------------------------|--|
|      |      |      |      |      | <b>ALPSALPINE CO., LTD.</b> |              |              |                                                    |  |
|      |      |      |      |      | APPD.                       | CHKD.        | DSGD.        | TITLE<br>1 1 形回転形エンコーダ<br>11mm Size Rotary encoder |  |
|      |      |      |      |      | Mar. 22, '96                | Mar. 22, '96 | Mar. 22, '96 |                                                    |  |
|      |      |      |      |      | Y. YOSHIOKA                 | M. SATOH     | Y. ISAWA     | DOCUMENT NO.<br>EC 1 1 E 1 8 2 D 4 (3/6)           |  |
| SYMB | DATE | APPD | CHKD | DSGD |                             |              |              | EC11E                                              |  |

| CLASS No.                                            |                                                                                                                                                                                                                                                                                                                        | TITLE<br>1 1 形回転形エンコーダ規格書<br>11mm Size Rotary Encoder Specification |                                                                                                                               |  |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--|
| 項目<br>Item                                           | 条 件<br>Conditions                                                                                                                                                                                                                                                                                                      |                                                                     | 規 格<br>Specifications                                                                                                         |  |
| 5-5 軸の押し引き強度<br>Push-pull strength of shaft          | 軸の押し及び引張り方向に100Nの力を10秒間加える。<br>(セッティング状態)<br>Push and pull static load of 100N shall be applied to the shaft in the axial direction for 10s. (After installing)                                                                                                                                                        |                                                                     | 軸の破損、著しいガタのないこと。<br>感触に異常がないこと。<br>Without damage or excessive play in shaft. No excessive abnormality in rotational feeling. |  |
| 5-6 軸ワタ<br>Shaft wobble                              | 取付面より30mmの位置に50mN・mの曲げモーメントを加える。<br>軸長が30mmに満たない場合は右の式による。Lは測定位置(取付面から5の位置)とする。<br>Bending moment of 50mN・m to be applied to the shaft at 30mm from the mounting surface. If the shaft length is less than 30mm, the value shall be calculated as right formula.<br>L: Measurement point from mounting surface.        |                                                                     | 軸受長 軸力'タ<br>Bushing Wobble<br>length Wobble<br>(mm) (mmp-p less)<br>0.5 × L / 30                                              |  |
| 5-7 軸のスラスト方向ガタ<br>Shaft play in axial direction      |                                                                                                                                                                                                                                                                                                                        |                                                                     | 0.4mm以下<br>0.4mm MAX.                                                                                                         |  |
| 5-8 軸の回転方向力'タ<br>Rotation play at the click position | 角度板にて測定する。<br>Measure with jig for rotational angle.                                                                                                                                                                                                                                                                   |                                                                     | 4° 以内<br>4° MAX.                                                                                                              |  |
| 5-9 取付け上の注意<br>Notice for mounting                   | 右図の様にスイッチ本体を抑えてご使用下さい。セッティング側でスイッチ本体の引き及び回転方向の力'イト'が無い場合は、はんだ付けだけの固定となり、はんだ付け信頼性及びスイッチ本体強度が不安定となる可能性があります。<br>Hold the bushing use front panel or light pipe. Because this switch not has thread. If don't hold the bushing, the switch maybe become intermittent rough mounting after soldering by knob stopper face. |                                                                     |                                            |  |

6. 耐久性能 Endurance characteristics.

| 項目<br>Item                      | 条 件<br>Conditions                                                                                                                                                                                                                                                                                                                                                     |  | 規 格<br>Specifications                                                                                                                                                                                 |  |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 6-1 しゅう動寿命性能<br>Rotational life | 無負荷で軸を毎時500サイクルの速で、15,000サイクル断続動作を行う。<br>但し、試験途中5,000で中間測定を行う。(1サイクルは、360°1往復)<br>The shaft of encoder shall be rotated to 15,000 cycles at a speed of 500cycles per hour without electrical load, after which measurements shall be made. However, an interim measurement shall be made immediately after 5,000 cycles.<br>(1 cycle: rotate 360° CCW rotate 360° CW) |  | クリックトルク<br>初期規格値に対し+15%<br>その他、初期規格を満足すること。<br>Detent torque: Relative to the previously specified value. +15%<br>Except above items, specifications in clause 4.1~6 and 5.1, 5.3 shall be satisfied. |  |

|      |      |      |      |      |                             |              |              |                                                    |  |
|------|------|------|------|------|-----------------------------|--------------|--------------|----------------------------------------------------|--|
|      |      |      |      |      | <b>ALPSALPINE CO., LTD.</b> |              |              |                                                    |  |
|      |      |      |      |      | APPD.                       | CHKD.        | DSGD.        | TITLE<br>1 1 形回転形エンコーダ<br>11mm Size Rotary encoder |  |
|      |      |      |      |      | Mar. 22, '96                | Mar. 22, '96 | Mar. 22, '96 |                                                    |  |
|      |      |      |      |      | Y. YOSHIOKA                 | M. SATOH     | Y. ISAWA     | DOCUMENT NO.<br>EC 1 1 E 1 8 2 D 4 (4/6)           |  |
| SYMB | DATE | APPD | CHKD | DSGD |                             |              |              | EC11E                                              |  |

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|--------------------------------------------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| CLASS No.                                                                |                                   | TITLE<br>フ ッ シュ モーメンタリスイッチ 規格書<br>PUSH MOMENTARY SWITCH SPECIFICATION                                                                                                                                                                                                                |  | (SW02)                                                                                                                                                           |  |
| 1. 定格容量 (抵抗負荷)<br>Switch rating (Resistor load) D.C. 5V 0.1A (500μA MIN) |                                   |                                                                                                                                                                                                                                                                                      |  |                                                                                                                                                                  |  |
| 2. 電気的性能 Electrical characteristics                                      |                                   |                                                                                                                                                                                                                                                                                      |  |                                                                                                                                                                  |  |
|                                                                          | 項目<br>Item                        | 条 件<br>Conditions                                                                                                                                                                                                                                                                    |  | 規 格<br>Specifications                                                                                                                                            |  |
| 2-1                                                                      | 接触抵抗<br>Contact resistance        | D. C. 5V1mA電圧降下法にて測定する。<br>Measured by the 1mA 5V D.C. voltage drop method.                                                                                                                                                                                                          |  | 100mΩ MAX.                                                                                                                                                       |  |
| 2-2                                                                      | チャタリング<br>Chattering              | 1サイクル (OFF-ON-OFF) 1秒で動作させる。<br>Switch is operated at the rate of 1 cycle is.<br>The 1 cycle shall be OFF-ON-OFF.                                                                                                                                                                    |  | 10ms以下<br>Less than 10ms                                                                                                                                         |  |
| 2-3                                                                      | 絶縁抵抗<br>Insulation resistance     | 端子-軸受間にD. C. 250V印加する。<br>Measurement shall be made under the condition which a voltage of 250VD.C. is applied between individual terminals and bushing.                                                                                                                             |  | 端子-軸受間にて100MΩ以上<br>Between individual terminals and bushing:<br>100MΩ MIN.                                                                                       |  |
| 2-4                                                                      | 耐電圧<br>Dielectric strength        | 端子-軸受間にA. C. 300V1分間又は、A. C. 360V2秒間印加する。<br>(リーク電流1mA)<br>A voltage of 300VA.C. shall be applied for 1min or a voltage of 360VA.C. shall be applied for 2s between individual terminals and bushing.(Leak current:1mA)                                                              |  | 損傷・アーク・絶縁破壊がないこと。<br>Without damage to parts,<br>arcing or breakdown.                                                                                            |  |
| 注記:<br>Note:                                                             |                                   | 軸・スイッチ端子間は絶縁されております。<br>Shaft is insulated from switch terminal.                                                                                                                                                                                                                     |  |                                                                                                                                                                  |  |
| 3. 機械的性能 Mechanical characteristics                                      |                                   |                                                                                                                                                                                                                                                                                      |  |                                                                                                                                                                  |  |
|                                                                          | 項目<br>Item                        | 条 件<br>Conditions                                                                                                                                                                                                                                                                    |  | 規 格<br>Specifications                                                                                                                                            |  |
| 3-1                                                                      | スイッチ回路・接点数<br>Contact arrangement |                                                                                                                                                                                                                                                                                      |  | 単極単投(Push on)<br>S.P.S.T.(Push on)                                                                                                                               |  |
| 3-2                                                                      | スイッチ移動量<br>Switching stroke       |                                                                                                                                                                                                                                                                                      |  | 1.5±0.5mm                                                                                                                                                        |  |
| 3-3                                                                      | スイッチ作動力<br>Switch operation force |                                                                                                                                                                                                                                                                                      |  | 4±2N                                                                                                                                                             |  |
| 4. 耐久性能 Endurance characteristics.                                       |                                   |                                                                                                                                                                                                                                                                                      |  |                                                                                                                                                                  |  |
|                                                                          | 項目<br>Item                        | 条 件<br>Conditions                                                                                                                                                                                                                                                                    |  | 規 格<br>Specifications                                                                                                                                            |  |
| 4-1                                                                      | 動作寿命特性<br>Operating life          | 無負荷にて軸を毎時500回の速さで20,000回断続動作を行う。<br>但し、試験途中5,000で中間測定を行う。<br>The shaft of switch shall be 20,000 times at a speed of 500times per hour without electrical load, after which measurements shall be made. However, an interim measurement shall be made immediately after 5,000 times. |  | 接触抵抗 : 200mΩ以下<br>その他、初期規格を満足すること。<br>Switch contact resistance:200mΩMAX.<br>Except above items.<br>Specifications in clause 2.2~4,and 3.1~3 shall be satisfied. |  |
| 5. その他 Note                                                              |                                   |                                                                                                                                                                                                                                                                                      |  |                                                                                                                                                                  |  |
| 5-1                                                                      |                                   | 軸にツマミを取り付け、センターから10mmの位置で押した時にひっかかり感が無いこと。<br>No sticky feel shall be observed when the knob on the shaft is pushed at 10mm off the center.                                                                                                                                          |  |                                                                                                                                                                  |  |
| 6. 注意事項 Note                                                             |                                   |                                                                                                                                                                                                                                                                                      |  |                                                                                                                                                                  |  |
| 6-1                                                                      |                                   | プッシュスイッチ付きのエンコーダは、軸が押されたままの状態では梱包や保管をされずと、スイッチ部に故障をきたす恐れがありますのでご配慮下さい。<br>Encoder equipped with a push-on switches are packaged or stored with their shafts being pushed-in, the switch part may be out of order and pay attention when you package or store them.                   |  |                                                                                                                                                                  |  |
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CLASS NO.

TITLE

1. はんだ耐熱 Resistance to soldering heat

下記の“ はんだ付け条件”にて絶縁体の変形、破壊のないこと、感融に異常のないこと。  
At the specified by the soldering conditions below.  
There shall be no deformation or cracks in molded part.  
No excessive abnormality in rotational feeling.

はんだ付け条件 Soldering conditions

手はんだの場合 Manual soldering

温度350℃以下、時間3秒以内  
Bit temperature of soldering iron : 350℃ or less.  
Application time of soldering iron : within 3s.

ディップはんだの場合 Dip soldering

使用基板 : t1. 6両面銅張積層板  
Printed wiring board: Both-sided copper clad laminate board with thickness of 1.6mm.

フラックス : 比重0. 82以上のフラックスを用い発泡式フラクサーにて発泡面高さは、基板板厚の3分の2。  
Flux:  
・Specific gravity: 0. 82 or more.  
・Flux shall be applied to the board using a bubble foaming type fluxer.  
・The board shall be soaked in the flux bubble only to the 2/3 of its thickness.

プリヒート : 基板表面温度100℃以下、時間2分以内  
Preheating:  
・Surface temperature of board: 100℃ or less.  
・Preheating time: within 2 min.

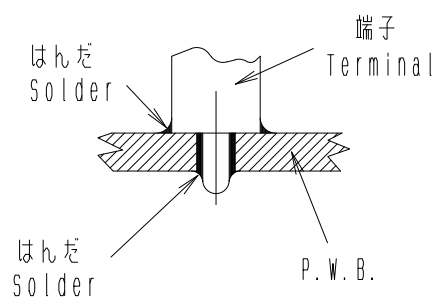
はんだ : 温度260±5℃、時間5±1秒  
Soldering:  
・Solder temperature: 260±5℃.  
・Immersion time: Within 5±1s.

以上の工程を1回または2回通過する。  
Apply the above soldering process for 1 or 2 times.

<

図のようにP、W、Bの上面に はんだ付けをする配線は、  
お避け下さい。

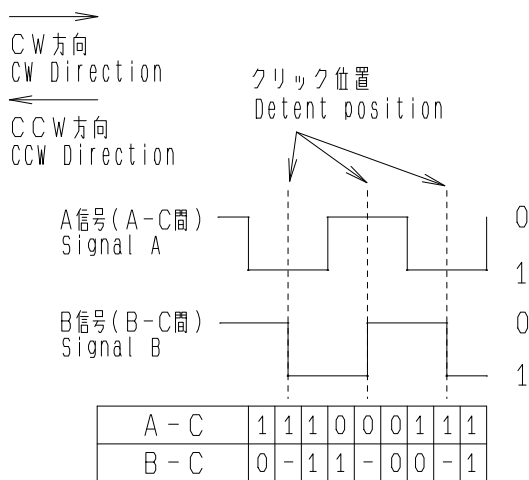
Please avoid soldering on upper surface of P.W.B. as shown



|      |      |      |      |      |                             |                     |                     |                |
|------|------|------|------|------|-----------------------------|---------------------|---------------------|----------------|
|      |      |      |      |      | <b>ALPSALPINE CO., LTD.</b> |                     |                     |                |
|      |      |      |      |      | APPD.                       | CHKD.               | DSGD.               | TITLE          |
|      |      |      |      |      | <i>Apr. 14, '93</i>         | <i>Apr. 14, '93</i> | <i>Apr. 14, '93</i> | EC 11E 182 D 4 |
|      |      |      |      |      | <i>S. Aizawa</i>            | <i>M. Satoh</i>     | <i>Y. Saitoh</i>    | DOCUMENT NO.   |
| SYMB | DATE | APPD | CHKD | DSGD |                             |                     |                     |                |

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| CLASS No.<br>_____ | TITLE<br>_____ |  |
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1) エンコーダの回路処理は、下図の読取方法を推奨します。  
For pulse count, recommendation is below.



A-C間の状態が変化した時にカウントし、CW、CCWの判定はその時のB-C間の状態による。

When phase A state changes, read phase B state and decide direction and count depend on it.

|                | CW 方向      | CCW 方向     |
|----------------|------------|------------|
| A - C<br>B - C | 1 → 0<br>1 | 1 → 0<br>0 |
| A - C<br>B - C | 0 → 1<br>0 | 0 → 1<br>1 |

A-C間が1→0に変化した時に、B-C間が1であればCW方向、また、B-C間が0であればCCW方向である。

When phase A changes from 1→0 and phase B=1 means CW direction, if phase B=0, it means CCW direction.

A-C間が0→1に変化した時に、B-C間が0であればCW方向、また、B-C間が1であればCCW方向である。

When phase A changes from 0→1 and phase B=0 means CW direction, if phase B=1, it means CCW direction.

|      |      |      |      |      |                                              |                                           |                                          |                              |
|------|------|------|------|------|----------------------------------------------|-------------------------------------------|------------------------------------------|------------------------------|
|      |      |      |      |      | <b>ALPSALPINE CO.,LTD.</b>                   |                                           |                                          |                              |
|      |      |      |      |      | APPD.<br>M-ENG2<br>S.MIZOBUCHI<br>2012-01-30 | CHKD.<br>M-ENG2<br>K.HIROSE<br>2012-01-30 | DSGD.<br>M-ENG2<br>H.MIURA<br>2012-01-30 | TITLE<br>_____               |
|      |      |      |      |      |                                              |                                           |                                          | DOCUMENT NO.<br>4LE-26 (1/1) |
| SYMB | DATE | APPD | CHKD | DSGD |                                              |                                           |                                          |                              |

注記 軸受材質：亜鉛タ<sup>※</sup>イキャスト

軸材質：アルミニウム

NOTES BUSHING MATERIAL: ZINC ALLOY DIE CASTING

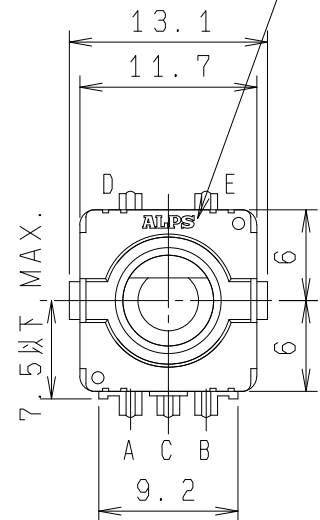
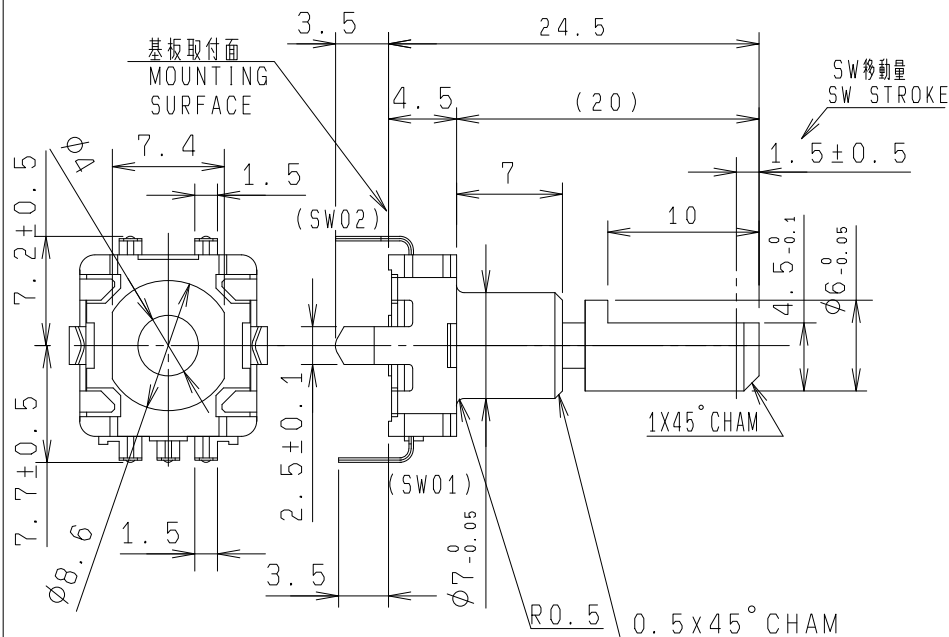
SHAFT MATERIAL: ALUMINUM

(SW01) ENCODER

(SW02) PUSH ON SW

商標の位置は任意とする。

THE POSITION OF  
TRADE MARK IS  
OPTIONAL.



軸角度は任意とする。  
SHAFT ANGLE IS  
OPTIONAL.

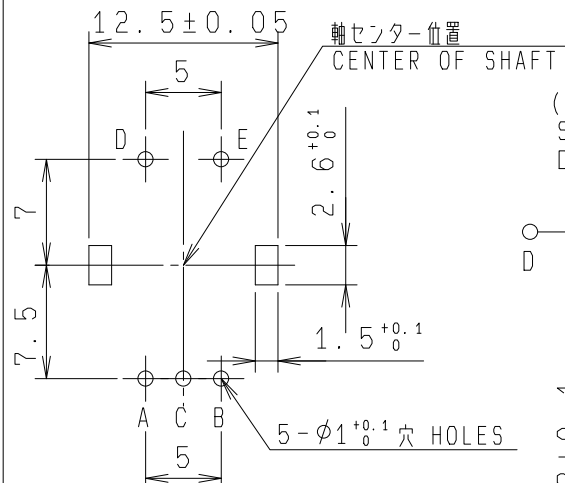
取付穴寸法図 許容差±0.1

(部品挿入側)

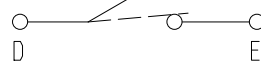
P.W.B. MOUNTING DETAIL

TOLERANCE±0.1

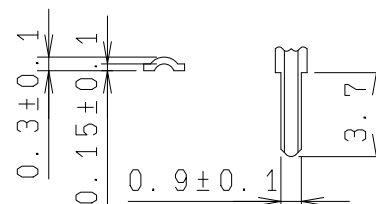
VIEWED FROM MOUNTING SIDE



(SW02)回路図  
SWITCH CIRCUIT  
DIAGRAM



基板挿入部端子形状詳細(3:1)  
TERMINAL DETAIL



基板板厚 t=1.6mm

P.C.B. THICKNESS t=1.6mm

(SW01)出力信号

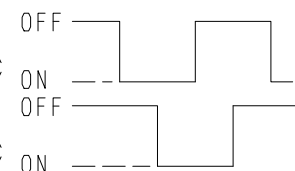
ENCODER OUTPUT SIGNAL

時計方向回転

CW ROTATION

A-C端子間  
TERMINAL A-C

B-C端子間  
TERMINAL B-C



指定なき部分の許容差  
TOLERANCES UNLESS OTHERWISE SPEC

|                         |      |
|-------------------------|------|
| $L \leq 10$             | ±0.3 |
| $10 < L < 100$          | ±0.5 |
| $100 \leq L$            | ±0.8 |
| 角度<br>ANGULAR DIMENSION | ±5°  |

|          |      |                            |            |       |                         |             |
|----------|------|----------------------------|------------|-------|-------------------------|-------------|
|          |      |                            |            |       |                         | 36クリック18パルス |
| PART NO. | NAME | MATERIAL NAME / CODE       |            |       | FINISH                  |             |
|          |      | <b>ALPSALPINE CO.,LTD.</b> |            |       |                         |             |
|          |      | DSGD. セツケイ2                |            | SCALE |                         |             |
|          |      | H, MIURA                   | 2000-05-31 | 2:1   |                         |             |
|          |      | CHKD.                      |            |       | TITLE 11形1軸 PUSH ON SW付 |             |
|          |      | M, SATOH                   | 2000-05-31 |       | 薄形エンコーダー                |             |
|          |      | APPD.                      |            | UNIT  | DOCUMENT NO.            |             |
| SYMB     | DATE | APPD                       | CHKD       | DSGD  | S, MIZOBUTI 2000-05-31  | LA2114E     |

EC11E182D4F20