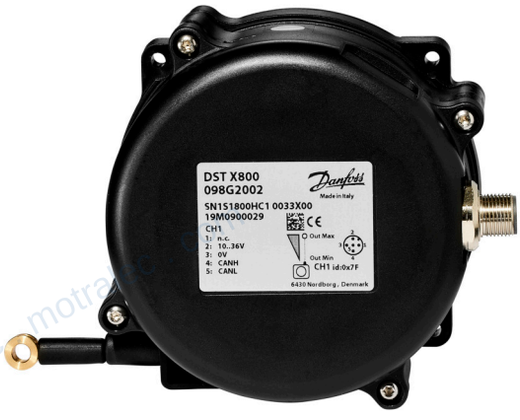
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Data Sheet

# Wire position sensor Type **DST X800**

For mobile hydraulic applications




The Danfoss DST X800 wire position sensor is developed to ensure a robust and high-performance solution mobile hydraulic applications. The stability control of e.g. a crane, telehandler or aerial platform is kept under control with draw wire sensors that determine the withdrawal of lateral stabilizers at different positions. On same applications the draw wire on the boom could prevent overturn of the machine.

Danfoss DST X800 series uses contactless Hall technology with measurement ranges up to 8.3 meter.

The sensor is designed for off-highway applications and resistant to shock and vibrations and with high electromagnetic compatibility and comes with both analog or CANopen output.

Single and redundant sensor types are available, making the complete portfolio suitable for safety-critical applications.

**Features:**

- Hall effect technology for almost infinite sensor life time
- Single or redundant range: 1.8 – 8.3 m
- Output: Analog or CANopen
- Electrical connector: M12 or cable
- Linearity: < ±0.5% FS
- IP protection level IP67

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# Product specification

## Technical data

### Table 1: Performance

| Features | Specifications |
|---|---|
| Measuring range | Strokes 1800mm - 2300mm - 3300mm - 4300mm - 4800mm - 5300mm - 6300mm - 7300mm - 8000mm - 8300mm |
| Linearity factory verification@ 25 °C | < ± 0.5% FS |
| Long term repeatability | < ±3% FS (for 1.80m, 2.30m, 3.30m)<br>< ±2% FS (for 4.30m, 4.80m, 5.30 m, 6.30m, 7.30 m, 8.00m, 8.30m) |
| Resolution | 0.1mm CANopen output; 12 bit analog output |
| Speed | Max. 2 m/sec, typ. 1 m/sec |
| Typical acceleration | 1 g |
| Durability | 500,000 speed max. 1 m/sec acc. max. 0.5 g;<br>150,000 speed max. 2 m/sec acc. max. 1 g |

### Table 2: Electrical specifications

| Features | Specifications |
|---|---|
| Electrical connections | M12 (4, 5 or 8 pin) connector or Cable |
| Output signal | 0.5 – 4.5 V DC, 0 – 10 V DC, 4 – 20 mA, CANopen |
| Supply voltage | 10 – 36 V DC |
| Current consumption | < 10 mA/per channel (no load) |
| MTFFd [Years] | CANopen: 220<br>Analogue: 173 (Single channel) |

### Table 3: Environmental conditions

| Features | | Specifications | |
|---|---|---|---|
| Operating temperature range | | | -40 – 65 °C |
| EMC | | Emission | EN 55011 |
| | | Immunity | EN 61236-3-2 |
| Vibration stability | Sinusoidal | 20 g, 10 Hz – 2,000 kHz | IEC 60068-2-6 |
| Shock resistance | Impulsive on 3 axes | 50 g, 11 ms | IEC 60068-2-27 |
| IP rating | | | IP67 with female connector mounted |

### Table 4: Mechanical characteristics

| Features | | Specifications |
|---|---|---|
| Materials | Enclosure | PBT (Polybutylene terephthalate) |
| | Wire | AISI 316; Ø0.85 mm nylon coating |
| Net weight | | 1,800 – 3,300 mm, 0.53 kg<br>4,300 – 5,300 mm, 0.63 kg<br>6,300 – 8,300 mm, 0.73 kg |

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# Dimensions

## M12 version

**Figure 1: M12 version**

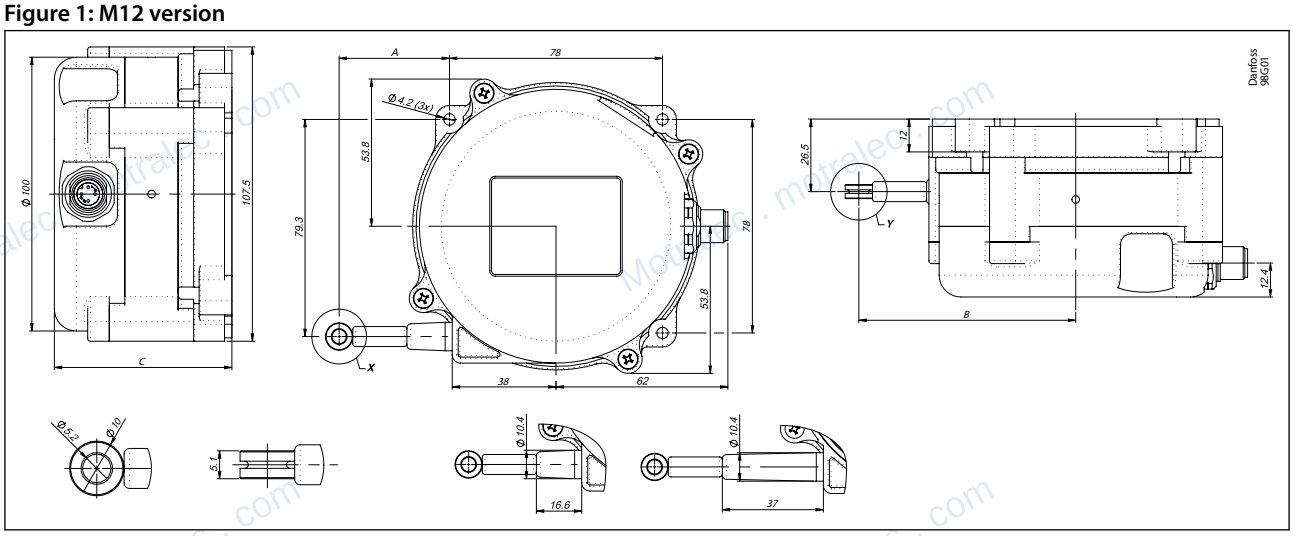



**Table 5: Strokes - M12 version**

| Strokes | A | B | C |
|---|---|---|---|
| 1,800 – 5,300 | 40.4 | 79.4 | - |
| 6,300 – 8,300 | 60.8 | 99.8 | - |
| 1,800 – 6,300 | - | - | 65 |
| 7,300 – 8,300 | - | - | 68 |

## Cable version

**Figure 2: Cable version**

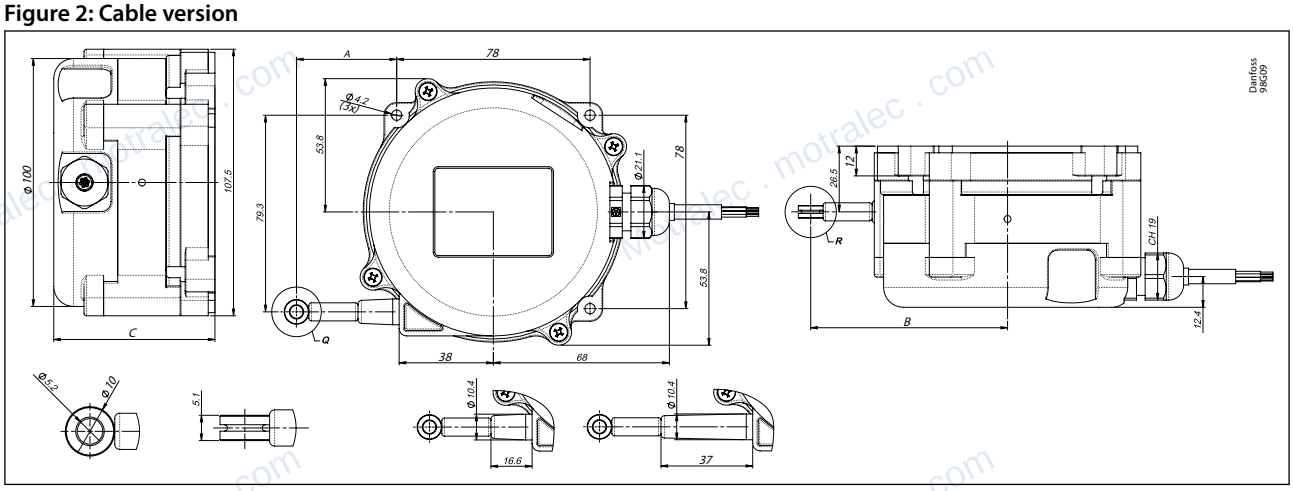



**Table 6: Strokes - cable version**

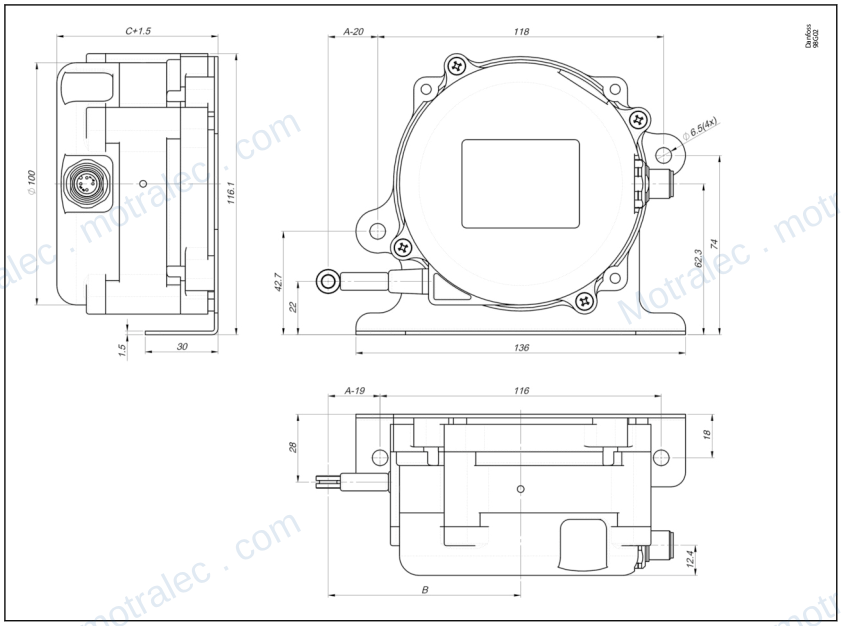
| Strokes | A | B | C |
|---|---|---|---|
| 1,800 – 5,300 | 40.4 | 79.4 | - |
| 6,300 – 8,300 | 60.8 | 99.8 | - |
| 1,800 – 6,300 | - | - | 65 |
| 7,300 – 8,300 | - | - | 68 |

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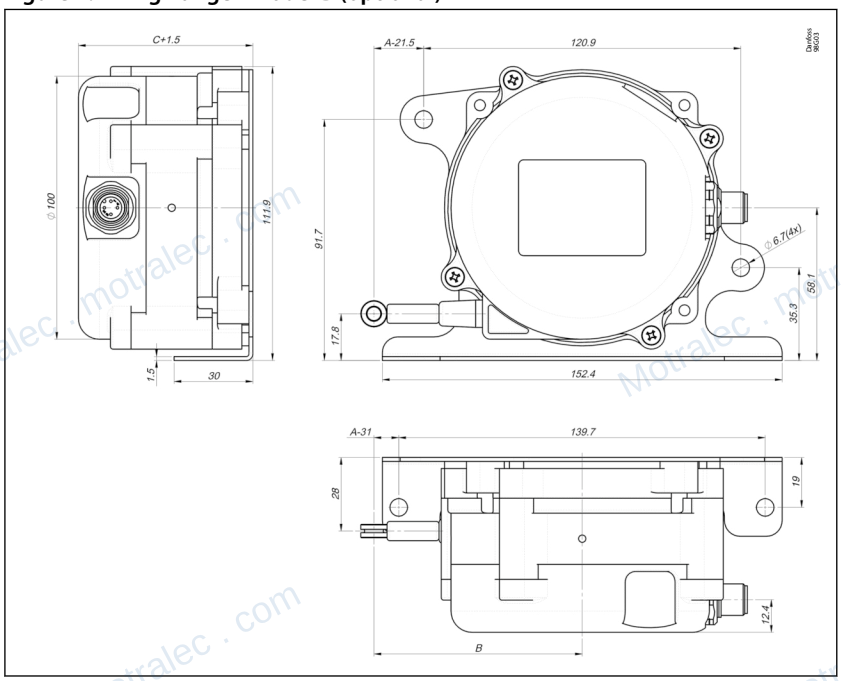
## Fixing flange - Model A (optional)

**Figure 3: Fixing flange - Model A (optional)**




## Fixing flange - Model B (optional)

**Figure 4: Fixing flange - Model B (optional)**



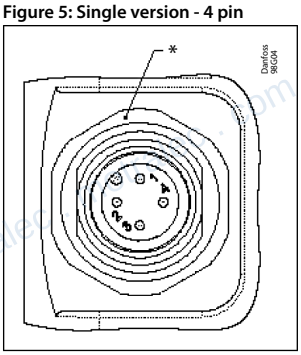

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## Electrical connections

### M12 version

**Figure 5: Single version - 4 pin**



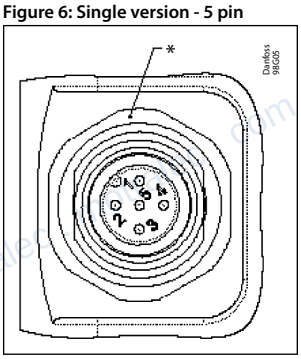

Analog output connections:

| | |
|---|---|
| **1.** | + Supply |
| **2.** | Ground |
| **3.** | Output |
| **4.** | N.C. |
| ***** | M12x1 4-pin male connector |

CANopen output connections:

| | |
|---|---|
| **1.** | + Supply |
| **2.** | Ground |
| **3.** | CAN H |
| **4.** | CAN L |

**Figure 6: Single version - 5 pin**



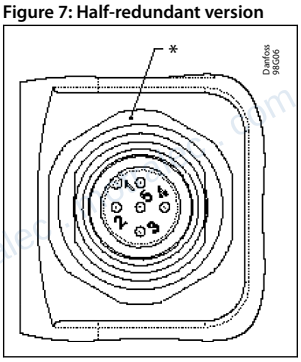

Analog output connections:

| | |
|---|---|
| **1.** | + Supply |
| **2.** | N.C. |
| **3.** | Ground |
| **4.** | Output |
| **5.** | N.C. |
| ***** | M12x1 5-pin male connector |

CANopen output connections:

| | |
|---|---|
| **1.** | N.C. |
| **2.** | + Supply |
| **3.** | Ground |
| **4.** | CAN H |
| **5.** | CAN L |

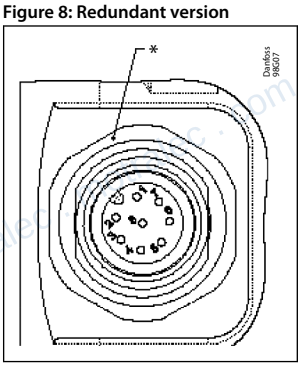
**Figure 7: Half-redundant version**




CANopen output connections:

| | |
|---|---|
| **1.** | Ground |
| **2.** | + Supply |
| **3.** | Ground |
| **4.** | CAN H |
| **5.** | CAN L |
| ***** | M12x1 5-pin male connector |

**Figure 8: Redundant version**




Analog output connections:

| | |
|---|---|
| **1.** | + Supply 1 |
| **2.** | Ground 1 |
| **3.** | Output 1 |
| **4.** | N.C. |
| **5.** | + Supply 2 |
| **6.** | Ground 2 |
| **7.** | Output 2 |
| **8.** | N.C. |
| ***** | M12x1 8-pin male connector |

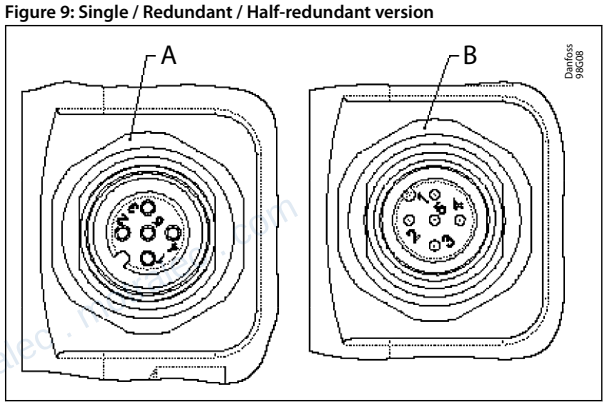
CANopen output connections:

| | |
|---|---|
| **1.** | + Supply 1 |
| **2.** | Ground 1 |
| **3.** | CAN H 1 |
| **4.** | CAN L 1 |
| **5.** | + Supply 2 |
| **6.** | Ground 2 |
| **7.** | CAN H 2 |
| **8.** | CAN L 2 |

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**Figure 9: Single / Redundant / Half-redundant version**



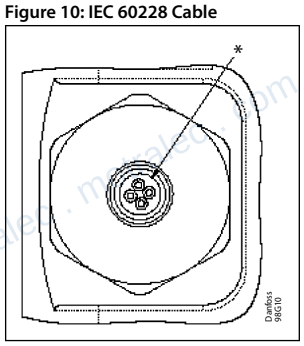

CANopen output IN-OUT connections:

| | |
|---|---|
| **1.** | Ground |
| **2.** | + Supply |
| **3.** | Ground |
| **4.** | CAN H |
| **5.** | CAN L |

| | |
|---|---|
| **A** | M12x1 5-pin female connector |
| **B** | M12x1 5-pin male connector |

## Cable version

**Figure 10: IEC 60228 Cable**




Connections:

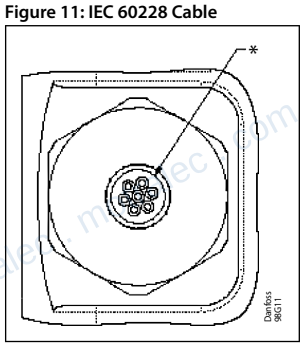
| | |
|---|---|
| **Red** | + Supply |
| **Black** | Ground |
| **Blue** | Out |
| **White** | N.C. |

| | |
|---|---|
| * | IEC 60228 Cable<br>4 pole 0.34 mm²<br>PUR OD 4.4 mm |

Connections:

| | |
|---|---|
| **Red** | + Supply |
| **Black** | Ground |
| **Blue** | CAN H |
| **White** | CAN L |

**Figure 11: IEC 60228 Cable**




Connections:

| | |
|---|---|
| **White** | + Supply CH1 |
| **Brown** | Ground CH1 |
| **Green** | Out CH1 |
| **Yellow** | N.C. |
| **Grey** | + Supply CH2 |
| **Pink** | Ground CH2 |
| **Blue** | Out CH2 |
| **Red** | N.C. |

| | |
|---|---|
| * | IEC 60228 Cable<br>4 pole 0.34 mm²<br>PUR OD 5.8 mm |

Connections:

| | |
|---|---|
| **White** | + Supply CH1 |
| **Brown** | Ground CH1 |
| **Green** | CAN H CH1 |
| **Yellow** | CAN L CH1 |
| **Grey** | Supply CH2 |
| **Pink** | Ground CH2 |
| **Blue** | CAN H CH2 |
| **Red** | CAN L CH2 |

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# Ordering

**Table 7: Ordering for DST X800**

| Output signal | Configurations | Code no. |
|---|---|---|
| 36 V; 0.5 – 4.5 V; | 1 x M12 5p; Single; 1,800 mm | 098G2000 |
| 36 V 0.5 – 4.5 V; | 1x M12 8p; Redundant; 1,800 mm | 098G2001 |
| 36 V; CANopen | 1 x M12 5p; Single; 1,800 mm | 098G2002 |
| 36 V; CANopen | 1x M12 8p; Redundant; 1,800 mm | 098G2003 |
| 36 V; 0.5 – 4.5 V; | 1 x M12 5p; Single; 4,800 mm | 098G2004 |
| 36 V; 0.5 – 4.5 V; | 1x M12 8p; Redundant; 4,800 mm | 098G2005 |
| 36 V; CANopen | 1 x M12 5p; Single; 4,800 mm | 098G2006 |
| 36 V; CANopen | 1x M12 8p; Redundant; 4,800 mm | 098G2007 |
| 36 V; 0.5 – 4.5 V; | 1 x M12 5p; Single; 8,300 mm | 098G2008 |
| 36 V; 0.5 – 4.5 V; | 1x M12 8p; Redundant; 8,300 mm | 098G2009 |
| 36 V; CANopen | 1 x M12 5p; Single; 8,300 mm | 098G2010 |
| 36 V; CANopen | 1x M12 8p; Redundant; 8,300 mm | 098G2011 |

Other on request.

## Ordering code - on request

| Sensor type | |
|---|---|
| Wire transducer | S |

| Electrical connections | |
|---|---|
| M12 - 4-p connector | M |
| M12 - 5-p connector | N |
| M12 - 8-p connector (only for redundant versions) | O |
| Cable | F |

| Numbers of connectors | |
|---|---|
| Cable connection | O |
| 1 male M12-4-p connector (single version) or 1 male M12-5-p connector (single or half-redundant version) or 1 male M12 8-p connector (only redundant version) | 1 |
| 2 male M12-4-p connectors (redundant version) or 2 male M12-5-p connectors (refudant version) | 2 |
| 1 male M12-5-p connector and 1 M12- 5-p female connector (only for IN-OUT CANopen version) | 3 |

| Circuit type | |
|---|---|
| Single | S |
| Redundant | R |
| Half-redundant | H |

| Measuring range | |
|---|---|
| Measuring range (specify) | |
| Available strokes: 1,800 mm; 2,300 mm; 3,300 mm; 4,300 mm; 4,800 mm; 5,300 mm; 6,300 mm; 7,300 mm; 8,000 mm; 8,300 mm | xxxx |

| Supply voltage | |
|---|---|
| 10…36 V DC | H |

| Output type | |
|---|---|
| 0.5…4.5 V DC (powered at 10 – 36 V DC) | A1 |
| 0...10 V DC output (powered at 11...36 V DC) | A2 |
| 4...20 mA output (powered at 10...36 V DC) | A3 |
| CANopen output (powered at 10...36 V DC) | C1 |

| Certificate | |
|---|---|
| No certificate attached | 0 |
| Linearity curve to be attached | L |

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| Version | |
|---|---|
| Standard | 033 |

| Accessories | |
|---|---|
| No accessories | X |
| FLA033: fixing flange, A version | A |
| FLA034: fixing flange, B version | B |
| CON293: 4-pin female mating connector M12x1; IP67 | C |
| CON469: 8-pin female mating connector M12x1; IP67 | D |
| CON031: 5-pin female mating connector M12x1; IP67 | E |

| Cable length | |
|---|---|
| No cable | 00 |
| 2000 mm | 20 |
| Other on request | |

**Table 8: Example of ordering: DST X800-SN2R4300HC1 0033X00**

| | |
|---|---|
| S | Wire sensor |
| N | M12 c onnector 5-pin |
| 2 | 2 male 5-pin connector |
| R | Redundant |
| 4300 | 4300 mm stroke |
| H | 10 – 36 V DC |
| C1 | CANopen |
| 0 | No certificate |
| 033 | Standard |
| X | No accessories |
| 00 | Cable length (on request) |

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The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.

**Table 9: Certificates, declarations, and approvals**

| File name | Document type | Document topic | Approval authority |
|---|---|---|---|
| 098R0010 | EU Declaration | EMCD/RoHS | Danfoss |

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