

**APE 391 M**

Specifications

Dimensions

Electrical Connection

Adjustment

**Interface Electronics**



<p><b>Mechanical design</b></p>	<p>Interface electronics in cable version Interpolation and digitizing electronics in D-sub connector housing</p>
<p><b>Interfaces</b></p>	<p><i>Input</i> <i>Output</i></p> <p>Incremental signals <math>\sim 1 V_{pp}</math> Absolute position values Mitsubishi High Speed Serial Interface</p>
<p><b>Special features</b></p>	<ul style="list-style-type: none"> <li>• Integrated 4096-fold interpolation</li> <li>• For connecting incremental HEIDENHAIN encoders to Mitsubishi controls with the Mitsubishi High Speed Serial Interface</li> </ul>



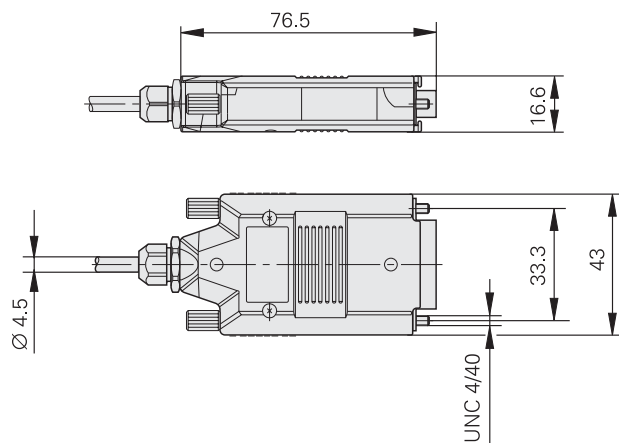
**Specifications**

	<b>APE 391 M</b>
<b>Input</b>	Incremental signals $\sim$ 1 V <sub>PP</sub>
Input frequency	≤ 400 kHz
Electrical connection *	<ul style="list-style-type: none"> <li>• D-sub connector (female), 15-pin</li> <li>• M23 connector, 12 pin</li> </ul>
Cable lengths	Max. 3 m
<b>Output</b>	Absolute position values via Mitsubishi High Speed Serial Interface
Electrical connection	D-sub connector (male) 15-pin
Cable lengths	Max. 15 m with HEIDENHAIN cable
<b>Interpolation</b>	4096-fold
<b>Power supply</b>	5 V ± 5 % measured at APE
<b>Current consumption</b>	≤ 160 mA (without load, without encoder)
<b>Operating temperature</b>	0 to 70 °C
<b>Storage temperature</b>	-30 to 70 °C
<b>Vibration</b> 55 to 2000 Hz <b>Shock</b> 11 ms	100 m/s <sup>2</sup> (IEC 60068-2-6) 200 m/s <sup>2</sup> (IEC 60068-2-27)
<b>Protection</b>	IP 50
<b>Weight</b>	140 g (APE without cable, with electronics)

\* Please indicate when ordering


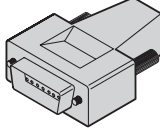
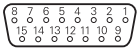

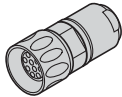




**Dimensions** in mm

  
 DIN ISO 8015  
 ISO 2768 - m H


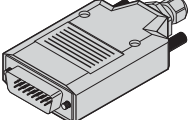
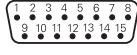



**Electrical Connection**

**Pin layout of APE input**


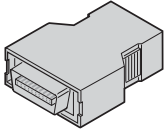
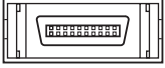


															
	Power supply				Incremental signals						Other signals				
	12	2	10	11	5	6	8	1	3	4	9	7	/		
	4	12	2	10	1	9	3	11	14	7	5/8/ 13/15	13	/		
	U <sub>P</sub>	Sensor U <sub>P</sub>	0V	Sensor 0V	A+	A-	B+	B-	R+	R-	Vacant	Vacant	Vacant		
	Brown/ Green	Blue	White/ Green	White	Brown	Green	Gray	Pink	Red	Black	/	Violet	Yellow		

**Pin layout of APE output**

<b>15-pin D-sub connector, male</b>															
															
	Power supply				Incremental signals <sup>1)</sup>							Absolute position values			
	4	12	2	10	6	1	9	3	11	14	7	5	13	8	15
	U <sub>P</sub>	Sensor U <sub>P</sub>	0V	Sensor 0V	Internal shield	A+	A-	B+	B-	R+	R-	Serial Data	Serial Data	Re- quest Frame	Re- quest Frame

<sup>1)</sup> Only for adjusting; do not use in normal operation

**Pin layout of Mitsubishi connector**






<b>20-pin Mitsubishi connector</b>								
								
	Power supply				Absolute position values			
	20	19	1	11	6	16	7	17
	U <sub>P</sub>	Sensor U <sub>P</sub>	0V	Sensor 0V	Serial Data	Serial Data	Request Frame	Request Frame
	Brown/Green	Blue	White/Green	White	Gray	Pink	Violet	Yellow

Shield is on housing; U<sub>P</sub> = power supply

Sensor: The sensor line is connected internally to the respective power supply.

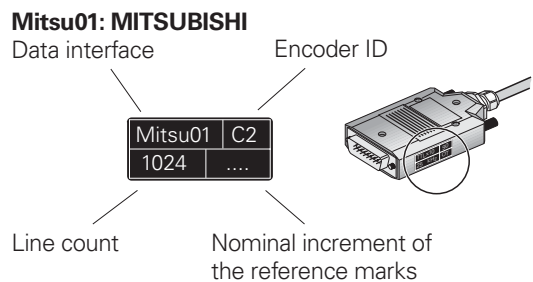
Vacant pins or wires must not be used!

**Connecting Elements and Cables**

<p>APE 391 M with <b>D-sub connector (female)</b> 15-pin</p> 	<p><b>D-sub connector (female)</b> 15-pin</p> 	<p>For cable Ø 6 mm: Id. Nr. <b>315 650-14</b> For cable Ø 8 mm: Id. Nr. <b>315 650-14</b></p>
<p>APE 391 M with <b>M23 connector (female)</b> 12-pin</p> 	<p><b>Cable without connectors, PUR D Ø 6 mm</b> [2(2 x 0.14 mm<sup>2</sup>) + (4 x 0.5mm<sup>2</sup>)]</p> 	<p>Cable Ø 6 mm: Id. Nr. <b>333 063-xx</b></p>
<p><b>Connecting cable complete</b> With D-sub connector (female) and Mitsubishi connector</p> 		<p>Cable Ø 6 mm: Id. Nr. <b>366 419-xx</b></p>

**Interfacing**

For the APE 391 M to function correctly in connection with the encoder, certain encoder parameters (e.g. number of signal periods for rotative encoders, nominal increment of encoders, encoder ID, ...) must be saved in the APE 391 M. Only HEIDENHAIN can program this data. These data are also printed on the ID label.



**HEIDENHAIN**

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