



# HEIDENHAIN



Product Information

## PWM 21 ATS Software

# Adjusting and testing package

HEIDENHAIN offers an adjusting and testing package for diagnostics and adjustment of HEIDENHAIN encoders with absolute and incremental interfaces. It consists of the following components:

- **PWM 21:** Testing device for connection to a PC through the USB interface
- **ATS:** Adjusting and Testing Software with integrated local encoder database for automatic encoder identification

We recommend returning the PWM 21 to the HEIDENHAIN calibration service in Traunreut every two years in order to ensure traceable, accurate and error-free operation as a testing device.

The PWM 21 is the successor model to the PWM 20. The performance range and the housing are unchanged. Only the board assembly has changed. The PWM 21 is supported as of ATS version V3.2.1. Future versions of ATS will continue to support PWM 20 devices.

## Inspection and testing devices from HEIDENHAIN

HEIDENHAIN encoders are provided with all information necessary for commissioning, monitoring and diagnostics. HEIDENHAIN offers the appropriate PWM inspection devices and PWT testing devices for encoder analysis. The PWM inspection devices can be used universally. They have low measuring tolerances and can be calibrated. Testing devices, like the PWT 100, have a simpler performance range and larger measuring tolerances. They cannot be calibrated.

## Mounting wizard

The PWM 21 is recommended as a mounting tool for the adjustment of HEIDENHAIN encoders that require a special mounting wizard (for example LIP 2xx, ERO 2xxx). The PWT 100 test device can be used only to a limited extent for adjusting encoders.

## Available functions

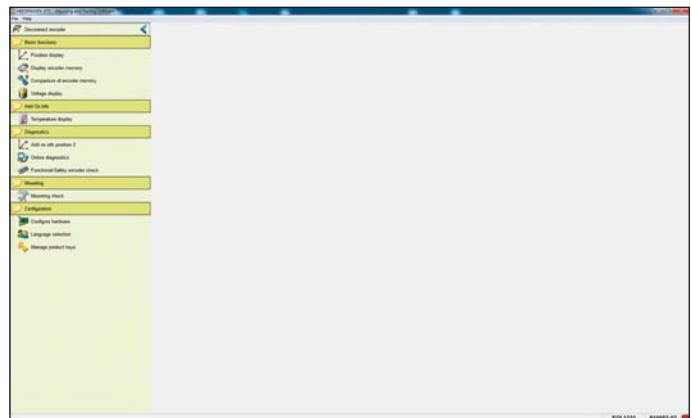
The functions supported by the ATS software vary depending on the encoder and the encoder interface. The EnDat interface makes it possible not only to display the position value, but also to read out the online diagnostics, to read or write parameters, shift datums, set write-protection and use further inspection functions, etc.

## Important new functions of the ATS software V3.2:

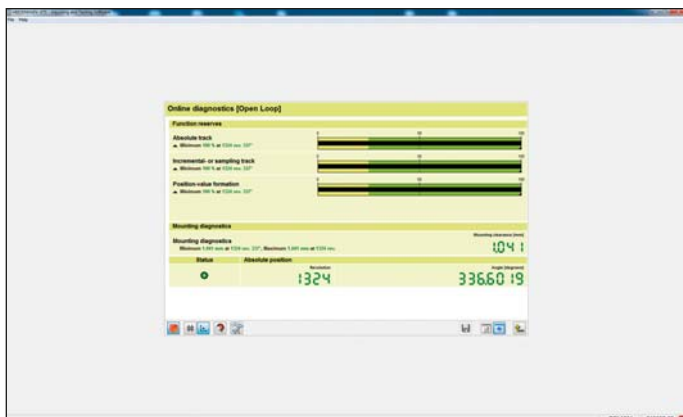
- *Mounting wizard:* Prepared for new generations of encoders
- *Datum shift:* Support for additional interfaces and information display
- *DRIVE-CLiQ:* Update for the display of parameters and error messages
- *Display of online diagnostics in the control loop:*  
Revised listening-in with EnDat;  
Fanuc: Manual switchover  $\alpha/\alpha_i$
- Expansion of incremental counter function
- Connect the encoder through the ID of the HEIDENHAIN motor.



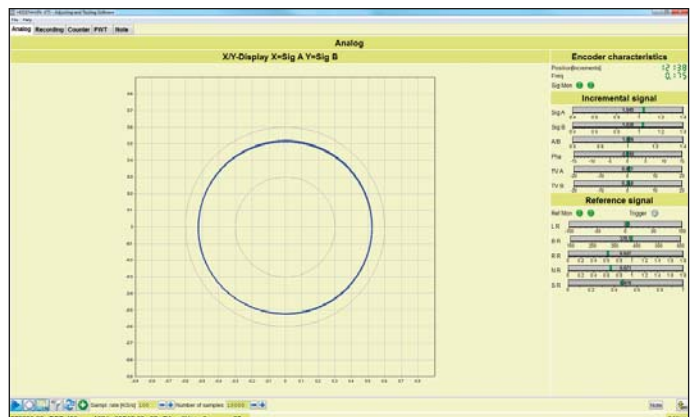
PWM 21



ATS software



Online diagnostics



Lissajou display of sinusoidal incremental signals

# Available functions

PWM 21 and ATS V3.2 – available functions	EnDat	Fanuc	Mitsubishi	SSI	DRIVE-CLiQ	Yaskawa	Panasonic	1V <sub>PP</sub> <sup>2)</sup> 11 μApp <sup>2)</sup>	TTL	HTL <sup>3)</sup>	
<b>Position display</b> Display of the absolute position Display of incremental position (if available) Display and resetting of error messages Display and resetting of warnings Display of transmission status PWT display of incremental signals	✓ ✓ ✓ ✓ ✓ -	✓ ✓ ✓ ✓ ✓ -	✓ ✓ ✓ ✓ ✓ -	✓ ✓ ✓ ✓ ✓ -	✓ - ✓ ✓ ✓ -	✓ - ✓ ✓ ✓ -	✓ - ✓ ✓ ✓ -	- ✓ - - - ✓	- - - - - ✓	- - - - - -	
<b>Connection dialog, encoder connection via:</b> • Encoder part number • Entry of interface and supply voltage • HEIDENHAIN motor part number	✓ ✓ ✓ ✓	✓ - - -	✓ - - -	✓ - - -	✓ - - -	✓ - - -	✓ - - -	✓ ✓ ✓ ✓	✓ - - -	✓ - - -	
<b>Diagnostics</b> Display of online diagnostics Display of online diagnostics in the control loop <sup>1)</sup> Feed-through mode permitted with PWM 21 Circular representation of the incremental signals (if available) Evaluation of reference signal Incremental counter Level measurement and logic analysis Display of supply voltage and supply current Homing and limit display Signal recording	✓ ✓ ✓ ✓ - - - - - - - - -	✓ ✓ ✓ - - - - - - - - - -	✓ ✓ ✓ - - - - - - - - - -	- - - ✓ - - - - - - - - -	✓ - - - - - - - - - - - -	✓ - - - - - - - - - - - -	✓ - - - - - - - - - - - -	- - - - - - - - - - - - - -	- - - - - - - - - - - - - -	- - - - - - - - - - - - -	
<b>Mounting wizards/testing wizards</b> For ECI 11xx/13xx/1xx, EQI 11xx/13xx, EBI 11xx/1xx For ERO 2xxx, ECA 4xxx For LIP 2xx, LIC 4xxx, LIC 2xxx Preparation for new encoder generations Testing and measuring wizard for encoders with functional safety Assistant for tensioning the scale tape	✓ ✓ -	- ✓ -	- ✓ -	- - -	✓ - -	- - -	- - -	- ✓ -	- - -	- - -	- - -
<b>Additional functions (if supported by the encoder)</b> Comparison of absolute position with incremental position Datum shift ("electric zeroing of the position") including info display <sup>4)</sup> Display of additional datum: Temperature Display of additional datum: Position value 2 Display of additional datum: Additional sensors Display of additional datum: Limit position signals Display of additional datum: Operating status error sources	✓ ✓ ✓ <sup>5)</sup> ✓ ✓ ✓ ✓	- ✓ - - - - -	- ✓ - - - - -	✓ ✓ - - - - -	- - ✓ ✓ - - -	- - - - - - -	- - - - - - -	- - - - - - -	- - - - - - -	- - - - - - -	
<b>Memory contents</b> Display of memory contents Modification to memory contents Saving the memory allocation Comparison of current memory contents with saved memory contents Saving the encoder memory	✓ ✓ ✓ ✓ ✓	- - - - ✓	- - - - ✓	- - - - -	✓ - - - ✓	- - - - ✓	- - - - ✓	- - - - -	- - - - -	- - - - -	

<sup>1)</sup> In feed-through mode, preferred in connection with a signal adapter, e.g. SA 100 or SA 110

<sup>2)</sup> 25 μApp/3 V<sub>PP</sub> for service purposes

<sup>3)</sup> Via signal adapter, for service purposes

<sup>4)</sup> License key is required and is available only for certain encoders (including EnDat)

<sup>5)</sup> Including conversion for PT 1000 sensors with properly set EnDat memory parameters

✓) See ATS software operating instructions

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# PWM 21 phase meter

Testing and measuring device	PWM 21
<b>Area of application</b>	<ul style="list-style-type: none"><li>• Testing the correct operation of absolute and incremental HEIDENHAIN encoders</li><li>• Mounting wizard for ExI, LIP 200, LIC 4000 and others</li></ul>
<b>Encoder input</b> Only for HEIDENHAIN encoders	<ul style="list-style-type: none"><li>• EnDat 2.1 or EnDat 2.2 (absolute value with or without incremental signals)</li><li>• DRIVE-CLiQ</li><li>• Fanuc Serial Interface</li><li>• Mitsubishi High Speed Interface</li><li>• Panasonic Serial Interface</li><li>• Yaskawa Serial Interface</li><li>• SSI</li><li>• 1 V<sub>PP</sub> (3 V<sub>PP</sub> only for service purposes)</li><li>• 1 V<sub>PP</sub> with Z1 track</li><li>• 11 µA<sub>PP</sub> (25 µA<sub>PP</sub> only for service purposes)</li><li>• TTL</li><li>• HTL (via signal adapter, only for service purposes)</li></ul>
<b>Encoder output</b>	Feed-through mode for certain interfaces (see <i>Available functions &gt; Diagnostics</i> ); (an SA 100 or SA 110 signal adapter is required for galvanic isolation)
<b>Interface</b>	USB 2.0 (High Speed)
<b>Voltage supply</b>	AC 100 V to 240 V (±10%), 50 Hz to 60 Hz (±2 Hz) DC 24 V (±2.4 V) Power consumption approx. 20 W
<b>Operating temperature</b>	0 °C to 45 °C
<b>Protection</b> EN 60 529	IP20
<b>Dimensions</b>	≈ 258 mm x 154 mm x 55 mm

## Adjusting and testing software

Adjusting and testing software	ATS software V3.2
<b>System requirements and recommendations</b>	<ul style="list-style-type: none"><li>• PC with dual-core processor</li><li>• Clock frequency (recommended) &gt; 2 GHz</li><li>• RAM &gt; 2 GB</li><li>• Operating system: Windows Vista, 7, 8, 10 (32-bit or 64-bit)</li><li>• ≈ 500 MB free space on the hard disk</li><li>• Screen resolution ≥ 1024 x 768</li></ul>
<b>Product key</b>	Management of product keys for optional functions
<b>Languages</b>	Choice between English and German

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## HEIDENHAIN

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