



HEIDENHAIN

SALES & SERVICE:

A Tech Authority, Inc.
13745 Stockton Ave.
Chino CA 91710
909-614-4522
sales@atechauthority.com



Product Information

PWM 21 ATS Software

Adjusting and testing package



PWM 21

HEIDENHAIN offers an adjusting and testing package for the diagnosis and adjustment of HEIDENHAIN encoders with absolute and incremental interfaces. This package is made up of the following components:

- **PWM 21:** inspection device for connection to a PC over a 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.

Inspection and testing devices from HEIDENHAIN

HEIDENHAIN encoders provide all of the information needed for commissioning, monitoring, and diagnostics. For the analysis of these encoders, HEIDENHAIN offers the appropriate PWM inspection devices and PWT testing units. The PWM inspection devices, which are universally deployable, feature calibration capability and low measuring tolerances. Testing devices such as the PWT 101 provide fewer functions, have wider tolerances, and cannot be calibrated.

Available functions

The ATS software supports various functions that vary depending on the encoder and its interface. For example, with the EnDat interface, it is possible to display the position value, read online diagnostics, read or write parameters, shift datums, configure write-protection, and perform other inspection functions.

Mounting wizard

For the adjustment of HEIDENHAIN encoders that require a special mounting wizard (e.g., the LIP 2xx and ERO 2xxx), the PWM 21 is the recommended mounting tool. The PWT 101 testing device can be used for adjustment only to a limited extent.

Important new functions of ATS software V3.4:

- *Measurement reports:* For the documentation of measurement results, measurement reports can now also be generated for encoders with incremental interfaces.
- *Online diagnostics:* Recording of the function reserves over the traverse path.
- *Display of incremental signals:* Persistence display of the circular representation (persistence mode) and adjustable trigger levels for the reference pulse
- *Inspection wizard for functional safety and mounting wizards:* These wizards have been adapted to the current device generations in terms of their functionality and display of results
- *Conversational languages:* German, English, French, Italian, Spanish, Korean, Chinese (simplified), Chinese (traditional)

Software options

The ATS software permits the user to expand the standard performance range of the software by entering a product key. The product key is subject to a charge and valid only for the serial number of the PWM 21.

Available product keys:

Additional functions integrated in **ATS14** for encoders with DRIVE-CLiQ interface:

- Expanded parameter display
- Temperature display: additional display of the temperature within the encoder*
- Datum shift*

ID 1277664-14

The signal limit values can be changed with **ATS20**.

The inspection and settings limits for signal monitoring are preset to the (standard) values documented in the *Interfaces for HEIDENHAIN Encoders* brochure (ID 1078628-xx). Customized and high-precision encoders may have different signal tolerances (e.g. tighter tolerances for the amplitudes of the output signals, on/off ratios, phase angles, etc.). The "Customizing" function allows for manual editing (adapting), saving, and loading of signal limit values.

ID 1277664-20

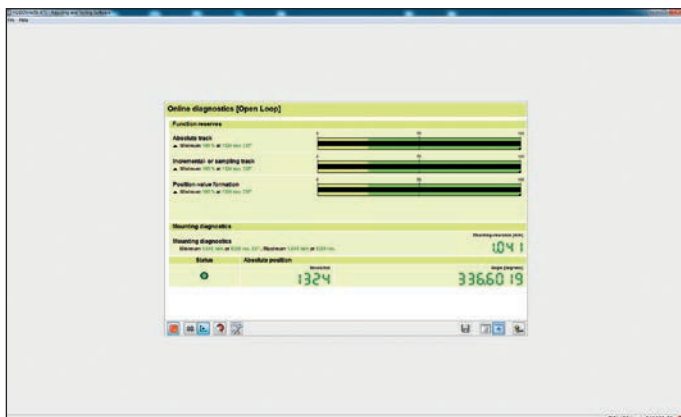
Additional function integrated in **ATS24**

for encoders with Fanuc, Mitsubishi, Panasonic, and Yaskawa interfaces:

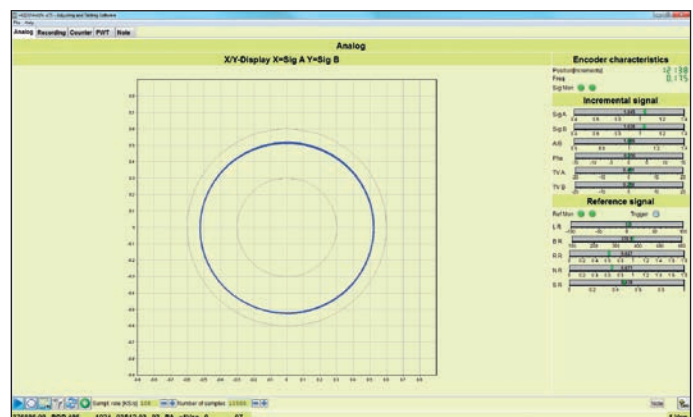
- Datum shift*

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* If supported by the encoder



Online diagnostics



Lissajous display of sinusoidal incremental signals

Range of functions

Range of functions of the PWM 21 and ATS software V3.4	EnDat	Fanuc	Mitsubishi	SSI	DRIVE-CLiQ	Yaskawa	Panasonic	1V _{PP} ²⁾ 11 μApp ²⁾	TTL	HTL ³⁾
Position display										
Display of the absolute position	✓	✓	✓	✓	✓	✓	✓	-	-	-
Display of the incremental position (if available)	✓	✓	✓	✓	-	-	-	✓	✓	✓
Display and resetting of error messages	✓	✓	✓	✓	✓	✓	✓	-	-	-
Display and resetting of warnings	✓	✓	✓	✓	✓	✓	✓	-	-	-
Display of the transmission status	✓	✓	✓	⊃	✓	✓	✓	-	-	-
PWT display of incremental signals	-	-	-	-	-	-	-	✓	⊃	-
Connection dialog; encoder connection via:										
• Encoder ID number	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• Entry of interface and supply voltage	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
• HEIDENHAIN motor ID number	✓	-	-	-	-	-	-	✓	-	-
Diagnostics										
Display of online diagnostics	✓	✓	✓	-	✓	✓	✓	-	-	-
Display of online diagnostics in the control loop ¹⁾	✓	✓	✓	-	-	-	✓	-	-	-
Monitoring mode permitted with the PWM 21	✓	✓	✓	-	-	-	✓	✓	✓	-
Circular representation of the incremental signals (if available)	✓	-	-	✓	-	-	-	✓	✓	-
Evaluation of the reference signal	-	-	-	-	-	-	-	✓	✓	✓
Incremental counter	-	-	-	-	-	-	-	✓	✓	✓
Display of supply voltage and supply current	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Homing/limit display	-	-	-	-	-	-	-	✓	✓	-
Signal recording	-	-	-	-	-	-	-	✓	-	-
Mounting wizards/inspection wizards										
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 Inspection wizard for encoders with functional safety Assistant for tensioning the scale tape	✓ ✓	- ✓	- ✓	- -	✓ -	- -	- -	- ✓	- -	- -
Additional functions (if supported by the encoder)										
Comparison of absolute position with incremental position	✓	-	-	✓	-	-	-	-	-	-
Datum shift ("electric zeroing"), including information display ⁴⁾	✓	(✓)	(✓)	(✓)	(✓)	(✓)	(✓)	-	-	-
Display of additional data: Temperature	✓ ⁵⁾	-	-	-	✓	-	-	-	-	-
Display of additional data: Position value 2	✓	-	-	-	✓	-	-	-	-	-
Display of additional data: Additional sensors	✓	-	-	-	-	-	-	-	-	-
Display of additional data: Limit position signals	✓	-	-	-	-	-	-	-	-	-
Display of additional data: Operating status error sources	✓	-	-	-	-	-	-	-	-	-
Memory contents										
Display of memory contents	✓	-	-	-	✓	-	-	-	-	-
Modification of memory contents	✓	-	-	-	-	-	-	-	-	-
Storing of memory assignments	✓	-	-	-	✓	-	-	-	-	-
Comparison of current memory contents with saved memory contents	✓	-	-	-	-	-	-	-	-	-
Backing up the encoder memory	✓	✓	✓	-	✓	✓	✓	-	-	-

¹⁾ In feed-through mode; preferably in conjunction with a signal adapter (e.g., an SA 100 or SA 110)

²⁾ 25 μApp/3 V_{PP} for servicing purposes

³⁾ Via signal adapter, for servicing purposes

⁴⁾ License key is required and is available only for certain encoders (with the exception of EnDat)

⁵⁾ Including conversion for PT 1000 sensors when EnDat memory parameters are appropriately set

(✓) See ATS software operating instructions

PWM 21 inspection device

Inspection device	PWM 21
Area of application	<ul style="list-style-type: none"> • Functional testing of absolute and incremental HEIDENHAIN encoders • Mounting wizard for ExI, LIP 200, LIC 4100, and others
Encoder input only for HEIDENHAIN encoders	<ul style="list-style-type: none"> • EnDat 2.1 or EnDat 2.2 (absolute value with or without incremental signals) • DRIVE-CLiQ • Fanuc Serial Interface • Mitsubishi high speed interface • Panasonic Serial Interface • Yaskawa Serial Interface • SSI • 1 V_{PP} (3 V_{PP} for servicing purposes only) • 1 V_{PP} with Z1 track • 11 μA_{PP} (25 μA_{PP} for servicing purposes only) • TTL • HTL (via signal adapter, for servicing purposes only)
Encoder output	Monitoring mode for certain interfaces (see <i>Range of functions > Diagnostics</i>); (an SA 100 or SA 110 signal adapter is required for galvanic isolation)
Interface	USB 2.0 (High Speed)
Supply voltage	AC 100 V to 240 V (±10%), 50 Hz to 60 Hz (±2 Hz) Voltage supply: DC 24 V (±2.4 V) Power consumption: approx. 20 W
Operating temperature	0 °C to 45 °C
Protection EN 60529	IP20
Dimensions	258 mm × 154 mm × 55 mm

Adjusting and testing software

Adjusting and testing software	ATS software V3.4
System requirements and recommendations	<ul style="list-style-type: none"> • PC with dual-core processor > 2 GHz • Main memory > 2 GB • ≈ 500 MB of free memory space • Screen resolution ≥ 1024 x 768 • Operating system: Windows 7, 8, 10 (32-bit or 64-bit)
Product key	Management of product keys for optional functions
Languages	German, English, French, Italian, Spanish, Korean, Chinese (simplified), Chinese (traditional)

DRIVE-CLiQ is a registered trademark of Siemens AG

HEIDENHAIN

DR. JOHANNES HEIDENHAIN GmbH

Dr.-Johannes-Heidenhain-Straße 5

83301 Traunreut, Germany

☎ +49 8669 31-0

☎ +49 8669 32-5061

E-mail: info@heidenhain.de

www.heidenhain.de

This Product Information document supersedes all previous editions, which thereby become invalid. The basis for ordering from HEIDENHAIN is always the Product Information document edition valid when the order is made.



Further information:

Comply with the requirements described in the following documents to ensure correct operation of the PWM:

- Brochure: *Interfaces of HEIDENHAIN Encoders*
- Brochure: *Cables and Connectors*

1078628-xx

1206103-xx