Four-Channel High-Voltage WideBand Amplifier

MODEL 9400

- **Four independent channels**
- **Small case size**
- **Monitor Outputs for each channel**
- **Precise signal amplification for multiple applications**
- **Full power bandwidth from DC to >500 kHz**
- **-200 to +200 V (400 Vp-p) with up to 50 mA output current**
- **Compatible with any of the Tabor arbitrary waveform generators**
- **Special unipolar mode for MEMS engine drivers**

Description
The Model 9400 was designed as a general purpose, wide band and high voltage amplifier however, with specific applications in mind. It has four channels built in a small case size to save space and cost but without compromising bandwidth and signal integrity.

Four Channels
Each channel can output signals from -200 to +200 V with continuous currents up to 50 mA. The output is driven from a 0.1Ω source and, with some degradation of its bandwidth, can drive capacitive loads up to 1 nF, while maintaining its full amplitude range. Each channel has a rear-panel monitor output that divides the main output signal by 100 for applications that require monitoring of the output signal with low voltage sensors.

Modes of Operation
There are two modes of operation. The first is normal mode where each channel amplifies and outputs bipolar signals with a gain of x50. In this mode, the input signal is amplified and delivered to the output terminals without modification of its original properties, except its amplitude level. Using this mode of operation, each channel can be used separately to amplify a unique signal. The second mode of operation is the unipolar mode where the signal is applied to one input, rectified, amplified and output through two separate outputs. Using this mode, the amplifier is converted to a two-input, four-output system, specifically designed to operate the up/down and right/left actuators of a typical MEMS micro engine, as well as for other applications requiring the precise conversion of bipolar to unipolar signals.

Safety
Safety played a major role during the design of the Model 9400. The high voltage path to the amplifier circuit is blocked by a front panel mechanical switch and accidental application of high power to the UUT is prevented by a safety latch. The Model 9400 will output high voltage signals only after the safety latch has been lifted and the high voltage switch flipped to ON position. In emergency situations, one can hit the protective latch to immediately remove the high voltage power from the output terminals. As an additional visual safety feature, a red light glows on the front panel whenever the high voltage is turned on.

Four-Channel High-Voltage WideBand Amplifier

Model 9400

Service and Support

Beyond providing precision Test & Measurement instruments, Tabor Electronics provides unparalleled service and support, and is continuously finding new ways to bring added value to its customers.

Our after-sales services are comprehensive. They include all types of repair and calibration, and a single point of contact that you can turn to whenever you need assistance. As part of our extensive support, we offer individualized, personal attention Help Desk, both online and offline, via e-mail, phone or fax.

Tabor Electronics maintains a complete repair and calibration lab as well as a standards laboratory in Israel and USA. Service is also available at regional authorized repair/calibration facilities.

Contact Tabor Electronics for the address of service facilities nearest you.

Applications

For expert technical assistance with your specific needs and objectives, contact your local sales representative or our in-house applications engineers.

Manuals, Drivers, and Software Support

Every instrument comes equipped with a dedicated manual, developer libraries, IVI drivers, and software. However, if your specific manual is lost or outdated, Tabor Electronics makes it possible to log-on to its Download Center and get the latest data “in a click”.

Product Demonstrations

If your application requires that you evaluate an instrument before you purchase it, a hands-on demonstration can be arranged by contacting your local Tabor Electronics representative or the Sales Department at our Corporate Headquarters.

Three-year Warranty

Every Tabor Electronics instrument comes with a three-year warranty. Each one has full test results, calibration certificate, and CD containing product's manual and complete software package. Our obligation under this warranty is to repair or replace any instrument or part thereof which, within three years after shipment, proves defective upon examination. To exercise this warranty, write or call your local Tabor representative, or contact Tabor Headquarters and you will be given prompt assistance and shipping instructions.

CORPORATE HEADQUARTERS
9 Hatasia St. P.O.Box404,
Tel Hanan, Israel 20302
☎ +972 (4) 8213393
FAX +972 (4) 8213388
www.taborelec.com

EUROPE

Austria
UEI-Vienna
☎ +43 15451 588
FAX +43 15451 464

Benelux (Belgium, The Netherlands and Luxembourg)
emv Benelux B.V.
☎ +31 172 423000
FAX +31 172 423009

Bulgaria
New-Tek Ltd.
☎ +359 296 25286
FAX +359 268 7110

Cyprus & Greece
ACTA Ltd.
☎ +30 210 600 3302
FAX +30 210 608 3113

Czech Republic & Slovakia
Blue-Panthers Instruments
☎ +420 2 4176 2724
FAX +420 2 4177 3251

Denmark
Metric Industrial A/S
☎ +45 4371 6444
FAX +45 4371 6433

Finland
Metric Industrial Oy
☎ +358 9 4761 600
FAX +358 9 4761 6700

France
EADS Test & Services
☎ +33 1 4094 4849
FAX +33 1 3923 2225

Germany
CompuMess Elektronik GmbH
☎ +49 89 321501-0
FAX +49 89 321501-11

ADMess GmbH
☎ +49 6352 6091
FAX +49 6352 1288

Tameq GmbH
☎ +49 6203 1079881
FAX +49 6203 1079885

Hungary
ELTEST Kft. (Ltd)
☎ +36 1 225 0031
FAX +36 30 618 1005

Italy
LP Instruments srl
☎ +39 2 4840 1713
FAX +39 2 4840 1852

Norway
Metric Industrial AS
☎ +47 4000 4054
FAX +47 4000 4053

Poland
NDN
☎ +48 22 641 1547
FAX +48 22 644 4250

Romania
ARC Brasov srl
☎ +40 268 472 577
FAX +40 268 419 749

Russia
Prist
☎ +7 495 777 5591
FAX +7 495 236 4558

Spain & Portugal
Setup Electronica S.L
☎ +34 93 414 0372
FAX +34 93 414 0991

Sweden
Ferner Elektronik AB
☎ +46 8 760 8360
FAX +46 8 760 8341

Switzerland
Elstar Elektronik AG
☎ + 41 56 427 1888
FAX + 41 56 427 1976

United Kingdom & Ireland
SEMATRON UK Ltd.
☎ + 44 1256 812222
FAX + 44 1256 812666

Yugoslavia (Bosnia, Croatia, Macedonia,Montenegro, Serbia, Slovenia)
MEM
☎ +43 1942 4254
FAX +43 1943 4251

ASIA PACIFIC & JAPAN

Australia
Trio T&M Solutions
☎ +61 8 8234 0504
FAX +61 8 8234 0130

India
AIMIL Ltd.
☎ +91 11 2695 0001
FAX +91 11 2695 0011

Japan
TOYO Corporation
☎ +81 3 3279 0771
FAX +81 3 3246 0645

South Korea
Zenixon Korea Co.
☎ +82 2 574 0084
FAX +82 2 574 6447

Malaysia, Philippines & Thailand
Genetron Inc.

Malaysia
☎ +603 5513 3604
FAX +603 5513 3608

Philippines
☎ +63 2672 0813
FAX +63 2671 9490

Thailand
☎ +66 2948 7299
FAX +66 2948 7322

New Zealand
Electrotest Ltd.
☎ +64 9 448 2600
FAX +64 9 448 2611

Singapore & Vietnam
Gold Lite Engineering Pte Ltd.
☎ +65 6273 0487
FAX +65 6273 5006

Taiwan, China & Hong Kong
LeColn Technology Co. Ltd.

Taiwan
☎ +886 2 8226 1366
FAX +886 2 8226 1368

China & Hong Kong
☎ +86 21 5878 4585
FAX +86 21 5878 4595

Government Organizations
Britway Technology Inc.
☎ +86 10 6211 4155
FAX +86 10 6211 2476

AFRICA

South Africa
Inala Technologies (Pty) Ltd.
☎ +27 11 206 8368
FAX +27 11 206 8361

MIDDLE EAST

Israel
Lahat Technologies Ltd.
☎ +972 3 547 2741
FAX +972 3 547 2742

Turkey
Netes Ltd.
☎ + 90 216 340 5050
FAX + 90 216 339 5556

UNITED STATES SALES & SUPPORT OFFICE
☎ +1 800 722 2528
FAX +1 949 859 7139

CANADA
Testforce Systems Inc.
☎ +1 514 856 0970
FAX +1 514 856 6983

SOUTH AMERICAS
Tecnolink Electronics Co.
☎ +1 440 543 7710
FAX +1 440 543 9681

TABOR ELECTRONICS Ltd.

The measure of perfection

Specification
Four-Channel High-Voltage WideBand Amplifier

Model 9400

CONFIGURATION

Amplifier Channels:

Single-ended:	4 separate inputs and four single-ended outputs, bipolar voltage span;
Unipolar:	2 separate inputs, each having two output channels with 180° phase offset, unipolar voltage outputs

INPUT CHARACTERISTICS

Connectors:	BNC
Impedance:	1MΩ
Coupling:	DC
Amplitude Level:	8 Vp-p (-4 to +4 V peaks)
Frequency Range:	
Full power	DC to > 500 kHz
Unipolar mode	DC to > 200kHz

OUTPUT CHARACTERISTICS

GENERAL

Connectors:	BNC
Source Impedance:	0.1Ω
Load impedance:	Resistive, recommended for full power bandwidth spec, load resistance limited by the output current ; Capacitive, up to 100 pF has minimal effect on bandwidth, 1 nF reduces the full power bandwidth to 100 kHz
Coupling:	DC
Protection:	Short-circuit, 10 seconds
Gain:	x50, fixed
Polarity:	Output normal; half wave rectified
Amplitude:	0 to 400 Vp-p (-200 to +200 V); 0 to +200 V, unipolar mode

SQUARE WAVE CHARACTERISTICS

Transition Time:	<1µs
Aberrations:	<10%

SINE WAVE CHARACTERISTICS

Small Signal:	
Bandwidth (-3dB)	1.5 MHz, at 20 Vp-p
Large Signal:	
Bandwidth (-3dB)	500 kHz, at 400 Vp-p
Accuracy:	(2% of full-scale amplitude range + 50 mV), Square wave at 1 kHz
THD:	<0.1%, 10 Hz to 50 kHz <0.8%, 50 kHz to 200 kHz

OUTPUT MONITOR CHARACTERISTICS

Connectors:	BNC (rear panel)
Source Impedance:	3 kΩ
Load impedance:	1 MΩ
Ratio:	100:1, ±10%

ENVIRONMENTAL

Operating Temperature:	0°C - 40°C, RH 80% (non-condensing)
Storage Temperature:	-30°C to 80°C

GENERAL

Physical Size:	2U, half-rack size
Power Requirements:	100V/115V/230V, 47-63 Hz, <150 VA; <120W
Weight:	Approximately 14 lbs (6.5 kg)
EMC Certification:	CE marked
Reliability:	MTBF per MIL-HDBK-217E, 25°C, Ground Benign
Safety:	Designed to meet IEC EN61010-1, UL 3111-1
Workmanship Std:	Conforms to IPC-A-610D
Warranty:	3 years standard; Extended warranty available upon request

ORDERING INFORMATION

Four-Channel High-Voltage WideBand Amplifier,

MODEL	9400-50 (*)

(*) Custom gain available upon request, however, bandwidth may change.

TABOR ELECTRONICS Ltd.

www.taborelec.com

The measure of perfection