ALBION DEVICES INC.

Formerly: TEST SYSTEMS INTERNATIONAL
531 Stevens Ave. West, Solana Beach, CA. 92075 USA
(858) 792-9585 FAX (858) 792-9644 www.albiondevices.com

MODEL ATS-20B INSTRUCTION MANUAL

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SPECIFICATIONS: ATS-20B

A. CURRENT AMMETER

1. Basic Accuracy =1% ± 2 digits AC + DC
   True RMS . . . . 0 - 10 KHz CF5
   Mean Average. . 0 - 1 KHz CF2
   Peak . . . . . 0 - 10 KHz
2. Input Conversion Time = 280 msec
3. Signal Input = 50mv per 1500 Amp Meter Shunt
4. Ranges 2,000 = .100 to 1.999 X 1000 Amps
   20,000 = 1.00 to 19.99 X 1000 Amps
5. DPM Display = 3½ LCD ½" (12mm) digits

B. METER SHUNT

1. Basic Accuracy = 0.1% (0 to 85°C)
2. Signal Output = 50mv per 1500 Amps
3. Duty Cycle (not to exceed 85°C) 10%
4. 4' (1.22m) connecting cable length

C. DURATION METER

1. Basic Accuracy = 1% ± 2 digits
2. Range = 0.06 to 19.99 seconds
3. Minimum Input = 100/1000 Amps to start timer.
4. Auto Reset Time = 1.0 seconds
5. DPM Display = 3½ LCD to ½" (12mm) digits

D. POWER

1. 8 each AA size alkaline batteries
2. Nominal battery life (2 years)
3. Low battery Indicator

E. SIZE- HxWxD 5½ x 13½ x 9½" (140 x 343 x 240mm)

F. WEIGHT = 13 lbs. (6kg)

G. TEMPERATURE RANGE

1. Operating = 5 to 45°C
2. Storage = -40 to 65°C with batteries removed.

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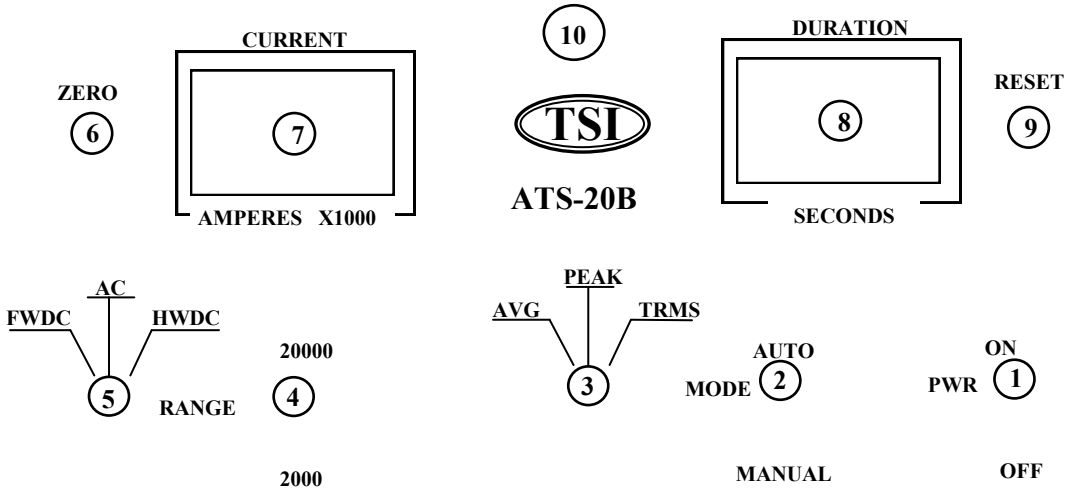
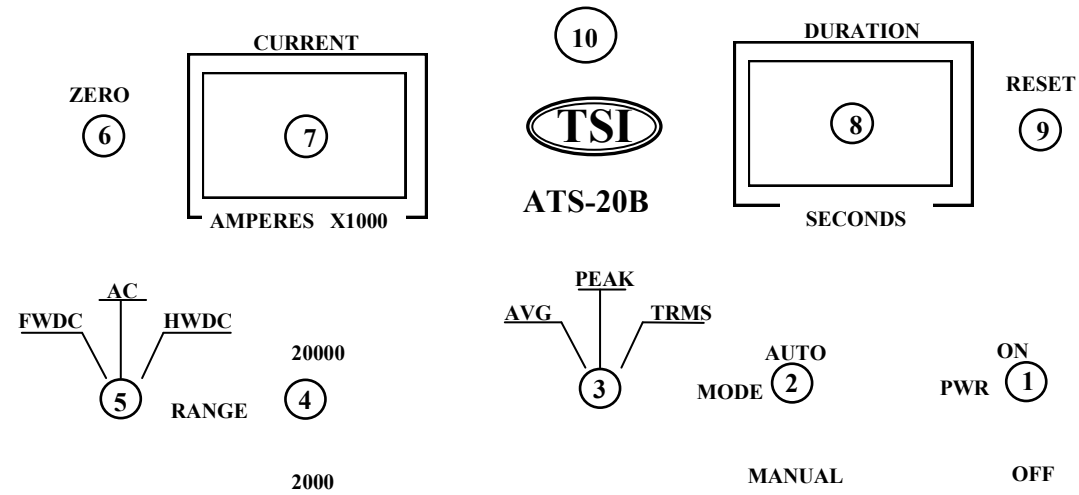


ATS-20B PANEL CONTROLS AND INDICATORS INSTRUCTION MANUAL



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1. **PWR ON-OFF** - A toggle switch for applying power ON or OFF to instrument.
2. **MODE AUTO-MANUAL** - A toggle switch for selection of CURRENT METER into AUTO or MANUAL MODE. In AUTO mode current meter will store reading indefinitely. In MANUAL mode meter responds to input signal.
3. **AVG-PEAK-TRMS** - A wafer switch for selection of CURRENT meters conversion technique of input current signal. AVG uses a mean average detector circuit. PEAK uses a fast rise peak detector circuit. TRMS uses a true RMS conversion circuit.
4. **RANGE 2000-20000** -A toggle switch for converting CURRENT meter maximum reading of 1.999 to 19.99 Amperes X 1000.
5. **FWDC-AC-HWDC** - A wafer switch for selection of CURRENT meters matching calibration of input current signal. Use AC position for PEAK measurements. Do not double HWDC measurement readings.
6. **ZERO** - A variable adjustment for obtaining a 000+1 CURRENT meter reading. CW is positive. Place MODE switch in MANUAL to adjust.

ATS-20B PANEL CONTROLS AND INDICATORS INSTRUCTION MANUAL

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7. CURRENT AMPERES X1000	**- A 3½ digit LCD meter for displaying input current from meter-shunt. Meter blanks 0's on over-range.**
8. DURATION SECONDS	**- A 3½ Digit LCD meter for displaying time input current exceeds approximately 100 AMPS on 2000 RANGE or 1000 AMPS on 20000 RANGE, from 0.06 to 19.99 seconds. Will hold last reading indefinitely and automatically update on each successive input. Meter should reset to within 0.00±1. Meter blanks 0's on over-range.**
9. RESET	**- A pushbutton, when pushed in, will release the Current and Duration Meters hold function, when no signal is present meters reset to 00.**
10. BATTERY INDICATOR	**- A low battery indicator. When on, instrument's calibration is not valid and batteries should be changed. Remove batteries for long term storage over 3 months.**

ATS-20B PANEL CONTROLS AND INDICATORS INSTRUCTION MANUAL

7. CURRENT AMPERES X1000	**- A 3½ digit LCD meter for displaying input current from meter-shunt. Meter blanks 0's on over-range.**
8. DURATION SECONDS	**- A 3½ Digit LCD meter for displaying time input current exceeds approximately 100 AMPS on 2000 RANGE or 1000 AMPS on 20000 RANGE, from 0.06 to 19.99 seconds. Will hold last reading indefinitely and automatically update on each successive input. Meter should reset to within 0.00±1. Meter blanks 0's on over-range.**
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FOR FULL WAVE DC ONLY
QUICK BREAK TEST PROCEDURE

METER OPTION

A. OPERATION ON 2000 RANGE

During current measurement, green OK LED will illuminate. When current flow stops Q.B. circuit will measure fall time of current and leave OK green LED on if system under test quick break is functioning properly. NG red LED will stay on if system quick break is not functioning properly.

B. TO CHECK HEADSHOT OPERATION

Monitored place meter shunt between head and tail stock, set current for 1000 amps. Current and duration can be at same time.

C. TO CHECK COIL OPERATION

Place meter shunt in series with coil by removing input coil cable from coil lug and bolting meter shunt between input cable and coil. Current and duration can be monitored at the same time. Set coil current at 1000 amps.

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1. **Release lid latches and raise lid.**
2. **PWR switch to ON. Meters may show some reading.**
3. **Press RESET. DURATION meter should indicate 0.00 with or without minus (-) sign. With MODE switch in AUTO, CURRENT meter should indicate 000. With MODE switch in MANUAL CURRENT meter should slowly reduce to 000. RESET does not affect CURRENT meter while MODE switch is in MANUAL.**
4. **To ZERO CURRENT meter to 000. Set MODE switch to MANUAL. Allow meter to stabilize. Turn zero knob for 000 meter indication. Minus (-) sign and last digit may flicker in MANUAL MODE.**
5. **Check for battery Indicator [10]. If ON, calibration is not valid and new batteries should be installed.**
6. **Turn AVG-PEAK-TRMS knob to desired measurement method. AVG (averaging) is used for most measurements. PEAK is used in some countries and on pulse discharge units. TRMS is used for True RMS measurements of any wave form, AC, DC, FWDC or HWDC, AVG and TRMS require a minimum of 200 msec to compute current to rated accuracy. Peak responds in 0.5 msec.**

ATS-20B OPERATING PROCEDURE INSTRUCTION MANUAL

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7. Set RANGE switch for desired CURRENT meter maximum range. 2000 will measure between .100 to 1.999 amperes X1000.20000 will measure between 1.00 to 19.99 amperes X1000.
8. Turn FWDC-AC-HWDC knob to match output of unit under calibration. Use AC position when making PEAK measurements.
9. Duration meter is automatic and will time a current signal if above 300 AMPS on 2000 RANGE or 3000 AMPS on 20000 RANGE from 0.06 to 19.99 seconds. Meter blanks out the 0's above 19.9 seconds.
10. Check that CURRENT meter is still zero.
11. Place MODE switch to AUTO.
12. Remove meter shunt and place in position for measurement. Above 5000 AMPS do not exceed 5 second ON time. Allow to cool if temperature exceeds 65°C rating.
13. General Measurement Procedures -
    A. ATS-20B accepts either polarity. Meters always read out positive.
    B. Meter shunt must be in series with current flow.
    C. Arcing at or near meter shunt will cause erratic meter readings. Connections must be kept tight.

ATS-20B OPERATING PROCEDURE INSTRUCTION MANUAL

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13. D. Do not place meter shunt on a conductive surface while taking measurements.
    E. Do not exceed 140 Psi (965 Kpa) clamping pressure on meter shunt.
    F. You may leave Either End connectors on meter shunt for clamp head units under 6000 amps.
    G. Allow 2 seconds between measurements to provide automatic reset time of ATS-20B. It is not necessary to press RESET after each measurement.
    ATS-20B will automatically reset after each measurement when current drops below 100/1000 amps when in AUTO MODE while holding last reading and will update next measurement when current exceeds 100/1000 Amps.
    H. Place DEMAG switch to OFF on unit under test.
    I. On SCR single phase controlled units with averaging type analog or digital meters the tracking accuracy is dependent on phase angle. These suggestions will place the SCR phase angle closer to the normal operating point of the unit under test rather than the low resistance of the meter shunt.
    1. Use the full recommended cable type and length in series with meter shunt.
    2. On clamp heads, add a bar length in series with meter shunt to approximate the parts resistance normally used.
    3. On clamp head units with FWDC 3 phase power the error is slight and the meter shunt can be used directly.

ATS-20B OPERATING PROCEDURE INSTRUCTION MANUAL

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CONVERSION CHART			
GIVEN VALUE	TO OBTAIN		
	PEAK	RMS	AVG
PEAK		0.707 x PEAK	0.637 x PEAK
RMS	1.41 x RMS		0.9 x RMS
AVG	1.57 x AVG	1.11 x AVG	

ATS-20B INSTRUCTION MANUAL

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AVG	1.57 x AVG	1.11 x AVG	

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BRIEF INDUSTRIAL AND MILITARY REQUIREMENTS FOR MAGNETIC PARTICLE MACHINES (1994)

1. **Records and history are under MIL-Q-9858, MIL-STD-45662, MIL-I-45208, MIL-STD-45662, ANSI/ASME N45.2, ISO 10012-1 and ANSI/NCSL Z540-1.**
2. **All calibration standards require a N.I.S.T. (NBS). Traceable inline meter shunt and all require machines to be re-calibrated after repairs are made or a malfunction is suspected.**
3. **MIL-STD-1949; Ammeter will be calibrated to not exceed ±10% FS, Time Timer shall be set for 0.5 ± 0.1 seconds every 6 months.**
4. **MIL-STD-271 (ships); Ammeter will be calibrated to not exceed ± 10% FS on AC, ± 5% FS on FWDC and HWDC every 90 days.**
5. **ASME V-7; Ammeter will be calibrated at three different points in the usable range to not exceed ± 10% FS every 6 months.**

ATS-20B INSTRUCTION MANUAL

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5. ASME V-7; Ammeter will be calibrated at three different points in the usable range to not exceed ± 10% FS every 6 months.

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Calibration service is available from TEST SYSTEMS INTERNATIONAL, INC. FOR $130.00 (2006)

Certification is in conformance with MIL-I-45208, MIL-STD-45662, ANSI/ASME N45.2, ISO 10012-1 and ANSI/NCSL Z540-1.

Instruments are calibrated to meet or exceed the requirements of : MIL-STD-271, ASTM SE-709, ASME Section V Article 7, MIL-STD-1949, ASTM-E-1444, or Factory Operational Specifications with NIST standards.

MAINTENANCE

Clean case and panel with alcohol or detergent base cleaners only with soft cloth.
Meter face plates are Lexan plastic and scratch easily.
Clean carbon or oxide buildup on meter shunt.
Keep hardware on meter shunt secure.

ATS-20B FACTORY CALIBRATION INSTRUCTION MANUAL

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Keep hardware on meter shunt secure.

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Batteries should be replaced when LO BAT indicator is displayed and or total battery voltage is lower than 10 volts.

Requires 8 each AA Alkaline or NI CAD.

Replacement Procedure

1. **PWR switch OFF.**
2. **Remove 4 each panel screws.**
3. **Lift panel and lay in front of case.**
4. **Remove 2 battery holder screws from case and slide off battery cover.**
5. **Remove AA batteries from holder by pressing (+) end back against spring and lifting up and out.**
6. **Replace AA batteries into holder with (-) end against spring pressing back and down on (+) end.**
7. **Replace battery cover and screws.**
8. **Replace battery mounting screws.**
9. **Replace Panel and panel screws. Do not pinch cable battery leads.**
10. **PWR switch ON to test operation.**

ATS-20B BATTERIES INSTRUCTION MANUAL

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Seller warrants that any T.S.I products furnished hereunder will, at the time of shipment, be free from defects in material and workmanship under normal use and will conform to sellers applicable standard written specifications. Sellers sole obligation hereunder shall be limited to, at sellers option either crediting buyer the purchase price of, or replacing any product for which (I) written notice of non-conformance hereunder is received within one year after shipment, and (II) after sellers authorization are returned pre-paid to seller and (III) satisfaction to be nonconforming. Any such replacement shall not extend the period within which such warranty can be asserted. This warranty shall not apply to products which seller determines have by buyer, or another, been subjected to operating and/or environmental conditions in excess of the maximum values in the applicable specifications or otherwise have been subjected to misuse, neglect, improper installation, repair, alterations, or damage.

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