

User manual **AmeTrim Adjustment Software** for Jofra Temperature Calibrators



User Manual Ametrim Adjustment Software for JOFRA Temperature Calibrators

© Copyright 2012 AMETEK Denmark A/S

LIST OF CONTENTS

1.	INTF	RODUCTION4
2.	GEN	ERAL INFORMATION5
	2.1	JOFRACAL instruments used with Ametrim5
	2.2	PCs, minimum hardware requirements:6
	2.3	PCs, minimum software requirements:6
	2.4	Installing and running Ametrim6
	2.5	Setup Printer7
3.	STA	RTING THE AMETRIM SOFTWARE.
	3.1	Starting the AmeTrim Software8
	3.2	Connecting the PC and the Calibrator8
	3.3	Ametrim - Main menu9
	3.4	Run Program9
	3.5	TCPIP Ethernet communication (RTC only)10
4.	AME	TRIM – RTC/PTC/ATC MAIN MENU11
	4.1	Temperature Adjustment13
	4.2	Input adjustment (ATC B, RTC/PTC B &C series)17
	4.3	Axial uniformity adjustment. (RTC/PTC series)23
	4.4	Factory defaults (RTC/PTC)29
	4.5	Update calibration dates
5.	USIN	NG DTI WITH THE AMETRIM31
	5.1	Connecting the PC and the DTI
	5.2	Ametrim - DTI main menu
	5.3	RTD input adjustment35
	5.4	Analog output adjustment
6.	USIN	NG ASM WITH THE AMETRIM40
	6.1	Connecting the PC and the ASM-80x40
	6.2	Run calibration/adjustment42
7.	USIN	NG ATC WITH THE AMETRIM49
	7.1	Connecting the PC and the ATC49

7.2	Adjusting and calibrating the instrument	51
7.3	Temperature Adjustment	52
7.4	Input Adjustment (B versions only)	58
7.5	Reference Sensor	64
7.6	Managing DTI sensor coefficients	66

1. Introduction

This manual contains operating instructions for:

JOFRA WINDOWS' ADJUSTMENT PROGRAM

AMETRIM

The program was developed by:

AMETEK Denmark A/S

Gydevang 32-34 DK-3450 Allerød Denmark

Tel.: +45 48 16 80 00 Fax: +45 48 16 80 80

2. General information

You are advised to return the JOFRA instruments to AMETEK Denmark A/S or an accredited laboratory at least once a year for calibration.

Alternatively you can the AmeTrim software to Adjust and Calibration the below listed JOFRA instruments.

The software comes on a USB memory stick with update downloads available from the AMETEK home page.

Knowledge of the JOFRA equipment and system to be tested is essential in order to obtain the maximum benefit from this program. Knowledge of Windows[®] programs in general is an advantage.

Warranty

Use of the product remains the full responsibility of the user, and AMETEK Denmark A/S offers no warranty and is under no obligation in relation to this product. In addition, AMETEK Denmark A/S cannot be held responsible for any damage, which may occur in connection with the use of this product, including loss of earnings, loss of profit, loss of data or recovery of lost data, loss of goodwill and other similar incidental or consequential damage or loss.

Technical assistance

Please contact the distributor, if you require technical assistance.

2.1 JOFRACAL instruments used with Ametrim

- RTC series
- PTC series
- ATC series
- DTI 100/1000
- ASM-80x B

2.2 PCs, minimum hardware requirements:

- Intel® Pentium® II 1.4 GHz processor.
- 128MB RAM (256MB recommended)
- 512MB free disk space on hard disk (1GB recommended) prior to installation
- Standard VGA (800x600, 256 colours). 1024x768 recommended.
- USB port.
- One or more free RS-232 serial and USB ports, if using devices requiring RS-232 communication.

2.3 PCs, minimum software requirements:

- Microsoft Windows® XP (32bit), Vista (32bit), Windows 7(32bit& 64bit), Windows 10.
- System fonts: MS Sans Serif and Arial

2.4 Installing and running Ametrim

Ametrim can be run direct from the USB for the ATC, DTI and ASM instruments however the software requires **JOFRACAL** software supplied on the same USB memory stick, to be installed before Ametrim can be used together with **RTC or PTC** calibrators.

RTC/PTC instrument requirements.

To run Ametrim on the RTC/PTC calibrators the software requires Microsoft .NET FRAMEWORK 3.5 SP1 and the RTC USB driver to be installed if not already found on the PC.

The JOFRACAL program is supplied on a USB stick and comes complete with its own installation program and automatically installs these programs.

If you want to install the program manually, the USB also contains a SETUP.EXE file in the Jofracal folder.

2.5 Setup Printer

This option provides a standard Windows® procedure which enables you to edit the settings for the current printer or change to another printer.

If you are unsure how to use these settings, refer to your Windows® Help.

Indstil printe	r	×
Printer		
<u>N</u> avn:	\\ametek14\RICOH DK-ALL-CSD PS	✓ <u>E</u> genskaber
Status:	Der er næsten ingen toner tilbage; 0 d	okumenter venter
Type:	RICOH MP C3504ex PS	
Hvor:	10.138.2.56	
Komment	ar:	
Papir		Papimetning
Størrelse:	Letter (8,5" x 11")	● <u>S</u> tående
<u>K</u> ilde:	Automatisk kassettevalg \lor	A <u>Ligg</u> ende
N <u>e</u> tværk		OK Annuller

3. Starting the Ametrim software.

3.1 Starting the AmeTrim Software

1

Note...

Before starting this software, the PC and the calibrator must be connected together and the calibrator switched on (see section 4.1).

The calibrator must not be performing any tasks like switch test, autostep or workorders. That means that the calibrator must be in the main menu before starting the software. Use the normal Windows procedure to start the AmeTrim software. If you are unsure of how to start software programs, refer to your Windows Help

3.2 Connecting the PC and the Calibrator



Caution...

Connect the USB serial cable provided to the USB device port on the side of the calibrator and to a USB port on the PC.

For communication via TCPIP connect the Ethernet cable to the connection also on the side of the RTC calibrator.

3.3 Ametrim - Main menu.



3.4 Run Program.

In the main menu select "Run Program" to start the calibration.



The displayed device types on the left depend on the method and type of comport selected.

If the Ethernet or virtual serial port created by the RTC/PTC communications driver is selected then only the RTC/PTC device is displayed and locked, whereas standard serial port selections enable the choice of ATC, DTI and ASM devices.

Burnes quiets cores	edia - 🔯	Desire quick covere	an 🛛
Оннса (дая	land publikanad Including and and and and and	Free lor Atc	Secol part/Chesnel
■ mt P() :)	Classes X Data	C 20 100/1000	Stanat Tees

Press "Connect" to start communications.

Note...

If no RTC appears in the list check it is properly connected and Windows has registered a new hardware device.

This is required the very first time you connect a particular

RTC to a PC. Then press the *button* to refresh the list.

3.5 TCPIP Ethernet communication (RTC only)

If the Ethernet option is selected, the IP address interface appears and the user can enter the IP address allocated to the connected RTC.

Should the user choose the Ethernet TCPIP protocol, ensure the Ethernet cable is connected and the RTC/PTC IP address is configured.



Note. Please refer to the RTC user manual regarding setting the IP address on the actual calibrator.

4. AMETRIM – RTC/PTC/ATC main menu.

As the software starts, it detects the type of calibrator connected to the PC and reads its serial number. This information is displayed at the bottom of the main menu window

	Main menu (BTC/PTC/ATC)
Designations adjustment	Temperature adjudences: List the treature is adjustications the calibrate is temperature measurement as "A factor" and as "As MY" X dos areas the opportunits to develop revise cellspects to the calibrate adoption a sensatement report.
and adjustment	Imput editationshi: Use that Postane to angle () calibrates the calibration electronical inputs, Nourier instantische and additionale and ont a second electric to out (a versione with)
Briel veillennity edjedorwol	Actal uniformity attactment: Use the feature to adjust the collector's avid aniformity (RTC % PTC acces city).
tatow delaiks	Set factory to facility person and contractory coefficiency to factory defacility WAMMAC conserve of contractory coefficiency. Provident body of the set provident before using
Lipidate calibration dates	Last calibration dates Update List calibration dates' values in the 6 NC.
General and a	Reference sensor: Use the fasture to download reference sensor parameters to the calibrator (II remains only)
ETI Sensor	DTI Sensor: Use this feature to manage the runerit sensors in a DTL.
Exit to real menu	Ent: Ents this program.

RTC/PTC/ATC main menu.



Note...

When software is used to control the calibrator, the calibrator's keyboard is disabled and the display indicates that the calibrator is remote controlled.



Depending on the instrument type connected the following processes may be activated or not:

- **Temperature Adjustment**: This checks the accuracy of the heat source and internal sensor in the calibrator (**all devices**)
- Input Adjustment: This checks the accuracy of the calibrator's electrical inputs (ATC B series, RTC/PTC B &C series).
- Axial uniformity adjustment: This ensures temperature uniformity throughout the insert (RTC/PTC series).
- **Factory defaults**: Sets all calibration coefficients to factory defaults.
- Update Calibration dates. Change calibration dates of the instrument (All devices).
- Reference sensor: Use this feature to manage the coefficients of the sensors in an AMETEK Digital Temperature Indicator (DTI) instrument (ATC B series only).
- **DTI Sensor**: Use this feature to manage the coefficients of the sensors in an AMETEK Digital Temperature Indicator (DTI) instrument (**all devices**).

4.1 Temperature Adjustment

This enables you to check the accuracy of the heat source and the internal sensor in the calibrator. This can be done in 3 ways:

- Using the external reference sensor on the ATC/PTC/RTC (B or C versions) to measure the TRUE temperature, AmeTrim can perform a fully automatic calibration and adjustment of the internal sensor. The calibrated reference sensor should then be connected to the reference input.
- Using a Digital Temperature Indicator (DTI) AmeTrim can read the TRUE temperature from the DTI and also make a fully automatic calibration and adjustment of the internal sensor. The DTI must be connected to a vacant serial COM port. See fig. 1.
- Using any other reference instrument, AmeTrim will set the temperature sequence and the TRUE values can be entered as they occur as manual inputs.



Fig. 1

Overse o interpretare situitiment somen	
Balancet with grand of arman party Balancet with grand of arman party advocet with GT	
Und Sequendaries (FINC) = 12 (FINC) = 2000 (FINC) = 2000 (FINC) = 2000 (FINC) = 2000	

Click a radio button to select the scenario that should be used, depending on which calibrated temperature reference that is available.

Click a radio button to select the desired temperature units.

Ensure that the precision thermometer is positioned correctly and ready to measure the temperatures.

Confirm that the calibration should be started.



Note.

An option exists for the RTC-700 the maximum temperature can be set to 660°C.



If using the reference sensor on the RTC/PTC scenario, only the Con050 software can be used to configure it.

Click Yes. The calibrator immediately starts working towards the temperature defined in the first step.

A new dialogue containing a table with pre-defined temperature steps is displayed. The calibrator type determines the range of these steps.

E.S.A.	Rand terror, Those terror	Tablesid
40		Sal temporature -50.00 °C
10.		Post temperature 2008 C
1		True temperature 1438 C
8		
ē		CMICHEN
٩		Stone Feating ST tergetetion
# /		Rend homosomer 10
15		A CONTRACTOR AND A CONTRACT
- 10		Collection (actor) (// march
-		
		219

When using the external reference sensor input on the calibrator, or when using a DTI, the calibration and adjustment will now run automatically.

Adjusting with manual inputs

If "manual inputs" is selected in the adjustment Scenario menu, the calibration will be performed in a little different way.

P

Select Start to begin, when the True temperature is stable click "Enter value". In the new dialogue, type in the correct "TRUE temperature" value read from the external precision thermometer.

1 Photostation	st Outa		Inexton
Supr.	Staat tang	least targe	Control Street and
		10	
100		11/	
1.00			and all the second s
300	_		
-			391
Tito Solar Re S madea W colliciante	des Très raix) e d'improbles reldented frei	dan Ro "Ina' kerana Ina kerina nemani Ina kerina nemani	sets in station on the outpartial score obsolutions areas and of the paint the states, and takes.

Click OK. The READ temperature measured by the calibrator and the TRUE value are entered in the table.

The calibrator now starts working towards the next temperature level.

- Repeat these steps until READ and TRUE values have been entered for each temperature step.
- Click Calculate to provide a new set of calibration coefficients for the calibrator.



Note...

Downloading new coefficients to the calibrator overwrites the existing ones already resident in the calibrator.

To prevent unintentional overwriting of existing coefficients, a warning appears requiring you to confirm the download.

- When you are satisfied with the measured and calculated values, click Download to send the correction values to the calibrator.
- Click Done to exit the Temperature adjustment option.

4.2 Input adjustment (ATC B, RTC/PTC B &C series).

This option allows you to check the accuracy of the calibrator's electrical inputs (for B and C versions only). In addition to the equipment already described in sections 4.1, you also require a calibrated reference signal source. For Cold Junction compensation, you will also require a stable temperature source, for example an ice bath, and a conversion table to provide the sensor's corresponding μV value for the bath's temperature.



Note...

Before calibrating/adjusting the inputs the calibrator must have been turned on for at least half an hour with the SET temperature "Not Activated" (the initial mode when turned on). In order to calibrate the inputs the following calibrated signals must be used:

A٦	C Nominal values	Accepted range
•	RTD and Reference Inputs: 50Ω 176Ω 345Ω	(45 to 70Ω) (150 to 200Ω) (330 to 350Ω)
•	RTD inputs: 1000Ω 2700Ω	(800 to 1200Ω) (2300 to 2900Ω)
•	mA inputs: 0 mA 10 mA 20 mA	(-1 to +1 mA) (9 to 11 mA) (18 to 22 mA)
•	V Inputs: 0 V 5 V 10 V	(-1 to +1 V) (3 to 7 V) (9 to 11 V)
•	mV inputs: 0 mV 35 Mv 70 mV	(-1 to +1 mV) (25 to 45 mV) (63 to 77 mV)

R٦	C Nominal values	Accepted range
•	RTD and Reference Inputs: 18Ω 345Ω	(15 to 22Ω) (330 to 350Ω)
•	DLC inputs 0 mV	(-1 to +1 mV)
•	RTD 400 inputs: 18Ω 345Ω	(15 to 22Ω) (330 to 350Ω)
•	RTD 4000 inputs: 18Ω	(15 to 22Ω)
•	3450Ω mA inputs: 0 mA	(3330 to 3500Ω) (-1 to +1 mA)
•	20 mA	(18 to 22 mA)
•	0 V 10 V	(-1 to +1 V) (9 to 11 V)
•	mV inputs: 0 mV 70 mV	(-1 to +1 mV) (63 to 77 mV)

PT	C Nominal values	Accepted range
•	RTD and Reference Inputs:	
	18Ω	(15 to 22Ω)
	345Ω	(330 to 350Ω)
٠	RTD 400 inputs:	
	18Ω	(15 to 22Ω)
	345Ω	(330 to 350Ω)
•	RTD 4000 inputs:	
	18Ω	(15 to 22Ω)
	3450Ω	(3330 to 3500Ω)
٠	mA inputs:	
	0 mA	(-1 to +1 mA)
	20 mA	(18 to 22 mA)
•	mV inputs:	
	0 mV	(-1 to +1 mV)
	70 mV	(63 to 77 mV)
•	Cold Junction compensation:	T-type thermocouple and a reference junction, for example an ice bath.

The number and type of electrical inputs to be checked is userdefinable. You can also define if you want to check the inputs by just measuring them or to measure, adjust and then calibrate the electrical inputs.

Cold Junction compensation requires a special setup, using a calibrated temperature source, for example an ice bath. This and the measurement principles are shown briefly below:



Fig. 2

If at any point you do not wish to continue, click Stop. The software exits this option and returns to the Main Menu.



By clicking the Calibration Date button, you can view the last calibration dates for each of the inputs.

To adjust and calibrate the current Input values

Use the check box list to select the inputs to be measured.

If you have selected more than one input to be measured, the measurements occur in the same order as they appear in the check box list.

- Connect the reference signal source to the appropriate input(s) when prompted.
- Click Start and follow the instructions on screen.

Each input has several pre-set input values. Ensure that the reference signal source is adjusted correctly when prompted.

For Cold Junction compensation, ensure the corresponding μ V value for the calibrated junction temperature is entered (0 μ V @ 0°C).



(P

Note...

There is no reporting facility in AmeTrim for the RTC/PTC.

If you do not require any further measurements, click Exit to return to the Main Menu.

The software measures the pre-set values for the selected input, adjusts the settings and then re-calibrates the calibrator's inputs. All this is done before moving on to the next selected input.

If you do not require any further measurements, click Done to return to the Main Menu.

4.3 Axial uniformity adjustment. (RTC/PTC series).

This option enables you to ensure the temperature uniformity throughout the insert.

In the AmeTrim main menu, select "Axial uniformity adjustment".

A new dialogue containing a table with pre-defined temperature steps is displayed. The calibrator type determines the range of these steps.

oburient	ity adjustment Upper FTC-195 A,	5eriali 3541.95-00061	5-990
veasuren	ierk data	1 in an	Intrument
Steps	Read bency.	11-12.	Set temperature - C
-23		1 M	Read temperature - °C
50	101		Status NOT FLANANG
155			
			DetC165A Detector
nfo Place 1. M 2. M 3. Al 4. C 5. St Arre Theo North	a the sensor at the escure the temper- tion of the sensor up- low 2 min. to stabil advate the button "B then will adculation as stopps are repead 0. BP?" "Women as	bottom of the well. Whe base at the bottom of it down from the bottom, or then reasours the ba- ature difference betwee for value", and entor it new coefficients down at until the gradient app	m Stability is declared: m Stability is declared: m seade(T2) mparatuse(T1) in the 2 paratices (T1-T2), e difference active the calibration critications are fulfilled.



Note...

For RTC-158/250 axial uniformity adjustment must not be carried out when the calibrator is filled with liquid.

Adjustment must be carried out when using an insert.

RTC-156/157/158/159/250, PTC-125/155/350 scenario

Requires difference measured between top and bottom. (T2) = Bottom, T(1) = 60mm from bottom





Use AMETEK 127587 temperature sensor (recommended) or similar with short measuring zone for axial uniformity adjustment.

For every temperature point, the following must be repeated until uniformity specifications are achieved.

 Measure the temperature at the bottom of the well (" Move the sensor up 60mm from the bottom. Allow 2 min. to stabilize then measure the temperature Calculate the temperature difference between the 2 positions (T1-T2). Select the button "Enter value", and enter the difference of the new coer of uniformity is within specifications, AmeTrim will co to the next temperature. Otherwise the process is reference. 	Ē	Place the sensor at the bottom of the well. When Stability is declared:
 Move the sensor up 60mm from the bottom. Allow 2 min. to stabilize then measure the temperature difference between the 2 positions (T1-T2). Select the button "Enter value", and enter the difference AmeTrim will calculation and download the new coe If uniformity is within specifications, AmeTrim will co to the next temperature. Otherwise the process is reference. 		Measure the temperature at the bottom of the well (T2).
 Allow 2 min. to stabilize then measure the temperature Calculate the temperature difference between the 2 positions (T1-T2). Select the button "Enter value", and enter the difference AmeTrim will calculation and download the new coe If uniformity is within specifications, AmeTrim will conto the next temperature. Otherwise the process is responsed. 	() I	Move the sensor up 60mm from the bottom.
 Calculate the temperature difference between the 2 positions (T1-T2). Select the button "Enter value", and enter the differe AmeTrim will calculation and download the new coe If uniformity is within specifications, AmeTrim will co to the next temperature. Otherwise the process is reference. 	() J	Allow 2 min. to stabilize then measure the temperature (T1).
Select the button "Enter value", and enter the differe AmeTrim will calculation and download the new coe If uniformity is within specifications, AmeTrim will co to the next temperature. Otherwise the process is re	Ē	Calculate the temperature difference between the 2 positions (T1-T2).
AmeTrim will calculation and download the new coe If uniformity is within specifications, AmeTrim will co to the next temperature. Otherwise the process is re	(F	Select the button "Enter value", and enter the difference.
		AmeTrim will calculation and download the new coefficients. If uniformity is within specifications, AmeTrim will continue to the next temperature. Otherwise the process is repeated.

PTC-660 scenario

Requires difference measured between top and bottom. (T2) = Bottom, T(1) = 50mm from bottom





Use STS-150 A966 temperature sensor (recommended) or similar with short measuring zone for axial uniformity adjustment.

For every temperature point, the following must be repeated until uniformity specifications are achieved.

 Measure the temperature at the bottom of the we Move the sensor up 50mm from the bottom. Allow 2 min. to stabilize then measure the tempe Calculate the temperature difference between the positions (T1-T2). Select the button "Enter value", and enter the diff AmeTrim will calculation and download the new of If uniformity is within specifications, AmeTrim will to the next temperature. Otherwise the process is 	he sensor at the bottom of the well. When Stability is ed:
 Move the sensor up 50mm from the bottom. Allow 2 min. to stabilize then measure the tempe Calculate the temperature difference between the positions (T1-T2). Select the button "Enter value", and enter the diff AmeTrim will calculation and download the new of If uniformity is within specifications, AmeTrim will to the next temperature. Otherwise the process is 	re the temperature at the bottom of the well (T2).
 Allow 2 min. to stabilize then measure the tempe Calculate the temperature difference between the positions (T1-T2). Select the button "Enter value", and enter the diff AmeTrim will calculation and download the new of If uniformity is within specifications, AmeTrim will to the next temperature. Otherwise the process is 	he sensor up 50mm from the bottom.
 Calculate the temperature difference between the positions (T1-T2). Select the button "Enter value", and enter the diff AmeTrim will calculation and download the new of If uniformity is within specifications, AmeTrim will to the next temperature. Otherwise the process is 	min. to stabilize then measure the temperature (T1).
Select the button "Enter value", and enter the diff AmeTrim will calculation and download the new of If uniformity is within specifications, AmeTrim will to the next temperature. Otherwise the process i	ate the temperature difference between the 2 ns (T1-T2).
AmeTrim will calculation and download the new on If uniformity is within specifications, AmeTrim will to the next temperature. Otherwise the process in to the next temperature.	the button "Enter value", and enter the difference.
	m will calculation and download the new coefficients. rmity is within specifications, AmeTrim will continue next temperature. Otherwise the process is repeated.

RTC-700 scenario

RTC-700 require difference measured in 2 zones Requiring a sensor at 3 different positions.

(T3) = Bottom, (T2) = 30mm from bottom.T(1) = 80mm from bottom





Use STS-200 A 970 temperature sensor (recommended) or similar for axial uniformity adjustment.

For every temperature point, the following must be repeated until uniformity specifications are achieved.

- Place the sensor at the bottom of the well. When Stability is declared:
- Measure the temperature at the bottom of the well (T3).
- Move the sensor up 30mm from the bottom.
- Allow 2 min. to stabilize then measure the temperature (T2).
- Move the sensor up 80mm from the bottom.
- Allow 2 min. to stabilize then measure the temperature (T1).
- Calculate the temperature difference between the 3 positions (T1-T2) and (T3-T2).
- Select the button "Enter value", and enter the difference.

AmeTrim will calculation and download the new coefficients. If uniformity is within specifications, AmeTrim will continue to the next temperature. Otherwise the process is repeated.

Reference sensor

This option enables you to view the calibration values currently loaded in the DTI for the reference sensors as well as enter and download values for new reference sensors. You require the calibration certificate for the new reference sensor.

- A new dialogue with a table containing the coefficients stored in the DTI for sensor 1 and sensor 2. Current sensor coefficients are automatically uploaded.
- Ametrim offers both ITS-90 and Calendar van Dusen standard coefficients to be stored in the DTI sensors.

V WRAW WE'LE THE AND SHORE SAVING	- 0 #
DTI configuration DTHORE Senal No. 2011000 - DDNI Less calification data: 17710216 17890 Information - Calendor van Duster	Monachar is denta
111.00 confluents 411796 01.000071.5225.411 41,4 15.000090606.50 16,8 15.0000000006-40 44,8 0.000000006-40 44,8 15.000000006-40 44,9 0.000000006-40 44,9 0.000000006-40	Digwrlad Dafwel
Senara Sanar († 1527) Senar I. au	
Sector/two Dancel TV.	Es]

To enter values for a new reference sensor

- Click a radio button to select sensor 1 or sensor 2. And press "Upload" to read current coefficients.
- Type in a unique and descriptive name for the reference sensor.

Use the mouse to position the pointer in the boxes in the table.

Select "ITS-90" or "Callendar van Dusen coefficients" and type in the coefficients from the Calibration Certificate supplied with the reference sensor.

When all the values from the Calibration Certificate have been entered, click "Download" values.

When the values are downloaded they overwrite the ones stored in the indicator.



Note...

These coefficients are not saved. Therefore, they must be typed in and downloaded when they need to be used.

Default values

This option downloads a set of default values, which are stored in the AmeTrim-ATC/DTI software.



Press "Yes" to download default values to the DTI.

4.4 Factory defaults (RTC/PTC)

Sets all calibration coefficients to factory defaults.



Heat yourse	PrpA
T internal reference	F 970-408 - Input
/= Top zone	T RID 4080 - Input
E secriter.	T WA-YOU
Applies C - Next	E nA sheat
F DET - Invat	TT TC - Input
= 0.2-spc	E COCONE

4.5 Update calibration dates

The page allows the user to update the calibration dates in the RTC/PTC calibrator.

NETRIARRECOTICS ASSOCIATES	0011000, ASM EDV		
Calibiation date update			
Heat source calibrated	07-93-2011	2	send data(s) to calibrator
Reference input calibrated	05-42-2010	2	Raload and Venty
Server input calibrated	05-82-2010		
			[re
Type : RTC-200.0 Secol co.	574639-00005 Last Date	Temp07-02-2011	E.



5. Using DTI with the AmeTrim

In the main menu select "Run Program" to start the calibration.

Device quick connection	n	×
Device type	Comport:	
C RTC/PTC	COM4 \Device\EdgeSer2	49
C ATC	Connect X Cancel	
DTI-100/1000		
C ASM-80x	© 1 C 2	

Select "DTI" and "Comport" in the "Device Quick Connect" dialog box and press "Connect".

5.1 Connecting the PC and the DTI



Caution...

- 1. Ensure that both the PC and the DTI are switched off at the mains. Failure to do so may result in your equipment being damaged.
- 2. Connect the serial cable provided to the "RS 232" port on the back of the DTI and to the COM port on the PC.
- 3. Switch on the PC and the DTI.

5.2 Ametrim - DTI main menu.

As the software starts, it detects the type of calibrator connected to the PC and reads its serial number. This information is displayed at the bottom of the main menu window

DTI main menu.

	and the
Reference sensor Set to default values BTD input adjustment Calibration date Émolog output adjustment Exit to mein menu Current DTI selerence of Dunent PEFMax.	Internet Intern

This DTI menu is divided into 5 different processes:

- **Reference sensor**: Use this feature to manage the coefficients of the sensors in the DTI.
- Set to default values: Use this feature to set internal reference resistor values to default values if odd values have been downloaded.
- **RTD-input adjustment**: Use this feature to calculate and download new values for internal reference resistors.
- **Calibration date**: Use this feature to download a new calibration date to the DTI.
- Analog output adjustment: Use this feature to adjust the analog output (only DTI-1000 with firmware version 1.60 or earlier).

Reference sensor

This option enables you to view the calibration values currently loaded in the DTI for the reference sensors as well as enter and download values for new reference sensors. In addition to the equipment already described in sections 5.1, you also require the calibration certificate for the new reference sensor.

In DTI main menu, click "Sensor coefficients".

A new dialogue with a table containing the coefficients stored in the DTI for sensor 1 and sensor 2. Current sensor coefficients are automatically uploaded.

Calendar ven Duarn RB A B C	1,00008E+00 0,00008E+00 4,77500E-07 -4,00000E-07	atesaconto devor Uplant Digendat Digendat
Said runker: 575	H-G6	
Serve to use : 4	z some 1 1 more	- ta

To enter values for a new reference sensor

- Click a radio button to select sensor 1 or sensor 2. And press "Upload" to read current coefficients.
- Type in a unique and descriptive name for the reference sensor.

Use the mouse to position the pointer in the boxes in the table.

- Select "ITS-90" or "Callendar van Dusen coefficients" and type in the coefficients from the Calibration Certificate supplied with the reference sensor.
- When all the values from the Calibration Certificate have been entered, click "Download" values.
 When the values are downloaded they overwrite the ones stored in the indicator.



Note...

These coefficients are not saved. Therefore, they must be typed in and downloaded when they need to be used.

Default values

This option downloads a set of default values, which are stored in the AmeTrim-ATC/DTI software.

User action!	
Are you sure you want to download default values for the reference resistance	
<u>Yes</u> <u>N</u> o	

Press "Yes" to download default values to the DTI.

5.3 RTD input adjustment

This option allows you to adjust the DTI by calculating and downloading new values for the internal reference resistors. For adjusting the internal reference resistors you need the following:

DTI-100 / DTI-1000 / DTI-1000 A :

50 ohm resistor 350 ohm resistor

DTI-1000 B :

12 ohm resistor 85 ohm resistor

It is recommended to use resistors with an accuracy of 6 ppm or better.

IEM RTC/TIC/ATC, 011-100/1000, 454-804			
Adjustment D1	a		
Robertoormako sale dixeed 1 - 0.00000 Robertoormako sale dixeed 2 - 10.0000	Den Divi	Estimat	1
Ripdred colli			
Time shaped 1 if it	100 filmer	4000	
Anno ites estimatela value.	-	- 0 a	
Unit happy addression taken		- Ger	
	in the second		
Assessed at Mar	tion in a faith	62.00 Most	
			P4
ProCircleTime Depart 013			

Connect the reference resistors to the input channels and enter the resistor values. Press "Start measurement", wait until the readings for "New low reference value" and "New high reference value" have stabilized (approx. 2 minutes) and press "Lock new values" to stop the measurement. The locked values can now be downloaded to the DTI or cancelled.

Calibration date

This option allows you to change the calibration date without adjusting the DTI.

D	TI calibration date		×
	Calibration date :	04-06-2004	•
	Download	Cancel]

Select the date of calibration and press "Download".

5.4 Analog output adjustment

(only DTI-1000 with firmware ver. 1.60 or earlier).

This option allows you to adjust the analog output of the DTI-1000. For adjusting the analog output you need a voltmeter 0V to 5V range with 0.1mV resolution and an accuracy of 0.1 mV.

AMPERANTO	PTC,ATC, DTI-10041000, ANN BIL		
	DTI analog output	calibration	
	Gick Shart to begin in sloper subjuit call	away	
	Analog subjud 1	Sur sur	
	2000 0.01431	5441	
			14
			Contraction of the local division of the loc
10.00	(Tex Record 6) F		

After entering the DTI analog output adjustment window, press "Start" to begin the adjustment procedure.

Aneb	he lov-analog g-outourt	lo supul rotege	-	
Anab	co.do.42	0.523	Hed	

Measure the output voltages of the two analog outputs, enter the values and press "Next".

		Desta	
Ullan	alog output ca	albration	
Poud high analogue	output voltage		
Analog output 1;	0.832	-	
Arsolog output 2:	9.820	lied	
			<u>1</u> #
State No errors			

Repeat the measurement of the output voltage for high output, enter the values and press "Next".

Calibration date		×
Download calibration da	te-> 04-06-2004	to DTI
Yes	No	

Press "Yes" to download calibration date and then "Exit" to return to the main menu.

6. Using ASM with the AmeTrim

In the main menu select "Run Program" to start the calibration.



Select "ASM-80x" and "Comport" in the "Device Quick Connect" dialog box and press "Connect".

If the ASM-80x is not switched on or is not connected to the selected port, then the software returns to the AMETRIM adjustment software main menu.



Note...

Before starting this software, the PC and the ASM-80x must be connected together and the ASM-80x switched on.

6.1 Connecting the PC and the ASM-80x



Caution...

- 1. Ensure that both the PC and the ASM-80x are switched off at the mains. Failure to do so may result in your equipment being damaged.
- 2.Connect the serial cable provided to the "RS 232" port on the front of the ASM-80x and to the COM port on the PC.
- 3. Switch on the PC and the ASM-80x.

If the calibrator is not switched on or is not one of the models covered by this manual, then the software closes automatically. As the software starts, it detects the type of instrument connected to the PC and reads its serial number.

This information plus the COM port the calibrator is connected to is displayed at the bottom of the AMETRIM window.



ASM main menu

6.2 Run calibration/adjustment

This option allows you to check the accuracy of the ASM-80x electrical inputs. You will require a calibrated reference signal source.

For Cold Junction compensation, you will also require a stable temperature source, for example an ice bath, and a conversion table to provide the sensor's corresponding μV value for the bath's temperature.



Note...

Before calibrating/adjusting the inputs, the ASM-80x must have been turned on for at least half an hour.

In order to calibrate the inputs the following calibrated signals must be used:

Ν	ominal values	Accepted range
•	RTD Input:	
	50Ω	(20 to 70Ω)
	176Ω	(150 to 200Ω)
	360Ω	(330 to 390Ω)
	1760Ω	(1500 to 2000Ω)
	3600Ω	(3300 to 3900Ω)
•	mA inputs:	
	0 mA	(-1 to +1 mA)
	10 mA	(9 to 11 mA)
	20 mA	(18 to 22 mA)
•	V Inputs:	
	0 V	(-1 to +1 V)
	5 V	(3 to 7 V)
	10 V	(9 to 11 V)
•	mV inputs:	
	0 mV	(-1 to +1 mV)
	35 mV	(25 to 45 mV)
	70 mV	(63 to 77 mV)
•	Cold Junction compensation:	T-type thermocouple and a reference junction, for example an ice bath.

The number and type of electrical inputs to be checked is userdefinable. You can also define if you want to check the inputs by just measuring them, adjust and calibrate or to measure, adjust and then calibrate the electrical inputs.

Cold Junction compensation requires a special setup, using a calibrated thermocouple and temperature source, for example an ice bath. This and the measurement principles are shown briefly below:



If at any point you do not wish to continue, click Stop. The software exits this option and returns to the Main Menu.

In AMETRIM main menu, click Run calibration/adjustment.



By clicking the Calibration dates button, you can view the last calibration date.

To calibrate the ASM-80x

Click the radio button Only measuring. æ Use the check box list to select the inputs to be measured. (P For A-models, only CJ-Comp. Can be selected. Use the check box list to select the input types to be æ measured. Connect the reference signal source to the appropriate P channel when prompted. Click Start and follow the instructions on screen. (P The software starts measuring the first of the selected inputs. Ensure that the correct reference signal source is connected when prompted. When all the selected inputs have been measured a new (P dialogue appears.

Measurment report ID
I
Mark report as
As found C As left
Calibration/adjustment date
dd 17 · mm 01 · yyyy 2000
Printer setup <u>Uk</u> Lancel

() I Type a unique name for the measurements. Click As found and ensure that the date is correct. This information will appear in a measurement report displayed on screen.

Click OK to view the measurement report.



Note...

These results are not saved electronically. If you require a record of these measurements, click Print while it is displayed.

- When you are finished viewing or printing the report, click Close. This returns you to the first dialogue in the Temperature adjustment option.
- If you do not require any further measurements, click Done to return to the Main Menu.

To adjust and calibrate (as left) the ASM-80x



Note...

If you select Cold Junction compensation, either you must also select the mV (TC) Input or be sure that the mV(TC) range is calibrated.

Click the radio button Adjust/Calibrate.

Use the check box list to select the inputs to be measured.

If you have selected more than one check box, the measurements occur in the same order as they appear in the check box list.

- Connect the reference signal source to the appropriate channel (when prompted).
- Click Start and follow the instructions on screen.

Each input has several pre-set input values. Ensure that the reference signal source is adjusted correctly when prompted.

For Cold Junction compensation, ensure the corresponding μ V value for the calibrated junction temperature is entered (0 μ V @ 0°C).

The software measures the pre-set values for the selected input, adjusts the settings and then re-calibrates the calibrator's inputs. All this is done before moving on to the next selected input.

When all the selected inputs have been measured, adjusted and re-calibrated a new dialogue appears.

<u>Ni</u>	_ 🗆 ×
Measurment report ID	
I	
Mark report as	
As found C As left	
Calibration/adjustment date	
dd 17 · mm 01 · yyyy 200	0
Printer setup	<u>C</u> ancel

Ē

Type a unique name for the measurements. Click As left and ensure that the date is correct. This information will appear in a measurement report displayed on screen.

Click OK to view the measurement report.



Note...

These results are not saved electronically. If you require a record of these measurements, click Print while the report is displayed.

When you are finished viewing or printing the report, click Close. This returns you to the first dialogue in the Temperature adjustment option.

If you do not require any further measurements, click Done to return to the Main Menu.

To calibrate (as found), adjust and calibrate (as left) the ASM-80x



Note...

If you select Cold Junction compensation, either you must also select the mV (TC) Input or be sure that the mV(TC) range is calibrated.

- Click the radio button Measure/Adjust/Calibrate.
- Use the check box list to select the inputs to be measured.

If you have selected more than one check box, the measurements occur in the same order as they appear in the check box list.

- Connect the reference signal source to the appropriate channel (when prompted).
- Click Start and follow the instructions on screen.

Each input has several pre-set input values. Ensure that the reference signal source is adjusted correctly when prompted.

For Cold Junction compensation, ensure the corresponding μ V value for the calibrated junction temperature is entered (0 μ V @ 0°C).

The software measures the pre-set values for the selected input, adjusts the settings and then re-calibrates the calibrator's inputs. All this is done before moving on to the next selected input. When all the selected inputs have been measured, adjusted and re-calibrated a new dialogue appears.

N. Contraction of the second s	_ 🗆 ×
Measurment report ID	
Mark report as	
Calibration/adjustment date dd 17 · mm 01 · yyyy 200	0
Printer setup	<u>C</u> ancel

Ē

æ

Type a unique name for the measurements. Click As left and ensure that the date is correct. This information will appear in a measurement report displayed on screen.

Click OK to view the measurement report.



Note...

These results are not saved electronically. If you require a record of these measurements, click Print while the report is displayed.

When you are finished viewing or printing the report, click Close. This returns you to the first dialogue in the Temperature adjustment option.

If you do not require any further measurements, click Done to return to the Main Menu.

7. Using ATC with the AmeTrim

In the main menu select "Run Program" to start the calibration.



Select "ATC" and "Comport" in the "Device Quick Connect" dialog box and press "Connect".

7.1 Connecting the PC and the ATC



Caution...

- 1. Ensure that both the PC and the calibrator are switched off at the mains. Failure to do so may result in your equipment being damaged.
- Connect the serial cable provided to the "RS232" port on the front of the calibrator and to the COM port on the PC.
- 3. Switch on the PC and the calibrator.

Use the normal Windows procedure to start the AmeTrim-ATC software.

If the calibrator is not switched on or is not one of the models covered by this manual, then the software closes automatically.

The calibrator must not be performing any tasks like switch test, autostep or workorders. That means that the calibrator must be in the main menu before starting the software.



Note...

When software is used to control the calibrator, the calibrator's keyboard is disabled and the display indicates that the calibrator is remote controlled.



ATC main menu

	Main menu (RTC/PTC/ATC)
Temperature adjustment	Temperature adjustment: Use this feature to adjust/calibrate the calibrator's temperature measurement as "As found" and as "As left". It also gives the opportunity to downloadnew coefficients to the calibrator and print a measurement report.
Input adjustment	Input adjustment : Use the feature to adjusticaliteate the calibrator's electronical inputs. You can which individual inputs to adjusticalizate and prict a manuferent report (it ventions only).
of electronic shares.	Ani al uniformity adjustment : Use this Feature to adjust the calibrator's actal uniformity. (PLC & PTC series only),
Entry offerin	Set factory defaults Sets all calibration coefficients to factory defaults. WARNING Ensuin all calibration coefficients. Run calibration/adjustment procedure before using
Update calibration dates	Last calibration dates: Update fast calibration date' values in the ATC
Baference senace	Reference censor: Use this feature to download reference sensor parameters to the calibrator (5 variations only).
QTT Sensor	DTE Sensori Use this feature to manage the ourrent sensors in a DTI.
Eak to men reara	Edt: Editethie program,

7.2 Adjusting and calibrating the instrument

Ametrim allows you to calibrate/adjust the calibrator yourself using the AmeTrim-ATC Adjust and Calibration Software. This software is divided into 3 separate processes:

- **Temperature Adjustment**: This checks the accuracy of the heat source and internal sensor in the calibrator, (section 7.3).
- **Input Adjustment**: This checks the accuracy of the calibrator's electrical inputs (for B versions only), (section 7.4).
- **Calibration date**: Use this feature to download a new calibration date to the DTI.
- **Reference Sensor**: This ensures that the electrical values from the reference sensor correspond to the correct temperature values. The calibration values of the sensor can be downloaded to the calibrator. (B versions only), (section 7.5).
- **DTI Sensor**: Use this feature to manage the coefficients of the sensors in an AMETEK Digital Temperature Indicator (DTI) instrument.

7.3 Temperature Adjustment

- Temperature Adjustment
- This enables you to check the accuracy of the heat source and the internal sensor in the calibrator.
- This can be done in 3 ways:
 - Using the external reference sensor on the ATC (B-version) to measure the TRUE temperature, AmeTrim-ATC can perform a fully automatic calibration and adjustment of the internal sensor. The calibrated reference sensor should then be connected to the reference input.
 - Using a Digital Temperature Indicator (DTI) AmeTrim-ATC can read the TRUE temperature from the DTI and also make a fully automatic calibration and adjustment of the internal sensor. The DTI must be connected to a vacant serial COM port. See fig. 3.
 - Using any other reference instrument, AmeTrim-ATC will set the temperature sequence and the TRUE values can be entered as they occur as manual inputs.



Fig. 3

In AmeTrim-ATC main menu, click Temperature adjustment.

Choose a temperature adjustment scenario: Adjustment Adjustment with geternal ref. sensor input Adjustment with manuel inputs Adjustment with DTI Unit Temperature in: © "C / O "E Temperature sequence C As fgund only © As found / adjust / As jeft	Scenario Connected ATC-155 B	This Computer
		[<u>E</u> xit

- Click a radio button to select the scenario that should be used, depending on which calibrated temperature reference that is available.
- Click a radio button to select the desired temperature units.
- Click a radio button to select whether the calibration only should be performed as an "As Found" which means without adjusting the internal sensor, or if it should be both as an "As found" measurement followed by and adjustment of the sensor and a final "As Left" calibration after the adjustment. After the calibration measurement reports on both calibrations can be printed.
- Enter the ambient temperature and the operator initials.
 These are to be used on the printed measurement reports.

Enter information	n umber			
Serial No.	016038-00008			
Ambient tempera Ambient	ure C			
Operatir Initials Operator				
	<u> </u>			

Ensure that the precision thermometer is positioned correctly and ready to measure the temperatures.

Confirm that the calibration should be started. Information on the last calibration date for the reference input is read from the calibrator and given to help you ensuring an adequate calibrated reference.

Confirm	×
?	The current reference sensor in the calibrator is "DEFAULT-ITS90" Last calibration date for the reference input was: 2000-01-01 (yyyy-mm-dd)
	Do you want to continue with the temperature calibration ?
	The calibration will start when you press the "Next" button. Please connect the reference sensor now.
	<u>Yes</u> <u>N</u> o

Click Yes. The calibrator immediately starts working towards the temperature defined in the first step.

A new dialogue containing a table with pre-defined temperature steps is displayed. The calibrator type determines the range of these steps.

æ

Stens	Bead temp	True temp	Instrument
15	-15.00	.15.15	Set temperature 25,00 °C
10	0.00	-13,13	Read temperature 25,00 °C
25	0,00	-0,01	True temperature 25,03 °C
50			Calibration
75			Status Stable in about 5:51 min.
100			Next temperature
125			Time left of calibration (aprox.) 5:56 (httm:

When using the external reference sensor input on the calibrator, or when using a DTI, the calibration and adjustment will now run automatically.

Adjusting with manual inputs

If manual inputs are selected in the adjustment Scenario menu, the calibration will be performed in a little different way.

Ē

Enter the data to be used on the printed measurement reports and click Ok.

Enter informatio	n
Calibrator serial nu	umber
Serial No.	016038-00008
-Ambient temperat	ure
Ambient	D*C
Operatir Initials	
Operator	
Decimals	
True values	
Reference equipr	nent
	<u>D</u> k <u>C</u> ancel

When the True temperature is stable click "Enter value". In

the new dialogue, type in the correct "TRUE temperature" value read from the external precision thermometer.

Measuremer	nt Data		Interaction
Steps	Read temp.	True temp.	Enter value
-15			Coloulaia
0			Facusis
25	_		
50			Print
75			
100			
125			
155			Stop
1			
Info Select the bu readout. Wh coefficients a	utton "Enter value", « en all temperatures h and download them t	when the "True" tempe ave been measured, yo the calibrator, and yo	rature is stable on the external ou can calculate a new set of u can print the measured data.

Click OK. The READ temperature measured by the calibrator and the TRUE value are entered in the table.

The calibrator now starts working towards the next temperature level.

- Repeat these steps until READ and TRUE values have been entered for each temperature step.
- Click Calculate to provide a new set of calibration coefficients for the calibrator.



Note...

If you want a record of the measured TRUE and READ values, you must click Print now. These values are not saved once you return to the AmeTrim Main Menu.



Note...

Downloading new coefficients to the calibrator overwrites the existing ones already resident in the calibrator.

To prevent unintentional overwriting of existing coefficients, a warning appears requiring you to confirm the download.

When you are satisfied with the measured and calculated values, click Download to send the correction values to the calibrator.

7.4 Input Adjustment (B versions only)

This option allows you to check the accuracy of the calibrator's electrical inputs (for B versions only). In addition to the equipment already described in sections 7.1, you also require a calibrated reference signal source. For Cold Junction compensation, you will also require a stable temperature source, for example an ice bath, and a conversion table to provide the sensor's corresponding μ V value for the bath's temperature.



Note...

Before calibrating/adjusting the inputs the calibrator must have been turned on for at least half an hour with the SET temperature "Not Activated" (the initial mode when turned on). In order to calibrate the inputs the following calibrated signals must be used:

Nominal values	Accepted range
RTD and Reference Inputs:	
50Ω	(45 to 70Ω)
176Ω	(150 to 200Ω)
345Ω	(330 to 350Ω)
RTD inputs:	
1000Ω	(800 to 1200Ω)
2700Ω	$(2300 \text{ to } 2900 \Omega)$
mA inputs:	(
0 mA	(-1 to +1 mA)
10 mA	(9 to 11 mA)
20 mA	(18 to 22 mA)
V Inputs:	,
0 V	(-1 to +1 V)
5 V	(3 to 7 V)
10 V	(9 to 11 V)
mV inputs:	
0 mV	(-1 to +1 mV)
35 mV	(25 to 45 mV)
70 mV	(63 to 77 mV)
Cold Junction compensation:	N-type thermocouple and a
	reference junction. for
	example an ice bath.

Note that Cold Junction compensation is only possible when "Measure/Adjust/Calibrate" is selected.

The number and type of electrical inputs to be checked is userdefinable. You can also define if you want to check the inputs by just measuring them or to measure, adjust and then calibrate the electrical inputs. Cold Junction compensation requires a special setup, using a calibrated temperature source, for example an ice bath. This and the measurement principles are shown briefly below:



Fig. 4

If at any point you do not wish to continue, click Stop. The software exits this option and returns to the Main Menu.

In AmeTrim-ATC main menu, click Input adjustment.

🚰 AmeTrim-ATC v.1.00		
Input adjustment		
Waiting for user input	True [REF]	_
	Measuring [REF]	
	Setup:	Adjust / Check
	 O <u>O</u>nly measuring ○ <u>M</u>easure / Adjust / Calibrate 	Ref. Sensor Input RTD-Input TC - Input
	Calibration Dates	Volt - Input MA - Input CJ Comp.
Start		<u>E</u> xit
COM:1 Type: ATC-155 B, Serial no. 016038-00008, Last c	al. date: 2000-05-30/2000-01-01	

By clicking the Calibration Date button, you can view the last calibration dates for each of the inputs.

To view the current Input values

	Click the radio button Only measuring.
() J	Use the check box list to select the inputs to be measured.
	If you have selected more than one input to be measured, the measurements occur in the same order as they appear in the check box list.
() J	Use the check box list to select the inputs to be measured.
() J	Connect the reference signal source to the appropriate input(s) when prompted.
() J	Click Start and follow the instructions on screen.
	The software starts measuring the first of the selected inputs. Ensure that the correct reference signal source is connected when prompted.
(F	When all the selected inputs have been measured a new dialogue appears.

(F

Measurment report ID
Mark report as
As found C As left
Calibration/adjustment date dd 17 - mm 01 - yyyy 2000
Printer setupQkCancel

Type a unique name for the measurements. Click As found and ensure that the date is correct. This information will appear in a measurement report displayed on screen.

Click OK to view the measurement report.



Note...

These results are not saved electronically. If you require a record of these measurements, click Print while it is displayed.

- When you are finished viewing or printing the report, click Close. This returns you to the first dialogue in the Temperature adjustment option.
- If you do not require any further measurements, click Done to return to the Main Menu.

To view, adjust and calibrate the current Input values



Note...

If you select Cold Junction compensation, either you must also select the mV (TC) Input or be sure that the (TC) Input is calibrated.

Click the radio button Measure/Adjust/Calibrate.

Use the check box list to select the inputs to be measured.

If you have selected more than one check box, the measurements occur in the same order as they appear in the check box list.

- Connect the reference signal source to the appropriate input(s) (when prompted).
- Click Start and follow the instructions on screen.

Each input has several pre-set input values. Ensure that the reference signal source is adjusted correctly when prompted.

For Cold Junction compensation, ensure the corresponding μ V value for the calibrated junction temperature is entered (0 μ V @ 0°C).

The software measures the pre-set values for the selected input, adjusts the settings and then re-calibrates the calibrator's inputs. All this is done before moving on to the next selected input.

When all the selected inputs have been measured, adjusted and re-calibrated a new dialogue appears.

N	_ 🗆 ×
Measurment report ID	
I	
Mark report as	
As found O As let	t
Calibration/adjustment date	
dd 17 · mm 01 · yyyy 20	00
Printer setup <u>O</u> k	<u>C</u> ancel

Ē

æ

Type a unique name for the measurements. Click As left and ensure that the date is correct. This information will appear in a measurement report displayed on screen.

Click OK to view the measurement report.



Note...

These results are not saved electronically. If you require a record of these measurements, click Print while the report is displayed.

- When you are finished viewing or printing the report, click Close. This returns you to the first dialogue in the Temperature adjustment option.
- If you do not require any further measurements, click Done to return to the Main Menu.

7.5 Reference Sensor

This option enables you to view the calibration values currently loaded in the calibrator for the reference sensor as well as enter and download values for new reference sensors. In addition to the equipment already described in sections 7.1, you also require the calibration certificate for the new reference sensor.

(j)

In AmeTrim-ATC main menu, click Reference sensor.

A new dialogue with a table containing the calibration of corresponding temperatures and resistances of the reference sensor. If none are present in the calibrator, then the default values are displayed.

Metrim-AT	C v.1.00				_ 🗆 X
Reference sen	sor download	i			
	Reference ser	isor parameters		Interaction	
	Sensor serial r	no. : Default-ITS90		Upload values	
		Ref. Temp.	Ohm	Download values	
	Step 1	-25,000	90,190	<u>D</u> efault values	
	Step 2	0,000	100,000		
	Step 3	100,000	138,510		
	Step 4	200,000	175,860		
	Step 5	300,000	212,050		
		-1			
	Add step		Delete step		
	Unit Tempera	ature in °C 🔿 T	emperature in *F		
					<u>E</u> xit
COM:1 Type: A	TC-155 B, Seria	al no. 016038-00008	, Last cal. date: 2000-05-3	30/2000-01-01	

Click a radio button to select the desired temperature units.

To view current values in the Calibrator

- Click Upload values. The current reference sensor values stored in the calibrator are displayed.
- Click Done when you are finished viewing the values. This returns you to the AmeTrim-ATC Main Menu.

To enter values for a new reference sensor

Type in a unique and descriptive name for the reference sensor.
 Use the mouse to position the pointer in the boxes in the table.
 Type in the temperature and resistance values from the Calibration Certificate supplied with the reference sensor.
 If the calibration data fills more than the steps currently displayed, click Add step. If it fills less than the number of steps displayed, click Delete step.
 When all the values from the Calibration Certificate have been entered, click Download values.

When the values are downloaded they overwrite the ones stored in the calibrator.

Default values

This option downloads a set of default values, which are stored in the AmeTrim-ATC software.

7.6 Managing DTI sensor coefficients

This dialog enables you to type in coefficient values for the reference sensor connected to the DTI



Note...

These coefficients are not saved. Therefore, they must be typed in and downloaded when they need to be used.

DTI1	000. Serial No. DTI100	DTI configuration	
	Last calibration date:	17112016	
	ITS90 Information	Callendar van Dusen	Interaction to device
	п	S 90 coefficients	Upload
	RTPW	9,998671722E+01	Developed
	aLR	-1,905492693E-02	Download
	bLR	-1,760112791E-04	Default
	cLR	0,00000000E+00	Doldar
	aHR	-1,928258128E-02	
	bHR	-2,839971276E-04	
	cHR	0,000000000E+00	
	dHR	0,00000000E+00	
	Serial number : TE	ST1	Next >>
	Sensor to use :	O Sensor 1 O Sensor 2	

- Select the channel that is used to connect this sensor to the DTI.
- Select desired standard CVD or ITS-90r
- Type in the correct coefficients for the selected sensor
- When you are satisfied with all the values, click Download.Default values can be selected by using the Default button.



UK Tel +44 (0)1243 833 302 stc.uk@ametek.com

France Tel +33 (0)1 30 68 89 40 general.lloyd-instruments@ametek.fr

Germany Tel +49 (0)2159 9136 510 info.mct-de@ametek.de **Denmark** Tel +45 4816 8000 jofra@ametek.com

USA - California Tel +1 (800) 444 1850 crystal@ametek.com

USA - Florida Tel +1 (800) 527 9999 cal.info@ametek.com

www.ametekcalibration.com

India Tel +91 22 6196 8200 jofra@ametek.com

Singapore Tel +65 6484 2388 jofra@ametek.com

China - Beijing Tel +86 10 8526 2111 ext. 19 stc.china@ametek.com

Information in this document is subject to change without notice. ©2020, by AMETEK, Inc., www.ametek.com. All rights reserved.