OM-222 096K 2015−07

Processes

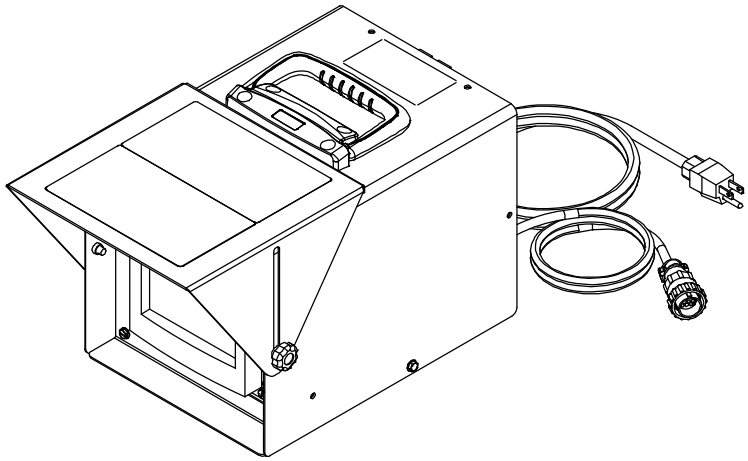
Induction Heating

Description

Single Induction Heating Power Source
Temperature Recorder

Proheat® Digital Recorder

CE



For Warranty Claims And Technical Support, Contact:
Sure Controls
N981 Tower View Drive
Greenville, WI 54942 USA
Tel: 920-757-0500
Email: service@surecontrols .com

OWNER'S MANUAL

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DECLARATION OF CONFORMITY

for European Community (CE marked) products.

MILLER Electric Mfg. Co., 1635 Spencer Street, Appleton, WI 54914 U.S.A. declares that the product(s) identified in this declaration conform to the essential requirements and provisions of the stated Council Directive(s) and Standard(s).

Product/Apparatus Identification:

Product	Stock Number
DIGITAL 6 CHANNEL RECORDER (CE)	195374
DIGITAL 12 CHANNEL RECORDER (CE)	300698

Council Directives:

- 2014/35/EU Low Voltage
- 2014/30/EU Electromagnetic Compatibility
- 2011/65/EU Restriction of the use of certain hazardous substances in electrical and electronic equipment

Standards:

- IEC 60974-10:2007 Arc Welding Equipment – Part 10: Electromagnetic compatibility (EMC) requirements

Signatory:

July 13, 2015

David A. Werba

MANAGER, PRODUCT DESIGN COMPLIANCE

Date of Declaration

272705A

SECTION 1 − SAFETY PRECAUTIONS − READ BEFORE USING

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Protect yourself and others from injury — read, follow, and save these important safety precautions and operating instructions.

1-1. Symbol Usage

DANGER! − Indicates a hazardous situation which, if not avoided, will result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.

Indicates a hazardous situation which, if not avoided, could result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.

NOTICE *− Indicates statements not related to personal injury.*

☞ *Indicates special instructions.*

This group of symbols means Warning! Watch Out! ELECTRIC SHOCK, MOVING PARTS, and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid the hazards.

1-2. Induction Heating Hazards

The symbols shown below are used throughout this manual to call attention to and identify possible hazards. When you see the symbol, watch out, and follow the related instructions to avoid the hazard. The safety information given below is only a summary of the more complete safety information found in the Safety Standards listed in Section 1-5. Read and follow all Safety Standards.

Only qualified persons should install, operate, maintain, and repair this unit.

During operation, keep everybody, especially children, away.

ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The power circuit and output bus bars or connections are electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. Incorrectly installed or improperly grounded equipment is a hazard.

- Do not touch live electrical parts.
- Enclose any connecting bus bars and coolant fittings to prevent unintentional contact.
- Wear dry, hole-free insulating gloves and body protection.
- Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.
- Additional safety precautions are required when any of the following electrically hazardous conditions are present: in damp locations or while wearing wet clothing; on metal structures such as floors, gratings, or scaffolds; when in cramped positions such as sitting, kneeling, or lying; or when there is a high risk of unavoidable or accidental contact with the workpiece or ground. For these conditions, see ANSI Z49.1 listed in Safety Standards. And, do not work alone!
- Disconnect input power before installing or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147 (see Safety Standards).
- Use only nonconductive coolant hoses with a minimum length of 18 inches (457 mm) to provide isolation.
- Properly install, ground, and operate this equipment according to its Owner's Manual and national, state, and local codes.
- Always verify the supply ground − check and be sure that input power cord ground wire is properly connected to ground terminal in disconnect box or that cord plug is connected to a properly grounded receptacle outlet.
- When making input connections, attach proper grounding conductor first − double-check connections.
- Keep cords dry, free of oil and grease, and protected from hot metal and sparks.
- Frequently inspect input power cord and ground conductor for damage or bare wiring – replace immediately if damaged – bare wiring can kill.
- Turn off all equipment when not in use.
- Do not use worn, damaged, undersized, or repaired cables.
- Do not drape cables over your body.
- Do not touch power circuit if you are in contact with the work, ground, or another power circuit from a different machine.
- Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
- Wear a safety harness if working above floor level.
- Keep all panels and covers securely in place.
- Use GFCI protection when operating auxiliary equipment in damp or wet locations.

SIGNIFICANT DC VOLTAGE exists in inverter power sources AFTER removal of input power.

- Turn Off inverter, disconnect input power, and discharge input capacitors according to instructions in Maintenance Section before touching any internal parts.

FUMES AND GASES can be hazardous.

Induction Heating of certain materials, adhesives, and fluxes can produce fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Keep your head out of the fumes. Do not breathe the fumes.
- If inside, ventilate the area and/or use local forced ventilation to remove fumes and gases. The recommended way to determine adequate ventilation is to sample for the composition and quantity of fumes and gases to which personnel are exposed.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watchperson nearby. Fumes and gases from heating can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
- Do not heat in locations near degreasing, cleaning, or spraying operations. The heat can react with vapors to form highly toxic and irritating gases.
- Do not overheat coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the heated area, the area is well ventilated, and while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if overheated. See coating SDS for temperature information.

FIRE OR EXPLOSION hazard.

- Do not overheat parts.
- Watch for fire; keep extinguisher nearby.
- Keep flammables away from work area.
- Do not locate unit on, over, or near combustible surfaces.
- Do not install unit near flammables.
- Do not operate where the atmosphere may contain flammable dust, gas, or liquid vapors (such as gasoline).
- After completion of work, inspect area to ensure it is free of sparks, glowing embers, and flames.
- Use only correct fuses or circuit breakers. Do not oversize or bypass them.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.
- Wear body protection made from durable, flame−resistant material (leather, heavy cotton, wool). Body protection includes oil-free clothing such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.

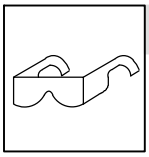
INDUCTION HEATING can burn.

- Do not touch hot parts bare-handed.
- Allow cooling period before handling parts or equipment.
- Do not touch or handle induction head/coil during operation unless the equipment is designed and intended to be used in this manner as specified in the owner's manual.
- Keep metal jewelry and other metal personal items away from head/coil during operation.
- To handle hot parts, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.

1-3. Additional Symbols for Installation, Operation, and Maintenance

FALLING EQUIPMENT can injure.

- Use handle and have person of adequate physical strength lift unit.
- Move unit with hand cart or similar device.
- For units without a handle, use equipment of adequate capacity to lift and support unit.
- Keep equipment (cables and cords) away from moving vehicles when working from an aerial location.
- If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.
- Follow the guidelines in the Applications Manual for the Revised NIOSH Lifting Equation (Publication No. 94−110) when manually lifting heavy parts or equipment.



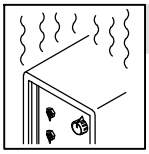
- Wear approved safety glasses with side shields or wear face shield.

MOVING PARTS can injure.

- Keep away from moving parts such as fans.
- Keep all doors, panels, covers, and guards closed and securely in place.
- Have only qualified persons remove doors, panels, covers, or guards for maintenance and troubleshooting as necessary.
- Reinstall doors, panels, covers, or guards when maintenance is finished and before reconnecting input power.

ELECTRIC AND MAGNETIC FIELDS (EMF) can affect Implanted Medical Devices.

- Wearers of Pacemakers and other Implanted Medical Devices should keep away.
- Implanted Medical Device wearers should consult their doctor and the device manufacturer before going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations.

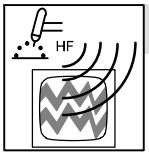


OVERUSE can cause OVERHEATING

- Allow cooling period.
- Reduce output or reduce duty cycle before starting to heat again.
- Follow rated duty cycle.

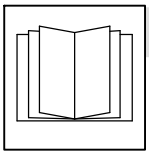
STATIC (ESD) can damage PC boards.

- Put on grounded wrist strap BEFORE handling boards or parts.
- Use proper static-proof bags and boxes to store, move, or ship PC boards.



H.F. RADIATION can cause interference.

- High-frequency (H.F.) can interfere with radio navigation, safety services, computers, and communications equipment.
- Have only qualified person familiar with electronic equipment perform this installation.
- The user is responsible for having a qualified electrician promptly correct any interference problem resulting from the installation.
- If notified by the FCC about interference, stop using the equipment at once.
- Have the installation regularly checked and maintained.
- Keep high-frequency source doors and panels tightly shut.



READ INSTRUCTIONS.

- Read and follow all labels and the Owner's Manual carefully before installing, operating, or servicing unit. Read the safety information at the beginning of the manual and in each section.
- Use only genuine replacement parts from the manufacturer.
- Perform maintenance and service according to the Owner's Manuals, industry standards, and national, state, and local codes.

BATTERY EXPLOSION can injure.

- Do not use induction equipment to charge batteries or jump start vehicles unless it has a battery charging feature designed for this purpose.

1-4. California Proposition 65 Warnings

Welding or cutting equipment produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)

This product contains chemicals, including lead, known to the state of California to cause cancer, birth defects, or other reproductive harm. *Wash hands after use.*

1-5. Principal Safety Standards

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, is available as a free download from the American Welding Society at http://www.aws.org or purchased from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihs.com).

Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 5060 Spectrum Way, Suite 100, Ontario, Canada L4W 5NS (phone: 800-463-6727, website: www.csa-international.org).

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, from U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 (phone: 1-866-512-1800) (there are 10 OSHA Regional Offices—phone for Region 5, Chicago, is 312-353-2220, website: www.osha.gov).

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Quincy, MA 02269 (phone: 1-800-344-3555, website: www.nfpa.org and www. sparky.org).

Canadian Electrical Code Part 1, CSA Standard C22.1, from Canadian Standards Association, Standards Sales, 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5NS (phone: 800-463-6727, website: www.csa-international.org).

Safe Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 25 West 43rd Street, New York, NY 10036 (phone: 212-642-4900, website: www.ansi.org).

Applications Manual for the Revised NIOSH Lifting Equation, The National Institute for Occupational Safety and Health (NIOSH), 1600 Clifton Rd, Atlanta, GA 30333 (phone: 1-800-232-4636, website: www.cdc.gov/NIOSH).

1-6. EMF Information

Electric current flowing through any conductor causes localized electric and magnetic fields (EMF). The current from arc welding (and allied processes including spot welding, gouging, plasma arc cutting, and induction heating operations) creates an EMF field around the welding circuit. EMF fields may interfere with some medical implants, e.g. pacemakers. Protective measures for persons wearing medical implants have to be taken. For example, restrict access for passers−by or conduct individual risk assessment for welders. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

1. Keep cables close together by twisting or taping them, or using a cable cover.
2. Do not place your body between welding cables. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep head and trunk as far away from the equipment in the welding circuit as possible.
5. Connect work clamp to workpiece as close to the weld as possible.
6. Do not work next to, sit or lean on the welding power source.
7. Do not weld whilst carrying the welding power source or wire feeder.

About Implanted Medical Devices:

Implanted Medical Device wearers should consult their doctor and the device manufacturer before performing or going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations. If cleared by your doctor, then following the above procedures is recommended.

SECTION 2 − CONSIGNES DE SÉCURITÉ − LIRE AVANT UTILISATION

⚠ Pour écarter les risques de blessure pour vous−même et pour autrui — lire, appliquer et ranger en lieu sûr ces consignes relatives aux précautions de sécurité et au mode opératoire.

2-1. Signification des symboles

⚠ DANGER! − Indique une situation dangereuse qui si on l'évite pas peut donner la mort ou des blessures graves. Les dangers possibles sont montrés par les symboles joints ou sont expliqués dans le texte.

⚠ Indique une situation dangereuse qui si on l'évite pas peut donner la mort ou des blessures graves. Les dangers possibles sont montrés par les symboles joints ou sont expliqués dans le texte.

NOTE *− Indique des déclarations pas en relation avec des blessures personnelles.*

☞ *Indique des instructions spécifiques.*

Ce groupe de symboles veut dire Avertissement! Attention! DANGER DE CHOC ELECTRIQUE, PIECES EN MOUVEMENT, et PIECES CHAUDES. Consulter les symboles et les instructions ci-dessous y afférant pour les actions nécessaires afin d'éviter le danger.

2-2. Dangers relatifs au soudage à l'arc

⚠ Les symboles présentés ci-après sont utilisés tout au long du présent manuel pour attirer votre attention et identifier les risques de danger. Lorsque vous voyez un symbole, soyez vigilant et suivez les directives mentionnées afin d'éviter tout danger. Les consignes de sécurité présentées ci-après ne font que résumer l'information contenue dans les normes de sécurité énumérées à la section 2-5. Veuillez lire et respecter toutes ces normes de sécurité.

⚠ L'installation, l'utilisation, l'entretien et les réparations ne doivent être confiés qu'à des personnes qualifiées.

⚠ Au cours de l'utilisation, tenir toute personne à l'écart et plus particulièrement les enfants.

UNE DÉCHARGE ÉLECTRIQUE peut entraîner la mort.

Le contact de composants électriques peut provoquer des accidents mortels ou des brûlures graves. Le circuit électrique et les barres collectrices ou les connexions de sortie sont sous tension lorsque l'appareil fonctionne. Le circuit d'alimentation et les circuits internes de la machine sont également sous tension lorsque l'alimentation est sur marche. Des équipements installés ou reliés à la borne de terre de manière incorrecte sont dangereux.

- Ne pas toucher aux pièces électriques sous tension.
- Protéger toutes les barres collectrices et les raccords de refroidissement pour éviter de les toucher par inadvertance.
- Porter des gants isolants et des vêtements de protection secs et sans trous.
- S'isoler de la pièce à couper et du sol en utilisant des housses ou des tapis assez grands afin d'éviter tout contact physique avec la pièce à couper ou le sol.
- D'autres consignes de sécurité sont nécessaires dans les conditions suivantes : risques électriques dans un environnement humide ou si l'on porte des vêtements mouillés ; sur des structures métalliques telles que sols, grilles ou échafaudages ; en position coincée comme assise, à genoux ou couchée ; ou s'il y a un risque élevé de contact inévitable ou accidentel avec la pièce à souder ou le sol. Dans ces conditions, voir ANSI Z49.1 énuméré dans les normes de sécurité. En outre, ne pas travailler seul !
- Couper l'alimentation d'entrée avant d'installer l'appareil ou d'effectuer l'entretien. Verrouiller ou étiqueter la sortie d'alimentation selon la norme OSHA 29 CFR 1910.147(se reporter aux Principales normes de sécurité).
- N'utiliser que des tuyaux de refroidissement non conducteurs ayant une longueur minimale de 457 mm pour garantir l'isolation.
- Installer le poste correctement et le mettre à la terre convenablement selon les consignes du manuel de l'opérateur et les normes nationales, provinciales et locales.
- Toujours vérifier la terre du cordon d'alimentation. Vérifier et s'assurer que le fil de terre du cordon d'alimentation est bien raccordé à la borne de terre du sectionneur ou que la fiche du cordon est raccordée à une prise correctement mise à la terre.
- En effectuant les raccordements d'entrée, fixer d'abord le conducteur de mise à la terre approprié et revérifier les connexions.
- Les câbles doivent être exempts d'humidité, d'huile et de graisse; protégez−les contre les étincelles et les pièces métalliques chaudes.
- Vérifier fréquemment le cordon d'alimentation et le conducteur de mise à la terre afin de s'assurer qu'il n'est pas altéré ou dénudé. Le remplacer immédiatement s'il l'est. Un fil dénudé peut entraîner la mort.
- L'équipement doit être hors tension lorsqu'il n'est pas utilisé.
- Ne pas utiliser des câbles usés, endommagés, de grosseur insuffisante ou mal épissés.
- Ne pas enrouler les câbles autour du corps.
- Ne pas toucher le circuit électrique si l'on est en contact avec la pièce, la terre ou le circuit électrique d'une autre machine.
- N'utiliser qu'un matériel en bon état. Réparer ou remplacer sur-le-champ les pièces endommagées. Entretenir l'appareil conformément à ce manuel.
- Porter un harnais de sécurité si l'on doit travailler au-dessus du sol.
- S'assurer que tous les panneaux et couvercles sont correctement en place.
- Utiliser une protection différentielle lors de l'utilisation d'un équipement auxiliaire dans des endroits humides ou mouillés.

Il reste une TENSION DC NON NÉGLIGEABLE dans les sources de soudage onduleur UNE FOIS le moteur coupé.

- Avant de toucher des organes internes, couper l'onduleur, débrancher l'alimentation et décharger les condensateurs d'alimentation conformément aux instructions indiquées dans la partie maintenance.

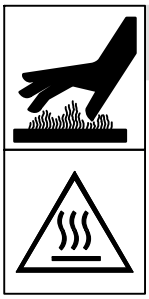
LES FUMÉES ET LES GAZ peuvent être dangereux.

Le chauffage à induction de certains matériaux, adhésifs et flux génère des fumées et des gaz. Leur inhalation peut être dangereuse pour votre santé.

- Ne pas mettre sa tête au-dessus des vapeurs. Ne pas respirer ces vapeurs.
- À l'intérieur, ventiler la zone et/ou utiliser une ventilation forcée au niveau de l'arc pour l'évacuation des fumées et des gaz. Pour déterminer la bonne ventilation, il est recommandé de procéder à un prélèvement pour la composition et la quantité de fumées et de gaz auxquels est exposé le personnel.
- Si la ventilation est médiocre, porter un respirateur anti-vapeurs approuvé.
- Lire et comprendre les fiches de données de sécurité et les instructions du fabricant concernant les adhésifs, les revêtements, les nettoyants, les consommables, les produits de refroidissement, les dégraisseurs, les flux et les métaux.
- Travailler dans un espace fermé seulement s'il est bien ventilé ou en portant un respirateur. Demander toujours à un surveillant dûment formé de se tenir à proximité. Des fumées et des gaz provenant du chauffage peuvent déplacer l'air, abaisser le niveau d'oxygène et provoquer des lésions ou des accidents mortels. S'assurer que l'air ambiant ne présente aucun danger.
- Ne pas chauffer dans des endroits se trouvant à proximité d'opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur peut réagir en présence de vapeurs et former des gaz hautement toxiques et irritants.
- Ne pas surchauffer des métaux munis d'un revêtement tels que l'acier galvanisé, plaqué au plomb ou au cadmium, à moins que le revêtement ne soit enlevé de la zone chauffée, que la zone soit bien ventilée et, si nécessaire, en portant un respirateur. Les revêtements et tous les métaux contenant ces éléments peuvent dégager des fumées toxiques s'ils sont surchauffés. Voir les informations concernant la température dans les spécifications de revêtement SDS.

Risque D'INCENDIE OU D'EXPLOSION.

- Ne pas surchauffer les composants .
- Attention aux risques d'incendie: tenir un extincteur à proximité.
- Stocker des produits inflammables hors de la zone de travail.
- Ne pas placer l'appareil sur, au-dessus ou à proximité de surfaces inflammables.
- Ne pas installer l'appareil à proximité de produits inflammables.
- Ne pas faire fonctionner l'appareil si l'air ambiant est chargé de particules, gaz, ou vapeurs inflammables (vapeur d'essence, par exemple).
- Une fois le travail achevé, assurez−vous qu'il ne reste aucune trace d'étincelles incandescentes ni de flammes.
- Utiliser exclusivement des fusibles ou coupe−circuits appropriés. Ne pas augmenter leur puissance; ne pas les ponter.
- Lire et comprendre les fiches de données de sécurité et les instructions du fabricant concernant les adhésifs, les revêtements, les nettoyants, les consommables, les produits de refroidissement, les dégraisseurs, les flux et les métaux.
- Porter un équipement de protection pour le corps fait d'un matériau résistant et ignifuge (cuir, coton robuste, laine). La protection du corps comporte des vêtements sans huile comme par ex. des gants de cuir, une chemise solide, des pantalons sans revers, des chaussures hautes et une casquette.



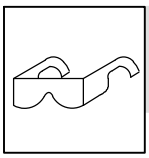
LE CHAUFFAGE PAR INDUCTION peut provoquer des brûlures.

- Ne pas toucher des parties chaudes à mains nues.
- Laisser refroidir les composants ou équipements avant de les manipuler.
- Ne pas toucher ou manipuler les câbles/enroulements d'induction durant l'opération à moins que l'équipement soit conçu à cet effet comme indiqué dans le manuel d'utilisateur.
- Tenir les bijoux et autres objets personnels en métal éloignés de la tête/de l'enroulement pendant le fonctionnement.
- Ne pas toucher aux pièces chaudes, utiliser les outils recommandés et porter des gants de soudage et des vêtements épais pour éviter les brûlures.

2-3. Dangers supplémentaires en relation avec l'installation, le fonctionnement et la maintenance

LA CHUTE DE L'ÉQUIPEMENT peut provoquer des blessures.

- Utiliser la poignée et demander à une personne ayant la force physique nécessaire pour soulever l'appareil.
- Déplacer l'appareil à l'aide d'un chariot ou d'un engin similaire.
- Pour les unités sans poignée, utiliser un équipement de levage de capacité suffisante pour lever l'appareil.
- Tenir l'équipement (câbles et cordons) à distance des véhicules mobiles lors de toute opération en hauteur.
- En utilisant des fourches de levage pour déplacer l'unité, s'assurer que les fourches sont suffisamment longues pour dépasser du côté opposé de l'appareil.
- Suivre les consignes du Manuel des applications pour l'équation de levage NIOSH révisée (Publication Nº94−110) lors du levage manuelle de pièces ou équipements lourds.



DES PIECES DE METAL ou DES SALETES peuvent provoquer des blessures dans les yeux.

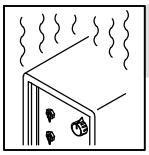
- Porter des lunettes de sécurité à coques latérales ou un écran facial.

DES ORGANES MOBILES peuvent provoquer des blessures.

- S'abstenir de toucher des organes mobiles tels que des ventilateurs.
- Maintenir fermés et verrouillés les portes, panneaux, recouvrements et dispositifs de protection.

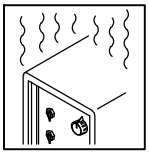
Les CHAMPS ÉLECTROMAGNÉTIQUES (CEM) peuvent affecter les implants médicaux.

- Les porteurs de stimulateurs cardiaques et autres implants médicaux doivent rester à distance.
- Les porteurs d'implants médicaux doivent consulter leur médecin et le fabricant du dispositif avant de s'approcher de la zone où se déroule du soudage à l'arc, du soudage par points, du gougeage, de la découpe plasma ou une opération de chauffage par induction.



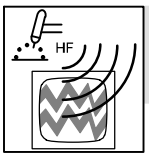
L'EMPLOI EXCESSIF peut SURCHAUFFER L'ÉQUIPEMENT.

- Prévoir une période de refroidissement
- Réduire le courant de sortie ou le facteur de marche avant de recommencer le chauffage.
- Respecter le cycle opératoire nominal.



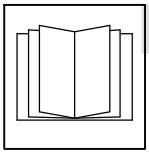
LES CHARGES ÉLECTROSTATIQUES peuvent endommager les circuits imprimés.

- Établir la connexion avec la barrette de terre AVANT de manipuler des cartes ou des pièces.
- Utiliser des pochettes et des boîtes antistatiques pour stocker, déplacer ou expédier des cartes PC.



LE RAYONNEMENT HAUTE FRÉQUENCE (HF) risque de provoquer des interférences.

- Le rayonnement haute fréquence (HF) peut provoquer des interférences avec les équipements de radio-navigation et de communication, les services de sécurité et les ordinateurs.
- Demander seulement à des personnes qualifiées familiarisées avec des équipements électroniques de faire fonctionner l'installation.
- L'utilisateur est tenu de faire corriger rapidement par un électricien qualifié les interférences résultant de l'installation.
- Si le FCC signale des interférences, arrêter immédiatement l'appareil.
- Effectuer régulièrement le contrôle et l'entretien de l'installation.
- Maintenir soigneusement fermés les portes et les panneaux des sources de haute fréquence.



LIRE LES INSTRUCTIONS.

- Lire et appliquer les instructions sur les étiquettes et le Mode d'emploi avant l'installation, l'utilisation ou l'entretien de l'appareil. Lire les informations de sécurité au début du manuel et dans chaque section.
- N'utiliser que les pièces de rechange recommandées par le constructeur.
- Effectuer l'entretien en respectant les manuels d'utilisation, les normes industrielles et les codes nationaux, d'état et locaux.

L'EXPLOSION DE LA BATTERIE peut provoquer des blessures.

- Ne pas utiliser l'appareil de soudage pour charger des batteries ou faire démarrer des véhicules à l'aide de câbles de démarrage, sauf si l'appareil dispose d'une fonctionnalité de charge de batterie destinée à cet usage.

2-4. Proposition californienne 65 Avertissements

⚠ **Les équipements de soudage et de coupage produisent des fumées et des gaz qui contiennent des produits chimiques dont l'État de Californie reconnaît qu'ils provoquent des malformations congénitales et, dans certains cas, des cancers. (Code de santé et de sécurité de Californie, chapitre 25249.5 et suivants).**

⚠ **Ce produit contient des éléments chimiques, dont le plomb, reconnus par l'État de Californie pour leur caractère cancérogène ainsi que provoquant des malformations congénitales ou autres problèmes de procréation. *Se laver les mains après toute manipulation.***

2-5. Principales normes de sécurité

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihs.com).

Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 5060 Spectrum Way, Suite 100, Ontario, Canada L4W 5NS (phone: 800-463-6727, website: www.csa-international.org).

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, from U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 (phone: 1-866-512-1800) (there are 10 OSHA Regional Offices—phone for Region 5, Chicago, is 312-353-2220, website: www.osha.gov).

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Quincy, MA 02269 (phone: 1-800-344-3555, website: www.nfpa.org and www. sparky.org).

Canadian Electrical Code Part 1, CSA Standard C22.1, from Canadian Standards Association, Standards Sales, 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5NS (phone: 800-463-6727, website: www.csa-international.org).

Safe Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 25 West 43rd Street, New York, NY 10036 (phone: 212-642-4900, website: www.ansi.org).

Applications Manual for the Revised NIOSH Lifting Equation, The National Institute for Occupational Safety and Health (NIOSH), 1600 Clifton Rd, Atlanta, GA 30333 (phone: 1-800-232-4636, website: www.cdc.gov/NIOSH).

2-6. Informations relatives aux CEM

Le courant électrique qui traverse tout conducteur génère des champs électromagnétiques (CEM) à certains endroits. Le courant issu d'un soudage à l'arc (et de procédés connexes, y compris le soudage par points, le gougeage, le découpage plasma et les opérations de chauffage par induction) crée un champ électromagnétique (CEM) autour du circuit de soudage. Les CEM peuvent créer des interférences avec certains implants médicaux comme des stimulateurs cardiaques. Des mesures de protection pour les porteurs d'implants médicaux doivent être prises: Limiter par exemple tout accès aux passants ou procéder à une évaluation des risques individuels pour les soudeurs. Tous les soudeurs doivent appliquer les procédures suivantes pour minimiser l'exposition aux CEM provenant du circuit de soudage:

1. Rassembler les câbles en les torsadant ou en les attachant avec du ruban adhésif ou avec une housse.
2. Ne pas se tenir au milieu des câbles de soudage. Disposer les câbles d'un côté et à distance de l'opérateur.
3. Ne pas courber et ne pas entourer les câbles autour de votre corps.
4. Maintenir la tête et le torse aussi loin que possible du matériel du circuit de soudage.
5. Connecter la pince sur la pièce aussi près que possible de la soudure.
6. Ne pas travailler à proximité d'une source de soudage, ni s'asseoir ou se pencher dessus.
7. Ne pas souder tout en portant la source de soudage ou le dévidoir.

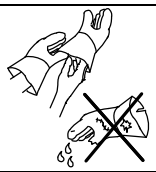
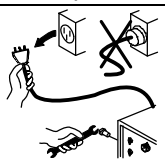
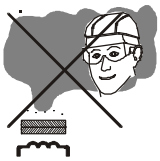
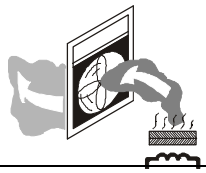
En ce qui concerne les implants médicaux :

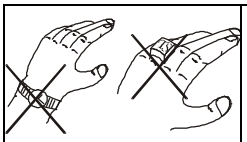
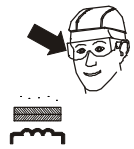
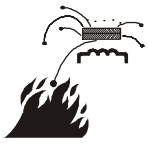
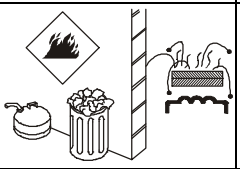
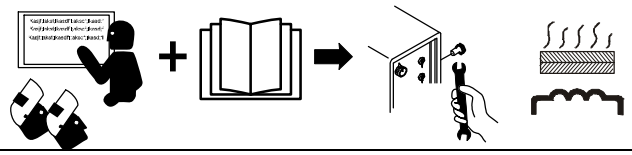
Les porteurs d'implants doivent d'abord consulter leur médecin avant de s'approcher des opérations de soudage à l'arc, de soudage par points, de gougeage, du coupage plasma ou de chauffage par induction. Si le médecin approuve, il est recommandé de suivre les procédures précédentes.

SECTION 3 − DEFINITIONS

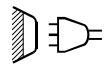
3-1. Additional Safety Symbols And Definitions

☞ *Some symbols are found only on CE products.*

	Warning! Watch Out! There are possible hazards as shown by the symbols. Safe1 2012−05
	Do not remove or paint over (cover) the label. Safe20 2012−05
	Do not discard product (where applicable) with general waste. Reuse or recycle Waste Electrical and Electronic Equipment (WEEE) by disposing at a designated collection facility. Contact your local recycling office or your local distributor for further information. Safe37 2012−05
	Wear dry insulating gloves. Do not wear wet or damaged gloves. Safe56 2012−05
	Disconnect input plug or power before working on machine. Safe5 2012−05
	Breathing heating fumes can be hazardous to your health. Read Material Safety Data Sheets (MSDSs) and manufacturer's instructions for material used. Safe79 2012−07
	Keep your head out of the fumes. Safe80 2012−07
	Use forced ventilation or local exhaust to remove the fumes. Safe81 2012−07
	Use ventilating fan to remove fumes. Safe82 2012−07
	Induction heating can cause injury or burns from hot items such as rings, watches, or parts. Safe74 2012−07

	Do not wear metal jewelry and other metal personal items such as rings and watches during operation. Safe75 2012−07
	Always wear safety glasses or goggles during and around heating operations to prevent possible injury. Safe83 2012−07
	Wear either safety glasses or full goggles depending on type of operation and nearby processes. Safe84 2012−07
	Induction heating sparks can cause fire. Do not overheat parts and adhesives. Safe76 2012−07
	Keep flammables away from heating operation. Do not heat near flammables. Safe77 2012−07
	Heating sparks can cause fires. Have a fire extinguisher nearby and have a watchperson ready to use it. Safe78 2012−07
	Become trained and read the instructions before working on the machine or heating. Safe85 2012−06

3-2. Miscellaneous Symbols And Definitions

	Line Connection
1~	Single Phase
U_1	Primary Voltage

I_{1max}	Rated Maximum Supply Current
P_{1max}	Maximum Power Consumption

IP	Degree Of Protection
Hz	Hertz

SECTION 4 − SPECIFICATIONS

4-1. Serial Number And Rating Label Location

The serial number and rating information for this product is located on the back. Use rating label to determine input power requirements and/or rated output. For future reference, write serial number in space provided on back cover of this manual.

4-2. Specifications

Specification	Description
Overall Dimensions	Height: 10 in. (254 mm); Width: 10-1/2 in. (268 mm); Depth: 13 in. (330 mm)
Weight	Net: 22.5 lb (10.2 kg)
Type Of Input Power	85-265 Volts AC, 47-63 Hz
Reference the controller and recorder manuals for additional information.	

4-3. Environmental Specifications

A. IP Rating

IP Rating	Operating Temperature Range	Storage Temperature Range
IP23 This equipment is designed for outdoor use. It may be stored, but is not intended to be used for welding outside during precipitation unless sheltered.	41 to 104 °F (5 to 40°C)	-4 to 122 °F (-20 to 50°C) IP23S 2014−06

B. Information On Electromagnetic Fields (EMF)

This equipment shall not be used by the general public as the EMF limits for the general public might be exceeded during welding.

This equipment is built in accordance with EN 60974−1 and is intended to be used only in an occupational environment (where the general public access is prohibited or regulated in such a way as to be similar to occupational use) by an expert or an instructed person.

Wire feeders and ancillary equipment (such as torches, liquid cooling systems and arc striking and stabilizing devices) as part of the welding circuit may not be a major contributor to the EMF. See the Owner's Manuals for all components of the welding circuit for additional EMF exposure information.

- The EMF assessment on this equipment was conducted at 0.5 meter.
- At a distance of 1 meter the EMF exposure values were less than 20% of the permissible values.

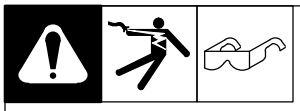
ce-emf 1 2010-10

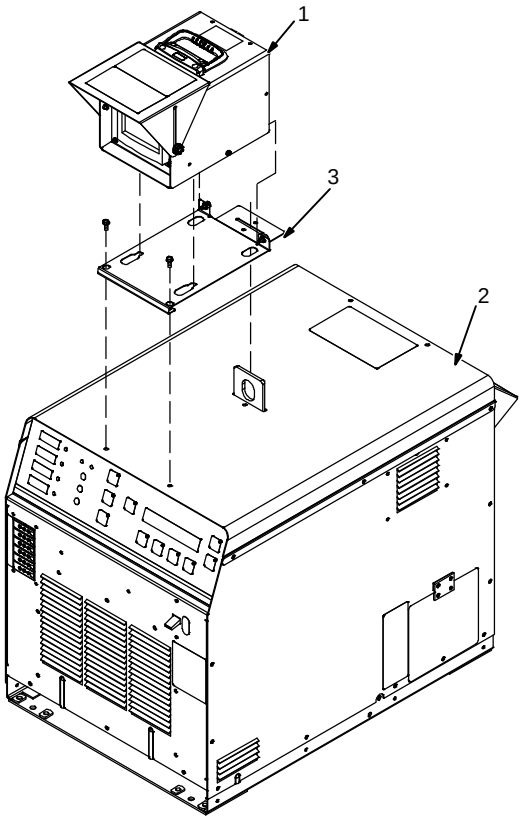
C. Information On Electromagnetic Compatibility (EMC)

This Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low−voltage supply system. There can be potential difficulties in ensuring electromagnetic compatibility in those locations, due to conducted as well as radiated disturbances.

ce-emc 3 2014-07

5-1. Recorder Installation





Turn Off and disconnect input power.

Do not use recorder handle to lift the entire system. Use recorder handle to lift only the recorder.

1 Recorder

2 Power Source

3 Mounting Bracket

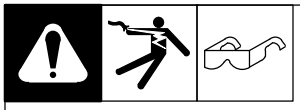
Install mounting bracket on power source and secure using existing hardware from top cover.

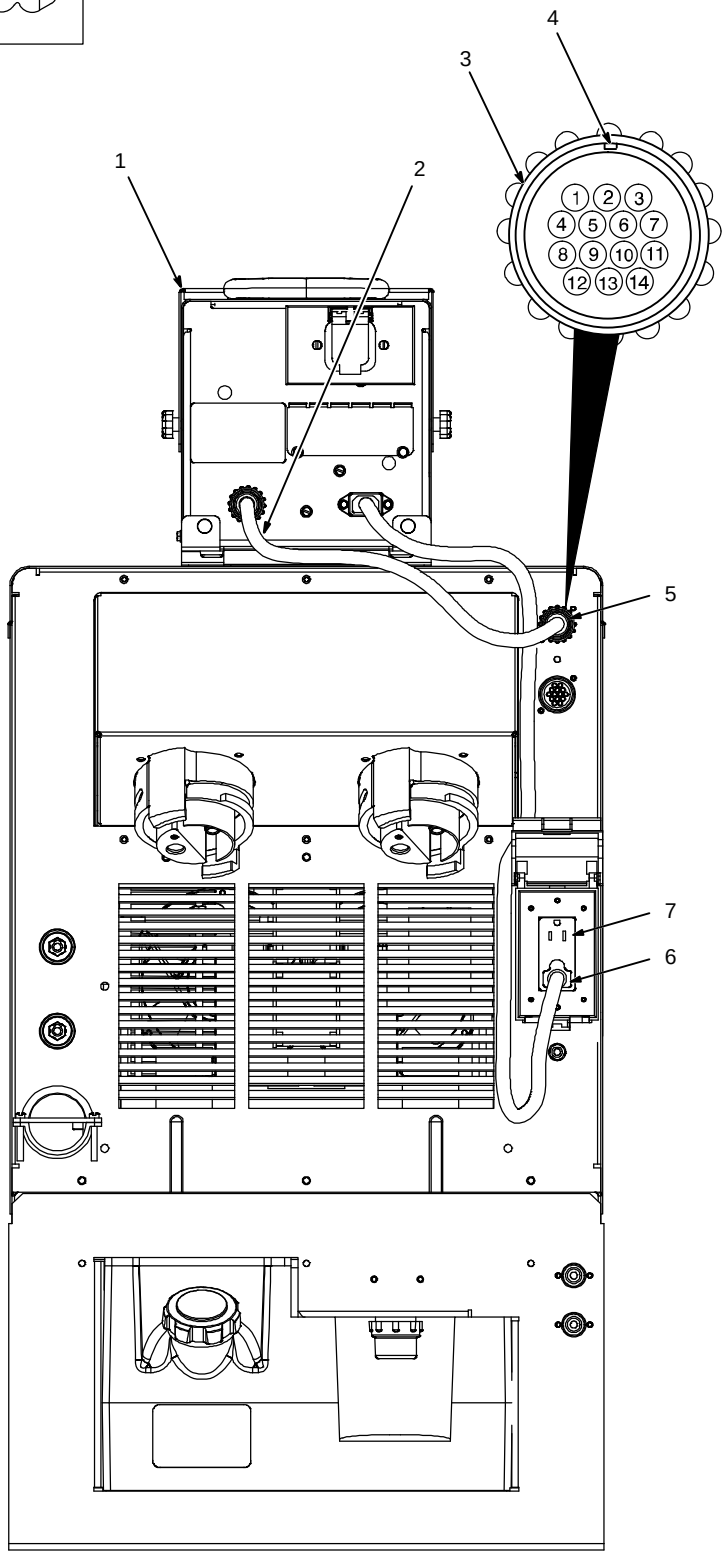
Install recorder on mounting bracket and secure using screws in rear of bracket.

804 408-A

Notes

5-2. Connecting To Power Source





Turn Off and disconnect input power.

1 Recorder

2 Interconnecting Cord

3 14-Pin Plug

4 Keyway

5 Remote 14 Receptacle RC9 (See Section 5-3)

To connect remaining end of cord to power source, align keyway, insert plug, and tighten threaded collar.

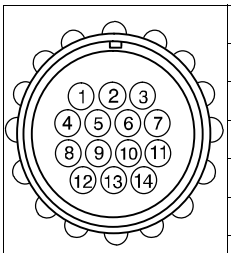
6 Power Cord

7 115 VAC Receptacle

Connect power cord to receptacle.

803 999-C

5-3. Output 14 Pin Information For Receptacle RC9



Pin Number	Pin Information
1	Thermocouple No. 1 (TC1), 0-10 volt DC signal (0V = −50°F, 10V = 1500° F) *
2	Thermocouple No. 2 (TC2), 0-10 volt DC signal (0V = −50°F, 10V = 1500° F) *
3	Thermocouple No. 3 (TC3), 0-10 volt DC signal (0V = −50°F, 10V = 1500° F) *
4	Thermocouple No. 4 (TC4), 0-10 volt DC signal (0V = −50°F, 10V = 1500° F) *
5	Signal Common
6	Thermocouple No. 5 (TC5), 0-10 volt DC signal (0V = −50°F, 10V = 1500° F) *
7	Thermocouple No. 6 (TC6), 0-10 volt DC signal (0V = −50°F, 10V = 1500° F) *
8	Unused
9	Unused
10	Chassis Ground
11	Unused
12	Unused
13	Unused
14	Unused

* The voltage to temperature calculation is:

(DC Volts In x 155) − 50 = °F

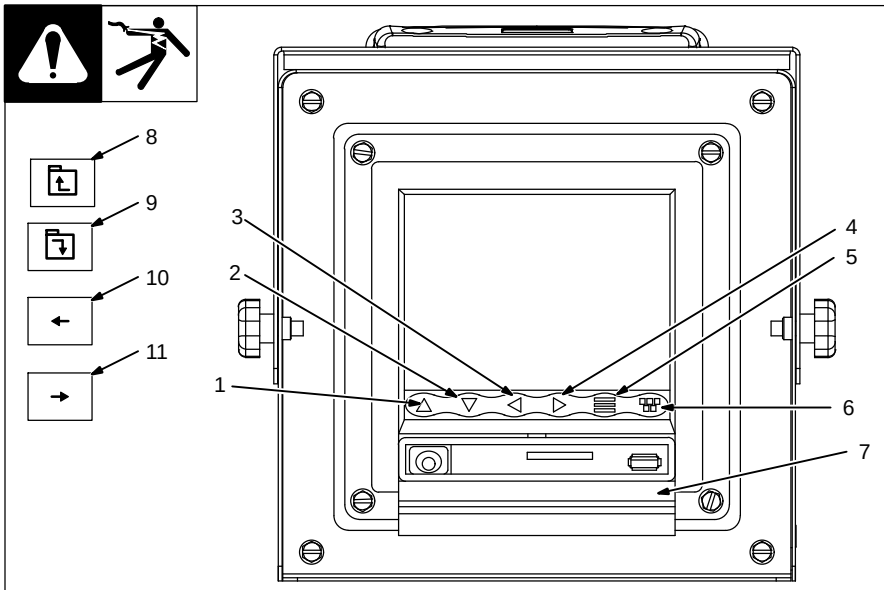
(DC Volts In x 86.1) − 45.4 = °C

The Recorder display should read ±5 °F or ±3 °C.

Notes

SECTION 6 − SETUP AND OPERATION

6-1. Digital Recorder Controls



Keep all panels, doors, and covers closed and secure during programming.

1 Page Up
2 Page Down
3 Left
4 Right
5 Option
6 Menu
7 Access Door For External Memory Connection

Additional keys that appear as needed for specific applications are as follows:

8 Close Folder
9 Open Folder
10 Left Cursor
11 Right Cursor

803 997-C

6-2. Time Date Setup − Digital

6-2-1. Login As Engineer

1 Touch top left corner (Logged Out) or (User).
2 Touch text (pull down menu) next to User.
3 Touch Engineer.
4 Touch Password field.
5 Touch Numeric.
6 Touch 1, then 0, and finally Ok. “Engineer” will appear in top left corner of display.

6-2-2. Go To Operator Screen

1 Touch the Menu key in bottom right corner to open Root Menu.
2 Touch Operator.

6-2-3. Locale Setup

1 Touch System.
2 Touch Locale.
3 Touch pull down next to Country.
4 Touch appropriate country.
5 Touch pull down next to Time Zone.
6 Touch appropriate time zone (i.e. CST Central). See “http://www.timeanddate.com” for additional information.
7 Set DST (Daylight Savings Time) if applicable. Place an “X” in the box next to “Use Summertime (DST)” to enable this option.

☞ *In the United States:*
DST begins at 2:00 am on the second Sunday in March.
DST ends at 2:00 am on the first Sunday in November.
See http://www.timeanddate.com/time/aboutdst.html for exceptions.

8 Touch Apply.

6-2-4. Time And Date Setup

1 Touch System.
2 Touch Clock.
3 Adjust time and date, if necessary.
4 Touch Apply.

6-2-5. Login As User

1 Touch top left corner (Engineer).

2 Touch pull down next to User.

3 Touch User from pull down list.

6-2-6. Go To Home Screen

1 Touch the Menu  key in bottom right corner to open Root Menu.

2 Touch Home.

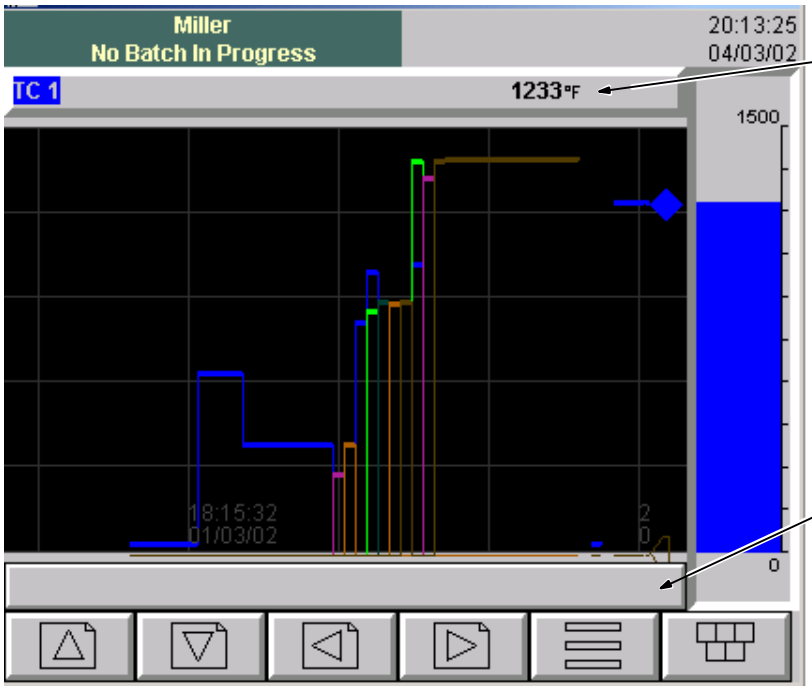
6-2-7. Channel Cycling On/Off And Notes

When Trend graphs are displayed, the operator has the option to sequentially display the TC readings for each channel by activating the "**Channel Cycling On**"option. When channel cycling is off, recorder displays only the selected TC value.

To activate/deactivate "**Channel Cycling**":

1 Press the Option  key to open options menu.

2 Press channel cycling On to activate cycling or press channel cycling Off to deactivate cycling.



To manually change which TC is displayed, press the TC field to advance to the next TC reading.

Notes can be added to a chart on the recorder while viewing a trend screen.

Press the "**Option Menu**" button.

Press "**Note**".

Press the field next to "**Operator Note**" and enter notes using keypad.

Press "**OK**".

Press "**OK**".

The note is added to the chart.

The note can be viewed on the bottom of the screen or in the history screen.

Press the Option key, press "Enter History".

To exit, press the Option key, then press "Exit History".

scrn34

6-3. Operation

6-3-1. Batch Recording Using Recorder

The batch file generated by the recorder will consist of:
GroupDescriptor~BatchName~TimeDateStamp.uhh

The default **Group Descriptor** is set to “Group”. This setting may be changed to something that relates to the application (i.e. Company, Contract, or Project name).

To change the Group Descriptor, proceed as follows:

1 Log in as an Engineer (see Section 6-2-1).

2 Touch Menu (bottom right).

3 Touch Operator.

4 Touch Config.

5 Touch Groups.

6 Touch the field next to Descriptor, a keypad will appear on the display.

7 Enter the desired name and touch Ok.

8 Touch Apply.

9 Touch Menu (bottom right).

10 Touch Home.

The **Batch Name** is entered by the operator. This should be a unique name that identifies the part being heated. Since the same part may have Pre-heat (P), Bakeout (B), and Stress (S) procedures done to it, the batch name should include an indicator as to which process was done (i.e. W41-1307-2-S) where the S indicates a stress procedure.

The **Time Date Stamp** and **.uhh** file extension are both generated automatically by the recorder.

Begin Batch recording.

6-3-1-1. Login As User

1 Touch top left corner.

2 Touch pull down next to User.

3 Touch User from pull down list.

6-3-1-2. Start Recording

1 Touch “No Batch In Progress”.

2 Touch “New”.

3 Touch field next to Job # (Batch Name). This will be the batch name.

4 Enter unique Batch Name (see Section 6-3-1).

5 Touch “Ok”.

6 Touch field next to User ID.

7 Enter User ID.

8 Touch “Ok”.

9 Touch field next to Comments.

10 Enter Comments or, at least, touch the blank key.

11 Touch “Ok”.

12 Scroll down to bottom of screen.

13 Touch field next to the MAC address i.e., 00:0A:8D:00:XX:XX.

14 Touch the blank key (bottom right keyboard).

15 Touch “Ok”.

16 Touch “Start”.

17 Touch “Close”.

6-3-1-3. Stop Recording

1 Touch the block with the batch name.

2 Touch “Stop”.

3 Touch “Close” − screen returns to the home screen and displays “No Batch In Progress”.

☞ *If a batch file was not started, the temperature data is still recorded. The Job# (Batch Name), User, Comments, and Recorder ID are not recorded.*

6-3-1-4. Saving Data To Media (Recommended After Each Batch)

1 Insert media into recorder.

2 Login as User (see Section 6-3-1-1).

3 Touch  key in bottom right corner to open Root Menu.

4 Touch “Operator”.

5 Touch “Archive”.

6 Touch “Local”.

7 Select Media Type in pulldown menu next to Media.

8 Select how much data to save to media (typically, Last Day is sufficient).

Last day saves from 12:00am until current time. Last week saves from 12:00am Monday until current time.

Scroll down and wait until archive transfer changes from active to inactive.

☞ *DO NOT remove media before completion of data transfer.*

9 Touch  key in bottom right corner to open Root Menu.

10 Touch “Home”.

11 Remove media.

12 To view data, go to Section 6-3-4.

6-3-1-5. Saving Data To A PC (Alternative To Media)

6-3-1-5-1. Review Software − First Time Setup

1 Start “Review” software.

2 Click on “Instrument”, “Setup”, “TCP/IP”.

3 Click on “Add Instrument”.

4 In the “TCP/IP Address or Host Name:” field, type “192.168.111.222”.

5 In the “Identifier:” field, type “Generic”.

6 Click on “OK”.

6-3-1-5-2. Creating A Shortcut − First Time Setup

Local Area Network Connection (Windows® 2000 And XP)

1 Click on “Start”, “Settings”, “Control Panel”.

2 Open “Network and Dial-up Connections”.

3 Right click on “Local Area Connection”.

4 Select “Create Shortcut”.

5 Click on “Yes” to create a shortcut on the desktop.

6 Close the “Network and Dial-up Connection” window.

7 Close the “Control Panel”.

Local Area Network Connection (Windows® VISTA)

1 Click on “Start”, “Settings”, “Control Panel”.

2 Open “Network and Sharing Center”.

3 Click “Manage network connection”.

4 Right click on “Local Area Connection”.

5 Select “Create Shortcut”.

6 Click on “Yes” to create a shortcut on the desktop.

7 Close the “Network Connections” window.

8 Close “Network and Sharing Center” window.

9 Close the “Control Panel”.

6-3-1-5-3. Changing IP Address To Connect The Recorder

For Windows® 2000, XP, And VISTA

1 Close any open network applications.

2 Double click “Local Area Connection” desktop shortcut.

3 Click on “Properties”.

4 Scroll down to “Internet Protocol (TCP/IP)”.

5 Click on “Internet Protocol (TCP/IP)” to highlight it.

6 Click on “Properties”.

7 Click on “Use the following IP address:”.

8 In the “IP address” field, type “192.168.111.221”.

9 Click on “OK”.

10 Click on “OK” to add the subnet mask.

11 The “Subnet mask:” field should display “255.255.255.0”.

12 Click on “OK”.

13 Click on “OK”.

14 Click on “Close” to close the “Local Area Connection” window.

6-3-1-5-4. Downloading Files From Recorder

1 Connect a crossover cable between the recorder and the PC (a crossover cable is a special network cable with the orange and green pairs reversed on one end).

2 Start “Review” software.

3 Click on “Instrument”, “File Services”.

4 Click on “Generic”.

5 Enter user name: “user” (leave password field blank).

6 Click on “OK”.

7 Right click on desired files and transfer them.

6-3-1-5-5. Troubleshooting Connection Problems

1 Click on “Start”, “Programs”, “Accessories”, “Command Prompt”.

2 Type in “ping 192.168.111.222”.

3 Press “Enter”.

If the message “Timed Out” appears 4 times, the recorder is not responding. Check unit setup outlined previously and verify crossover cable is connected properly.

6-3-1-5-6. Resetting IP Address (Necessary To Connect User’s PC To Company’s Network)

For Windows® 2000, XP, And VISTA

1 Close any open network applications.

2 Double click “Local Area Connection” desktop shortcut.

3 Click on “Properties”.

4 Scroll down to “Internet Protocol (TCP/IP)”.

5 Click on “Internet Protocol (TCP/IP)” to highlight it.

6 Click on “Properties”.

7 Click on “Obtain an IP address automatically”.

8 Click on “OK”.

9 Click on “OK”.

10 Click on “Close” to close the “Local Area Connection” window.

6-3-2. Recovering From An Interruption

If a batch was running, the recorder will automatically start a new file with the same batch name and continue recording.

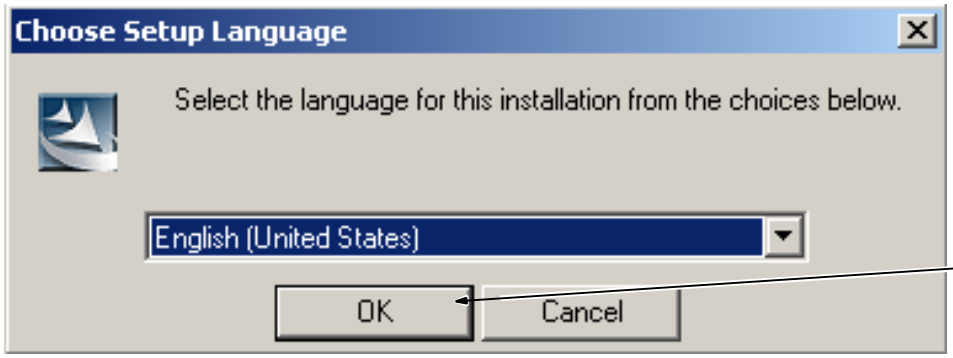
6-3-3. Viewing Data In QuickChart Software

6-3-3-1. Installing Software And First Time Setup

Insert the “Review Full and Review QuickChart Full” CD into the computer.

If the installation program does not automatically start, browse to the CD using “My Computer” and run “Setup.exe”.

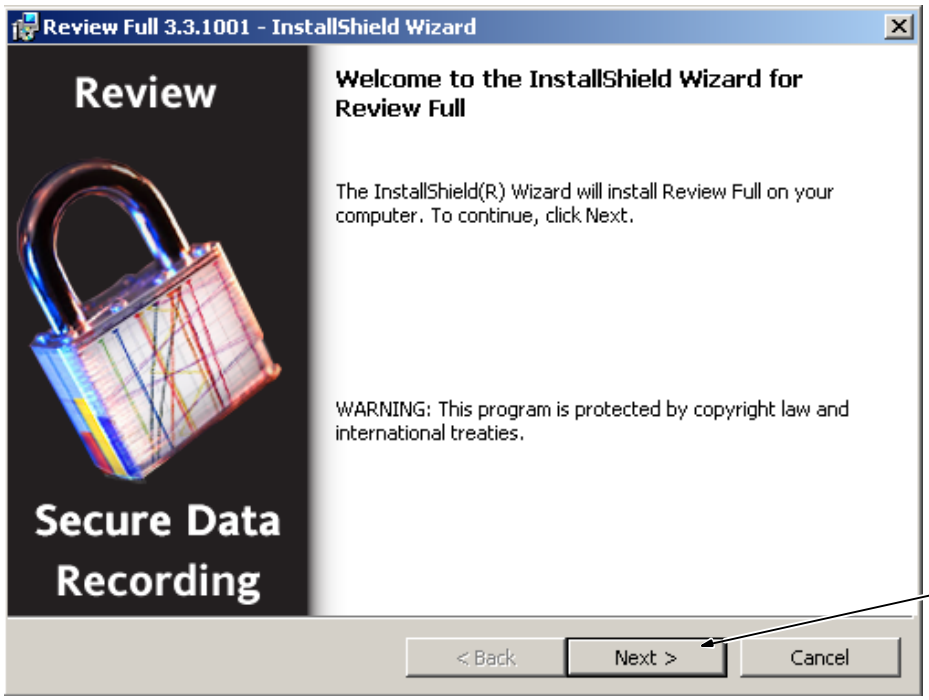
Choose a language for the software program. Click the arrow to expand the menu and select the desired language for the software program.



Select desired language for the software program, and click “**OK**”.

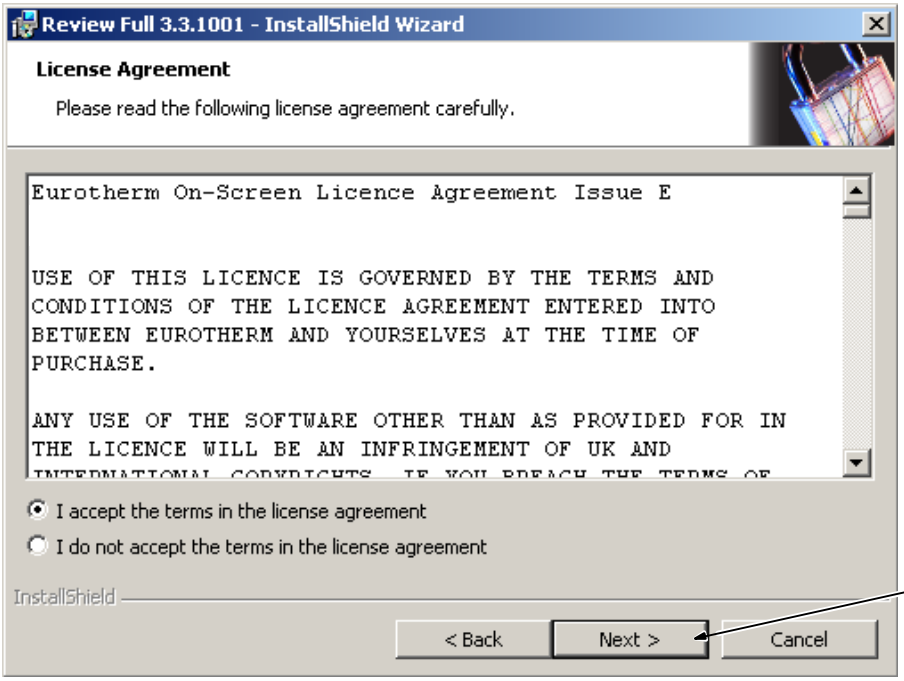
Click “**OK**” after making a language selection.

QCS01



To continue the installation, click on “**Next>**”.

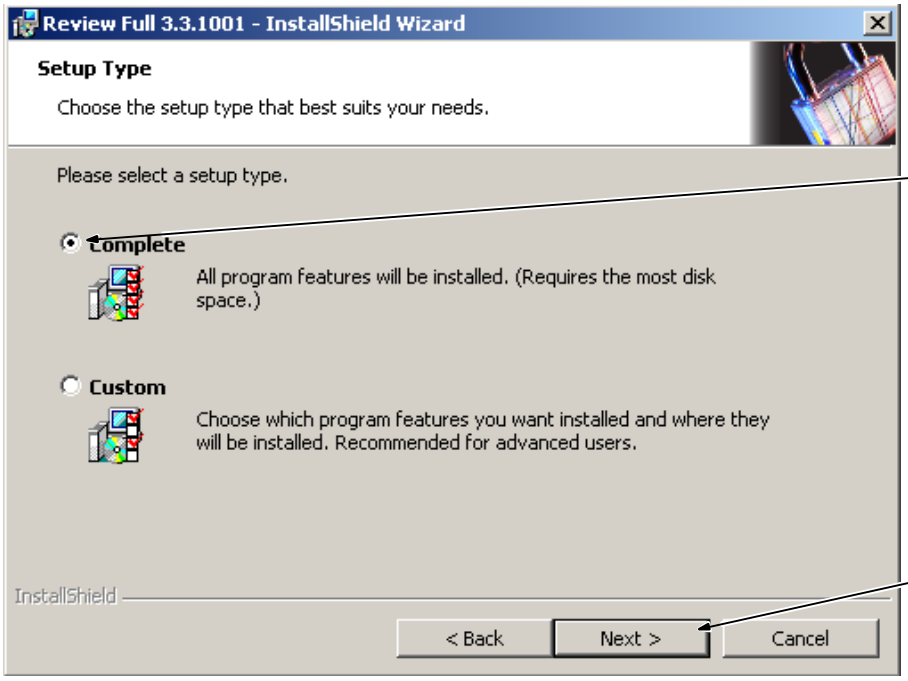
QCS02



☞ *You must accept the license agreement to install the software.*

Choose if you agree to the license agreement and click "**Next>**".

QCS03



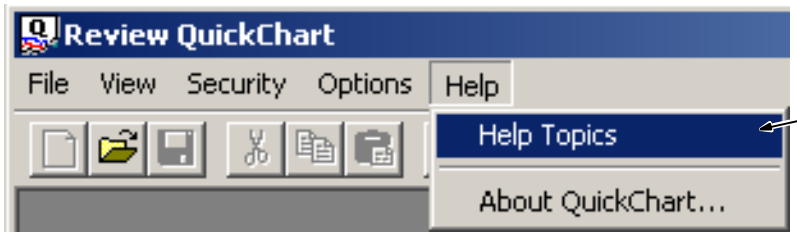
Select "**Complete**".

Click "**Next>**".

☞ *After software installation is complete, restart the PC.*

QCS04

This Owner's Manual will guide you through the steps to create and save a chart for a batch file. Additional information about the software can be found by clicking "Help/Help Topics" after the software is installed.



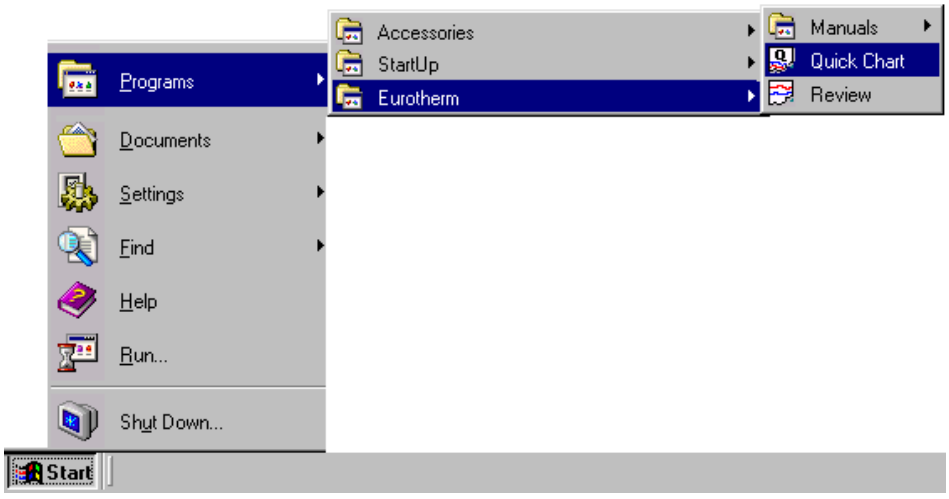
Additional information about the software can be found by clicking "**Help**" and "**Help Topics**".

QCS05

6-3-3-2. Backing Up Data

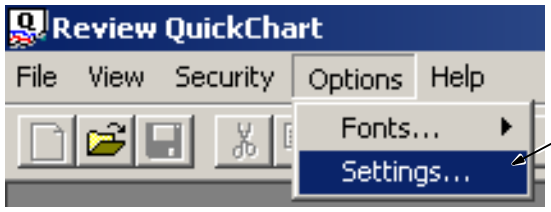
QuickChart software reads data from the file(s) selected. After a chart is created, it should be saved in a location that is backed up by your company's data archive procedures.

6-3-4. Running QuickChart Software



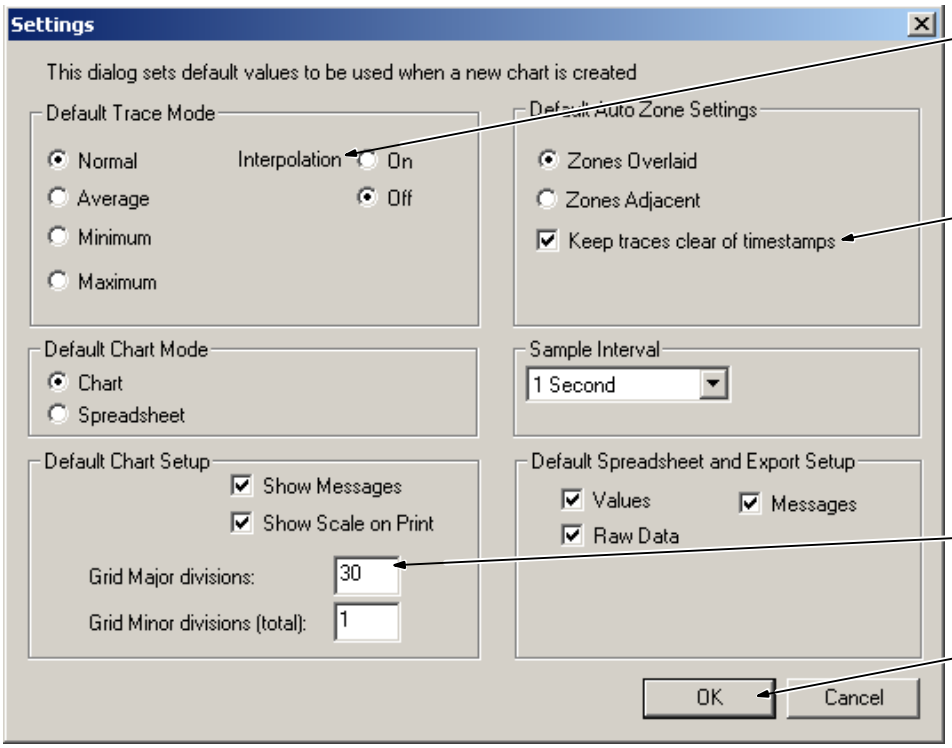
Select "**Start\Programs\Eurotherm\QuickChart**".

QCS06



Default option settings can be made prior to opening or creating a chart. Select "**Options**" and "**Settings**".

QCS07



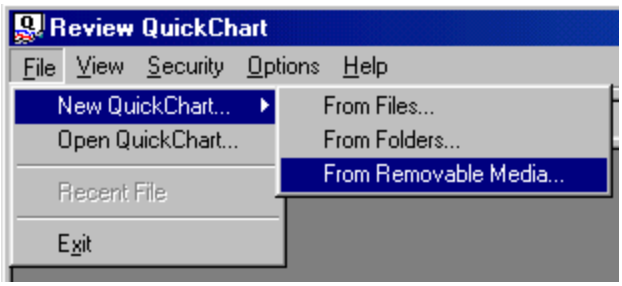
Interpolation can be turned "**On**" or "**Off**" to affect trace smoothness.

"**Keep traces clear of timestamps**" ensures the time stamp is viewable.

"**Grid Major divisions:**" can be changed. A setting of 30 would result in 50° increments on a span from 0-1500° F.

Select "**OK**" after making the desired settings.

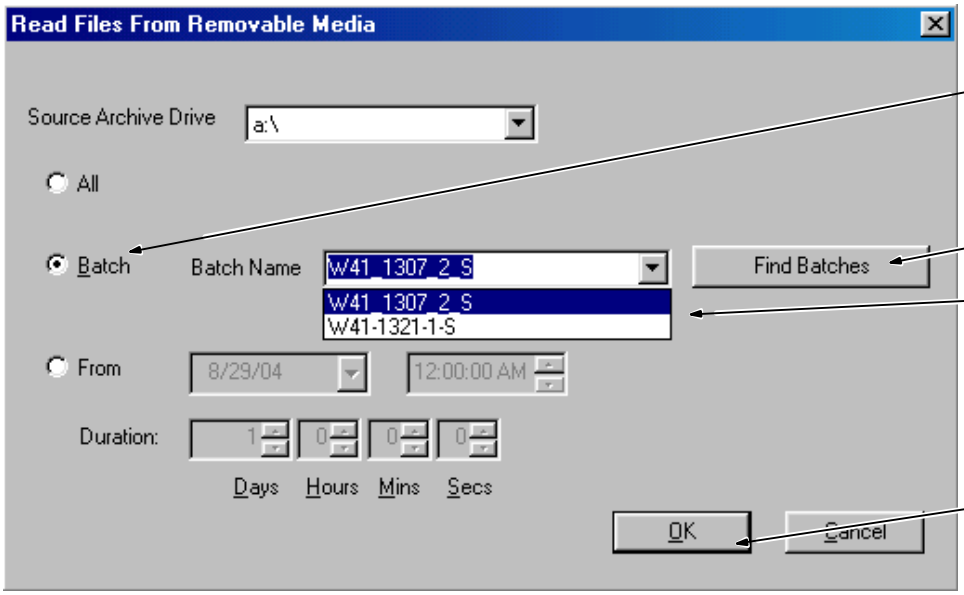
QCS08



Insert media that contains the desired file into the PC.

Select "**File**", "**New QuickChart**", and "**From Removable Media**".

QCS09



Select "**Batch**".

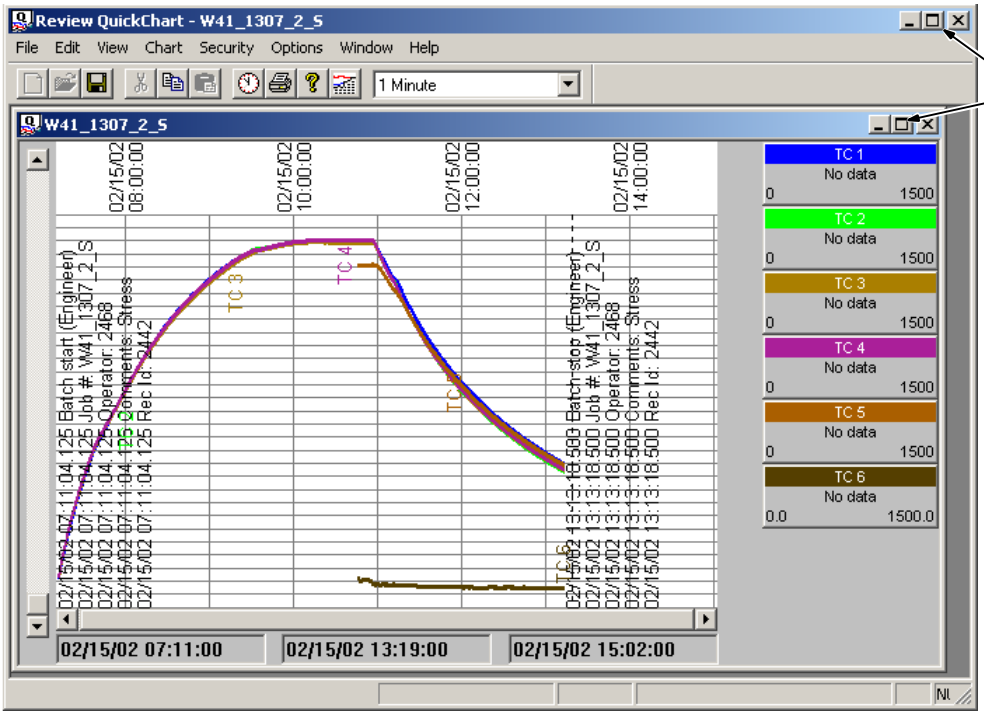
Select "**Find Batches**".

Select "**Batch Name**" from the pulldown menu.

If there was a power interruption during a batch or if it was an extremely long batch, the recorder may have created multiple files with the same name. All files will open when the batch name is selected.

Select "**OK**".

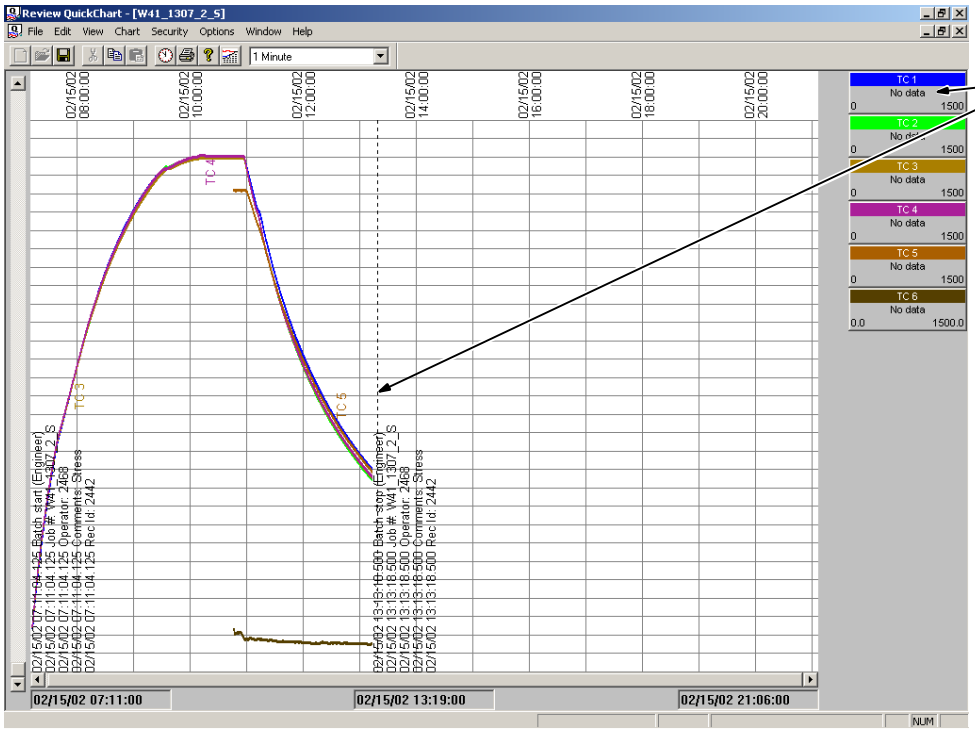
QCS10



The chart will open in a "window".

Maximize both windows for better viewing.

QCS11



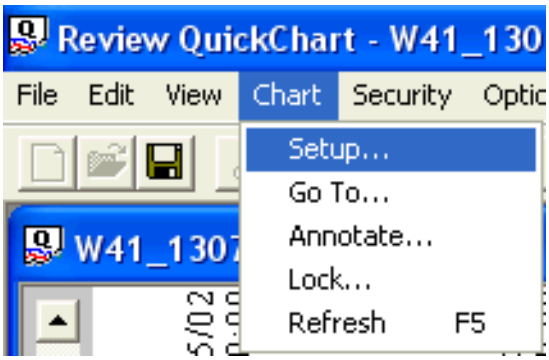
The chart will appear in full screen view.

Data tags will show "No data" due to the cursor being located right of the data trace.

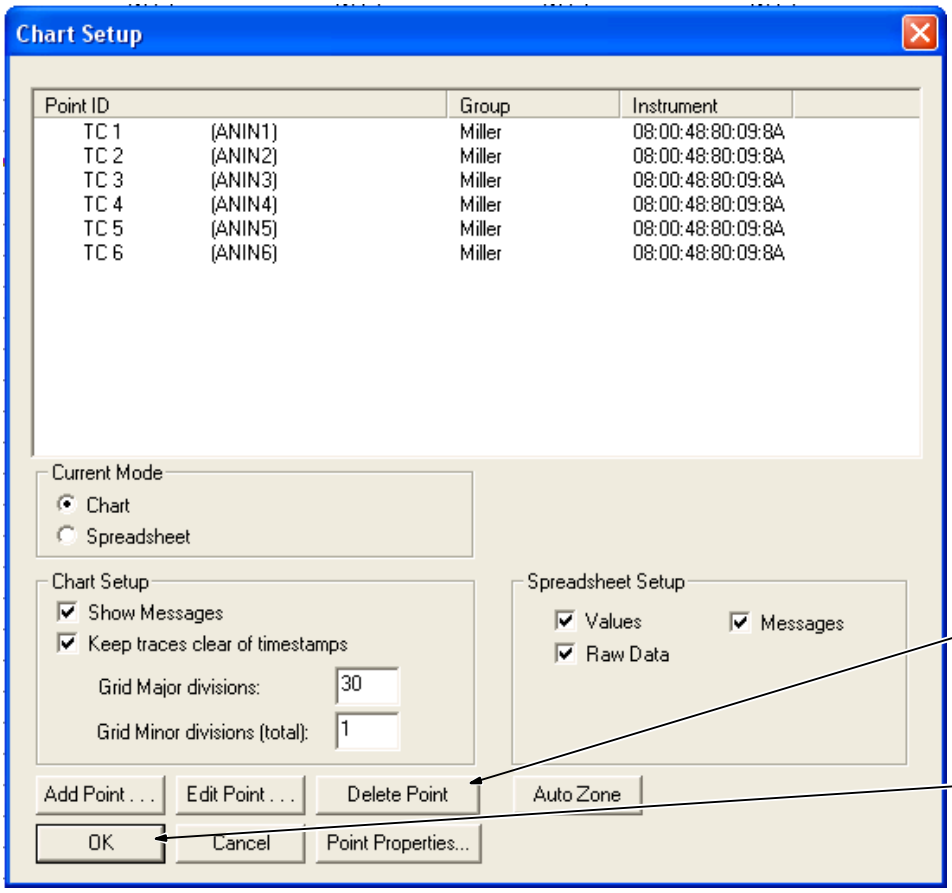
Click on a data trace to display values at that point.

QCS12

To delete a trace from the chart, select "**Chart**" and "**Setup**"..



QCS13



Select a TC # (Point ID) to delete.

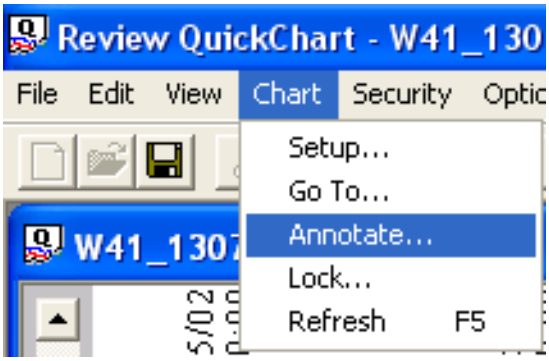
Select "**Delete Point**".

Select "**OK**".

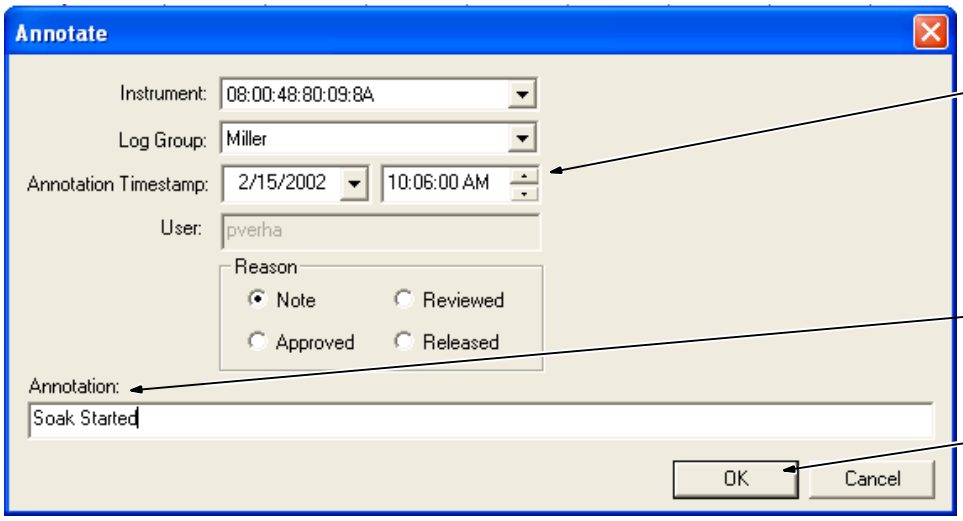
QCS14

Notes can be added to the chart.

Select "**Chart**" and "**Annotate**".



QCS15

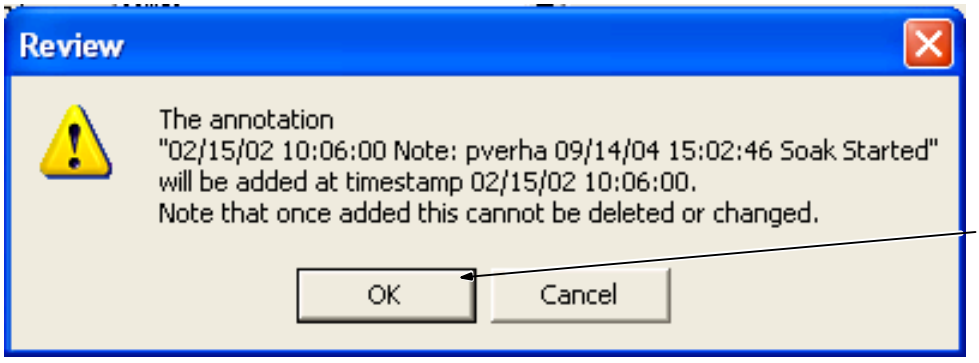


Select the time and date where the note should be placed.

Enter notes in the "**Annotation:**" field.

Select "**OK**".

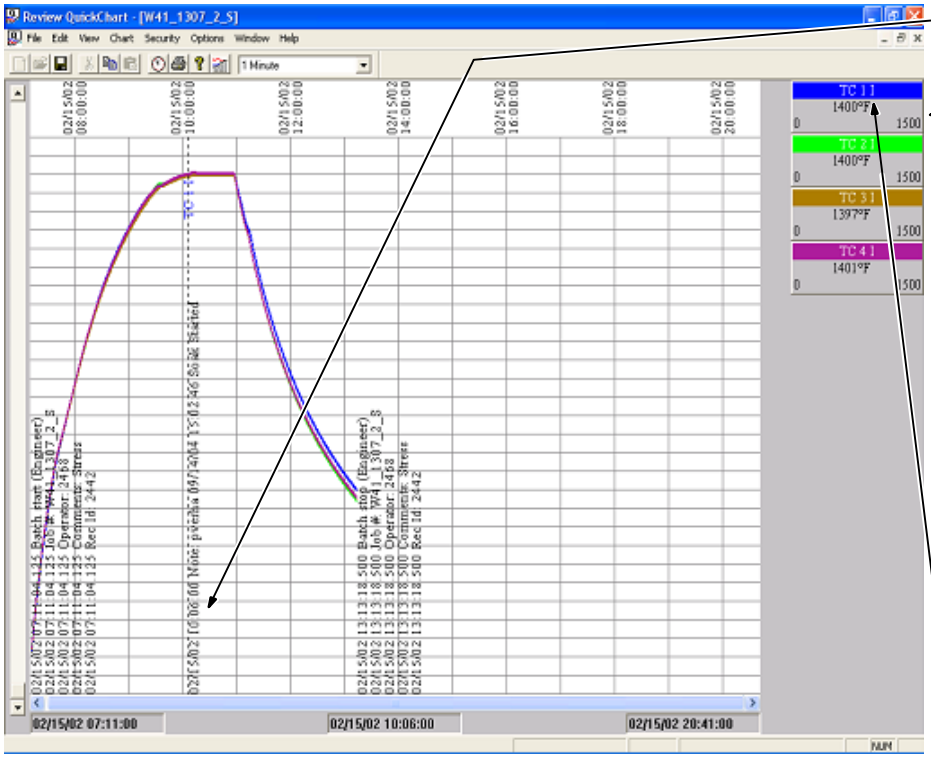
QCS16



Once a note is applied to the chart, it cannot be removed.

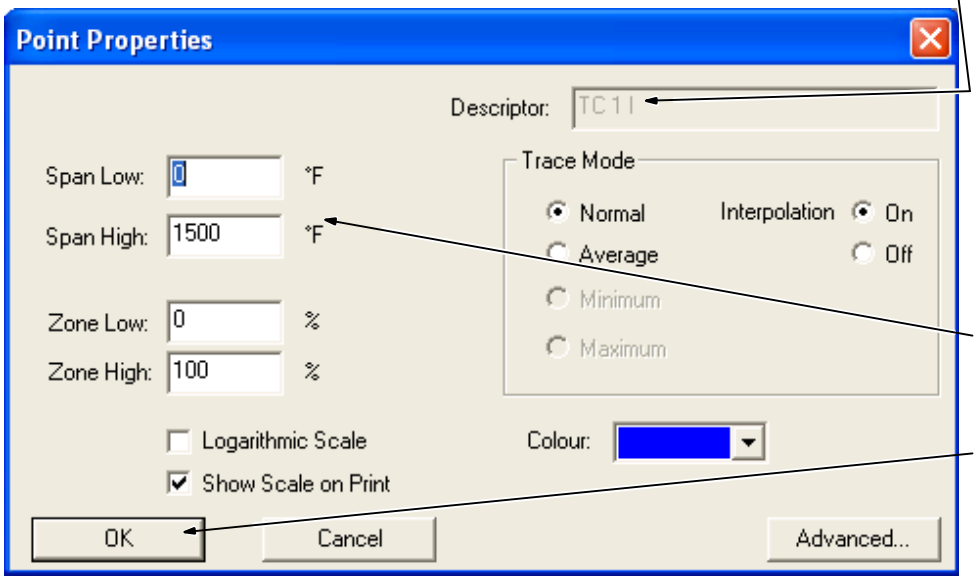
Select "**OK**" to apply the note.

QCS17



The note is displayed on the chart.

To edit trace properties, right click on the channel to edit.

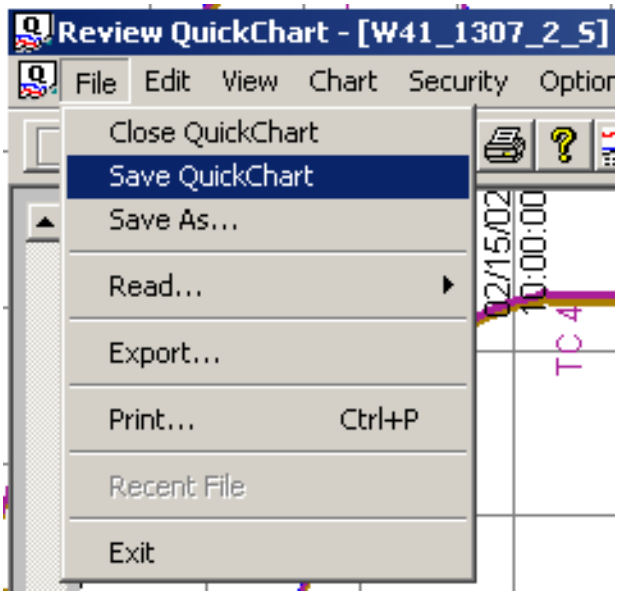


Notice when Interpolation is On, an "I" is added to the "**Descriptor:**": Interpolation On will show a smoothed line between points instead of steps.

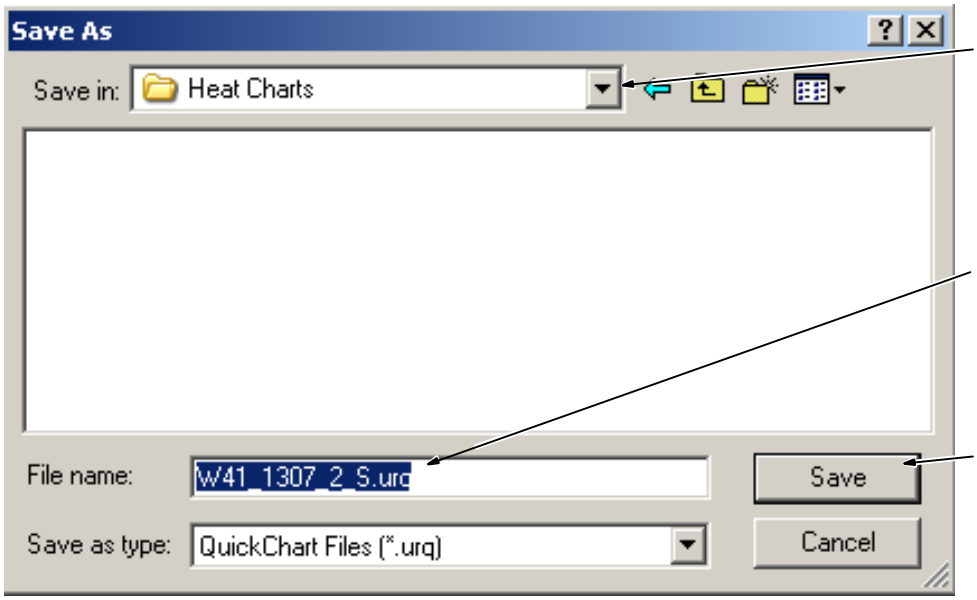
Span dictates the range of temperature to plot for the trace.

Select "**OK**" when done.

To save a chart, select "**File**" and "**Save QuickChart**".



QCS20



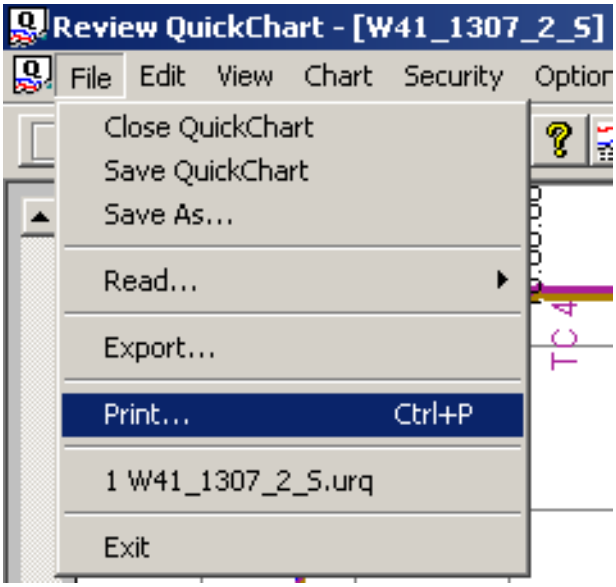
Browse to a location that is backed up by your company network system.

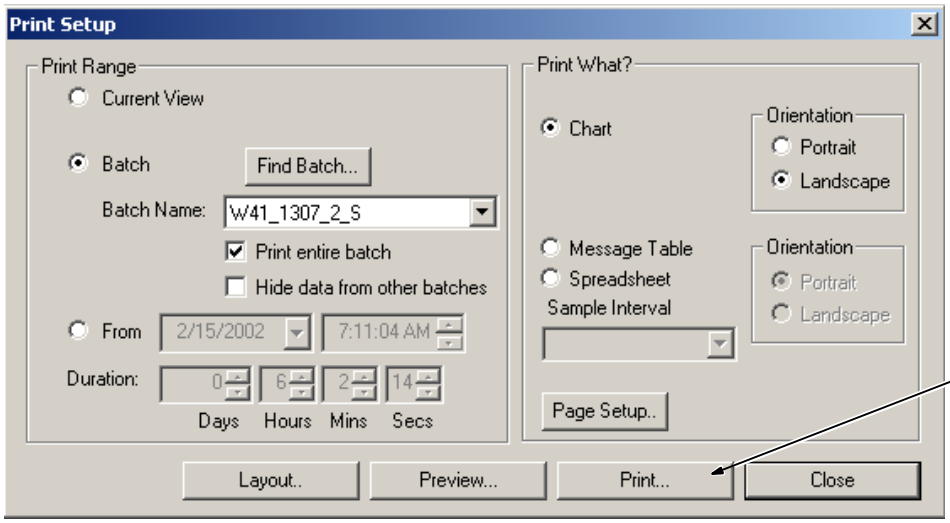
The Batch name is already entered as the "File name:" for consistency. The file extension becomes .urq and includes the data from the recorder .uhh file, the chart option settings, and any annotations that were added.

Select "**Save**" to save the file.

QCS21

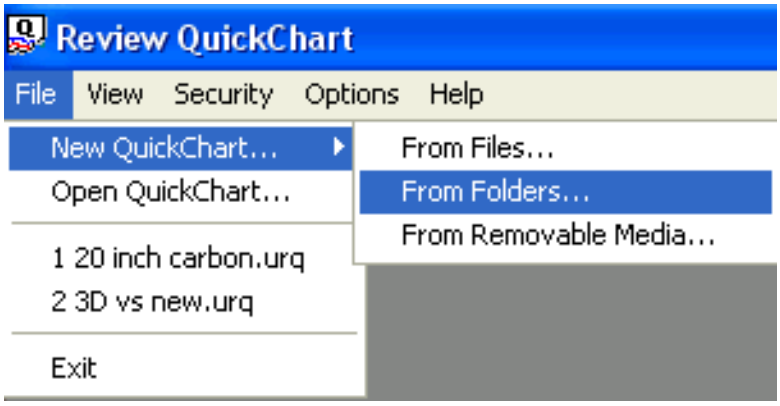
To print a chart, select “**File**” and “**Print**”.





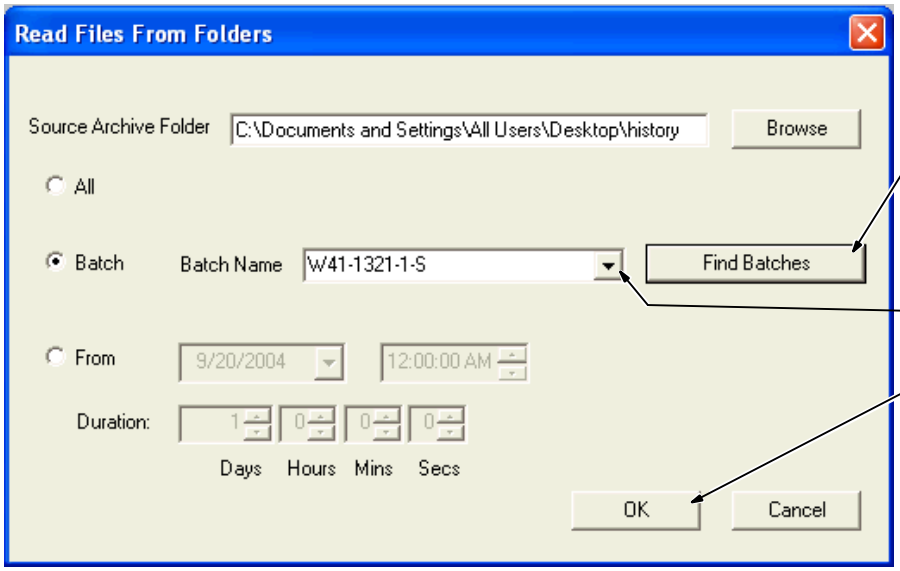
Select “**Print**” to print the chart.

If files are already on the PC, select "**File**", "**New QuickChart**", and "**From Folders**".



QCS24

Browse to the folder containing the .uhh files.



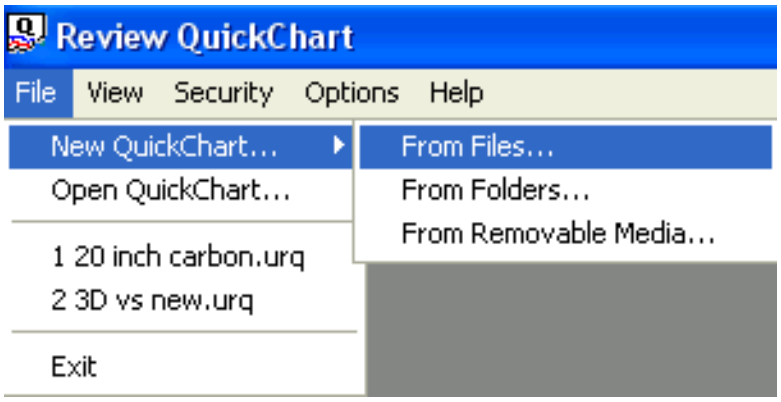
Select "**Find Batches**".

Select the "**Batch Name**" from the pull-down menu.

Select "**OK**".

The chart will open similar to the "From Removable Media" method.

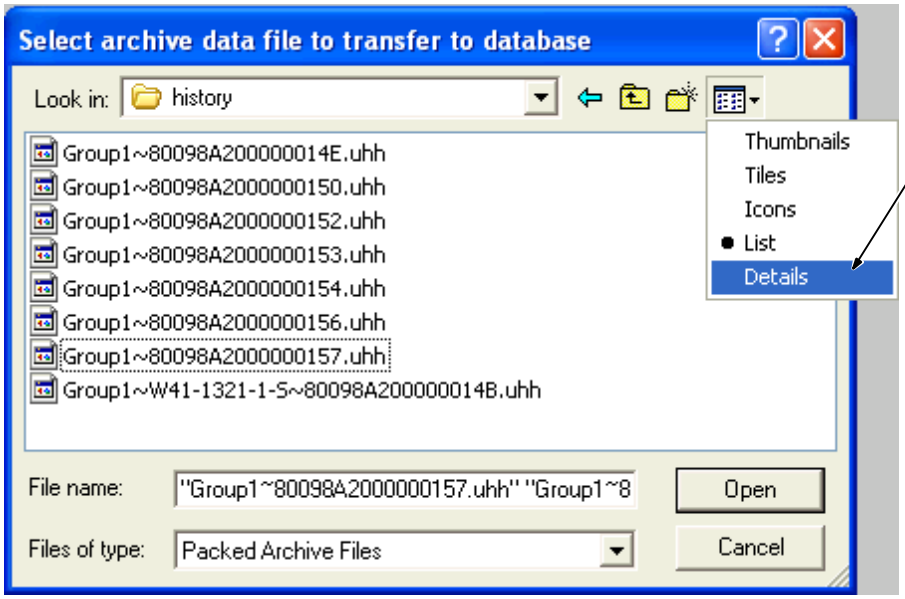
QCS25



If a batch file was not started, the recorder still records data while powered up.

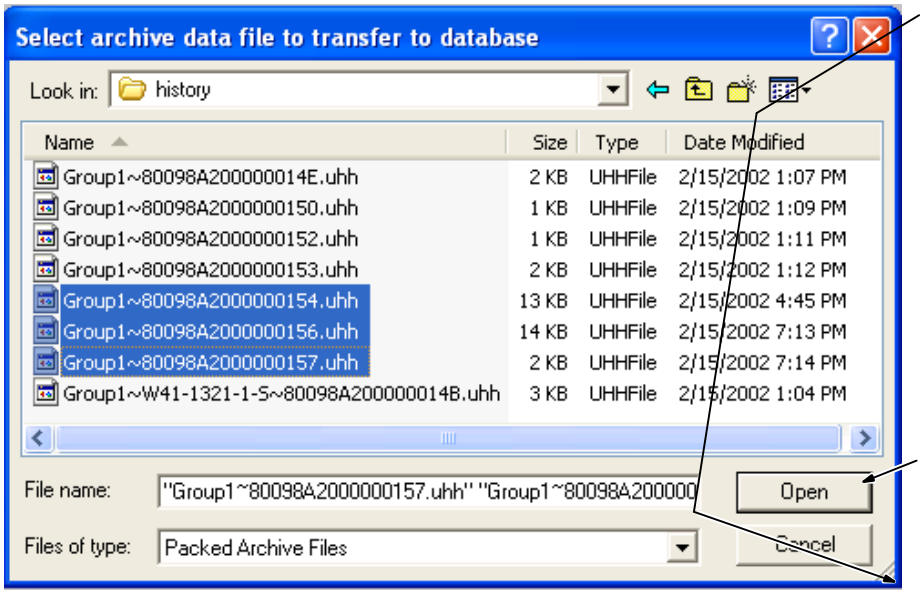
To create a chart from these files, select "**File**", "**New QuickChart**", and "**From Files**".

QCS26



Activate the "**Details**" view to show time and date file was created (in GMT).

QCS27

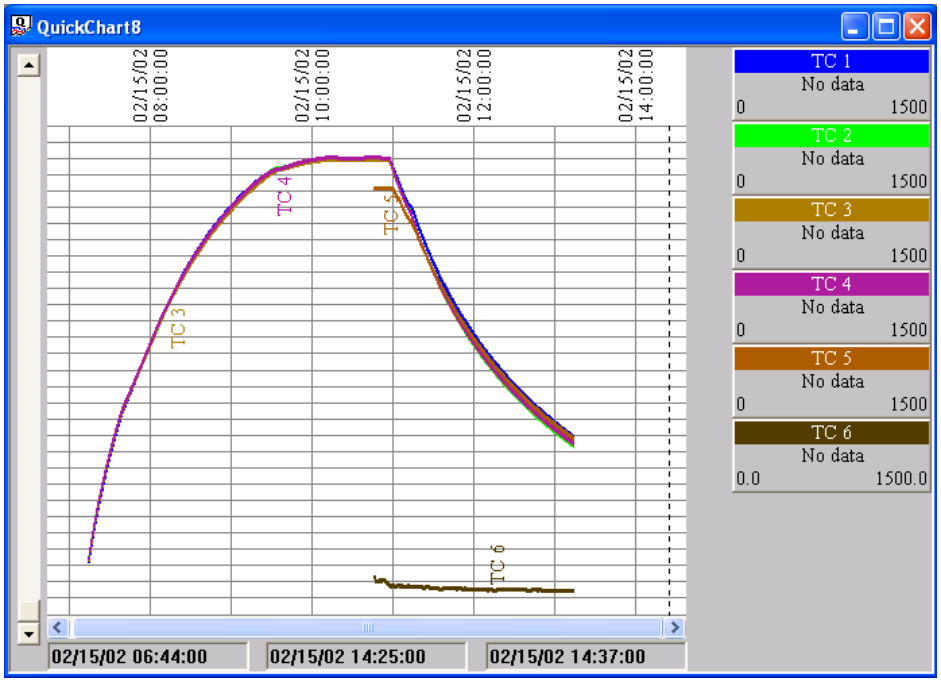


Adjust window size by placing the cursor on the bottom right-hand corner of the window. Press and hold the left mouse button while dragging the mouse to change the window size.

Select the files from which the chart will be created.

Select "**Open**".

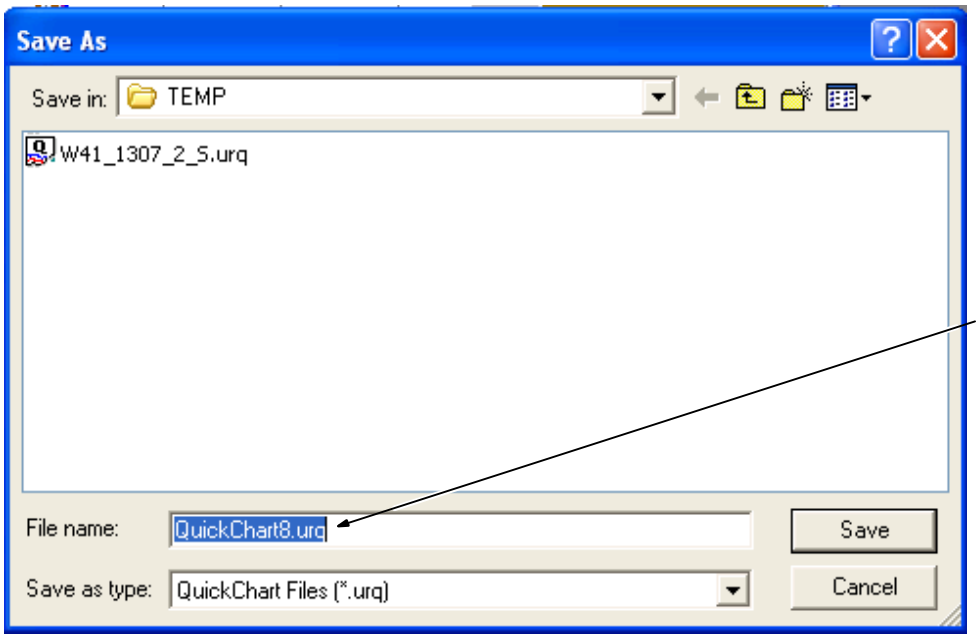
QCS28



The chart will display temperature data without Batch information.

Annotations can be added using the same procedure as stated previously.

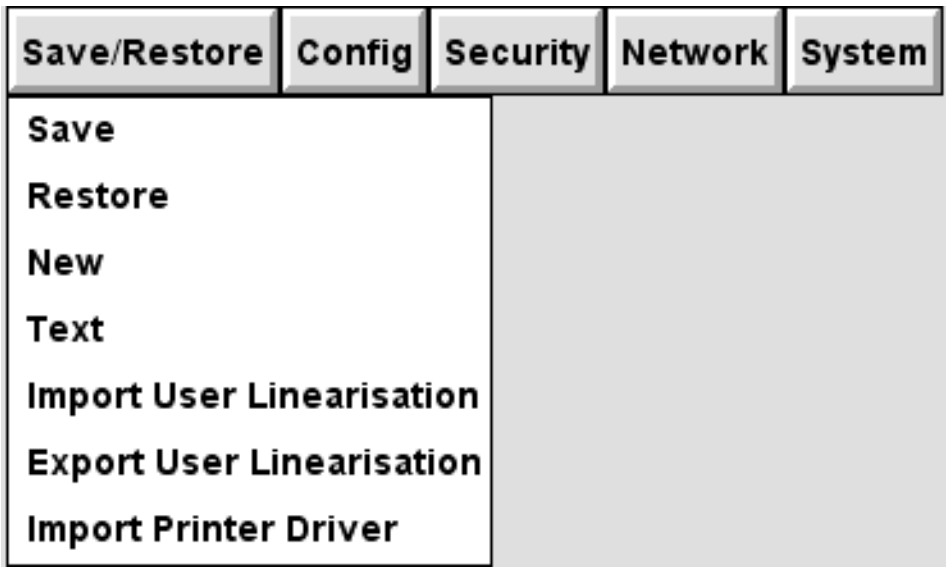
QCS29



When saving a chart from files, the Batch Name should be entered as the "**File name:**".

QCS30

6-4. Changing Recorder From Degrees F to Degrees C



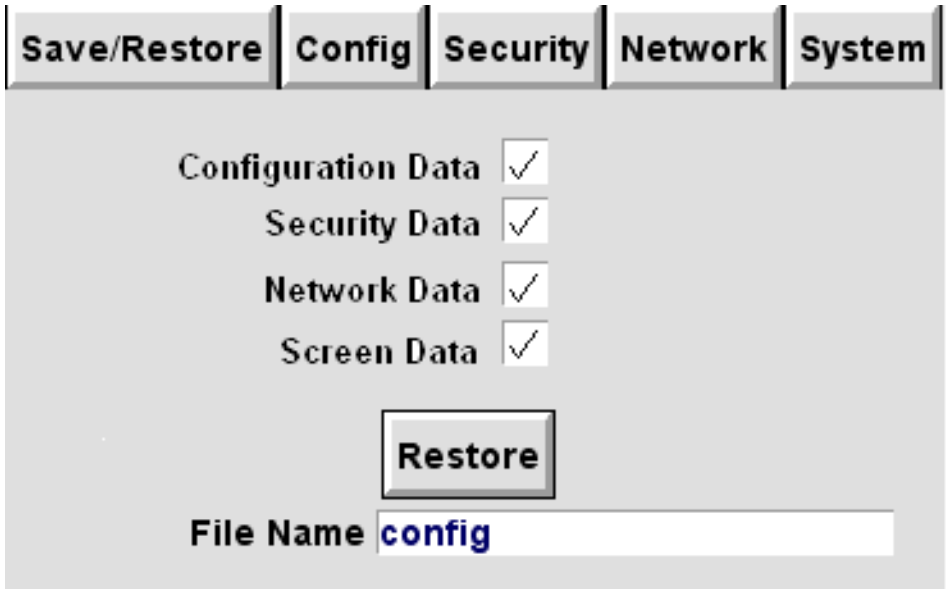
Log in as "**Engineer**" (see Section 6-2-1).

Press "**Menu**" (bottom right of display).

Press "**Operator**".

Press "**Save/Restore**".

Press "**Restore**" .



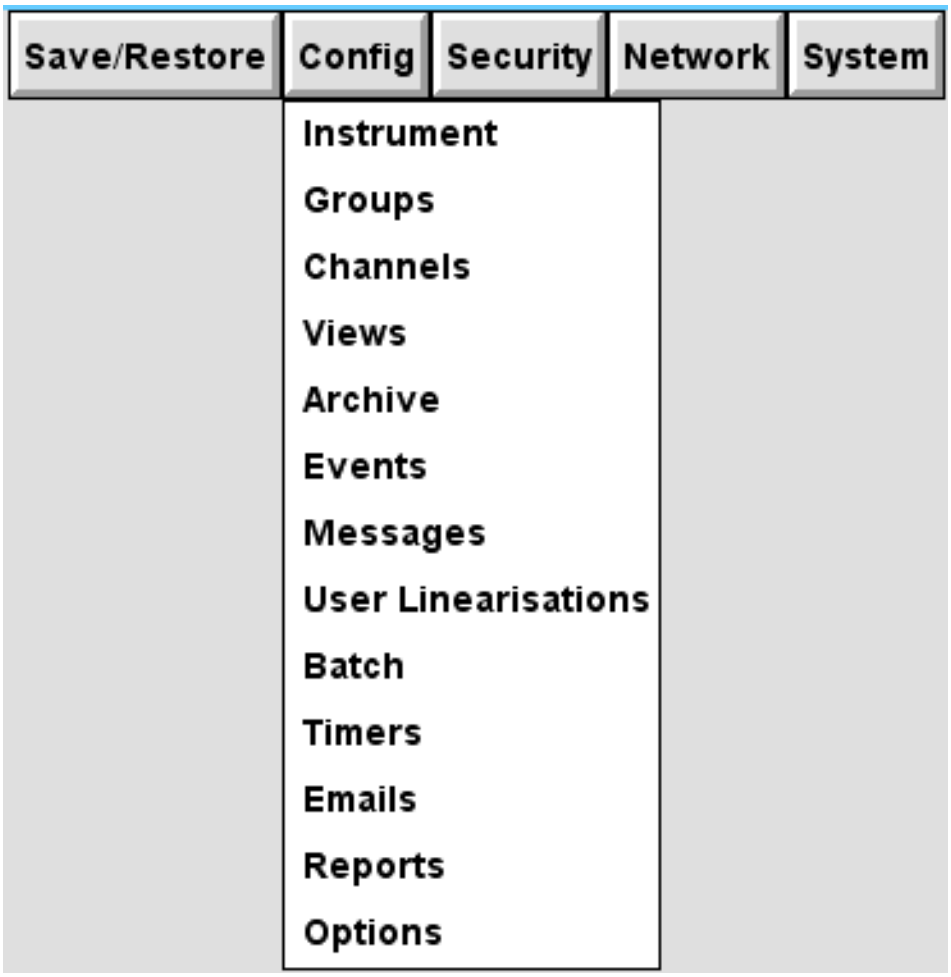
Press the field next to File Name **(config)**.

Press the desired config file (**Deg C** or **Deg F**).

Press "**Open**". The config file will load.

Press "**Menu**".

Press "**Home**".



To review channel configuration settings:

Log in as “**Engineer**” (see Section 6-2-1).

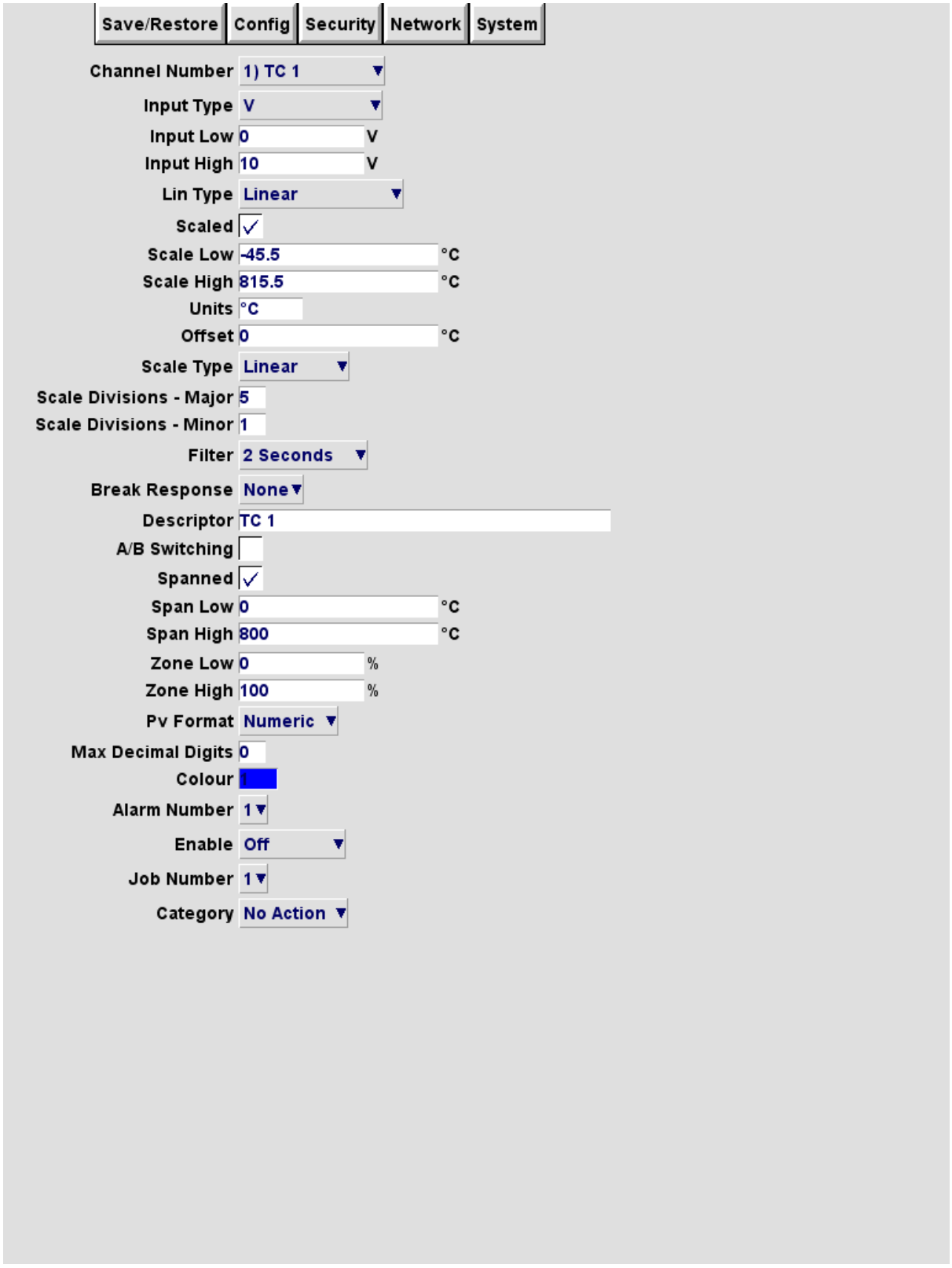
Press “**Menu**” (bottom right of display).

Press “**Operator**”.

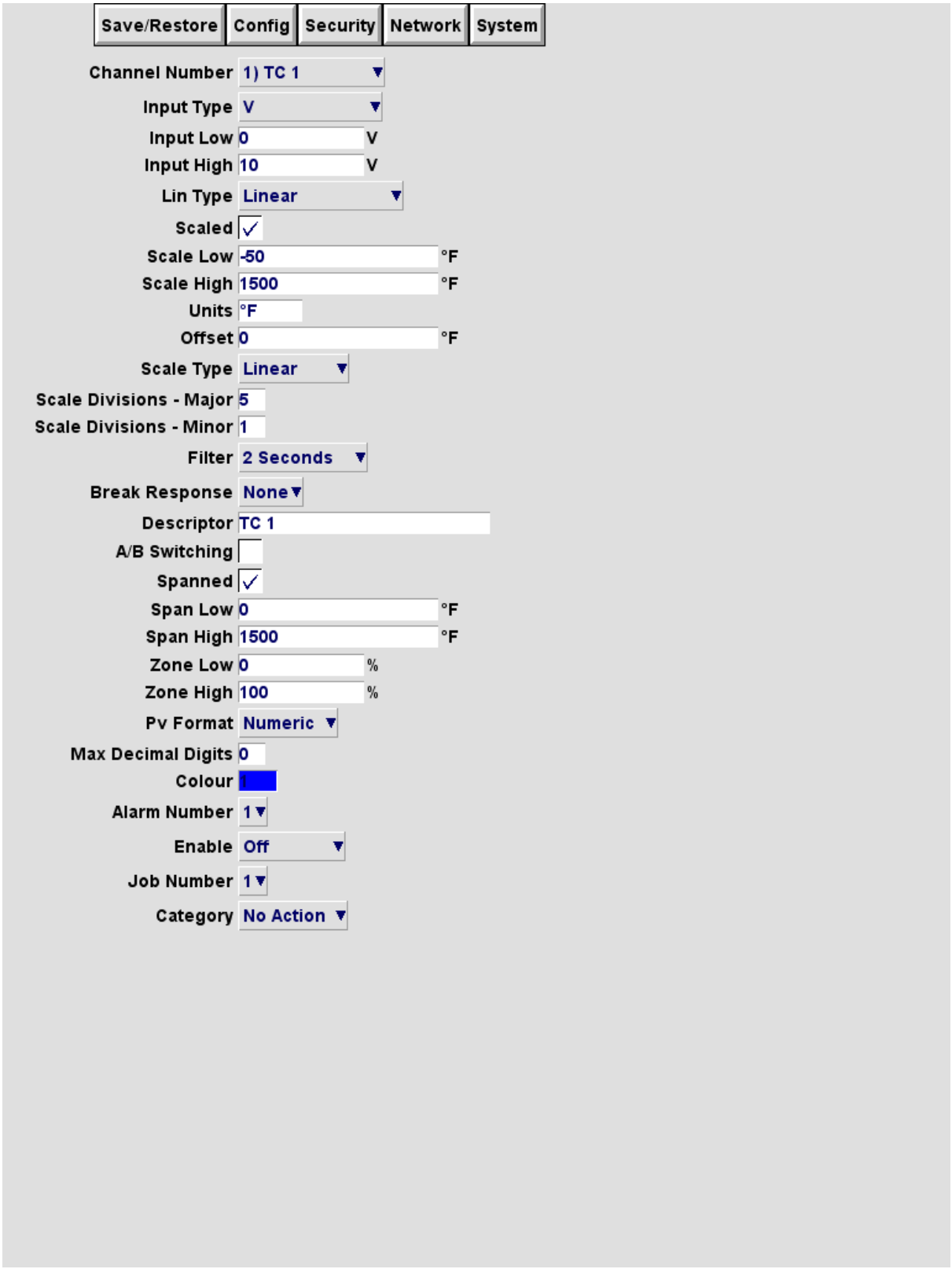
Press “**Config**“.

Press “**Channels**” on pull down menu.

Degree C Configuration



Degree F Configuration



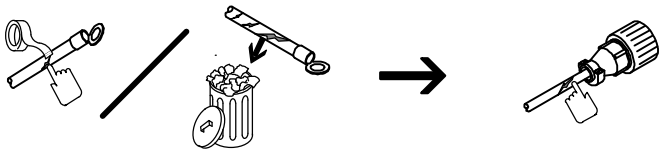
SECTION 7 − MAINTENANCE & TROUBLESHOOTING

7-1. Routine Maintenance

Disconnect input plug or power before maintaining.

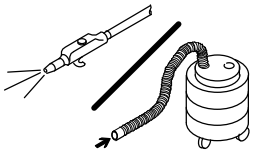
☞ *Maintain more often during severe conditions.*

3 Months



Repair Or Replace Cracked Cables And Cords

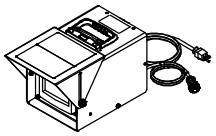
6 Months



Blow Out Or Vacuum Inside Of Wind Tunnel

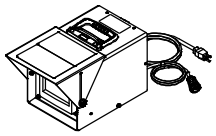
Replace Unreadable Labels

12 Months



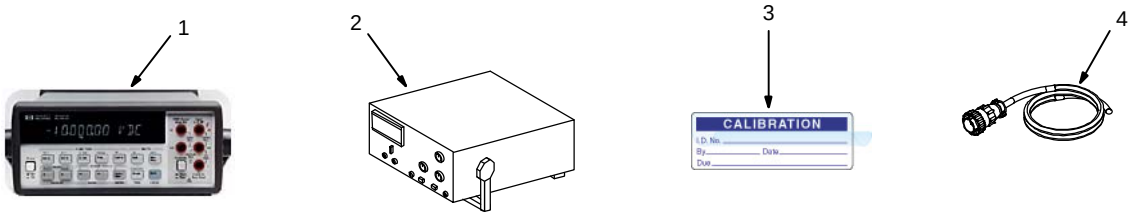
Verify Unit Calibration

3 Years



Replace Battery Every 3 Years OR When Battery Indicator Is Displayed

7-2. Calibration Verification Equipment



1. Precision Digital Voltmeter (DVM)

Suggested meters are Agilent Multimeter or Hewlett Packard Multimeter Model 34401A or equivalent. DVM must be able to read to three decimal places (0.000).

2. Adjustable DC Power Supply

Power supply must be able to produce 2.787 volts DC, 6.012 volts DC, and 9.239 volts DC ±1 volt.

3. Calibration Label

Suggested label from Q−CEES item QCC306BU or equivalent.

4. Interconnecting Cable

MILLER Part No. 300168 can be used to connect the Recorder to the DC power supply.

7-3. Calibration Verification Procedure

Calibration verification should be done every year. Use appropriate Certificate of Calibration to record calibration information. A spreadsheet could also be used to record the information.

7-3-1. Initial Set Up

Connect power to recorder and DC power supply.

Connect DVM in parallel with DC output.

7-3-2. Getting Information From Recorder

1. Touch top left key in corner (Logged Out or Operator).
2. Touch Logged Out next to User or User I.D
3. Select Engineer from the drop down menu.
4. Touch box next to Password
5. Touch Numeric tab
6. Touch 1 then 0.
7. Touch Ok.
8. Touch key in bottom right corner (to access Root Menu).
9. Touch Operator.
10. Touch Network.
11. Touch Address from the drop down menu.
12. Enter the Instrument number in the Certificate.
13. Enter the MAC address in the Certificate.

7-3-3. Set Up Recorder For Verification

1. Touch key in bottom right corner (to access Root Menu).
2. Touch home (to display trend graph).
3. Touch bottom left key in corner (to display channels TC1−TC6).

7-3-4. Calibration Verification

1. Connect voltage source to the RC9 14−pin connector on the rear of the Recorder. Red lead to pin 1 and black to pin 5.
2. Set voltage source as close as possible to 2.787 Volts DC (must be set to read to 3 decimal positions) using your Precision DVM in parallel to measure output.

The voltage to temperature calculation is:
(DC Volts In x 155) − 50 = °F
(DC Volts In x 86.1) − 45.4 = °C

3. Enter the achieved voltage below “Voltage In DC” in the Certificate.
4. Verify a TC1 display value of 382.0 (±5) °F or 194.5 (±3) °C.
5. Repeat steps 1.−4. for TC2 – TC6 input jacks. The associated temperature will appear.
    1. For TC2 move red voltage source lead to RC9 pin 2.
    2. For TC3 move red voltage source lead to RC9 pin 3.
    3. For TC4 move red voltage source lead to RC9 pin 4.
    4. For TC5 move red voltage source lead to RC9 pin 6.
    5. For TC6 move red voltage source lead to RC9 pin 7.
6. Enter Recorder values into Certificate.
7. Repeat steps 1.−6. with voltage source set as close as possible to 6.013 Volts DC. Verify a display value of 882.0 (±5) °F or 472.2 (±3) °C.
8. Repeat steps 1.−6. with voltage source set as close as possible to 9.239 Volts DC. Verify a display value of 1382.0 (±5) °F or 750.0 (±3) °C

7-3-5. Finishing Procedure

1. Disconnect power for recorder.
2. Remove calibrated voltage source.
3. Complete calibration label & place it on unit directly above TC1 display.
   I.D. No. (recorder serial number)
   By (your initials) Date (today’s date)
   Due (date 1 year from today)
4. Print a copy of the certificate to send with the Recorder.
5. If entering data in a spreadsheet, save data.

Company Name
Street
PO Box
City, State, Zip Code

CERTIFICATE OF CALIBRATION

Unit Model Number: 195374
Unit Serial Number:
Calibration Date:
Re-Calibration Date:

Certified By:
Instrument Number:
MAC Address: 08:00:80:72:

Company name: does hereby certify the above instrument was calibrated against standards maintained by Company name: and meets or exceeds all published specifications. The accuracy of these standards is directly traceable to the National Institute of Standards and Technology.

	PRIMARY STANDARD		PRIMARY STANDARD		PRIMARY STANDARD	
	Voltage In (DC)	Equivalent Temp (°F)	Voltage In (DC)	Equivalent Temp (°F)	Voltage In (DC)	Equivalent Temp (°F)
CHANNEL 1						
CHANNEL 2						
CHANNEL 3						
CHANNEL 4						
CHANNEL 5						
CHANNEL 6						

Instrumentation Used:

Calibrated Multimeter: Model Name and Number

Serial Number:

A-232171-B 09/09/08

Company Name
Street
PO Box
City, State, Zip Code

CERTIFICATE OF CALIBRATION

Unit Model Number: 195374
Unit Serial Number:
Calibration Date:
Re-Calibration Date:

Certified By:
Instrument Number:
MAC Address: 08:00:80:72:

Company name: does hereby certify the above instrument was calibrated against standards maintained by Company name: and meets or exceeds all published specifications. The accuracy of these standards is directly traceable to the National Institute of Standards and Technology.

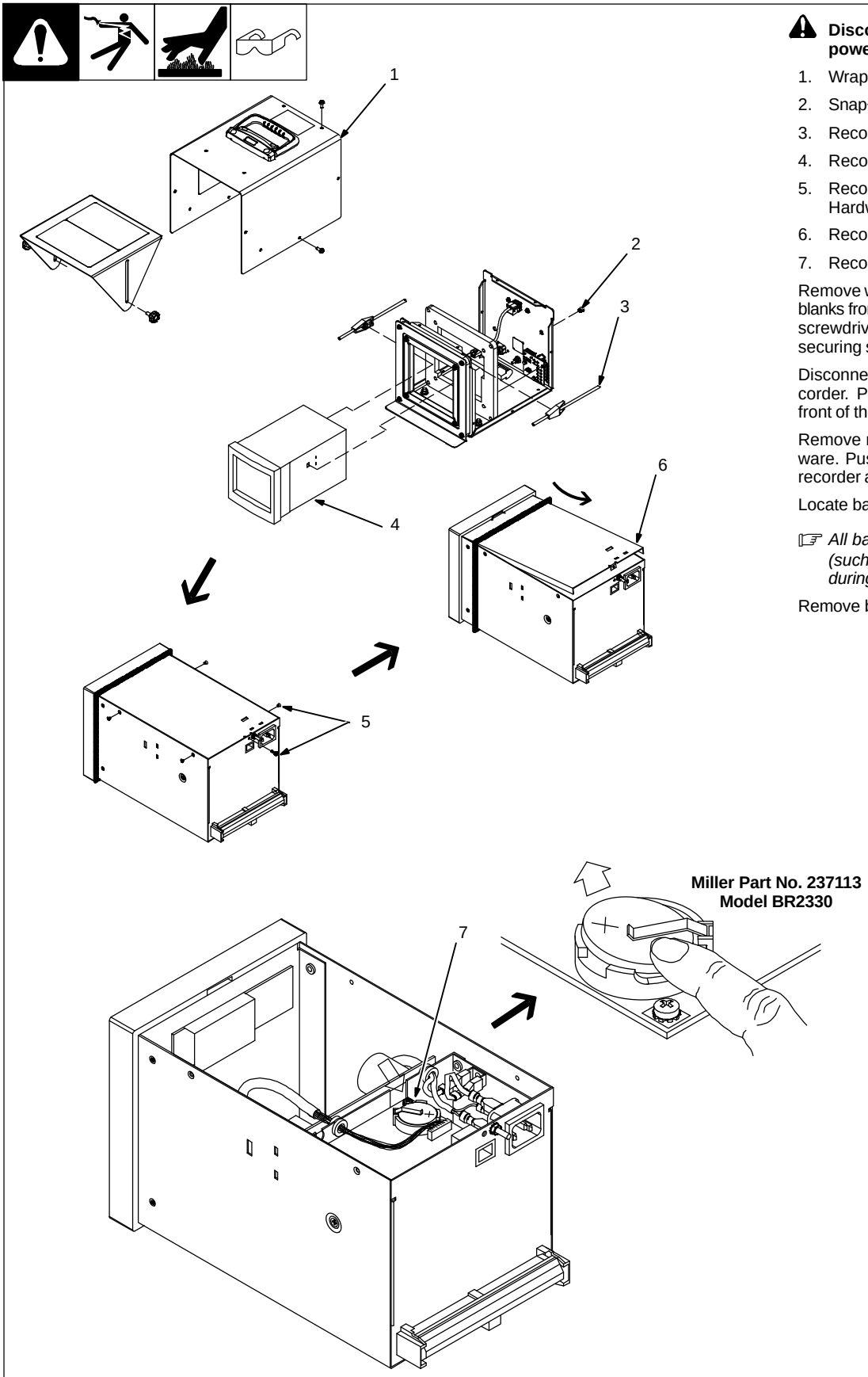
	PRIMARY STANDARD		PRIMARY STANDARD		PRIMARY STANDARD	
	Voltage In (DC)	Equivalent Temp (°C)	Voltage In (DC)	Equivalent Temp (°C)	Voltage In (DC)	Equivalent Temp (°C)
CHANNEL 1						
CHANNEL 2						
CHANNEL 3						
CHANNEL 4						
CHANNEL 5						
CHANNEL 6						

Instrumentation Used:

Calibrated Multimeter: Model Name and Number

Serial Number:

7-4. Replacing Recorder Battery



Disconnect input plug or power.

1. Wrapper
2. Snap−In Blank
3. Recorder Securing Screws
4. Recorder
5. Recorder Top Cover Hardware
6. Recorder Top Cover
7. Recorder Battery

Remove wrapper. Remove snap−in blanks from rear panel and use long screwdriver to remove recorder securing screws.

Disconnect all connections to recorder. Push recorder out of the front of the unit.

Remove recorder top cover hardware. Push cover towards rear of recorder and lift off.

Locate battery on circuit board.

☞ *All battery backed RAM data (such as date and time) is lost during battery change.*

Remove battery and replace.

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7-5. Troubleshooting

Trouble	Remedy
Recorder does not power up.	Check 115 volts ac at receptacle where recorder is plugged in.
	Be sure that recorder is not plugged into a switched receptacle.
	Check power source primary power for 3-phase, 400 or 460-575 volts ac (depending on model).
	Replace building line fuse or reset circuit breaker.
Recorder is plugged into 115 volts ac, but does not power up.	See Section 7-6-1.
Recorder displays Channel Error.	See Section 7-6-2.
Temperature readings go down instead of up.	Check for reversed red (−) and yellow (+) leads in 2-pin thermocouple, and correct if necessary.
Temperature readings do not rise.	Check for a short between thermocouple wires.
Recorder screen blinks when touched, but does not advance to next screen.	Screen calibration needs adjusting. Turn off recorder power switch. Turn on recorder power switch while touching screen, and continue to touch screen (about 45 seconds) until configuration display appears on the screen. Press “Touch Cal” or wait a few minutes for the Touch Cal display to appear on the screen. Use a pointed object (be careful not to damage screen), and touch each set of cross hairs to calibrate screen. When calibration is complete, turn recorder power off and back on again.
Recorder does not recognize storage media	USB flash drives use software drivers to communicate between memory devices and the recorder. The drivers of some newer memory devices are not supported by Eurotherm. Try a different series memory device or contact www.Eurotherm. com for a flash drive to work with your recorder.

7-6. Diagnostic Procedures For Recorder

7-6-1. Recorder Does Not Turn On

Place power source power switch in the Off position. Open memory device access door. Place power source power switch in the On position.

Check for memory device light illumination: If light does illuminate, replace the recorder. If drive light does not illuminate, proceed as follows:

Remove recorder wrapper.

Check for 115 volts ac at plug on rear of recorder and reseat plug.

If 115 volts ac is not present, replace power cord.

If 115 volts ac is present at plug on rear of recorder, check that green LED is illuminated by viewing through louvers on side of recorder.

A green LED should be visible through the louvers on the side of the recorder.

If green LED is not illuminated, replace recorder.

7-6-2. Recorder Displays Channel Error

Recorder will not operate below 32° F, allow 15-30 minutes for warm up or move recorder to a warmer location.

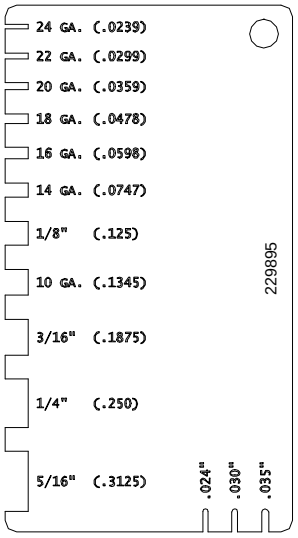
Remove recorder wrapper. Remove red cover on rear of recorder.

Check that terminal strip is secure on rear of recorder.

Ribbon cable may be disconnected inside of recorder after prior maintenance, reconnect ribbon cable.

If above procedures do not clear the error message, replace recorder.

Notes



MATERIAL THICKNESS GAUGE

SECTION 8 − ELECTRICAL DIAGRAMS

⚠ WARNING	• Do not touch live electrical parts. • Disconnect input power or stop engine before servicing. • Do not operate with covers removed. • Have only qualified persons install, use, or service this unit.
ELECTRIC SHOCK HAZARD	

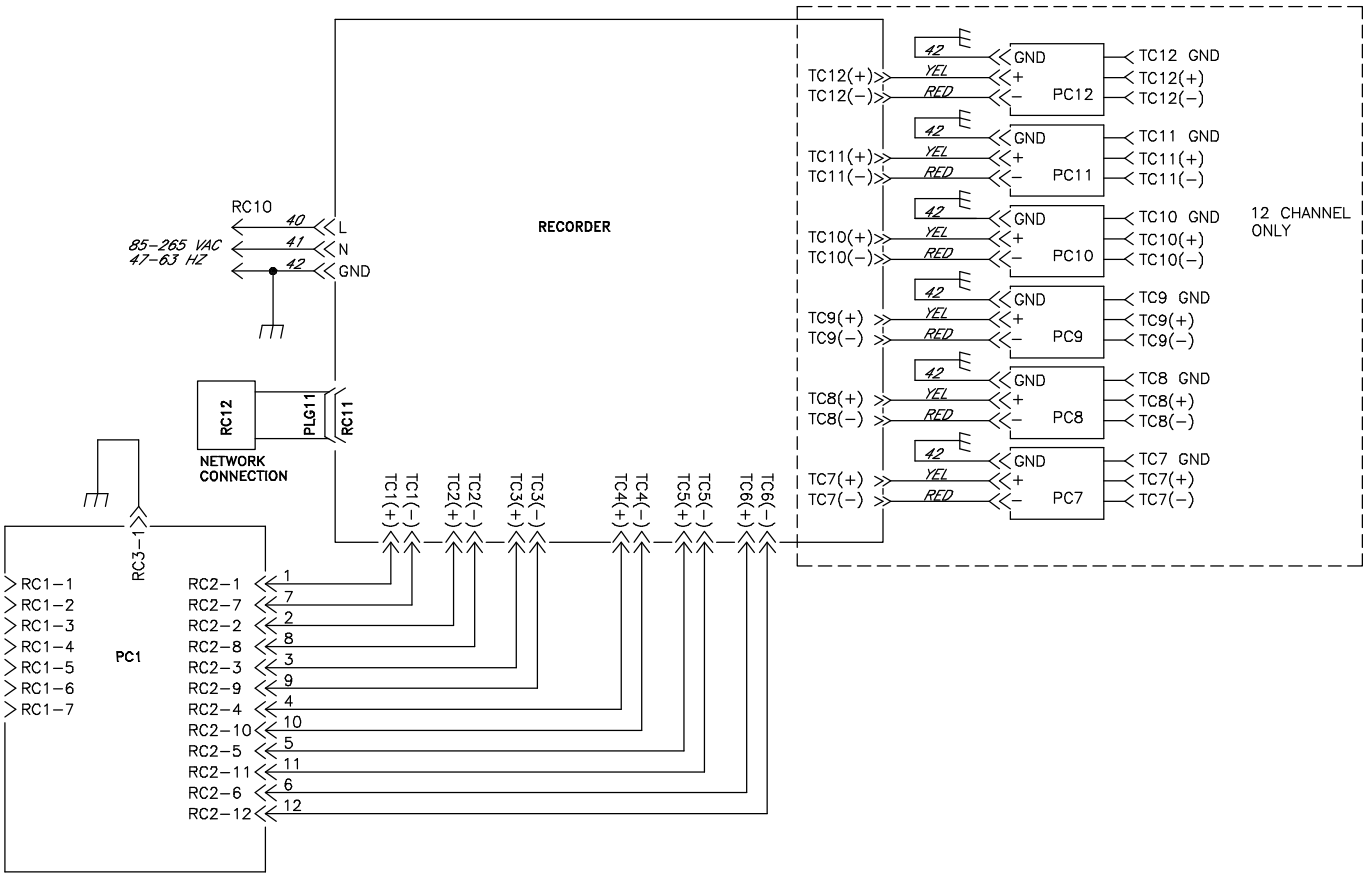


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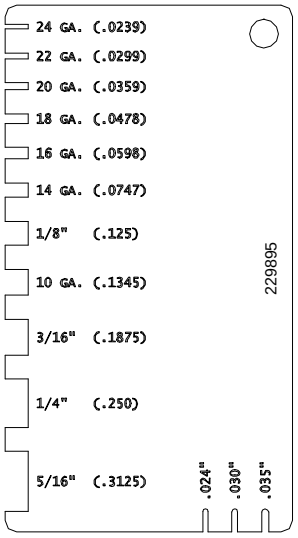
Figure 8-1. Circuit Diagram For Digital Recorder

Notes



MATERIAL THICKNESS GAUGE

☞ *Hardware is common and not available unless listed.*

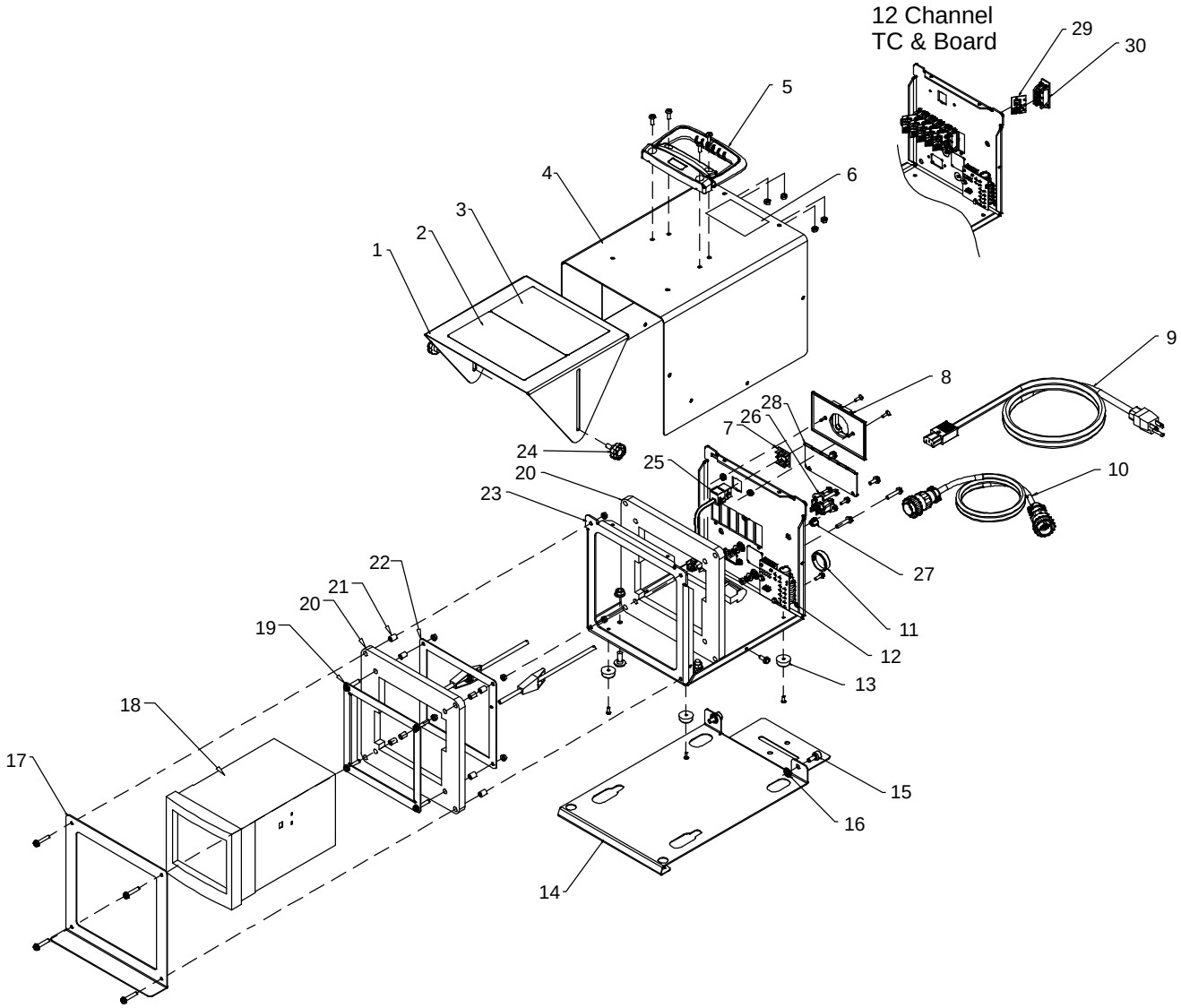


Figure 9-1. Complete Assembly

Item No.	Dia. Mkgs.	Part No.	Description	Quantity Model 6 Ch	Quantity Model 12 Ch
Figure 9-1. Complete Assembly.					
1		+220790	Cover, Front	1	1
2		190025	Label, General Precautionary,	1	1
3		147876	Label, Warning General Precautionary	1	1
4		+220786	Wrapper,	1	1
5		208015	Handle, Rubberized Carrying	1	1
6		227665	Label, Warning Falling Equipment Can Cause Serious	1	1
7		209948	Brkt, Mtg Receptacle Rj45	1	1
8		220794	Cover, Receptacle Weatherproof Single Rcpt	1	1
9		220795	Cable, Power 2.0m 18ga 3c	1	1
10		220972	Cable, Interconnecting	1	1
11		224042	Conn, Circ Cpc Protective Cap Size 17 Plastic	1	1
12	PC1	232099	Circuit Card Assy, Filter Recorder	1	1
13		019663	Mount, Nprn 15/16odx3/8 Rec 3/16x3/8	4	4
14		226610	Bracket, Mtg Recorder W Hardware (Including)	1	1
15		225068	Screw, 250−20x .23 Thumb Knurled Stl Pld Captive	2	2
16		173997	Retainer, Screw No 12 Nylon	2	2
17		220789	Panel, Front	1	1
18		230274	Recorder, Temperature/Digital 6 channel	1	
18		246745	Recorder, Temperature/Digital 12 channel		1
19		220787	Plate, Mtg	1	1
20		220788	Mount, Nprn 100mm Recorder 45 Durometer	2	2
21		143797	Spacer, Nylon .312 Od X .194 Id X .437 Lg	8	8
22		227591	Plate, Mtg Recorder Back	1	1
23		220785	Case Section Layout, Front/Bottom/Rear	1	1
24		220791	Knob, Clamping	2	2
25		214532	Cable Assy, Interconnecting Rj45	1	1
26		227112	Receptacle, 115v,Iec 320−c14	1	1
27		057359	Blank, Snap−in Nyl .375 Mtg Hole Black	2	2
		047636	Housing Plug + Pins, (Service Kit)	2	2
28		245229	Cover, TC Receptacle Blank	1	
29	PC7-12	245210	Circuit Card Assy, Recorder TC Filter Control	6	
30		198893	Receptacle, Thermocouple Type K Panel Mount	6	

+When ordering a component originally displaying a precautionary label, the label should also be ordered.

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

SOCKET/WRENCH SELECTION TABLE (U.S. STANDARD)

Specifications		Socket or Wrench Size	
Bolt Diameter	Decimal Equivalent	Bolt	Nut
1/4 in	.250 in	3/8 in	7/16 in
5/16 in	.3125 in	1/2 in	9/16 in
3/8 in	.375 in	9/16 in	5/8 in
7/16 in	.4375 in	5/8 in	3/4 in
1/2 in	.500 in	3/4 in	13/16 in
9/16 in	.5625 in	7/8 in	7/8 in
5/8 in	.625 in	15/16 in	1 in
3/4 in	.750 in	1-1/8 in	1-1/8 in
7/8 in	.875 in	1-5/16 in	1-5/16 in
1 in	1.000 in	1-1/2 in	1-1/2 in

SOCKET/WRENCH SELECTION TABLE (METRIC)

Specifications		Socket or Wrench Size	
Bolt Diameter	U.S. Decimal Equivalent	Bolt	Nut
6 mm	.2362 in	10 mm	10 mm
8 mm	.3150 in	14 mm	14 mm
10 mm	.3937 in	17 mm	17 mm
12 mm	.4724 in	19 mm	19 mm
14 mm	.5512 in	22 mm	22 mm
16 mm	.6299 in	24 mm	24 mm
18 mm	.7087 in	27 mm	27 mm
22 mm	.8661 in	32 mm	32 mm
24 mm	.9449 in	36 mm	36 mm

Notes

Warranty

Effective January 1, 2015
(Equipment with a serial number preface of MF or newer)

This limited warranty supersedes all previous Miller warranties and is exclusive with no other guarantees or warranties expressed or implied.

LIMITED WARRANTY − Subject to the terms and conditions below, warrants to its original retail purchaser that new equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped from factory. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

Within the warranty periods listed below, manufacturer will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Manufacturer must be notified in writing within thirty (30) days of such defect or failure, at which time manufacturer will provide instructions on the warranty claim procedures to be followed. If notification is submitted as an online warranty claim, the claim must include a detailed description of the fault and the troubleshooting steps taken to identify failed components and the cause of their failure.

Manufacturer shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the delivery date of the equipment to the original end-user purchaser, and not to exceed twelve months after the equipment is shipped to the distributor.

1. 5 Years Parts — 3 Years Labor
   * Original Main Power Rectifiers Only to Include SCRs, Diodes, and Discrete Rectifier Modules
2. 3 Years — Parts and Labor
   * Auto-Darkening Helmet Lenses (Except Classic Series) (No Labor)
   * Engine Driven Welder/Generators **(NOTE: Engines are Warranted Separately by the Engine Manufacturer.)**
   * Inverter Power Sources (Unless Otherwise Stated)
   * Plasma Arc Cutting Power Sources
   * Process Controllers
   * Semi-Automatic and Automatic Wire Feeders
   * Transformer/Rectifier Power Sources
3. 2 Years — Parts and Labor
   * Auto-Darkening Helmet Lenses − Classic Series Only (No Labor)
   * Fume Extractors − Capture 5, Filtair 400 and Industrial Collector Series
4. 1 Year — Parts and Labor Unless Specified
   * Automatic Motion Devices
   * CoolBelt and CoolBand Blower Unit (No Labor)
   * Desiccant Air Dryer System
   * External Monitoring Equipment and Sensors
   * Field Options **(NOTE: Field options are covered for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)**
   * RFCS Foot Controls (Except RFCS-RJ45)
   * Fume Extractors − Filtair 130, MWX and SWX Series
   * HF Units
   * ICE/XT Plasma Cutting Torches (No Labor)
   * Induction Heating Power Sources, Coolers **(NOTE: Digital Recorders are Warranted Separately by the Manufacturer.)**
   * LiveArc Welding Performance Management System
   * Load Banks
   * Motor-Driven Guns (except Spoolmate Spoolguns)
   * PAPR Blower Unit (No Labor)
   * Positioners and Controllers
   * Racks
   * Running Gear/Trailers
   * Spot Welders
   * Subarc Wire Drive Assemblies
   * Water Coolant Systems
   * TIG Torches (No Labor)
   * Wireless Remote Foot/Hand Controls and Receivers
   * Work Stations/Weld Tables (No Labor)
5. 6 Months — Parts
   * Batteries
   * Bernard Guns (No Labor)
   * Tregaskiss Guns (No Labor)
6. 90 Days — Parts
   * Accessory (Kits)
   * Canvas Covers
   * Induction Heating Coils and Blankets, Cables, and Non-Electronic Controls
   * M-Guns
   * MIG Guns and Subarc (SAW) Torches
   * Remote Controls and RFCS-RJ45
   * Replacement Parts (No labor)
   * Roughneck Guns
   * Spoolmate Spoolguns

Limited Warranty shall not apply to:

1. **Consumable components; such as contact tips, cutting nozzles, contactors, brushes, relays, work station table tops and welding curtains, or parts that fail due to normal wear. (Exception: brushes and relays are covered on all engine-driven products.)**
2. Items furnished by manufacturer, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
3. Equipment that has been modified by any party other than manufacturer, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

MANUFACTURER'S PRODUCTS ARE INTENDED FOR PURCHASE AND USE BY COMMERCIAL/INDUSTRIAL USERS AND PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT.

In the event of a warranty claim covered by this warranty, the exclusive remedies shall be, at manufacturer's option: (1) repair; or (2) replacement; or, where authorized in writing by manufacturer in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized service station; or (4) payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at customer's risk and expense. Manufacturer's option of repair or replacement will be F.O.B., Factory at Appleton, Wisconsin, or F.O.B. at an authorized service facility as determined by manufacturer. Therefore no compensation or reimbursement for transportation costs of any kind will be allowed.

TO THE EXTENT PERMITTED BY LAW, THE REMEDIES PROVIDED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL MANUFACTURER BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT), WHETHER BASED ON CONTRACT, TORT OR ANY OTHER LEGAL THEORY.

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT TORT OR ANY OTHER LEGAL THEORY WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE, WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY MANUFACTURER IS EXCLUDED AND DISCLAIMED BY MANUFACTURER.

Some states in the U.S.A. do not allow limitations of how long an implied warranty lasts, or the exclusion of incidental, indirect, special or consequential damages, so the above limitation or exclusion may not apply to you. This warranty provides specific legal rights, and other rights may be available, but may vary from state to state.

In Canada, legislation in some provinces provides for certain additional warranties or remedies other than as stated herein, and to the extent that they may not be waived, the limitations and exclusions set out above may not apply. This Limited Warranty provides specific legal rights, and other rights may be available, but may vary from province to province.

Owner's Record

Please complete and retain with your personal records.

Model Name	Serial/Style Number
Purchase Date	(Date which equipment was delivered to original customer.)
Distributor	
Address	
City	
State	Zip

Resources Available

Always provide Model Name and Serial/Style Number.

Contact your Distributor for:	Welding Supplies and Consumables Options and Accessories Personal Safety Equipment Service and Repair Replacement Parts Owner's Manuals Circuit Diagrams
Contact the Delivering Carrier to:	File a claim for loss or damage during shipment. For assistance in filing or settling claims, contact your distributor and/or equipment manufacturer's Transportation Department.