NOTICE: This document contains references to Varian. Please note that Varian, Inc. is now part of Agilent Technologies. For more information, go to **www.agilent.com/chem.**

Agilent Technologies

Splitter Box

Models

829-7020
829-7021

(I) *MANUALE DI ISTRUZIONI*

(D) *BEDIENUNGSHANDBUCH*

(F) *NOTICE DE MODE D'EMPLOI*

(GB) *INSTRUCTION MANUAL*

87-900-131-01
SEPTEMBER 2008

Splitter Box

VARIAN
vacuum technologies

Dear Customer,

Thank you for purchasing a VARIAN vacuum product. At VARIAN Vacuum Technologies we make every effort to ensure that you will be satisfied with the product and/or service you have purchased.

As part of our Continuous Improvement effort, we ask that you report to us any problem you may have had with the purchase or operation of our product. On the back side you find a Corrective Action Request form that you may fill out in the first part and return to us.

This form is intended to supplement normal lines of communications and to resolve problems that existing systems are not addressing in an adequate or timely manner.

Upon receipt of your Corrective Action Request we will determine the Root Cause of the problem and take the necessary actions to eliminate it. You will be contacted by one of our employees who will review the problem with you and update you, with the second part of the same form, on our actions.

Your business is very important to us. Please, take the time and let us know how we can improve.

Sincerely.

Sergio PIRAS
Vice President and General Manager
VARIAN Vacuum Technologies

Note: Fax or mail the Customer Request for Action (see backside page) to VARIAN Vacuum Technologies (Torino) - Quality Assurance or to your nearest VARIAN representative for onward transmission to the same address.

CUSTOMER REQUEST FOR CORRECTIVE / PREVENTIVE / IMPROVEMENT ACTION

TO : VARIAN VACUUM TECHNOLOGIES TORINO - QUALITY ASSURANCE

FAX N° : XXXX - 011 - 9979350

ADDRESS: VARIAN S.p.A. - Via F.lli Varian, 54 - 10040 Leinì (Torino) - Italy

E-MAIL : marco.marzio@varianinc.com

NAME	COMPANY	FUNCTION

ADDRESS : _____

TEL. N° : _____ FAX N° : _____

E-MAIL : _____

PROBLEM / SUGGESTION :

_____

_____

_____

_____

_____

_____

REFERENCE INFORMATION (model n°, serial n°, ordering information, time to failure after installation, etc.) :

_____

_____

_____

DATE _____

CORRECTIVE ACTION PLAN / ACTUATION (by VARIAN VTT) LOG N° _____

_____

_____

_____

_____

_____

_____

XXXX = Code for dialing Italy from your country (es. 01139 from USA; 00139 from Japan, etc.)

VARIAN

INFORMAZIONI GENERALI

Questa apparecchiatura è destinata ad uso professionale. L'utente deve leggere attentamente il presente Manuale di istruzioni ed ogni altra informazione addizionale fornita dalla Varian prima dell'utilizzo dell'apparecchiatura. La Varian declina ogni responsabilità dovuta alla mancata osservanza totale o anche parziale delle istruzioni fornite in questo documento, all'uso improprio dell'apparecchiatura da parte di personale non addestrato, all'esecuzione di interventi non autorizzati o alla mancata osservanza delle specifiche normative nazionali.
Nei paragrafi seguenti sono riportate tutte le informazioni necessarie a garantire la sicurezza dell'operatore durante l'utilizzo dell'apparecchiatura. Nel appendice "Technical Information" vengono fornite delle informazioni dettagliate.

Questo manuale utilizza le seguenti convenzioni:

PERICOLO!

I messaggi di pericolo attirano l'attenzione dell'operatore su una procedura o una pratica specifica che, se non eseguita in modo corretto, potrebbe provocare gravi lesioni personali.

ATTENZIONE

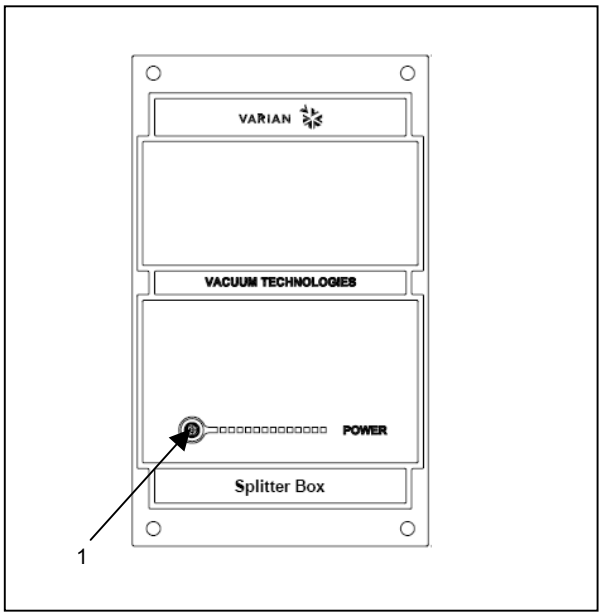
I messaggi di attenzione sono visualizzati prima di procedure che, se non osservate, potrebbero causare danni all'apparecchiatura.

NOTA

Le note contengono informazioni importanti estrapolate dal testo.

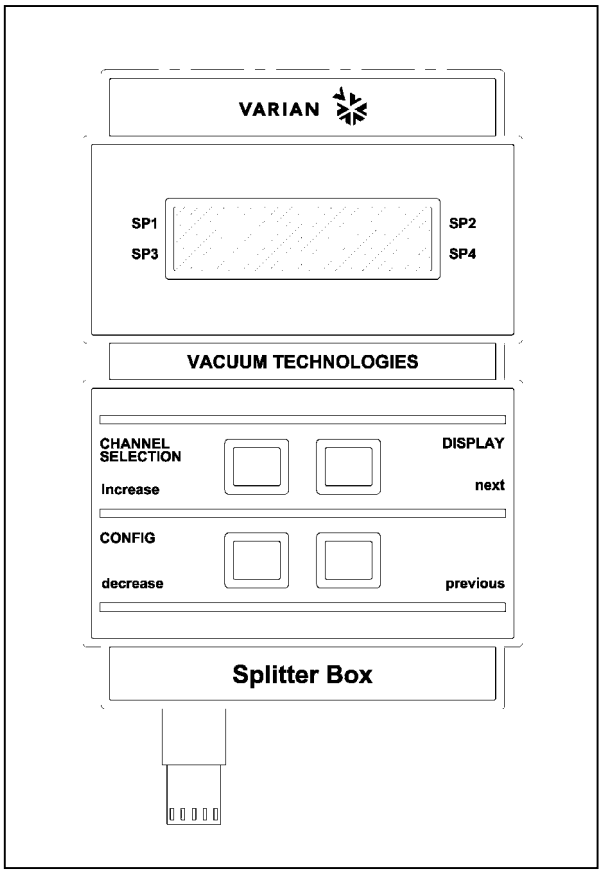
PANNELLO FRONTALE

Senza Display e Tastiera

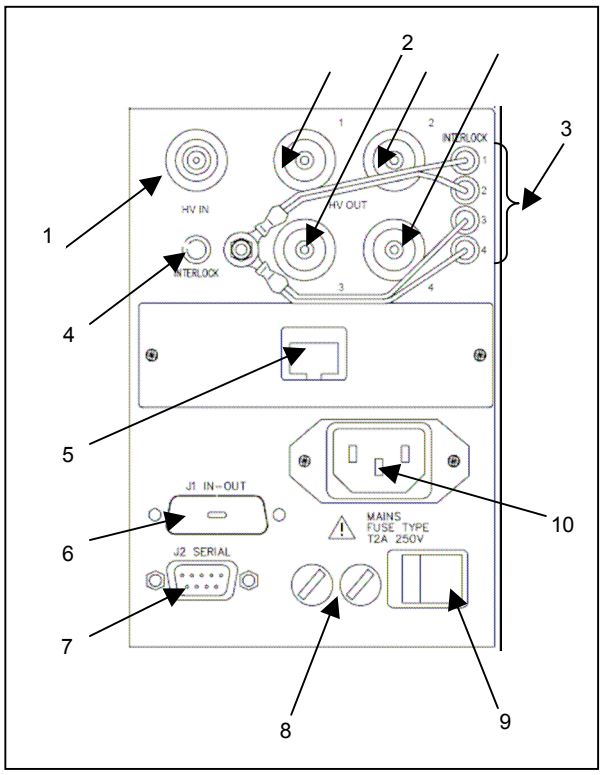


1. Led di indicazione Controller acceso

Con Display e tastiera



PANNELLO POSTERIORE



1. Ingresso HV
2. 4 uscite HV
3. 4 interlock tra Splitter Box e Pompe
4. Interlock tra Splitter Box e alimentatore alta tensione (per es. DUAL)
5. connettore Ethernet (opzionale)
6. Remote I/O (opzionale)
7. connettore seriale per RS232 e RS485 (vedi pin out nell'appendice "Technical Information")
8. 2xT2 A 250 V fusibili
9. pulsante di accensione spegnimento
10. Presa di alimentazione

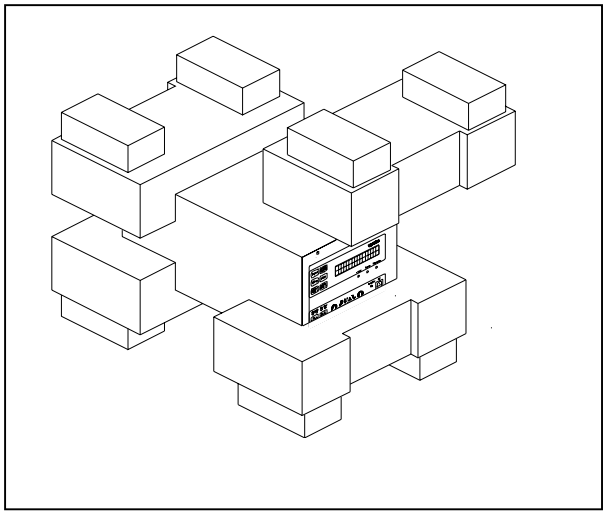
IMMAGAZZINAMENTO

Per trasportare e immagazzinare il controller occorre osservare le seguenti condizioni ambientali:

- Temperatura: da -20 °C a +70 °C
- Umidità relativa: da 0 a 95% (senza condensa).

PREPARAZIONE PER L'INSTALLAZIONE

Il controller viene fornito in un imballo protettivo speciale; nel caso in cui si presentassero segni di danni che potrebbero essere stati causati durante il trasporto, contattare l'ufficio vendite locale.
Durante l'operazione di disimballo, prestare particolare attenzione a non lasciar cadere il controller e a non sottoporlo ad urti.
Il materiale dell'imballo è completamente riciclabile e risponde alla direttiva CEE 85/399 per la tutela dell'ambiente.



Imballo del controller

INSTALLAZIONE

PERICOLO!

Per alimentare il controller Splitter Box usare un cavo di alimentazione a 3 fili dotato di spina approvata a livello internazionale. Utilizzare sempre questo cavo di alimentazione, inserendo la spina in una presa di alimentazione munita di collegamento a terra onde evitare scariche elettro-statiche.
All'interno del controller sono presenti delle alte tensioni che possono provocare delle lesioni gravi o addirittura la morte. Prima di eseguire qualsiasi operazione di installazione o manutenzione del controller, scollegarlo dalla presa elettrica.

Durante il funzionamento, occorre che siano rispettate le seguenti condizioni ambientali:

- Temperatura: da 0 °C a +45 °C
- Umidità relativa: 0 - 90% (senza condensa)

NOTA

L'interlock del cavo viene chiuso sulla massa della pompa. Se il collegamento è interrotto l'alta tensione viene disabilitata. Chiudere l'interlock con l'apposito contro-connettore se si utlizza un cavo senza connettore di interlock.

USO

In questo paragrafo vengono riportate le principali procedure operative. Per ulteriori informazioni e per le procedure riguardanti collegamenti o particolari opzioni fare riferimento al paragrafi "USE" nell'appendice "Technical Information".

PERICOLO!

Quando sull'ingresso HV dello splitter box è presente l'alta tensione anche su tutte e quattro le uscite è presente l'alta tensione anche se lo Splitter Box è spento e scollegato dall'alimentazione.
Per evitare gravi danni alle persone o addirittura la morte collegare tutte e quattro le uscite dello Splitter Box alle pompe tramite gli appositi cavi prima di fornire l'alta tensione all'ingresso dello Splitter Box.

Accensione del Controller

Procedere come segue per accendere le pompe ioniche utilizzando un'alimentatore (per es.Dual) per fornire l'alta tensione e lo Splitter Box per leggere la corrente e la pressione delle 4 pompe ad esso collegate.

- collegare le 4 pompe con lo splitter Box
- collegare gli interlock di ogni pompa al corrispondente connettore sul pannelo posteriore dello Splitter Box
- collegare l'alimentatore alta tensione allo Splitter Box attraverso l'apposito cavo P/N 929-0704
- collegare l'interlock dell'alimentatore alta tensione con il corrispondente connettore di interlock
- collegare l'alimentazione di rete allo Splitter Box ed accenderlo tramite l'apposito tasto (tasto 9 fig.pannelo Posteriore)
- Accendere l'alimentazione alta tensione (DUAL)
- Leggere la corrente/pressione di ogni singola pompa con lo Splitter Box.

NOTA

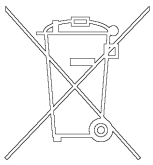
Lo Splitter Box per poter fuzionare correttamente assorbe una certa corrente dall'ingresso alta tensione L'introduzione dello Splitter box (anche se spento) tra il DUAL e la pompa provoca una lettura errata di corrente e pressione del DUAL. La corrente letta dal DUAL non è la somma delle correnti lette dallo Splitter Box.
Quando si introduce lo Splitter Box tra DUAL e pompa si deve leggere la corrente/pressione solo dallo Splitter box perché solo la lettura effettuata tramite lo Splitter è corretta.

MANUTENZIONE

Il controller Splitter Box non richiede alcun intervento di manutenzione. Qualsiasi tipo di intervento sull'unità deve essere eseguito da personale tecnico autorizzato.
In caso di guasto è possibile usufruire del servizio di riparazione Varian o del "Varian advanced exchange service", che permette di ottenere un controller rigenerato in sostituzione di quello guasto.
Qualora un controller dovesse essere rottamato, procedere nel rispetto delle normative nazionali specifiche.

SMALTIMENTO

Significato del logo "WEEE" presente sulle etichette.
Il simbolo qui sotto riportato è applicato in ottemperanza alla direttiva CE denominata "WEEE". Questo simbolo **(valido solo per i paesi della Comunità Europea)** indica che il prodotto sul quale è applicato, NON deve essere smaltito insieme ai comuni rifiuti domestici o industriali, ma deve essere avviato ad un sistema di raccolta differenziata. Si invita pertanto l'utente finale a contattare il fornitore del dispositivo, sia esso la casa madre o un rivenditore, per avviare il processo di raccolta e smaltimento, dopo opportuna verifica dei termini e condizioni contrattuali di vendita.



ALLGEMEINES

Dieser Apparat ist für Fachbetriebe bestimmt. Vor Gebrauch sollte der Benutzer dieses Handbuch sowie alle weiteren mitgelieferten Zusatzdokumentationen genau lesen. Bei Nichtbeachtung - auch teilweise - der enthaltenen Hinweise, unsachgemäßem Gebrauch durch ungeschultes Personal, nicht autorisierten Eingriffen und Mißachtung der einheimischen, hier zur Geltung kommenden Bestimmungen übernimmt die Firma Varian keinerlei Haftung.
In den folgenden Abschnitten sind alle erforderlichen Informationen für die Sicherheit des Bedieners bei der Anwendung des Geräts aufgeführt. Detaillierte technische Informationen sind im Anhang "Technical Information" enthalten.

In dieser Gebrauchsanleitung werden Sicherheitshinweise folgendermaßen hervorgehoben:

GEFAHR!

Die Gefahrenhinweise lenken die Aufmerksamkeit des Bedieners auf bestimmte Vorgänge oder Praktiken, die bei unkorrekter Ausführung schwere Verletzungen hervorrufen können.

ACHTUNG

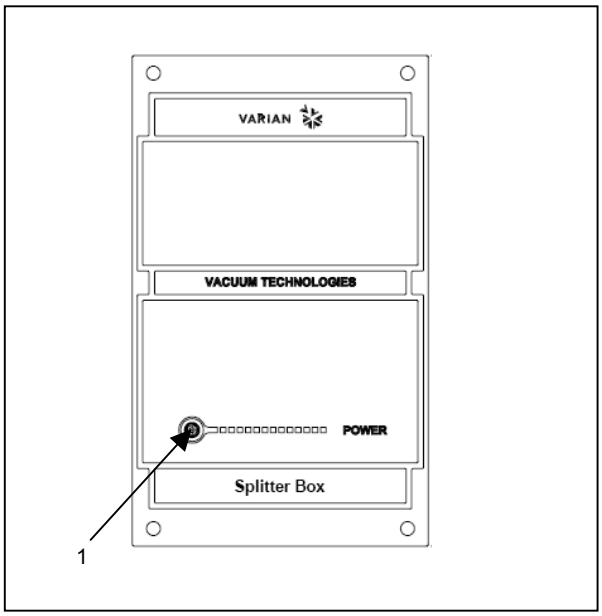
Die Warnhinweise vor bestimmten Prozeduren machen den Bediener darauf aufmerksam, daß bei Nichteinhaltung Schäden an der Anlage entstehen können.

ANMERKUNG

Die ANMERKUNGEN enthalten wichtige Informationen, die im Text hervorgehoben werden.

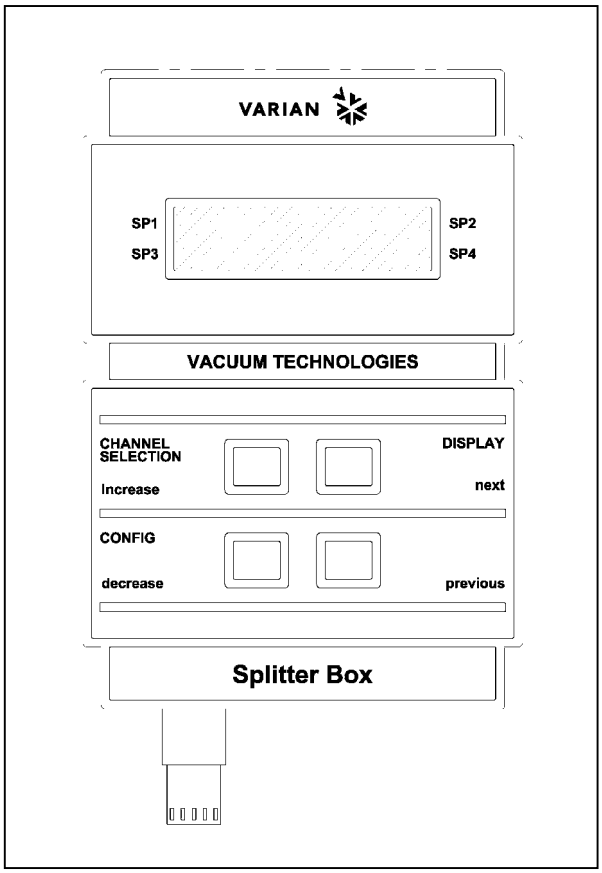
VORDERE SCHALTTAFEL

Ohne Display und Tastatur

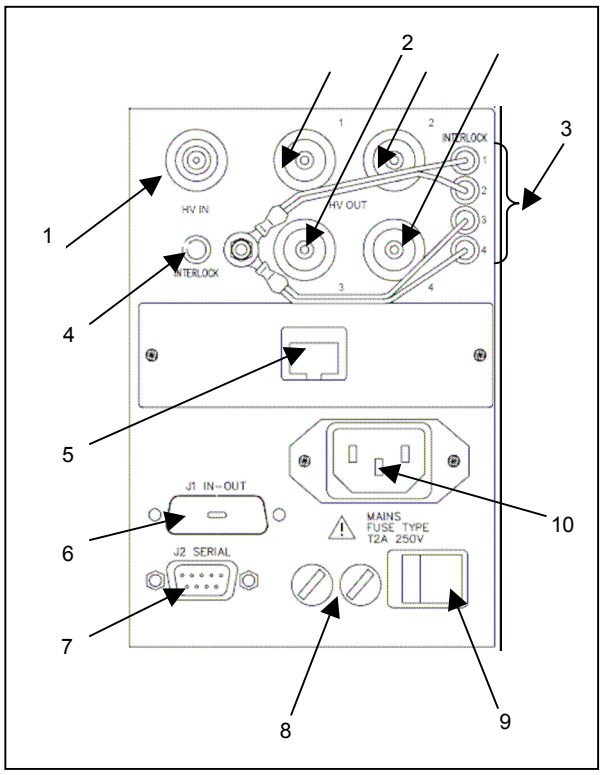


1. Controller-Anzeige-Led leuchtet

Mit Display und Tastatur



SCHALTTAFEL AUF DER RÜCKSEITE



1. HV-Eingang
2. 4 HV-Ausgänge
3. 4 Verriegelung zwischen Verteilerkasten und Pumpen
4. Verriegelung zwischen Verteilerkasten und Hochspannungs-Speisegerät (z.B. DUAL)
5. Ethernet-Verbinder (zusätzlich möglich)
6. Fernanschluss I/O (zusätzlich möglich)
7. Serienanschluss für RS232 und RS485 (siehe pin out im Anhang “Technical Information”)
8. 2xT2 A 250 V Sicherungen
9. Ein-/Aus
10. Hauptsteckdose

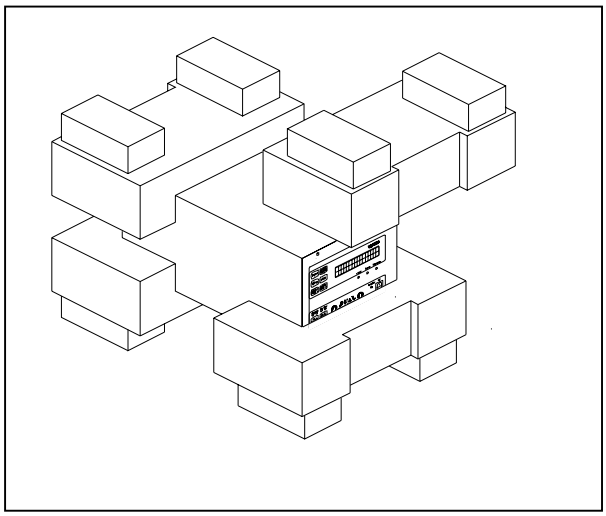
LAGERUNG

Bei Transport und Lagerung der Controller müssen folgende Umgebungsbedingungen eingehalten werden:

- Temperatur: -20 °C bis +70 °C
- Rel. Luftfeuchtigkeit: 0-95 % (nicht kondensierend).

VOR DER INSTALLATION

Der Controller wird mit einer speziellen Schutzverpackung geliefert. Eventuelle Transportschäden müssen sofort der zuständigen örtlichen Verkaufsstelle gemeldet werden.
Das Verpackungsmaterial muß korrekt entsorgt werden. Es ist vollständig recyclebar und entspricht der EG-Richtlinie 85/399 für Umweltschutz.



Verpackung des Controllers

INSTALLATION

GEFAHR!

Zur Einspeisung des Controller-Verteilerkastens muß immer ein Netzkabel mit 3 Leitern und mit einem den internationalen Normen entsprechenden Netzstecker verwendet werden. Es sollte immer dieses Netzkabel benutzt werden, das an eine vorschriftsmäßig geerdete Steckdose anzuschließen ist, um Stromentladungen zu vermeiden.
Im Controller kommt es zu hohen Spannungen, die schwere Schäden verursachen und lebensgefährlich sein können. Vor jedem Montage- bzw. Wartungseingriff, der am Controller vorgenommen wird, muß daher der Netzstecker gezogen werden.

Während des Betriebs müssen folgende Umgebungsbedingungen eingehalten werden:
- Temperatur: von 0 °C bis +45 °C
- Rel. Luftfeuchtigkeit: 0 - 90% (nicht kondensierend)

ANMERKUNG

Die Verriegelung des Kabels wird auf der Masse der Pumpe geschlossen. Wenn die Verbindung unterbrochen wird, wird die Hochspannung deaktiviert. Die Verriegelung mit dem entsprechenden Gegenstecker schließen, wenn ein Kabel ohne Verriegelungsstecker benutzt wird.

GEBRAUCH

In diesem Kapitel sind die wichtigsten Betriebsvorgänge aufgeführt. Für weitere Hinweise bezüglich Anschluß und Montage des bestellbaren Zubehörs verweisen wir auf das Kapitel "USE" im Anhang zu "Technical Information".

GEFAHR!

Wenn es am HV-Eingang des Verteilerkastens es zu hohen Spannungen kommt, ist die Hochspannung auch an allen vier Ausgängen vorhanden, auch wenn der Verteilerkasten ausgeschaltet und nicht an die Hauptleitung angeschlossen ist. Um schwere Schäden und Lebensgefahr zu vermeiden, alle vier Ausgänge des Verteilerkastens mit Hilfe angebrachter Kabel an die Pumpen anschließen, bevor die Hochspannung dem Eingang des Verteilerkastens zugeführt wird.

Einschalten des Controllers

Zum Einschalten der Ionenpumpen wie folgt vorgehen. Dabei ein Speisegerät (z.B. Dual) verwenden, um mit Hochspannung einzuspeisen sowie den Verteilerkasten, um den Strom und den Drucke der 4 daran angeschlossenen Pumpen abzulesen.

- die 4 Pumpen an den Verteilerkasten anschließen
- Verriegelungen aller Pumpen am zugehörigen Verbinder auf der Steuertafel auf der Rückseite des Verteilerkastens anschließen; mit Hilfe des Kabels P/N 929-0704 die Hochspannungszuleitung am Verteilerkasten anschließen
- Verriegelung des Hochspannungs-Speisegeräts an den zugehörigen Verriegelungsverbinder anschließen
- Netzanschluss am Verteilerkasten einstecken und ihn mit Hilfe der zugehörigen Taste (Taste 9 Abb. Schalttafel auf der Rückseite) einschalten
- Hochspannungszuführung (DUAL) einschalten
- Mit Hilfe des Verteilerkastens die Strom-/Druckwerte aller Pumpen ablesen.

ANMERKUNG

Um einwandfrei funktionieren zu können, verbraucht der Verteilerkasten *am Hochspannungseingang eine gewisse Menge an Strom.*
Der Einbau eines Verteilerkastens *zwischen dem DUAL und der Pumpe ruft ein falsches Ablesen des DUAL-Strom- und Druckwertes hervor (auch wenn er ausgeschaltet ist). Der vom DUAL abgelesene Stromwert ist nicht gleich der Summe aller vom* Verteilerkasten abgelesenen Stromwerte.
Beim Einbau des Verteilerkastens zwischen dem DUAL und der Pumpe muß der Strom- bzw. der Druckwert nur vom *Verteilerkasten abgelesen werden, weil nur der vom Verteiler abgelesene Wert richtig ist.*

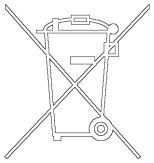
WARTUNG

Die Dual-Controller sind wartungsfrei. Eventuell erforderliche Eingriffe müssen von dazu befugtem Fachpersonal ausgeführt werden. Bei Störungen kann der Varian-Reparaturdienst in Anspruch genommen werden oder schließen Sie einen Vertrag für “Varian Advanced Exchange Service” ab, mit dem ein defekter Controller gegen einen general-überholten ausgetauscht wird.

Eine eventuelle Verschrottung muß unter Einhaltung der einschlägigen landesüblichen Vorschriften erfolgen.

ENTSORGUNG

Bedeutung des "WEEE" Logos auf den Etiketten.
Das folgende Symbol ist in Übereinstimmung mit der EU-Richtlinie WEEE (Waste Electrical and Electronic Equipment) angebracht.
Dieses Symbol (**nur in den EU-Ländern gültig**) zeigt an, dass das betreffende Produkt nicht zusammen mit Haushaltsmüll entsorgt werden darf sondern einem speziellen Sammelsystem zugeführt werden muss.
Der Endabnehmer sollte daher den Lieferanten des Geräts - d.h. die Muttergesellschaft oder den Wiederverkäufer - kontaktieren, um den Entsorgungsprozess zu starten, nachdem er die Verkaufsbedingungen geprüft hat.



INDICATIONS GENERALES

Cet appareillage a été conçu en vue d'une utilisation professionnelle. Il est conseillé à l'utilisateur de lire attentivement cette notice d'instructions ainsi que toute autre indication supplémentaire fournie par Varian, avant l'utilisation de l'appareillage. Varian décline par conséquent toute responsabilité en cas d'inobservation totale ou partielle des instructions données, d'utilisation incorrecte de la part d'un personnel non formé, d'opérations non autorisées ou d'un emploi contraire aux réglementations nationales spécifiques.
Les paragraphes suivants donnent toutes les indications nécessaires à garantir la sécurité de l'opérateur pendant l'utilisation de l'appareillage. Des renseignements plus détaillés se trouvent dans l'appendice "Technical Information".

Cette notice utilise les signes conventionnels suivants:

DANGER!

Les messages de danger attirent l'attention de l'opérateur sur une procédure ou une manoeuvre spéciale qui, si elle n'est pas effectuée correctement, risque de provoquer de graves lésions.

ATTENTION

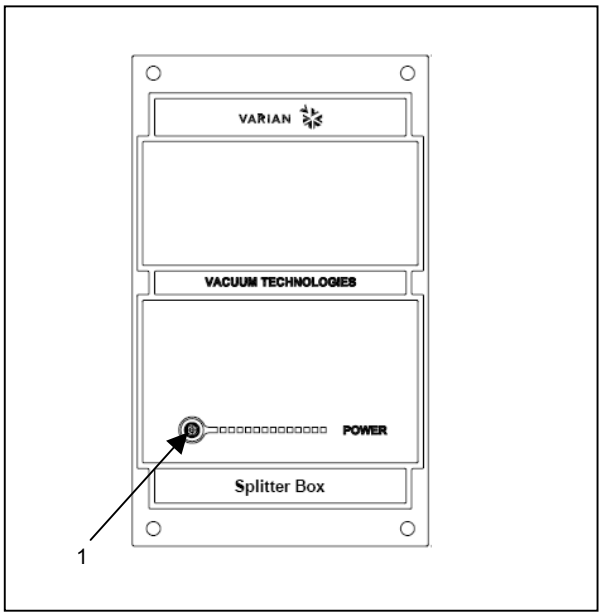
Les messages d'attention apparaissent avant certaines procédures qui, si elles ne sont pas observées, pourraient endommager sérieusement l'appareillage.

NOTE

Les notes contiennent des renseignements importants, isolés du texte.

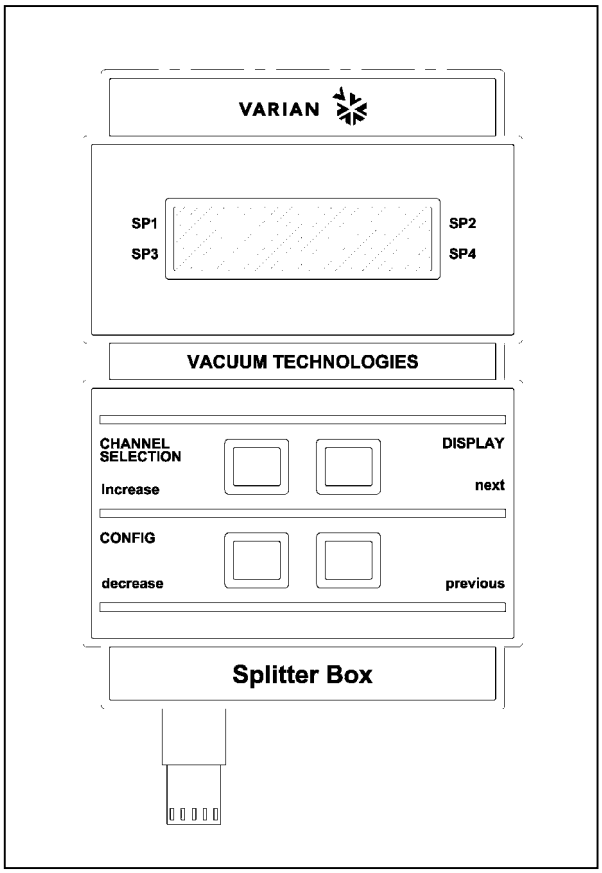
PANNEAU FRONTAL

Sans écran ni clavier

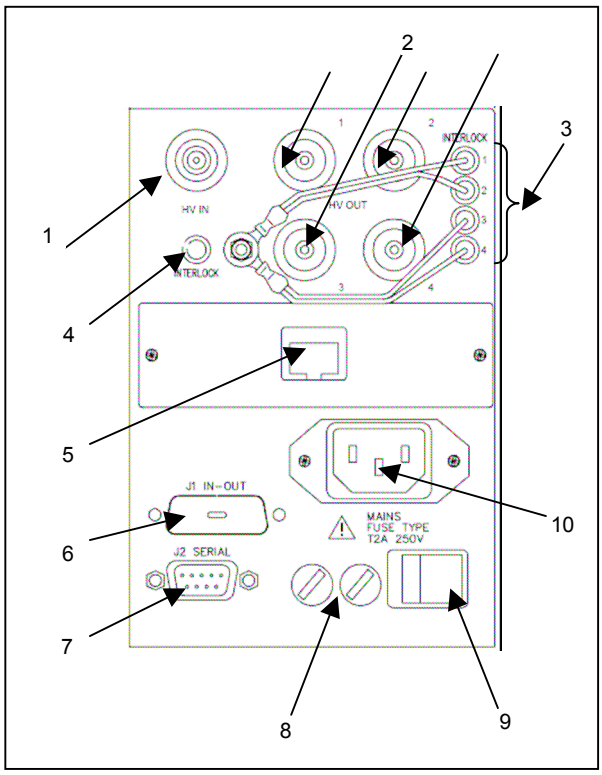


1. Led d'indication contrôleur en marche

Avec écran et clavier



PANNEAU ARRIERE



1. Entrée HV (Haute Tension)
2. 4 sorties HV
3. 4 interlocks entre le Splitter Box et les pompes
4. Interlock entre le Splitter Box et l'alimentateur de haute tension (ex.: DUAL)
5. Connecteur Ethernet (en option)
6. Remote I/O (en option)
7. Connecteur série pour RS232 et RS485 (voir le brochage dans l'appendice "Technical Information")
8. Fusibles 2xT2 A 250V
9. Bouton marche/arrêt
10. Prise d'alimentation

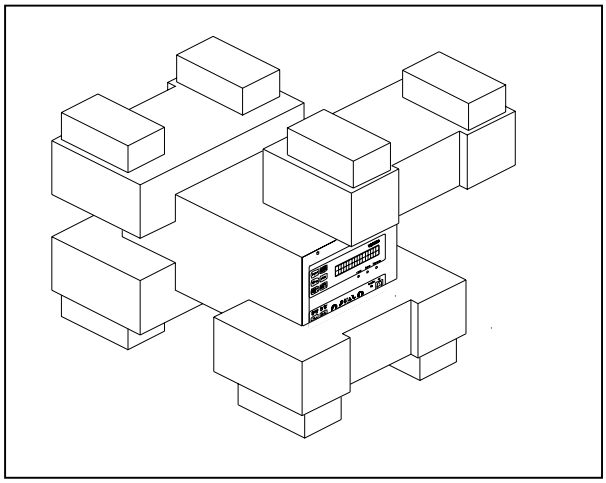
EMMAGASINAGE

Pour transporter et emmagasiner le contrôleur il faut observer les conditions suivantes d'environnement:

- température: de -20°C à +70°C
- humidité relative: 0 - 95 % (non condensante).

PREPARATION POUR L'INSTALLATION

Le contrôleur est fourni dans un emballage de protection spécial; si l'on constate des dommages pouvant s'être produits pendant le transport, contacter tout de suite le bureau de vente local. Pendant l'opération d'ouverture de l'emballage, veiller tout particulièrement à ne pas laisser tomber le contrôleur et à ne lui faire subir aucun choc. Le matériel est entièrement recyclable et il est conforme aux directives CEE 85/399 en matière de protection de l'environnement.



Emballage du contrôleur

INSTALLATION

DANGER!

Pour alimenter le contrôleur Splitter Box, utiliser un cordon d'alimentation à 3 fils muni d'une fiche agréée à l'échelle internationale. Utiliser toujours ce cordon d'alimentation en introduisant la fiche dans une prise d'alimentation reliée à la terre afin d'éviter les décharges électrostatiques.
Il y a des hautes tensions à l'intérieur du contrôleur qui peuvent provoquer des blessures graves, voire mortelles. Avant d'effectuer la moindre opération d'installation ou d'entretien du contrôleur, le débrancher de la prise électrique.

Pendant le fonctionnement, il est nécessaire de respecter les conditions d'environnement suivantes:

- Température: de 0 °C à +45 °C
- Humidité relative: 0 - 90% (non condensante)

NOTE

L'interlock du câble est serré sur la masse de la pompe. Si le branchement est coupé, la haute tension est interrompue. Lorsqu'on utilise un câble sans connecteur d'interlock, fermer l'interlock avec le connecteur de fermeture prévu à cet effet.

UTILISATION

Dans ce paragraphe, on indique les principales procédures opérationnelles. Pour tous autres détails et pour les procédures concernant des connexions ou des éléments en option, se reporter au paragraphe "USE" de l'appendice "Technical Information".

DANGER!

Quand la haute tension est branchée sur l'entrée HV du Splitter Box, un courant haute tension est également présent au niveau des quatre sorties, même si le Splitter Box est éteint et que son cordon d'alimentation est débranché.
Pour éviter des blessures graves, voire mortelles, brancher les quatre sorties du Splitter Box sur les pompes à l'aide des câbles réservés à cet effet avant de relier l'entrée du Splitter Box à la haute tension.

Allumage du Contrôleur

Procéder comme suit pour allumer les pompes ioniques à l'aide d'un alimentateur (ex.: Dual), chargé de fournir la haute tension, et le Splitter Box de relevé du courant et de la pression des 4 pompes qui y sont reliées.

- brancher les 4 pompes sur le splitter Box
- brancher l'interlock de chaque pompe sur le connecteur correspondant situé sur le panneau arrière du Splitter Box
- brancher l'alimentateur de haute tension sur le Splitter Box à l'aide du câble spécial P/N 929-0704
- brancher l'interlock de l'alimentateur de haute tension sur le connecteur correspondant de l'interlock
- brancher l'alimentation du réseau sur le splitter Box et l'allumer avec le bouton réservé à cet effet (bouton 9 du schéma du panneau arrière)
- Allumer l'alimentation de la haute tension (DUAL)
- Lire les valeurs de courant/pression de chaque pompe relevées par le Splitter Box.

NOTE

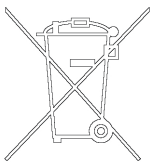
Le Splitter Box absorbe une certaine quantité de courant de l'entrée haute tension pour pouvoir fonctionner correctement
L'insertion du Splitter Box (même s'il est éteint) entre le DUAL et la pompe provoque une lecture de courant et de pression erronée du DUAL. Le courant relevé par le DUAL ne correspond pas à la somme des courants relevés par le Splitter Box.
Quand le Splitter Box est inséré entre le DUAL et la pompe, il ne faut lire la valeur de courant/pression que sur le Splitter Box parce que seul ce relevé est correct.

ENTRETIEN

Le contrôleur Splitter Box n'a besoin d'aucun entretien. N'importe quel entretien sur l'unité doit être effectué par un personnel technique autorisé. En cas de panne contacter le Support technique Varian ou bien s'abonner au Varian Advanced Exchange Service" où le contrôleur endommagé est remplacé par un contrôleur reconditionné.
En cas de mise au rebut du contrôleur, procéder à son élimination conformément aux réglementations nationales en la matière.

MISE AU REBUT

Signification du logo "WEEE" figurant sur les étiquettes.
Le symbole ci-dessous est appliqué conformément à la directive CE nommée "WEEE".
Ce symbole **(uniquement valide pour les pays de la Communauté européenne)** indique que le produit sur lequel il est appliqué NE doit PAS être mis au rebut avec les ordures ménagères ou les déchets industriels ordinaires, mais passer par un système de collecte sélective. Après avoir vérifié les termes et conditions du contrat de vente, l'utilisateur final est donc prié de contacter le fournisseur du dispositif, maison mère ou revendeur, pour mettre en œuvre le processus de collecte et mise au rebut.



GENERAL INFORMATION

This equipment is intended for professional use. Prior to using this equipment the user must carefully read this Instruction Manual in its entirety and any additional information provided by Varian. Varian declines all responsibility for damage caused by the total or partial misuse of the instructions provided herein, by the improper use of the equipment by untrained personnel, by unauthorized interventions or by negligence in complying with any specific national rule or regulation.
The following sections provide you with all the information needed to guarantee the operator's safety when using the equipment. Detailed information is provided in the appendix entitled "Technical Information".

The following conventions are used in this manual:

DANGER!

Danger messages call the operator's attention to a specific procedure or operation that could cause serious injury if not performed correctly.

WARNING

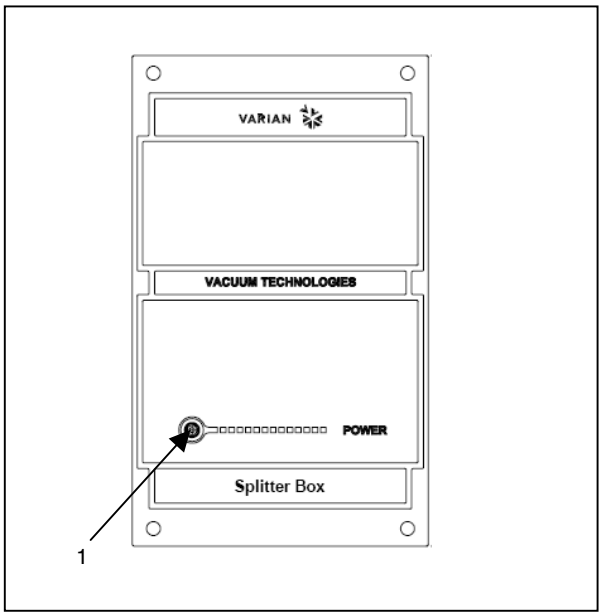
Warning messages are provided before procedures that could cause damage to the equipment if not complied with.

NOTE

Notes provide you with important information extracted from the text.

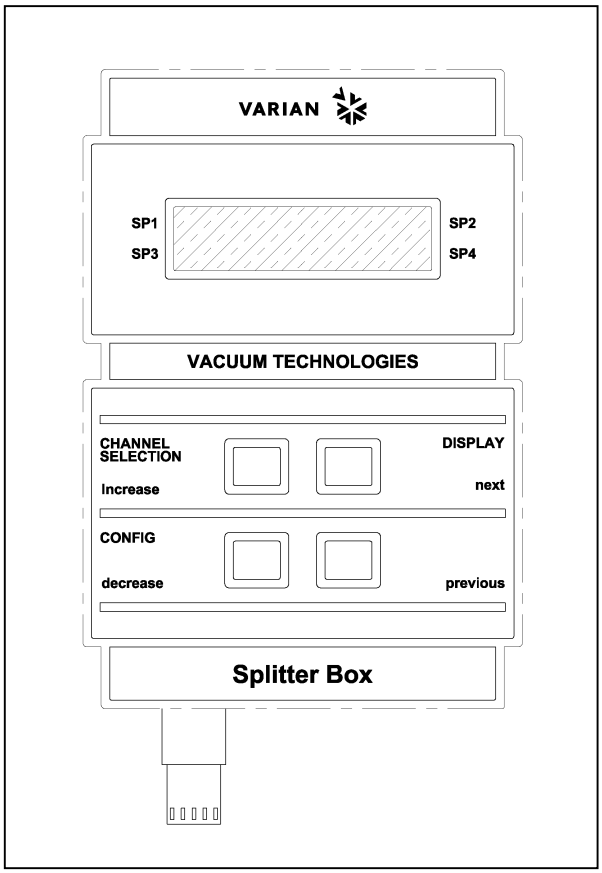
FRONT PANEL

Without Display and Keyboard

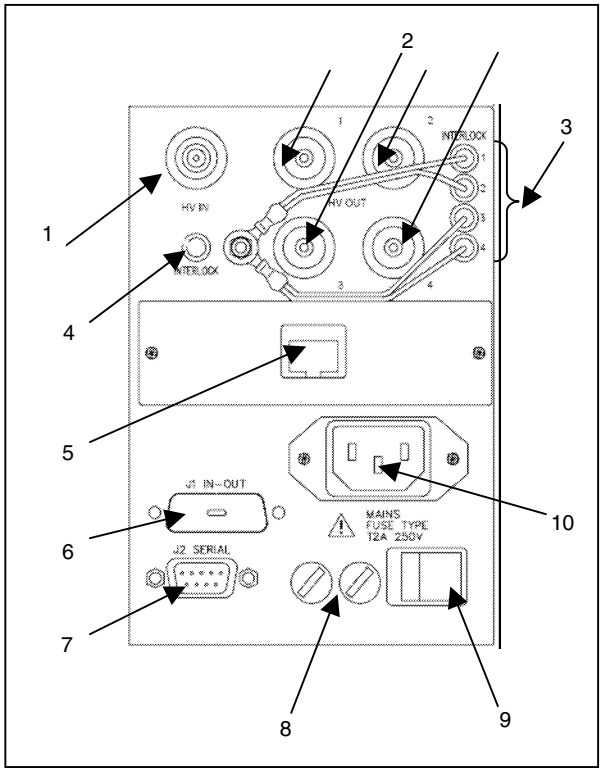


1. Controller ON led.

With Display and Keyboard



REAR PANEL



1. HV input
2. 4 HV outputs
3. 4 interlocks between Splitter Box and Pumps
4. Interlock between Splitter Box and high voltage power supply unit (e.g. DUAL)
5. Ethernet connector (optional)
6. Remote I/Os (optional)
7. Serial connector for RS232 and RS485 (see pin-out in the "Technical Information" appendix)
8. 2xT2 A 250V fuses
9. ON/OFF button
10. Power socket

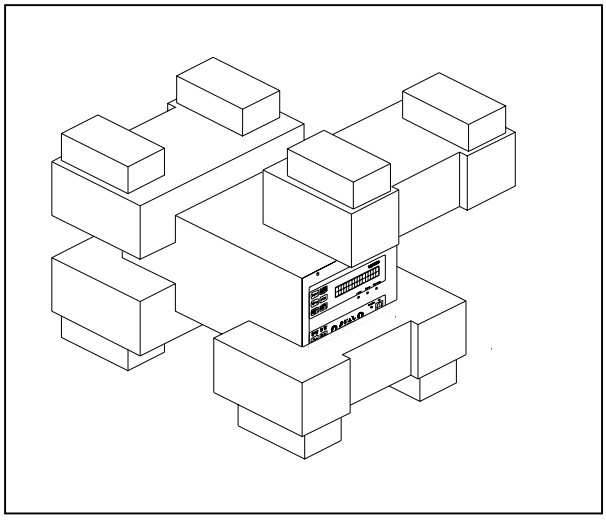
STORAGE

The following environmental conditions must be met when transporting and storing the controller:

- Temperature: -20 °C to +70 °C
- Relative humidity: 0 - 95% (non-condensing).

PRIOR TO INSTALLATION

The controller comes in a special protective packaging; if there is any sign of damage that could have been caused during transportation, contact your local sales office immediately.
When unpacking the controller, be particularly careful to avoid dropping it or knocking it against anything.
The packaging material is totally recyclable and complies with EEC directives 85/399 for the safeguard of the environment.



Controller Packaging

INSTALLATION

DANGER!

To power the Splitter Box controller, use a 3-wire power cord fitted with internationally approved plug.
Always use this power cord, inserting the plug in a power socket fitted with a ground connection in order to avoid electrostatic discharge.
The high voltages present inside the controller may cause serious injury or death. Before carrying out any installation or maintenance operations on the controller, disconnect this from the electric outlet.

During functioning, the following environment conditions must be guaranteed:

- Temperature: from 0 °C to +45 °C
- Relative humidity: 0 - 90% (without condensation).

NOTE

The interlock of the cable is closed on the ground of the pump. If the connection is interrupted, the high voltage is disabled. Close the interlock with the specific counter-connector if a cable without interlock connector is used.

USE

The main operating procedures are described below.
For further information and for procedures concerning connections or particular options, refer to the “USE” paragraphs in the “Technical Information” appendix.

DANGER!

When high voltage is present on the HV input of the splitter box, high voltage is also present on all four outputs even if the Splitter Box is OFF and disconnected from the power supply.
To avoid serious injury or even death connect all four outputs of the Splitter Box to the pump via the specific cables before applying high voltage to the input of the Splitter Box.

Switching on of the controller

Proceed as follows to switch on the ionic pumps using a power supply unit (e.g. Dual) to supply the high voltage and power the Splitter Box in order to read the current and pressure of the four pumps connected to this.

- connect the 4 pumps with the splitter Box
- connect the interlocks of each pump to the matching connector
  on the rear panel of the Splitter Box
- connect the HV power supply unit to the Splitter Box using the specific cable P/N 929-0704
- connect the interlock of the HV power supply unit with the matching interlock connector
- connect the mains supply to the splitter Box and switch this on using the specific key
  (key 9 fig. rear panel)
- switch on the HV power supply (DUAL)
- read the current/pressure of each single pump with the Splitter Box.

NOTE

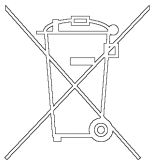
To operate correctly, the Splitter Box absorbs a certain amount of current from the HV input.
Introduction of the Splitter box (even if OFF) between the DUAL and the pump causes incorrect reading of current and pressure of the DUAL.
The current read by the DUAL is not the sum of the currents read by the Splitter Box.
When the Splitter Box is introduced between the DUAL and pump, current/pressure must be read only from the Splitter box because only the reading made via the Splitter box is correct.

MAINTENANCE

The Splitter Box controller does not require any type of maintenance. Any operations on the unit must be carried out by authorized technical personnel.
In the case of fault, it is possible to take advantage of the Varian repair service or of the "Varian advanced exchange service", which makes it possible to obtain a replacement regenerated controller. If the controller is to be scrapped, proceed according to specific national regulations.

DISPOSAL

Meaning of the "WEEE" logo found in labels
The following symbol is applied in accordance with the EC WEEE (Waste Electrical and Electronic Equipment) Directive.
This symbol (**valid only in countries of the European Community**) indicates that the product it applies to must NOT be disposed of together with ordinary domestic or industrial waste but must be sent to a differentiated waste collection system.
The end user is therefore invited to contact the supplier of the device, whether the Parent Company or a retailer, to initiate the collection and disposal process after checking the contractual terms and conditions of sale.



SPLITTER CONTROLLER DESCRIPTION

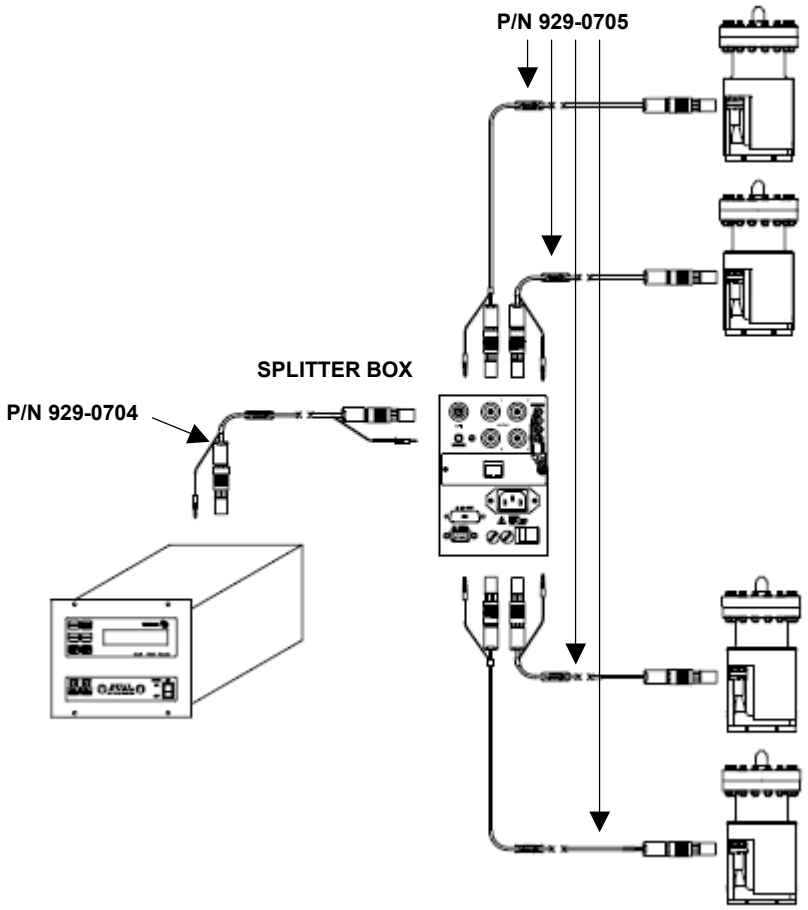
Varian's Splitter Box controller is fitted with a HV input connector and four HV outputs. Inside the controller, the four outputs are connected in parallel with the input. Also, the Splitter Box controller is able to measure current independently on the four outputs and to convert the current reading into pressure according to the selected Varian pump.

The Splitter Box controller also features RS232 and RS485 serial communication.

The Splitter Box controller is available with the following options:

- Ethernet communication
- Display and keyboard.

To connect the Splitter Box with the HV power supply unit (e.g. the DUAL), use the specific cable P/N 929-0704. For connections between the HV power supply unit, the Splitter Box and the pump, refer to the figure below.

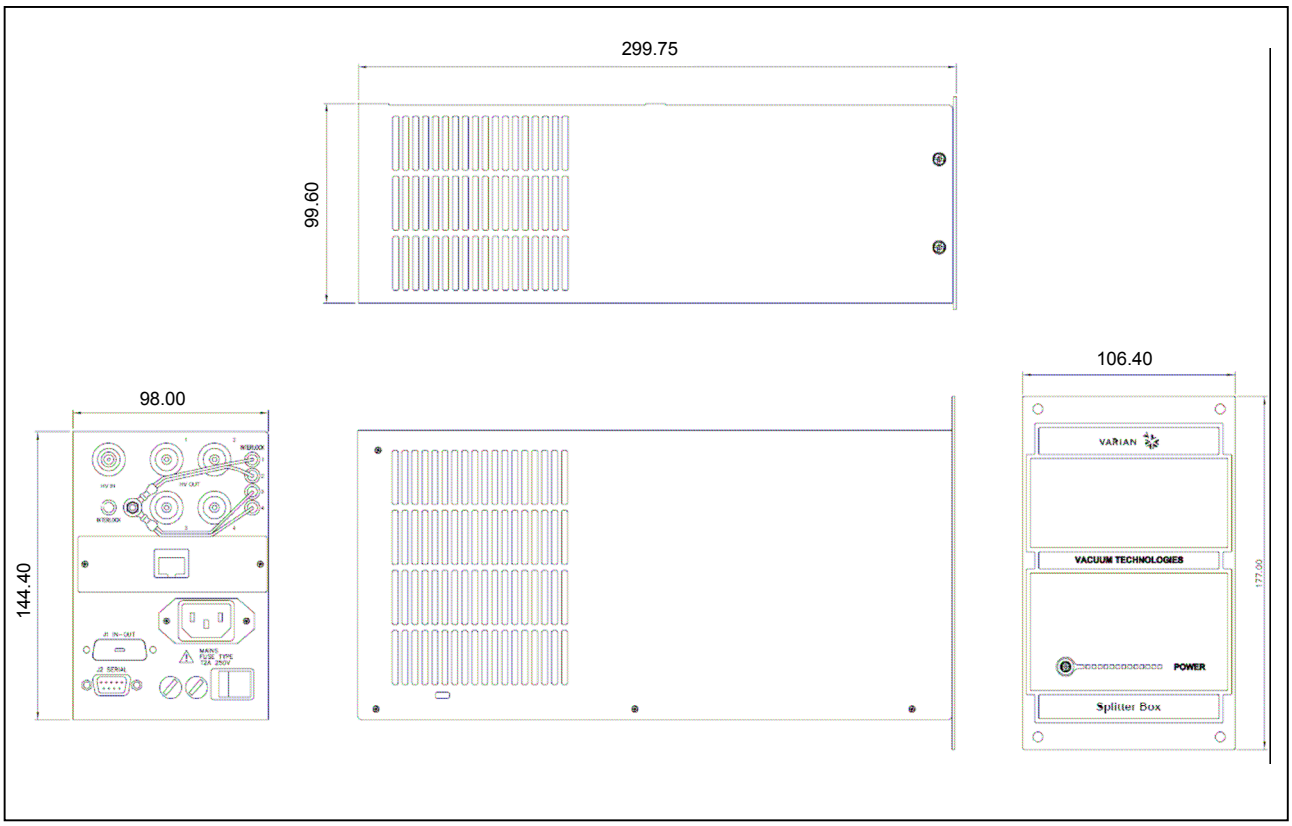


CONTROLLER SPECIFICATIONS

Input: Voltage Frequency Power	 110, 240 Vac +/-10% 50 to 60 Hz 37 VA	
Fuse	2xT2 A 250 V	
Output HV	4 channels in parallel with the HV input	
Input HV	To be connected to a HV power supply unit. Max. voltage +/-7000V	
Voltage Measurement	Resolution: 100V	
Current Measurement	**Range**	**Error Max**
	0 - 1uA	+/-50nA
	1uA – 10uA	+/-250nA
	10uA – 100uA	+/-2.5uA
	100uA – 1mA	+/-25uA
	1mA – 10mA	+/-250uA
	10mA – 100mA	+/-2.5mA
	100mA – 500mA	+/- 12mA
Environment Pollution Degree 2	Temperature: storage -20 °C to +70 °C Umidity: 0 - 95%	
Operating	Temperature: +5 to +45 °C Umidity: 0 - 90% non condensing	
Applied norr.	EN 61010 -1 EN 55011 (Class-A) EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-4-2,3,4,5,6,11,8	
Weight:	2,6 Kg	

CONTROLLER OUTLINE

The outline dimensions for the Splitter Box controllers are shown in the following figure.



Controller Model Dimensions

COMMUNICATION

All Splitter Box models are fitted with a RS232 and RS485 serial interface (see the pin-out of the connector below).

The unit can communicate on two different protocols:

- "Window" protocol (new system)
- Binary protocol (old system)

The Binary protocol is used in old Varian controllers; it has been implemented on this controller in order to guarantee compatibility with the old products but will no longer be developed in future.

Use of the Binary protocol for new projects should be avoided.

NOTE

Please use "Window" protocol for new development.

Some models (829-7020, 829-7021) also feature an Ethernet interface(TCP/IP).

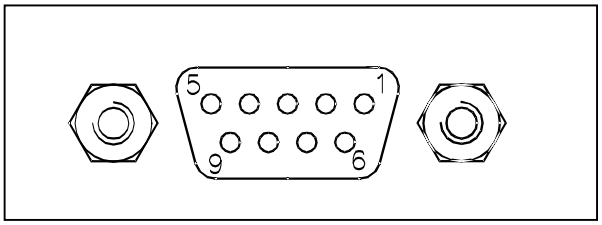
To communicate via the Ethernet interface, simply encapsulate the "Window" protocol inside the TCP/IP protocol.

In order to communicate via the Ethernet interface, the IP address and the Subnet mask must be configured to adapt these to own network. The procedure for this operation is described below.

J2 – Serial Connector

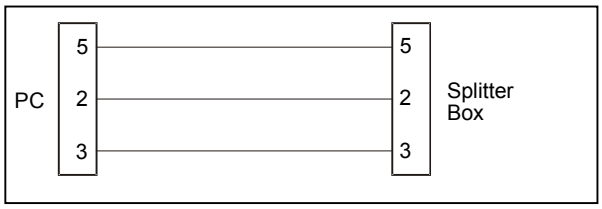
This connector provides the connection for RS – 232 and RS – 485 serial line.

J2 Pin-out:

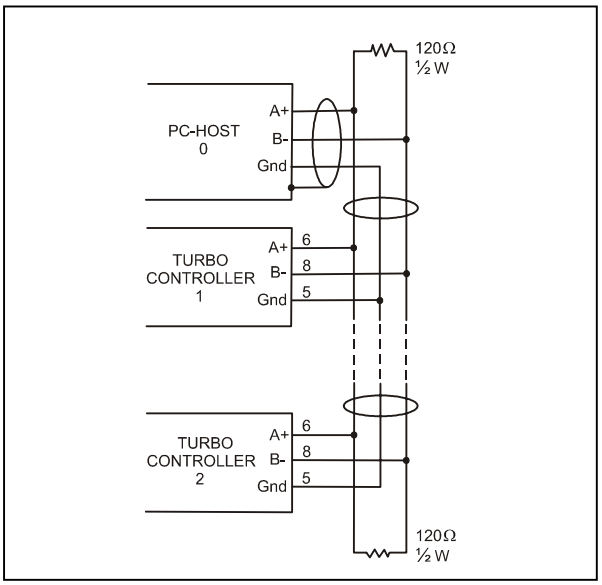


PIN N.	SIGNAL NAME
1	+5 V (OUT) (Reserved)
2	TX (RS232
3	RX (RS232
4	NC
5	GND
6	A + (RS485)
7	NC
8	B – (RS485)
9	RESERVED

Connector examples:



RS – 232 Connection



RS – 485 Connection

Window Protocol

Description

Communication Format

- 8 data bit
- no parity
- 1 stop bit
- baud rate: 600/1200/2400/4800/9600 programmable

Communication Protocol

The communication protocol is a MASTER/SLAVE type where:

- Host = MASTER
- Controller = SLAVE

The communication is performed in the following way:

1. the host (MASTER) send a `MESSAGE + CRC` to the Controller (SLAVE);
2. the Controller answer with an `ANSWER + CRC` to the host.

The `MESSAGE` is a string with the following format:

`<STX>+<ADDR>+<WIN>+<COM>+<DATA>+<ETX>+<CRC>`

where:

NOTE

When a data is indicated between two quotes ('...') it means that the indicated data is the corresponding ASCII character.

- `<STX>` (Start of transmission) = 0x02
- `<ADDR>` (Unit address) = 0x80 (for RS 232) `<ADDR>` (Unit address) = 0x80 + device number (0 to 31) (for RS 485)
- `<WIN>` (Window) = a string of 3 numeric character indicating the window number (from '000' to '999'); for the meaning of each window see the relevant paragraph.
- `<COM>` (Command) = 0x30 to read the window, 0x31 to write into the window
- `<DATA>` = an alphanumeric ASCII string with the data to be written into the window. In case of a reading command this field is not present. The field length is variable according to the data type as per the following table:

DATA TYPE	FIELD LENGTH	VALID CHARACTERS
Logic (L)	1	'0' = OFF '1' = ON
Numeric (N)	6	'-', '.', '0' . . . '9' right justified with '0'
Alphanumeric (A)	10	from blank to '_' (ASCII)

- `<ETX>` (End of transmission) = 0x03
- `<CRC>` = XOR of all characters subsequent to `<STX>` and including the `<ETX>` terminator.

The value is hexadecimal coded and indicated by two ASCII character.
The addressed SLAVE will respond with an `ANSWER` whose structure depends from the `MESSAGE` type.
When the `MESSAGE` is a reading command, the SLAVE will respond transmitting a string with the same structure of the `MESSAGE`.

NOTE

Using the RS 485 interface, the message structure remains identical to the one used for the RS 232 interface, the only difference being that the value assigned to the ADDRESS `<ADDR>`

The Splitter Box can answers with the following response types:

Response Type	Response Length	Response Value	Description
Logic	1 byte	-	after a read instruction of a logic window
Numeric	6 bytes	-	after a read instruction of a numeric window
Alphanumeric	10 bytes	-	after a read instruction of an alphanumeric window
ACK	1 byte	(0x6)	the command execution has been successfully completed
NACK	1 byte	(0x15)	the command execution has been failed
Unknown Window	1 byte	(0x32)	the specified window in the command is not a valid window
Data Type Error	1 byte	(0x33)	the data type specified in the command (Logic, Numeric or Alphanumeric) is not accorded with the specified Window
Out of Range	1 byte	(0x34)	the value expressed during a write command is out of the range value of the specified window
Win Disabled	1 byte	(0x35)	the specified window is Read Only or temporarily disabled (for example you can't write the Soft Start when the Pump is running)

Window Meanings

N.	Read/ Write	Data Type	Description	Admitted Values
8	R/W	N	Command type	0 = serial 2= Local
108	R/W	N	Baud Rate	1200 = 1 2400 = 2 4200 = 3 9600 = 4
503	R/W	N	RS485 Address Setting	0-31
504	R/W	L	Serial type Select	RS232 = 0 RS485 = 1
600	R/W	N	Unit of pressure measure	Torr = 0 mBar = 1 Pa=2
610	R/W	N	Device Number CH1	See Below
620	R/W	N	Device Number CH2	See Below
630	R/W	N	Device Number CH3	See Below
640	R/W	N	Device Number CH4	See Below
803	R	A	Interlock Status	See Below
804	R	A	Status set point	See Below
810	R	N	Voltage	0-7000
811	R	A	Current CH1	X.XE-XX
812	R	A	Pressure CH1	X.XE-XX
821	R	A	Current CH2	X.XE-XX
822	R	A	Pressure CH2	X.XE-XX
831	R	A	Current CH3	X.XE-XX
832	R	A	Pressure CH3	X.XE-XX
841	R	A	Current CH4	X.XE-XX
842	R	A	Pressure CH4	X.XE-XX

Pumps Type
The pumps which are supported by the controller for reading pressure are as follows:

Device Number	Pumps Type	Polarity
0	Spare	pos
1	500SC/Tr	neg
2	300SC/Tr	neg
3	150SC/Tr	neg
4	75-55-40SC/Tr	neg
5	20SC/Tr	neg
6	500Diode/ND	pos
7	300Diode/ND	pos
8	150 Diode/ND	pos
9	75-55-40 Diode/ND	pos
10	20 Diode/ND	pos
11	45-55-75 SEM	pos
12	25-35 SEM	pos

Status Set Point

10	9	8	7	6	5	4	3	2	1
-	-	-	-	-	-	CH4	CH3	CH2	CH1
-	-	-	-	-	-	X	X	X	X

CHn
X = 0 Set point not reached
X = 1 Set point reached

Interlock Status

10	9	8	7	6	5	4	3	2	1
-	-	-	-	-	-	CH4	CH3	CH2	CH1
-	-	-	-	-	-	X	X	X	X

CHn
X = 0 Interlock Cable OK
X = 1 Interlock Cable open

Examples:

Command: Set Unit of Pressure → mbar
Source: PC
Destination: Controller

02	80	36	30	30	31	30	30	30	30	30	31	03	38	35
STX	ADDR	WINDOW			WR	DATO						ETX	CRC	

Source: Controller
Destination: PC

02	80	6	3	38	35
STX	ADDR	ACK	ETX	CRC	

Command: Set pump 500Diode for channel 2
Source: PC
Destination: Controller

02	80	36	32	30	31	30	30	30	30	30	36	03	38	30
STX	ADDR	WINDOW			WR	DATO						ETX	CRC	

Source: Controller
Destination: PC

02	80	6	3	38	35
STX	ADDR	ACK	ETX	CRC	

Command: Read the voltage
Source: PC
Destination: Controller

02	83	38	31	30	30	03	38	39
STX	ADDR	WINDOW			RD	ETX	CRC	

Source: Controller
Destination: PC

02	80	38	31	30	30	30	30	37	30	30	30	03	38	44
STX	ADDR	WINDOW			RD	DATO						ETX	CRC	

ETHERNET INTERFACE

Overview

Ethernet communications are provided by the Splitter Box by means of a MOXA card, model NE4100T. This card allows the serial protocol to be encapsulated within a TCP/IP framework. To communicate with the Ethernet controller either the serial port or the Ethernet port can be used.

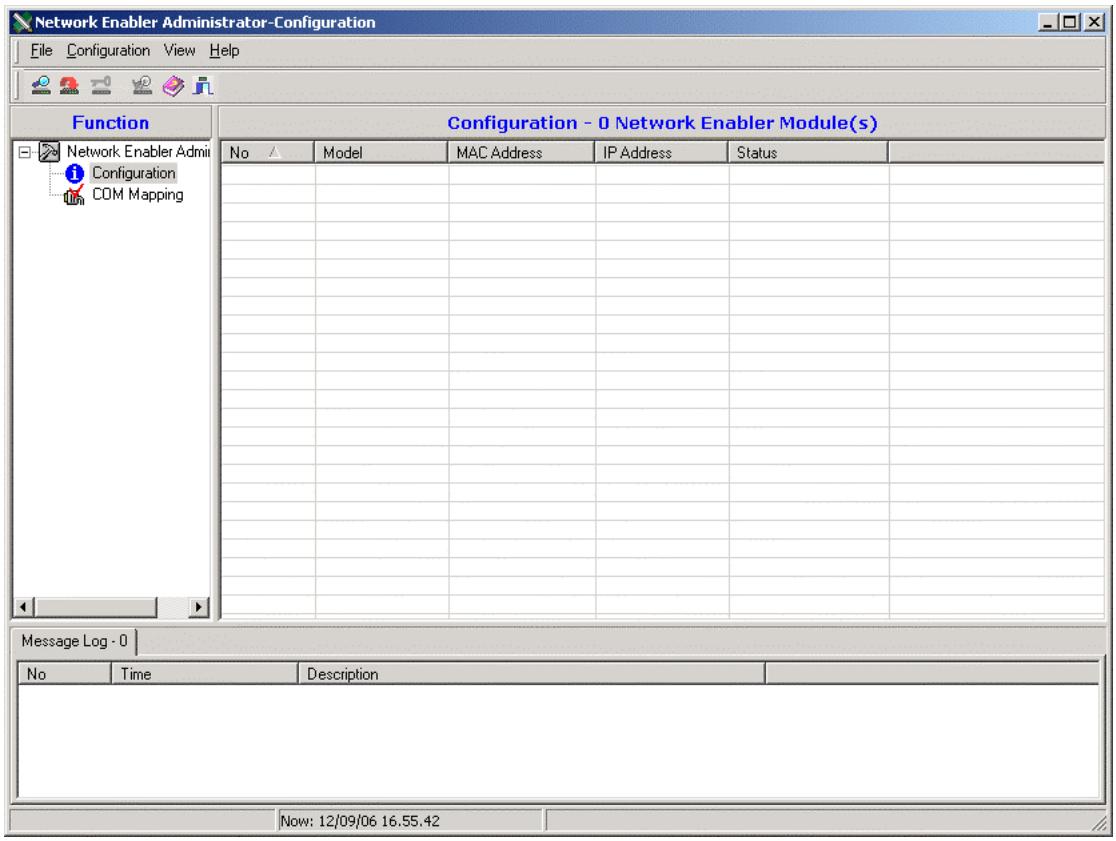
NOTE

Both communication ports (serial and Ethernet) must not be used at the same time.

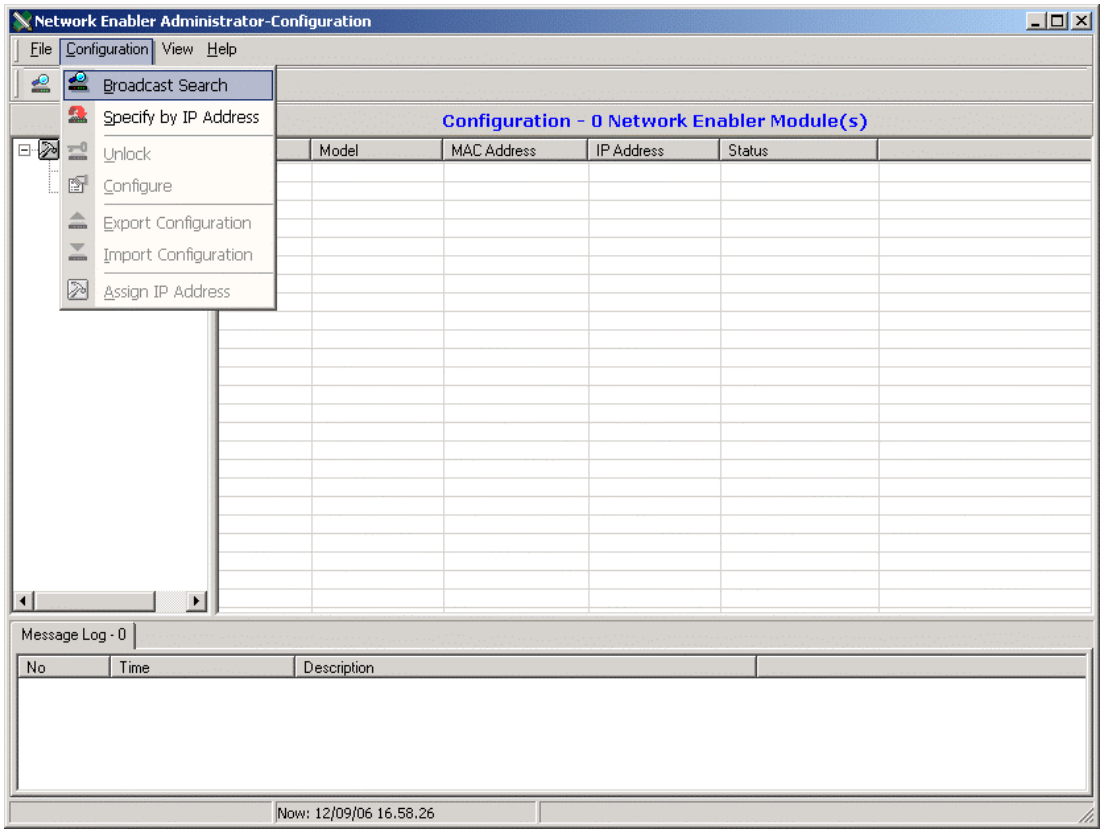
Before you can use Ethernet communications, you must configure the card with the software provided by Moxa: Network Enabler Administrator 2.7.

IP Address Configuration

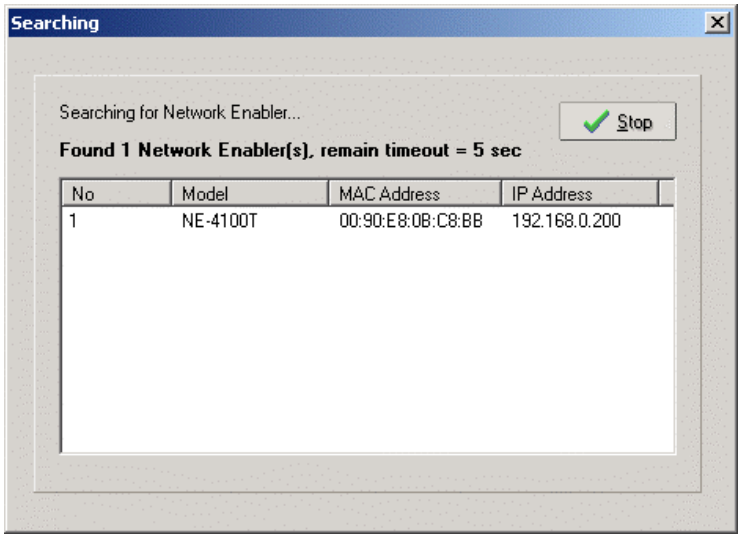
Run the Moxa-supplied program:



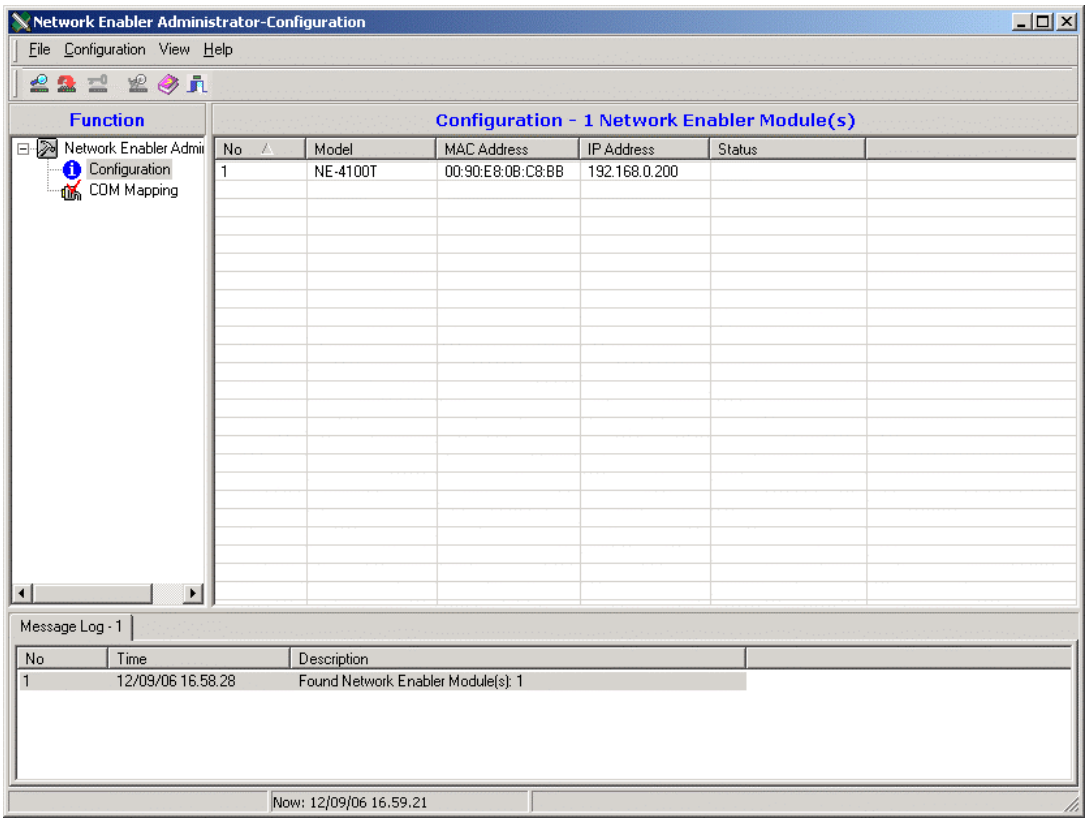
From the **Configuration** menu, select **Broadcast Search**:



The following screen appears displaying the MOXA cards found on the network. In the example shown, a MOXA card has been found at IP address 192.168.0.200 with MAC address 00:90:E8:0B:C8:BB

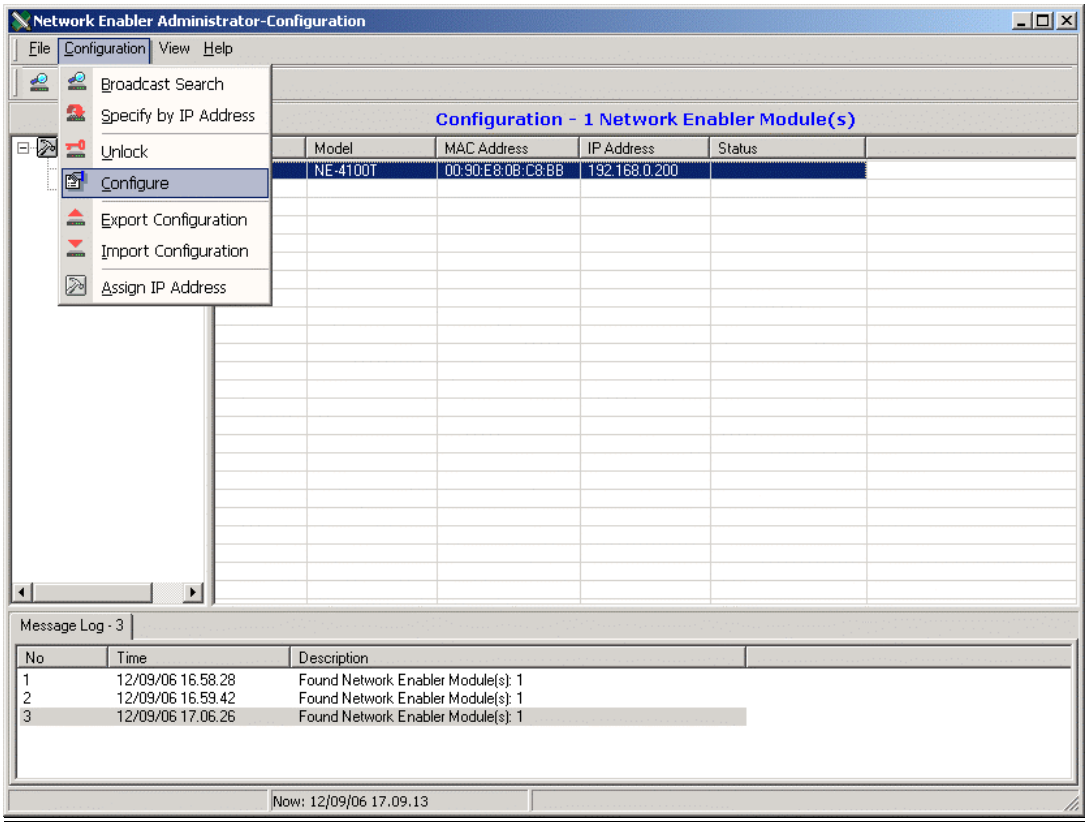


The next figure displays the MOXA cards found:

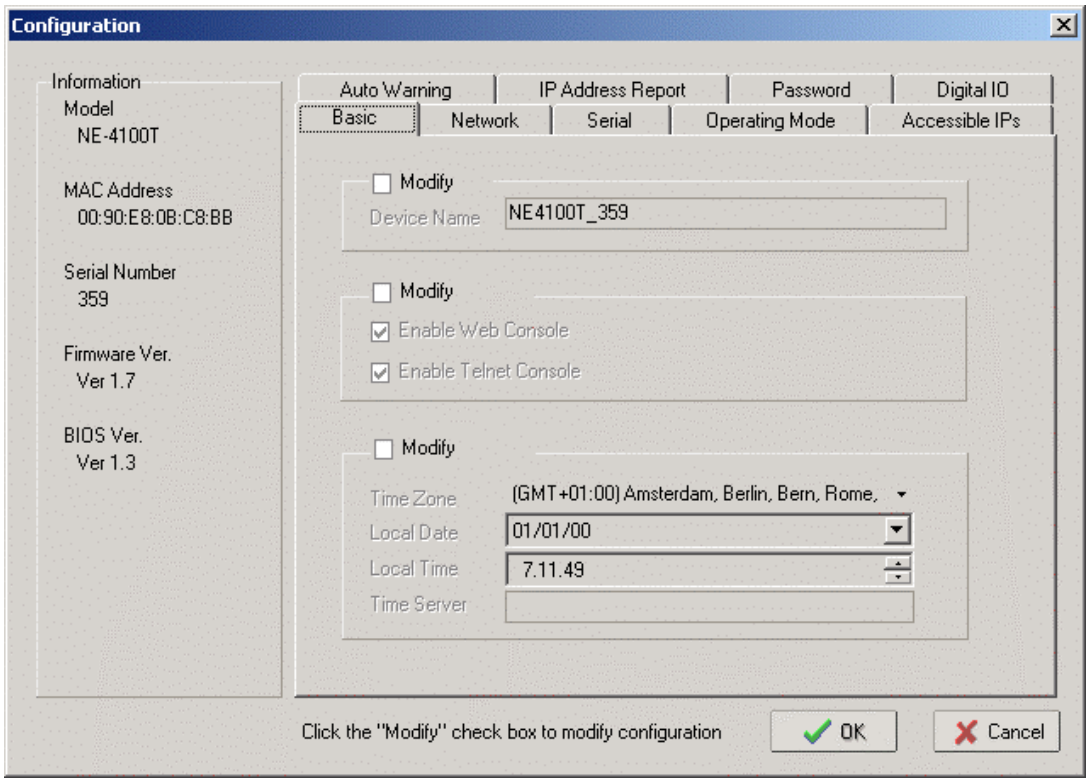


At this point, to be able to interact with the software of the card, it may be necessary to change the IP address of the MOXA card.

From the **Configuration** menu, select the item **Configure** as shown in the following figure:

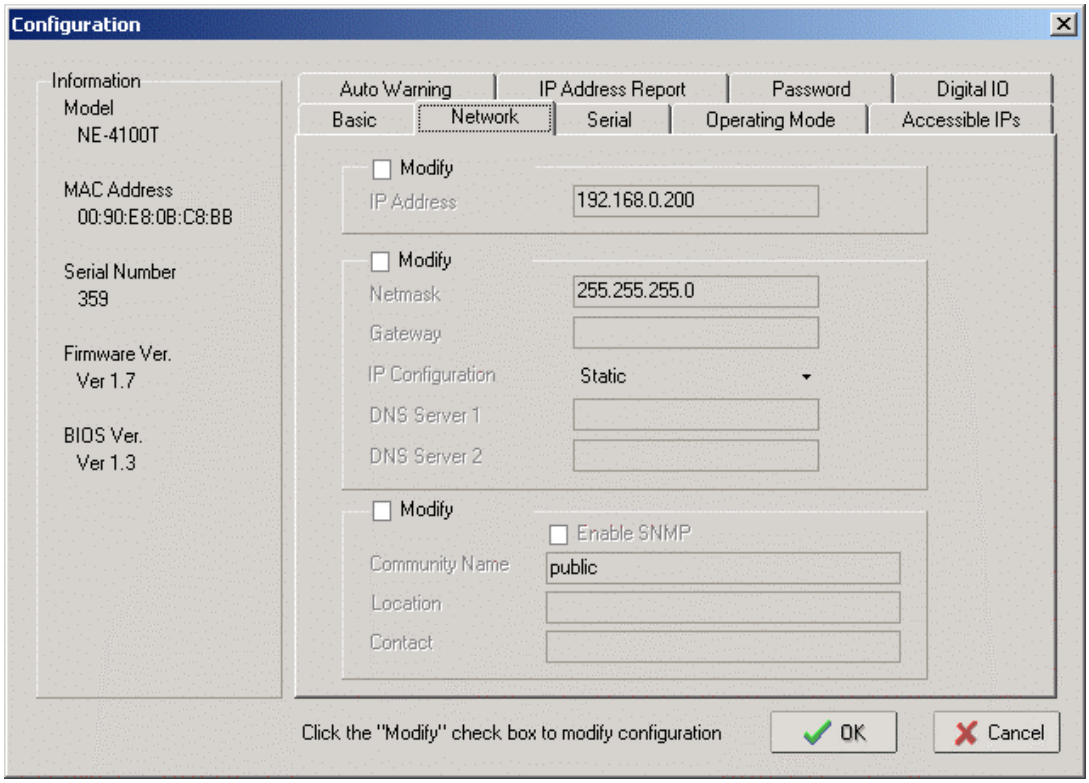


The screen below appears:

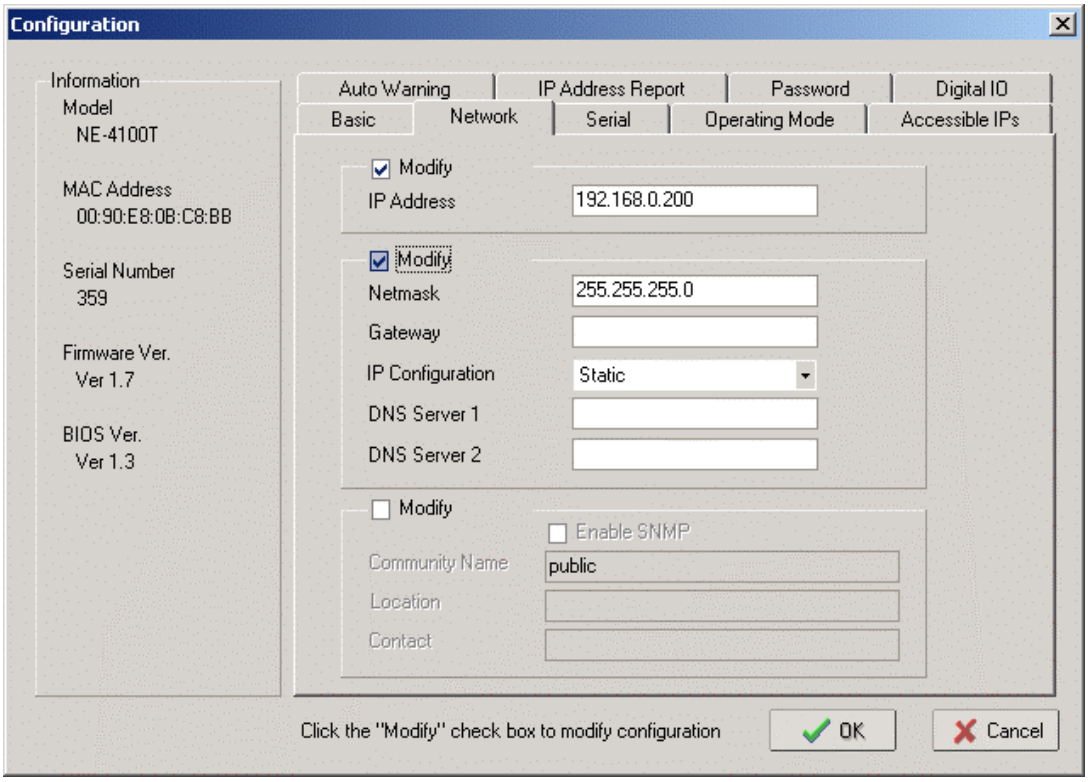


With your mouse, select the second checkbox for **Modify**, then select **Enable Web Console** and deselect the item **Enable Telnet Console**. This will allow you to use a browser to configure the rest of the parameters, as can be seen further on.

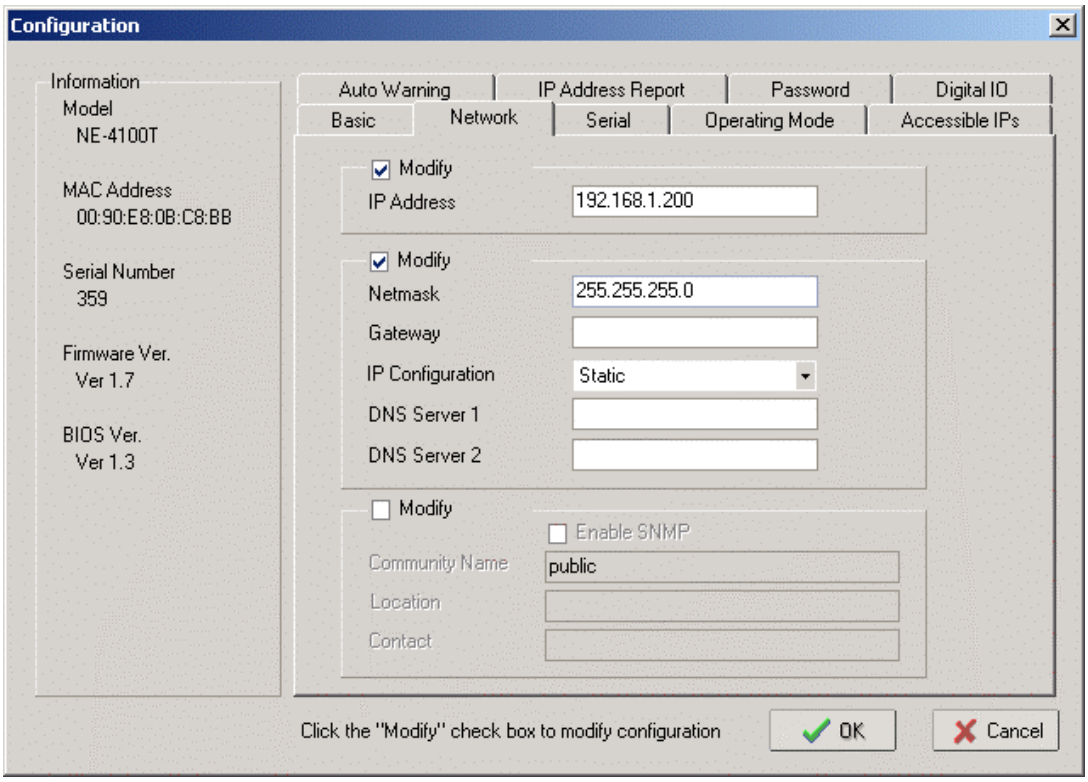
With your mouse, select the **Network** tab.



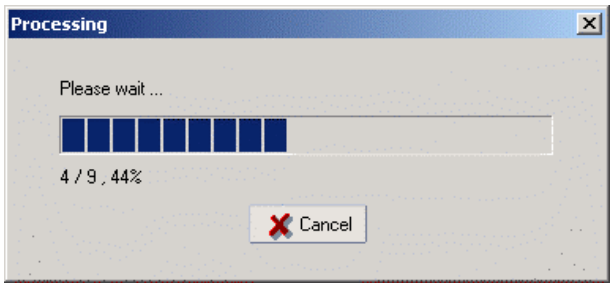
Select the **Modify** checkboxes for IP address and Netmask.



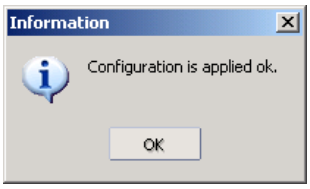
At this point you can modify the IP address/netmask of the card. Let's suppose that the new address is in class C, 192.168.1.200 with netmask 255.255.255.0

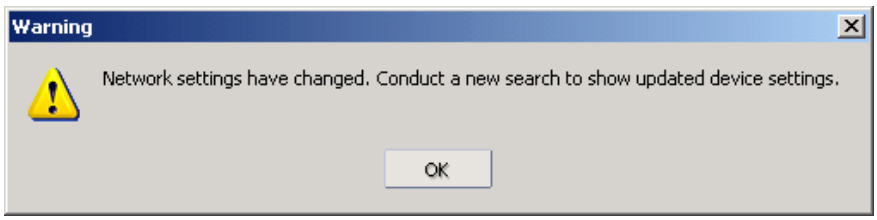


Confirm with OK. Wait as the values are modified on the card.

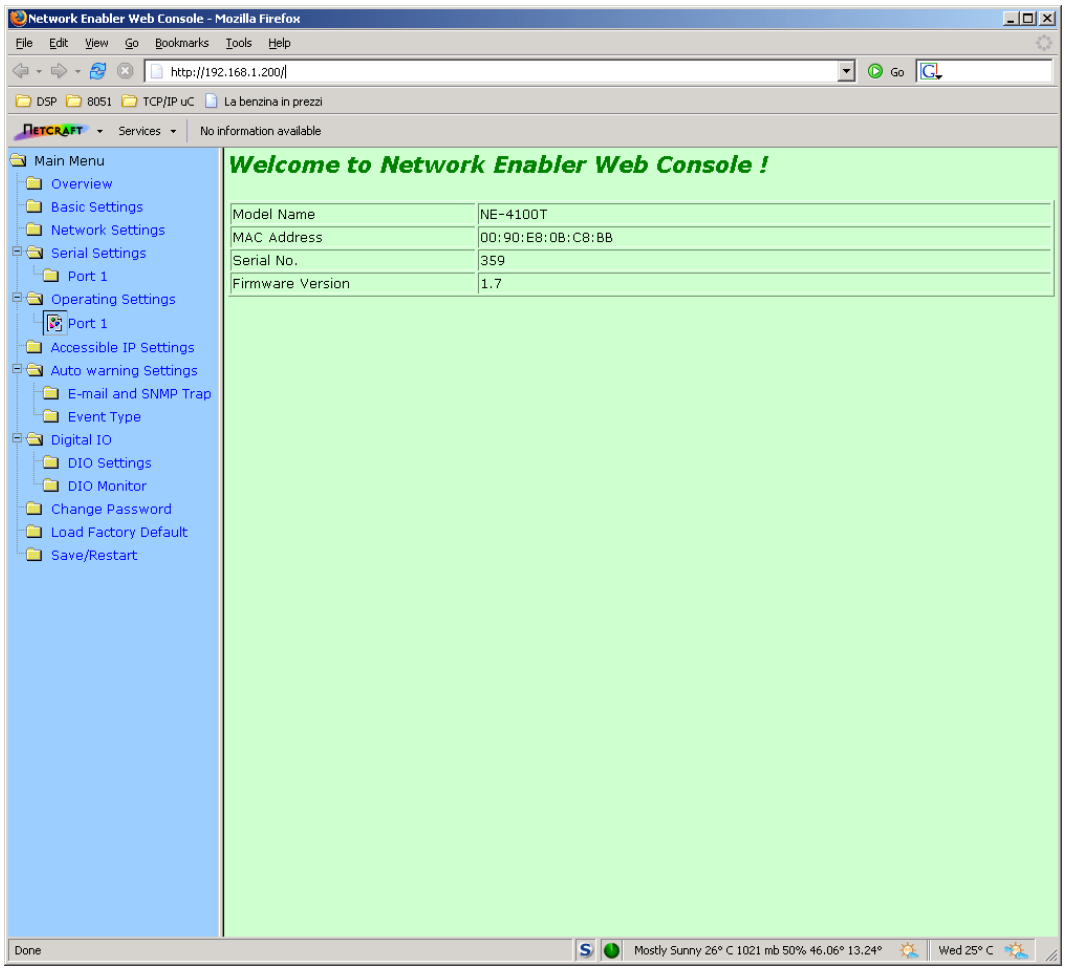


If the operation is successful, confirmation and warning windows appear in this order:



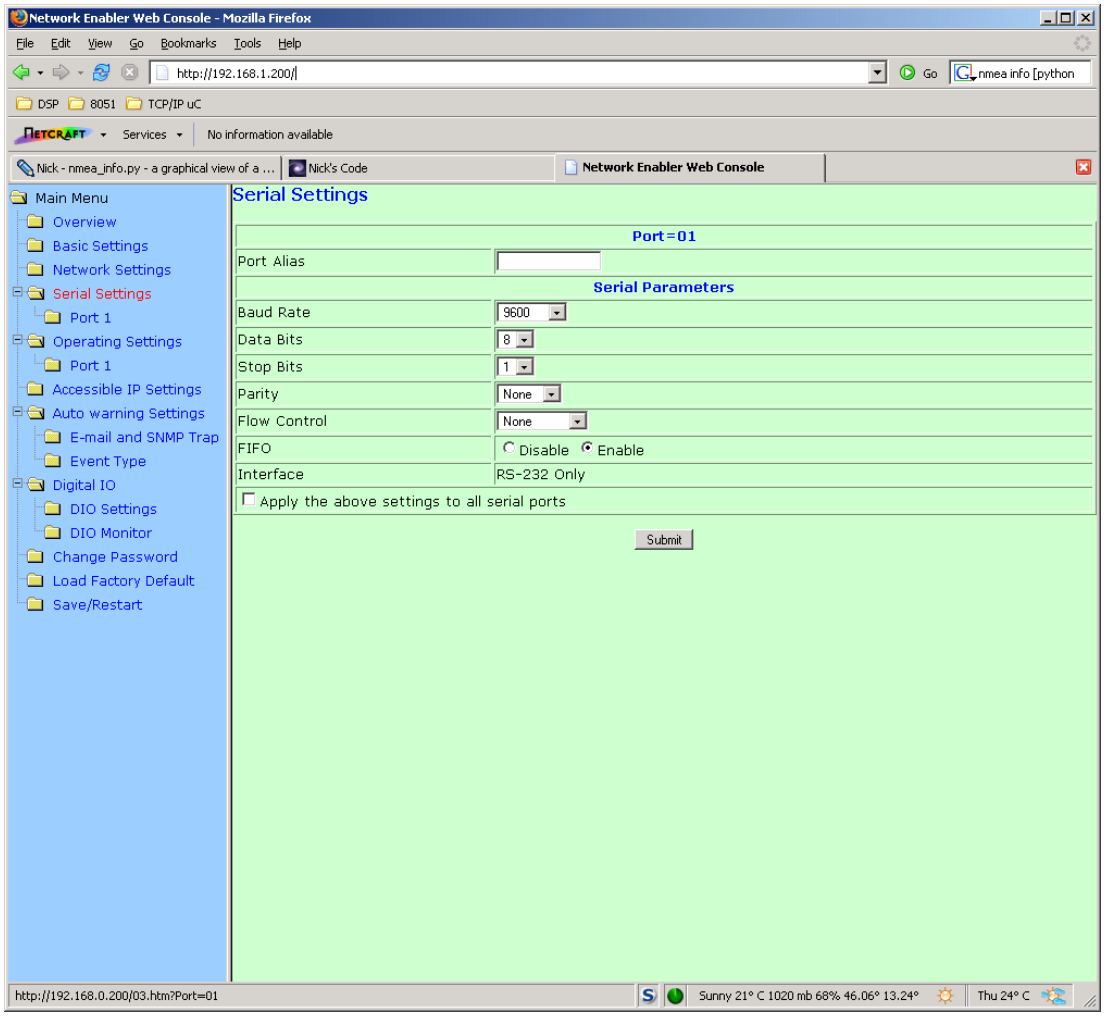


Confirm again, in the usual way.
Now, using any browser, connect to the URL http://192.168.1.200 and configure the remaining card parameters.



RS232 Parameter Configuration

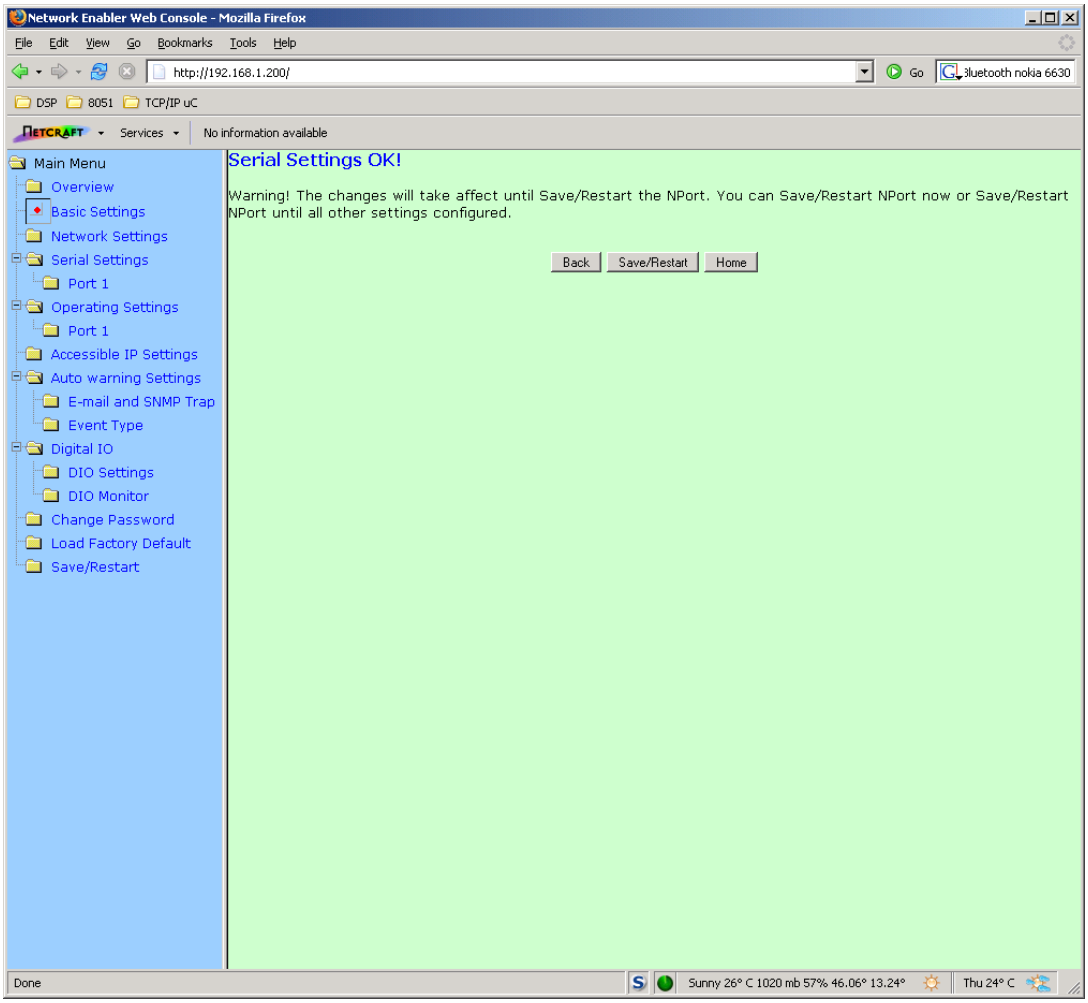
Select



At this point, you can modify the 232 serial settings on the MOXA card with the equivalent values set on the DUAL card. In this example:

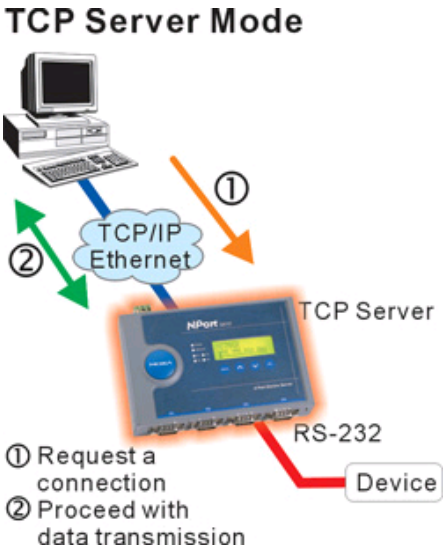
Baud Rate: 9600
Data Bit: 8
Stop Bit: 1
Parity: None
Flow Control: None

At the end, confirm your settings.



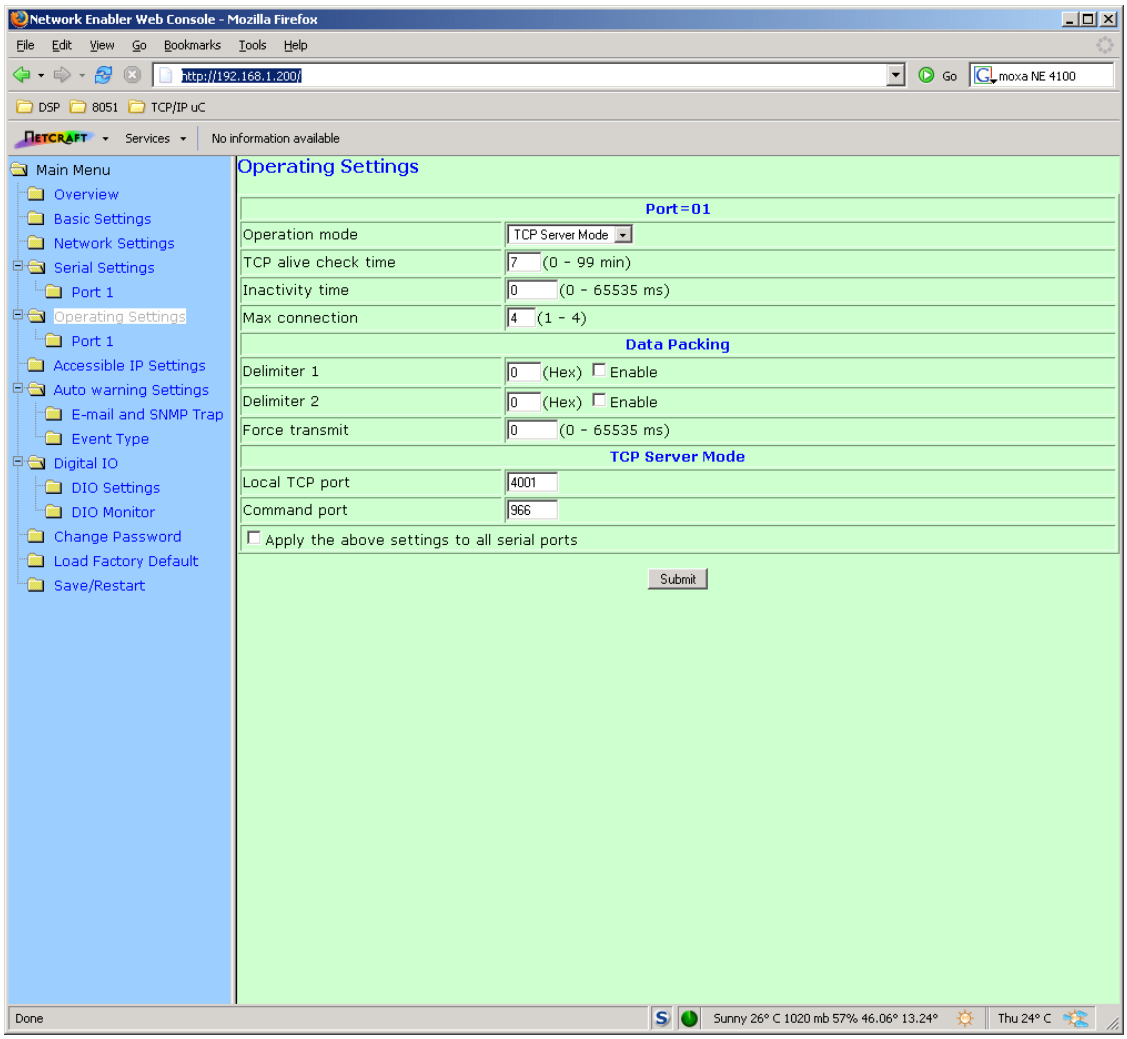
To finally save your settings, select the **Save/Restart** item.

TCP Server Mode Configuration



To be able to use the program provided by Varian (DEC) for communications between a PC and DUAL over a TCP/IP network, you must configure the card with the TCP server mode functionality.

Again, using your browser, select the **Operating Settings** item and define the parameters in the frame on the right as follows:



where:

Max connection: 4 is the maximum number of simultaneous connections[1] that can be made to the device.
Local TCP port: 4001 is the port on which the service providing the TCP/IP<->RS232 interfacing is listening.

For more details, refer to the supplier's site: MOXA

[1] If the number for Max connection is greater than **1**, this means that two or more users, in theory, are authorised to modify the DUAL parameters remotely.

BINARY PROTOCOL

This protocol has been implemented on the Splitter Box only for compatibility with old controllers. Varian advises against use of this protocol for new projects.

The three protocols have equivalent data fields which comply with the following formats:

Type	No. of Bytes.	Description
Read	1	"?" (3Fh[3]) performs reads on the Splitter Box
Status	1	"0" (30h) = false = off "1" (31h) = true = on [5]
Integer	5	"xxxxx" represented in BCD[4] on 5 digits (always positive)
BitField	8	Like the integer type, but with meanings associated to the number's single bits
Expo-nential	7	"x.xEsxx" where x is BCD digits, E is the 45h character and s is the ("+" o "-" sign
String	n	Sequence of n characters included within the 20h and 7Fh range

[3] the "h" notation following a number indicates that the number is expressed in hexadecimal format

[4]BCD: the number is represented by digits included within the "0" and "9" range (ASCII 30h - 39h).

[5]Status can also assume values greater than "1".

The commands have a read and a write mode. By specifying the type of read operation being performed, the Host queries the Splitter Box which in turn replies in a format compliant with the command sent. As long as a write operation can be carried out, the write and read formats for the same command coincide.

Communication Format

Host to Dual controller command format:
[header command] [length] [command] [channel] [data] [checksum]
Dual controller to Host reply format:
[header response] [length] [command] [channel] [data] [checksum]

Field	No. of bytes	Value	Description
Header command	1	81h 81h÷A0h	Header for the serial RS232, RS422 Header and address for the serial RS485 (129 - 160)
Header response		01h 01h÷20h	Header for the serial RS232, RS422 Header and address for the serial RS485
Length	2		Data packet length in BCD (command, channel, data fields only)
Command			See commands description (byte 0 command, byte 1 subcommand)
Channel	1	30h 31h 32h 33h 34h	No channel High Voltage 1 High Voltage 2 High Voltage 3 High Voltage 4
Data	n		See commands description
Checksum	1		XOR of all bytes (checksum excluded) in *and* with 7Fh

List of Commands

Command	Read/ Write	Code Value ASCII	Code Value hex	Channel	Admitted Values
Unit of pressure measure	R/W	D0	44h30h	No Channel	Torr = 0 mBar = 1 Pa=2
Device Number	R/W	F0	46h30h	HV1,HV2,HV3,HV4	See Below
Voltage	R	S0	53h30h	HV1,HV2,HV3,HV4	0-7000
Current	R	T0	54h30h	HV1,HV2,HV3,HV4	X.XE-XX
Pressure	R	U0	55h30h	HV1,HV2,HV3,HV4	X.XE-XX

Examples

Unit of pressure: mbar
81h 30h34h 44h30h 30h 31h 70h

Pump select for channel 3 is : 500 Diode
81h 30h34h 46h30h 33h 36h 76h

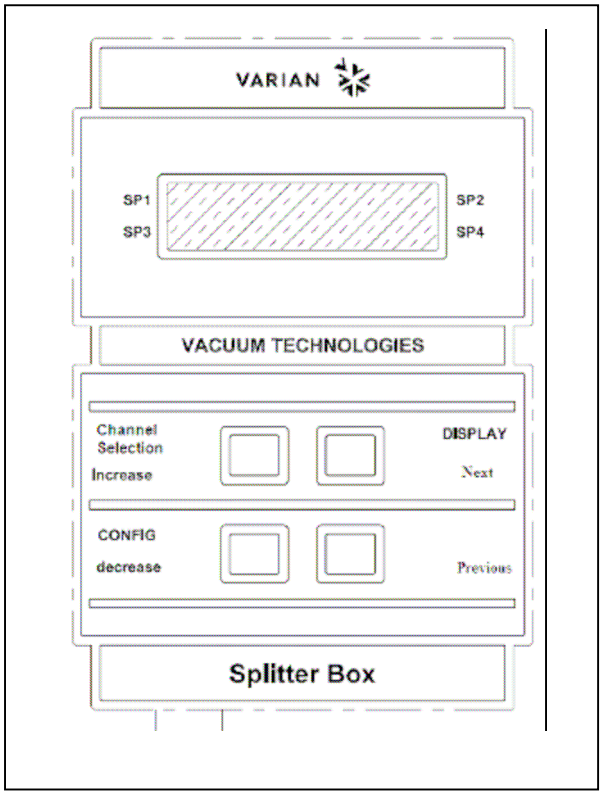
Read voltage
81h 30h34h 53h30h 31h 3Fh 68h

Read current for channel 4
81h 30h34h 54h30h 34h 3Fh 6Ah

Read pressure for channel 1
81h 30h34h 55h30h 31h 3Fh 6Eh

HOW TO USE BY FRONT PANEL

This paragraph explains how to use the front panel with display and keyboard for those models equipped with display and keyboard (929-7020 , 929-7021).

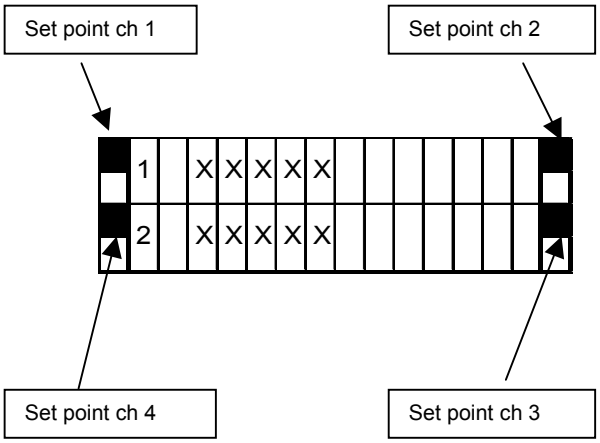


Front panel

➢ At power-on, the display shows:

				V	A	R	I	A	N					
		V	A	C	U	U	M		T	E	C	H	.	

➢ After a few seconds, the following screen page is displayed:



Where:

XXXX is the name of the pump, for example:
500SC/Tr = 500 StarCell o Triode
75-55-40 CS = 75 o 55 o 40 StarCell o Triode
500 Diode = 500 Diode o Noble Diode ecc…

The black squares to the left and right of the display indicate whether the set points are active (black squares) or not (white squares).

The numbers to the left of the display indicate the number of the channel. In the figure above, the pumps of channels 1 and 2 are indicated.

➢ Press the “Channel Selection” key for alternative display of all four channels.
In the figure below, channels 3 and 4 are shown for example purposes.

3		7	5	-	5	5	-	4	0		S	C		
4		7	5	-	5	5	-	4	0		S	E	M	

➢ Press the “Display” key to display all the measurements alternatively.

1		X	.	X	E	-	X	X	m	b	a	r		
2		X	.	X	E	-	X	X	m	b	a	r		

(in the configuration menu it is possible to choose between mbar, Torr, Pascal).

1		X	.	X	E	-	X	X		A				
2		X	.	X	E	-	X	X		A				

1		-	7	0	0	0			V					
2		-	7	0	0	0			V					

Configuration menu

➢ Press the “Config” key to access the configuration menu; the following screen page is displayed:

					C	O	N	F	I	G				
						M	E	N	U					

To scroll the items of the menu, press the “Next” key.
Each time “Next” is pressed, the parameters of that screen page are saved.
Pressing “Previous”, the data of the screen page are not saved; the following screen page is displayed for 2 sec. and subsequently the item of the previous menu.

				C	H	A	N	G	E	S				
				A	B	O	R	T	E	D				

To select the parameters of a menu item, use the “Increase” and “Decrease” buttons.

- Pressing “Next”:

					C	O	N	F	I	G				
						X	X	X	X					

Where XXXX is
GENERAL
HV1
HV2
HV3
HV4
To move from one value to another, press the “Increase” or “Decrease” key.

- If **GENERAL** has been selected, after pressing the “Next” key, the following is displayed:

						M	O	D	E					
						X	X	X	X					

Where XXXX is:
SERIAL
FRONT

- Pressing “Next”:

				P	R	E	S	S	U	R	E			
						X	X	X	X					

Where XXXX is:
Torr
Mbar
Pa

- Pressing “Next”:

S	E	R	I	A	L		B	A	U	D		R	A	T	E
					X	X	X	X							

Where XXX is: 1200 4800 9600

- Pressing “Next”:

			S	E	R	I	A	L		T	Y	P	E		
					X	X	X	X							

Where XXX is: RS232 RS485

- Pressing “Next”:

			S	E	R	I	A	L		A	D	D	R		
						X	X								

Where XX is: from 0 to 32

- Pressing “Next” causes exit from the menu.

- If **HV1,2,3,4** is selected, after pressing the “Next” key, the following is displayed:

				H	V	X		P	U	M	P			
					X	X	X	X	X					

Where XXXX are the name of the pumps

- Pressing “Next”:

		H	V	X		S	e	t	P	o	i	n	t	
				X	.	X	E	-	X	X		A		

The mantissa flashes and with “Increase” , “Decrease” the mantissa is modified.
Pressing “next”, the mantissa stops flashing and the exponent starts to flash. The exponent can be modified with “Increase” , “Decrease”.
Pressing “next” again, the measurement unit flashes; this may vary between “A” (Ampere) and the pressure unit of measurement selected in the **General** menu.
The set point indication envisages +/- 5% hysteresis on the value set.

- Pressing “Next” causes exit from the menu.

ACCESSORIES

DESCRIPTION	PART NUMBER
Positive Splitter Box with Ethernet and with display and keyboard	929-7020
Negative Splitter Box with Ethernet and with display and keyboard	929-7021
Positive Splitter Box with Ethernet and w/o display and keyboard	829-7020
Negative Splitter Box with Ethernet and w/o display and keyboard	829-7021
H.V. cable between controller and Splitter Box	929-0704
H.V. cable between Splitter Box and pump	929-0705

Request for Return

1. A Return Authorization Number (RA#) **WILL NOT** be issued until this Request for Return is completely filled out, signed and returned to Varian Customer Service.
2. Return shipments shall be made in compliance with local and international **Shipping Regulations** (IATA, DOT, UN).
3. The customer is expected to take the following actions to ensure the **Safety** of workers at Varian: (a) Drain any oils or other liquids, (b) Purge or flush all gasses, (c) Wipe off any excess residues in or on the equipment, (d) Package the equipment to prevent shipping damage, (for Advance Exchanges please use packing material from replacement unit).
4. Make sure the shipping documents clearly show the RA# and then return the package to the Varian location nearest you.

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Fax: +1 781 8609252

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Phone: +39 011 9979111
Fax: +39 011 9979330

Asia and ROW
Varian Vacuum Technologies
Local Office

CUSTOMER INFORMATION

Company name: ..……………………..……...……………….……………………………...…………………….....…………..….

Contact person: Name: ……………………………………..… Tel: ……………………….…....………………..….……....

Fax: …………………………….…...…...…… E-Mail: ...……………………..…………..…..….…..…..

Ship Method: ………….……......…… Shipping Collect #: ………….…..………… P.O.#: ……………….…......………..

Europe only: VAT reg. Number: ………………..……………... *USA only:* ☐ Taxable ☐ Non-taxable

Customer Ship To: ………………………….……… Customer Bill To: ………………..……………...

……………..…………………... ..………………………………...

………………..………………... ..………………………………...

PRODUCT IDENTIFICATION

Product Description	Varian P/N	Varian S/N	Purchase Reference

TYPE OF RETURN (check appropriate box)

☐ Paid Exchange ☐ Paid Repair ☐ Warranty Exchange ☐ Warranty Repair ☐ Loaner Return
☐ Credit ☐ Shipping Error ☐ Evaluation Return ☐ Calibration ☐ Other ……………….

HEALTH and SAFETY CERTIFICATION

Varian Vacuum Technologies **CAN NOT ACCEPT** any equipment which contains **BIOLOGICAL HAZARDS** or **RADIOACTIVITY**. Call Varian Customer Service to discuss alternatives if this requirement presents a problem.

The equipment listed above (check one):

☐ **HAS NOT** been exposed to any toxic or hazardous materials

OR

☐ **HAS** been exposed to any toxic or hazardous materials. In case of this selection, check boxes for any materials that equipment was exposed to, check all categories that apply:

☐ Toxic ☐ Corrosive ☐ Reactive ☐ Flammable ☐ Explosive ☐ Biological ☐ Radioactive

List all toxic or hazardous materials. Include product name, chemical name and chemical symbol or formula.

………..

Print Name: …………………………………. Customer Authorized Signature: ……………...…………………….

Print Title: …………………………………... Date: ..…../..…../……

NOTE: If a product is received at Varian which is contaminated with a toxic or hazardous material that was not disclosed, **the customer will be held responsible** for all costs incurred to ensure the safe handling of the product, and **is liable** for any harm or injury to Varian employees as well as to any third party occurring as a result of exposure to toxic or hazardous materials present in the product.

Do not write below this line

Notification (RA)#: …………………….……….. Customer ID#: ……….………… Equipment #: ……………………..

VARIAN

Request for Return

ISO 9001 REGISTERED

FAILURE REPORT

TURBO PUMPS and TURBOCONTROLLERS

☐ Does not start	☐ Noise	POSITION	PARAMETERS		
☐ Does not spin freely	☐ Vibrations	☐ Vertical	Power:	Rotational Speed:	
☐ Does not reach full speed	☐ Leak	☐ Horizontal	Current:	Inlet Pressure:	
☐ Mechanical Contact	☐ Overtemperature	☐ Upside-down	Temp 1:	Foreline Pressure:	
☐ Cooling defective		☐ Other:	Temp 2:	Purge flow:	
		…….	OPERATION TIME:		
TURBOCONTROLLER ERROR MESSAGE:					

ION PUMPS/CONTROLLERS

☐ Bad feedthrough	☐ Poor vacuum
☐ Vacuum leak	☐ High voltage problem
☐ Error code on display	☐ Other
Customer application:	

VALVES/COMPONENTS

☐ Main seal leak	☐ Bellows leak
☐ Solenoid failure	☐ Damaged flange
☐ Damaged sealing area	☐ Other
Customer application:	

LEAK DETECTORS

☐ Cannot calibrate	☐ No zero/high backround
☐ Vacuum system unstable	☐ Cannot reach test mode
☐ Failed to start	☐ Other
Customer application:	

INSTRUMENTS

☐ Gauge tube not working	☐ Display problem
☐ Communication failure	☐ Degas not working
☐ Error code on display	☐ Other
Customer application:	

PRIMARY PUMPS

☐ Pump doesn't start	☐ Noisy pump (describe)
☐ Doesn't reach vacuum	☐ Over temperature
☐ Pump seized	☐ Other
Customer application:	

DIFFUSION PUMPS

☐ Heater failure	☐ Electrical problem
☐ Doesn't reach vacuum	☐ Cooling coil damage
☐ Vacuum leak	☐ Other
Customer application:	

FAILURE DESCRIPTION

(Please describe in detail the nature of the malfunction to assist us in performing failure analysis):

NOTA: Su richiesta questo documento è disponibile anche in Tedesco, Italiano e Francese.
REMARQUE : Sur demande ce document est également disponible en allemand, italien et français.
HINWEIS: Auf Aufrage ist diese Unterlage auch auf Deutsch, Italienisch und Französisch erhältlich.

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