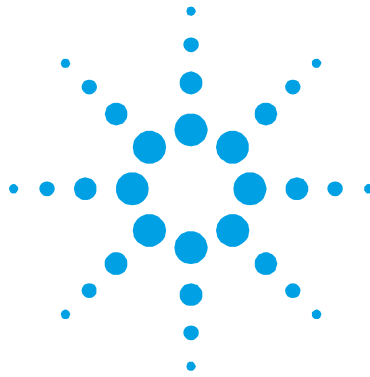




Splitter Box

Models

829-7020, 829-7021

**Manuale di Istruzioni
Bedienungshandbuch
Notice de Mode d'Emploi
User Manual**

87-900-131-01 (A)

05/2011



Agilent Technologies

Notices

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WARNING

A **WARNING** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a **WARNING** notice until the indicated conditions are fully understood and met.

Splitter Box



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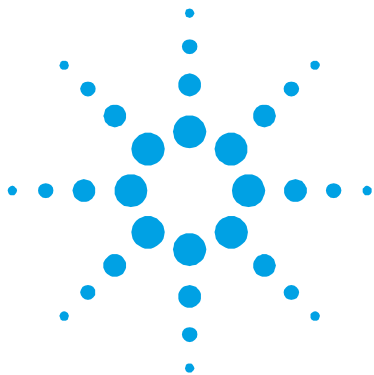
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Traduzione delle istruzioni originali



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 Agilent prima dell'utilizzo dell'apparecchiatura. La Agilent 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:

AVVERTENZA!



I messaggi di avvertenza 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

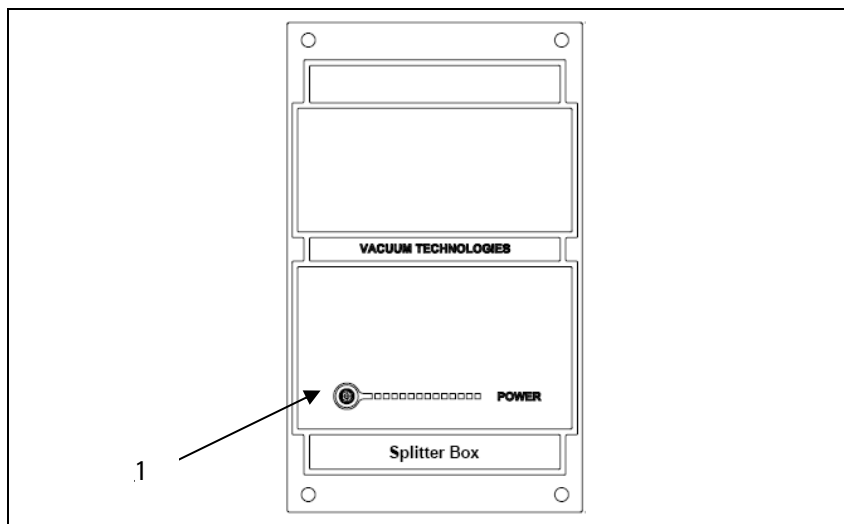


Figura 1

1	LED di indicazione Controller acceso
---	--------------------------------------

Con Display e tastiera

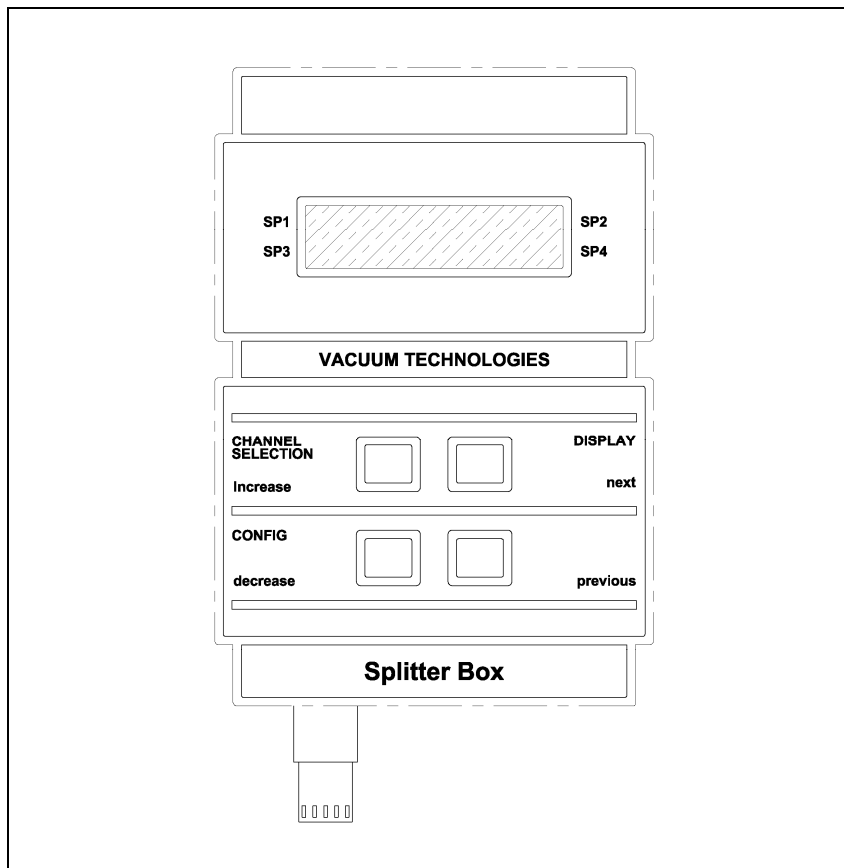


Figura 2

Pannello posteriore

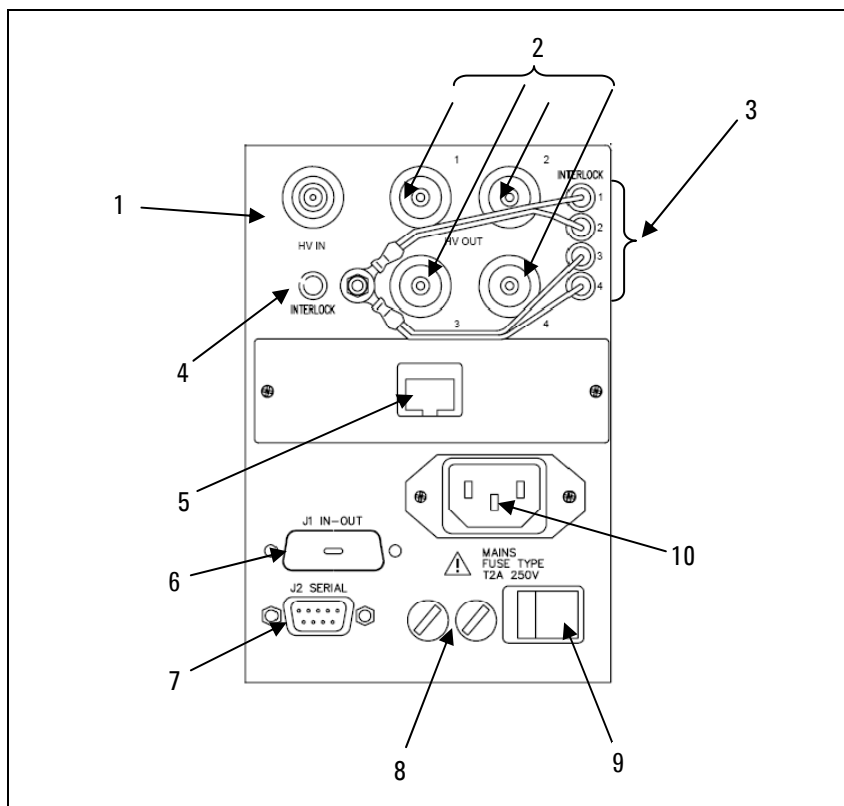


Figura 3

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)

1 Istruzioni per l'uso

Immagazzinamento

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.

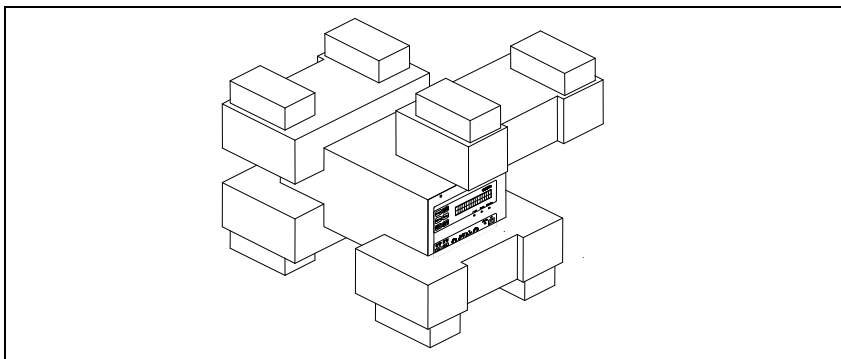


Figura 4 Imballo del controller

Installazione

AVVERTENZA!



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 elettrostatiche.

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 utilizza 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 ai paragrafi "USE" nell'appendice "Technical Information".

AVVERTENZA!



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 pannello 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. pannello 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 funzionare 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 Agilent o del "Agilent advanced exchange service", che permette di ottenere un controller rigenerato in sostituzione di quello guasto.

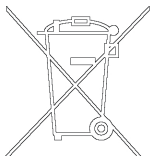
Qualora un controller dovesse essere rottamato, procedere nel rispetto delle normative nazionali specifiche.

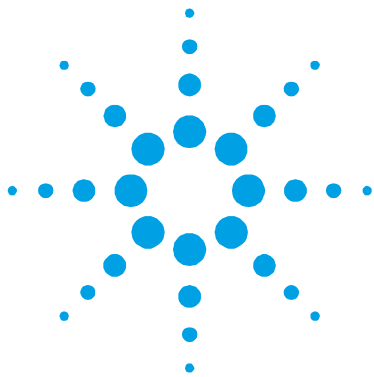
Smaltimento

Significato del logo "WEEE" presente sulle etichette. Il simbolo qui sotto riportato 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.





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Übersetzung der Originalanleitungen



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 Agilent 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:

WARNUNG!



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

VORSICHT!

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

HINWEIS

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

Vordere Schalttafel

Ohne Display und Tastatur

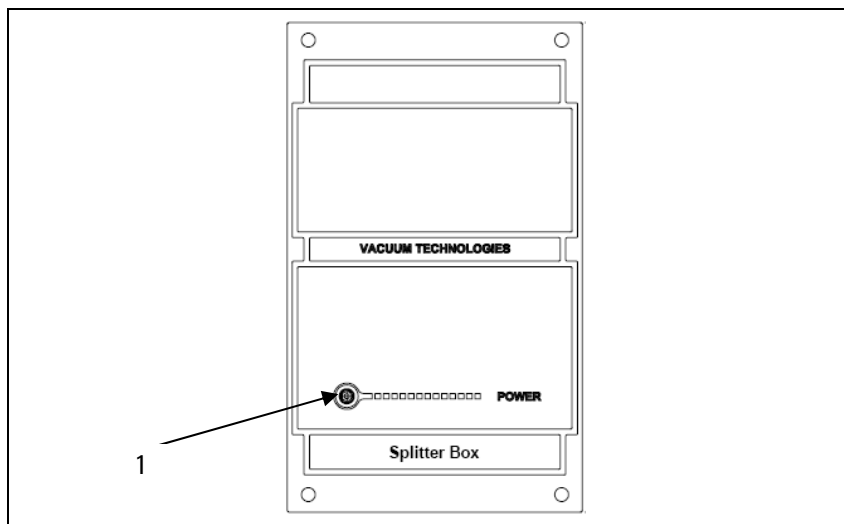


Abbildung 1

1	Controller-Anzeige-LED leuchtet
---	---------------------------------

Mit Display und Tastatur

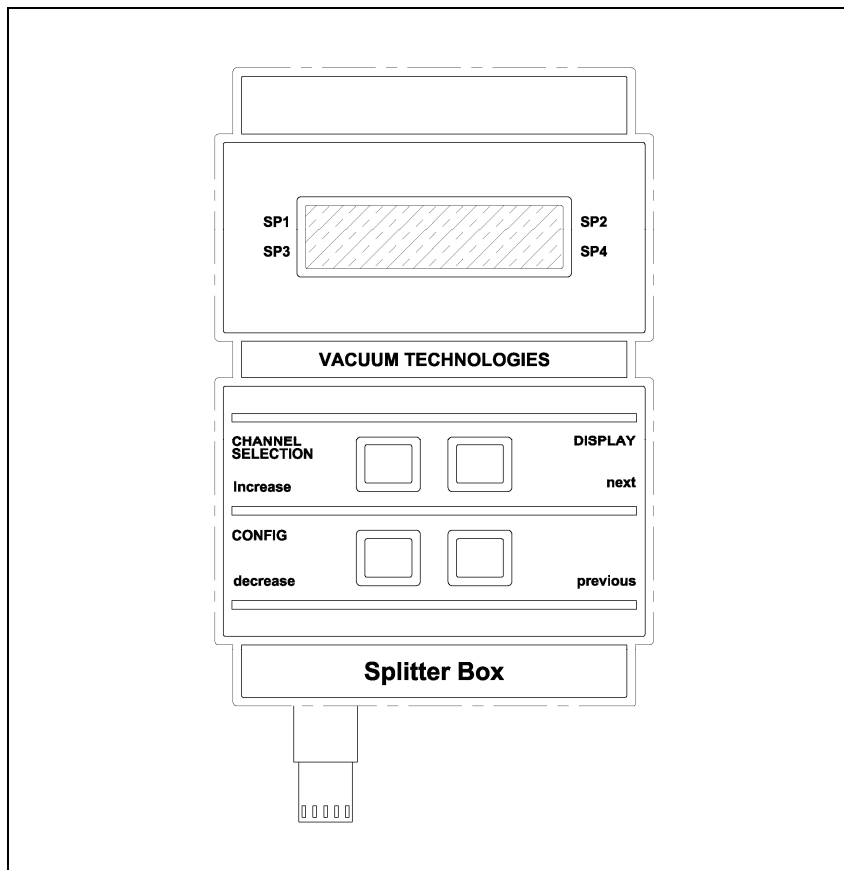


Abbildung 2 Controller-Anzeige-LED leuchtet

Schalttafel auf der Rückseite

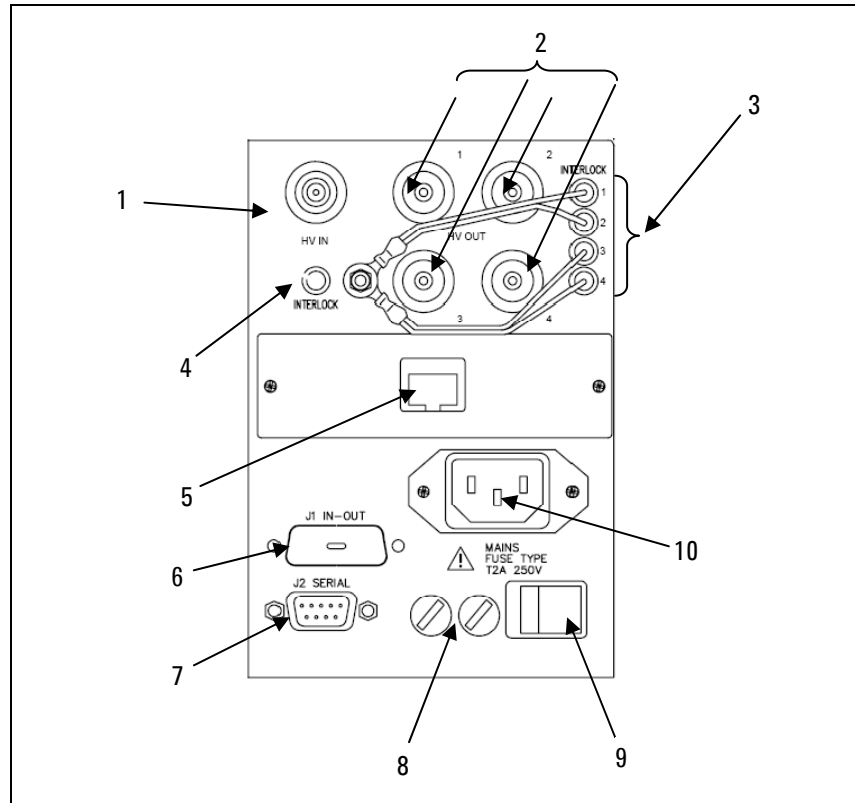


Abbildung 3

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)

2 Gebrauchsanleitung

Lagerung

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.

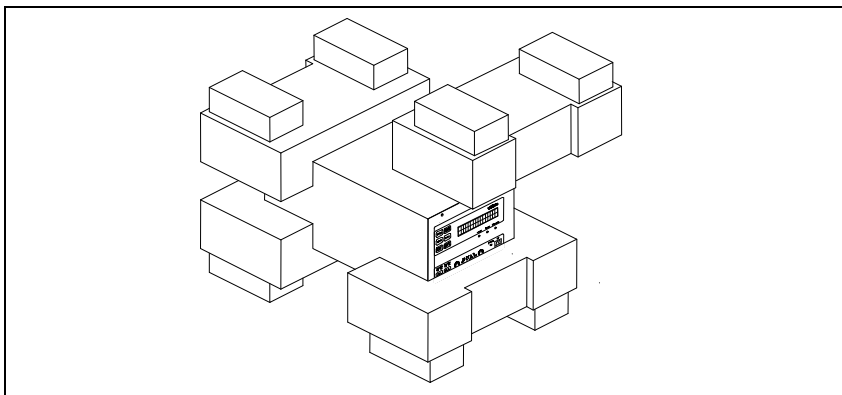


Abbildung 4 Verpackung des Controllers

Installation

WARNUNG!



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)

HINWEIS

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".

WARNUNG!



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.

HINWEIS

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 Agilent-Reparaturdienst in Anspruch genommen werden oder schließen Sie einen Vertrag für "Agilent Advanced Exchange Service" ab, mit dem ein defekter Controller gegen einen generalüberholten ausgetauscht wird.

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

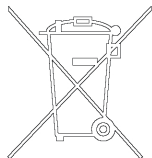
Entsorgung

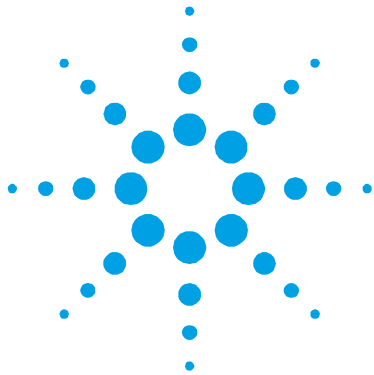
Bedeutung des "WEEE" Logos auf den Etiketten.

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.





3

Mode d'emploi

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Traduction de la mode d'emploi originale



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 Agilent, avant l'utilisation de l'appareillage. Agilent 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:

AVERTISSEMENT!



Les messages d'avertissement 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

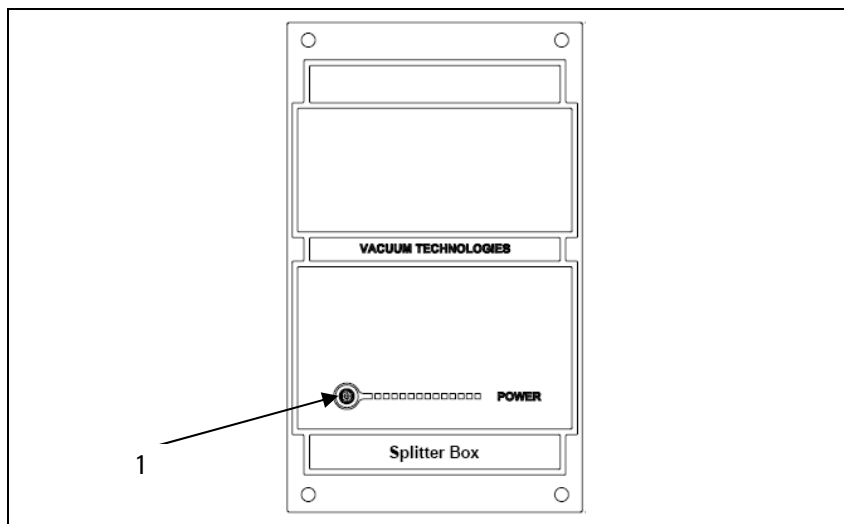


Figure 1

1	LED d'indication contrôleur en marche
---	---------------------------------------

Avec écran et clavier

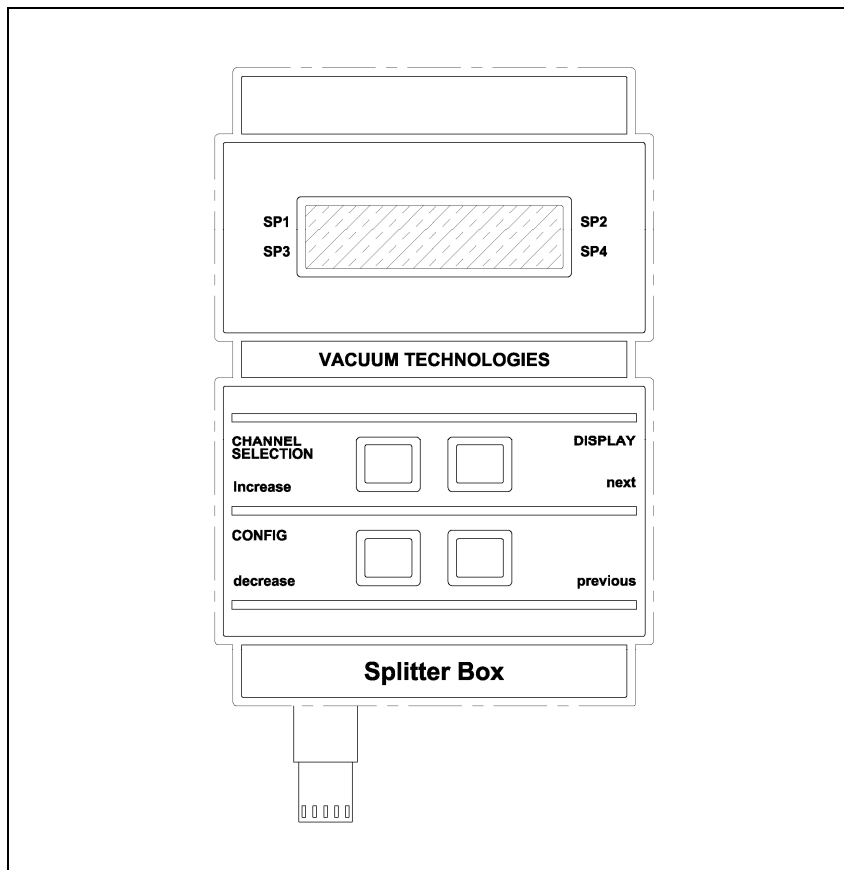


Figure 2

Panneau arriere

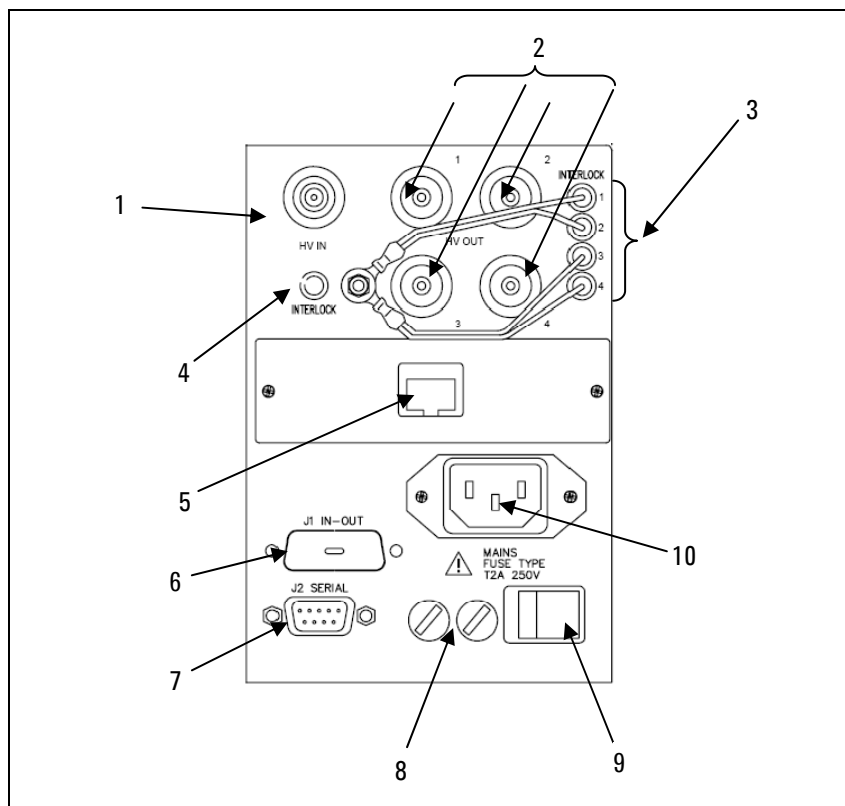


Figure 3

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")

3 Mode d'emploi

Emmagasinage

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).

Préparation 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.

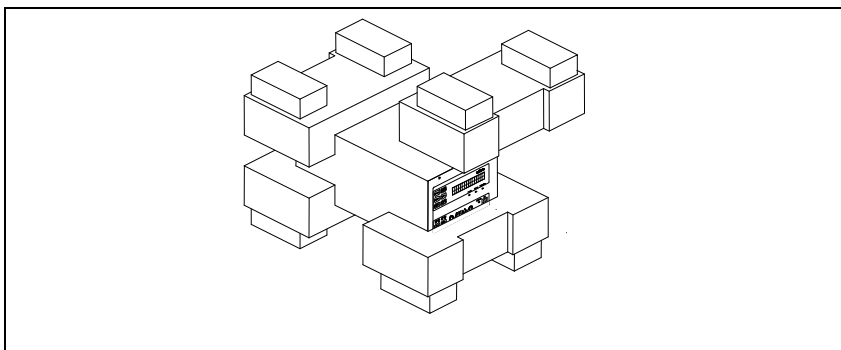


Abbildung 5 Emballage du contrôleur

Installation

AVERTISSEMENT!



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".

AVERTISSEMENT!



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

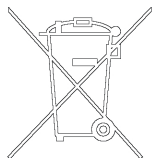
Le contrôleur Splitter Box n'a besoin d'aucun entretien. N'importe quel entretien sur l'unité doit être effectué par un personnel technique autorisé. En cas de panne contacter le Support technique Agilent ou bien s'abonner au Agilent Advanced Exchange Service" où le contrôleur endommagé est remplacé par un contrôleur reconditionné.

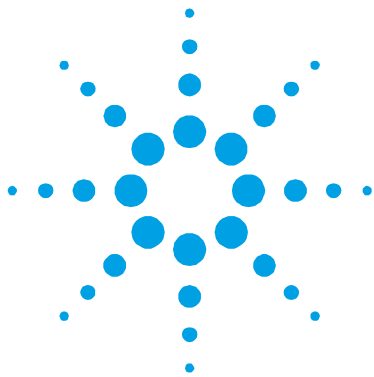
En cas de mise au rebut du contrôleur, procéder à son élimination conformément aux réglementations nationales en la matière.

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.





4

Instructions for Use

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Original Instructions



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 Agilent. Agilent 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:

WARNING!



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

CAUTION!

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

NOTE

Notes contain important information extracted from the text.

Front Panel

Without Display and Keyboard

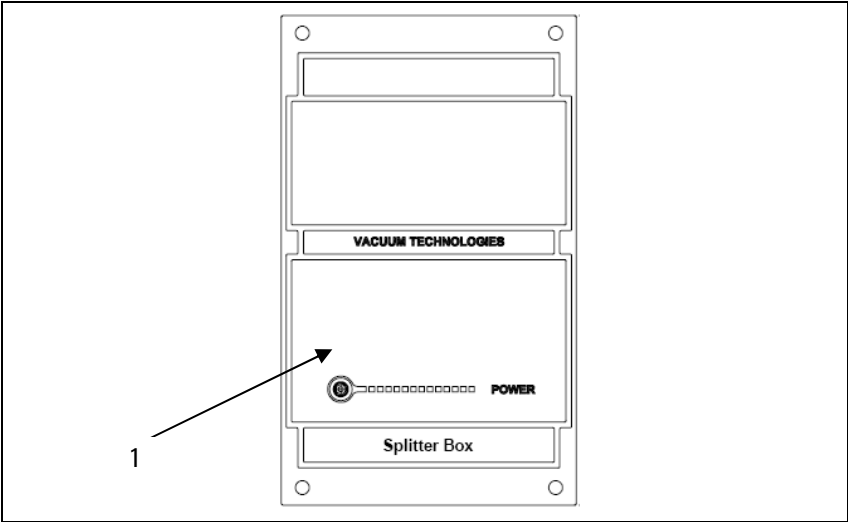


Figure 1

1	Controller ON LED.
---	--------------------

With Display and Keyboard

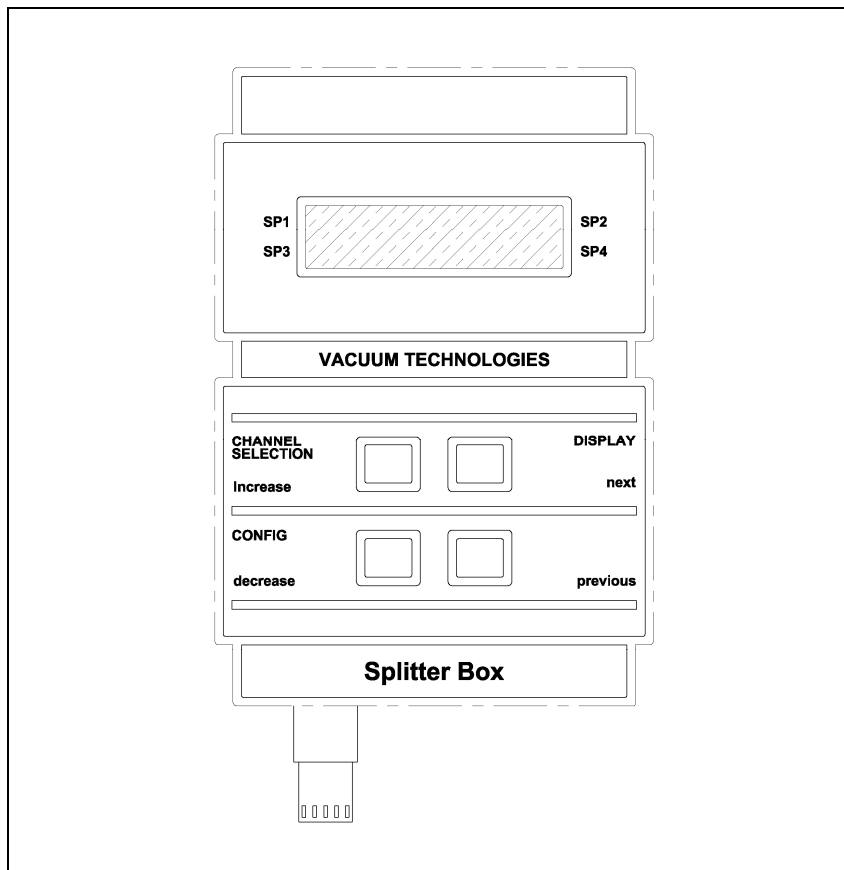


Figure 2

Rear Panel

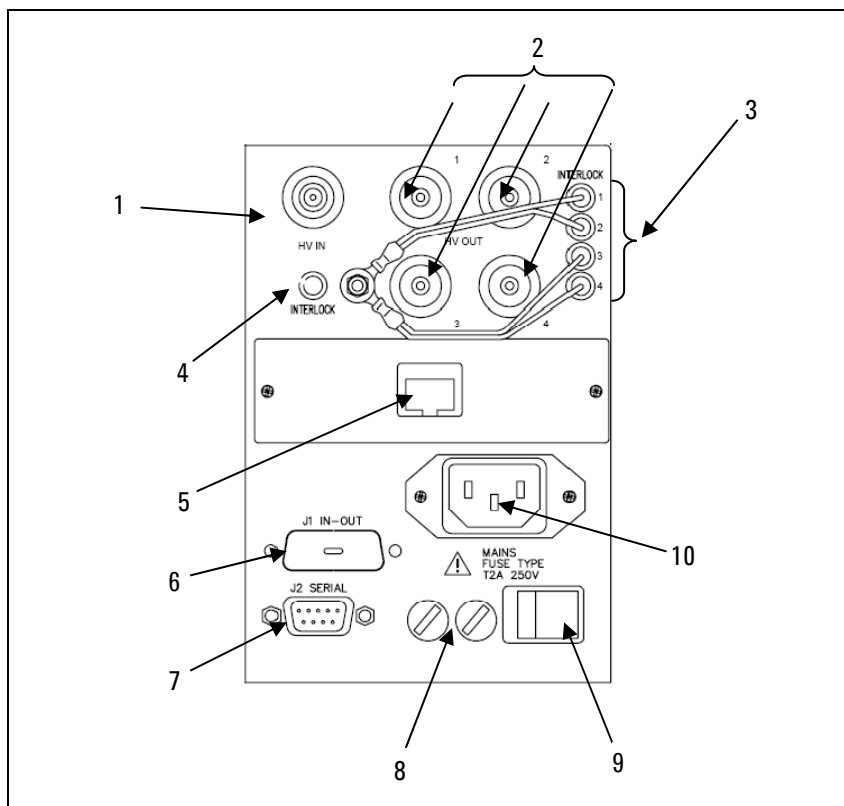


Figure 3

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)

4 Instructions for Use

Storage

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.

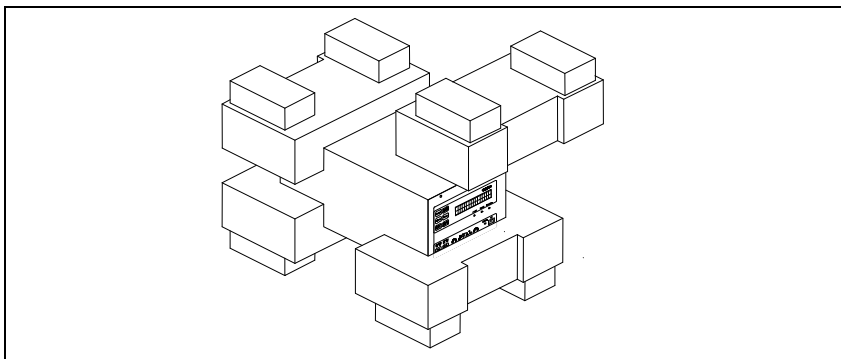


Figure 4 Controller Packaging

Installation

WARNING!



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.

WARNING!



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 Agilent repair service or of the "Agilent 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.

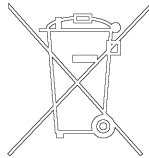
Disposal

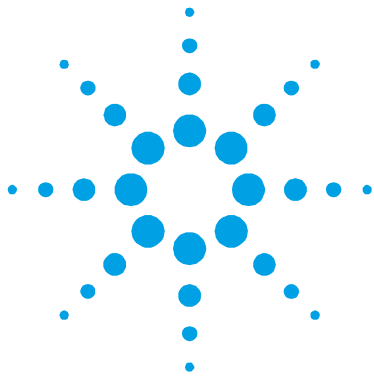
Meaning of the "WEEE" logo found in labels

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.





5

Technical Information

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Original Instructions



5 Technical Information

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Splitter Controller Description

Agilent'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 Agilent 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.

5 Technical Information

Splitter Controller Description

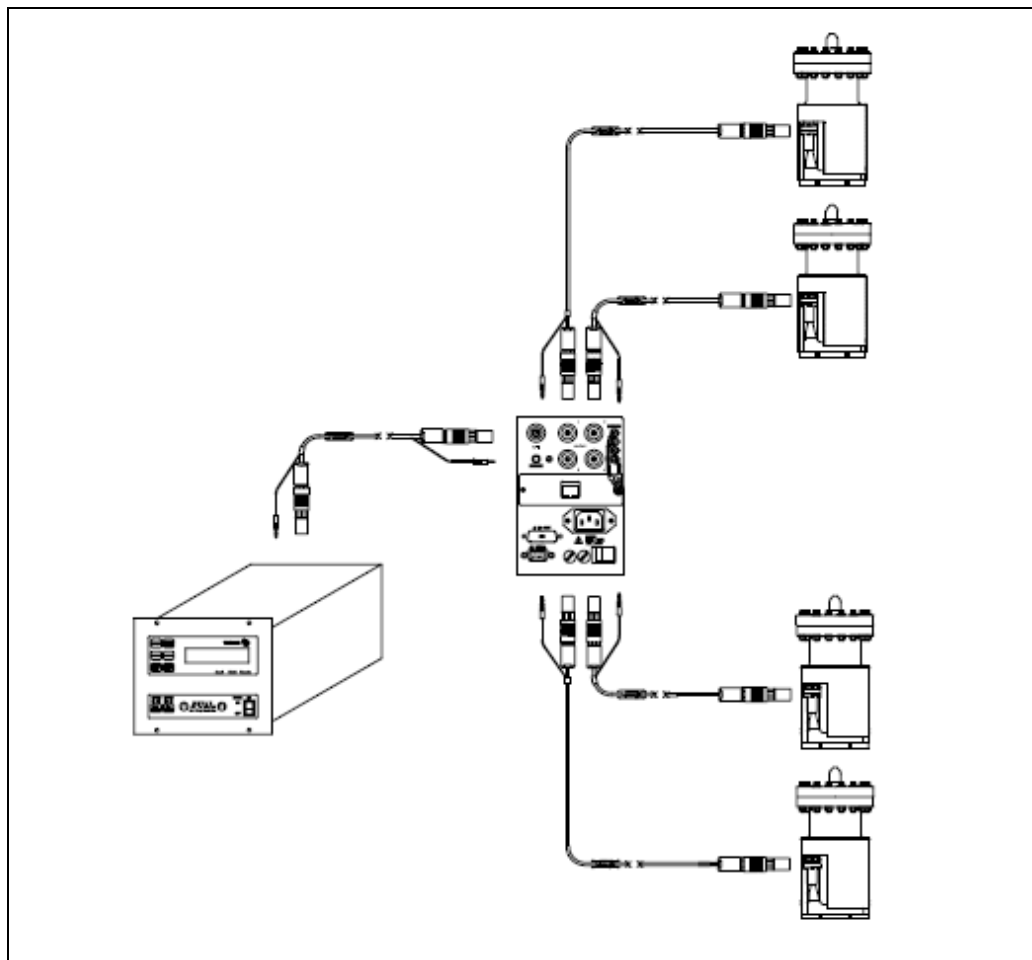


Figure 5

Controller Specifications

Tab. 1

Input:		
Voltage	110, 240 Vac	+/-10%
Frequency	50 to 60 Hz	
Power	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	Temperature: storage -20 °C to +70 °C Umidity: 0 - 95%	
Pollution Degree 2		
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.

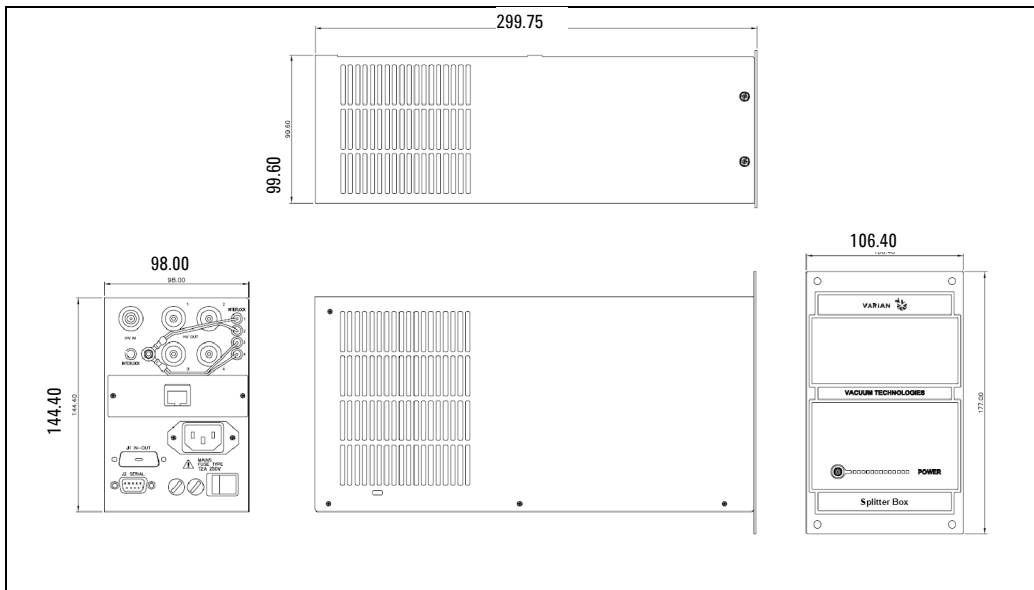


Figure 6 Controller Model Dimensions

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 Agilent 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:

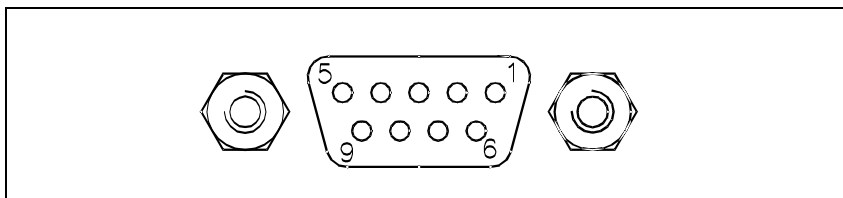


Figure 7

Tab. 2

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

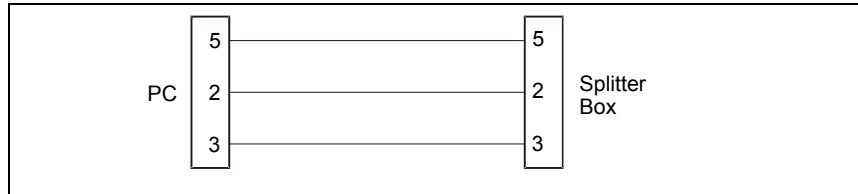


Figure 8 RS – 232 Connection

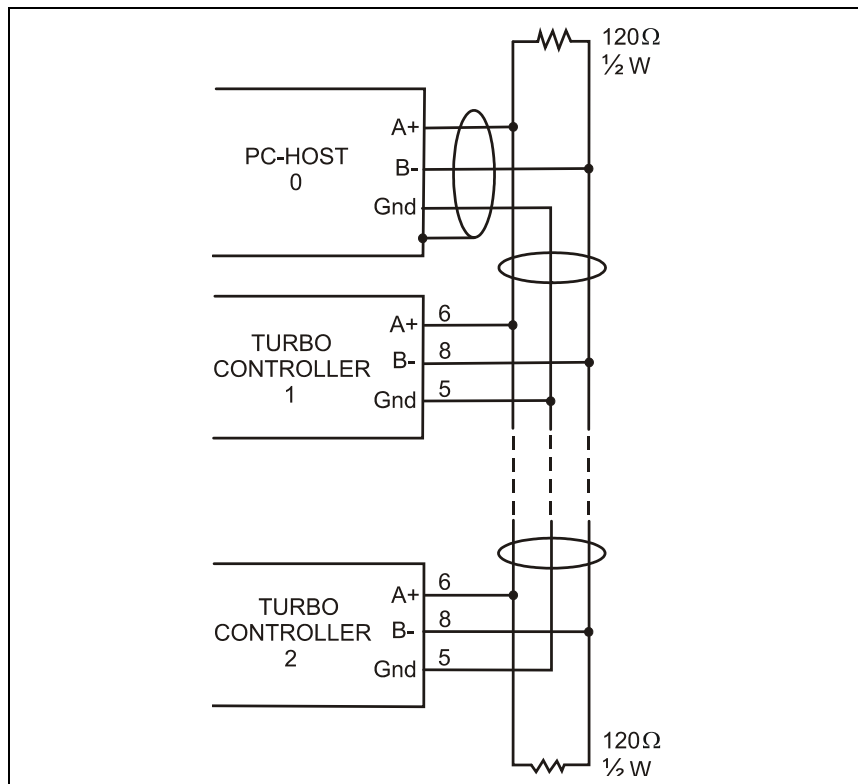


Figure 9 RS – 485 Connection

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

Tab. 3

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:

Tab. 4

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

Tab. 5

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:

Tab. 6

Data Type	Description	Admitted Values
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	DAT0						ETX	CRC	

Source: Controller

Destination: PC

02	80	06	03	38	35
STX	ADDR	ACK	ETX	CRC	

5 Technical Information

Communication

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:

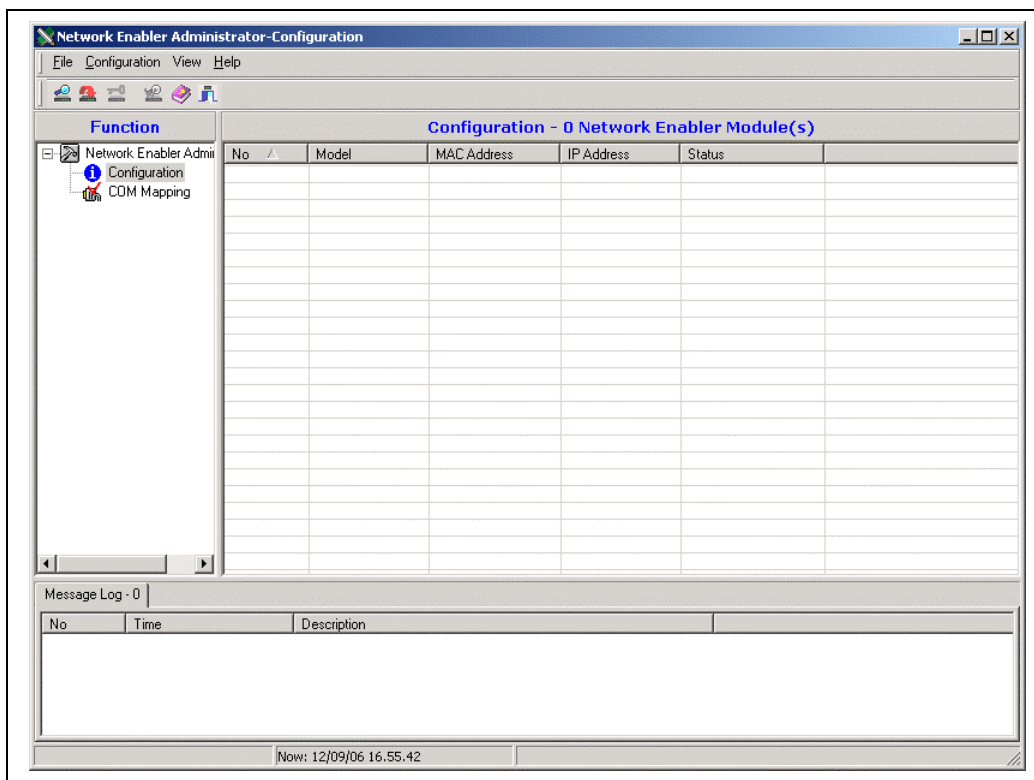


Figure 10

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

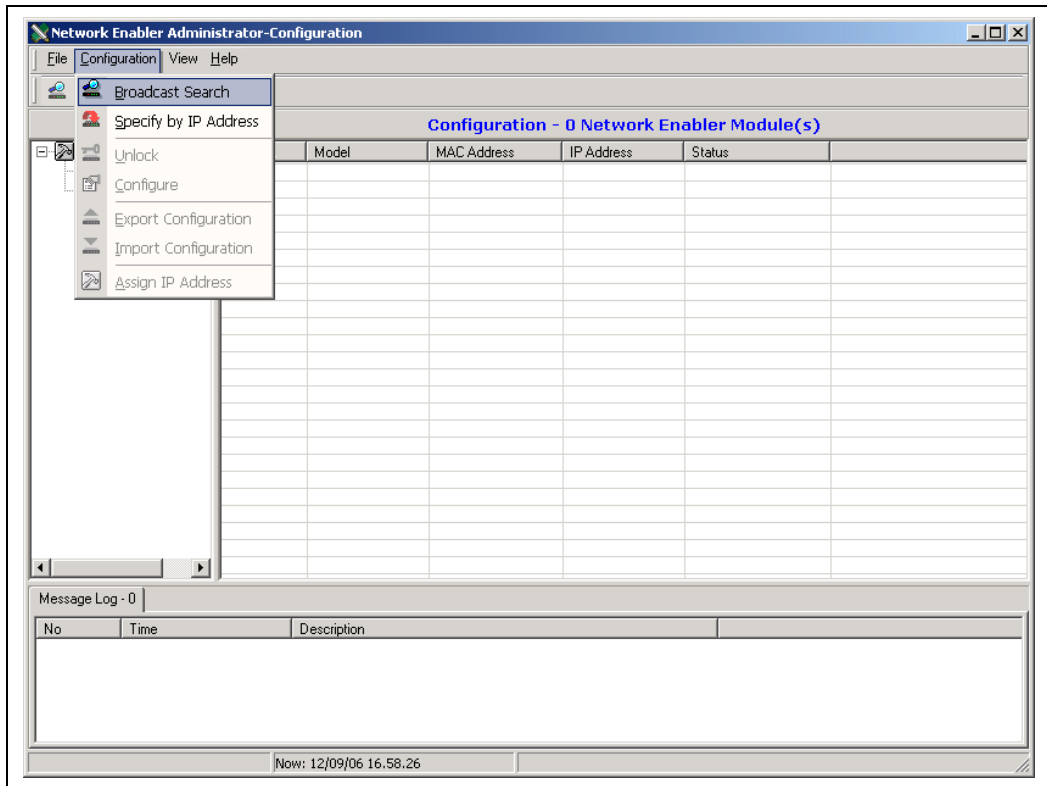


Figure 11

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

5 Technical Information

Ethernet Interface

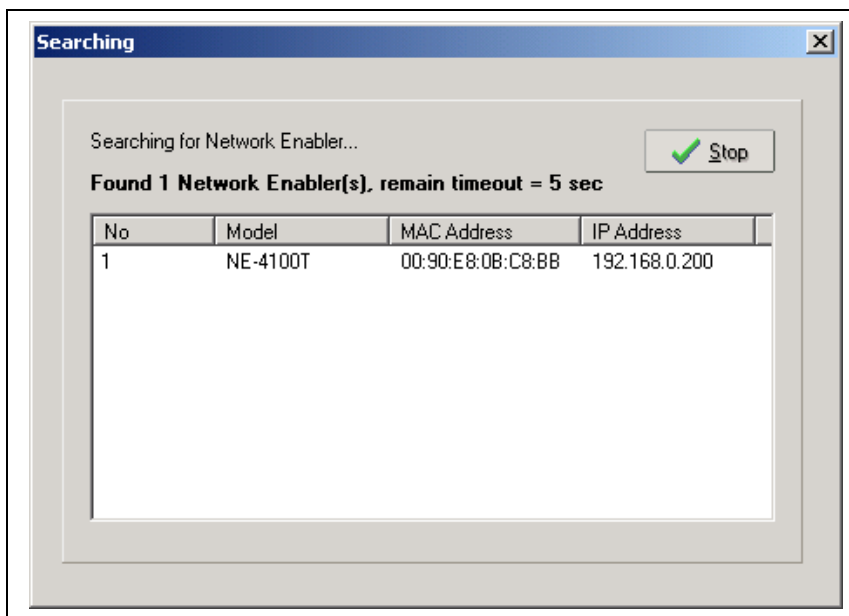


Figure 12

The next figure displays the MOXA cards found:

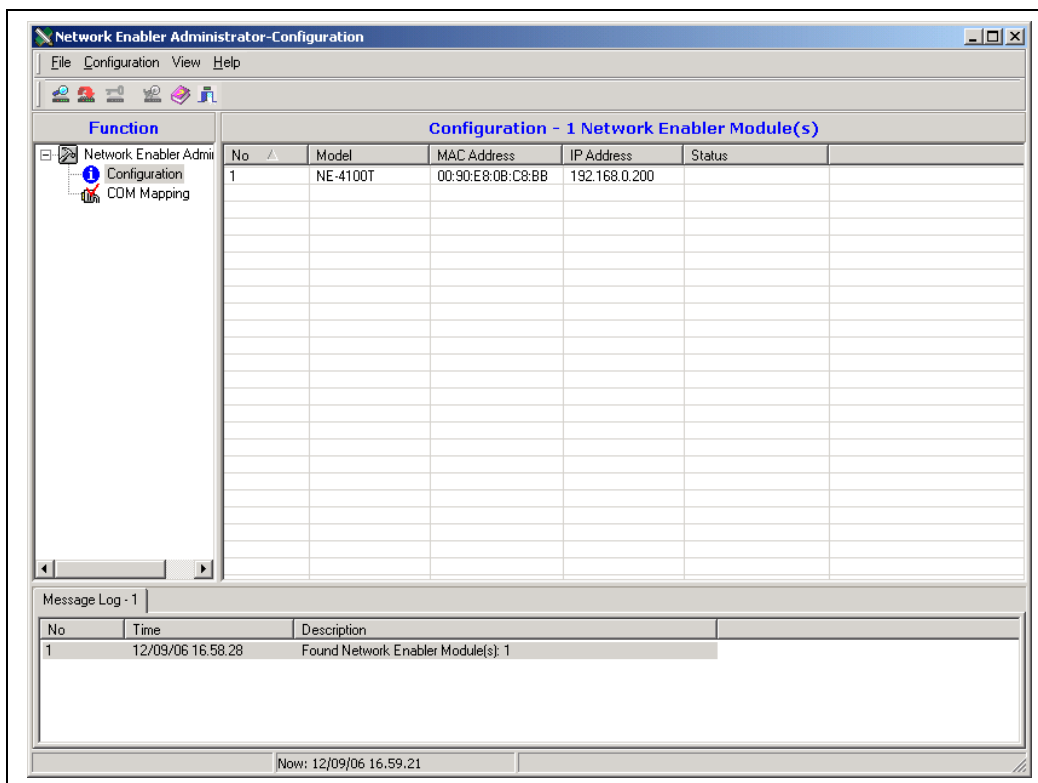


Figure 13

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.

5 Technical Information

Ethernet Interface

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

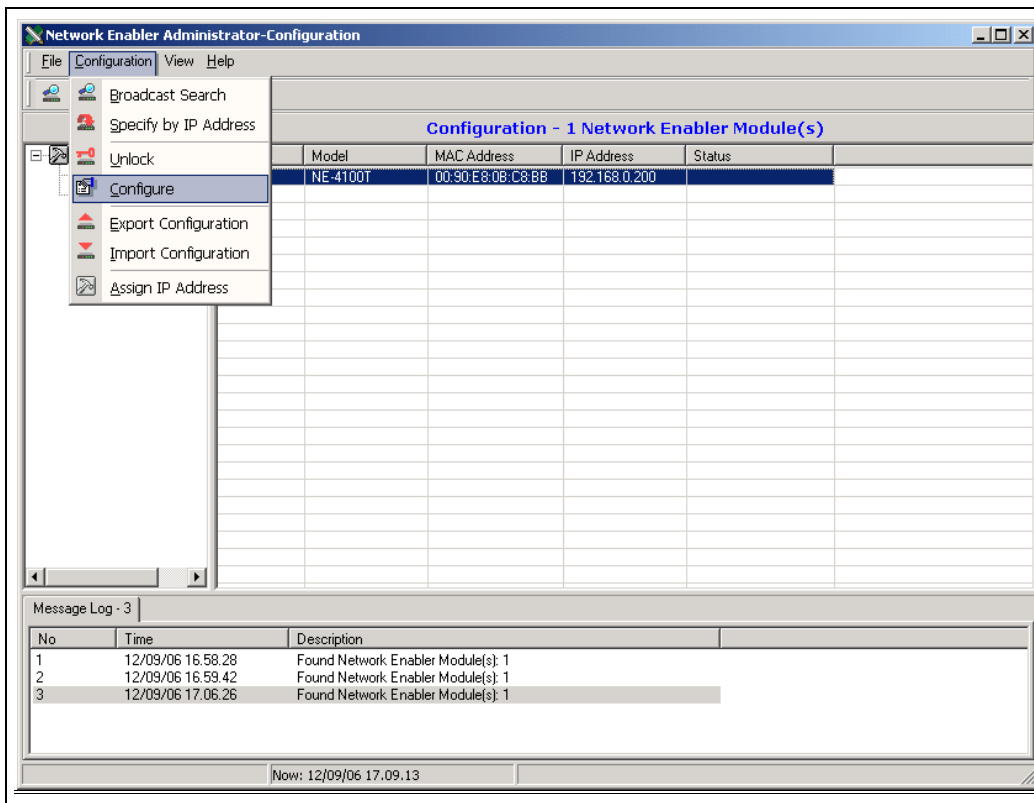


Figure 14

The screen below appears:

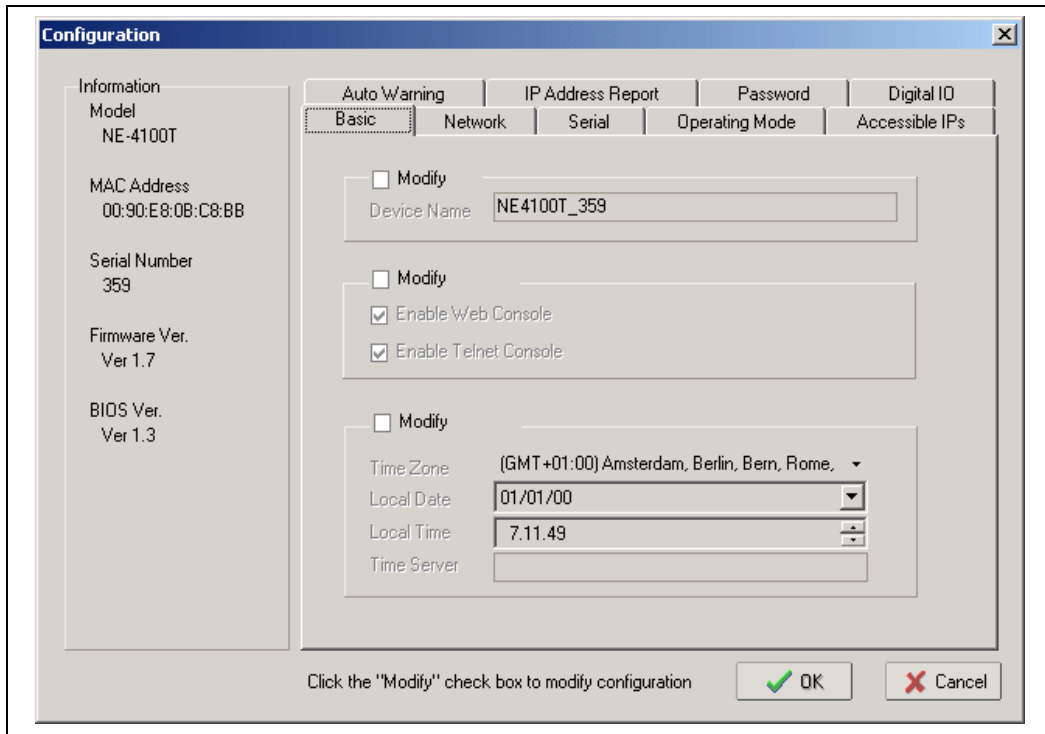


Figure 15

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.

5 Technical Information

Ethernet Interface

The screenshot shows a 'Configuration' window with a sidebar on the left and a main configuration area on the right. The sidebar contains the following information:

- Information
- Model: NE-4100T
- MAC Address: 00:90:E8:0B:C8:BB
- Serial Number: 359
- Firmware Ver.: Ver 1.7
- BIOS Ver.: Ver 1.3

The main configuration area has several tabs: 'Auto Warning', 'IP Address Report', 'Password', 'Digital IO', 'Basic', 'Network' (selected), 'Serial', 'Operating Mode', and 'Accessible IPs'. The 'Network' tab is active, showing the following fields:

- ☐ Modify: IP Address (192.168.0.200)
- ☐ Modify: Netmask (255.255.255.0)
- Gateway: (empty field)
- IP Configuration: Static (dropdown menu)
- DNS Server 1: (empty field)
- DNS Server 2: (empty field)
- ☐ Modify: ☐ Enable SNMP
- Community Name: public
- Location: (empty field)
- Contact: (empty field)

At the bottom of the window, there is a message: 'Click the "Modify" check box to modify configuration'. Below this message are two buttons: 'OK' (with a green checkmark) and 'Cancel' (with a red X).

Figure 16

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

Configuration

Information
 Model
NE-4100T
 MAC Address
00:90:E8:0B:C8:BB
 Serial Number
359
 Firmware Ver.
Ver 1.7
 BIOS Ver.
Ver 1.3

Auto Warning | **IP Address Report** | **Password** | **Digital IO**
Basic | **Network** | **Serial** | **Operating Mode** | **Accessible IPs**

☒ **Modify**
 IP Address: 192.168.0.200

☒ **Modify**
 Netmask: 255.255.255.0
 Gateway:
 IP Configuration: Static
 DNS Server 1:
 DNS Server 2:

☐ **Modify**
☐ **Enable SNMP**
 Community Name: public
 Location:
 Contact:

Click the "Modify" check box to modify configuration

Figure 17

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

5 Technical Information

Ethernet Interface

The Configuration window displays the following information:

- Information:**
 - Model: NE-4100T
 - MAC Address: 00:90:E8:0B:C8:BB
 - Serial Number: 359
 - Firmware Ver.: Ver 1.7
 - BIOS Ver.: Ver 1.3
- Auto Warning** | **IP Address Report** | **Password** | **Digital IO**
- Basic** | **Network** | **Serial** | **Operating Mode** | **Accessible IPs**
- ☒ **Modify**
 - IP Address: 192.168.1.200
- ☒ **Modify**
 - Netmask: 255.255.255.0
 - Gateway:
 - IP Configuration: Static
 - DNS Server 1:
 - DNS Server 2:
- ☐ **Modify**
 - ☐ Enable SNMP
 - Community Name: public
 - Location:
 - Contact:

Click the "Modify" check box to modify configuration

OK Cancel

Figure 18

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

The Processing window displays the following information:

- Processing**
- Please wait ...
- Progress bar: 4 / 9, 44%
- Cancel

Figure 19

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

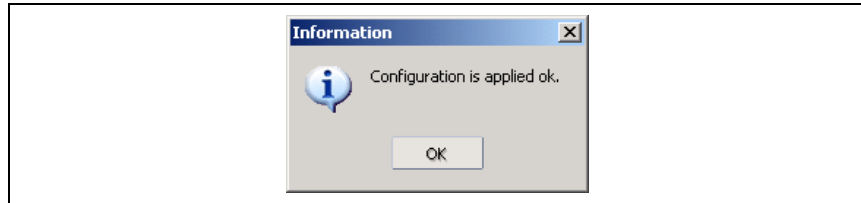


Figure 20

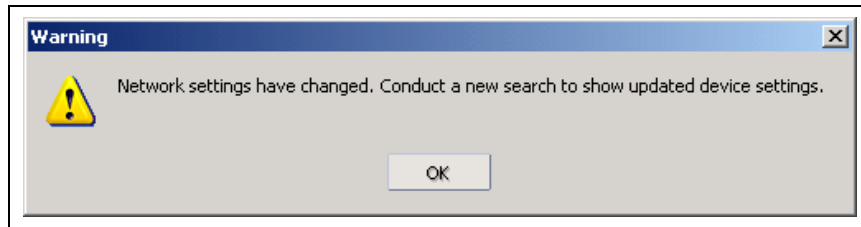


Figure 21

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.

5 Technical Information

Ethernet Interface

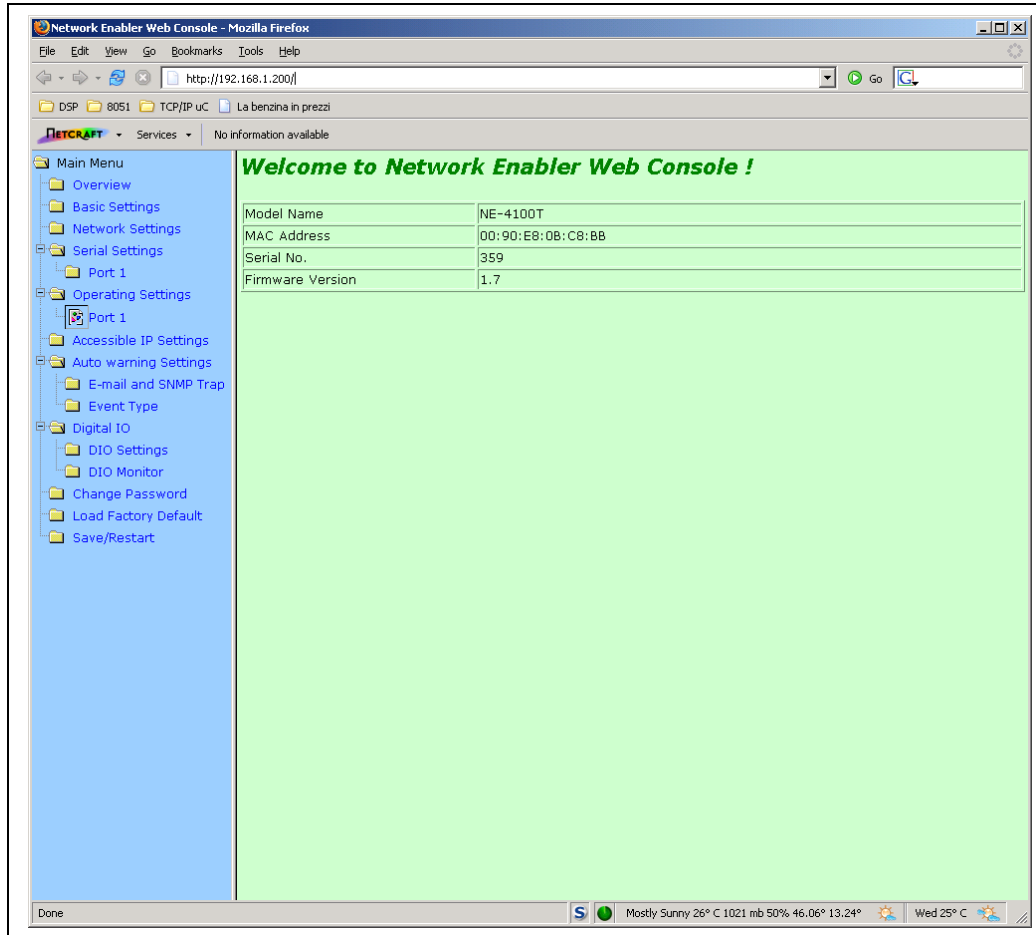


Figure 22

RS232 Parameter Configuration

Select

The screenshot displays the 'Network Enabler Web Console' interface in a Mozilla Firefox browser. The address bar shows 'http://192.168.1.200/'. The left sidebar contains a 'Main Menu' with the following items: Overview, Basic Settings, Network Settings, Serial Settings (highlighted), Operating Settings, Accessible IP Settings, Auto warning Settings, E-mail and SNMP Trap, Event Type, Digital IO, DIO Settings, DIO Monitor, Change Password, Load Factory Default, and Save/Restart. The main content area is titled 'Serial Settings' and 'Port = 01'. It features a form with the following fields: 'Port Alias' (text input), 'Baud Rate' (dropdown menu set to 9600), 'Data Bits' (dropdown menu set to 8), 'Stop Bits' (dropdown menu set to 1), 'Parity' (dropdown menu set to None), 'Flow Control' (dropdown menu set to None), 'FIFO' (radio buttons for Disable and Enable, with Enable selected), and 'Interface' (dropdown menu set to RS-232 Only). Below these fields is a checkbox labeled 'Apply the above settings to all serial ports'. A 'Submit' button is located at the bottom right of the form. The status bar at the bottom of the browser shows the URL 'http://192.168.0.200/03.htm?Port=01', system status icons, and weather information: 'Sunny 21° C 1020 mb 68% 46.06° 13.24°' and 'Thu 24° C'.

Figure 23

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:

5 Technical Information

Ethernet Interface

Baud Rate: 9600

Data Bit: 8

Stop Bit: 1

Parity: None

Flow Control: None

At the end, confirm your settings.

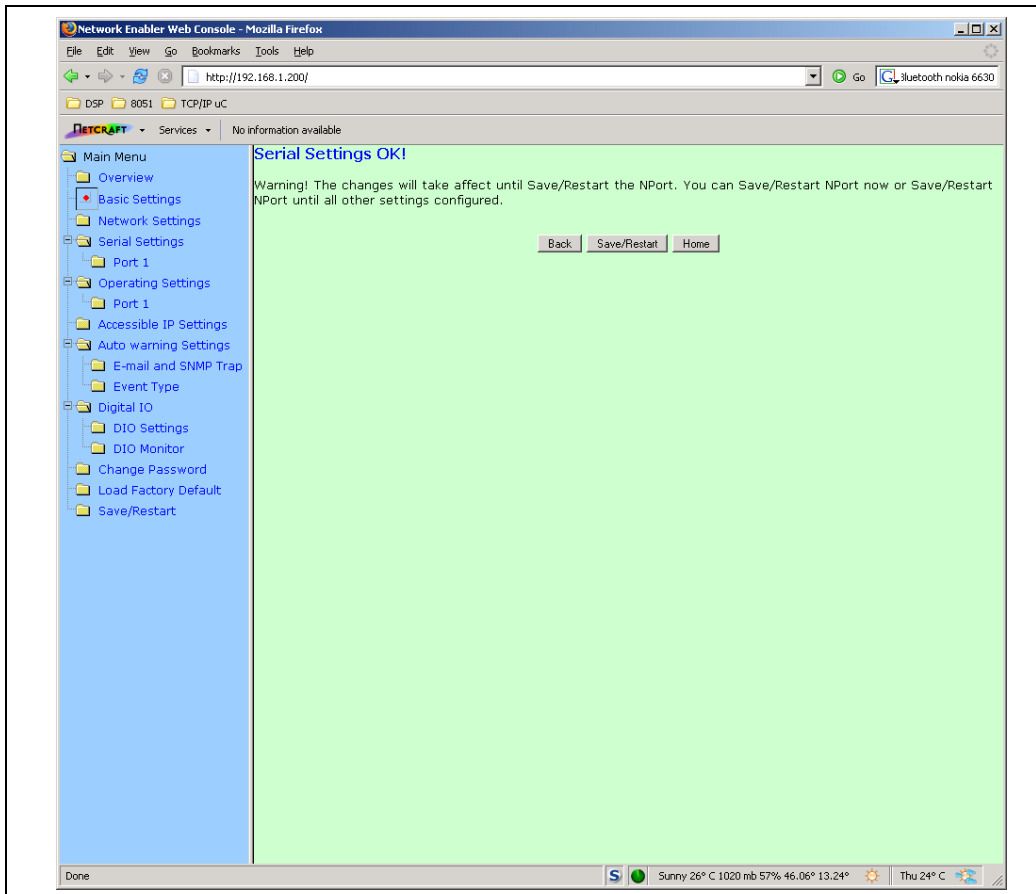


Figure 24

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

TCP Server Mode Configuration

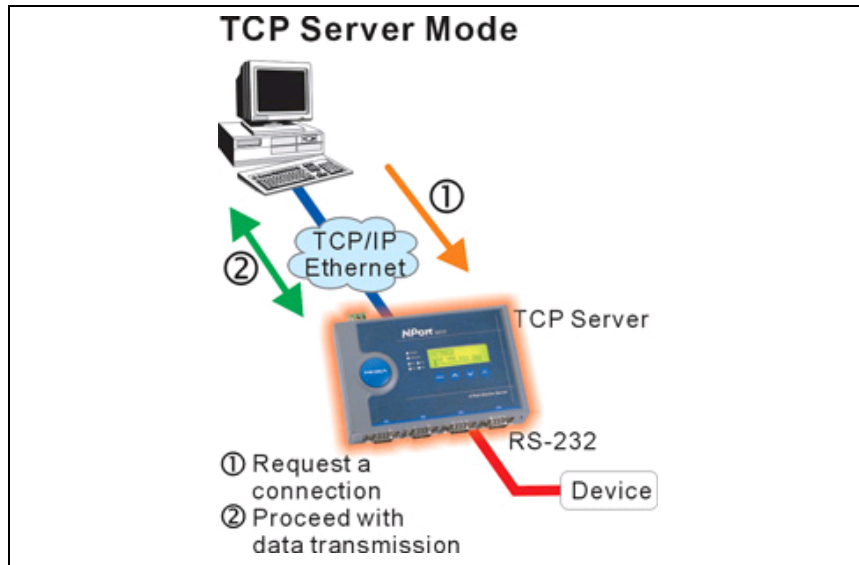


Figure 25

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

5 Technical Information

Ethernet Interface

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

The screenshot shows the Network Enabler Web Console in a Mozilla Firefox browser window. The address bar displays `http://192.168.1.200/`. The left sidebar contains a tree view with the following items: Main Menu, Overview, Basic Settings, Network Settings, Serial Settings, Port 1, Operating Settings (highlighted), Port 1, Accessible IP Settings, Auto warning Settings, E-mail and SNMP Trap, Event Type, Digital IO, DIO Settings, DIO Monitor, Change Password, Load Factory Default, and Save/Restart. The main content area is titled "Operating Settings" and has a light green background. It contains several sections of settings:

- Port = 01**
 - Operation mode:
 - TCP alive check time: (0 - 99 min)
 - Inactivity time: (0 - 65535 ms)
 - Max connection: (1 - 4)
- Data Packing**
 - Delimiter 1: (Hex) ☐ Enable
 - Delimiter 2: (Hex) ☐ Enable
 - Force transmit: (0 - 65535 ms)
- TCP Server Mode**
 - Local TCP port:
 - Command port:
 - ☐ Apply the above settings to all serial ports

A "Submit" button is located at the bottom right of the settings area. The bottom status bar shows system information: Sunny 26° C 1020 mb 57% 46.06° 13.24°, Thu 24° C.

Figure 26

where.

Max connection: 4 is the maximum number of simultaneous connections¹ 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. Agilent advises against use of this protocol for new projects.

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

Tab. 7

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

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

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

⁵Status 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]

Tab. 8

Field	No. of bytes	Value	Description
Header command	1	81h	Header for the serial RS232, RS422
		81h÷A0h	Header and address for the serial RS485 (129 - 160)
Header response		01h	Header for the serial RS232, RS422
		01h÷20h	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	No channel
		31h	High Voltage 1
		32h	High Voltage 2
		33h	High Voltage 3
		34h	High Voltage 4

List of Commands

Tab. 9

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).

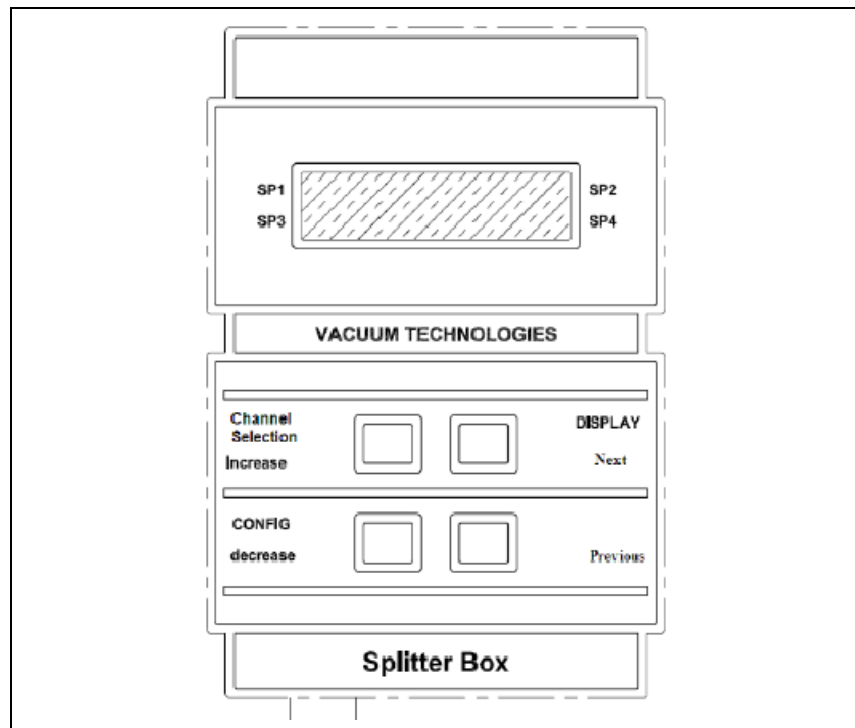


Figure 27 Front panel

5 Technical Information

How to Use by Front Panel

- At power-on, the display shows:

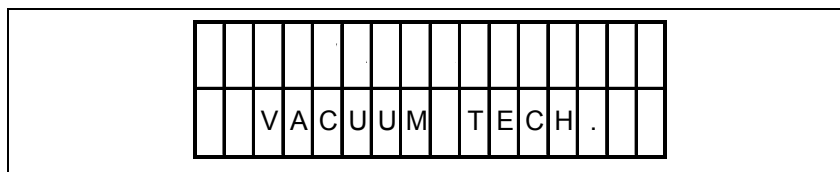
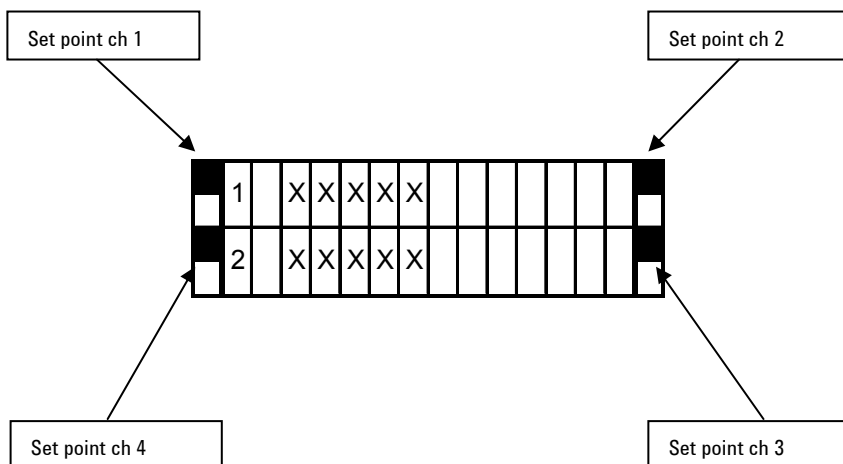


Figure 28 Front panel

- 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 measure-ments 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”:

5 Technical Information

How to Use by Front Panel

			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

Tab. 10

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

5 Technical Information

Accessories



Agilent Technologies

Vacuum Products Division

Dear Customer,

Thank you for purchasing an Agilent vacuum product. At Agilent Vacuum Products Division 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 products. 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,

Giampaolo LEVI

***Vice President and General Manager
Agilent Vacuum Products Division***

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

CUSTOMER REQUEST FOR CORRECTIVE / PREVENTIVE / IMPROVEMENT ACTION

TO: AGILENT VACUUM PRODUCTS DIVISION TORINO – QUALITY ASSURANCE

FAX N°: XXXX-011-9979350

ADDRESS: AGILENT TECHNOLOGIES ITALIA S.p.A. – Vacuum Products Division –
Via F.lli Varian, 54 – 10040 Leinì (TO) – Italy

E-MAIL: vpd-qualityassurance_pdl-ext@agilent.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 AGILENT VPD) _____ _____ _____ _____ _____ _____		LOG N° _____

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



Vacuum Products Division Instructions for returning products

Dear Customer:

Please follow these instructions whenever one of our products needs to be returned.

- 1) Complete the attached Request for Return form and send it to Agilent Technologies (see below), taking particular care to identify all products that have pumped or been exposed to any toxic or hazardous materials.
- 2) After evaluating the information, Agilent Technologies will provide you with a Return Authorization (RA) number via email or fax, as requested.
Note: Depending on the type of return, a Purchase Order may be required at the time the Request for Return is submitted. We will quote any necessary services (evaluation, repair, special cleaning, eg).
- 3) **Important steps for the shipment of returning product:**
 - Remove all accessories from the core product (e.g. inlet screens, vent valves).
 - Prior to shipment, drain any oils or other liquids, purge or flush all gasses, and wipe off any excess residue.
 - If ordering an Advance Exchange product, please use the packaging from the Advance Exchange to return the defective product.
 - Seal the product in a plastic bag, and package product carefully to avoid damage in transit. You are responsible for loss or damage in transit.
 - Agilent Technologies is not responsible for returning customer provided packaging or containers.
 - **Clearly label package with RA number.** Using the shipping label provided will ensure the proper address and RA number are on the package. Packages shipped to Agilent without a RA clearly written on the outside cannot be accepted and will be returned.
- 4) Return only products for which the RA was issued.
- 5) **Product being returned under a RA must be received within 15 business days.**
- 6) **Ship to the location specified on the printable label, which will be sent, along with the RA number, as soon as we have received all of the required information.** Customer is responsible for freight charges on returning product.
- 7) Return shipments must comply with all applicable **Shipping Regulations** (IATA, DOT, etc.) and carrier requirements.

RETURN THE COMPLETED REQUEST FOR RETURN FORM TO YOUR NEAREST LOCATION:

EUROPE:

Fax: 00 39 011 9979 330

Fax Free: 00 800 345 345 00

Toll Free: 00 800 234 234 00

vpt-customer@agilent.com

NORTH AMERICA:

Fax: 1 781 860 9252

Toll Free: 800 882 7426, Option 3

vpl-ra@agilent.com

PACIFIC RIM:

please visit our website for individual
office information

<http://www.agilent.com>



**Vacuum Products Division
Request for Return Form
(Health and Safety Certification)**

Please read important policy information on Page 3 that applies to all returns.

1) CUSTOMER INFORMATION

Company Name:		Contact Name:
Tel:	Email:	Fax:
Customer Ship To:		Customer Bill To:
Europe only: VAT reg. Number:		USA/Canada only: ☐ Taxable ☐ Non-taxable

2) PRODUCT IDENTIFICATION

Product Description	Agilent P/N	Agilent S/N	Original Purchasing Reference

3) TYPE OF RETURN (Choose one from each row and supply Purchase Order if requesting a billable service)

- 3A. ☐ Non-Billable ☐ Billable ➡ New PO # (hard copy must be submitted with this form):
- 3B. ☐ Exchange ☐ Repair ☐ Upgrade ☐ Consignment/Demo ☐ Calibration ☐ Evaluation ☐ Return for Credit

4) HEALTH and SAFETY CERTIFICATION

AGILENT TECHNOLOGIES CANNOT ACCEPT ANY PRODUCTS CONTAMINATED WITH BIOLOGICAL OR EXPLOSIVE HAZARDS, RADIOACTIVE MATERIAL, OR MERCURY AT ITS FACILITY. Call Agilent Technologies to discuss alternatives if this requirement presents a problem. The equipment listed above (check one): ☐ HAS NOT pumped or been exposed to any toxic or hazardous materials. OR ☐ HAS pumped or been exposed to the following toxic or hazardous materials. If this box is checked, the following information must also be filled out. Check boxes for all materials to which product(s) pumped or was exposed: ☐ Toxic ☐ Corrosive ☐ Reactive ☐ Flammable ☐ Explosive ☐ Biological ☐ Radioactive List all toxic/hazardous materials. Include product name, chemical name, and chemical symbol or formula: NOTE: If a product is received at Agilent 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 Agilent employees as well as to any third party occurring as a result of exposure to toxic or hazardous materials present in the product. Print Name: _____ Authorized Signature: _____ Date: _____

5) FAILURE INFORMATION:

Failure Mode (REQUIRED FIELD. See next page for suggestions of failure terms):
Detailed Description of Malfunction: (Please provide the error message)
Application (system and model):

I understand and agree to the terms of Section 6, Page 3/3.		
Print Name:	Authorized Signature: _____	Date:



Vacuum Products Division Request for Return Form (Health and Safety Certification)

Please use these Failure Mode to describe the concern about the product on Page 2.

TURBO PUMPS and TURBO CONTROLLERS

APPARENT DEFECT/MALFUNCTION	POSITION	PARAMETERS
- Does not start - Does not spin freely - Does not reach full speed - Mechanical Contact - Cooling defective	- Noise - Vibrations - Leak - Overtemperature - Clogging	- Vertical - Horizontal - Upside-down - Other:
		Power: Rotational Speed: Current: Inlet Pressure: Temp 1: Foreline Pressure: Temp 2: Purge flow: OPERATING TIME:

ION PUMPS/CONTROLLERS

- Bad feedthrough - Vacuum leak - Error code on display	- Poor vacuum - High voltage problem - Other
---	--

VALVES/COMPONENTS

- Main seal leak - Solenoid failure - Damaged sealing area	- Bellows leak - Damaged flange - Other
--	---

LEAK DETECTORS

- Cannot calibrate - Vacuum system unstable - Failed to start	- No zero/high background - Cannot reach test mode - Other
---	--

INSTRUMENTS

- Gauge tube not working - Communication failure - Error code on display	- Display problem - Degass not working - Other
--	--

SCROLL AND ROTARY VANE PUMPS

- Pump doesn't start - Doesn't reach vacuum - Pump seized	- Noisy pump (describe) - Over temperature - Other
---	--

DIFFUSION PUMPS

- Heater failure - Doesn't reach vacuum - Vacuum leak	- Electrical problem - Cooling coil damage - Other
---	--

Section 6) ADDITIONAL TERMS

Please read the terms and conditions below as they apply to all returns and are in addition to the Agilent Technologies Vacuum Product Division – Products and Services Terms of Sale.

- Customer is responsible for the freight charges for the returning product. Return shipments must comply with all applicable **Shipping Regulations** (IATA, DOT, etc.) and carrier requirements.
- Customers receiving an Advance Exchange product agree to return the defective, rebuildable part to Agilent Technologies **within 15 business days**. Failure to do so, or returning a non-rebuildable part (crashed), will result in an invoice for the non-returned/non-rebuildable part.
- Returns for credit toward the purchase of new or refurbished Products are subject to prior Agilent approval and may incur a restocking fee. Please reference the original purchase order number.
- Units returned for evaluation will be evaluated, and a quote for repair will be issued. If you choose to have the unit repaired, the cost of the evaluation will be deducted from the final repair pricing. A Purchase Order for the final repair price should be issued within 3 weeks of quotation date. Units without a Purchase Order for repair will be returned to the customer, and the evaluation fee will be invoiced.
- A Special Cleaning fee will apply to all exposed products per Section 4 of this document.
- If requesting a calibration service, units must be functionally capable of being calibrated.

Sales and Service Offices

United States

Agilent Technologies
Vacuum Products Division
121 Hartwell Avenue
Lexington, MA 02421 - USA
Tel.: +1 781 861 7200
Fax: +1 781 860 5437
Toll-Free: +1 800 882 7426

Benelux

Agilent Technologies Netherlands B.V.
Vacuum Products Division
Herculesweg 8
4338 PL Middelburg
The Netherlands
Tel.: +31 118 671570
Fax: +31 118 671569
Toll-Free: 00 800 234 234 00

Canada

Central coordination through: Agilent Technologies
Vacuum Products Division
121 Hartwell Avenue
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