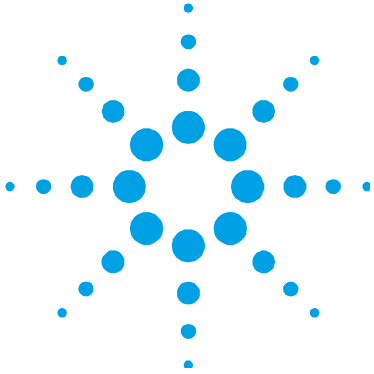


Serial Computer Interface for TSP Controller

Models
929-0024, 929-0025, 929-0026

Manuale di Istruzioni
Bedienungshandbuch
Notice de Mode D'Emploi
User Manual

87-900-079-01 (F)
05/2011

Agilent Technologies

Notices

Manual Part Number

Publication Number: 87-900-079-01 (F)

Edition

Edition 05/2011

Printed in ITALY

Agilent Technologies Italia S.p.A.

Vacuum Products Division

Via F.lli Varian, 54

10040 Leini (TO)

ITALY

Warranty

The material contained in this document is provided "as is," and is subject to being changed, without notice, in future editions. Further, to the maximum extent permitted by applicable law, Agilent disclaims all warranties, either express or implied, with regard to this manual and any information contained herein, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. Agilent shall not be liable for errors or for incidental or consequential damages in connection with the furnishing, use, or performance of this document or of any information contained herein. Should Agilent and the user have a separate written agreement with warranty terms covering the material in this document that conflict with these terms, the warranty terms in the separate agreement shall control.

Technology Licenses

The hardware and/or software described in this document are furnished under a license and may be used or copied only in accordance with the terms of such license.

Restricted Rights Legend

If software is for use in the performance of a U.S. Government prime contract or subcontract, Software is delivered and licensed as "Commercial computer software" as defined in DFAR 252.227-7014 (June 1995), or as a "commercial item" as defined in FAR 2.101(a) or as "Restricted computer software" as defined in FAR 52.227-19 (June 1987) or any equivalent agency regulation or contract clause. Use, duplication or disclosure of Software is subject to Agilent Technologies' standard commercial license terms, and non-DOD Departments and Agencies of the U.S. Government will receive no greater than Restricted Rights as defined in FAR 52.227-19(c)(1-2) (June 1987). U.S. Government users will receive no greater than Limited Rights as defined in FAR 52.227-14 (June 1987) or DFAR 252.227-7015 (b)(2) (November 1995), as applicable in any technical data.

Trademarks

Windows and MS Windows are U.S. registered trademarks of Microsoft Corporation.

Safety Notices

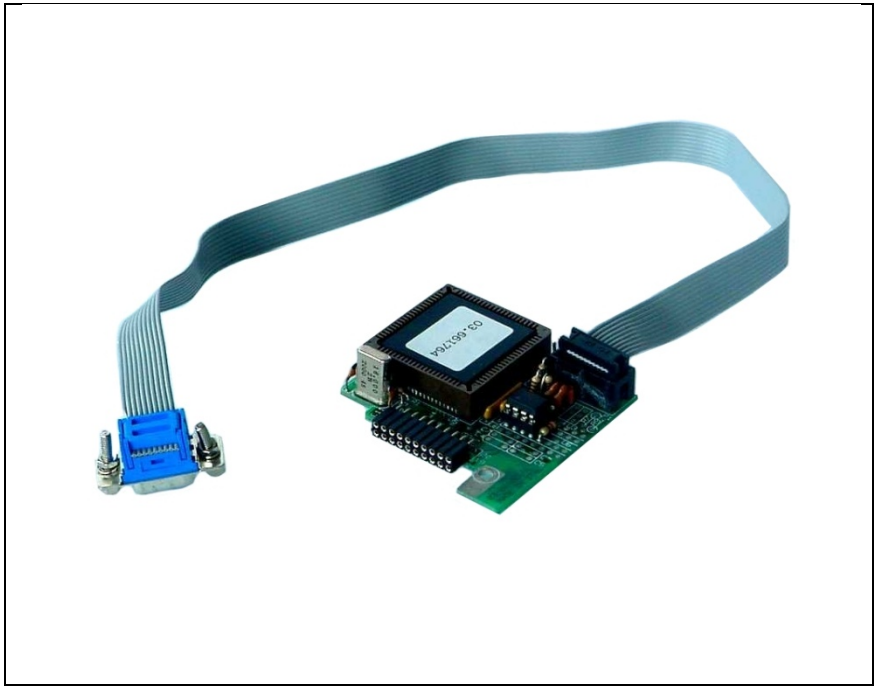
CAUTION

A **CAUTION** 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 damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

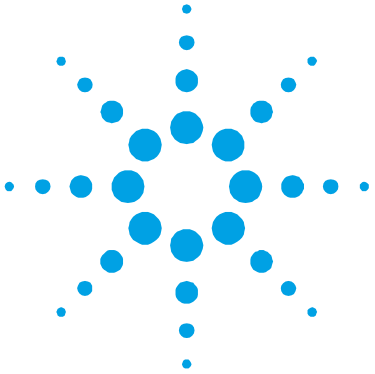
WARNING

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.

Serial Computer Interface for TSP Controller



Contents



1 Istruzioni per l'uso

Traduzione delle istruzioni originali

Informazioni Generali

Questa apparecchiatura è destinata ad uso professionale. L'utilizzatore deve leggere attentamente il presente manuale di istruzioni ed ogni altra informazione addizionale fornita dalla Agilent prima dell'utilizzo dell'apparecchiatura. La Agilent si ritiene sollevata da eventuali responsabilità dovute all'inosservanza totale o parziale delle istruzioni, ad uso improprio da parte di personale non addestrato, ad interventi non autorizzati o ad uso contrario alle normative nazionali specifiche.

Nei paragrafi seguenti sono riportate tutte le informazioni necessarie a garantire la sicurezza dell'operatore durante l'utilizzo dell'apparecchiatura.

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.

Descrizione delle schede di interfaccia seriale per il controller TSP

Sono disponibili tre modelli di schede di interfaccia seriale per il controller TSP corrispondenti ad altrettanti tipi di protocollo di comunicazione (vedere le figure seguenti):

- modello 929-0024: Scheda seriale RS 232
- modello 929-0025: Scheda seriale RS 422
- modello 929-0026: Scheda seriale RS 485.

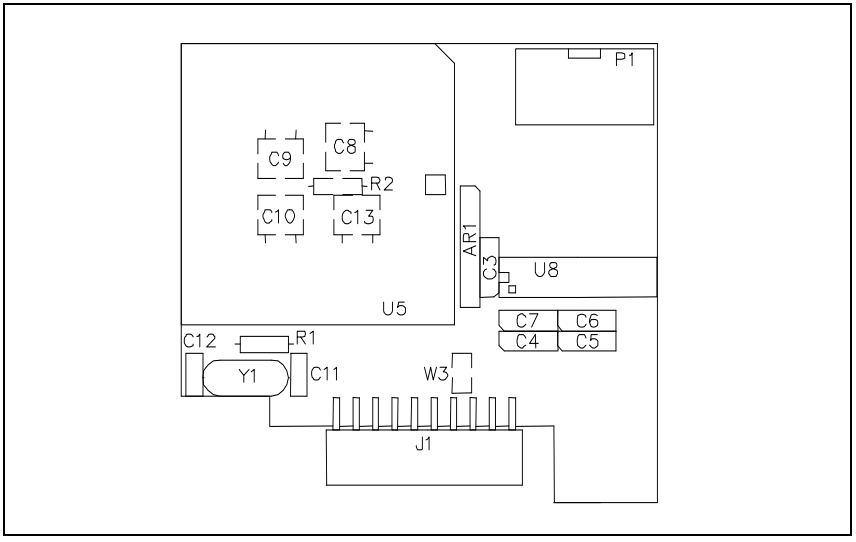


Figura 1 Scheda seriale RS 232 modello 929-0024

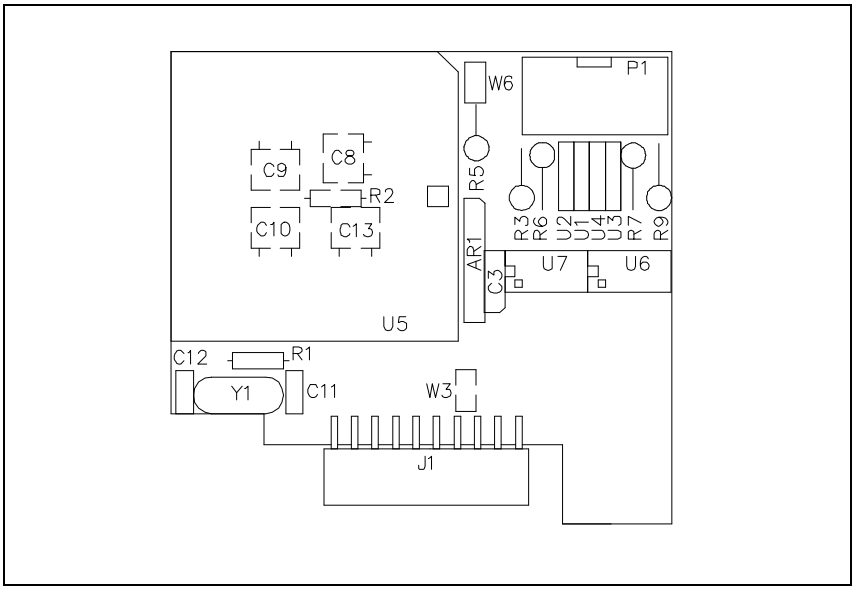


Figura 2 Scheda seriale RS 422 modello 929-0025

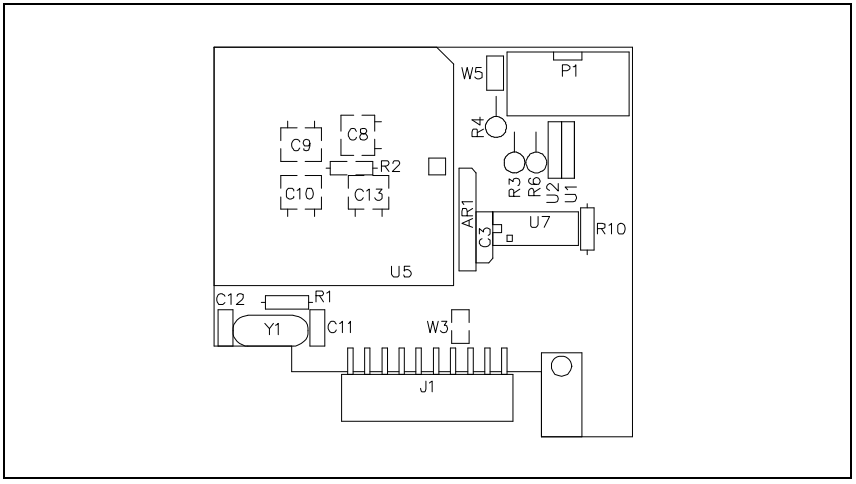


Figura 3 Scheda seriale RS 485 modello 929-0026

Tutti i modelli delle schede sono costituiti da un circuito elettronico che provvede a decodificare i comandi ricevuti dal computer remoto negli opportuni segnali di controllo per il TSP Controller, ed a codificare ed inviare i dati rilevati dal TSP Controller al computer remoto. Il kit fornito per tutti i modelli è costituito dai seguenti elementi:

- la scheda di interfaccia;
- un cavo piatto con i relativi connettori per il collegamento tra la scheda e il pannello posteriore del TSP;
- il presente manuale di istruzioni.

Dimensioni delle schede di interfaccia

La figura seguente illustra le dimensioni in mm [pollici] delle schede di interfaccia.

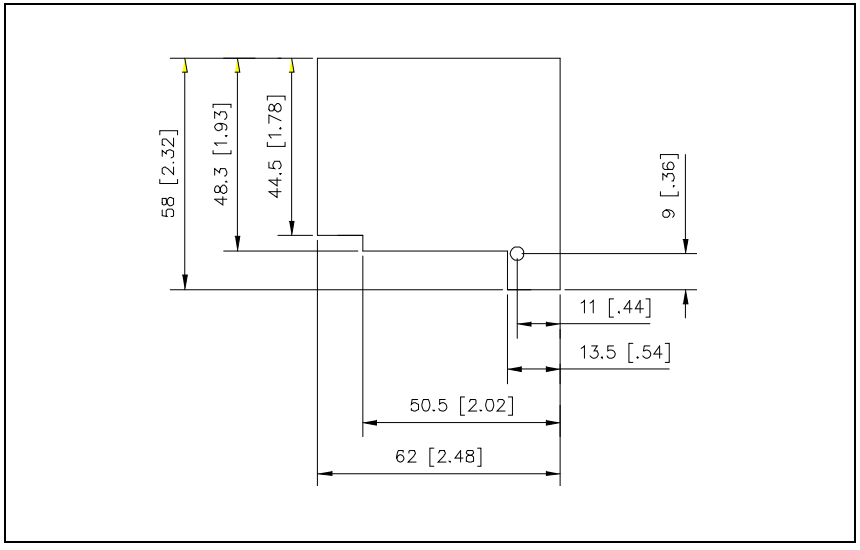


Figura 4 Dimensioni delle schede di interfaccia

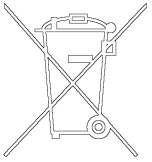
Immagazzinamento

Durante il trasporto e l'immagazzinamento delle schede di interfaccia seriale non devono essere superate le seguenti condizioni ambientali:

- temperatura da 20 °C a +70 °C
- umidita relativa: 0 – 95 % (non condensante)

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.



Preparazione per l'installazione

Le schede di interfaccia vengono fornito in un imballo protettivo speciale; se si presentano segni di danni, che potrebbero essersi verificati durante il trasporto, contattare l'ufficio vendite locale.

Durante l'operazione di disimballaggio, prestare particolare attenzione a non lasciar cadere la scheda, a non sottoporla ad urti e a non toccare con le mani i componenti elettronici onde evitare che le cariche statiche possano danneggiare la scheda.

Non disperdere l'imballo nell'ambiente. Il materiale è completamente riciclabile e risponde alla direttiva CEE 85/399 per la tutela dell'ambiente.

La figura seguente illustra l'imballo delle schede di interfaccia.

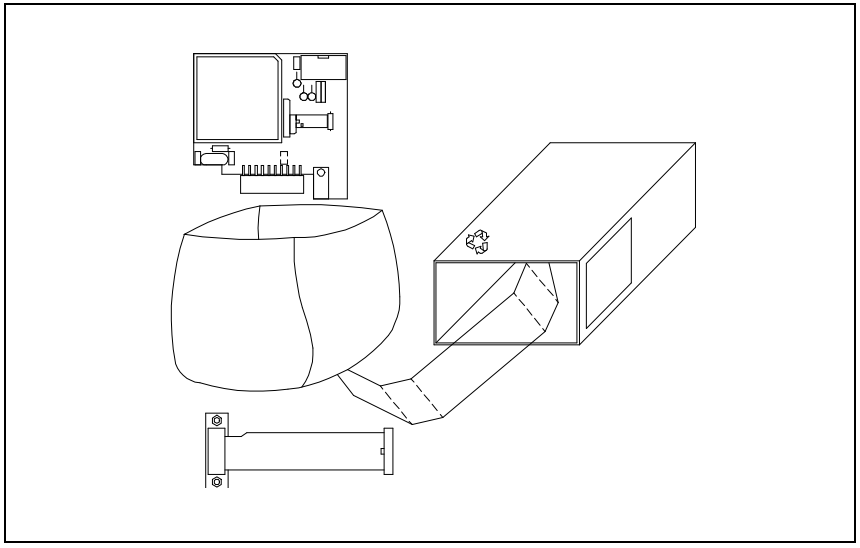


Figura 5

Installazione

L'installazione delle schede di interfaccia non richiede particolari predisposizioni. Per installare la scheda all'interno del TSP Controller occorre eseguire la seguente procedura:

1. Scollegare il controller dall'alimentazione elettrica.
2. Rimuovere la copertura superiore.
3. Inserire la scheda di interfaccia nell'apposito connettore della scheda del pannello frontale del controller.
4. Rimuovere la copertura di chiusura dello spazio sul pannello posteriore previsto per l'inserimento del connettore seriale.
5. Collegare il cavo piatto da un lato al connettore P1 della scheda di interfaccia e far passare l'altro capo all'interno del controller fino a far uscire il connettore a vaschetta da 9 pin dall'apposito spazio del pannello posteriore.
6. Fissare il connettore a vaschetta al pannello posteriore con le apposite viti di fissaggio.
7. Reinserire la copertura superiore del TSP controller.
8. Ricollegare il controller all'alimentazione.

Le figure seguenti illustrano la disposizione dei piedini e dei relativi segnali sul connettore a vaschetta delle schede di interfaccia.

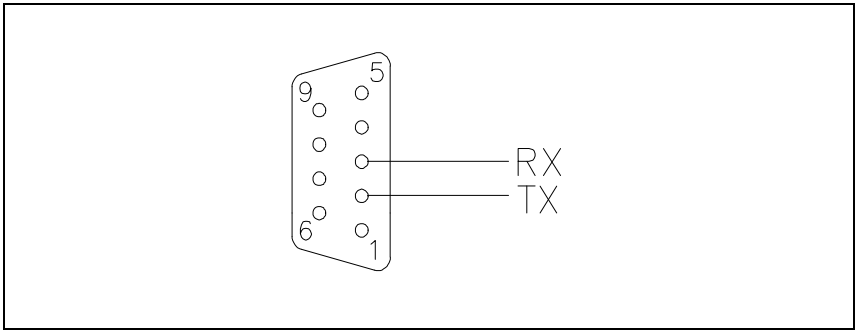


Figura 6 Scheda seriale RS 232

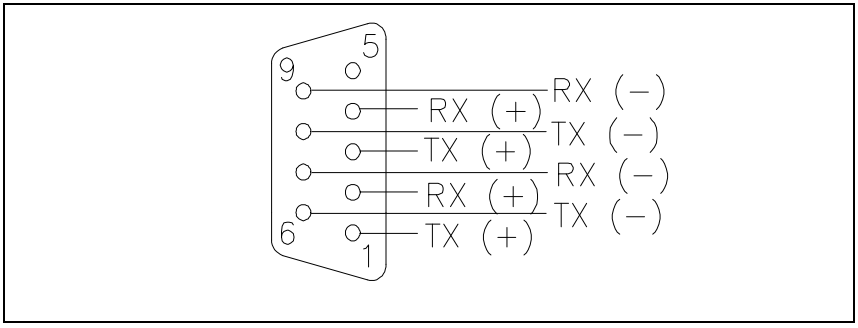


Figura 7 Scheda seriale RS 422

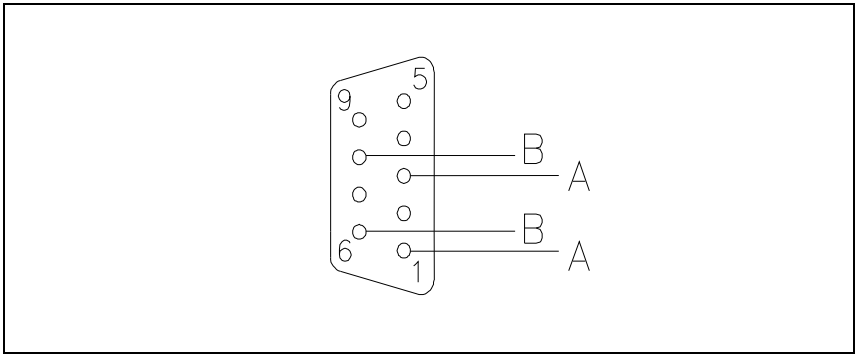


Figura 8 Scheda seriale RS 485

Protocollo di comunicazione seriale

Formato di comunicazione

- 8 bit di dato
- nessuna parità
- 1 bit di stop
- baud rate: 600/1200/2400/4800/9600 programmabile

Protocollo di comunicazione

- Di tipo Master/Slave con il computer host Master ed il Controller Slave.
- Massimo numero di periferiche: 32 (solo per connessione in RS485).

La comunicazione avviene nel seguente modo:

Host		**Controller**
`Messagio`	⟷	`Risposta`

Il **`Messaggio`** ha il seguente formato:

`<ADR>+<LDAT>+<DATA>+<CRC>`

dove:

- **<ADR>:** 0x80+indirizzo della periferica (da 0x1 a 0x20). L'impostazione di un indirizzo non valido configura l'unità come unità 1.
- **<LDAT>:** lunghezza del campo dati codificato in decimale su due caratteri (da 00 a 99).
- **<DATA>:** campo di lunghezza variabile in funzione del tipo di comando costituito dai seguenti elementi:
  - **Comando:** lettera maiuscola o minuscola che identifica il comando (vedere la tabella dei comandi della pagina seguente).
  - **Parametri:** stringa di lunghezza e conte-nuto dipendente dal comando. Nel caso in cui il comando sia un comando di lettura di un dato questo campo conterrà il carattere "?" (0x3f esadecimale). Nel caso in cui il comando sia un comando di impostazione dati, o nel caso in cui sia il **Messaggio** sia la risposta del Controller ad un comando di lettura, il campo conterrà una stringa di dati di uno dei tipi dettagliati nella tabella seguente:

Tab. 1

TIPO DI DATO	CARATTERI VALIDI
Logico	0 1
Numerico	Stringa di 5 caratteri numerici giustificati a destra con dei caratteri "0".
Esponenziale	Stringa con formato: "XXe-YY"

- **<CRC>**: XOR di tutti i caratteri che costituiscono il **Messaggio**, con l'esclusione del CRC, e con il bit più significativo posto a 0.

La struttura della **Risposta** dell'unità Slave indirizzata dipenderà dal **Messaggio** ricevuto:

- non conterrà alcun carattere nel caso di **Messaggio** con CRC errato, o con indirizzo Slave non corretto, o con lunghezza campo/tipo dati non corretta, o con comando sconosciuto;
- conterrà il carattere ACK (0x6 esadecimale) per confermare l'avvenuta impostazione del parametro associato al comando inviato dal Master quando il comando è un comando di scrittura;
- sarà costituita da un **Messaggio** con la stessa struttura del **Messaggio** descritta precedente-mente, ma con il campo **<DATA>** contenente il parametro richiesto dal Master e con il campo **<ADR>** con il bit più significativo posto a 0 quando il comando è un comando di lettura.

Tab. 2

COMANDO	DESCRIZIONE	TIPO DI DATO	LETTURA/ SCRITTURA	VALORI POSSIBILI
A	Autostart	Logico	L/S	0 = SI 1 = NO
B	Baud rate	Numerico	L/S	0 = 600 1 = 1200 2 = 2400 3 = 4800 4 = 9600
C	Lettura ingresso corrente (unità di misura: 0,1 A)	Numerico	L	
D	Indirizzo (non utilizzato nel caso di scheda di interfaccia RS 232)	Numerico	L/S	da 1 a 32
E	Codice di errore	Numerico	L	0 = nessun errore 1 = sovratemperatura 2 = Mini Ti-Ball guasto 3 = filamento TSP interrotto 4 = TSP guasto 5 = corto circuito
F	Filamento attivo	Numerico	L/S	0 = Mini Ti-Ball 1 = filamento 1 del TSP 2 = filamento 2 del TSP 3 = filamento 3 del TSP
G	Avvio/arresto del controller	Logico	L/S	0 = arresto 1 = avvio
H	Soglia pressione	Esponenziale	L/S	da "01e-10" a "01e-04"
I	Corrente erogata (unità di misura: 0,1 A)	Numerico	L	
L	Lettura ingresso pressione (unità di misura: 0,1 V)	Esponenziale	L	

COMANDO	DESCRIZIONE	TIPO DI DATO	LETTURA/ SCRITTURA	VALORI POSSIBILI
M	Modo di funzionamento del controller	Numerico	L/S	0 = manuale 1 = automatico 2 = remoto 3 = automatico/remoto
N	Corrente di sublimazione (unità di misura: 0,1 A; valore approssimato a 0,5 A)	Numerico	L/S	300 = 30 A 305 = 30,5 A ..... 495 = 49,5 A 500 = 50 A
P	Periodo di sublimazione	Numerico	L/S	30 = 3 minuti 100 = 10 minuti 300 = 30 minuti 600 = 1 ora 1200 = 2 ore 2400 = 4 ore 4800 = 8 ore 19200 = 32 ore
R	Recover	Logico	L/S	0 = automatico 1 = manuale
S	Stato del controller	Numerico	L	0 = arresto 1 = guasto 2 = attesa interlock 3 = rampa 4 = attesa sublimazione 5 = sublimazione
T	Tempo di sublimazione (unità di misura: 0,1 min.)	Numerico	L/S	10 = 1 minuto 15 = 1,5 minuti ..... 70 = 7 minuti
V	Tensione erogata (unità di misura: 0,1 V)	Numerico	L	

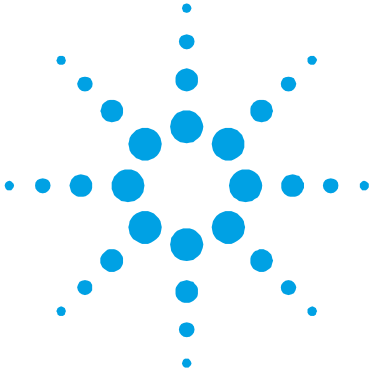
Esempi di messaggi TSP

Tab. 3

ADD.	CMD	R/W	TYPE	VALUE	MESSAGE	RESPONCE	COMMENT
1	R	R	L	-	81 30 32 52 JF 6E 0 2 R ?	01 30 32 52 J0 61 0 2 R 0	Legge Recover status (value = 1)
1	R	W	L	1	81 30 32 52 31 60 0 2 R 1	06	Scrive Recover status a 1
1	R	W	L	0	81 30 32 52 30 61 0 2 R 0	06	Scrive Recover status a 0
1	T	R	N	-	81 30 32 54 3F 68 0 2 T ?	01 30 36 54 30 30 30 31 30 62 0 6 T 0 0 0 1 0	Legge Sublimation time (value = 10)
1	T	W	N	00600	81 30 36 54 30 30 36 30 30 56 0 6 T 0 0 6 0 0	06	Scrive Sublimation time a 600
1	H	R	P	-	81 30 32 48 JF 74 0 2 H ?	01 30 37 4B 30 31 65 2D 30 37 00 0 7 H 0 1 e - 0 7	Legge Pressure Thresold (value = 1e-7)
1	H	W	P	05e-06	81 30 37 48 30 35 65 2D 30 36 05 0 7 H 0 5 e - 0 6	06	Scrive Pressure Thresold a 5e-6

Add	Indirizzo del dispositivo
Cmd	Comando (A, B, C...)
R/W	Operazione (Read/Write)
Type	Tipo di dato (Logico/Numerico/Potenza)

I campi "MESSAGE" e "RESPONCE" sono rappresentati in forma esadecimale (i corrispondenti valori ASCII sono indicati, quando possibile, sotto a ciascun byte).



2 Gebrauchsanleitung

Übersetzung der Originalanleitungen

Allgemeines

Dieser Apparat ist für Fachbetriebe bestimmt. Vor Gebrauch sollte der Benutzer dieses Handbuch sowie alle weiteren mitgelieferten Zusatzdokumente genau lesen. Bei - auch nur teilweisem - Nichtbeachtung der enthaltenen Hinweise, unsachgemäßem Gebrauch durch ungeschultes Personal, nicht autorisierten Eingriffen und Mißachtung der einheimischen, hier zur Geltung kommenden Bestimmungen übernimmt die Fa. Agilent keinerlei Haftung.

In den folgenden Abschnitten sind alle erforderlichen Informationen für die Sicherheit des Bedieners bei Anwendung des Geräts angeführt.

Ins einzelne gehende Informationen über das Installierte Gerät finden sich in den mitgelieferten technischen Handbüchern.

In dieser Gebrauchsanleitung werden Sicherheitshinweise folgendermaßen hervorgehoben:

WARNUNG!

Die Warnhinweise lenken die Aufmerksamkeit des Bedieners auf bestimmte Vorgänge oder Praktiken, die bei falscher Ausführung zu schweren Verletzungen führen können.

VORSICHT! Die Vorsichtshinweise vor bestimmten Prozeduren machen den Bediener darauf aufmerksam, dass bei Nichtbeachten Schäden an der Anlage entstehen können.

HINWEIS Die HInweise enthalten wichtige Informationen, die im Text hervorgehoben werden.

Beschreibung der Karten zum seriellen Anschluss von TSP-Controllern

Es stehen drei verschiedene Arten von Karten zum seriellen Anschluss des entsprechenden TSP-Controllers mit ebenso vielen Protokollen zur Datenübertragung zur Verfügung (siehe nachstehende Abbildungen):

- Baureihe 929-0024: serielle Karte RS232
- Baureihe 929-0025: serielle Karte RS422
- Baureihe 929-0026: serielle Karte RS485

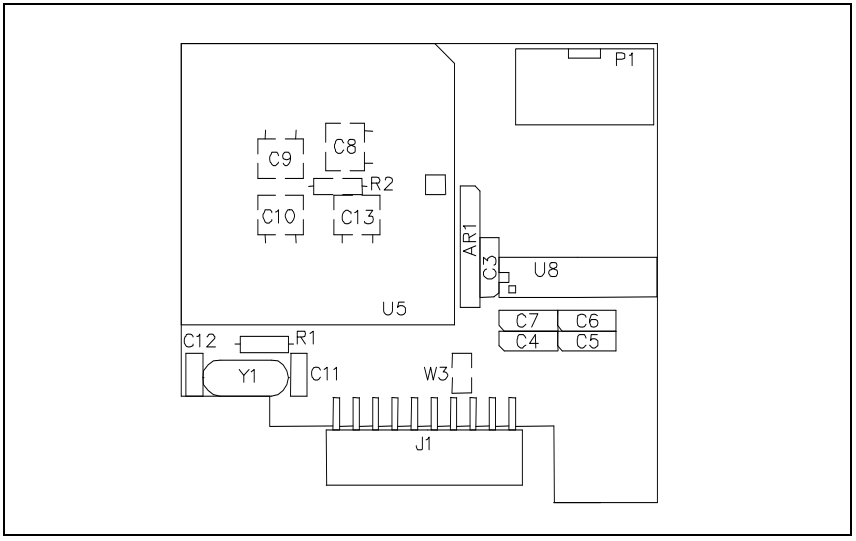


Abbildung 1 Serielle Karte RS 232 für Baureihe 929-0024

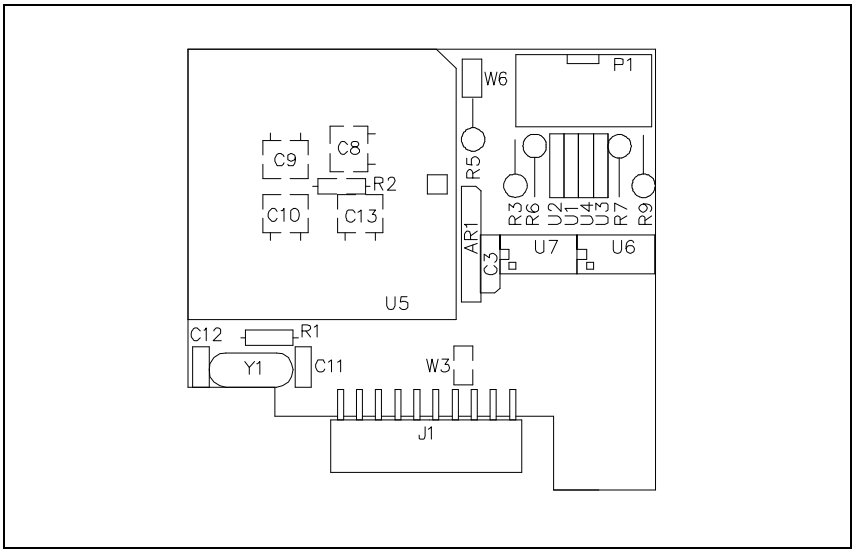


Abbildung 2 Serielle Karte RS 422 für Baureihe 929-0025

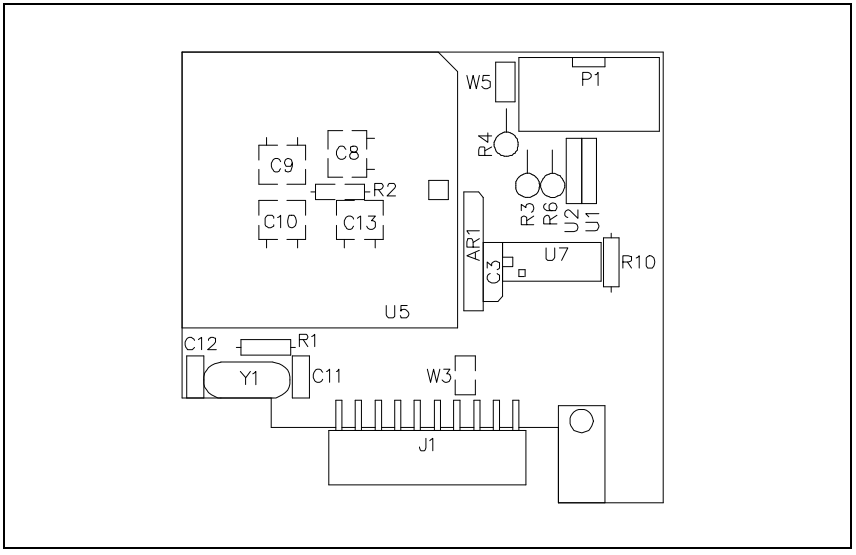


Abbildung 3 Serielle Karte RS 485 für Baureihe 929-0026

Alle lieferbaren Karten bestehen aus einem elektronischen Schaltkreis zum Dekodieren der von einem angeschlossen Computer übertragenen Befehle in Steuersignale für den TSP-Controller sowie zum Codieren und Übertragen der vom TSP-Controller aufgenommenen Daten an einen angeschlossenen Computer.

Für alle Karten wird folgender Bausatz geliefert:

- serielle Karte
- Flachkabel mit Steckern zum Anschluss der Karte an die hintere Schalttafel des TSP-Controllers
- diese Gebrauchsanleitung

Abmessungen der Seriellen Karten

Die folgende Abbildung zeigt die Einbaumaße in mm [Zoll] der seriellen Karten.

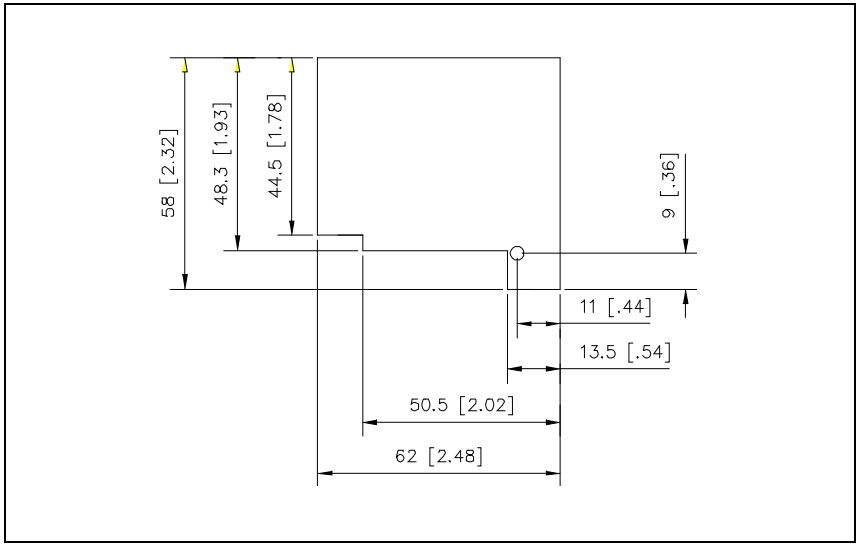


Abbildung 4 Kartenabmessungen

Lagerung

Bei Transport und Lagerung der seriellen Karten müssen folgende Umgebungsbedingungen eingehalten werden:

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

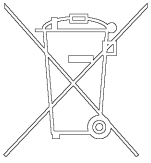
Entsorgung

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.



Vor Installation

Die seriellen Karten werden in einer speziellen Schutzverpackung geliefert. Eventuelle Transportschäden müssen der zuständigen örtlichen Vertretung gemeldet werden.

Beim Auspacken vorsichtig vorgehen, damit die Karten nicht fallen oder gestoßen werden. Um eine Beschädigung der Karten durch elektrostatische Entladungen zu vermeiden, dürfen elektronische Bauteile nicht mit der Hand angefasst werden.

Das Verpackungsmaterial muss korrekt entsorgt werden. Es ist vollständig recyclebar und entspricht der EG-Richtlinie 85/399 für Umweltschutz.

Die folgende Abbildung zeigt die Verpackung der seriellen Karten.

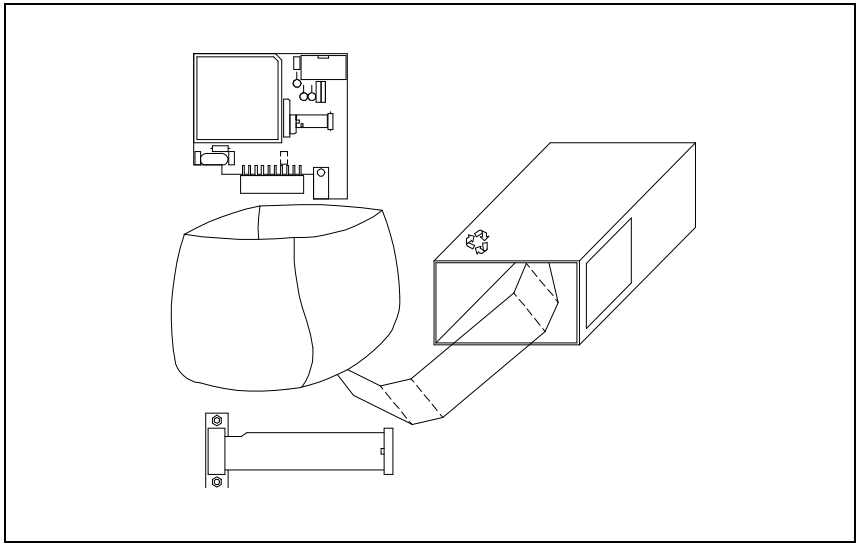


Abbildung 5

Installation

Zum Einbau der seriellen Karten sind keine besonderen Vorbereitungen nötig. Zur Installation der Karten im TSP-Controller wie folgt vorgehen:

1. Trennen Sie den TSP-Controller vom Stromnetz.
2. Nehmen Sie das Gehäuseoberteil ab.
3. Stecken Sie die serielle Karte in den Stecker auf der vorderen Schalttafel des TSP-Controllers
4. Entfernen Sie Kappe auf der hinteren Schalttafel von der Öffnung für den seriellen Stecker.
5. Schließen Sie das Flachkabel auf der einen Seite an die serielle Karte an und führen das andere Kabelende so durch den Controller, dass der 9-stiftige Stecker aus der Steckeröffnung auf der hinteren Schalttafel herausschaut.
6. Befestigen Sie den 9-stiftige Stecker mit den entsprechenden Schrauben an der hinteren Schalttafel.
7. Setzen Sie das Gehäuseoberteil wieder auf den TSP-Controller.
8. Schließen Sie den TSP-Controller wieder an das Stromnetz an.

Die folgenden Abbildungen zeigen die Stiftanordnung des Ausgangssteckers der seriellen Karten mit den zugehörigen Signalen.

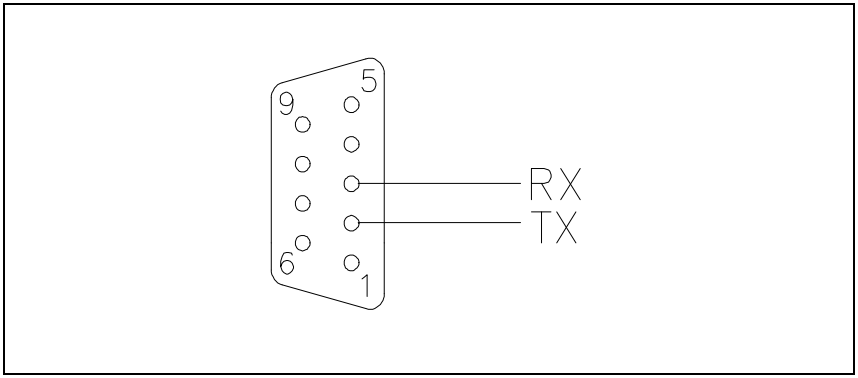


Abbildung 6 Serielle Karte RS 232

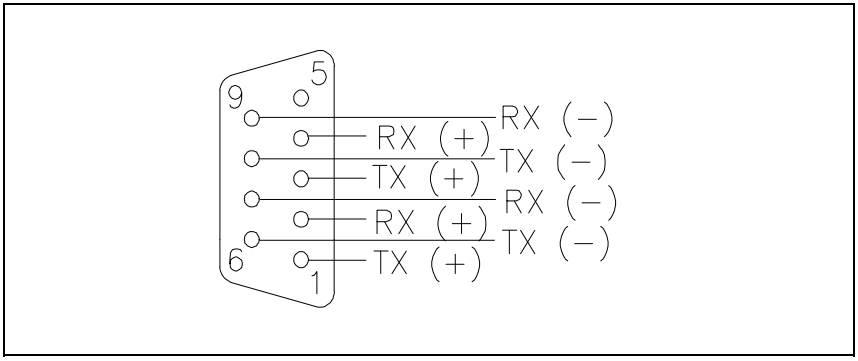


Abbildung 7 Serielle Karte RS 422

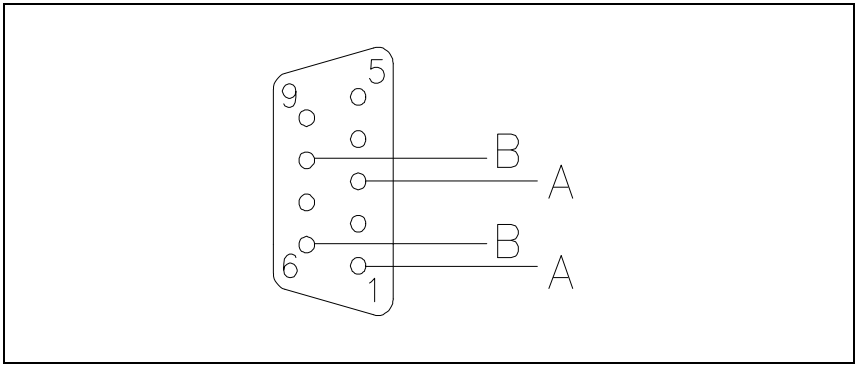


Abbildung 8 Serielle Karte RS 485

Serielles Datenübertragungs-Protokoll

Datenübertragungsformat

- 8 Datenbits
- keine Parität
- 1 Stopbit
- Baudraten: 600/1200/2400/4800/9600, programmierbar

Datenübertragungsprotokoll

- Master/Slave mit Hostrechner als Master und TSP-Controller als Slave
- max. Zahl von Peripheriestationen: 32 (nur bei RS485)

Die Datenübertragung geht wie folgt vor sich:

Host		**Controller**
`Meldung`	⟷	`Antwort`

Die Meldung hat das Format:

<ADR>+<LDAT>+<DATA>+<CRC>

mit:

- **<ADR>:** 0x80 + Adresse der Peripheriestation (von 0x01 bis 0x20). Bei Eingabe einer ungültigen Adresse wird die Einheit mit 1 konfiguriert
- **<LDAT>:** mit zwei Ziffern (00 bis 99) dezimal codierte Länge des Datenfelds.
- **<DATA>:** variable Länge je nach Art des aus folgenden Elementen bestehenden Steuerbefehls:
  - **Befehl:** Groß- oder Kleinbuchstaben für den Befehlscode (siehe Tabelle der Befehle auf der folgenden Seite.):
  - **Parameter:** Länge und Inhalt dieser Zeichenfolge hängen vom Steuerbefehl ab. Wenn der Befehl ein Befehl zur Datenaufnahme ist, enthält dieses Feld das Zeichen "?" (0x3F hex.). Ist es ein Befehl zur Dateneingabe oder handelt es sich um eine Anwort des Controllers auf einen Befehl zur Datenaufnahme, enthält das Feld eine der folgenden Zeichenfolgen:

Tab. 1

DATENTYP	GÜLTIGE ZEICHEN
Logisch	0 1
Numerisch	Folge von 5 Ziffern, mit "0" rechtsbündig gemacht.
Exponential	Zeichenkette im Format: “XXe-YY”

- **<CRC>**: XOR aller Zeichen der **Meldung** mit Ausnahme der CRC und dem signifikantesten Bit auf "0".

Die Struktur der **Antwort** vom angesprochenen Slave hängt von der von ihm empfangenen **Meldung** ab:

- Bei **Meldungen** mit falscher CRC oder ungültiger Slave-Adresse oder ungültiger Feldlänge/Datenart oder unbekanntem Befehlscode enthält die **Antwort** keine Zeichen.
- Wenn es sich um einen Schreibbefehl handelt, enthält die **Antwort** das Zeichen "ACK" (0x6 hex) zur Bestätigung, dass der mit dem Befehl assoziierte und vom Master übertragene Parameter erfolgreich programmiert ist.
- Wenn es sich um einen Lesebefehl handelt, hat die **Antwort** die gleiche Struktur wie die oben beschriebene, jedoch enthält das <**DATA**> Feld den vom Master angeforderten Parameter und im <**ADR**> Feld ist das signifikanteste Bit auf "0" gesetzt.

Tab. 2

BEFEHL	BESCHREIBUNG	DATEN-TYP	LESEN/ SCHREIBEN	MÖGLICHE WERTE
A	Autostart	logisch	L/S	0 = JA 1 = NEIN
B	Baudrate	Nummerisch	L/S	0 = 600 1 = 1200 2 = 2400 3 = 4800 4 = 9600
C	Lesen Stromeingang (Einheit 0,1 A)	Nummerisch	L	
D	Adresse (bei RS232 nicht verfügbar)	Nummerisch	L/S	von 1 bis 32
E	Fehlercode	Nummerisch	L	0 = kein Fehler 1 = Überhitzung 2 = Ausfall Mini Ti-Ball 3 = Fadenstrang TSP gebrochen 4 = Störung TSP 5 = Kurzschluss
F	Fadenstrang aktiv	Nummerisch	L/S	0 = Mini Ti Ball 1 = Fadenstrang 1 des TSP 2 = Fadenstrang 2 des TSP 3 = Fadenstrang 3 des TSP
G	Controller-Start/Stop	logisch	L/S	0 = Stop 1 = Start
H	Druckschwelle	Exponential	L/S	von “01e-10” bis “01e-04”
I	Aufgenommener Strom (Einheit: 0,1 A)	Nummerisch	L	
L	Lesen Druckeingang (Einheit: 0,1 V)	Exponential	L	

BEFEHL	BESCHREIBUNG	DATEN-TYP	LESEN/ SCHREIBEN	MÖGLICHE WERTE
M	Controllerbetriebsmodus	Nummerisch	L/S	0 = manuell 1 = automatisch 2 = ferngesteuert 3 = automatisch/ferngesteuert
N	Sublimationsstrom (Einheit 0,1 A; gerundet auf 0,5 A)	Nummerisch	L/S	300 = 30 A 305 = 30,5 A ..... 495 = 49,5 A 500 = 50 A
P	Sublimationsdauer	Nummerisch	L/S	30 = 3 Min 100 = 10 Min 300 = 20 Min 600 = 1 Std 1200 = 2 Std 2400 = 4 Std 48000 = 8 Std 19200 = 32 Std
R	Recover	logisch	L/S	0 = automatisch 1 = manuell
S	Controllerstatus	Nummerisch	L	0 = Stop 1 = Störung 2 = Wartezeit Sperre 3 = Rampe 4 = Wartezeit Sublimation 5 = Sublimation
T	Sublimationszeit (Einheit 0,1 Min.)	Nummerisch	L/S	10 = 1 Min 15 = 1,5 Min ..... 70 = 7 Min
V	Aufgenommene Spannung (Einheit: 0,1 V)	Nummerisch	L	

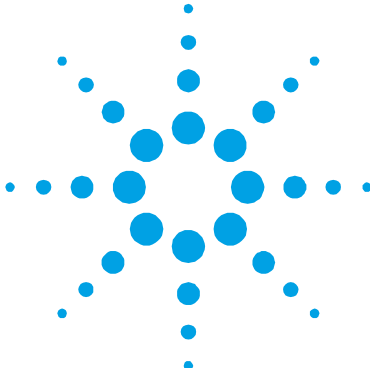
Beispiele für TSP Meldungen

Tab. 3

ADD.	CMD	R/W	TYPE	VALUE	MESSAGE	RESPONCE	COMMENT
1	R	R	L	-	81 30 32 52 JF 6E 0 2 R ?	01 30 32 52 J0 61 0 2 R 0	Recover Status lesen (Wert = 1)
1	R	W	L	1	81 30 32 52 31 60 0 2 R 1	06	Recover Status auf 1 schreiben
1	R	W	L	0	81 30 32 52 30 61 0 2 R 0	06	Recover Status auf 0 schreiben
1	T	R	N	-	81 30 32 54 3F 68 0 2 T ?	01 30 36 54 30 30 30 31 30 62 0 6 T 0 0 0 1 0	Sublima-tionszeit lesen (Wert = 10)
1	T	W	N	00600	81 30 36 54 30 30 36 30 30 56 0 6 T 0 0 6 0 0	06	Sublimation szeit auf 600 schreiben
1	H	R	P	-	81 30 32 48 JF 74 0 2 H ?	01 30 37 4B 30 31 65 2D 30 37 00 0 7 H 0 1 e - 0 7	Schwellen-druck lesen (Wert = 1 und -7)
1	H	W	P	05e-06	81 30 37 48 30 35 65 2D 30 36 05 0 7 H 0 5 e - 0 6	06	Schwellen-druck auf 5 und -6 schreiben

Add Adresse der Einrichtung
Cmd Befehl (A, B, C...)
R/W Operation (Read/Write)
Type Datentyp (logisch/numerisch/exponential)

Die Felder “MESSAGE” und “RESPONCE” sind hexadezimal (wenn möglich werden die entsprechenden ASCII Werte unter jedem Byte angegeben).



3 Mode d’emploi

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 Varia, avant l'utilisation de l'appareillage. Agilent décline 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.

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 dont le non respect pourrait endommager sérieusement l'appareillage.

NOTE Les notes contiennent des renseignements importants, extrapolés du texte.

Description des cartes d'interface serielles pour le controleur TSP

Trois modèles de cartes d'interface sérielles sont disponibles pour le contrôleur TSP (correspondant à autant de types de protocoles de communication (Cf. les figures suivantes):

- modèle 929-0024: Carte sérielle RS 232
- modèle 929-0025: Carte sérielle RS 422
- modèle 929-0026: Carte sérielle RS 485.

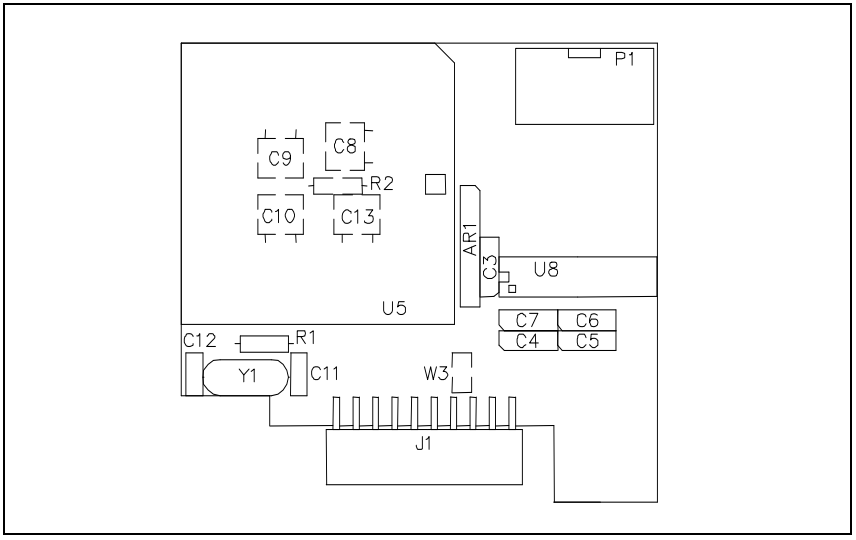


Figure 1 Carte sérielle RS 232 modèle 929-0024

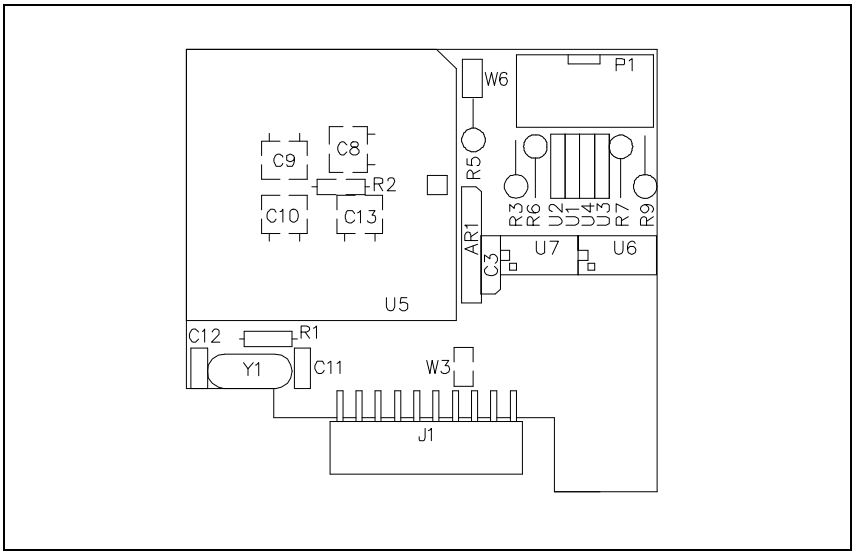


Figure 2 Carte sérielle RS 422 modèle 929-0025

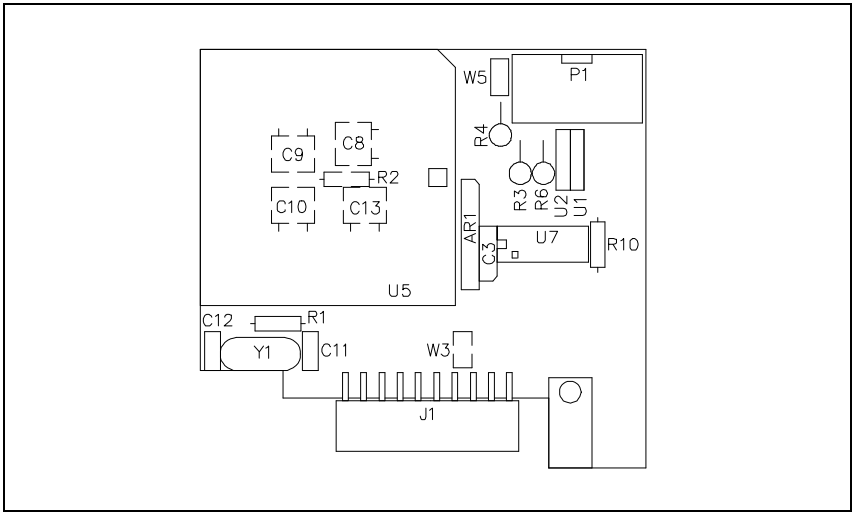


Figure 3 Carte sérielle RS 485 modèle 929-0026

Tous les modèles de cartes sont constitués d'un circuit électronique chargé de décodifier les commandes en provenance de l'ordinateur à distance en signaux de contrôle appropriés au contrôleur TSP et à codifier et envoyer les données relevées par le Contrôleur TSP à l'ordinateur à distance.

Le kit fourni pour tous les modèles est constitué des éléments suivants:

- la carte d'interface;
- un câble plat doté des connecteurs pour la liaison entre la carte et le panneau arrière du TSP;
- le présent manuel d'instructions.

Dimensions des cartes d'interface

La figure ci-après illustre les dimensions en mm (pouces) des cartes d'interface.

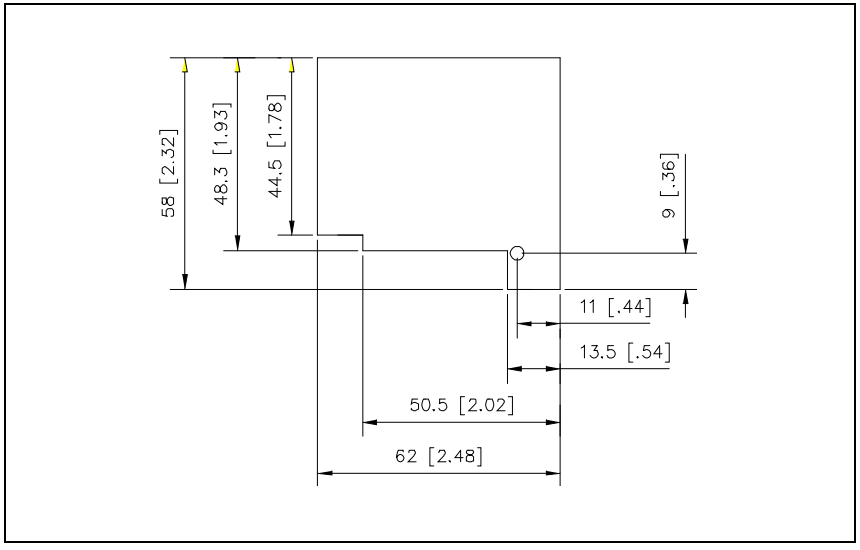


Figure 4 Dimensions des cartes d'interface

Emmagasinage

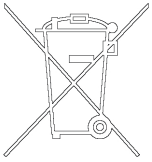
Pendant le transport et l'emmagasinage des carte d'interface sérielles, il faudra veiller à respecter les conditions environnementales suivantes:

- Température: de -20 °C à +70 °C
- Humidité relative: 0 to 95 % (non condensante)

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.



Preparation pour l'installation

Les cartes d'interface sont livrées dans un emballage de protection spécial; si l'on constate des marques de dommages pouvant s'être produits pendant le transport, contacter aussitôt le bureau de vente local.

Pendant l'opération d'ouverture de l'emballage, veiller tout particulièrement à ne pas laisser tomber les cartes, à ne leur faire subir aucun choc et à ne pas poser les doigts sur les composants électroniques afin d'éviter que les charges statiques puissent endommager les cartes. Ne pas jeter l'emballage dans la nature. Le matériel est entièrement recyclable et il est conforme aux directives CEE 83/399 en matière de protection de l'environnement. La figure suivante illustre l'emballage des cartes d'interface.

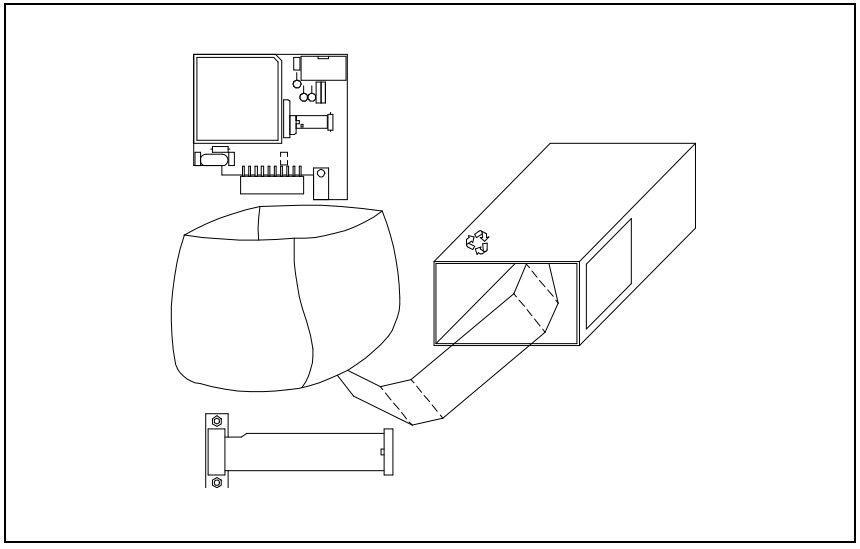


Figure 5

Installation

L'installation des cartes d'interface ne requiert aucune préparation particulière.

Pour installer la carte à l'intérieur du Contrôleur TSP, suivre la procédure ci-dessous:

1. Débrancher le contrôleur.
2. Retirer le boîtier supérieur.
3. Introduire la carte d'interface dans le connecteur de la carte du panneau frontal du contrôleur.
4. Sur le panneau arrière, retirer la languette obstruant le passage prévu pour l'introduction du connecteur sériel.
5. Brancher une extrémité du câble plat au connecteur P1 de la carte d'interface et faire passer l'autre extrémité à l'intérieur du contrôleur jusqu'à faire sortir la prise à 9 contacts du logement prévu sur le panneau arrière.
6. Fixer la prise au panneau arrière à l'aide des vis de fixation prévues.
7. Replacer le boîtier supérieur du contrôleur TSP.
8. Rebrancher le contrôleur à l'alimentation électrique.

Les figures suivantes illustrent la disposition des pieds et des signaux sur la prise de la carte d'interface.

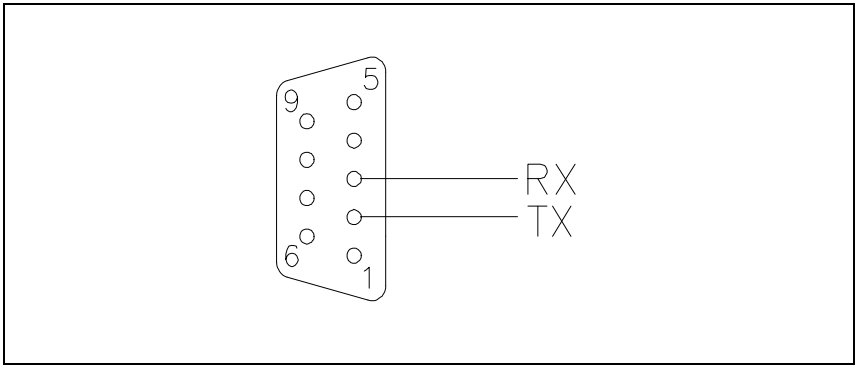


Figure 6 Carte sérielle RS 232

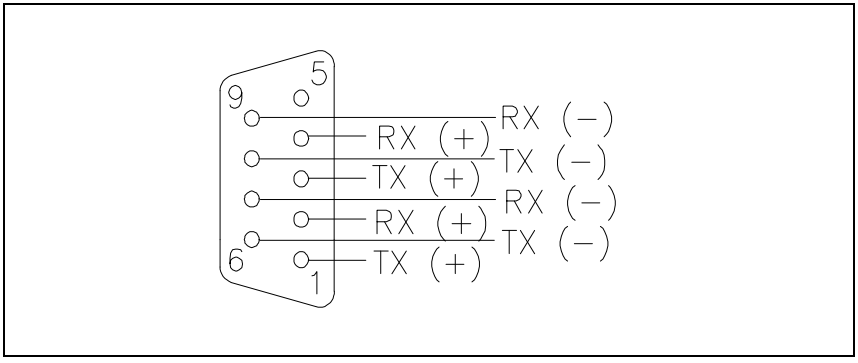


Figure 7 Carte sérielle RS 422

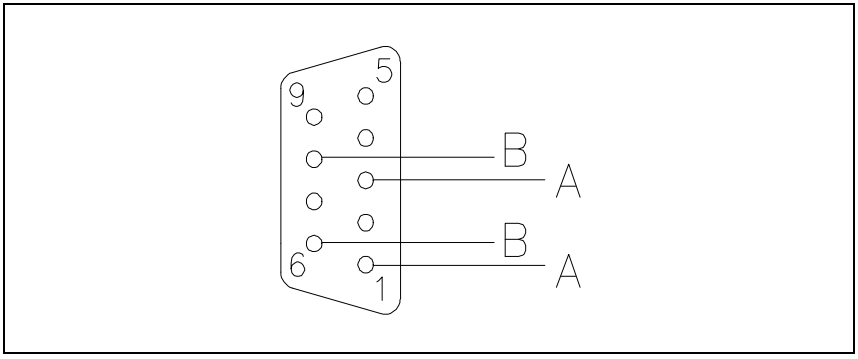


Figure 8 Carte sérielle RS 485

Protocole de communication serielle

Datenübertragungsformat

- 8 bit de données
- aucune parité
- 1 bit de stop
- baud rate: 600/1200/2400/4800/9600 programmables

Protocole de communication

- Du type Master/Slave avec l'ordinateur host Master et Contrôleur Slave.
- Nombre maximum de périphériques: 32 (uniquement pour connexions en RS 485)

La communication s'établit de la façon suivante:

Host		**Contrôleur**
Message	⟷	Réponse

Le message présente le format suivant:

<ADR>+<LDAT>+<DATA>+<CRC>

Dans lequel:

- **<ADR>:** 0x80+adresse du périphérique (de 0x1 à 0x20). L'introduction d'une adresse non valable configure l'unité comme unité 1.
- **<LDAT>:** longueur du champ données codifié en décimales sur deux caractères (de 00 à 99).
- **<DATA>:** champ de longueur variable en fonction du type de commande constitué par les éléments suivants:
  - **Commande:** lettre majuscule ou minuscule identifiant la commande (Cf tableau des commandes de la page suivante);
  - **Paramètres:** chaîne dont la longueur et le contenu dépendent de la commande. Au cas où la commande serait une commande de lecture d'une donnée, ce champ contiendra le caractère "?" (0x3f hexadécimal). Au cas où la commande serait une commande d'introduction de données ou au cas où le **Message** serait la réponse du Contrôleur à une commande de lecture, le champ contiendra une chaîne de données d'un des type présentés dans le tableau suivant:

Tab. 1

TYPE DE DONNEE	CARACTERES VALABLES
Logique	0 1
Numérique	Chaîne de 5 caractères numériques justifiés à droite avec des caractères "0".
Exponentielle	Chaîne avec format "XXe-YY"

- **<CRC>:** XOR de tous les caractères qui constituent le **Message**, à l'exclusion du CRC et avec le bit le plus significatif placé à 0.

La structure de la **Réponse** de l'unité Slave dépendra du **Message** reçu:

- elle ne contiendra aucun caractère en cas de **Message** avec CRC erroné ou avec adresse Slave incorrecte ou avec longueur du champ/type de données incorrecte ou avec commande inconnue.
- elle contiendra le caractère ACK (0x6 hexadécimal) pour confirmer l'introduction du paramètre associé à la commande envoyée par le Master lorsque la commande est une commande d'écriture.
- Elle sera constituée d'un **Message** ayant la même structure que le **Message** décrit précédemment mais avec le champ **<DATA>** contenant le paramètre requis par le Master et avec le champ **<ADR>** avec le bit le plus significatif placé à 0 lorsque la commande est une commande de lecture.

Tab. 2

COMMANDE	DESCRIPTION	TYPE DE DONNEE	LECTURE/ ECRITURE	VALEURS POSSIBLES
A	Autostart	Logique	L/E	0 = OUI 1 = NON
B	Baud rate	Numérique	L/E	0 = 600 1 = 1200 2 = 2400 3 = 4800 4 = 9600
C	Lecture arrivée courant (unité de mesure: d.1 A)	Numérique	L	
D	Adresse (inutilisable dans le cas de cartes d'interface RS 232)	Numérique	L/E	de 1 à 32
E	Code d'erreur	Numérique	L	0 = aucun erreur 1 = température excessive 2 = Mini Ti-Ball en panne 3 = Filament TSP interrompu 4 = TSP en panne 5 = filament 3 du TSP
F	Filament actif	Numérique	L/E	0 = Mini Ti-Ball 1 = Filament 1 du TSP 2 = Filament 2 du TSP 3 = Filament 3 du TSP
G	Démarrage/Arrêt du contrôleur	Logique	L/E	0 = arrêt 1 = démarrage
H	Seuil de pression	Exponentielle	L/E	de "01e-10" à "01e-04"
I	Courant fourni (unité de mesure : o,1 A)	Numérique	L	
L	Lecture arrivée pression (unité de mesure: 0,1 V)	Exponentielle	L	

COMMANDE	DESCRIPTION	TYPE DE DONNEE	LECTURE/ ECRITURE	VALEURS POSSIBLES
M	Mode de fonctionnement du contrôleur	Numérique	L/E	0 = manuel 1 = automatique 2 = à distance 3 = automatique/à distance
N	Courant de sublimation (unité de mesure: 0,1 A; valeur proche de 0,5)	Numérique	L/E	300 = 30 A 305 = 30,5 A ..... 495 = 49,5 A 500 = 50 A
P	Période de sublimation	Numérique	L/E	30 = 3 minutes 100 = 10 minutes 300 = 30 minutes 600 = 1 heure 1200 = 2 heures 2400 = 4 heures 4800 = 8 heures 19200 = 32 heures
R	Recover	Logique	L/E	0 = automatique 1 = manuel
S	Etat du contrôleur	Numérique	L	0 = arrêt 1 = en panne 2 = attente interlock 3 = rampe 4 = attente sublimation 5 = sublimation
T	Temps de sublimation (unité de mesure: 0,1 min.)	Numérique	L/E	10 = 1 minute 15 = 1,5 minutes ..... 70 = 7 minutes
V	Tension fournie (unité de mesure: 0,1 V)	Numérique	L	

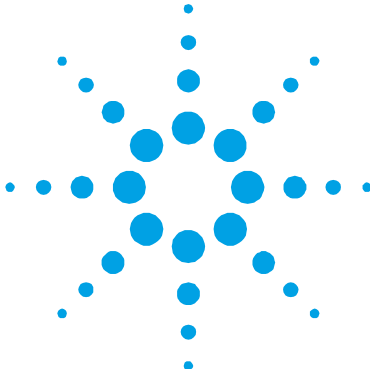
Exemples de messages TSP

Tab. 3

ADD.	CMD	R/W	TYPE	VALUE	MESSAGE	RESPONCE	COMMENT
1	R	R	L	-	81 30 32 52 JF 6E 0 2 R ?	01 30 32 52 J0 61 0 2 R 0	Lit Recover status (valeur = 1)
1	R	W	L	1	81 30 32 52 31 60 0 2 R 1	06	Ecrit Recover status à 1
1	R	W	L	0	81 30 32 52 30 61 0 2 R 0	06	Ecrit Recover status à 0
1	T	R	N	-	81 30 32 54 3F 68 0 2 T ?	01 30 36 54 30 30 30 31 30 62 0 6 T 0 0 0 1 0	Lit Sublimation time (valeur = 10)
1	T	W	N	00600	81 30 36 54 30 30 36 30 30 56 0 6 T 0 0 6 0 0	06	Ecrit Sublimation time à 600
1	H	R	P	-	81 30 32 48 JF 74 0 2 H ?	01 30 37 4B 30 31 65 2D 30 37 00 0 7 H 0 1 e - 0 7	Lit Pressure Thresold (valeur = 1e-7)
1	H	W	P	05e-06	81 30 37 48 30 35 65 2D 30 36 05 0 7 H 0 5 e - 0 6	06	Ecrit Pressure Thresold à 5e-6

Add	Adresse du dispositif
Cmd	Commande (A, B, C...)
R/W	Opération (Read/Write)
Type	Type de donnée (Logique/Numérique/Puissance)

Les champs "MESSAGE" et "RESPONCE" sont représentés sous forme héxadécimale (les valeurs correspondantes ASCII sont indiquées, si possible, sous chaque octet).



4 Instructions for Use

Original Instructions

General Information

This equipment is destined for use by professionals. The user should read this instruction manual and any other additional information supplied by Agilent before operating the equipment. Agilent will not be held responsible for any events occurring due to non-compliance, even partial, with these instructions, improper use by untrained persons, non-authorised interference with the equipment or any action contrary to that provided for by specific national standards.

The following paragraphs contain all the information necessary to guarantee the safety of the operator when using the equipment.

Detailed information about the installed equipment are available into the supplied relevant technical manuals.

This manual uses the following standard protocol:

WARNING!

The warning messages are for attracting the attention of the operator to a particular procedure or practice which, if not followed correctly, could lead to serious injury.

CAUTION! The caution messages are displayed before procedures which, if not followed, could cause damage to the equipment.

NOTE The notes contain important information taken from the text.

TSP Controller Serial Interface PCB Description

Three models of serial interface board for TSP controller are available. Each model corresponds to a serial communication protocol (see the following figures):

- model 929-0024: RS 232 serial interface board
- model 929-0025: RS 422 serial interface board
- model 929-0026: RS 485 serial interface board.

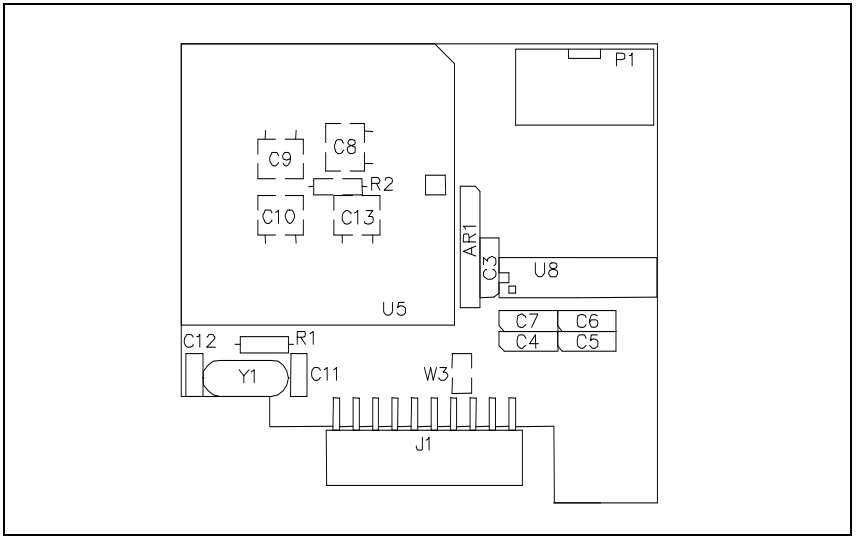


Figure 1 RS 232 Serial Interface Board Model 929-0024

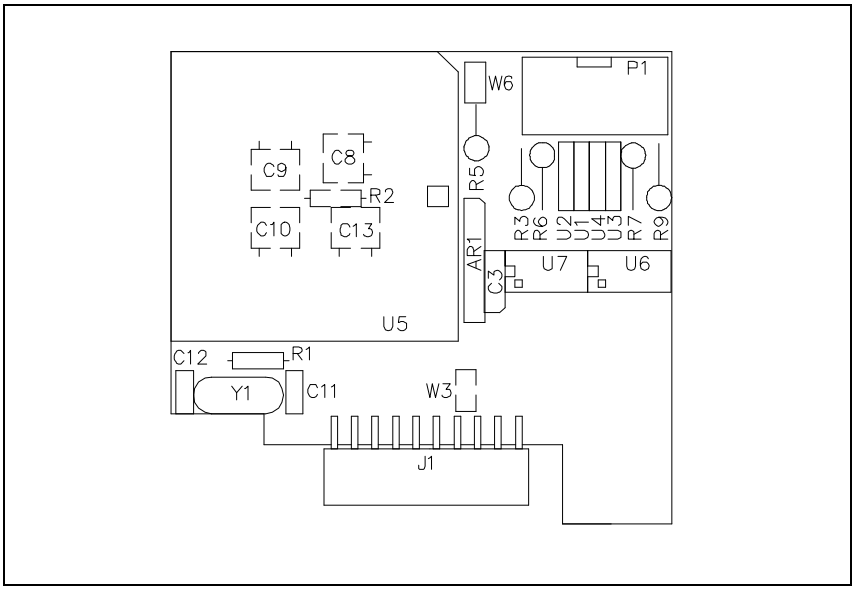


Figure 2 RS 422 serial interface board model 929-0025

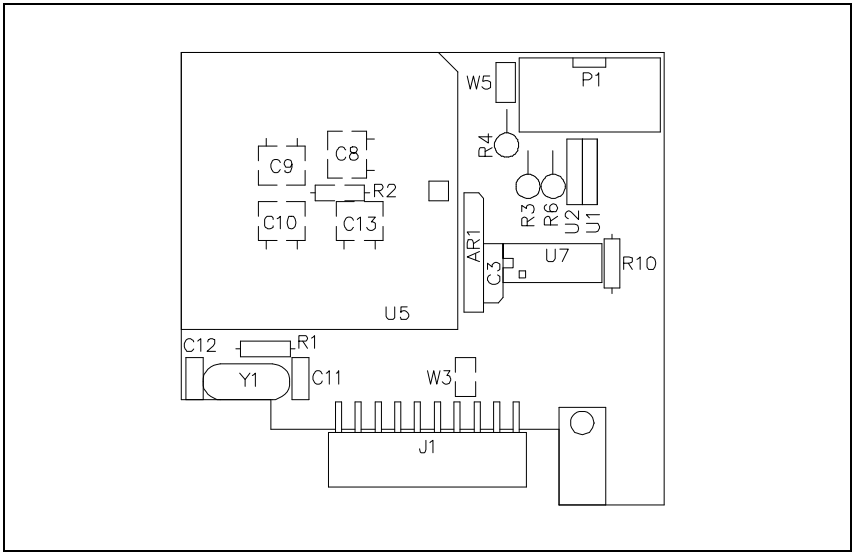


Figure 3 RS 485 Serial Interface Board Model 929-0026

All the board models include an electronic circuitry. It decodes the commands from the host computer into suitable control signals for the TSP Controller, and encodes and sends data from TSP Controller to the host computer.

The furnished kit of all models comprises the following elements:

- the interface board;
- a flat cable with relevant connectors to connect the board to the TSP rear panel;
- this instruction manual.

Interface Boards Dimensions

The following figure shows the interface boards dimensions in mm [inches].

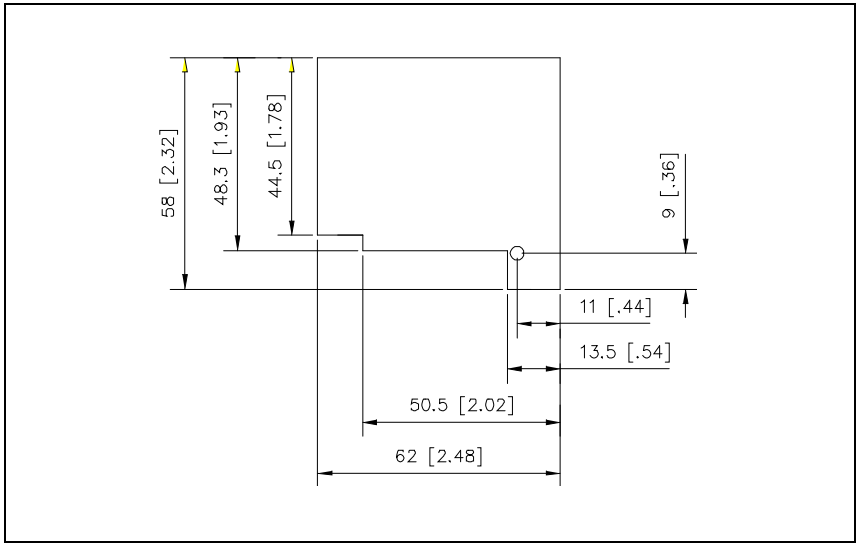


Figure 4 Interface Boards Dimensions

Storage

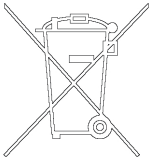
When transporting and storing the serial interface boards the following environmental requirements should be satisfied:

- Temperature: from -20 °C to +70 °C
- Relative humidity: 0 to 95 % (without condensing)

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.



Preparation for Installation

The interface boards are supplied in a special protective packing. If this shows signs of damage which may have occurred during transport, contact your local sales office.

When unpacking the board, be sure not to drop it, avoid any kind of sudden impact or shock vibration to it and avoid any hand contact with the electronic circuitry: the electrostatic charges may damage the board.

Do not dispose of the packing materials in an unauthorized manner. The material is 100 % recyclable and complies with EEC Directive 85/399.

The following figure shows the boards packaging.

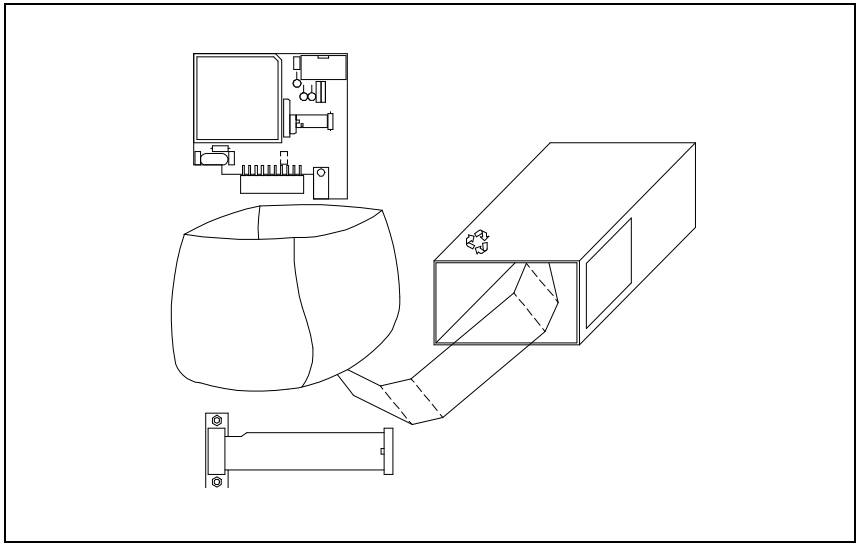


Figure 5

Installation

The interface boards installation does not require specific presettings. The following procedure must be executed to install the interface board inside the TSP Controller:

1. Disconnect the controller from the mains.
2. Remove the upper cover.
3. Insert the interface board into the suitable connector of the controller front panel board.
4. Remove the closing cover of the serial connector space of the controller rear panel.
5. Connect one side of the flat cable to P1 connector of the interface board and get the other side through the controller until the 9-pin D-type connector go out from the suitable space of the rear panel.
6. Fix the connector to the rear panel by means of the fixing screws.
7. Reassemble the TSP controller upper cover.
8. Reconnect the controller to the mains.

The following figures show the pin layout and relevant signals of the interface boards D-type connectors.

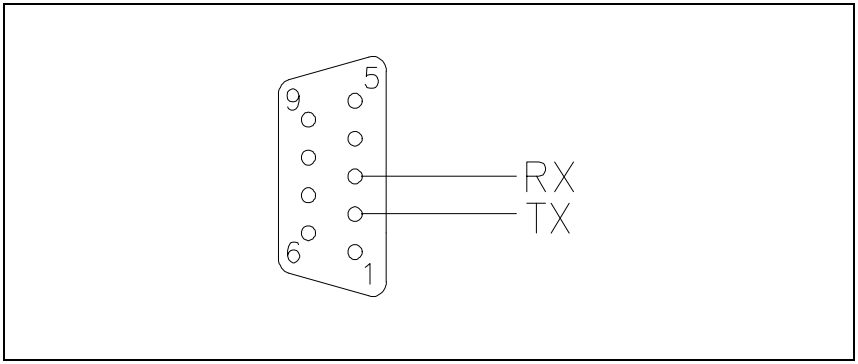


Figure 6 RS 232 Serial Board

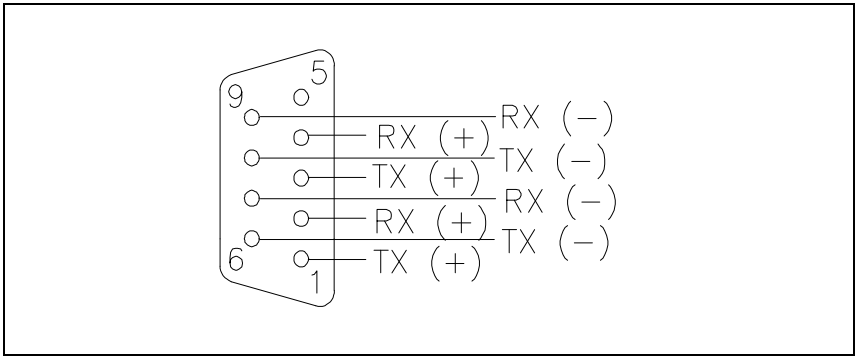


Figure 7 RS 422 Serial Board

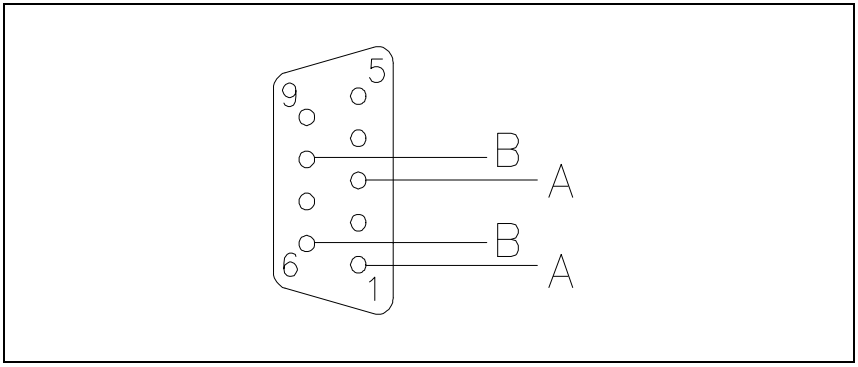


Figure 8 RS 485 Serial Board

Serial Communication Protocol

Communication Format

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

Communication Protocol

- Master/Slave type with host computer Master and Controller Slave
- Maximum peripheral number: 32 (only for RS 485 protocol)

The communication is performed in the following way:

Host		**Controller**
`Message`		`Answer`

`Message` is a string with the following format:

`<ADR>+<LDAT>+<DATA>+<CRC>`

where:

- **<ADR>:** 0x80+peripheral address (from 0x1 to 0x20). An invalid address set the unit as unit 1.
- **<LDAT>:** data field length. It is encoded in decimal with two character (from 00 to 99).
- **<DATA>:** variable length field according to the command type, with the following elements:
  - **Command:** upper or lower case letter corresponding to the command (see the table of the following page):
  - **Parameters:** this is a string with length and content variable according to the command. When the command is a data reading one, this field contains the "?" (0x3f hexadecimal) character. When the command is a data setting one, or when the **Message** is a Controller answer to a reading command, this field contains a data string of one of the following types:

Tab. 1

DATA TYPE	VALID CHARACTER
Logic	0 1
Numeric	5 characters numeric string right justified with "0".
Exponential	A string with the following format: "XXe-YY"

- **<CRC>:** XOR of all characters of the **Message**, with the exclusion of CRC, and with the most significant bit set to 0.

The addressed slave unit will respond with an `Answer` whose structure depends from the received **`Message`**:

- when the **`Message`** has a wrong CRC, or an unavailable address, or an incorrect field length/data type, or an unknown command, the **`Answer`** will not contain any character;
- the `Answer` will contain the ACK character (0x6 hexadecimal) to confirm the setting of the parameter associated with the command sent from Master when the command is a writing one;
- the **`Answer`** will contain a **`Message`** with the same structure of the `Message` previously described, but with **<DATA>** field containing the Master requested parameter and with the **<ADR>** field with the most significant bit set to 0 when the command is a reading one.

Tab. 2

COMMAND	DESCRIPTION	DATA TYPE	READ/WRITE	ADMITTED VALUES
A	Autostart	Logic	R/W	0 = YES 1 = NO
B	Baud rate	Numeric	R/W	0 = 600 1 = 1200 2 = 2400 3 = 4800 4 = 9600
C	Input current reading (measurement unit: 0,1 A)	Numeric	R	
D	Address (not available for RS 232 interface board)	Numeric	R/W	from 1 to 32
E	Error Code	Numeric	R	0 = no error 1 = overtemperature 2 = Mini Ti-Ball interrupt. 3 = TSP filament interrupt 4 = TSP defective 5 = short circuit
F	Active filament	Numeric	R/W	0 = Mini Ti-Ball 1 = filament 1 of TSP 2 = filament 2 of TSP 3 = filament 3 of TSP
G	Controller start/stop	Logic	R/W	0 = stop 1 = start
H	Pressure threshold	Exponential	R/W	from “01e-10” to “01e-04”
I	Absorbed current (measurement unit: 0,1 A)	Numeric	R	
L	Input pressure reading (measurement unit: 0,1 V)	Exponential	R	
M	Controller operating mode	Numeric	R/W	0 = manual 1 = automatic 2 = remote 3 = automatic/remote

COMMAND	DESCRIPTION	DATA TYPE	READ/WRITE	ADMITTED VALUES
N	Sublimation current (measurement unit: 0,1 A; this value is rounded to 0,5 A)	Numeric	R/W	300 = 30 A 305 = 30,5 A ..... 495 = 49,5 A 500 = 50 A
P	Sublimation period	Numeric	R/W	30 = 3 minutes 100 = 10 minutes 300 = 30 minutes 600 = 1 hour 1200 = 2 hours 2400 = 4 hours 48000 = 8 hours 19200 = 32 hours
R	Recover	Logic	R/W	0 = automatic 1 = manual
S	Controller status	Numeric	R	0 = stop 1 = fail 2 = wait interlock 3 = ramp 4 = wait sublimation 5 = sublimation
T	Sublimation time (measurement unit: 0,1 min.)	Numeric	R/W	10 = 1 minute 15 = 1,5 minutes ..... 70 = 7 minutes
V	Absorbed voltage (measurement unit: 0,1 V)	Numeric	R	

Example of TSP Messages

Tab. 3

ADD.	CMD	R/W	TYPE	VALUE	MESSAGE	RESPONCE	COMMENT
1	R	R	L	-	81 30 32 52 JF 6E 0 2 R ?	01 30 32 52 J0 61 0 2 R 0	Reads Recover status (value = 1)
1	R	W	L	1	81 30 32 52 31 60 0 2 R 1	06	Writes Recover status to 1
1	R	W	L	0	81 30 32 52 30 61 0 2 R 0	06	Writes Recover status to 0
1	T	R	N	-	81 30 32 54 3F 68 0 2 T ?	01 30 36 54 30 30 30 31 30 62 0 6 T 0 0 0 1 0	Reads Sublimation time (value = 10)
1	T	W	N	00600	81 30 36 54 30 30 36 30 30 56 0 6 T 0 0 6 0 0	06	Writes Sublimation time to 600
1	H	R	P	-	81 30 32 48 JF 74 0 2 H ?	01 30 37 4B 30 31 65 2D 30 37 00 0 7 H 0 1 e - 0 7	Reads Pressure Threshold (value = 1 and -7)
1	H	W	P	05e-06	81 30 37 48 30 35 65 2D 30 36 05 0 7 H 0 5 e - 0 6	06	Writes Pressure Threshold to 5 and -6

Add Device address
Cmd Command (A, B, C...)
R/W Operation (Read/Write)
Type Data type (Logical/Numeric/Power)

The “MESSAGE” and “RESPONSE” fields are represented in hex format (the corresponding ASCII values are indicated, wherever possible, under each byte).

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.)

Agilent Technologies

Agilent Technologies

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:	**NORTH AMERICA:**	**PACIFIC RIM:**
Fax: 00 39 011 9979 330		
Fax Free: 00 800 345 345 00	Fax: 1 781 860 9252	please visit our website for individual
Toll Free: 00 800 234 234 00	Toll Free: 800 882 7426, Option 3	office information
vpt-customercare@agilent.com	vpl-ra@agilent.com	http://www.agilent.com

Agilent Technologies

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:**

Agilent Technologies

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

ION PUMPS/CONTROLLERS

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

VALVES/COMPONENTS

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

LEAK DETECTORS

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

INSTRUMENTS

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

SCROLL AND ROTARY VANE PUMPS

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

DIFFUSION PUMPS

- Heater failure	- Electrical problem
- Doesn't reach vacuum	- Cooling coil damage
- Vacuum leak	- 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
Lexington, MA 02421 - USA
Tel.: +1 781 861 7200
Fax: +1 781 860 5437
Toll-Free: +1 800 882 7426

China
Agilent Technologies (China) Co. Ltd
Vacuum Products Division
No.3, Wang Jing Bei Lu,
Chao Yang District,
Beijing, 100102
China
Tel.: +86 (10) 6439 7718
Toll-Free: 800 820 6556

France
Agilent Technologies France
Vacuum Products Division
7 Avenue des Tropiques
Z.A. de Courtaboeuf - B.P. 12
91941 Les Ulis cedex - France
Tel.: +33 (0) 1 69 86 38 84
Fax: +33 (0) 1 69 86 29 88
Toll free: 00 800 234 234 00

Germany and Austria
Agilent Technologies
Vacuum Products Division Alsfelder Strasse 6 Postfach 11 14 35
64289 Darmstadt – Germany
Tel.: +49 (0) 6151 703 353
Fax: +49 (0) 6151 703 302
Toll free: 00 800 234 234 00

India
Agilent Technologies India Pvt. Ltd.
Vacuum Product Division
G01. Prime corporate Park,
230/231, Sahar Road, Opp. Blue Dart Centre,
Andheri (East), Mumbai – 400 099.India
Tel: +91 22 30648287/8200
Fax: +91 22 30648250
Toll Free: 1800 113037

Italy
Agilent Technologies Italia S.p.A.
Vacuum Products Division
Via F.lli Varian 54
10040 Leini, (Torino) - Italy
Tel.: +39 011 997 9111 Fax: +39 011 997 9350
Toll-Free: 00 800 234 234 00

Japan
Agilent Technologies Japan, Ltd.
Vacuum Products Division
8th Floor Sumitomo Shibaura Building
4-16-36 Shibaura Minato-ku Tokyo 108-0023 - Japan
Tel.: +81 3 5232 1253
Fax: +81 3 5232 1710
Toll-Free: 0120 655 040

Korea
Agilent Technologies Korea, Ltd.
Vacuum Products Division
Shinsa 2nd Bldg. 2F 966-5 Daechi-dong
Kangnam-gu, Seoul
Korea 135-280
Tel.: +82 2 3452 2452
Fax: +82 2 3452 2451
Toll-Free: 080 222 2452

Mexico
Agilent Technologies
Vacuum Products Division
Concepcion Beistegui No 109 Col Del Valle
C.P. 03100 – Mexico, D.F.
Tel.: +52 5 523 9465
Fax: +52 5 523 9472

Singapore
Agilent Technologies Singapore Pte. Ltd,
Vacuum Products Division
Agilent Technologies Building,
1 Yishun Avenue 7,
Singapore 768923
Tel : (65) 6215 8045
Fax : (65) 6754 0574

Southeast Asia
Agilent Technologies Sales Sdn Bhd
Vacuum Products Division
Unit 201, Level 2 uptown 2,
2 Jalan SS21/37, Damansara Uptown
47400 Petaling Jaya,
Selangor, Malaysia
Tel : +603 7712 6106
Fax: +603 6733 8121

Taiwan
Agilent Technologies Taiwan Limited
Vacuum Products Division (3F)
20 Kao-Shuang Rd.,
Pin-Chen City, 324
Taoyuan Hsien , Taiwan, R.O.C.
Tel. +886 34959281
Toll Free: 0800 051 342

UK and Ireland
Agilent Technologies UK, Ltd.
Vacuum Products Division
6 Mead Road Oxford Industrial Park
Yarnton, Oxford OX5 1QU – UK
Tel.: +44 (0) 1865 291570
Fax: +44 (0) 1865 291571
Toll free: 00 800 234 234 00

Other Countries
Agilent Technologies Italia S.p.A.
Vacuum Products Division
Via F.lli Varian 54 10040 Leini, (Torino) - Italy
Tel.: +39 011 997 9111
Fax: +39 011 997 9350
Toll-Free: 00 800 234 234 00

Customer Support & Service

NORTH AMERICA:
Toll Free: 800 882 7426, Option 3
vpl-ra@agilent.com
EUROPE:
Toll Free: 00 800 234 234 00
vpt-customercare@agilent.com
PACIFIC RIM:
please visit our website for individual office information http://www.agilent.com

Worldwide Web Site, Catalog and Order On-line:
www.agilent.com
Representative in most countries
12/10

Printed in ITALY
05/2011
Publication Number: 87-900-079-01 (F)

Agilent Technologies