

TSP Profibus Gateway

Model 829-0027

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

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Agilent Technologies

Notices

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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.

TSP Profibus Gateway



TSP Profibus Gateway

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Procedura per l'installazione

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1 Procedura per l'installazione Informazioni Generali

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. Informazioni dettagliate sono fornite nell'appendice "Technical Information".

Questo manuale utilizza le seguenti convenzioni:



I messaggi di avvertenza attirano 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!

l 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.

Immagazzinamento

Durante il trasporto e l'immagazzinamento del Profibus Gateway non devono essere superate le seguenti condizioni ambientali:

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

Preparazione per l'installazione

Il Profibus Gateway viene fornito in un imballo protettivo speciale; se si presentano segni di danni, che potrebbero essersi verificati durante il trasporto, contattare l'ufficio vendite locale. Non disperdere l'imballo nell'ambiente. Il materiale è completamente riciclabile e risponde alla direttiva CEE 85/399 per la tutela dell'ambiente.

Installazione

Non installare e/o utilizzare il Profibus Gateway in ambienti esposti ad agenti atmosferici (pioggia, gelo, neve), polveri, gas aggressivi, in ambienti esplosivi o con elevato rischio di incendio.

Durante il funzionamento è necessario che siano rispettate le seguenti condizioni ambientali:

- temperatura: da + 5 °C a +40 °C
- umidità relativa: 0 90 % (non condensante).

Uso

ATTENZIONE!

Il Profibus Gateway appartiene alla prima categoria di installazione (o sovratensione) prevista dalla normativa EN 61010-1. Connettere quindi il dispositivo ad una linea di alimentazione che soddisfi tale categoria.

Il Profibus Gateway ha dei connettori per gli ingressi/uscite e per la comunicazione seriale che devono essere connessi ai circuiti esterni in modo che nessuna parte sotto tensione sia accessibile. Assicurarsi che l'isolamento del dispositivo connesso al Profibus Gateway abbia un isolamento adeguato anche in condizione di guasto singolo come previsto dalla normativa EN 61010-1.

Per l'installazione degli accessori opzionali, vedere "Technical Information".

Uso

In questo paragrafo sono riportate le principali procedure operative.

Prima di usare il controller effettuare tutti i collegamenti elettrici.

Accensione ed Uso del Profibus Gateway

Per accendere il Profibus Gateway è sufficiente fornire la tensione di alimentazione.

Il LED rosso sul pannello frontale del Gateway indica che il dispositivo è alimentato. Il LED verde, invece, indica lo stato del dispositivo:

- Lampeggio lento: scambio dati
- 1 impulso: errore link RS 485 (ad esempio, il dispositivo è ancora in fase di ricerca controller)
- 2 impulsi: errore link Profibus (ad esempio, il dispositivo non è indirizzato dal master)
- Lampeggio veloce: errore interno.

Arresto del Profibus Gateway

Per arrestare il Profibus Gateway è sufficiente togliere la tensione di alimentazione.

Manutenzione

Il Profibus Gateway non richiede alcuna manutenzione. Qualsiasi intervento deve essere eseguito da personale autorizzato.

Prima di effettuare qualsiasi intervento sul sistema scollegarlo dall'alimentazione.

NOTA Prima di rispedire al costruttore il Profibus Gateway per riparazioni o advanced exchange service, è indispensabile compilare e far pervenire al locale ufficio vendite la scheda "Sicurezza e Salute" allegata al presente manuale di istruzioni. Copia della stessa deve essere inserita nell'imballo del sistema prima della spedizione.

Qualora il Profibus Gateway dovesse essere rottamato, procedere alla sua eliminazione nel rispetto delle normative nazionali specifiche.

1 Procedura per l'installazione Smaltimento

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.



TSP Profibus Gateway User Manual



Anleitung zur Installation

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Übersetzung der Originalanleitungen



Agilent Technologies

Allgemeine Informationen

Diese Vorrichtung ist für eine professionelle Anwendung bestimmt. Der Benutzer muss, vor Anwendung, vorliegendes Handbuch und alle weitere von Agilent gelieferte Angaben, aufmerksam durchlesen. Agilent ist für etwaige auf teilweise oder gesamte Nichtberücksichtigung der Gebrauchsanweisungen beruhende Verantwortungen, für eine nicht geeignete Anwendung durch nicht ausgebildetes Personal, für nicht autorisierte Eingriffe oder für Anwendung unter Nichtbeachtung der nationalen Bestimmungen, nicht verantwortlich.

In den folgenden Absätzen sind alle notwendigen Informationen über die Sicherheit des Bedienungspersonals, während des Betriebs, angegeben. Ausführliche Angaben sind im Anhang "Technical Information", enthalten.

Dieses Handbuch benutzt folgende konventionelle Angaben.



Die Warnhinweise deuten auf ein Verfahren oder ein besonderes Verhalten hin, das bei Nichtbeachtung der Vorsichtsmassnahmen, schwere persönliche Schäden verursachen könnte.

VORSICHT!

Die Vorsichtshinweise erscheinen vor Verfahren, die bei Nichtbeachten, Geräteschaden verursachen könnten.

HINWEIS Die Hinweise enthalten wichtige Informationen aus dem Text.

Lagerung

Während des Transportes und der Lagerung des Profibus Gateway, dürfen folgende Umgebungsbedingungen nicht überschritten werden:

- Temperatur: von 0 °C bis +70 °C
- relative Luftfeuchtigkeit: 0 95 % (ohne Kondensbildung)

Vorbereitung für die Installation

Der Profibus Gateway wird in einer speziellen Schutzverpackung geliefert; sollten während des Transports Schäden aufgetreten sein, verständigen Sie bitte die lokale Verkaufsabteilung. Die Verpackung ordnungsgemäß entsorgen Das Material ist vollständig recyclebar.

Installation

Den Profibus Gateway nicht in Räumen, die Regen, Frost, Schnee, Staub oder aggressivem Gas ausgesetzt sind oder in Räumen mit Explosions- oder hoher Brandgefahr, verwenden.

Während der Betätigung müssen folgende Umgebungsbedingungen berücksichtigt werden:

- Temperatur: von 5 °C bis +40 °C
- relative Luftfeuchtigkeit: 0 90 % (ohne Kondensbildung)

2 Anleitung zur Installation

Anwendung

VORSICHT!

Der Profibus Gateway wird in die erste Installationskategorie (Überspannung) der Norm EN 61010-1 eingestuft. Die Vorrichtung muss an eine Netzlinie angeschlossen werden, die dieser Kategorie entspricht.

Profibus Gateway verfügt außer den, für die serielle Kommunikation vorgesehenen Stecker, auch Ausgangs- und Eingangsstecker, die mit den äußeren Schaltungen verbunden werden müssen, sodass kein Teil unter Spannung zugänglich sein kann. Sicherstellen, dass die Isolierung der mit dem Profibus Gateway verbundenen Vorrichtung, auch im Einzelschadenfall, so wie von Norm EN 61010-1 vorgesehen, eine angebrachte Isolierung besitzt.

Für die Installation der Options-Nebeneinrichtungen, beachten Sie bitte den Abschnitt "Technical Information".

Anwendung

In diesem Absatz werden die wichtigsten Funktionsverfahren angegeben .

Vor Anwendung des Kontrollers, alle elektrische Anschlüsse verbinden.

Anschalten und Betrieb des Profibus Gateway

Zum Einschalten des Profibus Gateway braucht dieser nur mit Spannung versorgt zu werden.

Die rote LED auf der Vorderseite des Gateway zeigt an, ob das Gerät versorgt ist. Die grüne LED zeigt hingegen den Status an:

- langsames Blinken: Datenaustausch
- 1 Impuls: RS 485 Verbindungsfehler (z.B. das Gerät sucht noch die Steuereinheit)
- 2 Impulse Profibus Verbindungsfehler (z.B. das Gerät wird nicht vom Master adressiert)
- schnelles Blinken: interner Fehler.

Abschalten des Profibus Gateway

Um den Profibus Gateway abzuschalten, genügt es die elektrische Versorgung abzuschalten.

Wartung

Für den Profibus Gateway ist keine Wartung erforderlich. Jeder Eingriff unterliegt autorisiertem Personal.

Vor jedem Eingriff, die elektrische Versorgung unterbrechen.

HINWEIS Vor Rücksendung des Profibus Gateway zum Hersteller zu Reparatur oder Advanced Exchange Service muss das Formular "Sicherheit und Gesundheit, das diesem Handbuch beigelegt ist, ausgefüllt und an das lokale Verkaufsbüro gesendet werden. Eine Kopie davon muss der Systemverpackung beigefügt werden.

Im Falle einer Verschrottung des Profibus Gateway, muss diese nach den nationalen Vorschriften erfolgen.

2 Anleitung zur Installation Entsorgung

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.





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Traduction de la mode d'emploi originale



3 Procédure pour l'installation Indications Generales

Indications Generales

Cet appareillage a été conçu en vue d'une utilisation professionnelle. Avant toute utilisation de l'appareil, il est conseillé à l'utilisateur de lire attentivement cette notice d'instructions ainsi que toute autre indication supplémentaire fournie par Agilent qui décline par conséquent toute responsabilité en cas de non respect total ou partiel des instructions données, d'utilisation impropre par un personnel non formé, d'opérations non autorisées ou d'emploi contraire aux réglementations nationales spécifiques. Les paragraphes suivants fournissent 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:



Les messages d'avertissement attirent l'attention de l'opérateur sur une procédure ou une manoeuvre spéciale qui, effectuée de façon impropre, 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.

Stockage

Pendant le transport et le stockage du Profibus Gateway, veiller au respect des conditions environnementales suivantes:

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

Preparation pour l'installation

Le Profibus Gateway est livré dans un emballage de protection spécial; en cas d'endommagement de l'emballage pouvant s'être produit pendant le transport, contacter le bureau de vente local.

Ne pas abandonner l'emballage dans la nature. Le matériel est entièrement recyclable et conforme à la directive CEE 85/399 en matière de protection de l'environnement.

Installation

Ne pas installer et/ou utiliser le Profibus Gateway dans des milieux exposés aux agents atmosphériques (pluie, froid, neige), polveri, gaz agressifs, dans des milieux explosifs ou avec risque élevé d'incendie.

Pendant le fonctionnement, il est nécessaire de respecter les conditions environnementales suivantes:

- pression maxi: 2 bar au-delà de la pression atmosphérique
- température: de +5 °C° à +40 °C
- humidité relative: 0 90 % (non condensante)

3 Procédure pour l'installation

Utilisation

ATTENTION! Le Profibus Gateway appartient à la première catégorie d'installations (ou surtension) prévue par la norme EN 61010-1. De ce fait, brancher le dispositif à une ligne d'alimentation compatible avec cette catégorie.

Le Profibus Gateway dispose de connecteurs pour les entrées/sorties et pour la communication en série qui doivent être branchés aux circuits extérieurs de facon qu'aucune partie sous tension ne soit accessible.

S'assurer que l'isolation du dispositif branché au Profibus Gateway a une isolation appropriée même en condition de panne individuelle selon les termes de la norme EN 61010-1.

Pour l'installation des accessoires en option, se reporter à "Technical Information".

Utilisation

Ce paragraphe présente les principales procédures opérationnelles. Avant d'utiliser le système, effectuer tous les branchements électriques.

Mise en marche et utilisation du Profibus Gateway

Pour allumer le Profibus Gateway il suffit de fournir la tension d'alimentation.

Le voyant rouge sur le panneau frontal du Gateway indique que le dispositif est alimenté. Le voyant vert, par contre, indique la condition du dispositif:

- Clignotement lent: échange données
- 1 impulsion: erreur lien RS 485 (par exemple, le dispositif est encore en phase de recherche contrôleur)
- 2 impulsions: erreur lien Profibus (par exemple, le dispositif n'est pas adressé par le master (maitre))
- Clignotement rapide: erreur interne.

Procédure pour l'installation 3 Entretien

Arrêt du Profibus Gateway

Pour arrêter le Profibus Gateway, il suffit de retirer la tension d'alimentation. Le contrôleur arrête immédiatement la pompe.

Entretien

Le Profibus Gateway n'exige aucun entretien particulier. Toute intervention doit être effectuée par un personnel agréé.

NOTE

Avant de renvoyer le Profibus Gateway au constructeur pour réparation ou "advanced exchange service", remplir et faire parvenir au bureau Agilent de votre région la fiche "Sécurité et Santé" jointe au présent manuel d'instructions. Une copie de cette fiche devra être mise dans l'emballage de la pompe avant l'expédition.

En cas de mise au rebut du Profibus Gateway, procéder à son élimination conformément aux réglementations nationales concernant la gestion des déchets.

3 Procédure pour l'installation Mise au rebut

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.





Installation Procedure

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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-authorized 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 is supplied in the appendix "Technical Information".

This manual uses the following standard protocol:



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.

Storage

When transporting and storing the Profibus Gateway, the following environmental requirements should not be exceeded:

- temperature: from 0° to +70 °C
- relative humidity: 0 95 % (non-condensing)

Preparation for Installation

The Profibus Gateway is shipped inside a special protective case; in case of damage occurred during the transport, please contact the local selling centre. Do not throw the case in the environment. The material is totally recyclable in accordance with the directive CEE 85/399 for the environmental protection.

Installation

Do not install or use the Profibus Gateway in an environment exposed to atmospheric agents (rain, snow, ice), dust, aggressive gases, or in explosive environments or those with a high fire risk.

During operation, the following environmental conditions must be respected:

- temperature: from + 5 °C to +40 °C
- relative humidity: 0 90 % (non-condensing)

4 Installation Procedure

Use

CAUTION!

The Profibus Gateway belongs to the first installation (or overvoltage) category as per directive EN 61010-1. Connect the device to a mains line that satisfy the above category.

The Profibus Gateway has Input/Output and serial communication connectors that must be connected to external circuits in such a way that no electrical part is accessible.

Be sure that the insulation of the device connected to the Profibus Gateway is adequate even in the case of single fault as per directive EN 61010-1.

For installation of optional accessories, see "Technical Information".

Use

This paragraph details the fundamental operating procedures.

Make all electrical connections before the use of the system.

Switching on and Use of Profibus Gateway

To switch on the Profibus Gateway it is necessary to supply the mains.

The red led on the Gateway front panel indicates the device is powered.

The green led indicates the device status:

- Blink slow: data exchange
- 1 pulse: RS 485 link problem (e.g. device is still searching controller)
- 2 pulses: Profibus link problem (e.g. device not addressed from a master)
- Blink fast: internal error.

Profibus Gateway Switching off

To switch off the Profibus Gateway it is necessary to remove the mains.

Maintenance

The Profibus Gateway does not require any maintenance. Any work performed on the system must be carried out by authorized personnel.

NOTE Before returning the Profibus Gateway to the constructor for repairs, or replacement with a reconditioned unit, the "Health and Safety" sheet attached to this instruction manual must be filled-in and sent to the local sales office. A copy of the sheet must be inserted in the system package before shipping.

If a Profibus Gateway is to be scrapped, it must be disposed of in accordance with the specific national standards.

4 Installation Procedure Disposal

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.





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Original Instructions



Agilent Technologies

Introduction

The ProfiBus interface works as a bi-directional bridge between the ProfiBus network and the Agilent RS-485 link. The interface provides input data (measures) and output data (parameters) to the controller.

One to four TSP Controllers equipped with the RS-485 serial interface option can be connected to the RS-485 sub-network (contact Agilent personnel for the related Part Numbers). Each Profibus Gateway replies to a single Profibus address, set using the dial selectors on the panel. Each TSP Controller can be controlled/read singularly by the master Profibus since each one is acknowledged as a Profibus Gateway "module".

In addiction, the interface provides standard and user related diagnostics in order to allow the user to manage the exceptions.

This gateway is classified as DP slave device.

Mechanical

The following outline drawings show the device's dimensions and connections. To allow the rack mounting on DIN slide, an accessory bracket is provided.



Figure 1 Outline Controller with DIN slide Assembly

Installation

This device is designed to work between a profibus network and up to 4 TSP Agilent controller. So a typical network will appear as follow:

NOTE

This unit can work only if TSP with RS-485 option is used. Please ask to Agilent Personnel to get the right part number.



Figure 2

Recommended procedure:

- 1. Be sure that all the units and controllers are switched off
- **2.** For RS-485 the cabling please refer to following pin out and to the controller's manual; the RS-485 cable has to be connected in this way (note that only 3 wires are needed and not 5):
- **3.** Connect the Profibus cable.
- 4. Set the address by rotational switches on the Profibus gateway.
- **5.** To avoid some seconds time delay (up to 50 sec) after power-on due to the "controller address search phase" please follows the advice here below.
 - **a** Configure the TSP controller to operate in RS-485 mode with a different serial address, only 01-02-03-04 values are permitted.
 - **b** Power on the ProfiBus interface only when the controllers are ready to receive data on his serial port (internal self-test passed).
- **6**. Ready to configure your network.

Each TSP connected to the RS-485 sub-network is acknowledged by the Profibus as an individual "module". The "TSP Profibus Gateway" must therefore be configured with a number of modules equivalent to the TSP connected to it.







Connectors Pin-Out

Connectors Pin-Out



Figure 4 TSP Profibus Gateway Connectors pin-out

Connectors Pin-Out



Figure 5 TSP RS485 Connector

Rotary Switches

The interface has two switches.

The switches are used to set the ProfiBus address of the device. Up to 126 different addresses (from 0 to 125) can be selected.

The address value sets by the 2 switches is expressed in hexadecimal notation, so value from 00 to 7D are permitted; this setting is read by the interface during the power-on phase, so any change of the switch position after the power-on is ignored.

Indicators

Two LEDs are present on the interface: one green and one red.

The red led indicates that the interface is correctly powered.

The green led shows the interface status according the following table:

Connectors Pin-Out



Figure 6

1 pulse

ProfiBus link established, controller link NOT established yet (Controller state machine not in Regular data exchange). This situation could be normal in the first seconds after the interface power on (Controller address searching phase) or after the controller power-on.

2 pulses

ProfiBus link not established yet (ProfiBus state machine not in Regular data exchange). This failure has priority (in the indication) over the previous.

Blink fast

Gateway fail (internal check) or wrong address set (address > 0x7D or address not stable during power-on).

Blink slow

Gateway operating properly.

GSD File

The GSD file provided with this interface is:

VAVT095A.gsd

The ID number is:

095A.hex

State Machine

From the software point of view, the interface can be seen as two devices (one for ProfiBus and the other for RS-485) linked together. Each device has its own state machine to manage the device operation.



Figure 7

State Machine

Tab. 1

Profibus State Machine		RS485 State Machine	
Status	Meaning	Status	Meaning
POWER_ON	Interface set-up	POWER_ON	Interface set-up
WAIT_PRM	Wait for parameterisation from the master	SRC_ADDR	Search for the controller serial address
WAIT_CFG	Wait for configuration from the master	IDENTIFY	Identify controller model and protocol
DATA_EXCH	Regular data exchange	DATA_EXCH	Regular data exchange

The two machines continuously share I/O data with the relative bus, and interact each other only in following conditions:

- ProfiBus Data exchange is suspended (static diagnosis activated) if the RS-485 serial link in not established
- RS-485 Data exchange is suspended (only for output data) if the ProfiBus State machine is not in Data Exchange mode

As a general rule, unrecoverable communication errors make each machine to jump to the state immediately following the power-on state (WAIT_PRM or SRC_ADDR).

Message Mapping

The communication is based on the continuous data exchange capability of the ProfiBus standard, where the master sends continuously the entire slave configuration and reads back the entire slave status.

For this purpose one Input (from slave to master) and one Output (from master to slave) buffers are provided. All the needed parameters are mapped inside each buffer. The following tables reassume the ProfiBus parameter access, related to the corresponding serial command (for this protocol please refers to the controller's manual).

Output Buffer Structure (for each Controller Configured on the RS-485 Network)

Total buffer length: 4 bytes

Tab. 2

	Offset Byte	Size Byte	Unit Res	Range	Description	COM Serial
	0	1	-	0-1	B0	G
					Power Output ON/OFF	
					0 = off	
					1 = on	
					B1	R
					Recover	
					0 = auto	
-					1 = manual	
5					B2	А
					Autostart	
					0 = yes, 1= no	
					B3	
					B4 – B5	М
)					Controller operating mode	
					0 =manual	
-					1 = automatic	
					2 = remote	
					3 = automatic/remote	
					B6 – B7	F
					Active filament	
					0 = Mini Ti Ball	
					1 = TSP filament 1	
					2 = TSP filament 2	
					3 = TSP filament 3	
	1	2	1bit = 0.1A	300-500	Sublimation current	Ν

R0 LLE	Offset Byte	Size Byte	Unit Res	Range	Description	COM Serial
	3	1	-		B0 – B3	Р
					Sublimation period	
					0 = 3 min	
					1 = 10 min	
R -1					2 = 30 min	
DD					3 = 1h	
R P					4 = 2h	
LE					5 = 4h	
TRO					6 = 8h	
NO					7 = 32h	
с 			1bit = 0.5	2 - 14	B4 – B7	Т
SP			min		Sublimation time	
-					2 = 1 min	
					3 = 1.5 min	
					13 = 6.5 min	
					14 =7 min	
	4	1	-		BO	G
-7					Power Output ON/OFF	
DR						
ISP – CONTR-AI						

Input Buffer Structure (for each Controller Configured on the RS-485 network)

Total buffer length: 10 bytes

Tab. 3

Offset Byte	Size Byte	Unit Res	Range	Description	COM Serial
0	1	-	-	B0 – B3	D
				Serial address	
				1 to 4	
				B4	
				B5	
				B6	
				B7	-
				Controller answering	
				0 = ok	
				1 = not responds	

Offset Byte	Size Byte	Unit Res	Range	Description	COM Serial
1	1	-	0-1	B0	G
				Power Output ON/OFF	
				0 = off	
				1 = on	
				B1	R
				Recover	
				0 = auto	
				1 = manual	
				B2	Α
				Autostart	
				0 = yes, 1= no	
				B3	
				B4 – B5	М
				Controller operating mode	
				0 =manual	
				1 = automatic	
				2 = remote	
				3 = automatic/remote	
				B6 – B7	F
				Active filament	
				0 = Mini Ti Ball	
				1 = TSP filament 1	
				2 = TSP filament 2	
				3 = TSP filament 3	
2	2	1bit = 0.1A	300-500	Sublimation current	Ν

Offset Byte	Size Byte	Unit Res	Range	Description	COM Serial
4	1	-		B0 – B3	Р
				Sublimation period	
				0 = 3 min	
				1 = 10 min	
				2 = 30 min	
				3 = 1h	
			4 = 2h		
				5 = 4h	
				6 = 8h	
				7 = 32h	
		1bit = 0.5 min	2 - 14	B4 – B7	Т
				Sublimation time	
				2 = 1 min	
				3 = 1.5 min	
				13 = 6.5 min	
				14 =7 min	

Offset Byte	Size Byte	Unit Res	Range	Description	COM Serial
ō	1		0-5	B0 – B3	S
				Controller status	
				0 = stop	
				1 = fail	
				2 = wait interlock	
				3 = ramp	
				4 = wait sublimation	
				5 = sublimation	
			0-5	B4 – B7	Е
				Error code	
				0 = no error	
				1 = overtemp	
				2 = Mini Ti Ball interuption	
				3 = TSP filament interrupt	
				4 = TSP defective	
				5 = short circuit	
3	2	1bit = 0.1A	0-500	Adsorbed current	I
5	1	1hi+ – 0 1\/	0 150	A dearbed valtage	V

Diagnosis Management

In addition to the Profibus six byte standard diagnostic, the interface provides both user diagnostic and static diagnostics functions

Standard diagnostic

The standard diagnostic management is fully compliant with the Profibus specification.

User diagnostic

The first byte in the user diagnostic area reflects the controller serial link status with following meaning:

Bit 0:	controller doesn't respond (RS485 link broken)
Bit 1:	controller not identified (not compatible with the Profibus Interface)
Bit 2:	first loop of requests not ended (values in the input data are not fully coherent yet)
Bit 4,5,6,7:	number of controller detected on the low speed (Rs485) line

So, if the low nibble in the first byte is equal to 0, the interface is working properly. Otherwise there is a problem.

During the start-up phase after one interface power on or controller power on, the first byte can assume values different from zero for few seconds. Each nibble (4 bits) in the bytes following the interface status byte, represents the status of the last attempt to write a parameter with following coding (diag status byte):

- 1. Write success
- 2. Protocol error (checksum error on low speed network)
- 3. Invalid channel
- 4. Invalid data
- 5. Invalid channel
- 6. Range error
- 7. Format error
- 8. Write not allowed while HV ON
- 9. Write not allowed while HV OFF
- 10. Write allowed only in serial mode

The Profibus external diagnosis services are used to report following unexpected situations:

Controller Fails

If the controller switches to fail mode, an external diagnostic service is required and one byte in the diagnostic buffer signals the type of failure.

User Parameter Mismatch

If the user sets one or more parameters out of their allowed range, a Profibus external diagnostic service is required and some bits in the diagnosis frame signals which parameter is wrong (i.e. over range or under range)

Diagnostic Buffer Structure

Tab. 4

Offset	Meanin	9		
0	Bo	station non exist (set by master)		
	B1	station not ready (slave not ready for data exchange)		
	B ₂	cfg fault (configuration data doesn't match)		
	B₃	ext diag (slave has external diagnostic data)		
	B4	not supported (slave doesn't support requested function)		
	B5	invalid slave response (slave sets permanent '0')		
	B ₆	prm fault (wrong parameter assignment)		
	B7	master_lock (slave is parameterised by another master)		
1	B ₀	prm req (slave has to be re-parameterised)	ics	
	B1	stat diag (static diagnosis)	lost	
	B ₂	fixed '1'	liagı	
	B3	wd_on (response monitoring active)	ird d	
	B ₄	Freeze mode (received freeze command)	nda	
	B ₅	Synch mode (received synch command)	Sta	
	B ₆	reserved		
	B7	diag deactivated (slave is parameterised by another master)		
2	Reserve	d		
3	Master	Add (master address after parameterisation. FF= without parameter)		
4	ldent nu	ımber high	•	
5	ldent nu	imber low		
6	External diagnosis "Header" length indication including header			
7	Interfac	e Status	TSP	
	Bo	Controller not responds	stic.	
	B1	Controller not identified	gno	
	B ₂	Input data not fully coherent yet	dia	
	B₃	Not used	rnal a	
	B47	Number of devices recognised on the low-speed network	Exte	
			0	

Technical Specifications

Tab. !	5
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Operating ambient temperature	+5 °C to +40 °C / $~0-90~\%~$ relative humidity
Storage ambient temperature	+0 °C to +70 °C / $~0-95~\%~$ relative humidity
Power supply:	
Input voltage:	24V dc +/-10 %
Max input power:	8W
Protection fuse:	T-1A (slow blow)
Compliance with:	EN 55011 (Radio disturbance characteristics) EN 61000-6-2 and EN 61326 (Immunity for industrial environments) which recall: - EN 61000-4-2 (Electrostaticdischarge phenomena) - EN 61000-4-3 (Radiatedhigh-frequency phenomena) - EN 61000-4-4, EN 61000-4-5, EN61000-4-6 (Conducted high-frequency phenomena) - EN 61000-4-8 (low frequency magnetic field)
Installation Category	II
Pollution Degree	2
Environment protection	IP-20
Weight kg (lbs)	0.38 (0.83)

Technical Specifications



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

vpd-qualityassurance_pdl-ext@agilent.com E-MAIL:

NAME	COMPA	NY	FUNCTION			
ADDRESS:						
TEL. N° :		FAX N° :				
E-MAIL:						
PROBLEM / SUG	GESTION :					
REFERENCE INFORMATION (model n°, serial n°, ordering information, time to failure after installation, etc.):						
			DATE			
CORRECTIVE AC (by AGILENT VP	TION PLAN / ACTUATION D)		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.

- 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.
- 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	<u>vpl-ra@agilent.com</u>	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 m	nust be submitted	with this form):	
3B .	Exchange Re	pair 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):					

l 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.

	TUKBU PUN	ips and	IORRO COMIR	ULLEKS		
APPARENT DEFECT/MALFUN	CTION	POSIT	10N	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	-Clagging			OPERATING TIME:		
ION PIIMPS/CONTROLLERS				VALVES / COMPONENTS		
- Bad feedthrough	- Poor vacuum		- Main seal leak		- Bellows leak	
- Vacuum leak	- High voltage problem		- Solenoid failure		- Damaged flange	
- Error code on display	- Other		- Damaged sealing area		-Other	
					MENTS	
- Cannot calibrate	-No zero/high backround		- Gauge tu	be not working	- Display problem	
- Vacuum system unstable	- Cannot reach test mode		- Communication failure - Dega		- Degas not working	
- Failed to start	- Other		- Error code on display		- Other	
SCROLL AND ROTARY VANE PUMPS				DIFFUSION PUMPS		
- Pump doesn't start	- Noisy pump (describe)		- Heater fa	ailure	- Electrical problem	
- Doesn't reach vacuum	- Over temperature		- Doesn't	reach vacuum	- Cooling coil damage	
- Pump seized	- Other		- Vacuum	leak	- Other	

FURBO PUMPS and TURBO CONTROLLERS

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. <u>Failure to do so, or returning a non-rebuildable part (crashed), will result in an invoice for the</u> <u>non-returned/non-rebuildable part.</u>
- 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.

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