

TwisTorr 304 FS AG

Rack Controller

Models

X3506-64002, X3506-64003

Manuale di istruzioni
Bedienungshandbuch
Notice de mode d'emploi
Manual de instrucciones
Manual de instruções
Bedrijfshandleiding
Istruktionsbog
Bruksanvisning

Instruksjon manual
Ohjekäsikirja
Felhasználói kézikönyv
Podrecznik instrukcji
Návod k použití
Návod na obsluhu
Priročník za navodila
User Manual

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Notices

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WARNING

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

TwisTorr 304 FS AG Rack Controller



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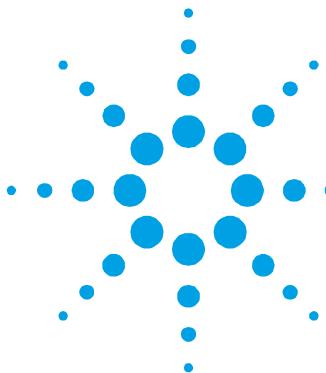
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Traduzione delle istruzioni originali



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1 Istruzioni per l'uso

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. I controller della serie TwisTorr 304 FS AG Rack sono dei convertitori di frequenza, controllati da un microprocessore, realizzati con componenti a stato solido e con capacità di autodiagnistica e autoprotezione.

Caratteristiche del controller:

- Operatività frontale / remota / seriale
- Pilotaggio a 24 Vdc della ventola di raffreddamento pompa
- Pilotaggio vent valve
- Lettura velocità pompa in seguito al comando di arresto (lettura velocità di arresto)
- Lettura della pressione
- Interfaccia Profibus (opzionale)
- Impostazione automatica tensione di ingresso.

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:

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.

Immagazzinamento

Durante il trasporto e l'immagazzinamento dei controller devono essere soddisfatte le seguenti condizioni ambientali:

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

1 Istruzioni per l'uso

Preparazione per l'installazione

Preparazione per l'installazione

Il controller 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.

Durante l'operazione di disimballaggio, prestare particolare attenzione a non lasciar cadere il controller e a non sottoporlo ad urti.

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

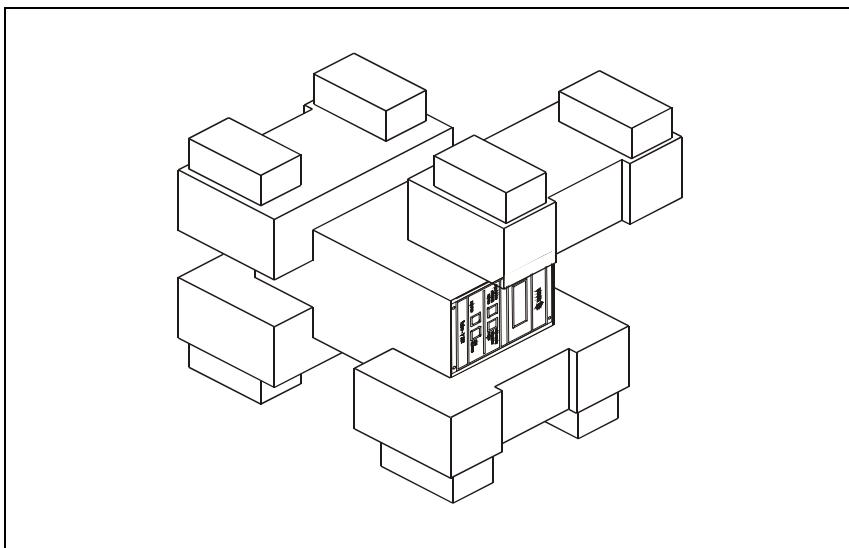


Figura 1 Imballo dei controller

Installazione

AVVERTENZA!



Il controller è progettato solo per uso interno e deve essere alimentato mediante un cavo di alimentazione a tre fili (vedere tabella delle parti ordinabili) con una spina di tipo approvato a livello internazionale ai fini della sicurezza dell'utente. Utilizzare sempre questo cavo di alimentazione ed inserire la spina in una presa con un adeguato collegamento di terra onde evitare scariche elettriche e per rispettare le specifiche CE. All'interno del controller si sviluppano alte tensioni che possono recare gravi danni o la morte. Prima di eseguire qualsiasi operazione di installazione o manutenzione del controller scollegarlo dalla presa di alimentazione.

NOTA

Il controller può essere installato su di un tavolo o all'interno di un apposito rack. In ogni caso occorre che l'aria di raffreddamento possa circolare liberamente intorno all'apparato. Non installare né utilizzare il controller 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 +45 °C;
- umidità relativa: 0 – 95 % (non condensante).

Per gli altri collegamenti e l'installazione degli accessori opzionali, vedere la sezione "Technical Information".

1 Istruzioni per l'uso

Uso

Uso

In questo paragrafo sono riportate le principali procedure operative. Per ulteriori dettagli e per procedure che coinvolgono collegamenti o particolari opzionali, fare riferimento al paragrafo "Use" dell'appendice "Technical Information".

Prima di usare il controller effettuare tutti i collegamenti elettrici e pneumatici e fare riferimento al manuale della pompa collegata.

AVVERTENZA!



Per evitare danni alle persone ed all'apparato, nel caso in cui la pompa sia appoggiata su di un tavolo assicurarsi che sia stabile. Non fare funzionare mai la pompa se la flangia di ingresso non è collegata al sistema o non è chiusa con la flangia di chiusura.

NOTA

Il connettore di richiusura J1 deve essere lasciato collegato con il suo ponticello se non viene effettuato alcun collegamento esterno. La pompa di pre-vuoto e la pompa TwisTorr 304 FS possono essere accese contemporaneamente.

Comandi, Indicatori e Connettori

Di seguito sono illustrati il pannello di comando del Controller ed i pannelli di interconnessione. Per maggiori dettagli fare riferimento alla sezione "Technical Information".

Descrizione pannello frontale

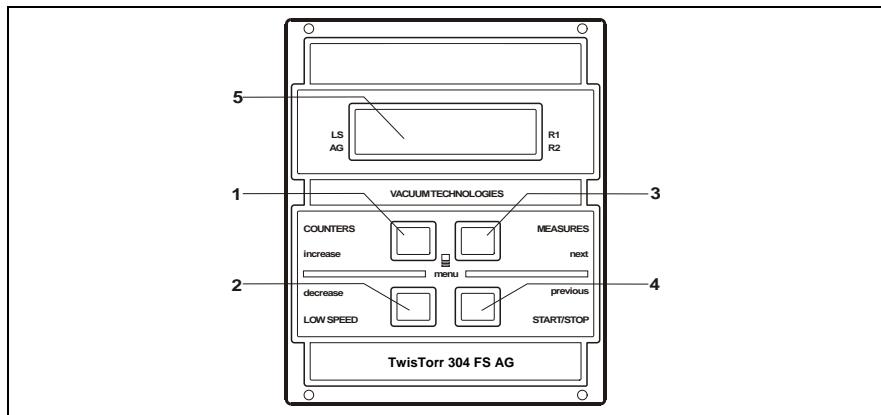


Figura 2 Pannello frontale del Controller TwisTorr 304 FS AG Rack

-
- | | |
|---|--|
| 1 | Pulsante per richiamare sul display i parametri cycle number, cycle time e pump life. |
| 2 | Pulsante per la selezione del modo LOW SPEED. È attivo solo quando è selezionato il modo di comando dal pannello frontale. Premendolo una volta, la pompa ruota a velocità "stand-by". Premendolo ancora si disattiva il modo LOW SPEED. |
| 3 | Pulsante per richiamare sul display i parametri pump current, pump temperature, pump power e rotational speed. È sempre attivo indipendentemente dal modo di funzionamento scelto. Premendo assieme i pulsanti 3 e 1 per almeno 2 secondi viene attivato un programma con il quale è possibile programmare alcuni parametri operativi. |
| 4 | Pulsante per inviare i comandi di START, STOP/RESET. È attivo solo quando è selezionato il modo di comando dal pannello frontale. Premendolo una volta si attiva la fase di avvio; premendolo nuovamente si arresta la pompa. Se la pompa si è fermata automaticamente a causa di un guasto, occorre premere questo pulsante una prima volta per eseguire il reset del controller ed una seconda volta per riavviare la pompa. |
| 5 | Display alfanumerico a cristalli liquidi: matrice di punti, 2 linee x 16 caratteri. |
-

1 Istruzioni per l'uso

Uso

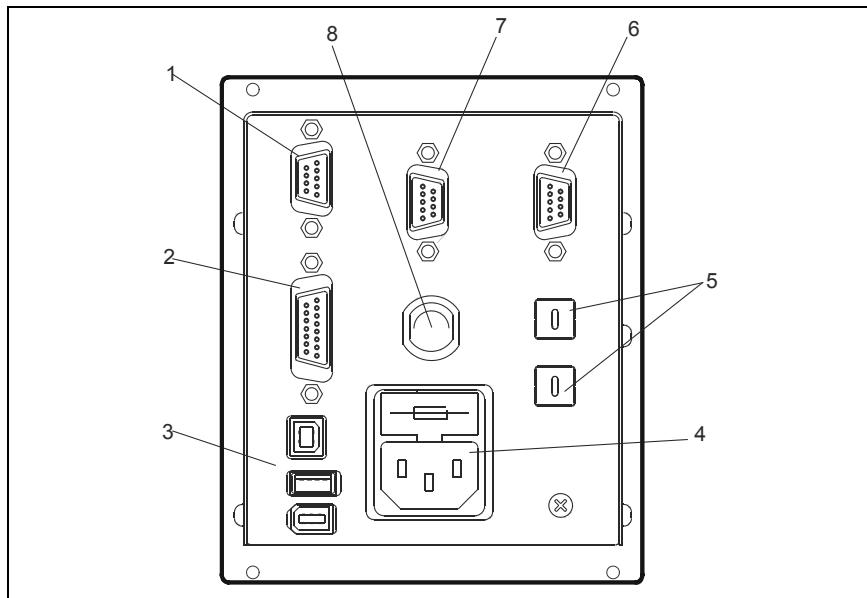


Figura 3 Pannello posteriore dei Controller TwisTorr 304 FS AG Rack

- | | |
|---|---|
| 1 | Connettore di ingresso dei segnali logici (il connettore di accoppiamento viene fornito con l'apposito ponticello di richiusura). |
| 2 | Connettore segnali logici in uscita e monitoraggio frequenza pompa più uscita analogica programmabile. |
| 3 | Connettore di uscita alimentazione (24 Vdc per la ventola di raffreddamento pompa, vent valve e calibro). |
| 4 | Modulo di ingresso alimentazione controller che comprende i fusibili, la presa di alimentazione ed il filtro ENC. |
| 5 | Switch a rotazione per impostare l'indirizzo del Profibus. |
| 6 | Profibus (opzionale). |
| 7 | Connettore seriale per controllo da remoto. |
| 8 | Pompa. |

Procedure di uso

Accensione del Controller

Per accendere il controller è sufficiente inserire il cavo di alimentazione nella presa di rete.

Avvio della Pompa

Per avviare la pompa occorre abilitare l'ingresso di interlock e premere il pulsante START del pannello frontale.

Arresto della Pompa

Per arrestare la pompa occorre premere il pulsante STOP del pannello frontale.

Manutenzione

I controller della serie TwisTorr 304 FS AG Rack non richiedono alcuna manutenzione. Qualsiasi intervento deve essere eseguito da personale autorizzato. In caso di guasto è possibile usufruire del servizio di riparazione Agilent o del "Agilent advanced exchange service", che permette di ottenere un controller rigenerato in sostituzione di quello guasto.

AVVERTENZA! Prima di effettuare qualsiasi intervento sul controller scollegare il cavo di alimentazione.



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

1 Istruzioni per l'uso

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.



Messaggi di errore

In alcuni casi di guasto la circuiteria di autodiagnosi del controller presenta alcuni messaggi di errore elencati nella tabella seguente.

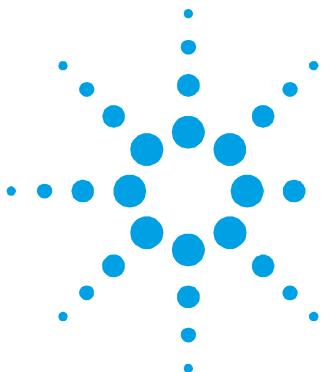
Tab. 1

| MESSAGGIO | DESCRIZIONE | AZIONE CORRETTIVA |
|---------------------------------|--|--|
| CHECK CONNECTION TO PUMP | Malfunzionamento nel collegamento tra pompa e controller. Oppure La pompa ha una temperatura inferiore a 0 °C. | Verificare che il cavo di collegamento tra pompa e controller sia ben fissato da entrambe le estremità e non sia interrotto. Premere due volte il pulsante START per riavviare la pompa. |
| WAITING INTERLOCK | È attivo il segnale di interlock presente sul connettore P1 a causa dell'interruzione del corto circuito tra il pin 3 ed il pin 8 del connettore J1, o a causa dell'apertura del segnale di interlock esterno. | Ripristinare il corto circuito tra il pin 3 ed il pin 8 del connettore P1, o chiudere il segnale di interlock esterno. |
| PUMP OVERTEMP. | La temperatura del cuscinetto superiore o della pompa ha superato i 60 °C. | Attendere che la temperatura ritorni al di sotto della soglia. Premere due volte il pulsante START per riavviare la pompa. |
| CONTROLLER OVERTEMP. | La temperatura dell'ambiente del controller ha superato i 70 °C. Oppure. La temperatura del radiatore del controller è superiore a 60 °C. | Attendere che la temperatura ritorni al di sotto della soglia. Premere due volte il pulsante START per riavviare la pompa. |

1 Istruzioni per l'uso

Messaggi di errore

| MESSAGGIO | DESCRIZIONE | AZIONE CORRETTIVA |
|------------------------|---|---|
| TOO HIGH LOAD | La corrente assorbita dalla pompa è maggiore di quella programmata. | Verificare che il rotore della pompa abbia la possibilità di ruotare liberamente. Premere due volte il pulsante START per riavviare la pompa. |
| SHORT CIRCUIT | Durante il funzionamento normale (dopo la fase di avvio) la connessione di uscita è in corto circuito. | Verificare i collegamenti tra pompa e controller. Premere due volte il pulsante START per riavviare la pompa. |
| SYSTEM OVERRIDE | La pompa è stata fermata da un segnale di emergenza proveniente da un contatto remoto. | Staccare il cavo di alimentazione del controller e correggere la causa dell'emergenza. Ricollegare il cavo di alimentazione e premere due volte il pulsante START per riavviare la pompa. |
| OVERVOLTAGE | Si è verificato un guasto nella sezione di alimentazione del controller, o il controller ha ricevuto un segnale spurio. | Premere due volte il pulsante START per riavviare la pompa. Se il messaggio si ripresenta rivolgersi in Agilent per la manutenzione. |
| POWER FAIL | Guasto nella sezione di alimentazione della pompa, del controller. | Rivolgersi alla Agilent per Manutenzione. |



2 **Gebrauchsanleitung**

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Übersetzung der Originalanleitungen



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2 Gebrauchsanleitung

Allgemeines

Allgemeines

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

Die Controller der Serie TwisTorr 304 FS AG Rack sind mikroprozessorgesteuerte Frequenzwandler. Sie sind mit Festkörperbauteilen gefertigt und verfügen über ein Selbstdiagnose- und ein Selbstschutzsystem.

Controllereigenschaften:

- Konsol-, Fern- und serielle Operationen
- 24V= Kühlventilator-Treiber
- Vent Valve Treiber
- Auslesen der Pumpgeschwindigkeit nach Stoppbefehl (Lesen der Stoppgeschwindigkeit)
- Auslesen des Drucks
- Profibus-Schnittstelle (Option)
- automatische Einstellung der Eingangsspannung

In den folgenden Abschnitten sind alle erforderlichen Informationen für die Sicherheit des Bedieners bei der Anwendung des Geräts aufgeführt. Detaillierte technische Informationen sind im Anhang "Technical Information" enthalten.

In dieser Gebrauchsanleitung werden Sicherheitshinweise folgendermaßen hervorgehoben:

WARNUNG!



Die Warnhinweise lenken die Aufmerksamkeit des Bedieners auf eine bestimmte Prozedur oder Praktik, die bei unkorrekter Ausführung schwere Verletzungen hervorrufen können.

VORSICHT!

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

HINWEIS

Die Hinweise enthalten wichtige Informationen, die aus dem Text hervorgehoben werden.

Lagerung

Beim Transport und bei der Lagerung der Controller müssen folgende klimatische Verhältnisse eingehalten werden:

- Temperatur: von -20 °C bis +70 °C
- Relative Luftfeuchtigkeit: 0 – 95 % (nicht kondensierend)

2 Gebrauchsanleitung

Vor der Installation

Vor der Installation

Der Controller wird mit einer speziellen Schutzverpackung geliefert. Eventuelle Transportschäden müssen der zuständigen örtlichen Verkaufsstelle gemeldet werden.

Beim Auspacken vorsichtig vorgehen, damit der Controller nicht fällt oder Stößen ausgesetzt wird.

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

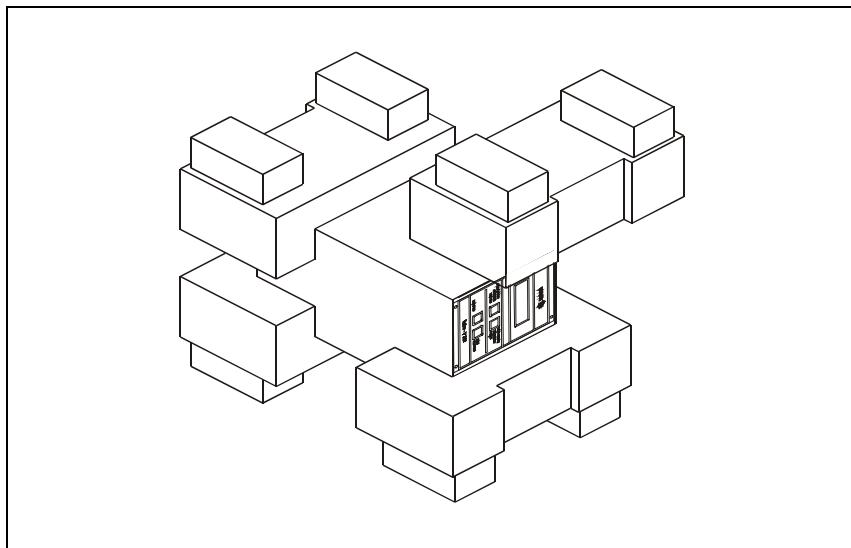


Abbildung 1 Verpackung der Controller

Installation

WARNING!



Zum Schutz des Bedieners darf der Controller nur im Gebäude zum Einsatz kommen und nicht außerhalb. Er muss mit einem dreidrigen Netzkabel (siehe Tabelle bestellbares Zubehör) und dem (international zugelassenen) Stecker angeschlossen werden. Es sollte immer dieses Netzkabel benutzt werden, das an eine korrekt geerdete Steckdose anzuschließen ist, um den CE Richtlinien zu entsprechen und Stromschläge zu vermeiden. Im Inneren des Controllers entstehen hohe Spannungen, die schwere Schäden verursachen und zum Teil lebensgefährlich sein können. Vor jedem Montage- bzw. Wartungseingriff muß deshalb der Netzstecker gezogen werden.

HINWEIS

Der Controller kann auf einen Tisch oder ein Gestell montiert werden. In beiden Fällen muß auf die ungehinderte Zirkulation der Kühlluft im Bereich des Geräts geachtet werden. Der Controller darf nicht in Umgebungen installiert u/o benutzt werden, die Witterungseinflüssen (Regen, Frost, Schnee), Staub und aggressiven Gasen ausgesetzt sind und in denen Explosions- und erhöhte Brandgefahr besteht.

Beim Betrieb müssen folgende Umgebungsbedingungen eingehalten werden:

- Temperatur: von +5 °C bis +45 °C
- Relative Luftfeuchtigkeit: 0 – 95 % (nicht kondensierend).

2 Gebrauchsanleitung

Gebrauch

Gebrauch

In diesem Kapitel sind die wichtigsten Betriebsvorgänge aufgeführt. Für weitere Hinweise bezüglich Anschlüsse und Montage des bestellbaren Zubehörs siehe Kapitel "Use" im Anhang zu "Technical Information".

Vor Benutzung des Controllers sämtliche elektrischen und pneumatischen Anschlüsse ausführen, und die Betriebsanleitung der angeschlossenen Pumpe durchlesen.

WANRUNG!



Steht die Pumpe auf einem Tisch, muß auf den stabilen Stand geachtet werden, da sonst die Gefahr von Personen- und Geräteschäden besteht. Die Pumpe nie einschalten, wenn der Eingangsflansch nicht am System angeschlossen bzw. nicht mit dem Schließflansch abgedeckt ist.

HINWEIS

Der Wiederverschließ-Verbinder J1 muß mit seiner Brücke angeschlossen bleiben, wenn kein externer Anschluß erfolgt. Die Vorvakumpumpe und die TwisTorr 304 FS Pumpe können gleichzeitig eingeschaltet werden.

Steuerungen, Anzeigen und Verbinder des Controllers

Der folgende Abschnitt beschreibt die vordere und hintere Konsole des Controllers. Für weitere Einzelheiten siehe "Technical Information".

Fronttafel der Controller

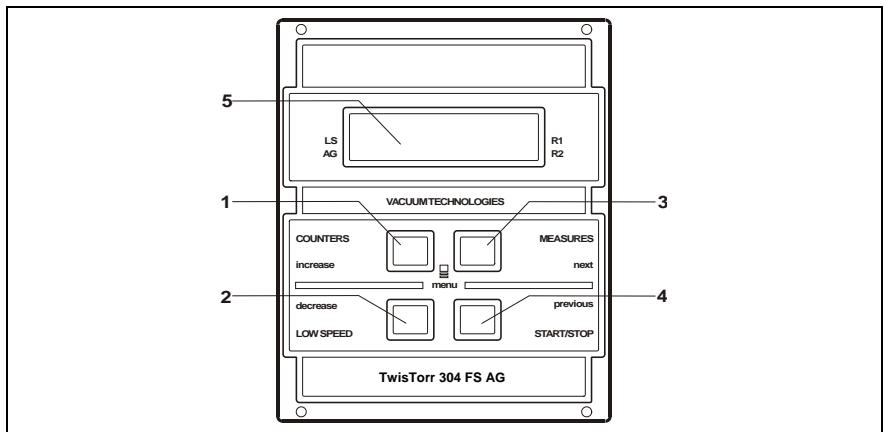


Abbildung 2 Fronttafel der Controller TwisTorr 304 FS AG Rack

-
- | | |
|---|---|
| 1 | Taste für die Anzeige der Parameter "cycle number", "cycle time" und "pump life". |
| 2 | Taste für die Einstellung des Modus LOW SPEED. Sie ist nur aktiv, wenn der Steuermodus auf Fronttafel eingestellt ist. Bei einmaligem Drücken läuft die Pumpe in Bereitschaftsgeschwindigkeit. Bei nochmaligem Drücken wird der Modus LOW SPEED deaktiviert. |
| 3 | Taste für die Anzeige der Parameter "pump current", "pump temperature", "pump power" und "rational speed". Sie ist immer aktiv, unabhängig vom gewählten Betriebsmodus. Bei gemeinsamer, mindestens 2 Sekunden langer Betätigung der Tasten 3 und 1 wird ein Programm aktiviert, mit dem einige Betriebsparameter programmiert werden können. |
| 4 | START-, STOP/RESET-Taste. Sie ist nur aktiv, wenn der Steuermodus auf der Fronttafel eingestellt ist. Bei einmaligem Drücken wird die Startphase aktiviert. Bei nochmaligem Drücken stoppt die Pumpe. Bei automatischem Pumpenstop durch Störung muß diese Taste ein erstes Mal zur Controller-Rücksetzung und dann ein zweites Mal zum Neustarten der Pumpe gedrückt werden. |
| 5 | Alphanumerisches Flüssigkristall-Display: Punkt-matrix, 2 Zeilen mit 16 Stellen. |
-

2 Gebrauchsanleitung

Gebrauch

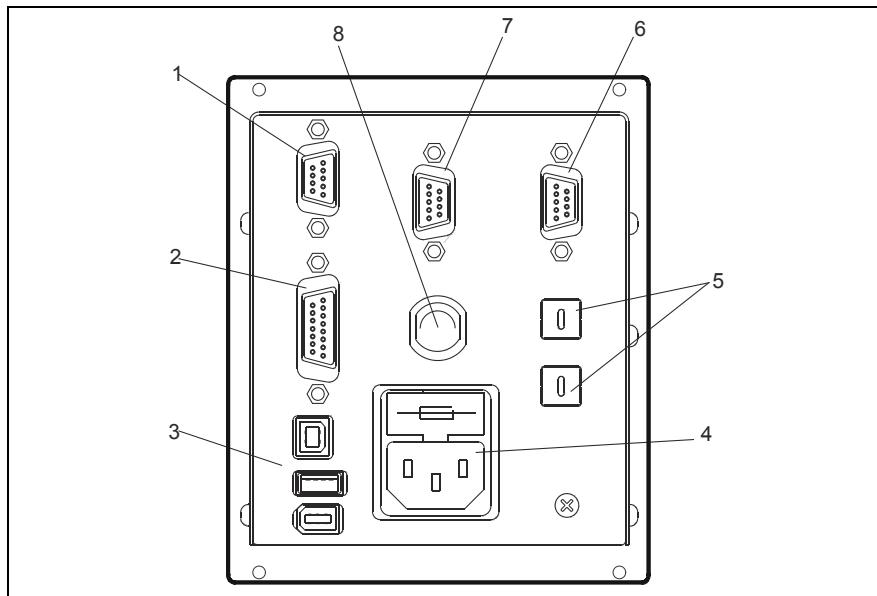


Abbildung 3 Rücktafel der Controller TwisTorr 304 FS AG Rack

- | | |
|---|---|
| 1 | Eingangsverbinder der logischen Signale (der Kupplungsverbinder wird mit einer Wiederverschließbrücke geliefert). |
| 2 | Stecker für logische Signale und Pumpenmonitor plus programmierbarer Analogausgang. |
| 3 | Stromausgangsstecker (24 V= für Pumpenkühlventilator, Vent Valve und Messinstrument). |
| 4 | Netzeingangsmodul des Controllers bestehend aus Netzsicherungen, Netzstecker und EMC Filter. |
| 5 | Drehschalter zum Setzen der Profibus Adresse. |
| 6 | Profibus (Option). |
| 7 | Serieller Stecker zur Fernsteuerung. |
| 8 | Pumpenstecker. |

Bedienung

Einschalten des Controllers

Zum Einschalten des Controllers genügt es, das Netzkabel an die Steckdose anzuschließen.

Pumpenstart

Zum Starten der Pumpe den Verrieglungseingang bestätigen und die START Taste of der vorderen Konsole des Controllers drücken.

Pumpenstopp

Zum Stoppen der Pumpe muß die STOP-Taste an der Fronttafel gedrückt werden.

Wartung

Die Controller der Serie TwisTorr 304 FS AG Rack sind wartungsfrei. Eventuell erforderliche Eingriffe müssen von dazu befugtem Fachpersonal ausgeführt werden. Bei einem Defekt kann der Agilent-Reparaturdienst bzw. der "Agilent advanced exchange service" in Anspruch genommen werden, der für die Erneuerung defekter Controller sorgt.

WARNUNG!

Vor jedem Eingriff am Controller muß der Netzstecker gezogen werden.



Ein Controller muß unter Einhaltung der einschlägigen landesüblichen Vorschriften erfolgen.

2 Gebrauchsanleitung

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.



Fehlermeldungen

In einigen Störungsfällen zeigt das Selbstdiagnosesystem des Controllers die in der nachstehenden Tabelle zusammengefaßten Meldungen an.

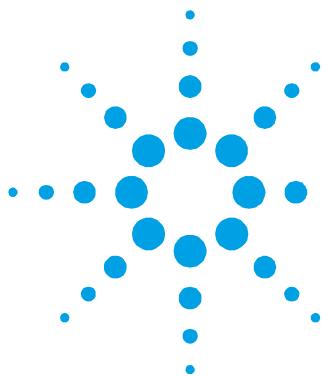
Tab. 1

| MELDUNG | BESCHREIBUNG | BEHEBUNG |
|---------------------------------|--|--|
| CHECK CONNECTION TO PUMP | Fehlfunktion der Pumpen-Controller Verbindung. Oder Die Temperatur der Pumpe ist unter 0 °C. | Sicherstellen, daß das Verbindungsleitung zwischen Pumpe und Controller an beiden Seiten korrekt befestigt ist und keine Unterbrechung vorliegt. Die Pumpe durch zweimalige Betätigung der START-Taste neustarten. |
| WAITING INTERLOCK | Das Interlock-Signal auf dem Verbinder P1 ist wegen der Kurzschluß-unterbrechung zwischen Pin 3 und Pin 8 des Verbinders K1 oder wegen der Öffnung des externen Interlock-Signals aktiv. | Den Kurzschluß zwischen Pin 3 und Pin 8 des Verbinders P1 rücksetzen oder das externe Interlock-Signal schließen. |
| PUMP OVERTEMP. | Die Temperatur des oberen Lagers bzw. der Pumpe hat 60 °C überschritten. | Warten bis die Temperatur unter den Schwellenwert gesunken ist. Die Pumpe durch zweimalige Betätigung der START-Taste neustarten. |
| CONTROLLER OVERTEMP. | Die Temperatur des Controllers hat 70 °C überschritten. Oder Die Temperatur des Kontrollerkühlkörpers ist über 60 °C. | Warten bis die Temperatur unter den Schwellenwert gesunken ist. Die Pumpe durch zweimalige Betätigung der START-Taste neustarten. |

2 Gebrauchsanleitung

Fehlermeldungen

| MELDUNG | BESCHREIBUNG | BEHEBUNG |
|------------------------|---|--|
| TOO HIGH LOAD | Die Pumpen ist stromaufnahme größer als die vorgesehene. | Sicherstellen, daß der Pumpenrotor ungehindert drehen kann. Die Pumpe durch zweimalige Betätigung der START-Taste neustarten. |
| SHORT CIRCUIT | Während des Normalbetriebs (nach der Startphase) erfolgt ein Kurzschluß der Ausgangsverbindung. | Die Verbindung zwischen Pumpe und Controller prüfen. Die Pumpe durch zweimalige Betätigung der START-Taste neustarten. |
| SYSTEM OVERRIDE | Die Pumpe wurde durch ein von einem entfernten Kontakt kommendes Notsignal gestoppt. | Das Netzkabel des Controllers ausstecken und die Störungsursache beheben. Das Netzkabel wieder anschließen und die Pumpe durch zweimalige Betätigung der START-Taste neustarten. |
| OVERVOLTAGE | Defekt im Versorgungsbereich des Controllers bzw. der Controller hat ein falsches Signal erhalten | Die Pumpe durch zweimalige Betätigung der START-Taste neustar-ten. Erscheint die Meldung wieder sollte der Agilent-Wartungs-dienst gerufen werden. |
| POWER FAIL | Defekt im Pumpenstromkreis des Controllers. | Agilent für Wartung kontaktieren. |



3

Mode d'emploi

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Traduction de la mode d'emploi originale



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3 Mode d'emploi

Indications générales

Indications générales

Cet appareillage a été conçu en vue d'une utilisation professionnelle. Il est conseillé à l'utilisateur de lire attentivement cette notice d'instructions ainsi que toute autre indication supplémentaire fournie par Agilent, avant l'utilisation de l'appareil. Agilent décline par conséquent toute responsabilité en cas d'inobservation totale ou partielle des instructions données, d'utilisation incorrecte de la part d'un personnel non formé, d'opérations non autorisées ou d'un emploi contraire aux réglementations nationales spécifiques. Les contrôleurs de la série TwisTorr 304 FS AG Racksont des convertisseurs de fréquence, contrôlés par un microprocesseur, réalisés avec des éléments à l'état solide et ayant des capacités d'autodiagnostic et d'autoprotection.

Caractéristiques du contrôleur:

- Caractère opérationnel de front /à distance / série
- Pilotage à 24 Vdc du ventilateur de refroidissement pompe
- Pilotage vent valve
- Lecture vitesse pompe suite à la commande d'arrêt (lecture vitesse d'arrêt)
- Lecture de la pression
- Interface Profibus (facultatif)
- Attribution automatique tension d'entrée.

Les paragraphes suivants donnent toutes les indications nécessaires à garantir la sécurité de l'opérateur pendant l'utilisation de l'appareillage. Des renseignements plus détaillés se trouvent dans l'appendice "Technical Information".

Cette notice utilise les signes conventionnels suivants:

AVERTISSEMENT!



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

ATTENTION!

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

NOTE

Les notes contiennent des renseignements importants, isolés du texte.

Emmagasinage

Pendant le transport et l'emmagasinage des contrôleurs, il faudra veiller à respecter les conditions environnementales suivantes:

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

3 Mode d'emploi

Préparation pour l'installation

Préparation pour l'installation

Le contrôleur est fourni 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 le contrôleur et à ne lui faire subir aucun choc. Ne pas jeter l'emballage dans la nature. Le matériel est entièrement recyclable et il est conforme aux directives CEE 85/399 en matière de protection de l'environnement.

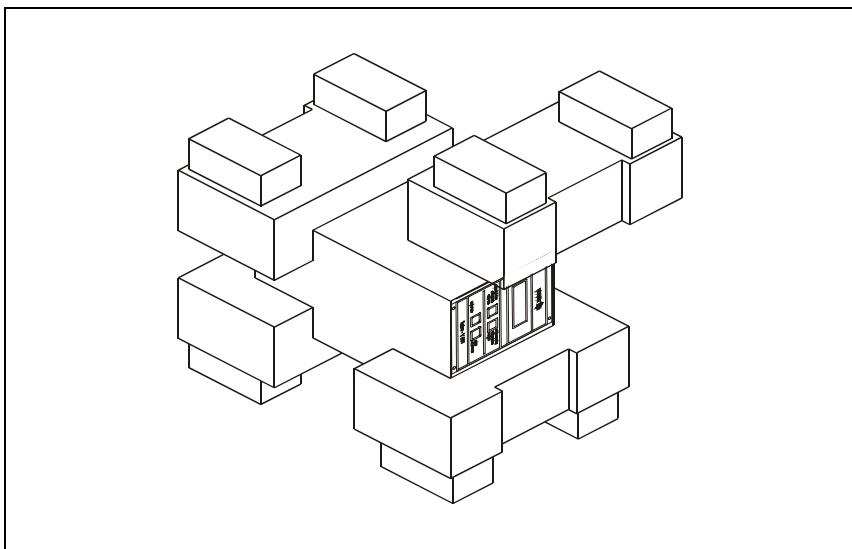


Figure 1 Emballage du Contrôleur

Installation

AVERTISSEMENT!

Pour la sécurité de l'utilisateur, le contrôleur ne doit être utilisé qu'en intérieur et doit être branché au moyen d'un câble d'alimentation à 3 fils (cf. tableau des pièces de rechange qui peuvent être commandées) avec une fiche du type approuvé au niveau international. Afin d'éviter toute décharge électrique et satisfaire aux conditions requises CE, il faut toujours utiliser ce câble d'alimentation, en introduisant la fiche dans une prise électrique pourvue d'un branchement approprié à la terre. A l'intérieur du contrôleur se développent de hautes tensions qui peuvent causer de graves dommages et même la mort. Avant d'effectuer toute opération d'installation ou d'entretien du contrôleur, le débrancher de la prise d'alimentation.

NOTE

Le contrôleur peut être installé sur une table ou à l'intérieur d'un rack prévu à cet effet. Il est en tout cas nécessaire que l'air de refroidissement puisse circuler librement à l'intérieur de l'appareil. Ne pas installer et/ou utiliser le contrôleur dans des milieux exposés à des agents atmosphériques (pluie, gel, neige), à des poussières, à des gaz de combat ainsi que dans des milieux explosifs ou à risque élevé d'incendie.

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

- température: de +5 °C à +45 °C
- humidité relative: de 0 % à 95 % (non condensante).

Pour les autres connexions et pour l'installation des accessoires en option, voir la section "Technical Information".

3 Mode d'emploi

Utilisation

Utilisation

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

Avant d'utiliser le contrôleur, effectuer toutes les connexions électriques et pneumatiques et se référer à la notice de la pompe connectée.

AVERTISSEMENT!

Pour éviter tous dommages aux personnes et à l'appareil, si la pompe est placée sur un plateau d'appui s'assurer que ce dernier est stable. Ne jamais faire fonctionner la pompe si la bride d'entrée n'est pas connectée au système ou n'est pas fermée à l'aide de la bride de fermeture.

NOTE

Laisser le connecteur de réenclenchement J1 connecté à sa barrette s'il n'est procédé à aucune connexion extérieure. La pompe à pré-vide et la pompe TwisTorr 304 FS peuvent être mises en marche simultanément.

Commandes, Indicateurs et Connecteurs

On présente ci-dessous le tableau de commande du Contrôleur ainsi que les tableaux d'interconnexion. Pour de plus amples détails, se reporter à la section "Technical Information".

Description du Tableau avant

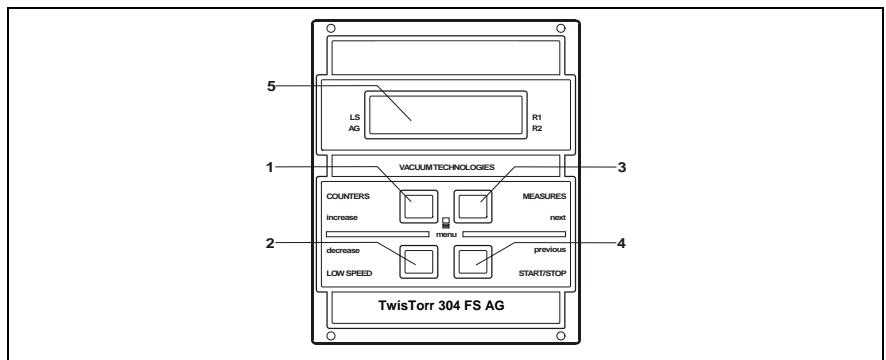


Figure 2 Tableau avant du Contrôleurs TwisTorr 304 FS AG Rack

- | | |
|---|---|
| 1 | Interrupteur rappelant sur l'afficheur les paramètres de cycle number, cycle time et pump life. |
| 2 | Interrupteur de sélection du mode LOW SPEED. Il n'est actif que lorsque le mode de commande est sélectionné depuis le tableau frontal. En le pressant une fois, la pompe tourne à vitesse "stand-by". En le pressant une deuxième fois, on désactive le mode LOW SPEED. |
| 3 | Interrupteur rappelant sur l'afficheur les paramètres de pump current, pump temperature, pump power et rotational speed. Il est toujours actif, indépendamment du mode de fonctionnement choisi. En pressant simultanément les interrupteurs 3 et 1 pendant 2 secondes au moins, on active un programme avec lequel il est possible de programmer certains paramètres opérationnels. |
| 4 | Interrupteur envoyant les commandes de START, STOP/RESET. Il n'est actif que lorsque le mode de commande est sélectionné depuis le tableau frontal. Une première pression de l'interrupteur active la phase de mise en marche; une deuxième pression provoque l'arrêt de la pompe. Si la pompe s'est arrêtée automatiquement à cause d'une panne, il faut presser cet interrupteur une première fois pour effectuer la mise à zéro du contrôleur et une deuxième fois pour remettre la pompe en marche. |
| 5 | Ecran alphanumérique à cristaux liquides: matrice de points, 2 lignes x 16 caractères. |

3 Mode d'emploi

Utilisation

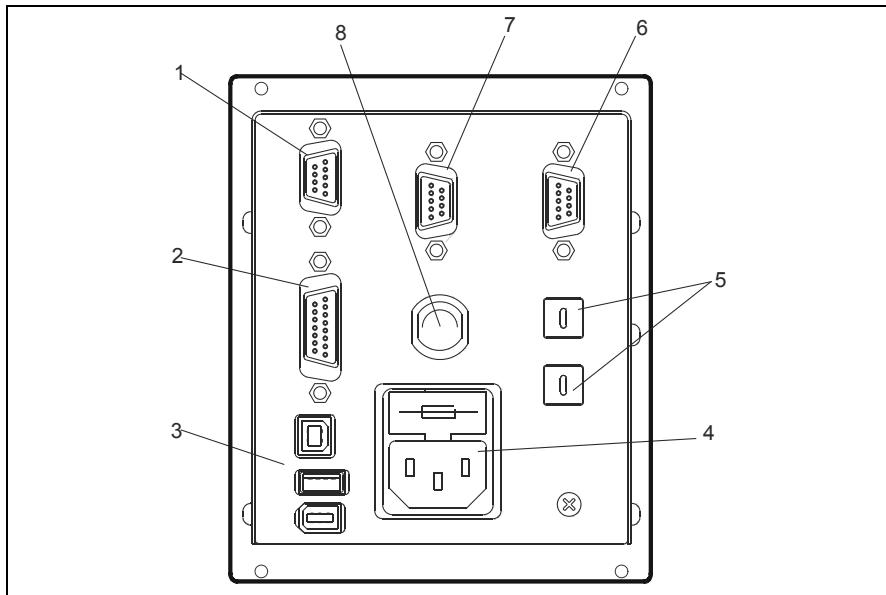


Figure 3 Tableau arrière du Contrôleur TwisTorr 304 FS AG Rack

- | | |
|---|---|
| 1 | Connecteur d'entrée des signaux logiques (le connecteur d'enclenchement est doté de la barrette de réenclenchement spéciale). |
| 2 | Connecteur signaux logiques en sortie et monitorage fréquence pompe plus sortie analogique programmables. |
| 3 | Connecteur de sortie alimentation (24 Vdc pour le ventilateur de refroidissement pompe, vent valve et calibre). |
| 4 | Module d'entrée alimentation contrôleur qui comprend les fusibles, la prise d'alimentation et le filtre ENC. |
| 5 | Interrupteur à rotation pour établir l'adresse du Profibus. |
| 6 | Profibus (facultatif). |
| 7 | Connecteur serial pour contrôle à distance |
| 8 | Connecteur pompe. |

Procedures d'utilisation

Allumage du Contrôleur

Pour allumer le contrôleur, il suffit d'introduire le câble d'alimentation dans la prise du réseau

Mise en marche de la Pompe

Pour faire démarrer la pompe il faut habiliter l'entrée de interlock et appuyer sur la touche START du panneau avant.

Arrêt de la Pompe

Pour arrêter la pompe, presser l'interrupteur STOP du tableau frontal.

Entretien

Les contrôleurs de la série TwisTorr 304 FS AG Rack n'exigent aucun entretien. Toute opération doit être effectuée par un personnel agréé.

En cas de panne, il est possible de s'adresser au Service de réparation Agilent ou bien au "Agilent advance exchange service" qui permet d'obtenir un contrôleur régénéré à la place du contrôleur détraqué.

AVERTISSEMENT! Avant d'effectuer toute opération sur le contrôleur, débrancher le câble d'alimentation.



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

3 Mode d'emploi

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 (**unique-ment valide pour les pays de la Communauté euro-péenne**) indique que le produit sur lequel il est appliqué NE doit PAS être mis au rebut avec les ordures ména-gères 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.



Messages d'erreur

Dans certains cas de panne, l'ensemble de circuits d'autodiagnostic du contrôleur présente certains messages d'erreur indiqués dans le tableau ci-dessous.

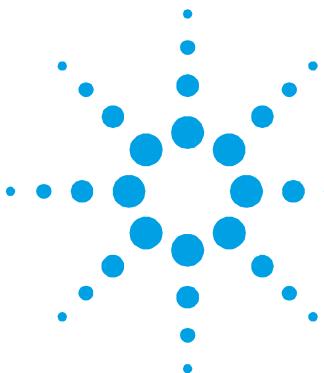
Tab. 1

| MESSAGE | DESCRIPTION | INTERVENTION |
|---------------------------------|--|---|
| CHECK CONNECTION TO PUMP | Dysfonctionnement de la connexion entre la pompe et le contrôleur. Ou bien La pompe a une température inférieure à 0 °C. | S'assurer que le câble de connexion entre la pompe et le contrôleur est bien fixé aux deux extrémités et qu'il n'est pas coupé. Presser deux fois l'interrupteur START pour réactiver la pompe. |
| WAITING INTERLOCK | Le signal d'interlock situé sur le connecteur P1 est actif à cause de la coupure du court-circuit entre le pin 3 et le pin 8 du connecteur J1 ou à cause de l'ouverture du signal d'interlock extérieur. | Rétablir le court-circuit entre le pin 3 et le pin 8 du connecteur P1 ou fermer le signal d'interlock extérieur. |
| PUMP OVERTEMP. | La température du palier supérieur ou de la a dépassé 60 °C. | Attendre que la température retourne au-dessous du seuil. Presser deux fois l'interrupteur START pour remettre la pompe en marche. |
| CONTROLLER OVERTEMP. | La température du contrôleur a dépassé 70 °C. Ou bien La température du radiateur du contrôleur est supérieure à 60 °C. | Attendre que la température retourne au-dessous du seuil. Presser deux fois l'interrupteur START pour remettre la pompe en marche. |

3 Mode d'emploi

Messages d'erreur

| MESSAGE | DESCRIPTION | INTERVENTION |
|------------------------|--|--|
| TOO HIGH LOAD | Pendant le fonctionnement normal (après la phase de mise en marche), le courant absorbé par la pompe est plus grand que celui qui a été programmé. | S'assurer que le rotor de la pompe a la possibilité de tourner librement. Presser deux fois l'interrupteur START pour remettre la pompe en marche. |
| SHORT CIRCUIT | Pendant le fonctionnement normal (après la phase de mise en marche), la connexion de sortie est en court-circuit. | Vérifier les connexions entre la pompe et le contrôleur. Presser deux fois l'interrupteur START pour remettre la pompe en marche. |
| SYSTEM OVERRIDE | La pompe a été arrêtée par un signal d'alerte provenant d'un contact éloigné. | Débrancher le câble d'alimentation du contrôleur et corriger la cause de l'alerte. Reconnecter le câble d'alimentation et presser deux fois l'interrupteur START pour remettre la pompe en marche. |
| OVERVOLTAGE | Il s'est produit une panne de la section d'alimentation du contrôleur, ou bien le contrôleur a reçu un faux signal. | Presser deux fois l'interrupteur START pour remettre la pompe en marche. Si le message se présente à nouveau, s'adresser à Agilent pour l'entretien. |
| POWER FAIL | Panne dans la section d'alimentation de la pompe, du contrôleur. | S'adresser à Agilent pour Maintenance. |



4

Manual de instrucciones

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Traducción de las instrucciones originales



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Información general

Este equipo se ha concebido para un uso profesional. El usuario deberá leer atentamente el presente manual de instrucciones y cualquier otra información suplementaria facilitada por Agilent antes de utilizar el equipo. Agilent se considera libre de cualquier responsabilidad debida al incumplimiento total o parcial de las instrucciones, al uso poco apropiado por parte de personal sin formación, a las operaciones no autorizadas o al uso que no cumpla con las normas nacionales específicas. Los controlers de la serie TwisTorr 304 FS AG Rack son convertidores de frecuencia, controlados por un microprocesador, realizados con componentes en estado sólido y con capacidad de autodiagnóstico y autoprotección.

Características del controler:

- Operatividad frontal / remoto / serial
- Pilotaje de 24 Vdc del ventilador de refrigeración bomba
- Pilotaje vent valve
- Lectura velocidad bomba después de activación mando de parada (lectura velocidad de parada)
- Lectura de la presión
- Interfaz Profibus (opcional)
- Configuración automática tensión de entrada.

En los apartados siguientes se facilita toda la información necesaria para garantizar la seguridad del operador durante el uso del equipo. Una información más detallada se facilita en el Suplemento "Technical Information".

Este manual utiliza los símbolos convencionales siguientes:

¡ADVERTENCIA!



Los mensajes de advertencia atraen la atención del operador sobre un procedimiento o una operación específica que, al no realizarse correctamente, podría provocar graves lesiones personales.

¡ATENCIÓN!

Los mensajes de atención se visualizan antes de procedimientos que, al no respetarse, podrían provocar daños al equipo.

NOTA

Las notas contienen información importante extraída del texto.

Almacenamiento

Durante el transporte y el almacenamiento de los controlers se deberá cumplir con las condiciones ambientales siguientes:

- temperatura: de -20 °C a +70 °C
- humedad relativa: 0 – 95 % (no condensadora)

4 Manual de instrucciones

Preparación para la instalación

Preparación para la instalación

El controler se suministra en un embalaje de protección especial; si se observan señales de daños, que podrían haberse producido durante el transporte, ponerse en contacto con la oficina de venta más cercana.

Durante la operación de desembalaje, prestar una atención especial a no dejar caer el controler y evitarle golpes. No dispersar el embalaje en el medio ambiente. El material es totalmente recicitable y cumple con la directiva CEE 85/399 para la preservación del medio ambiente.

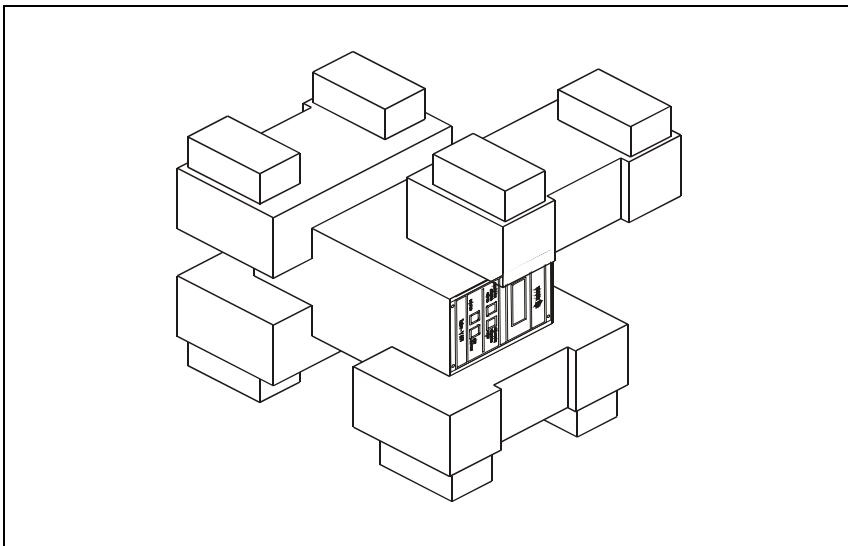


Figura 1 Embalaje de los Controllers

Instalación

¡ADVERTENCIA!



El controlador está diseñado sólo para su uso en interiores y para mantener la seguridad del usuario debe ser alimentado mediante un cable de 3 conductores (v. tabla de las piezas de recambio solicitables) con un tipo de clavija aprobado a nivel internacional. Para evitar el riesgo de descargas eléctricas y cumplir con los requisitos CE, utilizar siempre este cable de alimentación, conectando la clavija a una toma eléctrica dotada con una adecuada conexión a tierra. Dentro del controlador se desarrollan altas tensiones que pueden causar graves daños o la muerte. Antes de efectuar cualquier operación de instalación o mantenimiento del controlador, desconectarlo del enchufe de alimentación.

NOTA

El controler puede instalarse en una mesa o dentro de un rack específico. En cualquier caso, es necesario que el aire de refrigeración pueda circular libremente alrededor del aparato. No instalar y/o utilizar el controler en ambientes expuestos a agentes atmosféricos (lluvia, hielo y nieve), polvos, gases agresivos, en ambientes explosivos o con alto riesgo de incendio.

Durante el funcionamiento es necesario que se respeten las condiciones ambientales siguientes:

- temperatura: de +5 °C a +45 °C
- humedad relativa: 0 – 95 % (no condensadora).

Para otras conexiones y la instalación de los accesorios opcionales, véase la sección “Technical Information”.

4 Manual de instrucciones

Uso

Uso

En este apartado se citan los procedimientos operativos principales. Para más detalles y para procedimientos que impliquen conexiones u opcionales especiales, les remitimos al apartado “Use” del anexo “Technical Informations”.

Antes de usar el controler efectuar todas las conexiones eléctricas y neumáticas y consultar el manual de la bomba conectada.

¡ADVERTENCIA!



Para evitar lesiones a las personas y al aparato, si la bomba está apoyada sobre una mesa cerciorarse que es estable. No poner en marcha nunca la bomba si la brida de entrada no está conectada al sistema o no está cerrada con la brida de cierre.

NOTA

El conector di cierre J1 ha de dejarse conectado con su conector puente si no se efectúa ninguna conexión exterior. La bomba pre-vacío y la bomba TwisTorr 304 FS pueden encenderse simultáneamente.

Mandos, Indicadores y Conectores

A continuación se ilustran el panel de mando del controler y los paneles de interconexión. Para más detalles consultar la sección "Technical Information".

Descripción del panel frontal

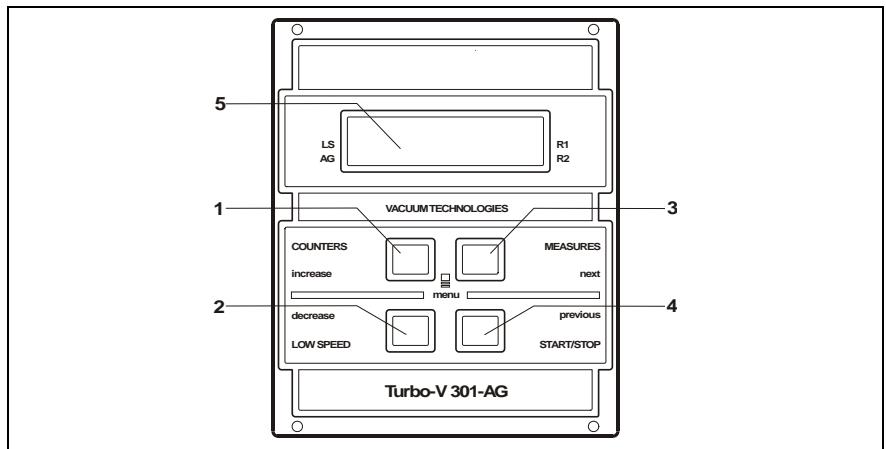


Figura 2 Panel frontal del Controller TwisTorr 304 FS AG Rack

- | | |
|---|---|
| 1 | Pulsador para que aparezcan en el display los parámetros cycle number, cycle time y pump life. |
| 2 | Pulsador para la selección del modo LOW SPEED. Está activado sólo cuando está seleccionado el modo de mando del panel frontal. Apretando una vez, la bomba gira a velocidad "stand-by". Apretándolo una vez más se desactiva el modo LOW SPEED. |
| 3 | Pulsador para que aparezcan en el display los parámetros pump current, pump temperature, pump power y rotational speed. Está siempre activado independientemente del modo de funcionamiento elegido. Apretando juntos los pulsadores 3 y 1 durante 2 segundos por lo menos, se activa un programa con el cual se pueden programar algunos parámetros operativos. |
| 4 | Pulsador para enviar los mandos de START, STOP/RESET. Está activo sólo cuando se selecciona el modo de mando del panel frontal. Apretándolo una vez se activa la fase de puesta en marcha; apretándolo otra vez se para la bomba. Si la bomba se ha parado automáticamente a causa de una avería, hay que apretar este pulsador primero una vez para efectuar el reset del controler y la segunda vez para volver a poner en marcha la bomba. |
| 5 | Display alfanumérico de cristales líquidos: matriz de puntos, 2 líneas x 16 caracteres. |

4 Manual de instrucciones

Uso

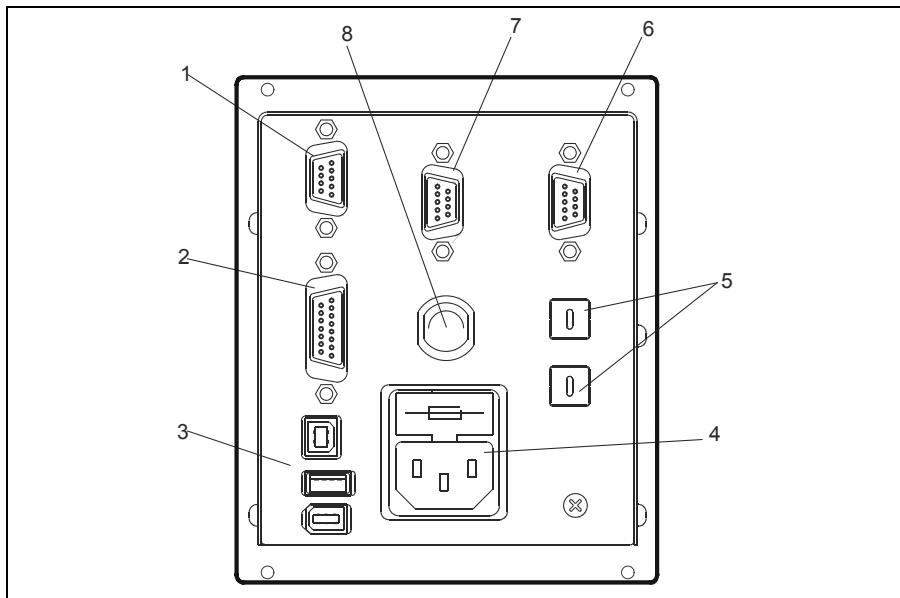


Figura 3 Panel trasero del controlador TwisTorr 304 FS AG Rack

-
- | | |
|---|--|
| 1 | Conejor de entrada de las señales lógicas (el conector de acoplamiento se suministra con el conector puente específico de cierre). |
| 2 | Conejor señales lógicas en salida y monitoreo frecuencia bomba y salida analógica programable. |
| 3 | Conejor de salida alimentación (24 Vdc para el ventilador de refrigeración bomba, vent valve y calibre). |
| 4 | Módulo de entrada alimentación controler con fusibles, toma de alimentación y filtro ENC. |
| 5 | Comutador de rotación para configurar la dirección del Profibus. |
| 6 | Profibus (opcional). |
| 7 | Conejor serial para control remoto. |
| 8 | Conejor bomba. |
-

Procedimientos de uso

Encendido del controler

Para encender el controler es suficiente introducir el cable de alimentación en la toma de red.

Puesta en marcha de la Bomba

Para activar la bomba es necesario habilitar la entrada de interlock y pulsar el botón START situado en el panel frontal.

Parada de la Bomba

Para detener la bomba hay que apretar el pulsador STOP del panel frontal.

Mantenimiento

Los controlers de la serie TwisTorr 304 FS AG Rack no necesitan ningún mantenimiento. Cualquier operación ha de ser efectuada por personal autorizado. En caso de avería es posible utilizar el servicio de reparación Agilent o del “Agilent advance exchange service”, que permite obtener un controler regenerado en vez del averiado.

¡ADVERTENCIA! Antes de efectuar cualquier operación en el controler desenchufar el cable de alimentación.



En caso de que un controler se tenga que desguazar, efectuar su eliminación respetando las normas nacionales específicas.

4 Manual de instrucciones

Eliminación

Eliminación

Significado del logotipo "WEEE" presente en las etiquetas. El símbolo que se indica a continuación, es aplicado en observancia de la directiva CE denominada "WEEE". Este símbolo (**válido sólo para los países miembros de la Comunidad Europea**) indica que el producto sobre el cual ha sido aplicado, NO debe ser eliminado junto con los residuos comunes sean éstos domésticos o industriales, y que, por el contrario, deberá ser sometido a un procedimiento de recogida diferenciada. Por lo tanto, se invita al usuario final, a ponerse en contacto con el proveedor del dispositivo, tanto si éste es la casa fabricante o un distribuidor, para poder proveer a la recogida y eliminación del producto, después de haber efectuado una verificación de los términos y condiciones contractuales de venta.



Mensajes de error

En algunos casos de avería los circuitos de autodiagnosis del controler presenta algunos mensajes de error detallados en la tabla siguiente.

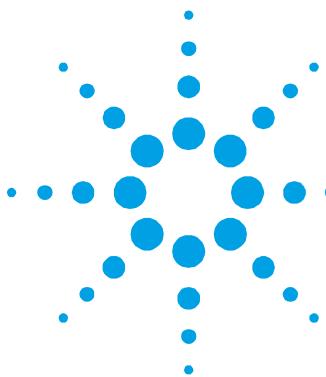
Tab. 1

| MENSAJE | DESCRIPCIÓN | ACCIÓN CORRECTIVA |
|---------------------------------|---|--|
| CHECK CONNECTION TO PUMP | Mal funcionamiento en la conexión entre la bomba y el Controler. O bien La bomba tiene una temperatura inferior a 0 °C. | Comprobar que el cable de conexión entra en la bomba y el controler está bien fijado por ambos extremos y no está interrumpido. Apretar dos veces el pulsador START para volver a poner en marcha la bomba. |
| WAITING INTERLOCK | Está activa la señal de interlock presente en el conector P1 a causa de la interrupción del cortocircuito entre el pin 3 y el pin 8 del conector J1, o a causa de la apertura de la señal de interlock externo. | Eliminar el cortocircuito entre el pin 3 y el pin 8 del conector P1, o cerrar la señal de interlock exterior. |
| PUMP OVERTEMP. | La temperatura del rodamiento superior o de la bomba ha superado los 60 °C. | Esperar a que la temperatura vuelva por debajo del umbral. Apretar dos veces el pulsador START para volver a poner en marcha la bomba. |
| CONTROLLER OVERTEMP. | La temperatura del controler ha superado los 70 °C. O bien La temperatura del radiador del controler es superior a 60 °C. | Esperar a que la temperatura vuelva por debajo del umbral. Apretar dos veces el pulsador START para volver a poner en marcha la bomba. |

4 Manual de instrucciones

Mensajes de error

| MENSAJE | DESCRIPCIÓN | ACCIÓN CORRECTIVA |
|------------------------|---|--|
| TOO HIGH LOAD | La corriente absorbida por la bomba es superior a la programada. | Comprobar que el rotor de la bomba tiene la posibilidad de girar libremente. Apretar dos veces el pulsador START para volver a poner en marcha la bomba. |
| SHORT CIRCUIT | Durante el funcionamiento normal (tras la fase de puesta en marcha) la conexión de salida está en cortocircuito. | Comprobar las conexiones entre la bomba y el controler. Apretar dos veces el pulsador START para volver a poner en marcha la bomba. |
| SYSTEM OVERRIDE | La bomba ha sido parada por una señal de emergencia procedente de un contacto remoto. | Desenchufar el cable de alimentación del controler y corregir la causa de la emergencia. Volver a conectar el cable de alimentación y apretar dos veces el pulsador START para volver a poner en marcha la bomba. |
| OVERVOLTAGE | Se ha producido una avería en la sección de alimentación del controler o el controler ha recibido una señal esporádica. | Apretar dos veces el pulsador START para volver a poner en marcha la bomba. Si el mensaje se vuelve a presentar dirigirse a Agilent para el mantenimiento. |
| POWER FAIL | Avería en la sección de alimentación de la bomba, del controler. | Ponerse en contacto con Agilent para el Mantenimiento. |



5

Manual de Istruções

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Tradução das instruções originais



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5 Manual de Instruções

Informações gerais

Informações gerais

Esta aparelhagem destina-se ao uso profissional. O utilizador deve ler atentamente o presente manual de instruções e todas as informações adicionais fornecidas pela Agilent antes de utilizar a aparelhagem. A Agilent não se responsabiliza pela inobservância total ou parcial das instruções, pelo uso indevido por parte de pessoas não treinadas, por operações não autorizadas ou pelo uso contrário às normas nacionais específicas.

Os controllers da série TwisTorr 304 FS AG Rack são conversores de frequência, controlados por um microprocessador, realizados com componentes em estado sólido e com capacidade de autodiagnóstico e autoprotecção.

Características do controller:

- Operatividade frontal / remota / serial
- Pilotagem em 24 Vdc da ventoinha de resfriamento bomba
- Pilotagem vent valve
- Leitura velocidade bomba seguindo ao comando de paragem (leitura velocidade de paragem)
- Leitura da pressão
- Interface Profibus (opcional)
- Impostação automática tensão de entrada.

Nos parágrafos seguintes estão descritas todas as informações necessárias para garantir a segurança do operador durante o uso da aparelhagem. Informações pormenorizadas são fornecidas no apêndice "Technical Information".

Este manual utiliza as seguintes convenções:

ATENÇÃO!



As mensagens de atenção chamam a atenção do operador para um procedimento ou uma prática específica que, se não efectuada correctamente, pode provocar graves lesões pessoais.

CUIDADO!

As mensagens de cuidado são visualizadas antes de procedimentos que, se não observados, podem causar danos à aparelhagem.

NOTA

As notas contêm informações importantes destacadas do texto.

Armazenagem

Durante o transporte e a armazenagem dos controllers, devem ser satisfeitas as seguintes condições ambientais:

- temperatura: de -20 °C a + 70 °C
- humidade relativa: 0 – 95 % (não condensante)

5 Manual de Instruções

Preparação para a instalação

Preparação para a instalação

O controller é fornecido numa embalagem protectora especial; se apresentar sinais de danos, que poderiam verificar-se durante o transporte, entrar em contacto com o escritório de vendas local.

Durante a retirada da embalagem, tomar muito cuidado para não deixar cair o controller e para não submetê-lo a choques. Não depositar a embalagem no meio ambiente. O material é completamente reciclável e responde à directriz CEE 85/399 para a protecção do meio ambiente.

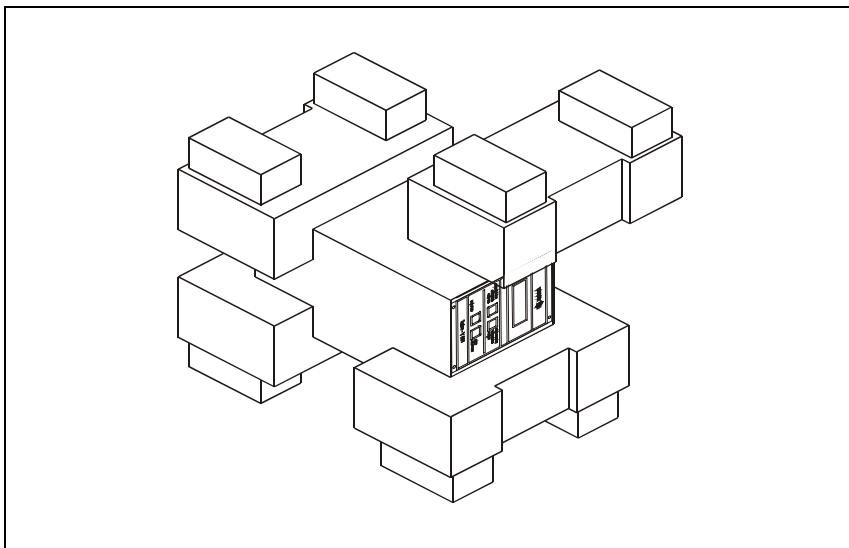


Figura 1 Embalagem dos controllers

Instalação

ATENÇÃO!



O controller foi concebido para utilização no interior e deve ser ligado com um cabo de alimentação de 3 fios (ver tabela de peças que pode encomendar) e ficha (aprovada internacionalmente) para garantir a segurança do utilizador. Use este cabo de alimentação e ficha em conjunto com uma tomada com a devida ligação a terra para evitar choques eléctricos e para satisfazer os requisitos da CE. A alta voltagem gerada no controller pode provocar ferimentos graves ou mesmo a morte. Antes de efectuar qualquer operação de instalação ou manutenção do controller, desligar a tomada de alimentação.

NOTA

O controller pode ser instalado numa mesa ou no interior de um rack específico. Em todo caso, é necessário que o ar de refrigeração possa circular livremente ao redor da aparelhagem. Não instalar e/ou utilizar o controller em ambientes expostos a agentes atmosféricos (chuva, gelo, neve), poeiras, gases agressivos ou em ambientes com perigo de explosão ou com elevado risco de incêndio.

Durante o funcionamento é necessário que sejam respeitadas as seguintes condições ambientais:

- temperatura: de +5 °C a +45 °C
- humidade relativa: 0 – 95 % (não condensante).

Para as outras ligações e a instalação dos acessórios opcionais, ver a secção "Technical Information".

5 Manual de Istruções

Utilização

Utilização

Neste parágrafo são descritos os principais procedimentos operativos. Para maiores detalhes e para procedimentos que envolvem ligações ou peças opcionais, consultar o parágrafo "Use" do apêndice "Technical Information".

Antes de usar o controller, efectuar todas as ligações eléctricas e pneumáticas e consultar o manual da bomba ligada.

ATENÇÃO!



Para evitar danos às pessoas e à aparelhagem, caso a bomba esteja apoiada numa mesa, certificar-se que esteja estável. Nunca activar a bomba se o flange de entrada não estiver ligado ao sistema ou não estiver fechado com o flange de fecho.

NOTA

O conector de fecho J1 deve permanecer ligado à sua ponte se não é efectuada nenhuma ligação externa. A bomba de pré-vácuo e a bomba TwisTorr 304 FS podem ser ligadas simultaneamente.

Comandos, Indicadores e Conectores

A seguir, estão ilustrados o painel de comando do Controller e os painéis de interconexão. Para maiores detalhes, consultar a secção "Technical Information".

Descrição painel frontal

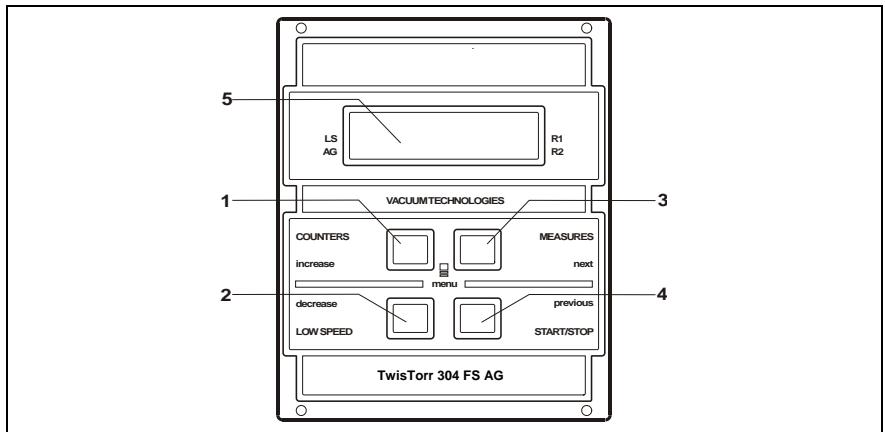


Figura 2 Painel frontal do Controller TwisTorr 304 FS AG Rack

- | | |
|---|--|
| 1 | Botão para evidenciar no display os parâmetros, cycle number, cycle time e pump life. |
| 2 | Botão para a seleção do modo LOW SPEED. É activo somente quando for seleccionado o modo de comando do painel frontal. Apertando uma vez, a bomba roda com velocidade "stand-by" .. Apertando-o novamente desactiva-se o modo LOW SPEED. |
| 3 | Botão para evidenciar no display os parâmetros pump current, pump temperature, pump power e rotational speed. É sempre activo independentemente do modo de funcionamento escolhido. Apertando os botões 3 e 1 em conjunto pelo menos 2 segundos é activado um programa com o qual é possível programar alguns parâmetros operativos. |
| 4 | Botão para enviar os comandos de START, STOP/RESET. É activo somente quando for seleccionado o modo de comando do painel frontal. Apertando-o uma vez activa-se a fase de arranque; apertando-o novamente pára a bomba. Se a bomba parou automaticamente por causa de uma avaria, ocorre apertar este botão uma primeira vez para executar o reset do controller e uma segunda vez para reiniciar a bomba. |
| 5 | Display alfanumérico com cristais líquidos: matriz de pontos 2 linhas x 16 caracteres. |

5 Manual de Instruções

Utilização

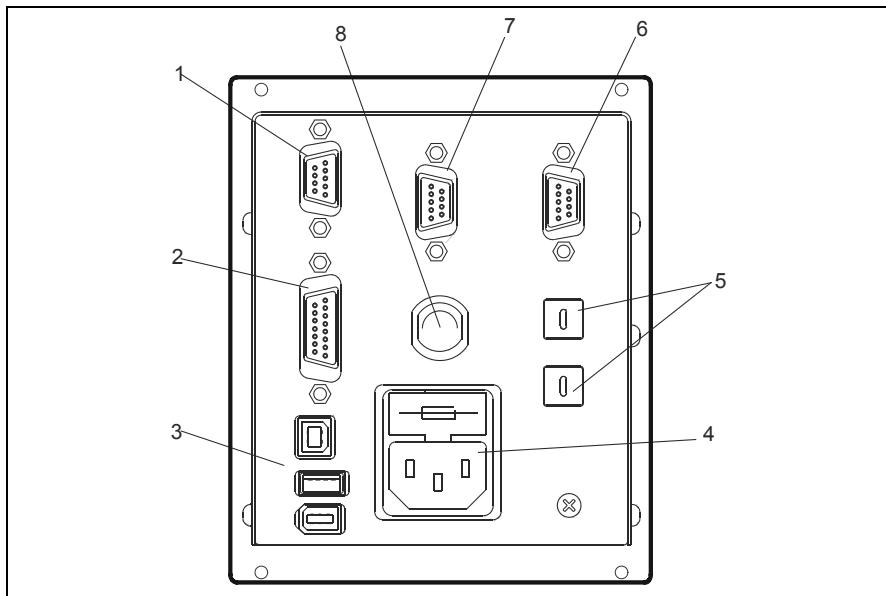


Figura 3 Painel posterior dos Controllers TwisTorr 304 FS AG Rack

-
- | | |
|---|---|
| 1 | Conecotor de entrada dos sinais lógicos (o conecotor de acoplamento é fornecido com ponte específica de fecho). |
| 2 | Conecotor sinal lógicos na saída e monitoragem freqüência bomba mais saída analógica programável. |
| 3 | Conecotor de saída alimentação (24 Vdc para a ventoinha resfriamento bomba, vent valve e calibragem). |
| 4 | Modulo de entrada alimentação controller que comprehende os fusíveis, a tomada de alimentação e o filtro ENC. |
| 5 | Switch em rotação para impostar o endereço do Profibus. |
| 6 | Profibus (opcional). |
| 7 | Conecotor serial para controle de remoto. |
| 8 | Conecotor bomba. |
-

Procedimentos de uso

Acendimento do Controller

Para ligar o controller, é suficiente inserir o cabo de alimentação na tomada de rede.

Activação da bomba

Para ligar a bomba ocorre habilitar a entrada de interlock e apertar o botão START do painel frontal.

Paragem da bomba

Para parar a bomba, é necessário premer o botão STOP do painel frontal.

Manutenção

Os controllers da série TwisTorr 304 FS AG Rack não requerem qualquer manutenção. Todas as operações devem ser efectuadas por pessoal autorizado.

Em caso de defeito é possível utilizar o serviço de reparação Agilent ou o "Agilent advanced exchange service", que permite obter um controller regenerado que substitua o controller com defeito.

ATENÇÃO!

Antes de efectuar qualquer operação no controller, desligar o cabo de alimentação.



Caso um controller deva ser destruído, proceder à sua eliminação respeitando as normas nacionais específicas.

5 Manual de Istruções

Eliminação

Eliminação

Significado do logótipo "WEEE" presente nos rótulos. O símbolo abaixo indicado é aplicado de acordo com a directiva CE denominada "WEEE". Este símbolo (**válido apenas para os países da Comunidade Europeia**) indica que o produto no qual está aplicado NÃO deve ser eliminado juntamente com os resíduos domésticos ou industriais comuns, mas deve ser dirigido a um sistema de recolha diferenciada. Portanto, convidamos o utilizador final a contactar o fornecedor do dispositivo, seja este o fabricante ou um revendedor, para encaminhar o processo de recolha e eliminação, após a oportuna verificação dos termos e condições do contrato de venda.



Mensagens de erro

Em alguns casos de defeitos, os circuitos de autodiagnóstico do controller apresentam mensagens de erro relacionadas na tabela abaixo.

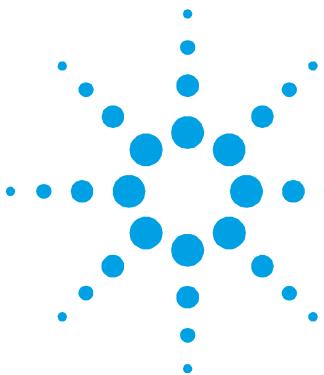
Tab. 1

| MENSAGEM | DESCRÍÇÃO | ACÇÃO CORRECTIVA |
|---------------------------------|--|--|
| CHECK CONNECTION TO PUMP | Mau funcionamento na ligação entre a bomba e o controller. Ou A bomba possui temperatura inferior a 0 °C. | Verificar se o cabo de ligação entre a bomba e o controller está bem fixado em ambas as extremidades e não está interrompido. Premir duas vezes o botão START para reactivar a bomba. |
| WAITING INTERLOCK | É activado o sinal de interlock existente no conector P1 devido à interrupção do curto circuito entre o pin 3 e o pin 8 do conector J1 ou devido à abertura do sinal de interlock externo. | Restabelecer o curto circuito entre o pin 3 e o pin 8 do conector P1 ou fechar o sinal de interlock externo. |
| PUMP OVERTEMP. | A temperatura do rolamento superior ou da bomba superou os 60 °C. | Aguardar até que a temperatura volte ao limite estabelecido. Premir duas vezes o botão START para reactivar a bomba. |
| CONTROLLER OVERTEMP. | A temperatura do controller superou os 70 °C. Ou A temperatura do radiador do controller é superior a 60 °C. | Aguardar até que a temperatura volte ao limite estabelecido. Premir duas vezes o botão START para reactivar a bomba. |

5 Manual de Istruções

Mensagens de erro

| MENSAGEM | DESCRÍÇÃO | ACÇÃO CORRECTIVA |
|------------------------|---|---|
| TOO HIGH LOAD | Durante o funcionamento normal (após a fase de accionamento) a corrente absorvida pela bomba é maior do que a programada. | Verificar se o rotor da bomba pode rodar livremente. Premer duas vezes o botão START para reactivar a bomba. |
| SHORT CIRCUIT | Durante o funcionamento normal (após a fase de accionamento) a conexão de saída está em curto circuito. | Verificar as ligações entre a bomba e o controller. Premer duas vezes o botão START para reactivar a bomba. |
| SYSTEM OVERRIDE | A bomba parou por um sinal de emergência proveniente de um contacto remoto. | Remover o cabo de alimentação do controller e corrigir a causa da emergência. Ligar novamente o cabo de alimentação e premer duas vezes o botão START para reactivar a bomba. |
| OVERVOLTAGE | Verificou-se um defeito na secção de alimentação do controller, ou o controller recebeu um sinal falso. | Premer duas vezes o botão START para reactivar a bomba. Se a mensagem se reapresentar, dirigir-se à Agilent para a manutenção. |
| POWER FAIL | Avaria na seção de alimentação da bomba, do controller. | Dirigir-se a Agilent para Manutenção. |



6

Bedrijfshandleiding

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Vertaling van de originele instructies



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6 Bedrijfshandleiding

Algemene informatie

Algemene informatie

Deze apparatuur is bestemd voor beroepsmatig gebruik. De gebruiker wordt verzocht aandachtig deze handleiding en alle overige door Agilent verstrekte informatie door te lezen alvorens het apparaat in gebruik te nemen. Agilent acht zich niet aansprakelijk voor de gevolgen van het niet of gedeeltelijk in acht nemen van de aanwijzingen, onoordeelkundig gebruik door niet hiervoor opgeleid personeel, reparaties waarvoor geen toestemming is verkregen of gebruik in strijd met de specifieke nationale wetgeving. De controllers van de TwisTorr 304 FS AG Rack serie zijn frequentieomzetters die gestuurd worden door een microprocessor, zijn gemaakt van halfgeleiderelementen en zijn in staat om zelfdiagnose en zelfbescherming uit te voeren.

Kenmerken van de controller:

- Bediening frontaal / op afstand / serieel
- Sturing met 24 Vdc van de koelventilator van de pomp
- Sturing vent valve
- Lezen snelheid pomp na stopcommando (lezen stopsnelheid)
- Lezen van de druk
- Interface Profibus (optie)
- Automatische instelling ingangsspanning.

In de volgende paragrafen is alle informatie vermeld om de veiligheid van de operator tijdens het gebruik van de apparatuur te verzekeren. Gedetailleerde informatie is te vinden in de bijlage "Technical information".

Deze handleiding hanteert de volgende symbolen:

WAARSCHUWING!



Bij dit symbool staat tekst die de aandacht van de operator vestigt op een speciale procedure of methode die, indien niet correct uitgevoerd, ernstig lichamelijk letsel kan veroorzaken.

VOORZICHTIG:

Bij dit symbool staat tekst met procedures die, indien niet opgevolgd, schade aan apparatuur kunnen veroorzaken

OPMERKING

De opmerkingen bevatten belangrijke informatie die uit de tekst is gelicht.

Opslag

Tijdens het transport en de opslag van de controllers moeten de volgende omgevingscondities aanwezig zijn:

- temperatuur: van -20 °C tot +70 °C
- relatieve vochtigheid: 0 – 95 % (niet condenserend)

6 Bedrijfshandleiding

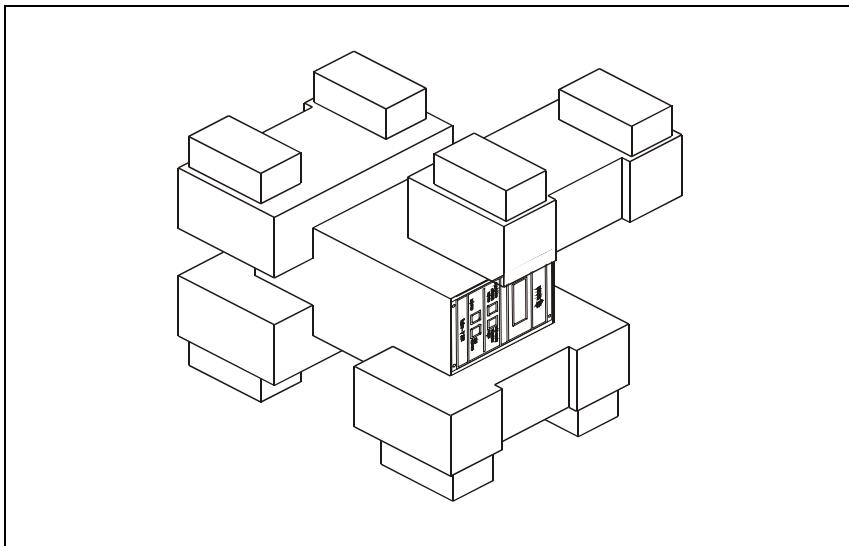
Voorbereiding voor installatie

Voorbereiding voor installatie

De controller wordt in een speciale beschermende verpakking geleverd; als er schade wordt geconstateerd die tijdens het transport veroorzaakt zou kunnen zijn, meteen contact opnemen met het plaatselijke verkoopkantoor.

Zorg er bij het uitpakken voor dat de controller niet kan vallen of stoten te verduren krijgt.

Laat de verpakking niet ergens buiten achter. Het verpakkingsmateriaal is volledig recyclebaar en voldoet aan de EEG milieurichtlijn 85/399.



Figuur 1 Verpakking van de controllers

Installatie

WAARSCHUWING!



De controller is uitsluitend voor gebruik binnenshuis ontworpen en moet van stroom worden voorzien met een 3-geleiderkabel (zie tabel met verkrijgbare onderdelen), voorzien van een internationaal goedgekeurde stekker met het oog op de veiligheid. Ter preventie van elektroshock en in overeenstemming met de CE voorschriften dient altijd van deze voedingskabel gebruik te worden gemaakt; steek de stekker in een goed geaard stopcontact. In de controller ontwikkelen zich hoge spanningen die zware beschadigingen of de dood kunnen veroorzaken. Alvorens installatie- of onderhoudswerkzaamheden uit te voeren, de controller van de contactstop afkoppelen.

OPMERKING

De controller kan op een tafel of in een speciaal rack worden geïnstalleerd. In ieder geval moet de koellucht vrij rondom het apparaat kunnen circuleren. De controller mag niet geïnstalleerd en/of gebruikt worden in ruimten die blootgesteld zijn aan de weersomstandigheden (regen, vorst, sneeuw), stof, agressieve gassen, of in ruimten met explosiegevaar of zeer hoog brandgevaar.

Tijdens de werking moeten de volgende omgevingscondities aanwezig zijn:

- temperatuur: van +5 °C tot +45 °C
- relatieve vochtigheid: 0 – 95 % (niet condenserend).

Voor de overige aansluitingen en de installatie van de accessoires wordt verwezen naar het hoofdstuk "Technical Information".

6 Bedrijfshandleiding

Gebruik

Gebruik

In deze paragraaf worden de voornaamste bedieningswijzen uitgelegd. Voor meer informatie of procedures die aansluitingen of speciale opties betreffen wordt verwezen naar de paragraaf "Use" van de bijlage "Technical Informations". Breng, alvorens de controller in gebruik te nemen, alle elektrische en pneumatische aansluitingen tot stand en raadpleeg hiervoor de handleiding van de aan te sluiten pomp.

WAARSCHUWING!



Indien de pomp op een tafel is geplaatst, controleren of deze stabiel staat om letsel aan personen en schade aan het apparaat te voorkomen. Laat de pomp nooit werken zonder dat de ingangslens aan het systeem is gekoppeld of de afsluitlens is gesloten.

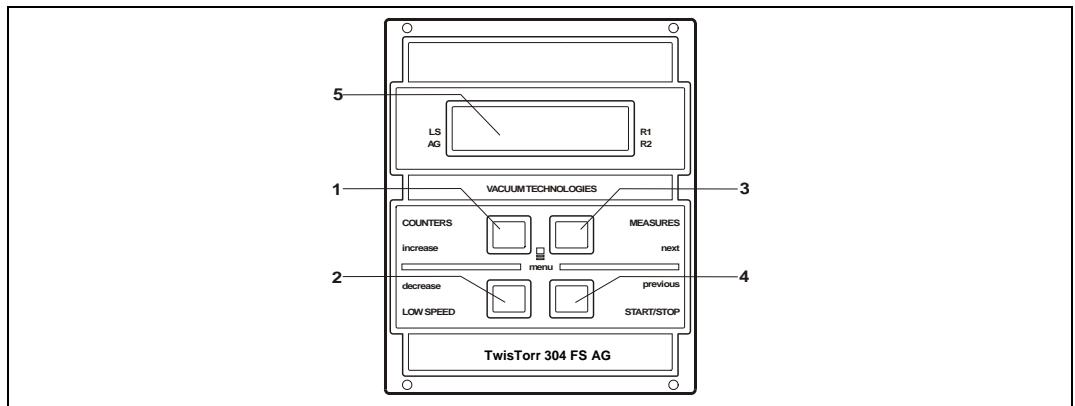
OPMERKING

De connector J1 moet met zijn jumper aangesloten blijven als geen externe aansluiting tot stand wordt gebracht. De pre-vacuümpomp en de TwisTorr 304 FS pomp mogen beide gelijktijdig ingeschakeld zijn.

Bedieningsorganen, Controlelampjes en Connectoren van

Hieronder worden het frontpaneel en het achterpaneel van de controller geïllustreerd. Voor meer informatie wordt verwezen naar het hoofdstuk "Technical Information".

Beschrijving frontpaneel

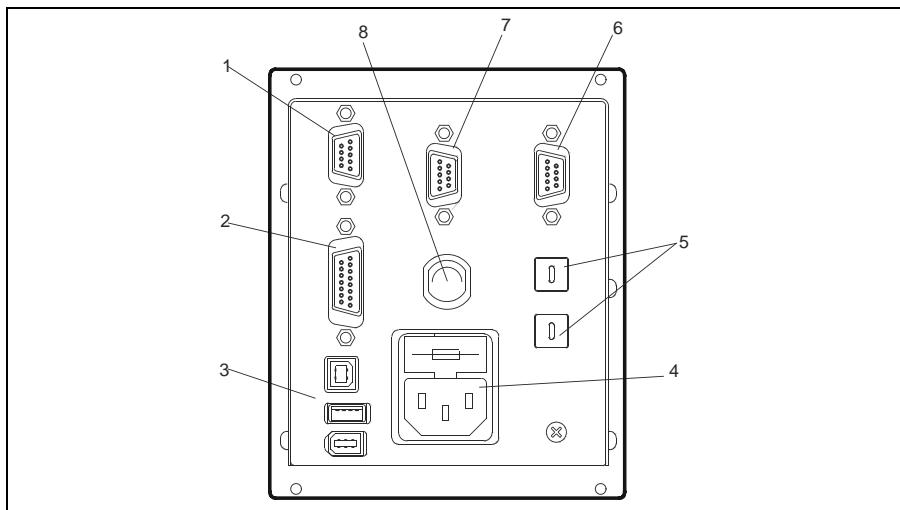


Figuur 2 Frontpaneel van de Controllers TwisTorr 304 FS AG Rack

-
- 1 Drukknop voor weergave op het display van de parameters cycle number, cycle time en pump life.
 - 2 Drukknop voor selectie van de bedrijfswijze LOW SPEED. Is alleen actief wanneer de bedrijfswijze op het frontpaneel wordt geselecteerd. Door de knop eenmaal in te drukken, draait de pomp met "stand-by" snelheid. Door de knop opnieuw in te drukken, wordt LOW SPEED geïnactiveerd.
 - 3 Drukknop voor weergave op het display van de parameters pump current, pump temperature, pump power en rotational speed. Is altijd actief, onafhankelijk van de gekozen bedrijfswijze. Door drukknoppen 3 en 1 gelijktijdig gedurende ten minste 2 seconden in te drukken, wordt een programma gestart waarmee enkele bedrijfsparameters kunnen worden geprogrammeerd.
 - 4 Drukknop voor het zenden van de sturingen START, STOP/RESET. Is alleen actief wanneer de bedrijfswijze op het frontpaneel wordt geselecteerd. Door de knop eenmaal in te drukken wordt de startfase geactiveerd; door de knop opnieuw te bedienen wordt de pomp gestopt. Als de pomp automatisch is gestopt ten gevolge van een storing, moet deze knop een eerste maal worden bediend om de controller te resetten en een tweede maal om de pomp weer op te starten.
 - 5 Alfanumeriek display met vloeibare kristallen (LCD): puntjespatroon, 2 lijnen x 16 karakters.
-

6 Bedrijfshandleiding

Gebruik



Figuur 3 Achterpaneel van de controllers TwisTorr 304 FS AG Rack

- | | |
|---|---|
| 1 | Connector voor ingang logische signalen (de te koppelen connector wordt met de speciale sluitklem geleverd). |
| 2 | Connector voor uitgang logische signalen en frequentiecontrole pomp plus programmeerbare analogische uitgang. |
| 3 | Uitgangsconnector voeding (24 Vdc voor de koelventilator van de pomp, vent valve en kaliber). |
| 4 | Ingangsmodule voeding controller die de zekeringen, het voedingscontact en het ENC-filter bevat. |
| 5 | Draaischakelaar om het adres van de Profibus in te stellen. |
| 6 | Profibus (optie). |
| 7 | Seriële connector voor afstandsbesturing. |
| 8 | Connector pomp. |

Gebruiksprocedures

Inschakelen van de controller

Om de controller in te schakelen, de voedingskabel in de netcontactdoos inbrengen.

Starten van de pomp

Om de pomp te starten, de interlock-ingang inschakelen en op de START-knop op het frontpaneel drukken.

Stoppen van de pomp

Voor het stoppen van de pomp de STOP knop op het frontpaneel bedienen.

Onderhoud

De controllers van de serie TwisTorr 304 FS AG Rack zijn onderhoudsvrij. Eventuele werkzaamheden moeten door bevoegd personeel worden uitgevoerd.

In geval van storing is het mogelijk om de reparatiedienst van Agilent of de "Agilent advanced exchange service" in te schakelen: zo krijgt men een ruilcontroller ter vervanging van de defecte controller.

WAARSCHUWING! **Alvorens werkzaamheden aan de controller uit te voeren, de voedingskabel afkoppelen.**



Mocht de controller gesloopt worden, ga dan overeenkomstig de specifieke nationale wetgeving te werk.

Afvalverwerking

Betekenis van het logo "WEEE" op de etiketten. Het onderstaande symbool wordt aangebracht in overeenstemming met de EG-richtlijn "WEEE". Dit symbool (**alleen geldig voor de landen van de Europese Gemeenschap**) geeft aan dat het product waarop het is aangebracht, NIET mag worden afgevoerd samen met mormaal huisvuil of industrieel afval, maar gescheiden moet worden ingezameld. De eindgebruiker wordt dus verzocht contact op te nemen met de leverancier van het apparaat, zij het de fabrikant of een wederverkoper, om het proces van gescheiden inzameling en verwerking in gang te zetten, na de van toepassing zijnde termen en voorwaarden van het verkoopcontract te hebben gecontroleerd.



Foutmeldingen

In geval van storingen wekt het zelfdiagnose-circuit van de controller enkele foutmeldingen op die in de volgende tabel zijn omschreven.

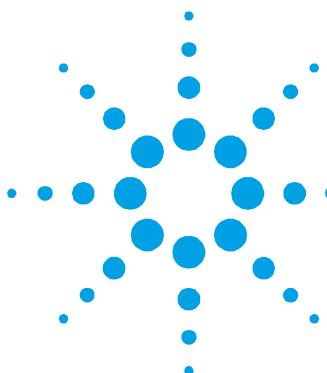
Tab. 1

| BOODSCHAP | OMSCHRIJVING | REMEDIE |
|---------------------------------|--|---|
| CHECK CONNECTION TO PUMP | Foutieve verbinding tussen pomp en controller. Of De pomp heeft een lagere temperatuur dan 0 °C. | Controleren of de verbindingskabel tussen pomp en controller aan beide uiteinden goed bevestigd is en geen onderbrekingen vertoond. Bedien twee maal de START-knop om de pomp weer op te starten. |
| WAITING INTERLOCK | Het interlock-signaal op connector P1 is actief wegens onderbreking van de kortsluiting tussen pin 3 en pin 8 van connector J1 of wegens het openen van het externe interlock-signaal. | Herstel de kortsluiting tussen pin 3 en pin 8 van connector P1 of sluit het externe interlock-signaal. |
| PUMP OVERTEMP. | De temperatuur van het bovenste pomplager bedraagt meer dan 60 °C. | Wacht tot de temperatuur weer onder de drempelwaarde is gezakt. Bedien twee maal de START-knop om de pomp weer op te starten. |
| CONTROLLER OVERTEMP. | De temperatuur van de controller bedraagt meer dan 70 °C. Of De temperatuur van de radiator van de controller bedraagt meer dan 60 °C. | Wacht tot de temperatuur weer onder de drempelwaarde is gezakt. Bedien twee maal de START-knop om de pomp weer op te starten. |

6 Bedrijfshandleiding

Foutmeldingen

| BOODSCHAP | OMSCHRIJVING | REMEDIE |
|------------------------|--|---|
| TOO HIGH LOAD | De stroomopname van de pomp is groter dan de geprogrammeerde waarde. | Controleer of de pomprotor vrij kan draaien. Bedien twee maal de START-knop om de pomp weer op te starten. |
| SHORT CIRCUIT | Tijdens normale werking (na startfase) is de uitgangsverbinding in kortsluiting. | Controleer de verbindingen tussen pomp en controller. Bedien twee maal de START-knop om de pomp weer op te starten. |
| SYSTEM OVERRIDE | De pomp is stilgelegd door een noodsignaal afkomstig van een afstandscontact. | Koppel de voedingskabel van de controller af en elimineer de oorzaak van de noodstop. Sluit de voedingskabel weer aan en bedien twee maal de START-knop om de pomp weer op te starten. |
| OVERVOLTAGE | Er is een storing opgetreden in de voedingssectie van de controller of de controller heeft een stoorsignaal ontvangen. | Bedien twee maal de START-knop om de pomp weer op te starten. Als de melding weer verschijnt zich voor onderhoud tot Agilent wenden. |
| POWER FAIL | Defect in het voedingsgedeelte van de pomp, van de controller. | Neem contact op met Agilent voor onderhoud. |



7

Istruktionsbog

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Oversættelse af originalinstruktionerne



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Generel Information

Generel Information

Dette materiel er beregnet til professionel anvendelse. Brugeren bør læse denne brugsanvisning og anden yderligere information fra Agilent, før udstyret anvendes. Agilent tager ikke ansvar for skader helt eller delvis som følge af tilsidesættelse af disse instruktioner, fejlagtig brug af personer uden tilstrækkelig kendskab, ukorrekt anvendelse af udstyret eller håndtering, der strider imod gældende lokale regler.

Styreenhederne i TwisTorr 304 FS AG Rack serien er mikroprocessorstyrede frekvens-omformere, der består af komponenter med fast tilstand.

Styreenhed specifikationer:

- Frontal /fjern- /seriel styring
- 24 Vdc styring af pumpens blæser
- Vent valve styring
- Aflæsning af pumpens hastighed som følge af tryk på stop (aflæsning af stophastighed)
- Aflæsning af tryk
- Profibus brugerflade (ekstra)
- Automatisk indstilling af indgangsspændingen.

De følgende afsnit indeholder al information der behøves, for at garantere operatørens sikkerhed under anvendelsen. Detaljeret information findes i bilaget "Technical Information".

I brugsanvisningen anvendes følgende standard-rubrikker:

ADVARSEL!



Advarselsmeddelelserne informerer operatøren om, at en speciel procedure eller en vis type arbejde skal udføres præcist efter anvisningerne. I modsat fald er der risiko for svære personskader.

FORSIGTIG!

Denne advarselsmeddelelse vises før procedurer, der skal følges nøje for ikke at risikere maskinskader.

BEMÆRK

Dette gør opmærksom på vigtig information i teksten.

Opbevaring

Følgende krav til omgivelsesforholdene gælder ved transport og opbevaring af styreenheden:

- temperatur: fra -20 °C til +70 °C
- relativ luftfugtighed: 0 – 95 % (ikke kondenserende)

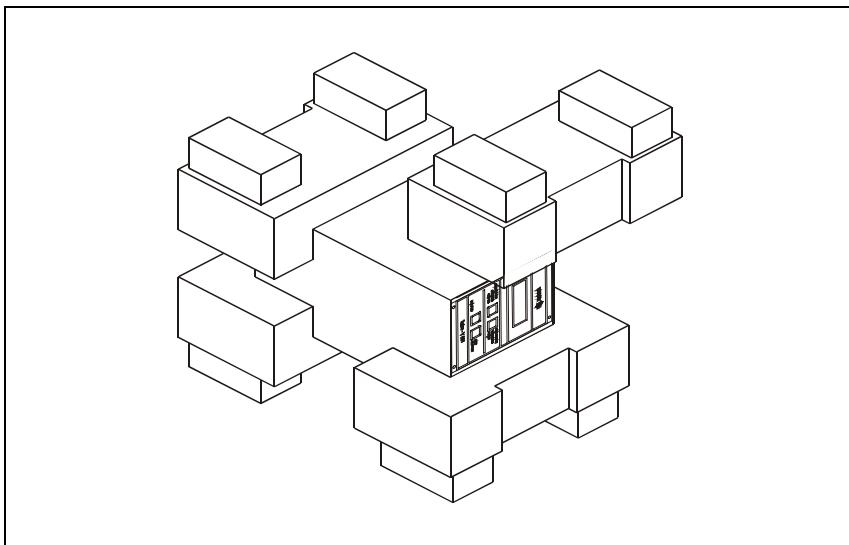
7 Istruktionsbog

Forberedelser før installation

Forberedelser før installation

Styreenheden leveres i en speciel beskyttende emballage. Kontakt den lokale forhandler, hvis emballagen viser tegn på skader, der kan være opstået under transporten. Sørg for at styreenheden ikke tabes eller udsættes for stød ved udpakningen.

Smid ikke emballagen ud. Materialet kan genbruges 100 % og opfylder EU-direktiv 85/399 om miljøbeskyttelse.



Figur 1 Styreenhedens emballage

Installation

ADVARSEL!

Af hensyn til sikkerheden, er styreenhed kun bregnet til idendørs brug og skal drives af et el-kabel med 3 ledere (Se tabel over reservedele) med et stik af internationalt godkendt type. For at undgå risiko for elektrisk stød og opfylde CE-kravene, skal denne ledning altid bruges, og sættes ind i en stikkontakt med en passende jordforbindelse. Spænding frembragt i styreenheden kan nå høje værdier og forårsage stor skade og dødsfald. Frakobl altid strømkablet, inden der udføres installations- eller vedligeholdelsesarbejde på styreenheden.

BEMÆRK

Styreenheden kan installeres på et bord eller et velegnet stativ. I begge tilfælde skal der være plads nok til, at luft kan cirkulerer frit omkring apparatet. Installér og anvend ikke styreenheden i miljøer, der udsættes for påvirkninger fra atmosfæren (regn, sne, is), damp, aggressive gasser, og ligeledes ikke i eksplosivt eller brandfarligt miljø.

Følgende krav til omgivelsesforholdene gælder ved drift:

- temperatur: fra +5 °C til +45 °C
- relativ luftfugtighed: 0 – 95 % (ikke kondenserende)

For øvrige tilslutninger og installation af tilbehør henvises til afsnittet "Technical Information".

7 Istruktionsbog

Anvendelse

Anvendelse

Dette afsnit beskriver de vigtigste driftsprocedurer. For en detaljeret beskrivelse samt procedurer, der involverer tilslutninger eller tilbehør, henvises til afsnittet "Use" i bilag "Technical Information". Inden styreenheden anvendes, bør samtlige elektriske og pneumatiske tilslutninger udføres. Læs brugsanvisningen før pumpen tilsluttes.

ADVARSEL!



Sørg for, at pumpen står fast, hvis den er installeret på et bord. Dette er for at forebygge skader på apparatet og personer. Start aldrig pumpen, hvis pumpetilløbet ikke er tilsluttet systemet eller er blokeret.

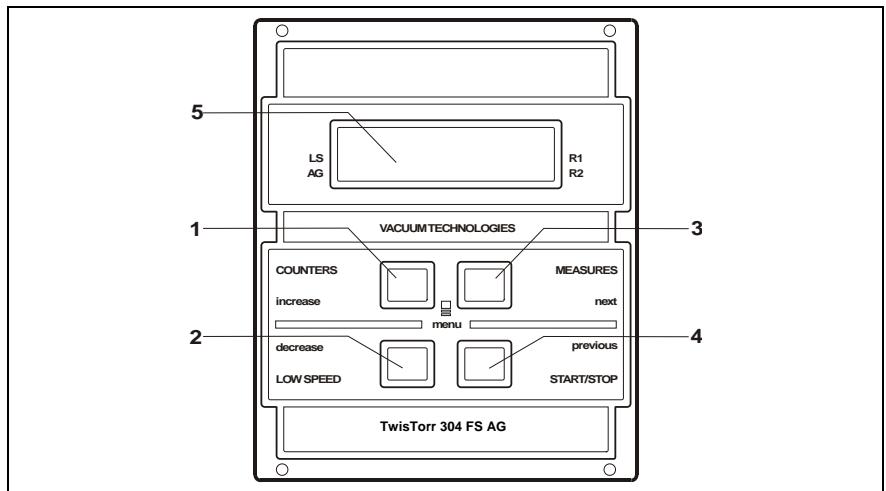
BEMÆRK

Afbryderkontakten J1 skal forblive tilsluttet med aktuel bro, når der ikke udføres eksterne tilslutninger. Forvakuumpumpen og TwisTorr 304 FS-pumpen skal fungere samtidigt.

Indikatorer og Kontakter på Styreenheden

Nedenfor vises styreenhedens front- og bagpanel. For yderligere information henvises til bilag "Technical Information".

Beskrivelse af frontpanel

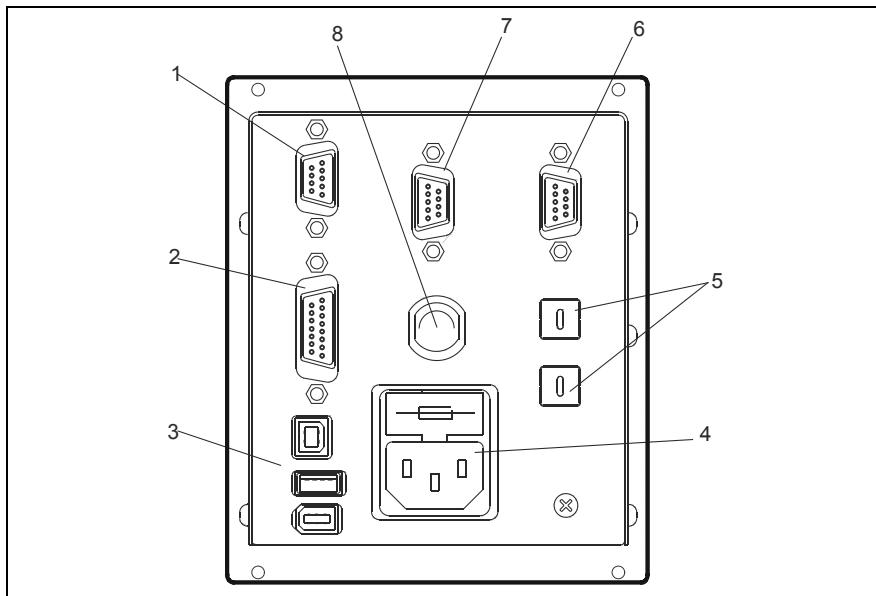


Figur 2 Frontpanelet på Styreenheden TwisTorr 304 FS AG Rack

-
- | | |
|---|--|
| 1 | Trykknap til at hente cycle number, cycle time og pump lift frem på displayet. |
| 2 | Trykknap til installering af LOW SPEED driftvalg. Trykknappen fungerer kun, når der vælges fra frontpanelet. Tryk på knappen en gang for at få pumpen til at rotere med "standby" hastighed. Tryk på knappen igen for at gå ud af LOW SPEED driften. |
| 3 | Trykknap til at hente pump current, pump temperature, pump power og rotational speed frem på displayet. Trykknappen fungerer altid, uanset den valgte styretype. Når trykknapperne 3 og 1 holdes trykket ind samtidigt i mindst 2 sekunder, starter et program, der tillader, at programmere visse driftparametre. |
| 4 | Trykknap til overføring af START, STOP/RESET. Trykknappen fungerer kun, når der vælges fra frontpanelet. Tryk på knappen en gang for at starte pumpen, tryk på knappen igen for at standse pumpen. Hvis pumpen standser automatisk ved en fejl, tryk på denne knap en gang for at tilbagestille styreenheden, og yderligere en gang for at starte pumpen igen. |
| 5 | LCD-display med tal og bogstaver: punktmatrice, 2 rader med 16 tegn. |
-

7 Istruktionsbog

Anvendelse



Figur 3 Bagpanelet på Styreenheden TwisTorr 304 FS AG Rack

- | | |
|---|--|
| 1 | Indgangskontakt til logiske signaler (tilslutningskontakten leveres med speciel forbindelsesbro). |
| 2 | Udgangskontakt til logiske signaler og kontrol af pumpens frekvens samt programmerbar analog udgang. |
| 3 | Udtag (24 Vdc til pumpens blæser, vent valve og manometer). |
| 4 | Indgangsmodul til styreenhed omfattende sikringer, strømudtag og ENC filter. |
| 5 | Drejekontakt til indstilling af Profibus adressen. |
| 6 | Profibus (ekstra). |
| 7 | Seriell kontakt til fjernkontrol. |
| 8 | Pumpekontakt. |

Instruktion

Start af styreenheden

Styreenheden startes ved at sætte strømkablet i vægudtaget.

Start af pumpen

Pumpen startes ved at aktivere interlock indgangen og trykke på START-knappen på frontpanelet.

Stop af pumpen

Pumpen stopper ved at trykke på STOP-trykknappen på frontpanelet.

Vedligeholdelse

Styreenhederne i TwisTorr 304 FS AG Rack serien behøver ikke nogen vedligeholdelse. Ethvert indgreb på pumpen skal foretages af autoriseret personale.

Hvis pumpen går i stykker, kan man benytte sig af Agilents reparations-service eller Agilent udvekslingsservice, hvor man kan få en repareret pumpe i bytte for den, der er gået i stykker.

ADVARSEL!

Inden der foretages noget som helst indgreb på styreenheden, skal strømmen førstafbrydes.



Skrøtning af pumpen skal foregå i overensstemmelse med det pågældende lands særlige love.

7 Istruktionsbog

Bortskaffelse

Bortskaffelse

Betydningen af "WEEE" logoet på mærkaterne. Nedenstående symbol anvendes i overensstemmelse med det såkaldte EU-direktiv "WEEE". Symbolet (**kun gældende for EU-landene**) viser, at produktet, som det sidder på IKKE må bortslettes sammen med affald fra private husholdninger eller industriel affald men skal indleveres på en godkendt affaldsstation. Vi opfordrer derfor slutbrugeren til at kontakte leverandøren af anordningen, enten fabrikken eller en forhandler, for igangsættelse af afhentnings- og bortslettesprocessen efter nøje at have kontrolleret betingelserne i salgskontrakten.



Fejlmeddelelser

Når visse fejl opstår, viser styreenheden ved selvdiagnose aktuelle fejl på displayet. De mulige meddelelser listes i følgende tabel.

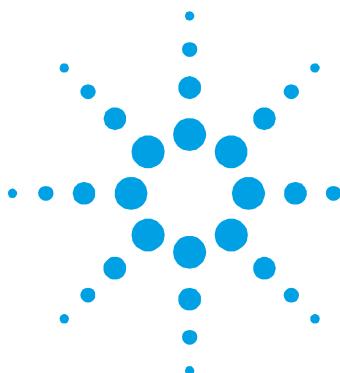
Tab. 1

| MEDDELELSE | BESKRIVELSE | KONTROL |
|---------------------------------|--|---|
| CHECK CONNECTION TO PUMP | Tilslutning mellem pumpe og styreenhed er defekt. eller Temperaturen på pumpen ligger under 0 °C. | Kontrollér at tilslutningskabel mellem pumpe og styreenhed er korrekt monteret samt at ingen afbrydninger forekommer. Tryk to gange på START for at starte pumpen igen. |
| WAITING INTERLOCK | Interlocksignalet findes på kontakt P1 p.g.a. kortslutning mellem stift 3 og stift 8 i kontakten J1 eller p.g.a. at det eksterne interlocksignal er åbent. | Tilbagestil kortslutningen mellem stift 3 og stift 8 på kontakt P1 eller sluk for det eksterne interlocksignal. |
| PUMP OVERTEMP. | Temperaturen på det øverste leje eller pumpen overskrider 60 °C. | Vent på at temperaturen falder til under tærskelværdi. Tryk to gange på START for at starte pumpen igen. |
| CONTROLLER OVERTEMP. | Temperaturen på styreenhedens overskriver 70 °C. eller Temperaturen på styreenhedens køler overskriver 60 °C. | Vent på at temperaturen falder til under tærskelværdi. Tryk to gange på START for at starte pumpen igen. |

7 Istruktionsbog

Fejlmeddelelser

| MEDDELELSE | BESKRIVELSE | KONTROL |
|------------------------|--|---|
| TOO HIGH LOAD | Under normal drift (efter startfasen) forbruger pumpen en større effekt end den programmerede værdi. | Kontrollér om pumpens rotor kan rotere frit. Tryk to gange på START for at starte pumpen igen. |
| SHORT CIRCUIT | Under normal drift (efter startfasen) er udgangseffekten kortsluttet. Strømmen, som optages af pumpen overskridt den programmerede værdi. | Kontrollér forbindelserne mellem pumpe og styreenhed. Tryk to gange på START for at starte pumpen igen. |
| SYSTEM OVERRIDE | Pumpen er blevet standset af et nødstopsignal fra en fjernkontakt. | Frakobl styreenhedens strømkabel og kontrollér årsagen til nødstoppet. Sæt derefter strømkablet i. Tryk to gange på START, for at starte pumpen igen. |
| OVERVOLTAGE | Der er opstået fejl i styreenhedens fødespænding eller styreenheden har fået et falsk signal. | Tryk to gange på START-knappen for at starte pumpen igen. Hvis meddelelsen kommer igen tag kontakt med Agilent for nødvendig vedligeholdelse. |
| POWER FAIL | Der er opstået fejl i sektionen for strømtilførsel til pumpen, styreenheden. | Tag kontakt med Agilent for Vedligeholdelse. |



8

Bruksanvisning

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Översättning av originalinstruktionerna



Agilent Technologies

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Allmän Information

Utrustningen är avsedd för yrkesmässig användning. Användaren bör läsa denna bruksanvisning, samt övrig dokumentation från Agilent före användning av utrustningen. Agilent tar inget ansvar för skador som helt eller delvis orsakats av åsidosättande av instruktionerna, olämplig användning av person utan tillräcklig kunskap, obehörigt bruk av utrustningen eller hantering som strider mot gällande lokala föreskrifter.

Styreheterna i TwisTorr 304 FS AG Rack serien är mikroprocessorstyrda frekvensomvandlare som består av komponenter med fast tillstånd. Styreheterna är försedda med självdianos- och självskyddsfunktion.

Styrehetens egenskaper:

- Front- / fjärr- / seriell styrning
- 24 Vdc styrning av pumpens kylfläkt
- Vent valve styrning
- Avläsning av pumphastighet efter kommando för stopp (avläsning av stopphastighet)
- Avläsning av tryck
- Profibus gränssnitt (option)
- Automatisk inställning av inspänning.

De följande avsnitten innehåller all information som behövs för att garantera operatörens säkerhet under driften. Detaljerade uppgifter finns i bilagan "Technical information".

I bruksanvisningen används följande standard-rubriker:

VARNING!



Varningsmeddelandena informerar operatören om att en speciell procedur eller en viss typ av arbete måste utföras exakt enligt anvisningarna. I annat fall finns risk för svåra personskador.

OBSERVER!

Detta varningsmeddelande visas framför procedurer som måste följas exakt för att undvika skador på maskinen.

OBSERVERA

Detta visar på viktig information i texten.

Förvaring

Följande krav på omgivningsförhållanden gäller vid transport och förvaring av styrenheten:

- temperatur: från -20 °C till +70 °C
- relativ luftfuktighet: 0 – 95 % (utan kondens)

8 Bruksanvisning

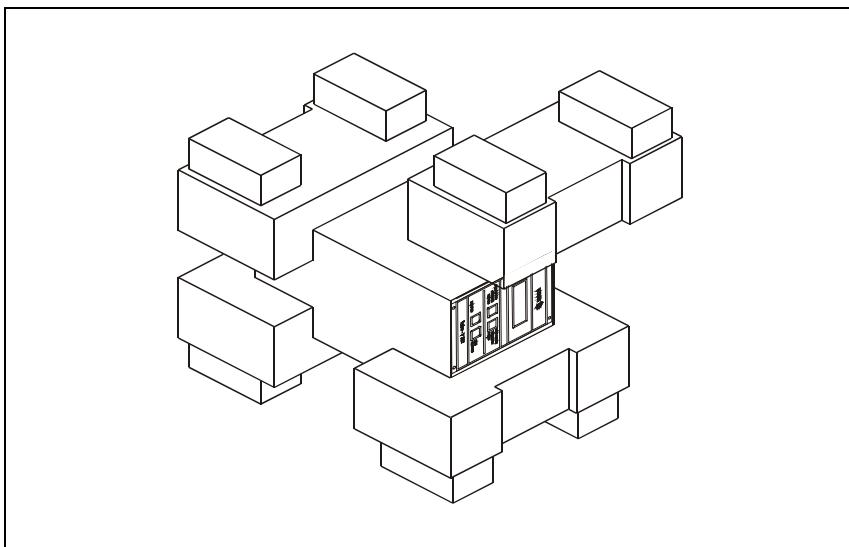
Förberedelser för installation

Förberedelser för installation

Styrenheten levereras i ett särskilt skyddande emballage. Kontakta det lokala försäljningskontoret om emballaget visar tecken på skador som kan ha uppstått under transporten.

Se till att styrenheten inte tappas eller utsätts för stötar vid uppackningen.

Kasta inte packmaterialet i soporna. Materialet är återvinningsbart till 100 % och uppfyller EU-direktiv 85/399 om miljöskydd.



Figur 1 Styrenhetens förpackning

Installation

VARNING!



För användarens säkerhet ska styrenheten, som endast avsetts för inomhus bruk, försörjas med en elkabel med 3 ledare (se tabellen över reservdelar som kan beställas) med en kontakt av internationell godkänd typ. För att undvika risk för elstötar och uppfylla kraven CE, använd alltid denna elkabel och sätt i kontakten i ett jordat eluttag. Spänningen inuti styrenheten kan nå höga värden och förorsaka allvarliga skador och dödsfall. Frånkoppla alltid strömkabeln innan något installations- eller underhållsmoment utförs på styrenheten.

OBSERVERA

Styrenheten kan installeras på ett bord eller inuti ett därtill avsett rack. I samtliga fall måste dock kyluftens kringlopp kunna cirkulera fritt kring apparaten. Installera och använd inte styrenheten i miljöer som utsätts för påverkan från atmosfären (regn, snö, is), damm, aggressiva gaser, och inte heller i explosiv eller brandfarlig miljö.

Följande krav på omgivningsförhållanden gäller vid drift:

- temperatur: från +5 °C till +45 °C
- relativ luftfuktighet: 0 – 95 % (utan kondens)

Beträffande övriga anslutningar och installation av tillbehör hänvisas till avsnittet "Technical Information".

8 Bruksanvisning

Användning

Användning

Detta avsnitt beskriver de viktigaste driftmomenten. För en detaljerad beskrivning samt beträffande moment som involverar anslutningar eller tillbehör hänvisas till avsnittet "Use" i bilaga "Technical Information".

Innan styrenheten används bör samtliga elektriska och pneumatiska anslutningar utföras. Läs bruksanvisningen för den anslutna pumpen.

WARNING!



Försäkra dig om att pumpen står stadigt, om den är installerad på ett bord, detta för att förebygga skador på apparaten och personer. Sätt aldrig igång pumpen, om intagsflänsen varken är kopplad till systemet eller är blockerad på plats med läsflänsen.

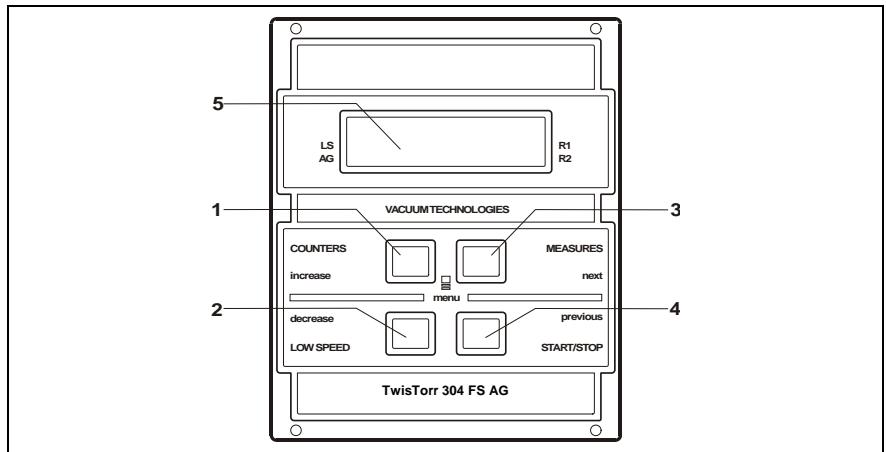
OBSERVERA

Stängningskontakten J1 måste lämnas ansluten med aktuell brygga om ingen extern anslutning utförs. Förvakuumpumpen och TwisTorr 304 FS-pumpen kan fungera samtidigt.

Indikatorer och Kontakterpå Styrenheten

Nedan visas styrenhetens front- och bakpanel. För ytterligare information hänvisas till bilaga "Technical Information".

Beskrivning av frontpanel

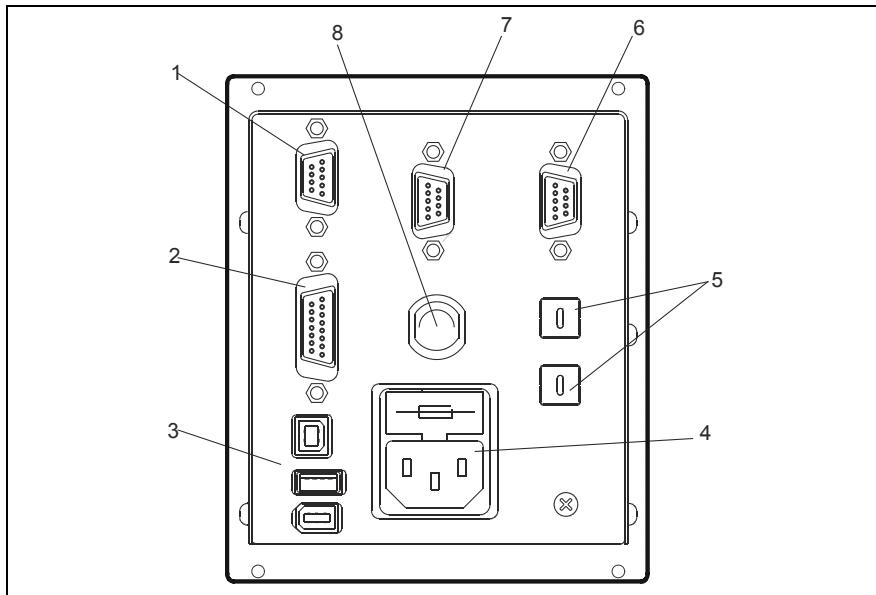


Figur 2 Frontpanelen på Styrenheten TwisTorr 304 FS AG Rack

-
- | | |
|---|---|
| 1 | Tryckknapp för att hämta parametrarna cycle number, cycle time och pump life på displayen. |
| 2 | Tryckknapp för inställning av LOW SPEED driftsätt. Tryckknappen fungerar endast när styrsätt från frontpanelen har valts. Genom att trycka på knappen en gång kommer pumpen att rotera vid "standby" hastighet. Tryck på knappen igen för att gå ur LOW SPEED driftsättet. |
| 3 | Tryckknapp för att hämta parametrarna pump current, pump temperature, pump power och rotational speed på displayen. Tryckknappen fungerar alltid, oavsett det valda styrsättet. När tryckknapparna 3 och 1 hålls samtidigt intryckta i minst 2 sekunder, startas ett program som tillåter att programmera vissa driftparametrar. |
| 4 | Tryckknapp för överföring av START, STOP/RESET. Tryckknappen fungerar endast när styrsätt från frontpanelen har valts. Tryck på knappen en gång för att starta pumpen, tryck på knappen igen för att stanna pumpen. Om pumpen stannat automatiskt i samband med ett fel, tryck på denna knapp en gång för att återställa styrenheten, och ytterligare en gång för att starta om pumpen. |
| 5 | LCD-display med siffror och bokstäver: punktmatrix, 2 rader med 16 tecken. |
-

8 Bruksanvisning

Användning



Figur 3 Bakre panel på Styrenheten TwisTorr 304 FS AG Rack

- | | |
|---|--|
| 1 | Ingångskontakt för logiska signaler (anslutnings-kontakten levereras med speciell stängningsbrygga). |
| 2 | Kontakt för utgående logiksignaler och kontroll av pumpfrekvens plus programmerbar analog utgång. |
| 3 | Utag (24 Vdc för kylfläkt, vent valve och manometer). |
| 4 | Inmodul för styrenhet omfattande säkringar, strömuttag och ENC filter. |
| 5 | Vred för inställning av Profibus adressen. |
| 6 | Profibus (option). |
| 7 | Seriell kontakt för fjärrkontroll. |
| 8 | Pumpkontakt. |

Instruktioner för bruk

Start av styrenheten

Styrenheten startas enkelt genom att sätta strömkabeln i vägguttaget.

Start av pumpen

Vid start av pumpen måste ingången till interlock aktiveras och START-knappen tryckas in på frontpanelen.

Stopp av pumpen

Pumpen stoppas genom att trycka på tryckknappen STOPP på frontpanelen.

Underhåll

Styrenheterna i TwisTorr 304 FS AG Rack serien är under-hållsfria.
Allt servicearbete måste utföras av auktoriserad personal.

Om styrenheten havererar, kontakta Agilent reparationsverkstad eller Agilent utbytesservice, som kan ersätta styrenheten med en renoverad styrenhet.

WARNING!

Innan något arbete utförs på styrenheten måste dess strömförsörjning brytas.



Skrötning av pumpen ska ske enligt gällande lagstiftning.

8 Bruksanvisning

Bortskaffning

Bortskaffning

Betydelse av logotypen "WEEE" på etiketterna. Symbolen som visas nedan har tillämpats i enlighet med CD-direktivet som har betecknats som "WEEE". Den här symbolen (**gäller endast i de länder som tillhör den Europeiska Unionen**) indikerar att produkten på vilken symbolen har applicerats INTE får skaffas bort tillsammans med vanliga hushålls- eller industriavfall, men att ändemot ett differentierat uppsamlingssystem måste upprättas. Vi rekommenderar därför att slutanvändaren tar kontakt med leverantören av anordningen, oberoende om det handlar om moderföretaget eller återförsäljaren, för att kunna starta uppsamlings- och bortskaffningsprocessen, detta efter lämplig kontroll av kontraktsenliga tidsgränser och försäljningsvillkor.



Felmeddelanden

När vissa fel uppstår visar styrenhetens självdiagnoskrets aktuellt felmeddelande på displayen. De möjliga meddelandena listas i följande tabell.

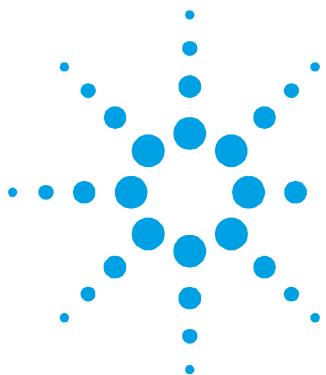
Tab. 1

| MEDDELANDE | BESKRIVNING | ÅTGÄRD |
|---------------------------------|--|--|
| CHECK CONNECTION TO PUMP | Anslutningen mellan pump och styrenhet är defekt. eller också Pumpens temperatur ligger under 0 °C. | Kontrollera att anslutningskabeln mellan pump och styrenhet är ordentligt monterad samt att inget avbrott förekommer. Tryck två gånger på knappen START för att starta om pumpen. |
| WAITING INTERLOCK | Interlock-signalen finns på kontakt P1 på grund av kortslutning mellan stift 3 och stift 8 i kontaktene J1, eller på grund av att den externa interlock-signalen är öppen. | Åtgärda kortslutningen mellan stift 3 och stift 8 på kontakt P1 eller stäng den externa interlock-signalen. |
| PUMP OVERTEMP. | Temperaturen på det övre lagret eller pumpen överskrider 60 °C. | Vänta tills temperaturen sjunker under tröskelvärdet. Tryck två gånger på knappen START för att starta om pumpen. |
| CONTROLLER OVERTEMP. | Temperaturen på styrenhetens överskrider 70 °C. eller också Temperaturen på styrenhetens kylare överskrider 60 °C. | Vänta tills temperaturen sjunker under tröskelvärdet. Tryck två gånger på knappen START för att starta om pumpen. |

8 Bruksanvisning

Felmeddelanden

| MEDDELANDE | BESKRIVNING | ÅTGÄRD |
|------------------------|---|--|
| TOO HIGH LOAD | Strömmen som absorberas av pumpen överstiger det värde som programmerats. | Kontrollera att pumpens rotor kan rotera fritt. Tryck två gånger på knappen START för att starta om pumpen. |
| SHORT CIRCUIT | Under normal drift (efter startmomentet) har utgången kortslutits. | Kontrollera anslutningarna mellan pump och styrenhet. Tryck två gånger på knappen START för att starta om pumpen. |
| SYSTEM OVERRIDE | Pumpen har stannats av en nödstoppsignal från en fjärrkontakt. | Främkoppla styrenhetens strömkabel och kontrollera nödstoppets orsak. Sätt därefter i strömkabeln. Tryck två gånger på knappen START för att starta om pumpen. |
| OVERVOLTAGE | Ett fel i styrenhetens matningsdel har uppstått eller styrenheten har fått en falsk signal. | Tryck två gånger på knappen START för att starta om pumpen. Om meddelandet visas igen, ta kontakt med Agilent för nödvändigt underhåll. |
| POWER FAIL | Fel i sektionen för strömtillförsel till pumpen, styrenheten. | Ta kontakt med Agilent för Underhåll. |



9

Instruksjon Manual

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Oversetting av den opprinnelige samsvarserklæringen



Agilent Technologies

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Generell informasjon

Dette utstyret er beregnet til bruk av profesjonelle brukere. Brukeren bør lese denne brukerveiledningen og all annen informasjon fra Agilent før utstyret tas i bruk. Agilent kan ikke holdes ansvarlig for hendelser som skjer på grunn av manglende oppfølging, selv delvis, av disse instruksjonene, feilaktig bruk av utrenet personell, ikke godkjente endringer av utstyret eller handlinger som på noen måte er i strid med nasjonale bestemmelser. Styreenhetene i TwisTorr 304 FS AG Rack serien er mikroprosessor-styrte frekvensomvendere, som består av komponenter med fast tilstand. Styreenhetene har funksjoner for selvdiagnose og selvbeskyttelse.

Styreenhetens karakteristikk:

- Frontal virksomhet / fjern / seriell
- Igangsetting av kjøleviften på 24 Vdc på pumpen
- Igangsetting av vent valve
- Avlesing av pumpehastighet etter stoppekommando (avlesing av stoppehastighet)
- Avlesing av trykk
- Grensesnitt Profibus (valgfritt)
- Automatisk innstilling av inngangsspenning

De følgende avsnittene inneholder all informasjon som er nødvendig for å sikre brukeren når utstyret er i bruk. For mer detaljert bruk vises det til tillegget "Technical Information".

Denne veiledningen bruker følgende standard-protokoll:

ADVARSEL!



Disse meldingene skal tiltrekke seg brukerens oppmerksomhet til en spesiell fremgangsmåte eller praksis som, hvis den ikke følges, kan medføre alvorlige skader.

FORSIKTIG!

Denne advarselen vises foran fremgangsmåter som, dersom de ikke følges, kan føre til at utstyret skades.

MERK

Merknadene inneholder viktig informasjon som er hentet fra teksten.

Lagring

Når styreenhetene transporteres eller lagres, må følgende forhold være oppfylt:

- temperatur: fra 20 °C til +70 °C
- relativ fuktighet: 0 – 95 % (uten kondens)

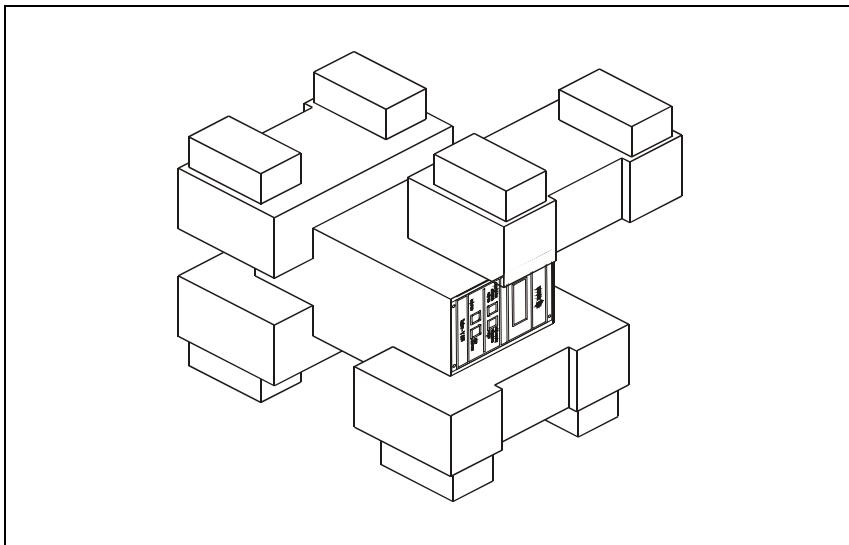
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Forberede installasjonen

Forberede installasjonen

Styreenheten leveres i en spesiell beskyttelsesemballasje. Viser denne tegn på skader som kan ha oppstått under transporten, må du ta kontakt med det lokale salgskontoret.

Når styreenheten pakkes ut, må du passe på at den ikke slippes ned eller utsettes for noen form for støt. Emballasjen må ikke kastes på en ulovlig måte. Alle materialer er 100 % resirkulerbare og er i samsvar med EU-direktiv 85/399 om miljøbeskyttelse.



Figur 1 Styreenhetens emballasje

Installasjon

ADVARSEL!



For å brukerens sikkerhet, er styrenheten Turbo V konstruert kun for bruk innendørs og skal forsynes med strøm ved hjelp av en strømkabel med 3 ledninger (se tabellen med reservedelene som du kan bestille) som har et støpsel som er godkjent på internasjonal nivå. For å unngå risikoen for elektriske støter og oppfylle CE-kavlene, skal du alltid bruke denne strømkabelen og kople den til et uttak med en korrekt jordekopling. Spenningen inne i styreenheten kan nå høye verdier og kan føre til alvorlige skader og dødsfall. Kople alltid strømkabelen fra strømnettet før alle installasjons-eller vedlikeholdsarbeider som utføres på styreenheten.

MERK

Styreenheten kan installeres på et bord eller inne i et passende stativ. Uansett så må kjøleluften kunne sirkulere fritt rundt apparatet. Ikke installér eller bruk styreenheten i miljøer som utsettes for regn, snø eller is, støv, aggressive gasser, eksplosjonsfarlige miljøer eller i miljøer med stor brannfare.

Under bruk må følgende forhold respekteres:

- temperatur: fra +5 °C til +45 °C
- relativ fuktighet: 0 – 95 % (uten kondens)

Når det gjelder andre tilkoplinger og installasjon av ekstrautstyr vises det til avsnittet "Technical Information".

9 Instruksjon Manual

Bruk

Bruk

Dette avsnittet beskriver de viktigste driftsmomentene. For en detaljert beskrivelse samt moment som omfatter tilkoplinger eller ekstra utstyr vises det til avsnittet "Use" i vedlegget "Technical Information". Før styreenheten tas i bruk bør samtlige elektriske og pneumatisk tilkoplinger gjøres. Les brukerveiledningen for pumpen som er tilkoplet.

ADVARSEL!



Dersom pumpen er installert på et bord må du kontrollere at pumpen står støtt. Dette er viktig for å forhindre skader på apparatet og på personer.

Dersom inngangsflensen hverken er tilkoplet systemet eller dersom den er blokkert av låseflensen må pumpen aldri startes opp.

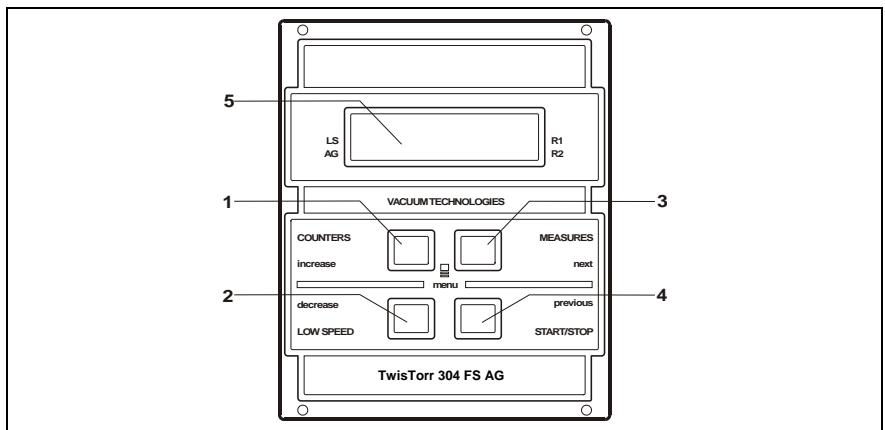
MERK

Lukkekontakten J1 må være tilkoplet aktuell brygge dersom det ikke skjer en annen ekstern tilkobling. Forvakuum-pumpen og TwisTorr 304 FS-pumpen må fungere sammen.

Indikatorer og Kontakter på Styreenheten

Nedenunder er frontpanelet og bakpanelet på styreenheten illustrert.
For ytterligere informasjon vises det til avsnittet "Accessories and Spare Parts" i vedlegget "Technical Information".

Beskrivelse av frontpanelet

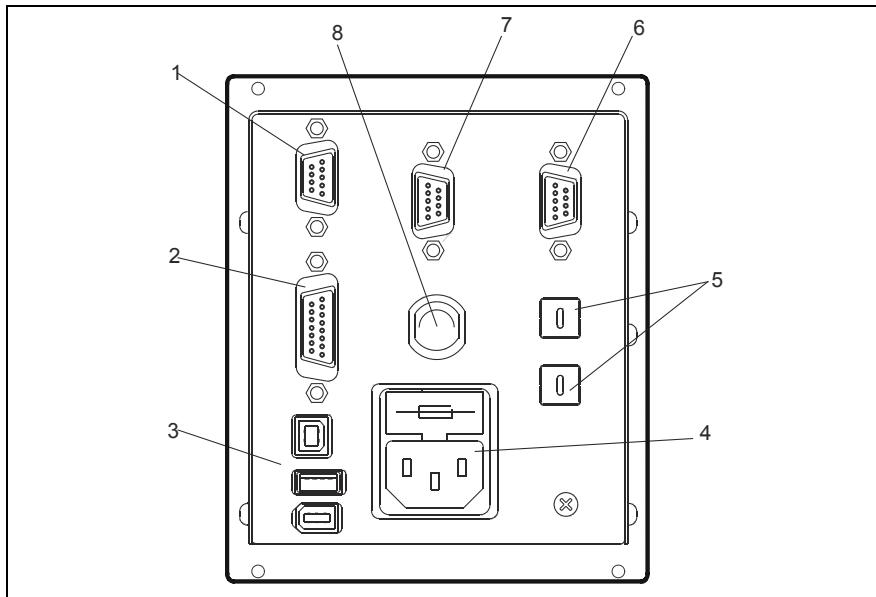


Figur 2 Frontpanelet på styreenheten TwisTorr 304 FS AG Rack

-
- | | |
|---|--|
| 1 | Trykknapp for å vise parametrene cycle number, cycle time og pump life på displayet. |
| 2 | Trykknapp for innstilling av LOW SPEED drift. Trykknappen fungerer kun når det er valgt styremåte fra frontpanelet. Ved å trykke på knappen én gang, roterer pumpen i "stand-by" hastighet. Trykk på knappen igjen for å gå ut av LOW SPEED drift. |
| 3 | Trykknapp for å vise parametrene pump current, pump temperature, pump power og rotational speed på displayet. Trykknappen fungerer alltid, uavhengig av styremåten. Når trykknappene 3 og 1 trykkes ned samtidig i minst to sekunder, startes et program som tillater programmering av visse driftsparametre. |
| 4 | Trykknapp for overføring av START, STOP/RESET. Trykknappen fungerer kun når det er valgt styremåte fra frontpanelet. Trykk på knappen en gang for å starte pumpen, trykk på knappen igjen for å stanse pumpen. Har pumpen stanset automatisk i forbindelse med en feil, trykk en gang på denne knappen for å tilbakestille styreenheten, en gang til for å startet pumpen. |
| 5 | LCD-display med siffer og bokstaver: punkt-matrise, 2 rader med 16 tegn. |
-

9 Instruksjon Manual

Bruk



Figur 3 Bakpanelet på styreenheten TwisTorr 304 FS AG Rack

- | | |
|---|--|
| 1 | Inngangskontakt for logiske signaler (tilkoplings-kontakten leveres med spesiell lukkebrygge). |
| 2 | Port for logiske signaler ut og monitoring av pumpefrekvens og analogisk utgang programmerbar. |
| 3 | Port for mating ut (24 Vdc på kjølevifte på pumpen, vent valve og kaliber). |
| 4 | Inngangsmodul til mating av styreenheten som består av sikringer, matekontakt og ENC-filter. |
| 5 | Dreiebryter for innstilling av Profibusadresse. |
| 6 | Profibus (valgfritt). |
| 7 | Serialport for fjernkontroll. |
| 8 | Pumpeport. |

Instruksjoner for bruk

Starte styreenheten

Styreenheten startes ved å sette strømkabelen i veggkontakten.

Starte pumpen

For å starte pumpen må man preparere interlockinngangen og trykke på knappen START på frontpanelet.

Stoppe pumpen

Pumpen stoppes ved å trykke på knappen STOPP på frontpanelet.

Vedlikehold

TwisTorr 304 FS AG Rack seriens styreenheter er vedlikeholdsfree. Alt arbeid på styreenheten må kun utføres av autorisert personell.

Dersom styreenheten stanser, må du ta kontakt med Agilents reparasjonsservice eller med Agilents avanserte bytteservice, som kan tilby overhalte styreenheter til erstatning for den ødelagte styreenheten.

ADVARSEL!

Før noe arbeid utføres på styreenheten, må den frakoples strømnettet.



Dersom en styreenhet skal kasseres, må dette skje i henhold til nasjonale bestemmelser.

Eliminering

Betydelsen av symbolet på logo "WEEE" på etikettene. Symbolet nedenunder som finnes, er anvendt i henhold til EC-direktiv kalt "WEEE". Dette symbolet (**som bare gjelder for land i Det europeiske fellesskap**), viser at produktet som det sitter på, IKKE må behandles som vanlig hus-industriavfall, men må legges i kildesortering. Derfor oppfordrer man den sluttelige brukeren av anordningen å henvende seg til leverandøren av anordningen, som kan være et firma eller en forhandler, som sørger for oppsamling og eliminering etter å ha kontrollert avtal og betingelser i kjøpekontrakten.



Feilmeldinger

Når det oppstår visse feil viser selvdiagnosekretsen i styreenheten den aktuelle feilmeldingen i displayet. De aktuelle feilmeldingen fremgår av tabellen nedenfor.

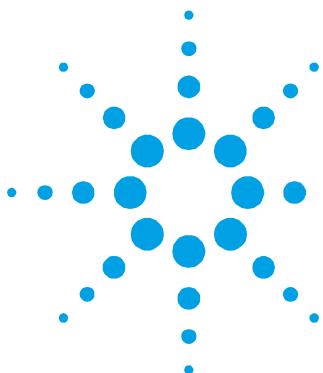
Tab. 1

| MELDING | BESKRIVELSE | FORHOLDSREGEL |
|---------------------------------|--|--|
| CHECK CONNECTION TO PUMP | Defekt kopling mellom pumpe og styreenhet. Eller Pumpen har en temperatur under 0 °C. | Kontroller at tilkoplingskabelen mellom pumpe og styreenhet er skikkelig montert samt at kabelen ikke er skadet. Trykk to ganger på knappen START for å starte pumpen. |
| WAITING INTERLOCK | Låsesignalet for kontakt P1 skyldes en kortslutning mellom stift 3 og stift 8 i kontakten J1 eller fordi det eksterne låsesignalet er åpent. | Tilbakestill kortslutningen mellom stift 3 og stift 8 på kontakt P1 eller steng det eksterne låsesignalet. |
| PUMP OVERTEMP. | Temperaturen på det øvre lageret eller pumpen er over 60 °C. | Vent til temperaturen synker under terskelverdien. Trykk to ganger på knappen START for å starte pumpen. |
| CONTROLLER OVERTEMP. | Temperaturen på styreenhetens er over 70 °C. Eller Temperaturen på radiatoren på styreenheten er over 60 °C. | Vent til temperaturen synker under terskelverdien. Trykk to ganger på knappen START for å starte pumpen. |

9 Instruksjon Manual

Feilmeldinger

| MELDING | BESKRIVELSE | FORHOLDSREGEL |
|------------------------|--|---|
| TOO HIGH LOAD | Den absorberte strømmen av pumpen er større enn den som er programmert | Kontroller om pumpens rotor kan rotere fritt. Trykk to ganger på knappen START for å starte pumpen. |
| SHORT CIRCUIT | Ved normal drift (etter startmomentet) er utgangen kortsluttet. | Kontroller tilkoplingene mellom pumpe og styreenhet. Trykk to ganger på knappen START for å starte pumpen. |
| SYSTEM OVERRIDE | Pumpen har stanset av et nødstoppsignal en fra fjernkontakt. | Kople fra styreenhetens strømkabel og finn frem til årsaken til nødstoppen. Kople deretter maskinen til strømnettet igjen. Trykk to ganger på knappen START for å starte pumpen. |
| OVERVOLTAGE | Det har oppstått en feil i styreenhetens matedel, eller så har styreenheten fått et falskt signal. | Trykk to ganger på knappen START for å starte pumpen igjen. Vises feilmeldingen om igjen, må du ta kontakt med Agilent for nødvendig vedlikehold. |
| POWER FAIL | Feil på matesektoren på pumpen, på styreenheten. | Henvend deg til Agilent for vedlikehold. |



10 Ohjekäsikirja

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Alkuperäisen ohjeiden käänös



Agilent Technologies

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Yleisiä tietoja

Tämä laite on tarkoitettu ammattimaiseen käyttöön. Ennen laitteen käyttöönottoa käyttäjän tulee lukea huolellisesti mukana seuraava käyttöohje sekä kaikki muut Agilentin toimittamat lisätiedot. Agilent ei vastaa seurausista, jotka johtuvat laitteen käyttöohjeiden täydellisestä tai osittaisesta laiminlyömisestä, ammattitaidottomien henkilöiden suorittamasta laitteen virheellisestä käytöstä, valtuuttamattomista toimenpiteistä tai maakohtaisten säädösten ja normien vastaisesta käytöstä.

Sarjan TwisTorr 304 FS AG Rack valvojat ovat mikroprosessorien valvomia kiinteistä materiaaleista tehtyjä taajuudenmuuntimia, jotka kykenevät itsemäärittelyyn ja itsesuojaukseen.

Valvojan ominaisuudet:

- Käytettävyys etupaneelista / etäkäyttö / sarjakäyttö
- Pumpun jäähdtyssiivikon 24V tasavirtaohjaus
- Vent valve ohjaus
- Pumpun nopeuden luku pysäytyskäskyn jälkeen (pysäytysnopeuden luku)
- Paineen luku
- Profibus-liitäntä (valinnainen)
- Automaattinen sisääntulon jännitteiden asetus.

Seuraavilla sivuilla on luettavissa tarpeelliset tiedot laitteen käyttäjän turvallisuuden takaamiseksi laitteen käytön aikana. Yksityiskohtaiset tiedot löytyvät liitteestä "Technical Information".

Tämä ohjekirja käyttää seuraavia merkintöjä:

VAROITUS!



Vaara-merkinnät saavat käyttäjän huomion kiinnitymään erityisiin toimintotapoihin, joiden seuraamatta jättäminen voi aiheuttaa vakavia henkilövaurioita.

HUOMIO!

Huomio-merkinnät varoittavat toiminnoista, joiden laiminlyönti voi johtaa laitteen vaurioitumiseen.

HUOM

Huomiot sisältävät tärkeää tekstillä otettua tietoa.

Varastointi

Valvojan kuljetuksen ja varastoinnin aikana tulevat seuraavat ympäristövaatimukset olla täytettyinä:

- lämpötila: -20 °C ja +70 °C asteen välillä
- suhteellinen kosteus: 0 – 95 % (ilman lauhdetta)

10 Ohjekäsikirja

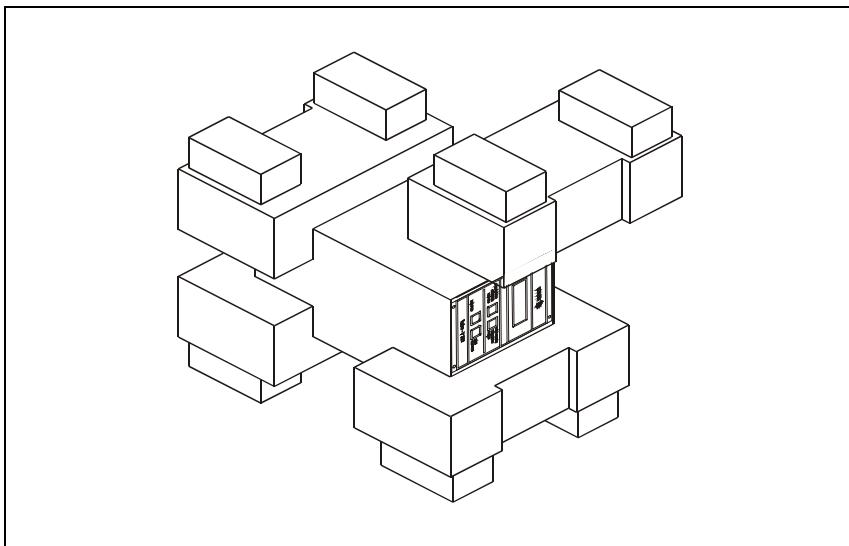
Valmistelut asennusta varten

Valmistelut asennusta varten

Valvoja toimitetaan erityisessä suojaavassa pakkauksessa. Mikäli havaitsette mahdollisesti kuljetuksen aikana tapahtuneita vaurioita, ottakaa yhteys paikalliseen myyntitoimistoon.

Pakkauksen purkamisen yhteydessä huolehtikaa, että valvoja ei pääse putoamaan ja välittäkää sen joutumista iskujen kohteeksi.

Älkää jättäkö pakkausta ympäristöön. Materiaali voidaan kokonaisuudessaan kierrättää ja se vastaa EU:n 85/399 direktiiviä ympäristön suojelesta.



Kuva 1 Valvojan pakkaus

Asennus

VAROITUS!



Käyttäjän turvallisuuden takaamiseksi-laitte on tarkoitettu vain sisätiloissa käytettäväksi ja sitä pitää syöttää 3:lla johtimella varustetulla sähköjohdolla (ks. tilattavissa olevien vaihto-osien taulukosta), jonka tulee olla varustettu kansainvälisesti hyväksyttyllä sähkötöpselillä. Sähköiskuvaaran välttämiseksi ja annettujen EC-määräysten mukaisesti käytä aina tämänlaista sähköjohtoa ja aseta töpseli asianmukaisesti maadoitettuun sähköpisteeseen. Valvojan sisällä syntyy korkeajännitettä, joka voi aiheuttaa vakavia vammoja tai jopa kuoleman. Ennen minkä tahansa valvojan huolto- tai asennustoimenpiteen suorittamista, irrottakaa valvoja sähköverkosta.

HUOM

Valvoja voidaan asentaa pöydän päälle tai siihen tarkoitukseen sopivan hyllyn sisään. Joka tapauksessa huolehtikaa siitä, että riittävä jäähdytysilma pääsee vapaasti kiertämään laitteen sisällä. Älkää asentako ja/tai käyttäkö valvoja tiloissa, joissa se joutuu alittiaksi ympäristötekijöille (sade, jää, lumi), pölylle, syövyttäville kaasuille, räjähdyssalttiissa ympäristössä tai tiloissa, joissa paloriski on suuri.

Toiminnan aikana tulee noudattaa seuraavia ympäristöolosuhteita koskevia säätöjä:

- lämpötila: 5 °C ja +45 °C välillä
- suhteellinen kosteus: 0 - 95% välillä (ilman lauhdetta)

Muiden kytkentöjen ja valinnaisten lisälaitteiden asennusten suorittamiseksi, katsokaa kappaletta "Technical Information".

Käyttö

Tähän kappaleeseen on kirjattu tärkeimmät käyttötoimenpiteet. Tarkempia lisätietoja sekä kytkentöjä ja valinnaisia lisälaitteita koskevien toimenpiteiden suorittamista käsitleviä tietoja löydätte kappaleesta "Käyttö", joka on "Tekniset tiedot"- kappaleen liitteenä. Ennen valvojan käyttöä suorittakaa kaikki sähkökytkennät seuraten kytkettävän pumpun käyttöohjeita.

VAROITUS!



Mikäli pumppu on asetettu pöydälle, varmistakaa että se on vakaa. Nämä vältytään vammoilta ihmisille sekä itse koneelle. Älkää myöskään käyttää pumppua, mikäli sisäantulon laippaa ei ole kytetty järjestelmään tai mikäli sitä ei ole suljettu laippasulkijalla.

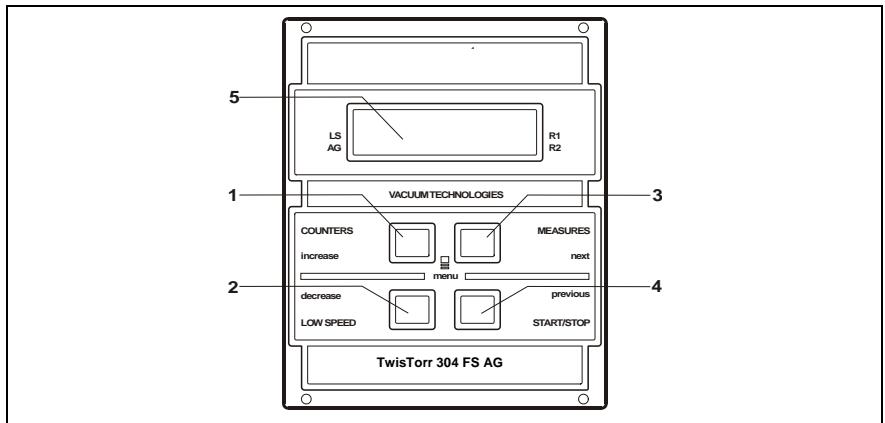
HUOM

Sulkimen J1 liitin tulee jättää yhdyskaapelilla kytkeyksi, mikäli ulkoisia kytkentöjä ei suoriteta. Esityhjiöpumppu ja TwisTorr 304 FS-pumppu voidaan käynnistää samanaikaisesti.

Valvojan Säätimet, Osoittimet ja Liittimet

Seuraavassa on kuvattu valvojan etu- ja takapaneelit. Tarkempia lisätietoja saatte kappaleesta "Technical Information".

Etupaneelin kuvaus

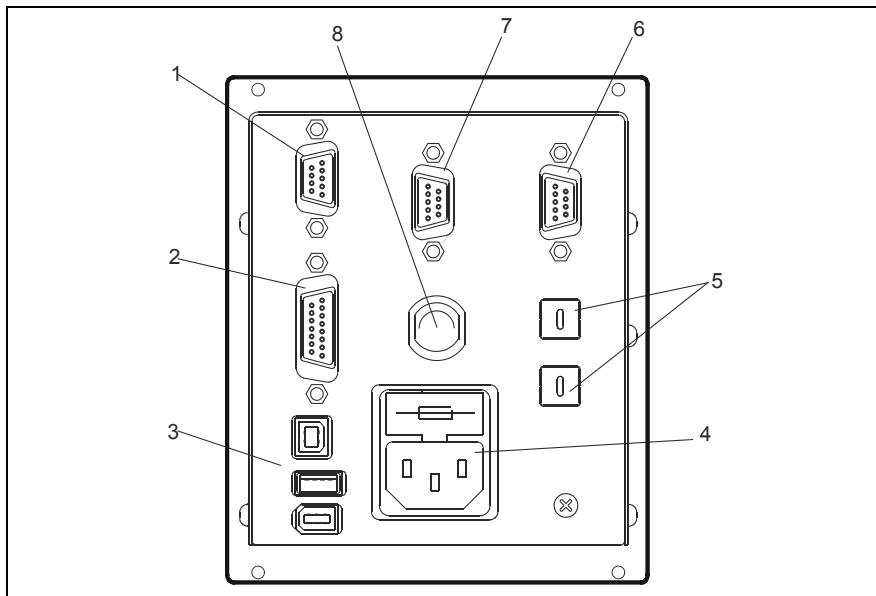


Kuva 2 Valvojen TwisTorr 304 FS AG Rack etupanelit

-
- | | |
|---|---|
| 1 | Painonappi, jonka avulla näyttöön saadaan kiertonumero, kiertoaika ja pumpun toiminta. |
| 2 | LOW SPEED -moodin valintaan käytettävä painonappi. Se aktivoituu vain silloin, kun etupaneelin toiminta-moodi on valittu. Yhden kerran painettaessa pumppu kiertää valmiustila-nopeudella. Painonappia uudelleen painettaessa LOW SPEED- modi disaktivoituu. |
| 3 | Painonappi, jonka avulla näyttöön saadaan pumpun sähkövirran, pumpun lämpötilan, pumpun tehon ja kiertonopeuden parametrit. Tämä on aina aktiivi riippumatta valitusta toimintamoodista. Painamalla painonappeja 3 ja 1 vähintään kahden sekunnin ajan, aktivoituu ohjelma, jonka avulla on mahdollista ohjelmoida joitakin toimintaparametreja. |
| 4 | START, STOP/RESET (KÄYNNISTYKSEN, PYSÄTYKSEN/UUDELLEN ASETUKSEN) käskeyjen painonappi. Se aktivoituu vain silloin, kun etupaneelin toiminta-moodi on valittu. Yhden kerran painettaessa käynnistysvaihe aktioituu. Uudelleen painettaessa pumppu pysähtyy. Mikäli pumppu on toimintahäiriön vuoksi pysähtynyt automaatisesti, painakaa painonappia yhden kerran, jolloin valvoja saadaan asetettua uudelleen. Toisen kerran painonappia painettaessa pumppu käynnistyy. |
| 5 | Kirjainnumerollinen digitaalinäyttö: pistematriisi, 2 riviä x 16 merkkiä. |
-

10 Ohjekäsikirja

Käyttö



Kuva 3 Valvojen TwisTorr 304 FS AG Rack takapaneli

- | | |
|---|--|
| 1 | Logiikkasegnaalien tulokytktä (pariliittimet toimitetaan niihin sopivilla yhdyskaapelisulkijalla). |
| 2 | Lähtevien logiikkasignaalien ja pumpun taajuuden tarkailun sekä ohjelmoitavan analogisen ulostulon liitin. |
| 3 | Virran ulostuloliitin (24 V tasavirta pumpun jäähdytyssiivikolle, vent valve ja kaliiperille). |
| 4 | Valvojan tulovirran moduuli, johon sisältyvät sulakkeet, virtapistoke ja suodatin ENC. |
| 5 | Profibus-osoitteiden asettamiseen tarkoitettu kiertokytkin. |
| 6 | Profibus (valinnainen). |
| 7 | Etäohjauksen sarjaliitintä. |
| 8 | Pumpun liitin. |

Käyttötoimenpiteet

Valvojan käynnistys

Valvoja käynnistyy asetettaessa virtakaapeli pistorasiaan.

Pumpun käynnistys

Käynnistääksenne pumpun pitää ottaa käyttöön interlock-sisääntulo ja painaa etupaneelin painiketta START.

Pumpun pysäytäminen

Pumppu pysähtyy painettaessa etupaneelissa olevaa STOP-painonappia.

Huolto

TwisTorr 304 FS AG Rack sarjan valvojat eivät kaipaa minkäänlaista huoltoa. Mahdolliset valvojaan tehtävät toimenpiteet tulee jättää aina valtuutetun henkilön tehtäviksi.

Toimintahäiriön sattuessa on mahdollista käyttää Agilentin korjauspalvelua tai "Agilent advance exchange service" -palvelua, jolloin on mahdollista vaihtaa rikkoontunut valvoja ladattuun valvojaan.

VAROITUS!

Ennen minkä tahansa valvojaan tehtävän toimenpiteen suorittamista irrottakaa sähkökaapeli pistorasiasta.



Mikäli valvoja täytyy romuttaa, toimikaa sen hävittämisessä kansallisten säädösten ja normien määräämällä tavalla.

Hävittäminen

Pakausmerkinnöissä olevan WEEE-logon merkitys. Alla näkyvä merkki on lisätty pakaukseen EY:n ns. WEEE-direktiivin mukaisesti. Merkki (**koskee ainoastaan Euroopan Unionin jäsenmaita**) tarkoittaa, että tuotetta EI saa hävittää tavallisen kotitalous- tai teollisuusjätteen mukana, vaan se on toimitettava erilliseen keräyspisteeseen. Loppukäyttäjää kehotetaan sen vuoksi ottamaan keräys- ja hävittämisperiaatteita varten yhteyttä laitteen toimittajaan, olipa se sitten laitteen valmistaja tai jälleenmyyjä, tarkastettuaan ensin kaupan sopimusehdot.



Vianetsintä

Joidenkin toimintahäiriöiden yhteydessä valvojan itsemäärittelypiiri analysoi virheen, joka näkyy viesteinä, jotka on kuvailtu seuraavassa taulukossa.

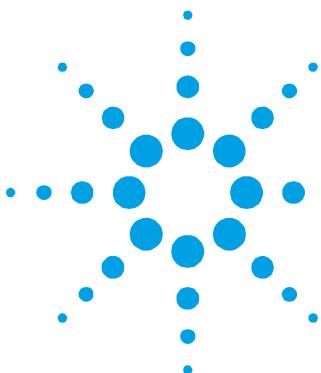
Tab. 1

| VIESTI | VIKA | KORJAUSTOIMENPITEET |
|---------------------------------|---|--|
| CHECK CONNECTION TO PUMP | Toimintahäiriö pumpun ja valvojan liitännässä. Tai Pumpun lämpötila on alempi kuin 0 °C. | Tarkistakaa että pumpun ja valvojan välinen yhteyskaapeli on hyvin kiinnitetty päästään eikä sen varrella ole esteitä. Painakaa kaksi kertaa painonappia START jolloin pumppu käynnisty. |
| WAITING INTERLOCK | Lukitussignaali (interlock) liittimessä P1 on aktiivinen johtuen liittimen J1 neulojen 3 ja 8 välillä tapahtuneen oikosulun keskeytyksestä tai ulkoisen lukitussignaalin (interlock) avautumisesta. | Palauttakaa liittimen P1 neulojen 3 ja 8 välinen oikosulku tai sulkekaa ulkopuolin lukitussignaali (interlock). |
| PUMP OVERTEMP. | Ylemmän laakerin tai pumpun lämpötila on ylittänyt 60 °C. | Odottakaa että lämpötila putoaa kynnsarvon alapuolelle. Painakaa painonappia START kaksi kertaa jolloin pumppu käynnisty. |
| CONTROLLER OVERTEMP. | Valvojan muuntajan lämpötila on 70 °C. Tai Valvojan lämmittimen lämpötila on korkeampi kuin 60 °C. | Odottakaa, että lämpötila putoaa kynnsarvon alapuolelle. Painakaa painonappia START kaksi kertaa jolloin pumppu käynnisty. |

10 Ohjekäsikirja

Vianetsintä

| VIESTI | VIKA | KORJAUSTOIMENPITEET |
|------------------------|--|--|
| TOO HIGH LOAD | Pumpun absorptiovirta ylittää ohjelmoidun arvon. | Tarkistakaa, että pumpun roottori pyörii vapaasti. Painakaa painonappia START kaksi kertaa jolloin pumppu käynnistyy. |
| SHORT CIRCUIT | Normaalityöskentelyn aikana (käynni-styksen jälkeen) poistoliitin on oikosulussa. | Tarkistakaa pumpun ja valvojan välinen liitos. Painakaa painonappia START kaksi kertaa jolloin pumppu käynnistyy. |
| SYSTEM OVERRIDE | Kaukokytkimestä tuleva hälytyssignaali on pysäytänyt pumpun. | Irroittakaa valvojan sähkökaapeli verkkovirrasta ja korjatkaa hälytyksen aiheuttaja. Kytkekää sähkökaapeli uudelleen ja painakaa painonappia START kaksi kertaa jolloin pumppu käynnistyy. |
| OVERVOLTAGE | Valvojan sähkövirran syöttössä on ilmennyt ongelma tai valvojan saama signaali on väärä. | Painakaa painonappia START kaksi kertaa, jolloin pumppu käynnistyy. Mikäli viesti näkyy uudelleen käänkyää Agilent huoltopalvelun puoleen. |
| POWER FAIL | Vika pumpun, valvojan virransyöttöösassa. | Käänkyää Agilent-yhtiön puoleen Huoltoa tarvittaessa. |



11

Felhasználói Kézikönyv

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Az eredeti utasítás fordítása



Agilent Technologies

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Általános információk

Ez a berendezés hivatásos használatra tervezett. A felhasználónak, a berendezés használatát megelőzően, gondosan el kell olvasnia e felhasználói kézikönyvet és minden egyéb, a Agilent által szolgáltatott információt. A Agilent elhárít magától minden esetleges felelősséget, mely a felhasználói utasítások teljes vagy részleges figyelmen kívül hagyásához, a nem kiképzett személyzet által történő nem megfelelő használathoz, meghatalmazás nélküli beavatkozásokhoz, vagy a specifikus nemzeti irányelvekkel ellentétes használathoz kötődik.

A TwisTorr 304 FS AG Rack sorozatú vezérlők mikroprocesszoros vezérlésű, szilárdtest-elemekkel realizált frekvencia-átalakítók, öndiagnosztikai és saját védelmi képességekkel.

A vezérlő tulajdonságai:

- Előlapról történő / táv- / soros vonalon keresztüli működtetés
- A szivattyú hűtőventillátorának 24 Vdc feszültségen történő vezérlése
- A vent valve vezérlése
- A szivattyú sebességének leolvasása a leállítási parancsot követően (leállási sebesség leolvasása)
- A nyomásérték leolvasása
- Profibus illesztő (opcionális)
- A bemeneti feszültség automatikus beállítása.

Az elkövetkező szakaszok tartalmazzák mindeneket az ismereteket, melyek a kezelő biztonságát hivatottak garantálni a berendezés használata során. Részletes információk találhatók a "Technical Information" című mellékletben.

E kézikönyv az alábbi megegyezésszerű jelöléseket alkalmazza:

VESZÉLY!



A veszélyt jelző üzenetek olyan eljárásra vagy specifikus tevékenységre hívják fel a kezelő figyelmét, melyek, ha nem megfelelő módon kerülnek végrehajtásra, súlyos személyi sérüléseket okozhatnak.

FIGYELEM!

A figyelmeztető üzenetek azon eljárások előtt kerülnek megjelenítésre, melyek figyelmen kívül hagyása a berendezés károsodásához vezethet.

MEGJEGYZÉS

A megjegyzések fontos, a szövegből kivonatolt információkat tartalmaznak.

Tárolás

A vezérlők szállítása és tárolása során az alábbi környezeti feltételeket kell biztosítani:

- hőmérséklet: -20 °C és +70 °C között
- relatív nedvességtartalom: 0 – 95 % (nem lecsapódó).

11 Felhasználói Kézikönyv

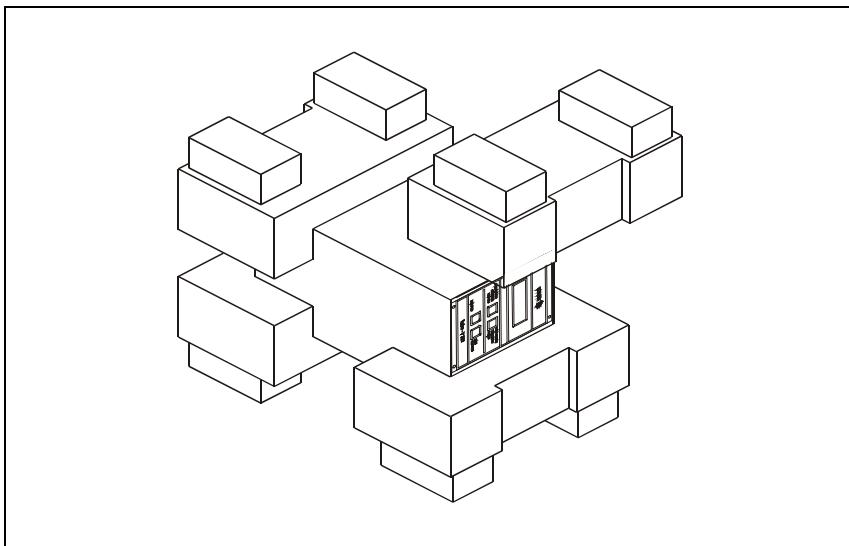
A telepítésre való előkészítés

A telepítésre való előkészítés

A vezérlő speciális védőcsomagolásban kerül leszállításra; ha ez károsodás jeleit mutatja, melyek a szállítás során keletkezhettek, kapcsolatba kell lépni a helyi forgalmazó irodával.

A kicsomagolás során különleges figyelmet kell fordítani arra, hogy a vezérlő le ne essék, és ne szenvedjen ütődéseket.

A csomagolóanyagot nem szabad szétszórni a környezetben. Az anyag teljes mértékben újrafelhasználható, s megfelel a környezetvédelemmel kapcsolatos EGK 85/399-es irányelvnek.



Ábra 1 számú vezérlők csomagolása

Telepítés

VESZÉLY!



A kizárálag beltéri használatra tervezett vezérlő táplálásához, a felhasználó biztonságáért érdekében, nemzetközileg elfogadott típusú csatlakozódugóval ellátott három erű vezetéket kell használni (lásd a rendelhető cserealkatrészek táblázatát). Az áramütések elkerülése és a EK követelményeinek a kielégítése érdekében minden ilyen kábelt kell használni, a csatlakozódugót egy megfelelő földelésű csatlakozóaljzatba dugva. A vezérlő belsejében nagyfeszültségek alakulnak ki, melyek súlyos károkat vagy halált okozhatnak. A vezérlő bármely telepítési vagy karbantartási műveletének megkezdése előtt ki kell húzni a hálózati csatlakozót.

MEGJEGYZÉS

A vezérlő telepítésre kerülhet egy asztalon, vagy egy megfelelő rack belsejében. minden esetben szükséges azonban, hogy a hűtőlevegő szabadon áramolhasson a berendezés belsejében. A vezérlőt nem szabad léggöri hatásoknak (eső, fagy, hó) kitett, poros, maró hatású gázt tartalmazó, robbanás- vagy fokozottan tűzveszélyes környezetben telepíteni vagy használni.

Üzem közben az alábbi környezeti feltételeket kell biztosítani:

- hőmérséklet: +5 °C és +45 °C között;
- relatív nedvességtartalom: 0 – 95 % (nem lecsapódó).

A többi összekötéssel és az opcionális kiegészítő felszerelések telepítésével kapcsolatosan lásd a "Technical Information" című alfejezetet.

11 Felhasználói Kézikönyv

Használat

Használat

Ebben a szakaszban a fontosabb működési eljárások kerülnek ismertetésre. További részletek és az összekötéseket vagy az opcionális elemeket érintő eljárások találhatók a "Technical Information" melléklet "Use" című szakaszában.

A vezérlő használata előtt valamennyi elektromos és pneumatikus összeköttetést létre kell hozni, és figyelembe kell venni a csatlakoztatott szivattyú kézikönyvét.

VESZÉLY!



Abban az esetben, ha a szivattyú egy asztalon került elhelyezésre, a személyekben és a berendezésben való károk elkerülése érdekében, biztosítani kell az asztal stabilitását. Soha nem szabad a szivattyút a bementi peremnek a rendszerhez való csatlakoztatása, vagy a záró peremmel való lezárása nélkül üzemeltetni.

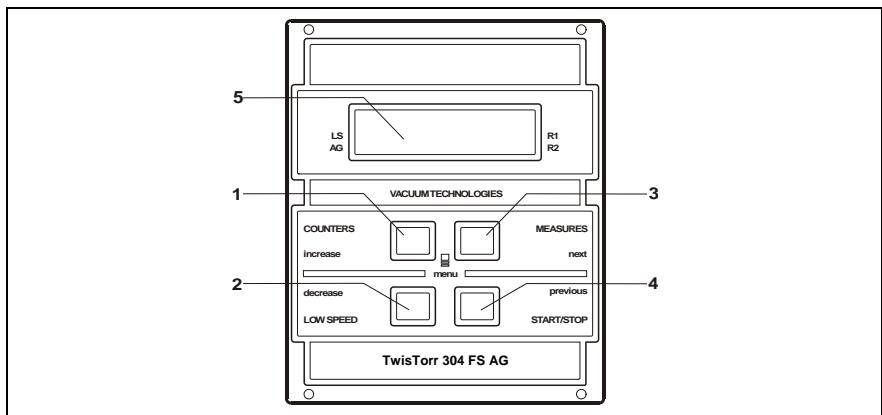
MEGJEGYZÉS

A J1 lezáró csatlakozó össze kell maradjon kötve a megfelelő átkötéssel (jumper), ha nincs semmiféle külső összeköttetés. Az elő-vákuum és a TwisTorr 304 FS szivattyú egyidejűleg is be lehetnek kapcsolva.

A vezérlő parancsai, kijelzői és csatlakozói

Az alábbiakban bemutatásra kerül a vezérlő elő- és hátlapja. További részletek találhatók a "Technical Information" című szakaszban.

Az előlap leírása

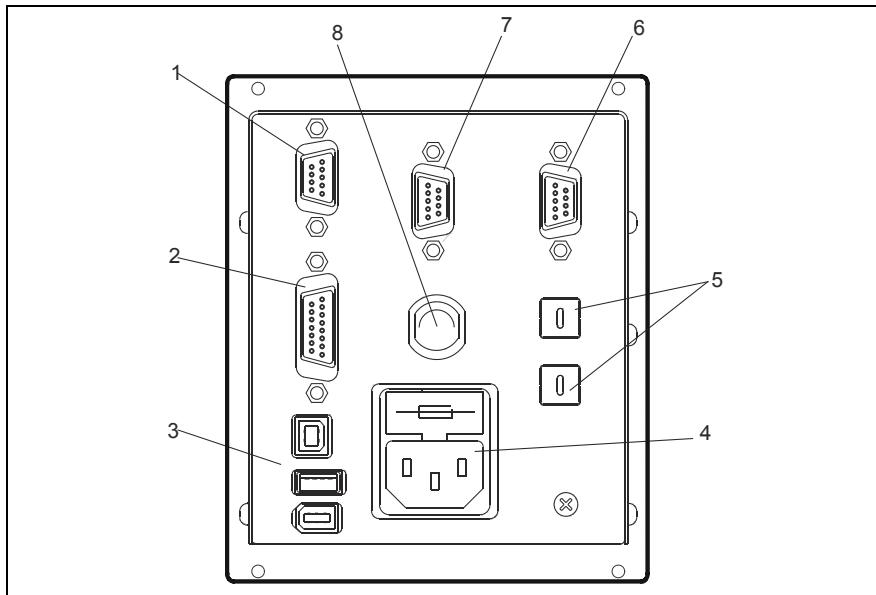


Ábra 2 A TwisTorr 304 FS AG Rack számú vezérlő előlapja

-
- 1 Nyomógomb a paramétereknek: ciklusszám, ciklusidő, szivattyú élettartama, a kijelzőre való lehívására.
- 2 A LOW SPEED (kis sebesség) üzemmód kiválasztására szolgáló nyomógomb. Csak akkor aktív, amikor az előlapról a parancsmód ki lett választva. Egyszer megnyomva, a szivattyú "stand-by" sebességgel forog. Még egyszer megnyomva, a LOW SPEED mód kikapcsolásra kerül.
- 3 Nyomógomb a paramétereknek: szivattyúáram, a szivattyú hőmérséklete, szivattyúteljesítmény és a forgási sebesség kijelzőre való lehívására. Mindig aktív, függetlenül a kiválasztott üzemmódtól. A 3-as és 1-es nyomógombot együtt legalább 2 másodpercig nyomva tartva, egy program kerül aktiválásra, melynek segítségével néhány üzemi paraméter programozható.
- 4 Nyomógomb a START, STOP/RESET parancsok indítására. Csak akkor aktív, amikor az előlapról a parancsmód ki lett választva. Egyszer megnyomva az indítási fázis kerül aktiválásra; még egyszer megnyomva a szivattyú leállításra kerül. Ha a szivattyú valamely hiba következtében automatikusan leáll, ezt a nyomógombot kell megnyomni; az első megnyomásra a vezérlő nullázódik (reset), a másodikra a szivattyú újraindul.
- 5 Folyadékkristályos alfanumerikus kijelző: pontmátrixos, 2 sor x 16 karakter.
-

11 Felhasználói Kézikönyv

Használat



Ábra 3 A TwisTorr 304 FS AG Rack -AG számú vezérlok hátlapja

- | | |
|---|---|
| 1 | Logikai jelek bemeneti csatlakozója (az összekötő csatlakozó megfelelő lezáró átkötéssel (jumper) van ellátva). |
| 2 | Csatlakozó a kimeneti logikai jelek, a szivattyúfrekvencia ellenőrzése és programozható analóg kimenet számára. |
| 3 | Kimeneti tápcsatlakozó (24 Vdc a szivattyú hűtőventillátorra, a vent valve és az idomszer számára). |
| 4 | Bementei tápellátó modul, a vezérlő számára. Magában foglalja a biztosítékokat, a tápcsatlakozót és az EMC- szűrőt. |
| 5 | Forgatógomb a Profibus címének beállításához. |
| 6 | Profibus (opcionális). |
| 7 | Soros csatlakozó távvezérléshez. |
| 8 | Szivattyúcsatlakozó. |

Használati eljárások

A vezérlő bekapcsolása

A vezérlő bekapcsolásához elegendő a hálózati kábelt a hálózati aljzatba illeszteni.

A szivattyú beindítása

A szivattyú beindításához engedélyezni kell az interlock bemenetet és megnyomni az előlapon a START nyomógombot.

A szivattyú leállítása

A szivattyú leállításához meg kell nyomni az előlapon található STOP nyomógombot.

Karbantartás

A TwisTorr 304 FS AG Rack sorozatú vezérlők semmiféle karbantartást sem igényelnek. Valamennyi beavatkozást meghatalmazott személyzet hajthat csak végre.

Meghibásodás esetén igénybe vehető a Agilent javítási szolgáltatása, vagy a "Agilent advanced exchange service", mely a meghibásodott helyett, egy javított vezérlőt biztosít.

VESZÉLY!

A vezérlőn való bármely beavatkozás végrehajtása előtt ki kell húzni a hálózati csatlakozót.



Amikor egy vezérlőt le kell selejtezni, megsemmisítésekor a tárgykörbe tartozó nemzeti normáknak megfelelően kell eljárni.

11 Felhasználói Kézikönyv

Megsemmisítés

Megsemmisítés

A címkén jelenlévő "WEEE" logo jelentése. Az alább látható szimbólum az EK "WEEE" elnevezésű irányelvével összhangban kerül alkalmazásra. Ez a szimbólum (**mely csak az Európai Közösségi országaiban érvényes**), azt jelzi, hogy a termék, melyen megtalálható, NEM kerülhet közönséges háztartási vagy ipari hulladékkal együtt megsemmisítésre, hanem azt egy szelektív hulladékgyűjtő rendszerbe kell továbbítani. A végfelhasználónak, a gyűjtési és megsemmisítési eljárás beindítása céljából, az adásvételi szerződés határidőinek és feltételeinek alapos áttanulmányozása után, fel kell vennie a kapcsolatot a berendezés szállítójával, legyen ez a gyártó vagy egy viszonteladó.



Hibaüzenetek

Néhány meghibásodási esetben a vezérlő öndiagnosztikai áramkörei hibaüzenetet jelenítenek meg (lásd az alábbi táblázatot).

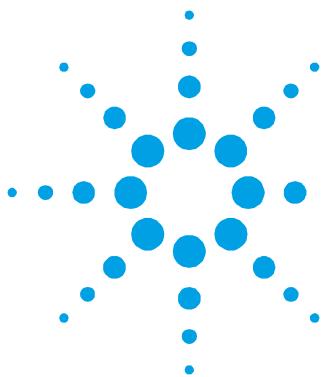
Tab. 1

| ÜZENET | LEÍRÁS | JAVÍTÁSI TEVÉKENYSÉG |
|---------------------------------|---|---|
| CHECK CONNECTION TO PUMP | Összeköttetési hiba a szivattyú és a vezérlő között, vagy a szivattyú hőmérséklete 0 °C alatt van. | Ellenőrizni, hogy a szivattyú és a vezérlő közti összekötő kábel minden végén jól van-e rögzítve és nincs megszakadva. A szivattyú újraindításához kétszer megnyomni a START nyomógombot. |
| WAITING INTERLOCK | A P1 csatlakozó reteszélés jelén jele aktív a J1 csatlakozó 3. és 8. pin-je közti rövidzár megszakadása, vagy a külső reteszélő jel nyitott állapota következtében. | Visszaállítani a P1 csatlakozó 3. és 8. pin-je közti rövidzárat, vagy zárnai a külső reteszélő jelét. |
| PUMP OVERTEMP. | A felső csapágy vagy a szivattyú hőmérséklete meghaladta a 60 °C-t. | Várakozni, míg a hőmérséklet a küszöbérték alá esik. A szivattyú újraindításához kétszer megnyomni a START nyomógombot. |
| CONTROLLER OVERTEMP. | A vezérlő ának hőmérséklete túllépte a 70 °C-t, vagy a vezérlő hűtésének hőmérséklete túllépte a 60 °C-t. | Várakozni, míg a hőmérséklet a küszöbérték alá esik. A szivattyú újraindításához kétszer megnyomni a START nyomógombot. |

11 Felhasználói Kézikönyv

Hibaüzenetek

| ÜZENET | LEÍRÁS | JAVÍTÁSI TEVÉKENYSÉG |
|------------------------|---|---|
| TOO HIGH LOAD | A szivattyú által felvett áram meghaladja a programozott értéket. | Ellenőrizni, hogy a szivattyú forgórésze szabadon foroghat-e. A szivattyú újraindításához kétszer megnyomni a START nyomógombot. |
| SHORT CIRCUIT | Normál üzem közben (az indítási fázist követően) a kimeneti összeköttetés zárlatos. | Ellenőrizni az összeköttetéseket a szivattyú és a vezérlő között. A szivattyú újraindításához kétszer megnyomni a START nyomógombot. |
| SYSTEM OVERRIDE | A szivattyú leállt egy távérintkezőtől származó vészjel hatására. | Kihúzni a vezérlő hálózati csatlakozóját és megszüntetni a vészjelzés okát. Újra csatlakoztatni a hálózati kábelt, és kétszer megnyomni a START nyomógombot a szivattyú újraindításához. |
| OVERVOLTAGE | Meghibásodás történt a vezérlő tápellátási részegységében, vagy a vezérlő egy hamis jelet kapott. | A szivattyú újraindításához kétszer megnyomni a START nyomógombot. Ha az üzenet ismétlődik, a Agilent-tól karbantartási beavatkozást kérni. |
| POWER FAIL | Meghibásodás a szivattyú vagy a vezérlő tápellátási részegységében. | A Agilent-tól karbantartási beavatkozást kérni. |



12

Podrecznik Instrukcji

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Az eredeti utasítás fordítása



Agilent Technologies

147 / 301

Informacje ogolne

Urzadzenie to jest przeznaczone do uzytku zawodowego. Przed przystapieniem do korzystania uzytkownik powinien wnikliwie przesledzic zarowno ten podrecznik zawierajacy instrukcje jak rowniez kazda inna dostarczona przez Agilent informacje. Agilent uchyla sie od jakiejkolwiek odpowiedzialnosci w przypadku calkowitego lub czesciowego nie przestrzegania swoich instrukcji, przeznaczenia urzadzenia niezgodnie z jego przeznaczeniem i jego obslugi przez personel uprzednio nie przeszkolony, naprawy urzadzenia bez odpowiedniej autoryzacji lub przeznaczenia niezgodnego z obowiazujacymi, specyficznymi normami krajowymi. Kontrolery z serii TwisTorr 304 FS AG Rack sa przetwornikami czestotliwosci kontrolowanymi przez mikroprocesor zrealizowanymi z komponentow w stanie stalym i posiadajacymi zdolnosci samodiagnostyczne i samoochronne.

Dane kontrolera:

- Operatywny frontalnie / w izolacji / seryjnie
- Sterowanie turbiny chlodzenia pompy z szybkoscia 24 Vdc
- Sterowanie vent valve
- Odczyt szybkosci pracy pompy w momencie nakazu zatrzymania (odczyt szybkosci w momencie zatrzymania)
- Odczyt cisnienia
- Posrednik Profibus (dodatkowy)
- Automatyczne ustawienie napiecia wejsciowego.

W nastepnych paragrafach zawarte sa wszystkie niezbedne informacje dotyczace gwarancji bezpieczenstwa personelu obslugujacego urzadzenie.

Bardziej szczegolowe informacje sa zawarte w dodatku do "Technical Information".

Podrecznik ten opiera sie na nastepujacych konwencjach:

ZAGROZENIE!



Sygnaly ostrzegajace o zagrozeniu powinny zwrocic uwage operatora na odpowiednia specyficzna procedura ktora jezeli nie jest przestrzegana w sposob prawidlowy moze przyczynic sie do powaznych obrazen osoby obslugujacej.

UWAGA!

Sygnaly wzrokowe ukazujace sie przed procedura jezeli zostana zlekcewazone moga spowodowac uszkodzenia urzadzenia..

PRZYPIS

Przypisy zawieraja najwazniejsze informacje wyciagniete z tekstu.

Magazynowanie

Kontrolery podczas transportu i przechowywania w magazynie powinny miec nastepujace warunki otoczenia:

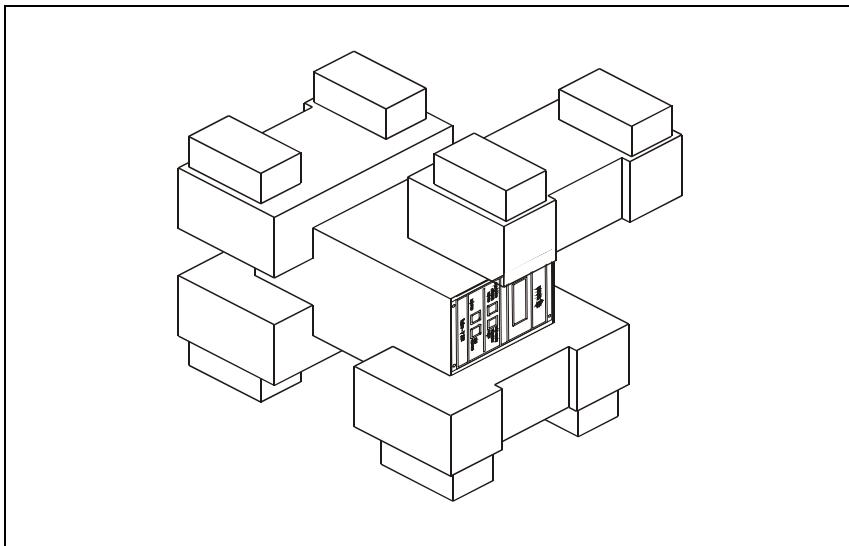
- temperatura: od -20 °C do +70 °C
- wilgotnosc wzgledna: od 0-95 %(nie kondensujaca).

Przygotowanie do instalacji

Kontroler zostaje dostarczony w specjalnym, ochronnym opakowaniu; jezeli opakowanie prezentuje jakiekolwiek uszkodzenia ktore moglyby powstac podczas transportu wowczas nalezy niezwlocznie powiadomic najblizszy, lokalny punkt sprzedazy.

Podczas operacji rozpakowywania nalezy zachowac specjalna ostroznosc zeby nie spowodowac upadku kontrolera lub nie narazic na uderzenia.

Nie wyrzucac opakowania poniewaz jest ono calkowicie rycyklowalne i odpowiada normom CEE 85/399 dotyczacym ochrony srodowiska.



Posta č 1 Opakowanie kontrolerow

Instalacja

ZAGROZENIE!



W celu zapewnienia bezpieczeństwa osobie obsługujacej, kontroler przeznaczony jest wyłącznie do użytku wewnętrznego i musi być podłączony za pomocą kabla zasilającego z 3 przewodami (patrz tabela części zamiennych, które można zamówić) z wtyczką mającą standardy międzynarodowe. Aby zapobiec ryzyku porażenia pradem oraz aby zapewnić standardy UE należy używać zawsze ten kabel zasilający, podłączając wtyczkę do kontaktu mającego odpowiednie uziemienie. We wnętrzu kontrolera powstają wysokie napięcia które mogą być przyczyną poważnych obrażeń lub wypadków śmiertelnych. Przed przystąpieniem do jakiejkolwiek operacji instalowania lub konserwacji należy odłączyć go od źródła zasilania.

PRZYPIS

Kontroler może być zainstalowany na stole lub wewnątrz odpowiedniego Rack. W obydwiu przypadkach należy pamiętać aby wokół kontrolera zapewnić swobodny przepływ powietrza dla prawidłowego chłodzenia. Nie instalować i/lub użytkować kontrolerów w miejscach narażonych na działanie warunków atmosferycznych (jak deszcz, mroz, śnieg), pyłów, gazów agresywnych w środowisku wybuchowym lub o dużym stopniu zagrożenia pożarowego.

Podczas pracy kontrolera należy zapewnić następujące warunki otoczenia:

- temperatura: od +5 °C do +45 °C
- wilgotność względna: 0 – 95 % (nie kondensująca).

Sposób połączenia i instalowania akcesoriów jest opisany w rozdziale "Technical Information".

Uzytkowanie

Paragraf ten zawiera podstawowe procedury operatywne. Dla uzyskania dodatkowych bardziej szczegółowych informacji lub dostępu do procedur na temat połączeń lub akcesoriów skonsultować paragraf "Use" znajdujący się w dodatku do "Technical Information".

Przed przystąpieniem do użycowania kontrolera wykonać wszystkie połączenia elektryczne i pneumatyczne podłączając pompę konsultując z odnośną instrukcją.

ZAGROZENIE!



Dla uniknięcia obrażeń personelu obsługującego urządzenie jak również uszkodzeń samego urządzenia należy upewnić się, szczególnie w przypadku gdy pompa została ustawniona na stole, czy stół jest odpowiednio stabilny. Pod żadnym pozorem nie uruchamiać pompy jeżeli kołnierz wejściowy nie jest połączony z systemem lub nie jest zamknięty kołnierzem zamykającym.

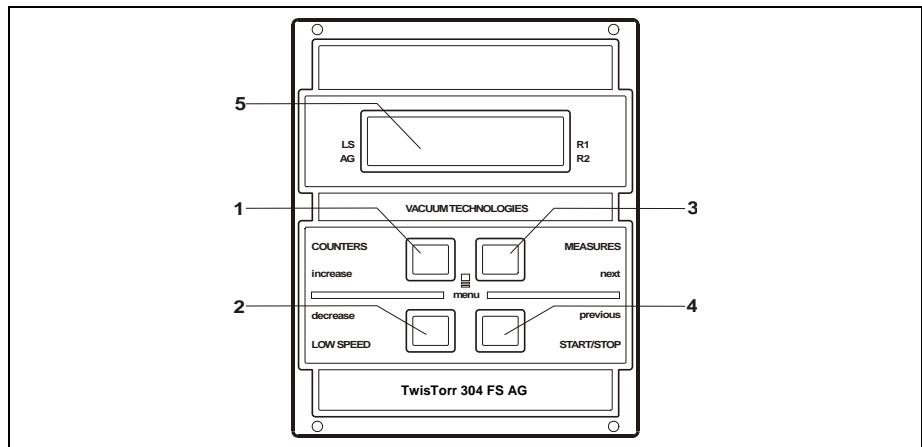
PRZYPIS

W przypadku kiedy nie zostanie wykonane zadne połączenie zewnętrzne łącznik zamykający J1 powinien pozostać połączony ze swoim mostkiem. Pompa wstępnej próżni i pompa TwisTorr 304 FS mogą być uruchomione jednocześnie.

Sterowniki, Wskazniki I Laczniki

Ponisze rysunki przedstawiaja panel frontalny i tylny kontrolera.Dla uzyskania dokladniejszych szczegolow skonsultowac odpowiedni rozdzial "Technical Information".

Opis pulpitu frontalnego

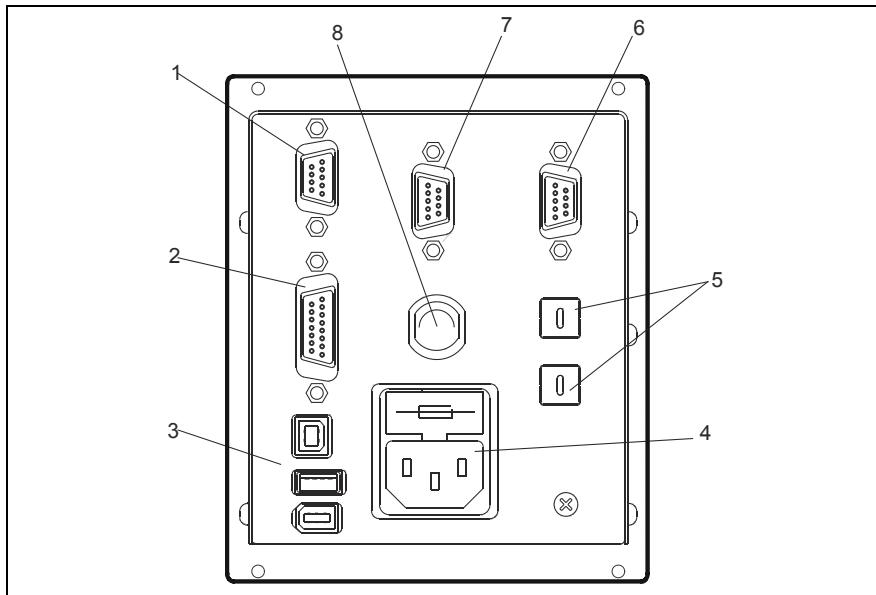


Posta Ć 2 Pulpit frontalny kontrolera TwisTorr 304 FS AG Rack

-
- | | |
|---|---|
| 1 | Przycisk sluzacy do przywolania na display parametrow cycle number, cycle time I pump life. |
| 2 | Przycisk do wybierania sposobu LOW SPEED. Dziala tylko wtedy kiedy sposob sterowania jest wybierany na pulpicie frontalnym. Naciskajac jeden, szybkosc obrotu pompy w pozycji "stand-by". Naciskajac jponownie nastepuje wylaczenie sposobu LOW SPEED ponownie. |
| 3 | Przycisk sluzacy do przywolania na display parametrow pump current,, pump temperature, pump power I rotational speed. Jest zawsze aktywny niezaleznie od wybranego sposobu dzialania. Naciskajac jednoczesnie przyciski 3 I 1 przez conajmniej 2 secundy uruchamia sie program przy pomocy ktorego jest mozliwe programowanie niektorych parametrow operatywnych. |
| 4 | Przycisk do przesyłania sygnalu START, STOP/ RESET. Dziala tylko wtedy kiedy sposob sterowania jest wybierany na pulpicie frontalnym naciskajac jeden raz uaktywnia sie faza uruchomienia; naciskajac ponownie zatrzymuje sie pompe. Jezeli pompa zatrzyma sie automatycznie z powodu uszkodzenia nalezy nacisnac przycisk jeden raz zeby zresetowac kontrolera I poraz drugi zeby uruchomic pompe. |
| 5 | Display alfanumeryczny na cieklych kryształach: matryca punktowana, 2 linie x 16 czcionek. |
-

12 Podrecznik Instrukcji

Uzytkowanie



Posta 6 3 Pulpit tylny kontrolerow TwisTorr 304 FS AG Rack

- | | |
|---|--|
| 1 | Lacznik wejsciowy sygnalow logicznych (lacznik blizniacy jest dostarczany z specialnym mostkiem zamykajacym) |
| 2 | Lacznik wyjsciowy sygnalow logicznych i nadzor nad częstotlowoscia na wyjściu podczas zaprogramowanej, wielokrotnej pracy pompy. |
| 3 | Lacznik zasilania na wyjściu (24 Vdc dla turbiny chłodzącej pompy, vent valve i kaliber). |
| 4 | Modul wejsciowy zasilania kontrolera zawierajacy bezpieczniki topikowe, gniazdko zasilajace i filtr ENC. |
| 5 | Switch obrotowy do ustawiania kierunku Profibus. |
| 6 | Profibus (dodatkowy). |
| 7 | Lacznik seryjny do kontroli na odleglosc. |
| 8 | Lacznik pompy. |

Procedure uzytkowania

Zaswiecenie kontrolera

Do zaswiecenia kontrolera wystarczy wprowadzic kabel zasilajacy do gniazdka sieci.

Uruchomienie pompy

Zeby uruchomic pompe nalezy odblokowac wejscie interlock i nacisnac znajdujacy sie na pulpicie frontalnym przycik START .

Zatrzymanie pompy

Do zatrzymania pompy wystarczy nacisnac przycisk STOP znajdujacy sie na pulpicie frontalnym.

Konserwacja

Kontroler z serii TwisTorr 304 FS AG Rack nie wymaga zadnej konserwacji. Jakakolwiek interwencja moze byc dokonywana wylacznie przez osoby autoryzowane.

W przypadku uszkodzenia mozliwe jest korzystanie z serwisow naprawczych Agilent lub "Agilent advance exchange service", w którym mozna otrzymac kontroler zregenerowany zastepujac go tym uszkodzonym.

ZAGROZENIE!

Przed wykonaniem jakiejkolwiek interwencji na kontrolerze nalezy odlaczyc kabel zasilajacy.



W przypadku decyzji zlomowania nalezy przeprowadzic operacje respektujac krajowe , specyficzne normy

Przetworstwo odpadow

Objasnienie znajdujacego sie na etykiecie znaczenia logo “WEEE”.

Uzyty ponizej symbol jest zgodny z wymogiem zarzadzenia “WEEE” Unii Europejskiej. Symbol ten (**prawomocny tylko w krajach Unii Europejskiej**) oznacza, ze wyrob ktory nim zostal oznaczony NIE moze byc przetworzony jako odpad razem z innymi domowymi lub przemyslowymi natomiast musi byc skladowany w miejscu przeznaczonym dla odpadow do przerobki zroznicowanej . Dlatego tez poleca sie uzytkownikowi, , po uprzedniej weryfikacji terminu i warunkow zawartych w kontrakcie sprzedazy, nawiazac kontakt z dostawca lub sprzedawca urzadzenia w celu uruchomienia procesu zbiorki i przerobu.



Bledne informacje

W niektórych przypadkach uszodzen obwod do autodiagnozy kontrolera pokazuje blendne informacie przyklady sa wymienione w ponizszej tabeli.

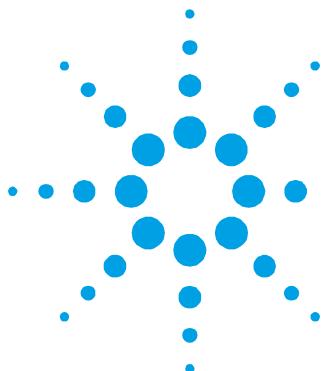
Tab. 1

| INFORMACJA | OPIS | AKCJA KORYGUJACA |
|---------------------------------|---|---|
| CHECK CONNECTION TO PUMP | Zaklocenia na polaczeniu miedzy pompa i kontrolerem. Lub Temperatura pompy jest ponizej 0 °C. | Zweryfikowac czy kabel laczacy pompe z kontrolerem jest dobrze zamocowany na obydwu koncach i czy nie jest przerwany. Nacisnac dwa razy przycisk START dla ponownego uruchomienia pompy. |
| WAITING INTERLOCK | Jest aktywny sygnal Interlock na laczniku P1 spowodowany zwarciem pomiedzy pin 3 i pin 8 lacznika J1, Lub na skutek otwarcia sygnalu zewnetrnego interlock. | Dokonac naprawy obwodu elektrycznego pomiedzy pin 3 i pin 8 lacznika P1 lub zamknac sygnal interlock zewnetrzny. |
| PUMP OVERTEMP. | Temperatura gornego lozyska lub pompy przekroczyla 60 °C. | Odczekac az temperatura sie obnizy ponizej ustalonego poziomu. Nacisnac dwa razy przycisk START dla ponownego uruchomienia pompy. |
| CONTROLLER OVERTEMP. | Temperatura w kontrolerze przekroczyla 70 °C. Lub Temperatura grzejnika nie przekracza 60 °C. | Odczekac az temperatura sie obnizy ponizej ustalonego poziomu. Nacisnac dwa razy przycisk START dla ponownego uruchomienia pompy. |

12 Podrecznik Instrukcji

Bledne informacje

| INFORMACJA | OPIS | AKCJA KORYGUJACA |
|------------------------|--|--|
| TOO HIGH LOAD | Absorpcja pradu przez pompe jest wyzsza od zaprogramowanej. | Sprawdzic czy wirnik nie ma przeszkod w swobodnym obrocie. Nacisnac dwa razy przycisk START dla ponownego uruchomienia pompy. |
| SHORT CIRCUIT | Podczas normalnej pracy (po fazie uruchomienia) na wyjsciu sa zwarcia. | Sprawdzic polaczenie pompy z kontrolerem. Nacisnac dwa razy przycisk START dla ponownego uruchomienia pompy. |
| SYSTEM OVERRIDE | Pompa sie zatrzymala na skutek sygnalu zagrozenia pochodzacego od pierwotnego kontaktu. | Odlaczyc kabel zasilania kontrolera i sprawdzic przyczyny powstania sygnalu zagrozenia. Podlaczyk ponownie kabel zasilajacy i nacisnac dwa razy przycisk START dla ponownego uruchomienia pompy. |
| OVERVOLTAGE | Nastapilo uszkodzenie w sekcji zasilania kontrolera lub kontroler otrzymał sygnal nieprawidlowy. | Nacisnac dwa razy przycisk START dla ponownego uruchomienia pompy. Jezeli sygnal sie powtorzy zwrocic sie do Agilent o przeprowadzenie konserwacji. |
| POWER FAIL | Uszkodzenie w sekcji zasilania pompy kontrolera. | Zwrocic sie do Agilent w celu naprawy. |



13

Návod k Použití

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Překlad originálního návodu



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13 Návod k Použití

Všeobecné informace

Všeobecné informace

Tento přístroj je určen pro profesionální potřebu. Uživatel si musí před použitím tuto příručku velmi pozorně přečíst, ale i každou další aktualizaci, kterou podnik bude předávat. V důsledku nedostatečného i částečně nesprávného použití, nebo v případě chyb nevyškoleného personálu či neoprávněných zásahů a neodpovídajících specifickým státním normám, Agilent nepřijímá a nenese žádnou zodpovědnost. Kontroléry série TwisTorr 304 FS AG Rack jsou frekvenčními konvertory, jsou kontrolované mikroprocesorem a skládají se z pevných komponentů s autodiagnostickou a samoochrannou schopností.

Charakteristiky kontroléru:

- Čelní operativnost / dálková / seriální.
- Pilotáž o 24 Vdc ochlazovací lopatky čerpadla. Pilotáž vent valve.
- Čtení rychlosti čerpadla po příkazu zastavení (čtení rychlosti zastavení).
- Čtení tlaku.
- Rozhraní Profibus (opční).
- Automatické nastavení vstupního napětí.

V následujících odstavcích jsou uvedeny veškeré nutné informace, týkající se operátora a bezpečnostních podmínek během provozu přístroje. Detailní informace se nacházejí v dodatku "Technical Information".

Tato příručka používá následující označení:

NEBEZPEČÍ!



Odkazy, které upozorňují na nebezpečí a donutí operátora, aby se řídil dle procedury nebo specifické praktiky, která nebude-li rádně vykonána, může ohrozit vážným způsobem jeho zdraví.

POZOR!

Tyto zprávy bývají vizualizovány před jakoukoliv procedurou, je třeba se jimi řídit, aby nedošlo k poškození přístroje.

POZNÁMKA

Poznámky, vyjmuté z textu obsahují velmi důležité informace.

Uskladnění

Během dopravy a skladování kontrolérů, se musí dbát na následující podmínky prostředí:

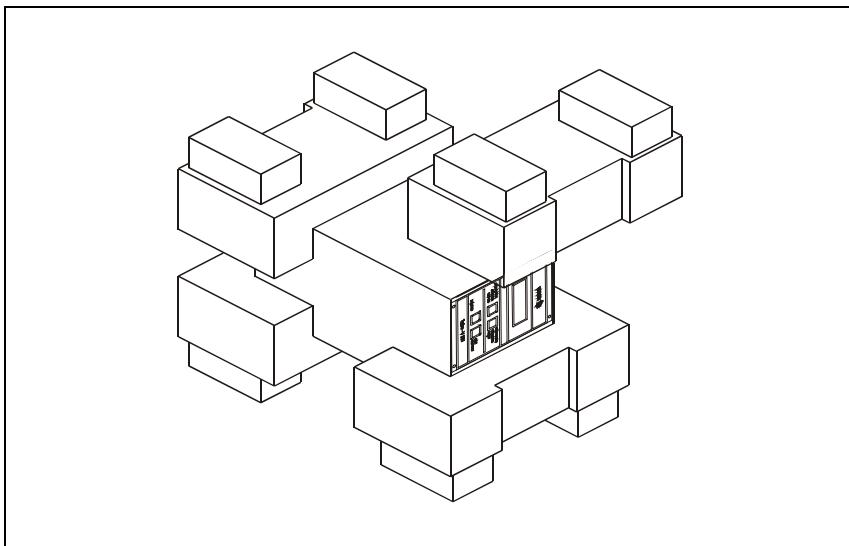
- temperatura: od -20 °C do +70 °C
- relativní vlhkost: 0 – 95 % (nesmí kondenzovat).

13 Návod k Použití

Příprava k instalaci

Příprava k instalaci

Kontrolér je dodáván v speciálním ochranném balení; objeví-li se následkem dopravy nějaké poškození, je třeba se okamžitě obrátit na místní prodejní servis. Během rozbalování se obzvlášť musí dávat pozor, aby kontrolér nespadl nebo aby neutrpěl nárazy. Balicí materiál se nesmí odkládat v přírodě. Tento materiál se může kompletně recyklovat, neboť se shoduje se směrnicemi EU, CEE 85/399, které se týkají životního prostředí.



Postava 1 Obal kontroléru

Instalace

NEBEZPEČÍ!



Ohledně ochrany bezpečnosti uživatele, kontrolér je výhradně určen k vnitřnímu používání a musí být napájen kabelem s 3 konduktory (viz tabulkou náhradních dílů, které lze objednat) s mezinárodně schválenou zástrčkou. Aby se předešlo elektrickému zásahu a aby byly splněny požadavky CE, daný napájecí kabel použivejte tak, že zástrčku zasunete do elektrické zásuvky s příslušným uzemněním. Uvnitř kontroléru dochází k vysokému napětí, které způsobuje vážné škody na zdraví i smrt. Před provedením jakéhokoli instalacního či údržbového úkonu s kontrolérem, je třeba nejprve přerušit elektrický příkon.

POZNÁMKA

Kontrolér může být nainstalován na stole nebo uvnitř příslušného rack. V každém případě je třeba, aby okolo přístroje mohl vzduch volně proudit. Kontrolér se nesmí instalovat v místech vystavených atmosférickým vlivům (déšť, mráz, sníh), prachu, agresivním plynlům, na výbušných místech nebo na místech kde existuje velké riziko požáru.

Během provozu je třeba, aby se respektovaly následující podmínky, týkající se operativního prostředí:

- teplota: od 5 °C do +45 °C
- Relativní vlhkost: 0 – 95 % (nesmí kondenzovat).

Pro další spojení a instalaci opčního příslušenství je třeba se podívat do sekce "Technical Information".

13 Návod k Použití

Použití

Použití

V tomto odstavci jsou uvedeny hlavní operativní postupy. Pro další detajly i pro procedury týkající se spojení nebo dalších opčních detajlů, je třeba se obracet na odstavec "Use" v příloze "Technical Information". Veškerá elektrická a pneumatická spojení se musí vykonat před použitím kontroléru, při čemž je třeba se obracet na příslušnou příručku napojeného čerpadla.

NEBEZPEČÍ!



Aby se vyhnulo nebezpečí, které může ohrozit osoby i přístroj, musí se zkontrolovat jeho stabilita v případě, že čerpadlo je položené na stole. Jestliže vstupní příruba není napojená na systém nebo není uzavřená se zavírající přírubou, čerpadlo se nesmí spustit do provozu.

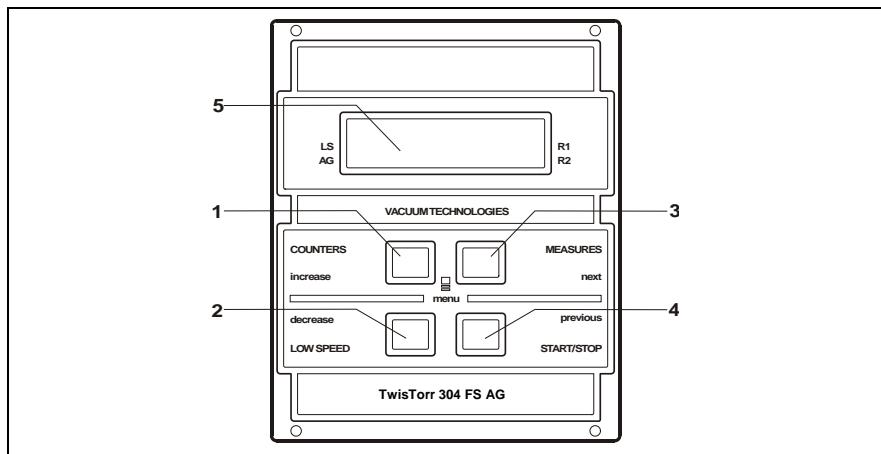
POZNÁMKA

Uzavírající konektor J1, jestliže nebude uskutečněno žádné vnější spojení, musí zůstat propojený se svým můstkem. Čerpadla pre-prázdna a TwisTorr 304 FS se mohou zapnout současně.

Ovládání, indikátory a konektory

V následujícím je ukázán čelní a zadní panel kontroléru. Pro širší detajl je třeba se obrátit na sekci "Technical Information".

Popis čelního panelu

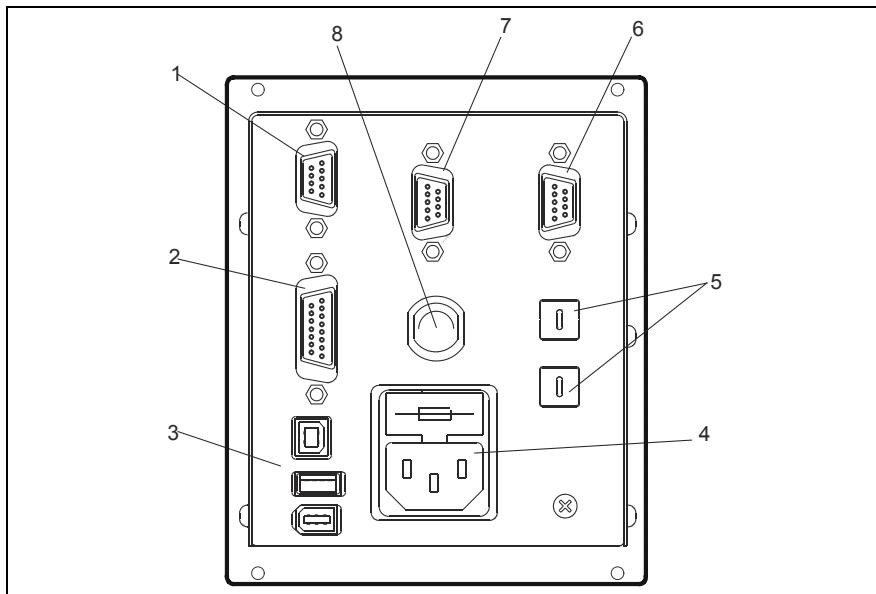


Postava 2 Čelní panel Konroléru TwisTorr 304 FS AG Rack

-
- | | |
|---|---|
| 1 | Tlačítko přivolání parametrů na displeji: cycle number, cycle time a pump life. |
| 2 | Tlačítko na volbu způsobem LOW SPEED. Je aktivní jen při zvoleném způsobu ovládání čelního panelu. Stiskne-li se jen jednou, čerpadlo pracuje rychlostí "stand-by". A stiskne-li se ještě jednou, deaktivuje se způsob LOW SPEED. |
| 3 | Tlačítko na přivolání parametrů na displeji: pump current, pump power, rotational speed, teplota spodního ložiska, teplota vrchního ložiska, teplota motoru, frekvence indukce. Nezávisle od zvoleného provozního způsobu, je neustále aktivní. Jestliže se tlačítka 3 a 1 stisknou společně alespoň na 2 vteřiny, bude aktivován program, dle kterého se mohou naprogramovat některé operativní parametry. |
| 4 | Tlačítko ovládání START, STOP/RESET. Je aktivní jen po volbě na čelním panelu. Stiskne-li se jen jednou, spouštěcí fáze bude aktivována; jestliže se znova stiskne, čerpadlo se zastaví. Jestliže se čerpadlo automaticky zastaví z důvodu nějaké poruchy, tlačítko se musí napoprvé stisknout, aby se uskutečnil reset kontroléru a po druhé aby se čerpadlo znova spustilo. |
| 5 | Alfanumerický displej na tekuté krystaly: matice bodů, 2 linky x 16 charakterů. |
-

13 Návod k Použití

Použití



Postava 3 Zadní panel Kontroléru TwisTorr 304 FS AG Rack

- | | |
|---|--|
| 1 | Vstupní konektor logických signálů (konektor spojky je dodáván s příslušným znovu zavírajícím můstkem). |
| 2 | Konektor výstupních logických signálů a monitorování frekvence čerpadla plus naprogramovatelný analogový výstup. |
| 3 | Konektor výstupu napájení (24 Vdc na ochlazovací lopatku čerpadla, vent valvea a kalibr). |
| 4 | Vstupní napájecí modul kontroléru, který zahrnuje i tavné pojistky, napájecí zásuvku a filtr ENC. |
| 5 | Rotační switch na stanovení Profibusové adresy. |
| 6 | Profibus (opční). |
| 7 | Seriální konektor na dálkovou kontrolu. |
| 8 | Konektor čerpadla. |

Používané procedury

Zapalování Kontroléru

Kontrolér se zapne vložením kabele do zásuvky na síti.

Spouštění čerpadla

Ke spuštění čerpadla je třeba oprávnit vstup interlocku a stisknout tlačítko START na čelním panelu.

Zastavení čerpadla

Čerpadlo se zastaví stisknutím tlačítka STOP na čelním panelu.

Údržba

Kontrolér série TwisTorr 304 FS AG Rack nevyžadují žádnou údržbu. Jakýkoliv zásah musí být vykonáván jen oprávněným personálem.

V případě poruchy se může využít opravářského servisu Agilent nebo "Agilent advanced exchange service", kde poškozený kontrolér bude vyměněn za nový.

NEBEZPEČÍ!

Nejdříve, před jakýmkoliv zásahem na kontroléru, se musí odpojit elektrický kabel.



Bude-li zapotřebí kontrolér likvidovat, musí se postupovat dle platných specifických státních norem.

13 Návod k Použití

Likvidace

Likvidace

Význam loga "WEEE" nacházejícího se na štítku. Níže uvedený symbol odpovídá směrnicím CE pojmenovaným "WEEE". Tento symbol (**platný jen pro státy Evropské Unie**) určuje, že výrobek, který je takto označen NESMÍ být likvidován společně s ostatními domácími nebo průmyslovými odpady, ale je nutno ho předat do patřičných provozních sběren, kde musí být tříděn a likvidován odděleně od městského odpadu. Uživateli, který míní výrobek likvidovat doporučujeme, aby se nakontaktoval přímo s výrobcem nebo prodejcem, který se po patřičném prověření termínů a smluvních podmínek postará o kompletní likvidaci uvedeného výrobku.



Chybné zprávy

V některých případných poruchách na autodiagnostických obvodech, kontrolér předává několik chybných odkazů, které jsou vyjmenovány v tabulce, která se nachází na následující stránce.

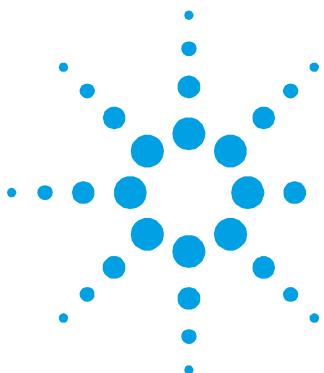
Tab. 1

| ZPRÁVY | POPIS | KOREKCE |
|---------------------------------|--|---|
| CHECK CONNECTION TO PUMP | Chybné fungování spojení mezi čerpadlem a kontrolérem (P31). Nebo Čerpadlo má nižší teplotu než je 0 °C. | Prověřit zda kabelové spojení mezi pumpou a kontrolérem je správně upevněné na obou dvou koncích a že nedošlo k přerušení. Stisknout tlačítko START dvakrát pro opětné spuštění čerpadla. |
| WAITING INTERLOCK | Aktivní signál interlock se nachází na konektoru P1, neboť došlo k přerušení zkratu mezi pin 3 a pin 8 del konektoru J1, nebo kvůli otevření signálu vnějšího interlock. | Znovu obnovit spojení nakrátko mezi pin 3 a pin 8 konektoru P1, nebo uzavřít signál vnějšího interlock. |
| PUMP OVERTEMP. | Temperatura horního ložiska nebo čerpadla převýšila 60 °C. | Počkat až se temperatura opět vrátí pod mezní hodnotu. Stisknout dvakrát tlačítko START pro opětné spuštění čerpadla. |
| CONTROLLER OVERTEMP. | Temperatura kontroléru převýšila 70 °C. Nebo Teplota radiátoru kontroléru je vyšší než 60 °C. | Výčkat až se temperatura opět vrátí pod mezní hodnotu. Stisknout dvakrát tlačítko START pro opětné spuštění čerpadla. |

13 Návod k Použití

Chybné zprávy

| ZPRÁVY | POPIS | KOREKCE |
|------------------------|--|--|
| TOO HIGH LOAD | Absorbovaný proud čerpadla je vyšší než ten naprogramovaný. | Prověřit, zda rotor čerpadla se může volně otáčet. Stisknout dvakrát tlačítko START pro opětné spuštění čerpadla. |
| SHORT CIRCUIT | Během normálního provozu (po spouštěcí fázi) výstupní spojení je ve zkratu. | Prověřit spojení mezi čerpadlem a kontrolérem. Stisknout dvakrát tlačítko START pro opětné spuštění čerpadla. |
| SYSTEM OVERRIDE | Pumpa byla zastavena nouzovým signálem prostřednictvím dálkového kontaktu. | Odpojit napájecí kabel kontroléru a napravit příčinu poplachu. Znovu připojit napájecí kabel a stisknout dvakrát tlačítko START pro opětné spuštění čerpadla. |
| OVERVOLTAGE | Vznikla porucha v napájecí sekci kontroléru, nebo kontrolér dostal falešný signál. | Stisknout dvakrát tlačítko START pro opětné spuštění čerpadla. Po opětné zprávě ohledně údržby je nutno se obrátit na Agilent . |
| POWER FAIL | Porucha v napájecí sekci čerpadla, kontroléru. | Ohledně údržby je třeba se obrátit na Agilent. |



14

Návod na Obsluhu

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Preklad originálneho návodu



Agilent Technologies

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Všeobecné informácie

Tento prístroj slúži k profesionálnemu použitiu. Užívateľ si pred použitím tohto prístroja musí pozorne prečítať tento návod k použitiu a jeho ďalšie doplnky, dodané podnikom Agilent. Podnik Agilent nepreberá na seba žiadnu zodpovednosť za úplné, alebo čiastočné nedodržiavanie návodu, za nesprávne používanie prístroja nekompetentnými osobami, za nepovolené zásahy a za používanie, ktoré nie je v zhode s príslušnými národnými normami. "Controllers" séria TwisTorr 304 FS AG Rack sú meniči kmitočtu, kontrolované mikroprocesorom, vyrobené prvkami pevnej fázy a so schopnosťou samodiagnostiky a samokontroly.

Charakteristiky controller-a:

- Čelné / dialkové / sériové riadenie
- 24 Vdc riadenie chladiacej lopatky čerpadla
- Riadenie vent valve
- Čítanie rýchlosťi čerpadla po poveli zastavenia (čítanie rýchlosťi zastavenia)
- Čítanie tlaku
- Medzičlánok Profibus (na objednávku)
- Automatické nastavenie vstupného napäťia.

Ďalej sú popísané všetky potrebné informácie, ktorých úlohou je zabezpečiť bezpečnosť pracovníka počas používania prístroja.

Podrobnejšie informácie sú uvedené v dodatku "Technical Information".

Tento návod používa nasledujúce signály:

NEBEZPEČIE!



Signál nebezpečie upozorňuje pracovníka na určitý pracovný postup, ktorý, keď nie je prevedený správne, môže zapríčiniť vážne osobné poranenia.

POZOR!

Signály "pozor" sú pred tými postupmi, ktoré, v prípade ich nedodržania, môžu poškodiť prístroj.

POZNÁMKA

Poznámky zahrňujú dôležité informácie, vytiahnuté z textu.

Uskladňovanie

Počas prepravy a uskladňovania "Controllers" musia byť dodržané tieto podmienky prostredia:

- teplota: od -20 °C do +70 °C
- relatívna vlhkosť: 0 – 95 % (bez kondenzátu).

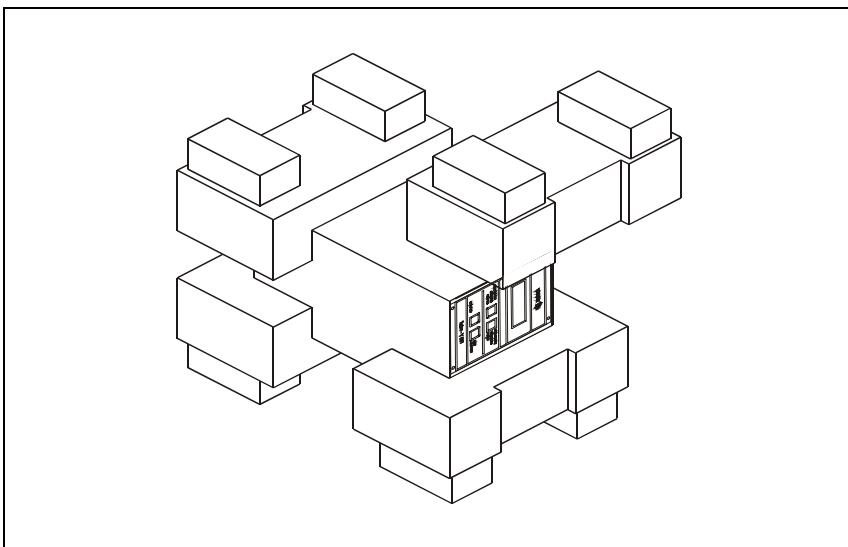
14 Návod na Obsluhu

Príprava pre inštaláciu

Príprava pre inštaláciu

“Controller” je dodaný v špeciálnom ochrannom obale; keby ste objavili škodu, spôsobenú prepravou, skontaktujte sa s kanceláriou miestneho predaja.

Pri rozbalovaní dávajte pozor, aby vám “Controller” nespadol, alebo niekde nenašiel. Obal nezahadzujte. Je vyrobený z recyklateľného materiálu a zodpovedá smernici CEE 85/399 pre ochranu životného prostredia.



Postava 1 Obal Controller

Inštalácia

NEBEZPEČIE!



Na ochranu bezpečnosti užívateľa, "controller" je určený výhradne na vnútorné použitie a musí byť napojený cez napájací kábel na 3 konduktory (viď tabuľku objednateľných náhradných dielov) s jednou medzinárodne schválenou zástrčkou. Aby sa predišlo elektrickému zásahu a aby boli splnené požiadavky CE, používajte stále tento napájací kábel tak, že zasuniete zástrčku do elektrickej zásuvky s príslušným uzemnením. Vo vnútri "Controller" sa vytvára vysoké napätie, ktoré môže spôsobiť vázne škody alebo smrť. Pred akýmkolvek úkonom, týkajúceho sa inštalácie alebo údržby "Controller" nezabudnite vytiahnúť zástrčku z elektrickej zásuvky.

POZNÁMKA

"Controller" môže byť inštalovaný na pracovnom stole alebo vo vnútri track. V každom prípade je potrebné, aby chladiaci vzduch mohol voľne krúžiť okolo prístroja. "Controller" nepoužívajte a neinštalujte v prostredí, vystavenom atmosferickým vplyvom (dážď, mráz, sneh), prachu, agresívnym plynom a v prostredí s vysokým rizikom požiaru.

Počas chodu je dôležité, aby boli rešpektované tieto podmienky prostredia:

- teplota: od +5 °C do +45 °C;
- relatívna vlhkosť: 0 – 95 % (nekondenzovaná).

Pre ostatné napojenia a inštaláciu zvoliteľného príslušenstva viď časť "Technical Information".

14 Návod na Obsluhu

Použitie

Použitie

V tomto odstavci sú uvedené hlavné operatívne postupy. Pre ostatné detaile a pre postupy, ktoré sa vzťahujú na napojenia, alebo na zvolené príslušenstvo, postupujte podľa časti "Use" v dodatku "Technical Information".

Pred použitím "Controller" prevedťte všetky potrebné elektrické a pneumatické napojenia a riadťte sa podľa návodu napojeného čerpadla.

NEBEZPEČIE!



Aby ste sa vyhli osobnému nebezpečiu a poškodeniu prístroja, skontrolujte, aby čerpadlo, umiestnené na pracovnom stole bolo stabilné. Čerpadlo nikdy nenaštartujte vtedy, keď vstupná príruba nie je napojená na systém, alebo nie je zavretá s uzáverovou prírubou.

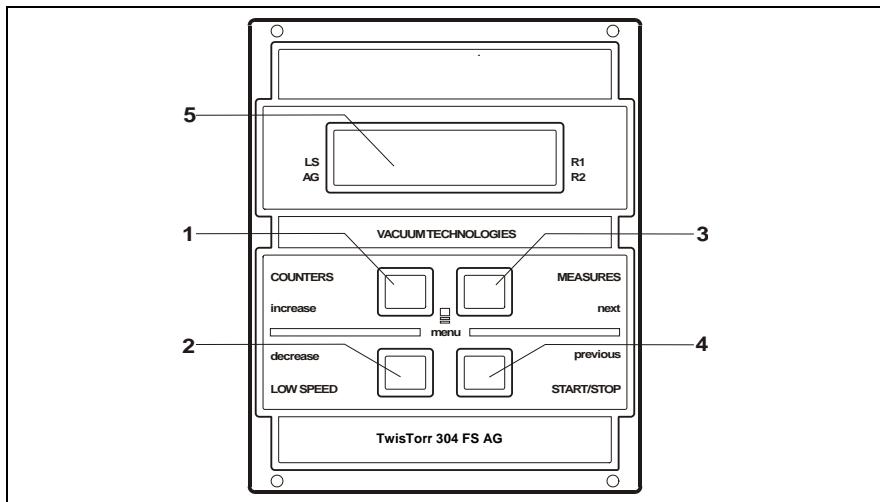
POZNÁMKA

Uzavierajúca prípojka J1 sa musí nechať napojená na jej mostík vtedy, keď nie je prevedené žiadne vonkajšie napojenie. Pred-prázdnové čerpadlo a čerpadlo TwisTorr 304 FS AG Rack môžu byť zapnuté súčasne.

Povely, Ukazovatele a Prípojky "Controller"

Ďalej je zobrazený čelný a zadný panel controller-a. Pre ďalšie detaily konzultuje časť "Technical Information".

Popis čelného panelu

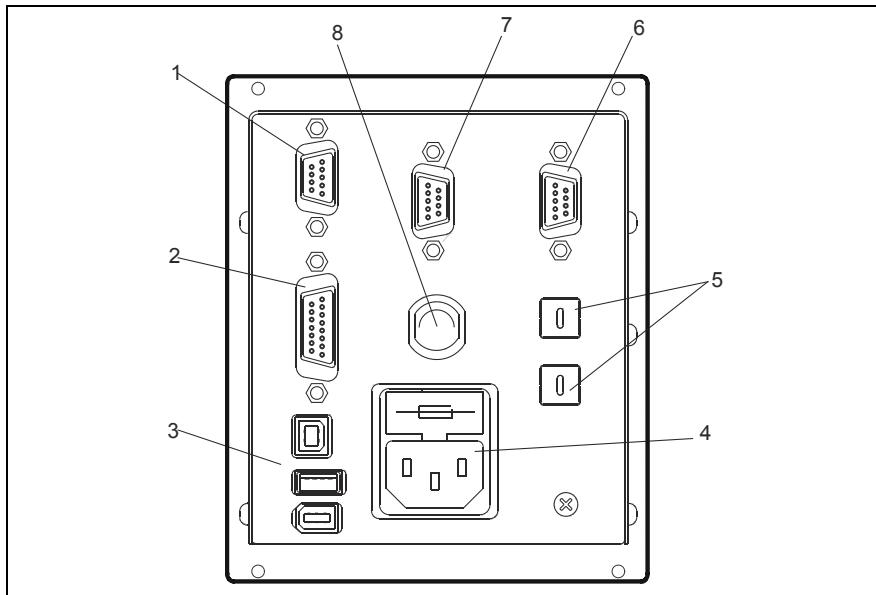


Postava 2 Čelný panel "Controller" TwisTorr 304 FS AG Rack

-
- | | |
|---|--|
| 1 | Tlačidlo pre vyvolanie parametrov cycle number, cycle time a pump life na displej. |
| 2 | Tlačidlo pre voľbu LOW SPEED. Je aktívne iba vtedy, keď povel vychádza z čelného panelu. Keď sa stlačí raz, čerpadlo sa točí rýchlosťou „stand by“. Stlačiac ho druhý raz, sa vypne LOW SPEED. |
| 3 | Tlačidlo pre vyvolanie parametrov pump current, pump temperature, pump power, rotational speed. Je stále aktívne, nezávisle od voľby funkcie. Stlačiac spolu tlačidlá 3 a 1 na aspoň 2 sekundy, sa spustí program, s ktorým sa možné zvolať niektoré operatívne parameter. |
| 4 | Tlačidlo povelov ŠTART, STOP/RESET. Je aktívne iba vtedy, keď povel vychádza z čelného panelu. Keď sa stlačí raz, spustí sa fáza naštartovania; stlačiac ho znova sa zastaví čerpadlo. Keď sa čerpadlo v prípade poruchy zastaví automaticky, treba stlačiť tlačidlo prvý krát pre resetovanie "controller" a druhý krát pre znovaňaštarovanie čerpadla. |
| 5 | Alfanumerický displej na tekutý kryštál: bodová matica, 2 línie x 16 písmen. |
-

14 Návod na Obsluhu

Použitie



Postava 3 Zadný panel "controller TwisTorr 304 FS AG Rack

- | | |
|---|--|
| 1 | Vstupná spojka logických signálov (spojovacia spojka je doganá s príslušným uzavierajúcim mostíkom). |
| 2 | Spojka východzích logických signálov a monitorovanie frekvencie čerpadla a navyše programovateľný analogický výstup. |
| 3 | Výstupá spojka napájania (24 Vdc pre chladiacu lopatku čerpadla, vent valve a kaliber). |
| 4 | Vstupný modul napájania controller-u, obsahujúci poistky, napájaciu zásuvku a filter ENC. |
| 5 | Rotačný switch pre nastavenie adresy Profibusu. |
| 6 | Profibus (na požiadavku). |
| 7 | Sériová spojka pre diaľkovú kontrolu. |
| 8 | Spojka čerpadla. |

Postup pri použití

Zapnutie "Controller"

Pre zapnutie "controller" stačí zapojiť kábel na elektrickú sieť a vypínač siete dať do polohy 1.

Naštartovanie čerpadla

Pre naštartovanie čerpadla je potrebné sprístupniť vstup Iinterlock a stlačiť tlačidlo START na čelnom paneli.

Zastavenie čerpadla

Pre zastavenie čerpadla treba stlačiť tlačidlo STOP na čelnom paneli.

Údržba

"Controllers" série TwisTorr 304 FS AG Rack nevyžadujú žiadnu údržbu. Akýkoľvek zásah musí previesť poverený personál.

V prípade vady je možné využiť opravnú službu Agilent alebo "Agilent advanced exchange service", ktorá vymení vadný "controller".

NEBEZPEČIE!

Pred akýmkoľvek zásahom na "controller" vytiahnite šnúru z elektrickej siete.



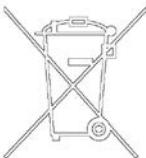
V prípade, že "controller" musí ísť do zberu, riadte sa platnými príslušnými národnými normami.

14 Návod na Obsluhu

Likvidácia

Likvidácia

Význam loga "WEEE" nachádzajúceho sa na štítkoch. Aplikovanie doluoznačeného symbolu dodržuje smernicu EÚ s názvom "WEEE". Tento symbol (**platný iba pre štáty Európskej Únie**) znamená, že výrobok s týmto štítkom NESMIE byť odstránený spolu s bežným domácom alebo priemyselným odpadom, ale sa musí odstrániť ako delený odpad. Vyzývame preto konečného užívateľa, aby sa skontaktoval s dodávateľom prístroja, či už je to výrobca alebo predajca za účelom jeho likvidácie podľa zmluvných podmienok predaja.



Oznamy vád

V niektorých prípadoch, týkajúcich sa vád, obvod samodiagnostiky "controller" signalizuje niekoľko oznamov vád, uvedených na ďalšej strane.

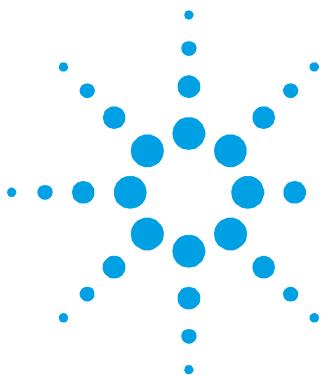
Tab. 1

| OZNAM | POPIS | ZÁSAH OPRAVY |
|---------------------------------|--|---|
| CHECK CONNECTION TO PUMP | Nefunguje napojenie medzi čerpadlom a "controller". Alebo Čerpadlo má nižšiu teplotu ako 0 °C. | Skontrolujte, či je spojovací kábel medzi čerpadlom a "controller" správne zasunutý na obidvoch koncoch a či nie je prerušený. Stlačte dvakrát tlačidlo START pre znovunaštartovanie čerpadla. |
| WAITING INTERLOCK | je aktívny signál interlock na spojke P1 z dôvodu prerušenia skratu medzi pin 3 a pin 8 spojky J1, alebo z dôvodu otvorenia signálu vonkajšieho interlock. | Obnoviť skrat medzi pin 3 a pin 8 spojky P1, alebo zavrieť signál vonkajšieho interlock. |
| PUMP OVERTEMP. | Teploota horného ložiska alebo čerpadla prekročila 60 °C. | Vyčkať, až sa teplota opäť vráti pod hranicu. Stlačte dvakrát tlačidlo START pre znovunaštartovanie čerpadla. |
| CONTROLLER OVERTEMP. | Teploota "controller" prekročila 70 °C. Alebo Teploota radiátora controllera presahuje 60 °C. | Počkať, kým teplota neklesne pod hranicu. Stlačte dvakrát tlačidlo START pre znovunaštartovanie čerpadla |

14 Návod na Osluhu

Oznamy vás

| OZNAM | POPIS | ZÁSAH OPRAVY |
|------------------------|--|---|
| TOO HIGH LOAD | Počas bežného chodu (po naštartovaní) čerpadlom absorbovaný prúd prevyšuje ten naprogramovaný. | Skontrolujte, či má rotor čerpadla možnosť točiť sa voľne. Stlačte dvakrát tlačidlo START pre znovunaštartovanie čerpadla |
| SHORT CIRCUIT | Počas bežného chodu (po naštartovaní) východzie napojenie je v skrate. | Skontrolujte napojenia medzi čerpadlom a "controller". Stlačte dvakrát tlačidlo START pre znovunaštartovanie čerpadla |
| SYSTEM OVERRIDE | Núdzový signál, vychádzajúci z diaľkového kontaktu zastavil čerpadlo. | Vytiahnite šnúru z elektrickej siete "controller" a ostráňte dôvod alarmu. Zasuňte napájaciu šnúru a stlačte dvakrát tlačidlo START pre znovunaštartovanie čerpadla. |
| OVERVOLTAGE | Objavila sa vada v sekcií napájania "controller", alebo "controller" dostal falošný signál. | Stlačte dvakrát tlačidlo START pre znovunaštartovanie čerpadla. Keď sa tento oznam objaví znova, obráťte sa na firmu Agilent pre údržbu. |
| POWER FAIL | Vada v napájacom systéme čerpadla, controllera. | Pre údržbu sa obráťte na Agilent. |



15

Priročnik za Navodila

| | |
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Prevod navodil v izvirniku



Agilent Technologies

183/301

Splošne informacije

Naprava je namenjena samo za strokovno rabo. Uporabnik mora temeljito prebrati priročnik in pri tem upoštevati vsako dodatno informacijo, ki jo nudi Agilent. Agilent ne odgovarja v slučaju celotnega ali delnega nespoštovanja navodil, pri nepravilni uporabi nestrokovnega osebja, v slučaju nedovoljenih posegov ali pri zanemarjenju specifičnih nacionalnih meril. Controllerji serije TwisTorr 304 FS AG Rack so frekvenčni pretvorniki, na katere nadzor ima mikrokrmilnik. Sestavljajo jih deli v solidnem stanju, ki imajo značilnosti avtodiagnoze in avtozaščite.

Značilnosti controllerja:

- Osrednja/oddaljena/serijska operativnost
- Upravljanje na 24 Vdc ventila ohlajevalne črpalk
- Upravljanje vent valve
- Branje hitrosti črpalk po ukazu zaustavitve (branje zaustavitev hitrosti)
- Branje pritiska
- Vmesnik Profibus (opcijski)
- Avtomatična postavitev vhodne napetosti.

V naslednjih odstavkih so navedene vse informacije potrebne za zagotavljanje sigurnosti uporabnika med rokovanjem s to napravo. Podrobnejše informacije dobite v priponki "Technical Information".

V tem priročniku so varnostne informacije razvrščene v dva razreda:

SVARILO!



Znak svarila opozarja uporabnika, da mora pri določenem postopku ali pri posebnem delovanju paziti. Kršitev svarila lahko privede do lažjih ali hudih telesnih poškodb.

POZOR!

Znak 'pozor' se pojavi pred postopke, ki če jih uporabnik zanemari, lahko napravo poškoduje.

OPOMBA

Opombe vsebujejo vse najbolj pomembne informacije iz besedila.

Skladiščenje

Med prevozom in skladiščenjem controllerjev morate zagotoviti naslednje pogoje okolice:

- temperatura: od -20 °C do +70 °C
- relativna vлага: 0 – 95 % (bez kondenzacije).

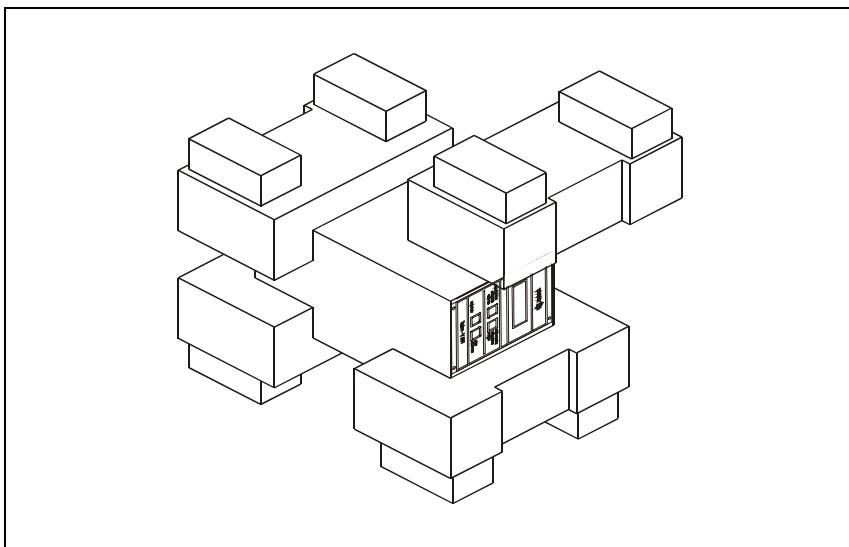
15 Priročnik za Navodila

Priprava za montažo

Priprava za montažo

Controller dobite v posebni zaščitni embalaži; če so na embalaži znaki poškodbe, ki naj bi nastale med transportom obrnite se krejavnemu prodajальнemu biroju.

Pri odstranitvi embalaže morate še posebno paziti, da controller ne pada na tla ali da ne podlegne udarcem. Ne zavrzite embalaže v okolico. Material lahko v celoti reciklirate in ustreza direktivi CEE 85/399 za zaščito okolja.



Slika 1 Embalaža controllera

Montaža

SVARILO!



Za boljšo varnost uporabnika, iController je namenjen le za notranjo uporabo in napaja napajalni kabel s 3 dovodi (glej tudi razpredelnico za nadomestne dele, ki se lahko naročijoli) z vtičem z medanrodno oznako. Da bi se izognili električnim stresljajem in da bi ravnali v skladu s predpisi ES, je potrebna uporaba takega napajalnega kabla, potreben je vtkaniti vtič v stikalo z ustrezno ozemljitvijo. Znotraj controller-jev se stvori visoka napetost, ki lahko človeku povzroči hude poškodbe ali celo smrt. Preden bi nadaljevali s katerokoli dejavnostjo montaže ali vzdrževanja controllerja, izklopite controller iz vtičnice.

OPOMBA

Controller lahko montirate na mizo ali vgradite v notranjost ustreznega rack-a. V vsakem slučaju morate poskrbeti, da voda za hlajenje prosto kroži skozi napravo. Controller-a ne smete montirati ali uporabiti v okolici, ki je izpostavljena klimatskim dejavnikom (dežju, ledu, snegu), prahu, agresivnim plinom, v okolici kjer obsatja nevarnost vnetja ali požara.

Med delovanjem morate zagotoviti naslednje pogoje okolice:

- temperatura: od +5 °C do +45 °C;
- relativna vлага: 0 – 95 % (ne-kondezna).

Kar se tiče priključkov in montaže opcionalnih dodatkov, si lahko ogledate priponko "Technical Information".

15 Priročnik za Navodila

Uporaba

Uporaba

V tem odsatvku so navedeni vsi glavni operativni postopki. Za dodatne detalje in postopke, ki zadevajo priključitve ali posamezne opcije, si lahko ogledate odstavek "Use" v pripomki "Technical Information".

Predno bi uporabili controller, morate priključiti vse električne in pnevmatske kable, pri tem se nanajšate na priročnik priložene črpalke.

SVARILO!



Da bi se izognili poškodbam bodisi oseb kot naprave, morate poskrbeti, da ste črpalko stabilno položili (če ste jo vgradili na mizi). Črpalka ne sme nikoli delovati, če vhodna prirobnica ni priklapljena k sistemu ali če ni zaprta s zapiralno prirobnico.

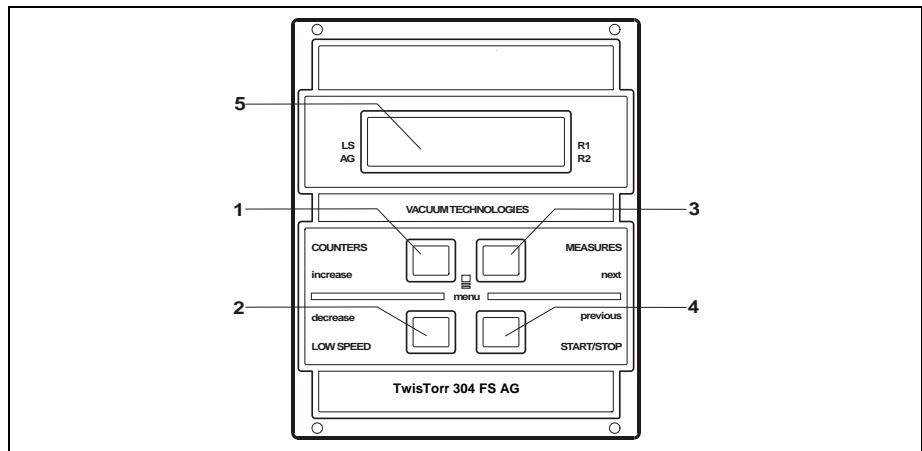
OPOMBA

Zapiralni konektor J1 mora ostati priključen k svojemu mostičku, če niste izvršili nikakršne druge zunanje priključitvije. Črpalko predhodnega praznjenja in črpalko TwisTorr 304 FS lahko istočasno vklopite.

Komande, indikatorji in konektorji

Sledi prikaz prednje in ozadnje plošče controllera. Za podrobnejše informacije si ogledajte paragraf "Technical Information".

Opis prednje plošče

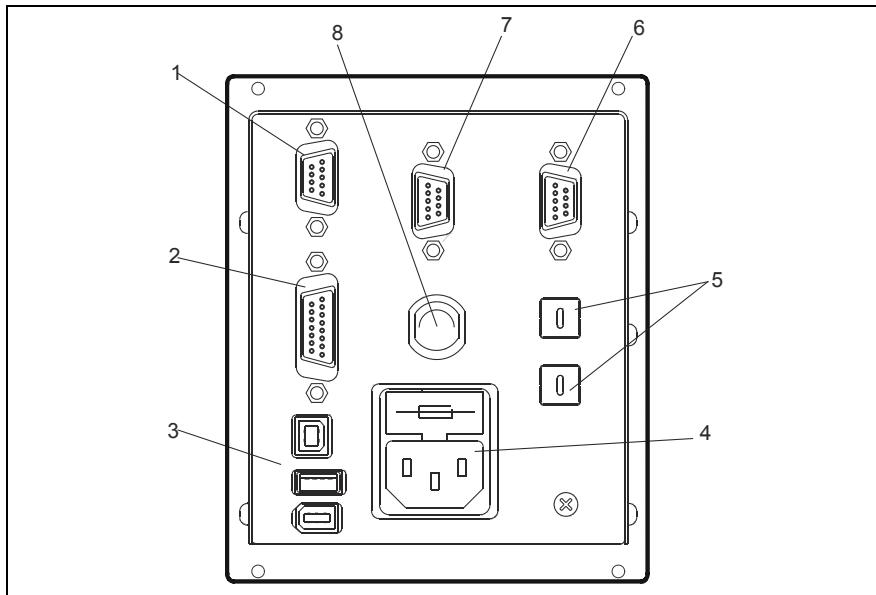


Slika 2 Prednja plošča Controllera TwisTorr 304 FS AG Rack

-
- | | |
|---|---|
| 1 | Tipka za preklic na zaslonu parametrov cycle number, cycle time in pump life. |
| 2 | Tipka za LOW SPEED modus je aktivna samo nato, ko ste izbrali to komando iz prednje plošče. Če gumb enkrat pritisnite, črpalka vrvi na hitrosti "stand-by". Če še enkrat pritisnite gumb, izključite LOW SPEED modus. |
| 3 | Tipka za preklic na zaslonu parametrov pump current, pump power, rotational speed, temperatura spodnjega ležišča, temperatura gornjega ležišča, temperatura motora, frekvence vzbujanja. Ta tipka je vedno aktivna neodvisno od modusa delovanja, ki ste ga izbrali. Če skupaj pritisnите gume 3 in 1 za vsaj dve sekundi aktivirate program, s katerim je mogoče nastaviti nekatere operativne prametre. |
| 4 | Tipka za zagon komand START, STOP/RESET. Aktivna je samo nato, ko ste to komando izbrali iz prednje plošče. Če gumb enkrat pritisnite boste pognali črpalko; če ga še enkrat pritisnete, boste črpalko zaustavili. Če se je črpalka sama zaustavila zaradi kvara, morate to tipko enkrat pritisniti, da bi lahko controller-a resetirali in še drugič za ponoven zagon črpalke. |
| 5 | Alfaštevilčni zaslon iz tekočih kristalov: prebijalo bodov, 2 linije x 16 znaka. |
-

15 Priročnik za Navodila

Uporaba



Slika 3 Ozadnja plošča Controllera TwisTorr 304 FS AG Rack

| | |
|---|---|
| 1 | Vhodni konektor logičnih signalov (spajalni konektor ima ustrezni zapiralni mostiček) |
| 2 | Konektor logičnih izhodnih signalov in nadzor frekvence črpalke plus analogični izhod, ki lahko programirate. |
| 3 | Izhodni napajalni konektor (24 Vdc za ohlajevalni ventil črpalke, vent valve in kaliber). |
| 4 | Vhodni modul napajanje controller-a, ki vsebuje varovalke, napajalno stikalo in filter ENC. |
| 5 | Rotacijski Switch za nastavljanje Profibusnega naslova. |
| 6 | Profibus (kot opcija) |
| 7 | Serijski konektor za nadzor iz oddaljenosti |
| 8 | Konektor črpalke. |

Postopki uporabe

Vklopitev Controllera

Za vklopitev Controller-a morate napajalni kabel vtakniti v omrežno vtičnico.

Zagon črpalke

Da bi zagnali črpalko morate usposobiti vhod interlock-a in pitisniti tipko START na prednji plošči.

Zaustavitev črpalke

Zaustavite črpalko s tipko STOP na prednji plošči.

Vzdrževanje

Controllerji serije TwisTorr 304 FS AG Rack ne potrebujejo vzdrževanja. Samo pooblaščeno osebje lahko rokuje s to napravo.

V slučaju okvare obrnite se servisu Agilent ali "Agilent advanced exchange service", ki Vam bo dal na razpolago obnovljeni controller.

SVARILO!

Pred katerikoli posegom, izklopite iz controller-a. napajalni kabel



Controller zavrzite kot industrijski odpadek v skladu z državnimi predpisi.

15 Priročnik za Navodila

Odlaganje opadkov

Odlaganje opadkov

Pomen znamke "WEEE" na etiketah. Spodaj navedeni simbol je v skladu z direktivo ES znano pod imenom "WEEE". Ta simbol (**ki velja samo v državah Evropske Skupnosti**) pomeni, da izdelek NE SMETE ODSTRANITI skupaj z ostalimi komunalnimi ali pa industrijskimi odpadki, temveč morate poskrbeti za njihovo primerno ločevanje. Zato pozivamo uporabnike, da se ali pri prodajальнem centru ali pa pri prodajalcu seznanijo o postopku ločevanja in odstranitve odpadkov, šele nato, ko se je seznanil s pogoji in z merili kupopordajne pogodbe.



Obvestilo o napaki

V nekaterih slučajih kvara pokaže električno vezje avtodiagnoze controller-a nekaj obvestil o napakah kot so opisane v spodnji tabeli.

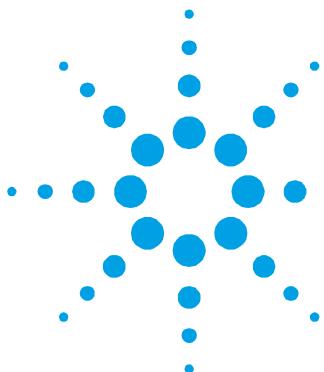
Tab. 1

| OBVESTILO | OPIS | POPRAVA |
|---------------------------------|---|---|
| CHECK CONNECTION TO PUMP | Napaka v priključitvi črpalke in controller-a. Ali Črpalka ima nižjo temperaturo od 0 °C. | Preverite, da je priključni kabel med črpalko in controller-om na obeh koncih trdno pritrjen in da ni prekinjen. Dvakrat pritisnite tipko START za ponoven zagon črpalke. |
| WAITING INTERLOCK | Signal interlocka prisoten na konektorju P1 zaradi prekinitve kratkega stika med pinom 3 in pinom 8 konektorja J1, ali ker se je odprl signal zunanjega interlocka. | Ponovno nastavite kratki stik med pinom 3 in pinom 8 konektorja P1, ali zaprite signal zunanjega interlocka. |
| PUMP OVERTEMP. | Temperatura gornjega ležišča ali črpalke je presegla i 60 °C. | Počakajte, da se temperatura vrne pod normalnim vrednostnim pragom. Pritisnite dvakrat tipko START za ponoven zagon črpalke. |
| CONTROLLER OVERTEMP. | Temperatura controllera je presegla 70 °C. Ali Temperatura controllerskega radiatorja je višja od 60 °C. | Počakajte, da se temperatura vrne pod normalnim vrednostnim pragom. Dvakrat pritisnite tipko START za ponoven zagon črpalke. |

15 Priročnik za Navodila

Obvestilo o napaki

| OBVESTILO | OPIS | POPRAVA |
|------------------------|--|---|
| TOO HIGH LOAD | Tok, ki ga črpalka prejme je večji od programiranega. | Preverite, da lahko rotor črpalke prosto vrti. Dvakrat pritisnite tipko START za ponoven zagon črpalke. |
| SHORT CIRCUIT | Med navadnim delovanjem (po zagonu) je priklopitev na izhodu v kratkem stiku. | Preverite priključke črpalke in controllera. Dvakrat pritisnite tipko START za ponoven zagon črpalke. |
| SYSTEM OVERRIDE | Delovanje črpalke je zaustavil signal zasilnosti iz oddaljenega kontakta. | Izklopite napajalni kabel controllera in popravite napako, ki se je pojavila s signalom zasile. Ponovno priključite napajalni kabel in pritisnite dvakrat tipko START za ponoven zagon črpalke. |
| OVERVOLTAGE | Kvar v oddelku za napajanje controllera, ali je controller dobil nepristen znak. | Dvakrat pritisnite tipko START za ponoven zagon črpalke. Če se to obvestilo spet pojavi, obrnite se Agilent za pravilno vzdrževanje. |
| POWER FAIL | Kvar v oddelku napajanja črpalke, controllera. | Obrnite se Agilent za pravilno vzdrževanje. |



16

Instructions for Use

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Original Instructions



Agilent Technologies

195/301

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 TwisTorr 304 FS AG Rack controllers are micro-processor-controlled, solid-state, frequency converter with self-diagnostic and self-protection features.

Controller features:

- Front / Remote / Serial Operation
- 24Vdc pump fan cooling drive
- Vent valve drive
- Pump speed reading after stop command (stop speed reading)
- Pressure reading
- Input voltage auto setting.
- Profibus interface (optional)

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:

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.

Storage

When transporting and storing the controllers, the following environmental requirements should be satisfied:

- temperature: from -20 °C to + 70 °C
- relative humidity: 0 – 95 % (without condensation)

16 Instructions for Use

Preparation for Installation

Preparation for Installation

The controller is 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 controller ensure that it is not dropped or subjected to any form of impact. Do not dispose of the packing materials in an unauthorized manner. The material is 100 % recyclable and complies with EEC Directive 85/399.

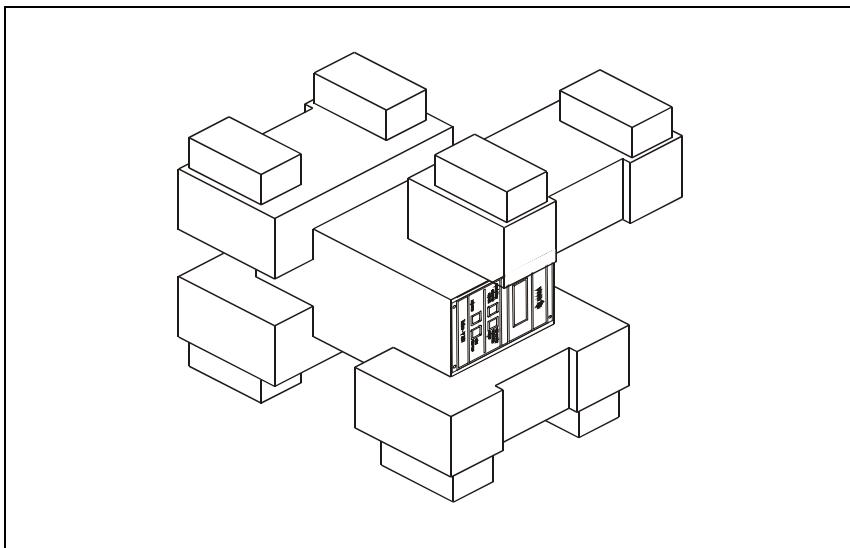


Figure 1 Controller packing

Installation

WARNING!



The controller is designed for indoor use only and must be powered with 3-wire power cord (see orderable parts table) and plug (internationally approved) for user's safety. Use this power cord and plug in conjunction with a properly grounded power socket to avoid electrical shock and to satisfy CE requirements. High voltage developed in the controller can cause severe injury or death. Before servicing the unit, disconnect the input power cable.

NOTE

TwisTorr 304 FS AG Rack controller can be used as a bench unit or a rack module, but it must be positioned so that free air can flow through the holes. Do not install or use the controller 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 +45 °C;
- relative humidity: 0 – 95 % (without condensation).

See the appendix "Technical Information" for detailed Information about the above mentioned and the other connections, and about the options installation.

16 Instructions for Use

Use

Use

This paragraph describes the fundamental operating procedures. Detailed information and operating procedures that involve optional connection or option are supplied in the paragraph "USE" of the appendix "Technical Information".

Make all vacuum manifold and electrical connections and refer to TwisTorr 304 FS pump instruction manual before operating the TwisTorr 304 FS AG Rack controller.

WARNING!



To avoid injury to personnel and damage to the equipment, if the pump is laying on a table make sure it is steady. Never operate the TwisTorr 304 FS pump if the pump inlet is not connected to the system or blanked off.

NOTE

The input signal J1 connector should be left in position including the shipping links if no external connections are made. The forepump and TwisTorr 304 FS pump can be switched on at the same time.

Controls, Indicators and Connectors

The following paragraph illustrates the Controller control panel and interconnection panel. More details are contained in the appendix "Technical Information".

Front Panel Description

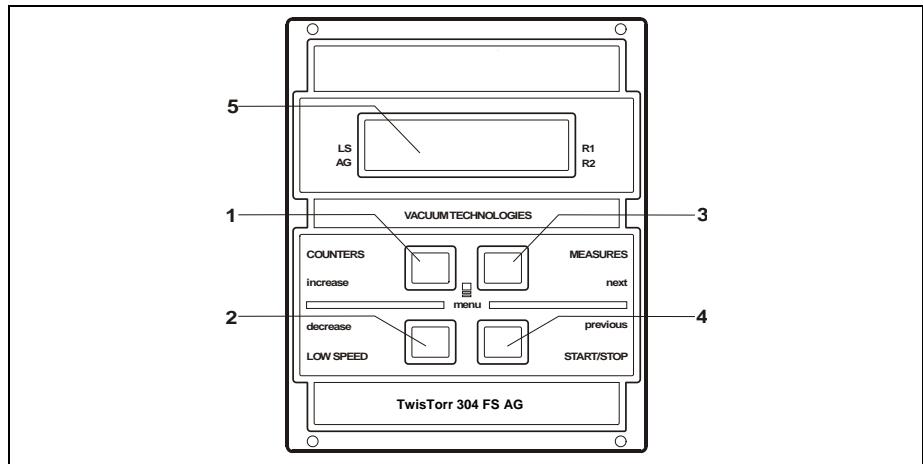


Figure 2 Controller TwisTorr 304 FS AG Rack Front Panel

| | |
|---|--|
| 1 | Keyboard push-button to recall on the display the cycle number, cycle time and pump life. |
| 2 | Keyboard push-button for LOW SPEED mode selection. It is active only when the front panel operation has been selected. Pressed once, the pump runs at "stand-by" speed. To unselect the mode, press the push-button again. |
| 3 | Keyboard push-button to recall on the display the pump current, pump temperature, pump power and rotational speed. It is always active regardless of the operating mode selected. Push-buttons 3 and 1, if pressed together for at least 2 seconds, put the controller in a routine where it is possible to program some operation parameters. |
| 4 | Keyboard push-button for START, STOP/RESET mode selection. It is active only when the front panel operation has been selected. By pressing once the starting phase begins; if pressed again it stops the pump. If the pump has been stopped automatically by a fault, this push-button must be pressed once to reset the controller and a second time to restart the pump. |
| 5 | LCD back-lighted alphanumeric display: dot matrix 2 lines x 16 characters. |

16 Instructions for Use

Use

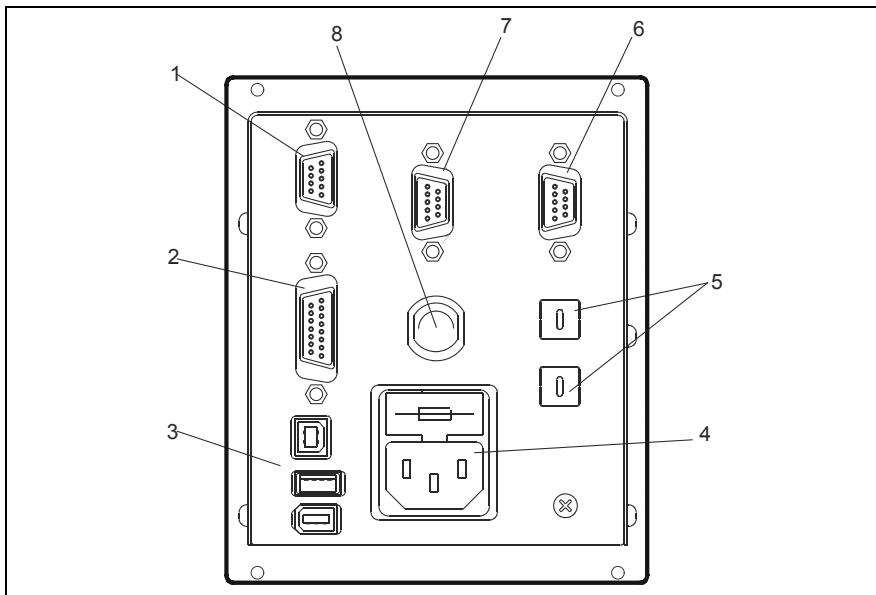


Figure 3 Controller TwisTorr 304 FS AG Rack Rear panel

| | |
|---|--|
| 1 | Logic input signals connectors (mating connector supplied with link). |
| 2 | Logic output signals connector and pump frequency monitor plus programmable analog output. |
| 3 | Power output connector (24 Vdc for pump cooling fan, Vent Valve and Gauge). |
| 4 | Controller power entry module consisting of mains fuses, mains socket and EMC filter. |
| 5 | Rotary switches for Profibus address setting. |
| 6 | Profibus (Optional). |
| 7 | Remote control serial connector. |
| 8 | Pump cable (5m long). |

Use Procedure

Controller Startup

To startup the controller plug the power cable into a suitable power source.

Starting the Pump

To start the pump, confirm the interlock input and press the START pushbutton on the controller front panel.

Pump Shutdown

To shutdown the pump press the STOP push-button on the controller front panel.

Maintenance

The TwisTorr 304 FS AG Rack series controller does not require any maintenance. Any work performed on the controller must be carried out by authorized personnel.

When a fault has occurred it is possible to use the Agilent repair service. Replacement controllers are available on an advance exchange basis through Agilent.

WARNING!

Before carrying out any work on the controller, disconnect it from the supply.



If a pump is to be scrapped, it must be disposed off in accordance with the specific national standards.

16 Instructions for Use

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.



Error Messages

For a certain type of failure, the controller will self-diagnose the error and the messages described in the following table are displayed.

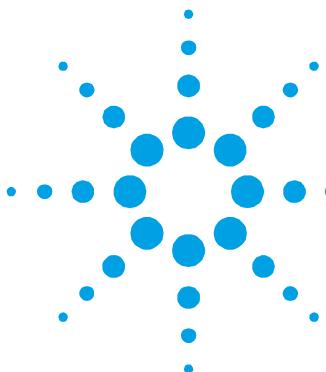
Tab. 1

| MESSAGE | DESCRIPTION | REPAIR ACTION |
|---------------------------------|---|--|
| CHECK CONNECTION TO PUMP | Wrong connection between the pump and the controller. Or The pump's temperature is below 0 °C. | Check connection between controller and pump. Press the START push-button twice to start the pump. |
| WAITING INTERLOCK | The interlock signal of P1 connector is activated by an interruption of the link between pin 3 and 8 of J1 connector, or because the external interlock signal is open. | Reset the short circuit between pin 3 and pin 8 of P1 connector, or close the external interlock signal. |
| PUMP OVERTEMP. | The upper bearing/pump temperature exceeds 60 °C. | Wait until the temperature decrease below threshold value. Press the START push-button twice to start the pump. |
| CONTROLLER OVERTEMP. | The controller environment temperature exceeds 70 °C. Or The controller's radiator temperature is above 60 °C. | Wait until the temperature decrease below threshold value. Press the START push-button twice to start the pump. |

16 Instructions for Use

Error Messages

| MESSAGE | DESCRIPTION | REPAIR ACTION |
|------------------------|--|--|
| TOO HIGH LOAD | The current drawn by the pump is higher than programmed. | Check that the pump rotor is free to rotate. Press the START push-button twice to start the pump. |
| SHORT CIRCUIT | After the starting phase the output connection is shorted. | Check connections and shortages between pump and controller. Press the START push-button twice to start the pump. |
| SYSTEM OVERRIDE | The pump is stopped by an emergency stop signal provided via a remote contact. | Remove the controller power cable and check the emergency condition. Then reconnect the power cable and press the START push-button twice to start the pump. |
| OVERVOLTAGE | Controller power supply circuitry is faulty, or the Controller received a spike. | Press the START push-button twice to start the pump. Should the message still be present, call the Agilent service. |
| POWER FAIL | Failure in the controller's pump power supply section. | Contact Agilent for Maintenance. |



17

Technical Information

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Error Messages

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TwisTorr 304 FS AG Rack Controller Description

The controller is available in two models (see orderable parts table):

- with RS 232-485 option
- with Profibus option

The controller is a solid-state frequency converter with the following features:

- Drives the pumps of the Twis Torr 304-FS family.
- Powers the pump cooling fan
- Drives the vent valve.
- Provides and acquires the pressure of the wide range gauge.
- Remote I/Os compatible with the previous version.
- Navigator default serial compatible with the previous RS 232 and 485 version.
- Speed reading after stop command.

See the following diagram for the connections and orderable parts.

17 Technical Information

TwisTorr 304 FS AG Rack Controller

Description

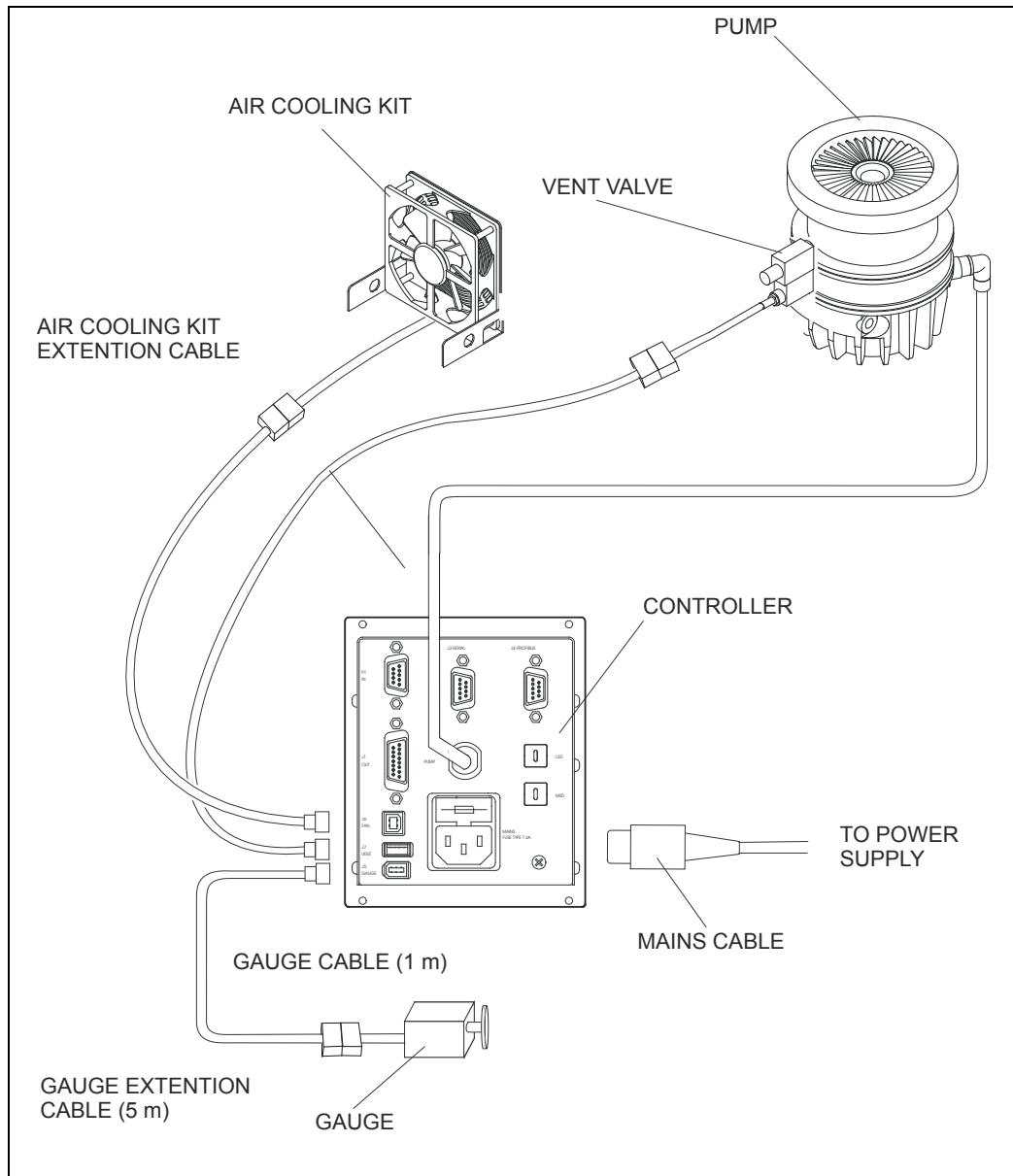


Figure 4 TwisTorr 304 FS AG Rack Controller – Connections

Controller Specifications

Tab. 2

| | |
|----------------------------|--|
| Input: | |
| Voltage | 100, 240 Vac (voltage fluctuation +/- 10%) |
| Frequency | 50 to 60 Hz |
| Power | 450 VA |
| Fuse | |
| 2 x T4 A (slow blow) 250 V | |
| Output: | |
| Voltage | 75 Vac |
| Frequency | 1010 Hz |
| Power | 150 W |
| Environment storage | -20 °C to +70 °C 0 – 95 % |
| Operating | +5 - +45 °C 0 – 90 % |
| Applied norr. | EN 61010 -1 EN 55011 (Class-A) EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-4-2,3,4,5,6,11, 8 |
| Weight: | 1.7 Kg (3.2 lbs) |
| Pollution Degree | 2 |
| Installation Category | II |
| Acoustic noise (ISO7779) | LpA < 70 dB(A), normal operation, operator position |

NOTE

The Controller must be positioned in such way that the mains cable can be easily disconnected.

17 Technical Information

Controller Outline

Controller Outline

The outline dimensions for the TwisTorr 304 FS AG Rack Controllers are shown in the following figure.

NOTE

TwisTorr 304 FS AG Rack controller can be used as a bench unit or as a rack module, but it must be positioned so that free air can flow through the holes.

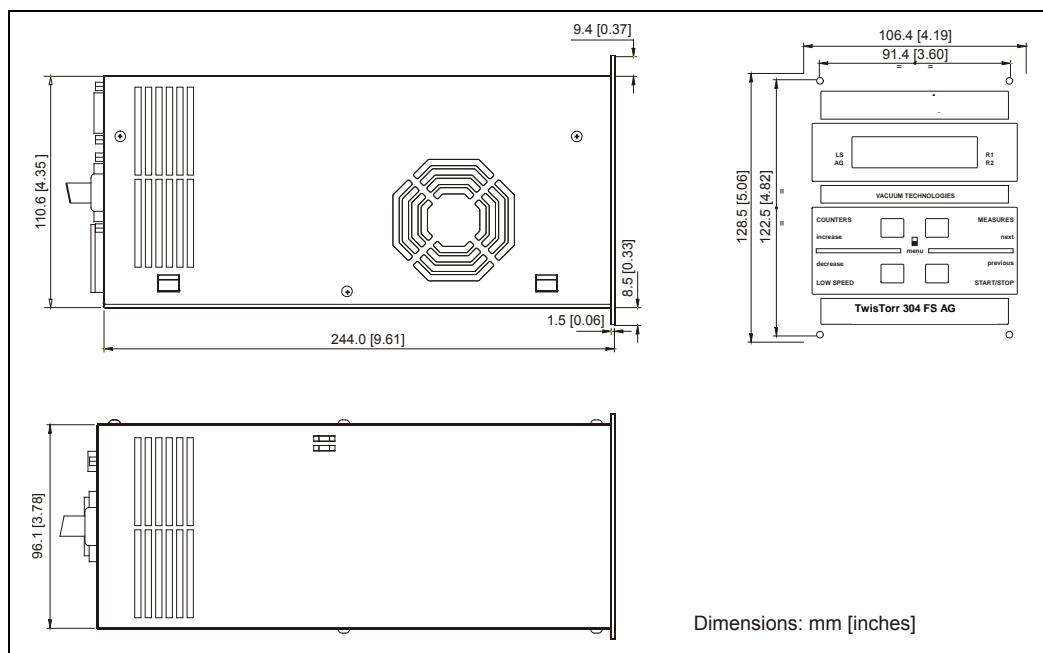


Figure 5 Controller outline

Controller Connection

J6 – Fan

The 24 Vdc, 150 mA maximum output voltage is present after START pushbutton is pressed and will remain present until a fault condition is displayed on front panel display or the turbopump is stopped.

This is a dedicated output for the optional TwisTor 304 pump cooling fan (see orderable parts table).

If you already have fan installed, use the available adapter cable to connect to the pump.

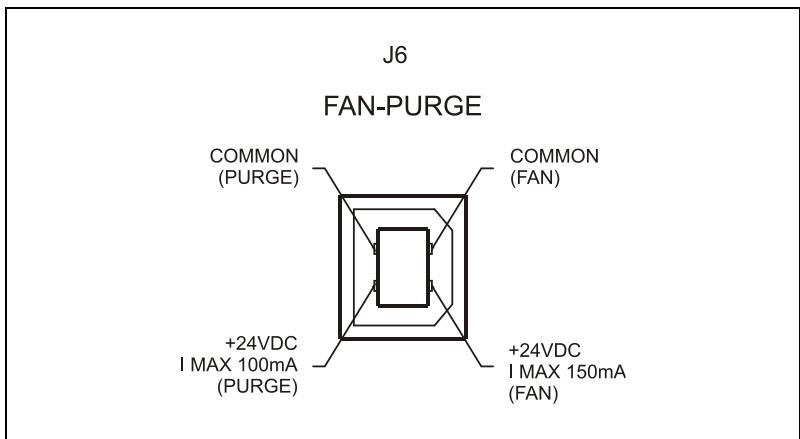


Figure 6 Fan Connector

17 Technical Information

Controller Connection

J7 – Vent

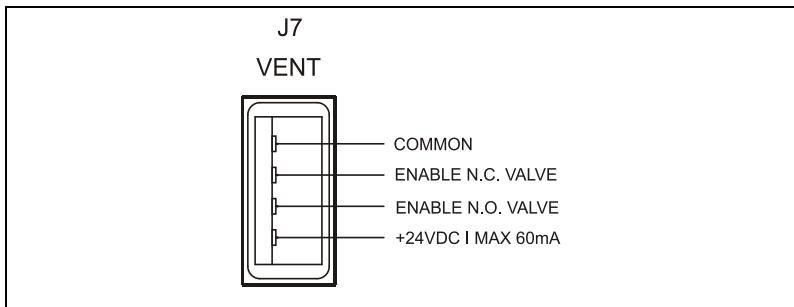


Figure 7 Vent Connector

This is dedicated 24 Vdc connector to control the optional vent valve (see orderable parts table). The vent valve can be driven by controller automatically or by serial line.

If you already have a vent valve installed 110 Vac powered, this valve must be replaced by a new model (see orderable parts table).

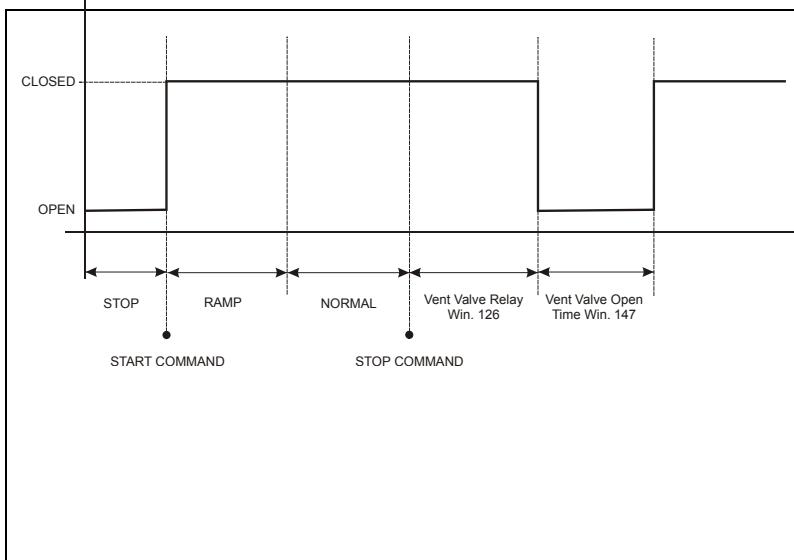


Figure 8 Vent Valve diagram in "Auto" mode

P1 – Input

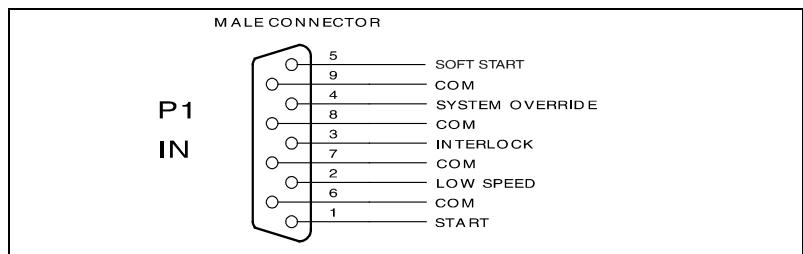


Figure 9 P1 input connector

All the logic input to the controller **must** be connected at J1 mating connector. With the provided P1 mating connector (shipped with pin 3 and pin 8 shorted) make the connections with AWG 24, (0.24 mm²) or smaller wire to the pins indicated in the figure to obtain the desired capability.

The following table describes the signals available on the connector.

Tab. 3

| Pins | Name | Description | Electrical | Note |
|-------|-----------------|--|--|--------------------------------------|
| 1-com | Start/Stop | Contact closed = Start Contact open = Stop | Optically isolated Vlow, max = 10v Imax = 5mA Imin (on) = 2mA | Active only in Remote Mode operation |
| 2-com | Low Speed | Contact closed = Low Speed Contact open = High Speed | Optically isolated Vlow, max = 10v Imax = 5mA | Active only in Remote Mode operation |
| 3-com | Interlock | Contact closed = Active Contact open = Inactive If active allows the pump running, if inactive stops the pump. | Optically isolated Vlow, max = 10v Imax = 5mA Imin (on) = 2mA | Active in all modes |
| 4-com | System Override | Contact closed = Active Contact open = Inactive If active allows the pump running, if active stops the pump and all the others connected devices (Fan, Vent) | Optically isolated Vlow, max = 10v Imax = 5mA Imin (on) = 2mA | Active in all modes |

17 Technical Information

Controller Connection

| Pins | Name | Description | Electrical | Note |
|-------|------------|--|--|---|
| | | Valve...). | | |
| 5-com | Soft Start | Contact closed= Active Contact open= Inactive If active before the start command activates the spft start procedure. To be used only at first pump run- up. | Optically isolated Vlow, max = 10v Imax = 5mA Imin (on) = 2mA | Active only in Remote Mode operation, and in STOP status. |

The following figure shows a typical contact logic input connection and the related simplified circuit of the controller.

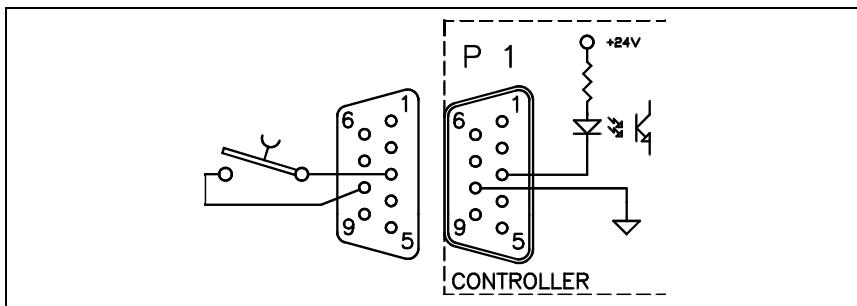


Figure 10 Typical logic input connection

J1 – Output

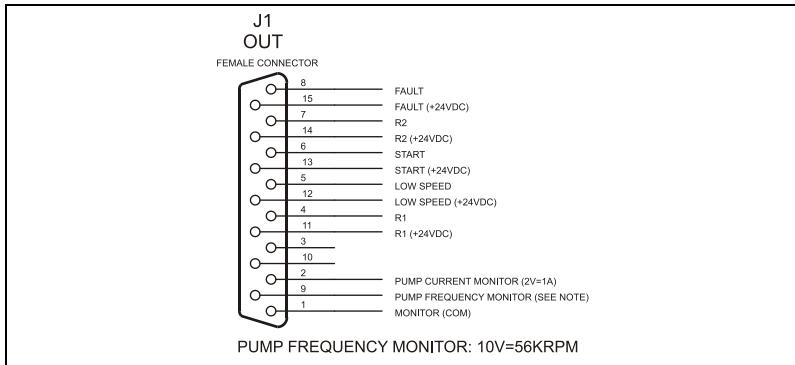


Figure 11 Logic output connector

All the logic output from the controller must be connected at P2 mating connector. The following table describes the signals available on the connector.

The following figure shows a typical logic output connection (relay coil) but any other device may be connected e.g. a LED, a computer, etc., and the related simplified circuit of the controller.

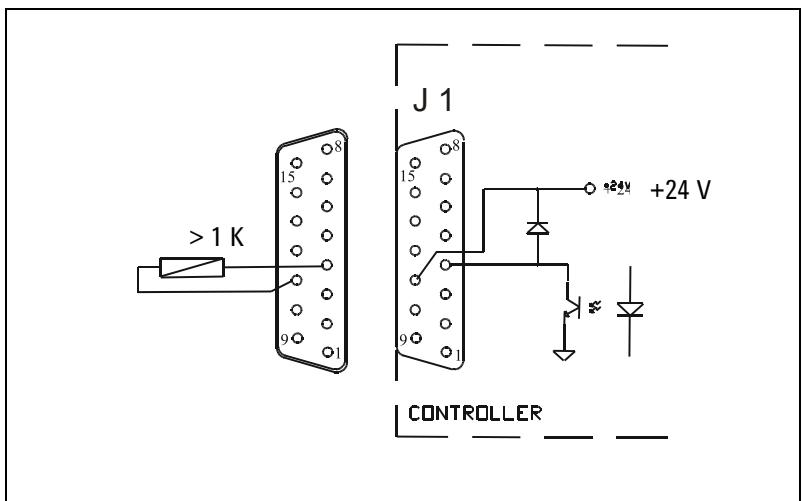


Figure 12 Digital Output Connection Example

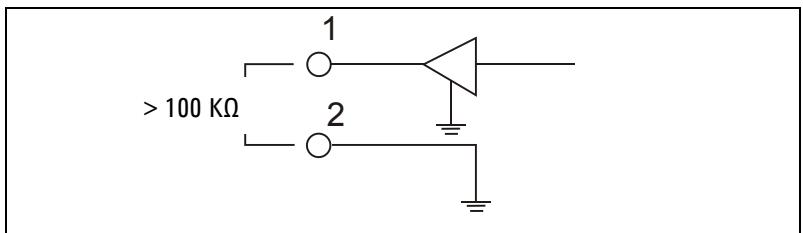


Figure 13 Analog Output Connection Example

17 Technical Information

Controller Connection

Tab. 4

| Pins | Name | Description | Electrical | Note |
|------|-----------|---|--|---|
| 15-8 | Fault | 0V = no fail 24V = fail | Optically isolated Vmax (=open) = 24v Vlow, max = 1,5v Imax = 60mA Pin-8 negative Pin-15 positive | Connect a 10kohm resistor between the 2 pins before measuring voltage A STOP command (by front Panel or serial or Start/stop input) reset the FAIL status. |
| 13-6 | Start | Configurable output. Default setting (win.177 = 0): 24V pump in RAMP state, 0V = other state. If win.177 = 1: 0V = pump in stop or FAIL status, 24V = other state | Optically isolated Vmax (=open) = 24v Vlow, max = 1,5v Imax = 60mA Pin-6 negative Pin-13 positive | Connect a 10kohm resistor between the 2 pins before measuring voltage |
| 12-5 | Low Speed | 24V = low speed active 0V = low speed not active | Optically isolated Vmax (=open) = 24v Vlow, max = 1,5v Imax = 60mA Pin-5 negative Pin-12 positive | Connect a 10kohm resistor between the 2 pins before measuring voltage |
| 11-4 | R1 | Programmable Set Point Out can be related to: Frequency, Power, Time Status or Pressure. See following figures for more details. All the setting can be done by: front panel or serial line (win.101 to 105 and 162). | Optically isolated Vmax (=open) = 24v Vlow, max = 1,5v Imax = 60mA Pin-5 negative Pin-12 positive | Connect a 10kohm resistor between the 2 pins before measuring voltage |
| 14-7 | R2 | Programmable Set Point Out Can be related to: Frequency, Power, Time Status or Pressure. See following figures for more details. All the setting can be done by: front panel or serial line (win.171 to 176). | Optically isolated Vmax (=open) = 24v Vlow, max = 1,5v Imax = 60mA Pin-7 negative Pin-14 positive | Connect a 10kohm resistor between the 2 pins before measuring voltage |

| Pins | Name | Description | Electrical | Note |
|------|----------------------------|---|---|--|
| 2-1 | Programmable Analog Output | Programmable analog output. Can be related to : frequency, power, pump temperature (linear) or pressure (logarithmic). The setting can be done by: front panel or serial line (win.111). 0V = 0Hz, 0W, 0°C 10V = 1010Hz, 150W, 100°C See following chart for more details | Optically isolated Rload, min = 10kr Ripple Vpp,max = 200mv Precision = 5% Resolution = 40mv Pin-1negative Pin-2 positive | Connect a 100kohm resistor between the 2 pins before measuring voltage |
| 9-1 | Frequency Analog Output | Analog output proportional to frequency (linear). 0V = 0Hz 10V = 1010Hz | Optically isolated Rload, min = 10kr Ripple Vpp,max = 200mv Precision = 1% Resolution = 40mv Pin-1negative Pin-9 positive | |

17 Technical Information
R1 – R2 Output Diagrams

R1 – R2 Output Diagrams

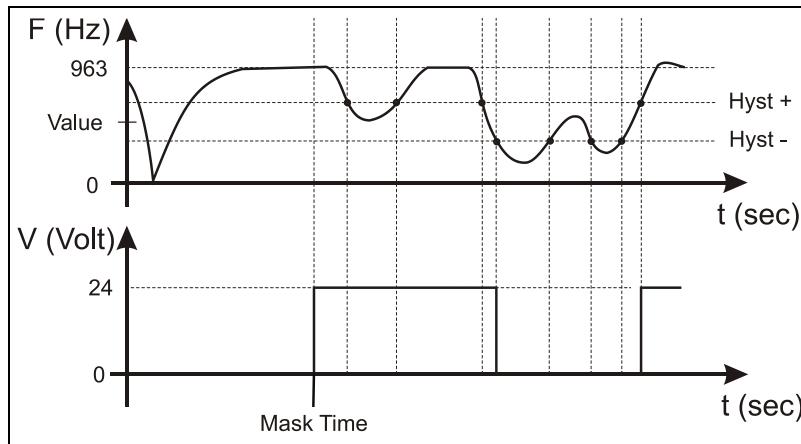


Figure 14 Diagram 1 – R1 or R2 related to frequency

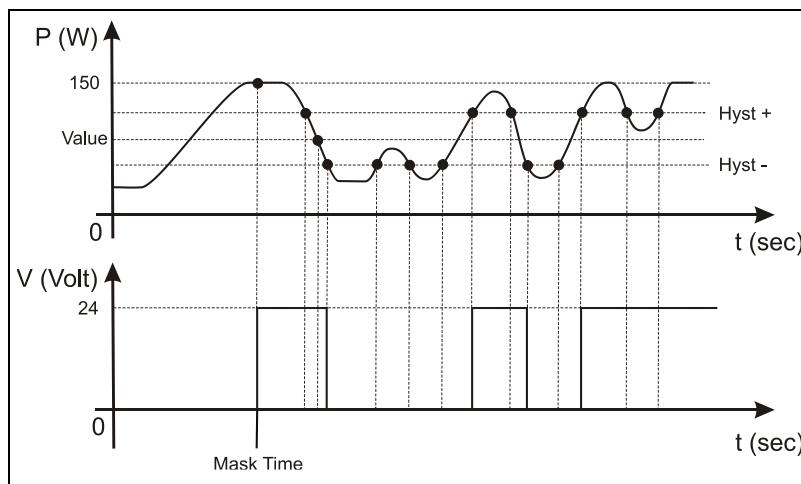


Figure 15 Diagram 2 – R1 or R2 related to power

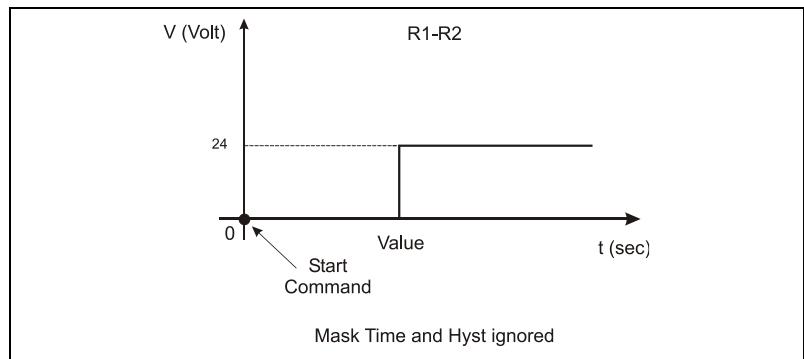


Figure 16 Diagram 3 – R1 or R2 related to time

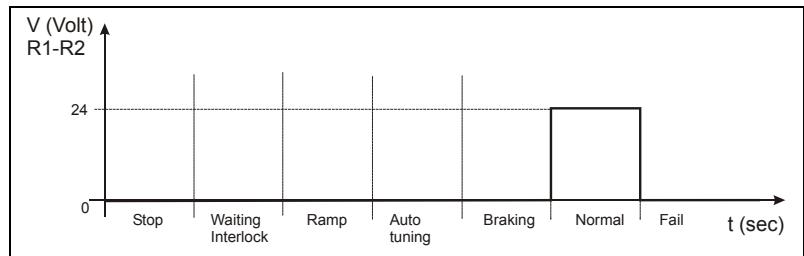


Figure 17 Diagram 4 – R1 or R2 related to Normal status

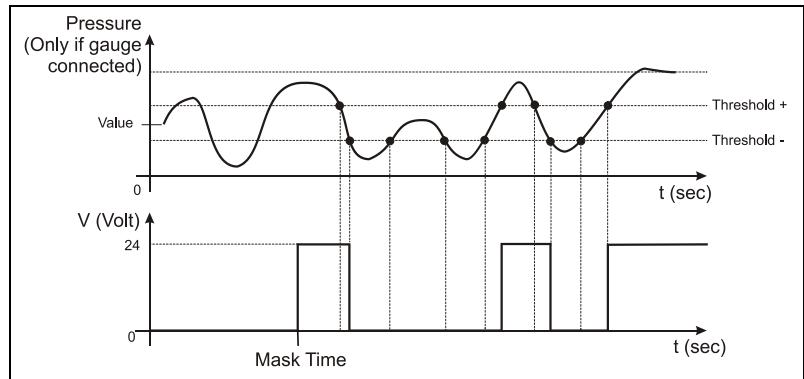


Figure 18 Diagram 5 – R1 or R2 related to pressure reading (if gauge connected)

17 Technical Information

Programmable Analog Output Diagrams

Programmable Analog Output Diagrams

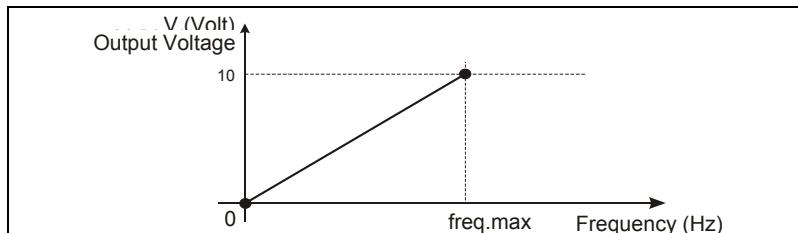


Figure 19 Diagram 1 – Programmable analog output related to frequency
(freq.max = 1010Hz)

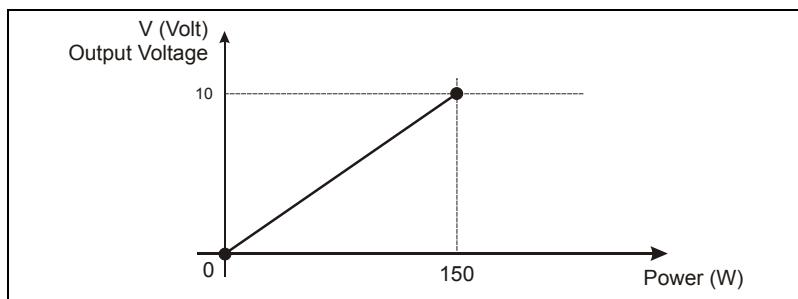


Figure 20 Diagram 2 – Programmable analog output related to power

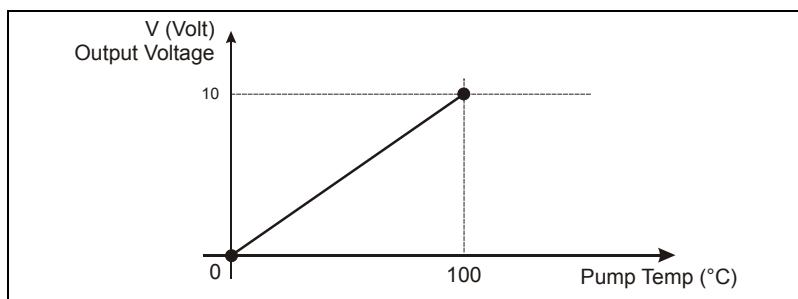


Figure 21 Diagram 3 – Programmable analog output related to pump temperature

Pump Connector

A five-meter long cable is available to connect the controller to the pump. The following figure shows the controller output connector configuration where pins:

- **A-F** = pump temperature sensor
- **B-C-D** = 75 Vac 3-phase output to pump motor stator
- **E** = EARTH PROTECTION

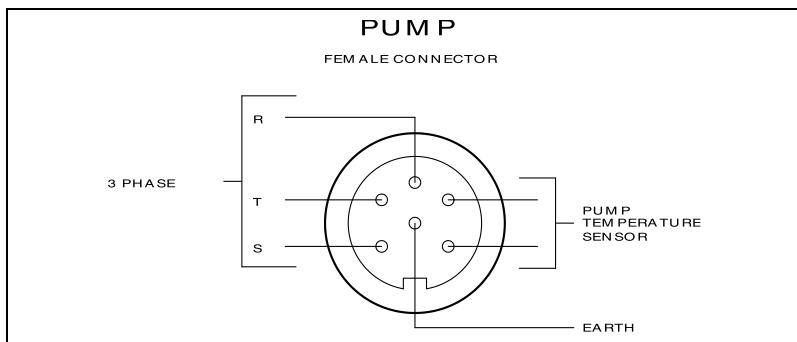


Figure 22 Controller-to-Pump Connector

J5 – Gauge Connector

This connector is available to connect the gauges.

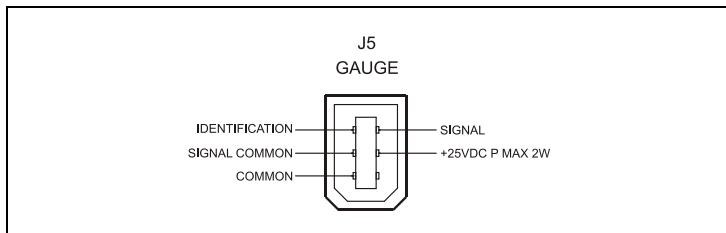


Figure 23 Gauge Connector

NOTE

The Mini-IMG gauge is intended for high vacuum use, so with pressure above 50 mTorr the signal is misinterpreted and a “false” pressure is displayed. Use a transition gauge to understand if the reading is really under 50 mTorr or not.

17 Technical Information

Programmable Analog Output Diagrams

NOTE

The maximum power provided by controller to drive a gauge is 2W, if your gauge require more power you need an external power supply.

The controller recognizes automatically the gauge connected by reading the signal “identification” in the connector.

Following a table with the gauge supported:

| Gauge model | Name showed in the display |
|---------------|----------------------------|
| FRG 700/702 | FRGa |
| IMG 500 | IMG |
| PVG 500/502 | PVGA |
| FRG 720/730 | FRGb |
| IM 500 | IM |
| CDG 500 T1000 | CDG3 |
| CDG 500 T0100 | CDG2 |
| CDG 500 T0010 | CDG1 |
| CDG 500 T0001 | CDG0 |

The controller give the error “gauge error” if the gauge connected is not supported.

There are some gauges (for example the CDG family gauge) that have the same identification. In this case the controller recognizes the family of the gauge but the user should select the right gauge by front panel.

The pressure can be read by display, by serial line (win. 224) and by Remote I/O (Programmable Analog Out), but the controller doesn't replicate the signal from the gauge.

The Programmable analog signal is according with the following table.

| ID | Gauge Model | Pressure range [mbar] | Voltage range on Analog Output [V] |
|----|--------------------------|-----------------------|------------------------------------|
| 1 | CT-100 | 1.33E-2 to 1.01E3 | 1.11 to 8.25 |
| 2 | FRG-700/702 | 5E-9 to 1E3 | 1.82 to 8.6 |
| 3 | IMG-500 | 2E-9 to 1E-2 | 1.8 to 8.5 |
| 4 | PVG-500/502 | 5E-4 to 1E3 | 1.9 to 10 |
| 6 | PCG-750/752 | 5E-5 to 1.5E3 | 0.61 to 10.23 |
| 7 | FRG-720/730 | 5E-10 to 1E3 | 0.774 to 10 |
| 8 | IM-500 (Eyesys Mini-IMG) | 1.33E-9 to 1.33E-1 | 1 to 9 |
| 9 | CDG-500 T1000 | 2.66E+1 to 1.33E3 | 0.2 to 10 |
| 10 | CDG-500 T0100 | 2.66E+0 to 1.33E2 | 0.2 to 10 |
| 11 | CDG-500 T0010 | 2.66E-1 to 1.33E1 | 0.2 to 10 |
| 12 | CDG-500 T0001 | 2.66E-2 to 1.33 | 0.2 to 10 |

When in programmable analog signal you read a voltage below the voltage range (in above table) it means “Error Over range”, if you read a voltage below the voltage range it means “Error Under range” (in these cases you can read the manual of the gauge for further details).

With the serial communication you can use the following windows:

| | |
|---------|--|
| Win 224 | Pressure reading with the format XX E XX |
| Win 257 | Gauge status (read only): 0 → when a gauge is not connected 1 → when a gauge is connected 2 → when the pressure read is under range or when the gauge give an internal error 3 → when the pressure read is under range or when the gauge give an internal error 4 → when the “identification” is present but not known by the controller |
| Win 267 | Gauge power (read/write): If you need to turn off the gauge at certain condition you can use this window 0 → gauge off 1 → gauge on (default) 2 → gauge normally off. It turns on when the set point 1 is activated. If the set point 1 type (win 101) is selected as “pressure” the gauge is always on. 3 → gauge normally off. It turns on when the set point 1 is activated. If the set point 2 type (win 171) is selected as “pressure” the gauge is always on. 4 → gauge normally off. It turns on when the set point 1 is activated. If the set point 3 type (win 101) is selected as “pressure” the gauge is always on. |

The windows from 136 to 140 manage an additional set point (set point 3) dedicated to turn ON or OFF the gauge (win 267=4)

17 Technical Information

Programmable Analog Output Diagrams

Pump Driving

Typical pump driving chart start and normal operation.

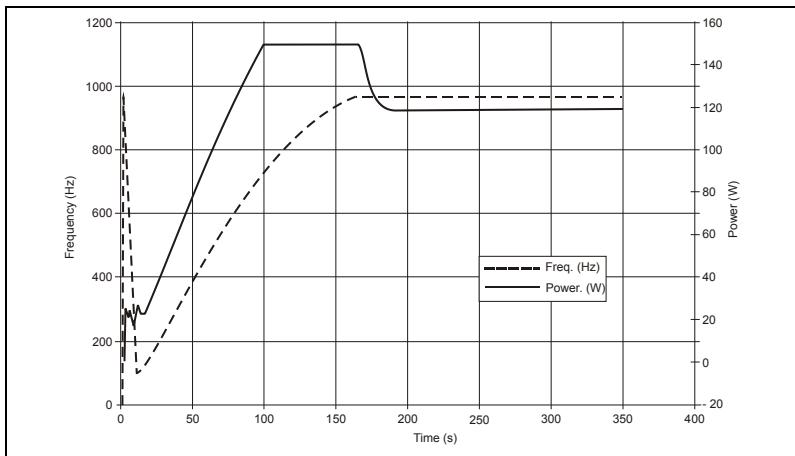


Figure 24 Diagram 4

Stop Speed Reading and Active Stop

This functions can be activated by Front Panel or serial line (Win 107, 167).

Active Stop brakes the pump using the motor. The Stop Speed reading reads the pump speed after a stop command.

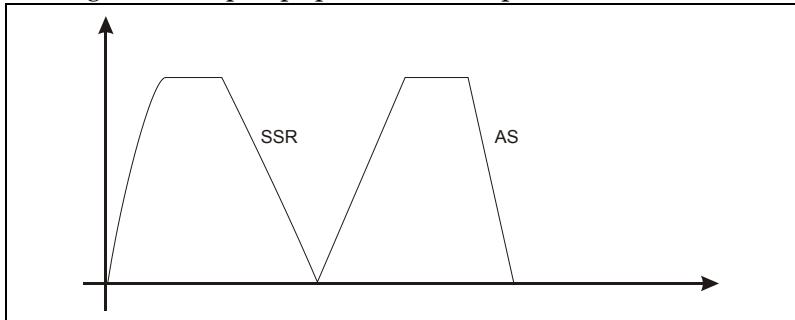


Figure 25 Diagram 5

J2 – Serial Connector

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

J2 Pin-out:

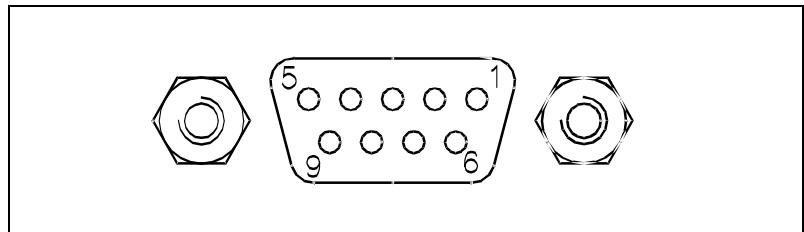


Figure 26 J 2 Connector

Tab. 5

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

17 Technical Information

J2 – Serial Connector

Connector Examples

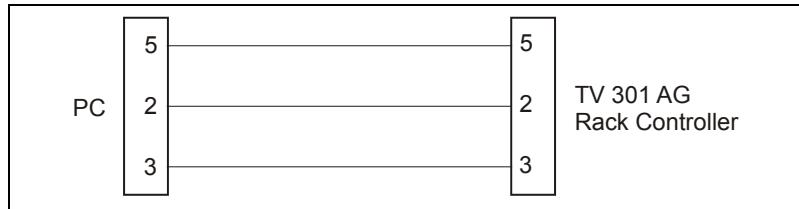


Figure 27 RS – 232 Connection

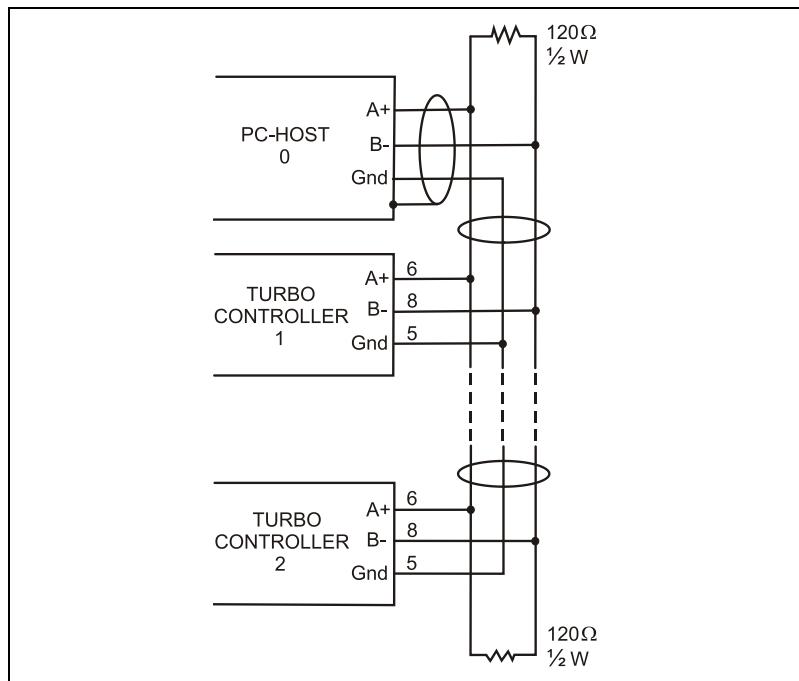


Figure 28 RS – 485 Connection

The communication port mating connector is supplied with the RS 232 PCB (AMP/Cannon or equivalent 15-pin "D" type male connector). For example, the Transmit data signal from controller (pin 2) must be connected to the host computer's receive data line (pin 2) and vice versa. Consult the host computer's instruction manual for its serial port connections.

NOTE

Agilent cannot guarantee compliance with FCC regulations for radiated emissions unless all external wiring is shielded, with the shield being terminated to the metal shroud on the D-subconnector. The cable should be secured to the connector with screws.

17 Technical Information

J2 – Serial Connector

Serial Communication Descriptions

This unit can communicate by two different protocols:

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

These two protocols can be used as well with 232 or 485 media.

NOTE

Please use "Window" protocol for new development.

Letter Protocol Description

The default protocol is “Window”

Communication format:

- 8 data bit
- no parity
- 1 stop bit
- The baud rate is programmable via front panel from 600 to 9600 baud. The controller is factory-set for 9600 baud operation.

Communication protocol:

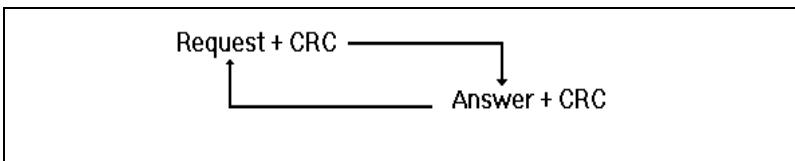
Host = Master

Controller = Slave

The communication is performed in the following way:

Host

Controller



Request is an ASCII character identifying the action that must be performed by the controller or the requested information.

Allowed ASCII characters:

- "A" = START
- "B" = STOP
- "C" = Low Speed ON
- "D" = Low Speed OFF
- "E" = Request for operational parameters
- "F" = Pump times zeroing

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Letter Protocol Description

- "G" = Parameters reading
- "H" = Parameters writing
- "I" = Request for operating status
- "J" = Request for numerical reading
- "K" = Request for counters reading.

CRC corresponds to the sum (with inverted sign) of all the preceding bytes.

e.g., the START command "A" in ASCII code = 41 inverted it will be: FF + 1 - 41 = BF.

Tab. 6

| CHARACTER | ASCII | CONVERTED ASCII FOR CRC CALCULATION |
|-----------|-------|-------------------------------------|
| "A" | 41h | - |
| CRC | - | BFh |
| "B" | 42h | - |
| CRC | - | BEh |
| "C" | 43h | - |
| CRC | - | BDh |
| "D" | 44h | - |
| CRC | - | BCh |
| "E" | 45h | - |
| CRC | - | BBh |
| "F" | 46h | - |
| CRC | - | BAh |
| "G" | 47h | - |
| CRC | - | 89h |
| "H" | 48h | - |
| <hr/> | | |
| "I" | 49h | - |
| CRC | - | B7h |
| "J" | 4Ah | - |
| CRC | - | B6h |

| CHARACTER | ASCII | CONVERTED ASCII FOR CRC CALCULATION |
|-----------|-------|-------------------------------------|
| "K" | 4Bh | - |
| CRC | - | B5h |
| "ACK" | 06h | - |
| CRC | - | FAh |
| "NACK" | 15h | - |
| CRC | - | EBh |

Answer = after a request from the host, the Controller will answer in one of the following ways:

- ACK
- NACK
- Message

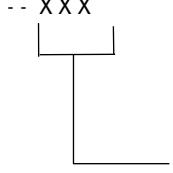
When the Request is "A", "B", "C", "D", "F" the Controller will Answer the ACK or NACK.

17 Technical Information

Letter Protocol Description

When the Request is "E, the **Answer** will contain the complete set of the following parameters:

Tab. 7

| BYTES | MEANING |
|---|---|
| 1 | |
| MSB LSB | |
| -- XXX | |
|  | |
| | 0 = STOP 1 = WAITING INTERLOCK 2 = STARTING 3 = NORMAL OPERATION 4, 5 = HIGH LOAD 6 = FAILURE 7 = APPROACHING LOW SPEED |
| 2÷5 | Cycle Time |
| 6÷9 | Pump Life |
| 10÷11 | Pump Temperature |
| 12 | Current* |
| 13 | Voltage* |
| 14÷17 | Frequency |
| 18÷19 | Cycle # |
| 20 | R1 Status |
| 21 | R2 Status |
| 22 | CRC |

*The values for current and voltage are given as numbers, scaled from 0 to 255, where 0 corresponds to 0 V and 255 to the full scale voltage (130 V) or current (2,5 A).

When the **Request** is "G", the **Answer** will contain a string of 11 characters with the following parameters:

Tab. 8

| BYTES | MEANING |
|-------|--|
| 1-2 | Pump cycles number (integer coded in 2 bytes) |
| 3 | Speed threshold |
| 4-7 | Run up time in seconds (long coded in 4 bytes) |
| 8 | Deat time (0 = NO 1 = YES) |
| 9 | Reserved |
| 10 | Soft Start mode (0 = NO 1=YES) |
| 11 | CRC |

When the configuration parameters have to be changed, send a **Request** string with "H" characters of the following type:

"H" + data + CRC

17 Technical Information

Letter Protocol Description

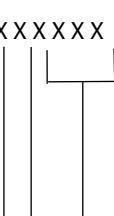
The following parameters can be changed:

Tab. 9

| BYTES | MEANING |
|--------------|--|
| 1 | Speed threshold |
| 2-5 | Run up time in seconds (long coded in 4 bytes) |
| 6 | Deat time (0 = NO 1 = YES) |
| 7 | Reserved |
| 8 | Soft Start mode (0 = YES 1 = NO) |
| 9 | CRC |

When the **Request** is "I" (Status readings), the **Answer** will contain a string of 2 characters with the following parameters:

Tab. 10

| BYTES | MEANING |
|--|---------|
| 1 | |
| MSB LSB | |
| -- X X X X X X | |
|  | |
| 0 = STOP | |
| 1 = WAITING INTERLOCK | |
| 2 = STARTING | |
| 3 = NORMAL OPERATION | |
| 4, 5 = HIGH LOAD | |
| 6 = FAILURE | |
| 7 = APPROACHING LOW SPEED | |
| R2 status 0 = OFF 1 = ON | |
| R1 status 0 = OFF 1 = ON | |
| 2 | CRC |

When the **Request** is "J" (Numerical readings), the **Answer** will contain a string of 5 characters with the following parameters:

Tab. 11

| BYTES | MEANING |
|--------------|---|
| 1 | Current (0-255 scaled) |
| 2 | Voltage (0-255 scaled) |
| 3 | Rotational speed KRPM |
| 4 | Pump temperature °C (0-254 temperature reading, 255 = fail) |
| 5 | CRC |

When the **Request** is "K" (Counters readings), the **Answer** will contain a string of 11 characters with the following parameters:

Tab. 12

| BYTES | MEANING |
|--------------|----------------|
| 1-4 | Cycle time |
| 5-8 | Pump life |
| 9-10 | Cycle number |
| 11 | CRC |

On request a sample program in QBasic language is available by Agilent.

Window Protocol

Description

Communication Format

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

Communication Protocol

The communication protocol is a MASTER/SLAVE type where:

- Host = MASTER
- Controller = SLAVE

The communication is performed in the following way:

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

The MESSAGE is a string with the following format:

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

Where:

NOTE

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

<STX> (Start of transmission) = 0x02

<ADDR> (Unit address) = 0x80 (for RS 232)

<ADDR> (Unit address) = 0x80 + device number (0 to 31)
(for RS 485)

<WIN> (Window) = a string of 3 numeric character indicating the window number (from '000' to '999'); for the meaning of each window see the relevant paragraph.

<COM> (Command) = 0x30 to read the window, 0x31 to write into the window

<DATA> = an alphanumeric ASCII string with the data to be written into the window. In case of a reading command this field is not present. The field length is variable according to the data type as per the following table:

Tab. 13

| Data Type | Field Length | Valid Characters |
|------------------|--------------|--|
| Logic (L) | 1 | '0' = OFF '1' = ON |
| Numeric (N) | 6 | '-' , '.' , '0' ... '9' right justified with '0' |
| Alphanumeric (A) | 10 | from blank to '_' (ASCII) |

<ETX> (End of transmission) = 0x03

<CRC> = XOR of all characters subsequent to <STX> and including the <ETX> terminator. The value is hexadecimal coded and indicated by two ASCII character.

The addressed SLAVE will respond with an ANSWER whose structure depends from the MESSAGE type. When the MESSAGE is a reading command, the SLAVE will respond transmitting a string with the same structure of the MESSAGE.

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Letter Protocol Description

NOTE

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

The controller can answers with the following response types:

Tab. 14

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

Examples

Command: START

Source: PC

Destination: Controller

| | | | | | | | | | |
|-----|------|--------|----|----|----|-----|-----|----|----|
| 02 | 80 | 30 | 30 | 30 | 31 | 31 | 03 | 42 | 33 |
| STX | ADDR | WINDOW | | WR | ON | ETX | CRC | | |

Source: Controller

Destination: PC

| | | | | | |
|-----|------|-----|-----|-----|----|
| 02 | 80 | 06 | 03 | 38 | 35 |
| STX | ADDR | ACK | ETX | CRC | |

Command: STOP

Source: PC

Destination: Controller

| | | | | | | | | | |
|-----|------|--------|----|----|-----|-----|-----|----|----|
| 02 | 80 | 30 | 30 | 30 | 31 | 30 | 03 | 42 | 32 |
| STX | ADDR | WINDOW | | WR | OFF | ETX | CRC | | |

Source: Controller

Destination: PC

| | | | | | |
|-----|------|-----|-----|-----|----|
| 02 | 80 | 06 | 03 | 38 | 35 |
| STX | ADDR | ACK | ETX | CRC | |

17 Technical Information

Examples

Command: SOFT-START (ON)

Source: PC

Destination: Controller

| | | | | | | | | | |
|-----|------|--------|----|----|----|-----|-----|----|----|
| 02 | 80 | 31 | 30 | 30 | 31 | 31 | 03 | 42 | 32 |
| STX | ADDR | WINDOW | | WR | ON | ETX | CRC | | |

Source: Controller

Destination: PC

| | | | | | |
|-----|------|-----|-----|-----|----|
| 02 | 80 | 06 | 03 | 38 | 35 |
| STX | ADDR | ACK | ETX | CRC | |

Command: SOFT-START (OFF)

Source: PC

Destination: Controller

| | | | | | | | | | |
|-----|------|--------|----|----|-----|-----|-----|----|----|
| 02 | 80 | 31 | 30 | 30 | 31 | 30 | 03 | 42 | 33 |
| STX | ADDR | WINDOW | | WR | OFF | ETX | CRC | | |

Source: Controller

Destination: PC

| | | | | | |
|-----|------|-----|-----|-----|----|
| 02 | 80 | 06 | 03 | 38 | 35 |
| STX | ADDR | ACK | ETX | CRC | |

Command: READ PUMP STATUS

Source: PC

Destination: Controller (with address = 3)

| | | | | | | | | |
|-----|------|--------|----|----|-----|-----|----|----|
| 02 | 83 | 32 | 30 | 35 | 30 | 03 | 38 | 37 |
| STX | ADDR | WINDOW | | RD | ETX | CRC | | |

Source: Controller (with address = 3 in stop status)

Destination: PC

| | | | | | | | | | | | | | |
|-----|-------|--------|---|---|---------------|---|---|---|---|-----|-----|---|---|
| 02 | 83 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 03 | 3 | 3 |
| | | 2 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 3 | 7 |
| STX | ADD R | WINDOW | | | DATA (STATUS) | | | | | ETX | CRC | | |

Command: REAL SERIAL TYPE

Source: PC

Destination: Controller (with address = 3 in 485 mode)

| | | | | | | | | |
|-----|------|--------|----|----|-----|-----|----|----|
| 02 | 83 | 35 | 30 | 34 | 30 | 03 | 38 | 31 |
| STX | ADDR | WINDOW | | RD | ETX | CRC | | |

Source: Controller

Destination: PC

| | | | | | | | | | |
|-----|------|--------|----|----|------|-----|-----|----|----|
| 02 | 83 | 35 | 30 | 34 | 30 | 31 | 03 | 42 | 30 |
| STX | ADDR | WINDOW | | RD | DATA | ETX | CRC | | |

17 Technical Information

Examples

Window Meanings

Tab. 15 Accessories and Spare Parts

| N. | Read/ Write | Data Type | Description | Admitted Values |
|-----|----------------|--------------|---|---|
| 000 | R/W | L | Start/Stop (in remote/ Front mode the window is a read only) | Start = 1 Stop = 0 |
| 001 | R/W | L | Low Speed Activation | No = 0 Yes = 1 (default = 0) |
| 008 | R/W | L | Remote (default) or Serial configuration | Remote = 1 Serial = 0 (default = 1) |
| 100 | R/W | L | Soft Start (write only in Stop condition) | YES = 1 NO = 0 |
| 101 | R/W | N | R1 Set Point type | 0 = Frequency 1 = Power 2 = Time 3 = Normal (default = 3) 4 = Pressure (available only if the gauge is connected) |
| 102 | R/W | N | R1 Set Point valve (expressed in Hz, W or s) | (default = 900) |
| 103 | R/W | N | Set Point delay: time between the pump start and the set point check (seconds) | 0 to 99999 (default = 0) |
| 104 | R/W | L | Set Point signal activation type: the signal can be "high level active" or "low level active" | 0 = high level active 1 = low level active (default = 0) |
| 105 | R/W | N | Set point hysteresis (in % of value) | 0 to 100 (default = 2) |
| 106 | R/W | L | Water cooling | 0 = NO 1 = YES |
| 107 | R/W | L | Active Stop (write only in stop) | 0 = NO 1 = YES |
| 108 | R/W | N | Baud rate | 600 = 0 1200 = 1 2400 = 2 4800 = 3 9600 = 4 (default = 4) |

| | | | | |
|-----|-----------------------------|---|--|---|
| 109 | W | L | Pump life/ cycle time/ cycle number reset | To reset write '1' |
| 110 | R/W | L | Interlock type (default = 0) | Impulse = 0 Continuous = 1 |
| 111 | R/W | L | Analog output type: output voltage signal proportional to frequency or power | 0 = frequency 1 = power (default = 1) 2 = Pump temperature 3 = Pressure |
| 117 | R/W | N | Low Speed frequency (Hz) | 000 to 1010 (default = 800) |
| 120 | R/W | N | Rotational frequency setting (Hz) | Low speed frequency (win 117) to 1010 (default = 1010) |
| 122 | R/W | L | Set vent valve on/off (on = closed) | On = 1 Off = 0 (default = 1) |
| 123 | Reserved to Agilent service | | | |
| 124 | | | | |
| 125 | R/W | L | Set the vent valve operation | Automatic = 0 (see note 1.) On command = 1 (see note 2.) |
| 126 | R/W | N | Vent valve opening delay (expressed in 0.2 sec) | 0 to 65535 (corresponding to 0 to 13107 sec) |
| 130 | Reserved to Agilent service | | | |
| 136 | R/W | N | Gauge Set Point Type | 0 = Freq 1 = Power 2 = Time 3 = Normal (default) |
| 137 | R/W | N | Gauge Set Point Value (Hz, W, s) | (default (867)) |
| 138 | R/W | N | Gauge Set Point Mask (sec) | (default = 0) |
| 139 | R/W | L | Gauge Set Point Segnal Activation Type | 0 = high level active (default) 1 = low level active |
| 140 | R/W | N | Gauge Set front Mysteresis (in % of R2 Valve) | (default = 2) |
| 143 | R/W | N | External Fan Configuration | 0 = ON 1 = automatic 2 = serial (default = 2) |
| 144 | R/W | L | External Fan Activation | 0 = OFF |

17 Technical Information

Examples

| 1 = ON (default = 0) | | | | |
|-------------------------|-----|---|---|---|
| 147 | R/W | N | Vent open time See "vent connector" paragraph | 0 = infinite 1 bit = 0.2 sec |
| 155 | R | N | Power limit applied Read the maximum allowable power | watt |
| 157 | R/W | N | Gas load type. Select the gas load to the pump | Ø = N ₂ 1 = Av |
| 161 | R/W | N | Pressure Reading Connection Factor See "GAUGE CONNECTOR" for more details | 0 to 10 0 = 0 10 = 1 = N ₂ |
| 162 | R/W | A | R1 Set Point Pressure Valve Valid if min. 101 = 4 Format X.X E. XX Where X = 0 to 9 s = + or - | |
| 163 | R/W | N | Pressure unit of measure | 0 = mBar 1 = Pa 2 = Torr |
| 167 | R/W | A | Stop speed reading Activates / deactivates the pump speed reading after Stop command | 0 = disable 1 = enable |
| 171 | R/W | N | R2 Set Point Type | 0 = Freq 1 = Power 2 = Time 3 = Normal (default = 3) 4 = Pressure (available only if the gauge is connected) |
| 172 | R/W | N | R2 Set Point Value (Hz, W, s) | |
| 173 | R/W | N | R2 Set Point Mask (sec) | |
| 174 | R/W | L | R2 Set Point Signal Activation Type | Ø = high level active 1 = low level active |
| 175 | R/W | N | R2 Set front Mysterious (in % of R2 Valve) | |
| 176 | R | A | R2 Set Point Pressure Valve Valid in win 171 = 4 Format X.X E X.X Where: X= 0 to 9 s = + or - | |
| 177 | R/W | L | Start Output Mode | 0 = Starting (Output ON only with pump Status = Starting) 1 = running (Output ON when the pump is running) (default) |

| | | | | |
|-----|-----|---|--|---|
| 181 | R/W | N | Gas type | 0 = not configured 1 = Nitrogen 2 = Argon 3 = Hydrogen 4 = other |
| 182 | R/W | N | Gas correction | |
| 200 | R | N | Pump current in mA dc | |
| 201 | R | N | Pump voltage in Vdc | |
| 202 | R | N | Pump power in W (pump current x pump voltage duty cycle) | |
| 203 | R | N | Driving frequency in Hz | |
| 204 | R | N | Pump temperature in °C | 0 to 70 |
| 205 | R | N | Pump status | Stop = 0 Waiting intlk = 1 Starting = 2 Auto-tuning = 3 Braking = 4 Normal = 5 Fail = 6 |
| 206 | R | N | Error code | Bit description: see the following figure |
| 211 | R | N | Controller Heatsink Temperature (°C) | |
| 216 | R | N | Controller Air Temperature (°C). | |
| 224 | R | A | Pressure reading Format = X.X E XX | |
| 226 | R | N | Rotation Frequency (rpm) | |
| 257 | R | N | Gauge status | 0 = No gauge connected 1 = gauge connected 2 = Under range/gauge error 3 = over range/gauge error 4 = Rid unknown |
| 267 | R/W | N | Gauge power | 0 = gauge off 1 = gauge On 2 = programmable power sp1 3 = programmable power sp2 4 = programmable power sp3 |
| 300 | R | N | Cycle time in minutes (zeroed by the reset command) | 0 to 999999 |
| 301 | R | N | Cycle number (zeroed by the reset command) | 0 to 9999 |

17 Technical Information

Examples

| | | | | |
|-----|-----|---|--|--|
| 302 | R | N | Pump life in hours (zeroed by the reset command) | 0 to 999999 |
| 320 | | | Reserved to Agilent service to 399 | |
| 400 | R | A | CRC EPROM (QE) | QE8XXXX (where "XXXX" are variable) |
| 402 | R | A | CRC Param. (PA) | PA8XXXX (where "XXXX" are variable) |
| 404 | R | A | CRC Parameter structure | "XXXX" |
| 500 | | | Reserved to Agilent service | |
| 503 | R/W | N | RS 485 address | 0 to 31 (default = 0) |
| 504 | R/W | L | Serial type select | 0 = RS 232 1 = RS 485 (default = 0) |

NOTE

1. Automatic means that when the controller stops, the vent valve is opened with a delay defined by window n. 126; when the controller starts, the vent valve is immediately closed.
2. On command means that the vent valve is opened or closed by means of window n. 122.

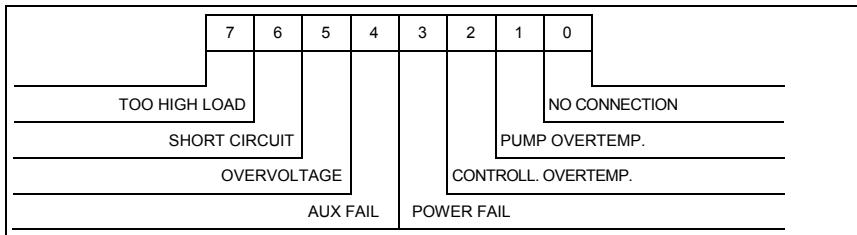


Figure 29 Window N. 206 Bit Description

How to Use by Front Panel

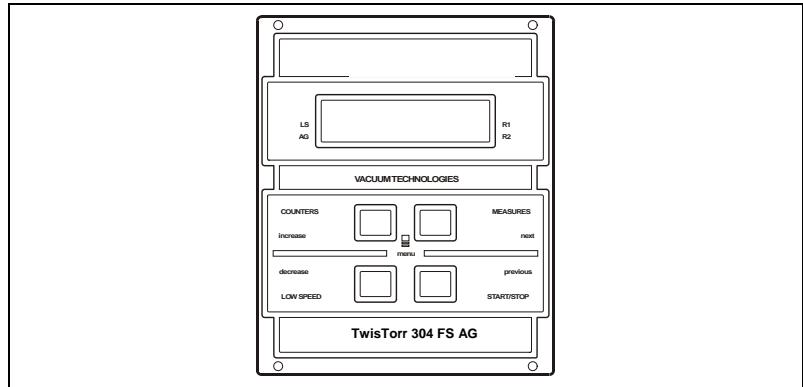


Figure 30

- **Start Stop and Reset Fail button**

Press once for the START command and again for the STOP command. In the case of controller's failure, press once to reset the fail condition.

NOTE

The front panel START/STOP function is available only if the controller is set to "FRONT mode". If it is set to "REMOTE mode", when the key is pressed an error message is shown indicating "COMMAND LOCKED IN REMOTE", if it is set to "SERIAL" mode, the "COMMAND LOCKED IN SERIAL MODE" error message is displayed. The "Reset Fail" function is always available regardless of controller mode.

- **Low Speed**

Press once to activate the LOW SPEED command; press again to de-activate.

NOTE

The front panel LOW SPEED function is available only if the controller is set to "FRONT"; otherwise an error message is returned. If it is set to "REMOTE" mode, the COMMAND LOCKED IN REMOTE error message is displayed while if it is in "SERIAL" mode the "COMMAND LOCKED IN SERIAL MODE" error message is returned.

17 Technical Information

How to Use by Front Panel

- **Counters**

Pressing the first time on the display, the following information is displayed:

| | | | | | | | | | | | | | | | | |
|--|--|--|----------|----------|----------|----------|----------|--|----------|----------|----------|----------|----------|----------|--|--|
| | | | C | Y | C | L | E | | X | X | X | X | | | | |
| | | | T | I | M | E | | | X | X | X | X | X | m | | |

Where:

CYCLE XXXX Number of start/stop cycles

TIME XXXXXm Time of last cycle (minutes)

Pressing a second time, the following is displayed:

| | | | | | | | | | | | | | | | | |
|--|--|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|--|--|--|
| | | | P | U | M | P | | L | I | F | E | | | | | |
| | | | | X | h | | | | | |

PUMP LIFE

XXXXXX total operating time (hours) of the pump

Pressing a third time, the following message Is displayed:

| | | | | | | | | | | | | | | | | |
|--|----------|----------|---|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|
| | M | N | : | | X | | |
| | S | N | : | | Y | |

MN Model Number of the controller

SN Serial Number

On pressing the key again, the main screen page is redisplayed.

- **Measures**

Pressing once, the following is obtained:

| | | | | | | | | | | | | | | | |
|----------|---|----------|----------|----------|----------|---|----------|----------|---|----------|----------|----------|----------|----------|----------|
| P | = | X | X | X | W | | | | | X | X | X | X | H | z |
| | | | | | T | = | X | X | ° | C | | | | | |

Where:

P = XXX W is the current power supplied to the pump

T = XX °C is the current temperature of the pump

XXXX Hz is the current frequency of rotation of the pump. This value is set by default to 963 Hz but can be modified by the user according to needs, proceeding as described in the “PROGRAMMING” paragraph. The unit of measurement (HZ / Krpm, default = Hz) is selected by the user from the INPUT/OUTPUT->SPED menu.

If the SOFT-START function (PUMP SETTING menu → SOFTSTART is active and the pump is ramping, indication of the speed of rotation is replaced with a bar-graph that indicates the soft-start step in course and the total number of steps to be performed. On completion of the soft-start ramp, the bar-graph is replaced with indication of the frequency of rotation of the pump

Pressing twice, the following is obtained:

| | | | | | | | | | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|----------|--|----------|----------|----------|----------|----------|----------|----------|
| N | O | R | M | A | L | | | | | X | X | X | X | H | z |
| | I | = | X | . | X | X | A | | V | = | X | X | X | V | |

Where:

NORMAL: indicates the operating regime of the pump

XXXHz: see description “Pressing once” **Measures** key

I=X.XXA: indicates the current absorbed by the pump

V= XXX V: indicates the pump driving voltage

Pressing 3 times, the following is obtained:

| | | | | | | | | | | | | | | | |
|----------|---|----------|----------|----------|----------|----------|---|----------|----------|----------|----------|----------|----------|----------|----------|
| P | = | X | X | X | W | | | | | X | X | X | X | H | z |
| | | X | . | X | X | E | - | Y | Y | m | B | a | R | | |

17 Technical Information

How to Use by Front Panel

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X | . | X | E | - | Y | Y | m | B | a | r | | Z | Z | Z | Z |
| P | = | X | X | X | W | | | | X | X | X | X | H | z | |

Where:

P= XXXW: indicates the current power supplied to the pump

XXXHz: see description “Pressing once” **Measures** key

X.XE-YYmBar: indicates the pressure currently measured by the gauge.

ZZZZ: indicates the kind of gauge (see table of gauge supported in the gauge chapter)

Other possible indications:

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|--|---|---|---|---|---|---|---|---|
| P | = | X | X | X | W | | | | | X | X | X | X | H | z |
| | | G | A | U | G | E | | E | R | R | O | R | | | |

Where:

GAUGE_ERROR: gauge not connected or broken

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|--|---|---|---|---|---|---|---|
| P | = | X | X | X | W | | | | | X | X | X | X | H | z |
| P | R | E | S | S | U | R | E | | U | N | D | E | R | | |

Where:

PRESS UNDER: indicates that the pressure read is below the minimum measurement threshold set (5 E-9 mBar)

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|--|---|---|---|---|---|---|---|
| P | = | X | X | X | W | | | | | X | X | X | X | H | z |
| P | R | E | S | S | U | R | E | | O | V | E | R | | | |

Where:

PRESS OVER: indicates that the pressure measured is above the maximum measurement threshold set (1000 mBar)

The unit of measurement of the pressure can be selected (GAUGE menu→Unit) from “mBar”, “Pa”, “torr”

Pressing 4 times returns to the following screen page:

| N | O | R | M | A | L | | | | | X | X | X | X | H | z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | X | X | X | X | X | X | X | X | X | X | X | X | X | X | |

Where:

NORMAL: indicates the operating regime of the pump

XXXHz: see description “Pressing once” **Measures** key

The operating mode of the controller is shown at the bottom in the center. This may be:

FRONT: front mode (the controller accepts START/STOP and LOW SPEED commands from the front panel)

REMOTE: remote mode (the controller accepts START/STOP and LOW SPEED commands via the rear connector)

RS232: the controller accepts commands from the serial port according to the RS232 standard.

RS485 [XX]: the controller accepts commands from the serial port in RS485 mode with address XX (XX from 0 to 31)

PROFIBUS [YYY]: the controller accepts commands from the PROFIBUS port with address YYY

17 Technical Information

How to Use by Front Panel

Black rectangles as shown below may be displayed at any time in the first and last box of the bottom line of the display (opposite the LS / AG / R1 / R2 captions). The meaning of these rectangles is as follows:

LS → the controller is at LOW SPEED

AG → the Gauge is connected to the controller

R1 → relay (set point) R1 is active

R2 → relay (set point) R2 is active

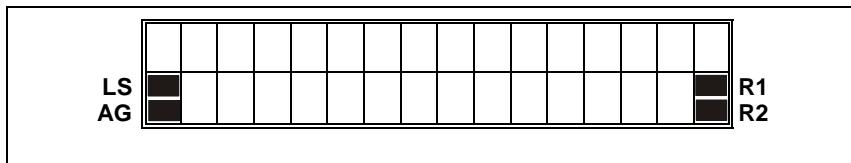


Figure 31

Use

General

Make all vacuum manifold and electrical connections and refer to TwisTorr 304 FS pump instruction manual before to operating the TwisTorr 304 FS AG Rack controller.

WARNING!



To avoid injury to personnel and damage to the equipment, if the pump is laying on a table make sure it is steady. Never operate the TwisTorr 304 FS pump if the pump inlet is not connected to the system or blanked off.

NOTE

The input signal P1 connector should be left in position including the shipping links if no external connections are made. The forepump and the TwisTorr 304 FS pump can be switched on at the same time.

17 Technical Information

Use

Startup

- Plug the controller power cable into a suitable power source.
The display lights up for approx. 2 seconds and shows:

| | | | | | | | | | | | | | | | |
|--|--|--|--|---|---|---|---|---|---|---|---|--|--|--|--|
| | | | | A | U | T | O | T | E | S | T | | | | |
| | | | | | | | O | K | | | | | | | |

- After 2 seconds, the display shows the following screen page:

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | T | O | P | | | | | | . | . | . | . | H | z |
| | | | | F | R | O | N | T | | | | | | |

NOTE

If the pump is not connected, the display will be as follows:

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|--|---|---|---|---|---|---|---|---|---|---|
| C | H | E | C | K | | C | O | N | N | E | C | T | I | O | N |
| | | | T | O | | P | U | M | P | | | | | | |

- Pressing the START button, the pump is started and the display shows the following screen page.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|
| S | T | A | R | T | I | N | G | | X | X. | X | X | H | z |
| | | | | F | R | O | N | T | | | | | | |

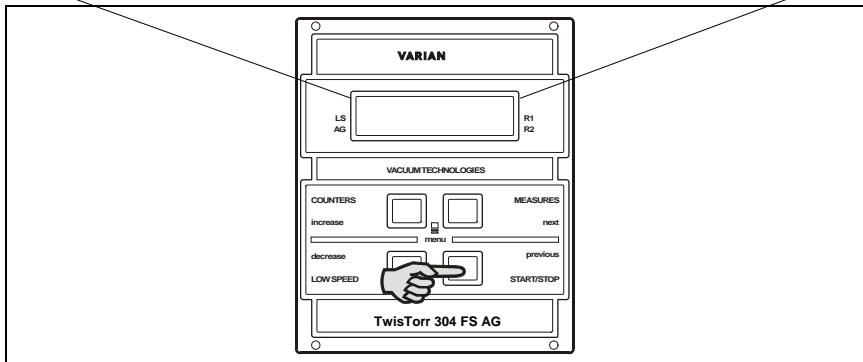


Figure 32

This screen page will be visible throughout the acceleration phase the pump. The increasing value of the rotation frequency will be displayed in the boxes marked X; the user may decide to express this value in Hz (default) or in KRMP.

Once operating speed has been reached, the following screen page is displayed:

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|
| N | O | R | M | A | L | | | | | | 9. | 6 | 3 | H | z |
| | | | | | | F | R | O | N | T | | | | | |

If the LOW SPEED key is pressed, the above screen page changes to:

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B | R | A | K | I | N | G | | | | X | X | X | X | H | z |
| | | | | | | F | R | O | N | T | | | | | |

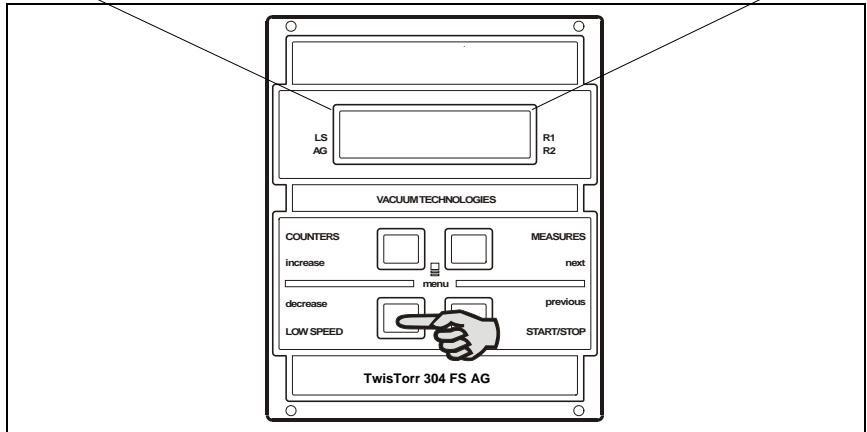


Figure 33

17 Technical Information

Use

The following screen page is displayed on reaching the pre-established speed:

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | O | R | M | A | L | | | | | 9 | 0 | 0 | H | z |
| | | | | | F | R | O | N | T | | | | | |

The rotation value set in both NORMAL and LOW SPEED mode can be modified by the user as described in the Programming section of this manual.

- Press the MEASURES push button: the display shows:

| | | | | | | | | | | | | | | |
|---|---|--|---|---|---|---|---|---|---|---|---|---|---|---|
| P | = | | 5 | 0 | W | | | | | 9 | 6 | 3 | H | z |
| | | | | | T | = | 4 | 5 | ° | C | | | | |

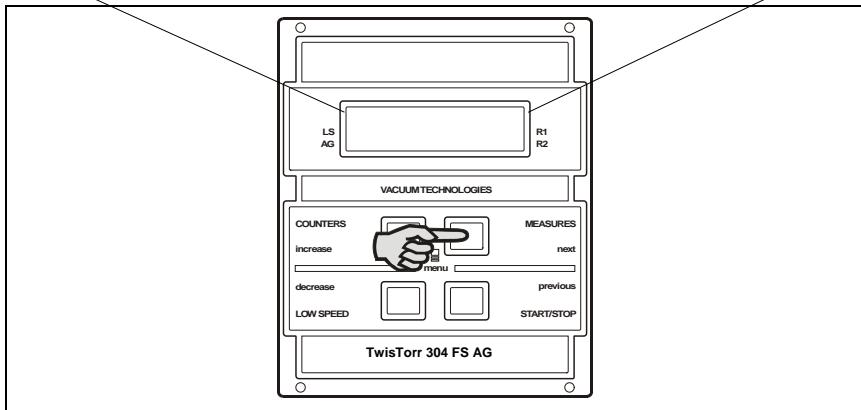


Figure 34

Where:

P = is the DC power drawn by the pump (range 0 to 999 Watt)

Hz = is the rotational speed of the pump as a function of the controller output frequency

°C = is the temperature of the outer ring of the upper bearing (range 00 to 99 °C)

- Pressing MEASURES key twice, the following screen page is displayed:

| | | | | | | | | | | | | | | | |
|----------|----------|----------|----------|----------|----------|---|---|--|---|---|----------|----------|----------|----------|----------|
| N | O | R | M | A | L | | | | | | g | 6 | 3 | H | z |
| | I | = | 1 | . | 2 | 0 | A | | V | = | 4 | 2 | V | | |

17 Technical Information

Use

Where:

I is the current supplied by the controller to the pump at that precise moment.

V is the voltage at which the controller is powering the pump at that moment

- Pressing the MEASURES key three times, with the GAUGE connected and functioning, the following screen page is displayed:

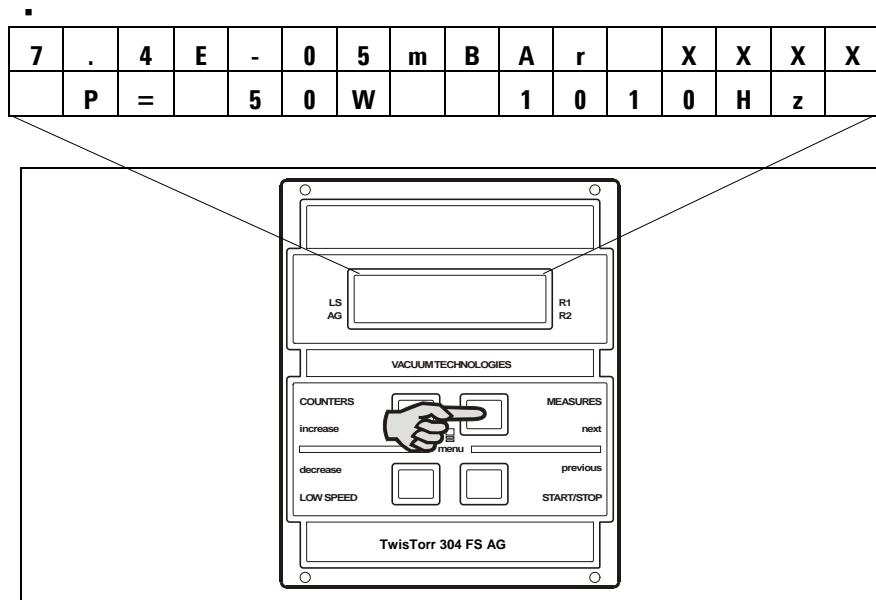


Figure 35

Where:

mBar shows the pressure value measured

XXXX shows the kind of gauge connected

The following messages may be displayed instead of the pressure:

GAUGE ERROR: indicates that the GAUGE is not identified

PRESSURE UNDER: indicates that a pressure below the minimum threshold set has been measured

PRESSURE OVER: indicates that a pressure exceeding the maximum threshold set has been measured

- Pressing the COUNTERS key, the following is obtained:

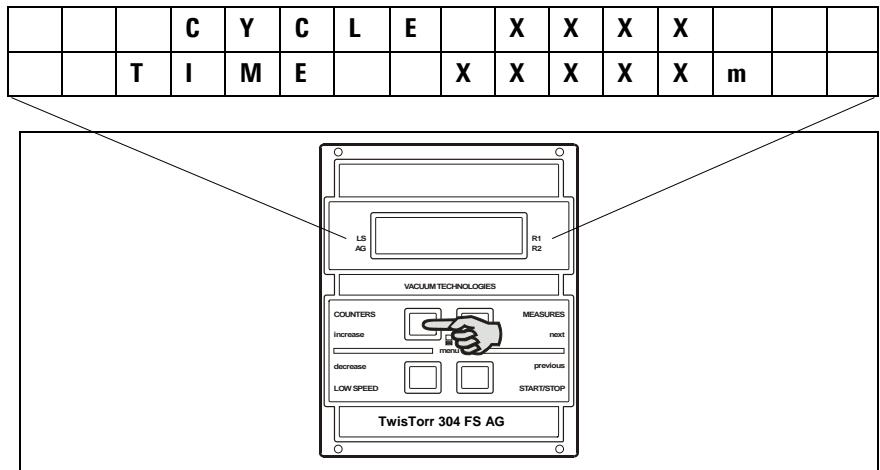


Figure 36

Where:

CYCLE XXXX Number of start/stop cycles

TIME XXXXXm Time of last cycle (minutes)

Pressing again:

| | | | | | | | | | | | | | |
|--|--|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | P | U | M | P | | L | I | F | E | | |
| | | | | X | X | X | X | X | X | h | | | |

Where:

PUMP LIFE XXXXXX total operating time (hours) of the pump

Programming

Configuration Menu

To access the configuration menu, press the COUNTERS + MEASURES buttons at the same time for at least 2 sec.

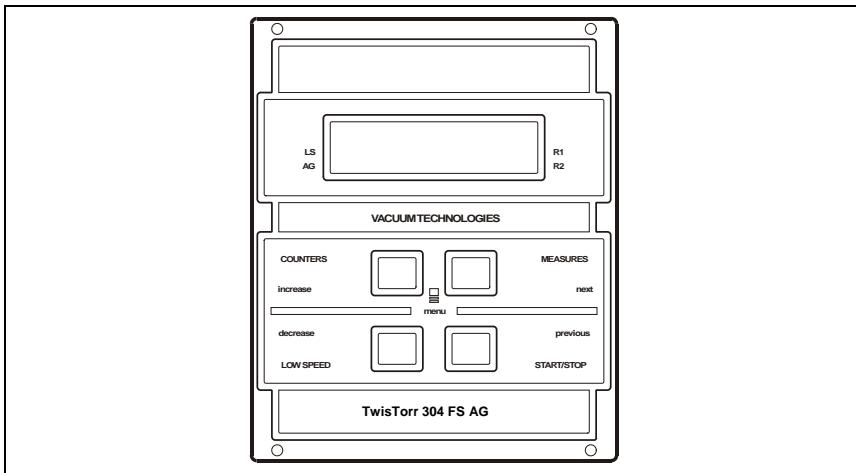


Figure 37

In programming mode, the meaning of the 4 buttons changes as follows:

- **COUNTERS/LOW SPEED** speed become “**INCREASE** and **DECREASE**” and make it possible to select the next or previous value of a parameter (in the case of compulsory parameters) or to increase/decrease the individual digit of a parameter (in the case of numeric parameters)
- The “**MEASURES** and **START/STOP**” buttons become “**NEXT** and **PREVIOUS**” and make it possible to select the next parameter (or next digit of a numeric parameter) or previous parameter.

Switching from one parameter to the next (using the “**NEXT**” key) indicates confirmation of any changes made to the specific parameter. If the changes cannot be accepted by the controller, the “**Data out of limits**” error message is displayed, the changes are cancelled and the value of the parameter prior to the modification is reproposed.

Switching from a parameter to the previous parameter (using the “**PREVIOUS**” key) indicates the intention to abort any changes made to the specific parameter. Abort is indicated by the caption “**Changes aborted**” that is displayed for approx. 1 second before moving to the previous parameter.

The configuration environment has a tree-like structure and permits “circular” navigation; on reaching the end of a branch, the user is returned automatically to the start of this. Navigation can proceed in a forwards (**NEXT** button) or backwards (**PREVIOUS** button) direction

It is possible to enter a sub-branch by pressing the “**INCREASE**” button. If no buttons are pressed for more than 1 minute, the controller automatically quits the programming environment canceling any modifications made to the current parameter.

The figure below shows the first level of the configuration menu and the links to the respective second level menus (indicated below).

17 Technical Information

Programming

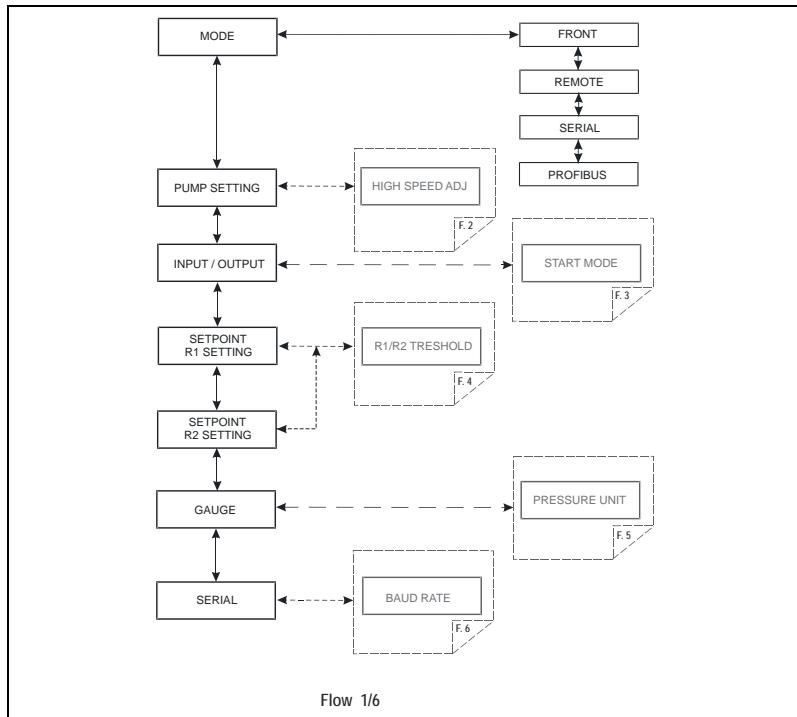


Figure 38

Mode Menu

- **MODE:** permits selection (see Flow 1/6) of the operating mode of the controller from those indicated below:
 - **FRONT:** accepts commands from the front panel
 - **REMOTE:** accepts commands from the remote input connector
 - **SERIAL:** accepts commands from the serial interface (or Profibus interface if present)
 - **PROFIBUS:** this operating mode is present only if the Profibus interface is installed on the controller

Pump Setting Menu

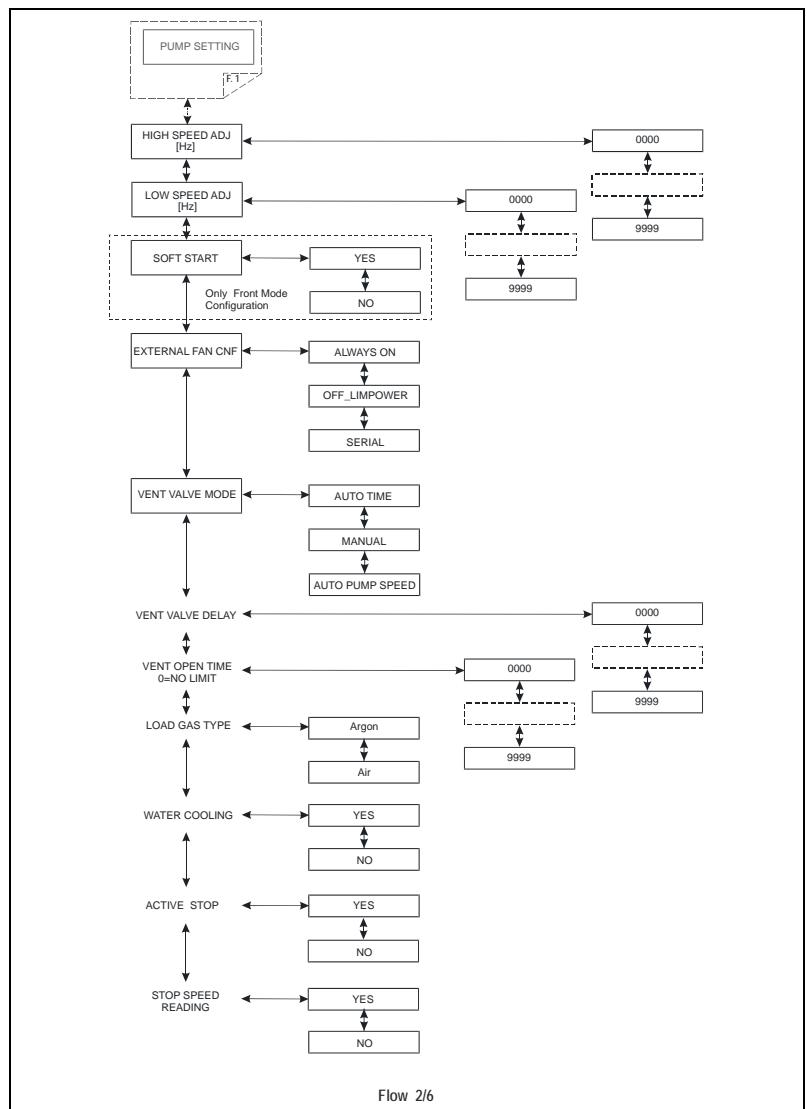


Figure 39

17 Technical Information

Programming

This menu contains all the parameters that have a direct effect on driving of the pump.

- **HIGH SPEED:** Sets (in Hz) the speed of rotation of the pump when the low-speed function is not active.
- **LOW SPEED:** Sets (in Hz) the speed of rotation of the pump when the low-speed function is active.
- **SOFT START:** enables (YES) or disables (NO) the soft start function. This parameter is visible only if the controller is configured in FRONT mode.
- **EXTERNAL FAN CNF:** Makes it possible to select driving mode of the external cooling fan. Possible options:
 - **ALWAYS ON:** the cooling fan is always ON
 - **OFF_LIMPOWER:** 10 seconds after the pump has reached NORMAL status, the fan is switched off and the driving power of the pump is reduced to 50 W
 - **SERIAL:** the cooling fan is controlled directly via the serial port.
- **VENT VALVE MODE:** makes it possible to select driving of the vent valve
 - **AUTO TIME:** the valve is controlled by the controller
 - **MANUAL:** the valve is controlled by the serial port.
 - **AUTO PUMP SPEED:** the valve is controlled by the controller taking into account the pump's deceleration.
- **VENT VALVE DELAY:** Sets the delay, expressed in seconds, between stopping of the pump and opening of the vent valve.
- **VENT VALVE OPEN TIME:** sets the time, expressed in seconds, of opening of the vent valve. Enter 0 if the valve is to be kept open indefinitely (until the next start).
- **LOAD GAS TYPE:** selects the type of gas used in the process. Therefore, the controller limits the power supplied to the pump according to the setting of this parameter.

- **WATER COOLING:** indicates whether the pump is cooled with water or not. The controller limits the power supplied to the pump according to this setting.
- **ACTIVE STOP:** enables (YES) or disables (NO) active braking.
- **STOP SPEED READING:** enables (YES) or disables (NO) the pump rotational frequency reading function also during the slowing phase that follows a stop command

Input/Output Menu

This menu contains parameters that determine the operating mode of the inputs and outputs of the controller.

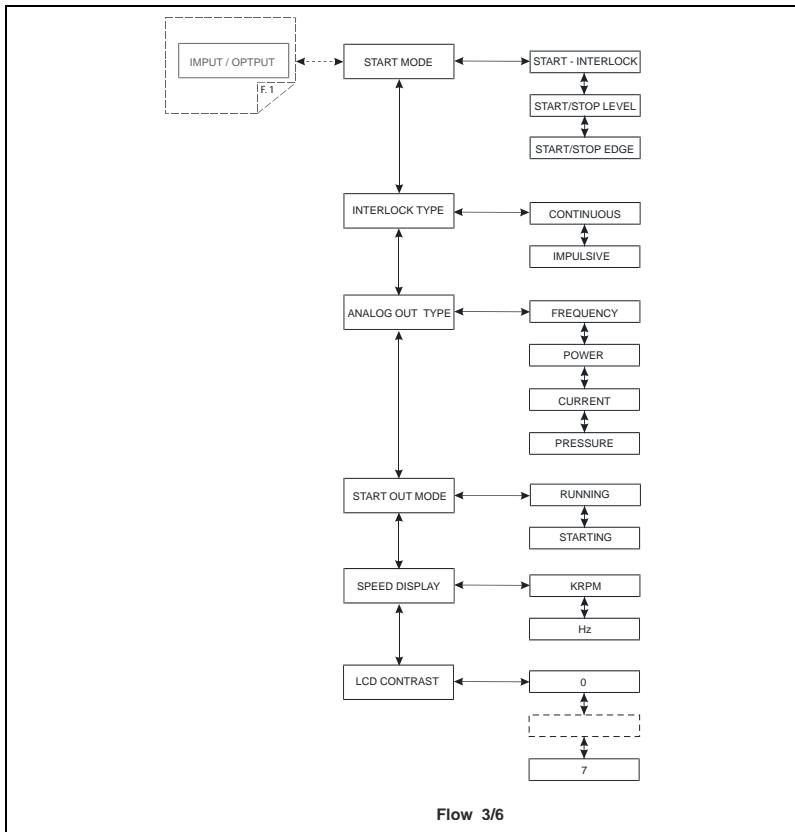


Figure 40

- **START MODE:** Permits selection of one of the three types of functioning of the START/STOP and INTERLOCK inputs:

- START/INTERLOCK: The pump is started if the START/STOP input is activated and is stopped if the START/STOP input is de-activated. The interlock input must be constantly active (INTERLOCK TYPE parameter = continuous) or may be active only at the time of starting (INTERLOCK TYPE parameter = impulsive)
- START/STOP LEVEL The START/STOP input acts as only START command (active on the level). The INTERLOCK input acts as STOP command (active on the level).
In the case of concurrent activation of the two inputs, the STOP command takes priority
- START/STOP EDGE The START/STOP input acts as START command (active on the edge)
The INTERLOCK input acts as STOP command (active on the edge).
- **INTERLOCK TYPE:** This parameter is displayed only when the previous parameter (START MODE) is equal to START/INTERLOCK and permits selection of one of the following two operating modes of the INTERLOCK input:
 - CONTINUOUS: the INTERLOCK input must be active continuously so that the pump can be driven by the controller. If, with the controller in start, the input INTERLOCK is de-activated, the controller switches to WAITING INTERLOCK status and interrupts driving of the pump
 - IMPULSIVE: it is sufficient for the input to be active when the START command is sent to the pump.
Subsequently, the input can also be de-activated. If the interlock is not active when the pump is started, the controller switches too WAITING INTERLOCK status.

17 Technical Information

Programming

- **ANALOG OUT TYPE:** permits selection of the type of signal to be sent to the programmable analogue output. One of the following signals can be selected:
 - FREQUENCY: the drive frequency of the pump is shown
 - POWER: the power supplied to the pump is shown
 - TEMPERATURE: the temperature of the pump is shown
 - PRESSURE: the pressure read by the gauge is shown.
- **START OUT MODE:** Selects the operating mode of the START output. Possible options:
 - RUNNING: the output is active when the pump is driven
 - STARTING: the output is active only during acceleration ramp-up.
- **SPEED OUT MODE (KRPM/Hz):** permits selection of the unit of measurement of the speed of rotation shown on the display of the controller.
This setting acts only on the measurement shown on the display. Possible options:
 - KRPM
 - Hz
- **LCD CONTRAST**

Setpoint R1 and Setpoint R2 Submenus

This submenu contains the settings relating to the output with relay R1 and R2 (if it is connected a gauge it will present also the settings for the set point 3).

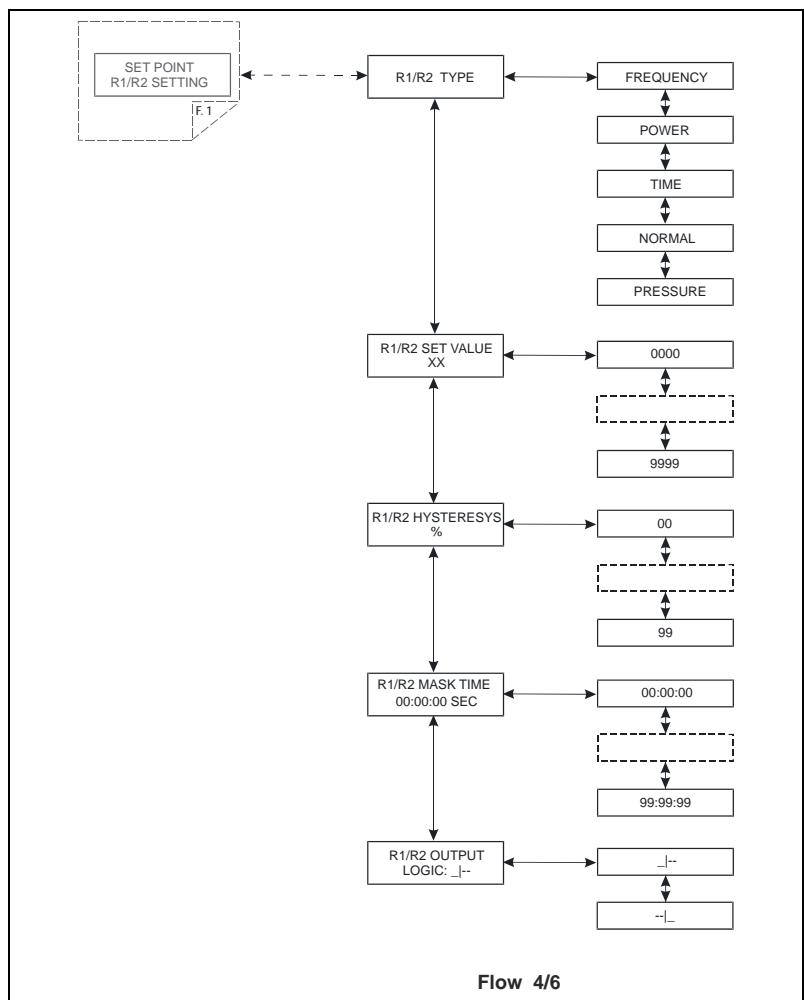


Figure 41

17 Technical Information

Programming

- **R1 (R2) TYPE:** selects the type of reference measurement to drive the relay. Possible types:
 - Frequency: driving frequency of the pump
 - Power: power supplied to the pump
 - Time: time from start
 - Normal: achievement of normal condition
 - Pressure: pressure read by the gauge, if present
- **R1 (R2) SET VALUE:** Sets the reference value at which the relay R1 (R2) is activated. This parameter is not available if TIME or NORMAL (previous parameter) is selected as SETPOINT TYPE.
- **R1 (R2) HISTERESYS:** Sets, in percentage, the hysteresis of the relay
- **R1 (R2) MASK TIME:** sets the masked time (in hh:mm:ss), measured from start, within which the SETPOINT R1 (R2) is not driven even if the threshold value has been reached. This parameter is not available if SETPOINT TYPE is set to NORMAL
- **R1 (R2) OUTPUT LOGIC:** Selects the control logic of the SETPOINT output.
 - positive logic (the relay is energized when the measurement exceeds the reference)
 - negative logic (the relay is energized when the measurement is below the reference)

This parameter is not available if SETPOINT TYPE is set to TIME or NORMAL.

Gauge Menu

This menu contains the parameters relating to functioning of the active gauge.

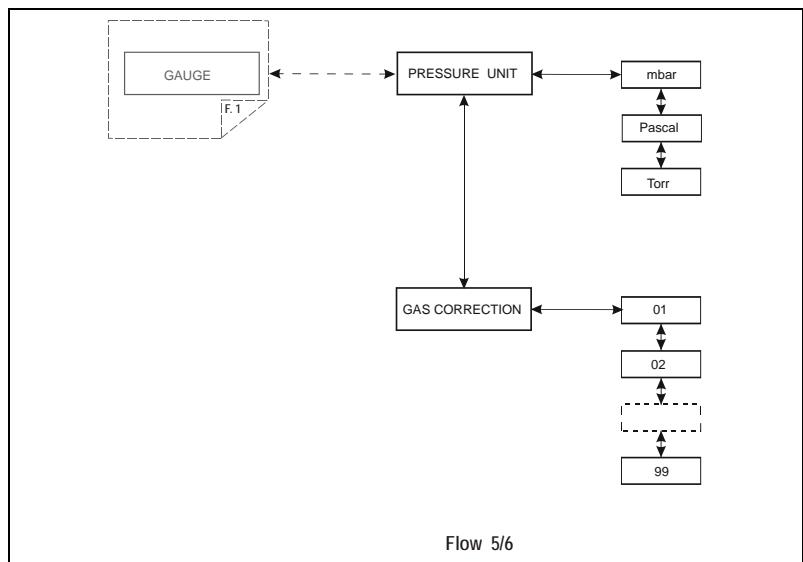


Figure 42

- **PRESSURE UNIT:** selects the unit of measurement of the pressure used to show this on the display, for display on the serial line and for setting of the setpoint and autopressure thresholds. Possible options:
 - mbar
 - Pascal
 - Torr

GAUGE MODEL ID: it shows the gauge model identified by the controller.

If there are more model with the same identification the user can select the right gauge connected

17 Technical Information

Programming

- **GAS TYPE** : sets the gas type:
0 : not configured
1 : Nitrogen
2 : Argon
3 : Idrogen
4 : Other

- **CORRECTION** : if it is selected the gas type 4 (Other) you can set the correction factor of the pressure measurement for this kind of gas. The pressure indicated by the instrument is equal to:
$$P \text{ indicated} = P \text{ measured} \times \text{Gas correction} / 10$$

Serial Menu

This menu contains the settings for management of the RS232/485 serial line.

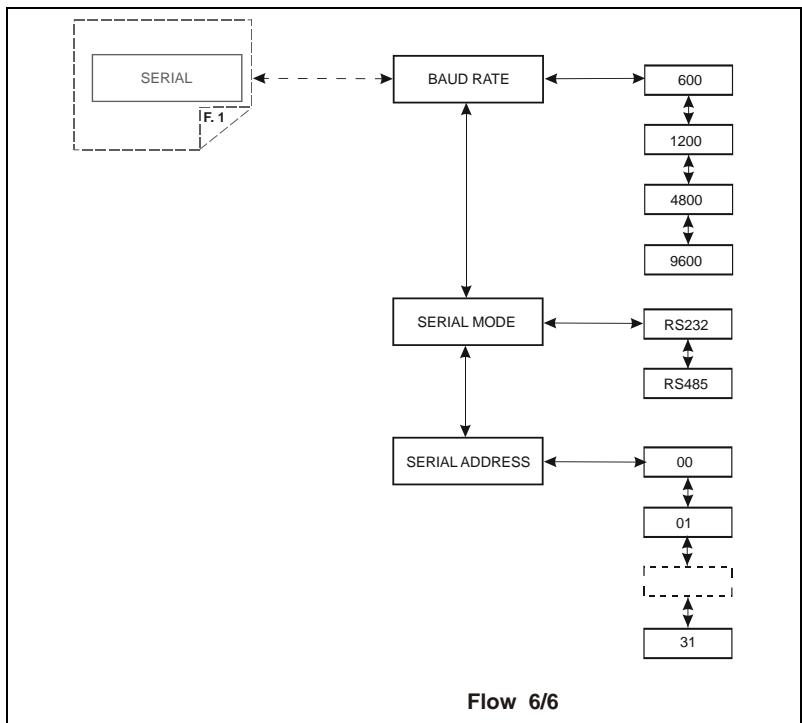


Figure 43

- **BAUD RATE:** permits selection of the communication speed selecting this from 600, 1200, 4800, 9600 baud
- **SERIAL MODE:** permits setting of the type of interface to RS232 (point to point) or RS485 (multidrop)
- **SERIAL ADDRESS:** sets the address of the node in the case of the RS485 interface. This parameter is not visible if the RS232 is selected.

17 Technical Information

How to Use by Remote I/O

How to Use by Remote I/O

- 1 Power ON the controller
- 2 Press the “COUNTERS” and “MEASURES” button together.
- 3 Select MODE = REMOTE from the “INPUT/OUTPUT” menu
- 4 Exit from configuration menu
- 5 Connection example:

How to Use in Serial Mode

- 1 Power on the controller
- 2 Connect the serial cable
- 3 Select by front panel if you want to work in 232 or 485, and if necessary, the serial address.
- 4 Select SERIAL from the INPUT/OUTPUT menu
- 5 Open the T+ software (see orderable parts table)
- 6 Ready to operate by SERIAL connections.

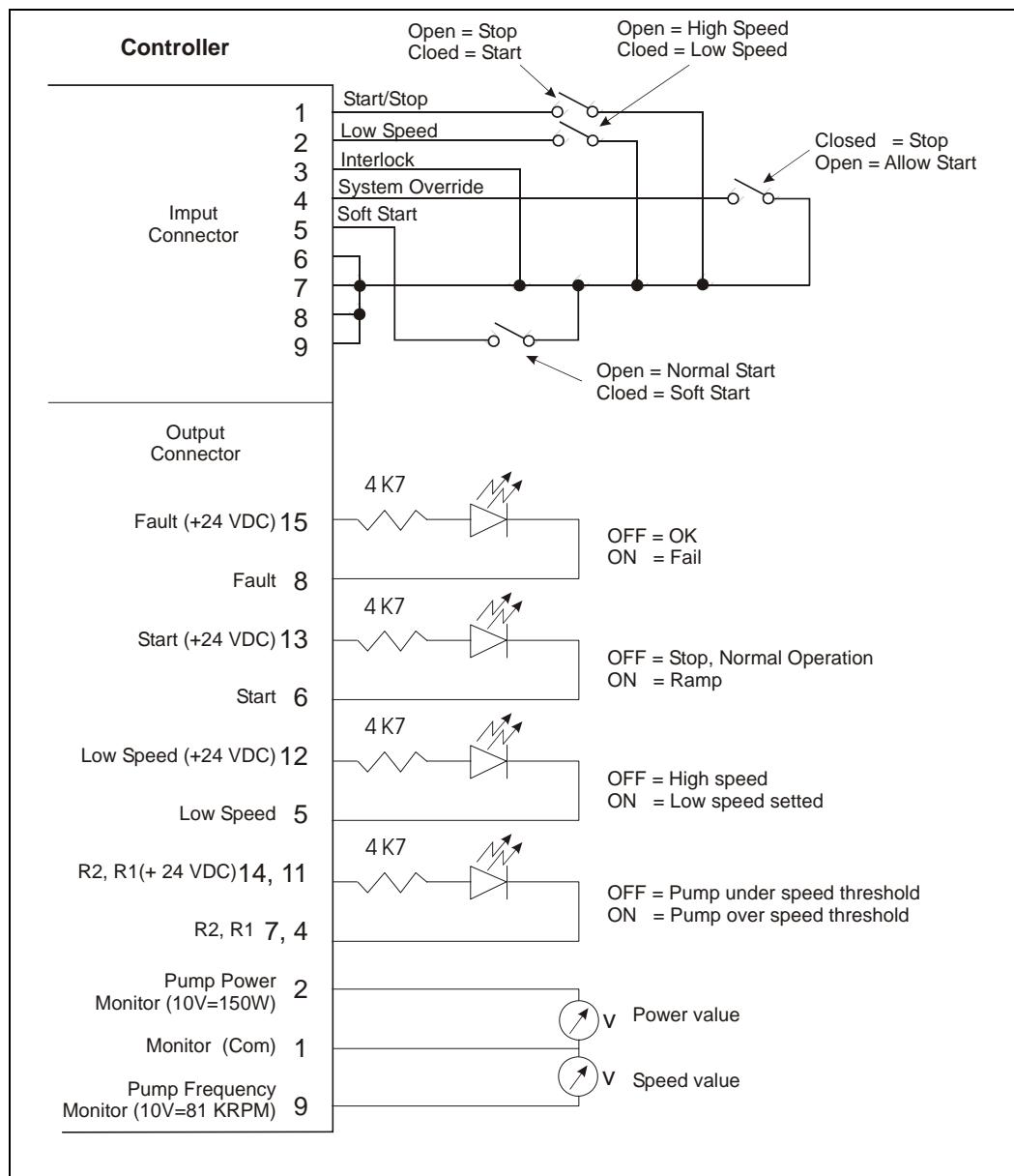


Figure 44

17 Technical Information

Profibus Option

Profibus Option

General

The ProfiBus option allow to communicate with the controller as ProfiBus DP slave device.

The option works as a bi-directional bridge between the ProfiBus network and the Agilent turbo controller internal link. The interface provides input data (measures) and output data (commands) to the controller, and in addition provides standard and user related diagnostics, in order to allow the user to manage the exceptions.

Installation

This option is factory installed.

The ProfiBus connector pin-out is reported in the following figure. Please in order to obtain best performance use ProfiBus certified cables.

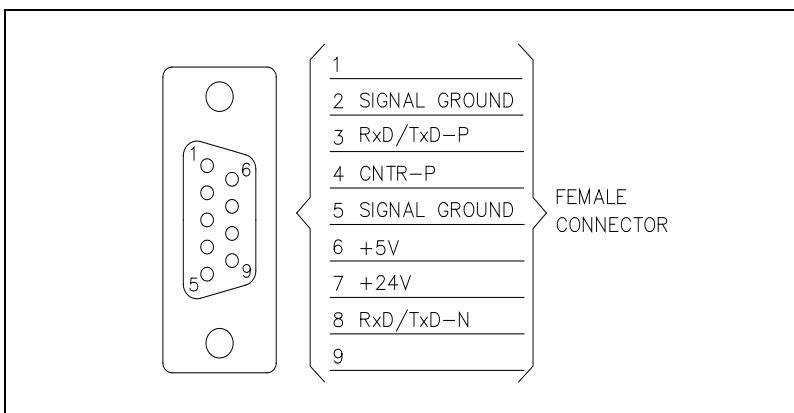


Figure 45 ProfiBus connector

Configuration

Before power-on the controller set the ProfiBus address by the 2 rotary switches.

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.

Software Operation and State Machine

From the software point of view, the interface can be seen as two devices (one for ProfiBus and the other for the internal link) linked together.

Each device has its own state machine to manage the device operation.

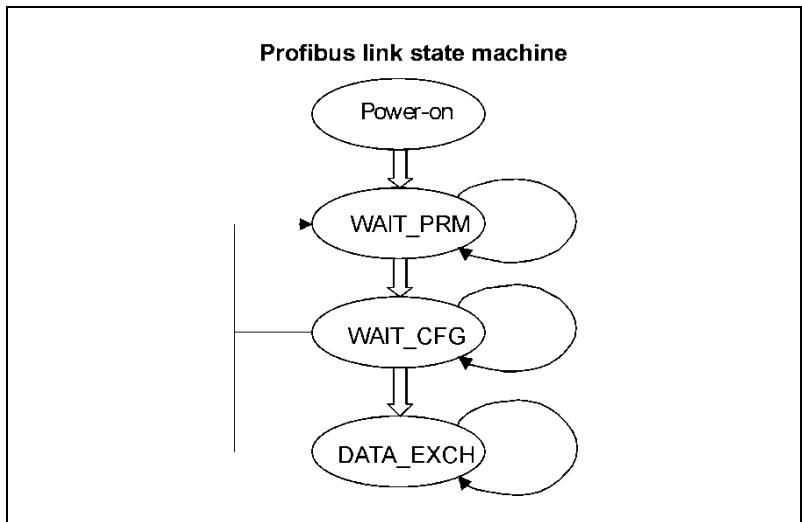


Figure 46

17 Technical Information

Profibus Option

Tab.16 Profibus state machine

| Status | Meaning |
|----------|---|
| POWER_ON | Interface set-up |
| WAIT_PRM | Wait for parameterisation from the master |
| WAIT_CFG | Wait for configuration from the master |
| DATA_EX | Regular data exchange |

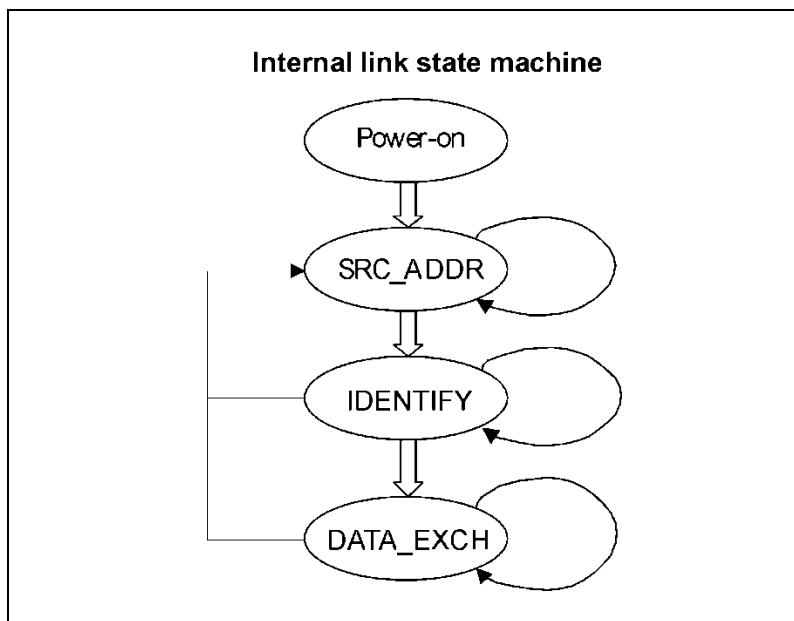


Figure 47

Tab. 17 Internal link state machine

| Status | Meaning |
|----------|--|
| POWER_ON | Interface set-up |
| SRC_ADDR | Search for the controller serial address |
| IDENTIFY | Identify controller model and protocol |
| DATA_EX | 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 internal serial link is not established
- Internal serial link 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 summarise the ProfiBus parameter access, related to the corresponding windows serial protocol (for this protocol please refers to the serial interface paragraph).

The interface doesn't any scaling operation on the read/written parameters. It acts only as a gateway between the ProfiBus network and the pump's controller serial interface. As a consequence of this, the scale and the meaning of some parameters depends directly to the specific model of Turbo Pump controller connected to the interface.

17 Technical Information

Profibus Option

Parameter Buffer

Tab. 18 Parameter buffer

| OFFSET BYTE | SIZE BYTE | UNIT RES | RANGE | DESCRIPTION | WIN SERIAL |
|----------------|--------------|------------|---------|--|---------------|
| 0 | 1 | - | 0-99 | Gauge gas load type. The value is divided by 10 (entering 12 the controller will apply 1.2) Enter here the correction factor for gas (necessary only if gauge is connected). | 161 |
| 1 | 2 | mA/Hz/sec | 0-10000 | Setpoint 1 value. Enter here the threshold value for the R1 output, valid only if B ₀ -B ₂ of Parameter Buffer Offset-21 is equal to 0,1,2 or 3. | 102 |
| 3 | 2 | Sec | 0-30000 | Setpoint 1 Mask Time. Set here the time, measured from the start pump event, while the R1 output is masked (not activated) | 103 |
| 5 | 2 | mA/Hz/sec | 0-10000 | Setpoint 2 value. Enter here the threshold value for the R2 output, valid only if B ₃ -B ₅ of Parameter Buffer Offset-21 is equal to 0,1,2 or 3. | 172 |
| 7 | 2 | Sec | 0-30000 | Setpoint 2 Mask Time. Set here the time, measured from the start pump event, while the R2 output is masked (not activated) | 173 |
| 9 | 2 | 0.2sec/bit | 0-30000 | Vent Valve Opening Delay. Set the delay time between the stop command and vent opening. Valid only in "purge/vent auto mode" (Parameter Buffer, Offset 20, B ₀ = 0). 0 = infinite (the valve will never open). | 126 |
| 11 | 2 | 0.2sec/bit | 0-30000 | Vent Valve Open Time. Set how long the vent will remain open, then both purge and vent will be closed. Valid only in "purge/vent auto mode" (Parameter Buffer, Offset 20, B ₀ = 0). 0 = infinite (the valve remain open till next start command). | 147 |
| 13 | 1 | % | 1-99 | Setpoint 1 Hysteresis. Set the Setpoint1 hysteresis around the nominal value | 105 |
| 14 | 1 | % | 1-99 | Setpoint 2 Hysteresis. Set the Setpoint2 hysteresis around the nominal value | 175 |

| | | | | | |
|----|---|-------------|-----------|--|-----|
| 15 | 1 | mBar/Torr/P | 0-99 a | Setpoint 1 Pressure Value Mantissa. Set the mantissa of the exponential value of the R1 setpoint (format X.XE-XX) when it is used for pressure monitoring (Parameter Buffer, Offset 21, B ₀₋₂ = 4). The value set here is divided by 10, that means 11 = 1.1 | 162 |
| 16 | 1 | | -10 - +10 | Setpoint 1 Pressure Value Exponent. Set the exponent of the exponential value of the R1 setpoint (format X.XE-XX) when it is used for pressure monitoring (Parameter Buffer, Offset 21, B ₀₋₂ = 4). | 162 |
| 17 | 1 | mBar/Torr/P | 0-99 a | Setpoint 2 Pressure Value Mantissa. Set the mantissa of the exponential value of the R2 setpoint (format X.XE-XX) when it is used for pressure monitoring (Parameter Buffer, Offset 21, B ₃₋₅ = 4). The value set here is divided by 10, that means 11 = 1.1 | 176 |
| 18 | 1 | | -10 - +10 | Setpoint 2 Pressure Value Exponent. Set the exponent of the exponential value of the R2 setpoint (format X.XE-XX) when it is used for pressure monitoring (Parameter Buffer, Offset 21, B ₃₋₅ = 4). | 176 |
| 19 | 1 | | | B ₀ = Stop Speed Reading. This function measures the pump speed after a stop command. 0 = Off 1 = On | 167 |
| | | | | B ₁ = Active Stop. This function brakes the pump after a stop command, by using the motor as a generator. 0 = Off 1 = On | 107 |
| | | | | B ₂ - Reserved | |
| | | | | B ₃₋₄ = Start/Stop/Interlock Mode. Change the logic of Start/Stop and Interlock inputs. Ask to Agilent personnel for this option | 151 |

17 Technical Information

Profibus Option

| | | | |
|----|---|---|-----|
| 20 | 1 | B ₀ = Vent & Purge Auto/Man 0 = Auto (the controller drives purge and vent valves automatically) 1 = Manual (the user can command the valves by serial line or profibus) | 125 |
| | | B ₁ = Gas Load Type. Select here the gas load 0 = Ar 1 = N2 | 157 |
| | | B ₂ = Interlock Type 0 = continuos (the interlock must be always present to run the pump) 1 = at start (the interlock must be present only at start command) | 110 |
| | | B ₃ = Setpoint R1 Logic 0 = active close (NO) 1 = active open (NC) | 104 |
| | | B ₄ = Setpoint R2 Logic 0 = active close (NO) 1 = active open (NC) | 174 |
| | | B ₅₋₆ = Pressure Unit 0 = mbar 1 = Pascal 2 = Torr | 163 |
| | | B ₇ = Reserved | |
| 21 | 1 | B ₀₋₂ = Setpoint R1 Type 0 = frequency 1 = current 2 = time 3= normal operation 4= pressure | 101 |
| | | B ₃₋₅ = Setpoint R2 Type 0 = frequency 1 = current 2 = time 3= normal operation 4= pressure | 171 |
| | | B ₆₋₇ = Analog Output 1 Type 0 = frequency 1 = power 2 = temperature 3= pressure | 111 |

Output Buffer

Tab. 19 Output buffer

| Offset Byte | Size Byte | Unit Res | Range | Description | WIN Serial |
|----------------|--------------|----------|----------------|---|---------------|
| 0 | 1 | | | B ₇ = Start/Stop 0 = Stop, 1 = Start | 000 |
| | | | | B ₆ = Low Speed This bit set the pump target speed to "low speed value" (Output Buffer, Offset 3), otherwise the target speed is set to "high speed value" (Output Buffer, Offset 1). 0 = Off, 1 = On | 001 |
| | | | | B ₅ – Soft Start This bit activates the soft start function which run-up the pump smoothly. Please activate this function only if the pump has been stopped for at least 3 months. 0 = On, 1 = Off | 100 |
| | | | | B ₄ = Vent Valve Command 0 = Close, 1 = Open Valid only if in Par Buff, Offset-20, B ₀ =1 | 122 |
| | | | | B ₃ = Purge Valve Command 0 = Close, 1 = Open Valid only if Par Buff, Offset-20, B ₀ =1 | 145 |
| | | | | B ₂ – Not used | |
| | | | | B ₀₋₁ = Operating Mode These bits define from which source the controller has to get commands (readings are always available). In order to operate the controller by Profibus these bits must be set to 3. 0 = Remote I/O 1 = Serial 2 = Front panel 3 = Profibus | 008 |
| 1 | 2 | Hz | 1100 - 1350 | High Speed Value Set the high rotational speed value | 120 |
| 3 | 2 | Hz | 1100 - 1350 | Low Speed Value Set the low rotational speed value | 117 |

17 Technical Information

Profibus Option

Input Buffer

Tab. 20 Input buffer

| OFFSET BYTE | SIZE BYTE | UNIT RES | RANGE | DESCRIPTION | WIN SERIAL |
|----------------|--------------|----------|-------|--|---------------|
| 0 | 1 | V | 0-100 | Voltage Voltage provided to the motor | 201 |
| 1 | 1 | °C | 0-100 | Pump Bearing Temperature Read the pump upper bearing temperature If > 60 °C the controller goes into fail status and the pump is stopped | 204 |
| 2 | 1 | °C | 0-100 | Controller Power Supply Temperature Read the controller power section temperature if > 75 °C the controller goes in fail status "controller over-temperature" | 216 |
| 3 | 1 | °C | 0-100 | Controller CPU Section Temperature Read the controller CPU section temperature if > 80 °C the controller goes in fail "controller overtemperature" | 211 |
| 4 | 1 | - | 0-6 | B ₀₋₃ – Status 0 = Stop 1 = Waiting for interlock (interlock connections on remote I/O connector missing) 2 = Ramp (the pump is increasing the speed) 3 = Auto tuning (the speed has been reduced because the gas load is higher than the Power Limit Applied) 4 = Braking (the pump is reducing the speed using the motor) 5 = Normal operation (the pump is at target speed) 6 = Fail (see error code byte Input Buffer Byte-27) | 205 |

| | | | | | |
|---|---|---|---|--|-----|
| 5 | 1 | - | - | Error Code (bit field) | 206 |
| | | | | B ₇ – Too High Load (the gas load is too high for the pump) | |
| | | | | B ₆ – Short Circuit (a short circuit happened between the two of the three motor phases) | |
| | | | | B ₅ – Over Voltage (too high bus voltage during braking) | |
| | | | | B ₄ – Verify Line Select Not used | |
| | | | | B ₃ – Power Fail (internal circuitry failure) | |
| | | | | B ₂ – Controller Over-Temperature ("Controller Power Section Temperature" or "Controller CPU Section Temperature" are over the limit) | |
| | | | | B ₁ - Pump Over-Temperature ("Pump Bearing Temperature" or "Pump Body Temperature" are over the limit) | |
| | | | | B ₀ – Check Connection To Pump (the connection between controller and pump missing) | |
| 6 | 1 | - | - | B ₀ – Set Point R1 Status | 221 |
| | | | | 0 = open | |
| | | | | 1 = closed | |
| | | | | B ₁ – Set Point R2 Status | 225 |
| | | | | 0 = open | |
| | | | | 1 = closed | |
| | | | | B ₂ – Vent Valve Status | 122 |
| | | | | 0 = closed | |
| | | | | 1 = open | |
| | | | | B ₃ – Purge Valve Status | 145 |
| | | | | 0 = close | |
| | | | | 1 = open | |
| | | | | B ₄ – Not Used | |
| | | | | B ₅ – Not Used | |
| | | | | B ₆ – Not Used | |
| | | | | B ₇ – Not Used | |

17 Technical Information

Profibus Option

| | | | | | |
|----|---|------------------|---------|--|-----|
| 7 | 2 | mA | 0-10000 | Current Motor current consumption | 200 |
| 9 | 2 | W | 0-200 | Power Motor power adsorption | 202 |
| 11 | 2 | W | 0-200 | Power Limit Applied Maximum allowable power | 155 |
| 13 | 2 | Hz | 0-1500 | Driving Frequency Read the rotational speed of the pump | 203 |
| 15 | 2 | Hz | 0-1500 | Target Frequency Read the target rotational speed | 120 |
| 17 | 2 | - | 0-65536 | Cycle Number Number of cycles (start and stop) done by the pump | 301 |
| 19 | 2 | min | 0-65536 | Last Cycle Time How long the last cycle lasted | 300 |
| 21 | 2 | h | 0-65536 | Pump Life Total pump running time | 302 |
| 23 | 4 | mBar/Torr/ Pa | - | Pressure Reading Reports the pressure reading in the "pressure unit" selected by Par. Buff., Offset-20, B ₅₋₆ | 224 |

Diagnostic Management

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

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

During the start-up phase after power on, the first byte in the user diagnostic area, can assume values different from zero.

This byte has the following meaning:

- Bit 0 = 1: controller not responds (RS485 link broken)
- Bit 1 = 1: controller not identified (not compatible with the ProfiBus gateway)

- Bit 2 = 1: first loop of requests not ended (values in the input data are not fully coherent yet)

So, if the first byte is equal to 0, the interface is working properly, otherwise there is a problem.

Each nibble 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):

- | | |
|---|---|
| 0 | Write success |
| 1 | Controller response was “NACK” |
| 2 | Controller response was “Unknown window” |
| 3 | Controller response was “Bad Data Type” |
| 4 | Controller response was “Over range” |
| 5 | Controller response was “Bad operation” |
| 6 | Controller response was an unknown response |
| F | Parameter not supported by the controller |

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

- **Controller fail:** if the controller goes in 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).

17 Technical Information

Profibus Option

Diagnostic Buffer

Tab. 21 Diagnostic buffer

| OFF SET | MEANING | |
|---------|---|---------------------|
| 0 | B ₀ station non exist (set by master) B ₁ station not ready (slave not ready for data exchange) B ₂ cfg fault (configuration data doesn't match) B ₃ ext diag (slave has external diagnostic data) B ₄ not supported (slave doesn't support requested function) B ₅ invalid slave response (slave sets permanent '0') B ₆ prm fault (wrong parameter assignment) B ₇ master_lock (slave is parameterised by another master) | |
| 1 | B ₀ prm req (slave has to be re-parameterised) B ₁ stat diag (static diagnosis) B ₂ fixed '1' B ₃ wd_on (response monitoring active) B ₄ Freeze mode (received freeze command) B ₅ Synch mode (received synch command) B ₆ reserved B ₇ diag deactivated (slave is parameterised by another master) | Standard diagnostic |
| 2 | Reserved | |
| 3 | Master Add (master address after parameterisation. FF= without parameter) | |
| 4 | Ident number high | |
| 5 | Ident number low | |
| 6 | External diagnosis "Header" length indication including header | |

| OFF SET | MEANING |
|---------|---|
| 7 | Interface Status B ₀ Controller not responds B ₁ Controller not identified B ₂ Input data not fully coherent yet B ₃ Not used B _{4..7} Not used |
| 8 | B _{7..4} – Start/Stop diag status B _{3..0} – Low Speed diag status |
| 9 | B _{7..4} – Soft Start diag status B _{3..0} – Vent Valve |
| 10 | B _{7..4} – Purge Valve B _{3..0} – Mode |
| 11 | B _{7..4} – High speed B _{3..0} – Low Speed |

External diagnostic

17 Technical Information

Error Messages

Error Messages

For a certain type of failure, the controller will self-diagnose the error and the following messages will be displayed.

NOTE

If the pump is not connected, the display will be as shown in the following figure.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|--|---|---|---|---|---|---|---|---|---|---|
| C | H | E | C | K | | C | O | N | N | E | C | T | I | O | N |
| | | | T | O | | P | U | M | P | | | | | | |

Check connection between controller and pump, then press STOP push-button twice to start the pump.

NOTE

If the P1 input connector is not in position with the link or the external interlock connections are open, when the START pushbutton is pressed the display will be as shown in the following figure.

| | | | | | | | | | | | | | | | |
|--|--|--|--|--|---|---|---|---|---|---|---|---|---|--|--|
| | | | | | | W | A | I | T | I | N | G | | | |
| | | | | | I | N | T | E | R | L | O | C | K | | |

Disconnect connector P1 and check the link or the external interlock, then install the connector to start the pump.

NOTE

If within each step of the soft start mode the rotational speed of the pump do not reach the planned value within 15 minutes the display will be as shown in the following figure.

NOTE

If in normal operation (after the starting phase) the current drawn by the pump is higher than programmed (1.8 A), the pump and the inter-connected devices are switched off and the display will be as shown in the following figure.

| | | | | | | | | | | | | | | | |
|--|---|---|---|--|---|---|---|---|--|---|---|---|---|--|--|
| | T | O | O | | H | I | G | H | | L | O | A | D | | |
| | | | | | | | | | | | | | | | |

Verify that systems has no leaks than press STOP RESET pushbutton twice to start the pump.

Check that pump rotor is free to rotate then press the STOP RESET pushbutton twice to start the pump.

NOTE

If the upper bearing/pump temperature exceeds 60 °C, the pump is shut off, and the display will be as shown in the following figure.

| | | | | | | | | | | | | | | | |
|--|--|--|--|--|---|---|---|---|---|---|---|---|--|--|--|
| | | | | | | P | U | M | P | | | | | | |
| | | | | | O | V | E | R | T | E | M | P | | | |

The message will stay on until the temperature decreases below threshold value. Press the STOP RESET pushbutton twice to start the pump.

NOTE

If the controller transformer temperature exceeds 90°C, the pump is shut off, and the display will be as shown in the following figure.

| | | | | | | | | | | | | | | | |
|--|--|--|---|---|---|---|---|---|---|---|---|---|--|--|--|
| | | | C | O | N | T | R | O | L | L | E | R | | | |
| | | | O | V | E | R | T | E | M | P | | | | | |

17 Technical Information

Error Messages

The message will stay on until the temperature decreases below threshold value. Press the STOP RESET pushbutton twice to start the pump.

| | | | | | | | | | | | | | | | |
|--|--|--|---|---|---|---|---|--|---|---|---|---|--|--|--|
| | | | P | O | W | E | R | | F | A | I | L | | | |
| | | | | | | | | | | | | | | | |

Indicates a fault in the circuit of the controller used to power the pump.

NOTE

If the pump is stopped by an emergency stop signal provided via a remote contact, the display will be as shown in the following figure.

| | | | | | | | | | | | | | | | |
|--|--|--|---|---|---|---|---|---|---|---|--|--|--|--|--|
| | | | | S | Y | S | T | E | M | | | | | | |
| | | | O | V | E | R | R | I | D | E | | | | | |

Remove the controller power cable and check the emergency condition.

Then reconnect the power cable and press the START pushbutton to start the pump.

| | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|
| | O | V | E | R | V | O | L | T | A | G | E | | | | |
| | | | | | | | | | | | | | | | |

Controller power supply circuitry is faulty, or the Controller received a spike.

Press the START push-button twice to start the pump. Should the message still be present, call the Agilent service.

| | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|--|---|---|---|---|---|---|---|--|--|
| | S | H | O | R | T | | C | I | R | C | U | I | T | | |
| | | | | | | | | | | | | | | | |

Check connections and shortages between pump and controller, then press the STOP RESET pushbutton twice to start the pump.

Orderable Parts

Tab. 22

| Description | Part number |
|---|-------------|
| TwisTorr 304 FS AG Rack Controller with RS-232/485 | X3506-64002 |
| TwisTorr 304 FS AG Rack Controller with Profibus option | X3506-64003 |
| TwisTorr 304 FS AG Air Cooling Kit (0.5 m cable) | X3500-68011 |
| Turbo-V 301-AG Air Cooling Kit extention cable (5 m) | 969-9940 |
| Vent Valve N.O. 0,5 mm orifice (0,5 m cable) | 969-9844 |
| Vent Valve extention cable (5 m) | 969-9941 |
| Mains cable NEMA plug (3 m) | 969-9958 |
| Mains cable european plug (3 m) | 969-9957 |



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.

A handwritten signature in black ink, appearing to read "Giampaolo Levi". It is positioned above a horizontal line.

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.Ili Varian, 54 – 10040 Leini (TO) – Italy

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

| | | |
|---|-------------------|-------------------|
| NAME <hr/> | COMPANY <hr/> | FUNCTION <hr/> |
| ADDRESS: <hr/> | | |
| TEL. N° : <hr/> | FAX N° : <hr/> | |
| E-MAIL: <hr/> | | |
| PROBLEM / SUGGESTION : <hr/> <hr/> <hr/> <hr/> <hr/> | | |
| REFERENCE INFORMATION (model n°, serial n°, ordering information, time to failure after installation, etc.): <hr/> <hr/> <hr/> <hr/> | | |
| DATE _____ | | |
| CORRECTIVE ACTION PLAN / ACTUATION (by AGILENT VPD) <hr/> <hr/> <hr/> <hr/> <hr/> | | LOG N° _____ |

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



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:

Fax: 00 39 011 9979 330
Fax Free: 00 800 345 345 00
Toll Free: 00 800 234 234 00
vpt-customercare@agilent.com

NORTH AMERICA:

Fax: 1 781 860 9252
Toll Free: 800 882 7426, Option 3
vpl-ra@agilent.com

PACIFIC RIM:

please visit our website for individual office information
<http://www.agilent.com>

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: <input type="checkbox"/> Taxable <input type="checkbox"/> 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:



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 | Power: |
| - Does not spin freely | - Vibrations | Current: |
| - Does not reach full speed | - Leak | Temp 1: |
| - Mechanical Contact | - Overtemperature | Temp 2: |
| - Cooling defective | - Clogging | Purge flow: 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 background |
| - 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.

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