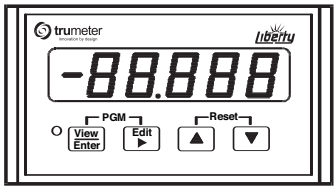
trumeter
innovation by design

Liberty CE

878X-X

Counter
Summenzähler
Compteur
Contador
Contatore



DIGITAL PANEL METERS
WARNING read page 2 first!

DIGITALE EINBAU-MESSINSTRUMENTE
ACHTUNG: Lesen Sie zuerst Seite 3!

INDICATEURS NUMERIQUES DE TABLEAU
RECOMMANDATION IMPORTANTE:
Reportez-vous tout d'abord à la page 4!

INSTRUMENTOS DE MEDIDA PANEL DIGITAL
ATENCIÓN: Primero lea la página 6!

MISURATORI DIGITALI A PANNELLO
ATTENZIONE: Leggere prima a pagina 7

019061-01 Issue 4.0 01/12

WARNING

Installation and maintenance must be carried out by suitably qualified personnel only. Hazardous voltages may be present on the connection terminals.

Installation

This product is intended to be installed in accordance with the operating and installation requirements of Overvoltage Category II and Pollution Degree 2 (as defined by IEC 664).

It must be fitted in a suitable enclosure which is accessible to qualified personnel only.

An external supply fuse must be fitted. The recommended fuse is:

DC supply - S504-2A manufactured by Bussmann.

Fuse details: Antisurge 2A, Rating 50V , Breaking capacity 35A @50V, UL recognised (file no E75865), complies with IEC127.

AC supply - S504-200mA manufactured by Bussmann.

Fuse details: Antisurge 200mA, Rating 250VAC , Breaking capacity 35A @250VAC, UL recognised (file no E75865), complies with IEC127.

The relay output circuits must be fitted with fuses suitable for the voltage and current being switched.

Maximum fuse ratings:

250VAC	@ cosØ= 1	fuse rating 5A
30VDC	@ cosØ= 1	fuse rating 5A

All conductors carrying hazardous voltage should have external switching or disconnect mechanisms fitted which provide at least 3mm of contact separation in all poles.

Failure to install or operate the unit in accordance with the above requirements may result in the electrical safety of the unit being impaired.

Maintenance

Ensure that all power sources to the unit are isolated prior to maintenance, inspection or cleaning.

There are no user serviceable parts inside this unit. Under no circumstances should the case be opened.

All external wiring connections should be inspected at regular intervals. Any damaged wiring should be replaced and any loose connections should be retightened.

Cleaning should be carried out using a dry cloth to wipe the casing of the unit.

Programming

Caution: If the optional relay output and/or analog output board(s) are installed in the DPM, then entering Program mode will cause both relays to release and the analog output to go to its minimum value (0V or 4 mA) regardless of the input signal value.

Diagnostics

Caution: Performing the diagnostic tests will turn on the analog output and operate the relays if those options are installed. First remove power from the DPM and disconnect the outputs from any loads that should not be turned on. If the optional RS485 communication board is installed, the DPM will respond with the scaled input value to the QST command.

ACHTUNG

INSTALLATION UND WARTUNG DÜRFEN NUR VON ENTSPRECHEND GESCHULTEN MITARBEITERN VORGENOMMEN WERDEN. AN DEN ANSCHLUSSKLEMMEN KÖNNEN LEBENSGEFÄHRLICHE HOCHSPANNUNGEN ANLIEGEN.

Installation

Dieses Produkt ist gemäss den Betriebs- und Installationsanforderungen von Schutzklasse II und Funkstörklasse 2 (entsprechend der Definition durch IEC 664) zu installieren.

Es muss in einem geeigneten Schutzbereich aufgestellt werden, der nur für entsprechend geschulte Mitarbeiter zugänglich ist.

In die externe Versorgung muss eine Sicherung eingesetzt werden. Empfohlen werden Sicherungen vom:

Versorgung DC - S504-2A, zB hergestellt von Bussmann.

Kenndaten der Sicherung: Absicherung gegen Stromspitzen 2A, Sicherungsbemessung 50V, Ausschaltleistung 35A bei 50VAC, anerkannt durch UL (Aktenzeichen E75865), entspricht IEC127.

Versorgung AC - S504-200mA, zB hergestellt von Bussmann.

Kenndaten der Sicherung: Absicherung gegen Stromspitzen 200mA, Sicherungsbemessung 250VAC, Ausschaltleistung 35A bei 250VAC, anerkannt durch UL (Aktenzeichen E75865), entspricht IEC127.

Die Ausgangsschaltkreise des Relais müssen mit geeigneten Sicherungen entsprechend den geschalteten Spannungen und Strömen versehen werden.

Maximale Sicherungsnennwerte:

250VAC	@ cosØ= 1	Sicherungsnennwert 5A
30VDC	@ cosØ= 1	Sicherungsnennwert 5A

Alle Stromleiter, an denen gefährliche Spannungen anliegen, müssen mit externen Schalt- oder Trennvorrichtungen versehen werden, die einen Kontaktabstand von mindestens 3 mm an allen Polen herstellen.

Wenn das Gerät nicht entsprechend den vorstehenden Anforderungen installiert und betrieben wird, ist die elektrische Sicherheit des Geräts nicht gewährleistet.

Wartung

Alle Stromquellen des Geräts müssen vor Wartungs-, Inspektions- und Reinigungsmaßnahmen isoliert werden.

Benutzerseitige Maßnahmen an den Teilen im Geräteinneren sind nicht möglich. Das Gehäuse darf unter keinen Umständen geöffnet werden.

Alle externen Kabelverbindungen müssen in regelmäßigen Abständen inspiziert werden. Beschädigte Kabelverbindungen müssen ersetzt und lose Verbindungen nachgezogen werden.

Die Reinigung des Gerätes ist durch Abwischen des Gehäuses mit einem trockenen Tuch vorzunehmen.

Programmierung

Achtung: Falls die Optionskarten Relaisausgang und/oder Analogausgang im DPM installiert sind, so bewirkt das Aufrufen des Programmierungsmodus, dass beide Relais freigegeben werden und dass der Analogausgang auf seinen Minimumwert (0V oder 4mA) gesetzt wird, unabhängig vom Wert des Eingangssignals.

Diagnose

Achtung: Die Durchführung der Diagnosetests bewirkt das Einschalten des Analogausgangs und des Betriebs der Relais, falls die Optionskarte Relais installiert ist. Zuerst die Versorgung des DPM abschalten und die Ausgänge von allen Lasten abklemmen, die nicht eingeschaltet sein sollen. Falls die Optionskarte Kommunikation RS485 installiert ist, reagiert das DPM auf den Befehl QST mit dem proportionalen Eingangswert.

RECOMMANDATION IMPORTANTE

L'INSTALLATION ET L'ENTRETIEN DOIVENT ETRE REALISES UNIQUEMENT PAR UN PERSONNEL SPECIALEMENT QUALIFIE. DES TENSIONS DANGEREUSES PEUVENT ETRE PRESENTES SUR LES BORNIERS DE RACCORDEMENT.

Installation

Ce produit doit être installé conformément aux normes Surtension Catégorie II et Pollution Niveau 2 de fonctionnement et d'installation (selon les réglementations IEC 664).

Il doit être inséré dans un boîtier adapté uniquement accessible au personnel qualifié.

Une alimentation externe doit être prévue. Le type de fusible recommandé est:

Alimentation CC - S504-2A fabriqué par Bussman.

Détails du fusible : fusible à action temporisée 2A, Calibre 50V, Capacité de coupure 35A @50VCC, homologué UL (fichier n° E75865), en conformité aux réglementations IEC127.

Alimentation CA - S504-200mA fabriqué par Bussman.

Détails du fusible : fusible à action temporisée 200mA, Calibre 250VCA, Capacité de

coupure 35A @250VCA, homologué UL (fichier n° E75865), en conformité aux réglementations IEC127.

Les circuits de sortie de relais doivent être munis de fusibles adaptés aux tensions et courants commutés.

Protection maximale du fusible :

250VCA	@ cosØ= 1	Protection du fusible 5A
30VCC	@ cosØ= 1	Protection du fusible 5A

Tous les conducteurs avec tension à risques doivent être munis d'interrupteurs externes ou de sectionneurs ayant au moins 3 mm de séparation de contact sur tous les pôles.

L'inobservation des instructions ci-dessus lors de l'installation ou de la mise en service peuvent provoquer des problèmes de sécurité électrique pouvant endommager l'appareil.

Entretien

Veiller à ce que toutes les tensions d'alimentation de l'appareil soient isolées avant d'effectuer des travaux de maintenance, d'inspection ou de nettoyage.

Aucune pièce de cet appareil n'est réparable par l'utilisateur. Le boîtier ne doit pas être ouvert, sous aucun prétexte.

Tous les branchements extérieurs doivent être inspectés à intervalles réguliers. Tout fil endommagé doit être remplacé et toutes les connexions desserrées doivent être resserrées.

Le nettoyage doit être fait avec un chiffon sec pour dépoussiérer le boîtier de l'unité.

Programmation

Avertissement : Si les carte optionnelles Relais et Sortie analogique sont installées dans le DMP, l'accès au mode Programme provoque le déclenchement des deux relais et les valeurs minimales de la sortie analogique (0V ou 4mA), indépendamment de la valeur du signal d'entrée.

Diagnostique

Avertissement : L'exécution des tests de diagnostique activera la sortie analogique et mettra en marche les relais si ces options sont installées. Avant tout coupez l'alimentation du DPMet débranchez les sorties de toute charge ne devant pas être activée. Si la plaquette de communication RS485 optionnelle est installée, le DPM donnera la valeur entrante réduite à la commande QST.

ATENCION

LA INSTALACION Y EL MANTENIMIENTO DEBE SER EFECTUADO CONVENIENTEMENTE SOLAMENTE POR PERSONAL CAPACITADO. PUEDEN HABER VOLTAJES PELIGROSOS EN LOS TERMINALES DE CONEXION.

Instalación

Este producto está destinado para ser instalado de acuerdo con los requerimientos de operación e instalación de la Categoría II de Sobrevoltaje y Grado 2 de Contaminación (como está definido por IEC 664).

Debe ser colocado en un apropiado contenedor al cual tenga acceso solamente personal capacitado.

Hay que montar un fusible de alimentación exterior. El fusible recomendado es:

Alimentación CC - S504-2A fabricado por Bussmann.

Detalles del Fusible: Sobrecorriente 2A, Servicio 50 V, Poder de Interrupción 35A a 50VCC, reconocido por UL (ficha N° E75865), de acuerdo con las normas IEC127.

Alimentación CA - S504-200mA fabricado por Bussmann.

Detalles del Fusible: Sobrecorriente 200 mA, Servicio 250 VAC , Poder de Interrupción 35A a 250VCA, reconocido por UL (ficha N° E75865), de acuerdo con las normas IEC127.

Los circuitos de salida del relé deben estar instalados con fusibles apropiados de acuerdo a los valores máximos de voltaje y corriente que se conmutan.

Máximos valores de los fusibles:

250VCA	@ cosØ= 1	valor del fusible 5A
30VCC	@ cosØ= 1	valor del fusible 5A

Todos los conductores que lleven voltajes peligrosos deben tener instalados mecanismos externos de interrupción o desconexión que provea una separación entre los contactos de por lo menos 3mm en todos los polos.

Podría afectarse la seguridad eléctrica de la unidad si ésta no se instala o se opera de acuerdo a los requerimientos anteriormente mencionados.

Mantenimiento

Asegúrese que todas las fuentes de energía de la unidad estén aisladas con anterioridad al mantenimiento, inspección o limpieza.

No hay ningún componente dentro de esta unidad que pueda repararse por el usuario. Bajo ninguna circunstancia la caja debe ser abierta.

Todas las conexiones del cableado externo deben inspeccionarse periodicamente.

Deben reemplazarse todos los cables dañados y debe ajustarse toda conexión floja.

La limpieza sobre la caja de la unidad debe efectuarse utilizandose un paño seco.

Programación

Atención: Si se ha instalado en el DPM una salida del relé opcional y/o un cuadro(s) de salida analógica, cuando se entre la modalidad programa se producirá el disparo de los dos relés y la salida analógica se pondrá en su valor mínimo (0V o bien 4mA) indiferentemente de cuál sea el valor de la señal de entrada.

Diagnósticos

Atención: Cuando se realicen los tests de diagnóstico se conectará la salida analógica y se accionarán los relés si dichas opciones han sido instaladas. Primero quitar la alimentación del DPM y desconectar las salidas de todas las cargas que pudieran estar conectadas. Si ha sido instalado el cuadro de comunicación opcional RS485, el DPM contestará con el valor de entrada reducido en la señal de mando QST.

ATTENZIONE

L'INSTALLAZIONE E LA MANUTENZIONE DEVONO ESSERE ESEGUITE ESCLUSIVAMENTE DA PERSONALE DEBITAMENTE QUALIFICATO. IN CORRISPONDENZA DEI MORSETTI DI COLLEGAMENTO POTREBBERO ESSERE PRESENTI TENSIONI PERICOLOSE.

Installazione

Il presente prodotto deve essere installato secondo i requisiti di funzionamento e installazione della Categoria di Sovratensione II ed il Grado di Inquinamento 2 (come definito da IEC 664).

L'unità deve essere installata in una idonea custodia, accessibile unicamente al personale qualificato.

E' necessario installare un fusibile di alimentazione esterno:

Alimentazione CC - S504 - 2A prodotto da Bussmann.

Resistenza a sovracorrenti transitorie 2A, tensione 50V, capacità di apertura 35A a 50VCC, omol. UL (reg. n°. E75865), conforme a IEC127.

Alimentazione AC - S504 - 200mA prodotto da Bussmann.

Resistenza a sovracorrenti transitorie 200mA, tensione 250VAC, capacità di apertura 35A a 250VAC, omol. UL (reg. n°. E75865), conforme a IEC127.

I circuiti di uscita a relè devono essere equipaggiati con fusibili compatibili con la tensione e la corrente di commutazione.

Valori massimi fusibile:

250VAC	@ cosØ= 1	valori fusibile 5A
30VCC	@ cosØ= 1	valori fusibile 5A

Tutti i conduttori che portano tensioni pericolose devono essere dotati di meccanismi di commutazione o scollegamento esterni che garantiscano almeno 3 mm di separazione a livello di tutti i poli.

L'installazione o l'utilizzo dell'unità in contravvenzione con i requisiti che precedono può compromettere la sicurezza elettrica dell'unità.

Manutenzione

Assicurarsi che tutte le fonti di alimentazione dell'unità siano adeguatamente isolate prima di procedere alla manutenzione, ispezione o pulizia.

All'interno dell'unità non sono presenti componenti manutenibili dall'utente. Evitare nel modo più assoluto di aprire la custodia dello strumento.

Controllare regolarmente tutti i collegamenti esterni. Sostituire eventuali cavi danneggiati e riserrare qualsiasi collegamento allentato.

Utilizzare un panno asciutto per pulire la custodia dell'unità.

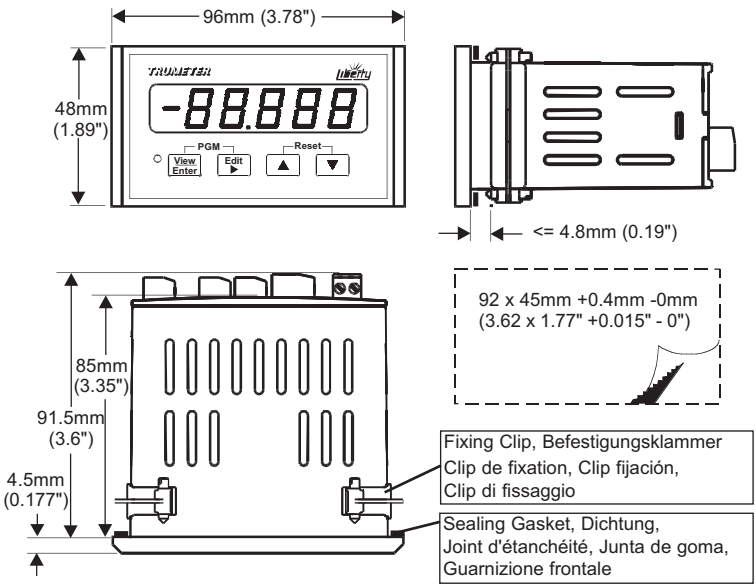
Programmazione

Avvertenza: Se nel DPM sono state installate la scheda di uscita relè e/o quella di uscita analogica opzionali, impostando il sistema in modalità Programmazione entrambi i relè verranno disattivati e l'uscita analogica verrà impostata sul valore minimo (0V o 4mA), indipendentemente dal valore del segnale di entrata.

Diagnostica

Avvertenza: L'esecuzione dei test diagnostici causa l'attivazione dell'uscita analogica e dei relè, nel caso in cui tali schede opzionali siano state installate. Innanzitutto, scollegare l'alimentazione dal DPM e le uscite da eventuali carichi che non devono essere attivati. Se la scheda di comunicazione RS485 opzionale è stata installata, il DPM risponde al comando QST con il valore di entrata adattato.

Mounting, Montage, Montaje, Montaggio



DO NOT OVERTIGHTEN screws, or the gasket will be squeezed out from behind the bezel.

Die Schrauben NICHT ZU FEST ANZIEHEN, anderenfalls wird Dichtung aus dem Deckring gedrückt.

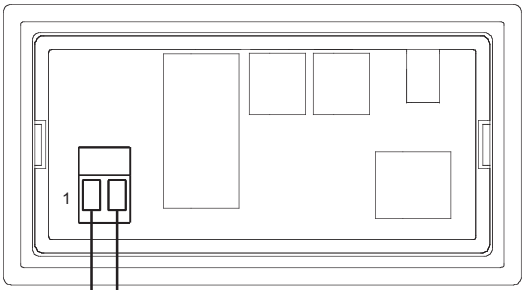
NE PAS TROP SERRER les vis, sans quoi la garniture sera chassée hors du logement.

NO APRETAR EN EXCESO los tornillos, o el obturador saltará afuera por detrás del bisel.

NON STRINGERE ECCESSIVAMENTE le viti altrimenti la guarnizione verrà spinta fuori dal frontale.

Connections, Anschlüsse, Raccordements, Conexiones, Collegamenti

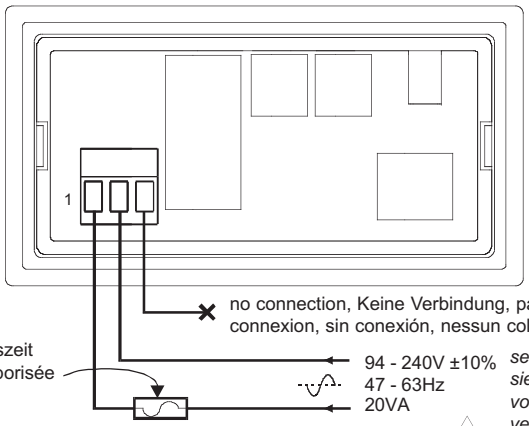
Power Supply, Versorgung, Alimentation, Alimentación, Alimentazione
8780-X: DC (CC)



2.0A, 50V
Anti-surge
Verzögerungszeit
À action temporisée
Temporizado
Ritardato

see page 2
siehe Seite 3
voir page 4
ver página 6
vedi pagina 7

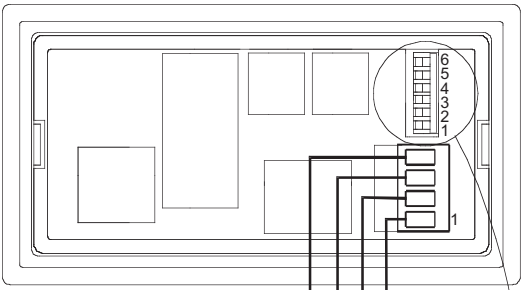
Power Supply, Versorgung, Alimentation, Alimentación, Alimentazione
8781-X: AC (CA)



0.2A, 250V
Anti-surge
Verzögerungszeit
À action temporisée
Temporizado
Ritardato

see page 2
siehe Seite 3
voir page 4
ver página 6
vedi pagina 7

Count Inputs, Zählereingange, Entrées Comptage, Entradas de conteo, Ingressi conteggio



Output, Ausgang, Sortie, Salida, Uscita

+12V @ 27mA

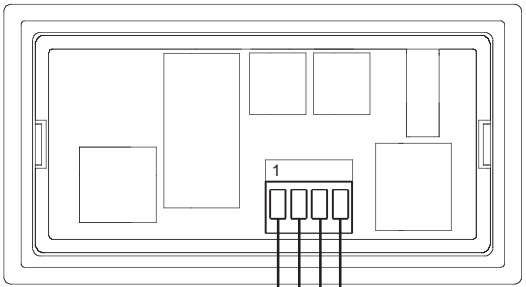
A

B

0V, Common, Masse, Commun, Común, Comune

see page 18
siehe Seite 18
voir page 18
ver página 18
vedi pagina 18

Control Inputs, Kontrolleingänge, Entrées de Contrôle, Entradas de Control, Ingressi Controllo



1

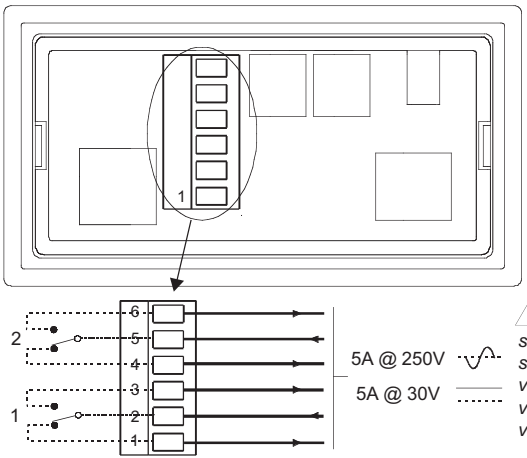
2

3

0V, Common, Masse, Commun, Común, Comune

see pages 19
siehe Seiten 19
voir pages 19
ver páginas 19
vedi pagini 19

Option Board, Optionskarte, Cartes en option,
Cuadro opcional, Scheda opzionale 878X-1, 878X-3, 878X-5, 878X-7:
Relay, Relais, Relé, Relè
see page 25, siehe Seite 25, voir page 25, ver página 25, vedi pagina 25



Relays shown in released (not operated) state.

Die Relais werden im freigegebenen Zustand (nicht in Betrieb) wiedergegeben.

Relais au repos (non commandé)

Relés en posición de reposo (desexcitados).

Relè diseccitato (non azionati).

Note: An RC surge suppressor is recommended across inductive loads.

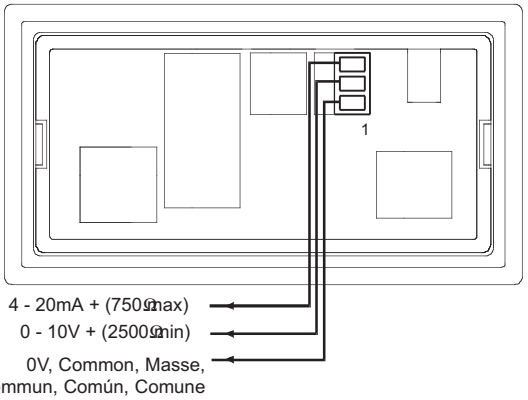
Hinweis: Es wird empfohlen, zwischen induktiven Lasten einen RC-Stromstoßstabilisator einzusetzen.

Remarque: une protection RC de surtension est recommandée pour les charges inductives.

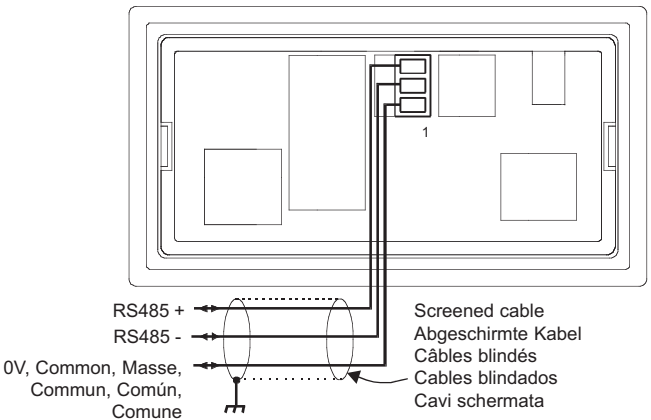
Nota: Se recomienda un compresor de sobrevoltaje RC por encima de las cargas inductivas.

Nota: Si consiglia un soppressore RC di sovracorrenti transitorie verso i carichi induttivi.

Option Board, Optionskarte, Cartes en option,
Cuadro opcional, Scheda opzionale
878X-2, 878X-3, 878-6, 878X-7:
Analog Output, Analogausgang, sortie analogique,
Salida analógica, Uscita Analogica
see page 26, siehe Seite 26, voir page 26, ver página 26, vedi pagina 26



Option Board, Optionskarte, Cartes en option,
Cuadro opcional, Scheda opzionale 878X-4, 878X-5, 878X-5, 878X-7:
RS485 *see page 26, siehe Seite 26, voir page 26, ver página 26, vedi pagina 26*



Specification

AC Power Supply (8781-X)

Input Power
94-240 VAC ±10%, 20 VA
47-63 Hz

External Fuse
0.2A, 250 VAC, Time Delay (T200mA, 250V)

Isolation
2300 VAC

DC Power Supply (8780-X)

Input Power
9-30 VDC, 12 VA
Reverse voltage protection

External Fuse
2.0A, 50 VDC, Time Delay (T2A, 50V)

Isolation
2300 VAC to signal inputs and relays, 500 VAC to RS485 and analog outputs

DC Power Output

12V DC ± 12% 75mA max
Short circuit protection

Relay option board (878X-1, 878X-3, 878X-5, 878X-7)

Relays
2 SPCO

Contacts
5A, 250V AC or 30V DC

Isolation
2300V AC

Analog Output option board (878X-2, 878X-3, 878X-6, 878X-7)

Outputs
4-20mA DC (<750Ω load), 0-10V DC (>2500Ω load)

Accuracy
± 0.13% full scale 100ppm/°C
+ 0.07% full scale change over 4-20mA load range

Isolation
2300V AC to signal inputs, relays and AC power supply, 500V AC to RS485 and DC power supply

Spezifikation

Versorgung AC (8781-X)

Eingang Netzstrom
94-240 VAC ±10%, 20 VA
47-63 Hz

Externe Sicherung
0,2A 250 VAC, Verzögerungszeit (T200mA, 250V)

Isolierung
2300 VAC

Versorgung DC (8780-X)

Eingang Netzstrom
9-30 VDC, 12 VA
Rückspannungsschutz

Externe Sicherung
2,0A 50 VDC, Verzögerungszeit (T2A, 50V)

Isolierung
2300 VAC an Signaleingänge und Relais, 500 VAC an RS 485 und Analagausgänge

Ausgäng DC

12V DC ± 12% 75mA max
Kurzschlussschutz

Relaisoptionskarte (878X-1, 878X-3, 878X-5, 878X-7)

Relais
2 SPCO

Kontakt
5A, 250V AC oder 30V DC

Isolierung
2300V AC

Analagausgänge-optionskarte (878X-2, 878X-3, 878X-6, 878X-7)

Ausgänge
4-20mA DC (<750Ω zwische), 0-10V DC (>2500Ω zwische)

Toleranz
± 0,13% Skalenendwert 100ppm/°C
+ 0,07% Skalenendwertänderung über 4-20mA Lastbereich

Isolierung
2300V AC an Signaleingänge und Relais und Versorgung AC, 500V AC an RS485 und Versorgung DC

Caractéristiques

Alimentation CA (8781-X)

Alimentation en entrée
94-240 VCA, ±10%, 20 VA
47-63 Hz

Fusible externe
0.2A, 250 VCA, à action temporisée (T200mA, 250V)

Isolation
2300 VCA

Alimentation CC (8780-X)

Alimentation en entrée
9-30 VCC, 12 VA
Protection inversion de polarité

Fusible externe
2.0A, 50 VCC, à action temporisée (T2A, 50V)

Isolation
2300 VCA aux entrées de signal et relais, 500 VCA au RS485 et aux sorties analogiques

Alimentation auxiliaire

12V DC ± 12% 75mA max
Protection court-circuit

Carte relais en option (878X-1, 878X-3, 878X-5, 878X-7)

Relais
2 SPCO, 2 contacts RCT

Contacts
5A, 250V CA ou 30V CC

Isolation
2300V CA

Carte sortie analogique en option (878X-2, 878X-3, 878X-6, 878X-7)

Sortie
4-20mA CC (<750Ω charge), 0-10V CC (>2500Ω charge)

Précision
± 0.13% pleine échelle 100ppm/°C
+ 0.07% pleine échelle sur plage du 4-20mA

Isolation
2300V CA aux entrées de signal, relais et alimentation CA, 500V CA au RS485 et alimentation CC

Especificaciones

Alimentación CA (8781-X)

Potencia de entrada
94-240 VCA, ±10%, 20 VA
47-63 Hz

Fusible exterior
0.2A, 250 VCA, Temporizado (T200mA, 250V)

Aislamiento
2300 VCA

Alimentación CC (8780-X)

Potencia de entrada
9-30 VCC, 12 VA
Protección voltaje inversa

Fusible exterior
2.0A, 50 VCC, Temporizado (T2A, 50V)

Aislamiento
2300 VCA para señalar entradas y relés, 500 VCA para RS485 y salidas analógicas

Salida de potencia CC

12V CC ± 12% 75mA max
Protección cortocircuito

Cuadro opcional relé (878X-1, 878X-3, 878X-5, 878X-7)

Relés
2 SPCO

Contactos
5A, 250V CA o 30V CC

Aislamiento
2300V CA

Cuadro opcional salida analógica (878X-2, 878X-3, 878X-6, 878X-7)

Salidas
4-20mA CC (<750Ω carga), 0-10V CC (>2500Ω carga)

Precisión
± 0.13% escala industrial 100ppm/°C
+ 0.07% conmutador escala industrial 4 - 20mA extensión carga

Aislamiento
2300V CA para señalar entradas, relés y alimentación CA, 500V CA para RS485 y alimentación CC

---> *página 17*

Specifiche

Alimentazione (8781-X)

Potenza di entrata
94-240 VCA, ±10%, 20 VA
47-63 Hz

Fusibile Esterno
0.2A, 250 VCA, Ritardato (T200mA, 250V)

Isolamento
2300 VCA

Alimentazione CC (8780-X)

Potenza di entrata
9-30 VCC, 12 VA
Protezione di tensione inversa

Fusibile Esterno
2.0A, 50 VCC, Ritardato (T2A, 50V)

Isolamento
2300 VCA alle ingressi di segnale e ai relè, 500 VCA a RS485 e alle uscite analogiche

Uscita di Potenza

12V CC ± 12% 75mA max
Protezione di cortocircuito

Scheda opzionale relè (878X-1, 878X-3, 878X-5, 878X-7)

Relè
2 SPCO

Contatti
5A, 250V CA o 30V CC

Isolamento
2300V CA

Scheda opzionale Uscita Analogica (878X-2, 878X-3, 878X-6, 878X-7)

Uscite
4-20mA CC (<750Ω carico), 0-10V CC (>2500Ω carico)

Accuratezza
± 0.13% su fondo scala 100ppm/°C
+ 0.07% di risoluzione su 4-20mA di campo

Isolamento
2300V CA ingressi di segnale, relè e alimentazione AC, 500V CA RS485 e alimentazione CC

---> *pagina 17*

< --- page 14

RS485 option board (878X-4, 878X-5, 878X-6, 878X-7)

Protocol
Opto 22® compatible
Isolation
2300V AC to signal inputs, relays and AC power supply, 500V AC to analog outputs and DC power supply

Display (all models)

+6, -5fi digit red LED
14mm high characters

Memory (all models)

EEPROM, 100 years

Environmental (all models)

Operating Environment
Indoor use to 2000m
Operating Temperature
0°C to +50°C
Storage Temperature
-20°C to +70°C
Relative Humidity
0 to 85%, non-condensing
Sealing
Front panel sealed to IP65 when used with clip mount and gasket provided.
Installation Category (IEC 664)
Overvoltage category II
Pollution degree 2
Vibration
2.5 g's, 30 to 200 Hz
Shock
30 g's, 11 msec half sinewave
EMC
Heavy Industrial:
Immunity to EN 50082-2
Emissions to EN 50081-2

---> page 18

< --- Seite 14

RS485 Optionskarte (878X-4, 878X-5, 878X-6, 878X-7)

Protokoll
Opto 22® kompatibel
Isolierung
2300V AC an Signaleingänge und Relais und Versorgung AC, 500V AC an Analagausgänge und Versorgung DC

Display (alle Modelle)

LED +6, -5fi stellig, rote Zeichenhöhe 14mm

Speicher (alle Modelle)

EEPROM, 100 Jahre

Umgebung (alle Modelle)

Operating Environment
Einsatz in Innenbereich, bis 2.000 m
Betriebstemperatur
0°C bis +50°C
Lagertemperatur
-20°C bis +70°C
Relative Luftfeuchtigkeit
0 to 85%, nicht kondensierend
Dichtung
Frontblende bei Verwendung von mitgelieferter Befestigungsklammer und Dichtung nach IP65 abgedichtet.
Installationskategorie (IEC 664)
Schutzklasse II
Entstörgrad 2 (IEC64)
Vibrationen
2.5 g's, 30 bis 200 Hz
Stösse
30 g's, 11 ms halbe Sinuswelle
EMC
Schwerindustrie
Immunität gemäss EN 50082-2
Emissionen gemäss EN 50081-2

---> Seite 18

< --- page 14

Carte RS485 en option (878X-4, 878X-5, 878X-6, 878X-7)

Protocole
Compatible Opto 22®
Isolation
2300V CA aux entrées de signal, relais et alimentation CA
500V CA aux sorties analogiques et alimentation CC

Affichage (tous les modèles)

+6, -5fi DEL chiffres rouges caractères 14mm

Mémoire (tous les modèles)

EEPROM, 100 ans

Environnement (tous les modèles)

Environnement de Fonctionnement
Utilisation en intérieur jusqu'à 2000m
Température de fonctionnement
de 0°C à +50°C
Température de stockage
de -20°C à +70°C
Humidité relative
0 to 85%, sans condensation
Etanchéité
IP65 en face avant avec montage par clip et le joint d'étanchéité fourni
Catégorie d'installation (IEC 664)
Catégorie surtension II
niveau de pollution 2
Vibration
2.5 g's, 30 à 200 Hz
Chocs
30 g's, 11 ms demi onde sinusoïdale
EMC
Industrie lourde:
Immunité à EN 50082-2
Emissions à EN 50081-2

---> page 18

< --- página 15

Cuadro opcional RS485 (878X-4, 878X-5, 878X-6, 878X-7)

Protocolo

compatible Opto 22®

Aislamiento

2300V CA para señalar entradas, relés y alimentación CA, 500V CA para salidas analógicas y alimentación CC

Pantalla (todos los modelos)

LED rojo +6, -5fi dígitos caracteres de 14 mm de altura

Memoria (todos los modelos)

EEPROM, 100 años

Factor ambiental (todos los modelos)

Medio ambiente de funcionamiento

En el interior utilizar a 2000m

Temperatura de operación

0°C a +50°C

Temperatura de almacenaje

-20°C a +70°C

Humedad Relativa

0 to 85%, No condensación

Grado de protección

Panel frontal sellado según IP65 cuando se monta a presión con el accesorio de fijación y la junta de goma, ambos proveidos.

Categoría de Instalación (IEC 664)

Categoría II de sobrevoltaje grado de contaminación 2

Vibración

2.5 g's, 30 a 200 Hz

Shock

30 g's, media onda senoidal 11 ms

EMC

Industrial pesada:
Inmunidad en EN 50082-2
Emisiones en EN 50081-2

---> página 18

< --- pagina 15

Scheda opzionale RS485 (878X-4, 878X-5, 878X-6, 878X-7)

Protocollo

Opto 22® compatibile

Isolamento

2300V CA alle entrate di segnale, ai relè e alle alimentazione AC, 500V CA alle uscite analogiche e all'alimentazione CC

Display (tutti i modelli)

+6, -5fi cifre con LED rosso caratteri da 14mm

Memoria (tutti i modelli)

EEPROM, 100 anni

Ambientale (tutti i modelli)

Ambiente Operativo

Per uso inferiore a 2000m slm

Temperatura di funzionamento

da 0 a +50°C

Temperatura di immagazzinamento

da -20 a +70°C

Umidità Relativa

da 0 a 85%, senza condensa

Tenuta

Pannello frontale con tenuta IP65 con fissaggio e guarnizione in dotazione.

Categoria di installazione (IEC 664)

Categoria di sovratensione II Grado di inquinamento 2

Vibrazione

2.5 g, da 30 a 200 Hz

Urto

30 g, 11 ms metà sinusoide

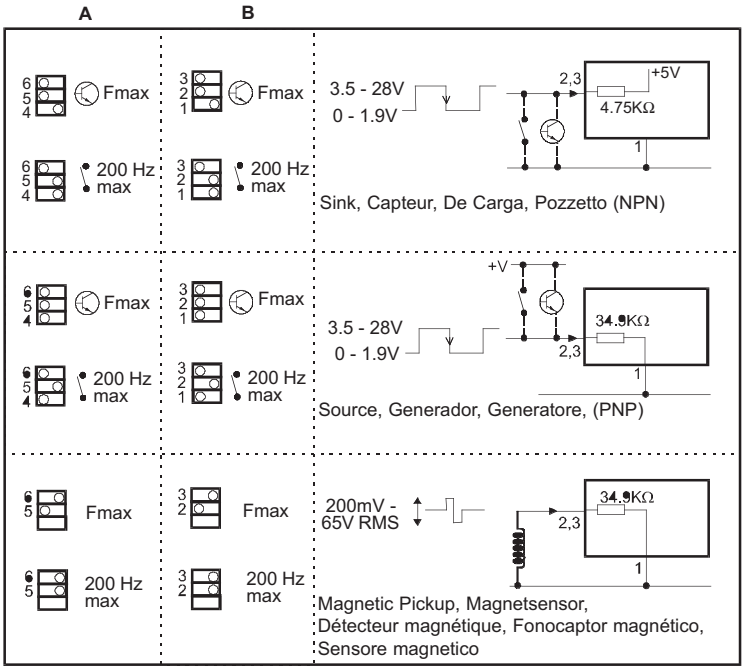
CEM

Industriale Pesante:
Immunità in base a EN 50082-2
Emissioni in base a EN 50081-2

---> pagina 18

Count Inputs, Zählereingange, Entrées Comptage, Entradas de conteo, Ingressi conteggio

see pages 11, 24 siehe Seiten 11, 24 voir pages 11, 24
ver páginas 11, 24 vedi pagini 11, 24

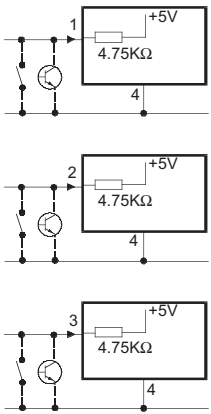


	Fmax	
Count mode, Zählermoden, Mode Compteur, Modo de conteo, Modalità di Conteggio	**A** or **B, A** oder **B** **A** ou **B, A** o **B** **A** o **B**	**A** and **B, A** und **B** **A** et **B, A** y **B** **A** e **B**
(A+ B-), (A+ B+), (A+ Binh)	8250 / 8250 Hz	3000 / 3000 Hz
Quad x1, Quad x2		3250 Hz
Quad x4		2000 Hz

Control Inputs, Kontrolleingänge, Entrées de Contrôle, Entradas de Control, Ingressi Controllo

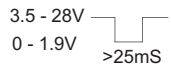
see pages 11, 24 siehe Seiten 11, 24 voir pages 11, 24
ver páginas 11, 24 vedi pagini 11, 24

All inputs: Sink only
Alle Eingänge: Nur Sink
Toutes les Entrées: Capteur uniquement
Todos las Entradas: Sólo de carga
Tutti i Ingressi: Solo pozzetto
(NPN)



Reset, Rücksetzung, RAZ

Relay Trigger, Auslösung Relais,
Enclenchement relais, Excitador del Relé ,
Relè Trigger



Sperrung, Schloss, Verrouillage, Lock, Blocco

Bypass P1

Operation

Base unit

When the power is switched on, the unit is in **Run mode**. In Run mode the contents of the **Registers** can be displayed, edited and reset. These include the Counters, Presets, Rate and PPI (see page 22).

For more details about the counters and presets, see the next page. For more information about scaling, see page 22. For more details about how to operate the unit in Run mode, see page 32.

If **Program Lock** is off, the unit can be put into **Program mode**, and the **Scalers**, **Count modes**, settings for the **Option boards**, and functions of the **Control inputs**, can be programmed by setting the values of the **Function codes** (FC).

For more information about Lock Program , and the Control inputs, see page 24. For more information about how to use Program mode to set the Function codes, see page 36.

When the power is switched off, the contents of all the Registers and Function codes are stored in memory, until the power is switched on again.

If the Totaliser counts up to 999,999 the next count will rollover to zero. If the Totaliser counts down to zero, the next count will rollunder to either 999,999 or -1, depending on the setting of Rollunder (FC11). If the Totaliser counts down to -99,999 it will stop.

The counters can be reset manually by one or more of the Control inputs, or by the front panel buttons. This depends on the setting of Control input (FC20) and Keypad reset (FC23). The Total will always reset to zero.

For more information about how the Control counter can be reset, see the next page.

The base unit can be fitted with one or more optional circuit boards. If the Relay option board is **not** installed, then only the Totaliser functions will be available. If the Relay option board **is** installed, then the Count Control functions will also be available.

For more information about the Option boards, see pages 25 and 26.

Totaliser functions

*If the Relay option board is **not** installed:*

The unit can be set to display either the **Total**, or the **Rate**, by changing the Display setting in Run mode (*on power-up: the **Total** is displayed*).

The Totaliser is a +6/-5fi digit counter that can count up or down or in both directions, depending on the setting of Count Mode (FC7, see page 24).

The 5 digit Rate display is updated each time an input pulse is received, up to a maximum of one update per second. If no pulses are received after nine seconds, the

Rate display will read zero. When the unit is in Quadrature mode, and the Totaliser is counting downwards, the Rate display will have a minus sign. The Rate display can be enabled or disabled by setting Rate Display (FC14).

Both the Total and the Rate can be programmed to read in any units by setting the Scaling parameters (FC0-6), as described on page 22. The Total display can be further divided by 1, 10 or 100, depending on the setting of Total Display (FC16).

Count Control functions

*If the Relay option board **is** installed:*

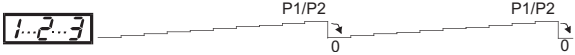
The unit can be set to display any of the Registers (if enabled), by changing the Display setting in Run mode (*on power-up: the **Control Counter** is displayed*).

The Totaliser continues to count the total number of input pulses, or it can be hidden by setting the Total Display (FC16) to *0*. In addition to the Totaliser, the unit has two more counters - the **Control counter** and the **Batch counter**.

The Control counter is a +6/-5fi digit counter that operates in a similar way to the Totaliser. It has two 6 digit Presets, **P1** and **P2**, that can only be set to positive numbers.

The Control counter can be programmed to reset automatically when the count reaches either or both of the two presets, P1 and P2. This depends on the setting of Reset mode (FC9) and Auto-reset (FC10).

Auto-reset:

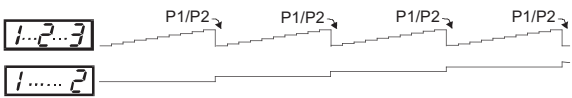


Note that if Reset mode (FC9) is set to *Reset to P2* , the counter will count backwards and will Reset and Auto-reset to P2, instead of to zero.

Reset to P2:

The Batch counter is a 6 digit counter that can only count upwards. If one of the Auto-reset (FC10) modes has been set, the Batch counter will count the number of times Auto-reset has occurred. The Batch counter and its preset, **Pb**, can be enabled or disabled by setting Batch counter (FC8).

Batch counter:



For information about how the relays can be controlled by P1, P2 and Pb, see page 25.

Scaling

The display can be programmed to read in any units by setting the Scaling parameters (Function codes FC0 - FC6).

NOS = Number Of Seconds in time unit (1=seconds, 60=minutes, 3600=hours etc)
PPI = Pulses Per Item (revolution, metre, litre, machine cycle etc)
DPF = Decimal Point Factor (from table below)

Count Decimal Point	*CDPF*	*Rate Decimal Point*	*RDPF*
100000	1	10000	1
10000.0	10	1000.0	10
1000.00	100	100.00	100
100.000	1000	10.000	1000
10.0000	10000	1.0000	10000

If Scaling mode (FC0) is set to *Calculated* (0):
PPI and NOS must be entered into FC1 and FC6.
Count Decimal Point and Rate Decimal Point must be entered into FC3 and FC5.
The unit will calculate Count Scaler and Rate Scaler (FC2 and FC4).

If Scaling mode (FC0) is set to *Calculated (1):*
PPI may also be edited in Run mode.

If Scaling mode (FC0) is set to *Programmed (2)*:
Count Decimal Point and Rate Decimal Point must be entered into FC3 and FC5.
Count Scaler and Rate Scaler must be calculated as shown below, and entered into FC2 and FC4.

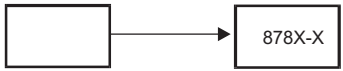
$$\text{Count Scaler} = \frac{\text{CDPF}}{\text{PPI}}$$

$$\text{Rate Scaler} = \frac{\text{NOS} \times \text{RDPF}}{\text{PPI}}$$

Examples:

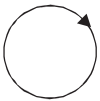
1 pulse per product *products per hour*

Display	**Rate**
Rate Decimal Point	**10000**
Rate Scaler	NOS x RDPF / PPI = 3600 x 1 / 1 = **3600**



5 pulses per metre *metres*

Display	**Count**
Count Decimal Point	**1000.0**
Count Scaler	CDPF / PPI = 10 / 5 = **2**



70 pulses per revolution *revolutions*
revolutions per minute

Display	**Count**
Count Decimal Point	**10000**
Count Scaler	CDPF / PPI = 1 / 70 = **0.0143**

Display	**Rate**
Rate Decimal Point	**100.00**
Rate Scaler	NOS x RDPF / PPI = 60 x 100 / 70 = **85.71**

Count inputs

The unit has two count inputs, A and B (see pages 11 and 18). The counter can be programmed to operate in any of the six modes shown below, by setting Count mode (FC7).

Count modes

A+ B-

A counts up, B counts down

A+ B+

A counts up, B counts up

A+ Binh

A counts up, B inhibits counter

Quadrature x 1

Quadrature x 2

Quadrature x 4

Note that if Reset mode (FC9) is set to *Reset to P2*, the counter will count backwards in all modes.

Control inputs

The unit has three control inputs (see pages 11 and 19) that can be used to reset the counters or to prevent users from accessing some functions. These are dependant on the Control Input setting (FC20).

We recommend that one of the Control inputs should be set to *Lock Program*, to prevent unauthorised changes to the unit's programming.

Relay option board

This contains two SPCO relays (see page 12).

Each relay can be programmed to operate in one of the modes shown below, by setting its Relay mode (FC30 or FC40).

Relay modes

Latched normal	Relay operates when triggered (FC32 or FC42). Relay releases when triggered (FC32 or FC42).
Latched reverse	as above, but operate and release are swapped.
Pulsed normal	Relay operates when triggered. Relay releases after the time programmed into Relay Pulse time (FC31 or FC 41), unless a release trigger occurs before the end of the time.
Pulsed reverse	as above, but operate and release are swapped.
Preset low	Relay operates when Control counter <= Preset. Relay releases when Control counter > Preset.
Preset high	Relay releases when Control counter < Preset. Relay operates when Control counter => Preset.

In all modes, when the power is switched off:

Both relays are released.

Latched and pulsed modes:

The relay can be triggered:

by the Control counter reaching P1, P2 or Pb,
or by the Relay Control input,
or Reset and Auto-reset,
depending on the setting of Relay Trigger (FC32 or FC42).

When the power is switched on:

The relays will not operate until re-triggered.

Preset low and Preset high modes:

The relay can be controlled by P1 or P2, depending on the setting of Relay Preset (FC34 or FC44).

When the power is switched on, the value of the Control counter is maintained from the previous session, but:

If Relay Preset test (FC35 or FC45) is *Disabled*, the relay will not operate until an input pulse causes the Control counter to reach the Preset.

If Relay Preset test (FC35 or FC45) is *Enabled*, the relay will immediately operate if the value of the Control counter had reached the Preset in the previous session.

Analog Output option board

This provides two analog outputs (4-20mA and 0-10V) (see page 13).

The outputs can be programmed to follow the Rate, the Totaliser counter, the Control counter or the Batch counter (if enabled), by setting Analog Assignment (FC70)

The output can be programmed to any range, by setting the Analog Output Offset (FC71) and Analog Output Full Scale (FC72).

When the display reading is equal to the Analog Output Offset value, the outputs will be 4mA and 0V.

When the display reading is equal to the Analog Output Full Scale value, the outputs will be 20mA and 10V.

When the display reading is in between these two values, the outputs will be:

$$V = \frac{(\text{Display Reading} - \text{Output Offset}) \times 10}{(\text{Output Full Scale} - \text{Output Offset})} \text{ V}$$

$$I = \left(\frac{(\text{Display Reading} - \text{Output Offset}) \times 16}{(\text{Output Full Scale} - \text{Output Offset})} \right) + 4 \text{ mA}$$

RS485 option board

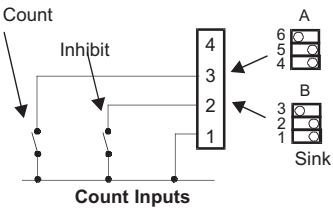
This provides a two-way serial communication link with a remote computer (see page 13).

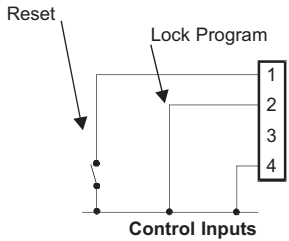
The serial link can be programmed by setting RS485 Serial Address (FC60), RS485 Baud Rate (FC61) and RS485 Parity (FC62).

For further information about the serial communication protocol, contact your local Trumeter office.

Examples

Simple Totaliser with Inhibit and Reset Inputs and Keypad Reset

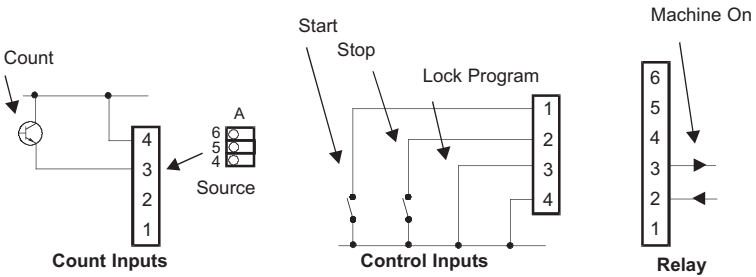




Function Codes

FC0	Scaling mode	0	Calculated
FC1	PPI	1.00	
FC2	Count Scaler	1.00000	
FC3	Count Decimal Point	0	100000
FC7	Count Mode	2	A+ Binh
FC14	Rate Display	0	Disabled
FC16	Total Display	1	Total displayed
FC20	Control Inputs	130	Input 1: Reset Total Input 2: Lock Program
FC23	Keypad reset	1	Reset Total

Machine Controller with Manual Start, Manual Stop and Automatic Stop



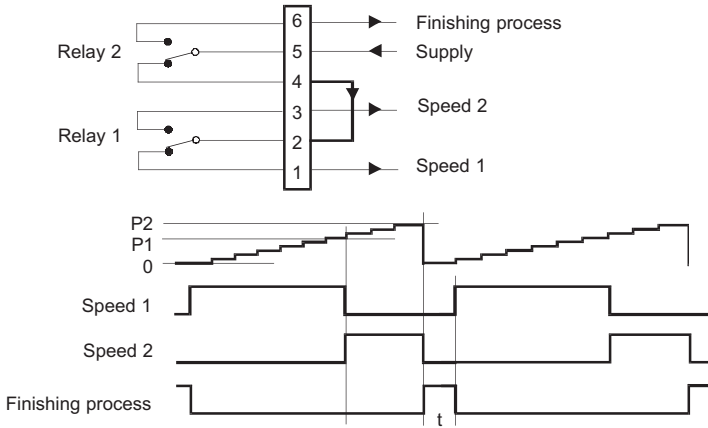
Registers

P1	Preset 1	Autostop Value	

Function Codes

FC0-6	Scaling	see page 22	
FC7	Count Mode	0,1,2	A+
FC8	Batch Counter	0	Disabled
FC9	Reset Mode	0	Normal
FC10	Auto Reset	0	Disabled
FC20	Control Inputs	583	Input 1: Reset Control Counter
			Input 2: Relay Control
			Input 3: Lock Program
FC30	Relay 1 Mode	1	Latched Normal
FC32	Relay 1 Trigger	20021	Reset operates relay
			P1 releases relay
			Relay Control releases relay

Repeating Two Speed Controller with Keypad Start, Keypad Reset and Timed Finishing Process.



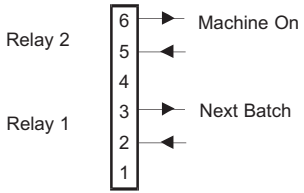
Registers

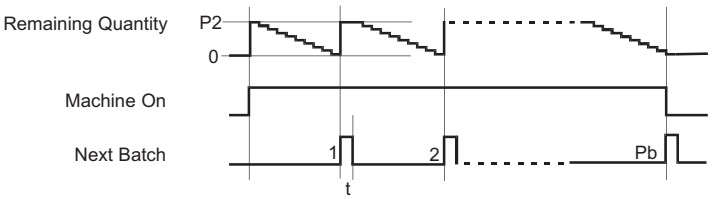
P1	Preset 1	Speed 2 Start Value	
P2	Preset 2	Finishing Process Start Value	

Function Codes

FC0-6	Scaling	see page 22	
FC7	Count Mode	to suit input device	
FC8	Batch Counter	0	Disabled
FC9	Reset Mode	0	Normal
FC10	Auto Reset	2	P2→0
FC20	Control Inputs	300	Input 1: Lock Program
FC23	Keypad Reset	5	Resets all Counters
FC30	Relay 1 Mode	1	Latched Normal
FC32	Relay 1 Trigger	12002	P1 operates relay P2 releases relay Reset releases relay
FC40	Relay 2 Mode	3	Pulsed Mode
FC41	Relay 2 Pulse Time	t	Finishing Process duration
FC42	Relay 2 Trigger	01002	P2 operates relay Reset releases relay

Batch Controller with Keypad Start, Keypad Reset, Automatic Stop after *Pb* Batches, and Remaining Quantity Display.





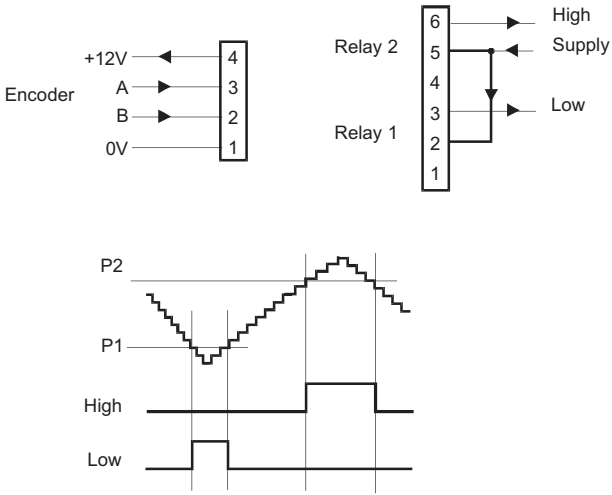
Registers

P2	Preset 2	Batch Quantity
Pb	Batch Preset	Number of Batches

Function Codes

FC0-6	Scaling	see page 22	
FC7	Count Mode	to suit input device	
FC8	Batch Counter	2	Enabled, with Batch Preset
FC9	Reset Mode	1	Reset to P2
FC10	Auto Reset	2	P2→0 (0→P2)
FC20	Control Inputs	300	Input 1: Lock Program
FC23	Keypad Reset	5	Resets all Counters
FC30	Relay 1 Mode	3	Pulsed Normal
FC31	Relay 1 Pulse Time	t	Next Batch pulse duration
FC32	Relay 1 Trigger	01000	P2 operates relay
FC40	Relay 2 Mode	1	Latched Normal
FC42	Relay 2 Trigger	00012	Reset operates relay Pb releases relay

Position Display with High and Low Level Warning Outputs.



Note: The zero position must be set when the power is switched on.

Registers

P1	Preset 1	Low Level
P2	Preset 2	High Level

Function Codes

FC0-6	Scaling	see page 22	
FC7	Count Mode	to suit encoder	
FC8	Batch Counter	0	Disabled
FC9	Reset Mode	0	Reset to P2
FC10	Auto Reset	0	Normal
FC20	Control Inputs	300	Input 1: Lock Program
FC30	Relay 1 Mode	5	Preset Low
FC34	Relay 1 Preset	0	P1
FC40	Relay 2 Mode	6	Preset High
FC44	Relay 2 Preset	1	P2

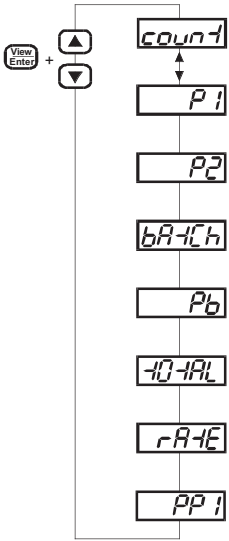
Run Mode

When the power is switched on, the unit is in **Run mode**. In Run mode, the contents of the **Registers** can be displayed, edited and reset. These include the Counters, Presets, Rate and PPI.

Use the View Enter, ▲ and ▼ buttons to select a Register, as shown below. Release the buttons to see the Register value.

Use the Edit ▶, ▲ and ▼ buttons to edit the value, as shown on the next page.

Press View Enter to see the Register name.



Register

Control counter
cannot be edited.

Preset 1 (P1)
see Function codes 10, 20, 32, 34, 42, 44.

Preset 2 (P2)
see Function codes 9, 10, 32, 34, 42, 44.

Batch counter
see Function codes 8, 20, 23.
cannot be edited.
Batch preset (Pb)
see Function codes 8, 32, 42.

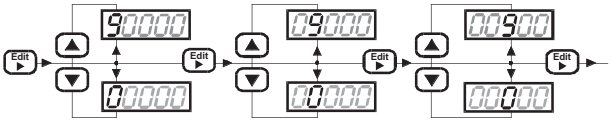
Total
see Function codes 16, 20, 23.
cannot be edited.
Rate
see Function codes 4, 5, 6, 14.
cannot be edited.
Pulses Per Item (PPI)
see Function codes 0, 1.

Note: To set all Counters and Presets to zero, enter Program mode, and set Load Defaults (FC50) to *2*.

To reset the counters, press ▲ and ▼ simultaneously (if enabled by Keypad reset - FC23).

Editing the Registers

Use the Edit, ▲ and ▼ buttons to edit the value, as shown below:



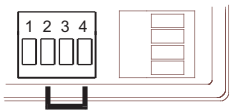
Press View Enter to save the edited value.

Program Mode

Caution: If the optional relay output and/or analog output board(s) are installed in the DPM, then entering Program mode will cause both relays to release and the analog output to go to its minimum value (0V or 4 mA) regardless of the input signal value.

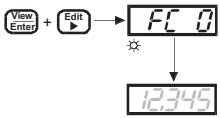
To program the base unit and the option boards, follow the instructions below.

1



Disconnect *Program Lock* (see Function code 20).

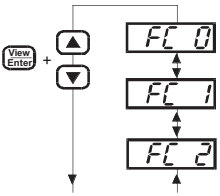
2



Press the View Enter and Edit buttons simultaneously, then release both buttons. The PGM lamp will light.

The display will show FC 0 (Function code 0), then it will change to show the value of FC 0.

3



Use the View Enter, ▲ and ▼ buttons to select a Function code from the list (see page 36).

Release the buttons to see the value of the Function code.

Press View Enter to see the Function code number.

Note: The Function codes for each option board will not appear unless that option board is installed. Some Function codes will not appear, depending on the setting of other codes.

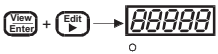
4

Use the Edit, ▲ and ▼ buttons to edit the value, as shown on the next page.

Note: To set all Function Codes to their default values, set Load Defaults (FC50) to *1*.

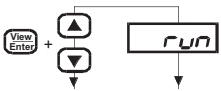
To return to Run mode and try out the new settings:

5



press the View Enter and Edit buttons simultaneously,

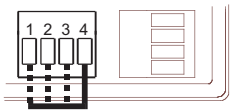
or



select run ,

Go back to 2 to change other Function codes.

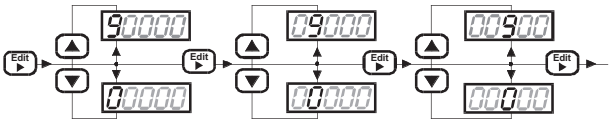
6



Connect *Program Lock* to 0V(see Function code 20).

Editing the Function Codes

Use the Edit , ▲ and ▼ buttons to edit the value, as shown below:



Press View Enter to save the edited value.

The Function Codes

	(default) values	Function Code	Your Settings
0	**(0)**	**Scaling mode** (see page 22)	
	0	Calculated. *PPI entry in Program mode only.*	
	1	Calculated. *PPI entry in Program mode or Run mode.*	
	2	Programmed. *Count Scaler and Rate Scaler required.*	
1	**(1.00)** 0.01 - 9999.99*	**Pulses Per Item (PPI)** (see page 22) **but any value that causes Count Scaler or Rate Scaler to be out of range will be rejected.*	
2	**(1.00000)** 0.00001 - 9.99999	**Count Scaler** (see page 22)	
3	**(0)**	**Count Decimal Point** (see page 22)	
	0	100000	
	1	10000.0	
	2	1000.00	
	3	100.000	
	4	10.0000	
4	**(60.00)** 0.001 - 9999	**Rate Scaler** (see page 22)	
5	**(0)**	**Rate Decimal Point** (see page 22)	
	0	10000	
	1	1000.0	
	2	100.00	
	3	10.000	
	4	1.0000	
6	**(60)** 1 - 99,999	**Number of Seconds in time unit (NOS)** (see page 22) 1=seconds, 60=minutes, 3600=hours etc	

	(default) values	**Function Code**	**Your Settings**
7	**(0)**	**Count Mode** (see page 24)	
	0	A+ B-	
	1	A+ B+	
	2	A+ Binh	
	3	Quadrature x 1	
	4	Quadrature x 2	
	5	Quadrature x 4	
8	**(0)**	**Batch Counter** (see page 21)	
	0	Disabled	
	1	Enabled, but no Batch preset	
	2	Enabled, with Batch preset	
9	**(0)**	**Reset mode** (see page 21)	
	0	Normal *Control counter resets to zero*	
	1	Reset to P2 *Control counter counts backwards and resets to P2*	
10	**(0)**	**Auto-reset** (see page 21)	
	0	Disabled	
	1	P1→0	
	2	P2→0	
	3	P1/P2→0	
11	**(0)**	**Rollunder** (see page 20)	
	0	999,999	
	1	-1	

	(default) values	**Function Code**	**Your Settings**
14	**(0)**	**Rate display** (see page 20)	
	0	Disabled	
	1	Enabled	
16	**(0) (1*)**	**Total display** (see page 20)	
	0	Disabled *not possible unless Relay option board is installed*	
	1	Total displayed ** default if Relay option board is not installed*	
	2	Total ÷ 10	
	3	Total ÷ 100	
20	**(000)**	**Control inputs** (see page 24)	
	abc:	*a*: input 1, *b*: input 2, *c*: input 3	
		eg. *037*: input 1 - No action input 2 - Lock Program input 3 - Reset all counters	
	0	No action	
	1	Reset Total	
	2	Lock all	
	3	Lock Program	
	4	Lock Program and P1	
	5	Reset Control counter	
	6	Reset Batch counter	
	7	Reset all counters	
	8	Relay Control input *see FC32 and FC42*	
	9	Bypass P1	
23	**(0)**	**Keypad reset** (see page 20)	
	0	Disabled	
	1	Reset Total	
		2 - 5: only if Relay option board is installed	
	2	Reset Control counter	
	3	Reset Batch counter	
	4	Reset displayed counter	
	5	Reset all counters	

38

	(default) values	**Function Code**	**Your Settings**
30	**(0)**	**Relay 1 mode** (see page 25)	
	0	Disabled	
	1	Latched normal	
	2	Latched reverse	
	3	Pulsed normal	
	4	Pulsed reverse	
	5	Preset low	
	6	Preset high	
31	**(1.00)**	**Relay 1 Pulse time** (see page 25)	
	0.01 - 99.99	Seconds	
32	**(00000)**	**Relay 1 Trigger** (see page 25 and FC20)	
	abcde:	*a:* P1, *b:* P2, *c:* Pb, *d:* Relay Control, *e:* Reset	
		eg. *12002*: P1 operates Relay 1 P2 and Reset release Relay 1	
	0	No action	
	1	Operate	
	2	Release	
34	**(0)**	**Relay 1 Preset** (see page 25) (FC30 = 5 or 6 only)	
	0	Relay 1 controlled by P1	
	1	Relay 1 controlled by P2	
35	**(0)**	**Relay 1 Preset test** (see page 25) (FC30 = 5 or 6 only)	
	0	Disabled	
	1	Enabled	

	(default) values	**Function Code**	**Your Settings**
40	**(0)**	**Relay 2 mode** (see page 25)	
	0	Disabled	
	1	Latched normal	
	2	Latched reverse	
	3	Pulsed normal	
	4	Pulsed reverse	
	5	Preset low	
	6	Preset high	
41	**(1.00)**	**Relay 2 Pulse time** (see page 25)	
	0.01 - 99.99	Seconds	
42	**(00000)**	**Relay 2 Trigger** (see page 25 and FC20)	
	abcde:	*a:* P1, *b:* P2, *c:* Pb, *d:* Relay Control, *e:* Reset	
		eg. *12002*: P1 operates Relay 2 P2 and Reset release Relay 2	
	0	No action	
	1	Operate	
	2	Release	
44	**(0)**	**Relay 2 Preset** (see page 25)	
		(FC40 = 5 or 6 only)	
	0	Relay 2 controlled by P1	
	1	Relay 2 controlled by P2	
45	**(0)**	**Relay 2 Preset test** (see page 25)	
		(FC40 = 5 or 6 only)	
	0	Disabled	
	1	Enabled	
50	**(0)**	**Load Defaults** (see pages 27 and 29)	
	0	No action	
	1	Load default values into all Function codes	
	2	Set all Presets and Counters to zero	

	(default) values	**Function Code**	**Your Settings**
60	**(00)** 00 - 99	**RS485 Serial Adress** (see page 26)	
61	**(4)** 0 1 2 3 4	**RS485 Baud Rate** (see page 26) 1200 2400 4800 9600 19200	
62	**(0)** 0 1 2	**RS485 Parity** (see page 26) none odd even	
70	**(0)** 0 1 2 3	**Analog Assignment** (see page 26) Rate Total *2 - 3: only if Relay option board is installed* Control counter Batch counter	
71	**(000000)** -99,999 - 99,999 0 - 999,999 -99,999 - 999,999	**Analog Output Offset** (see page 26 and FC11) if Rate if Total, and Rollunder = 999,999 if Control counter, and Rollunder = 999,999 if Batch counter if Total, and Rollunder = -1 if Control counter, and Rollunder = -1	
72	**(99999*)(999999)** -99,999 - 99,999* 0 - 999,999 -99,999 - 999,999	**Analog Output Full Scale** (see page 26 and FC11) if Rate if Total, and Rollunder = 999,999 if Control counter, and Rollunder = 999,999 if Batch counter if Total, and Rollunder = -1 if Control counter, and Rollunder = -1	

Diagnostics

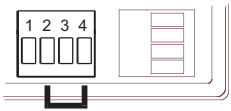
Caution: Performing the diagnostic tests will turn on the analog output and operate the relays if those options are installed. First remove power from the DPM and disconnect the outputs from any loads that should not be turned on. If the optional RS485 communication board is installed, the DPM will respond with the scaled input value to the QST command.

Tests performed automatically when power is turned on:

	Display test	if faulty, return to factory for repair
	Memory error	} return to factory for repair
	Calibration error	}
	Programming error	} press any key or cycle power OFF then ON
	Run Data error	} then re-program

Keyboard diagnostics:

1



Turn Power OFF

Disconnect *Program Lock* (see Function code 20).

2

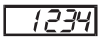
Edit + ▲ +

Turn Power ON

Display test — All segments and PGM light ON
Relays released
Outputs minimum (0V or 4mA)

3

View Enter →



Software part number

Edit →

Analog Test — Outputs maximum (10V or 20mA)
Display blank

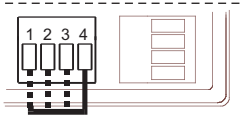
▲ →

Relay 2 Test — Relay 2 operates
Digit Test — One digit at a time

▼ →

Relay 1 Test — Relay 1 operates
Segment Test — One segment at a time

4



Turn Power OFF

Connect *Program Lock* to 0V(see Function code 20).

Trumeter Technologies Ltd., Imperial House, Hornby Street, Bury
BL9 5BN, United Kingdom
Tel: +44 (0)161 705 4318 Fax: +44 (0)161 705 4319
e-mail: sales.uk@trumeter.com

Trumeter Company Inc.,1020 North West 6 Street, Suite D,
Deerfield Beach, Florida 33442, U.S.A.
Tel: +1 800 537 2261 Fax: +1 954 449 0947
email: sales.usa@trumeter.com

http://www.trumeter.com