

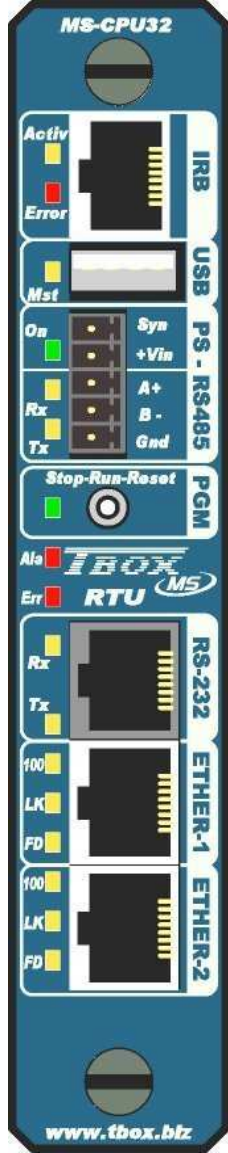
OVARRO

CONNECTING TECHNOLOGIES

KIT-AUTOMATE MS

Configuration Automate MS



<h2>5. CPU-32 bits</h2>	<p>Référence: MS-CPU32</p>
<ul style="list-style-type: none"> ➤ Entrée alimentation (8..30 Vdc) ➤ Bouton de sélection du mode de fonctionnement ➤ 1 x RS232 ➤ 1 x RS485 ➤ 2 x Ethernet indépendants ➤ 1 x USB (pas disponible) ➤ E/S de synchronisation ➤ Mesure de température interne ➤ Mesure de tension d'alimentation ➤ Redondance ➤ Horodatage à la milliseconde 	 <p>The image shows the front panel of the MS-CPU32 device. It features a blue plastic housing with several ports and indicators. At the top, there is a circular port labeled 'MS-CPU32'. Below it are two LEDs labeled 'Activ' (yellow) and 'Error' (red). To the right of these LEDs is a connector labeled 'IRB'. Further down is a 'USB' port. Below the USB port is a 'Mst' port. To the right of the Mst port is a connector labeled 'PS - RS485' with pins for '+Vin', 'A+', 'B-', and 'Gnd'. Below this is a 'Stop-Run-Reset' button with a green LED. To the right of the button is a connector labeled 'PGM'. Below the button is a red LED labeled 'Ala' and a red LED labeled 'Err'. To the right of these LEDs is a connector labeled 'RTU MS'. Below the LEDs is a connector labeled 'RS-232' with pins for 'Rx' and 'Tx'. Below the RS-232 connector are two Ethernet ports labeled 'ETHER-1' and 'ETHER-2', each with pins for '100', 'LK', and 'FD'. At the bottom of the panel is a circular port and the website 'www.tbox.biz'.</p>

SPÉCIFICATIONS TECHNIQUES

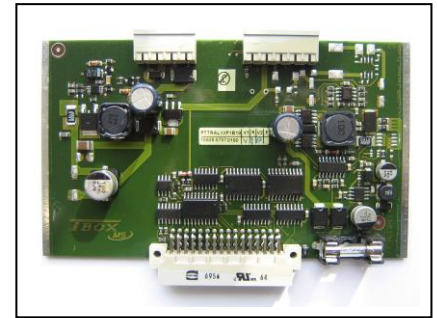
Général		
Processeur		Power PC (MPC8248), 32 bits, 266 Mhz, 505 Mips (max.)
Horloge	Dérive	Horloge temps réel, sauvegardée (voir chapitre 5.1 ci-dessous) Typique: 3 sec./jour
Bouton		Bouton poussoir: RUN - STOP - RESET
LED	On (green) Run/Stop (green) Ala (red) Err (red)	ON= CPU alimentée, soit par +Vin ou par une MS-PSxxx 2 Hz=RUN ; 0.5 Hz=STOP 8 Hz= Alarme active ON= erreur sur le BUS

Alimentation	
Tension d'alimentation	8 .. 30 VDC
Courant d'alimentation I total entrée I sur Vcc=3.3V I sur Vp (tension d'entrée - 1V)	Max. 2 A Max. 3 A Max. 1.5 A
Consommation (sans USB ni IRB) P total	2.65 W
Connecteur	Bloc de jonction à ressort (5 x 2.54mm)
Pile interne (voir chapitre 5.1)	
Tension	3 V Lithium. Ref.: CR 1220
Utilisation	Sauvegarde de l'horloge et de la RAM (datalogging)
Durée de vie	CPU sous tension: 10 ans CPU arrêtée et luggée dans le Rack: - Typique 265 jours ATTENTION: Après ce temps, la batterie doit être remplacée afin de maintenir l'horloge et le datalogging.
Mémoire	
Flash	16 Mbytes (Boot Loader, Linux, OS, Application, Sources, Web & Rapport)
SDRAM	64 Mbytes (Partie dynamique de Linux, OS, Application)
SRAM	1 Mbytes (Datalogging, log, copie des valeurs de Tags)
SD card (en option)	Max. 1 Gbytes
RS 232	
Connecteur	RJ 45
Câblage (voir schéma plus loin)	TxD, RxD, RTS, CTS GND, DTR, DCD, RI
Protocole	ModBus-RTU Maître / Esclave
LED	RxD: ON à la réception TxD: ON à la transmission
RS 485	
Connecteur	Bloc de jonction à ressort (3 x 2.54mm)
Câblage (voir plus loin)	2 fils + GND
Protocole	ModBus-RTU Maître / Esclave
LED	RxD: ON à la réception TxD: ON à la transmission
Isolation	Pas d'isolation entre les signaux et l'alimentation
Protection	Protection surtension (mode commun)
Nombre d'esclaves	256 (si la technologie utilisée par les esclaves le permet)
Terminaison	Terminaison non requise. Resistances <i>Failsafe bias</i> incluses: résistances pullup et pulldown qui assurent un niveau logique VRAI lorsque A et B sont ouverts ou en court-circuit.
USB (pas disponible)	
Modèle	1.1
Connecteur	Type A
Ethernet	
Quantité	2 x ports Ethernet séparés
Connecteur	RJ-45
Modèle	100 BASE-TX (4 fils) AUTO MDI / MDIX Full Duplex / Négociation automatique
Câblage	AUTO MDI / MDIX : adaptation automatique câble croisé ou câble droit
Vitesse	10/100 Mbits
Protocoles	ModBus/TCP 'Master' and 'Slave', SMTP, FTP, HTTP, NTP, Ping
Connexions TCP/IP	- " Client " - Tag distant : 1 socket – 1 contexte' - " Client " - Alarme : 2 sockets (requis pour FTP) – 1 contexte - " Serveur " - ModBus : 16 sockets – 16 contextes - " Serveur " - HTTP : 16 sockets – 16 contextes
LED	100: ON = connectée à 100 MHz – OFF = connectée à 10 MHz Lk: ON = connecté – FLASH = en communication FD: ON = Full Duplex
Isolation	1.5 kV entre signaux et Gnd

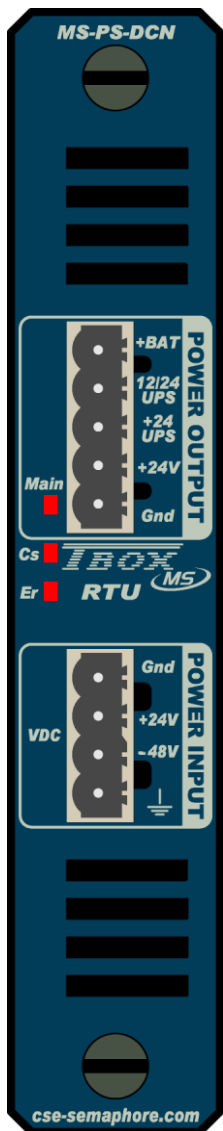
Entrées/Sorties	
Entrée bouton « Stop »	Entrée digitale interne, associée au bouton dans la position 'STOP'. Utilisation: en programmation Ladder/BASIC.
E/S de synchronisation	Le même canal est utilisée comme entrée OU sortie Connexions multi-points entre CPUs Utilisation: actions de synchronisation de plusieurs CPUs dans la même armoire Tension: max. 30 VDC Courant: max. 45MA Pas de PROTECTION Connecteur: Bloc de jonction à ressort Plage de câbles: 0.2 – 0.75 mm ² (avec ferrule)
Température interne	Seuil de température indiqué par deux entrées digitales: ≥ 70°C ≥ 85°C
Tension alimentation	Pas disponible avec MS-CPU32
Redondance	(en option)
Emplacement des CPUs dans le Rack	slot0 et slot1
Alternance entre les CPUs	Max. 2 sec.
Applications dans CPU	Chaque CPU a sa propre application (identiques ou différentes)
Synchronisation	Pas de synchronisation entre les CPUs
Température	
Stockage	-40°C à 85°C
Fonctionnement	Standard: -20°C à 65°C Ruggedized (option): -40°C à 70°C
Humidité	15 à 95 % sans condensation
Dimensions	
Sans connecteur	Hauteur x Profondeur x Largeur: 150 x 83 x 29 mm
Poids	272 g

TBOX MS-PS-DCN

- Power Supplies -48 .. +24 VDC



Technical Specifications



Input

Voltage input:	either:	+8..+30 VDC
	or:	-60..-24 VDC
Connector		Screw connector (4 x 5.08 mm) Wire range: 0.14 – 2.5 mm ² (or max. 12 AWG)

Power

Input Power at I out max.

with **positive input** voltage:
with **negative input** voltage:

Hw. Rev. 01	Hw. Rev. 02
Max. 20 W	Max. 40 W
Max. 25 W	Max. 50 W

Input Power in overload or short-circuit
with **positive input** voltage:
with **negative input** voltage:

Max. 75 W	Max. 150 W
Max. 85 W	Max. 170 W

Output Power
with **all input** voltages:

Max. 15 W	Max. 30 W @ 50 °C (*)
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(*) Linear derating from 30W @ 50°C to 20W @ 70 °C.

Input Current
Hw. Rev. **02** : Max. 2A
(depending on input voltage, input max power: 40W)

Output

+BAT	Battery Connection (+ 12VDC LEAD ACID battery) - Mode Constant current / limited voltage - Voltage Maximum: 13.8 V - Current Typical: 90 mA
+24 UPS (as of Hw. Rev. 02)	+24VDC when mains or battery is present. <u>Current:</u> max. 120 mA
12/24 UPS	+24VDC when mains is present otherwise battery voltage (8V ..+13.8V). Ideal to power another rack MS. <u>Current:</u> see below
+24V	+24VDC when mains is present. <u>Current:</u> total current, including the one needed for the MS cards.

with **positive input** voltage:
with **negative input** voltage:

Hw. Rev. 01	Hw. Rev. 02
Max. 0,625 A	Max. 1,25 A @ 24 V (or 30 W)
Max. 0,625 A	Max. 1,25 A

Gnd Ground and 0V of Battery

	Hw. Rev. 01	Hw. Rev. 02
Output current on the Bus (Vcc=3.3V)	Max. 3 A	Max. 5 A @ 50 °C (*)
	(*) Linear derating from 5A @ 50°C to 3A @ 70 °C.	

	Hw. Rev. 01	Hw. Rev. 02
Total current used by all secondary outputs - battery charger, Bus, 24 V output - (Vp=24 V):	Max. 0.625 A	Max. 1.5 A

Connector Screw connector (5 x 5.08 mm)
Wire range: 0.14 – 2.5 mm² (or max. 12 AWG)

Protection

Test	Automatic test of the access of the card by the CPU (see LED 'CS' below)
EMC protection	
Overload and short-circuit	Maximum 1 second every minute Above this time, risk of permanent damage (output line is opened)
FUSE primary voltage	Soldered Fuse of 1.25 A. Not replaceable by user.
FUSE battery	Standard Glass Fuse of 2A fast (5x20). Replaceable by user.

Isolation

Input between Gnd and Earth	No isolation
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LED

Main	Input Voltage present
CS	Card Selection: card corresponds to a card declared in TWinSoft.
ER	Error: card type does not correspond to the one declared in TWinSoft.

Input

Active Power Supply	Digital input = 1 when power supply active (used in redundancy)
Power Fail	Digital input = 1 when 'main' power breaks down
Temperature	See above

Environment

Temperature storage	-40°C to 85°C
Temperature working (ambient)	Industrial Temperature: -40°C to 70°C
Humidity	15 to 95 % without condensation
Altitude	Max. 5000 m

Dimensions

Without connector	Height x Depth x Width: 150 x 83 x 29 mm
Weight (w/o connector)	350 g

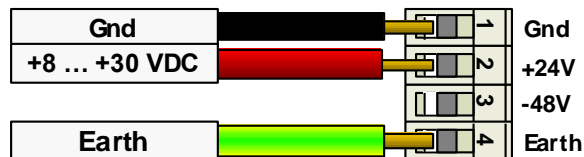
Approvals

CE, UL, CSA, C-Tick

Cabling Schematic

Cabling – Power Supply 24 VDC

Connector: POWER INPUT Screw connector (4 x 5.08 mm)



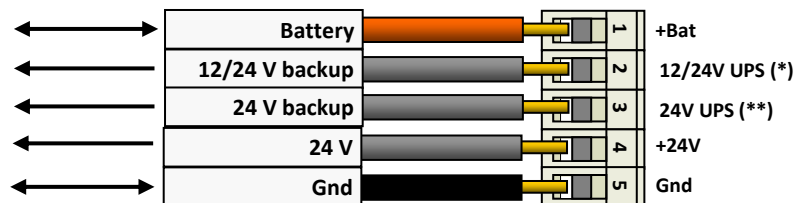
Cabling – Power Supply 48 VDC

Connector: POWER INPUT Screw connector (4 x 7.68 mm)



Cabling – Battery

Connector: POWER OUTPUT Screw connector (5 x 5.08 mm)

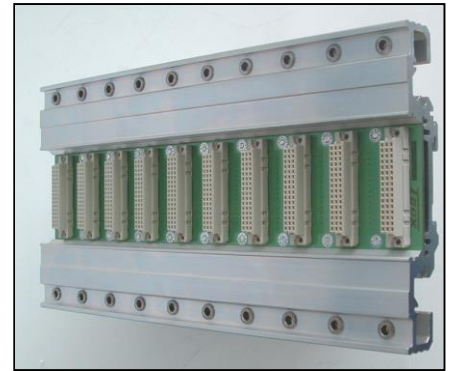


(*): 12V when battery active; 24 V when mains active

(**): 24V when battery and mains active

TBOX MS-RACK

- MS-RACK1: rack 1 slot
- MS-RACK3: rack 3 slots
- MS-RACK5: rack 5 slots
- MS-RACK10: rack 10 slots
- MS-RACK15: rack 15 slots
- MS-RACK20: rack 20 slots



Technical Specifications

General

Mode	Passive Bus
Consumption	No electronic component
Speed	Max. 1 Mbytes/s
PCB	6 layers

Approvals

CE, UL, CSA, C-Tick

RACK1 (No Bus)

Dimension w/o cards	Height x Length x Depth: 150 x 38 x 30 mm
Weight	63 g

RACK3

Dimension w/o cards	Height x Length x Depth: 150 x 95 x 30 mm
Weight	360 g

RACK5

Dimension w/o cards	Height x Length x Depth: 150 x 156 x 30 mm
Weight	600 g

RACK10

Dimension w/o cards	Height x Length x Depth: 150 x 300 x 30 mm
Weight	1200 g

RACK15

Dimension w/o cards	Height x Length x Depth: 150 x 450 x 30 mm
Weight	1800 g

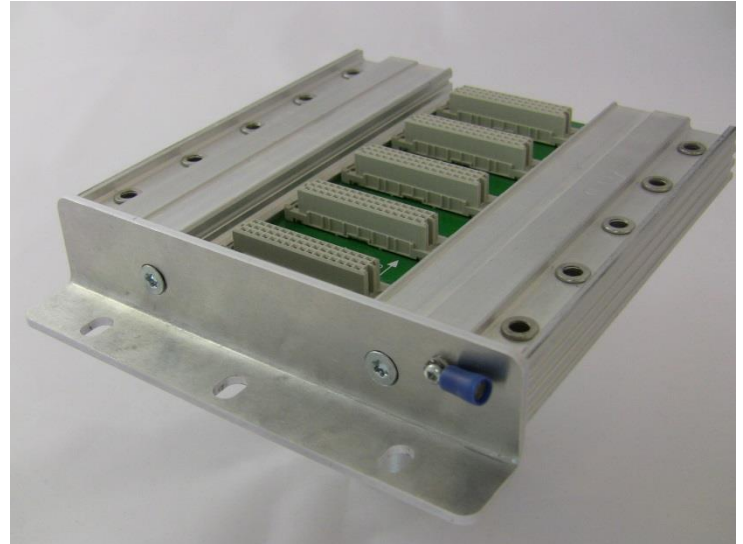
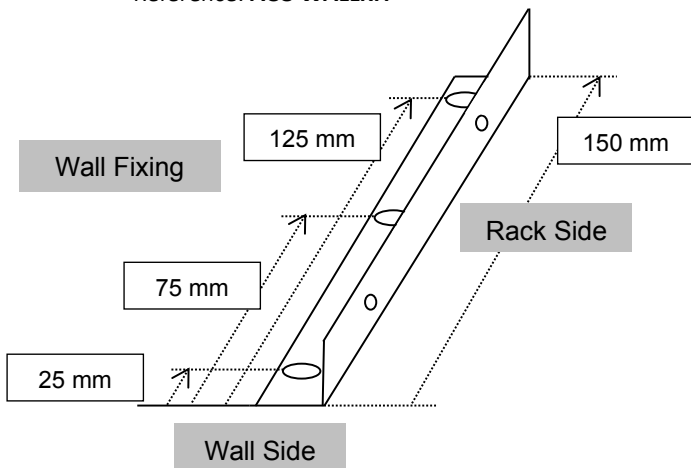
RACK20

Dimension w/o cards	Height x Length x Depth: 150 x 590 x 30 mm
Weight	2400 g

Installation on the rack on a wall

Squares with three wall fixings.

Reference: **ACC-WALKKIT**



The kit is composed of 2 squares and 4 screws. The squares are fixed at the sides of the rack.
The black plastic sides must first be removed as well as the GND screw. The latter must be screwed to the square after fixing.

Installation of the Rack in a 19'' cabinet

The **Rack 15 slots** can be mounted directly in the 19'' cabinet.

The height of the Rack is 150 mm and adapted for a 4U cabinet (177.8 mm).
You have then enough room for cabling the Cards.

You need two items:

MS-RACK15

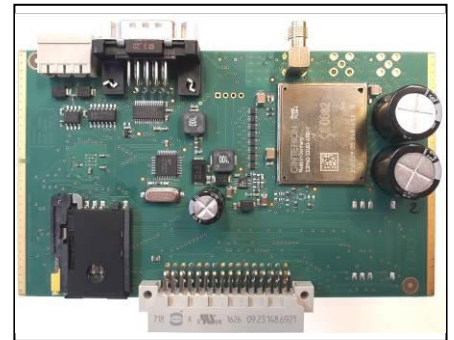
MS-RACKKIT (2 x sides)



TBOX MS-GSM-4W

Available for MS-CPU32 and MS-CPU32-S2,
not available for MS-CPU16

- Worldwide LTE modem, except:
 - Chinese Operators using TDD technologies and Verizon in US
- Twelve Band LTE (4G)
- Seven Band UMTS/HSPDA (3G)
- Quad Band GSM/GPRS/EDGE (2G)
- GSM IP mode communication (through APN)
- Send/Receive SMS
- 1 port RS232/RS485 non isolated



Technical Specifications



General

Construction	Industrial grade LTE (4G) modem
Consumption	On the BUS : 30 mA On Vp : Max. 4.75 W
Replacement	Hot insertable/removable. There is no risk to damage hardware, but a reset is required
Test	Automatic test of the access of the card by the CPU (See LED 'CS' below)

4G Modem

Frequencies	<p>LTE (4G): Twelve band, 700 (Bd12 <MFBI Bd17>, Bd28) / 800 (Bd18, Bd19, Bd20) / 850 (Bd5) / 900 (Bd8) / AWS (Bd4) / 1800 (Bd3) / 1900 (Bd2) / 2100 (Bd1) / 2600 (Bd7)</p> <p>UMTS/HSPA+ (3G): Seven band, 800 (BdXIX) / 850 (BdV) / 900 (BdVIII) / AWS (BdIV) / 1800 (BdIX) / 1900 (BdII) / 2100MHz (BdI)</p> <p>GSM/GPRS/EDGE (2G): Quad band, 850/900/1800/1900 MHz.</p>
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Output Power	<p>According to Release 8 (4G): Class 3 (+23dBm ±2dB) for all bands</p> <p>According to Release 99 (3G): Class 3 (+24dBm +1/-3dB) for all bands</p> <p>According to Release 99 (2G): Class 4 (+33dBm ±2dB) for EGSM850 Class 4 (+33dBm ±2dB) for EGSM900 Class 1 (+30dBm ±2dB) for GSM1800 Class 1 (+30dBm ±2dB) for GSM1900 Class E2 (+27dBm ± 3dB) for GSM 850 8-PSK Class E2 (+26dBm ± 3dB) for GSM 900 8-PSK Class E2 (+26dBm +3 /-4dB) for GSM 1800 8-PSK Class E2 (+26dBm +3 /-4dB) for GSM 1900 8-PSK</p>
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LEDs (GSM) Network	Flashes when the GSM is connected to the network Indicates that the GSM is connected to an APN
	On Line Flash ON when GSM is transmitting T/R
SIM card	3V and 1.8V SIM cards Standard size SIM card.
Antenna connector	Screw connector, type SMA female (Jack) on MS-GSM card

RS232 – RS485

Mode	RS232 or RS485 (no simultaneous use of both modes)
Isolation	No isolation. Gnd is linked to earth by internal connection
RS232	<u>Signals:</u> RxD, TxD, CTS, RTS, DTR, DSR, DCD, RI <u>Connector:</u> 9 pin Sub-D (male)
RS485	<u>Cabling:</u> 2 wires (A+ and B-) for multi-points connection <u>Termination:</u> no need for termination resistor (failsafe bias resistors included: pullup and pulldown resistors which assures a logical level TRUE when A and B are opened or in short circuit) <u>Number of slaves:</u> 256 (if RS485 technology of slaves allows it too) <u>Connector:</u> screw connector (3 x 5.08 mm)
LEDs (common to 2 ports) RxD	Indicates reception of data Indicates transmission of data
	TxD

LED

Cs	Card Selection: card corresponding to card declared in TWinSoft.
ER	Error: card type not corresponding to the one declared in TWinSoft.

Environment

Temperature storage	-40°C to 85°C
Temperature working (ambient)	Industrial Temperature: -40°C to 70°C
Humidity	15 to 95 % without condensation
Altitude	Max. 5000 m

Dimensions

Without connector	Height x Depth x Width: 150 x 83 x 29 mm
Weight	300 g

Approvals

CE, UL, CSA, FCC, C-Tick

Antennas

One model of antenna covers all frequencies (700/806/850/1800/1900/2100/2500/2600 Mhz).
Reference. ACC-GSM-ANT-4G



Antenna Surge Arrestor

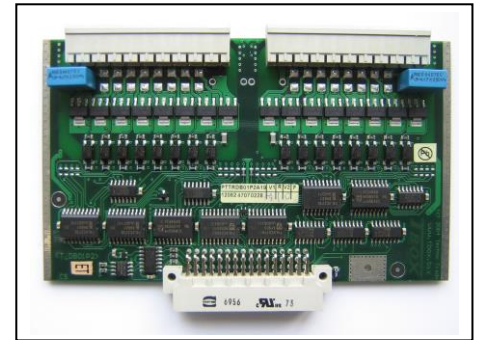
Connection to the arrestor:

1. Use the N-M>>N-M connector from the arrestor to connect it to the antenna (remove N-M>>FME-M from antenna if mounted).
2. Connect N-M>>FME-M adapter supplied with the antenna to the arrestor.
3. Connect the corresponding wire.

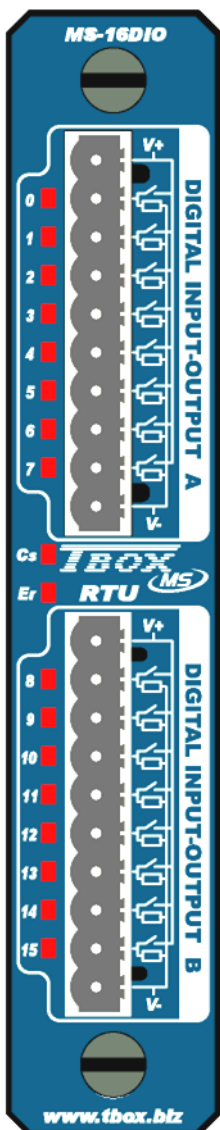


TBOX MS-16DIO

- 16 x digital Inputs/Outputs : 2 groups of 8 digital inputs/outputs
- Isolation by group of 8
- Each channel can be cabled as an input or an output



Technical Specifications



General

Quantity	16 channels. Each can be cabled as Input or Output
Consumption	40 mA
Replacement	Hot insertable/removable. There is no risk to damage hardware, but a reset is required.
Test	Automatic test of the access of the card by the CPU (see LED 'CS' below)
Connector	Screw connector (10x5.08mm) Wire range: 0.14 – 2.5 mm ² (or max. 12 AWG)

LED

Individual	LED corresponding to the activation of each digital output. By software, possibility to disable the LED to save energy
Cs	Card Selection: card corresponding to card declared in TWinSoft.
ER	Error: card type not corresponding to the one declared in TWinSoft.

Isolation

Isolation from the Ground	Isolation from the CPU ground and the earth
2 groups isolated	Isolation by group of 8 inputs/outputs: One Common by group of 8.
Level of isolation	1500 Vrms - between groups - between inputs/outputs and ground - between inputs/outputs and earth

Environment

Temperature storage	-40°C to 85°C
Temperature working (ambient)	Industrial Temperature: -40°C to 70°C
Humidity	15 to 95 % without condensation
Altitude	Max. 5000 m

Dimensions

Without connector	Height x Depth x Width: 150 x 83 x 29 mm (5.906 x 3.27 x 1.142 inches)
Weight	258 g

I/O Specifications

Inputs

Voltage at Input

Typical	24 VDC
Maximum for a LOW level	5 VDC
Minimum for a HIGH level	11 VDC
Maximum	60 VDC
Compatibility	with type 1 and 2 of IEC61131-2

Current

Maximum at the input	2.0 mA at 30 VDC 4.5 mA at 60 VDC
Resistance	12 kΩ

Sampling

Minimum period LOW – HIGH	Task switching between process cycle has to be taken into account, as well as cycle time itself: <u>MS-CPU16</u> : 10 ms. + cycle time. <u>MS-CPU32</u> : 4 ms. + cycle time.
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Protection

RC filter	1592 Hz
Voltage inversion	Up to 55 VDC

Outputs

Voltage / Current

Working voltage on V+	12 to 60 VDC: to read back outputs to corresponding DI. 6 to 60 VDC: without read back.
Current per output	Maximum: 200 mA
Voltage per output	Maximum: 60 VDC (depending on V+)
Short-Circuit current	Minimum: 0.2 A Typical: 0.9A Maximum: 1.2A
Impedance	Typical: 1 ohm Maximum: 10 ohms

Protection

Protection diode	Protection against inverted voltage when working with inductive load WARNING: when the output is connected to a DC relay driving an AC relay, the AC relay must be protected with a RC circuit
Over load	Maximum: 60 VDC
Reverse voltage	Maximum: 55 VDC
Short-Circuit + Over load	Thermal protection with automatic recovery

Approvals

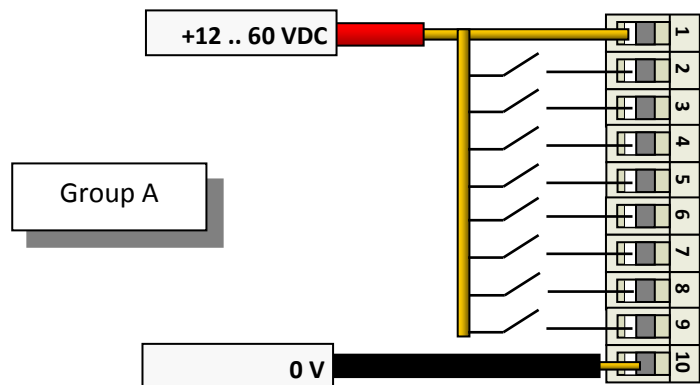
CE, UL, CSA, C-Tick

Cabling Schematic

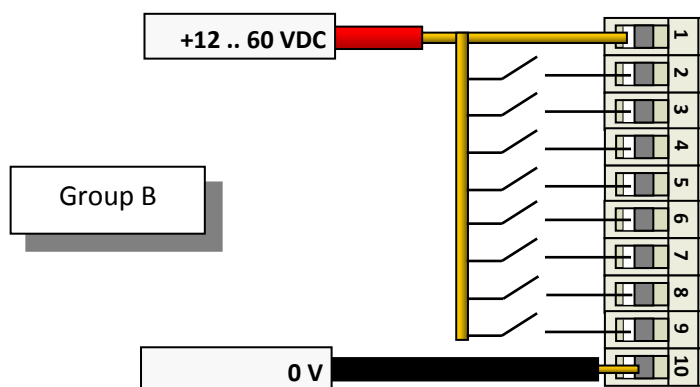
Digital Inputs

Connector: Screw connector

Pin Out:



- 1 V+
- 2 Input 0
- 3 Input 1
- 4 Input 2
- 5 Input 3
- 6 Input 4
- 7 Input 5
- 8 Input 6
- 9 Input 7
- 10 V-



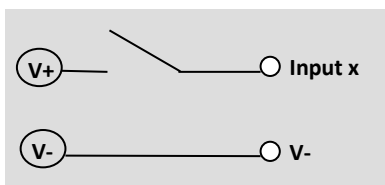
- 1 V+
- 2 Input 8
- 3 Input 9
- 4 Input 10
- 5 Input 11
- 6 Input 12
- 7 Input 13
- 8 Input 14
- 9 Input 15
- 10 V-



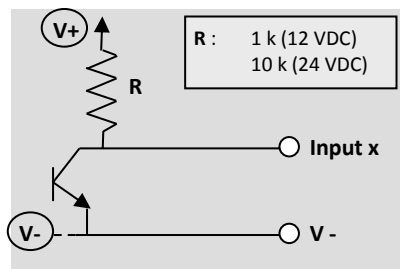
Each channel can be cabled individually as **Input** or as **Output**

It is **mandatory** to cable **V+** to have a proper working of input stage and **LED** operation.

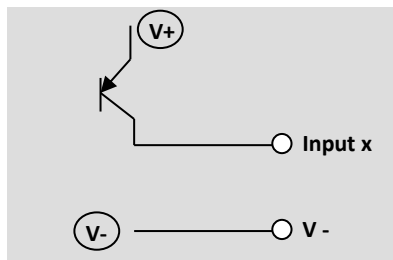
Cabling to Dry contact



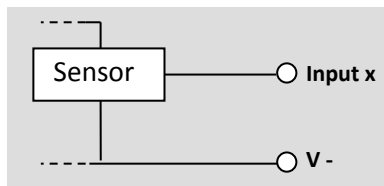
Cabling to NPN transistor



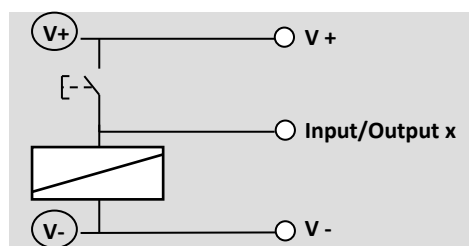
Cabling to PNP transistor (or OPTO)



Cabling to Voltage sensor



Cabling both Input and Output



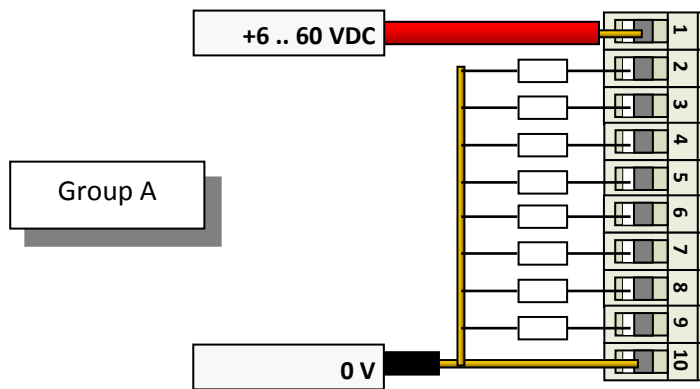
This type of cabling can be used in 2 cases:

1. Manual activation of the Output: as long as the button is pressed, the output is forced.
2. Activation of the Output during a time determined in the Program. You maintain the button until it is detected by the program and has switched the output.

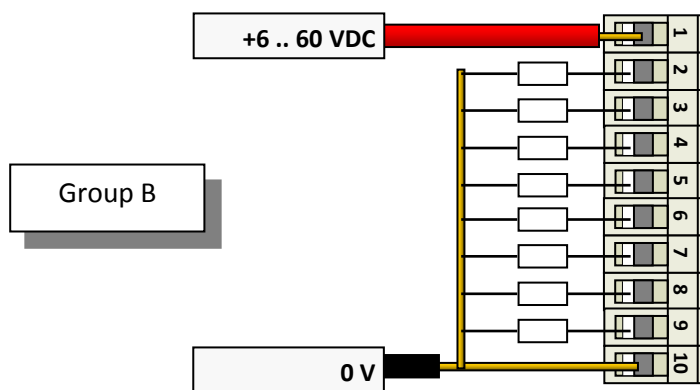
Digital Outputs

Connector: Screw connector

Pin Out:



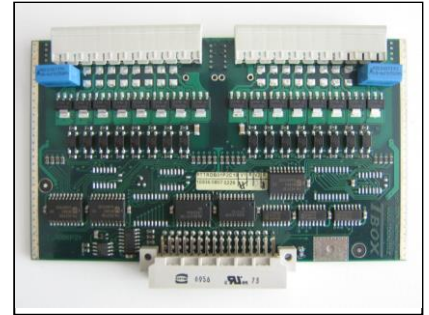
- 1** V+
- 2** Output 0
- 3** Output 1
- 4** Output 2
- 5** Output 3
- 6** Output 4
- 7** Output 5
- 8** Output 6
- 9** Output 7
- 10** V-



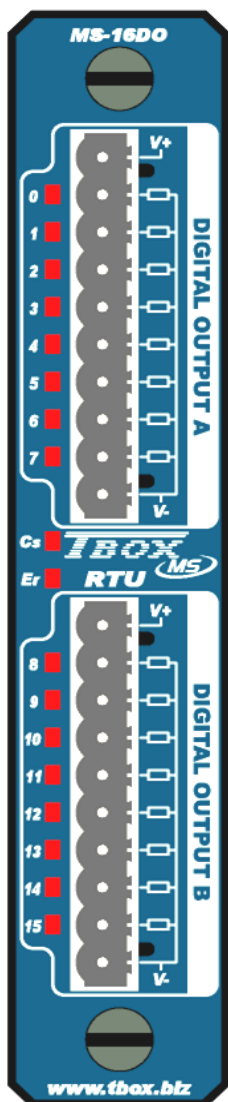
- 1** V+
- 2** Output 8
- 3** Output 9
- 4** Output 10
- 5** Output 11
- 6** Output 12
- 7** Output 13
- 8** Output 14
- 9** Output 15
- 10** V-

TBOX MS-16DO

- 16 x digital outputs: 2 groups of 8 digital outputs
- Isolation by group of 8 outputs



Technical Specifications



General

Consumption	40 mA
Type	Current Sourcing (PNP transistor)
Replacement	Hot insertable/removable. There is no risk to damage hardware, but a reset is required.
Connector	Screw connector (10x5.08mm) Wire range: 0.14 – 2.5 mm ² (or max. 12 AWG)

LED

Individual	LED corresponding to the activation of each digital output. By software, possibility to disable the LED to save energy
Cs	Card Selection: card corresponding to card declared in TWinSoft.
Er	Error: card type not corresponding to the one declared in TWinSoft.

Isolation

Isolation from the Ground	Isolation from the CPU ground and the earth
2 groups isolated	Isolation by group of 8 outputs: One Common by group of 8 outputs.
Level of isolation	1500 Vrms - between groups - between outputs and ground - between outputs and earth

Protection

Test	Automatic test of the access of the card by the CPU (see LED 'CS' above)
Protection diode	Protection against inverted voltage when working with inductive load WARNING: if the output is connected to a DC relay driving an AC relay, the AC relay must be protected with an RC circuit
Overload	Maximum: 60 VDC
Reverse voltage	Maximum: 55 VDC
Short-circuit + Overload	Thermal protection with automatic recovery

Voltage/Current

Working voltage on V+	6 to 60 VDC
Current per output	Maximum: 200 mA
Voltage per output	Maximum: 60 VDC (depending on V+)
Short-Circuit current	Minimum: 0.2 A Typical: 0.9A Maximum: 1.2A
Impedance	Typical: 1 ohm Maximum: 10 ohms

Environment

Temperature storage	-40°C to 85°C
Temperature working (ambient)	Industrial Temperature: -40°C to 70°C
Humidity	15 to 95 % without condensation
Altitude	Max. 5000 m

Dimensions

Without connector	Height x Depth x Width: 150 x 83 x 29 mm (5.906 x 3.27 x 1.142 inches)
Weight	258 g

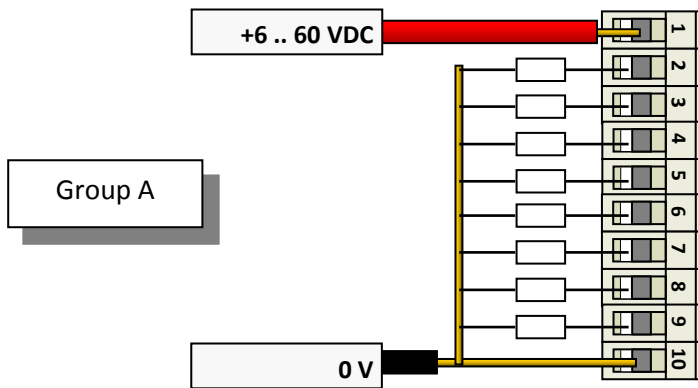
Approvals

CE, UL, CSA, C-Tick

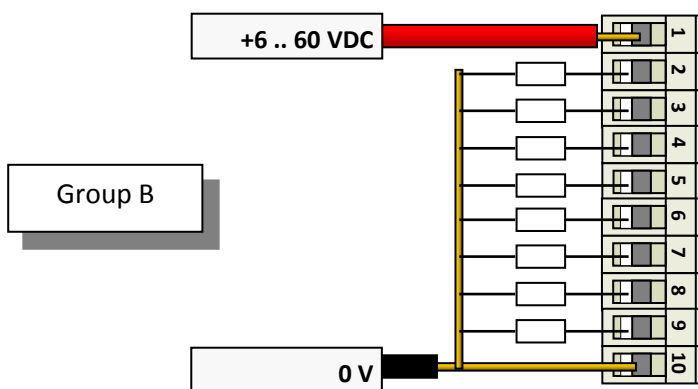
Cabling Schematic

Connector: Screw connector

Pin Out:



- 1 V+
- 2 Output 0
- 3 Output 1
- 4 Output 2
- 5 Output 3
- 6 Output 4
- 7 Output 5
- 8 Output 6
- 9 Output 7
- 10 V-

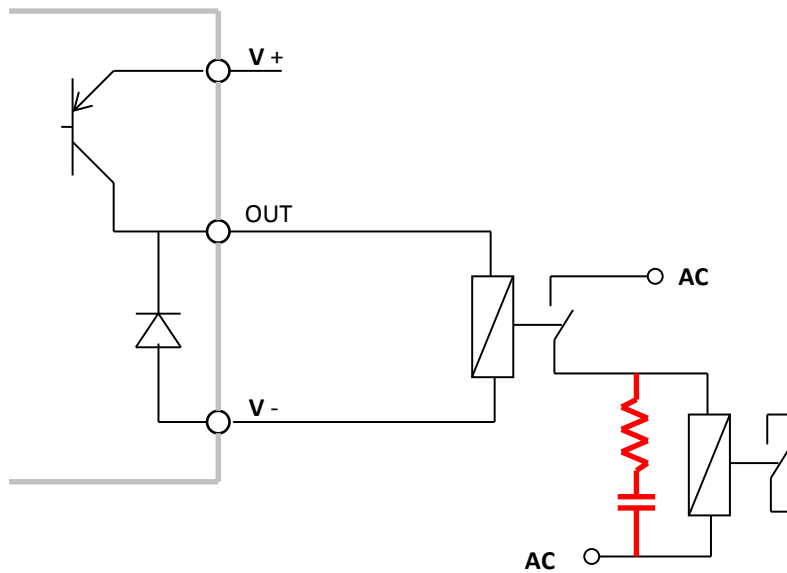


- 1 V+
- 2 Output 8
- 3 Output 9
- 4 Output 10
- 5 Output 11
- 6 Output 12
- 7 Output 13
- 8 Output 14
- 9 Output 15
- 10 V-

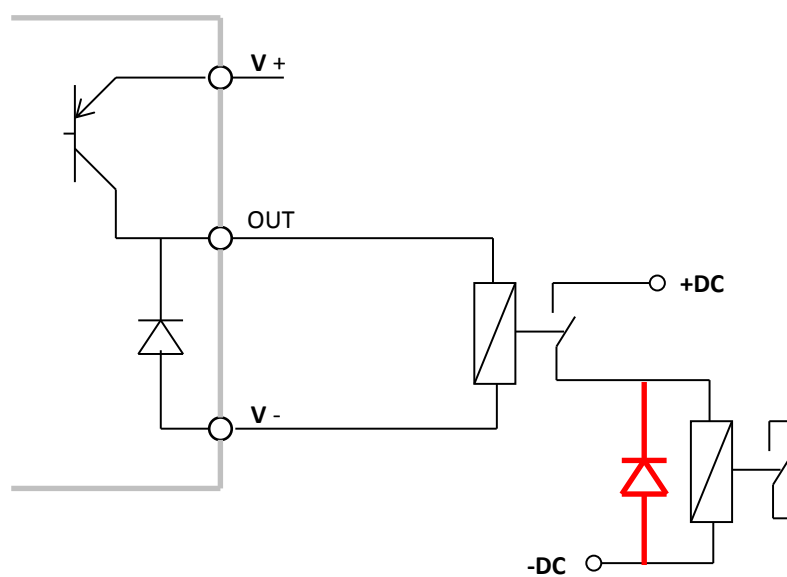


See precautions next page when cabling to external relays

Cabling to external AC relay

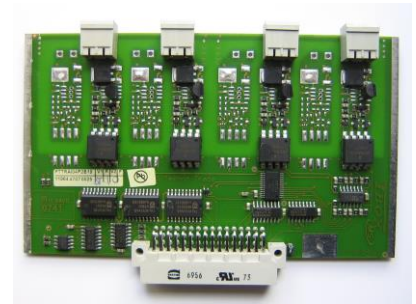


Cabling to external DC relay



TBOX MS-4AI420

- 4 analog inputs 4..20mA
- Isolated one by one



Technical Specifications



General

Consumption	10 mA				
Configuration	<table> <tr> <td>Hardware</td> <td>No hardware configuration required</td> </tr> <tr> <td>Software</td> <td>Signal selection during channel configuration</td> </tr> </table>	Hardware	No hardware configuration required	Software	Signal selection during channel configuration
Hardware	No hardware configuration required				
Software	Signal selection during channel configuration				
Mode	Passive, input stage powered by the loop				
Signals	4..20mA Cabling to 4/20. Select in TWinSoft, signal 4..20mA				
Resolution	<table> <tr> <td>ADC</td> <td>14 bits</td> </tr> <tr> <td>Current</td> <td>3.1 μA</td> </tr> </table>	ADC	14 bits	Current	3.1 μ A
ADC	14 bits				
Current	3.1 μ A				
Accuracy @ 25°C	<table> <tr> <td>Current</td> <td>0.1% FS</td> </tr> </table>	Current	0.1% FS		
Current	0.1% FS				
Voltage on Input	Typ.: 4.5 Vdc Max. 6 Vdc				
Replacement	Hot removable. No risk to damage hardware, but reset is required.				
Test	Automatic test of card access by the CPU.				
Connector	Screw connector (10 x 5.08 mm) Wire thickness: 0.14 – 2.5 mm ² (or max. 12 AWG)				

Protection

Polarity	Protection against inversion of polarity
Voltage	Protection against voltage applied to the input (max : 30 Vdc – 50 mA)

Isolation

Each input	Isolated one by one, from CPU GND and Earth
Level of isolation	500 Vrms

Digital Input

Validity input (DI) Returns '0' when signal < 2.4mA and > 21.6 mA
 Returns '1' when the 4..20mA signal is valid

LED

Cs **Card Selection:** card corresponding to card declared in TWinSoft

ER **Error:** card type not corresponding to the one declared in TWinSoft

Environment

Temperature storage -40°C to 85°C

Temperature working (ambient) **Industrial Temperature:** -40°C to 70°C

Humidity 5 to 95 % without condensation

Altitude Max. 5000 m

Dimensions

Without connector Height x Depth x Width: **150 x 83 x 29 mm**
 (5.906 x 3.27 x 1.142 inches)

Weight 300 g

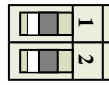
Approvals

CE, UL, CSA, C-Tick

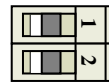
Cabling Schematic

Connector: **Screw connector**

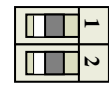
Pin Out:



1 input 0: 4..20m (+)
2 input 0: 4..20m (-)



1 input 1: 4..20m (+)
2 input 1: 4..20m (-)

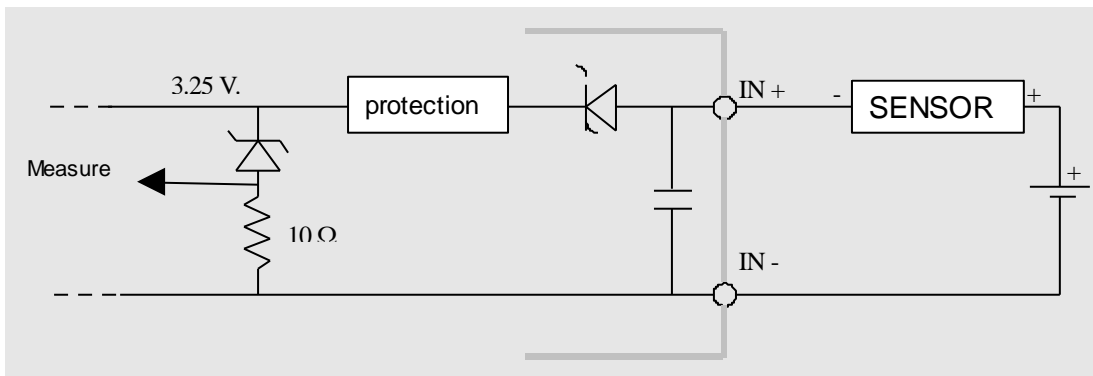


1 input 2: 4..20m (+)
2 input 2: 4..20m (-)

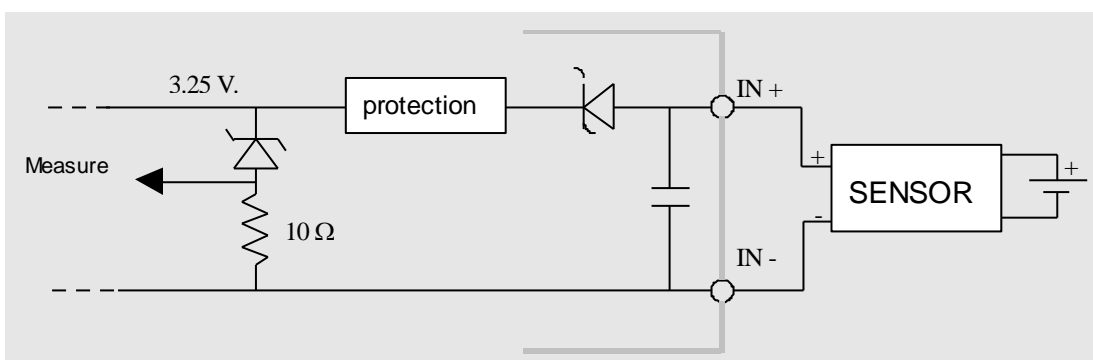


1 input 3: 4..20m (+)
2 input 3: 4..20m (-)

Cabling to 2 Wires sensor (current)



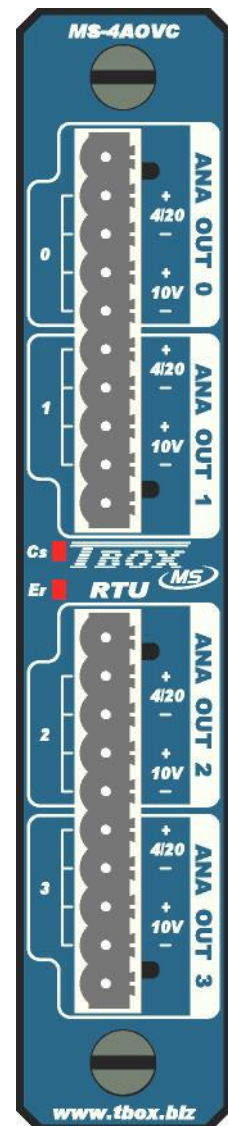
Cabling to 4 Wires sensor (current)



17. 4 x Analog Outputs

Reference:
MS-4AOVC

- 4 analog output individually isolated
- each output: 4..20 mA or -10V..+10V



4 ANAOUT (next)

TECHNICAL SPECIFICATIONS

General		
Quantity		4 analog outputs
Consumption	P Total	0.85 W
Signals	- for each output	Choice between 4..20mA OR -10V..+10V
Configuration	Hardware Software	No hardware configuration required signal selection during channel configuration with TWinSoft
DA converter		12 bits, bipolar
Mode	- Current	Active mode. Supplies a nominal voltage of 24 VDC (see cabling).
Full Range:	- Current - Voltage	0 to 20mA -10V to +10V
Resolution - DA converter:	- Current - Voltage	12 bits 11 bits + sign
Resolution:	- Current - Voltage	5 μ A 5 mV
Accuracy:	- Current - Voltage	0.1% Full Scale 0.1% Full Scale
Reactivity:	- Current - Voltage	25 msec 1 msec
Load impedance limit	- Current - Voltage	Resistance of the actuator: maximum 1000 Ω : gives a drop of 20 V, maximum allowed. minimum 3000 Ω : gives a current of 3.33 mA, maximum allowed.
Replacement		Hot insertable/removable. There is no risk to damage hardware, but a reset is required.
Test		Automatic test of the access of the card by the CPU (See LED 'CS' below)
Connector		Screw connector (10 x 5.08 mm) Wire range: 0.14 – 2.5 mm ² (or max. 12 AWG)
Digital Input		
Validity input associated to each analog output 4..20mA		Returns '0' when the current loop is opened. Returns '1' when the current loop is closed.
LED		
CS		Card Selection: the card corresponds to a card declared in TWinSoft.
ER		Error: The card type does not correspond to the one declared in TWinSoft.
Isolation		
4 channels isolated		Individually isolated
From the Ground		Isolation from the CPU ground and the earth
Level of isolation		500 Vrms between each output 1500 Vrms between each output and earth
Environment		
Temperature storage		-40° to 85°C
Temperature working (ambient)		Industrial temperature: -40°C to 70°C
Humidity		15 to 95 % without condensation
Altitude		Max. 5000m
Dimensions		
Without connector		Height x Depth x Width: 150 x 83 x 29 mm
Weight		300 g

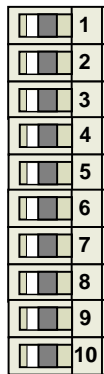
4 ANAOUT (next)

CABLING – ANALOG OUTPUTS



Description: Cabling to 4..20mA OR -10V..+10V actuators	Connector: Screw connector	Pin Out:
--------------------------------------------------------------------------	---------------------------------------------	-----------------

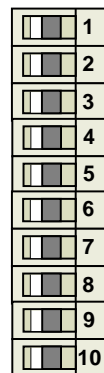
Group A



- 1** No connection
- 2** Output 0 : 4..20mA - I OUT (+)
- 3** Output 0 : 4..20mA - I IN (-)
- 4** Output 0 : -10V..+10V - V OUT (+)
- 5** Output 0 : -10V..+10V - V OUT (-)
- 6** Output 1 : 4..20mA - I OUT (+)
- 7** Output 1 : 4..20mA - I IN (-)
- 8** Output 1 : -10V..+10V - V OUT (+)
- 9** Output 1 : -10V..+10V - V OUT (-)
- 10** No connection

Description: Cabling to 4..20mA OR -10V..+10V actuators	Connector: Screw connector	Pin Out:
--------------------------------------------------------------------------	---------------------------------------------	-----------------

Group B

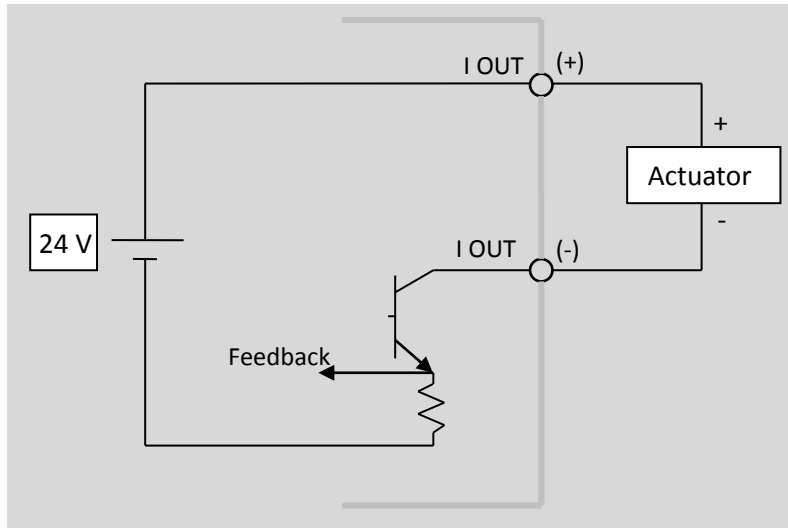


- 1** No connection
- 2** Output 2 : 4..20mA - I OUT (+)
- 3** Output 2 : 4..20mA - I IN (-)
- 4** Output 2 : -10V..+10V - V OUT (+)
- 5** Output 2 : -10V..+10V - V OUT (-)
- 6** Output 3 : 4..20mA - I OUT (+)
- 7** Output 3 : 4..20mA - I IN (-)
- 8** Output 3 : -10V..+10V - V OUT (+)
- 9** Output 3 : -10V..+10V - V OUT (-)
- 10** No connection



Each channel can be used with two different signals: 4..20mA **OR** -10V..+10V; **not with both signals** at the same channel.

Cabling to 'Current' actuator



Cabling to 'Voltage' actuator

