TraxGateway
PROFIBUS-DP

Installation Manual

To properly use this product, read this manual thoroughly and retain for easy reference, inspection, and maintenance. Ensure the end user receives this manual.

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1. SAFETY INFORMATION

CONTRIVE manufactures products used as components in a wide variety of industrial systems and equipment. The selection and application of CONTRIVE products remain the responsibility of the equipment manufacturer or end user.

CONTRIVE accepts no responsibility for the way its products are incorporated into the final system design. Under no circumstances should any CONTRIVE product be incorporated into any product or design as the exclusive or sole safety control.

Without exception, all controls should be designed to detect faults dynamically and fail safely under all circumstances.

All systems or equipment designed to incorporate a product manufactured by CONTRIVE must be supplied to the end user with appropriate warnings and instructions as to the safe use and operation of that part.

Any warnings provided by CONTRIVE must be promptly provided to the end user. CONTRIVE offers an express warranty only as to the quality of its products in conforming to standards and specifications published in the original literature.

NO OTHER WARRANTY, EXPRESS OR IMPLIED, IS OFFERED.

CONTRIVE assumes no liability for any personal injury, property damage, losses, or claims arising from misapplication of its products.

1.1 General Precautions

Read and understand this manual before installing, operating, or servicing this unit. This unit must be installed according to this manual and local regulations. The drawings may show units without covers or safety shields to illustrate details. Disconnect power supply and follow all usual safety precautions before carrying out any operation on the device. Be sure to reinstall covers or shields before operating any devices.

The device is not user serviceable, a faulty device must be put out of order and sent back for servicing.

Any illustrations, photographs, or examples used in this manual are provided as examples only and may not apply to all products to which this manual is applicable.

The products and specifications described in this manual or the content and presentation of the manual may be changed without notice to improve the product and/or the manual.

1.2 Label

Technical and warning information are displayed on the unit as shown in the figure below. Follow all warnings and safety instructions when using the product.

DEVICE DATA

DEVICE CODE

TraxGateway·PDP·230·A
230V±15% 50÷60Hz 35VA$_{MAX}$ IP67

1360.40.01   2508.0004

READ THE INSTRUCTIONS BEFORE USE
LIRE LES INSTRUCTIONS AVANT UTILISATION
LEGGERE LE ISTRUZIONI PRIMA DELL'UTILIZZO
ANLEITUNG VOR DEM GEBRAUCH LESEN
LEER LAS INSTRUCCIONES ANTES DE USAR
AANWIJZINGEN VOOR HET GEBRUIK LEZEN

CONTRIVE

DEVICE TYPE

WEEK / YEAR
SERIAL NUMBER

2. PRODUCT OVERVIEW

TraxBus is a dedicated communication system specifically designed to operate in very harsh environments where electrical noise generated by ignition transformers makes very difficult to operate for any standard physical layer.

PROFIBUS is an open digital communication system supporting a wide range of fast, timecritical applications.

PROFIBUS-DP (Decentral Periphery) is one of the three PROFIBUS variants.

DP is dedicated to fast data communication between systems and peripherals at a field level. TraxGateway connects a dedicated TraxBus to a standard field network using the PROFIBUS-DP protocol.

PROFIBUS-DP is included into the European Fieldbus Standard EN 50170.

The network is primarily used in process and factory automation.

By installing the TraxGateway it is possible to monitor and operate remote Burner Control Units (BCU) and general purpose input/output units (SPAC) from a PROFIBUS-DP master device. TraxGateway transfers the control signals received from control system (PLC) to peripherals. In the opposite direction it holds all peripherals operating status.

A complete galvanic isolation provided between all the sections of the TraxGateway.

3. RECEIVING

Please perform the following tasks after receiving the TraxGateway:

- Inspect the unit for damage. If the TraxGateway appears damaged upon receipt, contact the shipper immediately.
- Verify receipt of the correct power supply voltage option by checking the label.
- If you have received the wrong model or the device does not function properly, contact your supplier.

4. ENCLOSURES

TraxGateway is available with 4 different enclosure options.
According to European Standard EN60529 a minimum protection degree IP40 must be guaranteed, raised to IP54 for open air application.
Aluminium enclosures must be connected to Protective Earth.

4.1 Aluminium
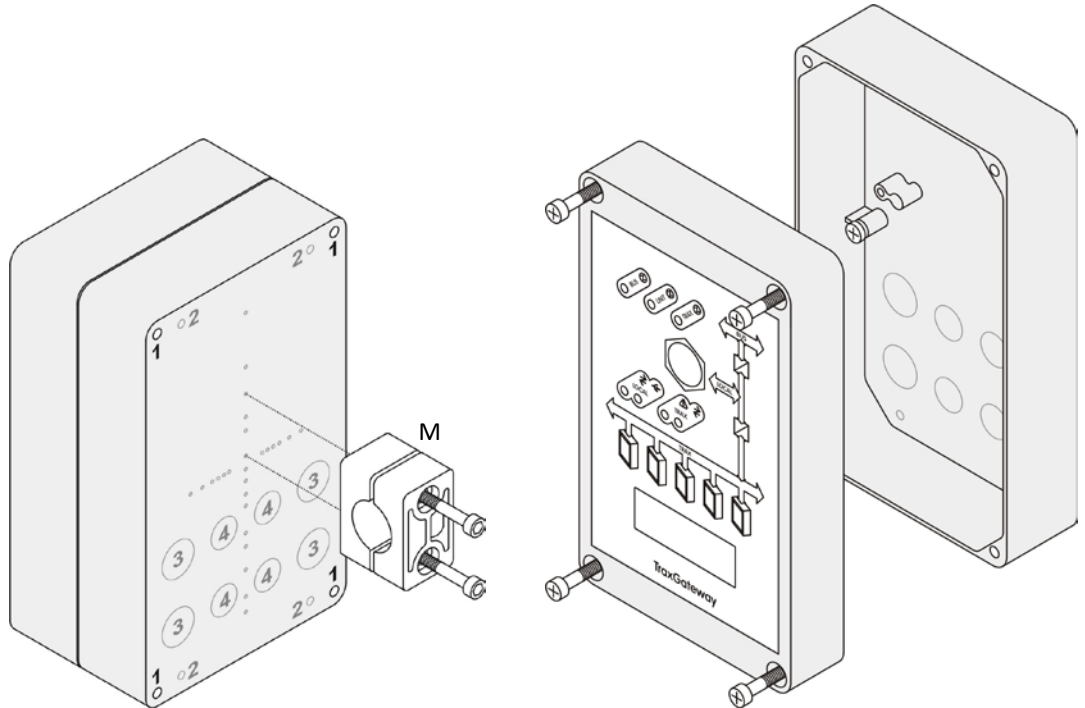
CAST ALLUMINIUM ALLOY EN AB 46100
ELECTROSTATIC POLYESTER POWDER COATING
COLOR: GRAY   IP64   WEIGHT: 1560 g   DIMENSION: 200 x 120 x 71 mm

1   EXTERNAL FITTING HOLES (4)   106 x 186 mm
        4.2 mm SELF TAPPING OR M5 THREAD FORMING SCREW

2   BREAKABLE FITTING HOLES (4)   77 x 182 mm
        4,0 mm DIAMETER

3   BREAKABLE HOLES FOR WIRING (4)   Ø 19,0 mm
        SUITABLE FOR PG11 CABLE GLAND

4   BREAKABLE HOLES FOR WIRING (4)   Ø 15,5 mm
        SUITABLE FOR PG9 CABLE GLANDS

M   OPTIONAL FITTING CLAMPS FOR PIPES
        VERTICAL MOUNTING   OUTSIDE DIAMETER 6 … 76 mm
        HORIZONTAL MOUNTING OUTSIDE DIAMETER 6 … 63 mm

4.2 Pre-processed low profile Aluminium
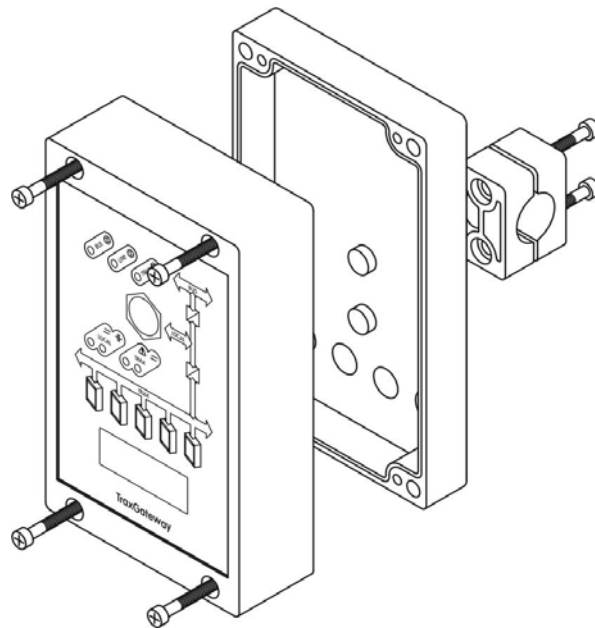
CAST ALLUMINIUM ALLOY
EN AB 46100
COLOR: NATURAL   IP65
200 x 120 x 71 mm | 1140 g

OPEN HOLES FOR WIRING
(3 BOTTOM)   Ø 15,5 mm
SUITABLE FOR PG9 CABLE GLAND

OPEN HOLE FOR WIRING
(1 BOTTOM)   Ø 19,0 mm
SUITABLE FOR PG11 CABLE GLAND

OPTIONAL ½" GAS (20÷25 mm)
FITTING CLAMP FOR PIPES,
VERTICAL MOUNTING

NOT RECOMMENDED
FOR NEW DESIGN

4.3 Standard Aluminium

CAST ALLUMINIUM ALLOY
EN AB 46100
COLOR: NATURAL   IP65
200 x 120 x 92 mm | 1800 g

NOT RECOMMENDED
FOR NEW DESIGN
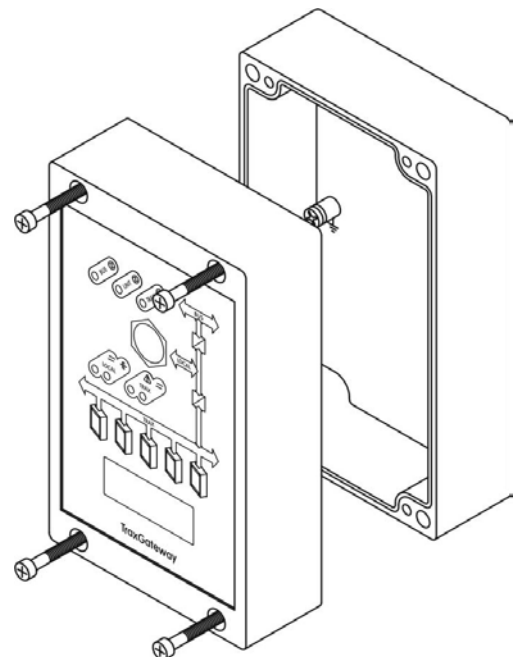
4.4 Plastic
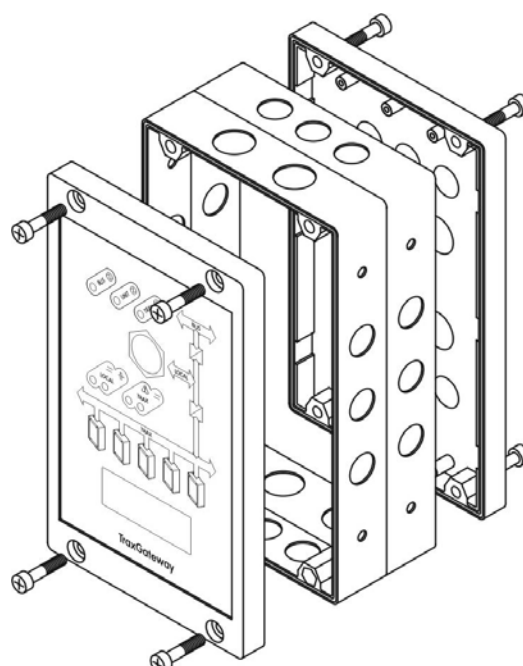
POLYCARBONATE UL-V0
COLOR: BLACK   IP65
200 x 120 x 71 mm | 1200 g

BREAKABLE HOLES FOR WIRING
(9 SIDES + 6 BOTTOM) Ø 15,5 mm
SUITABLE FOR PG9 CABLE GLAND

BREAKABLE HOLES FOR WIRING
(2 SIDES + 4 BOTTOM) Ø 19,0 mm
SUITABLE FOR PG11 CABLE GLAND

NOT RECOMMENDED
FOR NEW DESIGN

5. LAYOUT

1	FITTING SCREWS
2	SEALED MINI USB CONNECTOR
3	DISPLAY

4	MAIN TERMINAL BOARD
5	POWER SUPPLY FUSE
6	PROFIBUS SHIELD CLIP
7	PROFIBUS TERMINAL BOARD
8	PROFIBUS TERMINATION SWITCH
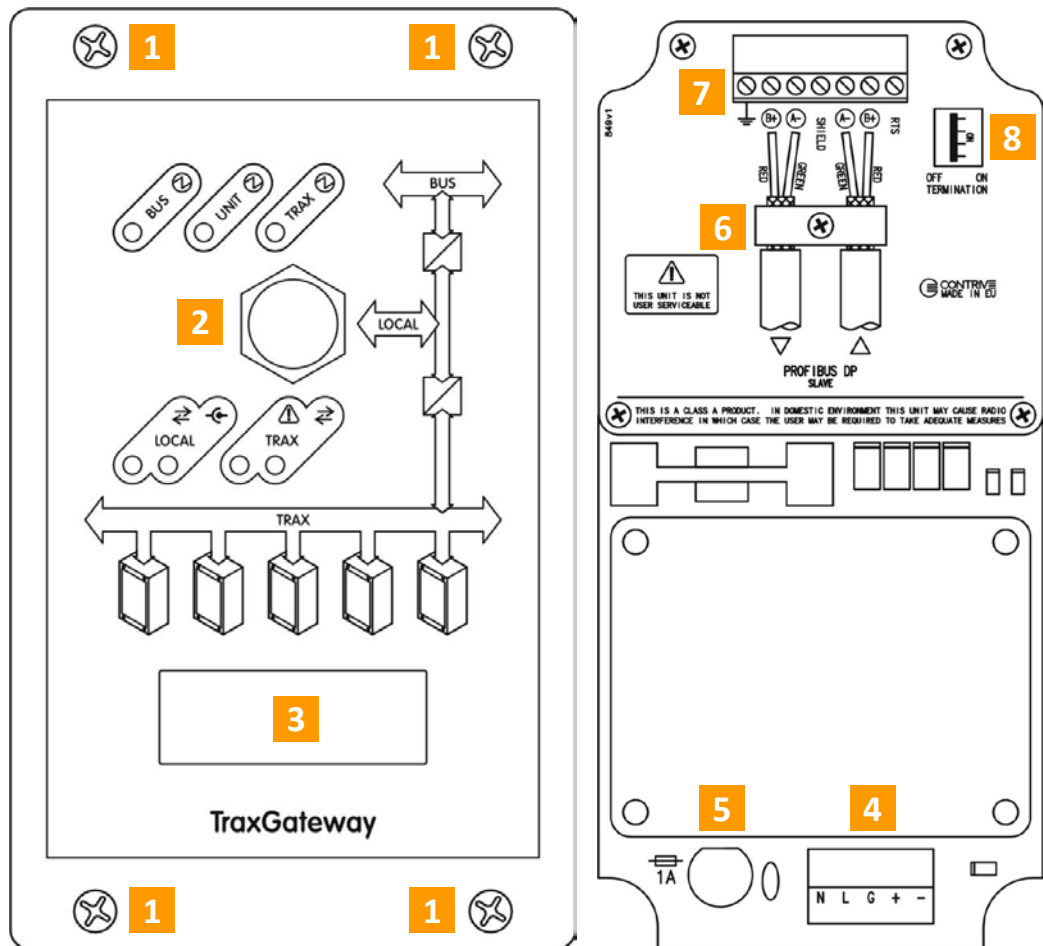
FIELDBUS POWER SUPPLY	LOCAL POWER SUPPLY	TraxBus POWER SUPPLY	DATA / LINK	ERROR / DATA
			LOCAL USB	TraxBus

6. DISPLAY
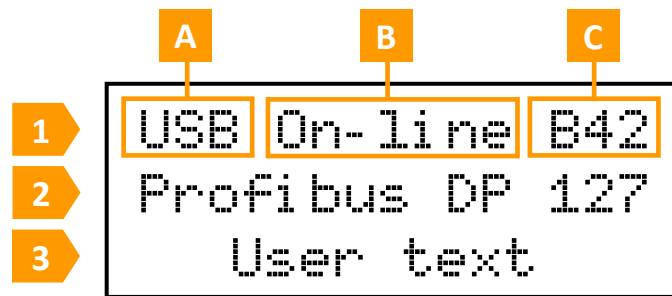
Device status is reported on the first line:

A		
`- - -`	Local USB unplugged	
`USB`	Local USB plugged	

B		
`Start-up`	Initialization in progress	
`On-line`	Fieldbus linked	
`Off-line`	Fieldbus missing	
`Idle`	Idle forced by master	
`Local`	Waiting for command through local USB	
`Transparent`	Transparent mode	
`Config`	Configuration mode	
`Exit`	Exiting from local modes	
`Reset`	Reset in progress	
`Invalid Bus`	Invalid fieldbus interface	
`Failure!`	Generic failure	

5		
`Bxx`	Linked BCU	
`Sxx`	Linked SPAC	
`Exx`	Specific error code	

The second and third lines are available for custom text strings defined by user.
Fieldbus type and node will be displayed at startup.
Once initialization has been successfully completed the custom text 1 will be displayed.

7. WIRING

The PROFIBUS-DP connector [7] is a 7 pin screw terminal 2,5 mm^2 (AWG14).

Cable shield MUST be connected to specific pin or metallic tab under the retaining clip [6]. An optional connection to next slave is available.

A low-impedance connection to Protective Earth MUST be provided using a cable crossection as large as possible in order to consistently shield the bus.
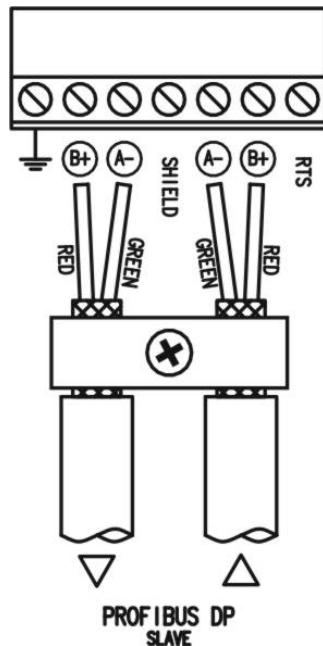
DATA LINE B IS POSITIVE WITH RESPECT TO DATA LINE A WHEN TRAXGATEWAY IS TRANSMITTING 1

THIS TERMINAL MUST BE WIRED TO A CLEAN LOW RF IMPEDANCE EARTH CONNECTION
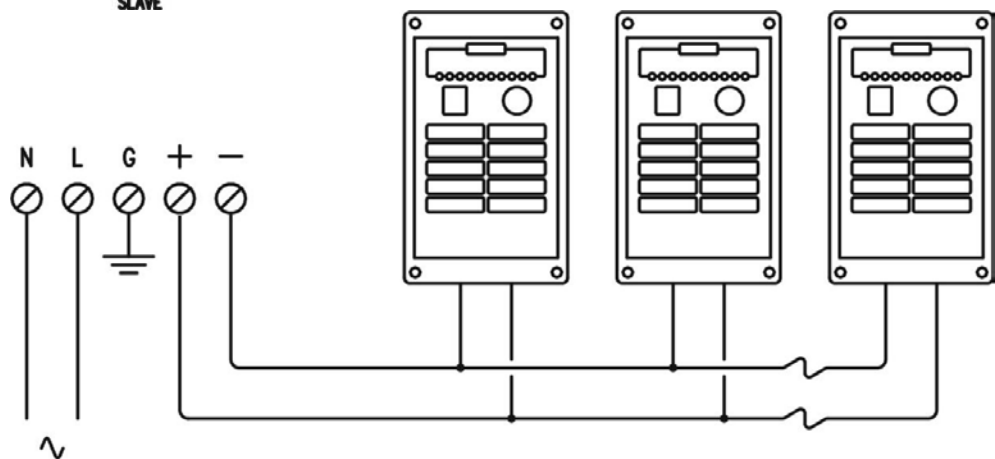
Power supply and TraxBus connector [4] is a 5 pin screw terminal 2,5 mm^2 (AWG14).

N	Main power supply, Neutral
L	Main power supply, Phase
G	Protective Earth
+	TraxBus POSITIVE
−	TraxBus NEGATIVE

DANGER !
Electrical Shock Hazard
Do not connect or disconnect wiring while the power is on.

In a typical layout TraxGateway is located on the kiln in a convenient position to keep the Fieldbus away from the noisy environment, usually at the beginning of the kiln.

Power supply and TraxBus are taken directly from the on board distribution that could be made using busbar trunkets or conduits.

ALL ELECTRONIC SYSTEMS MUST BE SUPPLIED BY A DEDICATED TRANSFORMER IN A TN-S EARTHING SYSTEM

MAIN POWER SUPPLY

FROM PROFIBUS MASTER

TO NEXT PROFIBUS SLAVE

MAIN POWER SUPPLY

USE MULTICORE CABLES
(POWER SUPPLY + TraxBus)
FOR SHORT STUBS ONLY

UP TO 120 PHYSICAL UNITS
PER EACH SEGMENT
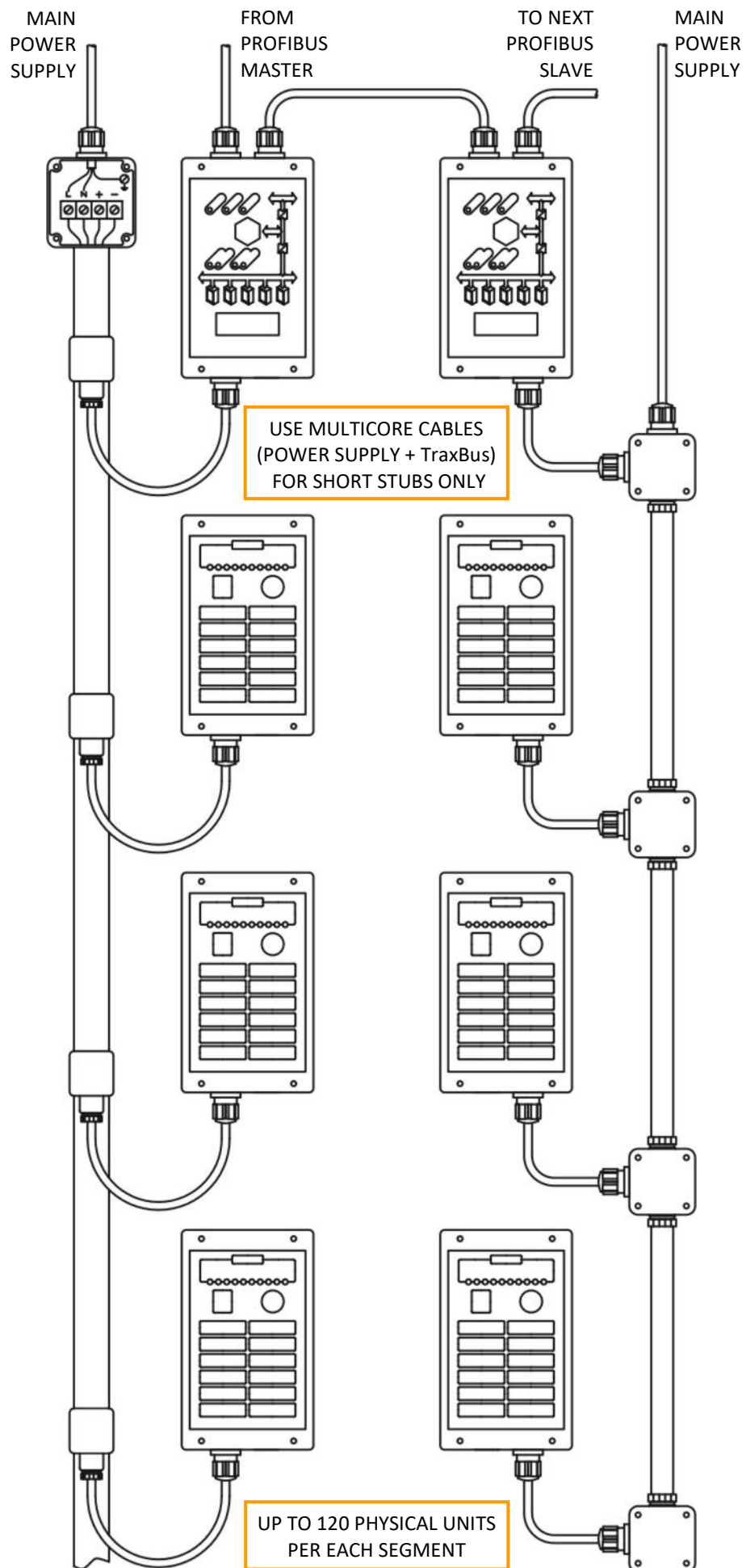
8. SPECIFIC REQUIREMENTS FOR PROFIBUS NETWORKS

The following precautions are recommended to obtain interference free operation of the Profibus network.
Relevant national and local regulations must be observed.
Please also consult the manual of the Profibus master for further installation guidelines.
It is recommended to use a master with a galvanic isolated bus driver and with over voltage protection.

8.1 Cable routing
The Profibus communication cable must be kept away from any cable carrying electrical noise (typically motor cables, supply to neon light and ignition transformers) to avoid coupling of high frequency noise between cables.
Normally a distance of 200 mm is sufficient, but it is generally recommended to keep the greatest possible distance between the cables, especially where cables are running in parallel over long distances.
If the Profibus cable has to cross a cable carrying heavy noise, they must cross each other at an angle of 90°.

8.2 Connection of the cable screen
The screen of the Profibus cable must always be connected to ground at both ends, that means the screen must be connected to ground in all stations connected to the Profibus network. It is important to have a low ground impedance connection of the screen, also at high frequencies. This can be obtained by connecting the surface of the screen to ground, for example by means of conductive cable gland.

8.3 Earth connection
It is important that all stations connected to the Profibus network are connected to the same earth potential. The earth connection must have a low HF (high frequency) impedance. This can be achieved by connecting a large surface area of the cabinet to earth. Especially when having long distances between the stations in a Profibus network it can be necessary to use additional potential equalizing cables, connecting the individual stations to the same earth potential.

8.4 Termination
A built-in network active terminator is available into TraxGateway.
Ensure that the terminating resistors are only closed (all) at the two segment ends and nowhere else. Any additional terminations can cause corruption of the Profibus signals and network malfunction.

8.5 Network technology
A maximum of 126 units (masters and slaves) can be connected to a PROFIBUS-DP system. All devices are connected in a bus structure (line). Up to 32 stations can be connected in a single segment.
If more than 32 stations are implemented or if there is a need to expand the network area, repeaters (amplifiers) must be used to link the individual bus segments.

8.6 Communication Cable Specifications

Use only PROFIBUS-DP dedicated communication cable; the warranty does not cover other cable types. For more information on cables, refer to the PROFIBUS-DP website at http://www.profibus.com/.

Impedance	135 ÷ 165 Ω @ 3 ÷ 20 MHz
Capacity	30 pF/m maximum
Loop resistance	110 Ω/km maximum
Signal attenuation	9 dB maximum
Core cross-section	0.34 mm^2 minimum
Core diameter	0.64 mm minimum (AWG22)

8.7 Cable Length

Communication speed determines maximum permissible cable length.
Table shows the specifications for Type A bus cables.

SPEED [kbps]	DISTANCE [m]	SPEED [kbps]	DISTANCE [m]
9.6	1200	500	400
19.2	1200	1500	200
45.45	1200	3000	100
93.75	1200	6000	100
187.5	1200	12000	100

8.8 GSD Files

A GSD file is needed to use the TraxGateway as a PROFIBUS-DP slave.
The generic GSD file *hms_1810.gsd* is provided to register the TraxGateway as a slave to a PROFIBUS-DP master.

The PROFIBUS user organisation has a homepage on the Internet: *www.profibus.com*
Several technical guides are available in or via this page.

For information concerning the PLC and the Profibus master system refer to the Siemens homepage *http://www.automation.siemens.com/_en/portal/index.htm*

9. SPECIFIC REQUIREMENTS FOR TraxBus NETWORKS

TraxBus features high electromagnetic noise immunity and great wiring simplicity, also using busbar trunkets. Possible application are in hostile industrial environments where other standard networks will not work.
Each TraxGateway can drive up to 120 physical units.
Live connection and/or disconnection while the communication is running are allowed, though a short break in the data flow may result from this operation.
A limited time short-circuit on the TraxBus is tolerated.

9.1 Communication Cable Specifications

TraxBus lines can be wired in any form: star, ring, straight or mixed but signal line must be wired separately from power lines.
Do not use shielded cables.
Do not use multicore cables or limit the use to short stubs.
Use conventional single wires or busbar trunkets to interconnect all peripherals.
If some shielding is absolutely necessary it is always possible to put unipolar wires in a conduit or grounded metal tube, without packing too many conductors together.

Capacity	100 nF maximum
Loop resistance	60 Ω maximum
Core cross-section	1 mm^2 minimum

It's very important to understand that the only precaution for good wiring are the line capacitance and line resistance.
An higher resistance will cancel data flow from TraxGateway to peripherals.
An higher capacitance will cancel data flow from peripherals to TraxGateway.

10. LOCAL USB

Real time bus activity will be displayed on a data terminal linked to local USB.
The information reported for remote units are:
- Address and command issued to peripheral (ASCII)
- Status received from peripheral (ASCII)
- Profibus control bits (BINARY, MSB to LSB)
- Profibus status bit (BINARY, MSB to LSB)

Communication settings: 38400 Baud, 8 data bit, No parity, 2 stop bit.
Once linked it's also possibile to enter configuration or transparent mode.
Command line interface is provided.

> *QPro is a free software utility for friendly management and easy configuration of peripherals through a wizard interface available on request.*

10.1 LOCAL Mode

Stop trace mode stroking few times on space bar.
TraxGateway enters local mode and bus polling is suspended.
The following commands can be issued:

HELP ▪ AVAILABLE COMMANDS LIST	
Command	`?`

Response	`Entering Configuration Mode:`
	` CNFG`
	
	`Entering Transparent Mode:`
	` TRSP`
	
	`Exit Local Mode:`
	` EXIT`
	`OK`

ENTER CONFIGURATION MODE	
Command	`CNFG`
Response	`>Local Configuration Mode`

ENTER TRANSPARENT MODE	
Command	`TRSP`
Response	`>Local Transparent Mode`

EXIT LOCAL MODE	
Command	`EXIT`
Response	`OK`

Device will revert to normal mode after 255 seconds of inactivity.

10.2 TRANSPARENT Mode
This mode overrides Fieldbus control. Local USB is directly linked to TraxBus.
The following commands can be issued:

ENTER CONFIGURATION MODE	
Command	`CNFG`
Response	`>Local Configuration Mode`

EXIT LOCAL MODE	
Command	`EXIT`
Response	`OK`

10.3 CONFIGURATION Mode
Enter the configuration mode to verify or change settings.
Leaving this mode TraxGateway will reset if some parameters has been changed.
The following commands can be issued:

HELP ▪ AVAILABLE COMMANDS LIST	
Command	`?`

Response	<pre>FieldBus Node Address [x=0 to 126]:
	 FBNode=? (Read FieldBus Node)
	 FBNode=x (Write FieldBus Node x)
	
	Off-Line Action Config [x=0(Clear) x=1(Freeze)]:
	 OFFLAC=? (Read Off-Line Action)
	 OFFLAC=x (Write Off-Line Action x)
	
	Idle Action Config [x=0(Clear) x=1(Freeze)]:
	 IdleAC=? (Read Idle Action)
	 IdleAC=x (Write Idle Action x)
	
	Custom Strings Shown at 2nd Line of the Display
	[x=y=1 to 127, LenMax(<text>)=32,
	Default=String(1)]:
	 String=x? (Read String x)
	 String=x,y? (Read String from x to y)
	 String=x,"<text>" (Write String x with <text>)
	
	Entering Transparent Mode:
	 TRSP
	
	Exit Configuration Mode:
	 EXIT
	OK</pre>

FIELDBUS NODE ADDRESS

Command	`FBNode=?`	Returns the Fieldbus node address of TraxGateway (factory default = 126)
Response	`FBNode=126`	
Command	`FBNode=1`	Set the Fieldbus node address of TraxGateway from 0 to 126
Response	`OK`	

FIELDBUS FAULT ACTION : OFF LINE

Command	`OFFLAC=?`	Returns current settings Factory default = 0 (Clear)
Response	`OFFLAC=0`	
Command	`OFFLAC=1`	Set behaviour while Off Line 0 = Clear / 1 = Freeze
Response	`OK`	

FIELDBUS FAULT ACTION : IDLE (CLEAR TELEGRAM)

Command	`IdleAC=?`	Returns current settings Factory default = 0 (Clear)
Response	`IdleAC=0`	
Command	`IdleAC=1`	Set behaviour while Idle 0 = Clear / 1 = Freeze
Response	`OK`	

CUSTOM DISPLAY TEXT STRINGS

Command	`String=1?`	Returns the text stored at position 1 Available positions from 1 to 127
Response	`String="ABCD"`	
Command	`String=1,3?`	Returns the custom text stored in the specified range (i.e.: 1 to 3) It's possibile to list all 127 strings (if stored)

Response	`String="ABCD"`
	`String="ALARM"`
	`String="PURGE"`
	`OK`	

Command	`String=1,"LOCKOUT"`	Store text at specific position (i.e.:1) max 32 characters
Response	`OK`	

ENTER TRANSPARENT MODE

Command	`TRSP`
Response	`>Local Transparent Mode`

EXIT LOCAL MODE

Command	`EXIT`
Response	`OK`

12. MEMORY MAPS

The OUTPUT data array holds incoming commands to be issued by peripherals and general settings. The INPUT data array holds peripherals status and general information. Two mapping options are available to better suit the specific installation requirements.

12.1 DATA REGISTER MAP 1

Up to 100 Burner Controllers (BCU) + 20 general purpose I/O modules (SPAC).

OUTPUT Master ► TraxGateway		INPUT TraxGateway ► Master	
BYTE	DESCRIPTION	BYTE	DESCRIPTION
1	BCU 00 ▪ Control	1	BCU 00 ▪ Status
2	BCU 01 ▪ Control	2	BCU 01 ▪ Status
3	BCU 02 ▪ Control	3	BCU 02 ▪ Status
4	BCU 03 ▪ Control	4	BCU 03 ▪ Status
5	BCU 04 ▪ Control	5	BCU 04 ▪ Status
6	BCU 05 ▪ Control	6	BCU 05 ▪ Status
7	BCU 06 ▪ Control	7	BCU 06 ▪ Status
…		…	
98	BCU 97 ▪ Control	98	BCU 97 ▪ Status
99	BCU 98 ▪ Control	99	BCU 98 ▪ Status
100	BCU 99 ▪ Control	100	BCU 99 ▪ Status
101	SPAC 00 ▪ Outputs	101	SPAC 00 ▪ Inputs
102	SPAC 01 ▪ Outputs	102	SPAC 01 ▪ Inputs
…		…	
119	SPAC 18 ▪ Outputs	119	SPAC 18 ▪ Inputs
120	SPAC 19 ▪ Outputs	120	SPAC 19 ▪ Inputs
121	—	121	—
122	Display text	122	—
123	—	123	ScanTime [sec]
124	—	124	ScanTime [msec]
125	Broadcast Control	125	Broadcast Status
126	Broadcast Control	126	Broadcast Status
127	—	127	—
128	General Settings	128	General Status

12.2 DATA REGISTER MAP 2

Up to 60 Burner Controllers (BCU) + 60 general purpose I/O modules (SPAC) usually installed into the BCU for specific process control.

BYTE	OUTPUT Master ► TraxGateway DESCRIPTION	BYTE	INPUT TraxGateway ► Master DESCRIPTION
1	BCU 00 ▪ Control	1	BCU 00 ▪ Status
2	SPAC 01 ▪ Outputs	2	SPAC 00 ▪ Inputs
3	BCU 01 ▪ Control	3	BCU 01 ▪ Status
4	SPAC 02 ▪ Outputs	4	SPAC 01 ▪ Inputs
5	BCU 02 ▪ Control	5	BCU 02 ▪ Status
6	SPAC 03 ▪ Outputs	6	SPAC 02 ▪ Inputs
7	BCU 03 ▪ Control	7	BCU 03 ▪ Status
…		…	
113	BCU 56 ▪ Control	113	BCU 56 ▪ Status
114	SPAC 56 ▪ Outputs	114	SPAC 56 ▪ Inputs
115	BCU 57 ▪ Control	115	BCU 57 ▪ Status
116	SPAC 57 ▪ Outputs	116	SPAC 57 ▪ Inputs
117	BCU 58 ▪ Control	117	BCU 58 ▪ Status
118	SPAC 58 ▪ Outputs	118	SPAC 58 ▪ Inputs
119	BCU 59 ▪ Control	119	BCU 59 ▪ Status
120	SPAC 59 ▪ Outputs	120	SPAC 59 ▪ Inputs
121	—	121	—
122	Display text	122	—
123	—	123	ScanTime [sec]
124	—	124	ScanTime [msec]
125	Broadcast Control	125	Broadcast Status
126	Broadcast Control	126	Broadcast Status
127	—	127	—
128	General Settings	128	General Status

12.3 INPUT OUTPUT BYTES - BCU

This section explains the data signals and their meaning in relation to specific Burner Control Units functionality for both outputs (control) and inputs (status).

	BCU CONTROL		BCU STATUS
0	**RESET** SET 1, WAIT 20" AND RESET 0 TO RESET FROM LOCKOUT	**0**	**(PILOT) BURNER** 0: BURNER OFF 1: BURNER RUNNING
1	**BURNER** 0: STOP BURNER 1: START BURNER	**1**	**MAIN BURNER** 0: MAIN BURNER OFF 1: MAIN BURNER RUNNING
2	**MAIN BURNER** 0: MAIN OFF 1: MAIN ON	**2**	**LOCKOUT** 0: – 1: BURNER LOCKOUT
3	**AIR VALVE** 0: AIR VALVE CLOSED, OFF 1: AIR VALVE OPEN, ON	**3**	**AIR VALVE** 0: AIR VALVE CLOSED, OFF 1: AIR VALVE OPEN, ON
4	—	**4**	**PURGE** 0: – 1: PURGE IN PROGRESS
5	**HI TEMP BYPASS** 0: SURVEILLANCE ON 1: SURVEILLANCE BYPASS	**5**	**HI-TEMP BYPASS** 0: SURVEILLANCE ON 1: SURVEILLANCE BYPASS
6	**READ ONLY** 0: REMOTE CONTROL ENABLED 1: REMOTE CONTROL DISABLED	**6**	**MANUAL SHUTDOWN** 0: – 1: BURNER SHUTDOWN LOCALLY
7	**INSTALLED** 0: SKIP DEVICE 1: DEVICE INSTALLED	**7**	**READY** 0: NO ANSWER FROM BCU 1: BCU READY

RESET OUTPUT
This output bit must be set to 1 then, after 20 seconds, set to 0 to reset a remote unit from lockout. This is safety procedure to avoid unwanted remote reset.

MAIN BURNER OUTPUT
Second stage burner controlled by this output is available only on specific BCUs.

AIR OUTPUT
Air valve controlled by this output is available only on specific BCUs.

HI-TEMP BYPASS OUTPUT (Quad600 ONLY)
The command issued only if the BROADCAST HI-TEMP output is enabled.
This is a safety procedure to avoid dangerous operation.

MAIN BURNER INPUT
Second stage burner status available only on specific BCUs.

AIR OUTPUT INPUT
This status is fetched from remote units since version 008, all previous versions give a confirmation of the request (control bit 3).

HI-TEMP BYPASS INPUT (Quad600 ONLY)
This status is fetched from remote units since version 008, all previous versions give a confirmation of the request (control bit 5).

12.4 INPUT OUTPUT BYTES - SPAC

This section explains the data signals and their meaning in relation to specific General purpose I/O modules for both outputs (control) and inputs (status).

	SPAC CONTROL		SPAC STATUS
0	**OUTPUT 1** 0: TURN OUTPUT OFF 1: TURN OUTPUT ON	**0**	**INPUT 1** 0: INPUT OFF, OPEN 1: INPUT ON, CLOSED
1	**OUTPUT 2** 0: TURN OUTPUT OFF 1: TURN OUTPUT ON	**1**	**INPUT 2** 0: INPUT OFF, OPEN 1: INPUT ON, CLOSED
2	**OUTPUT 3** 0: TURN OUTPUT OFF 1: TURN OUTPUT ON	**2**	**INPUT 3** 0: INPUT OFF, OPEN 1: INPUT ON, CLOSED
3	**OUTPUT 4** 0: TURN OUTPUT OFF 1: TURN OUTPUT ON	**3**	**INPUT 4** 0: INPUT OFF, OPEN 1: INPUT ON, CLOSED
4	**RESET TIMEOUT** SET 1, WAIT 20" AND RESET 0 TO RESET FROM TIMEOUT §	**4**	**COM TIMEOUT** 0: – 1: COM TIMEOUT OCURRED
5	—	**5**	—
6	—	**6**	—
7	—	**7**	—

RESET TIMEOUT

This control bit must be set to 1 then, after 20 seconds, set to 0 to reset a remote unit from timeout. This is safety procedure to avoid unwanted remote reset.

12.5 INPUT OUTPUT BYTES - BROADCAST

This section explains the data signals and their meaning for Broadcast outputs (control) and inputs (status). To be valid, the same control value must be written in both byte 125 and byte 126.

	BROADCAST CONTROL		BROADCAST STATUS
0	**HALT ALL** 0: – 1: FORCE ALL BURNERS OFF	**0**	**HALT ALL** CURRENT HALT BROADCAST STATUS
1	**RUN ALL** 0: – 1: FORCE ALL BURNERS ON	**1**	**RUN ALL** CURRENT RUN BROADCAST STATUS
2	**HI TEMP CONFIRM** 0: TEMPERATURE BELOW 750°C 1: TEMPERATURE ABOVE 750°C	**2**	**HI TEMP CONFIRM** 0: TEMPERATURE BELOW 750°C 1: TEMPERATURE ABOVE 750°C
3	—	**3**	—
4	—	**4**	—
5	—	**5**	—
6	—	**6**	—
7	—	**7**	—

HALT ALL / RUN ALL OUTPUT
All burners on TraxBus will be affected by broadcast command, disregarding to adressess (also outside the range 00÷99). Halt is the priority command when both Halt and Run broadcast commands are given at the same time, Run command will be issued only if both halt bits are reset to 0.
The status of each single burner is available also when broadcast commands overtakes.

HITEMP CONFIRM OUTPUT (Quad600 ONLY)
To prevent possible dangerous condition introduced by flame detection bypass request (allowed for burners operating at temperatures above 750°C) the command received for each single burner issued only if both these broadcast outputs are enabled.

INPUTS
Inputs (status) updated once the outputs (command) has been successfully read.

12.6 OUTPUT BYTE - DISPLAY

Up to 127 custom text can be displayed on the 2nd and 3rd lines of the local display, selecting the relevant binary value. Custom text at 1st position (if any) will be displayed after start-up.

	DISPLAY CONTROL
0	0000000 : No action
1	0000001 : Custom text 1
	0000010 : Custom text 2
2	0000011 : Custom text 3
	0000100 : Custom text 4
3	0000101 : Custom text 5
	…
4	…
	…
5	1111011 : Custom text 123
	1111100 : Custom text 124
	1111101 : Custom text 125
6	1111110 : Custom text 126
	1111111 : Custom text 127
7	

12.7 OUTPUT BYTE – GENERAL SETTINGS

This section explains the data signals and their meaning for outputs (control) controlling the memory map and baud rate to be used on TraxBus.

	GENERAL SETTINGS		4800	9600	19200	38400	MAP 1 100 BCU + 20 SPAC	MAP 2 60 BCU + 60 SPAC
0	BAUD RATE TraxBus	—	0	1	0	1		
1	BAUD RATE TraxBus	—	0	0	1	1		
2	DEVICES MAP	———————————					0	1
3	—							
4	—							
5	—							
6	—							
7	—							

12.8 INPUT BYTE – GENERAL STATUS

This section explains the data signals and their meaning for inputs reporting the current operating status of TraxGateway.

	GENERAL STATUS
0	**LOCAL MODE** 0: ON LINE (FIELDBUS) 1: LOCAL (USB)
1	**TRANSPARENT MODE** 0: – 1: TRANSPARENT MODE
2	**CONFIG MODE** 0: – 1: CONFIGURATION MODE
3	—
4	—
5	—
6	—
7	—

12.9 INPUT BYTES – SCAN TIME

This section explains the data signals and their meaning for inputs reporting the time used by TraxGateway to scan all the installed peripherals.

The value is reported using two bytes:

Byte 123 = seconds

Byte 124 = milliseconds

13. SPECIFICATIONS

POWER SUPPLY	
Supply Voltage	115 or 230 V AC
Frequency	50...60 Hz
Power consumption	35 VA
Line fuse	1 A

ENVIRONMENTAL	
Operating temperature	-10 ÷70 °C
Storage temperature	-25 ÷ 85 °C
Relative humidity	5 ÷ 95% non condensing
Altitude	Up to 1000 m

PROFIBUS-DP V0	
Communication speed	Automatic detection 9600 ÷ 12M bit/s
Physical Layer	RS-485

TraxBus	
Communication speed	4800, 9600, 19200, 38400 bit/s
Line voltage	24 V DC MAX
Allowed line dropout	3 V DC MAX
Allowed line capacitance	100 nF MAX
Allowable peripherals	Up to 120

14. ORDERING GUIDE

| TraxGateway | PDP | 230 | N |

BUS TYPE

Profibus-DP,V0 : PDP
DeviceNet : DEV
Ethernet/IP : ETH
Direct I/O : WIR

POWER SUPPLY

230VAC: 230
115VAC: 115

ENCLOSURE

Light Aluminium : N
[1] Standard Aluminium : A
[1] Low Profile Aluminium : B
[1] Plastic : P

[1] SPECIAL VERSION ON REQUEST