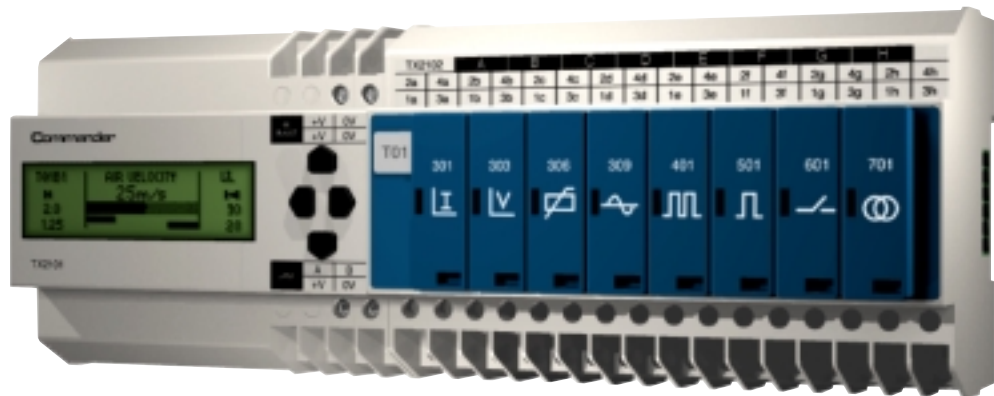




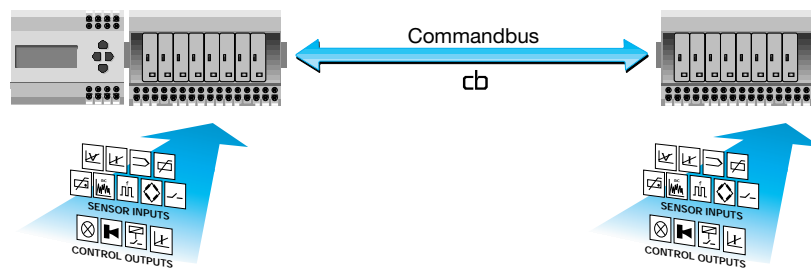
# COMMANDER

*I/O command and control system for:-  
Sensors • Control Devices • Alarms*



FEATURES

- Bus expandable distributed I/O.
- User configurable input signals and output drivers.
- Programmable sensor response functions.
- Programmable control functions.
- Data logging.
- Datacomms for distributed systems.
- Intrinsically safe for hazardous area operation.
- Galvanically isolated I/O and databus.



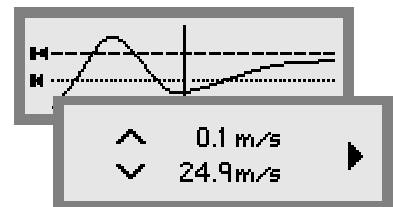
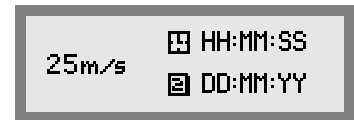


**TX2101 COMMAND MODULE**

*The command centre of the system with digital display, navigator programming keypad, and commandbus connector.*



- **Sensor Input/Output Status Display**  
Individual display for each I/O channel with signal bar-graph text entry for sensor duty and alarm setpoint data.
- **Direct Input Set-up**  
Easy-to-use, icon led set-up routine, direct programming through the navigator keypad. Infinitely flexible alarm function programming.
- **Data History**  
Data retention of minimum and maximum signal values with graphical trending.  
Data logging of sensor data and output events with time, date and identification.
- **Sensor Signal Function Programming**  
Characterisation of sensor response including;  
Rising/falling signal, Hysteresis, Scaling, Engineering units, Offset, Damping, Sample Rate and Fault monitoring.

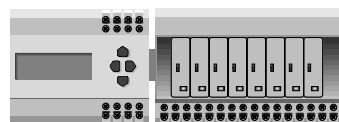


**Programmable Control Functions**

Direct programming of basic control functions and alarm grouping.  
Custom software modules can be incorporated for sequential control, time delays, algebraic functions, logic functions, mathematical functions, counting, rate-of-rise, algorithms, comparitors, etc.

**Commandbus**

Extendible I/O communication bus with power supply distribution to each channel.



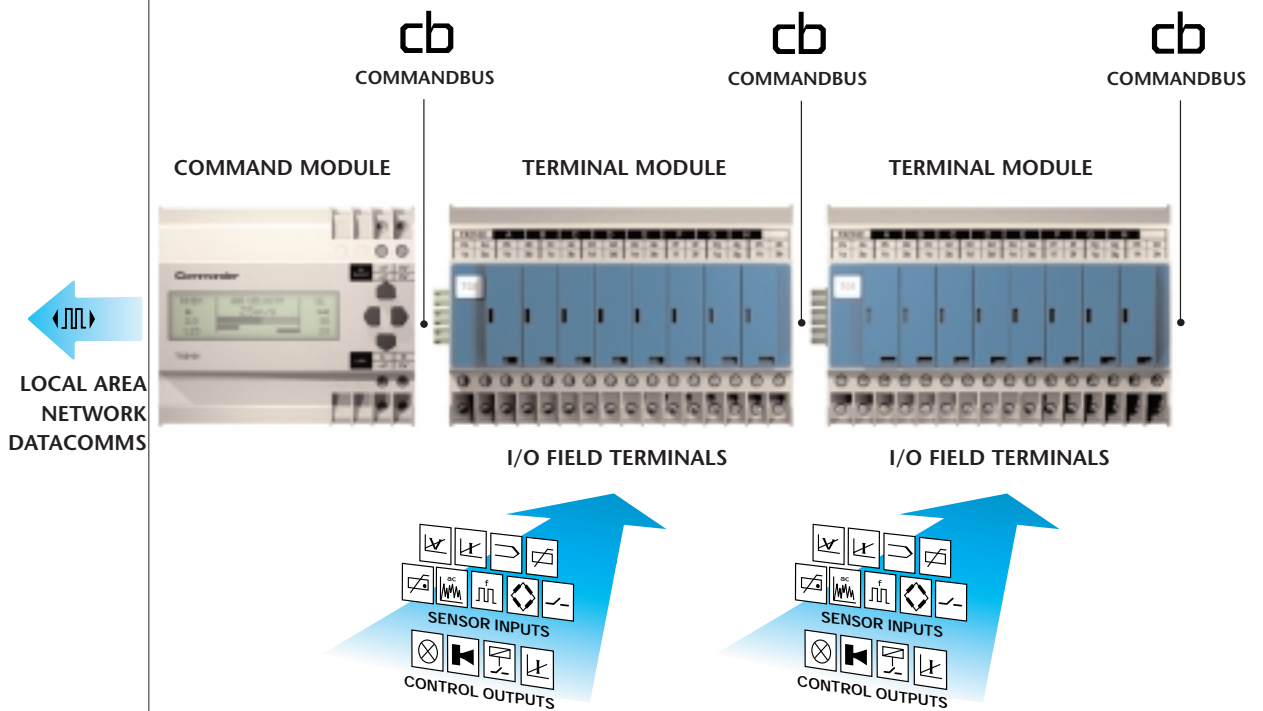
**Datacomms**

RS485 based datacomms for distributed monitoring and control systems.  
MODBUS • SAP • ETHERNET



**MODULAR SYSTEM CONFIGURATION**

- I/O Terminal Modules couple directly to the Command Module through the Commandbus.
- Each Terminal Module accepts up to 8 I/O channel cards in any function combination.
- Data repeat and refresh, incorporated within the Terminal Module, each capable of driving an additional 1000/2000 metres of Commandbus cable.
- The Commandbus carries I/O data and distributes power to each I/O channel – no power looping needed.



- Channel function is determined by each I/O channel card.
- Channels can be configured without interruption of the system.
- Single, dual or quad I/O functions.
- Channel cards are galvanically isolated from the Commandbus providing maximum operational integrity and noise rejection.




I/O CHANNEL CARDS




**ANALOGUE INPUT CHANNEL CARDS**


**TX2141.301.03** 4...20mA Input.  
.01  
.02




**TX2141.302.03** Dual 4...20mA Input.  
.01  
.02



**TX2141.303.03** 0.4...2V Input.  
.01  
.02



**TX2141.304.03** Dual 0.4...2V Input.  
.01  
.02




**TX2141.306.03** PT100 Temp. Input  
.01  
.02




• Measuring Range: -50°C...200°C • -50°C...400°C

**TX2141.307.03** Dual PT100 Temp. Input.  
.01  
.02




• Measuring Range: -50°C...200°C • -50°C...400°C

**TX2141.308.03** Dual S/C Temp. Input.  
.01  
.02




• Measuring Range: 0°C...100°C • 0°C...200°C

**TX2141.309.03** ac & Vibration Input  
.01  
.02



• Bandpass Frequency: 10Hz...100Hz • 500Hz...10kHz

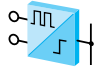
**TX2141.310.03** mV Input.  
.01  
.02



• Measuring Range: 0...2mV • 0...5mV • 0...10mV • 0...50mV • 0...100mV • 0...1V • 0...2V • Specific Measuring Range

**PULSE FREQUENCY INPUT CHANNEL CARDS**

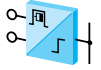
**TX2141.401.03** Pulse/frequency Input.  
.01  
.02



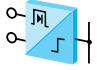
Counting, frequency measurement. Speed sensing, pulse comparison.

**ONOFF/STATE INPUT CHANNEL CARDS**

**TX2141.501.03** Dual NAMUR Input.  
.01  
.02

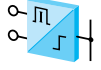


**TX2141.502.03** Dual ONOFF Input.  
.01  
.02




(with line monitoring diode)

**TX2141.503.03** Dual Current Loop State Input.  
.01  
.02




**TX2141.504.03** Quad ONOFF Input.  
**TX2141.504.01**




**ONOFF/STATE OUTPUT CHANNEL CARDS**

**TX2141.601.01** Reed Relay Output.  
.02




(Clearance compliant for intrinsically safe circuits).

**TX2141.603.03** Quad Solid State Output.  
**TX2141.603.01**

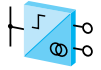


**TX2141.604.03** Dual Relay Output.




**ANALOGUE OUTPUT CHANNEL CARD**


**TX2141.701.03** Dual 4...20mA Output.  
.01  
.02



**AREA CLASSIFICATION**

Suffix .03: GENERAL PURPOSE  
(eg. **TX2141.301.03**)

Suffix .01:  GROUP I  
(eg. **TX2141.301.01**)

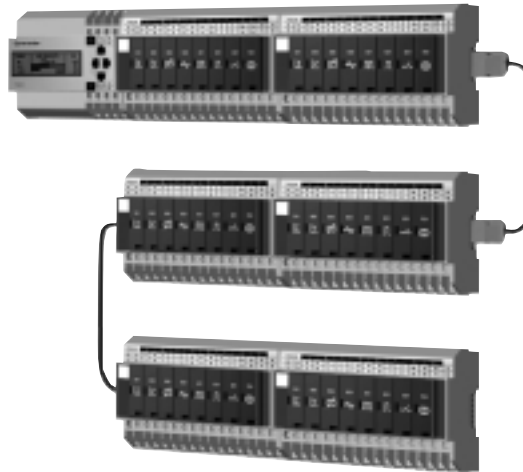
Suffix .02:  GROUP II  
(eg. **TX2141.301.02**)



**Expand up to a possible 960 I/O.**



**Expand in parallel format.**

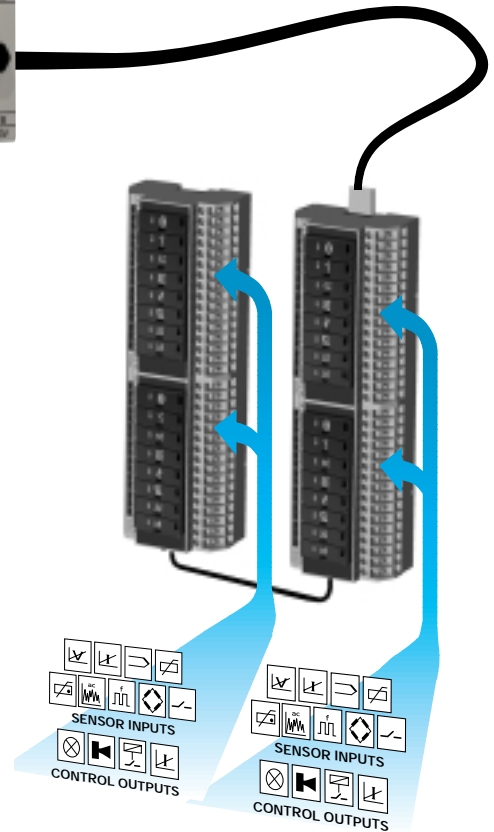


**Expand in back-to-back format.**





- Install the Command module at a convenient dispersed location.
- Plant cables terminated directly to the I/O Terminal Modules.
- Panel wiring eliminated.



- Fit a Commandbus convertor module for cable runs to remote I/O Terminal Modules.



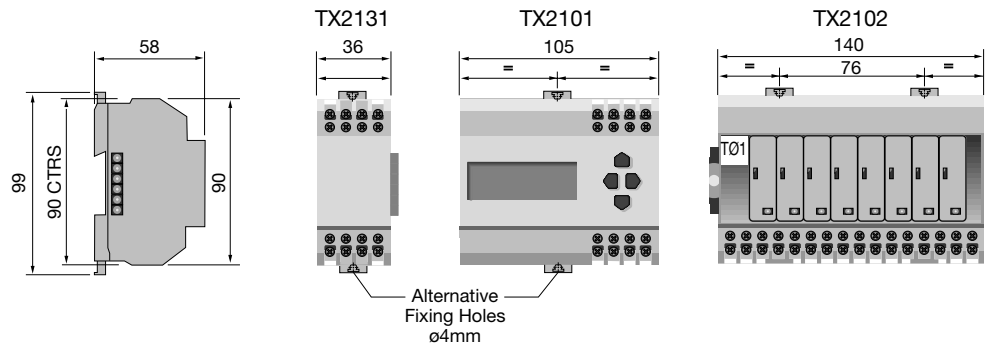
- Each Terminal Module added to a Commandbus will provide up to 2000 metres of additional Commandbus transmission distance.



TECHNICAL details

	TX2101.03 General Purpose	TX2101.01 Group I	TX2101.02 Group II
Ambient Temp. Limits:	-10 °C...50°C		
Electrical Connections:	3.5mm barrier/clamp terminals.		
Housing Material:	Glass filled polycarbonate.		
Environmental Protection:	IP55 (must be housed in protective metal enclosure).		
Information Display:	32 x 122 pixels. Graphic LCD with backlight.		
Processor:	Microprocessor controlled menu operation with non-volatile data retention. 16 bit A/D conversion		
Programming:	Fourway NAVIGATOR keypad. Sensor input signal function programming. output control function programming.		
Datalog:	2000 readings per channel with Time/Date/Duty. Data listing or graphical trend display.		
Datacomms:	LAN 1 and LAN 2 RS485 datacomms output for multipoint distributed systems.		
Supply Voltage:	24V dc	12V dc (From approved Intrinsically Safe Source)	24V dc (From TX2172 Power Supply ONLY)
Isolation:	All input and output circuits are galvanically isolated from the Commandbus. All power supplies to TX2102 terminal Modules are galvanically isolated. All Commandbus data is galvanically isolated at all exit ports.		

DIMENSIONS



APPROVALS AND CERTIFICATION



- Certified Intrinsically Safe to Euronorm Standards: EEx iad IIC T4 (P)  
EEx ia I (P)
- Performance approved to Euronorm Standards: EN50054  
EN50055  
EN50057

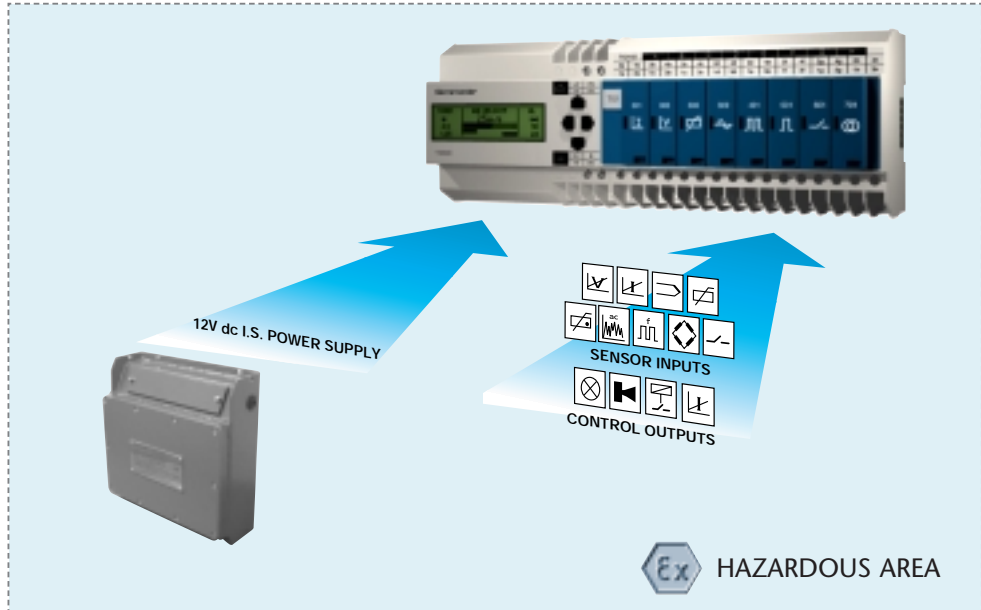


- Designed to comply with: ATEX directive (P)  
EMC directive (P)



COMMANDER  
IN A  
GROUP I  
HAZARDOUS  
AREA

The complete system – Commander, sensors and control devices can be mounted in the hazardous area.



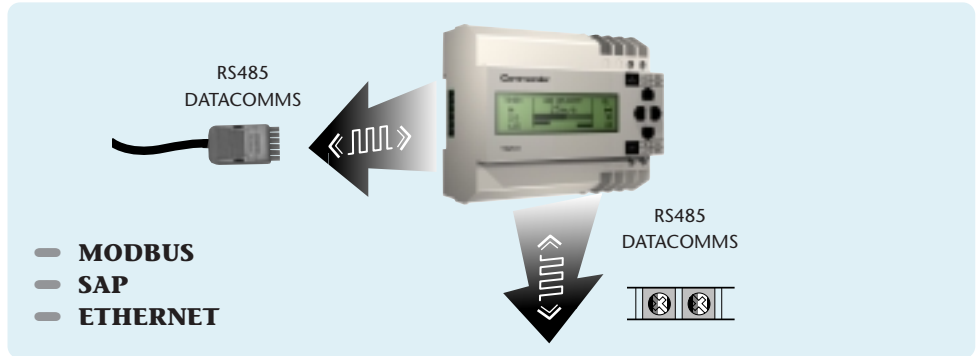
COMMANDER  
IN A  
GROUP II  
HAZARDOUS  
AREA USING  
A TX2172  
Ex e POWER  
SUPPLY



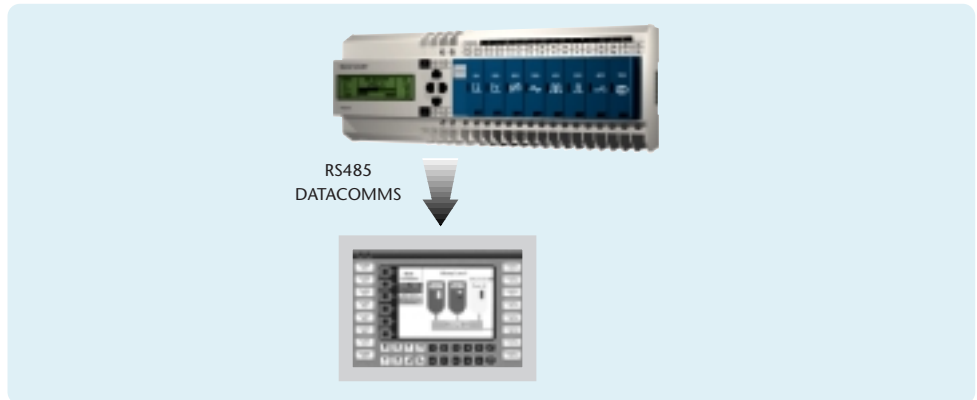


DATA COMMS  
FOR  
DISTRIBUTED  
COMMANDER  
SYSTEMS

**The Command module has two alternative output ports each providing RS485 datacomms, one in Connector format the other in Terminal format.**

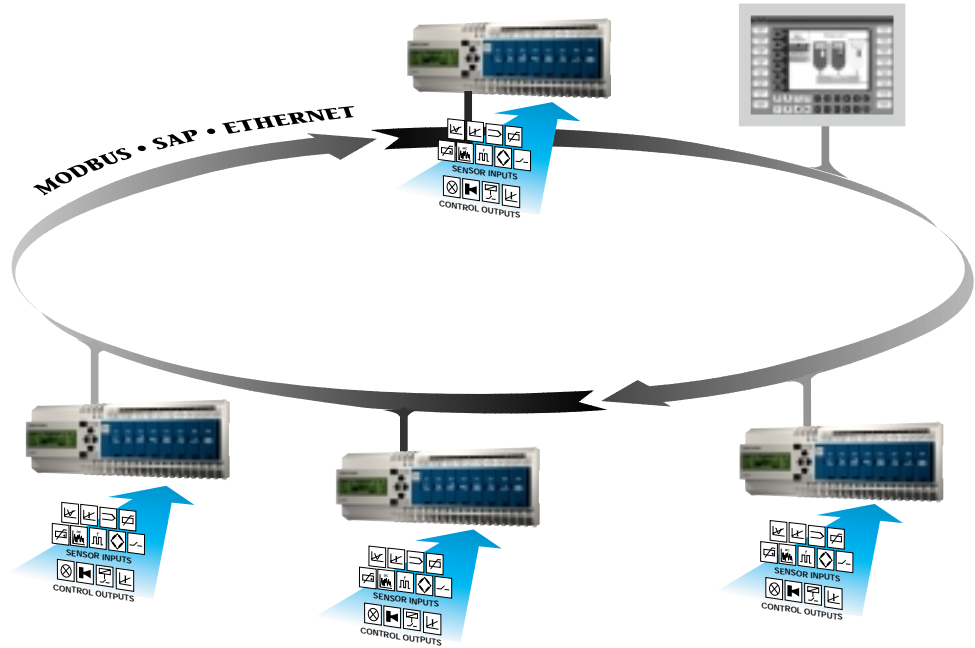


**Commander communicating DIRECTLY with an Operator Interface or a PC based network using the RS485 datacomms output.**





DISTRIBUTED  
COMMANDER  
SYSTEM with  
PC BASE  
STATION





ORDER  
REFERENCE

- TX2101.03 COMMAND MODULE. DIN. General Purpose.
- TX2101.01 COMMAND MODULE. DIN. Group I.
- TX2101.02 COMMAND MODULE. DIN. Group II.



- TX2104.03 COMMAND MODULE. PANEL. General Purpose.
- TX2104.01 COMMAND MODULE. PANEL. Group I.
- TX2104.02 COMMAND MODULE. PANEL. Group II.



- TX2102.03 I/O TERMINAL MODULE. DIN. General Purpose.
- TX2102.01 I/O TERMINAL MODULE. DIN. Group I.
- TX2102.02 I/O TERMINAL MODULE. DIN. Group II.



■ TX2131 COMMANDBUS CONVERTOR MODULE

Converts the normal Commandbus plug and socket connector, to screw terminal connections for remote Commandbus cabling.



■ TX2171 POWER SUPPLY MODULE. General Purpose.

General purpose 24V dc power supply for DIN rail mounting directly into the Commandbus.

**Please specify:**

- Supply: 85V ac...264V ac universal
- Output: 24V dc
- Current: 1A



■ TX2172 POWER SUPPLY MODULE. Group II.

Special voltage restricted power supply for DIN rail mounting directly into the Commandbus.

24V dc for Group II Ex applications.

**Please specify:**

- Supply: 110V ac
- Supply: 230V ac



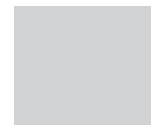
- TX2121.03 COMMANDBUS REPEATER MODULE. General Purpose.
  - TX2121.01 COMMANDBUS REPEATER MODULE. Group I.
  - TX2121.02 COMMANDBUS REPEATER MODULE. Group II.
- Increase the transmission distance on the Commandbus.



- TX2122.01 COMMS REPEATER MODULE. Group I.
- Increase the transmission distance on the RS485 LAN data output ports.  
Can also be used as an Intrinsically Safe isolation barrier at the surface/hazardous area interface.



- TX2199 COMMANDER AUTO SETUP SOFTWARE PACKAGE
- SETUP the complete Commander programme in software on a PC and load directly into the Command Module through the LAN 2 data port. Package includes CD and LAN 2 interconnecting cable.

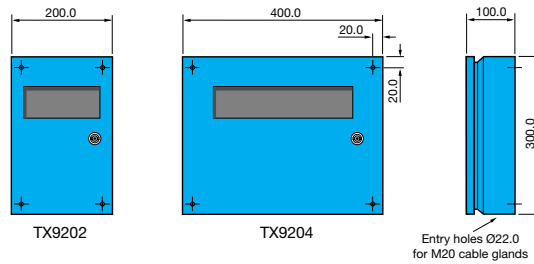




HOUSINGS  
FOR THE  
COMMANDER  
SYSTEM

**TX9200 SERIES STAINLESS STEEL COMMANDER HOUSINGS.**

- Robust welded stainless steel construction.
- Mounting rails fitted.
- Observation window.
- Hinged cover with lockable fastening.
- Wall fixing facilities.
- IP65 environmental protection.



**MOULDED POLYCARBONATE WEATHERPROOF HOUSINGS IN A RANGE OF SIZES.**

- Transparent waterproof hinged covers.
- Wall fixing kit.
- Mounting rails fitted.
- Masking plates provided.
- Choice of cable entry facilities.



Stand-alone  
Wall Mounting  
Command Module.

Terminal Module  
with Commandbus  
Convertor

Compilation Commander Station

- Command Module
- Comms Repeater
- Terminal Module
- Commandbus Convertor

ACCESSORIES

- **TX2141.08 BLANK CHANNEL CARD**  
*To cover unused channel card locations.*
  
- **TX2141.09 MARKING TAG BAR**  
*Self-adhesive fixing to the TX2102 Terminal Module. Supplied complete with 8 white tags for marking the duty reference of each channel.*
  
- **TX2151 COMMANDBUS CABLE HEADER. Male**  
*(Internal screw terminal connections). The housing of the connector is fitted with two retaining screws for anchoring to the TX2104 Series Command Modules, panel mounting version.*
  
- **TX2152 COMMANDBUS CABLE HEADER. Female**
  
- **TX2153 COMMANDBUS CABLE HEADER. Male**
  
- **TX2154 6 CORE COMMANDBUS CABLE (5 USED). per metre**  
*(For use with TX2152 and TX2153)*
  
- **TX2158 END CLAMP.**
  
- **TX2159 END CLAMP WITH CABLE ANCHOR.**  
*Commandbus cable headers can be secured in position by using the clip provided on this end clamp.*



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**e-mail:** sales@trolex.com  
**internet:** www.trolex.com