

NET-BOX Overview with Integrated Safety Protocols (CIP Safety/PROFIsafe)

NET-BOX PRODUCT OVERVIEW:

NEW



EtherNet/IP™



PROFINET®



Integrated safety protocols for use with industry recognised industrial Ethernet networking capabilities.

Ethernet/IP (CIP Safety) or PROFINET (PROFIsafe).

**Manufactured from Plastic, Die-Cast or Stainless Steel.
All-In-One Pushbutton Station & Distributed I/O Device.
Fully Customisable for Complex Systems.
Pre-Configured to Your Specific Requirements.**

HOW DOES IT WORK?:

The NET-BOX device is designed to be fitted near a guarded access point where a mix of safe and standard IO control functions are required. The NET-BOX is fitted with an (optional) E-Stop and can monitor external dual channel safety devices that are equipped with either voltage-free contacts (NET-BOX provides test pulses) or OSSD outputs. A single dual channel output is also provided for safe control of an actuator.

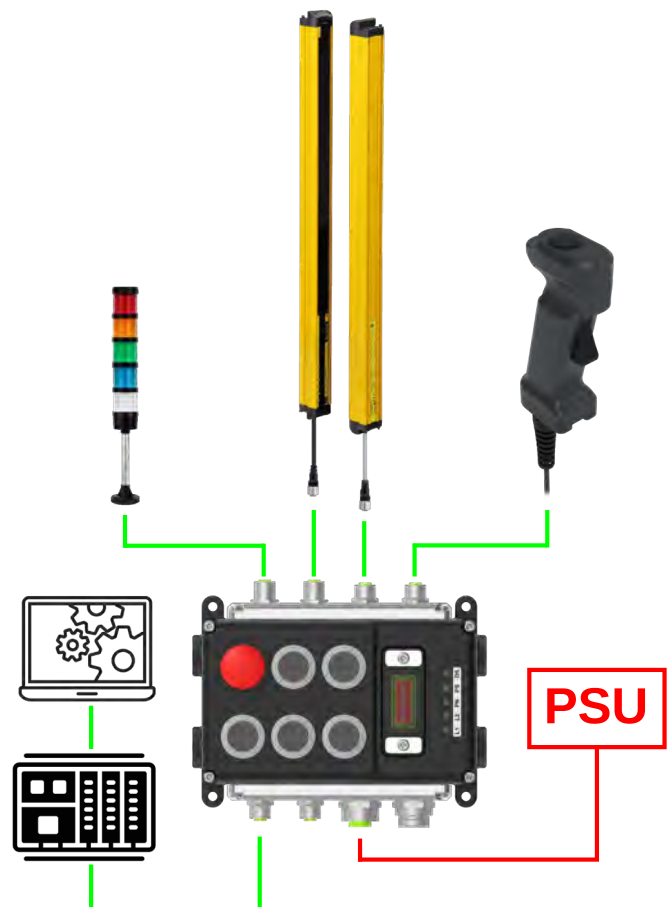
DESCRIPTION & FEATURES:

The NET-BOX is a configurable pushbutton and distributed I/O station that communicates with the main industrial network protocols: PROFINET with PROFIsafe and Ethernet/IP with CIP Safety.

Each NET-BOX unit can be configured to your applications specific requirements and can accommodate up to 4 additional connectors for implementing external field devices and distributed I/O. This highly configurable product is compatible with pushbuttons, emergency stops, lamps, selector switches and can easily be configured using our NET-BOX part number diagram (see P231).

NET-BOX combines machine control functions with I/O for connecting external field devices, reducing cabling cost compared to traditional 'hard-wire' methods. Each module can house up to three dual channel safety inputs; this can include safety interlocks, light curtains, enabling pendants, scanners and much more. There are also up to 40+ non-safe inputs and outputs for pilot devices, stack lights, buzzers and much more.

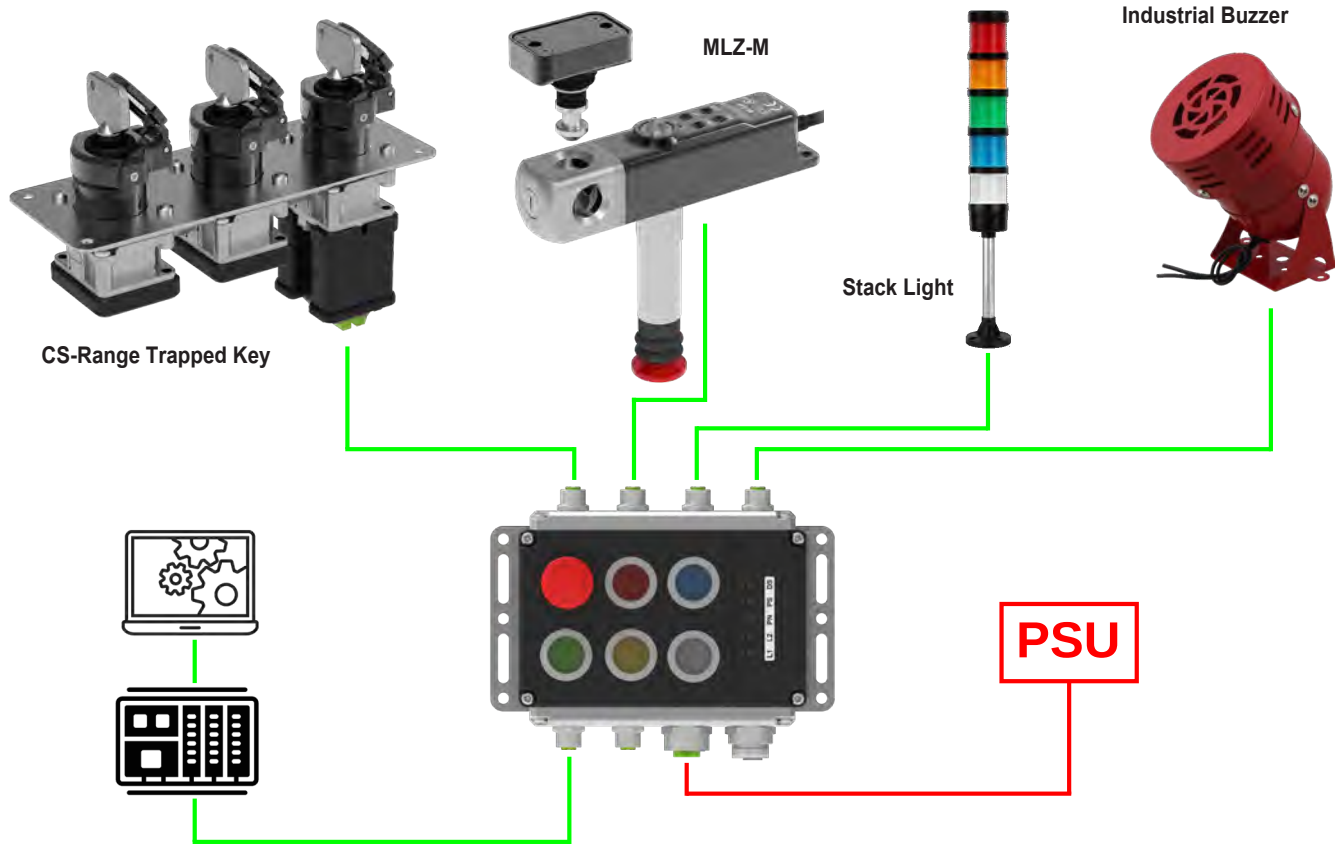
Unlike a traditional networked I/O block, the NET-BOX can be configured to a specific products making it the perfect solution for customer specific applications in all industries.



NET-BOX Overview with Integrated Safety Protocols (CIP Safety/PROFIsafe)

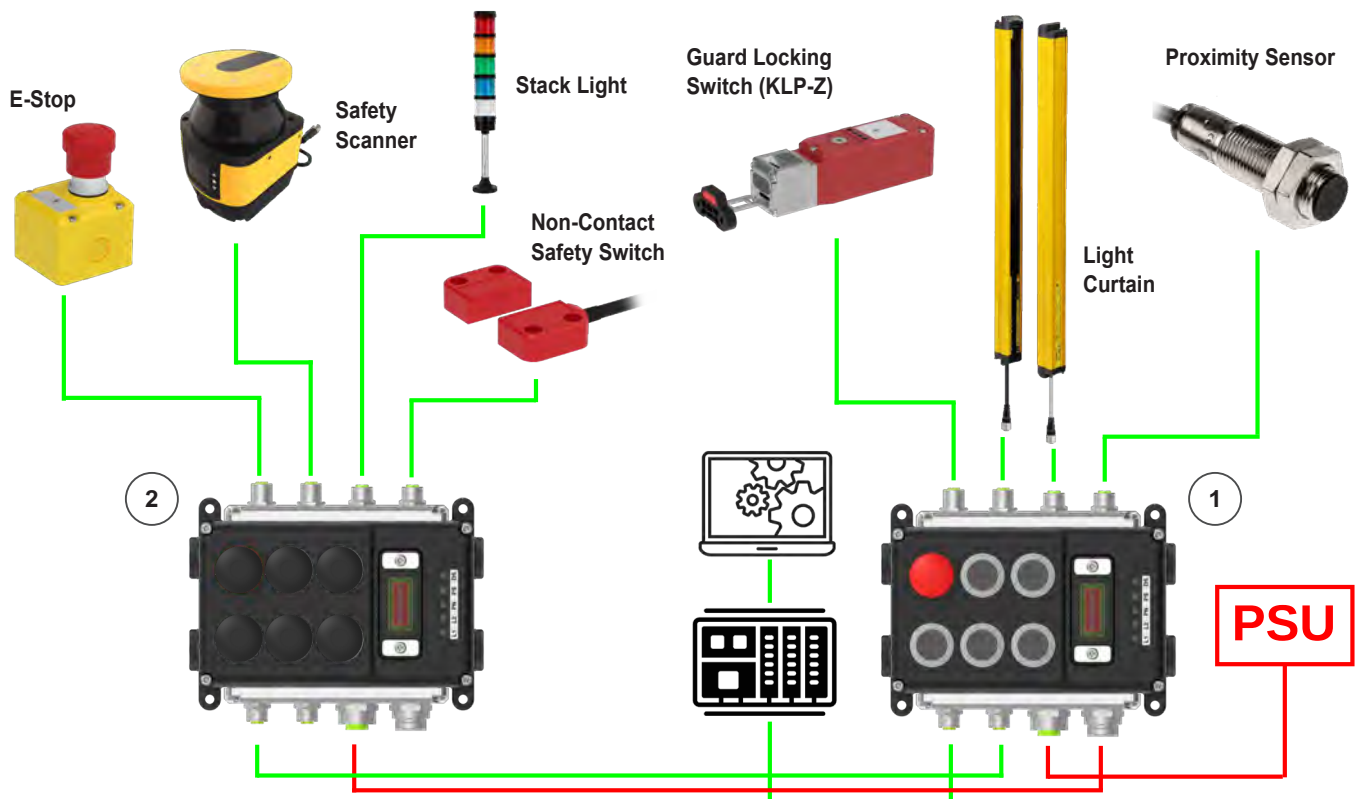
EXAMPLE 1:

NET-BOX-PS in plastic with 1 x E-Stop, 5 x illuminated Pushbuttons. 2 x monitoring of dual channel safety devices (1 x OSSD and 1 x voltage free) and 2 x non-safe I/O for stack light and buzzer.



EXAMPLE 2:

2 x NET-BOX-PS in die-cast connected in series. NET-BOX (1) 1 x E-Stop, 5 x illuminated Pushbuttons. 2 x monitoring of dual channel safety devices (2 x OSSD for light curtain and KLP-Z) 1 x non-safe I/O for proximity sensor. NET-BOX (2) 6 x blanking plugs with 3 x monitoring of dual channel safety devices (1 x OSSD for safety scanner, 2 x voltage free for E-Stop and Non-Contact) and 1 x non-safe I/O for stack light.



NET-BOX Overview with Integrated Safety Protocols (CIP Safety/PROFIsafe)

DIAGNOSTIC INDICATION:

Every NET-BOX features easy to understand indication for general diagnostics and troubleshooting.

PROFIsafe:



LED	Function	Colour
DS	Device State	Red/Green
PS	PROFIsafe	Red/Green
PN	PROFINET / Network	Red/Green
L1	Link 1	Amber/Green
L2	Link 2	Amber/Green

LED	LED State	Comment
DS	Green	Device running
	Red	Internal fault detected
PS	Green	PROFIsafe OK
	Green Flash	PROFIsafe Integration required
	Red	Safe input fault detected, reset qualifier bits
PN	Off	Not initialised
	Green	Normal operation
	Green flash 1Hz	Locate PROFINET device
	Green 1 flash	Diagnostic event present
	Red	Exception
	Red 1 flash	Configuration error
	Red 2 flashes	IP address not set
	Red 3 flashes	Station name not set
	Red 4 flashes	Internal error
L1/L2	Off	No Ethernet link detected
	Amber	Ethernet link detected
	Amber flash	Ethernet data transfer

CIP Safety:

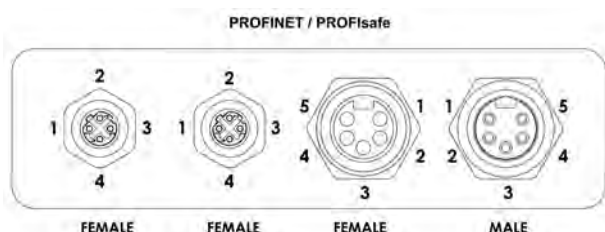


LED	Function	Colour
DS	Device State	Red/Green
PS	Module Status	Red/Green
PN	Network Status	Red/Green
L1	Link 1	Amber/Green
L2	Link 2	Amber/Green

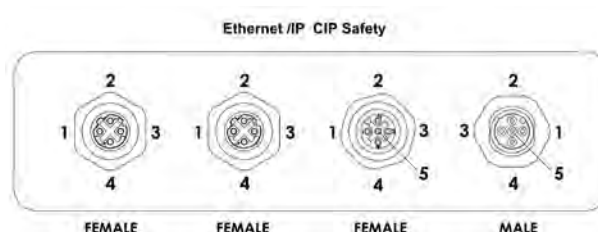
LED	LED State	Comment
DS	Green	Device running
	Red	Internal fault detected
MS	Green	Connection to PLC, run state
	Green Flash	Connection to PLC, idle state
	Red	Major Fault
	Red Flashing	Recoverable fault, check PLC / NET-BOX configuration
NS	Off	No IP address set
	Green	Online, connection(s) established
	Green flash 1Hz	Online, no connections established
	Red	Network fault
	Red flash	Connection timed out
L1/L2	Off	No Ethernet link detected
	Amber	Ethernet link detected
	Amber flash	Ethernet data transfer

STANDARD CONNECTOR OPTIONS (CUSTOM CONFIGURATIONS AVAILABLE):

(2 x 4 Pin M12 'D' Code for Data) (2 x 5 Pin 7/8" for Power)



(2 x 4 Pin M12 'D' Code for Data) (2 x 5 Pin M12 'A' Code for Power)

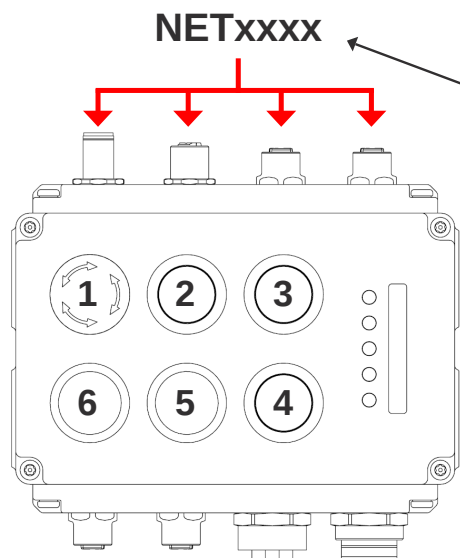


POWER		
Port C 7/8" FEMALE 5 Pin	Port D 7/8" MALE 5 Pin	Function
1	1	0V dc
2	2	0V dc
3	3	Earth (case)
4	4	+24V dc supply
5	5	+24V dc supply

POWER		
Port C M12 FEMALE 5 Pin 'A' Code	Port D M12 MALE 5 Pin 'A' Code	Function
1	1	+24V dc supply
2	2	0V dc
3	3	0V dc
4	4	+24V dc supply
5	5	Earth (case)

NET-BOX Overview with Integrated Safety Protocols (CIP Safety/PROFIsafe)

HOW TO CONFIGURE A NET-BOX:



Once you have configured your NET-BOX using the diagram below, the next step is to obtain a unique **NET ID number**:

1. Make a list of the product part number/s you want to connect to the NET-BOX.
2. To check compatibility, email the list to technical@idemsafety.com along with any data sheets relating to the products.
3. A **NET ID number** and a product configuration sheet will then be provided, which is unique to your specific requirements.

NET-BOX switch part numbers are located on the NET-BOX plastic (p114-115), NET-BOX die-cast (p116-117) and NET-BOX stainless steel (p118-119) overview pages.

530001 - NETxxxx - 1E - 2BR - 3LG - 4S - 5BW - 6X

SWITCH

ISSUED BY IDEM FOR
ADDITIONAL CONNECTIVITY

POSITION ON
LID

CONTROL
DEVICE CODE

LENS
COLOUR

Illuminated Emergency Stop

Contacts: 2NC	
Control Device Code	Note
E	E-Stop can only be fitted into Position 1 on Lid

Illuminated Push Buttons

Contacts: 1NO		
Control Device Code	Colour Code	Colour of Lens
B	R	Red
	B	Blue
	G	Green
	Y	Yellow
	W	White

Lamps		
Control Device Code	Colour Code	Colour of Lens
L	R	Red
	B	Blue
	G	Green
	Y	Yellow
	W	White

Illuminated Selector Switch

Control Device Code	Description
S	1NO Maintained

Blanking Plug

Code	Description
X	Plastic Plug used to seal any unused positions.



NET-BOX Plastic with Integrated Safety Protocols (CIP Safety/PROFIsafe)

EtherNet/IP™



Manufactured from Plastic with Stainless Steel Mounting Plate.
All-In-One Pushbutton Station + Distributed Solution.
Fully Customisable for Complex Systems.
Pre-Configured to Your Specific Requirements.

APPLICATION & FEATURES:

The NET-BOX Plastic is a configurable control pushbutton station that communicates with the main industrial network protocol: PROFINET with PROFIsafe and Ethernet/IP with CIP Safety.

The NET-BOX control station can be configured to your applications specific requirements and can accommodate up to 4 additional connectors for implementing external field devices and distributed I/O. This highly configurable product is compatible with pushbuttons, emergency stops, lamps, selector switches and can easily be configured using our NET-BOX part number diagram located on p231.

The NET-BOX combines machine control functions with I/O for connecting external field devices, reducing cabling cost compared to traditional 'hard-wire' methods. Each module can house up to three dual channel safety inputs, compatible with products such as safety interlocks, light curtains, enabling pendants, scanners and much more. There are also up to 40+ non-safe inputs and outputs for pilot devices, stack lights, buzzers and much more.

Unlike a traditional networked I/O block, the NET-BOX can be configured to a specific products making it the perfect solution for customer specific applications in all industries.

- TUV and cULus approved to CAT4, SIL3, PLc.
- Choice of pluggable connections for quick installation (M12 or 7/8")
- Network address assignment set by DIP switches
- Easy to use web interface accessible by IP address
- 3 Dual Channel Safety Inputs
- Up to 40+ standard I/O
- Daisy chain power and network connections (in/out).
- Choice of standard machine function buttons/lamps or custom configurable (E Stops, Start, Stop, Indication).

DEVICE LAYOUT:



KEY

1	Pilot Devices
2	Data Ports
3	Power Ports
4	Blanking Plugs for Cable Entry
5	Lid Screws
6	Indication LEDs
7	Stainless Steel Mounting Plate



NET-BOX Plastic are supplied with a stainless steel rear mounting plate and two back brackets for clamping.

DIP SWITCHES:

NET-BOX comes with easily selectable DIP switches to manually set an IP address.



TECHNICAL SPECIFICATIONS:

Device Characteristics	
Response time (Safety Inputs)	36 ms max. (Change of input state -> transmission to field bus)
Response time (Safety Outputs)	7.7 ms max. (field bus telegram recvd -> change of output state)
Electrical Data	
Operating voltage	24 V DC +10%/-15% (SELV/PELV)
Power Supply UL Requirements	Class 2 power supply must be used
Current consumption, max.	250 mA (excluding Standard Outputs and Safety Outputs).
Allowed through current (daisy-chain)	5A
Standard Inputs	
Input Rated Voltage	24V DC
Input Rated Current	2 mA
Standard Outputs	
Output Rated Voltage	24V DC (sourced from power connectors)
Output Maximum Current	500 mA single / 1.5 A group (OUT1..4 / OUT5..8)

NET-BOX Plastic with Integrated Safety Protocols (CIP Safety/PROFIsafe)

INDICATION DIAGNOSTICS:

PROFIsafe:



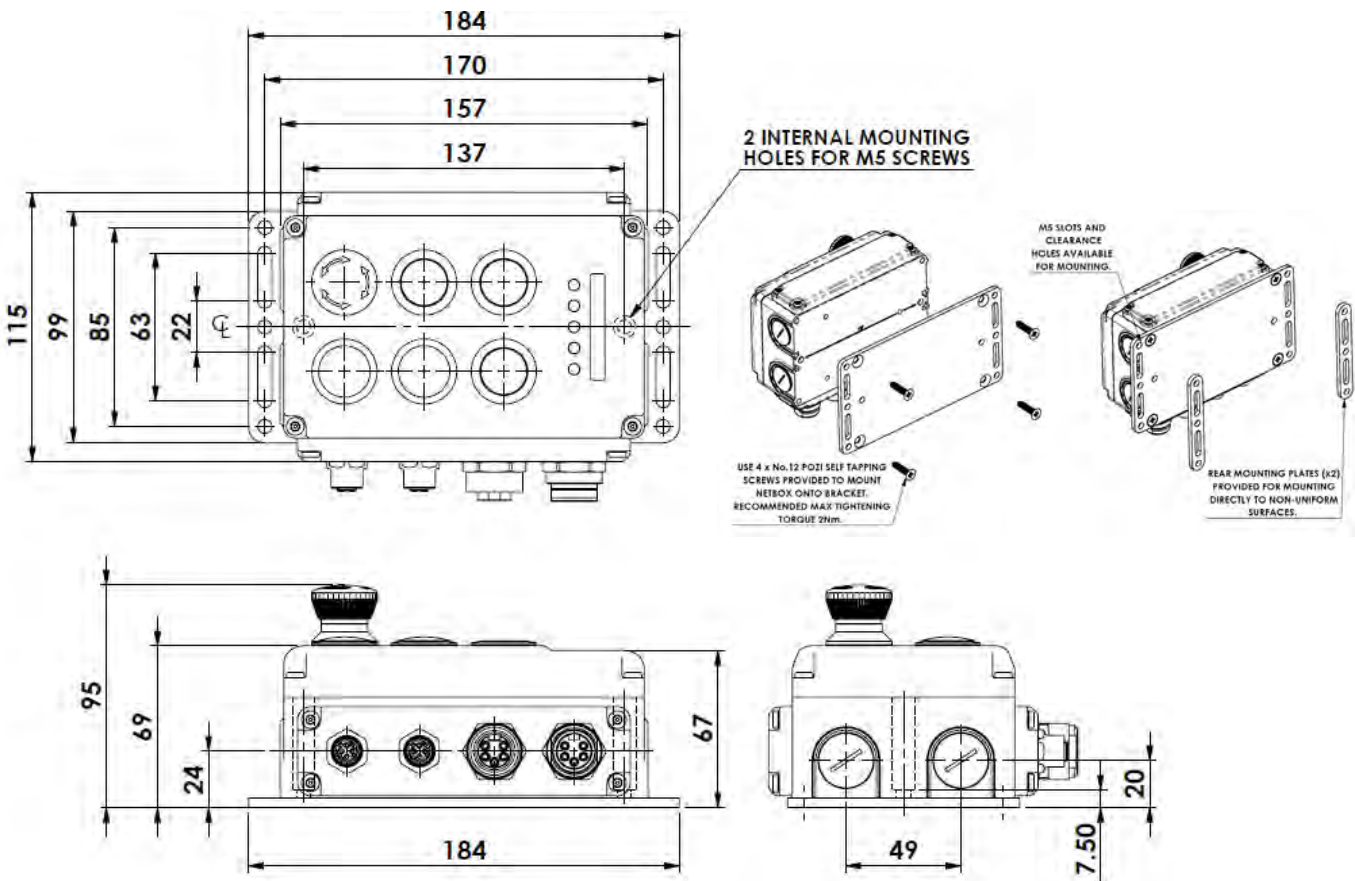
LED	Function	Colour
DS	Device State	Red/Green
PS	PROFIsafe	Red/Green
PN	PROFINET / Network	Red/Green
L1	Link 1	Amber/Green
L2	Link 2	Amber/Green

CIP Safety:



LED	Function	Colour
DS	Device State	Red/Green
PS	Module Status	Red/Green
PN	Network Status	Red/Green
L1	Link 1	Amber/Green
L2	Link 2	Amber/Green

DIMENSIONS:



ORDERING:

Part No.	Description	Protocol	Data Connection	Power Connection
530001	NET-BOX-PS M20 PLASTIC	PROFIsafe	2 x M12 Data Connectors	2 x 7/8" 24V. dc Connectors
530101	NET-BOX-CS M20 PLASTIC	CIP Safety	2 x M12 Data Connectors	2 x M12 Power 24V. dc Connectors
530002	NET-BOX-PS 1/2" NPT PLASTIC	PROFIsafe	2 x M12 Data Connectors	2 x 7/8" 24V. dc Connectors
530102	NET-BOX-CS 1/2" NPT PLASTIC	CIP Safety	2 x M12 Data Connectors	2 x M12 Power 24V. dc Connectors

NET-BOX Metal with Integrated Safety Protocols (CIP Safety/PROFIsafe)

EtherNet/IP™



Manufactured from Robust Die-Cast Metal.
External DIP Switches and Mounting Points.
Robust Design for High Traffic Environments.
All-In-One Pushbutton Station + Distributed Solution.
Fully Customisable for Complex Systems.
Pre-Configured to Your Specific Requirements.

APPLICATION & FEATURES:

The NET-BOX Metal is a configurable control pushbutton station that communicates with the main industrial network protocol: PROFINET with PROFIsafe and Ethernet/IP with CIP Safety.

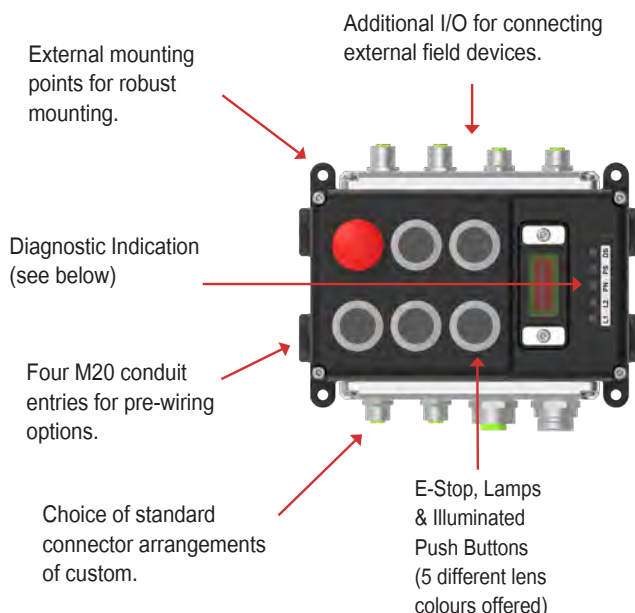
The NET-BOX control station can be configured to your applications specific requirements and can accommodate up to 4 additional connectors for implementing external field devices and distributed I/O. This highly configurable product is compatible with pushbuttons, emergency stops, lamps, selector switches and can easily be configured using our NET-BOX part number diagram located on p231.

The NET-BOX combines machine control functions with I/O for connecting external field devices, reducing cabling cost compared to traditional 'hard-wire' methods. Each module can house up to three dual channel safety inputs, compatible with products such as safety interlocks, light curtains, enabling pendants, scanners and much more. There are also up to 40+ non-safe inputs and outputs for pilot devices, stack lights, buzzers and much more.

Unlike a traditional networked I/O block, the NET-BOX can be configured to a specific products making it the perfect solution for customer specific applications in all industries.

- TUV and cULus approved to CAT4, SIL3, PL_e.
- Choice of pluggable connections for quick installation (M12 or 7/8")
- Network address assignment set by DIP switches
- Easy to use web interface accessible by IP address
- 3 Dual Channel Safety Inputs
- Up to 40+ standard I/O
- Daisy chain power and network connections (in/out).
- Choice of standard machine function buttons/lamps or custom configurable (E Stops, Start, Stop, Indication).

DEVICE LAYOUT:



DIP SWITCHES:

NET-BOX comes with easily selectable DIP switches to manually set an IP address.



TECHNICAL SPECIFICATIONS:

Device Characteristics	
Response time (Safety Inputs)	36 ms max. (Change of input state -> transmission to field bus)
Response time (Safety Outputs)	7.7 ms max. (field bus telegram recvd -> change of output state)
Electrical Data	
Operating voltage	24 V DC +10%/-15% (SELV/PELV)
Power Supply UL Requirements	Class 2 power supply must be used
Current consumption, max.	250 mA (excluding Standard Outputs and Safety Outputs).
Allowed through current (daisy-chain)	5A
Standard Inputs	
Input Rated Voltage	24V DC
Input Rated Current	2 mA
Standard Outputs	
Output Rated Voltage	24V DC (sourced from power connectors)
Output Maximum Current	500 mA single / 1.5 A group (OUT1..4 / OUT5..8)

NET-BOX Metal with Integrated Safety Protocols (CIP Safety/PROFIsafe)

INDICATION DIAGNOSTICS:

PROFIsafe:



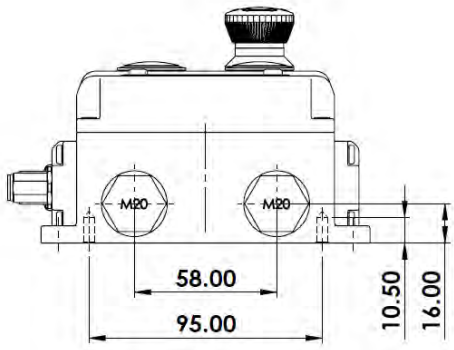
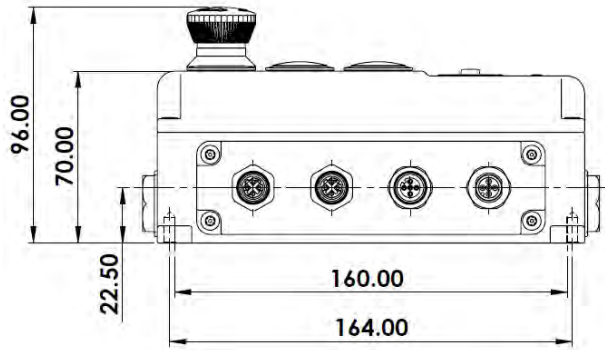
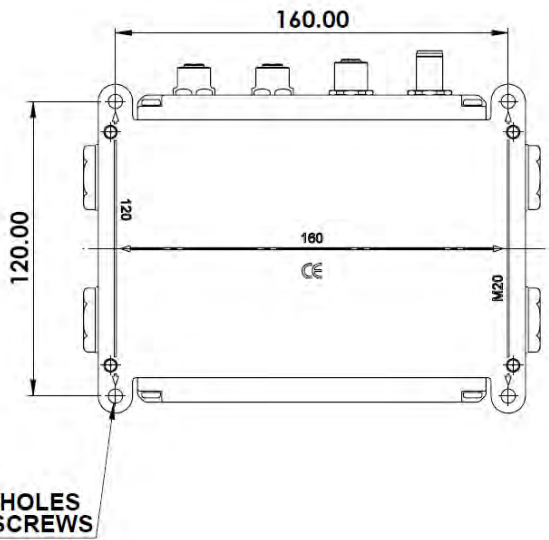
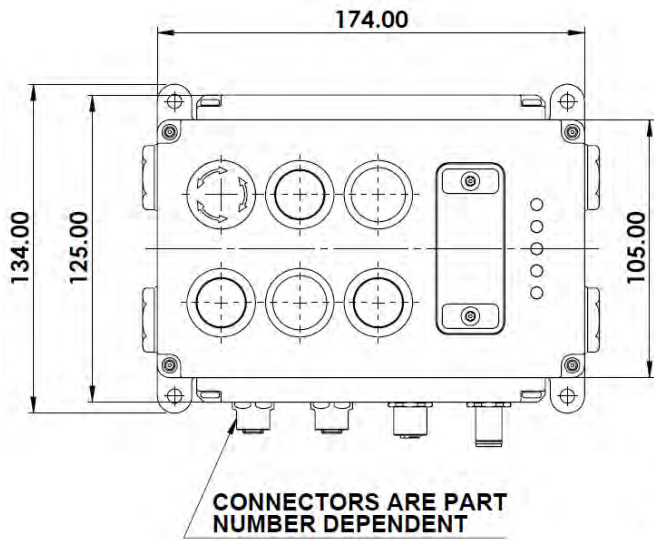
LED	Function	Colour
DS	Device State	Red/Green
PS	PROFIsafe	Red/Green
PN	PROFINET / Network	Red/Green
L1	Link 1	Amber/Green
L2	Link 2	Amber/Green

CIP Safety:



LED	Function	Colour
DS	Device State	Red/Green
PS	Module Status	Red/Green
PN	Network Status	Red/Green
L1	Link 1	Amber/Green
L2	Link 2	Amber/Green

DIMENSIONS:



ORDERING:

Part No.	Description	Protocol	Data Connection	Power Connection
531001	NET-BOX-PS M20 DIE-CAST	PROFIsafe	2 x M12 Data Connectors	2 x 7/8" 24V. dc Connectors
531101	NET-BOX-CS M20 DIE-CAST	CIP Safety	2 x M12 Data Connectors	2 x M12 Power 24V. dc Connectors
531002	NET-BOX-PS 1/2" NPT DIE-CAST	PROFIsafe	2 x M12 Data Connectors	2 x 7/8" 24V. dc Connectors
531102	NET-BOX-CS 1/2" NPT DIE-CAST	CIP Safety	2 x M12 Data Connectors	2 x M12 Power 24V. dc Connectors

NET-BOX S/Steel with Integrated Safety Protocols (CIP Safety/PROFIsafe)

EtherNet/IP™



Manufactured from Robust 316 Stainless Steel.
All-In-One Pushbutton Station + Distributed Solution.
Fully Customisable for Complex Systems.
Optional Mounting Plate + IP69K Button Covers.

APPLICATION & FEATURES:

The NET-BOX Stainless Steel is a configurable control pushbutton station that communicates with the main industrial network protocol: PROFINET with PROFIsafe and Ethernet/IP with CIP Safety.

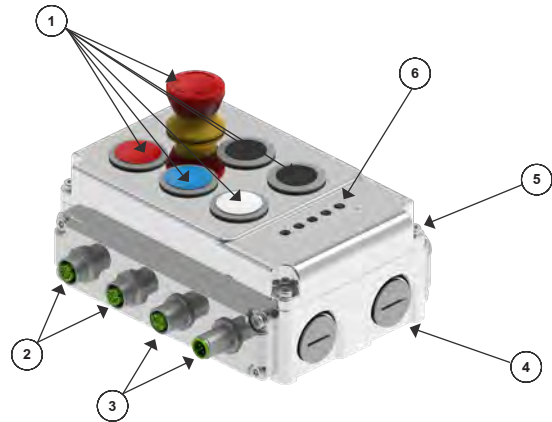
The NET-BOX control station can be configured to your applications specific requirements and can accommodate up to 4 additional connectors for implementing external field devices and distributed I/O. This highly configurable product is compatible with pushbuttons, emergency stops, lamps, selector switches and can easily be configured using our NET-BOX part number diagram located on p115.

The NET-BOX combines machine control functions with I/O for connecting external field devices, reducing cabling cost compared to traditional 'hard-wire' methods. Each module can house up to three dual channel safety inputs, compatible with products such as safety interlocks, light curtains, enabling pendants, scanners and much more. There are also up to 40+ non-safe inputs and outputs for pilot devices, stack lights, buzzers and anything that requires 8 or less I/O per device.

Unlike a traditional networked I/O block, the NET-BOX can be configured to a specific products making it the perfect solution for customer specific applications in all industries.

- TUV and cULus approved to CAT4, SIL3, PLe.
- Choice of pluggable connections for quick installation (M12 or 7/8")
- Network address assignment set by DIP switches
- Easy to use web interface accessible by IP address
- 3 Dual Channel Safety Inputs
- Up to 40+ standard I/O
- Daisy chain power and network connections (in/out).
- Choice of standard machine function buttons/lamps or custom configurable (E Stops, Start, Stop, Indication).

DEVICE LAYOUT:

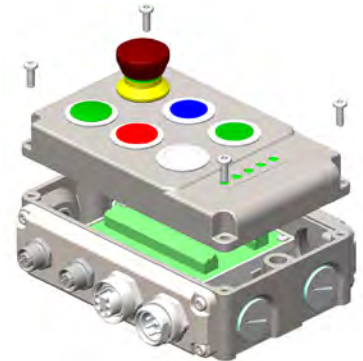


KEY

1	Pilot Devices
2	Data Ports
3	Power Ports
4	Blanking Plugs for Cable Entry
5	Lid Screws
6	Indication LEDs

DIP SWITCHES:

NET-BOX comes with easily selectable DIP switches to manually set an IP address.



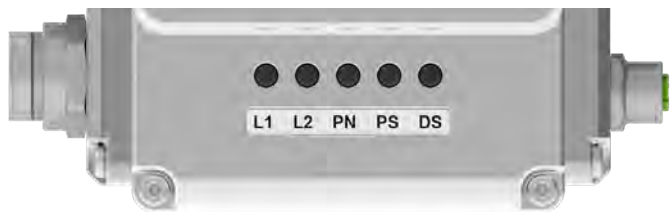
TECHNICAL SPECIFICATIONS:

Device Characteristics	
Response time (Safety Inputs)	36 ms max. (Change of input state -> transmission to field bus)
Response time (Safety Outputs)	7.7 ms max. (field bus telegram recvd -> change of output state)
Electrical Data	
Operating voltage	24 V DC +10%/-15% (SELV/PELV)
Power Supply UL Requirements	Class 2 power supply must be used
Current consumption, max.	250 mA (excluding Standard Outputs and Safety Outputs).
Allowed through current (daisy-chain)	5A
Standard Inputs	
Input Rated Voltage	24V DC
Input Rated Current	2 mA
Standard Outputs	
Output Rated Voltage	24V DC (sourced from power connectors)
Output Maximum Current	500 mA single / 1.5 A group (OUT1..4 / OUT5..8)

NET-BOX S/Steel with Integrated Safety Protocols (CIP Safety/PROFIsafe)

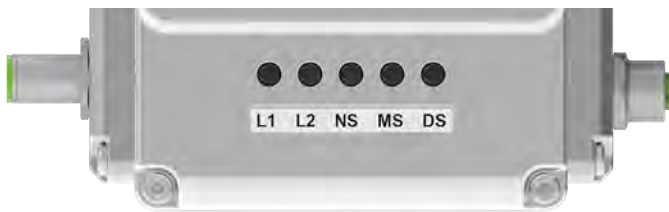
INDICATION DIAGNOSTICS:

PROFIsafe:



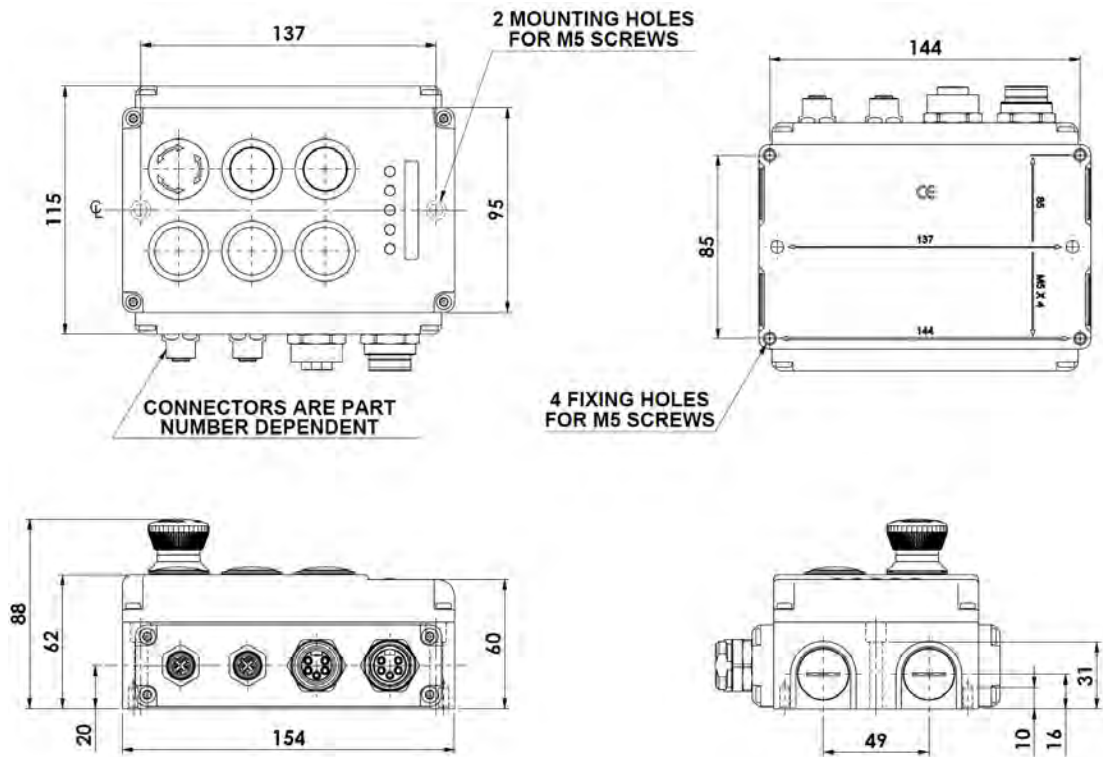
LED	Function	Colour
DS	Device State	Red/Green
PS	PROFIsafe	Red/Green
PN	PROFINET / Network	Red/Green
L1	Link 1	Amber/Green
L2	Link 2	Amber/Green

CIP Safety:



LED	Function	Colour
DS	Device State	Red/Green
PS	Module Status	Red/Green
PN	Network Status	Red/Green
L1	Link 1	Amber/Green
L2	Link 2	Amber/Green

DIMENSIONS:



ORDERING:

Part No.	Description	Protocol	Data Connection	Power Connection
532001	NET-BOX-PS M20 STAINLESS STEEL	PROFIsafe	2 x M12 Data Connectors	2 x 7/8" 24V. dc Connectors
532101	NET-BOX-CS M20 STAINLESS STEEL	CIP Safety	2 x M12 Data Connectors	2 x M12 Power 24V. dc Connectors
532002	NET-BOX-PS 1/2" NPT STAINLESS STEEL	PROFIsafe	2 x M12 Data Connectors	2 x 7/8" 24V. dc Connectors
532102	NET-BOX-CS 1/2" NPT STAINLESS STEEL	CIP Safety	2 x M12 Data Connectors	2 x M12 Power 24V. dc Connectors



NET-BOX Mounting bracket
sold seprately.
Material: Stainless Steel
Part Number: *****



Optional sealing covers for IP69K
protection.
Material: Silicone
Part Number: Please request this
feature when making an enquiry.