



MOTORIZED VALVES FIELDBUS

MASTER STATION



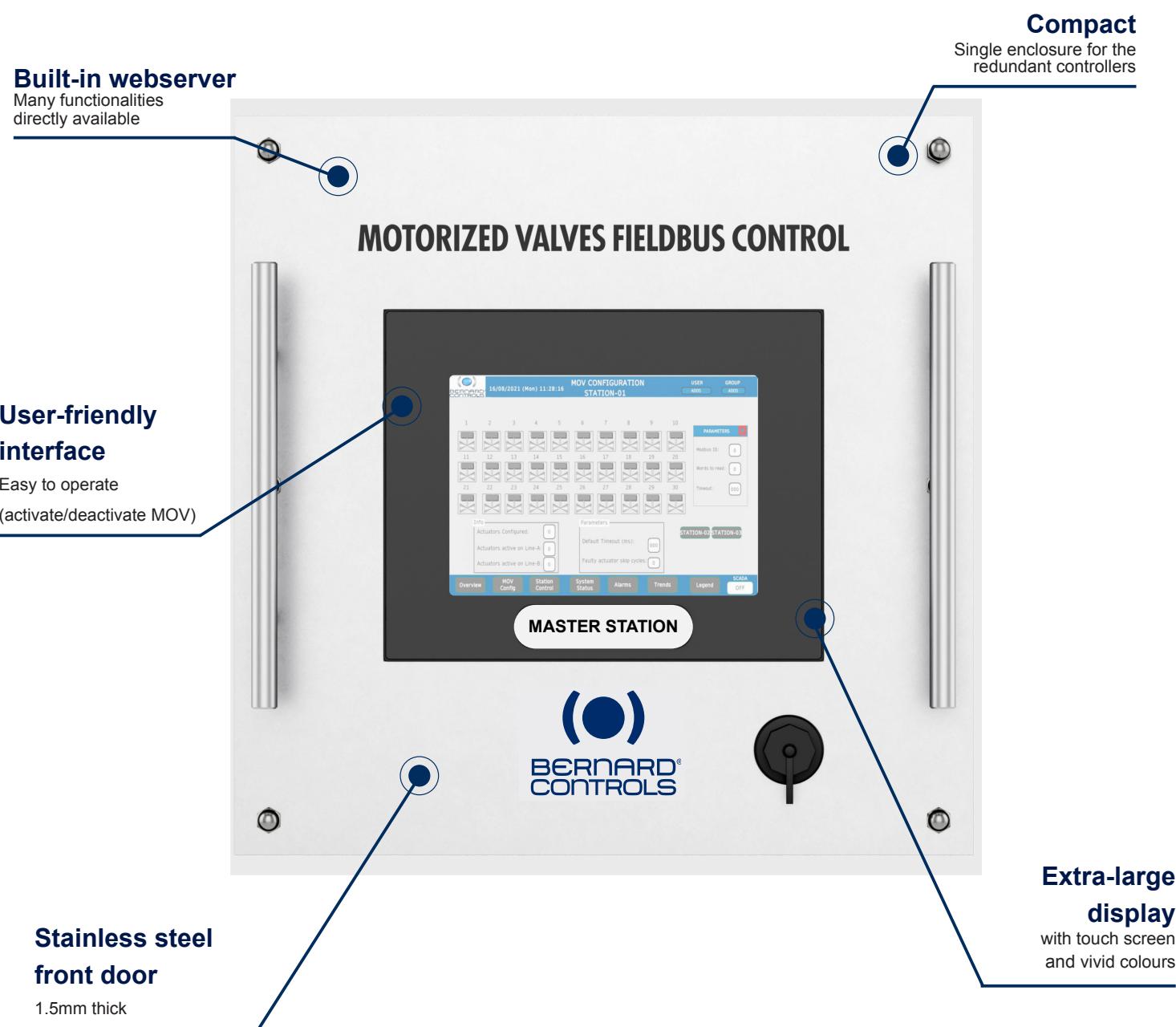
///////// Invest in Confidence ///////////

Fieldbus Solution
MASTER STATION

MASTER STATION

Powerful control interface
for large quantities of motor operated valves

Product overview



Product benefits

• Compact, Flexibility & Efficiency

- Flexible physical deployment: The Master Station is designed to meet customer requirements and is available in both rack and compact cabinet versions.
- Open protocols: Bernard Controls adopts open protocols such as Modbus RTU and Profibus DPV1 for fieldbus solutions, giving customers the flexibility to connect to a wide range of devices.
- Compatible with all Bernard Controls actuator ranges and with actuators from other manufacturers implementing these open protocols
- Efficient: The entire installation can be scanned in just one to five seconds (up to 247 actuators* via Modbus RTU or 240 via Profibus DPV1), while still allowing multiple commands to be sent simultaneously.
- Compact: A single enclosure houses the complete redundant system for streamlined installation.
- Seamless takeover: For redundant system, with real-time synchronization between primary and backup units, the system ensures uninterrupted operation through instant, seamless takeover if the primary unit fails.

• Solutions for every need

- Tailored to customer requirements, Bernard Controls' Master Station configurations integrate both open protocols Modbus RTU and Profibus DPV1, single or redundant system, for maximum compatibility.
- Master Station is designed not only for seamless integration with Bernard Controls actuators but is also fully compatible with actuators from other manufacturers.

• Simplicity

- The Master Station is a ready-to-use solution, delivered fully configured to simplify command and control of large numbers of motor-operated valves via fieldbus, helping you save time and resources.
- The extra-large, panel-mounted display features a touchscreen with vivid colors for easier interaction.

- The Master Station features a built-in web server—no external gateway or server required. All functionalities can be accessed remotely via a web client, including operating the MOVs, retrieving data and alarms, and logging information.

• Easy maintenance

- INTELLI+® actuators delivers extensive information to assist with system diagnostics and schedule preventative maintenance for MOVs. When paired with the Master Station, it provides continuous, easy monitoring of every actuator in your installation.
- MOVs can be easily removed from the network without interrupting operation, thanks to Bernard Controls' quick connector option or BU box (depending on the actuator model).
- The system provides comprehensive diagnostic information, including actuator alarms. Network diagnostics locate faults precisely, and built-in self-diagnostics detect cable, communication, and other system issues quickly.
- Built-in real-time clock ensures accurate monitoring of alarm events, system data, and faults.
- Equipped with 64 MB of memory for logging and archiving data and alarms.

• Advanced Monitoring and Diagnostics for Predictive Maintenance

- INTELLI+® integrated control provides advanced monitoring and diagnostics, including ESD, PST, programmable timers, customizable alarms, programmable signaling relays, and comprehensive operation monitoring.
- The Master Station supports NAMUR NE107 diagnostics, providing clear and standardized status information for each connected actuator. Using this feature, operators can instantly identify device conditions such as Failure, Maintenance Required, Out of Specification, or Function Check directly on

* Supports up to 247 actuators without external repeaters when using BC Logic V2, Intelli+ V3, or actuators with integrated repeaters; otherwise, up to 32 actuators

> MASTER STATION Modbus RTU

Advanced Features

Casing / Design

- Compact, single enclosure
- Bigger display: 10" panel-mounted HMI
- Less components
- Less cabling / single channel

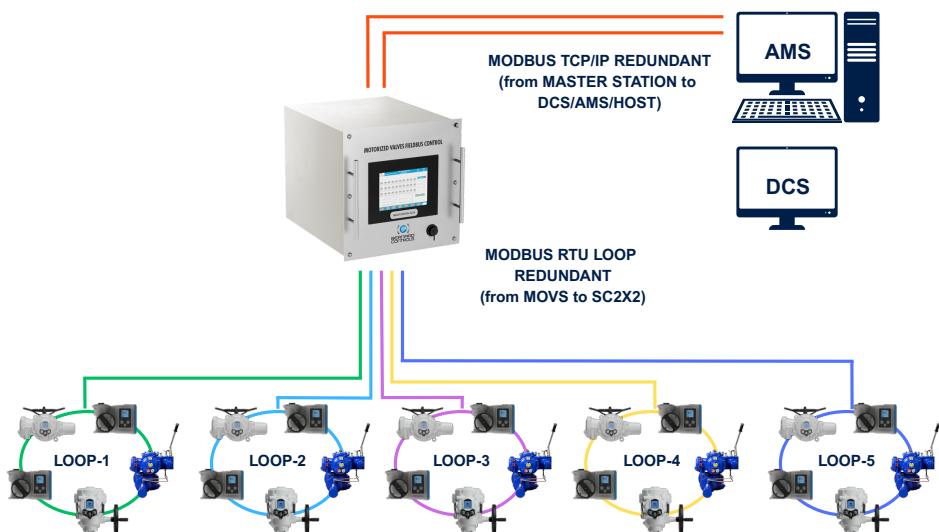
MS Functionalities

- Hot standby redundancy
- Built-in webserver from HMI
- Easy operation, fault finding, and maintenance

Multiple Independent networks mean easy identification of line fault, easy maintenance and troubleshooting.

Field / Topology Advantages

- Faster data rate than conventional systems
- Multiple independent redundant networks
- Non-proprietary, open protocol



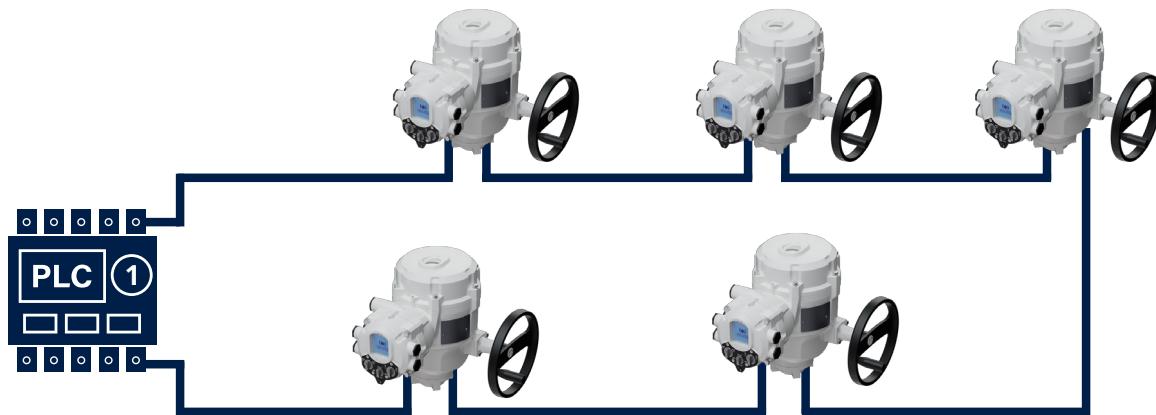
19" rackmountable

Up to 8 loops in standard with 247 MOVs allowing for max 1km between two actuators

>>> Wall mounted and Floor mounted are available on request

> MASTER STATION Modbus RTU

Single system Modbus RTU



+ Higher reliability:

- > If there is a cable break somewhere in the loop (the loop is cut), communication can still continue from the other direction.
- > The MS still reaches all devices because the signal has two possible paths which is reducing downtime from physical cable damage.

+ Easier troubleshooting:

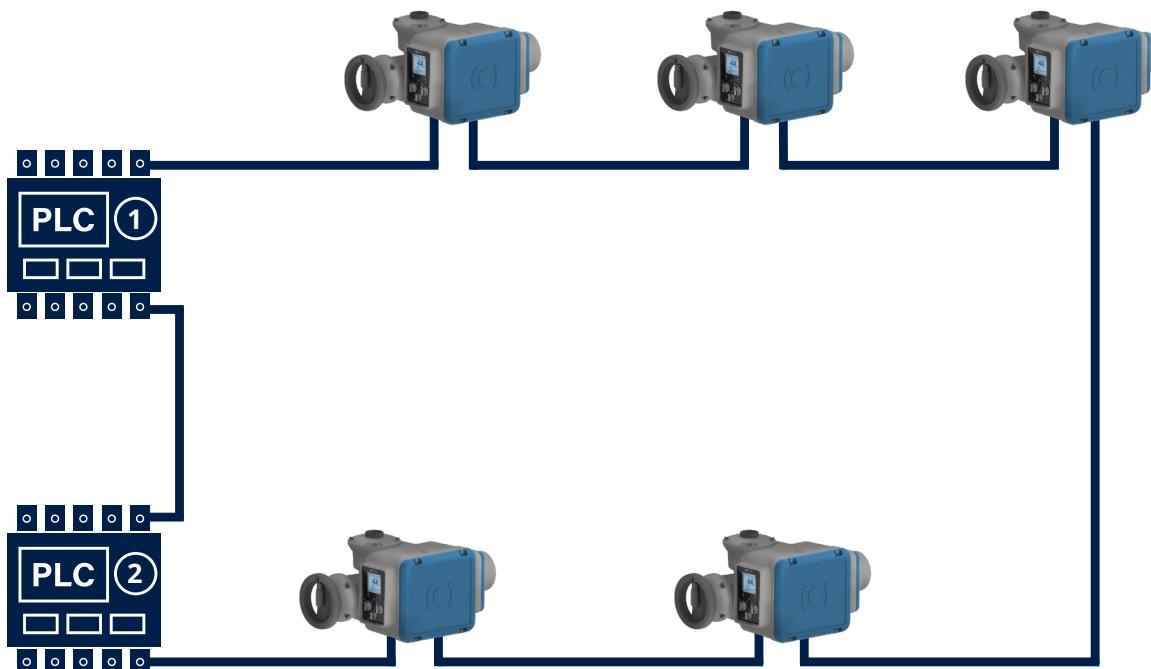
- > Loop systems with diagnostics allow quick identification of the fault location and isolate the faults faster compared to a line topology.

+ Flexibility for future expansion

- > Additional devices can be inserted into the loop without re-designing the whole network.

> MASTER STATION Modbus RTU

Redundant system Modbus RTU



⊕ Provides all the benefits of a standard Modbus RTU loop with the added benefit of redundant MS

- > Redundant MS ensures seamless takeover if primary controller fails
- > Protection against both cable and controller faults
- > System remains operational during controller removal
- > Devices stay accessible during loop section maintenance

> MASTER STATION Profibus DPV1

Advanced Features

Casing / Design

- Compact, single enclosure
- Bigger display: 10" panel-mounted HMI
- Less components
- Less cabling / single channel

MS Functionalities

- Hot standby redundancy
- Built-in webserver from HMI
- Easy operation, fault finding, and maintenance

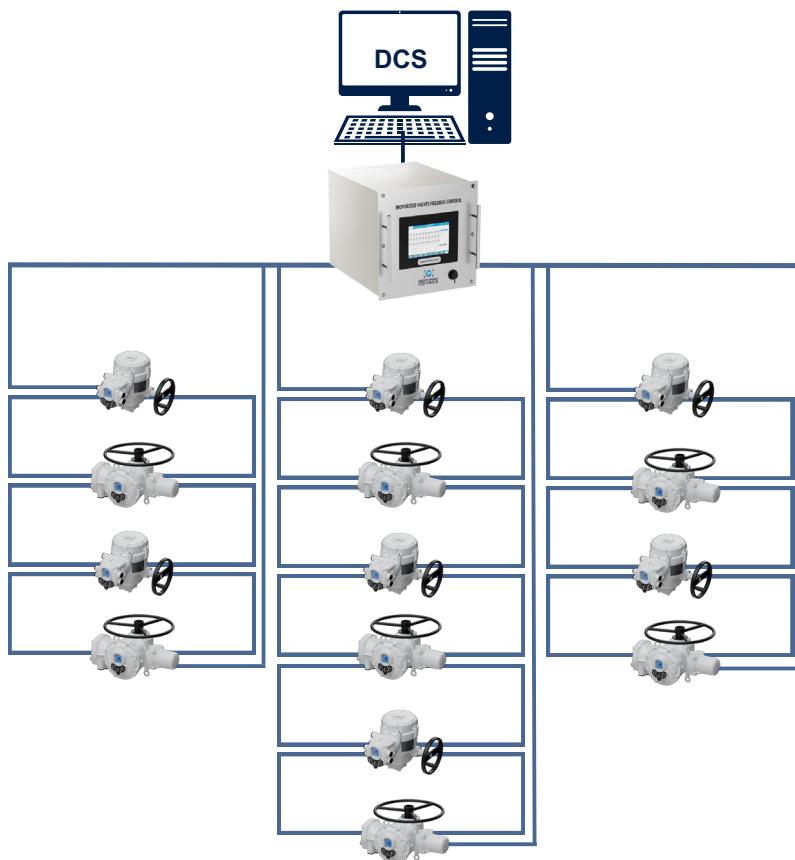
Field / Topology Advantages

- Faster data rate than conventional systems
- Multiple independent redundant networks
- Non-proprietary, open protocol

> Repeaters can also be used to get additional fieldbus lines if placed at PLC output. Each line is independent from the others and therefore a problem on a line does not affect the others.

> Each network / spur length can range up to 1200 m depending on transmission speed, i.e., 9.6kbps to 12 Mbps, 31 devices per channel.

> Master Station can be connected with Profihubs to enhance the number of communication lines and increase the reliability of the communication.



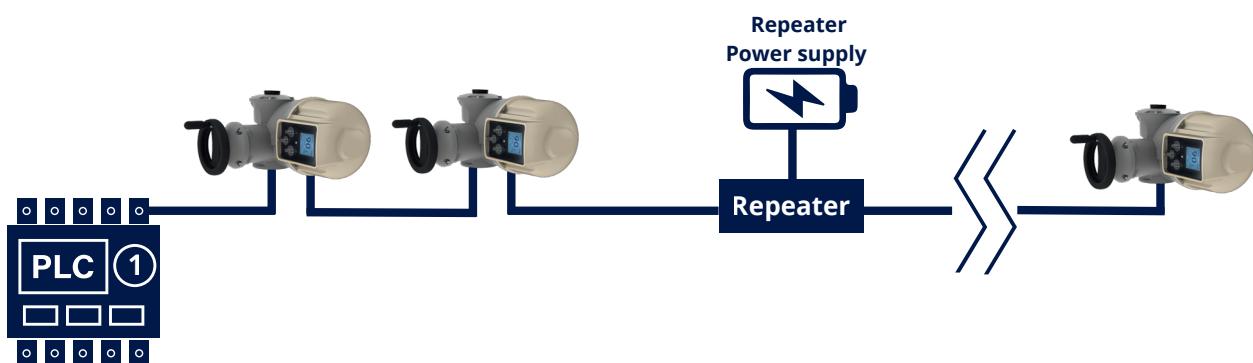
19" rackmountable

Up to 4 start of lines in standard

>>> Wall mounted and Floor mounted are available on request

> MASTER STATION Profibus DPV1

Single system Profibus DPV1 single line



+ Simplicity :

> Straightforward design, easy to plan and commission.

+ Lower cost :

> Requires only one continuous bus line, ideal for smaller plans or non-critical systems.

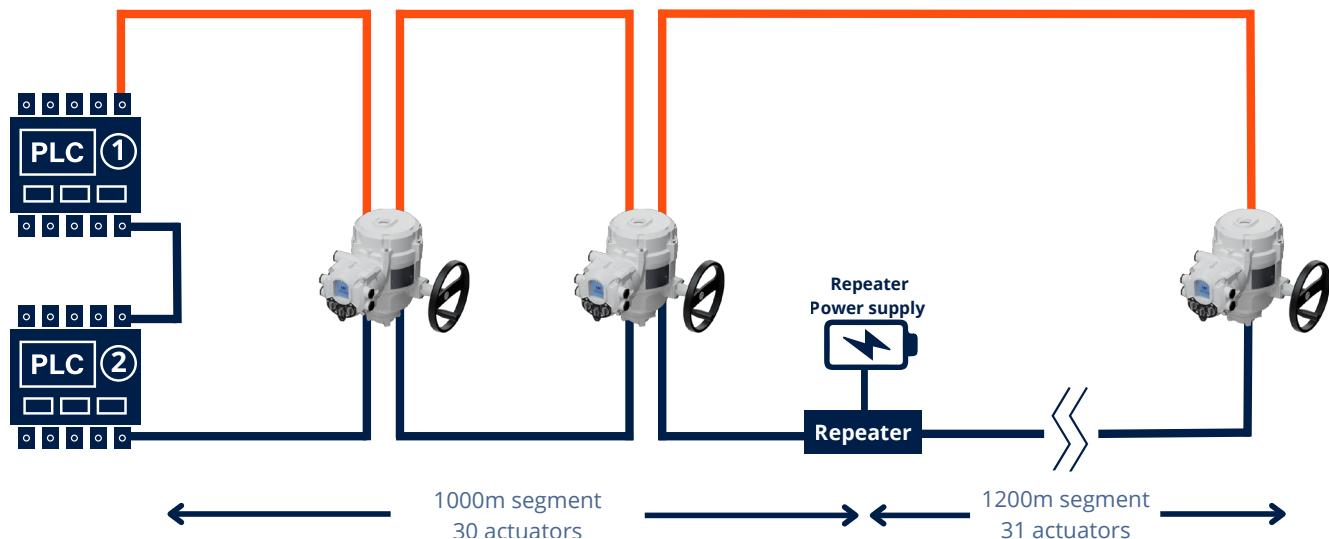
+ Ease of maintenance

> Single-line layout simplifies fault identification and reduces downtime during maintenance or component replacement

> MASTER STATION Profibus DPV1

Redundant system Profibus DPV1 redundant line

— Line 1
— Line 2



+ Maximum availability

> Profibus architecture designed with no single point of failure.

+ Uninterrupted operation:

> Ensures continuous performance in critical plants where downtime is extremely costly.

+ Seamless failover

> Controllers run in hot-standby; switchover is automatic and transparent to MOVs

+ Maintenance without downtime:

> One controller can be serviced while the other remains operational; one cable line can be disconnected while devices stay online through the redundant line.

> Standard products

MASTER STATION MODBUS RACK MOUNT SINGLE SYSTEM

Product name	Single / Redundant system	Fieldbus type	Physical topology	Number of loops
MS11001-STD	Single Controller	Modbus RTU	Modbus Loop	1
MS11002-STD				2
MS11003-STD				3
MS11004-STD				4
MS11005-STD				5
MS11006-STD				6
MS11007-STD				7
MS11008-STD				8

MASTER STATION MODBUS RACK MOUNT HOT STANDBY REDUNDANT SYSTEM

Product name	Single / Redundant system	Fieldbus type	Physical topology	Number of loops
MS12001-STD	Redundant Controller	Modbus RTU	Modbus Loop	1
MS12002-STD				2
MS12003-STD				3
MS12004-STD				4
MS12005-STD				5
MS12006-STD				6
MS12007-STD				7
MS12008-STD				8

> Standard products

MASTER STATION PROFIBUS RACK MOUNT SINGLE SYSTEM SINGLE LINE

Product name	Single / Redundant system	Fieldbus type	Physical topology	Number of start lines
MS11111-STD	Single Controller	Profibus DP	Profibus Single Line	1
MS11112-STD				2
MS11113-STD				3
MS11114-STD				4

MASTER STATION MODBUS RACK MOUNT HOT STAND-BY REDUNDANT SYSTEM REDUNDANT LINE

Product name	Single / Redundant system	Fieldbus type	Physical topology	Number of start lines
MS12121-STD	Redundant Controller	Profibus DP	Profibus Redundant Line	1
MS12122-STD				2
MS12123-STD				3
MS12124-STD				4

> Product specifications

FEATURES	MASTER STATION MODBUS RTU	MASTER STATION PROFIBUS DPV1
COMMUNICATION PROTOCOL	Between Master Station & Host/Control System: Modbus RTU (RS-485) or Modbus TCP/IP (RJ-45 Ethernet)	
	Between Master Station & actuators: Modbus RTU (RS-485) - open standard protocol	Between Master Station & actuators: Profibus DPV1 (RS-485) - open standard protocol
COMMUNICATION TYPOLOGY	Loop (standard) Single or Redundant Line (On request)	Single or Redundant Line (standard)
REDUNDANCY SYSTEM TYPE	Hot standby redundancy system	
SUPPORTED ACTUATORS	Bernard Controls with Logic V2, Intelli+ V2, Intelli+ V3 option. Compatible with third party actuators integrating Modbus RTU or Profibus DPV0/DPV1 open protocols.	
MAXIMUM NUMBER OF DEVICES	Up to 247	Up to 240
EXTERNAL REPEATER	Included in Bernard Controls actuators with Modbus Loop option (built-in repeater) Optional with third-party compatible actuators	Not provided by Bernard Controls, the number of external repeaters are based on the Profibus standard recommendation (32 devices per segment, repeaters are to be considered as devices in the line)
MAXIMUM NUMBER OF LOOPS/SEGMENTS	Up to 8 loops as a standard Up to 20 loops on request	Up to 4 starts of lines as a standard. Up to 20 starts of lines on request.
SUPPORTED BAUD RATES	From 2400 bps to 115.2 kbps	
MAXIMUM DISTANCE	Up to 20 km (and more)	
COMMUNICATION CYCLE TIME	- For 5 km and 60 actuators: up to 7 seconds - For 10 km and 120 actuators: up to 14 seconds	- For 5 km and 60 actuators: 1.75 seconds - For 10 km and 120 actuators: 3 seconds
STANDARD DIMENSION (W x H x D)	Rack mount: 500mm x 465mm x 400mm Other dimensions are customizable on request.	
HOUSING	Single housing for both Single and Redundant System 1.5mm Mild steel or Stainless steel SS316L (depending on the enclosure type)	
HMI PANEL SIZE	10" (standard) 7" and 15" (on request)	
HMI LOCAL PANEL CAPABILITIES	- Controllers & modules diagnostics - Power & utilities real-time status - IP address / gateway configurable - Actuator status (alarms, feedback, diagnostics, etc) - Remote control actuators (with configurable auxiliaries for BC actuators)	

> Product specifications

FEATURES	MASTER STATION MODBUS RTU	MASTER STATION PROFIBUS DPV1
PAINT	C4 as standard (others on request) RAL7035 as standard (others on request)	
WEIGHT	< 30 kg for all standard configurations	
POWER SUPPLY	Single phase 110 - 240 VAC (+-10%) 50Hz / 60 Hz (Others on request)	
POWER CONSUMPTION	40 Watt maximum for each controller on redundant system	
AMBIENT TEMPERATURE RANGE	From 0°C to +60°C / From 32°F to +140°F	
WEB SERVER SUPPORT	Supported as standard via Virtual Network Computing (VNC) Client	
NTP TIME SERVER CONNECTION	Available on request	
DATALOGGING MEMORY SIZE CAPABILITY	64MB built-in program memory 5GB memory expansion	64MB built-in program memory
OPTIONAL FEATURES (ON REQUEST)	<ul style="list-style-type: none"> - Lightning protection (outside the rack) - Air flow switch - Door switch with led inside panel - Status LED (power supply fault). - Access to controllers/HMI for backup/programming from outside the panel. - USB to export reports. - History log and Alarm/Events. - I/O module for power supply and utilities Alarms. - (Possible) Cabinet alarms: <ul style="list-style-type: none"> - Fan failure. - Earth leakage detection - Power Fault - Temperature alarm. - Door open alarm - Lockable hinged doors. - Hot Redundant controllers with G3 conformal coating controller with certificate. - Two Separate power feeder from UPS and Non-UPS. - Power supply surge protection. - Power socket. - Integral fuse protection. - Over temperature protection (Thermostat with adjustable set point). 	

› Product selection

MS 1 W X Y Z-STD

ZZ: Number of loops / Starts of Line

MODBUS: 1-8

PROFIBUS: 1-4

Y: Physical Topology

1. Loop
2. Single Line
3. Redundant

X: Fieldbus type

1. Modbus RTU
2. Profibus DPV1

W: Single / Redundant system

1. Single controller
2. Redundant controller

1 : Rack mounted

BERNARD CONTROLS GROUP

CORPORATE HEADQUARTERS

4 rue d'Arsonval - CS 70091 / 95505 Gonesse CEDEX France / Tel. : +33 (0)1 34 07 71 00 / Fax : +33 (0)1 34 07 71 01 / mail@bernardcontrols.com

CONTACT BY OPERATING AREAS

>AMERICAS

NORTH AMERICA

BERNARD CONTROLS UNITED STATES
HOUSTON
inquiry.usa@bernardcontrols.com
Tel. +1 281 578 66 66

SOUTH AMERICA

BERNARD CONTROLS LATIN AMERICA
inquiry.southamerica@bernardcontrols.com
Tel. +1 281 578 66 66

>ASIA

CHINA

BERNARD CONTROLS CHINA &
BERNARD CONTROLS CHINA NUCLEAR
BEIJING
inquiry.china@bernardcontrols.com
Tel. +86 (0) 10 6789 2861

KOREA

BERNARD CONTROLS KOREA
SEOUL
inquiry.korea@bernardcontrols.com
Tel. +82 (0) 2 2183 6226

SINGAPORE

BERNARD CONTROLS SINGAPORE
SINGAPORE
inquiry.singapore@bernardcontrols.com
Tel. +65 65 654 227

>EUROPE

BELGIUM

BERNARD CONTROLS BENELUX
NIVELLES (BRUSSELS)
inquiry.belgium@bernardcontrols.com
inquiry.holland@bernardcontrols.com
Tel. +32 (0)2 343 41 22

FRANCE

BERNARD CONTROLS FRANCE &
BERNARD CONTROLS NUCLEAR FRANCE
GONESSE (PARIS)
inquiry.france@bernardcontrols.com
Tel. +33 (0)1 34 07 71 00

GERMANY

BERNARD CONTROLS DEUFRA
TROISDORF (KÖLN)
inquiry.germany@bernardcontrols.com
Tel. +49 2241 9834 0

ITALY

BERNARD CONTROLS ITALIA
RHO (MILANO)
inquiry.italy@bernardcontrols.com
Tel. +39 02 931 85 233

SPAIN

BERNARD CONTROLS SPAIN
MADRID
inquiry.spain@bernardcontrols.com
Tel. +34 91 30 41 139

UNITED KINGDOM

BERNARD CONTROLS UNITED KINGDOM
inquiry.uk@bernardcontrols.com
Tel. +44 (0)7435 266310

>INDIA, MIDDLE EAST & AFRICA

AFRICA

BERNARD CONTROLS AFRICA
ABIDJAN - IVORY COAST
inquiry.africa@bernardcontrols.com
Tel. + 225 21 34 07 82

INDIA

BERNARD CONTROLS INDIA
inquiry.india@bernardcontrols.com
Tel. +971 4 880 0660

MIDDLE-EAST

BERNARD CONTROLS MIDDLE-EAST
DUBAI - U.A.E.
inquiry.middleeast@bernardcontrols.com
Tel. +971 4 880 0660

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