



Electronic Equipment for Control

DS100 / DS200

Fieldbus 2 wires control

FIELDBUS DS100 / DS200 : WIRING ECONOMY AND INSTALLATION FACILITY.

A remote control of actuators or any type of equipment based on a two-wire control cable system. The fieldbus DS100 / DS200 is the overall solution which allows a centralised control and monitoring of multiple actuators.

The DS100 / DS200 fieldbus was developed with the idea that a data transmission to a field needs a simple and sturdy system which is reliable. Functional and economic, it ensures work safety ; the DS100 / DS200 is the most suitable solution and the most economic.

The control station of the DS100 / DS200 fieldbus acts as an interface for systems of upper level : PLC, control rooms, maintenance positions ; it also monitors the connection to actuators. Each actuator is equipped with a bus interface module.

LOW COST INSTALLATIONS

Reduction of the number of starting lines : one per actuator in conventional installations ; one for a group of actuators with the fieldbus system.

Results in important reduced cable installation costs on site.

DS100 / DS200 - FIELDBUS FLEXIBILITY

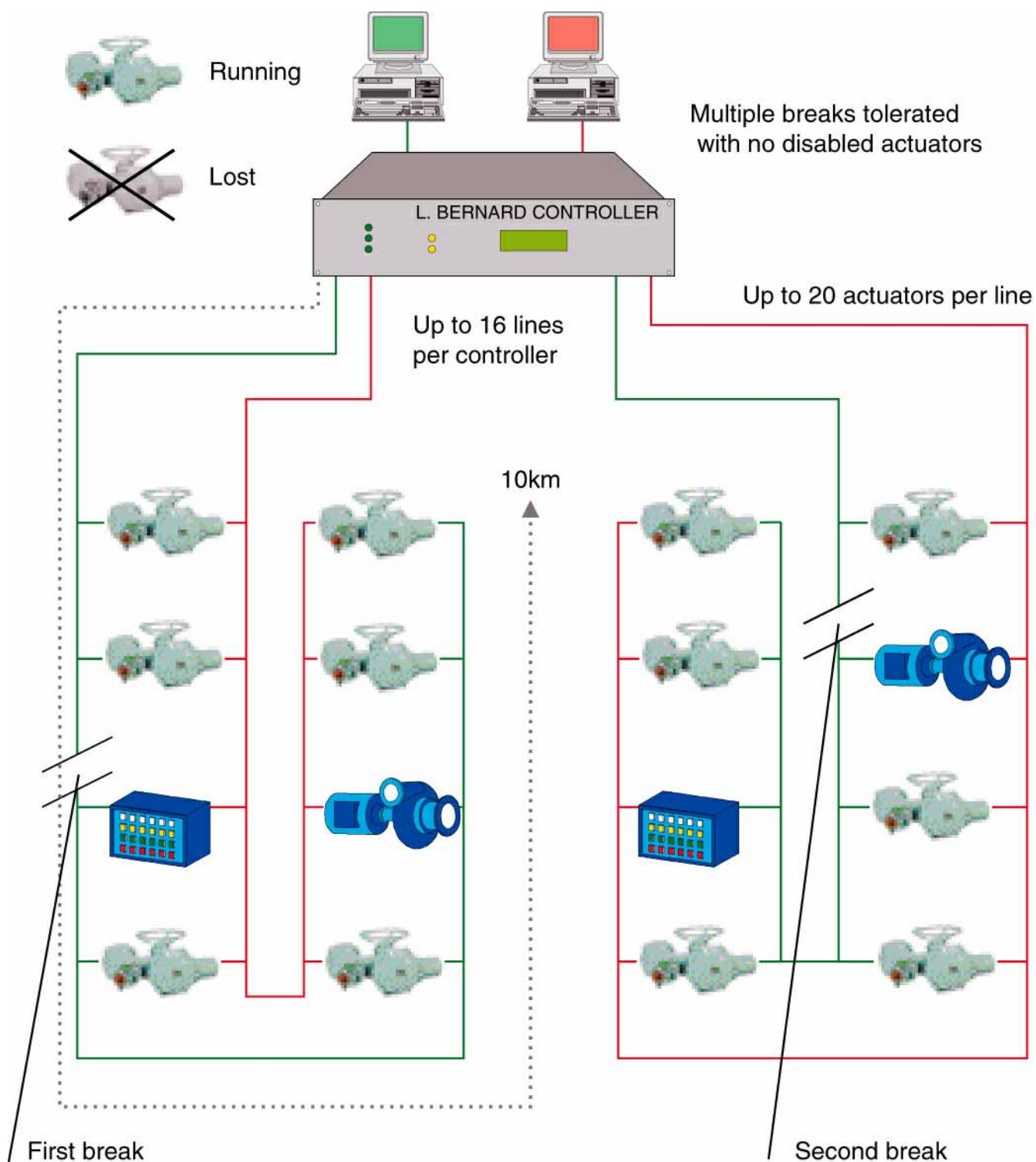
The two-wire connection on actuators is simple and fast.

Locally, the system may be extended by connecting a supplementary unit on the line. Easy installation and low cost connection.

Long lengths of lines is possible without loss of response time (up to 10 km from starting line).

TEST AND SERVICING FACILITIES

Small pocket sized controllers make it possible to either monitor the commands which circulate in the bus system or to fit a field unit on an actuator. Signs are alphanumeric without necessary programming and may be used by non specialists.

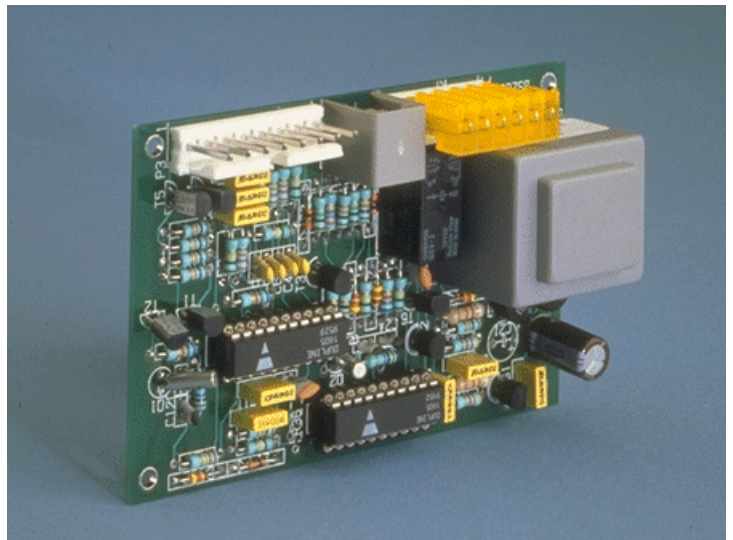


VARIOUS POSSIBLE CONNECTIONS

A COMPACT INTERFACE FOR ACTUATORS

Each actuator is equipped with a bus interface. This compact sized module transmits open, close, commands as well as signalling valve open and valve closed. The motorised valve is permanently under control ; any eventual malfunctioning is immediately reported.

The bus interface module takes up very small space and can be fitted in all of our integral version actuators.



MULTIPLE CONNECTIONS

These modules are easy to accommodate so as to create personalised connections. All sensors or motors may be connected : pressostat, pump controls, actuators already installed on site, etc..

The field modules are widely diffused and may be acquired from an independent source other than L. BERNARD thus the bus system is an « OPEN » fieldbus easily available.

Examples of modules directly connected to fieldbus :

ON-OFF duty module, 1 to 8 inputs (potential-free contacts)

ON-OFF duty module, 1 to 8 outputs per relay

Analogue module 4-20mA input

Analogue module 4-20mA output

Control boxes with pushbuttons and signalling devices may be integrated and connected anywhere on the bus so as to pilot a unit belonging to the same bus loop.

A MEDIA PROTOCOL FOR DIALOGUE WITH PLC

Communication between the controller DS100/DS200 and the PLC of higher level are assured through RS422 or RS485 links. The media protocol is MODBUS with a transmission speed of 9600 baud. Selection of address on the controller by miniswitches offers the possibility of connecting various controllers on the same media line (multidrop).

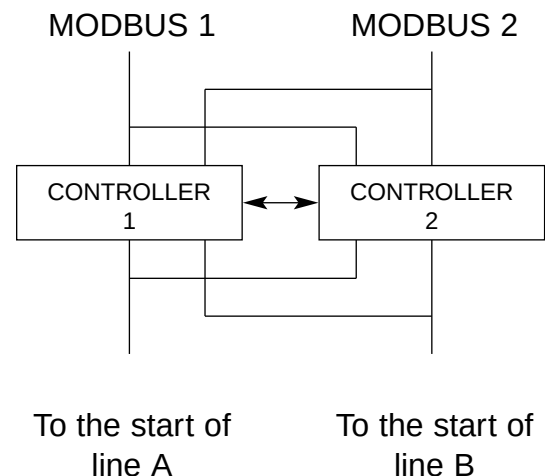
Emergency shut down (optional) :

By opening an external switch, a choice of motorized valves is driven in fail safe position. Each actuator can be configured to open or close the valve.

OPTIMUM SECURITY WITH REDUNDANT FIELDBUS

Owing to its construction technics, the fieldbus DS100 is liable and robust.

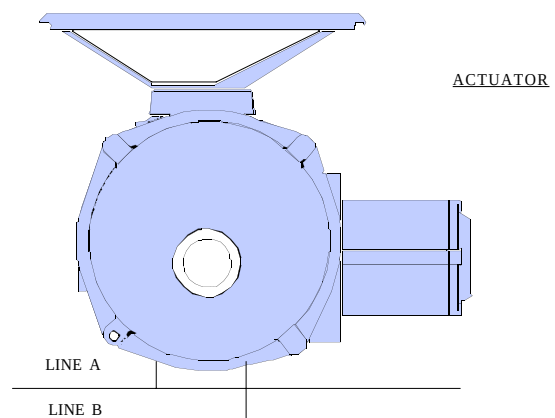
However, to guaranty a continuous functioning of the system, even inspite of a line break, the use of a double command technic is the most efficient. The controller DS200 is the solution and works in the following manner : All circuits - the bus controller, the starting line fiber optic connections and each bus line - are doubled.



The bus controllers may receive one or two MODBUS protocols. Each controller is separate and has a permanently updated data base. Mutual surveillance of each controller is achieved through optocoupled connections.

Each actuator receives information either from line A or line B.

The surveillance of each bus line A or B is permanent and in case of malfunctioning, actuators are automatically commuted to the operational line. The malfunctioning is immediately reported on the front side of the principal rack and unto the PLC.



RAPID PERFORMANCE

The processing system's speed allows for high safety while monitoring and controlling all information statements treated in a particularly short lapse of time.

The fieldbus DS100 / DS200 response lapse time is independent of the length of the loop. The time lapse depends only on the number of bus lines connected to single or redundant control type.

The time lapse specified in the chart corresponds to the number of lines and takes into consideration the whole of the system from the time an order is sent through the MODBUS protocol to the actuator's actioning itself.

For example, an installation equipped with a controller DS200 including 100 actuators installed on 5 fieldbus redundant loops over a distance up to 10 Km, will require 1,2 seconds for updating of all data.

DS100 / DS200	Scan speed (sec)
DS100 System	
1st single line	0,4
Per supplementary line	0,1
DS200 System	
1st redundant line	0,4
Per supplementary line	0,15



TECHNICAL DATA

	Type DS100	Type DS200
2 Standards	Single bus	Redundant bus
Protocol	1 MODBUS	2 MODBUS
Line type	RS422 or RS485	RS422 or RS485
Supply	230 v - 50 HZ 115 v - 60 HZ	230 v - 50 HZ 115 v - 60 HZ
Consumption per rack	50 VA	50 VA
System capacity		
Max. number of lines	16	16
Number of actuators per line	21	21
Max. number of actuators	336	336
Master control station		
Case dimensions	rack 19" - 3U 483 x 132 mm Depth : 375 mm	rack 19" - 3U 483 x 132 mm Depth : 375 mm
Number of lines	1 to 2	1
Secondary control station		
Case dimensions	rack 19" - 4U 483 x 177 mm Depth : 375 mm	rack 19" - 4U 483 x 177 mm Depth : 375 mm
Number of lines	1 to 8	1 to 4
<u>Backside panel connections</u>		
<i>Control station for principal bus</i>		
Supply male base according IEC 320	1	1
ON-OFF switch and fuse 1A	1	1
Connector SUB D 9 for connection to MODBUS	1	2
Fiber optic connectors for connections to secondary rack	2	4
Bus output terminal	3 to 6	6
<i>Control station for secondary bus</i>		
Supply male base according IEC 320	1	1
Fuse 1A	1	1
Bus output terminal	3 to 24	6 to 24
Fiber optic connectors for connections to principal rack	2	4
Operating temperature	0 - 50°C	0 - 50°C
Storage temperature	- 20° + 60°C	- 20° + 60°C
Humidity without condensation	20 % to 80 %	20 % to 80 %
Fieldbus cable : twisted pair		
Section for 6 km	2 x 1 mm ²	2 x 1 mm ² + 2 x 1 mm ²
Max. capacity	140 nF/km	140 nF/km
Section for 10 km	2 x 1,5 mm ²	2 x 1,5 mm ² + 2 x 1,5 mm ²
Max. capacity	60nF/km	60nF/km

At Your Service Over The World

AUSTRALIA

j.outram@peglerbeacon.com.au

PEGLER BEACON AUSTRALIA Pty Ltd
25 South Street Rydalmere
NSW 2116 AUSTRALIA
Tel : + 61 2 98 41 23 45
Fax : + 61 2 96 84 64 39

MALAYSIA

tcmeng@pc.jaring.my

ACTUATION & CONTROLS ENGINEER
7, Jalan Bayu 2/5 - Taman Perindustrian.
Tampol Jaya - 81200 JOHOR BAHRU
Tel : +60 7 23 50 277 / 23 50 281
Fax : +60 7 23 50 280 / 23 50 285

AUSTRIA

hammermueller@IPU.co.at

IPU ING PAUL UNGER
Hardtmuthgasse 53
1100 WIEN
Tel : +43 1 602 41 49
Fax : +43 1 603 29 43

MIDDLE-EAST

bernact@emirates.net.ae

BERNARD MIDDLE-EAST
Villa N°5-P.O. box 34079, 39b Street
Al Jaffliya Compound, Al Jaffliya
DUBAI - U.A.E.
Tel : +971 4 39 80 726
Fax : +971 4 39 80 726

BELGIUM

christian.baert@bernard-benelux.com

BERNARD BENELUX SA
Rue Saint-Denis, 135
1190 BRUXELLES
Tel : +32 2 34 34 122
Fax : +32 2 34 72 843

THE NETHERLANDS

bernard.benelux@12move.nl

BERNARD BENELUX NV
Sophialaan 5
3542 AR UTRECHT
Tel : +31 30 24 14 700
Fax : +31 30 24 13 949

BRAZIL

jcn@jcn.com.br

JCN
Av. Mutinga, 3188 - Pirituba
CEP 05110-000 Sao Paulo SP
Tel : +55 11 39 02 26 00
Fax : +55 11 39 02 40 18

NORWAY

post@fagerberg.no
www.fagerberg.no

FAGERBERG NORGE a.s
P.O box 522 - HØYDEN
1522 MOSS
Tel : +47 69 26 48 60
Fax : +47 69 26 73 33

CHINA

office@tadella.com
www.tadella.com

TADELLA LIMITED
B701, Hong-an mansion,
188 Chanoel Street, Dongcheng District,
BEIJING - CHINE 100010
Tel : +86 10 6517 0601 / 0602
Fax : +86 10 6517 0603

POLAND

matzanke@pol.pl

MARCO
Ul. Ksiezycowa 1
01-934 WARSZAWA
Tel : +48 22 864 55 43
Fax : +48 22 864 94 22

CZECH REPUBLIC

brno@fluidbohemia.cz

FLUIDTECHNIK BOHEMIA s.r.o.
Olomoucka 87
627 00 Brno
Tel : +420 548 213 233-5
Fax : +420 548 213 238

PORTUGAL

import.export@pinhol.com.pt

PINHOL, GOMES & GOMES LDA.
Caminho dos Confeiteiros, 41 - 41 A
Portela de Carnaxide
2790-051 Carnaxide
Tél : +351 21 425 68 50
Fax : +351 21 425 68 59

DENMARK

jh@armatec.dk
www.armatec.dk

ARMATEC A/S
Mjølnersvej 4-8
DK 2600 Glostrup
Tel : +45 46 96 00 00
Fax : +45 46 96 00 01

SINGAPORE

acesin@singnet.com.sg

ACTUATION & CONTROLS ENG. (ASIA)
Block 2 Bukit Batok Street 24
N°07-19 Skytech
SINGAPOUR 659480
Tel : +65 65 654 227
Fax : +65 65 650 224

FINLAND

info@soffco.fi
www.soffco.fi

OY SOFFCO AB
Karapellontie 11
FIN-02610 ESPOO
Tel : +358 9 54 04 620
Fax : +358 9 54 04 6250

SPAIN

bernardservo@wanadoo.es

BERNARD SERVOMOTORES
C/ Valentin Beato, 11 - 1°D
28037 MADRID
Tel : +34 91 30 41 139
Fax : +34 91 32 73 442

GERMANY

bernard@deufra.de
www.deufra.de

DEUFRA GMBH
Kasinostrasse 22
53840 TROISDORF
Tel : +49 22 41 98 340
Fax : +49 22 41 98 34 44

SWEDEN

christer.noren@fagerberg.se
www.fagerberg.se

G. FAGERBERG AB
Postbox 12105
40241 GOETEBORG
Tel : +46 31 69 37 00
Fax : +46 31 69 38 00

GREECE

yanpap@acci.gr

PI&MS
3 Pendelis Str. Pallini
153 51 Athènes - Hellas
Tel : +30 2 10 66 69 129
Fax : +30 2 10 66 69 130

SWITZERLAND

info@matokem.com
www.matokem.com

MATOKEM AG
Binningerstrasse 86
CH - 4123 ALLSCHWIL
Tel : +41 61 483 15 40
Fax : +41 61 483 15 42

HUNGARY

apagy@elender.hu

APAGYI TRADEIMPEX KFT
1145 Budapest
Stefania u. 63/c.
Tel : +36 1 223 1958
Fax : +36 1 273 0680

THAILAND

pinvidic@ksc7.th.com

BERNARD SOUTH-EAST ASIA
Liaison office Thailand
Bangkok 10110 Thailand
Tel : +66 1 814 57 30
Fax : +66 2 255 26 38

INDIA

mail@ilpgt.com

INSTRUMENTATION LTD
Kanjikode West 678623
PALGHAT-KERALA
Tel : +91 491 56 61 27 / 56 61 28
Fax : +91 491 56 61 35 / 56 62 40

TURKEY

cimtek@isiklar.com.tr

CIMTEK A.S.
Gencilik Caddesi N°9 Isiklar Binası
TANDOĞAN
06570 - ANKARA
Tel : +90 312 232 67 00
Fax : +90 312 232 53 64

ITALY

derman_vanni@pechiney.com

PECHINEY ITALIA S.P.A.
Viale F. Restelli 5
20124 MILAN
Tel : +39 02 66 89 31
Fax : +39 02 60 81 513

UNITED ARABS EMIRATES

emhold@emirates.net.ae

EMIRATES HOLDINGS
P.O. Box 984
ABU DHABI
Tel : +97 12 644 73 73
Fax : +97 12 644 40 66

JAPAN

yoshiro.shimizu@pechiney.com

PECHINEY JAPAN
29 Fl. Shinjuku Mitsui Bldg
2-1-1 Nishi Shinjuku, Shinjuku-ku, Tokyo
163-0429 JAPON
Tel : +81 3 33 49 66 39
Fax : +81 3 33 49 67 50

UNITED-KINGDOM

enquiries@zoedale.co.uk
www.zoedale.co.uk

ZOEDALE Plc
Stannard Way / Priory Business Park
BEDFORD MK44 3WG
Tel : +44 12 34 83 28 32
Fax : +44 12 34 83 28 00

KOREA (Rep of)

bernard@humanitc.com
www.humanitc.com

HUMAN INFRASTRUCTURE TECH.
3 Fl. SungWon Building
813-1 Bangbae-Dong, Seocho-Gu
SEOUL 137-832
Tel : +82 2 532 2604
Fax : +82 2 3478 7089

USA

bernard.sales@bernardcontrols.com
www.bernardcontrols.com

BERNARD CONTROLS Inc
15740 Park Row, Suite 100
HOUSTON - TEXAS 77084
Tel : +1 281 578 66 66
Fax : +1 281 578 27 97

L. BERNARD

4 rue d'arsonval - BP 91 - 95505 GONESSE. France
Tel. +33.1.34.07.71.00 - Fax +33.1.34.07.71.01
E-mail : mail@bernard-actuators.com - Internet : <http://www.bernard-actuators.com>



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