

NEW
STATE OF THE ART
AMPLIFIER MODUL

Neuffener Strasse 29
D-72636 Frickenhausen
Tel: (+49) 7025 - 911 007
Fax: (+49) 7025 - 911 008
Email: info@h-c-s-gmbh.de
www.h-c-s-gmbh.de



Universal Digital Module Amplifier for DIN Mounting Rail (Top-Hat Rail)

DMA-2

- ◆ **Amplifier module for 1 or 2 proportional valves without feedback**
- ◆ **Both output stages individually controllable by means of two independent analogue inputs**
- ◆ **Adaptation possible to all common proportional valves of all kinds of manufacturers**
- ◆ **Full digital PI current controller for both output stages**
- ◆ **Universal usage for hydraulic, pneumatic and other applications**
- ◆ **Analogue input with high resolution and accuracy**
- ◆ **Easy usage and operation by means of WINDOWS- or terminal program**
- ◆ **Extreme short cycle time for best dynamic behaviour**



1 Applications and usage

The amplifier modules DMA-2 are used for:

Control of proportional valves of all kinds (only without feedback): propotional directional (direct and pilot operated), flow control, pressure limiting and pressure reduction valves, cartridge and servo valves (with torque motor on request)

- Flash-EPROM technology for easy software update or modifications from PC via RS232 interface
- Variable settings for all kinds of solenoid systems

2 Features

- Fully digitized amplifier modul

- All adjustments and parameter settings possible by means of PC. No on board potentiometers on the modul (user friendly adjustment)

- Flexible and reliable system, use of a modern 16 bit CPU with high power reserve

- CAN-Interface "On Board". Ask us about the possibilities.

- Flexibility due to possible software and hardware extensions and options for customer specific requirements

- Change of selected parameters "on-the-fly" without interference of function; monitoring of display values via PC

- High resolution and accuracy for analogue set point signal due to a 12-Bit A/D-converter

- Two output stages can be used either for one proportional valve with two solenoids or for two valves with one solenoid each due to two independant analogue inputs

- All kinds of customer specific adaptations of hardware and software for specific applications possible. Just ask us and we provide the right solution

- Fast and easy mounting, installation and exchange due to top-hat rail (DIN mounting rail) in accordance with EN50022 and connectors with screw terminals system COMBICON

3 Technical data

Feature	Range, characteristics
Supply voltage	Unom = 24 V (12 ... 33V) DC, residual ripple < 10 % (max. 50 VA power draw)
Solenoid system selection	0,8 A; 1,1 A; 1,3 A; 1,6 A; 2,4 A; 2,7 A and 3,5 A (intermediate values adjustable)
Control voltage for digital inputs	24 V +/- 10 %, residual ripple < 10 %, current draw per input < 20 mA
Temperature ranges	Ambient: 0° C ...50° C (other on request) storage- 20° C ... 60° C
Connection	16 pole (4 x 4); screw terminals for max 1,5 mm ²
Type of connector	Phoenix Combicon connector with screw terminals, type: MSTBT 2,5/ 4-ST
EMC	In accordance with the applicable standards (CE)
Analogue set value (input)	Version DMA-22-01: 1 differential input with 12 bit resolution, 0 ... +/- 10 V / 0 ... 20 mA / 4 ... 20 mA Version DMA-22-02: 2 differential inputs with 12 bit resolution, 0 ... +/- 10 V / 0 ... 20 mA / 4 ... 20 mA
Digital inputs	Version DMA-22-01: 5 inputs, opto-coupled (S1.01, S1.02, S1.03, S1.04, ENABLE) Version DMA-22-02: 3 inputs, opto-coupled (S1.01, S2.01, ENABLE)
Solenoid current (output)	2 output stages, each for up to max. 3,5 A (with over-energ. and quick de-energization); max. combined current = 4,5 A
Digital outputs	1 output opto-coupled, voltage level 0 V / 24 V, 10 mA (ERROR)
Interfaces	RS232, 6-pole female RJ45/6 connector; optional CAN interface (on request)
Status signals	3 status LED's at front (Run/OK; Enable, Error)
PWM frequency, cycle times	Approx. 22 kHz PWM frequency, cycle time 0,085 msec
Mounting/housing	Mounting: top-hat rail (mounting rail) in accord. with EN50022 with inetgrated PE contact Housing configuration: ventilated (IP20) Material: PA 66 - FR; flammability in accordance with UL94V0; Dimensions approx.: (w x h x d) 22,5 x 100 x 114 mm

4 Block diagram hardware

Diagram for version: DMA-22-01-xxx-S0; Operation Mode: 01

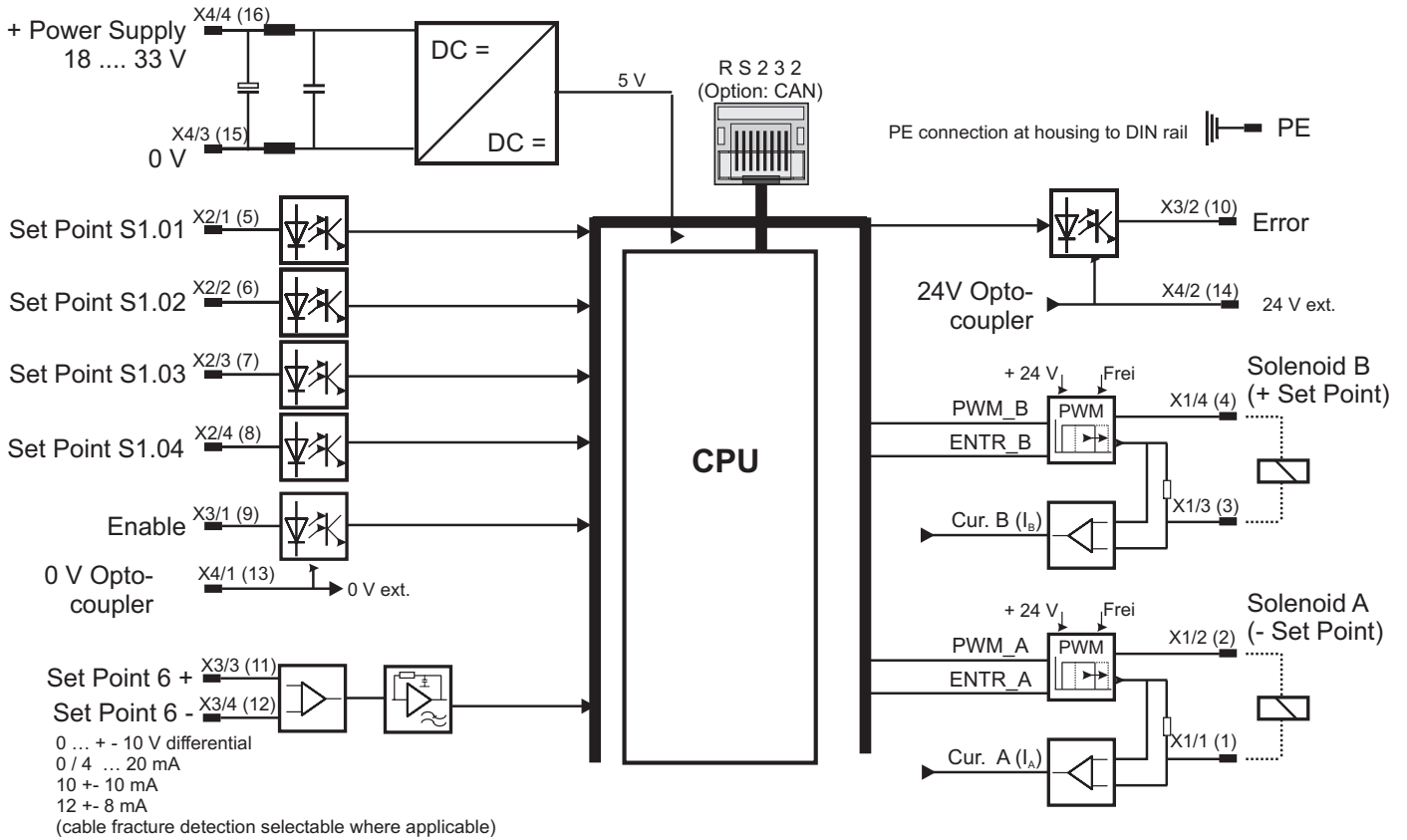
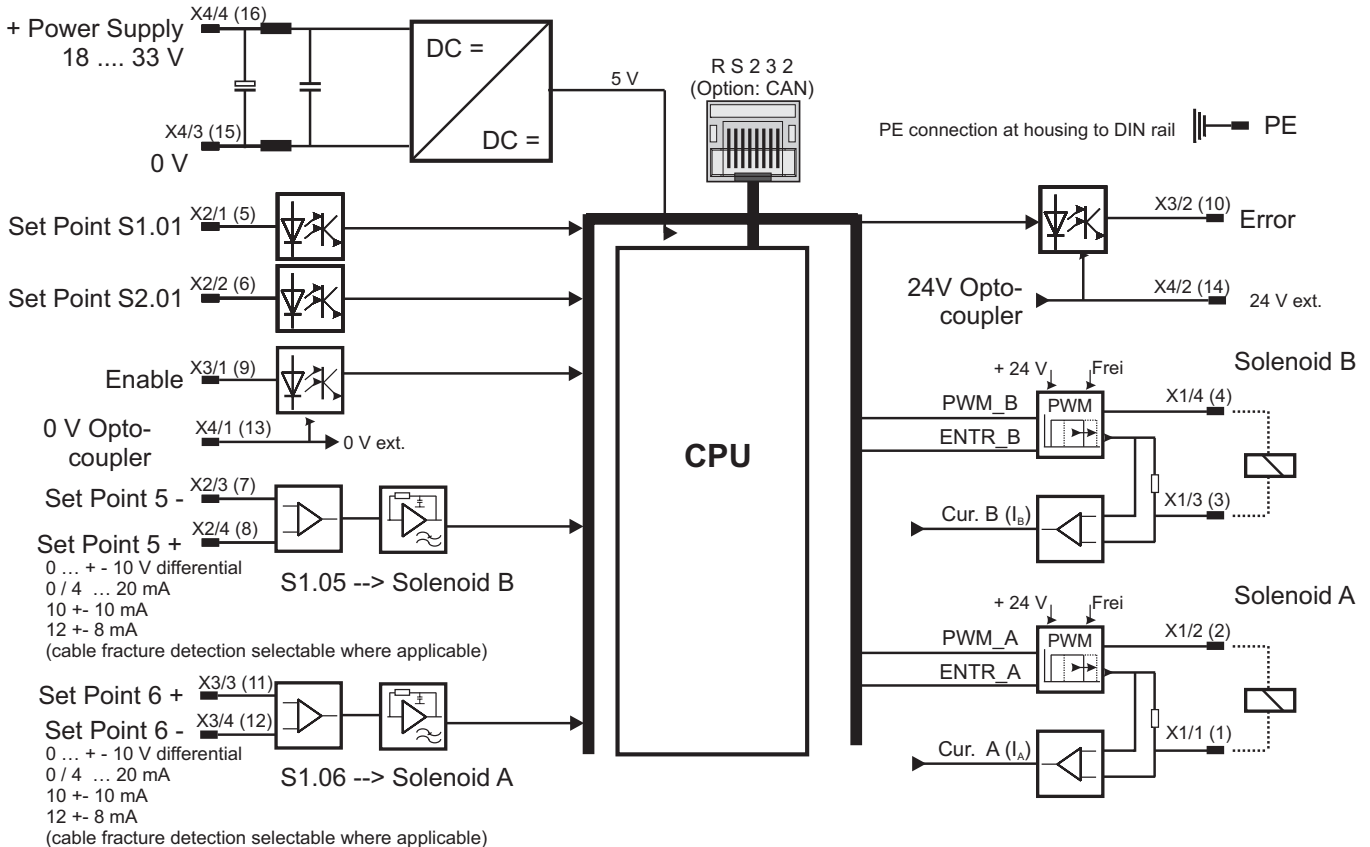
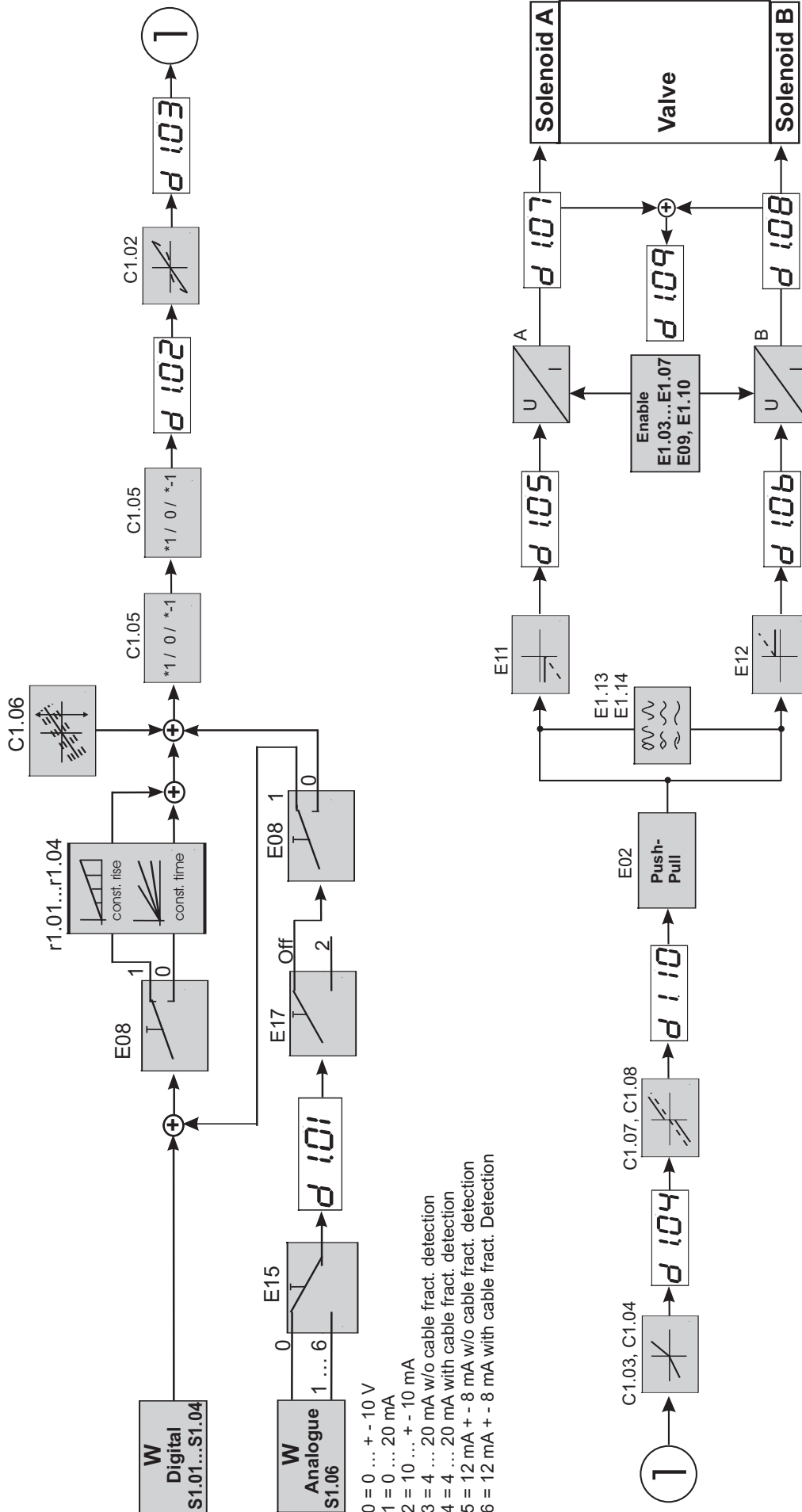


Diagram for version: DMA-22-02-xxx-S0; Operation Mode: 02



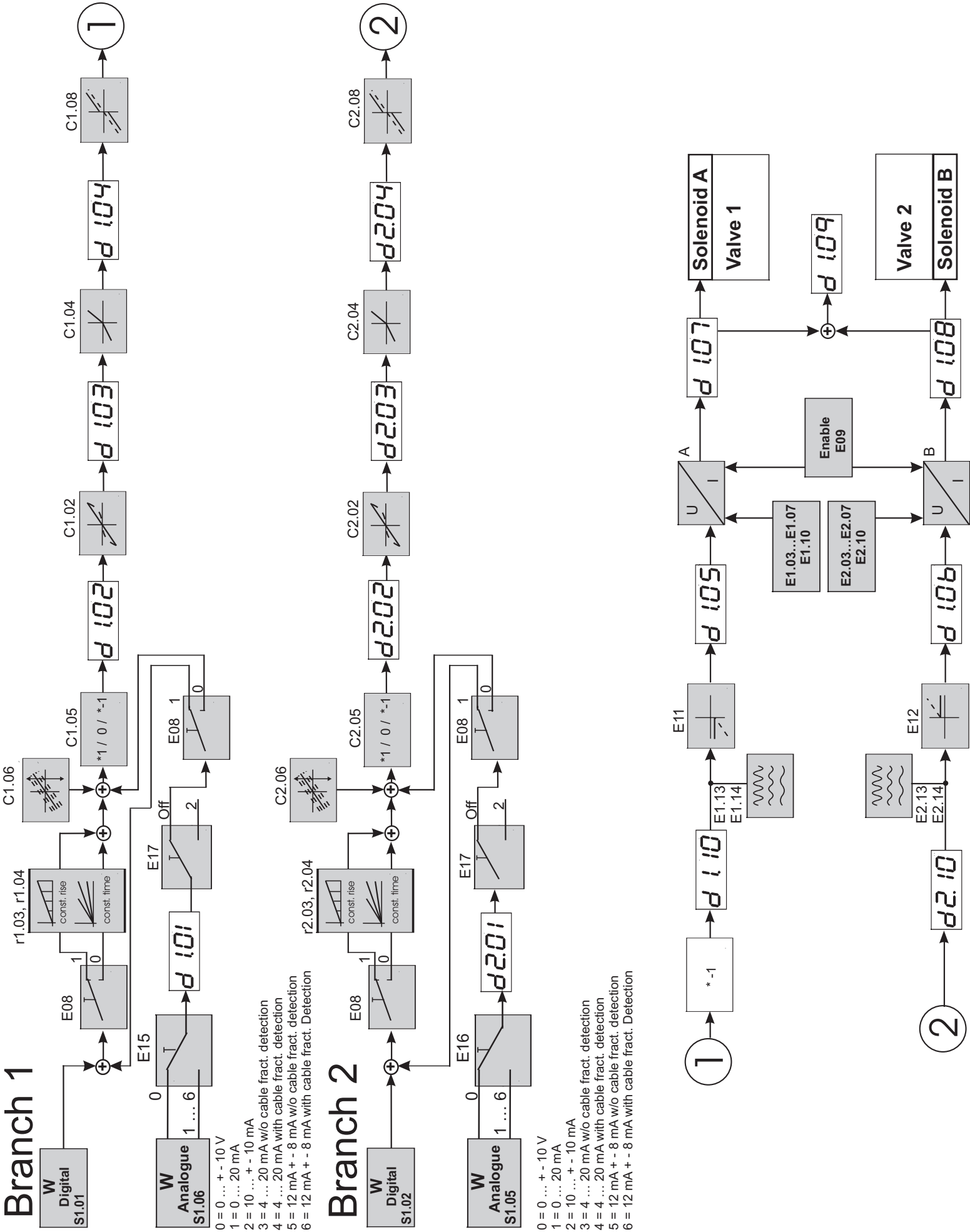
5 Block diagram of software functions

Version: DMA-22-01-xxx-S0 / Operation Mode: 01 ; 1 valve (open loop) with 2 solenoids



6 Block diagram of software functions

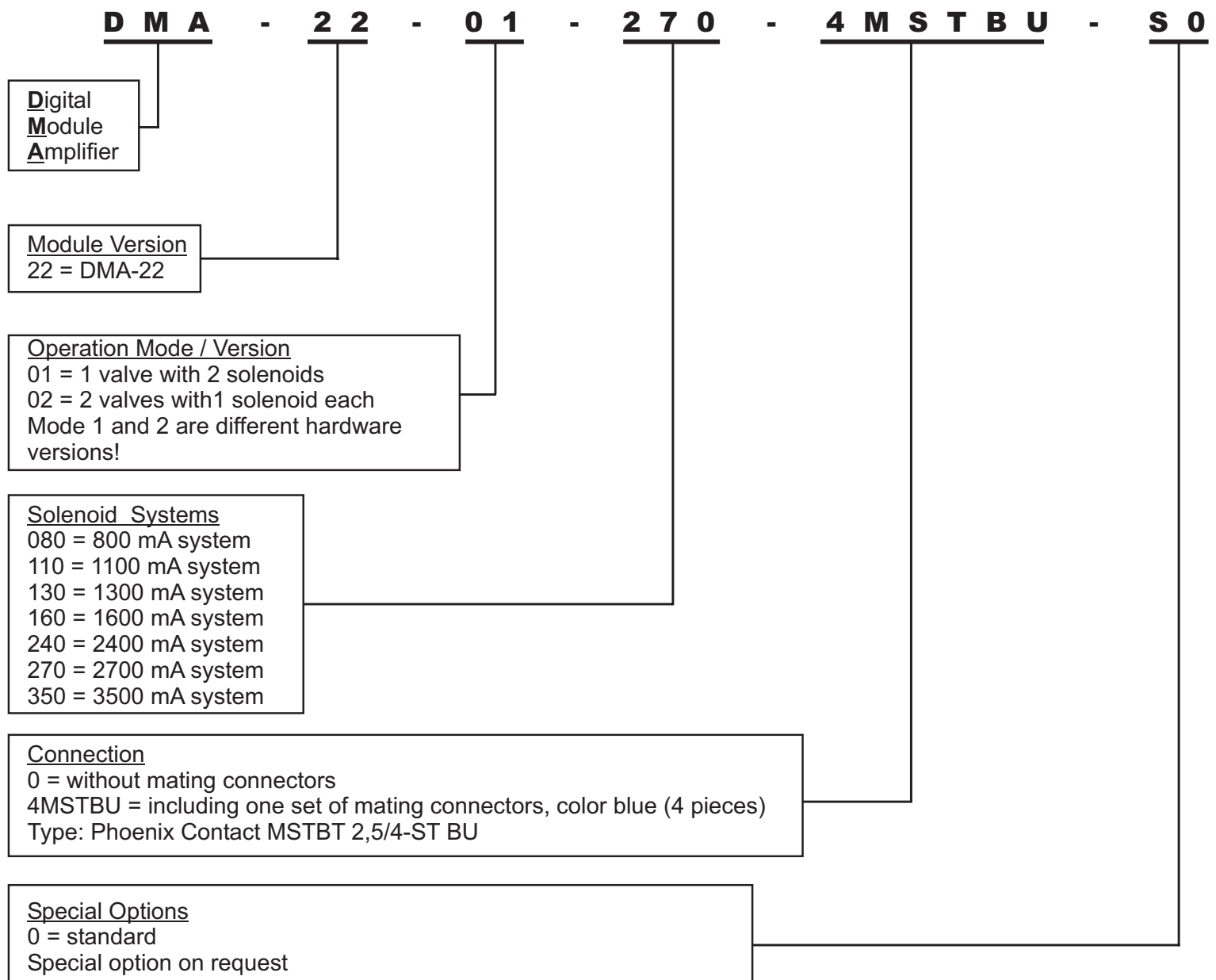
Version: DMA-22-02-xxx-S0 / Operation Mode: 02 ; 2 valves (open loop) with 1 solenoid each



7 Accessories and Options

Name	Description
HCSTool	Software for parameterization, operation, monitoring, storage and documentation of adjustments. In English, French and German on CD.
DMA-2PC	Interface cable for communication between PC and DMA-2 for RS232 interface. 1 x Sub-D 9-pole connector female, 1 connector Western-Digital 6-pole, with 2,5 m cable
EKB-04	EKB-04 Handheld keypad and display unit for parameter setting and copying
Profibus-Interface	On request
CAN-Interface	On request
Vibration/shock protect.	In accordance with EN 60068-2-6 / EN 60068-2-27 for DMA-2 on request
Conformal coating	Conformal coating for DMA-2 on request
DMA-2 customer specific and special versions	Brand labeling, special software for application specific functions; special hardware options and versions; on request
Others	Customer specific documentation and program HCSTool; on request

8 Order code



9 Our partners and distributors

SWITZERLAND AND AUSTRIA**GRI BI AG**

Lättenstr. 33
CH-8952 Schlieren
Switzerland
Tel.: (+41) 1 733 - 40 50
Fax: (+41) 1 730 - 58 05
Email: r.schaffner@gribiag.ch
www.gribiag.ch

SWEDEN**TUBE****TUBE CONTROL AB**

Storsättagand 10
SE-12725 Skärholmen
Sweden
Tel.: (+46) 8 - 555 92 100
Fax: (+46) 8- 555 92 150
Email: info@tubecontrol.se
www.tubecontrol.se

SPAIN**HRE HIDRAULIC S.L.**

C / Ibaitarte, 21
E-20870 Elgoibar
Spain
Tel.: (+34) 943 - 742 130
Fax: (+34) 943 - 742 708
Email: hre-hidraulic@hre.es
www.hre.es

GREAT BRITAIN**Voith Turbo Ltd.**

6 Beddington Farm Road
Croydon, Surrey
England CRO 4XB
Tel: (+44)208 667 0333
Fax: (+44) 208 667 0403
nick.moody@voith.com
www.uk.voithturbo.com

SWEDEN**AB GUSTAF TERLING**

Askims Verkstadsväg 15
Box 1013
SE-43621 Askim
Sweden
Tel.: (+46) 31 - 28 98 40
Fax: (+46) 31 - 28 64 01
Email: carlbom@terling.se
www.terling.se

NORWAY**SERVI MOTION CONTROL AS**

Haugenveien 2
N-1402 Ski
Norway
Tel.: (+47) 64 - 979 797
Fax: (+46) 64 - 979 899
Email: nils.harald.flaa@servi.no
www.servi.no

SPAIN**GLUAL HIDRÀULICA, S.A.**

Landeta Hiribidea, 11
E-20730 Azpeitia (Gipuzkoa)
Spain
Tel.: (+34) 943 157 015
Fax: (+34) 943 157 404
Email: j.valverde@glual.es
www.glual.com

BRAZIL, SOUTH AMERICA**Voith Turbo Ltda**

Av. Fernando Stecca, 575
Alto da Boa Vista
BR - 18087 - 450 Sorocaba / SP
Tel.: (+55) 15 228 1114
Fax: (+55) 15 228 1115
Email: friedrich.guther@voith.com
www.hl-hydraulic.com

SWEDEN**HL HYDRAULIC LEVARANTÖREN AB**

Maltesholmsvägen 88
Box 3443
SE-16523 Hässelby
Sweden
Tel.: (+46) 8 - 4 45 54 20
Fax: (+46) 8 - 4 45 54 30
Email: bjorn.arvidsson@hydlev.se
www.hydlev.se

ITALY**BIMAL AUTOMAZIONI S.R.L.**

Zona Industriale
I-06078 Ponte Valleceppi
Italy
Tel.: (+39) 075 - 592 1750
Fax: (+39) 075 - 592 1740
Email: carbonari@bimal.com;
Email: gai@bimal.com
www.bimal.com

FRANCE**HYDRAULIQUE PAUL MH**

4-6 Rue du LANGUEDOC
ZA DES BETHUNES
SAINT OUEN L'AUMONE / BP 9047
95071 CERGY PONTOISE CEDEX
France
Tel.: (+33)1 34 48 51 90 -
Fax: (+33)1 30 37 04 32 -
Email: info@hydraulique-paul .fr
www.hydraulique-paul.fr

CANADA, NORTH AMERICA**HYDRA-FAB FLUID POWER INC.**

3585 Laird Road Unit 5
Mississauga, Ontario L5L 5Z8
Canada
Tel.: (+44) 1527 - 516 666
Fax: (+44) 1527 - 516 777
Email: rgores@hydrafab.com
www.hydrafab.com