



DA-65R



Retrofit solution

DA-65R retrofit solution

What is DA-65R ?

A new DA-controller to replace previous Delem controllers using 48-pole connectors for I/O interface

Why DA-65R ?

An appropriate retrofit solution to replace DA-controllers that are out of production or for which certain spare parts have become obsolete

DA-65R retrofit solution

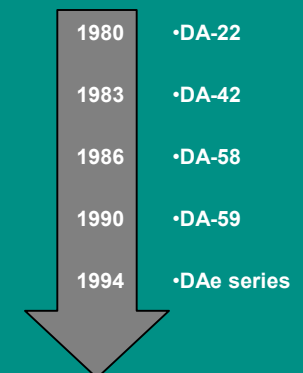
Delem product families (1)

- A. DA-200/DA-500/DA-2000
 - Y-axis controller; Y1, Y2
 - 1x 48-pole connector

- B. DA-22
 - Y1, Y2, X
 - 2x 48-pole connector

- C1. DA-42
- C2. DA-20/DA-23/DA-24/DA-58/DA-59
- C3. DA-21e/DA-23e/DA-24e/DA-58e/DA-59e
 - Y1, Y2, X
 - Aux axis optional (X2, R, Z...) with D7289 option board or D7246 (DA42)
 - Up to 8 additional axes with add-on's (DI-43/DI-44)
 - 2x 48-pole connector
 - add-on bus

Product history:



The DA-65R is specially developed to retrofit these DA-controllers

DA-65R retrofit solution

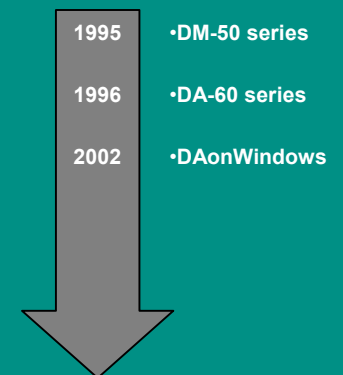
Delem product families (2)

- D. DA-60 series: DA-61/DA-64/DA-65/DA-69/DA-68PL
 - Modusys system, DM-modules
 - HSB bus

- E. DM-50 series: DA-51/DM-51/DM-54
 - Single board solution
 - Max. 4 axes, not expandable
 - 1 48-pole connector
 - Also available for conventional machines

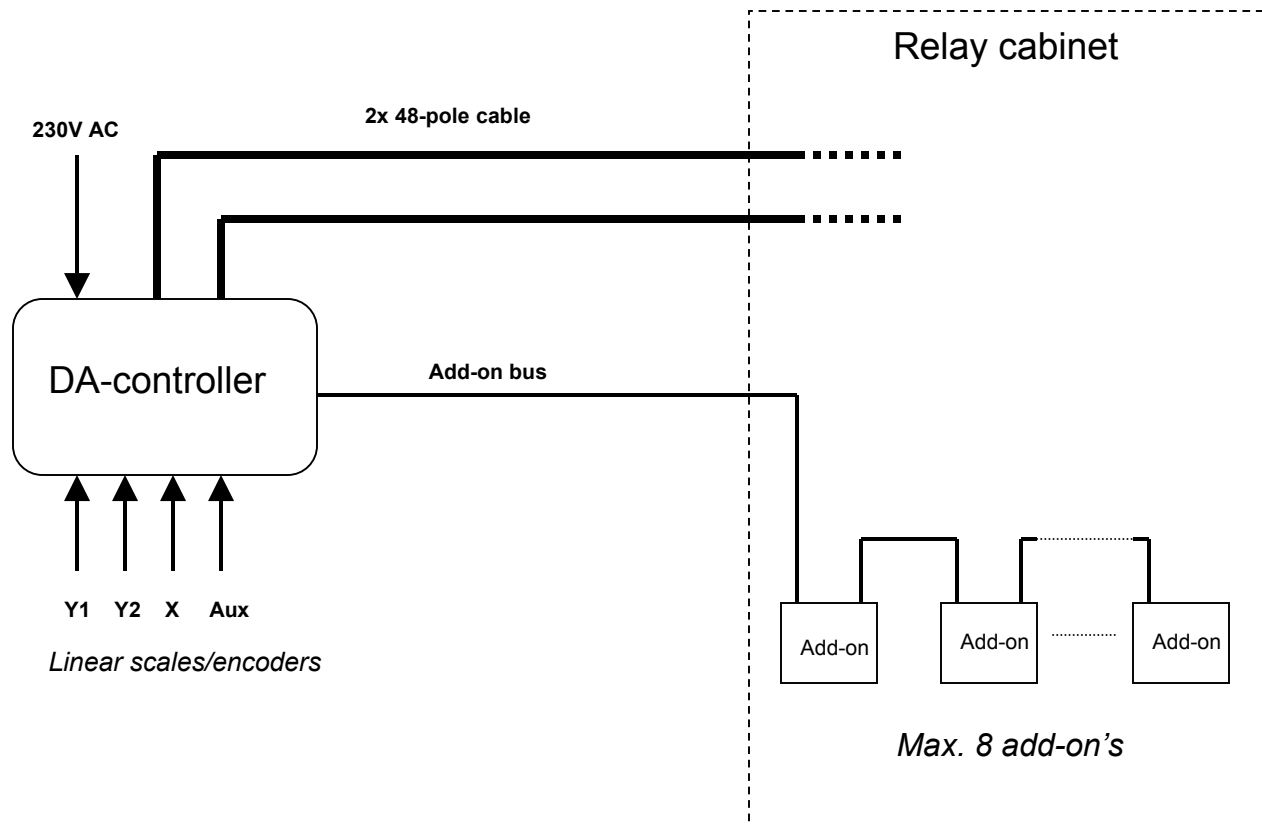
- F. DAonWindows series: DA-65W/DA-66W/DA-69W
 - Windows® based controls
 - Modusys system, fully compatible with DA-60 series

Product history:



DA-65R retrofit solution

Previous architecture

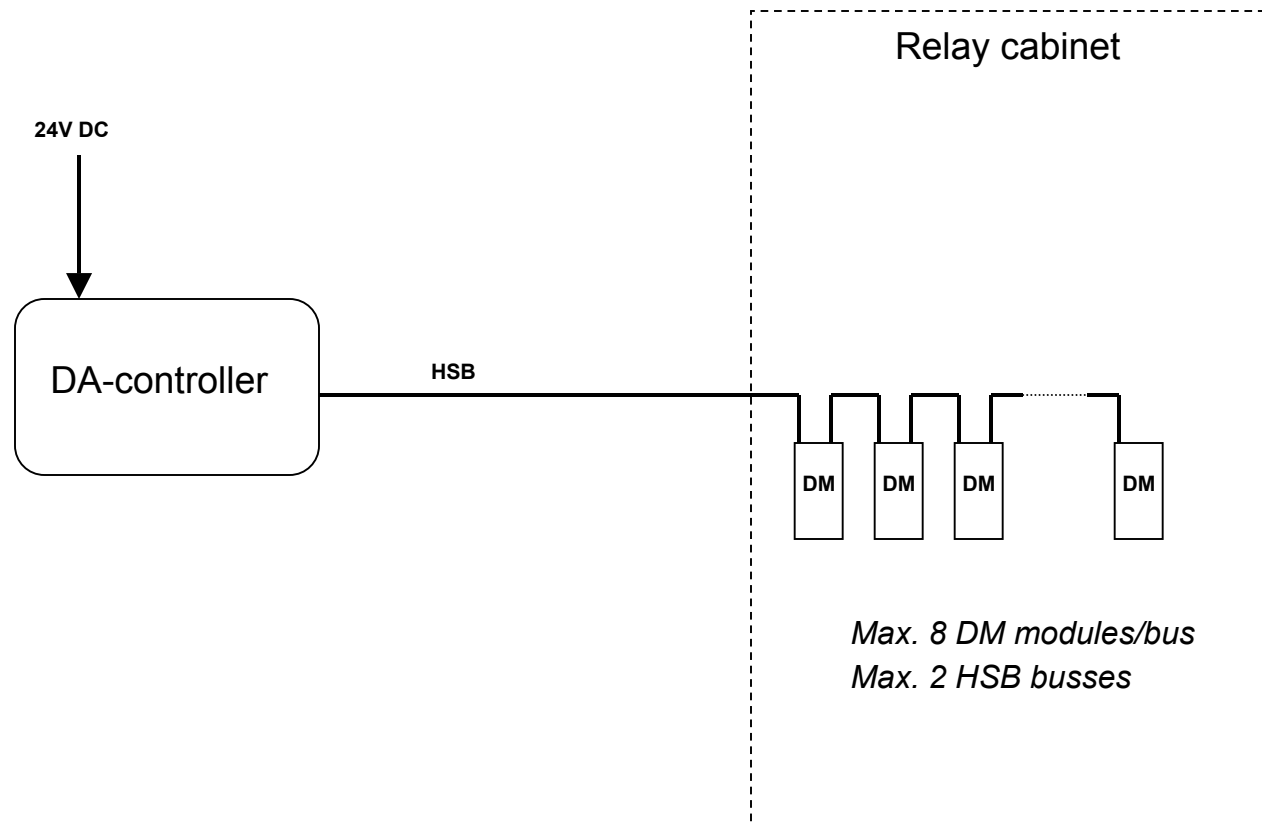


Previous architecture

- DA-controller supports max. 4 axes internal
- Add-on bus to connect up to 8 additional axes
- 48-pole cables (2X) to interface with relay cabinet

DA-65R retrofit solution

Current architecture



Current architecture

- Fully modular system: Modusys
- All I/O interfaced with DM-modules in relay cabinet

DA-65R retrofit solution

DA-65R:

- Pin compatible with Delem product families A, B and C
- Based on the latest DAonWindows technology
- Includes full DA-65W functionality

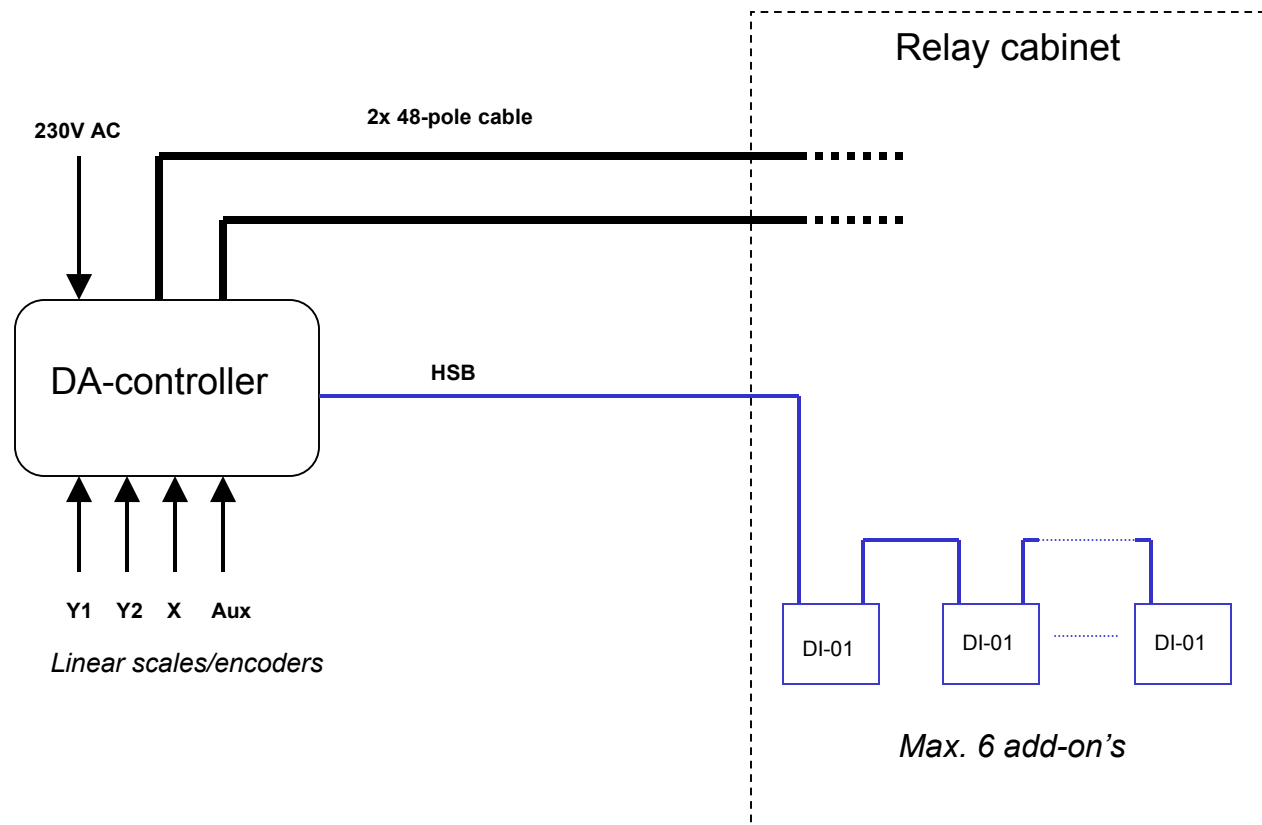


DA-65R, retrofit

- Current generation DA-controller
- I/O compatible with previous generations

DA-65R retrofit solution

DA-65R architecture



DA-65R retrofit solution

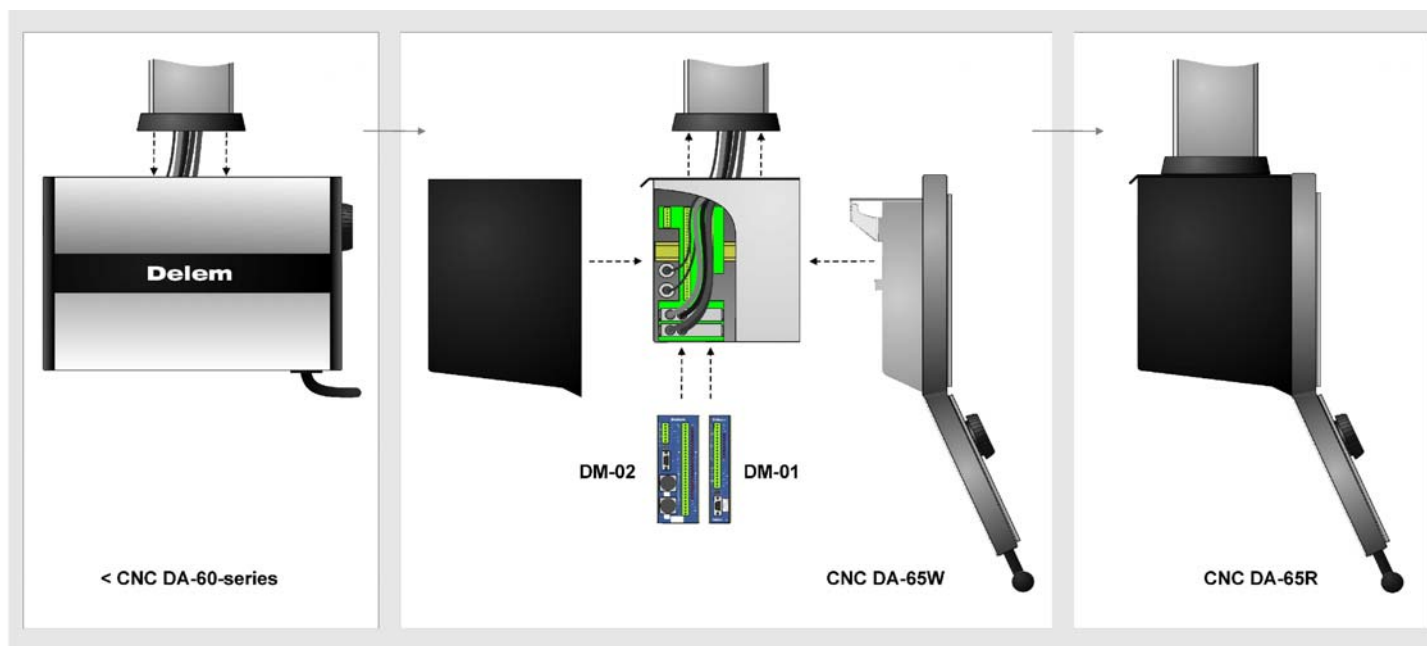
DA-65R

- Pin compatible with:
 - A. DA-200/-DA500/DA-2000
 - B. DA-22
 - C1. DA42
 - C2. DA-20/DA-23/DA-24/DA-42/DA-58/DA-59
 - C3. DA-21e/DA-23e/DA-24e/DA-58e/DA-59e
- Mounting dimensions compatible with previous DA-controllers
- Standard 4 axes (Y1, Y2, X, Aux)
- Based on DA-65W electronics, includes a DM-02 and one DM-01 module
- Retrofit solution for add-on's (DI-43/DI-44) is also available; DI-43/DI-44 cards **must** be replaced by DI-01 cards

Remarks:

- DA-65R does **not** support conventional press brakes
- DA-65R supports servo control for backgauge axes, **not** 1- or 2- speed AC

DA-65R retrofit solution



DA-65R retrofit solution

Includes full DA-65W features

- 2D graphical programming
- Automatic bend sequence calculation
- 10.4" TFT colour screen
- USB interface (2X) for memory stick, keyboard and mouse
- Windows® network support
- Standard Windows suite
- Y-axis analysis tool
- 4MB product and tools memory
- USB memory stick included

DA-65R retrofit solution

DA-65R options

Hardware options

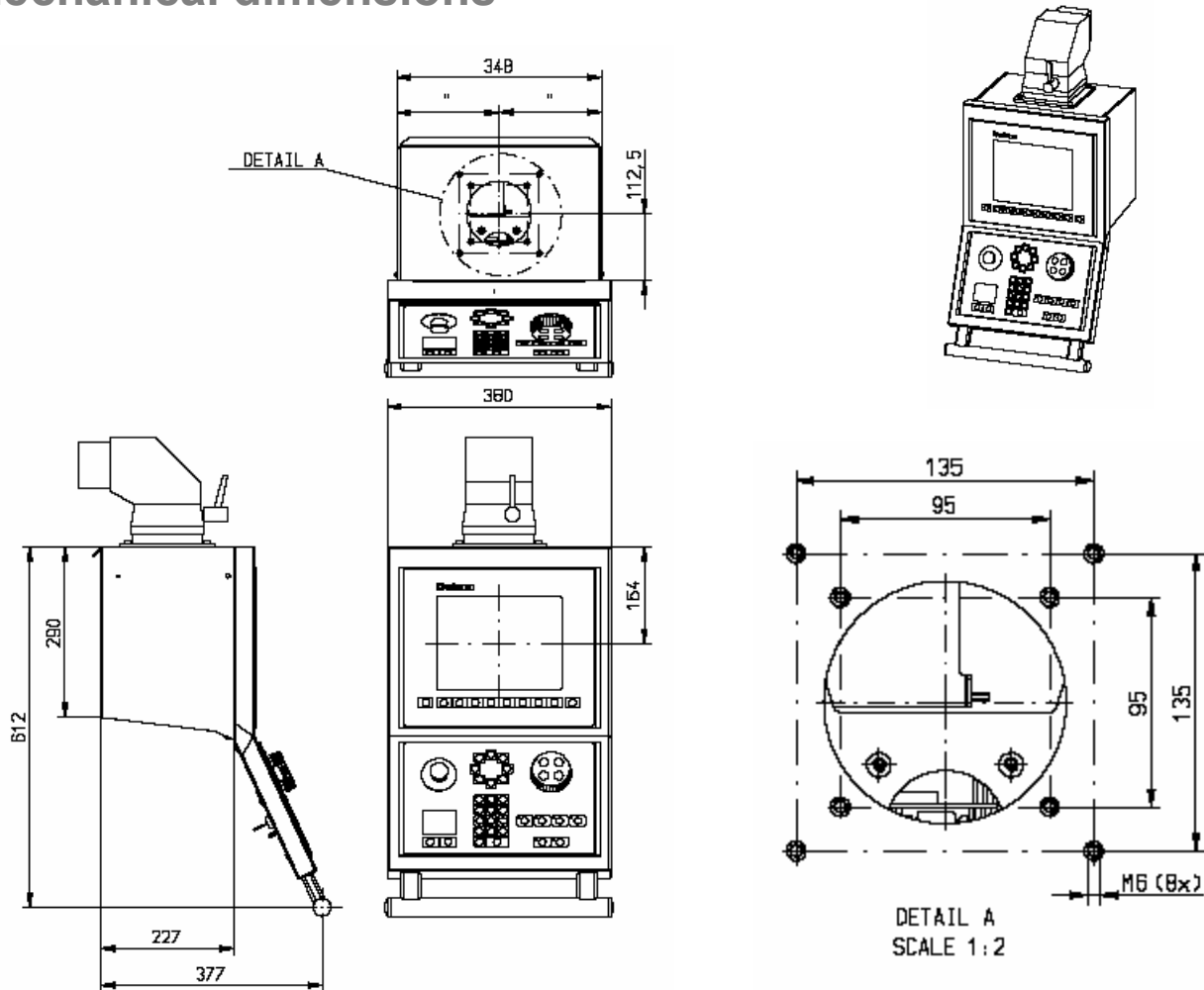
- USB floppy drive (external),
including mounting bracket D-USB-FD-Assy

Software options

- Part support control OP-W-PARTSUP
- Barcode reader OP-W-BCODE
- X-angle programming OP-W-X α

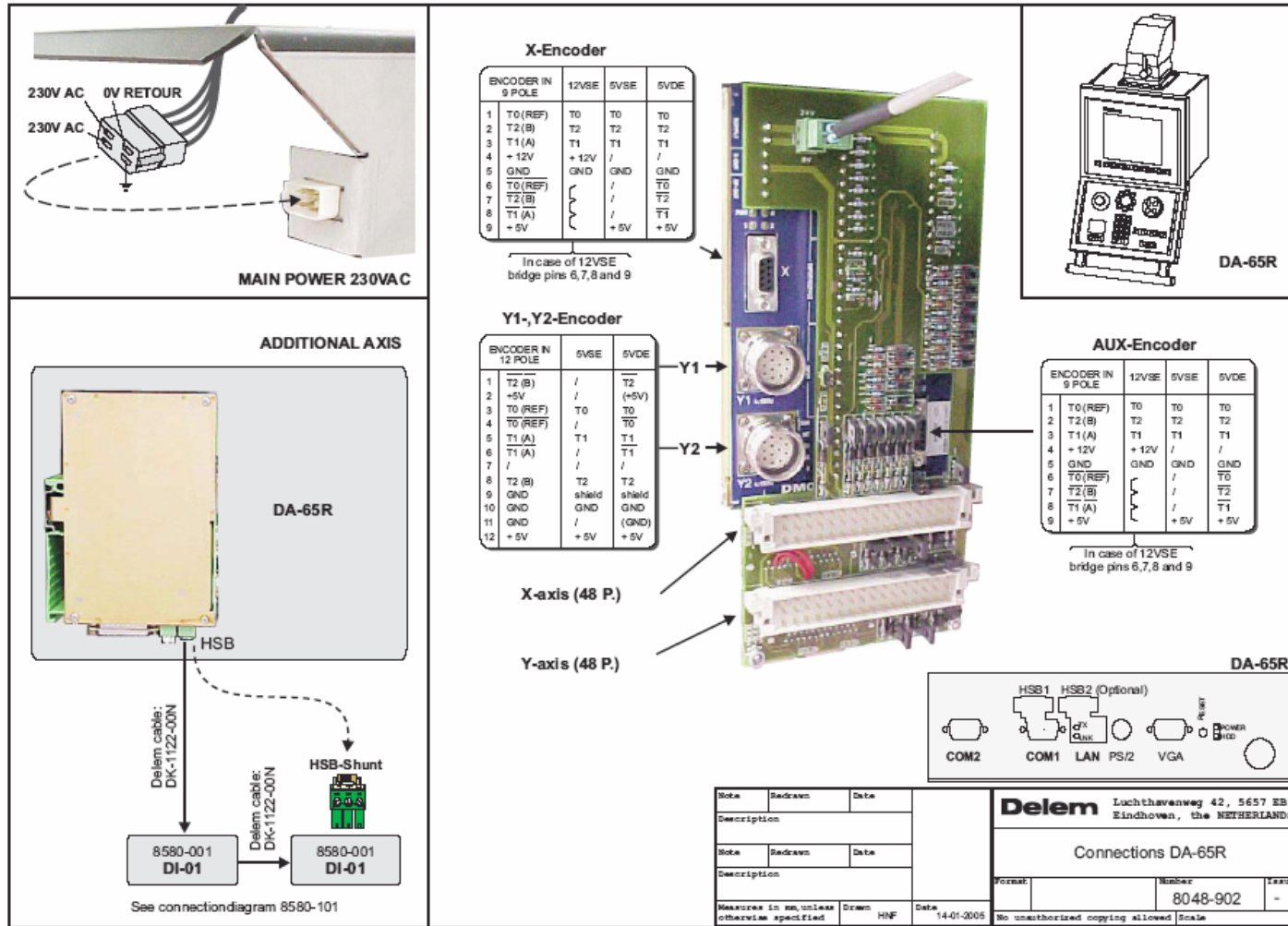
DA-65R retrofit solution

Mechanical dimensions



DA-65R retrofit solution

Connections



X-Encoder

ENCODER IN 9 POLE	12VSE	5VSE	5VDE
1 T0(REF)	T0	T0	T0
2 T2(B)	T2	T2	T2
3 T1(A)	T1	T1	T1
4 +12V	+12V	/	/
5 GND	GND	GND	GND
6 T0(REF)	/	/	T0
7 T2(B)	/	/	T2
8 T1(A)	/	/	T1
9 +5V	+5V	+5V	+5V

In case of 12VSE bridge pins 6,7,8 and 9

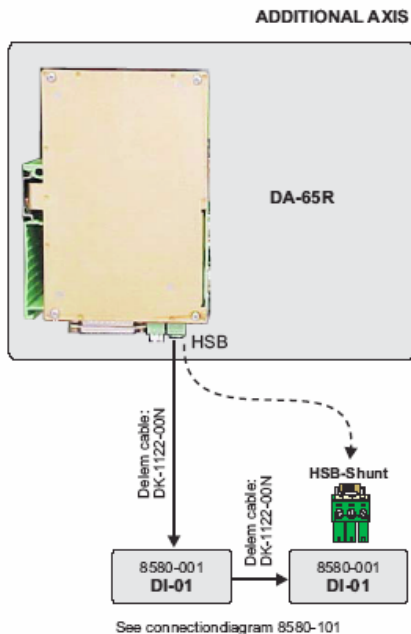
Y1,Y2-Encoder

ENCODER IN 12 POLE	5VSE	5VDE
1 T2 (B)	/	T2 (+5V)
2 +5V	/	/
3 T0(REF)	T0	T0
4 T0(REF)	/	T0
5 T1 (A)	T1	T1
6 T1 (A)	/	T1
7 /	/	/
8 T2 (B)	T2	T2
9 GND	shield	shield
10 GND	GND	GND
11 GND	/	(GND)
12 +5V	+5V	+5V

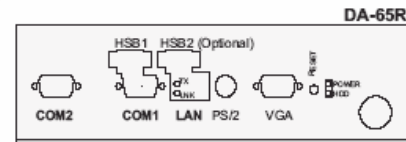
AUX-Encoder

ENCODER IN 9 POLE	12VSE	5VSE	5VDE
1 T0(REF)	T0	T0	T0
2 T2(B)	T2	T2	T2
3 T1(A)	T1	T1	T1
4 +12V	+12V	/	/
5 GND	GND	GND	GND
6 T0(REF)	/	/	T0
7 T2(B)	/	/	T2
8 T1(A)	/	/	T1
9 +5V	+5V	+5V	+5V

In case of 12VSE bridge pins 6,7,8 and 9



X-axis (48 P.)
Y-axis (48 P.)



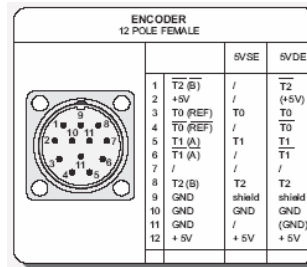
Note	Redrawn	Date	
Description			
Note	Redrawn	Date	
Description			
Measures in mm, unless otherwise specified	Drawn	Date	
	HNF	14-01-2005	

Delem Luchthavenweg 42, 5657 EB Eindhoven, the NETHERLANDS	
Connections DA-65R	
Format:	Number: 8048-902
Scale:	-
No unauthorized copying allowed	

DA-65R retrofit solution

Encoder Connections, Y-axis

- Standard 12-pole FRB connector, 5V differential ended



- Conversion cable available for:
-12-pole Binder connector, 5V differential and single ended:

DK-FRB/M-BIN/F



12-pole FRB,
male

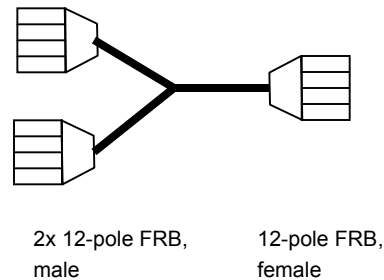
12-pole Binder,
female

DA-65R retrofit solution

Linear scales

- Only 5V linear scales are supported
- Linear scale resolution must be 20µm
- In case of a 1 cylinder machine, 1 linear scale connected to both inputs. Special conversion cable is available:

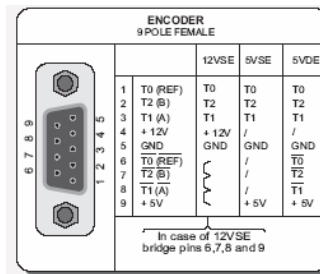
DK-FRB-split-F-2M



DA-65R retrofit solution

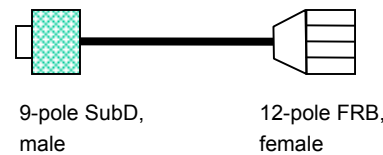
Encoder Connections, X- and Auxiliary axis

- Standard 9 –pole SubD connector,
 - 5V differential ended
 - 5V single ended
 - 12V single ended



- Conversion cables available for:
 - 12-pole FRB connector, 5V differential and single ended:

DK-FRB-SUBD



9-pole SubD,
male

12-pole FRB,
female

- 12 pole Binder connector, 5V differential and single ended:

DK-BIN12/F-SUBD9/M-5S



9-pole SubD,
male

12-pole Binder,
female

DA-65R retrofit solution

Encoder Connections, X- and Auxiliary axis

- Conversion cables available for:
 - 7 pole Binder connector, 5V single ended:



- 7 pole Binder connector, 12V single ended

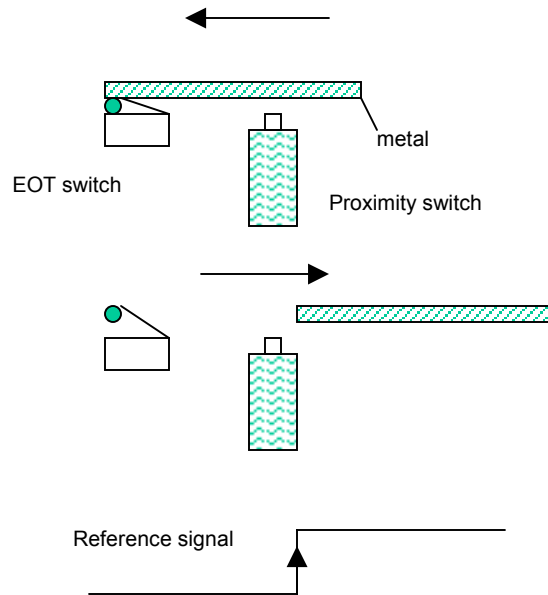


- Reference marker from encoder or from separate proximity switch
 - Both systems are supported
 - In case of separate proximity switch, check the signal definition

DA-65R retrofit solution

Reference cycle with inductive proximity switch

Standard definition:



- When the metal part moves from the proximity switch a low to high transition on the input will generate a reference pulse.
- Proximity switch is normally closed type.
- The reference signal will **not** be recognized if the definition is wrong

Standard definition

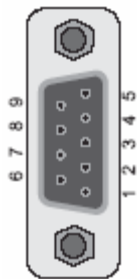
- Normally closed switch
- Reference signal rising edge

DA-65R retrofit solution

X-axis reference signal

- Definition of DM-02 reference input differs from DM-01
- **No** problem when reference pulse from encoder is used
- In case of a proximity switch the reference signal for the X-axis (DM-02) must be inverted:

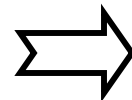
Exchange pin 1 and 6 in the 9-pole subD connector



Standard connection:

		12VSE
1	T0 (ref)	T0
2	T2 (B)	T2
3	T1 (A)	T1
4	+12V	+12V
5	GND	GND
6	$\overline{T0}$ (ref)	
7	$\overline{T2}$ (B)	
8	$\overline{T1}$ (A)	
9	+5V	

Pin 6, 7 and 8 connected to +5V(9)



Modified connection:

		12VSE
1	T0 (ref)	
2	T2 (B)	T2
3	T1 (A)	T1
4	+12V	+12V
5	GND	GND
6	$\overline{T0}$ (ref)	T0
7	$\overline{T2}$ (B)	
8	$\overline{T1}$ (A)	
9	+5V	

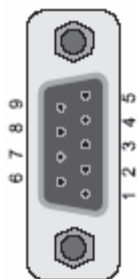
Pin 1, 7 and 8 connected to +5V(9)

DA-65R retrofit solution

Invert 5VSE reference signal

- In case of 5VSE, if necessary, the reference pulse can be inverted.
- Possible for DM-02, DM-01 and DI-01 modules

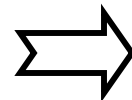
Exchange pin 1 and 6 in the 9-pole subD connector



Standard connection:

		5VSE
1	T0 (ref)	T0
2	T2 (B)	T2
3	T1 (A)	T1
4	+12V	/
5	GND	GND
6	$\overline{T0}$ (ref)	/
7	$\overline{T2}$ (B)	/
8	$\overline{T1}$ (A)	/
9	+5V	+5V

Pin 4, 6, 7 and 8 are left open



Modified connection:

		5VSE
1	T0 (ref)	$\overline{T0}$ (ref)
2	T2 (B)	T2
3	T1 (A)	T1
4	+12V	/
5	GND	GND
6	$\overline{T0}$ (ref)	T0
7	$\overline{T2}$ (B)	$\overline{T2}$ (B)
8	$\overline{T1}$ (A)	$\overline{T1}$ (A)
9	+5V	+5V

Pin 1, 7 and 8 connected

DA-65R retrofit solution

Valve connections

- Proportional valves
 - Internal valve amplifier for Hoerbiger valves (LVDT feedback, 1.5A max)
 - or*
 - -10V..+10V output to drive an external valve amplifier

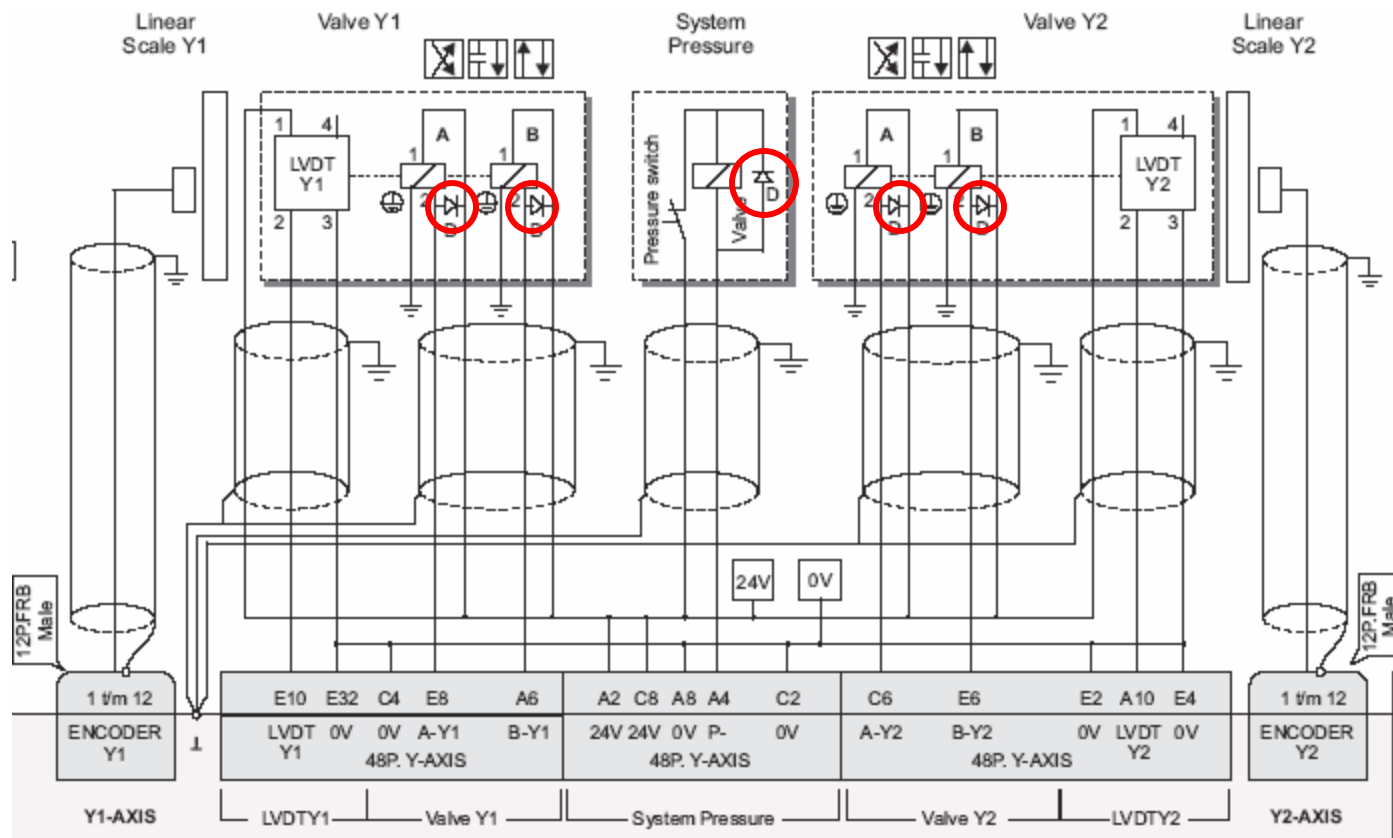
- Pressure valve
 - Current control, max. 1.5A
 - or*
 - Voltage output, 0-10V

- For Hoerbiger valves and current controlled pressure valves diodes (high frequency types) must be mounted parallel to the coils. Diodes are supplied with the DA-65R.

- Type of valve connection must be specified when ordering the DA-65R

DA-65R retrofit solution

Valve connections, Hoerbiger valves

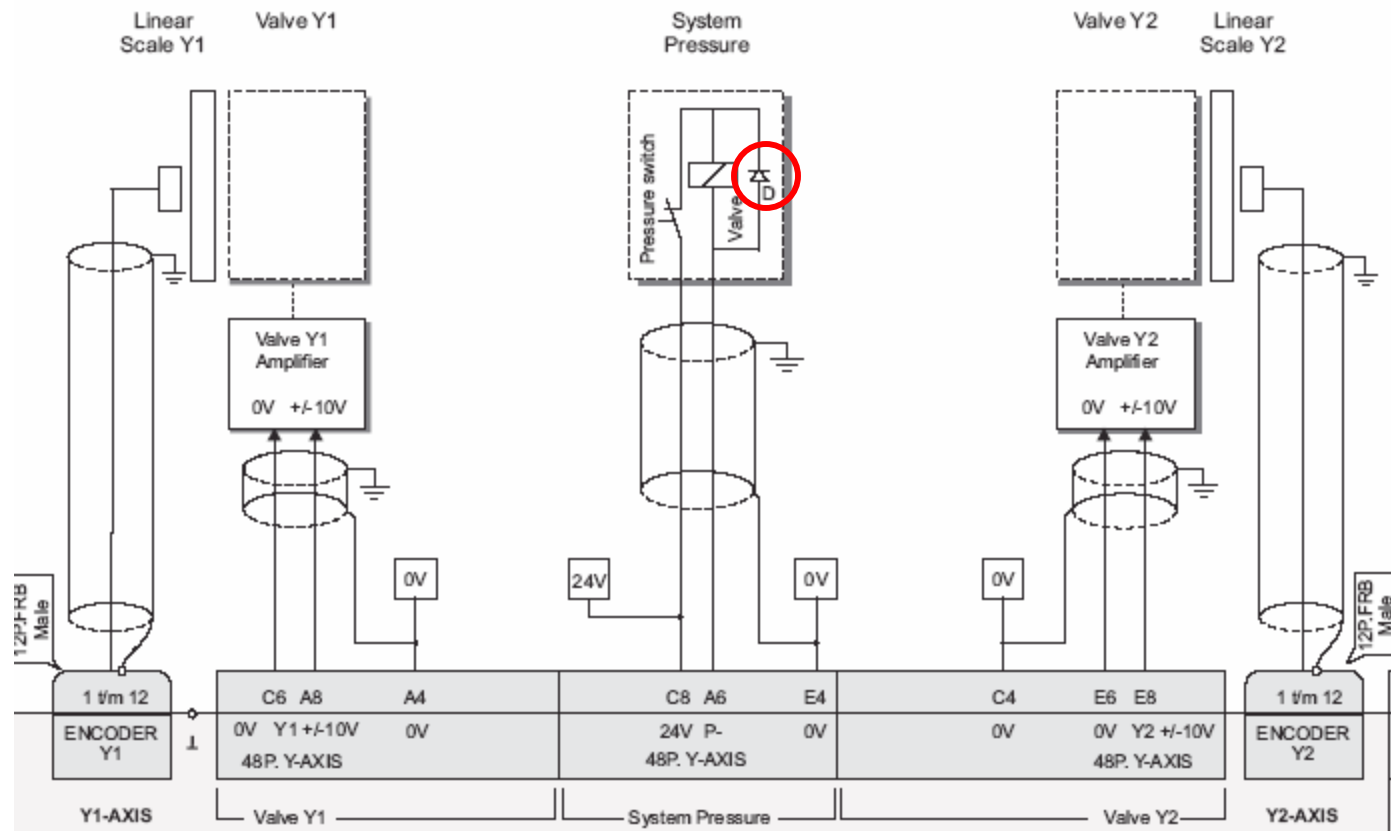


Current controlled valves

- Diodes must be mounted parallel to the coils
- Also for pressure valve
- Diodes supplied with DA-65R

DA-65R retrofit solution

Valve connections, external amplifier

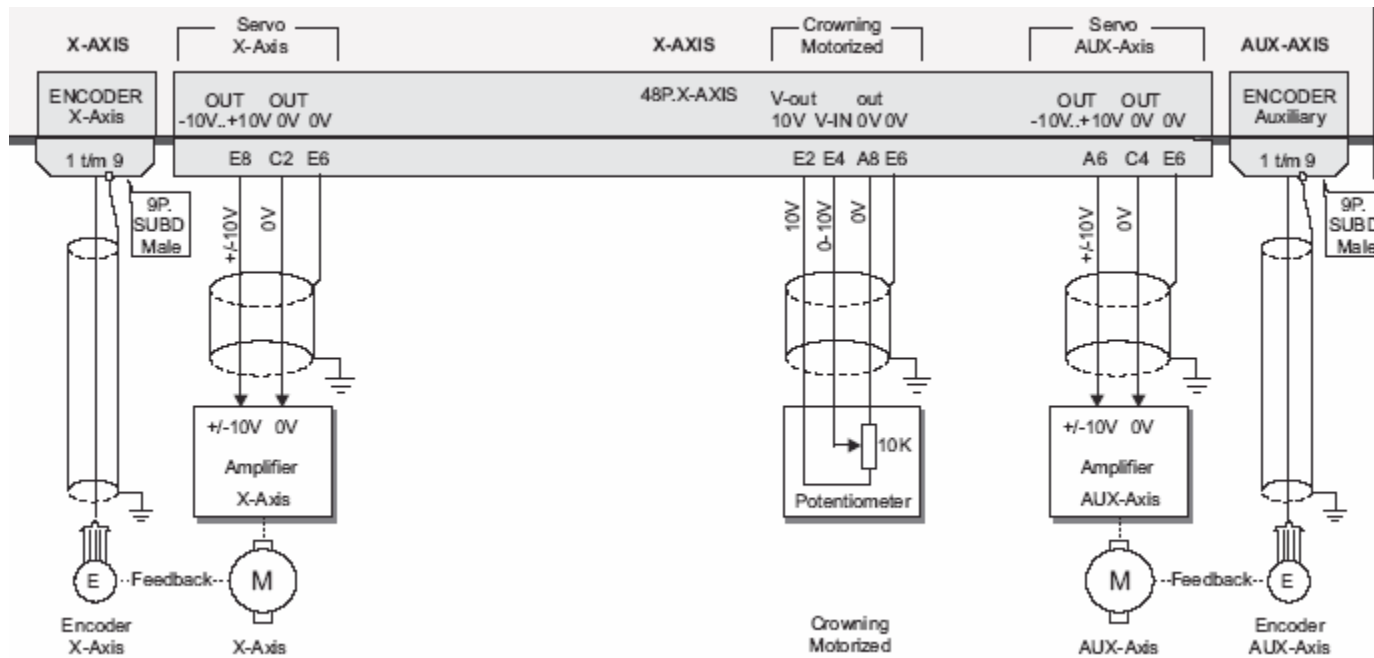


Pressure valve output

- Diode must be mounted parallel to the coil
- 0-10V output is also supported

DA-65R retrofit solution

Servo axes connection

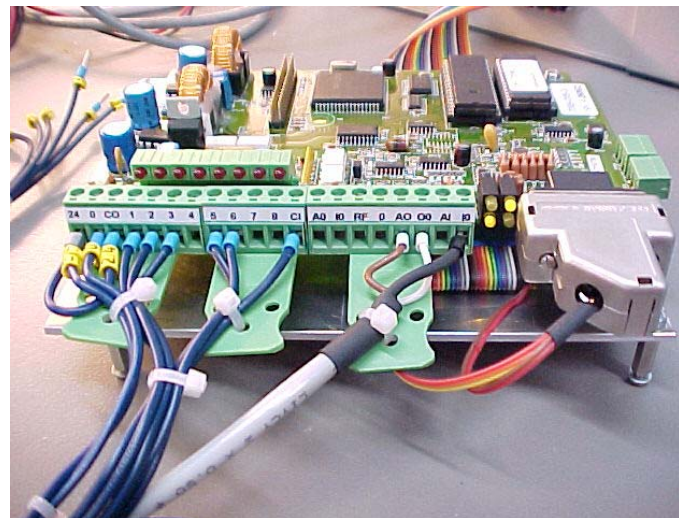


DA-65R retrofit solution

Auxiliary axes, Add-on's

DI-01 add-on card

- Add-on cards, DI-43/DI-44, **must** be replaced by DI-01
- Add-on bus cables must be replaced by HSB cables
- Mounting dimensions equal to DI-43/DI-44
- Conversion cables to connect to DC321/DC322 included
- Also compatible with DC432



DC432 Servo interface

- Interface card to third party servo drives
- Can also be combined with new DI-01 add-on card

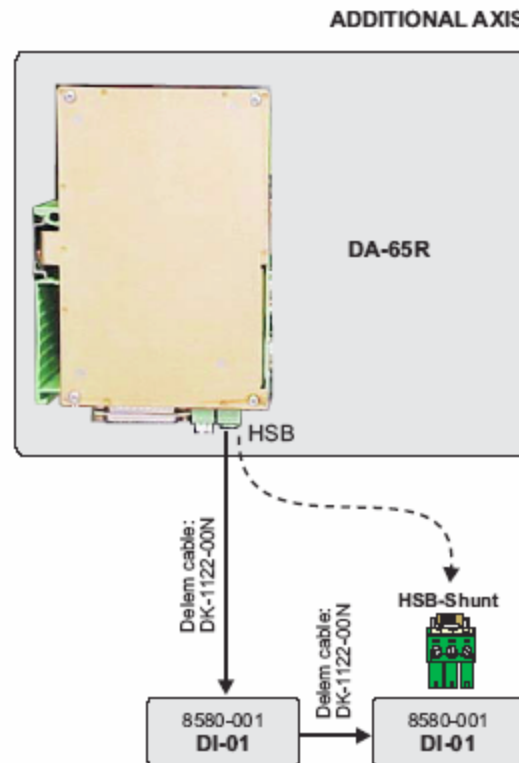
•Alternative solution:

Replace DI-43/DI-44+DC432 combination by a standard DM-01 module

DA-65R retrofit solution

Auxiliary axes, Add-on's

- HSB cable is connected to DM-01 inside DA-65R
- Connector with HSB shunt must be connected on last DI-01 card



- HSB cable from DA-65R to first DI-01: DK-HSB-L55 (5m)
- HSB to connect to next DI-01 cards: DK-HSB-050 (0.5m)

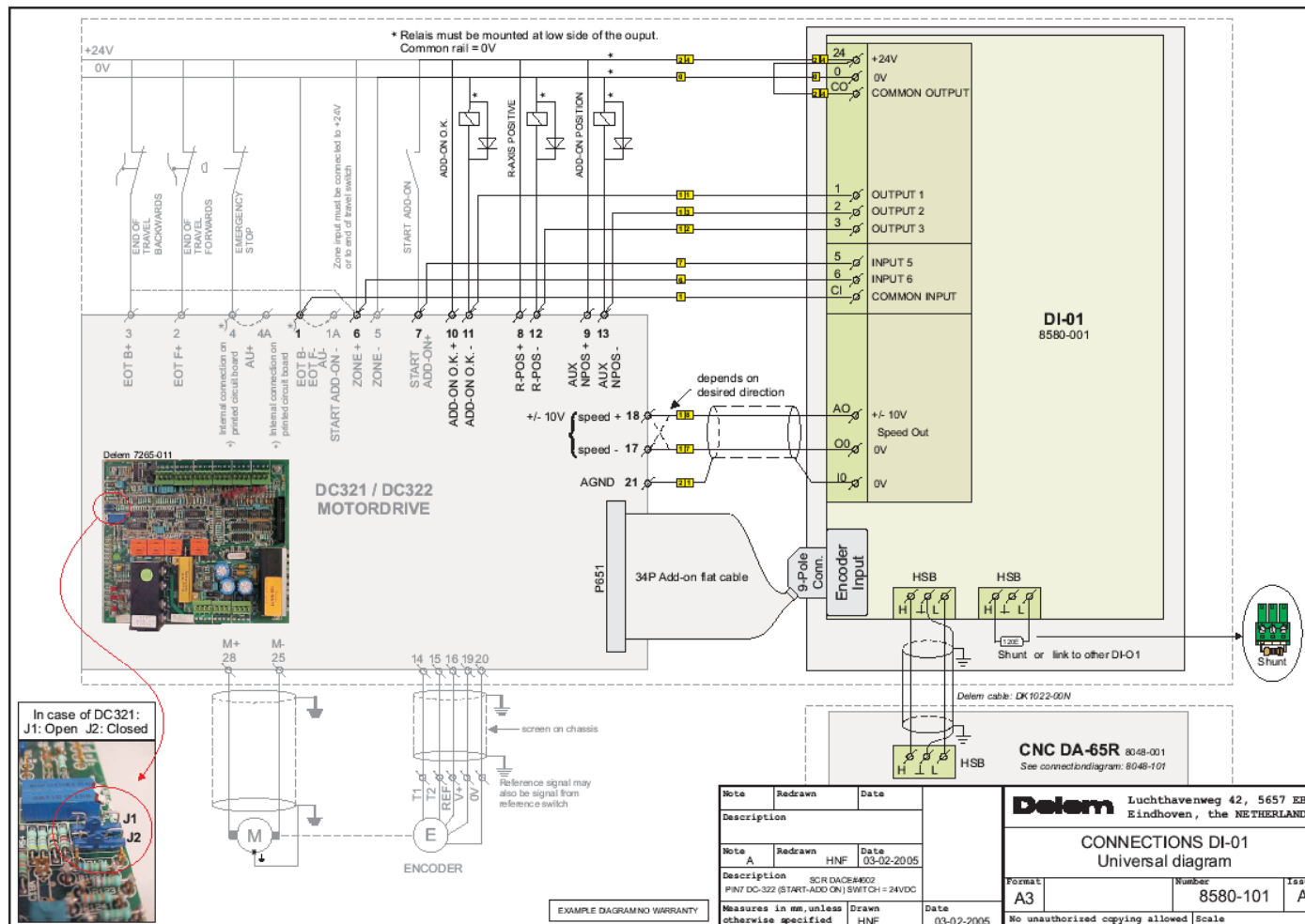
See connection diagram 8580-101

DI-01 card

- Replaces DI-43 and DI-44
- Up to 6 DI-01 cards can be connected
- HSB bus replaces Add-on bus

DA-65R retrofit solution

DI-01 connection



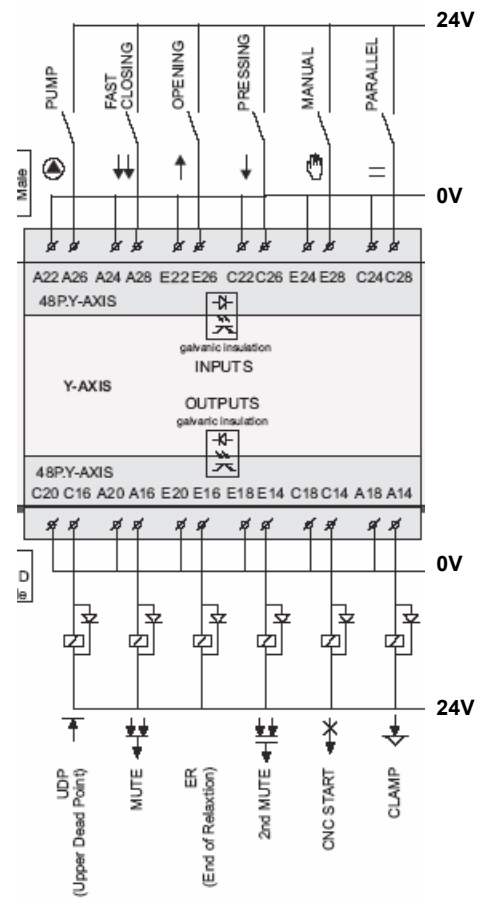
DI-01 card

- Connections to DC321/DC322 are included
- In case of DC321: J1 and J2 setting must be changed
- Place HSB shunt connector on last DI-01

DA-65R retrofit solution

I/O connections, Y-axis connector

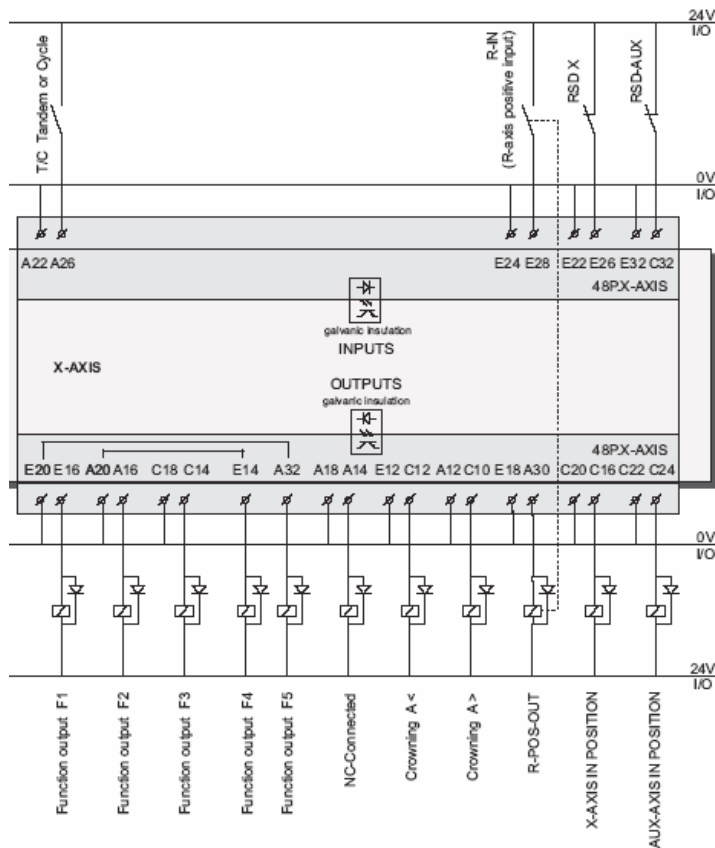
I/O connections for the Y-axis compatible with diagram 9021-101



DA-65R retrofit solution

I/O connections, X-axis connector

I/O connections for the X- and Aux-axis compatible with diagram 9020-101



Function outputs F1-F3:

- All floating

or

-Connected to common GND

-Must be specified when ordering the DA-65R

-F4 GND connected to F2 GND (A20)

-F5 GND connected to F1 GND (E20)

DA-65R retrofit solution

I/O connections, remarks DA-22

DA-22 - Y-axis (7174 board)

- Input "Bottoming" (A26) not available anymore
In the DA-65R "bottoming" is selected with a parameter per bend
- Input A26 is "Pump started" input, must be connected
- Output A14 (EH) is now pinching point
- Output E14 (pinching point) is now 2ndMute

DA-22 - X-axis (7201 board)

- Slow speed input (C28) not available anymore, input has no function
- EOT inputs (A26, E26) and enable output F (E16) not available anymore
- Tandem input T/C (E28) now on input A26
- Input E28 is now R-in (R-axis positive), must be connected
- Function output V (E14) now is function output F4

DA-65R retrofit solution

I/O connections, remarks DA-42

DA-42 - Y-axis (7174 board)

- Output A14 was EH, now is pinching point
- Output E14 was pinching point, now is 2ndMute

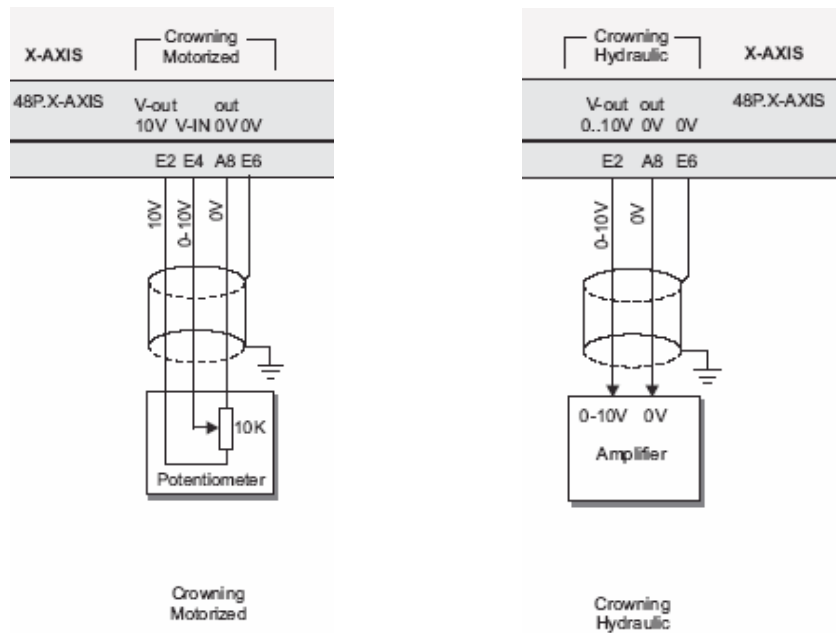
DA-42 - X-axis (7201 board)

- Slow speed input (C28) not available anymore, input has no function
- EOT inputs (A26, E26) and enable output F (E16) not available anymore
- Function output V (E14) now is function output F4

DA-65R retrofit solution

Crowning

- Motorized crowning with potentiometer feedback
or
- Hydraulic crowning, 0-10V output
- Must be specified when ordering the DA-65R
- Connection compatible with diagram 9020-101
- Crowning on add-on card is *not* supported



DA-65R retrofit solution

Part support

Possible solutions:

1. Use the internal DM-01 module to drive the part support
 - Analog output to DBT-01 on A6/C4 of X-axis connector in stead of E2/A8
 - Can not be combined with a second internal servo axis (internal DM-01 can be used for a servo axis *or* for a part support)
2. Configure the part support on an external DM-01

The DA-65R also supports the Digital part support:

- Improved performance
- Eliminates the DBT-01

DA-65R retrofit solution

Order specifications

DA-65R controller

- Type of hydraulics; Hoerbiger or external valve amplifier
Also specify original KO-table number
- Pressure valve; current (1.5A) or voltage (0-10V) output
- Type of crowning; motorized (<,>) or hydraulic (0-10V)
- Function outputs (F1-F3); floating or common GND
- Supply voltage; 230V or 115V
- Arm mounting dimensions; 95mm or 135mm

Additional

- Encoder conversion cables
- DI-01 cards
- HSB cables



Fill out the Retrofit Questionnaire

DA-65R variants

- Must be specified when ordering the DA-65R
- Use the Retrofit Questionnaire

DA-65R retrofit solution



Retrofit Questionnaire

General Information	
Brand of machine	
What hydraulic system is used (include copy of hydraulic switching diagram in case of a non Delem control!)	
Backgauge configuration	
Which brand controller is currently on the machine If Delem controller, which type and Serial Number	
Delem controller specific information	
General:	
What is the software version of the controller	
What KO-table is installed	
Input Voltage 230V or 110V	
Arm mounting bolts distance: 95mm or 135mm	
I/O Boards:	
<input type="checkbox"/> 7280-	Please complete the type number (e.g. 7280-002)
<input type="checkbox"/> 7281-	Please complete the type number
<input type="checkbox"/> 7282-	Please complete the type number
<input type="checkbox"/> 7289-	Please complete the type number
1 Y1 & Y2 Proportional valve	
<input type="checkbox"/> Internal valve amplifier	
<input type="checkbox"/> External Valve	
2 Y1 & Y2 Proportional valve	
<input type="checkbox"/> Internal valve amplifier	
<input type="checkbox"/> External Valve	

Retrofit Questionnaire

- Helps to specify the correct DA-65R variant
- Include the filled out form with the order

DA-65R retrofit solution

Spare parts

