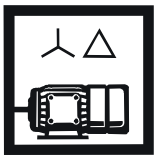
Contactor Control / Automation Technology / PLC

Contactor Control

2120	Contactor Control Board
2121.1	Contactor Board
2122	AC Multifunction Motor
2200	**Series** Contactor Control Demo Boards

Automation Technology / PLC

2150	Universal Component Board I
2151	Universal Component Board II
2152	Universal Component Board III
2153	Universal Component Board IV
215x.xx	PLC I/O Insert Modules
2156	Multifunction Display Board



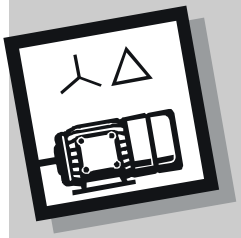
Fault Simulators Contactor Control (Series 3100)

3190	Contactor Circuit
3191	Reversing Contactor Circuit
3192	Star-Delta Circuit

hps SystemTechnik
Lehr- + Lernmittel GmbH
Altdorfer Strasse 16
88276 Berg (Germany)
Tel.: + 49 7 51 / 5 60 75 80
Fax: + 49 7 51 / 5 60 75 77
Web: www.hps-systemtechnik.com
E-Mail: export@hps-systemtechnik.com

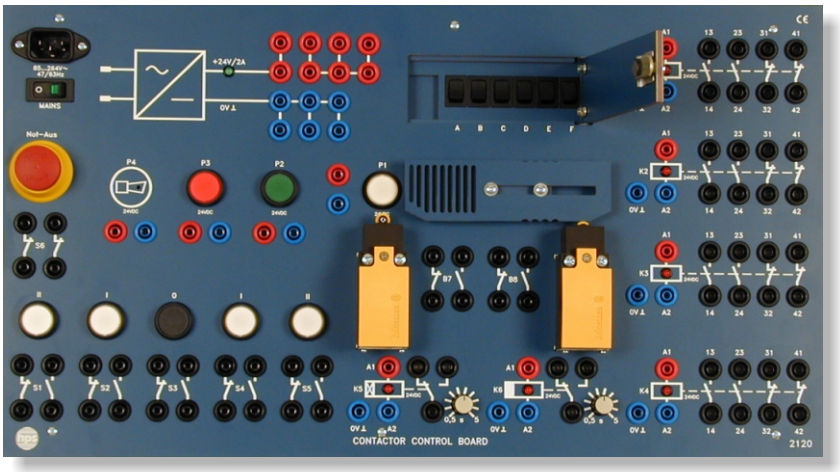
Contactor Control

Compact Training System from Conventional Control to the PLC

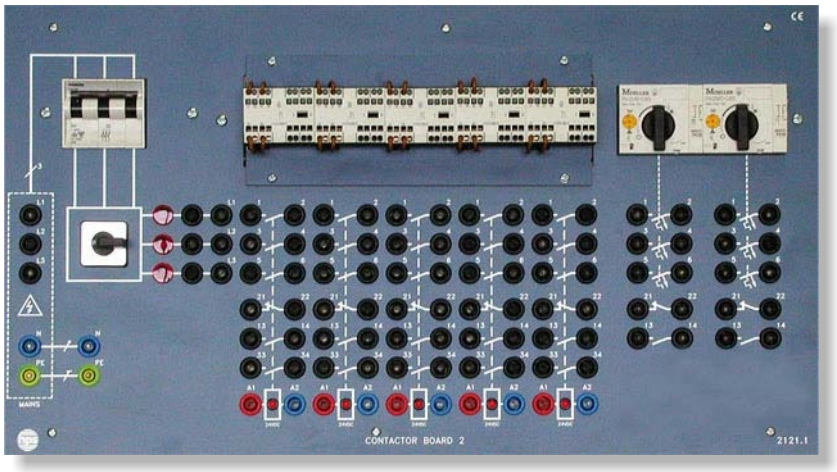


Contactor Control Training System

Types
2120 / 2121.1 / 2122



CONTACTOR CONTROL BOARD (Type 2120)



CONTACTOR BOARD (Type 2121.1)

AC MULTIFUNCTION MOTOR (Type 2122)

- **All introductory experiments in contactor control engineering (24 V) can be conducted with the CONTACTOR CONTROL BOARD.**
- **With built-in process simulation**
- **Built-in error simulator also makes it excellently suitable for tests**
- **All power parts such as line circuit breakers, load disconnecting switches, main contactors and motor circuit breakers are available on the CONTACTOR BOARD**
- **Special contactors enable direct control by a programmable logic control (PLC)**
- **The AC MULTIFUNCTION MOTOR enables all tests with asynchronous motor, motor with isolated windings and Dahlander motor**
- **No special lab equipment required, 1-phase or 3-phase mains connection suffices**

05 / 14 V02 Technical changes without prior notice!

hps SystemTechnik
Lehr- + Lernmittel GmbH
Altdorfer Strasse 16
88276 Berg (Germany)

Tel.: + 49 7 51 / 5 60 75 80
Fax: + 49 7 51 / 5 60 75 77
Web: www.hps-systemtechnik.com
E-Mail: export@hps-systemtechnik.com

Contactor Control Training System

Types
2120 / 2121.1 / 2122

Combination Possibilities of the Contactor Control Training System

Basic experiments in contactor control engineering with 24 V

CONTACTOR CONTROL BOARD
Type 2120

- Simple contactor circuits
- Contactor circuit with timer relay (delayed pick-up and drop-out)
- Use of emergency stop button according to VDE 0113 and VDE 0100
- Safety equipment according to the Machine Directive
- Contact labelling according to DIN

Experiments in contactor control engineering with application (motor)

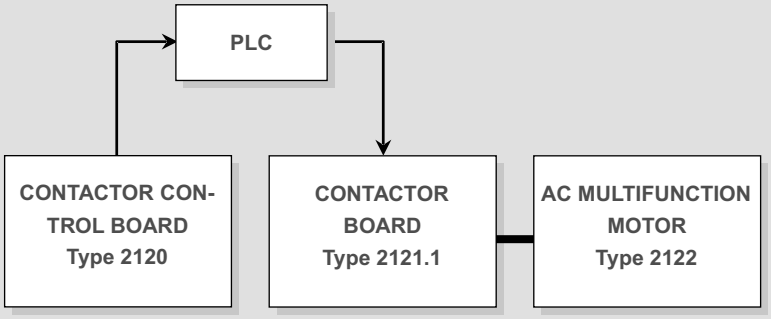
CONTACTOR CONTROL BOARD
Type 2120

CONTACTOR BOARD
Type 2121.1

AC MULTIFUNCTION MOTOR
Type 2122

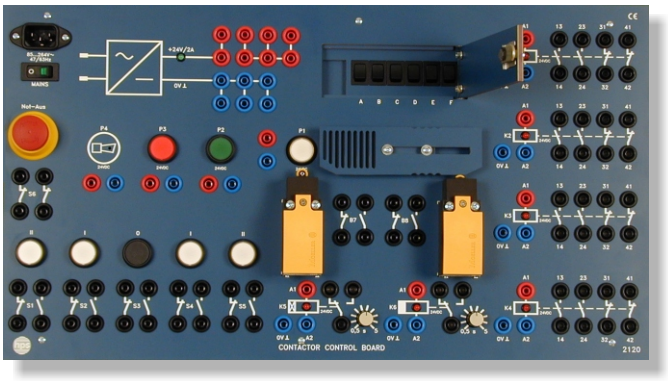
- Star-delta circuit
- Star-delta circuit with 2 directions of rotation
- Dahlander circuit
- Circuit for motor with isolated windings

Experiments in contactor control engineering with PLC and application (motor)



All the circuits listed above can also be set up in connection with a PLC.

Contactor Control



CONTACTOR CONTROL BOARD (Typ 2120)

You can conduct the most important basic experiments in contactor control engineering (24 V) with the CONTACTOR CONTROL BOARD. The built-in power supply enables direct use on a 1-phase mains.

Contactor Control Technical Data

Types 2120 / 2121.1

Power supply
- Mains connection: 85 ... 264 V AC / 47 ... 63 Hz
- Output: 24 V DC, 2 A

4 auxiliary contactors
- Operating voltage: 24 V DC
- Status display by LED
- 2 NCC, 2 NOC each, contact load: 250 V AC, 8 A

2 timer relays (delayed pick-up and drop-out)
- Operating voltage: 24 V DC, status display by LED
- 1 changeover switch, contact load: 250 V AC, 8 A
- Time delay, adjustable: approx. 0.5 ... 5 s

Simulation of a safety cover
- 2 limit switches for sensing the end positions
- 1 NCC, 1 NOC each, contact load: 250 V AC, 4 A
- Optical indication of the position by a signal lamp: white, 24 V, 40 mA

5 Push-buttons
- 1 NCC, 1 NOC each, contact load: 250 V AC, 4 A

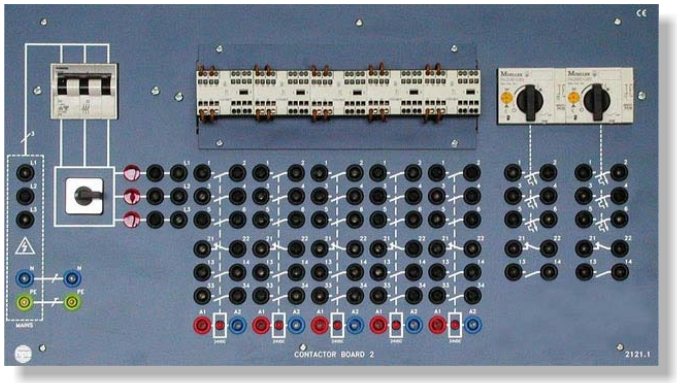
2 signal lamps, green, red: 24 V, 40 mA

Signal generator, acoustic: 24 V DC

Emergency stop switch
- 2 NCC, contact load: 250 V AC, 4 A

Error simulator with lockable doors
- Simulation of typical errors by rocker switch (A ... F), can be set individually and in combination

Dimensions / weight
- 532 x 297 x 130 mm (w x h x d) / weight: 3.6 kg



CONTACTOR BOARD (Type 2121.1)

The CONTACTOR BOARD is used for conducting experiments with main circuits in connection with the CONTACTOR CONTROL BOARD or a PLC.

The AC MULTIFUNCTION MOTOR (Type 2122) can be used as a load.

Power supply, 3-phase
- Mains connection: 400 V AC / 50 ... 60 Hz

5 main contactors with auxiliary contacts
- Operating voltage: 24 V DC / 2.3 W
  Due to the low current consumption the main contactors can be controlled directly by a PLC.
- Status display by LED
- 3 NOC, contact load: 400 V AC, 7 A
- auxiliary contacts:1 NCC, 2 NOC

2 motor circuit breakers
- Motor current: 0.4 ... 0.63 A, adjustable, with 2 additional auxiliary contacts (1 NCC, 1 NOC), other motor circuit breakers can also be installed if necessary.

Line circuit breaker: 3fold, 400 V AC, 2 A

Load disconnecting switch: 400 V AC, 25 A

Dimensions / weight
- 532 x 297 x 125 mm (w x h x d) / weight: 5.3 kg

Contactor Control
Technical Data

Type
2122

Contactor Control

AC MULTIFUNCTION MOTOR (Type 2122)

In contactor control engineering the AC MULTIFUNCTION MOTOR can be used in three different operating modes:

- As an asynchronous motor in star and delta operation with left and right hand rotation
- As a motor with isolated windings for two speeds, with left and right hand rotation
- As a Dahlander motor for delta or double star operation, with left and right hand rotation

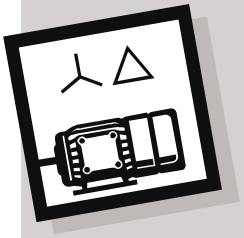
To easily recognise both direction of rotation and high and low speeds, a display has been installed which is fed by a tachogenerator.

Delta circuit
- Voltage / current: 400 V AC / 0.45 A
- Power: 0.1 kW
- Speed: 1350 rpm (at 50 Hz)
- cos : 0.71

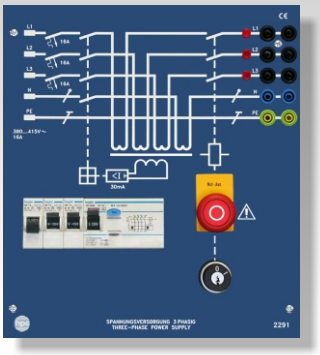
Double star circuit
- Voltage / current: 400 V AC / 0.5 A
- Power: 0.15 kW
- Speed: 2710 rpm (at 50 Hz)
- cos : 0.8

Dimensions / weight
- 532 x 297 x 270 mm (w x h x d)
- weight: 5.5 kg

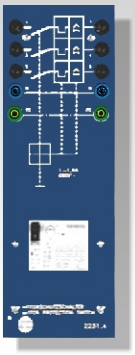
Contactor Control



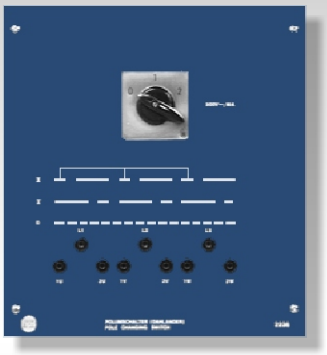
Contactor Control
Demo Boards
Series 2200



Three-Phase Power Supply



Motor Protection Switch



Pole Changing Switch

Three-Phase Induction Motor

- **Didactically sophisticated training system**
- **Designed for basic and further training in contactor control engineering**
- **Detailed experiment instructions**
- **Designed for electric machines with a power up to 1 kW**

With this training system, hps SystemTechnik offers a comprehensive program for conducting experiments in contactor control engineering.

The training system consists mainly of Demonstration Boards such as:

- Three-Phase Power Supply
- Motor Protection Switch
- Star-Delta Switch
- Pole Changing Switch
- Time Relay
- Over-Current Relay
- Contactor
- Instrument Reversing Switch

The standard illustration of the respective circuit on the Demonstration Boards enables optimum signal tracing.

The circuit is assembled with safety leads and safety connecting plugs through 4 mm jacks inset in the front of the Board.

The rear of the Demonstration Boards is protected with a grey plastic cover.
Its shape allows the Boards to be placed at an ergonomically favourable angle for example on a table.

To conduct the experiments, the Demonstration Boards are placed on a table or suspended in an hps rack for demonstration purposes.

The training system is accompanied by the experiment manual „Motor Control Gear", this contains numerous experiments with detailed circuit descriptions.

Technical Data

- Dimensions of the Demonstration Boards:
  95 x 297 mm (w x h)
  266 x 297 mm (w x h)
  The depths differ, see the following pages.
- Material of the front panel:
  5 mm thick laminate, matt blue in colour

The following pages contain further technical data and illustrations of the Demonstration Boards.

hps SystemTechnik
Competence in Training

hps SystemTechnik
Lehr- + Lernmittel GmbH
Altdorfer Strasse 16
88276 Berg (Germany)

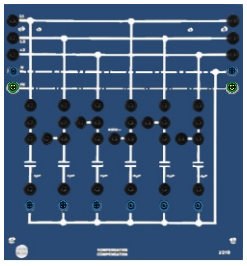
Tel.: + 49 7 51 / 5 60 75 80
Fax: + 49 7 51 / 5 60 75 77
Web: www.hps-systemtechnik.com
E-Mail: export@hps-systemtechnik.com

Contactor Control

Demonstration Boards for Contactor Control

Contactor Control
Demo Boards
Series 2200

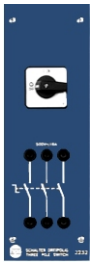

Type 2209


Type 2219

Fuse **Type 2209**
Diazede: up to 25 A; E 27 complete with cartridge 10 A slow-blow;
dimensions: 95 x 297 x 125 mm (w x h x d); weight: 0.7 kg

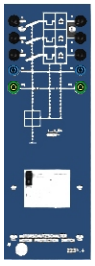
Compensation **Type 2219**
3 x 2 µF; 3 x 4 µF; 400 V AC; with discharge resistors 1.8 M (each);
dimensions: 266 x 297 x 80 mm (w x h x d); weight: 1.55 kg

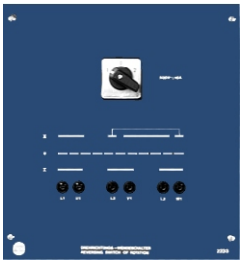

Type 2230


Type 2232

Fuse **Type 2230**
Neozede; triple; up to 25 A; complete with 3 cartridges 10 A slow-blow;
Dimensions: 95 x 297 x 125 mm (w x h x d); weight: 0.8 kg

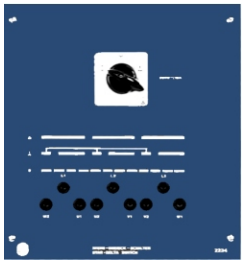
Three-Pole Switch **Type 2232**
500 V AC / 16 A; switch sequence: 0 - 1;
dimensions: 95 x 297 x 125 mm (w x h x d); weight 0.65 kg


Type 2231.4


Type 2233

Motor Protection Switch **Type 2231.4**
1,00 ... 1,60 A
Dimensions: 95 x 297 x 125 mm (w x h x d); weight: 0.8 kg

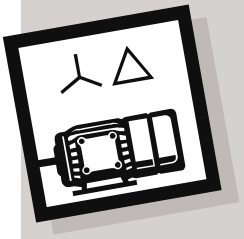
Reversing Switch of Rotation **Type 2233**
Three pole: 500 V AC / 16 A; switch sequence: 2 - 0 - 1;
dimensions: 266 x 297 x 125 mm (w x h x d); weight: 1.15 kg


Type 2234

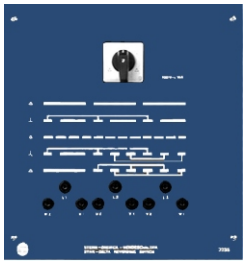
Star-Delta Switch **Type 2234**
500 V AC / 16 A; switch sequence: zero - star - delta;
dimensions: 266 x 297 x 125 mm (w x h x d); weight: 1.35 kg

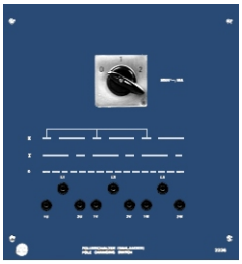
Contactor Control

Demonstration Boards for Contactor Control



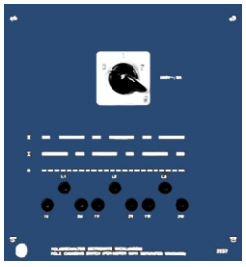
Contactor Control
Demo Boards
Series 2200

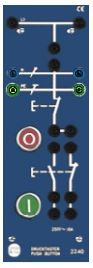

Type 2235


Type 2236

Star-Delta Reversing Switch **Type 2235**
500 V AC / 16 A; switch sequence: delta - star - zero - star - delta;
dimensions: 266 x 297 x 125 mm (w x h x d); weight: 1.3 kg

Pole Changing Switch (Dahlander) **Type 2236**
500 V AC / 16 A; switch sequence: 0 - 1 - 2 (zero - delta - double-star);
dimensions: 266 x 297 x 125 mm (w x h x d); weight 1.28 kg


Type 2237


Type 2240

Pole Changing Switch **Type 2237**
(for motor with separated windings)
500 V AC / 16 A; switch sequence: 0 - 1 - 2 (zero - star - star);
dimensions: 266 x 297 x 125 mm (w x h x d); weight: 1.3 kg

Pushbutton **Type 2240**
250 V AC / 16 A; key out: 1 NCC; key in: 1 NCC, 1 NOC;
dimensions: 95 x 297 x 125 mm (w x h x d); weight 0.6 kg


Type 2240.1


Type 2240.2

Pushbutton (off) **Type 2240.1**
250 V AC / 16 A; 1 NCC; 1 NOC;
dimensions: 95 x 297 x 125 mm (w x h x d); weight 0.55 kg

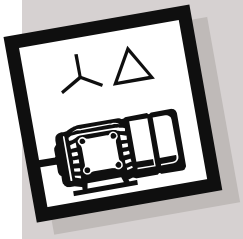
Pushbutton (on) **Type 2240.2**
250 V AC / 16 A; 1 NCC; 1 NOC;
dimensions: 95 x 297 x 125 mm (w x h x d); weight 0.55 kg


Type 2241


Type 2250

Signal Lamp (triple) **Type 2241**
220 ... 240 V AC; colours of the lamps: red, yellow, green;
dimensions: 95 x 297 x 125 mm (w x h x d); weight: 0.65 kg

Limit Switch **Type 2250**
250 V AC / 6 A; 1 NCC; 1 NOC;
dimensions: 95 x 297 x 125 mm (w x h x d); weight: 0.6 kg



Contactor Control

Demonstration Boards for Contactor Control

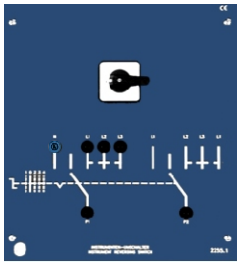
Contactor Control
Demo Boards
Series 2200

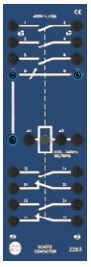

Type 2251


Type 2251.1

Proximity Switch (open-circuit principle) **Type 2251**
20 ... 250 V AC / 100 VA; inductive-type; switching distance: 10 mm;
dimensions: 95 x 297 x 45 mm (w x h x d); weight: 0.4 kg

Proximity Switch (closed-circuit principle) **Type 2251.1**
20 ... 250 V AC / 100 VA; inductive-type; switching distance: 10 mm;
dimensions: 95 x 297 x 45 mm (w x h x d); weight: 0.4 kg


Type 2255.1


Type 2263

Instrument Reversing Switch **Type 2255.1**
400 V AC / 4 A; 1 x phase to neutral contactor; 3 x phase to phase;
dimensions: 266 x 297 x 125 mm (w x h x d); weight: 1.25 kg

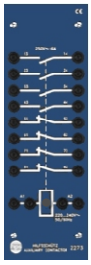
Contactor **Type 2263**
400 V AC / 16 A; 3 main contacts; 4 auxiliary contacts (2 NCC, 2 NOC);
coil voltage: 220 ... 240 V, 50 ... 60 Hz;
dimensions: 95 x 297 x 125 mm (w x h x d); weight: 1.0 kg

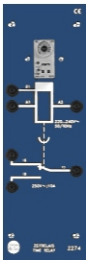

Type 2264.5


Type 2264.6

Over-Current Relay **Type 2264.5**
Auxiliary switch; 1 change-over contact; contact load: 250 V AC / 4 A
1,00 ... 1,60 A
Dimensions: 95 x 297 x 125 mm (w x h x d); weight: 0.85 kg

Over-Current Relay **Type 2264.6**
Auxiliary switch; 1 change-over contact; contact load: 250 V AC / 4 A
1,60 ... 2,50 A
Dimensions: 95 x 297 x 125 mm (w x h x d); weight: 0.85 kg


Type 2273

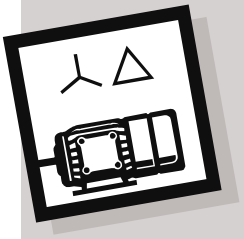

Type 2274

Auxiliary Contactor **Type 2273**
250 V AC / 6 A; 4 NOC; 4 NCC; coil voltage: 220 ... 240 V, 50 ... 60 Hz;
dimensions: 95 x 297 x 125 mm (w x h x d); weight: 1.0 kg

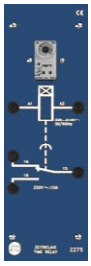
Time Relay (drop-out delay: 0.1 s ... 10 h) **Type 2274**
1 change-over contact; contact load: 250 V AC / 10 A, 250 V DC / 8 A;
Actuation voltage: max. 240 V AC, max. 24 V AC / DC (switchable);
dimensions: 95 x 297 x 125 mm (w x h x d); weight: 0.65 kg

Contactor Control

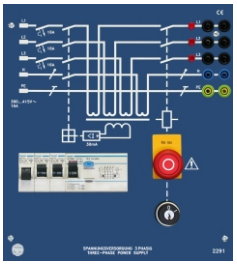
Demonstration Boards for Contactor Control



Contactor Control
Demo Boards
Series 2200



Type 2275



Type 2291

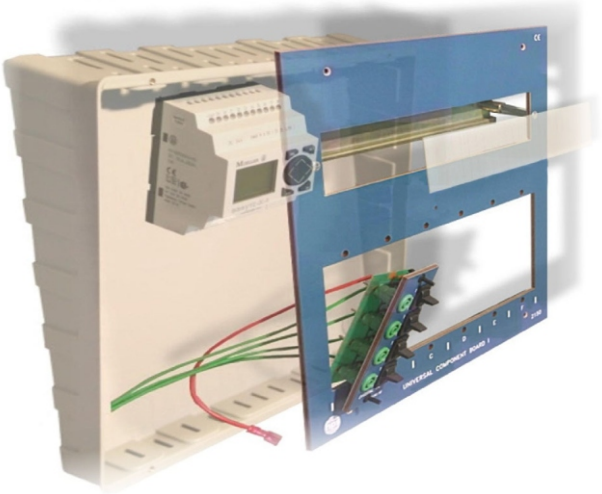
Time Relay (Pull-up delay: 50 ms ... 1 h) **Type 2275**
1 change-over contact; contact load: 250 V AC / 5 A, 125 V DC / 5 A;
actuation voltage: max. 240 V AC;
dimensions: 95 x 297 x 125 mm (w x h x d); weight: 0.6 kg

Three-Phase Power Supply **Type 2291**
380 ... 415 V AC / 16 A; with FI-circuit breaker: I_{FN} = 30 mA;
fuse: 16 A; type B; mains connection: Cekon plug (CEE standard);
dimensions: 266 x 297 x 125 mm (w x h x d); weight: 3 kg

Accessories Recommended

- Field Rectifier (Type 5503)
- RMS Multimeter (Type 1075)
- Electronic Power Meter (Type 1077)
- Electronic Phase-Angle Meter (Type 1078)
- Storage Cabinet (Type 8132)
- 2 Sets of Safety Connecting Leads (Type 9102.10), each containing 40 connecting leads
- Safety Connecting Plugs 4 mm/19 mm (Type 9101.4)
- Experiment manual: „Motor Control Gear" (Type V 0082)
- Three-Phase Induction Motor (e. g. Type 2707)
- Three-Phase Induction Motor, Dahlander (e. g. Type 2709)
- Three-Phase Induction Motor, with two separate windings (e. g. Type 2710)

Contactor Control

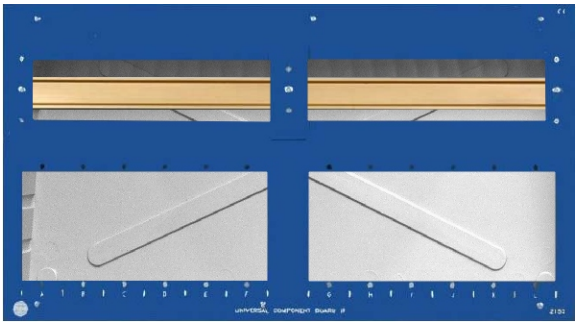


UNIVERSAL COMPONENT BOARD

Types
2150, -51, -52, -53

- **UNIVERSAL COMPONENT BOARD for the built-in of industrial components on a top hat rail**
- **Industrial components and existing trainings systems are placed into operation via 4 mm safety jacks.**
- **huge variety of insert modules**
- **low cost implementation of own ideas**
- **Possibility of accomplishment of project works**

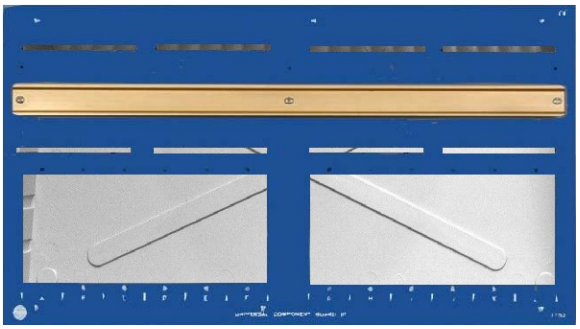
UNIVERSAL COMPONENT BOARD (Type 2150)



UNIVERSAL COMPONENT BOARD (Type 2152)

the top hat rail is mounted inside, up to 6/12 hps- insert modules could be assembled

UNIVERSAL COMPONENT BOARD (Type 2151)



UNIVERSAL COMPONENT BOARD (Type 2153)

the top hat rail is mounted on the front, up to 6/12 hps- insert modules could be assembled

hps SystemTechnik
Competence in Training

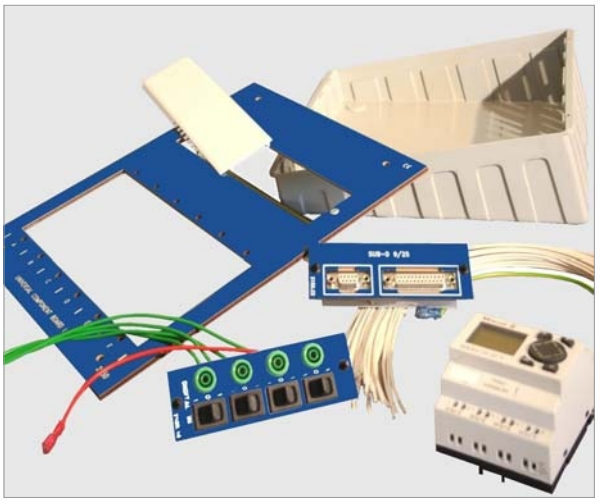
hps SystemTechnik
Lehr- + Lernmittel GmbH
Altdorfer Strasse 16
88276 Berg (Germany)

Tel.: + 49 7 51 / 5 60 75 80
Fax: + 49 7 51 / 5 60 75 77
Web: www.hps-systemtechnik.com
E-Mail: export@hps-systemtechnik.com

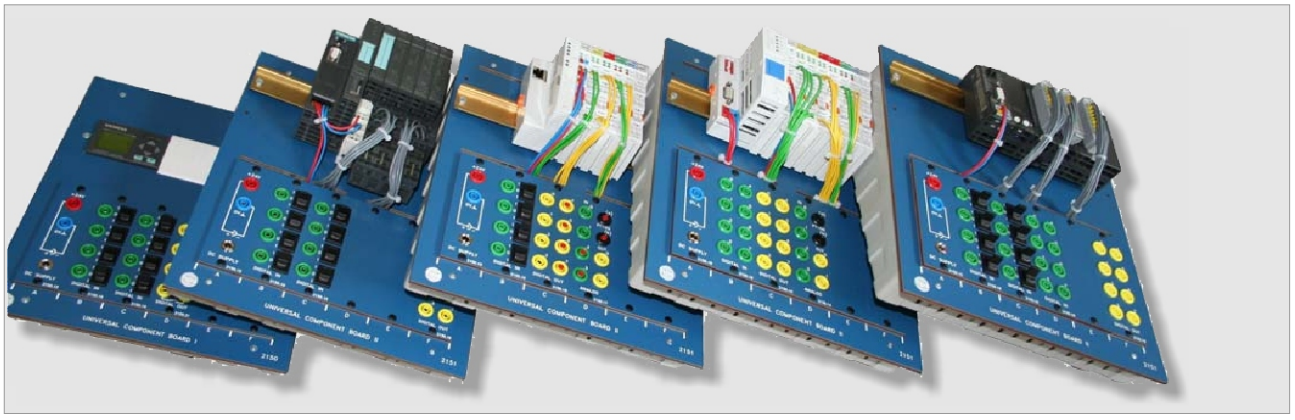
UNIVERSAL COMPONENT BOARD

Types
2150, -51, -52, -53

Contactor Control



UNIVERSAL COMPONENT BOARD I (Type 2150)



Examples for UNIVERSAL COMPONENT BOARD with varying components and insert modules

Mechanical Data

The top hat rail, that is mounted on the front, can be assembled with two varying heights. Therefore the industrial components could be mounted, which aren't eccentric placed on the top hat rail.

- **Material of the front panel:** Laminate (5 mm), matt blue
- **Rear front:** Grey plastic cover (angled)
- **Dimension:**

  UNIVERSAL COMPONENT BOARD I (Type 2150): 266 x 297 x 95 mm (w x h x d)

  UNIVERSAL COMPONENT BOARD II (Type 2151): 266 x 297 x 95 mm (w x h x d)

  UNIVERSAL COMPONENT BOARD III (Type 2152): 532 x 297 x 95 mm (w x h x d)

  UNIVERSAL COMPONENT BOARD IV (Type 2153): 532 x 297 x 95 mm (w x h x d)
- **Weight:**

  UNIVERSAL COMPONENT BOARD I: approx. 1.5 kg

  UNIVERSAL COMPONENT BOARD II: approx. 1.5 kg

  UNIVERSAL COMPONENT BOARD III: approx. 2.0 kg

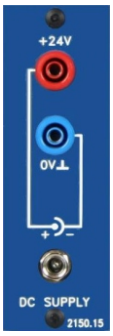
  UNIVERSAL COMPONENT BOARD IV: approx. 2.0 kg

Scope of delivery:

UNIVERSAL COMPONENT BOARD with mounted top hat rail and grey plastic cover. For the UNIVERSAL COMPONENT BOARDs (Type 2150 and 2152) covers are provided. With these covers the free space in the front of the board is closed after the assembly of the industrial components.

Contactor Control

Overview of the currently available insert modules, suitable for the UNIVERSAL COMPONENT BOARDs



DC SUPPLY (Type 2150.15)

Insert module (one width)

Connection of 24 V DC with 4 mm safety jacks or hollow plugs for the stabilised power supply unit (Type 3816) 24 V DC / 1 A

DIGITAL IN (Type 2150.16)

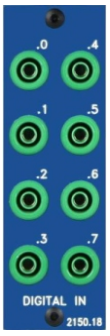
Insert module (one width)

4 digital inputs via 4 mm safety jacks and additional stimulation via 4 pushbutton/lock-in switches

ANALOG (Type 2150.17)

Insert module (one width)

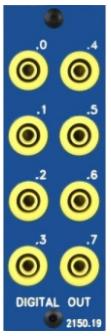
4 analog inputs, 2 analog outputs and 1 PT100 input via 4 mm safety jacks



DIGITAL IN (Type 2150.18)

Insert module (one width)

8 digital inputs via 4 mm safety jacks



DIGITAL OUT (Type 2150.19)

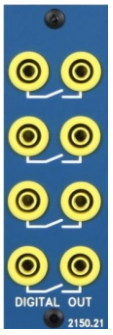
Insert module (one width)

8 digital outputs via 4 mm safety jacks

MAINS (Type 2150.20)

Insert module (one width)

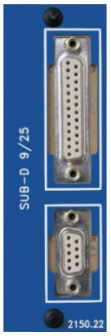
single-phase mains connection, with 2-pole mains switch, additional mains fuse and 3-core mains cable



DIGITAL OUT (Type 2150.21)

Insert module (one width)

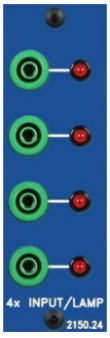
4 potential-free NOCs via 4 mm safety jacks



MECHATRONIC ADAPTER (Type 2150.22)

Insert module (one width)

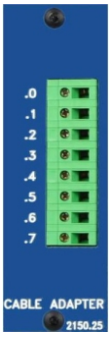
9-pin and 25-pin SUB-D adapter to connect mechatronic systems to a PLC



INPUT/LAMP (Type 2150.24)

Insert module (one width)

4 lamps, 24 V / 4 connections via 4 mm safety jacks



CABLE ADAPTER (Type 2150.25)

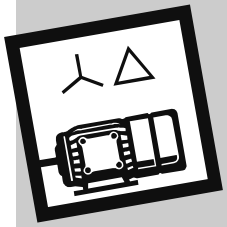
Insert module (one width)

for connection of 8 usual installation lines

DIGITAL IN AC (Type 2150.27)

Insert module (one width)

4 digital inputs via 4 mm safety jacks and additional stimulation via 4 pushbutton/lock-in switches 230 V AC



UNIVERSAL COMPONENT BOARD

Insert Modules

Contactor Control

MAINS (Type 2150.60)

Insert module
(one width)

For 230 V AC mains connection via 4 mm safety sockets, with phase pilot lamp

Blank panel (Type 2130.19)

Cover for one free expansion square
(one width)

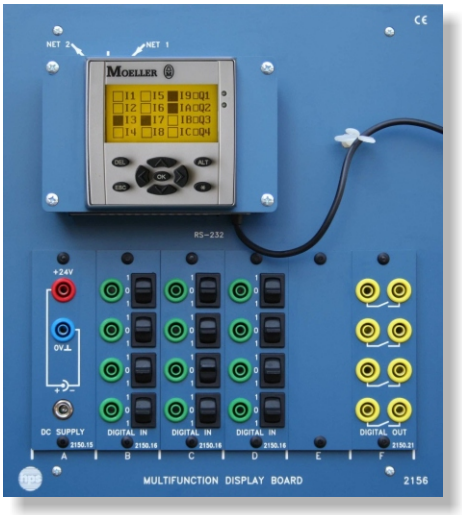
Blank panel (Type 2130.25)

Cover for two free expansion squares
(double width)

Scope of delivery for the insert modules:

Completely assembled insert modules with dowels to be built in the UNIVERSAL COMPONENT BOARD. Strands for connection of the insert module to the industrial components are provided.

Subject to technical modifications.



Front view of the
MULTIFUNCTION DISPLAY BOARD

Side view of the
MULTIFUNCTION DISPLAY BOARD

MULTIFUNCTION DISPLAY BOARD

Type 2156

- **The MULTIFUNCTION DISPLAY BOARD for fast access, provides additionally of the EASY 800-functions the visualization of texts, graphics and pictures.**
- **Provides the possibility to link up/networking with other easy-NET units.**
- **AI Inputs and Outputs are connected with 4 mm safety plugs. All 12 inputs are additionally equipped with switch for signals.**
- **Power supply with 4-mm- plugs or power supply unit type 3816 (optional).**
- **Easy to operate programming, software included.**

Mechanical Data

- **Material of the front panel:** Laminate (5 mm), matt blue
- **Rear front:** Grey plastic cover (angled)
- **Dimension:** 266 x 297 x 95 mm (w x h x d)
- **Weight:** approx. 2.0 kg

Scope of Delivery

- MULTIFUNCTION DISPLAY BOARD with built-in MFD-80 B, MFD-CP8-ME, MFD-R16
- Connecting lead easy 800-PC-CAB
- Software easy SOFT-PR (from Win 98) for programming
- inclusive documentation, manual for MFD-Titan and all control relays easy

Accessories Recommended

- Power supply unit stabilised 24 V DC / 1 A (Type 3816)

Technical Data

Operating voltage:
24 V DC; approx. 0.3 A

Built-in display with control unit:
Moeller MFD-Titan MFD-80B

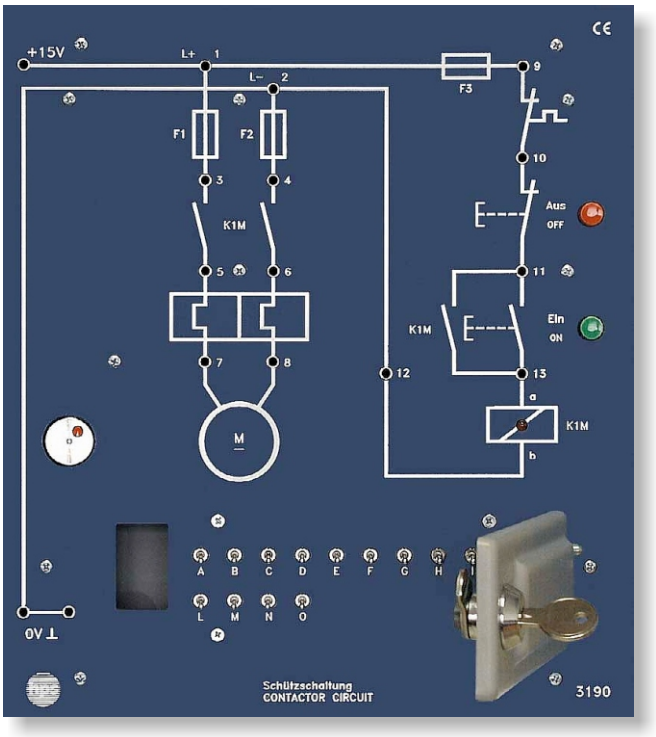
Specification of hardware:
- Graphic display 132 x 64 pixel
- Input keys integrated
- Text display
- Status LED's red and green
- 4 Cursor buttons
- 4 Button function keys
- 1 Mode button
- Design with easy-NET
- Output: 4 relay
- Inputs:12 digital

Interfaces:
- RS 232 for programming
- easy-NET bus connectors

Subject to technical modification.

hps SystemTechnik
Competence in Training
hps SystemTechnik
Lehr- + Lernmittel GmbH
Altdorfer Strasse 16
88276 Berg (Germany)
Tel.: + 49 7 51 / 5 60 75 80
Fax: + 49 7 51 / 5 60 75 77
Web: www.hps-systemtechnik.com
E-Mail: export@hps-systemtechnik.com

Contactor Control / Electric Machines



- **For troubleshooting and signal tracing in applied circuits in contactor control / electric machines**
- **Ideally suitable for test purposes**
- **Up to 14 errors can be set by toggle switches**
- **Short experiment setup times**
- **With detailed circuit descriptions**

Fault Simulators

Series 3100

With the Fault Simulators, hps SystemTechnik offers a comprehensive program for troubleshooting and signal tracing in applied circuits in the field of contactor control with electric machines.

Up to 14 possible practice-oriented errors such as breaks, short-circuits in lines, components and connections are simulated by toggle switches located behind a lockable panel.

The lockable panel over the toggle switches makes the fault simulators particularly suitable for conducting tests.

The respective circuit is illustrated in standard form on the Fault Simulators and enables optimum signal tracing and troubleshooting in connection with the external measuring points (4 mm jacks).

To conduct the experiments or for troubleshooting the Fault Simulators are placed on a table or suspended in an hps rack for demonstration purposes.

The rear of the Fault Simulators is protected with a grey plastic cover. Its shape allows the Fault Simulators to be placed at an ergonomically favourable angle for example on a table.

A detailed technical description is delivered with every Fault Simulator. In addition to a short description and error list, this contains general information on troubleshooting in circuits which lead to recognizing the error simulated by the Fault Simulator.

Technical Data

- Dimensions of the Fault Simulators:
  266 x 297 mm (w x h)
  The depths and weights differ, see the following pages.
- Material of the front panel:
  5 mm thick laminate, matt blue in coulor

Please see overleaf for other technical data of the individual Fault Simulators.

hps SystemTechnik
Competence in Training

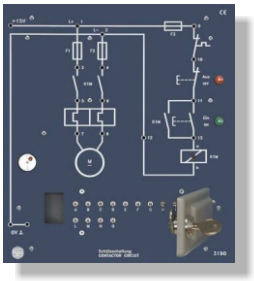
hps SystemTechnik
Lehr- + Lernmittel GmbH
Altdorfer Strasse 16
88276 Berg (Germany)

Tel.: + 49 7 51 / 5 60 75 80
Fax: + 49 7 51 / 5 60 75 77
Web: www.hps-systemtechnik.com
E-Mail: export@hps-systemtechnik.com

Fault Simulators

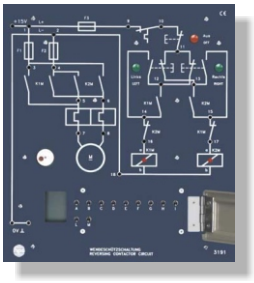
Series 3100

Contactor Control / Electric Machines



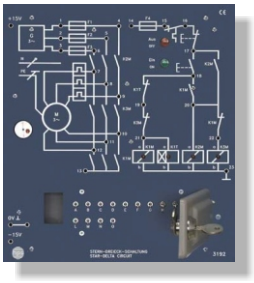
Type 3190

Contactor Circuit **Type 3190**
With overcurrent protection and connected small motor;
operating voltage and current: +15 V/320 mA; settable errors: 14;
dimensions: 266 x 297 x 97 mm (w x h x d); weight: 1.7 kg



Type 3191

Reversing Contactor Circuit **Type 3191**
With direct switching, overcurrent protection and
connected small motor;
operating voltage and current: +15 V / 300 mA;
settable errors: 12;
dimensions: 266 x 297 x 97 mm (w x h x d); weight: 1.6 kg



Type 3192

Star-Delta Circuit **Type 3192**
With small motor and overcurrent protection;
operating voltage and current:
+15 V / 600 mA, -15 V / 5 mA,10 V AC;
settable errors: 14;
dimensions: 266 x 297 x 97 mm (w x h x d); weight: 1.8 kg

Accessories Recommended for the Fault Simulators

- 3 Connecting Leads (Type 9102.2), with 4 mm plugs, length 60 cm
- 2 Connecting Leads (Type 9102.3), with 4 mm plugs, length 100 cm
- DC SUPPLY BOARD (Type 1002.1), +15 V DC / +5 V DC / -15 V DC

Technical changes without prior notice!