

**HURCO**

FIELD SERVICE BULLETIN

DATE: **November 1, 2000**

ISSUE NUMBER:

SUBJECT: **MIDACO Pallet Changer
J2 Interface Wiring**PRODUCT: **HURCO BEDMILLS WITH AUXILLARY OUTPUTS** **PAGE 1 OF 3**

The Midaco Automatic Pallet Changer requires two auxiliary outputs and two inputs to the Hurco Control. Midaco supplies the J-2 pigtail harness, which must be installed and operable prior to Midaco scheduling a technician to install the pallet changer.

The Hurco Ultimax Machine **MUST** have Software version 2.13 or higher. Also the Machine must have had FSB 1252B, M-CODE MODIFICATION.

The following relay and sockets are required to be installed into the Hurco Electrical Cabinet.

Qty	Description	Hurco PN	Schrack PN	Farnell Catalog PN
2	Relay	403-2001-054	RT 424 024	625-590
2	Socket	403-5001-020	RT 78 625	625-620
2	LED w/ diode	417-0001-047	RPM L0 024	x

**ORIGINATOR: MM
REVISED BY: BRR**

PROPRIETARY INFORMATION

INFORMATION CONTAINED HEREIN IS THE PROPERTY OF HURCO MANUFACTURING COMPANY, INC. NO REPRODUCTION OR DISCLOSURE OF THIS INFORMATION SHALL BE MADE BY THE RECIPIENT TO ANY OTHER PERSON OR ORGANIZATION WITHOUT THE PRIOR WRITTEN CONSENT OF HURCO MANUFACTURING COMPANY, INC.

A. Harness Installation

1. Install the two relay sockets, relays, and LED/Diode Module on an existing rail in the control cabinet. Label the relays CR 52 and CR 53.
2. Install the J-2 connector into the control cabinet. The indexer port location can be used if the customer does not have an indexer, otherwise a new hole will have to be drilled.
3. Wire the harness, using the wiring diagram on the last page of this document. (Ref. FSB 1252B).

B. Configure M-Code Parameters

1. To Access the parameters, Power On the Hurco Control. After the Control has booted up, press the “Auxiliary” key, “Enter” key, 100, “Enter” key: The integrator defined M-Codes are found in Integrator Support Services under:
F1 – CNC Configuration Parameters
F7 - General Parameters
M-Code Table
Page Down
2. Change the Program Operation Label for the M-Codes as follows:
(These labels will only be displayed in a conversational program.)
Reference FSB1252B.

M Code Table	Program Operation Label
52	Change to Pallet #1
53	Change to Pallet #2
54	Aux Out #3
55	Aux Out #4
62	Finish Pallet Change #1
63	Finish Pallet Change #2
64	Aux Out #3 Off
65	Aux Out #4 Off

3. The M-Code confirmation enable is found in Integrator Support Services under:
F2 – Integrator Configuration Parameters
F2 – Integer parameters
F1 – Jump to parameter 250
Change the value of N95:250 to 6
This change will activate Aux Inputs 1 and 2. Reference FSB 1252B.

C: Verify Operation of Auxiliary Outputs

1. Write a simple Hurco conversational program that will cycle the outputs and cancel them when a finish signal is received.

From the Input Screen on the Ultimex Control press the following key sequence:

F3 Part Programming

F5 Miscellaneous

F5 Machine Function

Enter the M Code Number

Conversational Program Example:

Block 1: MACHINE FUNCTION
M CODE 52 (CHANGE TO PALLET #1)

Block 2: MACHINE FUNCTION
M CODE 62 (FINISH PALLET CHANGE)

Block 3: MACHINE FUNCTION
M CODE 53 (CHANGE TO PALLET #2)

Block 4: MACHINE FUNCTION
M CODE 63 (FINISH PALLET CHANGE)

Verification:

When block 1 is executed, CR52 will energize. Verify continuity across J-2, pins 6 and 7.

Cancel output by temporarily shorting J-2, pins 9 and 10. Verify CR52 de-energizes.

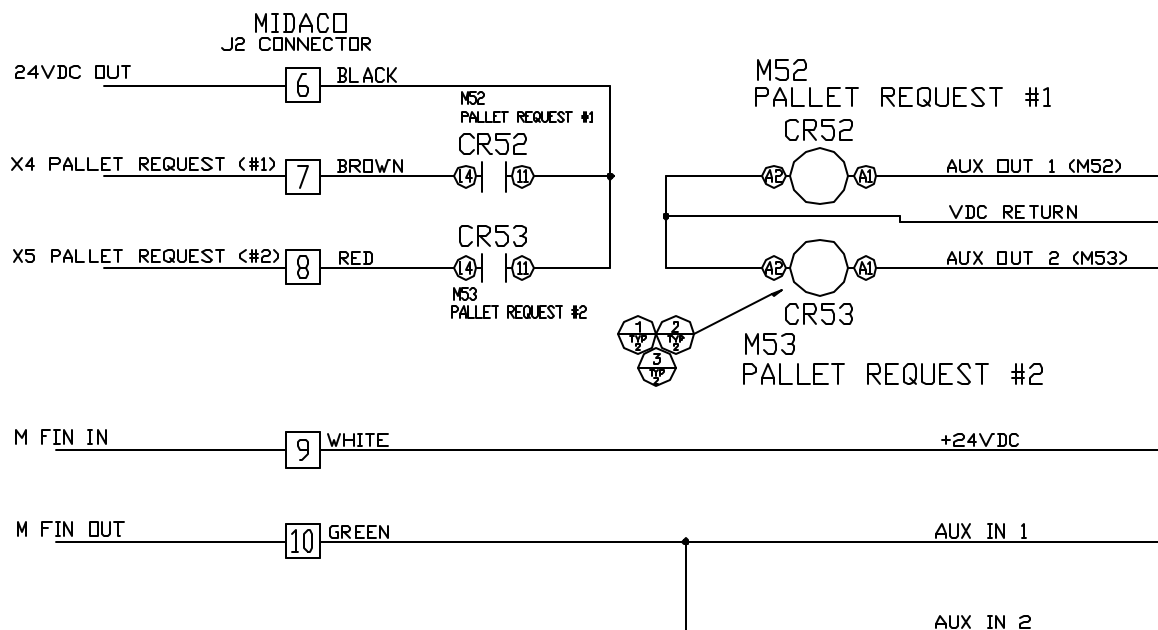
When block 3 is executed, CR53 will energize. Verify continuity across J-2, pins 6 and 8.

Cancel output by temporarily shorting J-2, pins 9 and 10. Verify CR53 de-energizes.

Program should now be complete

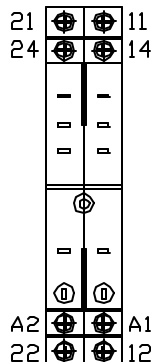
RELAY ADDITIONS REQUIRED FOR 2 EXTERNAL M CODES M52 & M53

HURCO WIRE TERMINATIONS BASED UPON CABINET DETAIL



MACHINES WITH FACTORY INSTALLED TB1 & TB2 TERMINAL STRIPS	MACHINES WITH FIELD INSTALLED 20 POSITION M-CODE TERMINAL STRIP	MACHINES WITH INTERFACE MODULES BLK1, BLK2 BLK3
TB2-45	TB1-16	BLK3-25
TB2-55	TB1-1	BLK1-35
TB2-46	TB1-17	BLK3-26
TB2-1	TB1-11	BLK2-33
TB2-21	TB1-6	BLK1-13
TB2-22	TB1-7	BLK1-14

RT78625
Socket
Pinout



REF	QTY	DESCRIPTION	TERMS
2	1	417-0001-047 MODULE, LED/BIODE SCHRACK W RPH LD D24	4
2	1	403-5001-020 SOCKET, RELAY, SCHRACK # RT78625	2
2	1	403-2001-054 RELAY, 24VDC, 2 POLE, 8A, SCHRACK # RT42024	1

REV	DATE	DESCRIPTION	BY	CHKD	APP'D	DATE	TERMS
A	X	REL					

DESCRIPTION	DATE	TERMS	BY	APP'D	DATE
MIDACO J2 M-CODE ADDITION					

Interface Power Relay RT

1 pole 12 / 16 A, 2 pole 8 A, DC- or AC coil



F0159-A

- 1 C/O 12 or 16 A or 2 C/O 8 A
- Sensitive coil 400 mW
- Cadmium-free contacts
- Protection class II (VDE 0700)
- 5 kV / 10 mm coil-contact
- 1 pole 12 A with 3.5 or 5 mm pinning
- Plug-in relay with robust pins
- Recycleable packaging

Applications
Panel boards, mechanical engineering



Technical data of approved types on request

Contact data

Configuration	1 C/O contact	2 C/O contacts
Type of contact	single contact	
Rated current	12 / 16 A	8 A
Rated voltage / max. breaking voltage	250 Vac / 440 Vac	
Rated breaking capacity	3000 / 4000 VA	2000 VA
Make current (max. 4 s at duty cycle 10%)	25 / 30 A	15 A
Contact material	AgNi 90/10	

Contact life

Type	Load	Operations	Standard
RT314	16 A, 250 Vac, C/O contact	3x10 ⁴	VDE 0435

Coil data

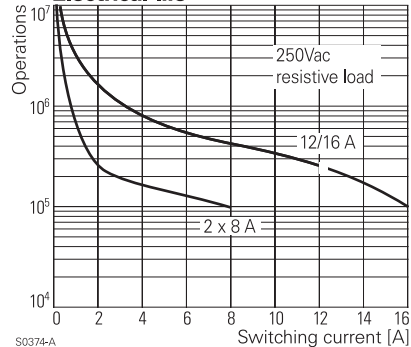
Nominal voltage	DC coil	6...110 Vdc
	AC coil	24...230 Vac
Nominal coil power	DC coil	400 mW
	AC coil	0.75 VA
Operate category	2 / b	

Coil versions, DC-coil

Coil code	Nominal voltage Vdc	Pull-in voltage Vdc	Release voltage Vdc	Maximum voltage Vdc	Coil resistance Ω	Coil current mA
006	6	4.2	0.6	15.3	90±10%	66.7
012	12	8.4	1.2	30.6	360±10%	33.3
024	24	16.8	2.4	61.2	1440±10%	16.7
048	48	33.6	4.8	122.4	5520±10%	8.7
060	60	42.0	6.0	153.0	7340±12%	8.1
110	110	77.0	11.0	280.5	26600±12%	4.1

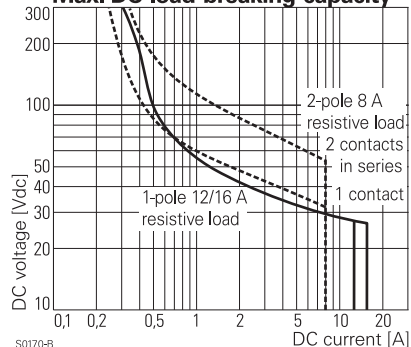
All figures are given for coil without preenergization, at ambient temperature +20°C
Other coil voltages on request

Electrical life



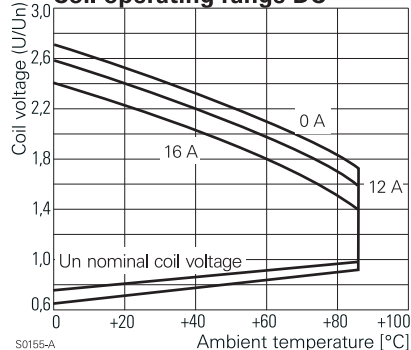
S0374-A

Max. DC load breaking capacity



S0170-B

Coil operating range DC



S0155-A

Interface Power Relay RT

1 pole 12 / 16 A, 2 pole 8 A, DC- or AC coil

Coil versions, AC-coil

Coil code	Nominal voltage Vac	Pull-in voltage Vac	Release voltage Vac	Maximum voltage Vac	Coil resistance Ω	Coil current mA
524	24	18.0	7.2	36.0	350\pm10%	31.6
615	115	86.3	34.5	172.5	8100 \pm 15%	6.6
730	230	172.5	69.0	345.0	32500\pm15%	3.2

All figures are given for coil without preenergization, at ambient temperature +20°C
Other coil voltages on request

Insulation

Dielectric strength	coil-contacts	5000 V _{rms}
	open contact circuit	1000 V _{rms}
	adjacent contacts	2500 V _{rms}
Clearance / creepage		$\geq 10 / 10$ mm
Insulation to IEC 664/VDE 0110 (1/89)		
Voltage rating		250
Pollution degree		3
Overvoltage category		III
Insulation to VDE 0110b (2/79)		
Insulation category / reference voltage		C / 250, B / 400
Tracking resistance		CTI 250

Other data

	1 C/O contact	2 C/O contacts
Flammability class UL		V-0
Ambient temperature		-40...+85 °C
Mechanical life	DC-coil >30x10 ⁶ ops. AC-coil >10x10 ⁶ ops.	>30x10 ⁶ ops. >5x10 ⁶ ops.
Max. switching rate at rated- / minimum load	6 min ⁻¹ / 1200 min ⁻¹	
Operate- / release time DC-coil	typ. 7 / 3 ms	typ. 7 / 2 ms
Bounce time N/O contact/N/C contact	typ. 1 / 3 ms	typ. 1 / 3 ms
Vibration resistance N/O / N/C contact	>10 / 5 g; 30...150 Hz	
Shock resistance (destruction)	>100 g	
Protection category	IP 50	
Relay weight	14 g	
Packaging unit	20 / 500 pcs.	
Accessories	see accessories RT, page 101	

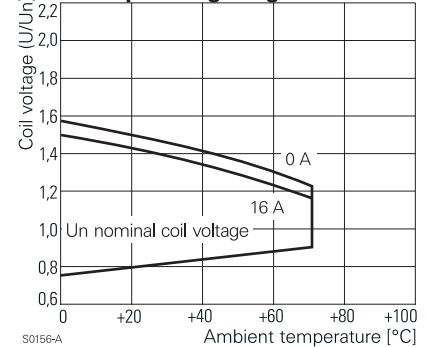
Ordering key

Type	Version	Contact configuration	Contact material	Coil
	1 1-pole, 12 A, pinning 3.5 mm	1 1 C/O contact	4 AgNi 90/10	
	2 1-pole, 12 A, pinning 5 mm	2 2 C/O contacts		
	3 1-pole, 16 A, pinning 5 mm			
	4 2-pole, 8 A, pinning 5 mm			

Coil code: please refer to coil versions table, preferred types in bold print

Washable version on request

Coil operating range AC

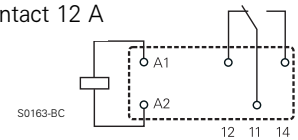


S0156-A

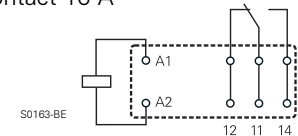
Terminal assignment

View on pins

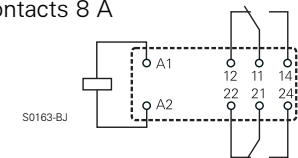
1 C/O contact 12 A



1 C/O contact 16 A

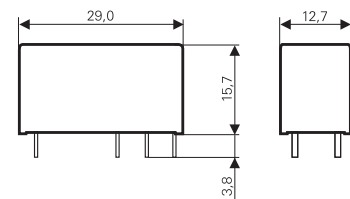


2 C/O contacts 8 A



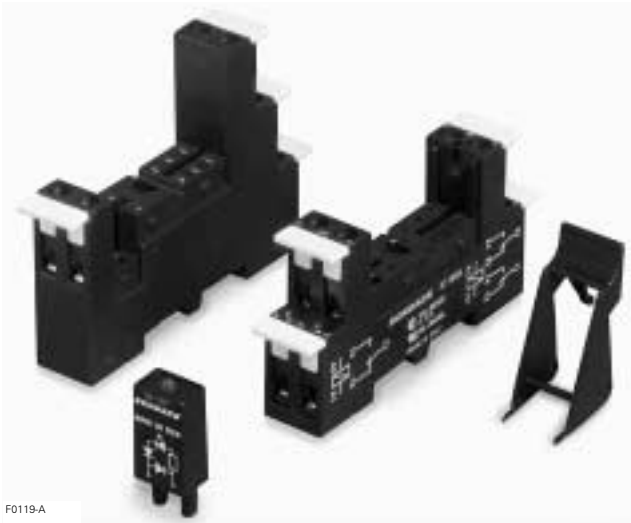
Dimensions

Dimensions in mm



S0272-AA

Accessories Industrial Power Relay RT



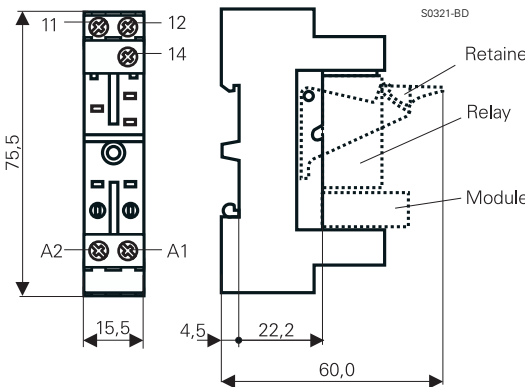
- New retainer clip with ejection function
- Easy replacement of relays on a densely packed DIN rail
- High quality rising clamp terminals
- Captive combination terminal screws
- No reduction of protection class or creepage/clearance with plastic retainer
- Simple plug-in indicator- and function modules
- White snap-on tags
- Not suitable for bistable relays with 2 coils

Accessories for sockets:

- Rejector
- Function- and protection modules
- Marking tags

Dimensions in mm

RT 78 624 Socket with screw-type terminals, pinning 3.5 mm for DIN rail mounting

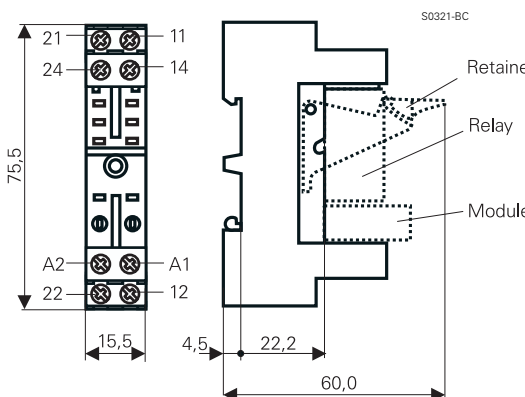


Technical data

Rated current	12 A
Rated voltage	300 Vac
Dielectric strength coil/cont.	>4000 V _{rms}
Insulation cat. (VDE 0110b)	C / 250 Vac
Ambient temperature	-25...85 °C
Protection category	IP 20
Protection against accidental contact meets	VBG 4
Wire cross section	2 x 2.5 mm ²
with bootlace crimp	2 x 1.5 mm ²
Packaging unit	20 pcs.

Retainer **RT 16 016**

RT 78 625 Socket with screw-type terminals, pinning 5 mm for DIN rail mounting



Technical data

Rated current	1 pole	12 A *)
	2 pole	2 x 12 A
Rated voltage	300 Vac	
Dielectric strength coil/cont.	>4000 V _{rms}	
Insulation cat. (VDE 0110b)	C / 250 Vac	
Ambient temperature	-25...+80 °C	
Protection category	IP 20	
Protection against accidental contact meets	VBG 4	
Wire cross section	2 x 2.5 mm ²	
Packaging unit	20 pcs.	

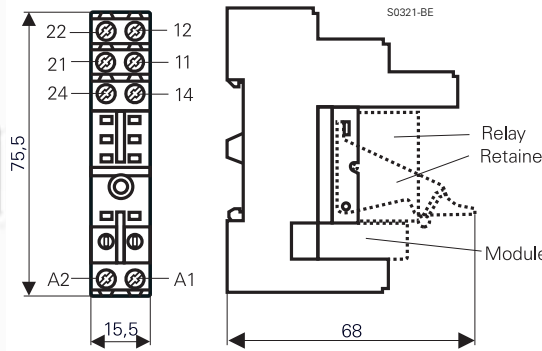
*) For RT 1 pole (16 A) the parallel terminals 11-21, 12-22 and 14-24 have to be bridged
 For RT 1 pole (12 A) the parallel terminals 11-12-14 have to be connected to the socket terminals 21-12-24

Retainer **RT 16 016**

Accessories Industrial Power Relay RT

RT 78 626 Socket with screw-type terminals, pinning 5 mm for DIN rail mounting

- Logical set-up of connections (input/output)
- Insulation to VDE 0106



Retainer **RT 16 016**

Dimensions in mm



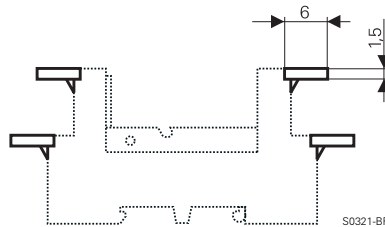
Technical data

Rated current	1 pole	12 A *)
	2 pole	2 x 12 A
Rated voltage	300 Vac	
Dielectric strength coil/cont.	>4000 V _{rms}	
Insulation cat. (VDE 0110b)	C / 250 Vac	
Ambient temperature	-25...+80 °C	
Protection category	IP 20	
Protection against accidental contact meets	VBG 4	
Wire cross section	2 x 2.5 mm ²	
Packaging unit	20 pcs.	

*) For RT 1 pole (16 A) the parallel terminals 11-21, 12-22 and 14-24 have to be bridged

For RT 1 pole (12 A) the parallel terminals 11-12-14 have to be connected to the socket terminals 21-12-24

RY 16 040 Marking tags



- White
- Marking area 15.5 x 6 mm
- Snaps on socket in up to 4 positions

Function- and Protection Modules

F0123-A



Function- and Protection Modules

Easy insertion of module into the socket
Wiring in parallel to the coil

Ordering code	Type
RPM T0 0A0	Protection diode 1N4007 ¹⁾
RPM U0 548	RC-network 24...48 Vac
RPM U0 730	RC-network 110...230 Vac
RPM L0 024	LED 12...24 Vdc w.prot.diode ¹⁾
RPM L0 524	LED 12...48 Vdc / Vac
RPM L0 110	LED 60...110 Vdc w.prot.diode ¹⁾
RPM L0 730	LED 110...230 Vac

¹⁾ Standard polarity: A1:+, A2:-