KM-OPTOIN-32

EDP No: A-483600

32 optically isolated inputs

wasco®

user‘s guide

wasco®

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1. Description

The module KM-OPTOIN-32 provides a very inexpensive galvanic isolation with Schmitt-Trigger function for the TTL inputs of the WITIO-PCI160EXTENDED, WITIO-PCI64EXTENDED and WITIO-PCI32STANDARD cards. The optocouplers are additionally protected against harmful voltage peaks and pulses by protection diodes. Two different input voltage ranges for the 32 input channels can be selected by easily changeable pluggable resistance arrays.
The input module KM-OPTOIN-32 can be connected to the 68-pin SCSI-II socket of a WITIO combined with the output module KM-OPTOOUT-32, KM-PREL-16, KM-REL-8 or the screw terminal module KMDB-68 via a connection module. For this purpose, 68-pin connection cables are available in various lengths. Uncomplicated connection to the peripherals is done by screw terminals. The polyamide chassis of the KM-OPTOIN-32 is fitted with foot elements to snap onto DIN-EN top-hat rails.

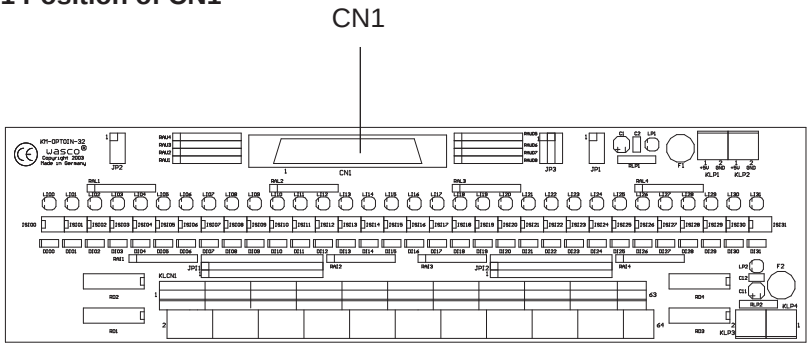
2. Safety Instructions

Observe the relevant VDE regulations!

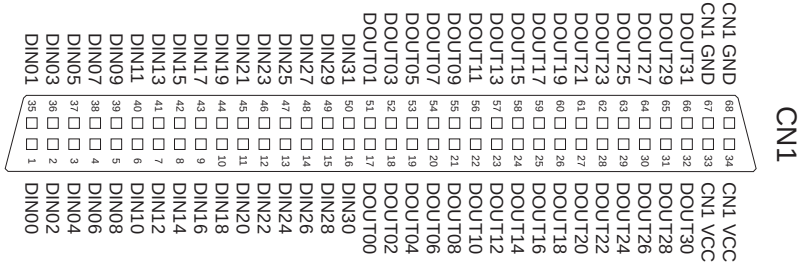
The KM-OPTOIN-32 module was designed for operation in control cabinets.

3. Connection socket

3.1 Position of CN1



3.2 Pin Assignment of CN1

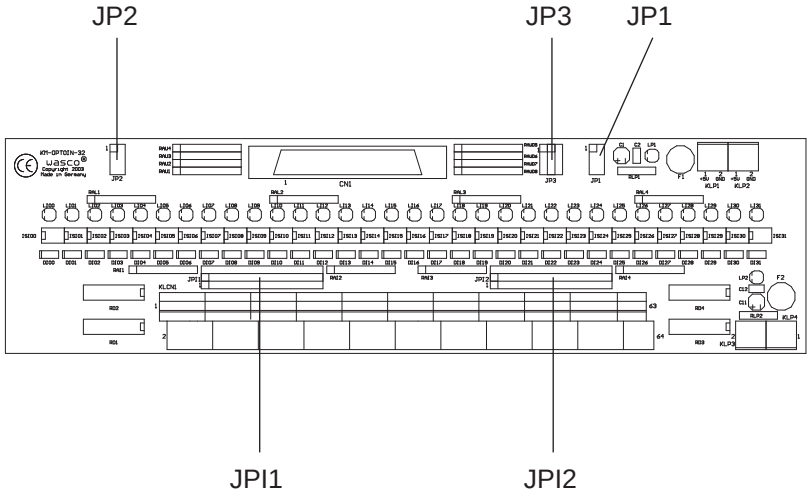


Vcc:
Connector for internal voltage source (+ 5V), **Never apply an external voltage across this pin.**

GND:
Ground connection

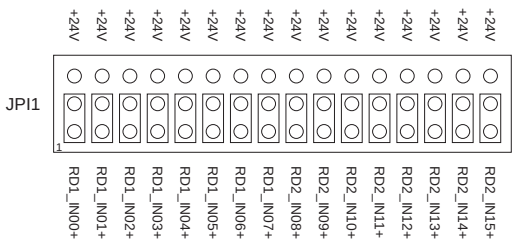
4. Jumper blocks

4.1 Position of the Jumper Blocks

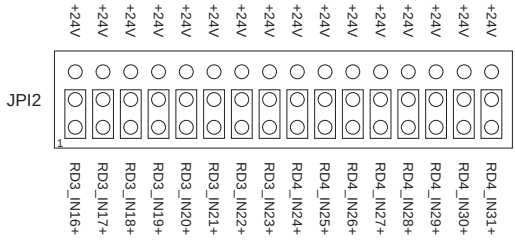


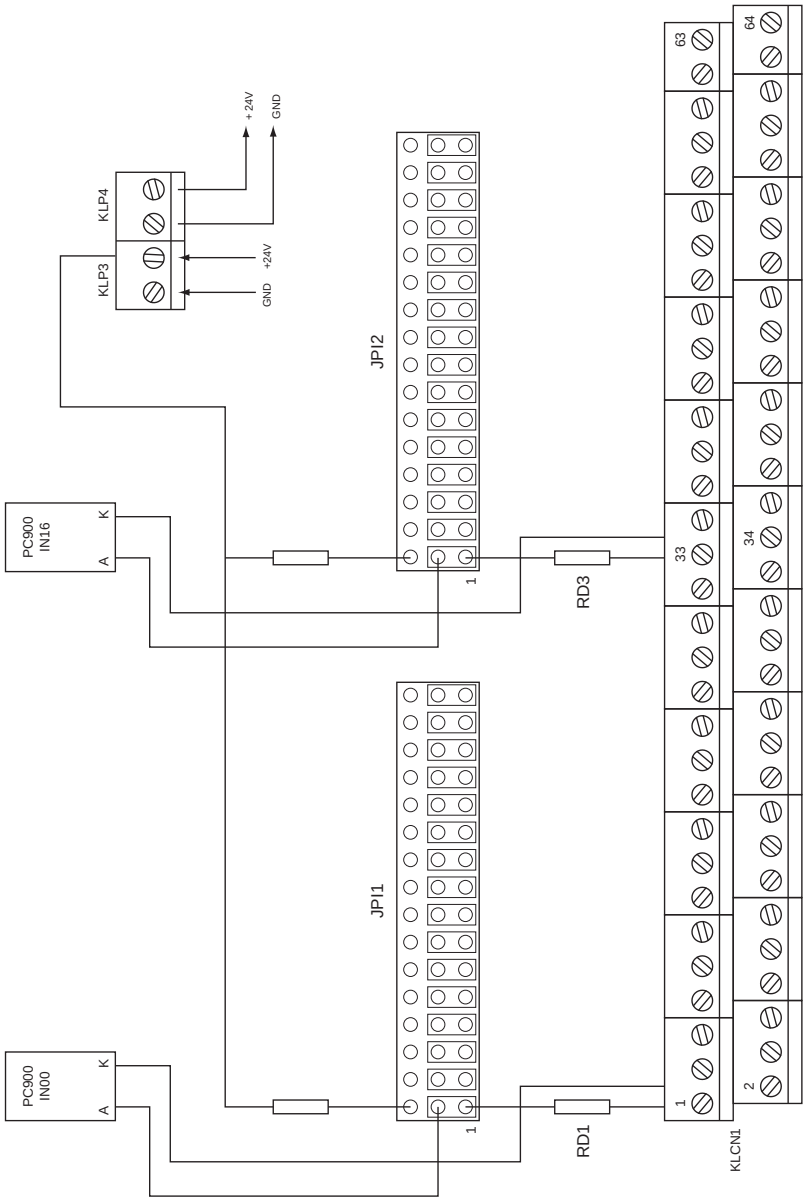
JP1: Power supply of the module internal or external
JP2: Status LEDs (On/Off)
JP3: Disconnection of the the data lines DOUT00...DOUT31 (optional)
JPI1: Triggering the optocoupler inputs IN00...IN15
JPI2: Triggering the optocoupler inputs IN16...IN31

4.2 Jumper Block Assignment JPI1



4.3 Jumper Block Assignment JPI2

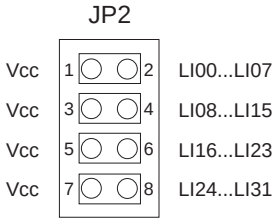



KLP4
KLP3
+ 24V
GND
+24V
GND
JPI2
JPI1
PC900
IN16
PC900
IN00
A
K
1
RD3
RD1
33
34
63
64
2
KLCN1

4.4 Jumper Block Assignment JP1

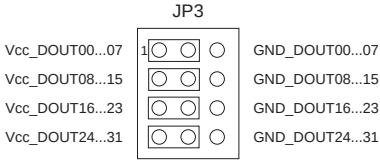
JP1 provides the power supply of the +5V KM-OPTOIN-32 module either via an external power source or internally via the **wasco**® PCI card.
Attention:
In order not to overload the card, the power supply must be connected externally when using several KM modules on one PCI card!

4.5 Jumper Block Assignment JP2



The status LEDs Lo00...Lo31 are powered via JP2. You can switch off the LEDs block by block by removing the jumpers on JP2.

4.6 Jumper Block Assignment JP3



In order to reduce possibly occurring spurious signals on the data lines DOUTxx, via JP3 you can connect the data lines block by block to +5V or GND via optionally usable terminating resistors (resistance decades RAUD5...RAUD8).

5. Operation Displays/Fuse Protection

Operation display
Upon applying the +5V DC voltage supply, the Power-On LED LP1 indicates the unit to be ready for operation.

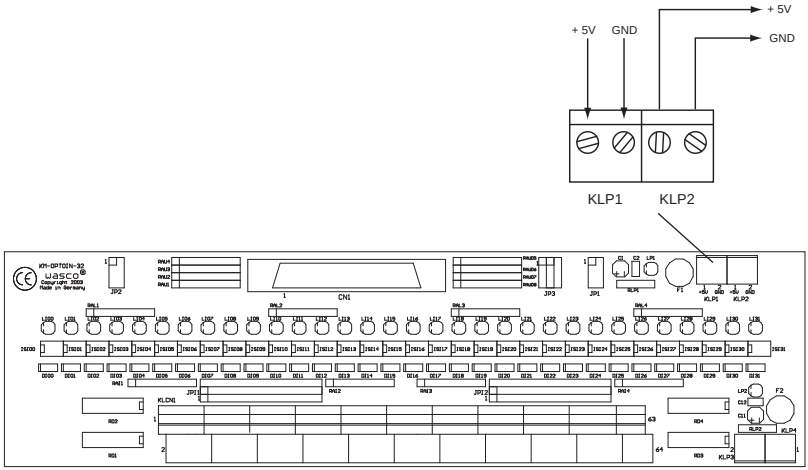
Status displays
The status LEDs (LI00...LI31) indicate the state of the control channels. The respective status LED is lit when the control channel is active.

Fuse protection
The operation power supply +5V is protected by a 1A miniature fuse (F1)

6. Installation of the KM-OPTOIN-32

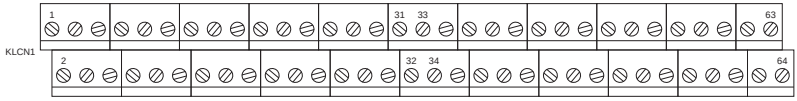
Before starting the installation, make sure there is no current in/to the entire system.

Check the correct position of the jumpers. When the power disconnection is ensured, snap the module onto the DIN-EN rail at the intended position. When using an external voltage supply, connect the power supply (+5V and GND) to the terminal pair KLP1 as shown in the figure below. The terminal pair KLP2 can be used to forward the operating power supply to the next KM module, if required. KLP3 and KLP4 are exclusively intended for connecting a +24V power supply when controlling the optocoupler inputs with minus input. For default operation, they are not necessary.

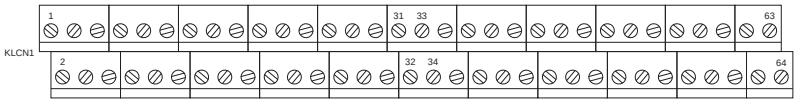


The KM-OPTOIN-32 requires an operating voltage of +5V DC. Connect the peripherals via the terminals KLCN1 - KLCN64. Ensure a strain relief on all of the wiring connections. Finally, connect the module to the **wasco**® card via a connection cable. The DS68R200DS68 is the intended cable. Check again all of the connections for correctness and secure mounting. Ensure that the Power-On LED LP1 is lit after you have switched on the system.

Please observe the polarity of the optocoupler connections!



Input IN00 +	KLCN1_1	Input IN08 +	KLCN1_17
Input IN00 -	KLCN1_2	Input IN08 -	KLCN1_18
Input IN01 +	KLCN1_3	Input IN09 +	KLCN1_19
Input IN01 -	KLCN1_4	Input IN09 -	KLCN1_20
Input IN02 +	KLCN1_5	Input IN10 +	KLCN1_21
Input IN02 -	KLCN1_6	Input IN10 -	KLCN1_22
Input IN03 +	KLCN1_7	Input IN11 +	KLCN1_23
Input IN03 -	KLCN1_8	Input IN11 -	KLCN1_24
Input IN04 +	KLCN1_9	Input IN12 +	KLCN1_25
Input IN04 -	KLCN1_10	Input IN12 -	KLCN1_26
Input IN05 +	KLCN1_11	Input IN13 +	KLCN1_27
Input IN05 -	KLCN1_12	Input IN13 -	KLCN1_28
Input IN06 +	KLCN1_13	Input IN14 +	KLCN1_29
Input IN06 -	KLCN1_14	Input IN14 -	KLCN1_30
Input IN07 +	KLCN1_15	Input IN15 +	KLCN1_31
Input IN07 -	KLCN1_16	Input IN15 -	KLCN1_32

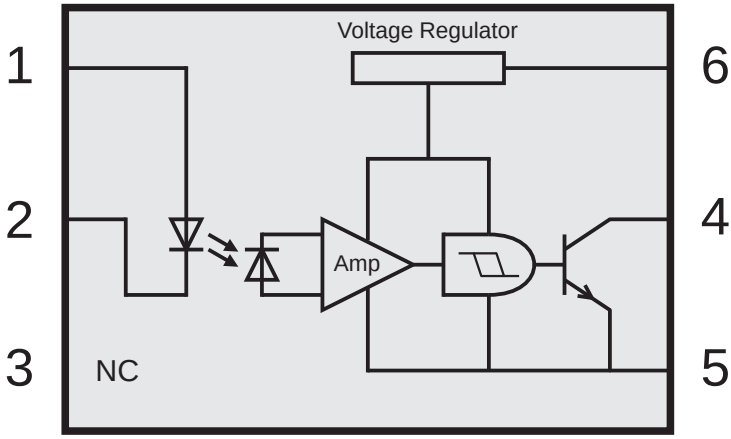


Input IN16 +	KLCN1_33	Input IN24 +	KLCN1_49
Input IN16 -	KLCN1_34	Input IN24 -	KLCN1_50
Input IN17 +	KLCN1_35	Input IN25 +	KLCN1_51
Input IN17 -	KLCN1_36	Input IN25 -	KLCN1_52
Input IN18 +	KLCN1_37	Input IN26 +	KLCN1_53
Input IN18 -	KLCN1_38	Input IN26 -	KLCN1_54
Input IN19 +	KLCN1_39	Input IN27 +	KLCN1_55
Input IN19 -	KLCN1_40	Input IN27 -	KLCN1_56
Input IN20 +	KLCN1_41	Input IN28 +	KLCN1_57
Input IN20 -	KLCN1_42	Input IN28 -	KLCN1_58
Input IN21 +	KLCN1_43	Input IN29 +	KLCN1_59
Input IN21 -	KLCN1_44	Input IN29 -	KLCN1_60
Input IN22 +	KLCN1_45	Input IN30 +	KLCN1_61
Input IN22 -	KLCN1_46	Input IN30 -	KLCN1_62
Input IN23 +	KLCN1_47	Input IN31 +	KLCN1_63
Input IN23 -	KLCN1_48	Input IN31 -	KLCN1_64

7. 32 Optocoupler Inputs

The KM-OPTOIN-32 provides 32 input channels, which are optically isolated by optocouplers. The isolation voltage between the computer‘s ground and the inputs is 500 Volt, whereas the isolation voltage within the inputs is limited to 100 Volt.

7.1 Pin assignment of the input optocouplers



7.2 Input voltage ranges

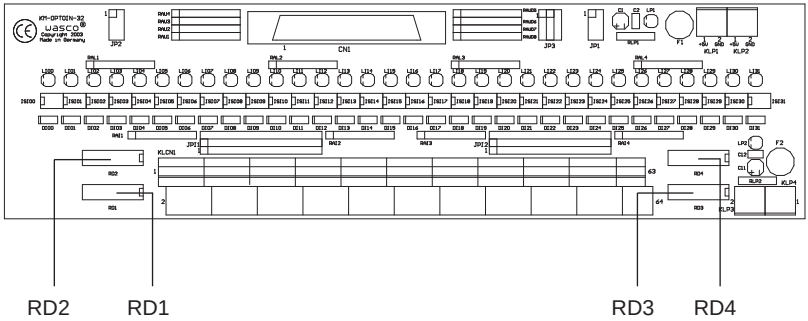
For the KM-OPTOIN-32, you can select two different voltage ranges for the inputs by exchanging the resistance arrays RD1, RD2, RD3 and RD4.

For the data of the two input voltage ranges please see following assignment:

Resistance RD1...RD4	Identifier	Low Level	High Level
1,0 KOhm	102	0...1,5 Volt	2,2...15 Volt
4,7 KOhm	472	0...4,0 Volt	7,0...30 Volt

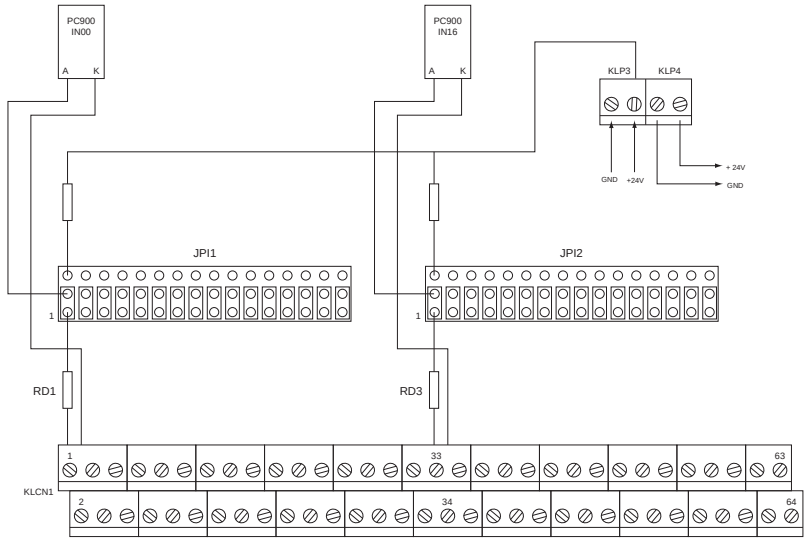
The input voltage range can not be selected when addresssing the input channels only via minus input:

Resistance RAU1...RAU4	Identifier	Low Level	High Level
4,7 KOhm	472	0...4,0 Volt	7,0...30 Volt



7.3 Addressing the input optocouplers IN00...IN31

You can control the 32 input channels of the KM-OPTOIN-32 in two different operating modes. Either you use directly the plus and minus inputs IN00+...IN31+ and IN00-...IN31-, or you use the minus input only. For this purpose, the plus input has to be fixed to +24V using the jumper blocks JPI1 und JPI2. In this operation mode it is necessary to apply an external voltage supply to KLP3.



8. Application Examples

The examples apply for following **wasco**® PCI cards:

Cards with 16 TTL inputs/outputs

OPTOIO-PCI32EXTENDED	Connection socket CN3
OPTOIN-PCI64EXTENDED	Connection socket CN3
OPTOIN-PCI32EXTENDED	Connection socket CN3
OPTOOUT-PCI64EXTENDED	Connection socket CN3
OPTOOUT-PCI32EXTENDED	Connection socket CN3
OPTOPRE-PCI8EXTENDED	Connection socket CN2
ADIODA-PCIF12EXTENDED	Connection socket CN2
ADIODA-PCIF12MDA	Connection socket CN3
IODA-PCI12K8EXTENDED	Connection socket CN2
IODA-PCI12K4EXTENDED	Connection socket CN2

Cards with 32 TTL inputs/outputs

WITIO-PCI32STANDARD	Connection socket CN1
WITIO-PCI64EXTENDED	Connection socket CN1/CN2
WITIO-PCI160EXTENDED	Connection socket CN1/2/3/4/5

8.1 Default applications of **wasco**® KM modules

16 isolated inputs, 16 isolated outputs 150mA

16 isolated outputs 2A

16 isolated inputs

8 isolated outputs 5A

32 isolated inputs

32 isolated outputs 150mA

16 isolated inputs, 16 isolated outputs 150mA

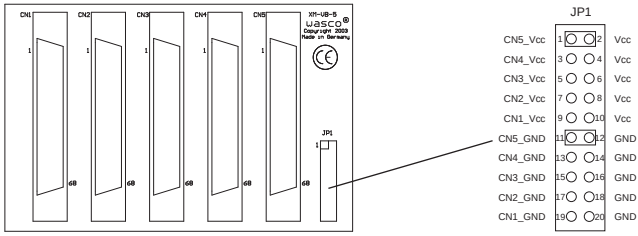
16 isolated inputs

16 isolated outputs 2A

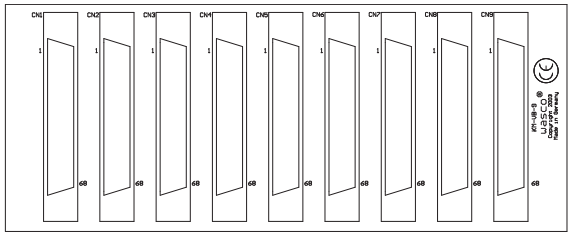
8 isolated outputs 5A

8.2 Connection modules KM-VB-5 and KM-VB-9

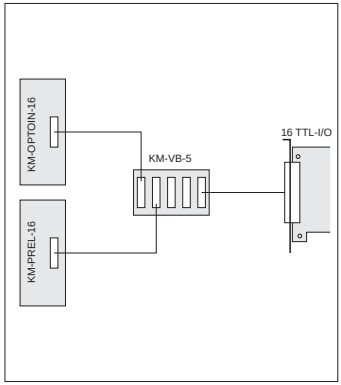
Several modules of the same type or a combination of various KM modules can be connected to a 68-pin SCSI-II socket for extended applications via the connection modules KM-VB-5 and KM-VB-9.



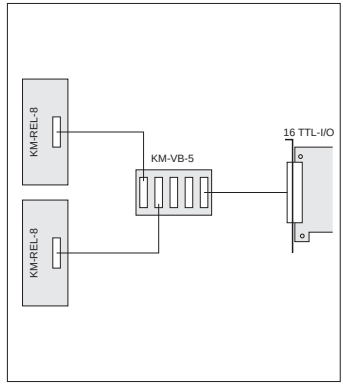
Via JP1 on the KM-VB-5 you can connect the power supply of +5V und GND from the PCI card to the connection sockets CN1...CN5.



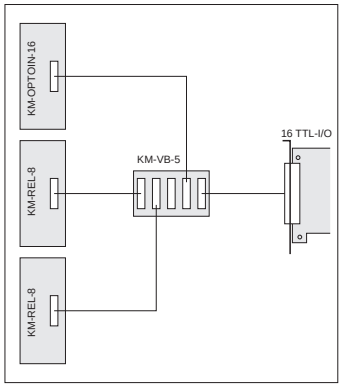
8.3 Extended applications of the wasco® KM series



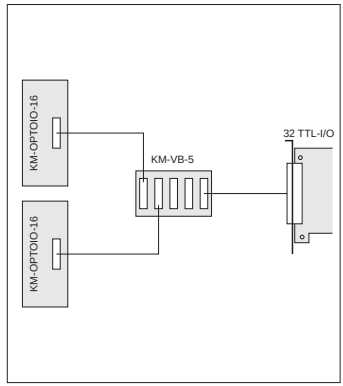
16 isolated inputs, 16 isolated outputs 2A



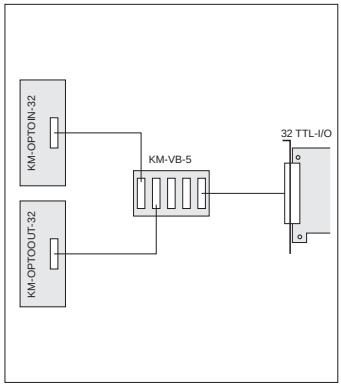
16 isolated outputs 5A



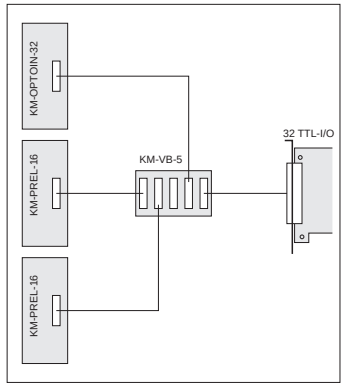
16 isolated inputs, 16 isolated outputs 5A



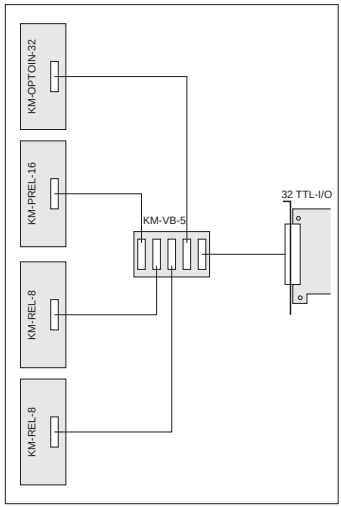
32 isolated inputs, 32 isolated outputs 150mA



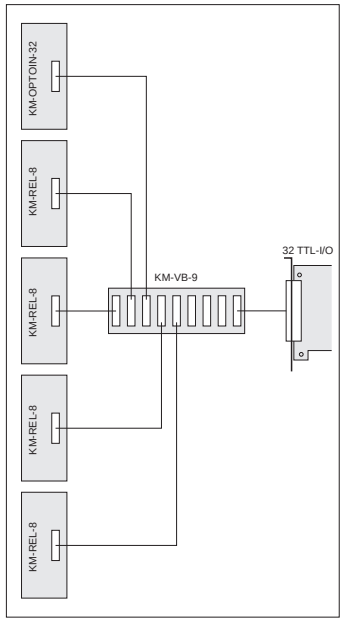
32 isolated inputs, 32 isolated outputs 150mA



32 isolated inputs, 32 isolated outputs 2A



32 isolated inputs, 16 isolated outputs 2A, 16 isolated outputs



32 isolated inputs, 32 isolated outputs 5A

9. Accessories

9.1 Fitting wasco® accessories

Connecting parts	EDP No.
DS68R200DS68 Connecting cable (2 meters)	A-492400
KM-VB-5 Connection Module	A-488200
KM-VB-9 Connection Module	A-488600
KM-DB68F25DB68 Connecting cable	A-489200
KM-DB68F50DB68 Connecting cable	A-489400
KM-DB68F75DB68 Connecting cable	A-489600

9.2 Single components for customized assembly

Connecting parts	EDP No.
SCSI-II plug 68-pin for flat ribbon cable	A-553200
Flat ribbon cable 68-pin	A-572800

10. Troubleshooting

You can find below a brief compilation of the most known error causes, which may occur while starting-up or running KM-OPTOIN-32.

Power On LED is not lit!

Are the operating power supply lines connected properly?

Have the jumpers on JP1 been set correctly?

Is the miniature fuse F1 of the KM-OPTOIN-32 in an orderly condition?

No functions at the inputs or outputs!

Is the Power On LED lit?

Are all of the jumper blocks set correctly?

Is the connection line plugged securely?

Are the lines to the peripherals connected properly?

11. Specifications

Optocoupler inputs
32 channels, optically isolated
32 x PC900 optocouplers
Overvoltage protection by 32 protection diodes
Input frequency max. 10 kHz
Input voltage range **RD1...RD4 1KOhm**
Low level 0...1,5 Volt
High level 2,2...15 Volt

RD1...RD4 4,7KOhm
Low level 0...4 Volt
High level 8...30 Volt

Connection Socket
1 x 68pin SCSI-II socket

Terminal blocks
4 x 2-pin screw terminals
1 x 64-pin screw terminals

Operating voltage
+ 5 V 1A miniature fuse F1

Power Consumption
+ 5 V typ. 97 mA

Dimensions
272mm x 77mm x 48mm (l x b x h) incl. polyamide casing

12. Product Liability Act

Information about Product Liability

The Product Liability Act (Act on Liability for Defective Products - ProdHaftG) in Germany regulates the manufacturer‘s liability for damages caused by defective products.

The obligation to pay compensation may already be given, if the product’s presentation could cause a misconception of safety to a non-commercial end-user and also if the end-user is expected not to observe the necessary safety instructions when handling this product.

It must therefore always be possible to prove that the non-commercial end-user has been made familiar with the safety rules.

In the interest of safety, please always point out the following safety instructions to your non-commercial customer:

Safety instructions

The valid VDE instructions must be observed, when handling products that come in contact with electrical voltage.

Especially the following instructions must be observed:
VDE100; VDE0550/0551; VDE0700; VDE0711; VDE0860.

The instructions are available from:
Vde-Verlag GmbH
Bismarckstr. 33
10625 Berlin

* unplug the power plug before you open the unit or make sure, there is no current to/in the unit.

* You only may put into operation any components, boards or devices if they have been installed inside a secure touch-protected casing before. During installation there must be no current to the equipment.

* Make sure that the device is disconnected from the power supply before using any tools on any components, boards or devices. Any electric charges stored in components in the device are to be discharged prior.

* Live cables or wires which are connected to the unit, the components or the boards, must always be tested for insulation defects or breaks. In case of any defect the device must be immediately taken out of operation until the defective cables have been replaced.

* When using components or boards you must strictly comply with the characteristic data for electrical sizes shown in the related description

* As a non-commercial end-user, if it is not clear whether or not the electrical characteristic data given in the provided description apply to a component you must consult an expert.

Furthermore, the compliance with building and safety instructions of all kinds (VDE, TÜV, industrial injuries corporation, etc.) is subject to the user/customer.

13. CE Confirmation

This is to certify, that the product

KM-OPTOIN-32
EDP Number A-483600

comply with the requirements of the relevant CE directives. This declaration will lose its validity, if the instructions given in this manual for the intended use of the products are not fully complied with.

EN 5502 Class B
IEC 801-2
IEC 801-3
IEC 801-4
EN 50082-1
EN 60555-2
EN 60555-3

The following manufacturer is responsible for this declaration:

Messcomp Datentechnik GmbH
Neudecker Str. 11
83512 Wasserburg

given by

Dipl.Ing.(FH) Hans Schnellhammer

Wasserburg, 21.06.2006

Reference system for intended use

This KM module is not a stand-alone device. The CE conformity only can be assessed when additional computer components are in use simultaneously. Therefore the CE conformity only can be confirmed when using the following reference system for the intended use of the KM module:

Control Cabinet:	Vero IMRAK 3400	804-530061C 802-563424J 802-561589J
19" Casing :	Vero PC-Casing	145-010108L
19“ Casing:	Additional Electronic	519-112111C
Motherboard:	GA-586HX	PIV 1.55
Floppy-Controller:	on Motherboard	
Floppy:	TEAC	FD-235HF
Grafik card:	Advantech	PCA-6443
Interface:	WITIO-PCI64EXTENDED	A-461800
Module:	KM-OPTOIN-32	A-483600
Connecting cable:	DS68R200DS68	A-492400