Operating Instructions
Programmable Multi-Transducer RISHducerM 40

Contents

1. Read first and then ...

The proper and safe operation of the device assumes that the Operating Instructions are read and the safety warnings given in the sections

4. Physical Installation
5. Electrical connections
6. Commissioning
12.Safety notes

are observed.

The device should only be handled by appropriately trained personal who are familiar with it and authorised to work in electrical installations.

2.Scope of supply (Figs.1, 2, 3 and 4)

Fig. 1

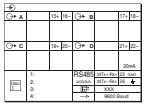


Fig. 3

Fig. 2

Fig. 4

Transducer (Fig.1)
1 **Operating Instructions** (Fig. 2) in English
1 **blank type label** (Fig.3),for recording programmed settings
1 **Interface definition M 40** (fig. 4)

3. Brief description

RISHducer M40 is a programmable transducer with a **RS 485 bus interface (MODBUS®).** It supervises several variables of an electrical power system **simultaneously** and generates 4 proportional analogue output signals.

The **RS 485** interface enables the user to determine the number of variables to be supervised (up to the maximum available). The levels of all internal energy counters that have been configured (max.4) can also viewed. Provision is made for programming the **RISHducer M40** via the bus. A standard EIA 485 interface can be used.

The transducers are also equipped with an **RS 232** serial interface to which a PC with the corresponding software can be connected for programming or accessing and executing useful ancillary functions. This interface is needed for bus operation to configure the device address, the Baud rate and possibly increasing the telegram waiting time (if the master is too slow) defined in the MODBUS® protocol.

The usual methods of connection, the types of measured variables, their ratings, the transfer characteristic for each output and the type of internal energy counters are the main parameters that can be programmed.

The ancillary functions include a power system check, provision for displaying the measured variable on a PC monitor, the simulation of the outputs for test purposes and a facility for printing nameplates.

4. Physical installation

The transducer can be mounted either on a top-hat rail or directly onto a wall or mounting surface.

Note "Environmental conditions" in Section "7.1 Technical data" when determining the place of installation!

4.1 Mounting on top-hat rails

Simply clip the device onto the top-hat rail (EN 50 022) (See Fig. 5)

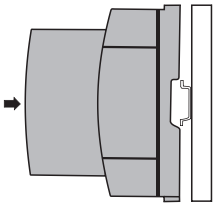


Fig.5 Mounting on top-hat rail 35 x 15 or 35 x 7.5 mm.

4.2 Fastening on a mounting surface

While pressing the latch (4) in the base of the device (Fig. 6, left) pull out the transducer securing brackets (1). To return the brackets to their original positions, the latch (5) in the base of the device has to be depressed before applying pressure to the securing brackets (1) (See Fig. 6, right).

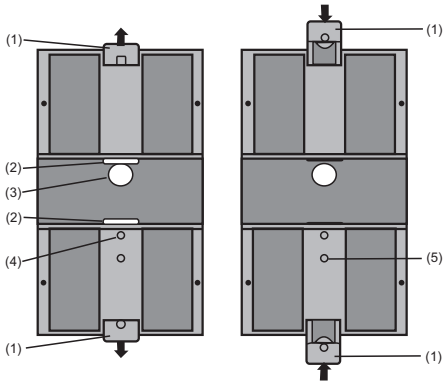


Fig.6. Rear of device.
(1) Screw hole brackets
(2) Top-hat rail clips
(3) Rubber buffers
(4) Latch for pulling the screw hole brackets out
(5) Latch for pushing the screw hole brackets in.

Function			Connect.
Measuring input	AC current	IL1	1 / 3
		IL2	4 / 6
		IL3	7 / 9
	AC voltage	UL1	2
		UL2	5
		UL3	8
		N	11
Outputs	Analogue		
	A	+	15
		-	16
	B	+	17
		-	18
	C	+	19
		-	20
	D	+	21
		-	22
RS 485 (MODBUS)	Tx + / Rx	+	23
	Tx - / Rx	-	24
		GND	25
			26
Power supply AC		~	13
		~	14
DC		+	13
		-	14

If power supply is taken from the measured voltage internal connections are as follow :

Application (system)	Internal connection Terminal / System
Single phase AC current	2 / 11 (L1 - N)
4-wire 3-phase symmetric load	2 / 11 (L1 - N)
All other (apart from A15/A16/A24)	2 / 5 (L1 - L2)

Drill 2 holes in the wall or panel as shown in the drilling pattern (Fig. 7). Now secure the power pack to the wall or panel using two 4 mm diameter screws.

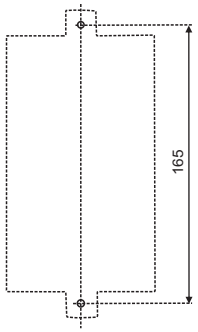


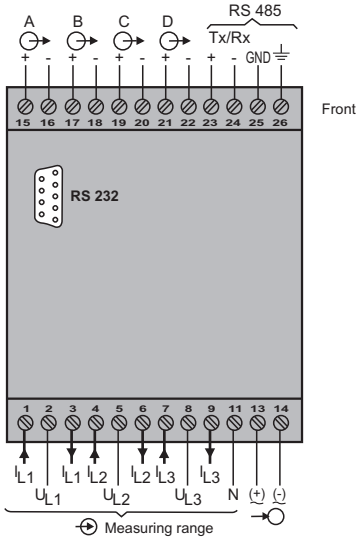
Fig. 7. Drilling plan

5. Electrical connections

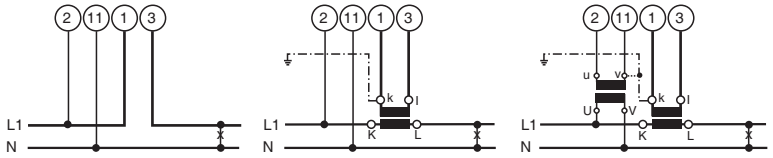
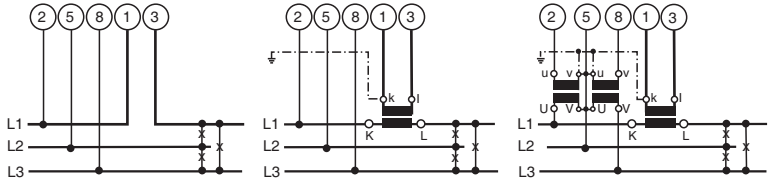
The connectors are designed as screw terminals. They are suited for single-wire leads of 4 mm^2 or multiple-wire leads of 2 × 2.5 mm^2 cross section.

Make sure that the cables are not live when making the connections !

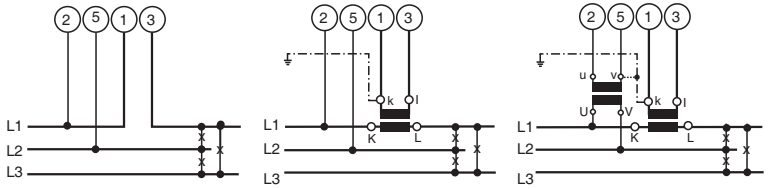
Connect the leads according to the table.



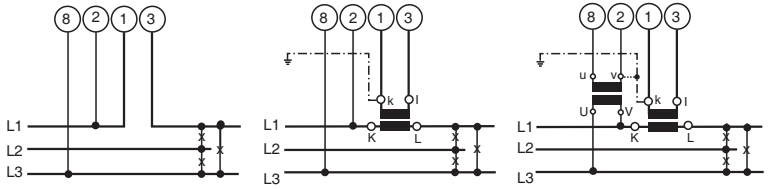
Measuring inputs

System / application	Terminals
Single-phase AC system	
3-wire 3-phase **symmetric load** I: L1	 Connect the voltage according to the following table for current measurement in L2 or L3:

Current transf.	Terminals		2	5	8
L2	1	3	L2	L3	L1
L3	1	3	L3	L1	L2

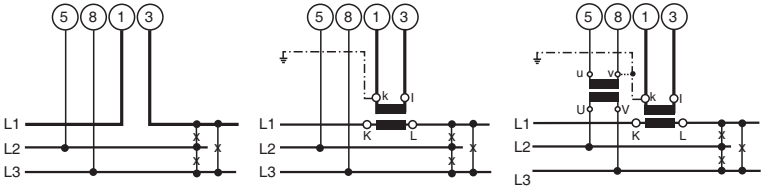
3-wire 3-phase **symmetric load** Phase-shift U: L1 - L2 I: L1	 Connect the voltage according to the following table for current measurement in L2 or L3:

Current transf.	Terminals		2	5
L2	1	3	L2	L3
L3	1	3	L3	L1

3-wire 3-phase **symmetric load** Phase-shift U: L3 - L1 I: L1	 Connect the voltage according to the following table for current measurement in L2 or L3:

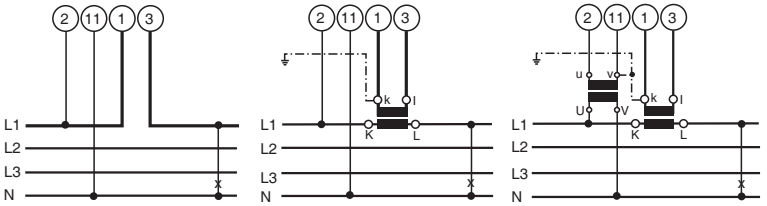
Current transf.	Terminals		8	2
L2	1	3	L1	L2
L3	1	3	L2	L3

Measuring inputs

System / application	Terminals
3-wire 3-phase **symmetric load** Phase-shift U: L2 - L3 I: L1	

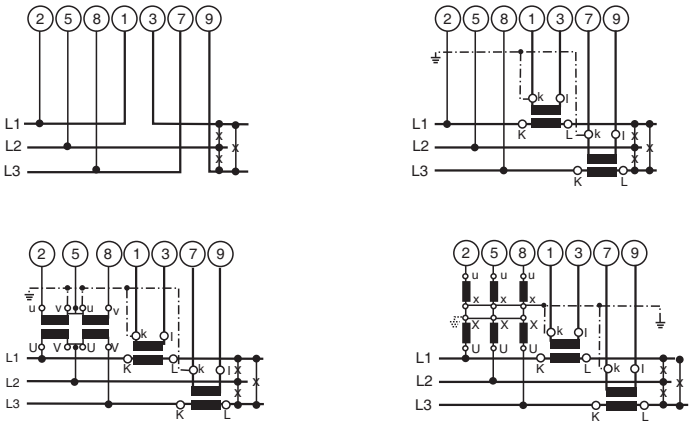
Connect the voltage according to the following table for current measurement in L2 or L3:

Current transf.	Terminals		5	8
L2	1	3	L3	L1
L3	1	3	L1	L2

4-wire 3-phase **symmetric load I: L1**	

Connect the voltage according to the following table for current measurement in L2 or L3:

Current transf.	Terminals		2	11
L2	1	3	L2	N
L3	1	3	L3	N

3-wire 3-phase **asymmetric load**	

10. Notes of maintenance

No maintenance is required.

11. Releasing the transducer

Release the transducer from a top-hat rail as shown in Fig. 21

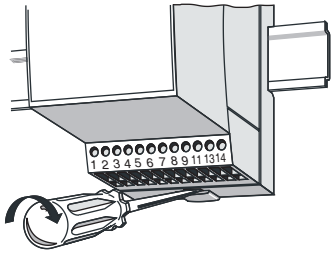


Fig. 21

12. Dimensional drawings

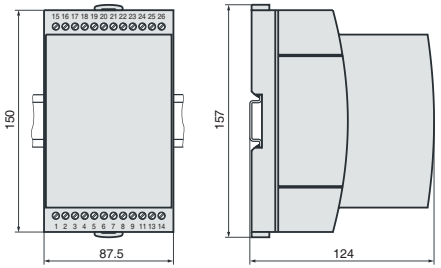


Fig. 22. **RISHducer** in housing **T24** clipped onto a top-hat rail (35 × 15 mm or 35 × 7.5 mm, acc. to EN 50 022)

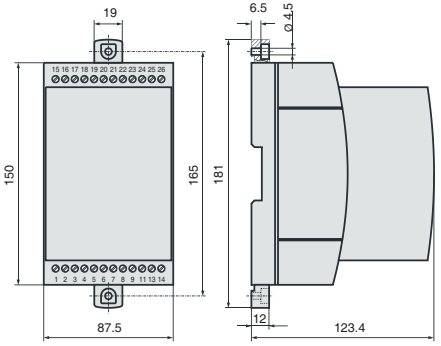


Fig. 23. **RISHducer** in housing **T24** screw hole mounting brackets pulled out.

13. Safety notes

- Before you start the device check for which power supply it is built.
- Verify that the connection leads are in good condition and that they are electrically dead while wiring the device.
- When it must be assumed that safe operation is no longer possible, take the device out of service (eventually

  This can be assumed on principle when the device shows obvious signs of damage.

  The device must only be used again after troubleshooting, repair and a final test of calibration and dielectric strength in our factory or by one of our service facilities.

- Calibration, maintenance or repair with the device open and live must only be performed by a qualified person who understands the danger involved. Capacitors in the device may still be charged even though the device has been disconnected from all

Meaning of the symbols on the device

The symbols on the device have the following meaning:

Warning of danger
(Caution, see documentation !)

Class II device

Output calibration

With this function you can perform a new calibration of the analog outputs. You can adjust the outputs to the given facts of subsequent devices as well. However, you have to calibrate every output after changing its hardware to achieve the desired accuracy.

To perform an output calibration you have to connect a voltmeter respectively ammeter of sufficient accuracy to the output terminals. On software demand you have to read measurands and put them to the software. If you adjust the output for subsequent devices, you have to take the measurands from these devices logically. The new calibration data will be stored as customer calibration. Any time you can load the factory calibration separately for each output.

Before performing any output calibration warm up the device to operating temperature first (min. 30 min. acc. to DIN EN 60 668).

For futher informations see config soft. M40 menubar "Help"

> To perform an output calibration you have to connect a voltmeter respectively ammeter of sufficient accuracy to the output terminals.

The instructions for opening the device are to be found in Section "8. Withdrawing and inserting the device."

Current output / Voltage output
(Output A: x=1, Output B: x=2, Output C: x=3, Output D: x=4)

Variantes

Output	Brx01	Rx43	Rx34	Rx44	Rx45	Rx46
mA Output	Open	0 Ω or soldered	27kΩ	Open	Variable	Variable
V Output	Sol-dered	Open	Variable	Varia-ble	0 Ω or soldered	Never mind

Calculation of resistors Rx45 and Rx46 for the scale output currents Y2 in the range ≥ 1 to ≤ 20 mA:

Current Output

$$Rx45 \;//\; Rx46 = \frac{1}{\frac{Y2[mA]}{0.99158\ V} - \frac{1}{27\ k\Omega}}$$

Y2	Rx45	Rx46
20 mA	Open	49.9 Ω
10 mA	Open	100 Ω
5 mA	Open	200 Ω
2.5 mA	2.7 kΩ	470 Ω
1 mA	3.3 kΩ	1.5kΩ

Calculation of resistors Rx34 and Rx44 for the full-scale output voltages Y2 in the range ≥ 1 to ≤ 10 V :

Voltage Output

Rx34 // Rx44 = Y2 [V] - 27'229.4

Y2	Rx34	Rx44
10 V	270 kΩ	OPEN
5 V	270 kΩ	270 kΩ
2.5 V	68 kΩ	OPEN
1 V	27 kΩ	OPEN

The locations of the variable components on the plug-in output board are shown in Figures 19 and 20.

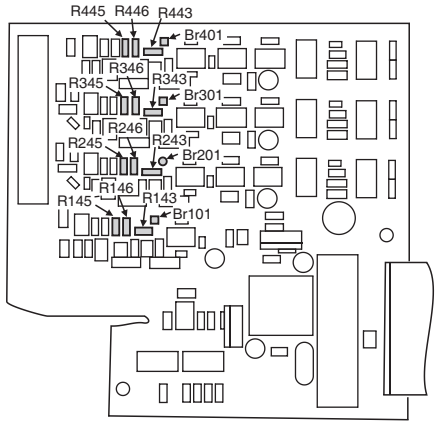


Fig. 19. Top view of the output board

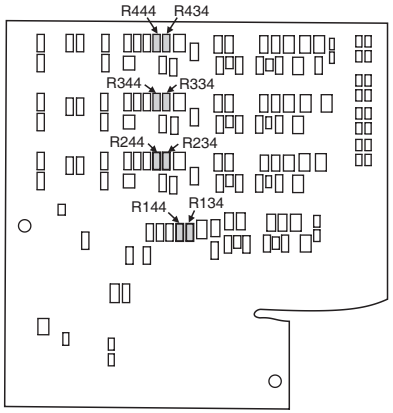
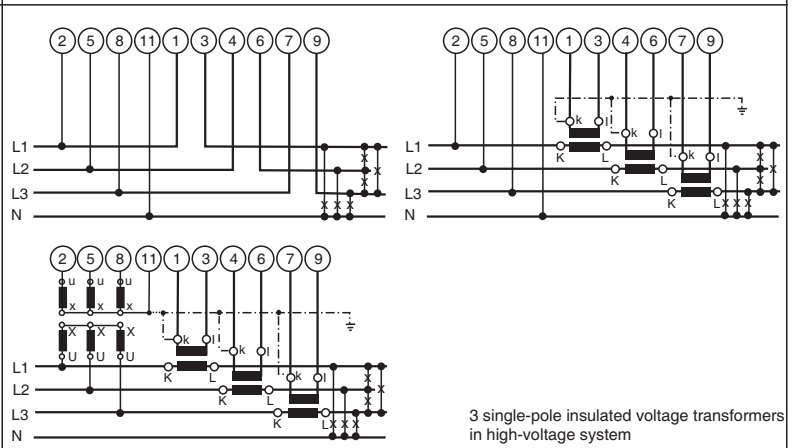
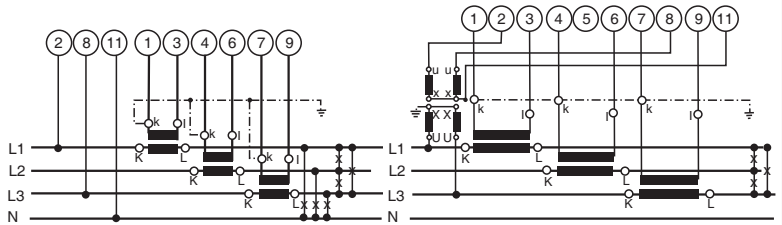


Fig. 20. Bottom view of The output board.

Measuring inputs	
System / application	Terminals
4-wire 3-phase **asymmetric load**	 3 single-pole insulated voltage transformers in high-voltage system
4-wire 3-phase **asymmetric load,** Open Y connection	 Low-voltage system / 2 single-pole insulated voltage transformers in high-voltage system

6. Connecting devices to the bus

The RS 485 interface of the M 40 is galvanically isolated from all other circuits. For an optimal data transmission the devices are connected via a 3-wire cable, consisting of a twisted pair cable (for date lines) and a shield. There is no termination required. A shield both prevents the coupling of external noise to the bus and limits emissions from the bus. The shield must be connected to solid ground.

You can connect up to 32 members to the bus (including master). Basically devices of different manufacturers can be connected to the bus, if they use the standard MODBUS® protocol. Devices without galvanically isolated bus interface are not allowed to be connected to the shield.

The optimal topology for the bus is the daysi chain connection from node 1 to node 2 to node n. The bus must from a single continuous path, and the nodes in the middle of the bus must have short stubs. Longer stubs would have a negative impact on signal quality (reflexion at the end). A star or even ring topology is not allowed.

There is no bus termination required due to low data rate. If you got problems when using long cables you can terminate the bus at both ends with the characteristic impedance of the cable (normally about 120Ω). Interface converters RS 232 ⇔ RS 485 or RS 485 interface cards often have a built-in termination network which can be connected to the bus. The second impedance then can be connected directly between the bus terminals of the device far most.

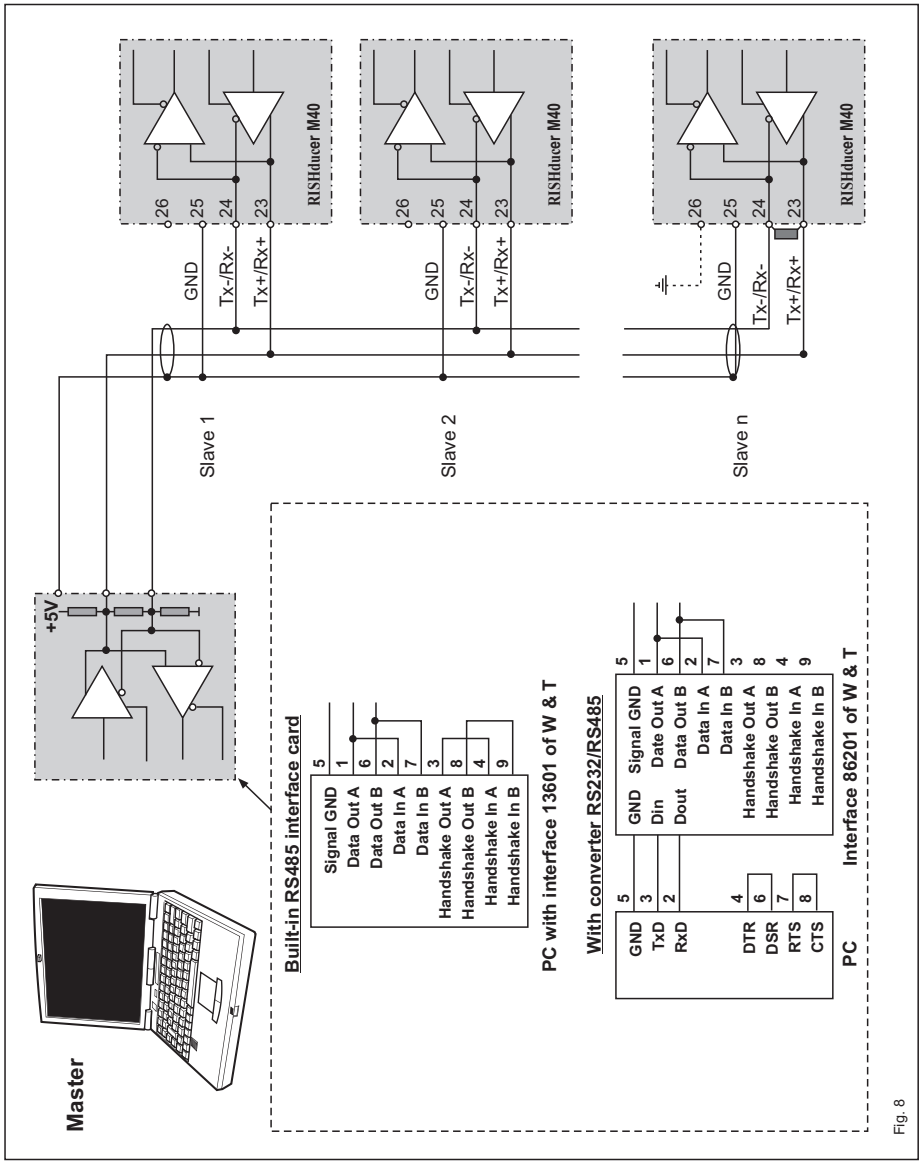


Fig.8 shows the connection of transducers M 40 to the MODBUS. The RS485 interface can be realized by means of PC built-in interface cards or interface converters. Both is shown using i.e. the interfaces 13601 and 86201 of W& T (Wiesemann & Theis GmbH).They are configured for a 2-wire application with automatic control of data direction. These interfaces provide a galvanical isolation and a built-in termination network.

Important:

- Each device connected to the bus must have a unique address (1 to 247, default ex factory : 247)

- All devices must be adjusted to the same baudrate.

8. Withdrawing and inserting the device

(Fig. 16)

Caution ! The warranty is void if the device is tampered with !

Remove the locking pins(13) on the rear of the transducer.
Screw wood screws of about 2 mm diameter partly into the locking pin holes and pull them out using small pincers.

Press in the retaining hook(14) with a screwdriver and remove the cover.

To close the device, insert a guide rail into the base of the
housing and press the two parts gently together until

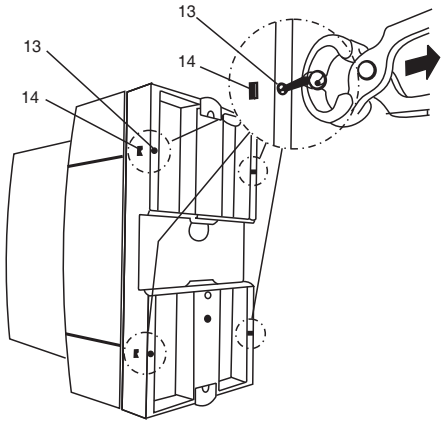


Fig. 16 Withdrawing the device

9. Reconfiguring the analogue outputs

The alternative configurations for the analogue outputs can be seen from Table 1.

Table 1 :

Action	Procedure
Change the current full-scale value from, for example, 20 mA to 10 mA (a hardware setting always has to be made when changing from a lower to a higher value)	Reconfigure the software, but do not change the hardware setting. Accuracy is reduced (see Section 8.1)
	Reconfigure the software, and change the hardware setting. Accuracy is not reduced
Change the current output [mA] to a voltage output [v] or vice versa	Reconfigure the software, change the hardware setting and calibrate the output (see Section 9.2)

9.1 Without hardware setting

The Config software M 40 and a programming cable are needed in order to reprogram the device.
The reduced accuracy resulting from this change can be determined by printing a type label (see Fig. 17 and 18)

	400kV/400V		1000/1.0A	50Hz			3N-
A	0.25°c	15+	16−	B	0.25° c	17+	18−
P1	0W	0.0mA		U1N	215V	0mA	
	500W	20mA			240V	20mA	
C	0.25°c	19+	20−	D	0.15+0.03°c	21+	22−
I1	0A	0mA		F	49.5Hz	0mA	
						20mA	
	1: I1			RS485	23Tx+/Rx+	25	GND
	2: P R			MODBUS	24Tx−/Rx−	26	⏚
	3: Q L						
	4: S				9600 Baud		

Fig. 17. Example of a type label with the present 20 mA output and an accuracy class of **0.25c**.

	400kV/400V		1000/1.0A	50Hz			3N-
A	0.45c	15+	16−	B	0.25° c	17+	18−
P1	0W	0.0mA		U1N	215V	0.0mA	
	500W	10mA			240V	20mA	
C	0.25°c	19+	20−	D	0.15+0.03°c	21+	22−
I1	0A	0mA		F	49.5Hz	0.0mA	
						20mA	
	1: I1			RS485	23Tx+/Rx+	25	GND
	2: P R			MODBUS	24Tx−/Rx−	26	⏚
	3: Q L						
	4: S				9600 Baud		

Fig. 18. Example of a type label with the new output of 10mA and an accuracy class of **0.45c**.

9.2 With hardware setting change

Unauthorized repair or alteration of the unit invalidates the warranty !

The config software M40 and a programming cable are needed in order to reprogram the device.

If modifying hardware range limits of analog outputs you have to change resistances on the output PCB. The range
limit is realized by means of a resistance, which is separated in two resistances for better accuracy. The calculation of this values and the assembling of the other variable components is shown below. However, the consequence of every hardware modification is a new output calibration.

7.2 PC Software for the RISHducer ●

RISHducer M40 is equipped as standard with both an RS232C interface and an RS485 MODBUS interface. The latter permits up to 32 devices to be connected including a master (PC)

Accordingly, two program packages are available for the , RISHducer M40 Config Soft. M40" and " Rishcom 200 software "

"Config soft. M40" Provides functions for both interfaces.
For example, the existing configuration of a transducer can be simply adapted to changed measurement requirements, measurements and counter readings can be uploaded and other functions for specific devices executed.

The PC is connected to the RS 232 interface by the programming cable. In the case of an RS 485 interface, a converter RS 232C⇔ RS 485 is needed which can be either a board in the PC or an external unit.

The software has an easy-to-operate, clear menu structure

- Uploading and display of the programmed configuration of the transducer or , in the case of the RS 485, the addressed device.
- Easy change of input and output parameters.

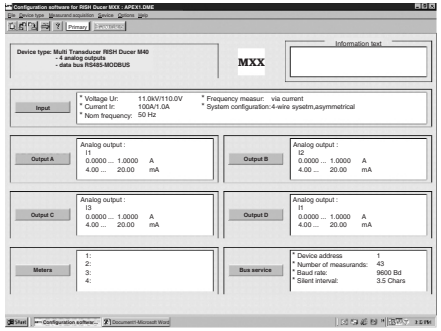


Fig. 12. Overview of the parameters.

- Downloading of a modified or new configuration to the (addressed) transducer
- Archiving of configuration files
- Configurable password access to those functions that permit transducer data to be changed.
- Configuration of all the usual methods of connection (types of power system)
- Provision for configuring the analogue outputs A to D (measured variable, full-scale value, limits and setting time for each output)

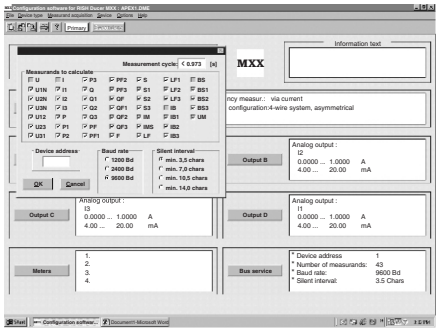


Fig. 13. Programmation of the output quantities.

- Selection of the measured variables for up to 4 internal counters.
- Provision for resetting the maximum value detectors of output and bus variables (RS 485 only)
- Provision for frequency measurement using either voltage or current
- Definition of the measured variables on the bus to be uploaded via the MODBUS interface (RS 485) together with the device address and the data transfer parameters.

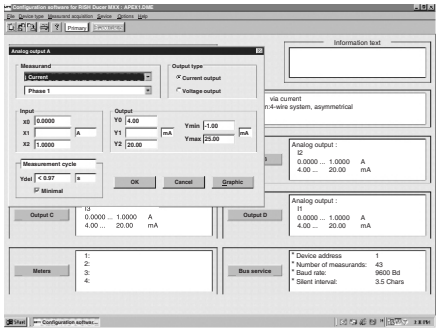


Fig. 14. Definition of the measured variables on the bus.

- Measurements displayed: Analogue output signals (RS 232) and all measured variables selected on the transducer that has been addressed
- Power system check: Display of all the system values, ideal as a wiring check (RS 232 only)
- The simulation of the analogue outputs for test purposes (RS 232 only)
- Printing of nameplates.

7. Commissioning

Prior to starting, check that the connection data of the transducer agrees with the system

The power supply to the transducer can then be switched

- Measuring input
  Input Voltage
  input Current
  Nominal Frequency
  System
- Measuring Output
  Output signal
- Power supply
- 6 Manufacturer
- 7 Works Number
- 8 Conformity mark
- 9 Terminals
  Input quantities and power supply
- 10 Terminals
  Output quantities
- 11 Programmed internal power meters
- 12 Terminal MODBUS
  Device address
  Baud rate

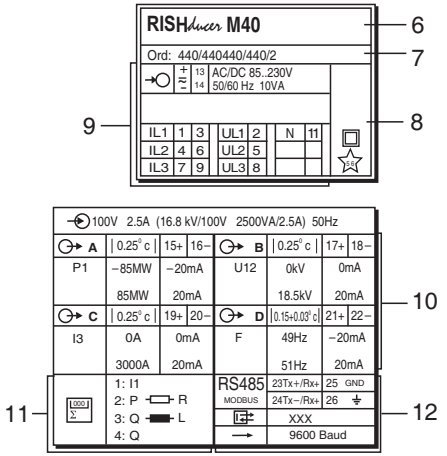


Fig. 9. Declaration to type label.

7.1 Technical Data

Symbols

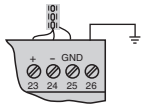
Symbols	Meaning
X	Measured variable
X0	Lower limit of the measured variable
X1	Break point of the measured variable
X2	Upper limit of the measured variable
Y	Output variable
Y0	Lower limit of the output variable
Y1	Break point of the output variable
Y2	Upper limit of the output variable
U	Input voltage
Ur	Rated value of the input voltage
U 12	Phase-to-phase voltage L1 - L2
U 23	Phase-to-phase voltage L2 - L3
U 31	Phase-to-phase voltage L3 - L1
U1N	Phase-to-neutral voltage L1 - N
U2N	Phase-to-neutral voltage L2 - N
U3N	Phase-to-neutral voltage L3 - N
UM	Average value of the voltages (U1N + U2N + U3N) / 3
I	Input current
I1	AC current L1
I2	AC current L2
I3	AC current L3
Ir	Rated value of the input current
IM	Average value of the currents (I1+I2+I3)/3
IMS	Average value of the currents and sign of the active power (P)
IB	RMS value of the current with wire setting range (bimetal measuring function)
IBT	Response time for IB

Symbols	Meaning
BS	Slave pointer function for the measurement of the RMS value IB
BST	Response time for BS
φ	Phase-shift between current and voltage
F	Frequency of the input variable
Fn	Rated frequency
P	Active power of the system P = P1 + P2 + P3
P1	Active power phase 1 (phase-to-neutral L1 – N)
P2	Active power phase 2 (phase-to-neutral L2 – N)
P3	Active power phase 3 (phase-to-neutral L3 – N)
Q	Reactive power of the system Q = Q1 + Q2 + Q3
Q1	Reactive power phase 1 (phase-to-netural L1 - N)
Q2	Reactive power phase 2 (phase-to-neutral L2 - N)
Q3	Reactive power phase 3 (phase-to-neutral L3 - N)
S	Apparent power of the system: $S = \sqrt{I_1^2 + I_2^2 + I_3^2} \cdot \sqrt{U_1^2 + U_2^2 + U_3^2}$
S1	Apparent power phase 1 (phase-to-neutral L1 - N)
S2	Apparent power phase 2 (phase-to-neutral L2 - N)
S3	Apparent power phase 3 (phase-to-neutral L3 - N)
Sr	Rated value of the apparent power of the system

Symbols	Meaning
PF	Active power factor cos φ = P/S
PF1	Active power factor phase 1 P1/S1
PF2	Active power factor phase 2 P2/S2
PF3	Active power factor phase 3 P3/S3
QF	Reactive power factor sin φ = Q/S
QF1	Reactive power factor phase 1 Q1/S1
QF2	Reactive power factor phase 2 Q2/S2
QF3	Reactive power factor phase 3 Q3/S3
LF	Power factor of the system LF = sgnQ . (1 - |PF|)
LF1	Power factor phase 1 sgnQ1. (1 - |PF1|)
LF2	Power factor phase 2 sgnQ2. (1 - |PF2|)
LF3	Power factor phase 3 sgnQ3. (1 - |PF3|)
c	Factor for the intrinsic error
R	Output load
Rn	Rated burden
H	Power supply
Hn	Rated value of the power supply
CT	c.t. ratio
VT	v.t. ratio

MODBUS® (Bus interface RS-485)

Terminals:	Screw terminals, terminals 23,24, 25 and 26
Connecting cable:	Screened twisted pairs
Max. distance :	Approx. 1200 m (approx. 4000 ft.)
Baudrate :	1200 ... 9600 Bd (programmable)
Number of bus station:	32 (including master)
Dummy load:	Not required



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Input

Waveform:	Sinusoidal
Rated frequency:	ACC. to type label 50, 60 or 16 2/3 Hz
Own consumption [VA] (with external power supply):	Voltage circuit: U^2 / 400 kΩ Current circuit: ≤I^2 . 0,01 Ω

Continuous thermal ratings of inputs

Current circuit	10 A 400 V single-phase AC system 693 V three-phase system
Voltage circuit	480 V single-phase AC system 831 V three-phase system

Short-time thermal rating of inputs

Input variable	Number of Inputs	Duration of overloads	Interval between two overloads
Current circuit	400 V single-phase AC system 693 V three-phase system		
100 A	5	3 s	5 min.
250 A	1	1 s	1 hour.
Voltage circuit	1 A, 2 A, 5 A		
Single-phase AC system 600 V H_{Interm} : 1.5 Ur	10	10 s	10 s
Three-phase system 1040 V H_{Interm} : 1.5 Ur	10	10 s	10 s

Analogue outputs

For the outputs A, B, C and D:

Output variable Y		Impressed DC current	Impressed DC voltage
Full scale Y2		see "Ordering information"	see "Ordering information"
Limits of output signal for input overload and / or	R = 0	1.25 · Y2	40 mA
	R→∞	30 V	1.25 Y2
Rated useful range of output load		$0 \le \frac{7.5\ V}{Y2} \le \frac{15\ V}{Y2}$	$\frac{Y\,2}{2\ mA} \le \frac{Y\,2}{1\ mA} \le \infty$
AC component of output signal (peak-to-peak)		≤ 0.005 · Y2	≤ 0.005 · Y2

The outputs A, B, C and D may be either short or open-circuited. They are electrically insulated from each other and from all other circuits (floating).

System response

Duration of the measurement cycle: Approx. 0.5 to 1.2s at 50 Hz, depending on measured variable

Response time:

Accuracy class (the reference value is the full-scale value Y2)

Measured variable	Condition	Accuracy class*
System: Active, reactive and apparent power	0.5 ≤ X2/Sr ≤ 1.5 0.3 ≤ X2/Sr < 0.5	0.25 c 0.5 c
Phase: Active, reactive and apparent power	0.167 ≤ X2/Sr ≤ 0.5 0.1 ≤ X2/Sr < 0.167	0.25 c 0.5 c
Power factor, active power and reactive power	0.5Sr ≤ S ≤ 1.5 Sr, (X2 - X0) = 2 0.5Sr ≤ S ≤ 1.5 Sr, 1 ≤ (X2 - X0) < 2 0.5Sr ≤ S ≤ 1.5 Sr, 0.5 ≤ (X2 - X0) < 1 0.1Sr ≤ S < 0.5 Sr, (X2 - X0) = 2 0.1Sr ≤ S < 0.5 Sr, 1 ≤ (X2 - X0) < 2 0.1Sr ≤ S < 0.5 Sr, 0.5 ≤ (X2 - X0) < 1	0.25 c 0.5 c 1.0 c 0.5 c 1.0 c 2.0 c
AC voltage	0.1 Ur ≤ U ≤ 1.2 Ur,	0.2 c
AC current / current averages	0.1 Ir ≤ I ≤ 1.5 Ir,	0.2 c
System frequency	0.1 Ur ≤ U ≤ 1.2 Ur, resp. 0.1 Ir ≤ I ≤ 1.5 Ir	0.15 + 0.03 c (f_N = 50...60 Hz) 0.15 + 0.1 c (f_N = 16 2/3 Hz)
Energy counter	acc. to IEC 1036 0.1 Ir ≤ I ≤ 1.5 Ir	1.0

* Basic accuracy 0.5 c for applications with phase-shift

Factor c (the highest value applies):

Linear characteristic:

$$c = \frac{1 - \frac{Y0}{Y2}}{1 - \frac{X0}{X2}} \text{ or } c = 1$$

Bent characteristic:

X0 ≤ X ≤ X1

$$c = \frac{Y1 - Y0}{X1 - X0} - \frac{X2}{Y2} \text{ or } c = 1$$

X1 < X ≤ X2

$$c = \frac{1 - \frac{Y1}{Y2}}{1 - \frac{X1}{X2}} \text{ or } c = 1$$

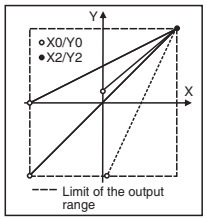


Fig. 10. Examples of settings with linear characteristic.

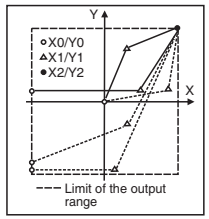


Fig. 11. Examples of settings with bent characteristic.

Influencing quantities and permissible variations

Acc. to IEC 688

Safety

Protection class:	II
Enclosure protection:	IP 40, housing IP 20, terminals
Overvoltage category:	III
Insulation test: (Versus earth):	Input voltage: AC 400 V Input current: AC 400 V Output: DC 40 V Power supply AC 400 V, DC 230 V

Power supply

Voltage:	Acc.to type label
Consumption:	≤ 9 W resp. ≤ 10 VA

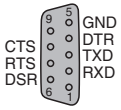
Programming connector on transducer

Interface:	RS 232 C
DSUB socket:	9-pin.

Programming connector on transducer

Interface: RS 232 C

DSUB socket: 9-pin.



The Interface is electrically insulated from all other circuits

Ambient conditions

Climatic rating :	Climate class 3 acc. To VDI/VDE 3540
Nominal range of use for temperature :	0... 15... 30... 45°C (usage group II)
Storage temperature:	-40 to + 85 °C
Annual mean relative humidity:	≤ 75%