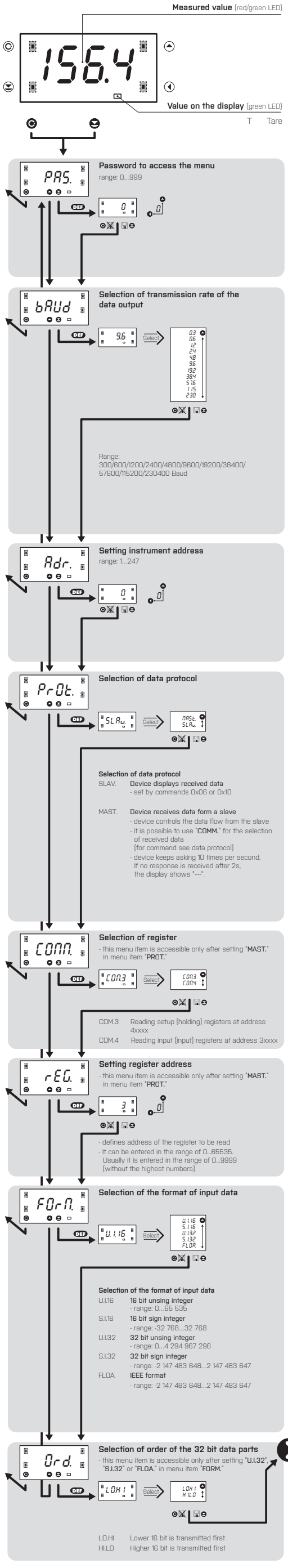
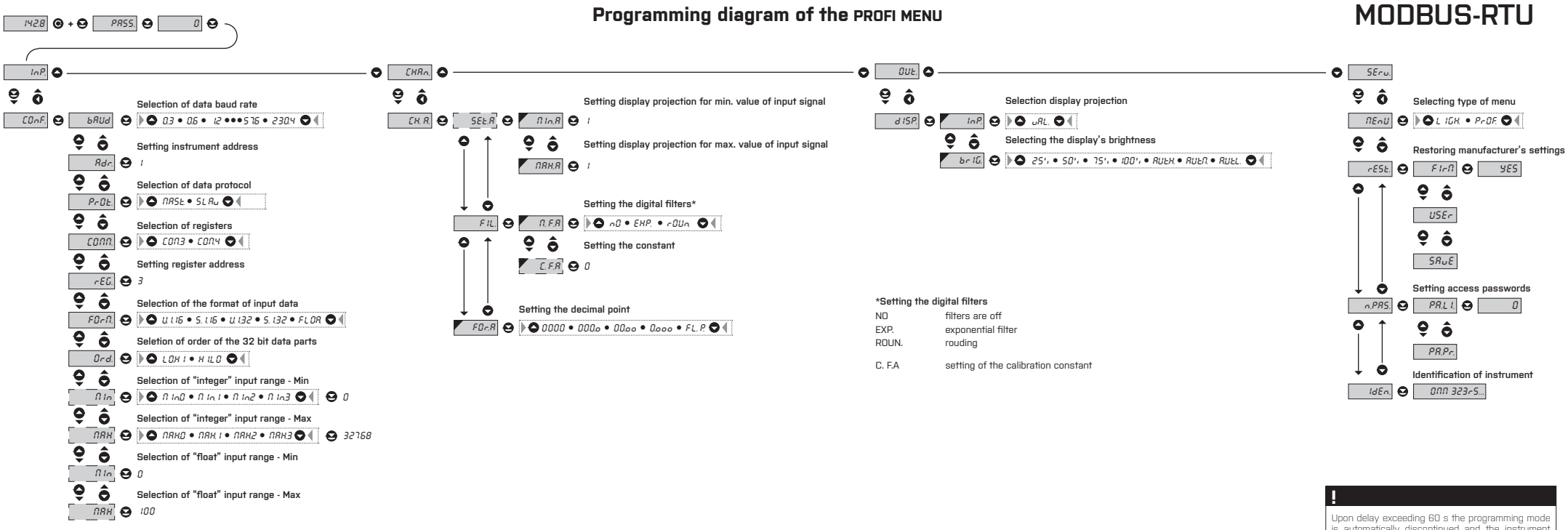
Programming diagram of the LIGHT MENU



Programming diagram of the PROFI MENU



*Setting the digital filters

NO	filters are off
EXP.	exponential filter
ROUN.	rouding
C. F.A	setting of the calibration constant

!

Upon delay exceeding 60 s the programming mode is automatically discontinued and the instrument itself restores the measuring mode

Command 6h > Input value

<AA> 06 00 00 <Word Hi> <Word Lo> <CRC Lo> <CRC Hi>

where:

Word is the value in the format signed integer -32 768 (8000h)...0...32 767 (7FFFh)

When displayed this value is recalculated with the aid of values entered in menu "INPUTS/CONFIG/MIN/MIN. LO and MAX. LO. Values "MIN. HI" and "MAX. HI" are of no significance in this case.

Response:

<AA> 06 00 00 <Word Hi><Word Lo><CRC Lo><CRC Hi>

Command 10h > Input value

<AA> 10 00 00 00 02 04 <Lo Word Hi> <Lo Word Lo> <Hi Word Hi> <Hi Word Lo> <CRC Lo> <CRC Hi>

where:

<Hi Word><Lo Word> together they create the value LONG INT.

Input values are calculated through the following values:

$$\text{CHAN. A} = \text{MIN. A} + \frac{(\text{MAX. A - MIN. A})}{(\text{MAX. - MIN.})} \times (\text{input data - MIN.})$$

Chan. A — value to be displayed and futher processed in the instrument

MIN. A, MAX. A — values entered in menu CHANNE./CHAN. A/SET. IN.

MIN., MAX. — values entered in menu INPUTS/CONFIG

MIN. = MIN. Hi x 65536 + MIN. Lo

MAX. = MAX. Hi x 65536 + MAX. Lo

Response:

Command copied without data part <AA> 10 00 00 00 02 <CRC Lo><CRC Hi>.

Command 20h > NON-STANDARD COMMAND for MODBUS

making instrument control accessible through standard commands of the OM ASCII protocol

<AA> 20 <number of symbols in standard message> standard message <CRC Lo> <CRC Hi>

Response:

provided no error occurs in MODBUS frame:

<AA> 20 <number of characters in standard message> standard message <CRC Lo> <CRC Hi> In this format is also the response ?00, reporting error in processing standard OM command.

Address field of standard message will always be 00 - here without any significance.

ERROR STATUS

In case of wrong address or CRC nothing comes back.

In case of error command (CRC is not controlled) <AA> A0 01 <CRC Lo> <CRC Hi> comes back. If an error is in 10h command error statement "2" or "3" is reported.

If other command is used than the one corresponding with selected data format, it is evaluated as error command.

In common:

<AA> instrument address - binary 1 - 247 (set in instrument menu)

<CRC Lo> <CRC Hi> is a control word according to definitions in Appendix C of MODBUS protocol description.

TERMINATING COMMUNICATION

Communication is terminated provided no data arrives during 3 1/2 characters. This period is determined with uncertainty of ±250 µs. MODBUS has standard rates up to 19 200. For higher rate it is necessary to count with this uncertainty e.g. 115 200 Baud -> 500 ±250 µs, 230 400 Baud -> 250 ±250 µs.

ERROR STATEMENTS

ERROR	CAUSE	ELIMINATION
E.d._	number is too small (large negative) to be displayed	change DP setting, channel constant
E.d.-	number is too large to be displayed	change DP setting, channel constant
E. i._	Input quantity is smaller than permitted input quantity range	change input signal value or input (range) setting
E. i.-	Input quantity is larger than permitted input quantity range	change input signal value or input (range) setting
E.HW.	a part of the instrument does not work properly	send the instrument for repair
E.EE.	data in EEPROM corrupted	perform restoration of manufacture setting, upon repeated error statement send instrument for repair
E.SE.	data in EEPROM outside the range	perform restoration of manufacture setting, upon repeated error statement send instrument for repair
E.CL.	memory was empty (presetting carried out)	upon repeated error statement send instrument for repair, possible failure in calibration
E. in.	disconnected input circuit	check wiring

FORMAT OF INPUT DATA

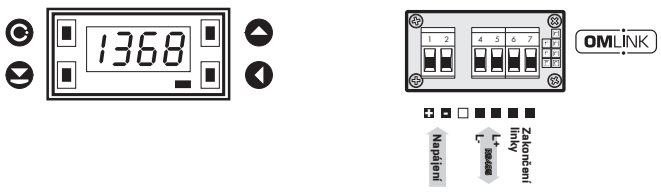
FORMAT	ORDER	COMM.	DATA
U. INT. 16	n/a	0x06	<AA> 06 00 00 <Word Hi> <Word Lo> <CRC Lo> <CRC Hi>
S. INT. 16	n/a	0x06	<AA> 06 00 00 <Word Hi> <Word Lo> <CRC Lo> <CRC Hi>
U. INT. 32	LO - HI	0x10	<AA> 10 00 00 00 02 04 <Lo Word Hi> <Lo Word Lo> <Hi Word Hi> <Hi Word Lo> <CRC Lo> <CRC Hi>
S. INT. 32	LO - HI	0x10	<AA> 10 00 00 00 02 04 <Lo Word Hi> <Lo Word Lo> <Hi Word Hi> <Hi Word Lo> <CRC Lo> <CRC Hi>
FLOAT	LO - HI	0x10	<AA> 10 00 00 00 02 04 <Lo Word Hi> <Lo Word Lo> <Hi Word Hi> <Hi Word Lo> <CRC Lo> <CRC Hi>
U. INT. 32	HI - LO	0x10	<AA> 10 00 00 00 02 04 <Hi Word Hi> <Hi Word Lo> <Lo Word Hi> <Lo Word Lo> <CRC Lo> <CRC Hi>
S. INT. 32	HI - LO	0x10	<AA> 10 00 00 00 02 04 <Hi Word Hi> <Hi Word Lo> <Lo Word Hi> <Lo Word Lo> <CRC Lo> <CRC Hi>
FLOAT	HI - LO	0x10	<AA> 10 00 00 00 02 04 <Hi Word Hi> <Hi Word Lo> <Lo Word Hi> <Lo Word Lo> <CRC Lo> <CRC Hi>

LEGENDA

#	Command beginning	
<AA>	Instrument address (1...247)	
<Word xx>	16-bit data	
<Lo Word xx>	32-bit data (lower part)	
<Hi Word xx>	32-bit data (higher part)	
U.INT.16	unsingned integer	0 (0x0000)...65 535 (0xFFFF)
S.INT.16	singned integer	-32 768 (0x8000)...65 535 (0x7FFF)
U.INT.32	unsingned integer	0 (0x0000 0000)...4 294 967 295 (0xFFFF FFFF)
S.INT.32	singned integer	-2147483648 (0x8000 0000)...65 535 (0x7FFF FFFF)
FLOAT	IEEE floating point	±6,80564693277058E+38

<Hi Word Hi> = ZEEE EEE; <Hi Word Lo> = EMMM MMMM
<Lo Word Hi> = MMMM MMMM; <Lo Worg Lo> = MMMM MMMM
Z...sign (1[0]/-1[1]); E...Exponent (-127[0x00]...0[0x7F]...128[0xFF])
M...Mantisa (1.0...2.0), highest mantisa bit is always 1 and it is covered by the lowest exponent bit e.g.: 0x3F80 0000 = Z*2^E*M = 1*2^[0]*1 = 1

CONNECTING AND CONTROLING OF INSTRUMENT



Power supply cord should not be near low voltage input signal leads.

Contactors, large electrical motors and other power elements should not be operated in the vicinity of the instrument.

Input signal leads (measured value) should be separated from all power devices.

Our instruments are extensively tested and they comply with relevant standrads for use in industrial environment, however, adhering to the above mentioned measures is stronlgy advised.

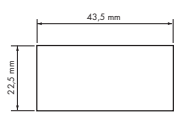
EXTERNAL INPUT

	DESCRIPTION	CONTROLS
TERMINATION	Termination of commuication line RS 485	upon contact, terminal (No. 6 + 7)

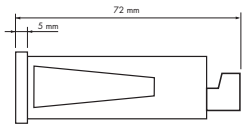
MOUNTING AND DIMENSIONS

Front view

Panel cut



Side view



Panel thickness: 0,5...20 mm

TECHNICAL DATA

INPUT

Type	RS 485
Protocol	MODBUS-RTU, Master, Slave
Data format	8 bit + no parity + 1 stop bit
Rate	300...230 400 Baud
RS 485	isolated, two-way communication, addressing (max. 31 instruments)

INSTRUMENT'S ACCURACY

TC	50 ppm/°C
Data back-up	stores the measured value after the device has been switched off (EEPROM - 10^6 write)
OM Link	company communication interface for operating, setting and updating of instruments
Watch-dog	reset after 500 ms
Calibration	at 25°C and 40 % r.h.

PROJECTION

Displey	9999, red or green 7-segment LED, digit height 9,1mm
Projection	9999
Decimal poin	setting - in menu
Brightness	%, 25 %, 50 %, 75 %, 100 % (selectable in the menu) or automatically at three steps Auto. H, Auto. M and Auto. L

POWER SUPPLY

	10...30 VDC/24 VAC, ±10 %, 0,2...1,5 VA
	10...30 VDC/24 VAC, ±10 %, 0,2...1,5 VA, isoloted

MECHANICAL PROPERTIES

Material	Noryl GFN2 SE1, incombustible UL 94 V-I
Dimensions	48 x 24 x 72 mm
Panel cut out	43,5 x 21,5 mm

ENVIROMENTAL

Connection	terminal board, section < 1,5 mm²
Stabilization period	15 minutes after switch on
Working temperature	-20°...60°C
Storage temperature	-20°...85°C
Cover	IP42 (front panel only)
Construction	security calss I
El. safety	EN 61010-1, A2
Dielectric strength	2,5 kVAC after 1 min between supply and input
Insulation resistance*	for pollution degree II, measuring cat. III. power supply > 300 V (PI)
EMC	EN 61326-1 (Industrial area)

*PI - Primary insulation, DI - Double insulation

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