OMM 335RS

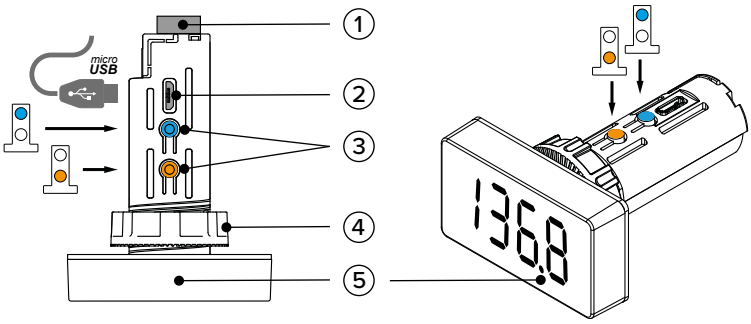
Digital Panel Meter

DATA DISPLAY RS 485

1 Description

- RS 485
- ASCII, MODBUS-RTU
- Scaling of measured values
- Setting from PC via USB
- Password protection to prevent unauthorised changes of settings
- Protection IP65
- Easy mounting into standardised Ø 22,5 mm hole

Note: There is galvanic connection between USB connector and input!
In case you need to configure the unit while the input signal is connected, the use of a galvanic isolated OM USB-ISO convertor is recommended.

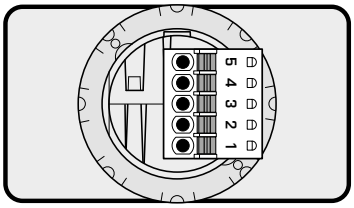


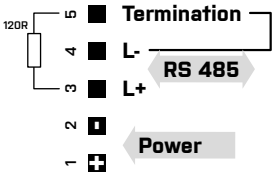
① Connector
② USB connection to PC
③ Interaction buttons
④ Fixing nut
⑤ 4 digit LED display

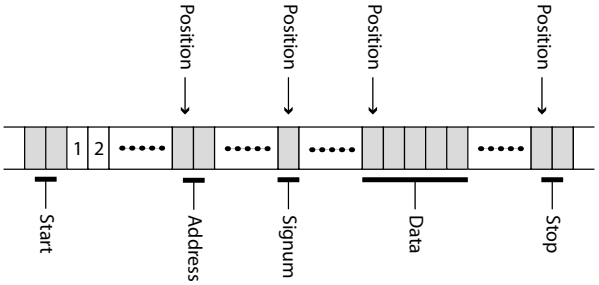
⚠ DANGER ⚠	⚠ WARNING ⚠	⚠ CAUTION
HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH - Disconnect all power before servicing equipment and other supply lines **Failure to follow this instruction will result in death or serious injury.**	**EQUIPMENT OPERATION HAZARD** - Do not use this product in safety critical system. - Do not disassemble, repair or modify this product. - Do not operate beyond the recommended operating environment. **Failure to follow these instructions can result in death, serious injury, or equipment damage.**	**EQUIPMENT OPERATION HAZARD** - Install 100 mA fuse UL...Class CC ; IEC...gG if unable to determine loop input current is within 4 to 20 mA **Failure to follow this instruction can result in injury or equipment damage**

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel.
No responsibility is assumed by ORBIT MERRET for any consequences arising out of the use of this material.

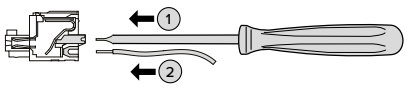
2 Product Connection







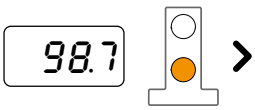
User data protocol



①		Ø 2 mm / 0,08 in
②	mm inch 6...8 / 0,24...0,31	
	mm²	0,2...1,3
	AWG	24...16

Note: Contactors, high power electric motors, frequency drives and other power devices should not be in a close proximity of the meter. Input signal leads (measured value) should be seperated from all power lines and power devices. Even though the meters has been designed and tested according to standards for industrial environment, we strongly advise to adhere to the above presented rules

3 Setting Instructions



Measuring mode

PASS. — Access into instrument menu
Range: 0...9999
2 s → 0 → 0
If password is set for **0**, then access is not password protected and the sign **PASS.**, is not displayed

bAUd — Baud rate selection
Range: 0,6...230,4 kBaud
DEF 0

06	600 Baud
12	1,2 kBaud
24	2,4 kBaud
48	4,8 kBaud
96	9,6 kBaud
192	19,2 kBaud
384	38,4 kBaud
576	57,6 kBaud
1152	115,2 kBaud
2304	230,4 kBaud

PrOt. — Data protocol selection
DEF ASCI.

ASCI	ASCII
MASt	ASCII - Master instrument solicits data from subordinate system
SLAv	ASCII - Slave passive display
Uni	ASCII - Universal cutom protocol can be set up
rtUM	MODBUS - Master
rtUS	MODBUS - Slave

Adr. — Address for ASCII protocol
Range: 0...31
DEF 0

A.no. — Address for MODBUS protocol
Range: 1...247
DEF 1

A.Pb. — Address for OMX 100Profi
The device can be connected to Profibus via PROFIBUS
DEF 19

FOrM. — Selection of input data format
DEF U.I.16

U.I.16	16 bit unsig. integ. 0...65 535
S.I.16	16 bit signed integ. -32 768...32 767
U.I32	32 bit unsig. integ. 0...4 294 967 296
S.I32	32 bit signed. integ. -2 147 483 648...2 147 483 647
FLOA	IEEE format see. Technical data

Ord. — Selection of order of the 32bit data parts
DEF LOHI

LOHI	Oven 16 bit is transmitted first
HILO	Higher 16 bit is transmitted second

MIn.0 — Setting input value
Setting the range of input values "Long integer" number in four values (words) **Min.0, Min.1, Min.2, Min.3**
DEF 0
MIn.1 / MIn.2 / MIn.3
The setting is the same in Min.0

DEF	U.I.16/S.I.16	DEF	U.I.32/S.I.32
Min.0	0/0	Min.0	0/0
Min.1	0/0	Min.1	0/0
		Min.2	0/0
		Min.3	0/0

MAX.0 — Setting input value
Setting the range of input values "Long integer" number in four values (words) **Max.0, Max.1, Max.2, Max.3**
DEF ASCI.
MAX.1 / MAX.2 / MAX.3
The setting is the same in Max.0

DEF	U.I.16/S.I.16	DEF	U.I.32/S.I.32
Max.0	0/0	Max.0	0/0
Max.1	100/100	Max.1	0/0
		Max.2	0/0
		Max.3	100/100

MIn.F — Setting minimum value of input data
Range: -999...9999
DEF 0

MAX.F — Setting maximum value of input data
Range: -999...9999
DEF 100

COMM. — Setting - Command
Description is realised by a shifted ASCII code (Tab 1), where the first two positions represent the description itself and the last two positions are the code (a number between 0 to 95). If **COMM** is set to „**uu**" (two spaces), then a data request #AA<CR> is broadcast. Otherwise #AA <<COMMAND>><CR> waits for confirmation „!AA" and then sends out a request for data #AA<CR>.
DEF uu

COMM. — Selection of registers
The item is accessible only after setting **MASTER**
DEF CO.04

CO03	Reading setup (holding) registers address 4xxxx
CO04	Reading input (input) registers address 3xxxx

rE — Restart
StA. — Stabilization time
StA.1 / StA.2
AdP. — Address for PROFIBUS protocol
Adr. — Address for ASCII protocol
Adr.1 / Adr.2
S.I.P — Setting - Input Parameters
P.SU — Setting - Power Supply
dAP. — Diagnostic Address for PROFIBUS protocol

Legend

- Enter Menu
- Interaction buttons
- Settings not saved (t > 2 s)
- Settings saved (t > 2 s)
- Return to measuring mode
- DEF Default

Note: For an easier unit configuration we recommend using our free PC SW called OM Link
www.merret.cz/en/products/software/om-link

Setting register address
The item is accessible only after setting **MASTER** a určuje adresu registru
Range: 0...9999

MODBUS

Setting initial two-symbol sequence
Set direct in ASCII code
Range: 1...127, if set to **0**, it will not be applied

DEF	
Sta.1	2
Sta.2	0

*setting is the same in **StA.1***

ASCII - Universal

Setting the address position
Position of the address and other symbols which have to have a set value. If set to **0**, the block will not be taken into account. The block can be anywhere in the message.

Range: 0...245

ASCII - Universal

Setting the instrument address
Set directly in ASCII code
Range: 1...127, if set to **0**, it will not be applied

DEF	
Adr.1	48
Adr.2	49

*setting is the same in **Adr.1***

ASCII - Universal

Setting number sign position
Number sign position. If set to **0**, it has to be part of the data. This symbol can appear anywhere within the message.
Range: 0...245

ASCII - Universal

„Plus“ number sign supression

YES	Sign "plus" will be replaced by space
no	Sign "plus" will be dispayed

ASCII - Universal

Setting data position
This block can be anywhere within the message. If ending sequence is received sooner than the set number of symbols, it is considered a succcesful reception
Range: 1...245

ASCII - Universal

Setting number of signs
7 symbols can be displayed only if there is no „minus“ sign and one of the symbols is decimal point
Range: 1...7

ASCII - Universal

Setting of closing two-symbol sequence
Set directly in ASCII codu
Range: 1...127, if set to **0**, the block will not be taken into account

DEF	
Sto.1	3
Sto.2	0

*The setting is the same in **StO.1***

ASCII - Universal

Setting of the request to receive data
Set directly in ASCII codu
Range: 1...127, if set to **0**, request is not sent

DEF	
rEq.1...8	0

*The setting is the same in **rEq.1***

ASCII - Universal

Selecting display mode in case of communicaton failure

no	no reaction
bLAn.	display goes off
FLAS.	last displayed value starts flashing
dASH.	dash symbols displayed
dOt.	decimal point is displayed

Setting the time constant for Timeout
Setting the time delay after which the indication of interrupted communication will appear on the display in the mode of **MOt.0**
Range: 0...99,9 s

Setting display projection for minimum value of input signal
Position of the DP does not affect display projection and the DP is automatically shifted after the value is confirmed
Range: -999...9999

This setting is only for ASCII protocol using commands 9N and 9F

Setting display projection for maximum value of input signal
Position of the DP does not affect display projection and the DP is automatically shifted after the value is confirmed
Range: -999...9999

This setting is only for ASCII protocol using commands 9N and 9F

Setting projection of the decimal point
The instrument allows for classic projection of a number with positioning of the DP as well as projection with floating DP, allowing to display a number in its most exact form FL. P.

0000	XXXX
000.0	X.XXX
00.00	XX.xx
0.000	X.xxx
FL. P.	floating dec. point

This setting is only for ASCII protocol using commands 9N and 9F

Value to be displayed

dAtA	received raw data without conversion (MODBUS - always converted)
uAL.	přepočtená hodnota

Return to manufacture setting of the instrument
Reading the primary setting of items in menu (DEF)

Setting new password
This option allows to change the numeric code, which blocks the access into menu
Range: 0...9999 (univeral password 8177)

Projection of instrument SW version
Display shows type, identification of the instrument, SW number, SW version and current input setting (Mode)

Example
OMM 355RS 81-004

Return to measuring mode

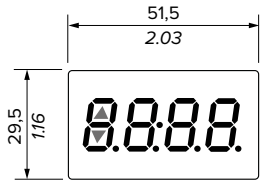
Note: If there is a pause during configuration exceeding 60 seconds, the configuration mode closes down automatically and the device is switched into a measuring mode. In such case all unconfirmed selections will be lost.

4 Error conditions

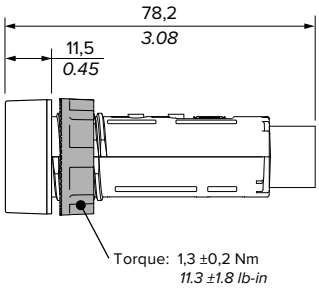
ERROR	CAUSE	ELIMINATION
E. d._	number is too small (large negative) to be displayed	change DP setting, channel constant setting
E. d¯	number is too high to be displayed	change DP setting, channel constant setting

5 Instrument dimensions and installation

Front view

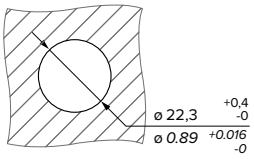


Side view



Panel cut

Panel thickness: 1...6 mm
0.04...0.24 in



mm
inch

6 Technical data

INPUT

Number of inputs	1
Type	RS 485 two-way communication, addressing
Protocol	ASCII, Modbus RTU Master, Slave, Universal
Format	8 bit + no parity + 1 stop bit or user defined
Adrress	0...31 (ASCII)/1...247 (MODBUS)
Rate	600...230 400 Baud

PROJECTION

Display	9999, 7-segment LED
Digit height	14 mm
Display color	red or green
Projection	-999...9999
Decimal point	setting - in menu
Brightness	fixed

INSTRUMENT ACCURACY

TC	50 ppm/°C
Linearization	linear interpolation in 50 points (only via OM Link)
OM Link	company communication interface for operation, setting and update of instruments. (microUSB)
Watch-dog	reset after 500 ms
Calibration	at 25°C and 40 % r.h.

POWER SUPPLY

Power	24 VDC/24 VAC, ±10 %, 0,2 VA, 10...30 VDC/24 VAC, ±10 %, 0,2 VA, isolated

MECHANIC PROPERTIES

Material	PA66, incombustible UL 94 V-0
Dimensions	51,5 x 29,5 x 78,2 mm
Panel cutout	ø 22,5 mm

OPERATING CONDITIONS

Connection	connector terminal blocks, section 0,2...1,3 mm²
Stabilization period	within 5 minutes after switch-on
Working temp.	-20°...60°C
Storage temp.	-20°...85°C
Protection	IP65 (front panel only)
Construction	safety class I
El. safety	EN 61010-1, A2
Dielectric strength	700 VAC after 1 min. between power supply and signal input
Insulation resist.*	for pollution degree II, measurement cat. II power supply, input > 250 V (PI)
EMC	EN 61326-1 (Industrial area)

* PI - Primary insulation, DI - Double insulation

TABLE OF SIGNS-

	0	1	2	3	4	5	6	7
0		!	"	#	$	%	&	'
8	(	)	*	+	,	-	.	/
16	0	1	2	3	4	5	6	7
24	8	9	:	;	<	=	>	?
32	@	A	B	C	D	E	F	G
40	H	I	J	K	L	M	N	O
48	P	Q	R	S	T	U	V	W
56	X	Y	Z	[	\	]	^	_
64	`	a	b	c	d	e	f	g
72	h	i	j	k	l	m	n	o
80	p	q	r	s	t	u	v	w
88	x	y	z	{	|	}	~	

DATA PROTOCOL - MODBUS

Format	Order	Command	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>

Legend

#	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 (upper part)

Measuring instruments of the OMM 335 series conform to the European regulation 2014/30/EU and 2014/35/EU

This product must be installed, connected and used in compliance with prevailing standards and/or installation regulations.
As standards, specifications and designs develop from time to time, always ask for confirmation of the information given in this publication.

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