

Digital Fieldbus Transmitter

PR 1720/00, -/01, -/10, -/11

Operating Manual



Operating Manual
for PR 1720

9499 050 72003
Release 2.50

Edition 3

29.06.2004

Contents

1	DESCRIPTION	7
1.1	INTERFACES	8
1.1.1	<i>Serial interfaces.....</i>	<i>8</i>
1.1.2	<i>Fieldbus interface.....</i>	<i>9</i>
1.1.3	<i>Analog output.....</i>	<i>9</i>
1.1.4	<i>Digital interfaces.....</i>	<i>9</i>
1.2	LIMITS	10
1.3	CONTROL SIGNALS	10
1.4	REMOTE DISPLAY.....	10
2	SAFETY HINTS, POWER CONNECTION	11
2.1	INITIAL INSPECTION.....	11
2.2	MOUNTING POSITION	11
2.2.1	<i>Housing in stainless steel (Version PR 1720/10 and -/11)</i>	<i>12</i>
2.3	BEFORE COMMISSIONING.....	12
2.4	OPENING THE INSTRUMENT	12
2.5	SUPPLY VOLTAGES/MAINS CONNECTION	13
2.5.1	<i>24 VAC version PR 1720/01 and -/11</i>	<i>13</i>
2.6	MAINTENANCE.....	14
2.6.1	<i>Fuse.....</i>	<i>14</i>
2.6.2	<i>Soldering.....</i>	<i>14</i>
2.7	REPAIR	15
2.7.1	<i>For special attention.....</i>	<i>15</i>
2.7.2	<i>Failure and excessive stress</i>	<i>15</i>
2.8	DISPOSAL.....	15
3	INSTALLATION	16
3.1	CONNECTIONS	16
3.2	CONNECTION OF 2 TO 8 LOAD CELLS VIA PR 6130 CABLE JUNCTION BOX	18
3.2.1	<i>Direct connection of 1 load cell</i>	<i>18</i>
3.3	CONNECTION OF 2 TO 4 LOAD CELLS WITH PR 1722 CONNECTION SUB-UNIT	19
3.4	DIGITAL OUTPUTS.....	20
3.5	DIGITAL INPUTS.....	20
3.6	ANALOG OUTPUT.....	21
3.7	OPERATOR/SERVICE INTERFACE RS232	22
3.8	SERIAL (COMMUNICATION) INTERFACES.....	23
3.8.1	<i>RS 232.....</i>	<i>24</i>
3.8.2	<i>Current loop.....</i>	<i>25</i>
3.8.3	<i>RS 422/485.....</i>	<i>26</i>
3.8.4	<i>RS422/485 BUS.....</i>	<i>27</i>
3.8.5	<i>RS 422/485 BUS 2- wire.....</i>	<i>28</i>
3.8.6	<i>Solder links on the interface modules.....</i>	<i>29</i>
3.9	PR 1721 FIELDBUS INTERFACE	30
3.9.1	<i>PR1721/11 Profibus-DP (option).....</i>	<i>31</i>
3.9.2	<i>PR1721/12 Interbus-S (Option).....</i>	<i>32</i>
3.9.3	<i>PR1721/14 DeviceNet Interface.....</i>	<i>33</i>
4	SURVEY/FUNCTION	35
4.1	FUNCTION BLOCKS	35

4.1.1	<i>Galvanic isolation</i>	35
4.2	DATA BACK-UP/MAINS FAILURE	36
4.2.1	<i>Calibration data</i>	36
4.2.2	<i>Configuration data</i>	36
4.3	SURVEY OF PARAMETERS CALIBRATION/CONFIGURATION.....	37
4.3.1	<i>Limit, fixed tare, fixed analog output value</i>	37
4.4	COMMISSIONING	38
4.4.1	<i>Terminal configuration</i>	38
4.4.2	<i>Boot messages</i>	39
4.4.3	<i>Start-up screen, Operating level</i>	40
4.4.3.1	Weight display	40
4.4.3.2	Status display	40
4.4.3.3	Key functions	41
4.4.3.4	Menu control in the masks.....	41
4.4.4	<i>Entry of parameters for limits and fixed tare value</i>	42
4.4.5	<i>SPM marker, setting/resetting via the terminal</i>	44
5	CALIBRATION	45
5.1	ENTRY PROCEDURE - CALIBRATION.....	45
5.2	CALIBRATION MENU	46
5.3	MEASUREMENT PARAMETER FILTERS	48
5.4	CALIBRATING THE INDICATOR	49
5.4.1	<i>Calibration by means of weights</i>	50
5.4.1.1	Hysteresis correction.....	50
5.4.1.2	Step-by-step calibration.....	51
5.4.2	<i>Adjustment with load cell data</i>	52
5.4.2.1	Gravity: increased accuracy due to gravity correction.....	52
5.4.3	<i>Adjustment via SPAN, entry of mV/V data</i>	53
5.4.3.1	SPAN calculation in mV/V.....	53
5.4.4	<i>End of calibration</i>	54
5.5	CHANGING THE CALIBRATION SUBSEQUENTLY	55
5.6	ERROR MESSAGES	56
5.6.1	<i>Error messages on the weight display</i>	56
5.6.2	<i>Error messages during calibration menu selection</i>	56
5.6.3	<i>Error messages during the calibration menu</i>	56
6	CONFIGURATION	57
6.1	CONFIGURING THE ANALOG OUTPUT	58
6.2	CONDITIONS FOR LIMIT VALUES, DIGITAL INPUTS AND OUTPUTS.....	60
6.2.1	<i>Configuring digital inputs and outputs</i>	61
6.2.1.1	Configuring outputs	61
6.2.1.2	Configuring inputs	62
6.2.2	<i>Configuring limit values</i>	63
6.3	TERMINAL KEY CONFIGURATION.....	65
6.4	ACCESS CODES	66
6.5	CONFIGURING OPERATING INTERFACE FOR REMOTE DISPLAY OPERATION.....	67
6.6	CONFIGURING FIELD BUS INTERFACE AND PROTOCOL.....	68
6.6.1	<i>Interbus S selection</i>	68
6.6.2	<i>Profibus DP selection</i>	68
6.6.3	<i>DeviceNet</i>	69
6.7	SERIAL INTERFACE (SUPERVISORY SYSTEM)	70
6.7.1	<i>Printer</i>	71
6.7.2	<i>Remote display at serial interface</i>	72
6.8	DISPLAY	74
6.9	SAVE DATA, CREATE/RELOAD BACK-UP FILE	75

6.9.1	Save data, create back-up file.....	75
6.9.2	Load data into PR1720.....	76
6.9.3	Print calibration/configuration parameters.....	76
6.9.3.1	Configuring the hyperterminal.....	79
6.10	LEAVING CONFIGURATION AND SAVING THE CONFIGURATION PARAMETERS.....	80
7	CALIBRATION PARAMETERS.....	81
7.1	ANALOG FILTER.....	81
7.2	TEST MODE.....	81
7.3	CALIBRATED AT.....	81
7.4	DIGITAL FILTER.....	81
7.5	DIMENSION.....	82
7.6	DONT PRINT BELOW.....	82
7.7	OPERATION IN W AND M.....	82
7.8	MEASURING TIME.....	82
7.9	ZERASET RANGE.....	83
7.10	AUTOMATIC ZERO TRACKING.....	83
7.11	ZEROTRACK RANGE.....	84
7.12	ZERO TRACK STEP.....	84
7.13	ZEROTRACK REPEAT TIME.....	84
7.14	RESOLUTION.....	84
7.15	FULLSCAL.....	85
7.16	STEPWIDTH.....	85
7.17	STANDSTILL DETECTION.....	85
7.18	STANDSTILL RANGE.....	85
7.19	STANDSTILL TIME/NUMBER OF STANDSTILL SAMPLES.....	86
7.20	CANCEL TARE COMMAND.....	86
7.21	OVERLOAD.....	86
8	SERIAL COMMUNICATION.....	87
8.1	COMMUNICATION PROTOCOLS.....	87
8.1.1	JBUS protocol/MODBUS protocol.....	87
8.1.2	DUST protocol.....	88
8.1.3	EW protocol.....	89
8.2	TELEGRAMS FOR EW AND DUST PROTOCOL.....	90
8.2.1	Data formats.....	91
8.2.2	Example.....	93
8.2.3	Error codes.....	94
8.3	COMMUNICATION WITH THE JBUS PROTOCOL.....	95
8.3.1	Function 1 or 2: read n bits.....	95
8.3.2	Function 3 or 4: read n successive words.....	96
8.3.3	Function 5: write a bit.....	97
8.3.4	Function 6: write word.....	97
8.3.5	Function 8: Diagnosis.....	98
8.3.6	Function 15: write n successive bits.....	98
8.3.7	Function 16: write n successive words.....	99
8.3.8	J-BUS error messages.....	99
8.3.9	Example program for generating the CRC bytes.....	100
9	SPM ADDRESSES.....	101
9.1	STATUS BITS FOR READING (READ ONLY).....	101
9.2	STATUS BITS FOR READ/WRITE.....	102
9.3	STATUS BITS STATE-TRIGGERED (STATIC, READ/WRITE).....	102

9.4	STATUS BITS EDGE-TRIGGERED (READ – SET)	102
9.5	BYTES FOR CALIBRATION INFORMATION.....	103
9.5.1	<i>SPM addresses for statuses in the analog part/load cell circuitry.....</i>	<i>103</i>
9.6	NUMERIC WEIGHT VALUES, 32-BIT TWO'S COMPLEMENT	104
9.6.1	<i>Printed weight values.....</i>	<i>104</i>
9.6.2	<i>Limit values and fixed values.....</i>	<i>104</i>
10	FIELDBUSES.....	105
10.1	INTERBUS-S, PROFIBUS-DP AND DEVICENET	105
10.1.1	<i>Technical data fieldbuses.....</i>	<i>105</i>
10.1.2	<i>Interface function Profibus-DP, DeviceNet.....</i>	<i>106</i>
10.1.3	<i>Interface function Interbus-S.....</i>	<i>106</i>
10.1.4	<i>Process data</i>	<i>106</i>
10.1.4.1	Data description	107
10.1.4.2	Output area.....	107
10.1.4.3	Input area	107
11	TECHNICAL DATA	111
11.1	CHARACTERISTICS, SPECIFICATIONS.....	111
11.2	GENERAL DATA	111
11.3	ACCURACY AND STABILITY	111
11.3.1	<i>A/D Conversion.....</i>	<i>111</i>
11.3.2	<i>Sensitivity.....</i>	<i>111</i>
11.4	LOAD CELLS.....	112
11.5	LOAD CELL CONNECTION.....	112
11.6	ANALOG OUTPUT	112
11.7	DIGITAL INPUTS	112
11.8	DIGITAL OUTPUTS.....	112
11.9	DISPLAY	112
11.10	CONFIGURATION/CALIBRATION	113
11.11	SERIAL INTERFACE.....	113
11.11.1	<i>Operating interface/service interface.....</i>	<i>113</i>
11.11.2	<i>Communication interface.....</i>	<i>113</i>
11.12	PROTOCOLS, FIELD BUSES.....	113
11.13	POWER SUPPLY.....	113
11.14	ENVIRONMENTAL CONDITIONS.....	113
11.15	ELECTROMAGNETIC COMPATIBILITY.....	114
11.16	RF INTERFERENCE SUPPRESSION	114
11.17	CE-CONFORMITY	114
11.18	CONNECTION	114
11.19	TYPE OF CONSTRUCTION.....	114
11.20	DIMENSIONS, WEIGHT	114
11.21	ACCESSORIES.....	114
12	ANNEX	115
12.1	GSD FILE FOR PR1721 PROFIBUS DP.....	115
12.2	EDS-FILE FOR PR1721 DEVICENET	116
12.3	PTB CERTIFICATE	117
12.4	INDEX.....	118

This is a “Table of Contents preview” for quality assurance

The full manual can be purchased from our store:

[https://the-checkout-tech.com/manuals/sartorius/PR-1720 operating manual.html](https://the-checkout-tech.com/manuals/sartorius/PR-1720%20operating%20manual.html)

And our free Online Keysheet maker:

<https://the-checkout-tech.com/Cash-Register-Keysheet-Creator/>

[HTTPS://THE-CHECKOUT-TECH.COM](https://THE-CHECKOUT-TECH.COM)