

SMRT-PRO Modbus[®] Register Tables

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WARNING

As is typical with most instruments, the addition of serial communications carries an inherent risk; it allows a remote operator to change the operation and/or characteristics of the device being digitally communicated with (in this case the SMRT-PRO meter). Inappropriate communication could have serious consequences in meter or system operation.

Ultimately, it is up to the system designer to provide for the safe operation of a process. But certainly, no single event should make the difference between a safe situation and a catastrophe. Please use the appropriate level of caution when implementing serial communication.

Disclaimer

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Introduction

This document describes how to communicate with the SMRT-PRO meters, **with firmware version 2.3 & greater**, using the Modbus® RTU Serial Communication Protocol. The user should be familiar with Modbus serial communication and the meters before using these tables. Refer to the meter instruction manual and the serial communication adapters' manual for setup and wiring instructions.

Go to <http://www.modbus.org/> to obtain a copy of the Modbus Specifications and to find Modbus Technical Resources.

Note that although there are no specific 3x Registers, all 4x Registers are mirrored into 3x register space, and are therefore capable of being read by Modbus function 04 (Read Input Registers).

Register Overview

40001 – 40042: PV/Rate Value (PV), Max PV, Min PV, Total, and Grand Total in floating point, double precision and long integer formats

40081 – 40087: Alarm status, alarm output acknowledge, reset Max & Min, reset Total, reset Grand Total

40091: System Status

40101 – 40141: Input selection, K-Factor, decimal points, time base, units, Total conversion factors, and alarm settings

40151 – 40178: Open collector pulse output settings and parameters

40201 – 40225: Analog output values and setup parameters

40231 – 40235: Gate, filter (contact de-bounce), and cutoff settings

40241 – 40242: Backlight and battery symbol settings

40251 – 40280: Display mode settings

40281 – 40285: Serial communication settings

40301 – 40319: Date & time settings and data logging settings

40401 – 40406: Menu password, Total & Grand Total passwords

40411 – 40418: Custom menu settings

40501 – 40632: Multipoint scaling parameters

40701 – 40744: Log data retrieval: Date & time, rate, total, grand total, and units

40901 – 40911: Product ID and firmware version

40921: Modbus tag

40991: Load factory defaults

40992: Restart meter

41001 – 41004: Button triggers

Register ¹			Name	Access	Limits or Range ²	Units	Data Type ³	Function Code(s)	Comments
Number	Address (Decimal)	Address (Hex)							
40001 – 40002	0 – 1	0000 – 0001	PV/Rate Display Value	Read Only	0 to 99,999	User defined	Floating point	03, 04	Represents the PV/Rate display value including the decimal point. Over Range = 10000
40003 – 40004	2 – 3	0002 – 0003	Total Value	Read Only	0 to 9,999,999,999,999	User defined	Floating point	03, 04	Represents the Total value, including the decimal point, since last Total reset. These registers must be read together.
40005 – 40006	4 – 5	0004 – 0005	Total Remainder Value	Read Only	1.73e5	User defined	Floating point	03, 04	To obtain the most accurate value add the remainder to the total. The small difference between the display value and the Modbus value is caused by data conversion rounding.
40007 – 40008	6 – 7	0006 – 0007	Grand Total Value	Read Only	0 to 9,999,999,999,999	User defined	Floating point	03, 04	Represents the Grand Total value, including the decimal point, since last Grand Total reset. These registers must be read together.
40009 – 40010	8 – 9	0008 – 0009	Grand Total Remainder Value	Read Only	1.73e5	User defined	Floating point	03, 04	To obtain the most accurate value add the remainder to the grand total. The small difference between the display value and the Modbus value is caused by data conversion rounding.
40011 – 40012	10 – 11	000A – 000B	Maximum Rate Value	Read Only	0 to 99,999	User defined	Floating point	03, 04	Represents the Maximum display value, including the decimal point, since last power up or Max Value reset.
40013 – 40014	12 – 13	000C – 000D	Minimum Rate Value	Read Only	0 to 99,999	User defined	Floating point	03, 04	Represents the Minimum display value, including the decimal point, since last power up or Min Value reset.
40015 – 40018	14 – 17	000E – 0011	Total Value	Read Only	0 to 9,999,999,999,999	User defined	Double	03, 04	Represents the Total value, including the decimal point, since last Total reset.
40019 – 40022	18 – 21	0012 – 0015	Grand Total Value	Read Only	0 to 9,999,999,999,999	User defined	Double	03, 04	Represents the Grand Total value, including the decimal point, since last Grand Total reset.
40023	22	0016	PV/Rate Display Value	Read Only	0 to 99,999	User defined	Long Hi	03, 04	Represents the PV/Rate display value excluding the decimal point. Decimal point setting in 40105.
40024	23	0017	PV/Rate Display Value	Read Only			Long Lo	03, 04	Must be read with 40023.
40025	24	0018	Total Non-Overflow Value	Read Only	0 to 9,999,999	User defined	Long Hi	03, 04	Represents the 7-digit Total non-overflow value, excluding the decimal point, since last Total reset. Decimal point setting in 40106. Use 40035 – 40038 to read 13-digit total.
40026	25	0019	Total Non-Overflow Value	Read Only			Long Lo	03, 04	Must be read with 40025.
40027	26	001A	Grand Total Non-Overflow Value	Read Only	0 to 9,999,999	User defined	Long Hi	03, 04	Represents the 7-digit Grand Total non-overflow value, excluding the decimal point, since last Grand Total reset. Decimal point setting in 40107. Use 40039 – 40042 to read 13-digit grand total.

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Register ¹			Name	Access	Limits or Range ²	Units	Data Type ³	Function Code(s)	Comments
Number	Address (Decimal)	Address (Hex)							
40028	27	001B	Grand Total Non-Overflow Value	Read Only			Long Lo	03, 04	Must be read with 40027.
40029	28	001C	Maximum Display Value	Read Only	0 to 99,999	User defined	Long Hi	03, 04	Represents the Maximum display value, excluding the decimal point, since last power up or Max Value reset.
40030	29	001D	Maximum Display Value	Read Only			Long Lo	03, 04	Must be read with 40029.
40031	30	001E	Minimum Display Value	Read Only	0 to 99,999	User defined	Long Hi	03, 04	Represents the Minimum display value, excluding the decimal point, since last power up or Min Value reset.
40032	31	001F	Minimum Display Value	Read Only			Long Lo	03, 04	Must be read with 40031.
40033	32	0020	PV/Rate Display Value	Read Only	0 to 99,999	User defined	Long Hi	03, 04	Represents the PV/Rate display value excluding the decimal point. Decimal point setting in 40105.
40034	33	0021	PV/Rate Display Value	Read Only			Long Lo	03, 04	Must be read with 40033.
40035	34	0022	Total Non-Overflow Value	Read Only	0 to 9,999,999	User defined	Long Hi	03, 04	Represents the Total non-overflow value, excluding the decimal point, since last Total reset. Total Value = (Total overflow x 10 ⁷) + (total non-overflow) Decimal point setting in 40106. The small difference between the display value and the Modbus value is caused by rounding applied to the display value.
40036	35	0023	Total Non-Overflow Value	Read Only			Long Lo	03, 04	Must be read with 40035.
40037	36	0024	Total Overflow Value	Read Only	0 to 999,999	User defined	Long Hi	03, 04	Represents the Total overflow value, since last Total reset. Must be read with 40035
40038	37	0025	Total Overflow Value	Read Only			Long Lo	03, 04	Must be read with 40035
40039	38	0023	Grand Total Non-Overflow Value	Read Only	0 to 9,999,999	User defined	Long Hi	03, 04	Represents the Grand Total non-overflow value, excluding the decimal point, since last Grand Total reset. Grand Total Value = (GTotal overflow x 10 ⁷) + (GTotal non-overflow) Decimal point setting in 40107. The small difference between the display value and the Modbus value is caused by rounding applied to the display value.

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Register ¹			Name	Access	Limits or Range ²	Units	Data Type ³	Function Code(s)	Comments
Number	Address (Decimal)	Address (Hex)							
40040	39	0024	Grand Total Non-Overflow Value	Read Only			Long Lo	03, 04	Must be read with 40039.
40041	40	0028	Grand Total Overflow Value	Read Only	0 to 999,999	User defined	Long Hi	03, 04	Represents the Total overflow value, since last Total reset. Must be read with 40039
40042	41	0029	Grand Total Overflow Value	Read Only			Long Lo	03, 04	Must be read with 40039
40081	80	0050	Alarm Status	Read Only			Word	03, 04	See <i>Alarm Status</i> on page 19 for details.
40082	81	0051	Alarm Acknowledge	Write Only	1		Bit	06, 16	Acknowledge alarms.
40083	82	0052	Reset Maximum	Write Only	1		Bit	06, 16	Reset stored maximum (Max) value.
40084	83	0053	Reset Minimum	Write Only	1		Bit	06, 16	Reset stored minimum (Min) value.
40085	84	0054	Reset Max & Min	Write Only	1		Bit	06, 16	Reset both stored maximum (Max) and minimum (Min) value.
40086	85	0055	Reset Total	Write Only	1		Bit	06, 16	To reset with total reset password disabled, write 1. To reset total when total password is enabled, write the total password.
40087	86	0056	Reset Grand Total	Write Only	1		Bit	06, 16	To reset with grand total reset password disabled, write 1. To reset total when total password is enabled, write the total password.
40091	90	005A	System Status	Read Only			Word	03, 04	Bit 0: Reserved; Bit 1: Low Power; Bit 2: Set Clk; Bit 3: Log Full; Bit 4: Pulse Over; Bit 5: Reserved; Bit 6: ;Warm Start; Bit 7: Cold Start, Bits 8 to 15: Reserved
40101	100	0064	Pulse Input	Read Write			Word	03, 04, 06, 16	0=Active, 1=NPN, 2=PNP, 3=Reed, 4=Coil, 5=Isolated, 6=Active Low, 7=NPN Low, 8=PNP Low, 9 to 15=Reserved
40102	101	0065	K-Factor Unit	Read Write	0 to 12		Integer	03, 04, 06, 16	0=Custom, 1=Gallon, 2=Liter, 3=Imperial Gallon, 4=Cubic Meter, 5=Barrel, 6= Bushel, 7= Cubit Yard, 8=Cubic Foot, 9=Cubic Inch, 10=Liquid Barrel, 11=Beer Barrel, 12=Hectoliter
40103 - 40104	102 - 103	0066 - 0067	K-Factor	Read Write	0.000001 to 9,999,999	Pulses per user defined unit	Float	03, 04, 06, 16	

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Register ¹			Name	Access	Limits or Range ²	Units	Data Type ³	Function Code(s)	Comments
Number	Address (Decimal)	Address (Hex)							
40105	104	0068	Rate Decimal	Read Write	0 to 4		Integer	03, 04, 06, 16	Set number of Rate decimal places.
40106	105	0069	Total Decimal	Read Write	0 to 6		Integer	03, 04, 06, 16	Set number of Total decimal places.
40107	106	006A	Grand Total Decimal	Read Write	0 to 6		Integer	03, 04, 06, 16	Set number of Grand Total decimal places.
40108	107	006B	Time Base	Read Write	0 to 3		Integer	03, 04, 06, 16	0=sec, 1=min, 2=hour, 3=day
40109	108	006C	Rate Units	Read Write	0 to 12		Integer	03, 04, 06, 16	0=Custom, 1=Gallon, 2=Liter, 3=Imperial Gallon, 4=Cubic Meter, 5=Barrel, 6= Bushel, 7= Cubit Yard, 8=Cubic Foot, 9=Cubic Inch, 10=Liquid Barrel, 11=Beer Barrel, 12=Hectoliter
40110 – 40111	109 – 110	006D – 006E	Rate Conversion Factor	Read Write	0.000001 to 9,999,999		Float	03, 04, 06, 16	Rate units must be set to Custom
40112	111	006F	Total Units	Read Write	0 to 12		Integer	03, 04, 06, 16	0=Custom, 1=Gallon, 2=Liter, 3=Imperial Gallon, 4=Meter ³ , 5=Barrel, 6= Bushel, 7= Cubic Yard, 8=Cubic Foot, 9=Cubic Inch, 10=Liquid Barrel, 11=Beer Barrel, 12=Hectoliter
40113	112	0070	Total Unit Multiplier	Read Write	0, 2, 3, 6		Integer	03, 04, 06, 16	0=1, 2=x100 (h), 3=x1,000 (k), 6=x1,000,000 (M)
40114 – 40115	113 - 114	0071 – 0072	Total Conversion Factor	Read Write	0.000001 to 9,999,999		Float	03, 04, 06, 16	Total units must be set to Custom
40116	115	0073	Total Reset Mode	Read Write	0 to 2		Integer	03, 04, 06, 16	0=Manual enable, 1= manual disable, 2=Auto
40117	116	0074	Total Reset Delay	Read Write	0 to 99,999	Seconds	Long Hi	03, 04, 06, 16	Must set reset mode to Auto
40118	117	0075	Total Reset Delay	Read Write			Long Lo	03, 04, 06, 16	Must be read with register 117
40119	118	0076	Total Alarm 1 Set Point	Read Write	0 to 9,999,999	User defined	Long Hi	03, 04, 06, 16	Set alarm output 1
40120	119	0077	Total Alarm 1 Set Point	Read Write			Long Lo	03, 04, 06, 16	Must be read with register 119
40121	120	0078	Total Alarm 2 Set Point	Read Write	0 to 9,999,999	User defined	Long Hi	03, 04, 06, 16	Set alarm output 2
40122	121	0079	Total Alarm 2 Set Point	Read Write			Long Lo	03, 04, 06, 16	Must be read with register 121

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Register ¹			Name	Access	Limits or Range ²	Units	Data Type ³	Function Code(s)	Comments
Number	Address (Decimal)	Address (Hex)							
40123	122	007A	Grand Total Units	Read Write	0 to 12		Integer	03, 04, 06, 16	0=Custom, 1=Gallon, 2=Liter, 3=Imperial Gallon, 4=Meter ³ , 5=Barrel, 6= Bushel, 7= Cubic Yard, 8=Cubic Foot, 9=Cubic Inch, 10=Liquid Barrel, 11=Beer Barrel, 12=Hectoliter
40124	123	007B	Grand Total Unit Multiplier	Read Write	0, 2, 3, 6		Integer	03, 04, 06, 16	0=1, 2=x100 (h), 3=x1,000 (k), 6=x1,000,000 (M)
40125 - 40126	124 - 125	007AC– 007D	Grand Total Conversion Factor	Read Write	0.000001 to 9,999,999	User defined	Float	03, 04, 06, 16	Grand Total units must be set to Custom.
40127	126	007E	Grand Total Reset Mode	Read Write	0 to 2		Integer	03, 04, 06, 16	0=Manual Enable, 1= Manual Disable, 2=Auto
40128	127	007F	Grand Total Reset Delay	Read Write	0.000000 to 9,999,999	Seconds	Long Hi	03, 04, 06, 16	
40129	128	0080	Grand Total Reset Delay	Read Write			Long Lo	03, 04, 06, 16	Must be read with register 127
40130	129	0081	Grand Total Alarm 1 Set Point	Read Write	0.000000 to 9,999,999	User defined	Long Hi	03, 04, 06, 16	Set Alarm Output 1
40131	130	0082	Grand Total Alarm 1 Set Point	Read Write			Long Lo	03, 04, 06, 16	Must be read with register 129
40132	131	0083	Grand Total Alarm 2 Set Point	Read Write	0.000000 to 9,999,999	User defined	Long Hi	03, 04, 06, 16	Set Alarm Output 2
40133	132	0084	Grand Total Alarm 2 Set Point	Read Write			Long Lo	03, 04, 06, 16	Must be read with register 131
40134	133	0085	Rate Alarm 1 Set Point	Read Write	0 to 99,999	User defined	Long Hi	03, 04, 06, 16	Set Alarm Output 1
40135	134	0086	Rate Alarm 1 Set Point	Read Write			Long Lo	03, 04, 06, 16	Must be read with register 133
40136	135	0087	Rate Alarm 1 Reset Point	Read Write	0 to 99,999	User defined	Long Hi	03, 04, 06, 16	Reset Alarm Output 1
40137	136	0088	Rate Alarm 1 Reset Point	Read Write			Long Lo	03, 04, 06, 16	Must be read with register 135
40138	137	0089	Rate Alarm 2 Set Point	Read Write	0 to 99,999	User defined	Long Hi	03, 04, 06, 16	Set Alarm Output 2
40139	138	008A	Rate Alarm 2 Set Point	Read Write			Long Lo	03, 04, 06, 16	Must be read with register 137

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Register ¹			Name	Access	Limits or Range ²	Units	Data Type ³	Function Code(s)	Comments
Number	Address (Decimal)	Address (Hex)							
40140	139	008B	Rate Alarm 2 Reset Point	Read Write	0 to 99,999	User defined	Long Hi	03, 04, 06, 16	Reset Alarm Output 2
40141	0140	008C	Rate Alarm 2 Reset Point	Read Write			Long Lo	03, 04, 06, 16	
40151	150	0096	Pulse Output 1 Mode	Read Write	0 to 12		Integer	03, 04, 06, 16	0=Off, 1=Rate Alarm, 2=Total Alarm, 3=GT Alarm, 4=On, 5=Off, 6=Timer, 7=Pulse Rate, 8=Pulse Total, 9=Pulse GT, 10=Pulse Retr, 11=Pulse Quad, 12=Test
40152	151	0097	Pulse Output 2 Mode	Read Write	0 to 12		Integer	03, 04, 06, 16	0=Off, 1=Rate Alarm, 2=Total Alarm, 3=GT Alarm, 4=On, 5=Off, 6=Timer, 7=Pulse Rate, 8=Pulse Total, 9=Pulse GT, 10=Pulse Retr, 11=Pulse Quad, 12=Test
40153 – 40154	152 – 153	0098 – 0099	Pulse Output 1 Rate Factor	Read Write	>0.00001 to 9,999,999	User defined	Float	03, 04, 06, 16	Set rate output conversion factor for output 1
40155 – 40156	154 – 155	009A – 009B	Pulse Output 2 Rate Factor	Read Write	>0.00001 to 9,999,999	User defined	Float	03, 04, 06, 16	Set rate output conversion factor for output 2
40157 – 40158	156 – 157	009C – 009D	Pulse Output 1 Total Factor	Read Write	>0.00001 to 9,999,999	User defined	Float	03, 04, 06, 16	Set total output conversion factor for output 1
40159 – 40160	158 – 159	009E – 009F	Pulse Output 2 Total Factor	Read Write	>0.00001 to 9,999,999	User defined	Float	03, 04, 06, 16	Set total output conversion factor for output 2
40161 – 40162	160 – 161	00A0 – 00A1	Pulse Output 1 Grand Total Factor	Read Write	>0.00001 to 9,999,999	User defined	Float	03, 04, 06, 16	Set grand total output conversion factor for output 1
40163 – 40164	162 – 163	00A2 – 00A3	Pulse Output 2 Grand Total Factor	Read Write	>0.00001 to 9,999,999	User defined	Float	03, 04, 06, 16	Set grand total output conversion factor for output 2
40165 – 40166	164 – 165	00A4 – 00A5	Pulse Output Test Frequency	Read Write	0.0 to 5,000.0	Hz	Float	03, 04, 06, 16	Output 1
40167 – 40168	166 – 167	00A6 – 00A7	Pulse Output Test Frequency	Read Write	0.0 to 5,000.0	Hz	Float	03, 04, 06, 16	Output 2
40169 – 40170	168 – 169	00A8 – 00A9	Pulse Output Timer Delay	Read Write	0.1 to 999,999.9	Seconds	Float	03, 04, 06, 16	Timer delay output 1
40171 – 40172	170 – 177	00AA – 00AB	Pulse Output Timer Delay	Read Write	0.1 to 999,999.9	Seconds	Float	03, 04, 06, 16	Timer delay output 2
40173 – 40174	172 – 173	00AC – 00AD	Pulse Output Timer On	Read Write	0.10 to 99,999.99	Seconds	Float	03, 04, 06, 16	Timer output pulse on time (pulse width) output 1
40175 – 40176	174 – 175	00AE – 00AF	Pulse Output Timer On	Read Write	0.10 to 99,999.99	Seconds	Float	03, 04, 06, 16	Timer output pulse time (pulse width) output 2

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Register ¹			Name	Access	Limits or Range ²	Units	Data Type ³	Function Code(s)	Comments
Number	Address (Decimal)	Address (Hex)							
40177	176	00B0	Pulse Output Timer Start/Stop	Read Write	0 or 1		Bit	03, 04, 06, 16	Output 1; 0=Stop, 1=Start
40178	177	00B1	Pulse Output Timer Start/Stop	Read Write	0 or 1		Bit	03, 04, 06, 16	Output 2; 0=Stop, 1=Start
40201	200	00C8	mA Output Mode	Read Write			Bit (x4)	03, 04, 06, 16	Bit 0: Rate; Bit 1: Total; Bit 2: Grand Total; Bit 3: Disable Write 1 to bit 0, bit 1, or bit 2 to select output mode. <i>To disable, write 1 to bit 3 and either bit 0, bit 1, or bit 2.</i>
40202 – 40203	201 – 202	00C9 – 00CA	mA Output Rate	Read Write	3.800 to 20.500	mA	Float	03, 04, 06, 16	Output 1
40204 – 40205	203 – 204	00CB – 00CC	mA Output Rate	Read Write	3.800 to 20.500	mA	Float	03, 04, 06, 16	Output 2
40206 – 40206	205 – 206	00CD – 00CE	mA Output Rate Display	Read Write	0.0000 to 99,999	User defined	Float	03, 04, 06, 16	Display 1
40208 – 40209	207 – 208	00CF – 00D0	mA Output Rate Display	Read Write	0.0000 to 99,999	User defined	Float	03, 04, 06, 16	Display 2
40210 – 40211	209 – 210	00D1 – 00D2	mA Output Total	Read Write	3.800 to 20.500	mA	Float	03, 04, 06, 16	Output 1
40212 – 40213	211 – 212	00D3 – 00D4	mA Output Total	Read Write	3.800 to 20.500	mA	Float	03, 04, 06, 16	Output 2
40214 – 40215	213 – 214	00D5 – 00D6	mA Output Total Display	Read Write	0.0000 to 9,999,999	User defined	Float	03, 04, 06, 16	Display 1
40216 – 40217	215 – 216	00D7 – 00D8	mA Output Total Display	Read Write	0.0000 to 9,999,999	User defined	Float	03, 04, 06, 16	Display 2
40218 – 40219	217 – 218	00D9 – 00DA	mA Output Grand Total	Read Write	3.800 to 20.500	mA	Float	03, 04, 06, 16	Output 1
40220 – 40221	219 – 220	00DB – 00DC	mA Output Grand Total	Read Write	3.800 to 20.500	mA	Float	03, 04, 06, 16	Output 2
40222 – 40223	221 – 222	00DD – 00DE	mA Output Grand Total Display	Read Write	0.0000 to 9,999,999	User defined	Float	03, 04, 06, 16	Display 1
40224 - 40225	223 - 224	00DF – 00E0	mA Output Grand Total Display	Read Write	0.0000 to 9,999,999	User defined	Float	03, 04, 06, 16	Display 2
40231	230	00E6	Lo Gate	Read Write	1 to 99	Seconds	Integer	03, 04, 06, 16	

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Register ¹			Name	Access	Limits or Range ²	Units	Data Type ³	Function Code(s)	Comments
Number	Address (Decimal)	Address (Hex)							
40232	231	00E7	Hi Gate	Read Write	2 to 9,999	Seconds	Integer	03, 04, 06, 16	
40233	232	00E8	Pulse Input Filter	Read Write	0 to 2		Integer	03, 04, 06, 16	0=High, 1=Medium, 2=Low Speed
40234 – 40235	233 – 234	00E9 – 00EA	Rate Cutoff	Read Write	0 to 99,999	User defined	Float	03, 04, 06, 16	
40241	240	00F0	Backlight	Read Write	0 or 1		Bit	03, 04, 06, 16	0=Off, 1=Enable
40242	241	00F1	Battery Symbol	Read Write	0 or 1		Bit	03, 04, 06, 16	0=Off, 1=Enable
40251	250	00FA	Bottom Display Mode	Read Write			Integer	03, 04, 06, 16	See Display Settings on page 19 for bottom display mode settings.
40252	251	00FB	Top Display Mode	Read Write			Integer	03, 04, 06, 16	See Display Settings on page 19 for top display mode settings.
40253	252	00FC	Total Units Display Seconds	Read Write	0 to 5	Seconds	Integer	03, 04, 06, 16	Set the time for the total unit display to toggle on the display. 0 = off
40254	253	00FD	Rate Units Display Seconds	Read Write	0 to 5	Seconds	Integer	03, 04, 06, 16	Set the time for the unit display to toggle on the display. 0 = off
40255	254	00FE	Tag Display Seconds	Read Write	0 to 5	Seconds	Integer	03, 04, 06, 16	Set the time for the custom tag display to toggle on the display. 0 = off
40256 – 40260	255 – 259	00FF – 0103	Rate Custom Unit Name	Read Write			Word (x5)	03, 04, 16	5 ASCII characters see <i>Allowable ASCII Character Set</i> on page 22. Listed range must be written together. Applicable when rate unit set to custom
40261 – 40267	260 – 266	0104 – 010A	Total Custom Unit Name	Read Write			Word (x7)	03, 04, 16	7 ASCII characters see <i>Allowable ASCII Character Set</i> on page 22. All registers in listed range must be written together. Applicable when total unit set to custom
40268 – 40274	267 – 273	010B – 0111	Grand Total Custom Unit Name	Read Write			Word (x7)	03, 04, 16	7 ASCII characters see <i>Allowable ASCII Character Set</i> on page 22. All registers in listed range must be written together. Applicable when grand total unit set to custom
40275 – 40281	274 – 280	0112 – 0118	User Tag	Read Write			Word (x7)	03, 04, 06, 16	7 ASCII character lower display user defined tag; <i>Allowable ASCII Character Set</i> on page 22. All registers in listed range must be written together.
40291	290	0122	Modbus Slave ID	Read Write	1 to 247		Integer	03, 04, 06, 16	

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Register ¹			Name	Access	Limits or Range ²	Units	Data Type ³	Function Code(s)	Comments
Number	Address (Decimal)	Address (Hex)							
40292	291	0123	Modbus Parity	Read Write	0 to 3		Integer	03, 04, 06, 16	0=8N1, 1=8N2, 2=Even Parity, 3=Odd Parity
40293	292	0124	Modbus Delay	Read Write	0 to 199	Milliseconds	Integer	03, 04, 06, 16	
40294	293	0125	Modbus Baud Rate	Read Write	1,200; 2,400; 4,800; 9,600; 19,200; 38,400; 57,600; or 115,200	bps	Long Hi	03, 04, 06, 16	
40295	294	0126	Modbus Baud Rate	Read Write			Long Lo	03, 04, 06, 16	Must be read with register 283
40301 - 40306	300 - 305	012C - 0131	Time	Read Write	0 to 99, 1 to 12, 1 to 31 (see comments), 0 to 23, 0 to 59, 0 to 59	Years, months, days, hours, minutes, seconds	Integer (x4)	03, 04, 16	Register 40301: Year; 40302: Month; 40303: Day; 40304: Hour; 40305: Minute; 40306: Second Range for days is determined by month. Write all Time registers with one command.
40307	306	0132	Log Time Active	Read Write	0 or 1		Bit (x4)	03, 04, 06, 16	Set appropriate bit to enable log times. Bit 0: Log Time 1, Bit 1: Log Time 2, Bit 2: Log Time 3, Bit 3: Log Time 4 Will error if log interval state is enabled (1, 2).
40308 - 40309	307 - 308	0133 - 0134	Log Time 1 Hour Minute	Read Write	0 to 23 0 to 59	Hour Minute	Integer (x2)	03, 04, 16	Log Time 1 Register 40308: Hour; 40309: Minute Write all above registers with one command.
40310 - 40311	309 - 310	0135 - 0136	Log Time 2 Hour Minute	Read Write	0 to 23 0 to 59	Hour Minute	Integer (x2)	03, 04, 16	Log Time 2 Register 40310: Hour; 40311: Minute Write all above registers with one command.
40312 - 40313	311 - 312	0137 - 0138	Log Time 3 Hour Minute	Read Write	0 to 23 0 to 59	Hour Minute	Integer (x2)	03, 04, 16	Log Time 3 Register 40312: Hour; 40313: Minute Write all above registers with one command.
40314 - 40315	313 - 314	0139 - 013A	Log Time 4 Hour Minute	Read Write	0 to 23 0 to 59	Hour Minute	Integer (x2)	03, 04, 16	Log Time 4 Register 40314: Hour; 40315: Minute Write all above registers with one command.
40316	315	013B	Log Interval State	Read Write	0 to 2		Integer	03, 04, 06, 16	0=Disable, 1=Enabled/Stop, 2=Start/Running Will error if any log times are enabled (1).
40317 - 40318	316 - 317	013C - 013D	Log Interval Time	Read Write	0 to 23 0 to 59	Hour Minute	Integer (x2)	03, 04, 16	Register 40317: Hour; 40318: Minute Write all above registers with one command.
40319	318	013E	Log Erase	Read Write			Word	03, 04, 06, 16	Write 0xFFFF erases. Read 0xFFFF indicates no logs, else returns highest recorded sequence number.
40401	400	0190	Menu Password	Read Write	0 to 99,999		Long Hi	03, 04, 06, 16	Read 0xFFFFFFFF if set, 0 if not set. Write password to set/unlock password.
40402	401	0191	Menu Password	Read Write			Long Lo	03, 04, 06, 16	

SMRT-PRO Modbus® Register Tables

Serial Communication

Register ¹			Name	Access	Limits or Range ²	Units	Data Type ³	Function Code(s)	Comments
Number	Address (Decimal)	Address (Hex)							
40403	402	0192	Total Password	Read Write	0 to 99,999		Long Hi	03, 04, 06, 16	Read 0xFFFFFFFF if set, 0 if not set. Write password to set/unlock password.
40404	403	0193	Total Password	Read Write			Long Lo	03, 04, 06, 16	
40405	404	0194	Grand Total Password	Read Write	0 to 99,999		Long Hi	03, 04, 06, 16	Read 0xFFFFFFFF if set, 0 if not set. Write password to set/unlock password. Note: 50873 used for permanent lock grand total. This value is not allowed through Modbus. Reads 0xF0F0F0 if set through front panel.
40406	405	0195	Grand Total Password	Read Write			Long Lo	03, 04, 06, 16	
40411	410	019A	Custom Menu 1	Read Write	0 to 30		Integer	03, 04, 06, 16	See Custom Menu Settings on page 20 for custom menu listings
40412	411	019B	Custom Menu 2	Read Write	0 to 30		Integer	03, 04, 06, 16	See Custom Menu Settings on page 20 for custom menu listings
40413	412	019C	Custom Menu 3	Read Write	0 to 30		Integer	03, 04, 06, 16	See Custom Menu Settings on page 20 for custom menu listings
40414	413	019D	Custom Menu 4	Read Write	0 to 30		Integer	03, 04, 06, 16	See Custom Menu Settings on page 20 for custom menu listings
40415	414	019E	Custom Menu 5	Read Write	0 to 30		Integer	03, 04, 06, 16	See Custom Menu Settings on page 20 for custom menu listings
40416	415	019F	Custom Menu 6	Read Write	0 to 30		Integer	03, 04, 06, 16	See Custom Menu Settings on page 20 for custom menu listings
40417	416	01A0	Custom Menu 7	Read Write	0 to 30		Integer	03, 04, 06, 16	See Custom Menu Settings on page 20 for custom menu listings
40418	417	01A1	Custom Menu 8	Read Write	0 to 30		Integer	03, 04, 06, 16	See Custom Menu Settings on page 20 for custom menu listings
40501 – 40564	500 - 563	01F4 – 0233	Scale Points Display Value	Read Write	0 to 99,999 for each point	User defined	Float (x32)	03, 04, 06, 16	32 float values of 2 registers per float. Each float number is a scaling display point that corresponds to a scaling input frequency value point. Write each display scale point, up to 32 points. Note: Write values first, then number of points (40632). Writing scale points disables K-factor scaling
40565 – 40628	564 – 627	0234 – 273	Scale Points Input Value	Read Write	0 to 99,999 for each point	Hz	Float (x32)	03, 04, 06, 16	32 float values of 2 registers per float. Each float number is a scaling input frequency (Hz) point that corresponds to a scaling display value point. Write each input scale point, up to 32 points. Note: Write values first, then number of points (40632). Writing scale points disables K-factor scaling

SMRT-PRO Modbus® Register Tables

Serial Communication

Register ¹			Name	Access	Limits or Range ²	Units	Data Type ³	Function Code(s)	Comments
Number	Address (Decimal)	Address (Hex)							
40629	628	0274	Number Scale Points	Read Only	0, 2 to 32	Scale points	Integer	03, 04, 06, 16	0=K-factor used, scaling disabled. Else, reads 2-32 based on number of points used in scale point registers.
40630	629	0275	Scale Point Units	Read Write	0 to 12		Integer	03, 04, 06, 16	Set units in display values of scale points. 0=Custom, 1=Gallon, 2=Liter, 3=Imperial Gallon, 4=Cubic Meter, 5=Barrel, 6= Bushel, 7= Cubit Yard, 8=Cubic Foot, 9=Cubic Inch, 10=Liquid Barrel, 11=Beer Barrel, 12=Hectoliter
40631	630	0276	Scale Time Base	Read Write	0 to 3		Integer	03, 04, 06, 16	0=Sec, 1=Min, 2=Hour, 3=Day Changes after save scale
40632	631	0277	Number Of Points / Save Scale	Read Write	Read: 0, 2 to 32 Write: 2 to 32	Scale points	Integer	03, 04, 06, 16	Read to confirm number of scale points set after wriing display value and input value scale points. Write confirmed number of scale points to save new scale points. Error if span error. 0=K-factor used, scaling disabled.
40701	700	02BC	Start Log	Write Only	0 or 1		Bit	06, 16	Write to set the active log to latest (highest log #, Forward for second highest, etc.) or oldest (lowest log number #, Forward for second lowest, etc.) in the log. 0=Latest First (Descending Order by Log #) 1=Oldest First (Ascending Order by Log #)
40702	701	02BD	Read/Next Log	Read Write	0 or 1		Bit	03, 04, 06, 16	Write to change the active log. 0=Next Log Backwards, 1=Next Log Forward
40703	702	02BE	Log Sequence Number	Read Write	1 to 1024		Integer	03, 04, 06, 16	Read get active log #. Write to set specific active log #.
40704	703	02BF	Log Record Status	Read Only	0 or 1		Bit (x4)	03, 04	Bit 0: Bad CRC; Bit 1: Start Log; Bit 2: Interval Mode Enabled; Bit 3: Log Time Mode Enabled
40705 – 40710	704 – 709	02C0 – 02C5	Log Record Time	Read Only	0 to 99, 1 to 12, 1 to 31, 0 to 23, 0 to 59, 0 to 59	Years, months, days, hours, minutes, seconds	Integer (x6)	03, 04	Read active log # record time. Register 40705: Year; 40706: Month; 40707: Day; 40708: Hour; 40709: Minute; 40710: Second Write all above registers with one command.
40711 – 40712	710 – 711	02C6 – 02C7	Log Rate	Read Only	0 to 99,999	User defined	Float	03, 04	Read active log # recorded Rate.
40713 – 40716	712 – 715	02C8 – 02C9	Log Total	Read Only	0 to 9,999,999,999,999	User defined	Float	03, 04	Read active log # recorded Total.
40717 – 40720	716 – 720	02CC – 02CF	Log Grand Total	Read Only	0 to 9,999,999,999,999	User defined	Float	03, 04	Read active log # recorded Grand Total.
40721 – 40724	720 – 723	02D0 – 02D3	Log Total	Read Only	0 to 9,999,999,999,999	User defined	Double	03, 04	Read active log # recorded Total. Double data type available for greater accuracy.
40725 – 40728	724 – 727	02D4 – 02D7	Log Grand Total	Read Only	0 to 9,999,999,999,999	User defined	Double	03, 04	Read active log # recorded Grand Total. Double data type available for greater accuracy.
40729	728	02D8	Log Rate	Read Only	0 to 99,999	User defined	Long Hi	03, 04	Read active log # recorded Rate. Long data type available for more accuracy.
40730	729	02D9	Log Rate	Read Only			Long Lo	03, 04	

SMRT-PRO Modbus® Register Tables

Serial Communication

Register ¹			Name	Access	Limits or Range ²	Units	Data Type ³	Function Code(s)	Comments
Number	Address (Decimal)	Address (Hex)							
40731	730	02DA	Log Total Non-Overflow Value	Read Only	0 to 9,999,999	User defined	Long Hi	03, 04	Read active log # recorded Total Represents the Total non-overflow value, excluding the decimal point. Total Value = (Total overflow x 10 ⁷) + (Total non-overflow) Decimal point setting in 40106.
40732	731	02DB	Log Total Non-Overflow Value	Read Only			Long Lo	03, 04	Must be read with 40731
40733	732	02DC	Log Total Overflow Value	Read Only	0 to 999,999	User defined	Long Hi	03, 04	Read active log # recorded Total. Represents the Total overflow value. Must be read with 40731
40734	733	02DD	Log Total Overflow Value	Read Only			Long Lo	03, 04	Must be read with 40731
40735	734	02DE	Log Grand Total Non-Overflow Value	Read Only	0 to 9,999,999	User defined	Long Hi	03, 04	Read active log # recorded Grand Total Represents the Grand Total non-overflow value, excluding the decimal point. Total Value = (Grand Total overflow x 10 ⁷) + (Grand Total non-overflow) Decimal point setting in 40107.
40736	735	02DF	Log Grand Total Non-Overflow Value	Read Only			Long Lo		Must be read with 40735
40737	736	02E0	Log Grand Total Overflow Value	Read Only	0 to 999,999	User defined	Long Hi		Read active log # recorded Grand Total. Represents the Grand Total overflow value. Must be read with 40735
40738	737	02E1	Log Grand Total Overflow Value	Read Only			Long Lo		Must be read with 40735
40739	738	02E2	Log Rate Units	Read Only	0 to 12		Integer	03, 04	0=Custom, 1=Gallon, 2=Liter, 3=Imperial Gallon, 4=Cubic Meter, 5=Barrel, 6= Bushel, 7= Cubit Yard, 8=Cubic Foot, 9=Cubic Inch, 10=Liquid Barrel, 11=Beer Barrel, 12=Hectoliter
40740	739	02E3	Log Total Units	Read Only	0 to 12		Integer	03, 04	0=Custom, 1=Gallon, 2=Liter, 3=Imperial Gallon, 4=Cubic Meter, 5=Barrel, 6= Bushel, 7= Cubit Yard, 8=Cubic Foot, 9=Cubic Inch, 10=Liquid Barrel, 11=Beer Barrel, 12=Hectoliter
40741	740	02E4	Log Total Unit Scaling	Read Write	0, 2, 3, 6		Integer	03, 04, 06, 16	0=1, 2=x100 (h), 3=x1,000 (k), 6=x1,000,000 (M) Note: Register not applicable for custom Total unit scaling.
40742	741	02E5	Log Grand Total Units	Read Only	0 to 12		Integer	03, 04	0=Custom, 1=Gallon, 2=Liter, 3=Imperial Gallon, 4=Cubic Meter, 5=Barrel, 6= Bushel, 7= Cubit Yard, 8=Cubic Foot, 9=Cubic Inch, 10=Liquid Barrel, 11=Beer Barrel, 12=Hectoliter

SMRT-PRO Modbus® Register Tables

Serial Communication

Register ¹			Name	Access	Limits or Range ²	Units	Data Type ³	Function Code(s)	Comments
Number	Address (Decimal)	Address (Hex)							
40743	742	02E6	Log Grand Total Unit Scaling	Read Only	0, 2, 3, 6		Integer	03, 04, 06, 16	0=1, 2=x100 (h), 3=x1,000 (k), 6=x1,000,000 (M) Note: Register not applicable for custom Grand Total unit scaling.
40744	743	02E7	Log Rate Time Unit	Read Only	0 - 3		Integer	03, 04, 06, 16	0=sec, 1=min, 2=hour, 3=day
40745	744	02E8	Log Alarm Status	Read Only	0 = alarm off 1 = alarm on		Bits	03, 04, 06, 16	Alarm 1 Bit 0=High alarm, 1=Low alarm, 2=Total alarm, 3= GT alarm Alarm 2 Bit 4=High alarm, 5=Low alarm, 6=Total alarm, 7= GT alarm
40746	745	02E9	Log Acknowledge Status	Read Only	0 = alarm not acknowledged 1 = alarm acknowledged		Bits	03, 04, 06, 16	Alarm 1 Acknowledge Bit 0=High alarm, 1=Low alarm, 2=Total alarm, 3= GT alarm Alarm 2 Acknowledge Bit 4=High alarm, 5=Low alarm, 6=Total alarm, 7= GT alarm
40747	746	02EA	Read/Next Log	Read Write	Read: 1 to 1024 Write: 0 or 1		Bit	03, 04, 06, 16	Same as register 40702 (Address 701). Write to change the active log. 0=Next Log Backwards, 1=Next Log Forward
40901 – 40905	900 – 904	0384 – 0388	Model String	Read Only			Word (x5)	03, 04	Contains extended part number information. One ASCII character per register (e.g. "APA-M"). See <i>Allowable ASCII Character Set</i> on page 22.
40906 – 40909	905 – 908	0389 – 038C	Product String	Read Only			Word (x4)	03, 04	Contains firmware identifier information. Two ASCII characters per register. See <i>Firmware Identifier</i> on page 21.
40910	909	038D	Product Number	Read Only			Integer	03, 04	Contains basic model number. See <i>Product Number & Description</i> on page 21.
40911	910	038E	Firmware Version	Read Only			Integer	03, 04	Contains firmware version information. Three decimal locations used in firmware number. Example: 2205 represents firmware version 2.205
40921 – 40936	920 – 935	0398 – 03A7	Modbus Tag	Read Write			Word (x16)	03, 04	User settable tag, up to 32 ASCII characters, two per register. This identification tag is only accessible via Modbus. See <i>Allowable ASCII Character Set</i> on page 22.
40991	990	03DE	Meter Settings	Write Only			Word	06, 16	0x1100 Restore from backup 0xEE00 Save to backup 0xFF00 loads Factory Defaults
40992	991	03DF	Restart Meter	Write Only	0xFF00 to Initialize		Word	06, 16	0xFF00 initializes meter

Register ¹			Name	Access	Limits or Range ²	Units	Data Type ³	Function Code(s)	Comments
Number	Address (Decimal)	Address (Hex)							
41001	1000	03E8	Menu Button	Write Only			Bit	06, 16	Write 1 to trigger button response.
41002	1001	03E9	Enter Button	Write Only			Bit	06, 16	Write 1 to trigger button response.
41003	1002	03EA	Reset Button	Write Only			Bit	06, 16	Write 1 to trigger button response.
41004	1003	03EB	Display Button	Write Only			Bit	06, 16	Write 1 to trigger button response.

Notes

Note 1. The Register numbers and addresses follow the Modbus format:

- 3xxxx are for Input Registers and are read – only.
- 4xxxx are for Holding Registers and are read/write.

Although there are no specific 3x Registers, all 4x Registers are mirrored into 3x register space, and are therefore capable of being read by Modbus function 04 (Read Input Registers). All data addresses in Modbus messages are referenced to zero (0), while Register addresses are referenced to one (1). For example, Register 40100 is sent in the Modbus message as 0x0063 (100 - 1 = 99 ≡ 63 hex). If two addresses are shown separated by a “-”, they form a register pair to make the parameter into a 4-byte (32 bit) value.

Note 2. Limits or Range: Writing a value that is outside the parameters range will force it to be limited to the closest value within the range. For example, if the range is -1.99 to +1.99 and the value sent is 3.21, the value used is 1.99. Likewise for the lower side of the range. Exceptions are noted in the comments.

Note 3. Data Types:
 Data format is highest byte first (Byte order: 1234).
 Bit = 1 bit; write a 1 to the first bit of the register
 Word = 16 bit
 Integer = -32768 to 32767
 Unsigned integer = 0 to 65535
 Long = -2,147,483,648 to 2,147,483,647
 Float = IEEE floating point format, 4 bytes
For the complete floating point standard, see IEEE 754-1985 Standard for Binary Floating-Point Arithmetic.

Integer’s data: The values represent the number without regard to the decimal point. The decimal point setting can be found in Holding Register 40102 for rate, 40103 for total, and 40104 for grand total.

For example, if the total value is 1234.56, a read of both 40029 – 40030 together will return 1 – 23456 (0x0001 – 0xE240). Register 40103 will contain 2 (0x0002) to indicate a decimal point setting of two places to the right of the decimal point. A floating point version of the total value, with the decimal point included, is also available by accessing register 40009-40010.

Example (register values are shown in hexadecimal):

Total value displayed	Registers 40009 – 40010	Register 40021	Register 40022	Register 40103
123.456	42F6 – E979	0001	E240	0003
1234.56	449A – 51EC	0001	E240	0002
12345.6	4640 – E666	0001	E240	0001

Note 4. A read of the Password register will return 0x000000 if the meter is unlocked, otherwise it will return 0xFFFFFFFF to indicate a locked meter. To unlock, the correct lock number must be written, which will then clear the lock number to 0x000000. If the wrong lock number is written, the reply will return 0xFFFFFFFF. If the correct lock number is written, the reply will be 0x000000. An unlocked meter can be locked by writing any non – zero value up to 0x999999.

- Note 5. Remote scaling procedure:
- Write the desired values for the display, Display 1 & 2, for the active input type. The active input type is based on the model number.
 - Write the desired values for the input, Input 1 & 2, for the active input type.
 - Write to the remote scaling register for the active input type.

Warning!

The scaling process takes the input values and converts them to A/D counts. Therefore, do NOT execute a remote scaling register write without first writing the display and input registers.

Warning!

Always allow the meter and the signal input circuitry to warm – up at least 20 minutes prior to calibrations. The scaling process takes the input values in mA and converts them to A/D counts. Therefore, do NOT execute a remote scaling register write without first writing the display and input registers.

Tables

Table 1. Alarm Status (40081)

Read alarm status and energized/non-energized status of Open Collector (OC).
 1= Alarm 1, 2 =Alarm 2, LA= Low Alarm, HA= High Alarm, TA = Total Alarm, GTA = Grand Total Alarm, ACK= Acknowledge, OC = Open Collector Output

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
Function	GTA2	TA2	LA2	HA2	GTA1	TA1	LA1	HA1	0	0	ACK2	ACK1	0	0	OC2	OC1	
	<i>Alarm 2</i>	<i>Alarm 2</i>	<i>Alarm 2</i>	<i>Alarm 2</i>	<i>Alarm 1</i>	<i>Alarm 1</i>	<i>Alarm 1</i>	<i>Alarm 1</i>							<i>Output 2</i>	<i>Output 1</i>	
	0	0	0	0	0	0	0	0			0	0			0	0	<i>Input Condition</i>
	1	1	1	1	1	1	1	1			0	0			1	1	Normal State
	1	1	1	1	1	1	1	1			1	1			0	0	Alarm State
																	Acknowledge After Alarm

1=Energized
 0=De-energized

Table 2. Display Settings

Bottom Display Settings (40251)

Integer	Function
0	Total
1	Total + Unit
2	Total + Tag
3	Total + Unit + Rate Unit
4	Grand Total
5	Grand Total + Unit
6	Grand Total + Tag
7	Grand Total + Unit + Rate Unit
8	Rate
9	Rate + Total Unit
10	Rate + Rate Unit
11	Rate + Tag
12	Rate Unit
13	Total Unit
14	Tag
15	Off

Top Display Settings (40252)

Integer	Function
0	Rate
1	Total

Table 3. Custom Menu Settings (40411 – 40418)

Custom Menu Settings		
Value	Parameter	Description
0	NONE	None
1	INPUT	Input
2	KFACTOR	K-Factor
3	UNITS	Units
4	DECIMAL	Decimal
5	DISPLAY	Display
6	A OUT	Analog out
7	RATE.DP	Rate decimal Point
8	TOTAL.DP	Total decimal point
9	GRTOT.DP	Grand total decimal point
10	SCALE	Scale
11	CAL	Calibrate
12	T BASE	Time base
13	T FACTR	Total conversion factor
14	T RESET	Total reset
15	GTFACTR	Grand total conversion factor
16	GTRRESET	Grand total reset
17	PASS	Password
18	PASS T	Total password
19	PASS GT	Grand total password
20	OUTPUT	Output
21	OUT 1	Out 1
22	OUT 2	Out 2
23	DATALOG	Data Log
24	LOGTIME	Log Time
25	INTERVL	Interval
26	LOGVIEW	Log View
27	PASSWORD	Password
28	SETUP	Setup
29	ADVANCE	Advance
30	SYSTEM	System

Table 4. Firmware Identifier (40906 – 40909)

Byte (Decimal)	Product
050	SMRT-PRO Series

*Note: Each register holds two ASCII characters.
 Example: SMRT-PRO Pulse Input (SFT050)
 40906: 0x5346 = SF
 40907: 0x7430 = T0
 40908: 0x3530 = 50
 40909: 0x3030 = 00*

Table 5. Product Number & Description (40910)

Integer	77
6830	Pulse Totalizer

Table 6. Allowable ASCII Character Set (40256 – 40281)

Display	HEX	Char
0	30	0
1	31	1
2	32	2
3	33	3
4	34	4
5	35	5
6	36	6
7	37	7
8	38	8
9	39	9

Display	HEX	Char
A	41	A
B	42	B
C	43	C
D	44	D
E	45	E
F	46	F
G	47	G
H	48	H
I	49	I
J	4A	J
K	4B	K
L	4C	L
M	4D	M
N	4E	N
O	4F	O
P	50	P
Q	51	Q
R	52	R
S	53	S
T	54	T
U	55	U
V	56	V
W	57	W
X	58	X
Y	59	Y
Z	5A	Z

Display	HEX	Char
a	61	a
b	62	b
c	63	c
d	64	d
e	65	e
f	66	f
g	67	g
h	68	h
i	69	i
j	6A	j
k	6B	k
l	6C	l
m	6D	m
n	6E	n
o	6F	o
p	70	p
q	71	q
r	72	r
s	73	s
t	74	t
u	75	u
v	76	v
w	77	w
x	78	x
y	79	y
z	7A	z

Display	HEX	Char
	20	Space
*	2A	*
+	05B	+
-	2D	-
/	2F	/
^	5E	^
_	5F	_
°	F8	°