

Chapter 7

Communications Interface

This chapter primarily describes the communications interface protocol for the Recorder.

7.1 Description

The Communications Interface is a field installable option. The user can choose either an RS232C compatible communications port, or an RS485 compatible communications port. An RS232C interface allows a single Data Recorder to communicate with a computer at a distance of up to 50 feet (16m). An RS485 interface is required for distances up to 4000 feet (1300m).

An RS485 interface will support up to 31 Data Recorders linked to a single computer. Each of the Recorders will be identified by a unique unit address (programmed under "Com Ports" in the Programming Menu).

Two modes of operation, Modbus RTU and Modbus ASCII, are supported in RS232C and RS485 communication interfaces.

7.1.1 Port Set Up

Refer to Chapter 5-10 Programming - Com Ports, for communications setup programming information.

7.1.2 Port Communications Wiring

Refer to Chapter 2-4, Installation and Wiring - Serial Ports, for wiring instructions of the communications port.

7.1.3 Modbus RTU and ASCII Functions

This Recorder supports a subset of the Modbus protocol ASCII and RTU. The functions included in the subset are:

- Function 1 - Read Coil Status
- Function 2 - Read Input Status
- Function 3 - Read Holding Registers
- Function 4 - Read Input Registers
- Function 5 - Force Single Coil
- Function 6 - Preset Single Register
- Function 15 - Force Multiple Coils
- Function 16 - Preset Multiple Registers

NOTE: Many registers are reserved or are not used. Use the defined registers only.

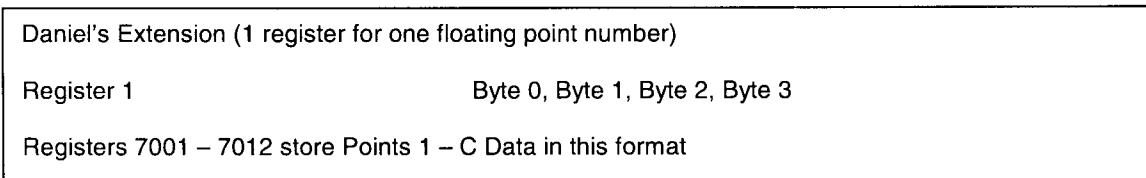
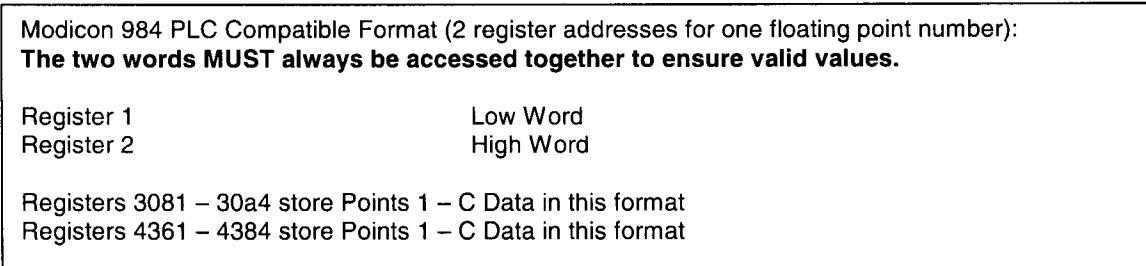
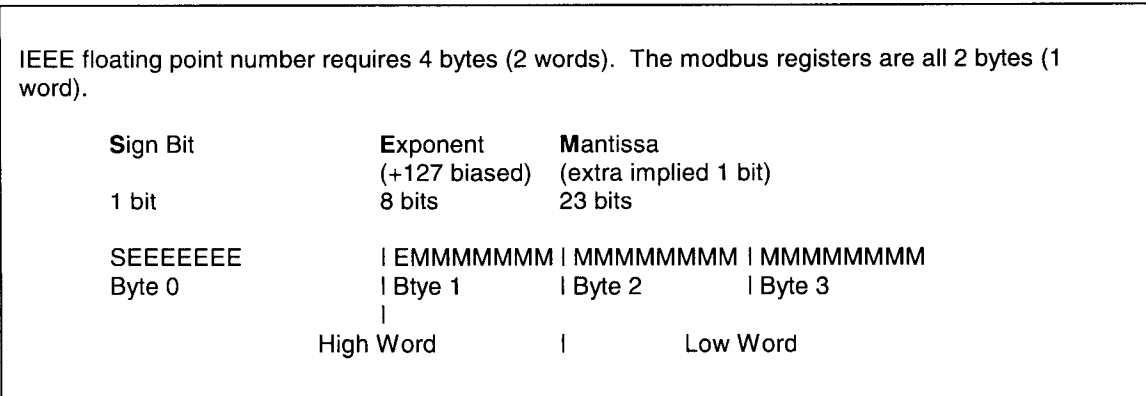
7.1.4 Modbus Registers

Tables 7-1 through 7-8 show the mapping of the recorder parameters into Modbus registers. Knowledge of these Modbus register assignments is only needed to make use of third party communications software.

NOTE: The Registers flagged as "Reserved" are intended for the Companion software only and should not be used with any other software.

7.1.5 Modbus Floating Point Formats

The registers most users will be interested in are the Point 1-C Data Registers. These registers hold the current floating point value for each data point. The actual Modbus specification has no mention of floating point numbers. Therefore several common methods of transferring a floating point number has emerged. We support two of those methods. One method is compatible with the Modicon 984 PSC and the other is sometimes referred to as the Daniel's Extension.



NOTE: Momentary coils activate the corresponding function every time a one is written to them.

Table 7-1 COILS 0XXX READ/WRITE (Use Functions 1, 5 or 15 to Access)			
COIL #	FUNCTION AND STATE		
1	Alarm Relay Latched	0=Off	1=On
2	Alarm Reflash	0=Off	1=On
3	Alarm Fail Safe	0=Off	1=On
4	Alarm Open On Ack	0=Off	1=On
5	Reserved		
6	Reserved		
7	Reserved		
8	Alarm Check	0=Enabled	1=Disabled
9	Span and Offset	0=Off	1=On
10	Reserved		
11	ADC Frequency	0=60 Hz	1=50 Hz
12	Reserved		
13	Reserved		
14	Reserved		
15	Reserved		
16	Reserved		
17	Ack Alarms (momentary)		
18	Reserved		
19	Chart Control	0=Chart Off	1=Chart On
20	Toggle Chart Speed	(Momentary)	
21	Scale Set	0=Set 1	1=Set 2
22	Learn Database	(Momentary)	
23	Reserved		
24	Reserved		
25	Chart Speed	0=Low	1=High
26	Auto Speed	0=Fix	1=Auto
27 - 63	Reserved		

Table 7-1 COILS 0XXX READ/WRITE (Use Functions 1, 5 or 15 to Access)			
COIL #	FUNCTION AND STATE		
64	Clear All Points	(Momentary)	
65	Bypass/Activate Point 1	1=Bypass	0=Activate
66	Bypass/Activate Point 2	1=Bypass	0=Activate
67	Bypass/Activate Point 3	1=Bypass	0=Activate
68	Bypass/Activate Point 4	1=Bypass	0=Activate
69	Bypass/Activate Point 5	1=Bypass	0=Activate
70	Bypass/Activate Point 6	1=Bypass	0=Activate
71	Bypass/Activate Point 7	1=Bypass	0=Activate
72	Bypass/Activate Point 8	1=Bypass	0=Activate
73	Bypass/Activate Point 9	1=Bypass	0=Activate
74	Bypass/Activate Point A	1=Bypass	0=Activate
75	Bypass/Activate Point B	1=Bypass	0=Activate
76	Bypass/Activate Point C	1=Bypass	0=Activate
77	Reserved		
78	Reserved		
79	Reserved		
80	Reset Point 1	(Momentary)	
81	Reset Point 2	(Momentary)	
82	Reset Point 3	(Momentary)	
83	Reset Point 4	(Momentary)	
84	Reset Point 5	(Momentary)	
85	Reset Point 6	(Momentary)	
86	Reset Point 7	(Momentary)	
87	Reset Point 8	(Momentary)	
88	Reset Point 9	(Momentary)	
89	Reset Point A	(Momentary)	
90	Reset Point B	(Momentary)	
91	Reset Point C	(Momentary)	
92	Reserved		
93	Reserved		
94	Reserved		

Table 7-2 Status Inputs 1XXX Read Only (Use Function 2 to Access)	
Register #	FUNCTION AND STATE
1001	0=No Alarms Present 1=Alarm(s) Present
1002-1008	Reserved
1009	Digital Input 1
1010	Digital Input 2
1011	Digital Input 3
1012	Reserved
1013	Reserved
1014	Reserved
1015	Reserved
1016	Reserved
1017	Point 1 Status 1=Invalid
1018	Point 1 Status 1=Overflow
1019	Point 1 Status 1=Overrange
1020	Point 1 Status 1=T.C.B.O.
1021	Point 1 Status 1=Bypassed
1022	Reserved
1023	Reserved
1024	Reserved
1025	Point 1 Status 1=Alarm #1
1026	Point 1 Status 1=Alarm #2
1027	Point 1 Status 1=Alarm #3
1028	Point 1 Status 1=Alarm #4
1029	Point 1 Status 1=Alarm #5
1030	Reserved
1031	Reserved
1032	Reserved
1033	Point 2 Status 1=Invalid
1034	Point 2 Status 1=Overflow
1035	Point 2 Status 1=Overrange
1036	Point 2 Status 1=T.C.B.O.
1037	Point 2 Status 1=Bypassed

Table 7-2 Status Inputs 1XXX Read Only (Use Function 2 to Access)		
Register #	FUNCTION AND STATE	
1038	Reserved	
1039	Reserved	
1040	Reserved	
1041	Point 2 Status	1=Alarm #1
1042	Point 2 Status	1=Alarm #2
1043	Point 2 Status	1=Alarm #3
1044	Point 2 Status	1=Alarm #4
1045	Point 2 Status	1=Alarm #5
1046	Reserved	
1047	Reserved	
1048	Reserved	
1049	Point 3 Status	1=Invalid
1050	Point 3 Status	1=Overflow
1051	Point 3 Status	1=Overrange
1052	Point 3 Status	1=T.C.B.O.
1053	Point 3 Status	1=Bypassed
1054	Reserved	
1055	Reserved	
1056	Reserved	
1057	Point 3 Status	1=Alarm #1
1058	Point 3 Status	1=Alarm #2
1059	Point 3 Status	1=Alarm #3
1060	Point 3 Status	1=Alarm #4
1061	Point 3 Status	1=Alarm #5
1062	Reserved	
1063	Reserved	
1064	Reserved	
1065	Point 4 Status	1=Invalid
1066	Point 4 Status	1=Overflow
1067	Point 4 Status	1=Overrange

Table 7-2 Status Inputs 1XXX Read Only (Use Function 2 to Access)		
Register #	FUNCTION AND STATE	
1068	Point 4 Status	1=T.C.B.O.
1069	Point 4 Status	1=Bypassed
1070	Reserved	
1071	Reserved	
1072	Reserved	
1073	Point 4 Status	1=Alarm #1
1074	Point 4 Status	1=Alarm #2
1075	Point 4 Status	1=Alarm #3
1076	Point 4 Status	1=Alarm #4
1077	Point 4 Status	1=Alarm #5
1078	Reserved	
1079	Reserved	
1080	Reserved	
1081	Point 5 Status	1=Invalid
1082	Point 5 Status	1=Overflow
1083	Point 5 Status	1=Overrange
1084	Point 5 Status	1=T.C.B.O.
1085	Point 5 Status	1=Bypassed
1086	Reserved	
1087	Reserved	
1088	Reserved	
1089	Point 5 Status	1=Alarm #1
1090	Point 5 Status	1=Alarm #2
1091	Point 5 Status	1=Alarm #3
1092	Point 5 Status	1=Alarm #4
1093	Point 5 Status	1=Alarm #5
1094	Reserved	
1095	Reserved	
1096	Reserved	
1097	Point 6 Status	1=Invalid
1098	Point 6 Status	1=Overflow

Table 7-2 Status Inputs 1XXX Read Only (Use Function 2 to Access)		
Register #	FUNCTION AND STATE	
1099	Point 6 Status	1=Overrange
1100	Point 6 Status	1=T.C.B.O.
1101	Point 6 Status	1=Bypassed
1102	Reserved	
1103	Reserved	
1104	Reserved	
1105	Point 6 Status	1=Alarm #1
1106	Point 6 Status	1=Alarm #2
1107	Point 6 Status	1=Alarm #3
1108	Point 6 Status	1=Alarm #4
1109	Point 6 Status	1=Alarm #5
1110	Reserved	
1111	Reserved	
1112	Reserved	
1113	Point 7 Status	1=Invalid
1114	Point 7 Status	1=Overflow
1115	Point 7 Status	1=Overrange
1116	Point 7 Status	1=T.C.B.O.
1117	Point 7 Status	1=Bypassed
1118	Reserved	
1119	Reserved	
1120	Reserved	
1121	Point 7 Status	1=Alarm #1
1122	Point 7 Status	1=Alarm #2
1123	Point 7 Status	1=Alarm #3
1124	Point 7 Status	1=Alarm #4
1125	Point 7 Status	1=Alarm #5
1126	Reserved	
1127	Reserved	
1128	Reserved	
1129	Point 8 Status	1=Invalid

Table 7-2 Status Inputs 1XXX Read Only (Use Function 2 to Access)		
Register #	FUNCTION AND STATE	
1130	Point 8 Status	1=Overflow
1131	Point 8 Status	1=Overrange
1132	Point 8 Status	1=T.C.B.O.
1133	Point 8 Status	1=Bypassed
1134	Reserved	
1135	Reserved	
1136	Reserved	
1137	Point 8 Status	1=Alarm #1
1138	Point 8 Status	1=Alarm #2
1139	Point 8 Status	1=Alarm #3
1140	Point 8 Status	1=Alarm #4
1141	Point 8 Status	1=Alarm #5
1142	Reserved	
1143	Reserved	
1144	Reserved	
1145	Point 9 Status	1=Invalid
1146	Point 9 Status	1=Overflow
1147	Point 9 Status	1=Overrange
1148	Point 9 Status	1=T.C.B.O.
1149	Point 9 Status	1=Bypassed
1150	Reserved	
1151	Reserved	
1152	Reserved	
1153	Point 9 Status	1=Alarm #1
1154	Point 9 Status	1=Alarm #2
1155	Point 9 Status	1=Alarm #3
1156	Point 9 Status	1=Alarm #4
1157	Point 9 Status	1=Alarm #5
1158	Reserved	
1159	Reserved	
1160	Reserved	

Table 7-2 Status Inputs 1XXX Read Only (Use Function 2 to Access)		
Register #	FUNCTION AND STATE	
1161	Point A Status	1=Invalid
1162	Point A Status	1=Overflow
1163	Point A Status	1=Overrange
1164	Point A Status	1=T.C.B.O.
1165	Point A Status	1=Bypassed
1166	Reserved	
1167	Reserved	
1168	Reserved	
1169	Point A Status	1=Alarm #1
1170	Point A Status	1=Alarm #2
1171	Point A Status	1=Alarm #3
1172	Point A Status	1=Alarm #4
1173	Point A Status	1=Alarm #5
1174	Reserved	
1175	Reserved	
1176	Reserved	
1177	Point B Status	1=Invalid
1178	Point B Status	1=Overflow
1179	Point B Status	1=Overrange
1180	Point B Status	1=T.C.B.O.
1181	Point B Status	1=Bypassed
1182	Reserved	
1183	Reserved	
1184	Reserved	
1185	Point B Status	1=Alarm #1
1186	Point B Status	1=Alarm #2
1187	Point B Status	1=Alarm #3
1188	Point B Status	1=Alarm #4
1189	Point B Status	1=Alarm #5
1190	Reserved	
1191	Reserved	

Table 7-2 Status Inputs 1XXX Read Only (Use Function 2 to Access)	
Register #	FUNCTION AND STATE
1192	Reserved
1193	Point C Status 1=Invalid
1194	Point C Status 1=Overflow
1195	Point C Status 1=Overrange
1196	Point C Status 1=T.C.B.O.
1197	Point C Status 1=Bypassed
1198	Reserved
1199	Reserved
1200	Reserved
1201	Point C Status 1=Alarm #1
1202	Point C Status 1=Alarm #2
1203	Point C Status 1=Alarm #3
1204	Point C Status 1=Alarm #4
1205	Point C Status 1=Alarm #5
1206-1256	Reserved

Table 7-3 Input Registers 3XXX 16 Bits Integers Read Only (Use Function 4 to Access)			
Register #	FUNCTION AND STATE		
3001-3040	Reserved		
3041	Point 1	Point Number 0=Not Programmed	
3042	Point 2	Point Number 0=Not Programmed	
3043	Point 3	Point Number 0=Not Programmed	
3044	Point 4	Point Number 0=Not Programmed	
3045	Point 5	Point Number 0=Not Programmed	
3046	Point 6	Point Number 0=Not Programmed	
3047	Point 7	Point Number 0=Not Programmed	
3048	Point 8	Point Number 0=Not Programmed	
3049	Point 9	Point Number 0=Not Programmed	
3050	Point A	Point Number 0=Not Programmed	
3051	Point B	Point Number 0=Not Programmed	
3052	Point C	Point Number 0=Not Programmed	
3053-3055	Reserved		
3056	Point 1 Status Word	Status Word Format	
3057	Point 2 Status Word	Bit 0 1=Invalid	Bit 11 = Alarm #4
3058	Point 3 Status Word	Bit 1 1=Overflow	Bit 12 = Alarm #5
3059	Point 4 Status Word	Bit 2 1=Overrange	
3060	Point 5 Status Word	Bit 3 1=T.C.B.O.	
3061	Point 6 Status Word	Bit 4 1=Bypass	
3062	Point 7 Status Word	Bit 5 Reserved	
3063	Point 8 Status	Bit 6 Reserved	
3064	Point 9 Status	Bit 7 Reserved	
3065	Point A Status	Bit 8 1=Alarm #1	
3066	Point B Status	Bit 9 1=Alarm #2	
3067	Point C Status	Bit 10 1=Alarm #3	
3068-3070	Reserved		
3071	Software Bit 0	1 = Totalizer Option	
	Options Bit 1	1 = Logarithmic Inputs Option	
3072	Relay Status	Bit 0= Relay 1 – Bit 5 = Relay 6 (0 = Open, 1 = Close)	

Table 7-3 Input Registers 3XXX 16 Bits Integers Read Only (Use Function 4 to Access)		
Register #	FUNCTION AND STATE	
3073	% Media Full	0 – 100%
3074	Recorder Firmware Version	The High byte is a BCD number. The Low byte is an ASCII character. Example: Version 1.2A would be 0x1241
3081-30A4	32 Bits Modicon Format Floating Point Data	Same as Registers 4361 - 4384

Table 7-4 Input Registers 7XXX 32 Bits IEEE Floating Point Read Only (Use Function 4 to Access)		
Register #	FUNCTION AND STATE	
7001	Point 1 Data	
7002	Point 2 Data	
7003	Point 3 Data	
7004	Point 4 Data	
7005	Point 5 Data	
7006	Point 6 Data	
7007	Point 7 Data	
7008	Point 8 Data	
7009	Point 9 Data	
7010	Point A Data	
7011	Point B Data	
7012	Point C Data	
7013	Reserved	
7014	Reserved	
7015	Reserved	
7016	Point 1 Output Scale	Low End
7017	Point 1 Output Scale	High End
7018	Point 2 Output Scale	Low End
7019	Point 2 Output Scale	High End
7020	Point 3 Output Scale	Low End
7021	Point 3 Output Scale	High End
7022	Point 4 Output Scale	Low End
7023	Point 4 Output Scale	High End
7024	Point 5 Output Scale	Low End
7025	Point 5 Output Scale	High End
7026	Point 6 Output Scale	Low End
7027	Point 6 Output Scale	High End
7028	Point 7 Output Scale	Low End
7029	Point 7 Output Scale	High End
7030	Point 8 Output Scale	Low End
7031	Point 8 Output Scale	High End

Table 7-4 Input Registers 7XXX 32 Bits IEEE Floating Point Read Only (Use Function 4 to Access)		
Register #	FUNCTION AND STATE	
7032	Point 9 Output Scale	Low End
7033	Point 9 Output Scale	High End
7034	Point A Output Scale	Low End
7035	Point A Output Scale	High End
7036	Point B Output Scale	Low End
7037	Point B Output Scale	High End
7038	Point C Output Scale	Low End
7039	Point C Output Scale	High End
7040	Reserved	
7041	Reserved	
7042	Reserved	
7043	Reserved	
7044	Reserved	
7045	Reserved	
7046	Reserved	
7047	Reserved	
7048	Reserved	
7049	Reserved	
7050	Reserved	
7051	Reserved	
7052	Reserved	
7053	Reserved	
7054	Reserved	
7055	Reserved	
7056	Reserved	
7057	Reserved	
7058	Reserved	
7059	Reserved	
7060	Reserved	
7061	Reserved	
7062	Reserved	

Table 7-5 Holding Registers 4xxx 16 Bits Integers (Use Functions 3, 6 and 16 to Access)			
Register #	FUNCTION AND STATE		
4001-4051	Reserved		
4052	Unit Tag	2 ASCII Characters [00] [01]	
4053	Unit Tag	2 ASCII Characters [02] [03]	
4054	Unit Tag	2 ASCII Characters [04] [05]	
4055	Unit Tag	2 ASCII Characters [06] [07]	
4056	Unit Tag	2 ASCII Characters [08] [09]	
4057	Unit Tag	2 ASCII Characters [00] [01]	
4058	Unit Tag	2 ASCII Characters [00] [01]	
4059	Unit Tag	2 ASCII Characters [02] [03]	
4060	Unit Tag	2 ASCII Characters [04] [05]	
4061	Unit Tag	2 ASCII Characters [06] [07]	
4062	Power-Up Display Mode	0 = Unit Tag 3 = Alarms	1 = Autojog 4 = Point
4063	Point Number for Display Point Power-Up Mode		
4064	Display Update Rate in Seconds		
4065	Reserved		
4066	T.C.B.O. Check Interval in Seconds		
4067	Input Switch #1 Definition	1 = Event	5 = Chart Speed
4068	Input Switch #2 Definition	2 = Record on/off	3 = Alarm Ack
4069	Input Switch #3 Definition	4 = Scale Set	6 = Record rate
4070	Reserved		
4071	Event #1 Open Message	2 ASCII Characters [00] [01]	
4072	Event #1 Open Message	2 ASCII Characters [02] [03]	
4073	Event #1 Open Message	2 ASCII Characters [04] [05]	
4074	Event #1 Open Message	2 ASCII Characters [06] [07]	
4075	Event #1 Open Message	2 ASCII Characters [08] [09]	
4076	Event #1 Close Message	2 ASCII Characters [00] [01]	
4077	Event #1 Close Message	2 ASCII Characters [02] [03]	
4078	Event #1 Close Message	2 ASCII Characters [04] [05]	
4079	Event #1 Close Message	2 ASCII Characters [06] [07]	
4080	Event #1 Close Message	2 ASCII Characters [08] [09]	

Table 7-5 Holding Registers 4xxx 16 Bits Integers (Use Functions 3, 6 and 16 to Access)		
Register #	FUNCTION AND STATE	
4081	Event #2 Open Message	2 ASCII Characters [00] [01]
4082	Event #2 Open Message	2 ASCII Characters [02] [03]
4083	Event #2 Open Message	2 ASCII Characters [04] [05]
4084	Event #2 Open Message	2 ASCII Characters [06] [07]
4085	Event #2 Open Message	2 ASCII Characters [08] [09]
4086	Event #2 Close Message	2 ASCII Characters [00] [01]
4087	Event #2 Close Message	2 ASCII Characters [02] [03]
4088	Event #2 Close Message	2 ASCII Characters [04] [05]
4089	Event #2 Close Message	2 ASCII Characters [06] [07]
4090	Event #2 Close Message	2 ASCII Characters [08] [09]
4091	Event #3 Open Message	2 ASCII Characters [00] [01]
4092	Event #3 Open Message	2 ASCII Characters [02] [03]
4093	Event #3 Open Message	2 ASCII Characters [04] [05]
4094	Event #3 Open Message	2 ASCII Characters [06] [07]
4095	Event #3 Open Message	2 ASCII Characters [08] [09]
4096	Event #3 Close Message	2 ASCII Characters [00] [01]
4097	Event #3 Close Message	2 ASCII Characters [02] [03]
4098	Event #3 Close Message	2 ASCII Characters [04] [05]
4099	Event #3 Close Message	2 ASCII Characters [06] [07]
4100	Event #3 Close Message	2 ASCII Characters [08] [09]
4100-4150	Reserved	
4151	Constant 1	Display Decimal Fix
4152	Constant 2	Display Decimal Fix
4153	Constant 3	Display Decimal Fix
4154	Constant 4	Display Decimal Fix
4155	Constant 5	Display Decimal Fix
4156	Constant 6	Display Decimal Fix
4157	Constant 7	Display Decimal Fix
4158	Constant 8	Display Decimal Fix
4159	Constant 9	Display Decimal Fix
4160	Constant A	Display Decimal Fix

Table 7-5 Holding Registers 4xxx 16 Bits Integers (Use Functions 3, 6 and 16 to Access)			
Register #	FUNCTION AND STATE		
4161	Constant B	Display Decimal Fix	
4162	Constant C	Display Decimal Fix	
4163-4174	Reserved		
4175	Low Chart Speed Table Index		
4176	High Chart Speed Table Index		
4177	Time Format	5=U.S.	7=International
4178-4189	Reserved		
4201	Pen 1 Assignment	0 = No Point	
4202	Pen 2 Assignment	0 = No Point	
4203	Pen 3 Assignment	0 = No Point	
4204	Pen 4 Assignment	0 = No Point	
4205	Pen 5 Assignment	0 = No Point	
4206	Pen 6 Assignment	0 = No Point	
4207	Pen 7 Assignment	0 = No Point	
4208	Pen 8 Assignment	0 = No Point	
4209	Pen 9 Assignment	0 = No Point	
4210	Pen A Assignment	0 = No Point	
4211	Pen B Assignment	0 = No Point	
4212	Pen C Assignment	0 = No Point	
4213-4220	Reserved		
4221	Bar 1 Assignment	0 = No Point	
4222	Bar 2 Assignment	0 = No Point	
4223	Bar 3 Assignment	0 = No Point	
4224	Bar 4 Assignment	0 = No Point	
4225	Bar 5 Assignment	0 = No Point	
4226	Bar 6 Assignment	0 = No Point	
4227	Bar 7 Assignment	0 = No Point	
4228	Bar 8 Assignment	0 = No Point	
4229	Bar 9 Assignment	0 = No Point	
4230	Bar A Assignment	0 = No Point	
4231	Bar B Assignment	0 = No Point	
4232	Bar C Assignment	0 = No Point	

Table 7-5 Holding Registers 4xxx 16 Bits Integers (Use Functions 3, 6 and 16 to Access)		
Register #	FUNCTION AND STATE	
4233-4240	Reserved	
4241	Digital Window 1 Assignment	0 = No Point
4242	Digital Window 2 Assignment	0 = No Point
4243	Digital Window 3 Assignment	0 = No Point
4244	Digital Window 4 Assignment	0 = No Point
4245	Digital Window 5 Assignment	0 = No Point
4246	Digital Window 6 Assignment	0 = No Point
4247	Digital Window 7 Assignment	0 = No Point
4248	Digital Window 8 Assignment	0 = No Point
4249	Digital Window 9 Assignment	0 = No Point
4250	Digital Window A Assignment	0 = No Point
4251	Digital Window B Assignment	0 = No Point
4252	Digital Window C Assignment	0 = No Point
4253-4274	Reserved	
4275	Recorder Mode	Bit 0 = Recording on/off Bit 3 = Format in process Bit 4 = Alarm Recording on/off Bit 5 = Save config in progress Bit 6 = Load config in progress Bit 7 = Data Record on/off
4276	Record Fill Mode	0 = Fill to end, otherwise Cyclic
4277	Record Mode 2	Each bit corresponds to a Point. (Bits 0-11) 0 = instantaneous, 1 = average
4278	Auto Record Points	Each bit corresponds to a Point. 1 = Alarm triggered Recording
4279	Record point enable	Each bit corresponds to a Point. 1 = Record
4280	Speed Control	Bit 0: 0 = Low Speed, 1 = High Speed Bit 1: 0 = Fixed Chart Speed, 1 = Auto Bit 2: 0 = Low Record Speed, 1 = High Record Speed Bit 3: 0 = Fixed Record Speed, 1 = Auto
4281	Filename	2 chars [00] [01]
4282	Filename	2 chars [02] [03]
4283	Filename	2 chars [04] [05]
4284	Filename	2 chars [06] [07]
4285-4360	Reserved	

Table 7-5 Holding Registers 4xxx (Use Function 3 to Access) 32 Bits Modicon Format Floating Point Writing to these registers has no effect	
Register #	FUNCTION AND STATE
4361	Point 1 Data Low Word
4362	Point 1 Data High Word
4363	Point 2 Data Low Word
4364	Point 2 Data High Word
4365	Point 3 Data Low Word
4366	Point 3 Data High Word
4367	Point 4 Data Low Word
4368	Point 4 Data High Word
4369	Point 5 Data Low Word
4370	Point 5 Data High Word
4371	Point 6 Data Low Word
4372	Point 6 Data High Word
4373	Point 7 Data Low Word
4374	Point 7 Data High Word
4375	Point 8 Data Low Word
4376	Point 8 Data High Word
4377	Point 9 Data Low Word
4378	Point 9 Data High Word
4379	Point A Data Low Word
4380	Point A Data High Word
4381	Point B Data Low Word
4382	Point B Data High Word
4383	Point C Data Low Word
4384	Point C Data High Word
4385	Reserved
4386	Reserved
4387	Reserved
4388	Reserved
4389	Reserved
4390	Reserved

Table 7-6 Holding Registers 6XXX 32 Bits Integers (Use Functions 3 and 16 to Access)	
Register #	FUNCTION AND STATE
6001	Date 4 Bytes [] [Year] [Month] [Day]
6002	Time 4 Bytes [] [Hours] [Minutes] [Seconds]
6015	Low Record Sample Rate Point 1
6016	High Record Sample Rate Point 1
6017	Low Record Sample Rate Point 2
6018	High Record Sample Rate Point 2
6019	Low Record Sample Rate Point 3
6020	High Record Sample Rate Point 3
6021	Low Record Sample Rate Point 4
6022	High Record Sample Rate Point 4
6023	Low Record Sample Rate Point 5
6024	High Record Sample Rate Point 5
6025	Low Record Sample Rate Point 6
6026	High Record Sample Rate Point 6
6027	Low Record Sample Rate Point 7
6028	High Record Sample Rate Point 7
6029	Low Record Sample Rate Point 8
6030	High Record Sample Rate Point 8
6031	Low Record Sample Rate Point 9
6032	High Record Sample Rate Point 9
6033	Low Record Sample Rate Point A
6034	High Record Sample Rate Point A
6035	Low Record Sample Rate Point B
6036	High Record Sample Rate Point B
6037	Low Record Sample Rate Point C
6038	High Record Sample Rate Point C

Table 7-7 Holding Registers 8xxx 32 Bits IEEE Floating Point (Use Functions 3 and 16 to Access)	
Registers #	FUNCTION AND STATE
8001	User Programmable Constant 1
8002	User Programmable Constant 2
8003	User Programmable Constant 3
8004	User Programmable Constant 4
8005	User Programmable Constant 5
8006	User Programmable Constant 6
8007	User Programmable Constant 7
8008	User Programmable Constant 8
8009	User Programmable Constant 9
8010	User Programmable Constant A
8011	User Programmable Constant B
8012	User Programmable Constant C
8013-8015	Reserved
8016	External Point 1
8017	External Point 2
8018	External Point 3
8019	External Point 4
8020	External Point 5
8021	External Point 6
8022	External Point 7
8023	External Point 8
8024	External Point 9
8025	External Point A
8026	External Point B
8027	External Point C

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