

XE-90M AND XE-145M MODBUS TABLES

R55 – R160 Fixed Speed Modbus Table

Register (40XXX)	Variable	Read/Write	Range	Notes
001	Status/Control	R/W		See FIGURE 1
003	Discharge Pressure	R		See Note 1
004	Sump Pressure	R		See Note 1
005	Inlet Vacuum	R		See Note 2
006	Injected Coolant Temperature	R		
007	Airend Discharge Temperature	R		
008	Aftercooler Discharge Temperature	R		
010	Separator Pressure Drop	R		See Note 1
011	Coolant Filter In Pressure	R		See Note 1
012	Coolant Filter Out Pressure	R		See Note 1
013	Coolant Filter Pressure Drop	R		See Note 1
014	Interstage Pressure	R		2-Stage Units Only, See Note 1
015	Remote Pressure	R		See Note 1
016	Aftercooler Discharge Pressure	R		See Note 1
064	Running Hours (hours)	R		
065	Loaded Hours (hours)	R		
094	Modbus Pressure Unit	R		See FIGURE 2
095	Modbus Temperature Unit	R		See FIGURE 2
098	Rated Pressure	R		
099	2-Stage	R		0 = 1 Stage
100	Starter Type	R	1 - 3	See FIGURE 2
101	Modulation Enabled	R		0=Disabled
102	Service Level	R	0 - 2	0=Level 0, 1=Level 1, 2=Level 2
103	Service Time Period	R/W	1000 - 8000	Increments of 1000
104	Dryer Installed	R		0=Off
112	Offline Pressure	R/W	75 - (rated+10)	rated = rated pressure
113	Online Pressure	R/W	65-(offline-10)	offline = offline pressure
114	Mode of Operation	R/W	0 - 2	See FIGURE 2
115	Starter Time (seconds)	R/W	5 - 30	
116	Auto Start/Stop (AS/S) Time (seconds)	R	120 - 3600	
117	Auto Start/Stop (AS/S) On/Off	R		0=Off
118	Communication Control On/Off	R		0=Off
119	Remote Start/Stop Enable	R		0=Off
120	Unused			
121	Power Out Restart Option (PORO) Enable	R		0=Off
122	PORO Time (seconds)	R	10 - 120	
123	Auto Start/Stop Delay Time (seconds)	R	0 - 60	
124	Low Ambient Temperature	R	30 - 60	Degree F
125	Unloaded Stop Time	R/W	10 - 60	

Register (40XXX)	Variable	Read/Write	Range	Notes
126	Low Ambient Option On/Off	R		0=Off
127	High Dust Filter	R		0=Off
128	Lead/Lag	R/W		0=Lag
129	Lag Offset	R/W	0 - 45	psi
130	Variable Frequency Drive	R		0=Off
131	Lead/Lag Cycle Length (Hours)	R	0 - 750	
132	Scheduled Start (Day)	R	0 - 9	See FIGURE 2
133	Scheduled Start (Hour)	R	0 - 23	
134	Scheduled Start (Minute)	R	0 - 59	
135	Scheduled Stop (Day)	R	0 - 9	See FIGURE 2
136	Scheduled Stop (Hour)	R	0 - 23	
137	Scheduled Stop (Minute)	R	0 - 59	
138	Condensate Release Time	R/W	2 - 20	
139	Condensate Interval Time	R/W	90 - 270	
140	Remote Sensor	R		0=Off
255	Warning Code	R		See FIGURE 4
256	Trip Code	R		See FIGURE 4

Note 1 - If unit of measure is bar or kgcm², divide by 10.

Note 2 - If unit of measure is bar or kgcm², divide by 100. If unit of measure is PSI, divide by 10.

Bit 0: Host/Local (R/W) 0 = Local 1 = Host	Bit 6: Alarm (R) 0 = No Alarms 1 = Alarms
Bit 1: Run/Stop (R/W) 0 = Stop 1 = Run	Bit 7: Warning (R) 0 = No Warnings 1 = Warnings
Bit 2: Load/Unload (R/W) 0 = Unload 1 = Load	Bit 8: On/Off Line Mode (R) 0 = Not in On/Off Line Mode 1 = On/Off Line Mode
Bit 3: Modulating (R) 0 = Not Modulating 1 = Modulating	Bit 9: Mod/ACS or Mod Only (R) 0 = Not in Mod/ASC Mode 1 = Mod/ASC Mode
Bit 4: Unused	Bits 10-12: Unused
Bit 5: Stopped in Auto Restart (R) 0 = Not Stopped in Auto Restart 1 = Stopped in Auto Restart	Bits 13-15: Unit Type (R) 001 = SSR controller

FIGURE 1 XE-90M AND XE-145M FIXED SPEED CONTROLLER REGISTER 01-STATUS/CONTROL

Register 94: Pressure - Modbus 0 = psi 1 = kPa 2 = bar 3 = kg/cm2	Register 95: Temperature - Modbus 0 = Degrees F 1 = Degrees C
Register 100: Starter Type 1 = Star-Delta 2 = Remote Starter 3 = Soft Starter	Register 114: Mode of Operation 0 = On/Off Line 1 = MOD/ACS 2 = Modulation Only
Registers 132, 135: Day 0 = Sunday 1 = Monday 2 = Tuesday 3 = Wednesday	4 = Thursday 5 = Friday 6 = Saturday 7 = Daily 8 = Weekdays 9 = Weekends

FIGURE 2 XE-90M AND XE-145M FIXED SPEED CONTROLLER REGISTER CODES

Code	Description
01	Sensor Failure 1AVPT
02	Sensor Failure 3APT
03	Sensor Failure 4APT
04	Sensor Failure 5CPT
05	Sensor Failure 6CPT
06	Sensor Failure 10APT (Remote)
07	Sensor Failure 2APT
08	Sensor Failure 7APT
09	Sensor Failure 2CTT
10	Sensor Failure 2ATT
11	Sensor Failure 4ATT
12	Sensor Failure T4 (Spare)
13	Sensor Failure 5DTT
14	Sensor Failure 6DTT
15	Sensor Failure T7 (Spare)
16	Sensor Failure T8 (Spare)
17	High Inlet Vacuum
18	Motor Overload (Main)
19	Fan Motor Overload
22	Check Motor Rotation
25	Remote Stop Failure
26	Remote Start Failure
28	Low Sump Pressure
29	High Air Pressure
30	High Coolant Filter Pressure Drop
31	High A/E Discharge Temperature
32	Emergency Stop
33	Change Inlet Filter
34	Change Separator Element
35	Change Coolant Filter
36	Sensor Error (Calibration)
38	100 Hours To Service
39	Service Required
40	Alarm – Service Required
41	Auxiliary 2
42	Auxiliary 1
43	Condensate Drain Error
48	Unit Too Cold To Start
49	High Sump Pressure
50	High Interstage Pressure
51	Dryer High Pressure
52	Dryer Freeze Warning
53	Condenser Low (Dryer)
54	Condenser High (Dryer)
55	Change HE Filter (Dryer)
200	Check SD Card

FIGURE 4 XE-90M AND XE-145M FIXED SPEED CONTROLLER TRIP & WARNING CODES

R55 – R160 VariableSpeed Modbus Table

Register (40XXX)	Variable	Read/Write	Range	Notes
001	Status/Control	R/W		See FIGURE 1
003	Package Discharge Pressure	R		See Note 1
004	Sump Pressure	R		See Note 1
005	Inlet Vacuum	R		See Note 2
006	Interstage Pressure	R		Only in 2-stage units. See Note 1
007	Coolant Filter In Pressure	R		See Note 1
008	Coolant Filter Out Pressure	R		See Note 1
009	Remote Pressure	R		See Note 1
010	Aftercooler Discharge Pressure	R		See Note 1
011	Injected Coolant Temperature	R		
012	Airend Temperature	R		
013	Aftercooler Discharge Temperature	R		
014	Inlet Temperature	R		
015	Cooler Out Temperature	R		
016	Evaporator	R		
017	Condenser	R		
018	Spare Temperature	R		
019	Separator Pressure Drop	R		See Note 1
020	Percent Capacity	R		
021	Percent Energy Savings	R		
022	Coolant Filter Pressure Drop	R		See Note 1
025	Motor Speed	R		
026	Motor Current	R		
027	Input Voltage	R		VAC
028	DC Bus Voltage	R		
029	Remote Pressure	R		
030	Motor Voltage	R		
031	Package kW	R		
032	kW Hours	R	0 – 999	Add to (mW hours * 1000)
033	mW Hours	R		
034				
064	Total Hours (hours)	R		
094	Modbus Pressure Unit	R		See FIGURE 2
095	Modbus Temperature Unit	R		See FIGURE 2
098	Compressor Type	R		See FIGURE 2
099	Service Level	R	0 - 2	0=Level 0, 1=Level 1, 2=Level 2
100	Service Time Period	R/W	1000 - 8000	Increments of 1000
101	Water Cooled	R		0=Off
102	Hot Side Thermal Valve	R		0=Off
103	Dryer Installed	R		0 = no dryer
104	2-Stage Enabled	R		0 = 1 stage
112	Target Pressure	R/W	65 - 145	
113	Auto Stop Pressure	R/W	(T+1)-(T+10)	T = target pressure
114	Immediate Stop Pressure	R/W	ASP-(ASP+10)	ASP = auto stop pressure

Register (40XXX)	Variable	Read/Write	Range	Notes
116	Energy Rate	R		
117	Compare Savings To	R/W	0 - 2	0=Geo, 1=Mod, 2=On/Off
118	Condensate Release Time	R	2 - 20	
119	Condensate Interval Time	R	90 - 270	
120	Remote Sensor Enable	R		0=Off
121	Communication Control On/Off	R		0=Off
122	Remote Start/Stop On/Off	R		0=Off
123	Power Out Restart Option (PORO)On/Off	R		0=Off
124	PORO Time (seconds)	R	10 - 600	
127	Scheduled Start - Day	R	0 - 9	See FIGURE 2
128	Scheduled Stop - Day	R	0 - 9	See FIGURE 2
129	Scheduled Start (Hour)	R	0 - 23	
130	Scheduled Start (Minute)	R	0 - 59	
131	Scheduled Stop (Hour)	R	0 - 23	
132	Scheduled Stop (Minute)	R	0 - 59	
251	VSD Software Version Number	R		Divide by 10
255	Warning Code	R		See FIGURE 4
256	Trip Code	R		See FIGURE 4

Note 1 - If unit of measure is bar or kgcm², divide by 10.

Note 2 - If unit of measure is bar or kgcm², divide by 100. If unit of measure is PSI, divide by 10.

<p>Bit 0: Host/Local (R/W) 0 = Local 1 = Host</p> <p>Bit 1: Run/Stop (R/W) 0 = Stop 1 = Run</p> <p>Bit 2: Load/Unload (R/W) 0 = No Loaded Operation 1 = Loaded Operatoin</p> <p>Bit 3: Operating at Minimum Speed (R) 0 = Operating above Minimum Speed 1 = Operating at Minimum Speed</p> <p>Bit 4: Operating at Maximum Speed (R) 0 = Operating below Maximum Speed 1 = Operating at Maximum Speed</p> <p>Bit 5: Stopped in Auto Restart (R) 0 = Not Stopped in Auto Restart 1 = Stopped in Auto Restart</p>	<p>Bit 6: Alarm (R) 0 = No Alarms 1 = Alarms</p> <p>Bit 7: Warning (R) 0 = No Warnings 1 = Warnings</p> <p>Bits 8 - 9: Normal/Unload Operate (R) 00 = Unloaded Operation 11 = Normal Operation</p> <p>Bits 10 – 11: Unused</p> <p>Bit 12: Nirvana Compressor (R) 0 = Not Nirvana 1 = Nirvana</p> <p>Bits 13-15: Unit Type (R) 001 = SSR controller</p>
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FIGURE 1 XE-90M AND XE-145M VARIABLE SPEED CONTROLLER REGISTER 01-STATUS/CONTROL

<p>Register 94: Pressure - Modbus 0 = psi 1 = kPa 2 = bar 3 = kg/cm2</p> <p>Register 98: Compressor Type 37 = 37kW/50HP 45 = 45kW/60HP 55 = 55kW/75HP 75 = 75kW/100HP 90 = 90kW 93 = 125HP 110 = 110kW 112 = 150HP 132 = 132kW 149 = 200HP 160 = 160Kw</p> <p>Register 127 & 128: Day 0 = Sunday 1 = Monday 2 = Tuesday 3 = Wednesday</p>	<p>Register 95: Temperature - Modbus 0 = Degrees F 1 = Degrees C</p> <p>4 = Thursday 5 = Friday 6 = Saturday</p> <p>7 = Daily 8 = Weekdays 9 = Weekends</p>
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FIGURE 2 XE-90M AND XE-145M VARIABLE SPEED CONTROLLER REGISTER CODES

Code	Description
01	Sensor Failure 4APT
02	Sensor Failure 3APT
03	Sensor Failure 1AVPT
04	Sensor Failure 5CPT
05	Sensor Failure 6CPT
06	(Spare)
07	Sensor Failure 2APT (2-stage units)
08	Sensor Failure 7APT (Dryer)
09	Sensor Failure 2CTT
10	Sensor Failure 2ATT
11	Sensor Failure 4ATT
12	Sensor Failure 1ATT
13	Sensor Failure 3CTT
14	Sensor Failure 5DTT
15	Sensor Failure 6DTT
16	Sensor Failure T8 (Spare)
17	Sensor Failure Remote (Optional)
18	High VSD Temperature
19	Blower Fault
20	VSD Communication Failure
22	Check Motor Rotation
23	Stop Failure
24	Check Incoming Power
25	Remote Stop Failure
26	Remote Start Failure
27	Incorrect VSD Type
28	Replace Coolant Filter (Idle Mode)
29	High Air Pressure
30	Low Sump Air Pressure
31	High A/E Discharge Temperature
32	Emergency Stop
33	Change Inlet Filter
34	Change Separator Element
35	Change Coolant Filter
36	Invalid Calibration
37	Check Set Points
38	100 Hours To Service
39	Service Required
40	Alarm – Service Required
41	Auxiliary 2
42	Auxiliary 1
44	Condensate Drain Error
45	High Interstage Pressure
46	High Coolant Filter Pressure Drop
47	High Inlet Vacuum
48	High Sump Pressure
49	Power Module Timeout
51	Dryer High Pressure
52	Freeze Warning
53	Condenser Low
54	Condenser High
55	Change HE Filter
200	Check SD Card

100	VSD Fault 0
101	VSD Fault 1
102	VSD Fault 2
103	VSD Fault 3
104	VSD Fault 4
105	VSD Fault 5
106	VSD Fault 6
107	VSD Fault 7
108	VSD Fault 8
109	VSD Fault 9
110	VSD Fault 10
111	VSD Fault 11
112	VSD Fault 12
113	VSD Fault 13
114	VSD Fault 14
115	VSD Fault 15
116	VSD Fault 16
117	VSD Fault 17
118	VSD Fault 18
119	VSD Fault 19
120	VSD Fault 20
121	VSD Fault 21
122	VSD Fault 22
123	VSD Fault 23
124	VSD Fault 24
125	VSD Fault 25
126	VSD Fault 26
127	VSD Fault 27
128	VSD Fault 28
129	VSD Fault 29
130	VSD Fault 30
131	VSD Fault 31
133	VSD Fault 33
134	VSD Fault 34
135	VSD Fault 35
136	VSD Fault 36
137	VSD Fault 37
138	VSD Fault 38
139	VSD Fault 39
140	VSD Fault 40
141	VSD Fault 41
142	VSD Fault 42
143	VSD Fault 43
144	VSD Fault 44

FIGURE 4 XE-90M AND XE-145M VARIABLE SPEED CONTROLLER ALARM & WARNING CODES

Xe Retrofit for SSR SG CONTROLLER Modbus Table

Register (40XXX)	Variable	Read/Write	Range	Notes
001	Status/Control	R/W		See FIGURE 1
003	Discharge Pressure	R		
004	Sump Pressure	R		
005	Inlet Vacuum	R		Divided by 10
006	Coolant Temperature	R		
007	Airend Temperature	R		
008	Discharge Temperature	R		
009	Cooler Out Tempature	R		Low Ambient Option
010	Separator Pressure Drop	R		
012	Dry Side Sump Pressure	R		separator delta-p sensor option
015	Remote Pressure	R		remote sensor option
020	% Load Modulation	R		
064	Total Hours (hours)	R	0 – 9999	Less Than 10000
065	Loaded Hours (hours)	R	0 – 9999	Less Than 10000
066	Ten Thousand Total Hours	R		Multiply by 10000
067	Ten Thousand Loaded Hours	R		Multiply by 10000
094	Modbus Pressure Unit	R/W		See FIGURE 2
095	Modbus Temperature Unit	R/W		See FIGURE 2
098	Rated Pressure	R		
099	Rated Horse Power/Kilowatt	R	0 – 22	See FIGURE 2
100	Starter Type	R	1 - 3	See FIGURE 2
101	Service Level	R	0 - 2	See FIGURE 2
103	Service Interval	R/W	1000 - 8000	hours
112	Offline Pressure	R/W	75 - (rated+3)	rated = rated pressure
113	Online Pressure	R/W	65-(offline-10)	offline = offline pressure
114	Mode of Operation	R/W	0 – 2	See FIGURE 2
115	Starter Time (seconds)	R/W	5 – 30	
116	Auto Start/Stop (AS/S) Time (seconds)	R	120 - 3600	
117	Auto Start/Stop (AS/S) On/Off	R	0 or 1	0=Off, 1=On
118	Communication Control On/Off	R	0 or 1	0=Off, 1=On
119	Remote Start/Stop On/Off	R	0 or 1	0=Off, 1=On
121	Power Out Restart Option (PORO)On/Off	R	0 or 1	0=Off, 1=On
122	PORO Time (seconds)	R	10 - 600	
123	Auto Start/Stop Delay Time (seconds)	R	0 - 60	
124	Low Ambient Temperature	R	30 - 150	
125	Unloaded Stop Time	R/W	10 - 30	

Note 1 - If unit of measure is bar or kgcm², divide by 10.

Note 2 - If unit of measure is bar or kgcm², divide by 100. If unit of measure is PSI, divide by 10.

Register (40XXX)	Variable	Read/Write	Range	Notes
126	Low Ambient Option On/Off	R	0 or 1	0=Off, 1=On
128	Lead/Lag	R/W	0 or 1	0=Lead, 1=Lag
129	Lag Offset	R/W	0 - 45	
130	Max Modulation Pressure	R/W	(Online+10) – (Offline + 7)	
131	Lead/Lag Cycle Length (Hours)	R	0 – 750	
132	Scheduled Start (Hour)	R	0 – 23	
133	Scheduled Start (Minute)	R	0 – 59	
134	Scheduled Stop (Hour)	R	0 – 23	
135	Scheduled Stop (Minute)	R	0 – 59	
138	High Dust Filter	R	0 or 1	0=Off, 1=On
147	Separator Delta-P Sensor	R	0 or 1	0=Off, 1=On
148	Variable Frequency Drive	R	0 or 1	0=Off, 1=On
149	Scheduled Start (Day)	R	0 - 9	See FIGURE 2
150	Scheduled Stop (Day)	R	0 - 9	See FIGURE 2
151	Remote Sensor	R	0 or 1	0=Off, 1=On
251	Unloaded Inlet Vacuum	R		
255	Warning Code	R		See FIGURE 3
256	Alarm Code	R		See FIGURE 3

<p>Bit 0: Host/Local (R/W) 0 = Local 1 = Host</p> <p>Bit 1: Run/Stop (R/W) 0 = Stop 1 = Run</p> <p>Bit 2: Load/Unload (R/W) 0 = Unload 1 = Load</p> <p>Bit 3: Modulating (R) 0 = Not Modulating 1 = Modulating</p> <p>Bit 4: Unused</p> <p>Bit 5: Stopped in Auto Restart (R) 0 = Not Stopped in Auto Restart 1 = Stopped in Auto Restart</p>	<p>Bit 6: Alarm (R) 0 = No Alarms 1 = Alarms</p> <p>Bit 7: Warning (R) 0 = No Warnings 1 = Warnings</p> <p>Bit 8: On/Off Line Mode (R) 0 = Not in On/Off Line Mode 1 = On/Off Line Mode</p> <p>Bit 9: Mod/ACS or Mod Only (R) 0 = Not in Mod/ASC Mode 1 = Mod/ASC Mode</p> <p>Bits 10-12: Unused</p> <p>Bits 13-15: Unit Type (R) 001 = SSR controller</p>
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FIGURE 1

Register 94: Pressure - Modbus

- 0 = psi
- 1 = kPa
- 2 = bar
- 3 = kg/cm2

Register 95: Temperature - Modbus

- 0 = Degrees F
- 1 = Degrees C

Register 99: Rated Horse Power/Kilowatt

- | | | |
|-----------|------------|------------|
| 0 = 50hp | 8 = 300hp | 16 = 132kw |
| 1 = 60hp | 9 = 350hp | 17 = 150kw |
| 2 = 75hp | 10 = 400hp | 18 = 160kw |
| 3 = 100hp | 11 = 450hp | 19 = 200kw |
| 4 = 125hp | 12 = 500hp | 20 = 250kw |
| 5 = 150hp | 13 = 75kw | 21 = 300kw |
| 6 = 200hp | 14 = 90kw | 22 = 350kw |
| 7 = 250hp | 15 = 110kw | |

Register 100: Starter Type

- 1 = Star-Delta
- 2 = Soft Starter
- 3 = Remote / DOL

Register 114: Mode of Operation

- 0 = MOD/ACS
- 1 = On/Off Line
- 2 = Modulation Only

Register 101: Service Level

- 0 = Level 0
- 1 = Level 1
- 2 = Level 2

Registers 149, 150: Day

- | | | |
|---------------|--------------|--------------|
| 0 = Sunday | 4 = Thursday | 7 = Daily |
| 1 = Monday | 5 = Friday | 8 = Weekdays |
| 2 = Tuesday | 6 = Saturday | 9 = Weekends |
| 3 = Wednesday | | |

FIGURE 2

Code	Description
01	Sensor Failure 1AVPT
02	Sensor Failure 3APT
03	Sensor Failure 4APT
04	Sensor Failure P4 (Spare)
05	Sensor Failure 6APT (Optional)
06	Sensor Failure P6 (Spare)
07	Sensor Failure P7 (Spare)
08	Sensor Failure P8 (Spare)
09	Sensor Failure 2CTT
10	Sensor Failure 2ATT
11	Sensor Failure 4ATT
12	Sensor Failure 3CTT (Optional)
13	Sensor Failure T5 (Spare)
14	Sensor Failure T6 (Spare)
15	Sensor Failure T7 (Spare)
16	Sensor Failure T8 (Spare)
17	Starter Fault 1SL and 2SL
18	Motor Overload (Main)
19	Fan Motor Overload
20	Control Power Loss
21	Stepper Limit Switch
22	Check Motor Rotation
23	Check Inlet Control System 1 & 2
25	Remote Stop Failure
26	Remote Start Failure
27	Check Inlet Control
28	Low Unload Sump Pressure
29	High Discharge Pressure
30	Low Sump Pressure
31	High A/E Discharge Temperature
32	Emergency Stop
33	Change Inlet Filter
34	Change Separator Element
35	Change Coolant Filter
36	Invalid Calibration
37	
38	100 Hours To Service
39	Service Required
40	Alarm – Service Required
41	Auxiliary 2
42	Auxiliary 1
43	High Line/Sump Differential
48	High Inlet Vacuum
49	Sensor Failure Remote

FIGURE 4-3