4.6 Parameter Access Overview

The accessible parameter numbers and respective scaling are listed in the following tables. The method to access the parameters depends on the fieldbus type in use as described in the following section.
The R/W column indicates whether the values are Writeable as well as readable (R/W) or Read Only (R)
The data types for the parameter are defined as follows: -
WORD Hexadecimal Word
U16 Unsigned 16 Bit Value
S16 Signed 16 Bit Value

4.6.1 Modbus RTU Register / CAN Index Data – Control & Monitoring

Modbus RTU Register	CAN Open Index	Sub Index	PDO Map	Parameter Number	Upper byte	Lower Byte	Format	Min	Max	Type	Scaling
1	2000h	0	Y	-	Control Word		WORD	-	-	R/W	See Below
2	2001h	0	Y	-	Frequency Setpoint		S16	-5000	5000	R/W	1dp, e.g. 100 = 10.0Hz
3	2002h	0	Y	-	Reserved		-	-	-	R/W	No function
4	2003h	0	Y	-	Modbus ramp control time		U16	0	60000	R/W	2dp, e.g. 500 = 5.00s
5	2004h	0	Y	-	High Resolution Frequency Setpoint		S16	-30000	30000	R	See Below
6	200Ah	0	Y	-	Error code	Drive status	WORD	-	-	R	See Below
7	200Bh	0	Y	-	Output Frequency		S16	0	5000	R	1dp, e.g. 100 = 10.0Hz
8	200Dh	0	Y	-	Motor Current		U16	0	-	R	1dp, e.g. 100 = 10.0A
9	200Eh	0	Y	-	Motor Torque		S16	0	65535	R	4096 = 100%
10	200Fh	0	Y	-	Motor Power		U16	0	-	R	2dp, e.g. 100 = 1.00kW
11	2012h	0	Y	P00-04	Digital Input Status		WORD	-	-	R	See Below
12	-	-		P00-20	Rating ID		U16	-	-	R	Internal Value
13	-	-		P00-20	Power rating		U16	-	-	R	2dp, e.g. 37 = 0.37kW / HP
14	-	-		P00-20	Voltage rating		U16	-	-	R	See Below
15	27E8h	0	N	P00-18	IO processor software version		U16	-	-	R	2dp, e.g. 300 = 3.00
16	27EAh	0	N	P00-18	Motor control processor software version		U16	-	-	R	2dp, e.g. 300 = 3.00
17	-	-		P00-20	Drive type		U16	-	-	R	Internal Value
18	201Ch	0	Y	P00-48	Scope Channel 1 Data		S16	-	-	R	Internal Format
19	201Dh	0	Y	P00-48	Scope Channel 2 Data		S16	-	-	R	Internal Format
-	201Eh	0	Y	P00-49	Scope Channel 3 Data		S16			R	Internal Format
-	201Fh	0	Y	P00-49	Scope Channel 4 Data		S16			R	Internal Format
20	2013h	0	Y	P00-01	Analog 1 input result		U16	0	1000	R	1dp, e.g. 500 = 50.0%
21	2014h	0	Y	P00-02	Analog 2 input result		U16	0	1000	R	1dp, e.g. 500 = 50.0%
-	2015h	0	Y	-	Analog Output %		U16	0	1000	R	1dp, e.g. 500 = 50.0%
22	-	-		P00-03	Pre-Ramp Speed Reference Value		S16	0	5000	R	1dp, e.g. 500 = 50.0Hz
23	2011h	0	Y	P00-08	DC Bus Voltage		U16	0	1000	R	600 = 600 Volts
24	-			P00-09	Drive Power Stage Temperature		S16	-10	150	R	50 = 50°C
-	2043h	0	Y	-	Control board temperature		S16	-10	150	R	50 = 50°C
25	-	-		P00-30	Drive Serial Number 4		U16	-	-	R	See Below
26	-	-		P00-30	Drive Serial Number 3		U16	-	-	R	
27	-	-		P00-30	Drive Serial Number 2		U16	-	-	R	
28	-	-		P00-30	Drive Serial Number 1		U16	-	-	R	
29	2017h	0	Y	-	Relay Output Status		WORD	0	1	R	Bit 0 Indicates Relay Status 1 = Relay Contacts Closed
30	-	-		-	Reserved		-	-	-	R	No Function
31	-	-		-	Reserved		-	-	-	R	No Function
32	203Ch	0	Y	P00-26	kWh Meter		U16	0	9999	R	1dp, e.g. 100 = 10.0kWh
33	203Dh	0	Y	P00-26	MWh Meter		U16	0		R	10 = 10MWh
34	203Eh	0	Y	P00-10	Running Time – Hours		U16			R	1 = 1 Hour
35	203Fh	0	Y	P00-10	Running Time – Minutes & Seconds		U16			R	100 = 100 Seconds
36	2040h	0	Y	P00-14	Run time since last enable – Hours		U16			R	1 = 1 Hour
37	2041h	0	Y	P00-14	Run time since last enable – Minutes & seconds		U16			R	100 = 100 Seconds
38	-	-		-	Reserved		U16			R	No Function
39	2010h	0	Y	P00-20	Internal Drive Temperature		S16	-10	100	R	20 = 20C
40	2044h	0	Y	-	Speed Reference (Internal Format)		U16	0	P-01	R	3000 = 50Hz
41	-	-		-	Reserved		-	-	-	R	No Function
42	2046h	0	Y		Digital Pot / Keypad Reference		U16	0	P-01	R	3000 = 50Hz
43	2048h	0	Y	P00-07	Output Voltage		U16	0	-	R	100 = 100 Volts AC RMS
44	-	-		-	Parameter Access Index		U16	1	60	R	See Below
45	-	-		-	Parameter Access Value		S16	-	-	R	See Below
46	-	-	N	-	Parameter Checksum		U16	0	65535	R	See Below
-	2049h	0	Y	P00-05	PI Output		U16	0	1000	R	1000 = 100.0%
-	23E8h	0	N	-	Scope Index 12					RW	
-	23E9h	0	N	-	Scope Index 34					RW	
-	27D0h	0	N	P00-11	Run Time Since Last Trip 1 – Hours		U16	0	65535	R	1 = 1 Hour
-	27D1h	0	N	P00-11	Run Time Since Last Trip 1 - Seconds		U16	0	3599	R	100 = 100 Seconds
-	27D2h	0	N	P00-12	Run Time Since Last Trip 2 – Hours		U16	0	65535	R	1 = 1 Hour
-	27D3h	0	N	P00-12	Run Time Since Last Trip 2 - Seconds		U16	0	3599	R	100 = 100 Seconds
-	27D4h	0	N	P00-13	Trip Log 2 & 1		WORD	-	-	R	

Modbus RTU Register	CAN Open Index	Sub Index	PDO Map	Parameter Number	Upper byte	Lower Byte	Format	Min	Max	Type	Scaling
-	27D5h	0	N	P00-13	Trip Log 4 & 3		WORD	-	-	R	
-	27D6h	0	N	P00-13	Trip 1 Time – Hours		U16	0	65535	R	1 = 1 Hour
-	26D7h	0	N	P00-13	Trip 1 Time - Seconds		U16	0	3599	R	100 = 100 Seconds
-	27D8h	0	N	P00-13	Trip 2 Time – Hours		U16	0	65535	R	1 = 1 Hour
-	27D9h	0	N	P00-13	Trip 2 Time - Seconds		U16	0	3599	R	100 = 100 Seconds
-	27DAh	0	N	P00-13	Trip 3 Time – Hours		U16	0	65535	R	1 = 1 Hour
-	27DBh	0	N	P00-13	Trip 3 Time - Seconds		U16	0	3599	R	100 = 100 Seconds
-	27DCh	0	N	P00-13	Trip 4 Time – Hours		U16	0	65535	R	1 = 1 Hour
-	27DDh	0	N	P00-13	Trip 4 Time - Seconds		U16	0	3599	R	100 = 100 Seconds
-	27DEh	0	N	P00-23	Time Heatsink > 85°C – Hours		U16	0	65535	R	1 = 1 Hour
-	27DFh	0	N	P00-23	Time Heatsink > 85°C - Seconds		U16	0	3599	R	100 = 100 Seconds
-	27E0h	0	N	P00-24	Time Internal > 80°C – Hours		U16	0	65535	R	1 = 1 Hour
-	27E1h	0	N	P00-24	Time Internal > 80°C - Seconds		U16	0	3599	R	100 = 100 Seconds
-	27E2h	0	N	P00-27	Fan Run Time – Hours		U16	0	65535	R	1 = 1 Hour
-	27E3h	0	N	P00-27	Fan Run Time - Seconds		U16	0	3599	R	100 = 100 Seconds
-	27E4h	0	N	-	Fire Mode Active Time – Hours		U16	0	65535	R	1 = 1 Hour
-	27E5h	0	N	-	Fire Mode Active Time - Seconds		U16	0	3599	R	100 = 100 Seconds
-	27E6h	0	N	-	Power on Time – Hours		U16	0	65535	R	1 = 1 Hour
-	27E7h	0	N	-	Power on Time - Seconds		U16	0	3599	R	100 = 100 Seconds
-	27E9h	0	N	P00-28	IO Checksum		WORD	-	-	R	
-	27EBh	0	N	P00-28	DSP Checksum		WORD	-	-	R	
-	27ECh	0	N	P00-19	Ambient Temperature Log 1		S16	-10	150	R	50 = 50°C
-	27Edh	0	N	P00-19	Ambient Temperature Log 2		S16	-10	150	R	50 = 50°C
-	27EEh	0	N	P00-19	Ambient Temperature Log 3		S16	-10	150	R	50 = 50°C
-	27EFh	0	N	P00-19	Ambient Temperature Log 4		S16	-10	150	R	50 = 50°C
-	27F0h	0	N	P00-19	Ambient Temperature Log 5		S16	-10	150	R	50 = 50°C
-	27F1h	0	N	P00-19	Ambient Temperature Log 6		S16	-10	150	R	50 = 50°C
-	27F2h	0	N	P00-19	Ambient Temperature Log 7		S16	-10	150	R	50 = 50°C
-	27F3h	0	N	P00-19	Ambient Temperature Log 8		S16	-10	150	R	50 = 50°C
-	27F4h	0	N	P00-15	DC Bus Voltage Log 1		U16	0	1000	R	600 = 600 Volts
-	27F5h	0	N	P00-15	DC Bus Voltage Log 2		U16	0	1000	R	600 = 600 Volts
-	27F6h	0	N	P00-15	DC Bus Voltage Log 3		U16	0	1000	R	600 = 600 Volts
-	27F7h	0	N	P00-15	DC Bus Voltage Log 4		U16	0	1000	R	600 = 600 Volts
-	27F8h	0	N	P00-15	DC Bus Voltage Log 5		U16	0	1000	R	600 = 600 Volts
-	27F9h	0	N	P00-15	DC Bus Voltage Log 6		U16	0	1000	R	600 = 600 Volts
-	27FAh	0	N	P00-15	DC Bus Voltage Log 7		U16	0	1000	R	600 = 600 Volts
-	27FBh	0	N	P00-15	DC Bus Voltage Log 8		U16	0	1000	R	600 = 600 Volts
-	27FCh	0	N	P00-16	Heatsink Temperature Log 1		S16	-10	150	R	50 = 50°C
-	27FDh	0	N	P00-16	Heatsink Temperature Log 2		S16	-10	150	R	50 = 50°C
-	27FEh	0	N	P00-16	Heatsink Temperature Log 3		S16	-10	150	R	50 = 50°C
-	27FFh	0	N	P00-16	Heatsink Temperature Log 4		S16	-10	150	R	50 = 50°C
-	2800h	0	N	P00-16	Heatsink Temperature Log 5		S16	-10	150	R	50 = 50°C
-	2801h	0	N	P00-16	Heatsink Temperature Log 6		S16	-10	150	R	50 = 50°C
-	2802h	0	N	P00-16	Heatsink Temperature Log 7		S16	-10	150	R	50 = 50°C
-	2803h	0	N	P00-16	Heatsink Temperature Log 8		S16	-10	150	R	50 = 50°C
-	2804h	0	N	P00-17	Motor Current Log 1		U16	0	-	R	1dp, e.g. 100 = 10.0A
-	2805h	0	N	P00-17	Motor Current Log 2		U16	0	-	R	1dp, e.g. 100 = 10.0A
-	2806h	0	N	P00-17	Motor Current Log 3		U16	0	-	R	1dp, e.g. 100 = 10.0A
-	2807h	0	N	P00-17	Motor Current Log 4		U16	0	-	R	1dp, e.g. 100 = 10.0A
-	2808h	0	N	P00-17	Motor Current Log 5		U16	0	-	R	1dp, e.g. 100 = 10.0A
-	2809h	0	N	P00-17	Motor Current Log 6		U16	0	-	R	1dp, e.g. 100 = 10.0A
-	280Ah	0	N	P00-17	Motor Current Log 7		U16	0	-	R	1dp, e.g. 100 = 10.0A
-	280Bh	0	N	P00-17	Motor Current Log 8		U16	0	-	R	1dp, e.g. 100 = 10.0A
-	280Ch	0	N	P00-18	DC Ripple Log 1		U16	0	-	R	1 = 1 Volt
-	280Dh	0	N	P00-18	DC Ripple Log 2		U16	0	-	R	1 = 1 Volt
	280Eh	0	N	P00-18	DC Ripple Log 3		U16	0	-	R	1 = 1 Volt
-	280Fh	0	N	P00-18	DC Ripple Log 4		U16	0	-	R	1 = 1 Volt
-	2810h	0	N	P00-18	DC Ripple Log 5		U16	0	-	R	1 = 1 Volt
-	2811h	0	N	P00-18	DC Ripple Log 6		U16	0	-	R	1 = 1 Volt
-	2812h	0	N	P00-18	DC Ripple Log 7		U16	0	-	R	1 = 1 Volt
-	2813h	0	N	P00-18	DC Ripple Log 8		U16	0	-	R	1 = 1 Volt
-	2814h	0	N	P00-25	Estimated Rotor Speed		S16	-	-	R	
-	2815h	0	N	P00-32	Actual PWM Frequency		U16	-	-	R	
-	2816h	0	N	P00-31	Motor Current iD		U16	0	-	R	
-	2817h	0	N	P00-31	Motor Current iQ		U16	0	-	R	
-	2818h	0	N	P00-33	O-I Trip Counter		U16	0	-	R	
-	2819h	0	N	P00-34	O-V Trip Counter		U16	0	-	R	
-	281Ah	0	N	P00-35	U-V Trip Counter		U16	0	-	R	
-	281Bh	0	N	P00-36	O-T Trip Counter		U16	0	-	R	
-	281Ch	0	N	P00-37	bO-I Trip Counter		U16	0	-	R	
-	281Dh	0	N	P00-38	O-Heat Trip Counter		U16	0	-	R	

4.6.2 Modbus RTU / CAN Index – Parameters

Modbus RTU Register	CAN Open Index	Par.	Description	Format	Min	Max	Data format / scaling
129	2065h	01	Max speed limit	U16	0	5*P-09	Internal value (3000 = 50.0Hz)
130	2066h	02	Min speed limit	U16	0	P-01	Internal value (3000 = 50.0Hz)
131	2067h	03	Accel ramp time	U16	0	60000	2dp, e.g. 300=3.00s
132	2068h	04	Decel ramp time	U16	0	60000	2dp, e.g. 300=3.00s
133	2069h	05	Stop Mode	U16	0	3	0: Ramp to stop + Mains Loss Ride Through 1: Coast to stop 2: Ramp to stop + Fast Stop 3: AC Flux Braking + Fast Stop
134	206Ah	06	Energy Optimiser	U16	0	1	0: Disabled 1: Enabled
135	206Bh	07	Motor rated voltage	U16	0	250 500	400 = 400 Volts
136	206Ch	08	Motor rated current	U16	0	Drive Rating Dependent	1dp, e.g. 100 = 10.0A
137	206Dh	09	Motor rated frequency	U16	25	500	Data unit is in Hz
138	206Eh	10	Motor rated speed	U16	0	60 * P-09	RPM
139	206Fh	11	Boost Value	U16	0	Drive Rating Dependent	1dp, e.g. 100 = 10.0%
140	2070h	12	Control mode	U16	0	6	0: Terminal Control 1: Keypad forward only 2: Keypad forward and reverse 3: Modbus control mode 4: Modbus control with ramp control 5: PID control 6: PID control with analog speed sum 7: CAN 8: CAN + Ramp Control 9: Slave Mode
141	2071h	13	Application Mode	U16	0	2	0: Industrial Mode 1: Pump Mode 2: Fan Mode
142	2072h	14	Access code	U16	0	9999	No Scaling
143	2073h	15	Digital input function	U16	0	17	See section 2.6 for function details
144	2074h	16	Analog input format	U16	0	7	0: 0…10V 1: b 0…10V 2: 0…20mA 3: t 4…20mA 4: r 4…20mA 5: t 20…4mA 6: r 20…4mA 7: 10…0V
145	2075h	17	Effective switching frequency	U16	0	5 (Drive Rating Dependent)	0 = 4KHz 1 = 8KHz 2 = 12Khz 3 =16KHz 4 = 24KHz 5 = 32KHz
146	2076h	18	Relay Output Function	U16	0	9	See parameter description for details
147	2077h	19	Digital Threshold	U16	0	1000	100 = 10.0%
148	2078h	20	Preset Speed 1	U16	-P-01	P-01	Internal value (3000 = 50.0Hz)
149	2079h	21	Preset Speed 2	U16	-P-01	P-01	Internal value (3000 = 50.0Hz)
150	207Ah	22	Preset Speed 3	U16	-P-01	P-01	Internal value (3000 = 50.0Hz)
151	207Bh	23	Preset Speed 4	U16	-P-01	P-01	Internal value (3000 = 50.0Hz)
152	207Ch	24	2nd Ramp	U16	0	60000	2dp e.g. 250 = 2.50s
153	207Dh	25	Analog Output Function	U16	0	10	See user guide for function details
154	207Eh	26	Skip Frequency Centre	U16	0	P-01	Internal value (3000 = 50.0Hz)
155	207Fh	27	Skip Frequency Band	U16	0	P-01	Internal value (3000 = 50.0Hz)
156	2080h	28	V/F Adjust Voltage	U16	0	P-07	100 = 100V
157	2081h	29	V/F Adjust Frequency	U16	0	P-09	50 = 50Hz
158	2082h	30	Start Mode Select	WORD	See Below		
159	2083h	31	Keypad restart mode	U16	0	7	See parameter description for details
160	2084h	32	DC Injection	WORD	See Below		
161	2085h	33	Spin Start Enable	U16	0	2	See parameter description for details
162	2086h	34	Brake circuit enable	U16	0	4	See parameter description for details
163	2087h	35	Analog Input / Slave Scaling	U16	0	20000	1000 = 100.0%
164	2088h	36	Communication Settings	WORD	See Below		
165	2089h	37	Access code definition	U16	0	9999	
166	208Ah	38	Parameter lock	U16	0	1	0: Unlocked 1: Locked
167	208Bh	39	Analog input offset	U16	-5000	5000	1dp, e.g. 300=30.0%
168	208Ch	40	Display Scaling Function	WORD	See Below		
169	208Dh	41	User PI P gain	U16	1	300	1dp, e.g. 10 = 1.0

Modbus RTU Register	CAN Open Index	Par.	Description	Format	Min	Max	Data format / scaling
170	208Eh	42	User PI I time constant	U16	0	300	1dp, e.g. 10 = 1.0s
171	208Fh	43	User PI mode select	U16	0	1	See parameter description for details
172	2090h	44	User PI reference select	U16	0	1	See parameter description for details
173	2091h	45	User PI digital reference	U16	0	1000	1dp, e.g. 100 =10.0%
174	2092h	46	User PI feedback select	U16	0	3	See parameter description for details
175	2093h	47	Analog Input 2 Format	U16	0	6	0: 0...10V 1: 0...20mA 2: t 4...20mA 3: r 4...20mA 4: t 20...4mA 5: r 20...4mA 6: Ptc-th
176	2094h	48	Standby Mode Timer	U16	0	250	1dp, e.g. 250 = 25.0s
177	2095h	49	PI Wake Up Error Level	U16	0	1000	1dp, e.g. 50 = 5.0%
178	2096h	50	User Relay Output Hysteresis	U16	0	1000	1dp e.g. 100 = 10.0%
179	2097h	51	Motor Control Mode	U16	0	5	0: IM Vector 1: V/F 2: PM Motor 3: BLDC Motor 4: SynRM Motor
180	2098h	52	Motor Parameter Autotune	U16	0	1	
181	2099h	53	Vector Mode Gain	U16	0	2000	1dp, e.g. 500 = 50.0%
182	209Ah	54	Maximum Current Limit	U16	0	1750	1dp, e.g. 1000 = 100.0%
183	209Bh	55	Motor Stator Resistance	U16	0	65535	2dp, e.g. 100 = 1.00R
184	209Ch	56	Motor Stator d-axis Inductance (Lsd)	U16	0	65535	1dp, e.g. 1000 = 100.0mH
185	209Dh	57	Motor Stator q-axis Inductance (Lsq)	U16	0	65535	1dp, e.g. 1000 = 100.0mH
186	209Eh	58	DC Injection Speed	U16	0	P-01	3000 = 50.0Hz
187	209Fh	59	DC Injection Current	U16	0	1000	1dp, e.g. 100 = 10.0%
188	20A0h	60	Thermal Overload Retention	U16	0	1	

4.7 Additional Information

4.7.1 Drive Control Word Format

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
High byte								Low byte							

Bit 0: Run/Stop command: Set to 1 to enable the drive. Set to 0 to stop the drive.

Bit 1: Fast stop request. Set to 1 to enable drive to stop with 2nd deceleration ramp.

Bit 2: Reset request. Set to 1 in order to reset the drive if drive is under trip condition.

User must clear this bit when drive is under normal condition to prevent un-expected reset.

Bit 3: Coast stop request. Set to 1 to issue a coast stop command.

For normal operation, Bit 3 has the highest priority, bit 0 has the lowest priority (bit 3>bit 1>bit 0). For example, if user set command as 0x0009, drive will do a coast stop rather than run. For normal run/start, just set this register to 1.

Note that stat/stop (bit 0), fast stop (bit 1) and coast stop (bit 3) only works if P-31= 0 or 1. Otherwise, start/stop function is controlled by drive control terminals. Reset function (bit 2) works all the time as long as the drive is operated under Modbus control mode (P-12=3 or 4).

4.7.2 Speed Reference Format (Standard resolution)

Speed reference value is transferred with one decimal place (200 = 20.0Hz). The maximum speed reference value is limited by P-01. Either register 2 or register 5 can be used for speed reference control, however only one reference should be used in any control system, otherwise unexpected behaviour can result.

4.7.3 Acceleration / Deceleration Ramp Time

Active only when P-12 = 4, this register specifies the drive acceleration and deceleration ramp time. The same value is applied simultaneously to the acceleration and deceleration ramp times. The value has two decimal places, e.g. 500 = 5.00 seconds.

4.7.4 High Resolution Speed Reference

This register allows the user to set the speed reference value in the internal format, e.g. 3000 = 50.0Hz. This allows control resolution to 1 RPM with a 2-pole motor. The maximum allowed value is limited by P-01.

Either register 2 or register 5 can be used for speed reference control, however only one reference should be used in any control system, otherwise unexpected behaviour can result.

4.7.5 Drive status and error code Word

High byte gives drive error code. (Valid when the drive is tripped, see 0 for further details)
Low byte gives drive status information as follows: -
Bit 0: 0 =Drive Stopped, 1 = Drive Running
Bit 1: 0 = OK, 1 = Drive Tripped
Bit 5: 0 = OK, 1 = In Standby Mode
Bit 6: 0 = Not Ready, 1 = Drive Ready to Run (not tripped, hardware enabled and no mains loss condition)

4.7.6 Scope Channel Data Values

These registers show the scope present data sample value for the first two scope channels. The channel data source selection is carried out through Optitools Studio.

4.7.7 Modbus RTU Registers 25 - 28: Drive Serial Number

The drive serial number may be read using these four registers. The serial number has 11 digits, stored as follows: -

Register 28		Register 27				Register 26		Register 25		
x	x	x	x	x	x	x	x	x	x	x

e.g.

Register 25	1										
Register 26	1										
Register 27	8745										
Register 28	57										
Drive Serial Number	5	7	8	7	4	5	0	1	0	0	1

4.7.8 Start Mode, Auto Restart & Fire Mode Configuration (P-30)

This parameter contains 3 values, stored as follows: -

High Byte								Low Byte							
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Input Type 0: Constant 1: Momentary Start				Input Sense 0: Normally Closed (Open Fire Mode) 1: Normally Open (Closed Fire Mode)				Start Mode / Auto Restart as: - 0: Edge-r 1: Auto-0 2: Auto-1 3: Auto-2 4: Auto-3 5: Auto-4 6: Auto-5							

4.7.9 DC Injection Configuration (P-32)

The parameter value is stored as a combined 16-bit word which is constructed as follows: -

High Byte								Low Byte							
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
DC Injection Mode 0: DC Injection on Start 1: DC Injection on Stop 2: DC Injection on Start & Stop								DC Injection Duration: 1dp, e.g. 0 – 250 = 0.0 – 25.0s							

4.7.10 Communications Configuration (P-36)

This Register entry contains multiple data entries, as follows: -

High Byte								Low Byte							
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Trip Configuration				Baud Rate				Drive Address							

Data values can be interpreted as follows: -

Drive Address	1 to 63		
Baud Rate	**Setting**	**Modbus RTU**	**CAN**
	0	115k2	500
	1	115k2	500
	2	9k6	500
	3	19k2	500
	4	38k4	500
	5	57k6	500
	6	115k2	500
	7	115k2	125
	8	115k2	250
	9	115k2	500
	10	115k2	1000
Trip Time Set-up	0	Comms Loss Trip Disabled	
	1	30ms Watchdog, Trip on Comms Loss	
	2	300ms Watchdog, Trip on Comms Loss	
	3	1000ms Watchdog, Trip on Comms Loss	
	4	3000ms Watchdog, Trip on Comms Loss	
	5	30ms Watchdog, Ramp to Stop on Comms Loss	
	6	300ms Watchdog, Ramp to Stop on Comms Loss	
	7	1000ms Watchdog, Ramp to Stop on Comms Loss	
	8	3000ms Watchdog, Ramp to Stop on Comms Loss	

4.7.11 Display Scaling (P-40)

The parameter value is stored as a combined 16-bit word which is constructed as follows: -

High Byte								Low Byte							
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Display Scaling Source 0: Motor Speed 1: Motor Current 2: Analog Input 2 Signal 3: PI Feedback		Display Scaling Factor: 3dp, e.g. 0 – 16000 = 0.000 – 16.000													

4.7.12 Parameter Checksum Modbus Register 46

A checksum is calculated based on the present value of all user adjustable parameters and stored in Modbus Register 46. This may be read to determine if parameter settings have been adjusted.

4.8 Modbus RTU Indirect Parameter Access

Optidrive E3 allows Read / Write access to all user adjustable parameters using a simple method as detailed below. This is achieved using the following two Modbus registers.

4.8.1.1 Register 44: Drive parameter index

This index value will be used by register 45 to carry out parameter read and write function. The valid range of this parameter is from 1 to 60 (maximum number of drive user adjustable parameters)

4.8.1.2 Register 45: Drive parameter value

When reading this register, the value represents the drive parameter value which index is specified by register 44.
When writing to this register, the value will be written to the drive parameter number specified by register 44.

4.8.2 Parameter Read Method

In order to read a parameter, firstly write the parameter number to register 44, then read the value from register 45, e.g. to Read the Value of P-01

- Write 1 to Register 44
- Read the Value of Register 45

4.8.3 Parameter Write Method

Writing parameter values can be achieved by the same method, however, register 45 is used to write the parameter value after the parameter number has been selected using Register 44, e.g. to Write a Value of 60.0Hz to parameter P-01

- Write 1 to Register 44
- Register 45 will return the present value of P-01, which can be Read if required
- Referring to the parameter table shown in 4.6.2, apply any scaling necessary
    - In this case, 60.0Hz = 3600
- Write the scaled value to Register 45. P-01 now changes to 60.0Hz, or an exception code may be returned.