

MSB			DL330P Control Relay References					LSB	Register Number
167	166	165	164	163	162	161	160		R16
			174	173	172	171	170		R17
207	206	205	204	203	202	201	200*		R20
217	216	215	214	213	212	211	210		R21
227	226	225	224	223	222	221	220		R22
237	236	235	234	233	232	231	230		R23
247	246	245	244	243	242	241	240		R24
257	256	255	254	253	252	251	250		R25
267	266	265	264	263	262	261	260		R26
277*	276	275	274	273	272	271	270		R27

* Control relays 200 – 277 can be made retentive by setting a CPU dipswitch. See Chapter 3 for details on setting CPU dipswitches.

MSB			DL340 Control Relay References					LSB	Register Number
167	166	165	164	163	162	161	160		R16
177	176	175	174	173	172	171	170		R17
207	206	205	204	203	202	201	200		R20
217	216	215	214	213	212	211	210		R21
227	226	225	224	223	222	221	220		R22
237	236	235	234	233	232	231	230		R23
247	246	245	244	243	242	241	240		R24
257	256	255	254	253	252	251	250		R25
267	266	265	264	263	262	261	260		R26
277	276	275	274	273	272	271	270		R27
307	306	305	304	303	302	301	300		R30
317	316	315	314	313	312	311	310		R31
327	326	325	324	323	322	321	320		R32
337	336	335	334	333	332	331	330		R33
347	346	345	344	343	342	341	340*		R34
357	356	355	354	353	352	351	350		R35
367	366	365	364	363	362	361	360		R36
				373*	372	371	370		R37
1007	1006	1005	1004	1003	1002	1001	1000		R100
1017	1016	1015	1014	1013	1012	1011	1010		R101
1027	1026	1025	1024	1023	1022	1021	1020		R102
1037	1036	1035	1034	1033	1032	1031	1030		R103
1047	1046	1045	1044	1043	1042	1041	1040		R104
1057	1056	1055	1054	1053	1052	1051	1050		R105
1067	1066	1065	1064	1063	1062	1061	1060		R106

* Control relays 340 – 373 can be made retentive by setting a CPU dipswitch. See Chapter 3 for details on setting CPU dipswitches.

Special Relays

The following table shows the Special Relays used with the DL305 CPUs. Note, our DL105, DL205, and DL405 product families use the data type “SP” to designate Special Relays. Even though we refer to the following relays as special relays, **DirectSOFT** uses the letter “C” as a special relay prefix for the DL305 products. These letters aren’t used with the handheld programmer.

CPUs	Special Relay	Description of Contents
DL330P	C175	100 ms clock, on for 50 ms and off for 50 ms.
	C176	Disables all outputs except for those entered with the SET OUT instruction.
	C177	Battery voltage is low.
DL330 DL340	C374	On for the first scan cycle after the CPU is switched to Run Mode.
	C375	100 ms clock, on for 50 ms and off for 50 ms.
	C376	Disables all outputs except for those entered with the SET OUT instruction.
	C377	Battery voltage is low.
DL330 DL330P DL340	C770	Changes timers to 0.01 second intervals. Timers are normally 0.1 second time intervals.
	C771	The external diagnostics FAULT instruction (F20) is in use.
	C772	The data in the accumulator is greater than the comparison value.
	C773	The data in the accumulator is equal to the comparison value.
	C774	The data in the accumulator is less than the comparison value.
	C775	An accumulator carry or borrow condition has occurred.
	C776	The accumulator value is zero.
	C777	The accumulator has an overflow condition.
DL340	C1072	Port 2 parity: on = odd, off = none
	C1074	The RX or WX instruction is active.
	C1075	An error occurred during communications with the RX or WX instructions.
	C1076	Port 2 communications mode: on = ASCII mode, off = HEX mode. DirectNET supports both ASCII and HEX modes and Modbus® only supports HEX mode.
	C1077	Port 1 communications mode: on = ASCII mode, off = HEX mode

Timer / Counter Registers and Contacts

The following table shows the locations used for programming timer or counters. Since timers and counters share the same data area, you cannot have timers and counters with duplicate numbers. For example, if you have Timer 600, you cannot have a Counter 600.

Each register contains the current value for the timer or counter. Each timer or counter also has a timer or counter contact with the same reference number.

NOTE: Counter current values are retentive and retain their state after a power cycle. These registers are 16-bit registers.

Timer/Counter References/Registers							
607	606	605	604	603	602	601	600
617	616	615	614	613	612	611	610
627	626	625	624	623	622	621	620
637	636	635	634	633	632	631	630
647	646	645	644	643	642	641	640
657	656	655	654	653	652	651	650
667	666	665	664	663	662	661	660
677*	676*	675*	674*	673	672	671	670

* Used with Timer / Counter Setpoint Unit and /or Thumbwheel Interface Module.

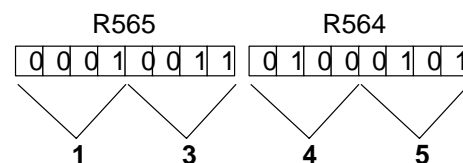
External Timer/Counter Setpoint Unit

Registers 674–677 are used in programming for use with the Timer/Counter Setpoint Unit and the Thumbwheel Interface Module that are available in some compatible product families. The registers contain the current time or count. There is also a status bit for each register with the same reference number. For example, the current value for Timer 674 is stored in R674 and the status contact is T674.

The presets for these modules are stored in R564 – R573 as follows.

- R564 – R565 — 1st T/C preset
- R566 – R567 — 2nd T/C preset
- R570 – R571 — 3rd T/C preset
- R572 – R573 — 4th T/C preset

The example shows how a 4-digit number would be represented in these registers.



Data Registers

The following 8-bit data registers are primarily used with data instructions to store various types of application data. For example, you could use a register to hold a timer or counter preset value.

Some data instructions call for two bytes, which will correspond to two consecutive 8-bit data registers such as R401 and R400. The LSB (Least Significant Bit) will be in register R400 as bit0 and the MSB (Most Significant Bit) will be in register R401 as bit17.

NOTE: Data Registers are retentive.

DL330 / DL330P 8-Bit Data Registers							
407	406	405	404	403	402	401	400
417	416	415	414	413	412	411	410
427	426	425	424	423	422	421	420
437	436	435	434	433	432	431	430
447	446	445	444	443	442	441	440
457	456	455	454	453	452	451	450
467	466	465	464	463	462	461	460
477	476	475	474	473	472	471	470
507	506	505	504	503	502	501	500
517	516	515	514	513	512	511	510
527	526	525	524	523	522	521	520
537	536	535	534	533	532	531	530
547	546	545	544	543	542	541	540
557	556	555	554	553	552	551	550
				563	562	561	560

DL340 8-Bit Data Registers							
407	406	405	404	403	402	401	400
417	416	415	414	413	412	411	410
427	426	425	424	423	422	421	420
437	436	435	434	433	432	431	430
447	446	445	444	443	442	441	440
457	456	455	454	453	452	451	450
467	466	465	464	463	462	461	460
477	476	475	474	473	472	471	470
507	506	505	504	503	502	501	500
517	516	515	514	513	512	511	510
527	526	525	524	523	522	521	520
537	536	535	534	533	532	531	530
547	546	545	544	543	542	541	540
557	556	555	554	553	552	551	550
				563	562	561	560
707	706	705	704	703	702	701	700
717	716	715	714	713	712	711	710
727	726	725	724	723	722	721	720
737	736	735	734	733	732	731	730
747	746	745	744	743	742	741	740
757	756	755	754	753	752	751	750
767	766	765	764	763	762	761	760

Stage Control / Status Bit Map

This table provides a listing of the individual stages and stage control bits. These are only available with the DL330P CPU.

MSB		Stage References						LSB	Register Number
007	006	005	004	003	002	001	000		R100
017	016	015	014	013	012	011	010		R101
027	026	025	024	023	022	021	020		R102
037	036	035	034	033	032	031	030		R103
047	046	045	044	043	042	041	040		R104
057	056	055	054	053	052	051	050		R105
067	066	065	064	063	062	061	060		R106
077	076	075	074	073	072	071	070		R107
107	106	105	104	103	102	101	100		R110
117	116	115	114	113	112	111	110		R111
127	126	125	124	123	122	121	120		R112
137	136	135	134	133	132	131	130		R113
147	146	145	144	143	142	141	140		R114
157	156	155	154	153	152	151	150		R115
167	166	165	164	163	162	161	160		R116
177	176	175	174	173	172	171	170		R117

Shift Register Bit Map

The shift register bits listed below are used in the shift register instruction. These outputs are discrete bits and are not the same locations as the 8 Bit Data Registers. These bits are retentive meaning they retain their state after a power cycle.

NOTE: The DL330P does not have Shift Register bits. Shift Register instructions in the DL330P use Control Relays memory references.

MSB		DL330 / DL340 Shift Register References						LSB	Register Number
407	406	405	404	403	402	401	400		R40
417	416	415	414	413	412	411	410		R41
427	426	425	424	423	422	421	420		R42
437	436	435	434	433	432	431	430		R43
447	446	445	444	443	442	441	440		R44
457	456	455	454	453	452	451	450		R45
467	466	465	464	463	462	461	460		R46
477	476	475	474	473	472	471	470		R47
507	506	505	504	503	502	501	500		R50
517	516	515	514	513	512	511	510		R51
527	526	525	524	523	522	521	520		R52
537	536	535	534	533	532	531	530		R53
547	546	545	544	543	542	541	540		R54
557	556	555	554	553	552	551	550		R55
567	566	565	564	563	562	561	560		R56
577	576	575	574	573	572	571	570		R57

With the DL340 CPU, these bits can also be used as control relays if they are not used with a Shift Register instruction.

Special Registers

This table provides a listing of the special registers used with the DL305 CPUs.

CPUs	Special Register	Description of Contents
DL330	R574 – 575	Contains the error code used with the FAULT instruction.
DL330P DL340	R576 – 577	Auxiliary accumulator used with the MUL and DIV instructions.
DL340 Only	R771	Sets the upper byte of the station address assigned to the bottom communication port. Therefore, this will contain the 1st and 2nd digits of the address.
	R772	Sets the lower byte of the station address assigned to the bottom communication port. This only contains one digit, which is the 3rd digit of the address.
	R773	Sets the baud rate for the bottom communication port.
	R774	Sets the leading communications delay time for the bottom communication port.
	R775	Sets the trailing communications delay time for the bottom communication port.
	R776	Sets the leading communications delay time for the top communication port.
	R777	Sets the trailing communications delay time for the top communication port.