

DL205

Data Types and Memory Map

In This Chapter. . . .

- DL205 Data Types
 - DL230 Memory Map
 - DL240 Memory Map
 - X Input Bit Map
 - Y Output Bit Map
 - Control Relay Bit Map
 - Stage Control / Status Bit Map
 - Timer Status Bit Map
 - Counter Status Bit Map
-

DL205 Data Types

The following table shows the data types available with the DL205 products.

DL205 Data Type	Description	Bits per unit	Number of bytes	
			HEX	ASCII
31	V memory	16	2	4
	T / C current value	16	2	4
32	Inputs (X, GX, SP)	8	1	2
33	Outputs (Y, C, Stage, T/C bits)	8	1	2
39	Diagnostic Status	8	1	2

NOTE: Not all DL205 devices offer the same memory ranges. Check your DL205 System Operation Manual to determine the ranges for your particular model.

Data Type 31 V-Memory Addresses

V-memory Address	Memory Type	DirectNET Reference Address
V00000	TMR Current Time	0001
V00001	TMR Current Time	0002
-----	-----	-----
V00177	TMR Current Time	0080
V01000	CTR Current Count	0201
V01001	CTR Current Count	0202
-----	-----	-----
V01177	CTR Current Count	0280
V02000	V	0401
V02001	V	0402
-----	-----	-----
V03777	V	0800
V04000	Non-volatile V	0801
V04001	Non-volatile V	0802
-----	-----	-----
V04377	Non-volatile V	0900
V07620	Special V	0F91
V07621	Special V	0F92
-----	-----	-----
V07737	Special V	0FE0
V07746	Special V	0FE7
V07647	Special V	0FE8
-----	-----	-----
V07777	Special V	1000

**Data Type 31
V-Memory
Addresses
(continued)**

V-memory Address	Memory Type	DirectNET Reference Address
V40400	X	4101
V40401	X	4102
-----	-----	-----
V40423	X	4114
V40500	Y	4141
V40501	Y	4142
-----	-----	-----
V40523	Y	4154
V40600	C	4181
V40601	C	4182
-----	-----	-----
V40617	C	4190
V41000	Stage Bits	4201
V41001	Stage Bits	4202
-----	-----	-----
V41037	Stage Bits	4218
V41100	TMR Status Bits	4241
V41101	TMR Status Bits	4242
-----	-----	-----
V41107	TMR Status Bits	4248
V41140	CTR Status Bits	4261
V41141	CTR Status Bits	4262
-----	-----	-----
V41147	CTR Status Bits	4268
V41200	Special Relay	4281
V41201	Special Relay	4282
-----	-----	-----
V41205	Special Relay	4286
V41226	Special Relay	428F
V41227	Special Relay	4290
-----	-----	-----
V41230	Special Relay	4299

**Data Type 32
Input Points**

V-Memory Address	Memory Type	Range	<i>DirectNET</i> Reference Address
V40400 LSB	X	0007 – 0000	0101
V40400 MSB	X	0017 – 0010	0102
V40401 LSB	X	0027 – 0020	0103
— — — —	— — — —	— — — —	— — — —
V40423 LSB	X	0467 – 0460	0127
V40423 MSB	X	0477 – 0470	0128
V41200 LSB	Special Relay	0007 – 0000	0181
V41200 MSB	Special Relay	0017 – 0010	0182
V41201 LSB	Special Relay	0027 – 0020	0183
— — — —	— — — —	— — — —	— — — —
V41205 LSB	Special Relay	0127 – 0120	018B
V41205 MSB	Special Relay	0137 – 0130	018C
V41226 LSB	Special Relay	0547 – 0540	01AD
V41226 MSB	Special Relay	0557 – 0550	01AE
— — — —	— — — —	— — — —	— — — —
V41230 LSB	Special Relay	0607 – 0600	01B1
V41230 MSB	Special Relay	0617 – 0610	01B2

Data Type 33
Outputs

V-Memory Address	Memory Type	Range	DirectNET Reference Address
V40500 LSB	Y	0007 – 0000	0101
V40500 MSB	Y	0017 – 0010	0102
V40501 LSB	Y	0027 – 0020	0103
— — — —	— — — —	— — — —	— — — —
V40523 LSB	Y	0467 – 0460	0127
V40523 MSB	Y	0477 – 0470	0128
V40600 LSB	C	0007 – 0000	0181
V40600 MSB	C	0017 – 0010	0182
V40601 LSB	C	0027 – 0020	0183
— — — —	— — — —	— — — —	— — — —
V40617 LSB	C	0367 – 0360	019F
V40617 MSB	C	0377 – 0370	01A0
V41000 LSB	Stage Bits	0007 – 0000	0281
V41000 MSB	Stage Bits	0017 – 0010	0282
V41001 LSB	Stage Bits	0027 – 0020	0283
— — — —	— — — —	— — — —	— — — —
V41037 LSB	Stage Bits	0767 – 0760	02BF
V41037 MSB	Stage Bits	0777 – 0770	02C0
V41100 LSB	Timer Status Bits	0007 – 0000	0301
V41100 MSB	Timer Status Bits	0017 – 0010	0302
V41101 LSB	Timer Status Bits	0027 – 0020	0303
— — — —	— — — —	— — — —	— — — —
V41107 LSB	Timer Status Bits	0167 – 0160	030F
V41107 MSB	Timer Status Bits	0177 – 0170	0310
V41140 LSB	Counter Status Bits	0007 – 0000	0321
V41140 MSB	Counter Status Bits	0017 – 0010	0322
V41141 LSB	Counter Status Bits	0027 – 0020	0323
— — — —	— — — —	— — — —	— — — —
V41147 LSB	Counter Status Bits	0167 – 0160	032F
V41147 MSB	Counter Status Bits	0177 – 0170	0330

Data Type 39 Diagnostic Status





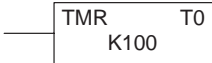
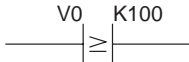

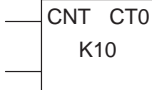
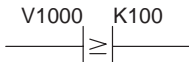


You can use Data Type 39 to obtain *DirectNET* diagnostic status. The following tables show the reference addresses for the various types of information and the *DirectNET* error codes (used with address 0000).

<i>DirectNET</i> Reference	Data Returned
0000	Last error and previous error*
0002	Number of successful communications
0004	Number of erroneous communications
0006	Number of retries for header
0008	Number of retries for data

* The last error code is contained in the most significant byte. The previous error code is in the least significant byte. Two codes that are displayed are cleared by two successful communication exchanges.

Error Code	Applicable Data Type	Error Description
00	All types	The transfer was successful.
01	All types	A timeout occurred in the serial link.
03	32, 33	A request was made to read or write a non-existent I/O point.
04	32, 33	A request was made for data of more I/O points than are available.
05	All types	A request was made to read or write odd bytes. The number of data requested was not a multiple of 4 in the ASCII mode.
06	31	A request was made to read or write one or more non-existent memory locations.
07	All types	A request was made to read or write a zero data byte.
08	36	An attempt was made to write a protected memory.
09	All types	An invalid code is specified or an attempt was made to write to an invalid address.
0A	39	A request was made to read or write one or more non-existent diagnostic status words.
0B	36, 39	An invalid starting address is used in the PC type read, scan start/stop, diagnostic status read or write request.
0C	All types	Three attempts were made to transmit the header.
0D	All types	Three attempts were made to transmit the data.
0F	All types	The header unit number is incorrect. An invalid function was requested.
14	All types	One or more errors occurred during the data block transfer. Possible errors are: invalid STX, ETC, LRC, or ETB is received; a parity, framing, or overrun error occurred.
15	All types	EOT from the master station could not be received.
16	All types	A code other than ACK or NAK was received.
1D	31, 33, 36	There is a format error in the non-header portion of the message.
1E	All types	There is a format error in the header block.

DL230 Memory Map

Memory Type	Discrete Memory Reference (octal)	Word Memory Reference (octal)	Qty. Decimal	Symbol
Input Points	X0 – X177	V40400 – V40407	128	X0 
Output Points	Y0 – Y177	V40500 – V40507	128	Y0 
Control Relays	C0 – C377	V40600 – V40617	256	C0 C0 
Special Relays	SP0 – SP117 SP540 – SP577	V41200 – V41204 V41226 – V41227	112	SP0 
Timers	T0 – T77		64	
Timer Current Values	None	V0 – V77	64	V0 K100 
Timer Status Bits	T0 – T77	V41100 – V41103	64	T0 
Counters	CT0 – CT77		64	
Counter Current Values	None	V1000 – V1077	64	V1000 K100 
Counter Status Bits	CT0 – CT77	V41140 – V41143	64	CT0 
Data Words	None	V2000 – V2377	256	None specific, used with many instructions
Data Words Non-volatile	None	V4000 – V4177	128	None specific, used with many instructions
Stages	S0 – S377	V41000 – V41017	256	SG S0 
System parameters	None	V7620 – V7647 V7750–V7777	48	None specific, used for various purposes

1 – The DL205 systems are limited to 128 discrete I/O points (total) with the present system hardware available. These can be mixed between input and output points as necessary.

DL240 Memory Map

Memory Type	Discrete Memory Reference (octal)	Word Memory Reference (octal)	Qty. Decimal	Symbol
Input Points	X0 – X177	V40400 – V40407	128 ¹	X0
Output Points	Y0 – Y177	V40500 – V40507	128 ¹	Y0
Control Relays	C0 – C377	V40600 – V40617	256	C0 C0
Special Relays	SP0 – SP137 SP540 – SP617	V41200 – V41205 V41226 – V41230	144	SP0
Timers	T0 – T177		128	
Timer Current Values	None	V0 – V177	128	
Timer Status Bits	T0 – T177	V41100 – V41107	128	T0
Counters	CT0 – CT177		128	
Counter Current Values	None	V1000 – V1177	128	
Counter Status Bits	CT0 – CT177	V41140 – V41147	128	CT0
Data Words	None	V2000 – V3777	1024	None specific, used with many instructions
Data Words Non-volatile	None	V4000 – V4377	256	None specific, used with many instructions
Stages	S0 – S777	V41000 – V41037	512	
System parameters	None	V7620 – V7737 V7746–V7777	106	None specific, used for various purposes

¹ – The DL205 systems are limited to 128 discrete I/O points (total) with the present system hardware available. These can be mixed between input and output points as necessary.

X Input Bit Map

This table provides a listing of the individual Input points associated with each V-memory address bit for the DL230 and DL240 CPUs.

DL230/DL240 Input (X) Points															Address		
MSB	17	16	15	14	13	12	11	10	7	6	5	4	3	2		1	0
	017	016	015	014	013	012	011	010	007	006	005	004	003	002	001	000	V40400
	037	036	035	034	033	032	031	030	027	026	025	024	023	022	021	020	V40401
	057	056	055	054	053	052	051	050	047	046	045	044	043	042	041	040	V40402
	077	076	075	074	073	072	071	070	067	066	065	064	063	062	061	060	V40403
	117	116	115	114	113	112	111	110	107	106	105	104	103	102	101	100	V40404
	137	136	135	134	133	132	131	130	127	126	125	124	123	122	121	120	V40405
	157	156	155	154	153	152	151	150	147	146	145	144	143	142	141	140	V40406
	177	176	175	174	173	172	171	170	167	166	165	164	163	162	161	160	V40407

Y Output Bit Map

This table provides a listing of the individual output points associated with each V-memory address bit for both the DL230 and DL240 CPUs.

DL230/DL240 Output (Y) Points															Address		
MSB	17	16	15	14	13	12	11	10	7	6	5	4	3	2		1	0
	017	016	015	014	013	012	011	010	007	006	005	004	003	002	001	000	V40500
	037	036	035	034	033	032	031	030	027	026	025	024	023	022	021	020	V40501
	057	056	055	054	053	052	051	050	047	046	045	044	043	042	041	040	V40502
	077	076	075	074	073	072	071	070	067	066	065	064	063	062	061	060	V40503
	117	116	115	114	113	112	111	110	107	106	105	104	103	102	101	100	V40504
	137	136	135	134	133	132	131	130	127	126	125	124	123	122	121	120	V40505
	157	156	155	154	153	152	151	150	147	146	145	144	143	142	141	140	V40506
	177	176	175	174	173	172	171	170	167	166	165	164	163	162	161	160	V40507

Control Relay Bit Map

This table provides a listing of the individual control relays associated with each V-memory address bit.

DL230/DL240 Control Relays (C)															Address	
MSB																LSB
17	16	15	14	13	12	11	10	7	6	5	4	3	2	1	0	
017	016	015	014	013	012	011	010	007	006	005	004	003	002	001	000	V40600
037	036	035	034	033	032	031	030	027	026	025	024	023	022	021	020	V40601
057	056	055	054	053	052	051	050	047	046	045	044	043	042	041	040	V40602
077	076	075	074	073	072	071	070	067	066	065	064	063	062	061	060	V40603
117	116	115	114	113	112	111	110	107	106	105	104	103	102	101	100	V40604
137	136	135	134	133	132	131	130	127	126	125	124	123	122	121	120	V40605
157	156	155	154	153	152	151	150	147	146	145	144	143	142	141	140	V40606
177	176	175	174	173	172	171	170	167	166	165	164	163	162	161	160	V40607
217	216	215	214	213	212	211	210	207	206	205	204	203	202	201	200	V40610
237	236	235	234	233	232	231	230	227	226	225	224	223	222	221	220	V40611
257	256	255	254	253	252	251	250	247	246	245	244	243	242	241	240	V40612
277	276	275	274	273	272	271	270	267	266	265	264	263	262	261	260	V40613
317	316	315	314	313	312	311	310	307	306	305	304	303	302	301	300	V40614
337	336	335	334	333	332	331	330	327	326	325	324	323	322	321	320	V40615
357	356	355	354	353	352	351	350	347	346	345	344	343	342	341	340	V40616
377	376	375	374	373	372	371	370	367	366	365	364	363	362	361	360	V40617

Stage Control / Status Bit Map

This table provides a listing of the individual stage control bits associated with each V-memory address bit.

DL230/DL240 Stage (S) Control Bits															Address		
MSB	17	16	15	14	13	12	11	10	7	6	5	4	3	2		1	0
017	016	015	014	013	012	011	010	007	006	005	004	003	002	001	000	V41000	
037	036	035	034	033	032	031	030	027	026	025	024	023	022	021	020	V41001	
057	056	055	054	053	052	051	050	047	046	045	044	043	042	041	040	V41002	
077	076	075	074	073	072	071	070	067	066	065	064	063	062	061	060	V41003	
117	116	115	114	113	112	111	110	107	106	105	104	103	102	101	100	V41004	
137	136	135	134	133	132	131	130	127	126	125	124	123	122	121	120	V41005	
157	156	155	154	153	152	151	150	147	146	145	144	143	142	141	140	V41006	
177	176	175	174	173	172	171	170	167	166	165	164	163	162	161	160	V41007	
217	216	215	214	213	212	211	210	207	206	205	204	203	202	201	200	V41010	
237	236	235	234	233	232	231	230	227	226	225	224	223	222	221	220	V41011	
257	256	255	254	253	252	251	250	247	246	245	244	243	242	241	240	V41012	
277	276	275	274	273	272	271	270	267	266	265	264	263	262	261	260	V41013	
317	316	315	314	313	312	311	310	307	306	305	304	303	302	301	300	V41014	
337	336	335	334	333	332	331	330	327	326	325	324	323	322	321	320	V41015	
357	356	355	354	353	352	351	350	347	346	345	344	343	342	341	340	V41016	
377	376	375	374	373	372	371	370	367	366	365	364	363	362	361	360	V41017	

DL240 Additional Stage (S) Control Bits															Address		
MSB	17	16	15	14	13	12	11	10	7	6	5	4	3	2		1	0
417	416	415	414	413	412	411	410	407	406	405	404	403	402	401	400	V41020	
437	436	435	434	433	432	431	430	427	426	425	424	423	422	421	420	V41021	
457	456	455	454	453	452	451	450	447	446	445	444	443	442	441	440	V41022	
477	476	475	474	473	472	471	470	467	466	465	464	463	462	461	460	V41023	
517	516	515	514	513	512	511	510	507	506	505	504	503	502	501	500	V41024	
537	536	535	534	533	532	531	530	527	526	525	524	523	522	521	520	V41025	
557	556	555	554	553	552	551	550	547	546	545	544	543	542	541	540	V41026	
577	576	575	574	573	572	571	570	567	566	565	564	563	562	561	560	V41027	
617	616	615	614	613	612	611	610	607	606	605	604	603	602	601	600	V41030	
637	636	635	634	633	632	631	630	627	626	625	624	623	622	621	620	V41031	
657	656	655	654	653	652	651	650	647	646	645	644	643	642	641	640	V41032	
677	676	675	674	673	672	671	670	667	666	665	664	663	662	661	660	V41033	
717	716	715	714	713	712	711	710	707	706	705	704	703	702	701	700	V41034	
737	736	735	734	733	732	731	730	727	726	725	724	723	722	721	720	V41035	
757	756	755	754	753	752	751	750	747	746	745	744	743	742	741	740	V41036	
777	776	775	774	773	772	771	770	767	766	765	764	763	762	761	760	V41037	

Timer Status Bit Map

This table provides a listing of the individual timer contacts associated with each V-memory address bit.

DL230/DL240 Timer (T) Contacts															Address	
MSB																LSB
17	16	15	14	13	12	11	10	7	6	5	4	3	2	1	0	
017	016	015	014	013	012	011	010	007	006	005	004	003	002	001	000	V41100
037	036	035	034	033	032	031	030	027	026	025	024	023	022	021	020	V41101
057	056	055	054	053	052	051	050	047	046	045	044	043	042	041	040	V41102
077	076	075	074	073	072	071	070	067	066	065	064	063	062	061	060	V41103

Additional DL240 Timer (T) Contacts															Address	
MSB																LSB
17	16	15	14	13	12	11	10	7	6	5	4	3	2	1	0	
117	116	115	114	113	112	111	110	107	106	105	104	103	102	101	100	V41104
137	136	135	134	133	132	131	130	127	126	125	124	123	122	121	120	V41105
157	156	155	154	153	152	151	150	147	146	145	144	143	142	141	140	V41106
177	176	175	174	173	172	171	170	167	166	165	164	163	162	161	160	V41107

Counter Status Bit Map

This table provides a listing of the individual counter contacts associated with each V-memory address bit.

DL230/DL240 Counter (CT) Contacts															Address	
MSB																LSB
17	16	15	14	13	12	11	10	7	6	5	4	3	2	1	0	
017	016	015	014	013	012	011	010	007	006	005	004	003	002	001	000	V41140
037	036	035	034	033	032	031	030	027	026	025	024	023	022	021	020	V41141
057	056	055	054	053	052	051	050	047	046	045	044	043	042	041	040	V41142
077	076	075	074	073	072	071	070	067	066	065	064	063	062	061	060	V41143

Additional DL240 Counter (CT) Contacts															Address	
MSB																LSB
17	16	15	14	13	12	11	10	7	6	5	4	3	2	1	0	
117	116	115	114	113	112	111	110	107	106	105	104	103	102	101	100	V41144
137	136	135	134	133	132	131	130	127	126	125	124	123	122	121	120	V41145
157	156	155	154	153	152	151	150	147	146	145	144	143	142	141	140	V41146
177	176	175	174	173	172	171	170	167	166	165	164	163	162	161	160	V41147