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VersaMax Micro PLCs

VersaMax Micro PLCs are available with 14, 23, 28, or 64 points of I/O.

Model Number	*Description*
IC200UAA003	14 Point (8) 120 VAC In, (6) 120 VAC Out, 120/240 VAC Power Supply
IC200UAA007	28 Point (16) 120 VAC In, (12) 120 VAC Out, 120/240 VAC Power Supply
IC200UAL004	23 Point (13) 12 VDC In, (10) Relay Out, (2) Analog In and (1) Analog Out, 12 VDC Power Supply
IC200UAL005	23 Point (13) 24 VDC In, (1) 24 VDC Out, (9) Relay Out, (2) Analog In and (1) Analog Out, 24 VDC Power Supply
IC200UAL006	23 Point (13) 24 VDC In, (9) Relay Out, (1) 24 VDC Out, (2) Analog In and (1) Analog Out, 120/240 VAC Power Supply
IC200UAR014	14 Point (8) 120 VAC In, (2) Relay Out at 10 Amp, (4) Relay Out at 2 Amp, 120/240 VAC P.S.
IC200UAR028	28 Point (16) 120 VAC In, (4) Relay Out at 10 Amp, (8) Relay Out at 2 Amp, 120/240 VAC P.S.
IC200UDD104	14 Point (8) 24 VDC In, (6) 24 VDC Out 2 at 1.0 Amp and 4 at 0.5 Amp, 24 VDC Power Supply
IC200UDD110	28 Point (16) 24 VDC In, (12) 24 VDC Out, 6 at 1.0 Amp and, 6 at 0.5 Amp, 24 VDC Power Supply
IC200UDD112	14 Point (8) 12 VDC In, (6) 12 VDC Out, 12 VDC Power Supply
IC200UDD120	28 Point (16) 24 VDC In, (12) 24 VDC Out with ESCP, 24 VDC Power Supply
IC200UDD212	28 Point (16) 12 VDC In, (12) 12 VDC Out, 12 VDC Power Supply
IC200UDD064	64 Point (40) 24VDC In, (24) 24VDC Out with ESCP (source), 24VDC Power Supply
IC200UDD164	64 Point (40) 24VDC In, (24) 24VDC Out (sink), 24VDC Power Supply
IC200UDR001	14 Point (8) 24 VDC In, (6) Relay Out, 120/240 VAC Power Supply
IC200UDR002	14 Point (8) 24 VDC In, (6) Relay Out, 24 VDC Power Supply
IC200UDR003	14 Point (8) 12 VDC In, (6) Relay Out, 12 VDC Power Supply
IC200UDR005	28 Point (16) 24 VDC In, (11) Relay Out, (1) 24 VDC Out, 120/240 VAC Power Supply
IC200UDR006	28 Point (16) 12 VDC In, (12) Relay Out, 12 VDC Power Supply
IC200UDR010	28 Point (16) 24 VDC In, (11) Relay Out, (1) 24 VDC Out, 24 VDC Power Supply
IC200UDR228	28 Point (16) 24 VDC In, (11) Relay Out, (1) 24 VDC Out, 12/24 VDC Power Supply
IC200UDR064	64 Point (40) 24VDC In, (24) Relay Out, 24VDC Power Supply
IC200UDR164	64 Point (40) 24VDC In, (24) Relay Out, 120/240VAC Power Supply

Option Modules for 64-Point Micro PLCs

Available Option Modules can be used to enhance the functionality of a 64-Point VersaMax Micro PLC. Four different Option Modules are available.

IC200USB001	RS232, Extra Port Option Module with 2 analog inputs
IC200USB002	RS485, Extra Port Option Module with 2 analog inputs
IC200UMB001	Memory Pack Module
IC200UUB001	USB / RS232 Conversion Option Module
IC200UEM001	Ethernet Option Module

1

VersaMax Micro PLC Expansion Units

VersaMax Micro PLC Expansion Units provide additional discrete points and analog I/O channels for the PLC system. Up to four VersaMax Micro PLC Expansion Units of any type can be connected to any VersaMax Micro PLC. Expansion units can be connected in any sequence.

Model Number	Description
IC200UEC008	8 Point (4) 24VDC In, (4) 24VDC Out with ESCP, 24VDC Power Supply
IC200UEC108	8 Point (4) 24VDC In, (4) 24VDC Out, 24VDC Power Supply
IC200UEC208	8 Point (4) 24VDC In, (4) Relay Out, 24VDC Power Supply
IC200UEI008	8 Point (8) 24VDC In, 24VDC Power Supply
IC200UEI016	16 Point (16) 24VDC In, 24VDC Power Supply
IC200UEO008	8 Point (8) 24VDC Out with ESCP, 24VDC Power Supply
IC200UEO016	16 Point (16) 24VDC Out with ESCP, 24VDC Power Supply
IC200UEO108	8 Point (8) 24VDC Out, 24VDC Power Supply
IC200UEO116	16 Point (16) 24VDC Out, 24VDC Power Supply
IC200UER008	8 Point (8) Relay Out, 24VDC Power Supply
IC200UER016	16 Point (16) Relay Out, 24VDC Power Supply
IC200UEX009	14 Point (8) 120 VAC In, (2) Relay Out @ 10 Amps (4) Relay Out @ 2 Amps, 120/240 VAC P.S.
IC200UEX010	14 Point (8) 120 VAC In, (6) 120 VAC Out, 120/240 VAC Power Supply
IC200UEX011	14 Point (8) 24 VDC In, (6) Relay Out, 120/240 VAC Power Supply
IC200UEX012	14 Point (8) 24 VDC In, (6) Relay Out, 24 VDC Power Supply
IC200UEX013	14 Point (8) 12 VDC In, (6) Relay Out, 12 VDC Power Supply
IC200UEX014	14 Point (8) 24 VDC In, (6) 24 VDC Out, 24 VDC Power Supply
IC200UEX015	14 Point (8) 12 VDC In, (6) 12 VDC Out, 12 VDC Power Supply
IC200UEX122	14 Point (8) 24 VDC In, (6) 24 VDC Out with ESCP, 24 VDC Power Supply
IC200UEX209	28 Point (16) 120 VAC In, (4) Relay Out at 10 Amp, (8) Relay Out at 2 Amp, 120/240 VAC P.S.
IC200UEX210	28 Point (16) 120 VAC In, (12) 120 VAC Out, 120/240 VAC Power Supply
IC200UEX211	28 Point (16) 24 VDC In, (12) Relay Out, 120/240 VAC Power Supply
IC200UEX212	28 Point (16) 24 VDC In, (12) Relay Out, 24 VDC Power Supply
IC200UEX213	28 Point (16) 12 VDC In, (12) Relay Out, 12 VDC Power Supply
IC200UEX214	28 Point (16) 24 VDC In, (12) 24 VDC Out, 6 at 1.0 Amp and, 6 at 0.5 Amp, 24 VDC Power Supply
IC200UEX215	28 Point (16) 12 VDC In, (12) 12 VDC Out, 12 VDC Power Supply
IC200UEX222	28 Point (16) 24 VDC In, (12) 24 VDC Out with ESCP, 24 VDC Power Supply
IC200UEX616	6 Point (4) Analog In and (2) Analog Out, 12 VDC Power Supply
IC200UEX624	4 Point (4) Analog In, 24 VDC Power Supply
IC200UEX626	6 Point (4) Analog In and (2) Analog Out, 24 VDC Power Supply
IC200UEX636	6 Point (4) Analog In and (2) Analog Out, 100-240 VAC Power Supply
IC200UEX724	4 RTD, Pt 100 In, 24VDC Power Supply
IC200UEX726	4 RTD, Pt 100 In and (2) Analog Out, 0 to 20mA , 4 to 20mA or 0 to 10VDC, 24VDC Power Supply
IC200UEX734	4 RTD, Pt 100 In, 120/240VAC Power Supply
IC200UEX736	4 RTD, Pt 100 In and (2) Analog Out, 0 to 20mA , 4 to 20mA or 0 to 10VDC, 120/240VDC P.S.

Comparison of Program and Data Memory Available

The following table compares the amounts of program and data memory available with VersaMax Nano PLCs and Micro PLCs.

Reference Type	***Reference Range***	***10-Point Nano PLCs***	***14-Point Micro PLCs***	***23 and 28-Point Micro PLCs***	***64-Point Micro PLCs***
User program logic	Not applicable	2K words	9K words	9K words	48K words
Discrete inputs	%I0001 - %I0512	512 bits	512 bits	512 bits	512 bits
Discrete outputs	%Q0001 - %Q0512	512 bits	512 bits	512 bits	512 bits
Discrete global references	%G0001 - %G1280	1280 bits	1280 bits	1280 bits	1280 bits
Discrete internal coils	%M0001 - %M1024	1024 bits	1024 bits	1024 bits	1024 bits
Discrete temporary coils	%T0001 - %T0256	256 bits	256 bits	256 bits	256 bits
System status references	%S0001 - %S0032	32 bits	32 bits	32 bits	32 bits
	%SA0001 - %SA0032	32 bits	32 bits	32 bits	32 bits
	%SB0001 - %SB0032	32 bits	32 bits	32 bits	32 bits
	%SC0001 - %SC0032	32 bits	32 bits	32 bits	32 bits
System register references					
10-pt, 14-pt PLCs	%R0001 - %R0256	256 words	256 words		
23-pt and 28-pt PLCs	%R0001 - %R2048			2K words	
64-pt PLCs	%R0001 - %R32640				32K words
Analog and High Speed Counter inputs	%AI0001 - %AI0128	128 words	128 words	128 words	128 words
Analog outputs	%AQ0001 - %AQ0128	128 words	128 words	128 words	128 words

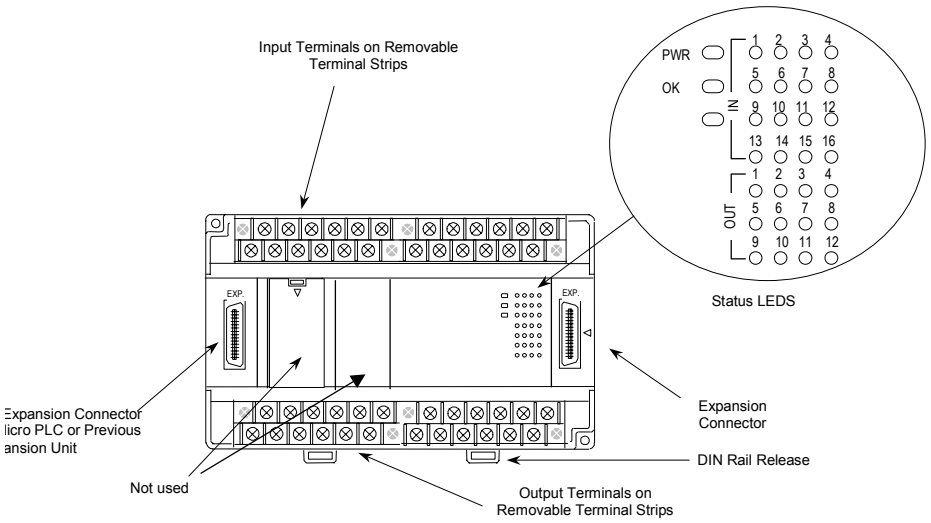
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VersaMax Micro PLC 28-Point Expansion Units

▪ IC200UEX209	28 Point Expansion Unit, (16) 120VAC In, (2) Relay Out at 10 Amps, (10) Relay Out at 2 Amps, 120/240VAC Power Supply
▪ IC200UEX210	28 Point Expansion Unit, (16) 120VAC In, (12) 120VAC Out, 120/240VAC Power Supply
▪ IC200UEX211	28 Point Expansion Unit, (16) 24VDC In, (12) Relay Out, 120/240VAC Power Supply
▪ IC200UEX212	28 Point Expansion Unit, (16) 24VDC In, (12) Relay Out, 24VDC Power Supply
▪ IC200UEX213	28 Point Expansion Unit, (16) 12VDC In, (12) Relay Out, 12VDC Power Supply
▪ IC200UEX214	28 Point Expansion Unit, (16) 24VDC In, (12) 24VDC Out, 24VDC Power Supply
▪ IC200UEX215	28 Point Expansion Unit, (16) 12VDC In, (12) 12VDC Out, 12VDC Power Supply
▪ IC200UEX222	28 Point Expansion Unit, (16) 24VDC In, (12) 24VDC Out with ESCP, 24VDC Power Supply

Features of VersaMax 28-Point Micro PLC Expansion Units

Modular 28-point Expansion Units can be used to increase the total I/O count of a Micro PLC. Expansion Units can be used with any 14- to 64-point Micro PLC. Expansion Units can be located up to 2 meters from the Micro PLC.



Removable Terminal Strips

The removable terminal assemblies are protected by hinged covers. After turning off power to the Expansion Unit, a terminal assembly and attached field wiring can be separated from the Expansion Unit by removing two screws.

Expansion Connector

The connector on the left side of the Expansion Unit is used to connect to the Micro PLC or to the outgoing connector on the previous Expansion Unit. The connector on the right side of the Expansion Unit can be used to attach to the next Expansion Unit.

Status LEDs

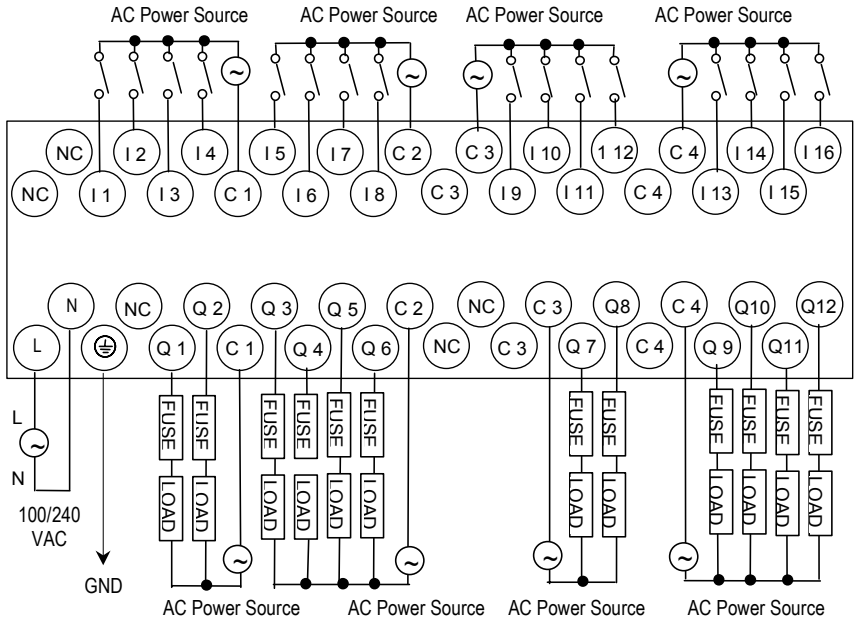
LEDs on the Expansion Unit provide quick visual verification of operating status. In addition to LEDs Expansion Unit local Power and OK mode, there is an LED for each I/O point.

Cables

A 0.1 meter ribbon cable (IC200CBL501) is provided with each Expansion Unit. Cables are also available in 0.5 meter (IC200CBL505) and 1 meter (IC200CBL510) lengths.

AC Input Specifications	
Points/Common	4 (I1–I4) and (I5–I8)
Rated Load Voltage	85–132 VAC, 50 -5% to 60 +5% Hz
Maximum Input Voltage	132V rms, 50/60 Hz
Input Current	8 mA rms (100 VAC, 60 Hz)
Voltage	ON minimum 80V rms, 4.5 mA rms, OFF: maximum 30V rms, 2 mA rms
Response Time	OFF to ON: maximum 25 ms< ON to OFF: maximum 30 ms
Isolation	1500V rms field side to logic side, 500V rms between groups
AC Output Specifications	
Rated Load Voltage	100 -15% to 240 +10% VAC, 50 -5% to 60 +5% Hz
Maximum Resistive Load Current	0.5 Amp per point
Maximum UL Pilot Duty Rating	0.5 Amp per point at 240 VAC 0.6 Amp maximum on C1 and C3 1.2 Amps maximum on C2 and C4
Maximum Inrush Current	5A (1 period)/point, 10A (1 period)/common
Maximum voltage drop when ON	1.5 V RMS
Maximum leak current when OFF	1.8 mA RMS (115 VAC), 3.5 mA RMS (230 VAC)
Response Time (Maximum)	OFF to ON: 1 mS, ON to OFF: 1/2 cycle + 1 ms
Isolation	1500V RMS field side to logic side, 500V RMS between groups

Wiring Diagram, IC200UEX210



IC200UEX211
28 Point Micro PLC Expansion Unit, (16) 24VDC In, (12) Relay Out, 120/240VAC Power Supply

VersaMax Micro PLC Expansion Unit IC200UEX211 accepts sixteen DC inputs and provides twelve normally-open 2 Amp relay outputs. It uses 100VAC to 240VAC nominal input power.

DC Inputs

The sixteen configurable DC inputs can be used as positive or negative logic inputs. Inputs are compatible with a wide range of input devices, such as pushbuttons, limit switches, and electronic proximity switches. The +24 VDC supply can be used for input devices and to power the DC input circuits. The combination of input circuit current and external device current must not exceed 200 mA.

Relay Outputs (Q1 – Q12)

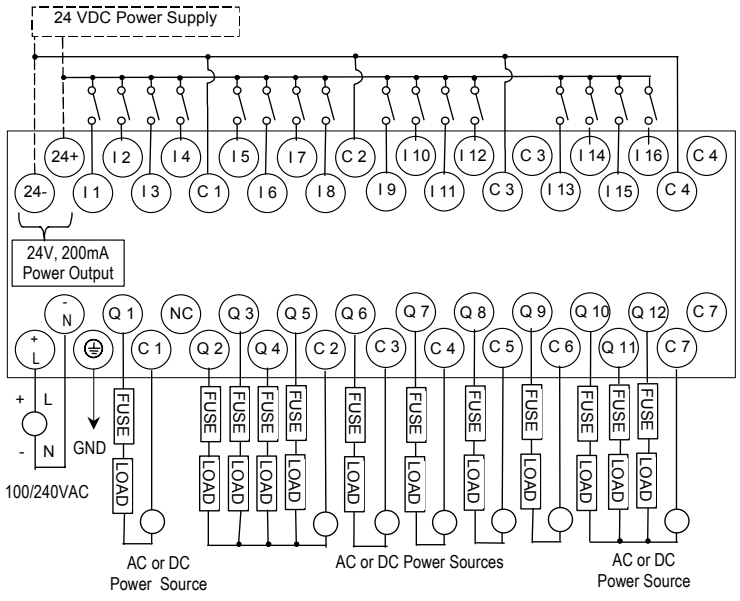
The twelve Form A (SPST-single pole single throw) normally-open relay outputs can control many types of load devices such as motor starters, solenoids, and indicators. The switching capacity of each of these circuits is 2 amps. An external source of AC or DC power must be supplied to operate field devices.

Expansion Unit IC200UEX211 Specifications

Inputs	Sixteen 24 VDC positive/negative logic input circuits
Outputs	Twelve normally open 2 amp relay circuits
+24 VDC Output Power Supply	200mA maximum (for input circuits and user devices)
AC Power Specifications	
Range	100 -15% to 240 +10% VAC
Frequency	50 -5% to 60 +5% Hz
Hold-up	10ms at 85 to 100VAC, 20ms at 100 to 265VAC
Inrush Current	30 Amp maximum at 200 VAC, 40 Amp maximum at 265 VAC
Inrush Time	2 ms for 40Amp
Input Current	0.20 Amp typical at 200 VAC, 0.10 Amp typical at 100 VAC
Input Power Supply Rating	26 VA

DC Input Specifications			
Number of Inputs	16		
Rated Input Voltage	24 volts DC		
Input Voltage Range	0 to 30 volts DC		
Input Current	7.5mA typical		
Input Resistance	2.8 Kohms		
Input Threshold Voltage	ON: 15VDC minimum, OFF: 5VDC maximum		
Input Threshold Current	ON: 4.5mA maximum, OFF: 1.5mA minimum		
Response Time	0.5 to 20ms configurable		
Isolation Voltage	1500V RMS field side to logic side, 500V RMS between groups		
Relay Output Specifications			
Operating Voltage	5 to 30 VDC or 5 to 250 VAC		
Isolation	1500 V RMS between field side and logic side, 500 V RMS between groups		
Leakage Current	15 mA at 240 VAC maximum		
Maximum UL Pilot Duty Rating	2 amps at 24 VDC and 240 VAC		
Maximum Resistive Load Rating	2 amps at 24 VDC and 240 VAC		
Minimum Load	10 mA		
Maximum Inrush	5 amps per half cycle		
Response Time	ON, OFF: 15 ms maximum		
Contact Life: Mechanical	20 x 10^6 mechanical operations		
Contact Life: Electrical Voltage 240VAC, 120VAC, 24VDC	Current: Resistive 2.0A	Current: Lamp and Solenoid 0.6A	Typical Operations 200,000

Wiring Diagram, IC200UEX211



IC200UEX212
28 Point Micro PLC Expansion Unit, (16) 24VDC In, (12) Relay Out, 24VDC Power Supply

VersaMax Micro PLC Expansion Unit IC200UEX212 accepts sixteen DC inputs and provides twelve normally-open 2 Amp relay outputs. It uses +24VDC nominal input power.

DC Power

The 24VDC power source must have enough transient current capability to support the inrush current of the power supply and to maintain a 24VDC voltage. The +24 VDC supply can be used for input devices and to power the DC input circuits at about 7.5 mA per input. The combination of input circuit current and external device current must not exceed 200 mA.

DC Inputs

Sixteen configurable DC inputs can be used as positive or negative logic inputs. Inputs are compatible with a wide range of input devices, such as pushbuttons, limit switches, and electronic proximity switches.

Relay Outputs (Q1 – Q12)

Twelve Form A (SPST-single pole single throw) normally-open relay outputs can control many types of load devices such as motor starters, solenoids, and indicators. The switching capacity of each of these circuits is 2A. An external source of AC or DC power must be supplied to operate field devices.

Expansion Unit IC200UEX212 Specifications

Inputs	Sixteen 24 VDC positive/negative logic input circuits
Outputs	Twelve normally open 2 amp relay circuits
DC Power Specifications	
Range	24 -20%, +25% VDC
Hold-up	10ms at 19.2 VDC
Inrush Current	1 Amp maximum at 30VDC
Inrush Time	10ms for 1 A
Input Current	0.30 Amp typical at 24VDC
Input Power Supply Rating	8W
+24 VDC Output Power Supply	200mA maximum (for input circuits and user devices)

Bit Memory References

The PLC uses six types of references for data stored in bit memory.

%I	Normally used for discrete inputs, and viewable in the Input Status Table.
%Q	Normally used for physical output references, and viewable in the Output Status Table. A %Q reference may be either retentive or non-retentive, depending on its use in the program.
%M	Normally used to represent internal references. A specific %M reference may be either retentive or non-retentive, depending on its use in the program.
%T	Used for temporary references that can be used many times in a program. Data with %T references is not retained through loss of power or RUN-TO-STOP-TO-RUN transitions. %T references cannot be used with retentive coils.
%S	▪ System status references, which have specific predefinitions. ▪ %S, %SA, %SB, and %SC can be used for any type of logic contact. ▪ %SA, %SB, and %SC can be used for retentive coils. ▪ %S can be used as inputs to functions or function blocks. ▪ %SA, %SB, and %SC can be used as inputs or outputs of functions and function blocks.
%G	Used for Global Data. Data in %G references is retained through power loss. %G references can be used with contacts and retentive coils, but not on non-retentive coils.

addresses

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**								
0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0
0	0	1	1	0	0	0	0	0	0	1	0	1	0	0	0
1	1	1	1	0	0	0	1	1	0	0	1	0	0	0	0
1	1	0	0	0	0	0	1	1	1	0	0	1	0	1	0
0	1	0	1	0	0	0	1	0	1	0	1	0	0	0	0
1	1	0	0	0	0	0	1	1	1	0	0	1	0	1	0
1	1	0	1	0	0	0	1	1	1	0	1	0	0	0	0
1	1	0	0	0	0	0	1	1	0	1	1	1	0	1	1
1	0	0	1	0	0	0	1	1	0	1	1	1	0	0	1
0	0	0	1	0	0	0	0	1	0	1	0	1	0	0	1

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Transition Bits and Override Bits

%I, %Q, %M, and %G references have associated transition and override bits.

%T, %S, %SA, %SB, and %SC references have associated transition bits only.

The CPU uses transition bits for transitional coils. When override bits are set, the associated references can only be changed from the programmer.