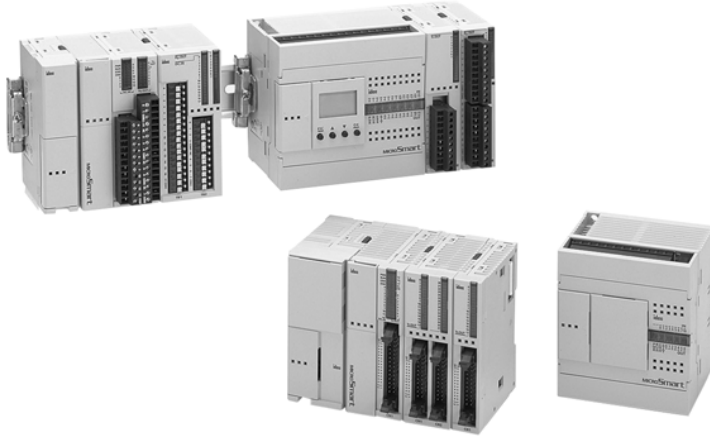


MicroSmart



UL Listed
File No. E211795

Key features of the MicroSmart series include:

- 10, 16, or 24 I/O All-in-one type CPU modules with Sink/Source DC input and Relay Output
- 20 I/O Slim type CPU modules with Sink/Source DC input and Transistor Sink or Source Output
- 20 I/O Slim type CPU modules with Sink/Source DC input and Relay Output with high-speed Transistor Sink or Source Output
- 40 I/O Slim type CPU modules with Sink/Source DC input and Transistor Sink or Source Output
- AC Input, DC Input, Relay Output, Transistor Output, Combination I/O and Analog I/O expansion modules available
- 24 I/O All-in-one CPU expandable to 88 I/O points; 20 I/O slim types expandable up to 148 or 244 I/O; 40 I/O slim type expandable up to 264 I/O points
- Standard RS232 port, optional plug-in RS485/RS232 port
- Optional memory cartridge or real-time clock and calendar cartridge
- Data link to other MicroSmart modules, PLCs, PCs or HG series operator interfaces
- Approved for Class 1–Div. 2 hazardous locations (UL1604)
- Compact size

Pulse Output/Trapezoidal Control

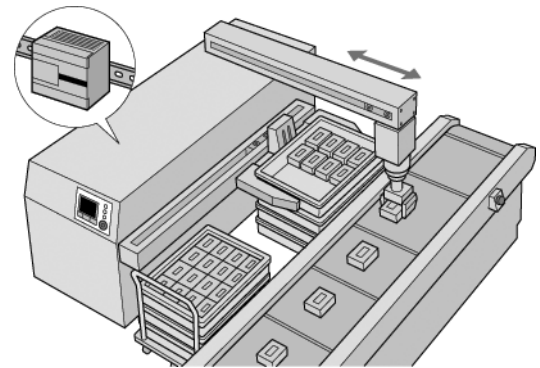
Independent dual-axis control is available with two pulse outputs. Locational values can be easily defined for precise positional (trapezoidal) control.

- Pulse output instruction
- PWM instruction (Pulse Width Modulation control)

Pulse Output Function Specifications

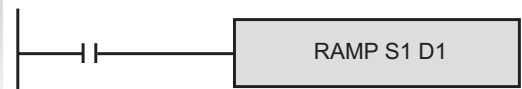
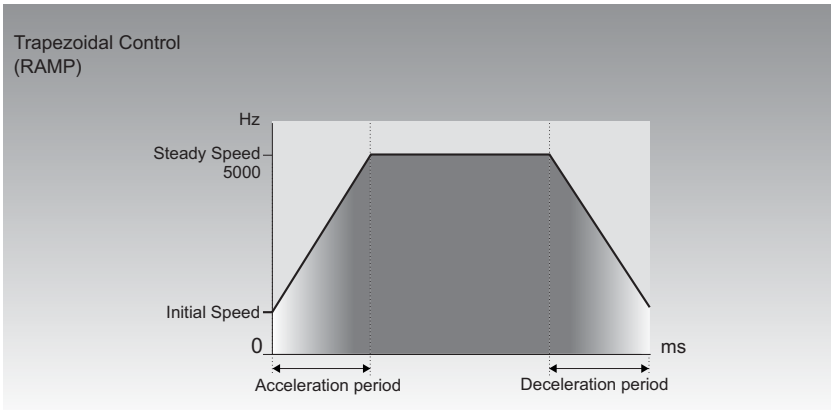
Number of output points	2
Maximum output frequency	20 kHz

*Only one point of trapezoidal control is available.



Setting the desired values enables you to precisely manage the trapezoidal control

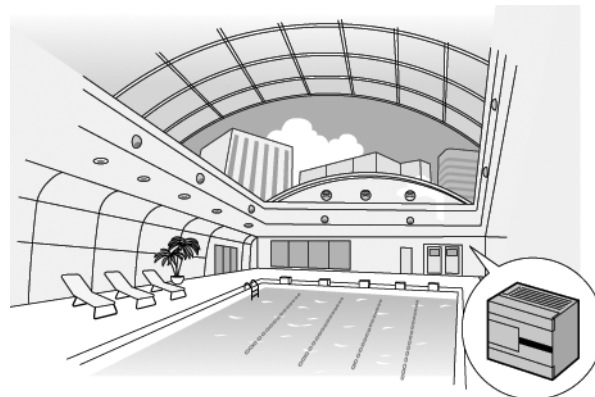
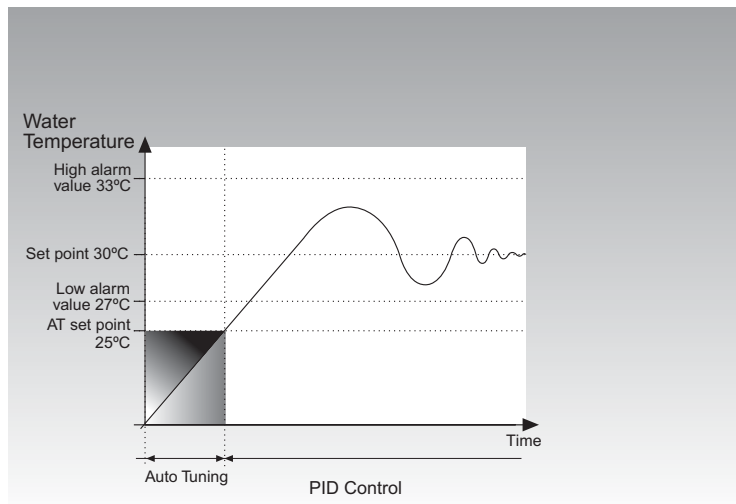
Operation mode (S1)	1
Steady pulse frequency (S1 + 1)	50
Initial pulse frequency (S1 + 2)	10
Frequency change rate (S1 + 3)	2
Present value (S1 + 6, 7)	10,000



J Programmable Logic Controllers

PID Control

To automatically maintain a target water temperature (PID control), use the auto tuning function to perform sampling. Based on the determined PID parameters, PID control is executed automatically. (Slim type CPU units only.)






Set point	30
AT set point	25
High alarm value	35
Low alarm value	27



CPU Modules - All-in-One Type

Part Numbers

AC Power Type	FC4A-C10R2*	FC4A-C16R2*	FC4A-C24R2
DC Power Type	FC4A-C10R2C*	FC4A-C16R2C*	FC4A-C24R2C

Item			
I/O Points	10 (6 in/ 4 out)	16 (9 in/7 out)	24 (14 in/10 out)
Output Type	Relay Output, 240V AC/30V DC, 2A		
Input Type	24V DC (Sink/Source)		
Power Voltage	AC	100-240V AC, 50/60 Hz	
	DC	24V DC	
Memory	4.8KB	15KB	27KB
Expandability	N/A*	N/A	88 maximum I/O (up to 4 expansion I/O modules)



- * I/O expansion modules not applicable to these two models.
- For specifications see page J-15 & for dimensions see page J-25.
- For options see J-11 & for accessories see J-12.

CPU Modules - Slim Type

Part Number	FC4A-D20K3	FC4A-D20RK1	FC4A-D40K3
Item			
I/O Points	20 (12 in/ 8 out)*	20 (12 in/ 8 out)	40 (24 in/16 out)**
Output Type	Transistor Sink Output 0.3A	Relay Output, 240V AC/30V DC, 2A* Sink Output 0.3A*	Transistor Sink Output 0.3A
Input Type	24V DC (Sink/Source)		
Power Voltage	24V DC		
Memory	27KB	31.2KB	31.2KB
Expandability	148 maximum I/O (up to 7 expansion modules)	244 maximum I/O (up to 7 expansion modules)	264 maximum I/O (up to 7 expansion modules)
Part Number	FC4A-D20S3	FC4A-D20RS1	FC4A-D40S3
Item			
I/O Points	20 (12 in/ 8 out)*	20 (12 in/ 8 out)	40 (24 in/16 out)**
Output Type	Transistor Source Output 0.3A	Relay Output, 240V AC/30V DC, 2A* Transistor, Source Output 0.3A*	Transistor Source Output 0.3A
Input Type	24V DC (Sink/Source)		
Power Voltage	24V DC		
Memory	27KB	31.2KB	31.2KB
Expandability	148 maximum I/O (up to 7 expansion modules)	244 maximum I/O (up to 7 expansion modules)	264 maximum I/O (up to 7 expansion modules)








1. * Transistor output 2 points and relay output 6 points.
2. **For MIL connector type modules, see page J-12 for cables and breakout modules.
3. For specifications see page J-15 & for dimensions see page J-25.
4. For options see J-11 & for accessories see J-12.

J

Programmable Logic Controllers







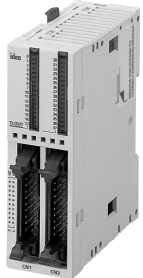
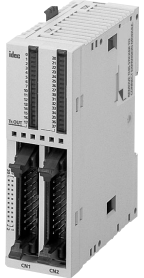
Input Modules - 5 Types

Part Number	FC4A-N08B1	FC4A-N16B1	FC4A-N16B3	FC4A-N32B3	FC4A-N08A11
Item					
Input Points	8-point DC	16-point DC	16-point DC*	32-point DC*	8-point AC
Input Type	24V DC (Sink/Source)				100 - 120V AC
Power Voltage	24V DC				100 - 120V AC (50/60Hz)
Terminal	Removable screw terminal	Removable screw terminal	MIL connector	MIL connector	Removable screw terminal



1. For specifications see page J-19 & for dimensions see page J-25.
2. For options see J-11 & for accessories see J-12.
3. *For MIL connector type modules, see page J-12 for cables and breakout modules.


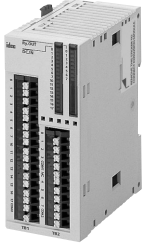
Output Modules - 8 Types

Part Number	FC4A-R081	FC4A-R161	FC4A-T08K1	FC4A-T08S1
Item				
Output Points	8-point Relay	16-point Relay	8-point Transistor	8-point Transistor
Output Type	Relay Output (1NO contact), 240V AC/30V DC, 2A		Transistor sink output 0.3A	Transistor Source Output 0.3A
Terminal	Removable screw terminal			
Part Number	FC4A-T16K3	FC4A-T16S3	FC4A-T32K3	FC4A-T32S3
Item				
Output Points	16-point Transistor	16-point Transistor	32-point Transistor	32-point Transistor
Output Type	Transistor sink output 0.1A*	Transistor source output 0.1A*	Transistor sink output 0.1A*	Transistor source output 0.1A*
Terminal	MIL connector			



1. For specifications see page J-19 & for dimensions see page J-25.
2. For options see J-11 & for accessories see J-12.
3. *For MIL connector type modules, see page J-12 for cables and breakout modules.





Combination I/O Modules - 2 Types

Part Number	FC4A-M08BR1	FC4A-M24BR2
Item		
I/O Points	8 (4 in/ 4 out)	24 (16 in/ 8 out)
Output Type	Relay Output, 240V AC/30V DC, 2A	
Input Type	24V DC (Sink/Source)	
Terminal	Removable terminal block	Wire clamp terminal



1. For specifications see page J-21 & for dimensions see page J-25.
2. For options see J-11 & for accessories see J-12.

Analog I/O Modules - 4 Types

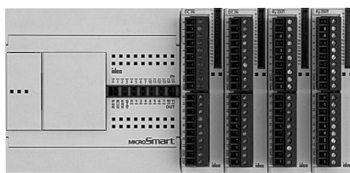
Part Number	FC4A-K1A1	FC4A-J2A1	FC4A-L03AP1	FC4A-L03A1
Item				
I/O Points	1 Analog Output	2 Analog Inputs	2 Analog Inputs, 1 Analog Output	2 Analog Inputs, 1 Analog Output
Output Type	Voltage (0-10V DC) Current (4-20mA)	–	Voltage (0-10V DC) Current (4-20mA)	Voltage (0-10V DC) Current (4-20mA)
Input Type	–	Voltage (0-10V DC) Current (4-20mA)	Thermocouple Resistance thermometer (RTD)	
Terminal	Removable terminal block			



1. For specifications see page J-22 & for dimensions see page J-25.
2. For options see J-11 & for accessories see J-12.
3. New analog modules available Fall '05. See page J-4 for details.

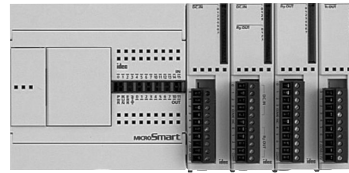
Expansion Module Examples

Example 1



Module	Type No.	Input	Output
CPU	FC4A-C24R2	14	10
DC Input	FC4A-N16B1	16	0
DC Input	FC4A-N16B1	16	0
Relay Output	FC4A-R161	0	16
Relay Output	FC4A-R161	0	16
Total		46	42

Example 2




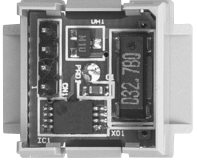


Module	Type No.	Input	Output
CPU	FC4A-C24R2	14	10
DC Input	FC4A-N08B1	8	0
DC Input/Relay Output	FC4A-M08BR1	4	4
Relay Output	FC4A-R081	0	8
Transistor Sink Output	FC4A-T08K1	0	8
Total		26	30

J

Programmable Logic Controllers




Optional Modules

Part Number	FC4A-HPH1	FC4A-PH1	FC4A-PM32 FC4A-PM64	FC4A-PT1
Item				
Type	HMI Base Module (does not come with HMI module)	HMI Module	Memory Cartridge	Clock Cartridge
Description	For mounting HMI module with slim type CPU module	For displaying and changing required operands	32KB or 64KB	-



1. For specifications see page J-24.





Communication Adapters

Part Number	FC4A-PC1	FC4A-PC2	FC4A-PC3
Item			
Type	RS232C	RS485	RS485
Terminal	Mini DIN	Mini DIN	Screw Terminal Type



1. For specifications see page J-24.
2. Used for All-In-One CPU units only, or for FC4A-HPH1 unit shown above.

Communication Modules for Slim Type CPUs






Part Number	FC4A-HPC1	FC4A-HPC2	FC4A-HPC3	FC4A-AS62M*
Item				
Type	RS232C	RS485	RS485	AS-Interface Master Module
Terminal	Mini DIN for Slim Type CPU Module	Mini DIN for Slim Type CPU Module	Screw Terminal Type for Slim Type CPU Module	-









1. For specifications see page J-24.
2. *FC4A-AS62M is compatible with CPUs: FC4A-D20RK1, FC4A-D20RS1, FC4A-D40K3, and FC4A-D40S3. (See Communication & Networking Section M for more information.)
3. New web server module available Fall '05. See page J-3 for details.

Accessories


MicroSmart Options

Item	Description	Length	Part Number
	Programming cable (Loader /user mode selectable)	3m/9.84'	FC4A-KC4CA
	O/I Interface Cable (MicroSmart port 1/2 RS232 to HG1B/2A)	1.5m/5'	FC4A-KC1CA
	O/I Interface Cable (MicroSmart port 1/2 RS232 to HG2F/3F/4F)		FC4A-KC2CA
	Modem Cable	3m/9.84'	FC2A-KM1C
	User Communication Cable	2.4m/7.87'	FC2A-KP1C
	Analog Voltage Input Cables (included with slim type CPU only)	1m/3.28'	FC4A-PMAC2P
	USB/RS232 Converter		FC4A-USB

MIL Connector Cables (Use with Breakout Modules)

Item	Length	Part Number
Non-Shielded 	0.5m	FC9Z-H050B20
	1m	FC9Z-H100B20
	2m	FC9Z-H200B20
	3m	FC9Z-H300B20
Shielded 	0.5m	FC9Z-H050A20
	1m	FC9Z-H100A20
	2m	FC9Z-H200A20
	3m	FC9Z-H300A20
Shielded Single Connectors 	5 ft	FC9Z-H100C20A
Non-Shielded 	0.5m	FC9Z-H050B26
	1m	FC9Z-H100B26
	2m	FC9Z-H200B26
	3m	FC9Z-H300B26
Shielded 	0.5m	FC9Z-H050A26
	1m	FC9Z-H100A26
	2m	FC9Z-H200A26
	3m	FC9Z-H300A26
Shielded Single Connectors 	5 ft	FC9Z-H100C26A

Breakout Modules

Item	Description	Part Number
	20 points (for 16 & 32 I/O expansion modules)	BX1D-S20A
	26 points (for 20 & 40 I/O CPU modules)	BX1D-S26A

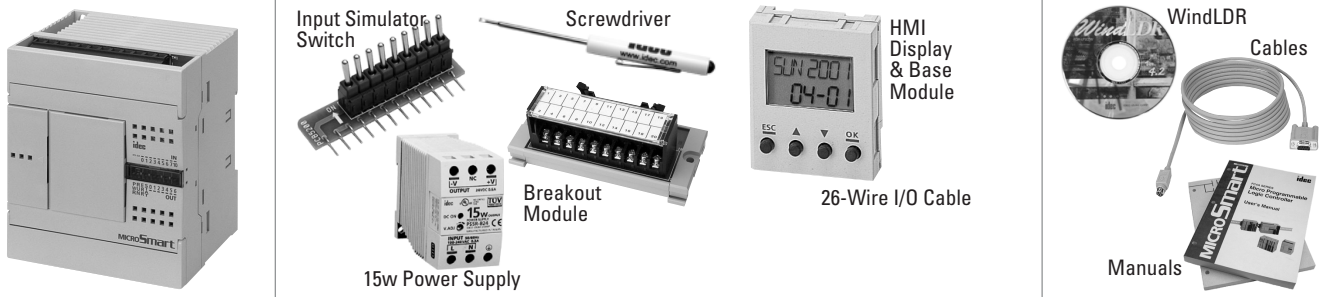
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Accessories con't




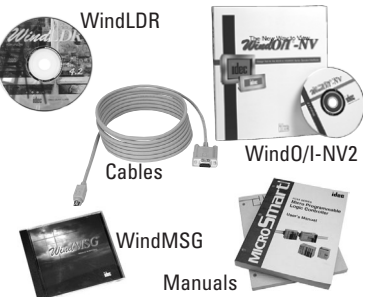





Item	Description	Pkg Qty	Part Number
	13-position terminal blocks for slim type CPU modules (TB1 for FC4A-D20RK1/-D20RS1)	2	FC4A-PMT13P
	16-position terminal blocks for slim type CPU modules (TB2 for FC4A-D20RS1)	2	FC4A-PMTS16P
	16-position terminal blocks for slim type CPU modules (TB2 for FC4A-D20RK1)	2	FC4A-PMTK16P
	11-position terminal blocks for I/O modules (8 point I/O modules)	2	FC4A-PMT11P
	10-position terminal blocks for I/O module (16 point I/O modules)	2	FC4A-PMT10P
	Direct Mounting Strips (for direct mounting of slim type CPU or I/O modules on a panel)	5	FC4A-PSP1P
	End Clips		BNL6
	DIN Rails (1m/3.28' long, 7.5mm height)		BAA1000
	DIN Rails (1m/3.28' long, 10.5mm height)		BNDN1000
	White IDEC screwdriver (2.5mm)		FC9Z-SD2
	Blue IDEC screwdriver (3.5mm)		FC9Z-SD1
	20-position connector socket (MIL connector for I/O modules)	2	FC4A-PMC20P
	26-position connector socket (MIL connector for Slim Type CPU)	2	FC4A-PMC26P
	14-point input simulator switch (Use with FC4A-C24R2 & FC4A-C24R2C)		FC4A-DS824-SW14
	9-point input simulator switch (Use with FC4A-C16R2 & FC4A-C16R2C)		FC4A-DS824-SW9
	6-point input simulator switch (Use with FC4A-C10R2 & FC4A-C10R2C)		FC4A-DS824-SW6
	MicroSmart Users Manual		FC9Y-B812-0A
	Windows-based programming software for IDEC PLCs (for more information, see page J-44).		WINDLDR

MicroSmart Packages

MicroSmart Starter Kits

Part Number	Includes	
	Input Simulator Switch Screwdriver Breakout Module 15w Power Supply HMI Display & Base Module 26-Wire I/O Cable WindLDR Cables Manuals	
MM-SMART-10	FC4A-C10R2, Input Simulator Switch, Screwdriver	WindLDR, Cables & Manuals
MM-SMART-16	FC4A-C16R2, Input Simulator Switch, Screwdriver	WindLDR, Cables & Manuals
MM-SMART-24	FC4A-C24R2, Input Simulator Switch, Screwdriver	WindLDR, Cables & Manuals
MM-SMART-20	FC4A-D20RK1, HMI Display & Base Module, 15w Power Supply, Screwdriver	WindLDR, Cables & Manuals
MM-SMART-40	FC4A-D40K3, HMI Display & Base Module, 15w Power Supply, 26-Wire I/O Cable & Breakout Module, Screwdriver	WindLDR, Cables & Manuals

MicroSmart Solution Packages

	Part Number	Micro Smart CPU	Operator Interface	Power Supply	Accessories	
				 15W  50W		
	MM-SMART-10-252	10 I/O	HG1X 2 line	–	WindLDR, WindMSG, Cables & Manuals	–
	MM-SMART-16-452	16 I/O	HG1X 4 line	–	WindLDR, WindMSG, Cables & Manuals	–
	MM-SMART-10-HG1B	10 I/O	HG1B RS232/485	15W	WindLDR, WindO/I-NV2, Cables & Manuals	E-Stop & Nameplate
	MM-SMART-16-HG1B	16 I/O	HG1B RS232/485	15W	WindLDR, WindO/I-NV2, Cables & Manuals	E-Stop & Nameplate
	MM-SMART-24-HG1B	24 I/O	HG1B RS232/485	15W	WindLDR, WindO/I-NV2, Cables & Manuals	E-Stop & Nameplate
	MM-SMART-20-HG1B	20 I/O	HG1B RS232/485	50W	WindLDR, WindO/I-NV2, Cables & Manuals	E-Stop & Nameplate
	MM-SMART-40-HG1B	40 I/O	HG1B RS232/485	50W	WindLDR, WindO/I-NV2, Cables & Manuals	E-Stop & Nameplate
	MM-SMART-16-HG2F-M	16 I/O	HG2F Monochrome	15W	WindLDR, WindO/I-NV2, Cables & Manuals	E-Stop & Nameplate
	MM-SMART-16-HG2F-C	16 I/O	HG2F Color	15W	WindLDR, WindO/I-NV2, Cables & Manuals	E-Stop & Nameplate
	MM-SMART-24-HG2F-M	24 I/O	HG2F Monochrome	15W	WindLDR, WindO/I-NV2, Cables & Manuals	E-Stop & Nameplate
	MM-SMART-24-HG2F-C	24 I/O	HG2F Color	15W	WindLDR, WindO/I-NV2, Cables & Manuals	E-Stop & Nameplate
	MM-SMART-20-HG2F-M	20 I/O	HG2F Monochrome	50W	WindLDR, WindO/I-NV2, Cables & Manuals	E-Stop & Nameplate
	MM-SMART-20-HG2F-C	20 I/O	HG2F Color	50W	WindLDR, WindO/I-NV2, Cables & Manuals	E-Stop & Nameplate
	MM-SMART-40-HG2F-M	40 I/O	HG2F Monochrome	50W	WindLDR, WindO/I-NV2, Cables & Manuals	E-Stop & Nameplate
	MM-SMART-40-HG2F-C	40 I/O	HG2F Color	50W	WindLDR, WindO/I-NV2, Cables & Manuals	E-Stop & Nameplate
	MM-SMART-24-HG3F	24 I/O	HG3F 10.4" TFT Color	60W	WindLDR, WindO/I-NV2, Cables & Manuals	E-Stop & Nameplate
	MM-SMART-24-HG4F	24 I/O	HG4F 12.1" TFT Color	60W	WindLDR, WindO/I-NV2, Cables & Manuals	E-Stop & Nameplate

J
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