



# SAF Drives

## OEM SAFphire

### Overview

Maple Systems’ OIT Family Operator Interface Terminals (Maple OITs) communicate with SAF Drives controllers using the SAFDrives-Modbus communications protocol. The Maple OIT is the master in a point-to-point single master, single slave or single master, multiple slaves format.

Compatible Controllers	
Family	Model
OEM SAFphire	OEM SAFphire Dedicated Controller CA418 Processor Card

### Communications Cable

The Maple OIT should be connected to the SAF Drives download or hand term communications port. A list of communications cables offered by Maple Systems as well as cable assembly instructions to assist you in assembling your own communications cable are available on our website at [www.maple-systems.com/cables.htm](http://www.maple-systems.com/cables.htm).

**WARNING:** If your communications cable is not wired exactly as shown in our cable assembly instructions, damage to the Maple OIT or loss of communications can result.

### Controller Settings

The SAFphire Drive serial communications protocol is Modbus slave.

The CA418 or the OEM SAFphire settings:

Name	Setting	Options
Node Address	SW1=1; J7=OFF	SW1=1-F; J7=ON/OFF
Modbus Communication Download Port or Hand Term Port	SW2=2 SW3=2	None for OIT None for OIT

# Accessible Controller Memory

## Register Memory

The following table lists the Controller's register memory ranges that Maple's OITs are able to access. Please note that your Controller's memory range may be *smaller* or *larger* than that supported by Maple's OITs. The following register memory is displayable in 16-bit or 32-bit formats on the Maple OIT.

Controller Bit Address	Controller Bit Description	Access
400001 to 400064, Sub=0	Input/Output Registers	Read/Write

## Discrete Memory

The following table lists the Controller's discrete memory ranges that Maple's OITs are able to access. Please note that your Controller's memory range may be *smaller* or *larger* than that supported by Maple's OITs. The bit-registers are accessed in the protocol as 16-bit words. Writing a bit to a register that is not accessed in a bit-wise fashion requires reading the entire register, changing the bit, then writing back the entire register. Special considerations are required so that the R registers are not changed by the controller during the reading and writing cycle of these registers. One way would be to use the bit-registers as separate 16-bit banks, with each bank allowed write access by either, but not both, the OIT or the controller. The following discrete memory is displayable in single-bit or bank formats on the Maple OIT.

Controller Bit Address	Controller Bit Description	Access
400001 Sub = 0 to Sub = 15	Discrete Input/Output	Read/Write

## Important Memory Considerations

If your controller's memory range is smaller than the range supported by Maple's OITs, it is possible to configure the Maple OIT to monitor a memory address which does not exist. Since this can cause unpredictable results, when you configure the Maple OIT please ensure that all selected memory addresses are valid for the controller model.

Do not configure the Maple OIT to write to any memory address which should only be written to by the controller.

### On using Bank 8 or Bank 16 formats

When using these formats, each controller coil (bit) is individually displayed in terms of 1 and 0, with the lowest addressed coil displayed in the left-most position in the field. Therefore, if using coils 00001-00016, then 00016 is the least significant bit displayed in the right-most position and 00001 is the most significant bit displayed in the left-most position. The address used must start on a byte boundary when using these formats, which can be determined if the first coil's address, minus 1 and then divided by 16, leaves no remainder.

# OITware-200 Settings

The following table lists the communications settings that must be configured in OITware-200.

Please note:

- the Default column lists OITware-200's default setting; your Controller's default may be different
- the Options column lists OITware-200's options; your Controller may not support every option

Name	Default	Options	Important Notes
Baud Rate	19200	19200, 9600, 4800, 2400, 1200, 600, 300	Must match the Drive port settings. Use the fastest baud rate supported by both.
Parity	Even	Even, Odd, None, Mark, Space	Must match the Drive port settings.
Data Bits	8	7, 8	Must match the Drive port settings.
Stop Bits	1	1, 2	Must match the Drive port settings.
Status Coils	Disable	No options	Not supported.
Address, Source Address	N/A		
Destination Address	1	1 to 31	Must match the Drive Network address.
Password	N/A		
Message Request Register (optional)	400062, Sub = 0	400001 to 400064, Sub = 0	Must be within the Controller's supported memory range.
Current Message Register (optional)	400063, Sub = 0	400001 to 400064, Sub = 0	Must be within the Controller's supported memory range.
Function Key Coils (optional)	Not supported	Not supported	Use the Screen Dependent Function Key Coils instead.
Screen Dependent Function Key Coils (optional)	400064, Sub = 0 to 15	400001 to 400064, Sub = 0 to 15	Must be within the Controller's supported memory range. Applies to OITs with Screen Dependent Function Keys.
Control Key Coils (optional)	OIT Action	No options	Must be within the Controller's supported memory range.