EUROTHERM DRIVES

Siemens Apogee P1 Communications Interface

Technical Manual

HA470909 Issue 1

Compatible with Version 1.x Software

Safety Information

Intended Users

This manual is to be made available to all persons who are required to install, configure or service equipment described herein, or any other associated operation.

The information given is intended to highlight safety issues, and to enable the user to obtain maximum benefit from the equipment.

Application Area

The equipment described is intended for industrial motor speed control utilising AC induction or AC synchronous machines.

Personnel

Installation, operation and maintenance of the equipment should be carried out by qualified personnel. A qualified person is someone who is technically competent and familiar with all safety information and established safety practices; with the installation process, operation and maintenance of this equipment; and with all the hazards involved.

REFER TO YOUR MAIN PRODUCT MANUAL FOR SPECIFIC SAFETY INFORMATION ABOUT THE DEVICE YOU ARE CONTROLLING

WARRANTY

Eurotherm Drives warrants the goods against defects in design, materials and workmanship
for the period of 12 months from the date of delivery on the terms
detailed in Eurotherm Drives Standard Conditions of Sale IA058393C.

Eurotherm Drives reserves the right to change the content and product specification without notice.

Contents

SIEMENS APOGEE TECHNOLOGY OPTION

A System Overview

The Apogee P1 Technology Option provides a serial data port, allowing VSDs (variable speed drives) to be linked to form a network. Using a PLC/SCADA or other intelligent device, this network can be continuously controlled to provide supervision and monitoring for each VSD in the system.

With each unit under local control, the central supervisor performs only periodic setpoint updating, control sequencing and data collection.

In the system, the PLC/SCADA supervisor acts as the Master, and the VSD as the Slave.

The network of VSDs can be set-up using each unit's MMI/Operator Station.

Advantages with this type of control system

1. Multi-wire analog transmission from a central programmable controller is replaced by a bussed digital system using serial data transmission over differential twisted-pair wires.

2. Digital transmission is fundamentally less noise-prone than analog methods, and the accuracy of the transmitted data is unaffected by the transmission medium. The use of intelligent devices at either end of the data link allows error checking to be used. This virtually eliminates the effects of electrical noise on data integrity. It is therefore possible to issue setpoints to drives with much higher accuracy using this method.

3. The communication standard used allows up to 32 drives to be connected to a single link which can be driven from a computer serial port.

4. The chosen standard and protocol are compatible with other Eurotherm Group products. Temperature controls, process controls, data loggers and drives can communicate easily with a common supervisory system.

Protocol

This card communicates using the Siemens Apogee P1 protocol. Any connections made to it most comply with this protocol. Every effort has been made to maintain compatibility with devices using this protocol.

Product Features

- Suitable for use with:

    HVAC10 Drive Products software version 4.6 onwards

- Connection using 2 or 4-wire shielded twisted pair (RS485)

- Configured using Function Block inputs

- Protocol tag access for defined P1 parameters

Size Notation – Part Numbers

Size 1 HVAC10 drives use the 6053/APOG Apogee Technology Box.

All Size 2 and 3 HVAC10 drives use the 6055/APOG Apogee Technology Box.

2
Installation

<div>

WARNING!

Before installing, ensure that the drive and all wiring is electrically isolated and cannot be made "live" unintentionally by other personnel.

Wait 5 minutes after disconnecting power before working on any part of the system or removing the covers from the Drive.

</div>

Apogee P1 FLN Communication Module (HVAC10)

You can create a network of drives by linking a Master (PLC or Apogee controller) to one or more HVAC10 drives fitted with this module.

Plug this Communication Module on to the front of the HVAC10 drive by removing its terminal cover and fitting the product to the right-most Technology Box position.

Wiring is very simple - all connections are SELV (Safe Extra Low Voltage).

It is possible to establish serial communications without adhering to the following recommendations, however, the recommendations will promote greater reliability.

PLC/SCADA Supervisor (4-wire only)

If possible, avoid using a PLC/SCADA supervisor which take its transmitter to a high impedance state (tri-state) when idling. If it is unavoidable, then it is essential to use properly screened cable.

Cable Specification

Use cable which has two twisted pairs, with each pair individually screened as shown. The characteristic impedance should be in the range 100 to 165 Ohms.
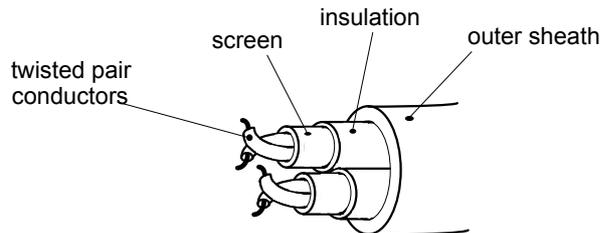
Recommended Cable Specification	
Characteristic Impedance	100-165Ω at 3-20MHz
Cable Capacitance	<30pF/m
Core Diameter	0.34mm² (22 AWG)
Cable Type	Twisted pair cable
Resistance	<110Ω/km
Shielding	Copper braid, or braid & foil

Note: *One example: Belden B3079A cable meets the above specification.*

Cable Routing

Daisy chain one drive to the next. The supervisor should be at one end of the run. Avoid spurs.

Earthing/Grounding

Connect the screens of both pairs of wires to ground at the supervisor. If possible, connect the supervisor's transmitter/receiver 0V reference to earth. Connect all screens as shown in the following diagrams.

User Connections to the Main Serial Port (P1)

The serial port on the Option allows the following Apogee P1 links to be made.

	RS485	
Electrical Connections	4-wire differential	2-wire differential
Number of transmitters and transceivers allowed per differential pair of wires	32 drivers 32 receivers	32 transceivers
Maximum cable length	4000ft/1200 metres	

6053
Technology Box

6055
Technology Box
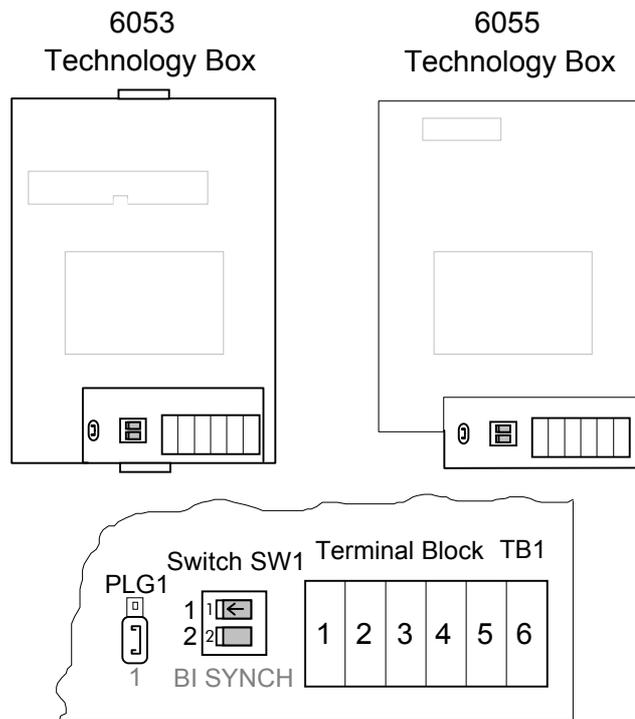
Figure 1 Option showing Terminal Block TB1 and DIL Switch SW1

DIL Switch (SW1) Settings

Set this switch to select 2-wire or 4-wire operation, and to switch in a terminator for the last drive in the system.

Switch	Status	Description
1	OFF	4-wire (default)
	ON	2-wire
2	OFF	Terminator out (default)
	ON	Terminator in
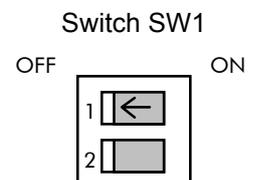
Terminators

- The unit logically furthest from the supervisor must have switch 2 set to ON.
- All other units in the system must have switch 2 set to OFF.

The supervisor's receiver input should also have a terminating resistor, chosen to match the characteristic impedance of the cable, typically 100 to 165 Ohms.

Terminal Block (TB1) Connections

Terminal No.	2-Wire Designation	4-Wire Designation
1	not used	TXB
2	not used	TXA
3	0V	0V
4	Cable Screen (except B versions)	Cable Screen (except B versions)
5	RXB/TXB	RXB
6	RXA/TXA	RXA

Fitting and Connecting to the Technology Box

6053 Technology Box

screen connections

HVAC10 Size 1

Captive Screw

6055 Technology Box

HVAC10 Size 2 & 3
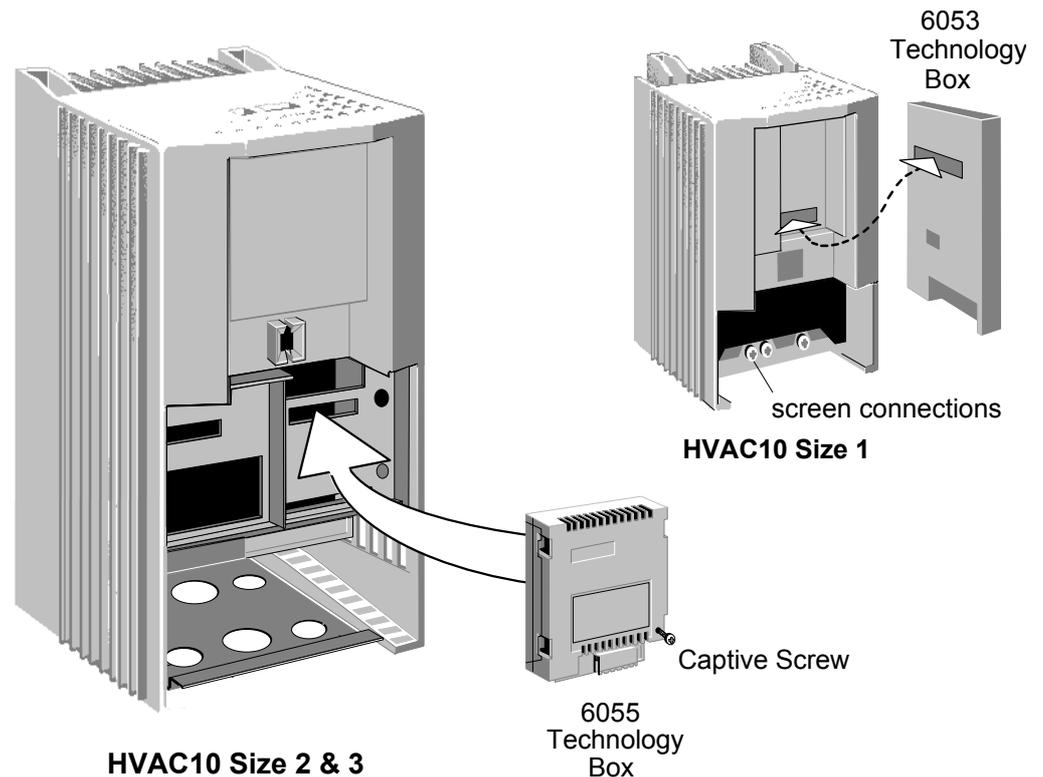
Figure 2 Plug-in Technology Boxes

WARNING!
Ensure that all wiring is isolated.

IMPORTANT: Remember to set the switch positions on the DIL switch, SW1.

The Technology Option plugs into the right-hand position on the front of the drive, or in place of the Operator Station/blank cover (SIZE 1 only).

It can be used with the Operator Station fitted, but for the HVAC10 SIZE 1 unit you must mount the Operator Station remotely using the Panel Mounting Kit with connecting lead (6052). The connecting lead enters the HVAC10 drive through the gland plate.

- Remove the terminal cover and screws.

- On the HVAC10 unit, plug the ribbon cable into the back of the Technology Box and into the socket on the drive.

- Click the Technology Box into place in the recess on the front of the drive. If provided, secure in position by tightening the captive screw on the bottom right hand corner of the Option. On the SIZE 1 unit it will protrude slightly above the standard plastic enclosure.

- Make all user wiring connections. Refer to the Wiring Diagrams**.**

- Re-fit the terminal cover securely with the screws.

Wiring Diagrams
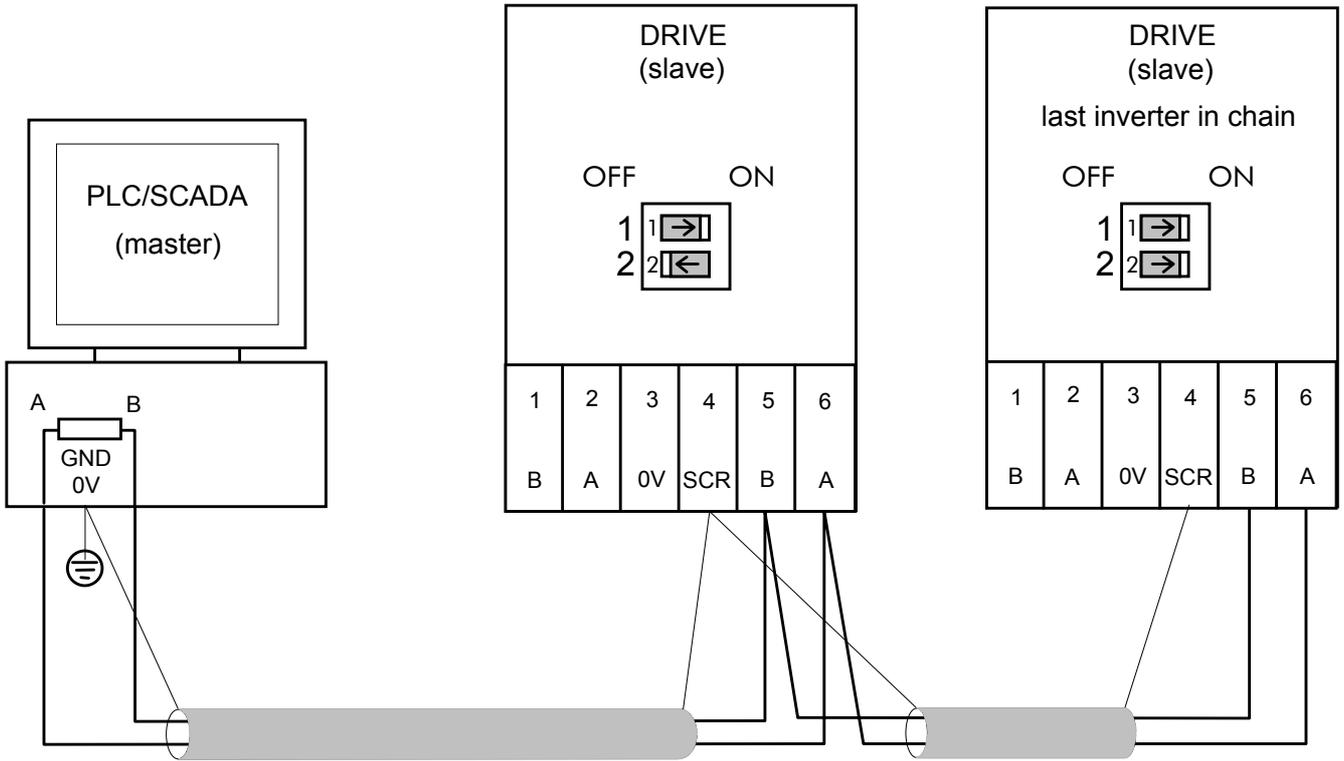
Figure 3   2-Wire Wiring Diagram for the HVAC10 Size 2 & 3 Drive
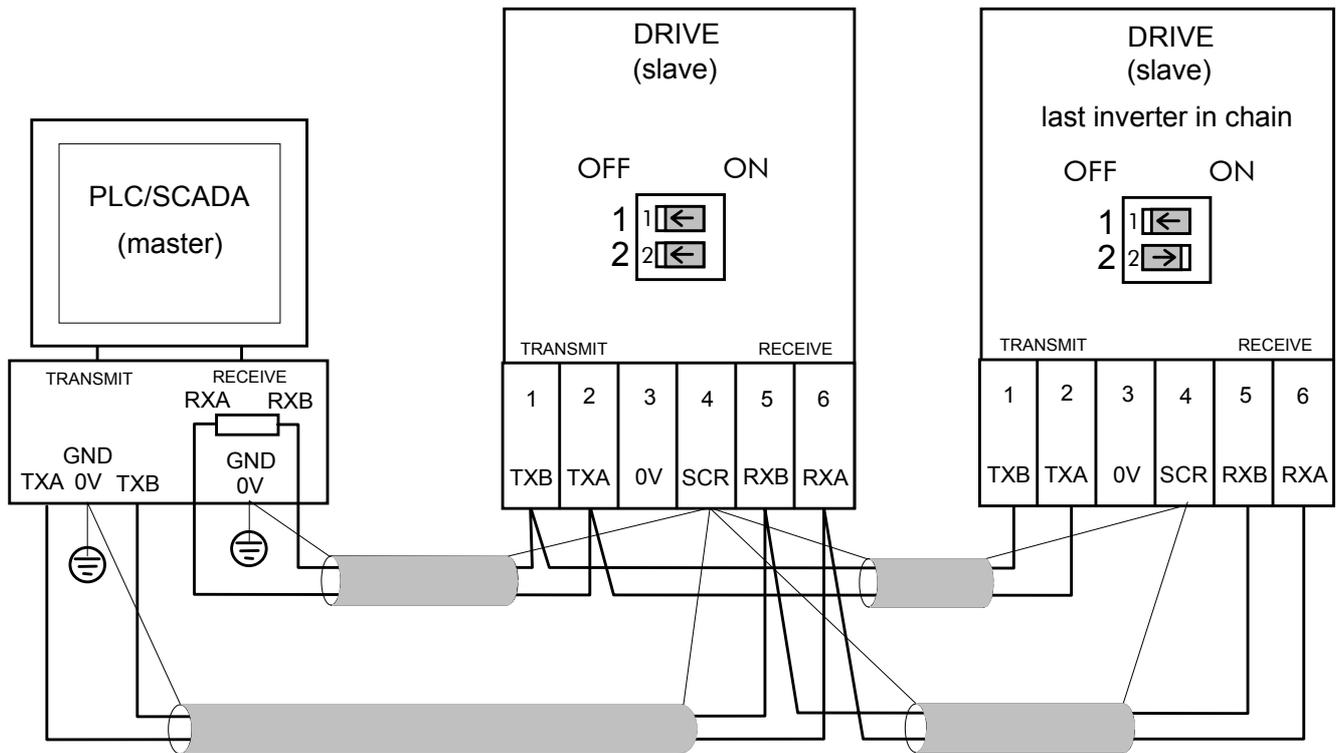
Figure 4   4-Wire Wiring Diagram for the HVAC10 Size 2 & 3 Drive

Siemens Apogee P1 Communications Interface

DRIVE (slave)

OFF   ON

1 | 1 →
2 | 2 ←

1	2	3	4	5	6
B	A	0V	SCR	B	A

DRIVE (slave)

last inverter in chain

OFF   ON

1 | 1 →
2 | 2 →

1	2	3	4	5	6
B	A	0V	SCR	B	A

PLC/SCADA (master)

A   B

GND
0V
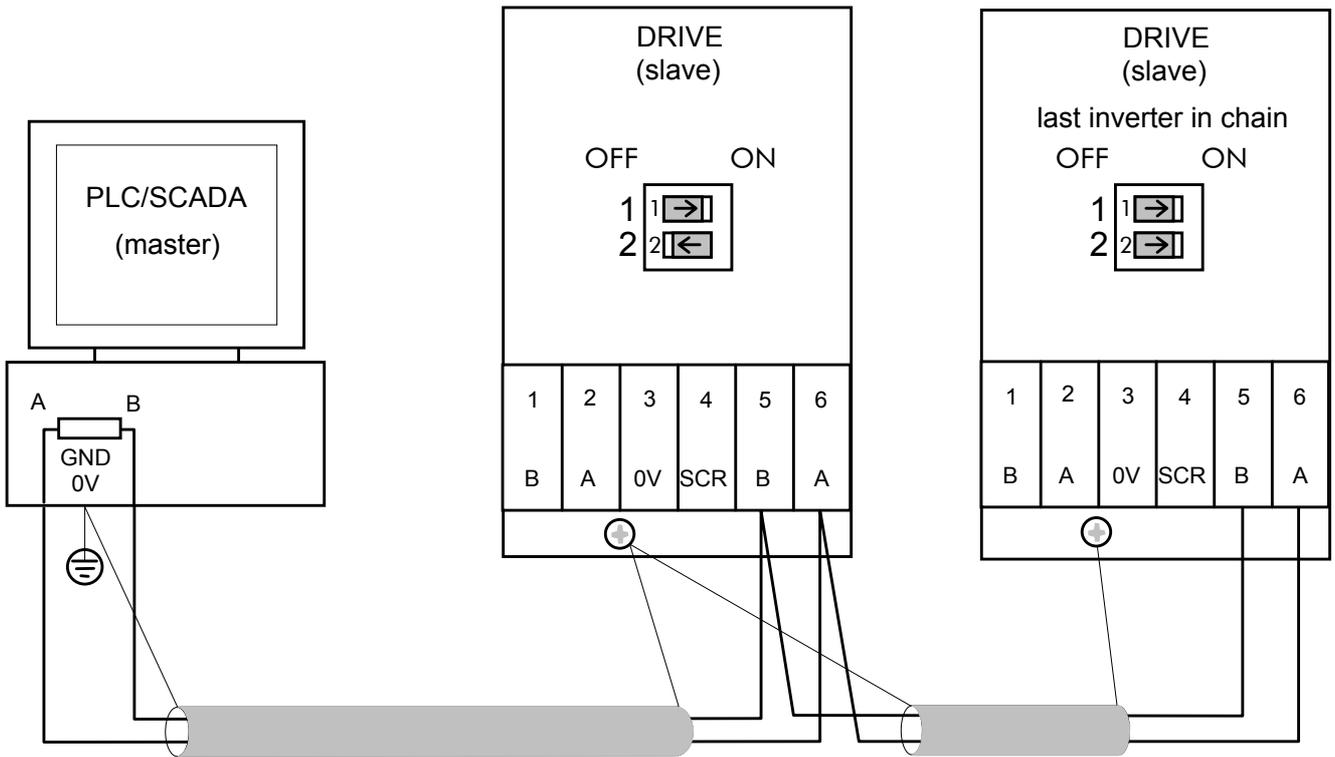
Figure 5   2-Wire Wiring Diagram for the HVAC10 Size 1 Drive

DRIVE (slave)

OFF   ON

1 | 1 ←
2 | 2 ←

TRANSMIT   RECEIVE

1	2	3	4	5	6
TXB	TXA	0V	SCR	RXB	RXA

DRIVE (slave)

last inverter in chain

OFF   ON

1 | 1 ←
2 | 2 →

TRANSMIT   RECEIVE

1	2	3	4	5	6
TXB	TXA	0V	SCR	RXB	RXA

PLC/SCADA (master)

TRANSMIT   RECEIVE
                RXA   RXB

GND   GND
TXA 0V TXB   0V
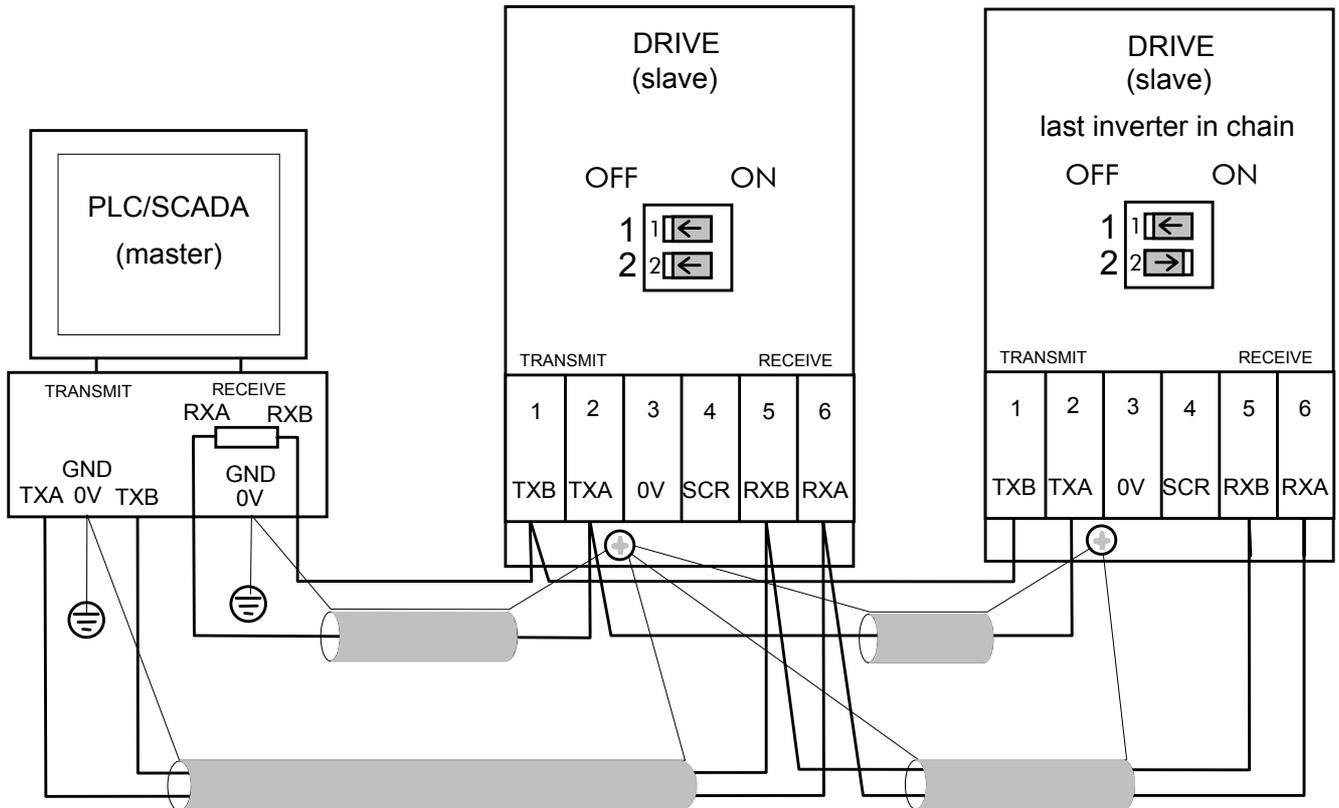
Figure 6   4-Wire Wiring Diagram for the HVAC10 Size 1 Drive

Initial Check for Connection

With the correct connections to the active PLC/SCADA supervisor, the MODULE LED will be ON continuously and the NETWORK LED will indicate the IDLE state with a flash.

ON	⬬	MODULE LED
FLASH	◯⬤	NETWORK LED

Understanding the LED Indications

HVAC10 Size 1
6053 Technology Box

HVAC10 Size 2 & 3
6055 Technology Box
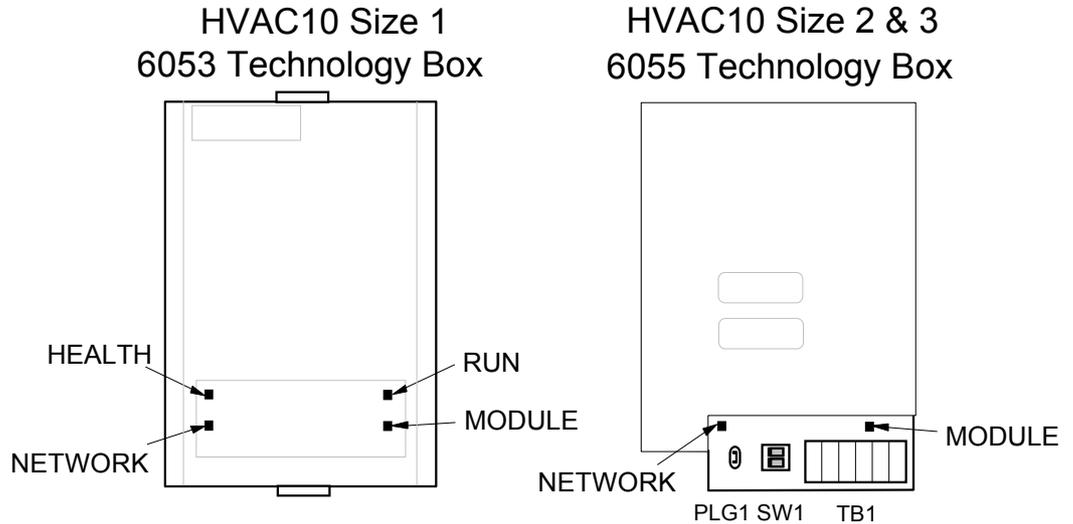
Figure 7 Technology Option LEDs

HINT:

The general rule for LED indications is

"ON IS GOOD, OFF IS BAD"

Health and Run LEDs

HVAC10 Size 1 (6053) Technology Box
These LEDs reproduce the indications of the LEDs on the HVAC10 drive that are hidden when the Technology Box is fitted.

HVAC10 Size 2 & 3 (6055) Technology Box
The board does not have its own Health or Run LEDs. The LEDs are either on the Operator Station or blank cover.

Module LED
This indicates the set-up state of the Technology Box. The states indicated are those produced by the FAULT parameter of the TEC OPTION function block.

Module LED Indication		FAULT Parameter Indication	Description
OFF	◯	SELF TEST	Initialising
SHORT FLASH	◯⬤	HARDWARE	Hardware fault
FLASH	◯⬤	TYPE MISMATCH	Wrong type or disabled
LONG FLASH	⬤◯	PARAMETER	Set-up fault, parameter values out-of-range
ON	⬬	NONE	Valid set-up, ready for external communications

Network LED

This indicates the state of the connected network.

Network LED Indication		Description
OFF	⬭	NOT READY/DISABLED: Initialising.
FLASH	⬭⬤	IDLE: No data is being received from Network Control Module.
LONG FLASH	⬤⬭	SOFT TIMEOUT: Drive not addressed in the last 10 seconds.
ON	⬛	OK: Device has been addressed.

Note: *The NETWORK LED can only be in the ON state when the MODULE LED is ON continuously, indicating that the Option is ready for external communications.*

Initial Set-up for Apogee P1

Configuring the Drive
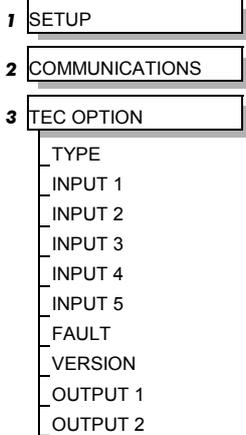
Using the Operator Station (MMI) or other suitable PC programming tool, the TEC OPTION function block requires configuring before the Apogee P1 option can be used.

The parameter names/functions in the TEC OPTION function block are inter-dependant and will change with different parameter values and the various Technology Options that can be fitted.

The top function block diagram shows the ConfigEd Lite parameter names, which are also displayed on the MMI if no Technology Option is fitted or an incorrect TYPE is selected for the fitted Technology Option.

ConfigEd Lite is Eurotherm Drives' Windows-based block programming software.

When the TYPE parameter is set to display RS485, the function block parameters take on new identities, as shown in the lower Function Block diagram.

Selecting Siemens Apogee P1

(Select Advanced view level on the Operator Station and view the TEC OPTION function block).

- Select RS485 in the TYPE parameter

- Select P1 FLN in the PROTOCOL parameter

- Select the node ADDRESS (0 to 31)

- Select the BAUD RATE (default is 4800)

- Check the FAULT parameter for error messages and rectify if necessary

When setting values for parameters from ConfigEd Lite (or other suitable PC programming tool) you are able to select any value in the parameter's range, i.e. -32768 to 32767. If the value is incorrect, i.e. it doesn't correspond to a value that can be set using the MMI, then the FAULT output parameter will be set to PARAMETER.

MMI Parameter Descriptions for Apogee P1

TYPE   *Range: Enumerated - see below*

Selects the type of Technology Option. The TYPE parameter is automatically set when defaults are loaded if a Technology Option is present.

Enumerated Value : Type
        0 : NONE
        1 : RS485
        2 : PROFIBUS DP
        3 : LINK
        4 : DEVICENET
        5 : CANOPEN
        6 : LONWORKS
        7 : CONTROLNET
        8 : MODBUS PLUS
        9 : ETHERNET

PROTOCOL   *Range: Enumerated - see below*

Selects the protocol to be used.

Enumerated Value : Protocol
        0 : EI ASCII
        1 : EI BINARY
        2 : MODBUS RTU
        3 : P1 FLN
        4 : METASYS N2
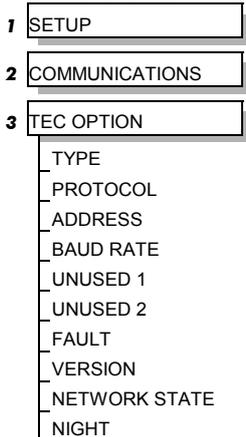
ADDRESS   *Range: 0 to 31*

Selects the Node address of this drive.

BAUD RATE   *Range: Enumerated - see below*

Selects the Baud Rate.

Enumerated Value : Baud Rate
>   0 : 4800 (default)
>   1 : 9600

UNUSED 1

Parameter not used for this protocol.

UNUSED 2

Parameter not used for this protocol.

FAULT   *Range: Enumerated - see below*

The fault state of the Technology Option.

Enumerated Value : Fault

0 : NONE	no faults
1 : PARAMETER	parameter out-of-range
2 : TYPE MISMATCH	TYPE parameter not set to RS485
3 : SELF TEST	hardware fault - internal
4 : HARDWARE	hardware fault - external
5 : MISSING	no option fitted

Also refer to Module LED, page 7.

VERSION   *Range: 0x0000 to 0xFFFF*

The version of the Technology Option card. If no option is fitted then the version is reset to zero.

NETWORK STATE   *Range: Enumerated - see below*

Shows the current Network State of the Technology Option card.

Enumerated Value : Network State

0 : OK	network comms to this device
1 : SOFT TIMEOUT	no comms addressed to this device during last 10 seconds.
2 : ACTIVITY	activity on the Serial Port but not to the device
3 : IDLE	no comms on Serial Port
4 : NOT READY	device not yet initialised for communication
5 : DISABLED	Serial communication has been disabled (default)

Also refer to Network LED, page 8.

NIGHT   *Range: FALSE/TRUE*

Shows the Night occupancy set by the FLN P1 network.

Troubleshooting

LED Indications		Cause/Symptom	Remedy
NETWORK	**MODULE**		
(OFF)	(OFF)	No power at the drive.	Check and apply power to the drive.
(OFF)	(OFF)	Technology Box/Option not installed correctly.	Check connections between Technology Box/Option and drive. On the HVAC10 Size 1, check the ribbon cable.
(OFF)	(OFF)	Hardware fault. **HVAC10 Size 1 WARNING**: Remove the terminal cover and the Technology Box whilst connected to see the drive's HEALTH and RUN LEDs. **BEWARE OF ELECTRIC SHOCK.**	If HEALTH and RUN LEDS are OFF, replace the drive, else replace the Technology Box/Option.
(OFF)	flashing	The self-test has failed.	Replace the Technology Box/Option.
(OFF)	flashing	Incorrect Technology Box/Option fitted or selected.	Fit the correct Technology Box/Option or select the matching value for the TYPE parameter in the TEC OPTION function block. (TYPE = RS485).
(OFF)	flashing	Set-up fault. A TEC OPTION parameter is out-of-range.	Select the correct value for the parameter in the TEC OPTION function block.
(OFF)	ON	NOT READY/DISABLED: Initialising.	If this condition persists for longer than 10 seconds check wiring to RXA and RXB terminals. It may be transposed.
flashing	ON	IDLE: No data is being received from Network Control Module.	Enable the PLC/SCADA application program. Check that switch SW1:1 is ON, i.e. selected for 2-wire operation. Check power for all equipment on the network, e.g. RS232 to RS485 converter or repeater.
flashing	ON	SOFT TIMEOUT: Drive not addressed in the last 10 seconds.	Check the PLC/SCADA program is running.
ON	ON	OK	

Point Database for Siemens Apogee P1

Point Number	Point Type	Subpoint Name	Factory Default (SI Units)	Engr. Units (SI Units)	Slope (SI Units)	Intercept (SI Units)	On Text	Off Text
1	LAO	CTRL ADDRESS	1	–	1	0	–	–
2	LAO	ED_HVAC10	**Error! Reference**	–	1	0	–	–
3	LAI	Freq Output	0	Hz	0.1	0	–	–
4	LAI	Freq Demand	0	Hz	0.1	0	–	–
5	LAI	Speed	0	RPM	0.1	0	–	–
6	LAI	Current	0	A	0.1	-1638.3	–	–
7	LAI	Torque	0	PCT	0.1	-1638.3	–	–
8	LAI	Power	0	Kw	0.1	0	–	–
10	LAI	Drive KWH	0	KWh	0.1	0	–	–
12	LAI	Runtime	0	Hrs	1	0	–	–
13	LAI	DC Bus Volts	0	Volts	1	0	–	–
14	LAI	Output Volts	0	Volts	1	0	–	–
20	LAO	OVRD Time		–	–	–	–	–
21	LDI	Direction	FWD	–	1	0	REV	FWD
22	LDO	Direction SP	FWD	–	1	0	REV	FWD
23	LDI	RUN	STOP	–	1	0	RUN	STOP
24	LDO	RUN SP	STOP	–	1	0	RUN	STOP
25	LAO	Stop Mode	0	–	1	0	–	–
27	LDO	Coast Stop	FALSE	–	1	0	TRUE	FALSE
28	LDO	Fast Stop	FALSE	–	1	0	TRUE	FALSE
29	LDO	Day.Night	DAY	–	1	0	–	–
30	LAO	Curr Limit	150.0	PCT	0.1	0	–	–
31	LAO	Accel Time 1	10.0	SECS	0.1	0	–	–
32	LAO	Decel Time 1	10.0	SECS	0.1	0	–	–
33	LAO	Stop Decel T	10.0	SECS	0.1	0	–	–
34	LAO	Fast Decel T	0.1	SECS	0.1	0	–	–
35	LDO	Run Enable	ENABLE	–	1	0	ENABLE	DISABL
37	LAO	Reference SP	0	PCT	0.1	-1683.3	–	–
40	LDI	O/P Relay 1	OFF	–	1	0	ON	OFF
41	LDI	O/P Relay 1	OFF	–	1	0	ON	OFF
42	LDI	O/P Relay 3	OFF	–	1	0	ON	OFF
44	LDO	Flycatch EN	FALSE	–	1	0	TRUE	FALSE
45	LDI	Flycatching	FALSE	–	1	0	TRUE	FALSE

a. Points not listed are not used in this application.

b. A single value in a column means that the value is the same in English units and in SI units.

c. Point numbers that appear in brackets { } may be unbundled at the field panel.

Point Database for Siemens Apogee P1 cont.

50	LAO	Analog 1 Out	0	PCT	0.01	-163.83	–	–
51	LAO	Analog 2 Out	0	PCT	0.01	-163.83	–	–
52	LAO	Analog 3 Out	0	PCT	0.01	-163.83	–	–
53	LAI	Analog In 1	0	PCT	0.01	-163.83	–	–
54	LAI	Analog In 2	0	PCT	0.01	-163.83	–	–
55	LAI	Analog In 3	0	PCT	0.01	-163.83	–	–
56	LAI	Analog In 4	0	PCT	0.01	-163.83	–	–
60	LAO	S/W Speed SP	0	PCT	0.1	0	–	–
61	LDO	S/W Spd Sel	HW	–	1	0	SW	HW
63	LAO	PID Ref	0	PCT	0.1	0	–	–
64	LAI	PID Feedback	0	PCT	0.1	0	–	–
65	LAI	PID output	0	PCT	0.1	0	–	–
67	LAO	Preset Spd 1	0	PCT	0.1	0	–	–
68	LAO	Preset Spd 2	0	PCT	0.1	0	–	–
69	LAO	Preset Spd 3	0	PCT	0.1	0	–	–
75	LDO	Preset Sel	MAIN	–	1	0	PRESET	MAIN
77	LDI	Purge	NORMAL	–	1	0	PURGE	NORMAL
79	LDI	Tripped	FALSE	–	1	0	TRUE	FALSE
80	LDO	Reset Fault	OK	–	1	0	RESET	OK
81	LAO	Net Timeout	0	SECS	0.1	0	–	–
82	LDI	Auto Mode	AUTO	–	1	0	AUTO	MANUAL
85	LAO	Skip Freq 1	0	Hz	0.1	0	–	–
86	LAO	Band 1	0	Hz	0.1	0	–	–
87	LAO	Skip Freq 2	0	Hz	0.1	0	–	–
88	LAO	Band 2	0	Hz	0.1	0	–	–
89	LAO	Skip Freq 3	0	Hz	0.1	0	–	–
90	LAO	Band 3	0	Hz	0.1	0	–	–
91	LAO	Skip Freq 4	0	Hz	0.1	0	–	–
92	LAO	Band 4	0	Hz	0.1	0	–	–
94	LDO	AR Enable	FALSE	–	1	0	TRUE	FALSE
95	LAO	AR attempts	5	–	0.1	0	–	–
96	LAO	AR Delay	10.0	Sec	0.1	0	–	–
99	LAI	Error Status	0	–	1	0	–	–

a. Points not listed are not used in this application.

b. A single value in a column means that the value is the same in English units and in SI units.

c. Point numbers that appear in brackets { } may be unbundled at the field panel.

Point Database Cross Reference

Point Number	Subpoint Name	Parameter
1	CTRL ADDRESS	Setup/Communications/Tec Option/Address
2	ED_HVAC10	---
3	Freq Output	Setup/Motor Control/Pattern Gen/Drive Frequency
4	Freq Demand	Setup/Seq & Ref/Reference/Speed Demand
5	Speed	Setup/Motor Control/Feedbacks/Speed Feedback
6	Current	Setup/Motor Control/Feedbacks/Motor Current
7	Torque	Setup/Motor Control/Feedbacks/Torque Feedback
8	Power	Setup/Motor Control/Motor Data/Power
10	Drive KWH	---
12	Runtime	---
13	DC Bus Volts	Setup/Motor Control/Feedbacks/DC Link Volts
14	Output Volts	Setup/Motor Control/Feedbacks/Terminal Volts
20	OVRD Time	---
21	Direction	Setup/Seq & Ref/Reference/Reverse
22	Direction SP	Setup/Inputs & Outputs/Dig In/Dig In 4/Invert
23	RUN	Setup/Seq & Ref/Sequencing Logic/Running
24	RUN SP	Setup/Seq & Ref/Sequencing Logic/Run Forward
25	Stop Mode	Setup/Seq & Ref/Reference Stop/Run Stop Mode
27	Coast Stop	Setup/Seq & Ref/Sequencing Logic/Not Coast Stop
28	Fast Stop	Setup/Seq & Ref/Sequencing Logic/Not Fast Stop
29	Day.Night	Setup/Communications/Tec Option/Night
30	Curr Limit	Setup/Motor Control/Current Limit/Current Limit
31	Accel Time 1	Setup/Seq & Ref/Reference Ramp/Accel Time
32	Decel Time 1	Setup/Seq & Ref/Reference Ramp/Decel Time
33	Stop Decel T	Setup/Seq & Ref/Reference Stop/Stop Time
34	Fast Decel T	Setup/Seq & Ref/Reference Stop/Fast Stop Time
35	Run Enable	Setup/Seq & Ref/Sequencing Logic/Drive Enable
37	Reference SP	Setup/Seq & Ref/Reference/Speed Setpoint
40	O/P Relay 1	Setup/Inputs & Outputs/Dig Out/Dig Out 1/Value
41	O/P Relay 1	Setup/Inputs & Outputs/Dig Out/Dig Out 2/Value
42	O/P Relay 3	Setup/Inputs & Outputs/Dig Out/Dig Out 3/Value
44	Flycatch EN	Setup/Motor Control/Flycatching/Enable
45	Flycatching	Setup/Motor Control/Flycatching/Active
50	Analog 1 Out	Setup/Inputs & Outputs/An Out/An Out 1/Value
51	Analog 2 Out	Setup/Inputs & Outputs/An Out/An Out 2/Value
52	Analog 3 Out	Setup/Inputs & Outputs/An Out/An Out 3/Value

Point Database Cross Reference cont.

53	Analog In 1	Setup/Inputs & Outputs/An Input/An Input 1/Value
54	Analog In 2	Setup/Inputs & Outputs/An Input/An Input 2/Value
55	Analog In 3	Setup/Inputs & Outputs/An Input/An Input 3/Value
56	Analog In 4	Setup/Inputs & Outputs/An Input/An Input 4/Value
60	S/W Speed SP	Setup/Misc/Value Func/Value Func 5/Input B
61	S/W Spd Sel	Setup/Misc/Value Func/Value Func 5/Input C
63	PID Ref	Setup/Setpoint Funcs/PID/Setpoint
64	PID Feedback	Setup/Setpoint Funcs/PID/Feedback
65	PID output	Setup/Setpoint Funcs/PID/PID Output
67	Preset Spd 1	Setup/Setpoint Funcs/Preset/Preset 1/Input 2
68	Preset Spd 2	Setup/Setpoint Funcs/Preset/Preset 1/Input 1
69	Preset Spd 3	Setup/Setpoint Funcs/Preset/Preset 1/Input 3
75	Preset Sel	Setup/Setpoint Funcs/Preset/Preset 1/Select Input
77	Purge	Setup/Misc/Value Func/Value Func 3/Input C
79	Tripped	Setup/Seq & Ref/Sequencing Logic/Tripped
80	Reset Fault	Setup/Seq & Ref/Sequencing Logic/Remote Trip Reset
81	Net Timeout	Setup/Seq & Ref/Comms Control/Comms Timeout
82	Auto Mode	Setup/Seq & Ref/Local Control/Remote Seq
85	Skip Freq 1	Startup/Setpoint Funcs/Skip Frequencies/Freq 1
86	Band 1	Startup/Setpoint Funcs/Skip Frequencies/Band 1
87	Skip Freq 2	Startup/Setpoint Funcs/Skip Frequencies/Freq 2
88	Band 2	Startup/Setpoint Funcs/Skip Frequencies/Band 2
89	Skip Freq 3	Startup/Setpoint Funcs/Skip Frequencies/Freq 3
90	Band 3	Startup/Setpoint Funcs/Skip Frequencies/Band 3
91	Skip Freq 4	Startup/Setpoint Funcs/Skip Frequencies/Freq 4
92	Band 4	Startup/Setpoint Funcs/Skip Frequencies/Band 4
94	AR Enable	Setup/Seq & Ref/Auto Restart/Enable
95	AR attempts	Setup/Seq & Ref/Auto Restart/Attempts
96	AR Delay	Setup/Seq & Ref/Auto Restart/Attempt Delay 1
99	Error Status	---

ISS.	MODIFICATION	ECN No.	DATE	DRAWN	CHK'D
1	First release of HA470909.	16656	16/04/03	CM	DL

FIRST USED ON

MODIFICATION RECORD

Siemens Apogee P1 Communications Interface

EUROTHERM DRIVES

DRAWING NUMBER

ZZ470909

SHT. 1

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