Specifications for SM-Applications Plus

- Enhanced high speed dedicated microprocessor
- 384kb Flash memory for user program
- 80kb user program memory
- EIA-RS485 port offering ANSI, Modbus-RTU slave and master and Modbus-ASCII slave and master protocols
- CTNet high speed network connection offering up to 5Mbit/s data rate.
- Two 24V digital inputs
- Two 24V digital outputs
- Task based programming system allowing for real-time control of drive and process
- CTSync

Specifications for SM-Applications Lite V2

- Only supported on SyPTPro V2.4.0 or later
- Only supported on SyPTLite V1.4.0 or later
- Enhanced high speed dedicated microprocessor
- SyPTLite 10kb executable memory
- 384kb executable memory, 80kb user memory.
- Task based programming system allowing for real-time control of drive and process.

Specifications for Digitax ST Plus Embedded Processor.

- Enhanced high speed dedicated microprocessor
- 384kb Flash memory for user program
- 80kb user program memory
- EIA-RS485 port offering ANSI, Modbus-RTU slave and master and Modbus-ASCII slave and master protocols
- CTNet high speed network connection offering up to 5Mbit/s data rate.
- Two 24V digital inputs
- Two 24V digital outputs
- Task based programming system allowing for real-time control of drive and process
- CTSync

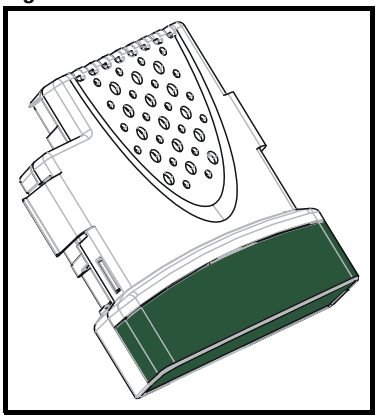
Specifications for Digitax ST Indexer Embedded Processor.

- Only supported on SyPTPro V2.4.0 or later
- Only supported on SyPTLite V1.4.0 or later
- Enhanced high speed dedicated microprocessor
- SyPTLite 10kb executable memory
- 384kb executable memory, 80kb user memory.
- Task based programming system allowing for real-time control of drive and process.

NOTE The SM-Applications Plus module, SM-Applications Lite V2 module and the Digitax ST Plus has a slightly faster variant of the SM-Applications microprocessor, thereby increasing performance of the module over the SM-Applications.

2.2 Solutions Module identification

Figure 2-1 Second Processor



The Second Processors can be identified by:

1. The label located on the underside of the Solutions Module.
2. The colour coding across the front of the Solutions Module.

   SM-Applications: Mint Green

   SM-Applications Lite: White

   SM-Applications Plus: Light Moss Green

   SM-Applications Lite V2: White

3.7.4 Routing of the cable

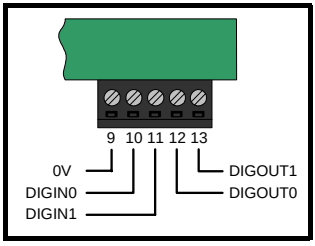
A data communications cable should not run parallel to any power cables, especially ones that connect drives to motors. If parallel runs are unavoidable, ensure a minimum spacing of 300mm (1 foot) between the communications cable and the power cable.

Cables crossing one another at right-angles are unlikely to give trouble. The maximum cable length for a EIA-RS485 link is 1200 metres (4,000 feet). This is at low baud rates only. The higher the baud rate the lower the maximum cable length.

3.7.5 Termination

When a long-distance multi-drop EIA-RS485 system is used, the transmit and receive pairs should have a termination resistor of 120Ω fitted across them in order to reduce signal reflections. However, at the lower data rates this is not so critical.

3.8 Digital I/O Connections



The SM-Applications, SM-Applications Plus and Digitax ST Plus are equipped with 2 digital inputs, known as DIGIN0 and DIGIN1, and 2 digital outputs, known as DIGOUT0 and DIGOUT1. These inputs and outputs can be read/controlled from the user program loaded into the SM-Applications Modules & Motion Processors .

The digital outputs are a positive logic arrangement such that they are at +24V when active and will supply up to 20mA of current. When inactive they are effectively floating. The digital outputs are protected against short-circuit or overload. The trip threshold is 20mA, and if tripped both outputs will be deactivated.

The digital I/O are controlled using menu 86 - refer to section 5.6 *Menu 86 - Digital I/O Parameters* on page 45.

3.9 Port Isolation

The digital input/output ports are connected to the main drive control circuits.

WARNING

The I/O circuits are isolated from the power circuits by basic insulation (single insulation) only. The installer must ensure that external control circuits are insulated from human contact by at least one layer of insulation (supplementary insulation) rated for the AC supply voltage

The CTNet and EIA-RS485 ports have supplementary insulation from the input/output ports, giving overall double insulation from the power circuit.
They have simple separation (functional insulation) from each other.

WARNING

To maintain the double insulation status of the data ports:

- All circuits to which either port is connected must have protective separation (i.e. double insulation or single insulation with grounding)
- All circuits to which the drive control circuits are connected must have at least basic insulation from live parts.

Pr 85.03	Timer Unit 16-bit Timer Count		
Access	RW	Range	16 bit
Default	N/A	Update Rate	Immediate

The current timer value can be read and written at any time using this parameter.

Apps	Apps Lite	Apps Plus	Lite V2	ST Plus	ST Indexer
✓	×	✓	×	✓	×

Pr 85.04	Timer Unit Wrap-around limit		
Access	RW	Range	16 bit
Default	N/A	Update Rate	Immediate

This parameter specifies the value at which Pr **85.03** will wrap-around.

Apps	Apps Lite	Apps Plus	Lite V2	ST Plus	ST Indexer
✓	×	✓	×	✓	×

CAUTION

Setting a small wrap-around figure with the timer operating at fast rates, could result in the Second Processor appearing to lock up. This is caused by the wrap-around interrupt being continually serviced and starving the other product features of processor resource. If this occurs the user can reset the Second Processor by performing a 1070 reset on the drive. If a DPL program sets the figures for the timer then, before resetting, the program auto-run should be disabled (Pr **xx.13**=0). After the reset the user can reinitialise the timer with a more reasonable wrap-around number.

Pr 85.05	Timer Unit Timer Capture Cache		
Access	RW	Range	16 bit
Default	N/A	Update Rate	Immediate

This parameter stores the cached value when using the timer in modes 1 or 2 (Capture modes)

Apps	Apps Lite	Apps Plus	Lite V2	ST Plus	ST Indexer
✓	×	✓	×	✓	×

5.6 Menu 86 - Digital I/O Parameters

The SM-Applications, SM-Applications Plus and Digitax ST Plus have two digital outputs and two digital inputs on-board. These outputs and inputs are controlled though this menu. See Section 3 (Installation) for detailed specifications.

Pr 86.01	Digital Input 0		
Access	RO	Range	0/1
Default	N/A	Update Rate	Immediate

Apps	Apps Lite	Apps Plus	Lite V2	ST Plus	ST Indexer
✓	×	✓	×	✓	×

GETPARATTR

This is used to get parameter attributes such as maximum and minimum values, read-only flag, etc.

```
(Max%, Min%, Flags%) = GETPARATTR(Menu%, Par%)
```

CModeXfer

This allows the user to change the drive mode without any fitted option modules getting a hard reset. It allows for a smoother drive mode change. While the drive mode change occurs fieldbuses will not be able to write to parameters and this is handled at system level. They will NOT get a 'write to parameter failed' message during this period.

NOTE Menus 15 to 20 will not be defaulted when using this command.

RtuReadRegs
RtuReadParas
RtuReadInputRegs
RtuPresetRegs
RtuPresetParas
RtuMasterReply
RtuMasterStatus

These commands are implemented to allow the user to utilise the SM-Applications, SM-Applications Plus and Digitax ST Plus modules Modbus RTU master functionality. Refer to the on-line help for further details.

PFIXREAD6/PFIXWRITE6

These blocks provide reading and writing of drive parameters in a fixed precision of 6 decimal places.

SETUSERID

This command is used to set the User ID Pr **81.49**.

```
SETUSERID(101)    // set #81.49 to 101.
```

ANSIREPLY

This command existed in the UD70, however the syntax has changed for the Second Processor.

```
(Status%, Reply%) = ANSIREPLY()
```

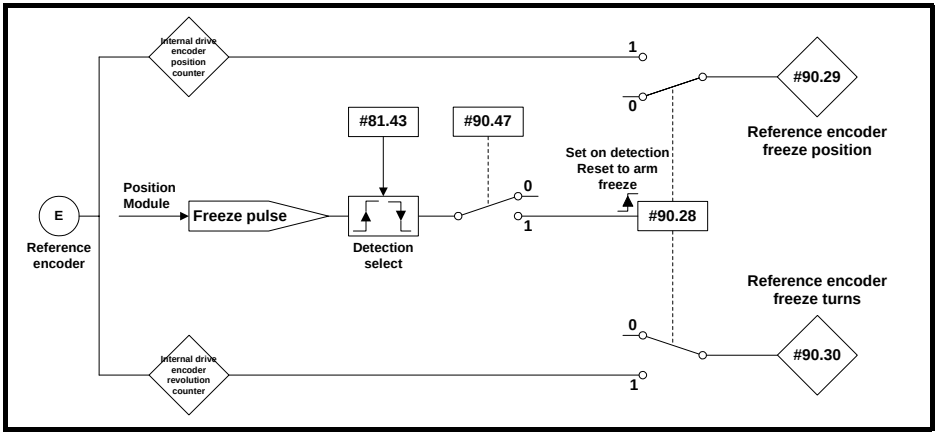
It is a EIA-RS485 port function which is used in conjunction with the ANSIREAD and ANSIWRITE functions.

NOTE When freezing the SM-Universal Encoder Plus data, the Second Processor's freeze input cannot be used. The freeze should come from the SM-Universal Encoder Plus module. Refer to the *SM-Universal Encoder Plus User Guide* for more information on using its freeze with the Second Processors.

8.2 Freeze input

The SM-Applications Lite, SM-Applications Lite V2 and Digitax Indexer are unlike the SM-Applications, SM-Applications Plus and Digitax ST Plus modules in that they do not have digital I/O which can be used to 'freeze' the reference and feedback encoder counters. However, another module in the same drive can be used to freeze the encoder data in the modules. For instance, setting parameter **x.40** for an SM-Universal Encoder Plus module to 1 allows other slots in the same drive to freeze data.

Figure 8-3 Apps Lite/Apps Lite V2 and Digitax St Indexer Reference Freeze Input



The encoder revolution counter is cached into parameter Pr **90.29** and the encoder position is cached into Pr **90.30**.

.When the parameter is written to with a value of 1070 the Second Processor will initiate a warm-restart of the drive and any other options. This can be used to restart the user program (providing auto-run Pr **81.13**=1) and clear any drive trip. This reset action can be performed at any time, not just after a run-time error or in an ERROR task



Writing 1070 to Pr **88.01** will result in any drive trip being automatically cleared as well as resetting all fitted options in the Unidrive SP. This behaviour is different to the UD70 product on Unidrive Classic where the drive was not reset.

The task that caused a run-time error can be determined by reading Pr **88.02**, as previously described.
If the user wishes to trip the drive (if it hasn't already been tripped) then write the appropriate trip code into Pr **10.38**.

Apps	Apps Lite	Apps Plus	Lite V2	ST Plus	ST Indexer
✓	✓	✓	✓	✓	✓

11.5 Resource monitoring

The SM-Applications Plus module, SM-Applications Lite V2 module, Digitax ST Indexer and Digitax ST Plus provide more realistic resource data than is available from parameter Pr **81.04** for SM-Applications Lite and SM-Applications. These are shown below.

Pr 88.03	POS Resource Monitoring		
Access	RW	Range	0/1
Default	0	Update Rate	Immediate

This parameter allows the user to enable or disable monitoring of the motion engine tasks free resource. When set to 1, parameters Pr **88.04** and Pr **88.05** become active. If set to zero, parameters Pr **88.04** and Pr **88.05** will read zero.

Apps	Apps Lite	Apps Plus	Lite V2	ST Plus	ST Indexer
×	×	✓	✓	✓	×

Pr 88.04	Free Resource for Motion Engine Tasks		
Access	RW	Range	0 to 95
Default	0	Update Rate	See Pr **81.12**

This parameter indicates the percentage resource available for running the motion engine tasks. These tasks are CTSync, CTSync Output Channels, POS0, PLCopen, APC, APC Output Channel and POS1. If this parameter value reaches zero a task overrun will occur. It is calculated every motion engine period and is displayed for the previous motion engine period

Apps	Apps Lite	Apps Plus	Lite V2	ST Plus	ST Indexer
×	×	✓	✓	✓	×