Index	ObjectCode	SI	DataType	Name	Default	Description
Communication Area						
0x1000	VARIABLE		UINT32	Device Type	0x0001138B	Semiconductor Common Device Profile
0x1001	VARIABLE		UINT8	Error Register		Reserved for future use
0x1008	VARIABLE		STRING	Manufacturer Device Name	EPackECAT	Name of the device
0x1009	VARIABLE		STRING	Manufacturer Hardware Version		Hardware version corresponding to PSL (Product Status Level) also written on instrument label
0x100A	VARIABLE		STRING	Manufacturer Software Version		Software version of the device
0x100B	VARIABLE		STRING	Manufacturer Bootloader Version		Software version of the Bootloader
0x1018	RECORD			Identity Object		
		1	UINT32	Vendor ID	0x1BC	Eurotherm Limited
		2	UINT32	Product Code	0xE1A2	EPackECAT
		3	UINT32	Revision Number	0x00000002	Revision Number of the device
		4	UINT32	Serial Number		Serial Number of the device
0x10F1	RECORD			Error Settings		Reserved for future use
		1		Local Error Reaction		
		2		Sync Error Counter Limit		
0x10F8	VARIABLE		UINT64	Timestamp Object		Local Timestamp of the device in ns
Process Data Object Mapping Area						
	RxPDO Mapping (0x1600 - 0x17FF)					
0x1600	ARRAY			Module RxPDO default mapping		
		1	UINT32		0x70010920	Setpoint provider Remote 2
0x1601	ARRAY			Module RxPDO user specific mapping		
		1	UINT32		0x00000010	flexible mapping
		2	UINT32		0x00000010	flexible mapping
		3	UINT32		0x00000010	flexible mapping
		4	UINT32		0x00000010	flexible mapping
		5	UINT32		0x00000010	flexible mapping
		6	UINT32		0x00000010	flexible mapping
		7	UINT32		0x00000010	flexible mapping
0x17FF	ARRAY			Device RxPDO user specific mapping		
		1	UINT32		0x00000010	flexible mapping
		2	UINT32		0x00000010	flexible mapping
		3	UINT32		0x00000010	flexible mapping
		4	UINT32		0x00000010	flexible mapping
		5	UINT32		0x00000010	flexible mapping
		6	UINT32		0x00000010	flexible mapping
		7	UINT32		0x00000010	flexible mapping
	TxPDO Mapping (0x1A00 - 0x1BFF)					
0x1A00	ARRAY			Module TxPDO default mapping		
		1	UINT32		0xF3900008	Latched Exception Status
		2	UINT32		0xF3800008	Active Exception Status
		3	UINT32		0x60020120	Control Process Value
		4	UINT32		0x60020220	Control Main Setpoint
		5	UINT32		0x60000520	Network Current
		6	UINT32		0x60000A20	Network Load Voltage
0x1A01	ARRAY			Module TxPDO user specific mapping		
		1	UINT32		0x00000010	flexible mapping
		2	UINT32		0x00000010	flexible mapping
		3	UINT32		0x00000010	flexible mapping
		4	UINT32		0x00000010	flexible mapping
		5	UINT32		0x00000010	flexible mapping
		6	UINT32		0x00000010	flexible mapping
		7	UINT32		0x00000010	flexible mapping
		8	UINT32		0x00000010	flexible mapping
		9	UINT32		0x00000010	flexible mapping
		10	UINT32		0x00000010	flexible mapping
0x1BFE	ARRAY			Device TxPDO default mapping		
		1	UINT32		0xF3970120	Latched Global Device Error Details
0x1BFF	ARRAY			Device TxPDO user specific mapping		
		1	UINT32		0x00000010	flexible mapping

Index	ObjectCode	SI	DataType	Name	Default	Description
		2	UINT32		0x00000010	flexible mapping
		3	UINT32		0x00000010	flexible mapping
		4	UINT32		0x00000010	flexible mapping
		5	UINT32		0x00000010	flexible mapping
		6	UINT32		0x00000010	flexible mapping
		7	UINT32		0x00000010	flexible mapping
		8	UINT32		0x00000010	flexible mapping
		9	UINT32		0x00000010	flexible mapping
		10	UINT32		0x00000010	flexible mapping
Synchronization Object Area						
0x1C00	ARRAY			**SyncManager Communication Type**		
		1	UINT8	Communication Type Sync Manager 0	0x01	Mailbox Receive (Master to Slave)
		2	UINT8	Communication Type Sync Manager 1	0x02	Mailbox Send (Slave to Master)
		3	UINT8	Communication Type Sync Manager 2	0x03	Process Data Out (Master to Slave)
		4	UINT8	Communication Type Sync Manager 3	0x04	Process data In (Slave to Master)
0x1C12	ARRAY			**SyncManager 2 Assignment**		
		1	UINT16		0x1600	Module RxPDO default mapping
		2	UINT16		0x1601	Module RxPDO user specific mapping
		3	UINT16		0x17FF	Device RxPDO user specific mapping
0x1C13	ARRAY			**SyncManager 3 Assignment**		
		1	UINT16		0x1A00	Module TxPDO default mapping
		2	UINT16		0x1A01	Module TxPDO user specific mapping
		3	UINT16		0x1BFE	Device TxPDO default mapping
		4	UINT16		0x1BFF	Device TxPDO user specific mapping
0x1C32	RECORD			**SyncManager Output Parameter**		
		1	UINT16	Synchronization Type	0x0000	Free Run
		2	UINT32	Cycle Time		Current Cycle time (Need 0x1C32.8 Get Cycle Time = 1)
		4	UINT16	Synchronization Types supported	0x0001	Free Run only supported
		5	UINT32	Minimum Cycle Time		Current Minimum Cycle Time (Need 0x1C32.8 Get Cycle Time = 1)
		6	UINT32	Calc and Copy Time		Current Calc and Copy Time (Need 0x1C32.8 Get Cycle Time = 1)
		8	UINT16	Get Cycle Time	0x0000	Write 1 to start Cycle Time Measurements
		9	UINT32	Delay Time		Not used
		10	UINT32	Sync0 Cycle Time		Not used
		11	UINT16	SM-Event Missed		Not used
		12	UINT16	Cycle Time Too Small		Not used
		32	UINT8	Sync Error		Not used
0x1C33	RECORD			**SyncManager Input Parameter**		
		1	UINT16	Synchronization Type	0x0000	Free Run
		2	UINT32	Cycle Time		Current Cycle time (Need 0x1C33.8 Get Cycle Time = 1)
		4	UINT16	Synchronization Types supported	0x0001	Free Run only supported
		5	UINT32	Minimum Cycle Time		Current Minimum Cycle Time (Need 0x1C33.8 Get Cycle Time = 1)
		6	UINT32	Calc and Copy Time		Current Calc and Copy Time (Need 0x1C33.8 Get Cycle Time = 1)
		8	UINT16	Get Cycle Time	0x0000	Write 1 to start Cycle Time Measurements
		9	UINT32	Delay Time		Not used
		10	UINT32	Sync0 Cycle Time		Not used
		11	UINT16	SM-Event Missed		Not used
		12	UINT16	Cycle Time Too Small		Not used
		32	UINT8	Sync Error		Not used
Object Area of the Module						
Input Data of the Module (0x6000 - 0x6FFF)						
0x6000	RECORD			**Network inputs**		
		1	REAL	Network Frequency		units: [hz] Frequency of the main Line voltage
		2	REAL	Network Line Voltage		units: [V] Voltage measurement on line side
		5	REAL	Network Current		units: [A] The time base measurement is the main period in phase angle, and the modulation period in burst mode
		10	REAL	Network Load Voltage		units: [V] Voltage measurement on load side

Index	ObjectCode	SI	DataType	Name	Default	Description
		15	REAL	Network Power per modulation period		units: [W]
						Measurement of the true power (P) on the network. This is calculated over the modulation period in burst mode. Typically used for monitoring or alarm strategy.
						Example : When you set modulator mode to "Burst Var", P represents instantaneous True Power on a half period changing continuously according to the duty cycle. At the Same Time, PBurst remains constant during the modulation period and represents the True Power delivered to the load over this time.
						Only if Power calculation feature is supported
		16	REAL	Network Power per main cycle		units: [W]
						True power measurement (P) on the main period in phase angle and in burst firing. This is typically used for true power control
						Only if Power calculation feature is supported
		17	REAL	Network Apparent Power		units: [VA]
						Apparent power (S) measurement. In phase angle defined as : S=Vline x Irms But in burst firing it is defined as:- S=Vrms x Irms
						Only if Power calculation feature is supported
		18	REAL	Network Power Factor		range is in between 0 to 1
						Calculation of power factor. Defined as : Power Factor = True Power / Apparent Power. In phase angle this is: PF=P/S In burst firing this is: PF = PBurst/S = CosPhi(Load)
						Only if Power calculation feature is supported
		19	REAL	Network Load Impedance		units: [Ω]
						Load impedance measurement. It is defined as:- Z=Vrms/Irms
		22	REAL	Network Z reference		units: [Ω]
						When the PLF is adjusted, this parameter is the reference load impedance.
						Only if PLF feature is supported
		25	BOOL	Network PLF Adjusted		Indicate if PLF is Adjusted (1) or Not (0).
						Only if PLF feature is supported
0x6001	RECORD			**Setpoint Provider inputs**		
		1	REAL	Setpoint provider Working Setpoint		0-100%
						This is the active value being provided as a setpoint output
		2	REAL	Setpoint provider Working Setpoint in Engineering unit		When operating in engineering units, this is an indication of the working setpoint in engineering units.
						Only if Setpoint Engineering Units feature is supported,
		3	BOOL	Setpoint provider Ramp rate Status		Indicates whether the ramp is complete.
						If the RampRate is active this is set to NO (0). If the rate limit has completed or the DisRamp (0x7nn1.03) is set, this value will be YES (1).
						Only if setpoint ramp feature is supported,
0x6002	RECORD			**Control inputs**		
		1	REAL	Control Process Value		This is the main PV of the Power Controller. Could be V^2, I^2 or P depending on the control mode selected.
		2	REAL	Control Main Setpoint		This is the setpoint you primarily wish to control at. This is taken as a percentage of the NominalPV. For example if NominalPV is 52900 squared voltage and the MainSP set to 50% the controller will aim to regulate at 26450 squared voltage. However if Transfer or Limit is enabled that will supersede this setpoint.
		3	REAL	Control Transfer Process Value		if Transfer Enable this is the transfer PV
		4	REAL	Control Limit Process Value		if Limit Enable this is the limit PV
		7	BIT3	Control Status		Return information about loop state
						0: Main PV
						1: Transfer active (if transfer feature supported)
						2-3: Reserved
						4: Limit active (if limit feature supported)
						5-7: Reserved
		10	REAL	Control Output Power		Output demand of the controller in percent
		11	REAL	Control Phase Angle Output for PA reduction		if Limit Enable and Burst Mode selected this is the output of limit loops in percent.
						Only if Limit feature supported
0x6003	RECORD			**Modulator inputs**		
		1	REAL	Modulator Output		This output is a logic signal (0;100) requesting the thyristor to turn on and off. If the Mode is set to PA this is a phase angle demand in percent.
0x6004	RECORD			**Firing inputs**		
		1	BOOL	Firing Safety Ramp Status		Return information about safety ramp state
						0: Ramping
						1: Finished
						Only if Safety Ramp feature supported
	Output Data of the Module (0x7000 - 0x7FFF)					
0x7000	RECORD			**Network outputs**		

Index	ObjectCode	SI	DataType	Name	Default	Description
		1	BIT3	Network PLF Adjust request		0: No
						7: Request
						Partial load failure adjustment request. This will start a load impedance measurement which will be used as a reference for detecting a partial load failure. If the load impedance measurement was successful the PLF Adjusted (0x6nn0.25) will be set. The measurement will fail if the load voltage (V) is below 30% of nominal voltage or the current (I) is below 30% of nominal current. This input is edge sensitive. That is, if the request remains at a permanent high level, only the first edge from 0 to 1 will be taken into account.
						Only if PLF feature supported
0x7001	RECORD			**Setpoint Provider outputs**		
		1	BOOL	Setpoint provider Setpoint Selection		To select setpoint source
						0 : Local (can be modify by an operator from controller front fascia)
						1: Remote (cannot be modify by an operator from controller front fascia)
		2	BOOL	Setpoint provider Remote Setpoint selection		To select remote source
						0 : remote 1
						1 : remote 2
		3	BOOL	Setpoint provider Disable ramp		If setpoint ramp rate is enabled, this may be used to terminate the ramp and write the target setpoint directly to the WorkingSP. The Ramp rate status is set to YES in this case.
						Only if setpoint ramp feature is supported
		4	BOOL	Operator access to Setpoint		Operator access to setpoint from front fascia enabled (1) or disabled(0),
						Only if Operator access to setpoint feature supported.
		7	REAL	Setpoint provider Local Setpoint		Setpoint value in percent (0-100%)
		8	REAL	Setpoint provider Remote 1		Setpoint value in percent (0-100%)
		9	REAL	Setpoint provider Remote 2		Setpoint value in percent (0-100%)
0x7002	RECORD			**Control outputs**		
		5	REAL	Control Limit setpoint 1		if Limit Enable this is the limit SP.
						Only if Limit feature supported
0x7003	RECORD			**Modulator outputs**		
		1	USINT	Modulator Minimum On Time		Minimum on time for variable modulator. This is set in mains periods. At 50% demand from the modulator : Ton=Toff=MinOnTime and CycleTime=2 x MinOnTime=Modulation period
						Only if Burst Var modulation selected
		2	BOOL	Modulator Switch Burst to PA		This allows the user to select between the Burst mode (0), as specified by the Mode parameter and the forced PA mode (1).
						Only available if burst to PA switching feature supported.
		4	UINT	Modulator Cycle Time		Cycle time for fixed period modulator. This is set in mains periods.This is the equivalent to the modulation period.
						Scaling factor x1.
						Only if Burst Fix modulation selected
0x7004	RECORD			**Firing outputs**		
		1	BOOL	Firing Output Enable		This input enables (1) or disables (0) firing. Normally this could be linked to a digital input, in this case writing would have no effect.
		3	USINT	Firing Soft Start Duration		Soft start duration on each "on" burst in burst firing. This applies a phase angle ramp over the number of specified mains periods. Soft start is applied only when the output turns on and is only available in burst firing.
						0: soft start disabled
						Only if soft start feature supported
		4	USINT	Firing Soft End Duration		Soft stop duration on each "on" burst in burst firing. This applies a phase angle ramp at the end of the "on" period for the number of specified mains periods. Soft stop is applied only when the output turns off and is only available in burst firing.
						0: soft stop disabled
						Only if soft stop feature supported
		5	USINT	Firing Delay Triggering		Specifies the duration of the triggering delay when firing into a transformer load. This is used to minimize inrush current on transformer load . It can be configured to a value from 0 to 90 degrees phase angle. This is only for burst firing without soft start.
						Only if transformer load supported
		6	UDINT	SWIR Load Cooling Time		units: [ms]
						0: No dedicated firing strategy is applied on SWIR load
						1-60000: A dedicated firing strategy is applied at next firing if no power is applied on SWIR load for more than this amount of time
						Only if Heater Type SWIR selected (0x8nn1:13 = 1)
		7	USINT	SWIR Load Cooling Threshold		Firing angle in percent (0-25%) below which SWIR load is considered unpowered (cold).
						Only if Heater Type SWIR selected (0x8nn1:13 = 1) and SWIR Load Cooling Time (0x7nn4:6) value different from 0
	Configuration Data of the Module (0x8000 - 0x8FFF)					
0x8001	RECORD			**Network Settings**		
		2	REAL	Network Nominal Voltage		Line nominal voltage setting of power module.
		3	REAL	Network Nominal Current		Nominal current of the stack used for calibrating the current measurement in power module. This is limited by Maximum Current Rating Option (0x9nn0.2), which imposes the limit of the physical current.

Index	ObjectCode	SI	DataType	Name	Default	Description
		4	USINT	Network Voltage Dips Threshold		Voltage dips threshold to activate Network Dips Alarm. This is configured as a percentage difference between 2 consecutive half cycles. Each half cycle voltage measurement is integrated and at the end of each half cycle the last 2 voltage integrals are compared. The setting is specified as a percentage of vLineNominal.
		6	REAL	Network Frequency Drift Threshold		Frequency Drift Threshold. It may be adjusted by the user to a higher value, up to 5%, in case of the source transformer having a high impedance which will introduce important phase shifting in burst firing. The supply frequency is checked every half cycle, and if the percentage change between 1/2 cycles exceeds this threshold value, a Mains Frequency System Alarm is generated.
		7	UINT	Network Chop Off Threshold		Chop-off alarm will be active when a current threshold is exceeded for more than a pre-defined number of mains period. Scaling factor x1. Only if Chop off feature supported
		8	USINT	Network Chop Off Number		Definition of the number of mains period in which Chop Off events can occur before a Chop Off alarm is enabled. Only used with Chop Off Threshold . Only if Chop off feature supported
		9	USINT	Network Over Voltage Threshold		Defines the threshold for detecting an over voltage condition. This is specified as a percentage of VLineNominal. If Vline is above the threshold a OverVoltage alarm will occur.
		10	USINT	Network Under Voltage Threshold		Defines the threshold for detecting an under voltage condition. This is specified as a percentage of VLineNominal. If Vline is below the threshold an Under Voltage alarm will occur.
		11	USINT	Network PLF sensitivity		This defines how sensitive the partial load failure detection is. This is defined as a ratio between the load impedance for an adjusted PLF and the current impedance measurement. For example, for a load of 6 elements (in parallel) if the PLF sensitivity is set to 2, then a PLF alarm will occur if 3 of the 6 elements are broken. Only available if PLF feature supported
		12	UINT	Network Over Current threshold		Defines the threshold for detecting an over current condition. This is specified in percentage of INominal. If I is above the threshold a Over Current alarm will occur. Scaling factor x1
		13	UINT8	Heater Type		Defines the type of heater used in the load: 0: Resistive load 1: Short wave infra red (SWIR) 2: Silicon Carbide (Csi) 3: Molybdenum disilicate (MoSi2) 4-255:Reserved Only if Heater Type Supported
0x8002	RECORD			**Setpoint Provider Settings**		
		1	REAL	Setpoint Limit		Setpoint limit scalar. Applies a limiting scalar to the target setpoint, this applies as: Working setpoint = (SL x SP) / 100 where SL = Setpoint limit scalar and SP = Target setpoint Note: The setpoint limiting scalar is applied before the rate limit. Only if setpoint limit feature is supported
		1	REAL	Setpoint Ramp rate		Ramp rate for the setpoint. The WorkingSP will be rate limited by Ramp Rate until the target setpoint has been achieved, this is in units/sec. Whilst ramping Ramp Rate Status (0x6nn1.3) is set to NO; when the ramp is complete the Ramp Rate Status is set to YES. If this value is set to 0 (OFF) the rate limit is disabled. Note: The rate limit is applied after the setpoint limiting scalar. Only if setpoint ramp feature is supported
		3	BOOL	Setpoint Units		Define the units of the setpoint, this can either be percent (0) or engineering (1). In the case of engineering the Working SP is calulated as a percentage based on the value of the Setpoint High Range parameter. Only if setpoint Engineering Units feature is supported
		5	REAL	Setpoint High Range		If a setpoint is configured in engineering units this is the high range of the setpoint. This is then used to scale the setpoint into percent of HighRange. Only if setpoint Engineering Units feature is supported
0x8003	RECORD			**Control Settings**		

Index	ObjectCode	SI	DataType	Name	Default	Description
		1	UINT8	Control Mode		To select the process value to control. Value Options 0: Control Mode V^2 In this mode, the loop controls the squared value of the load voltage. 1: Control Mode I^2 In this mode, the loop controls the squared value of the load current. 2: Control Mode P (only if power feature supported) In this mode, the loop controls the true power delivered to the load. 3: Open Loop In this mode, the loop is kept opened. 4-255: Reserved
		3	REAL	Control Nominal PV		This is usually the nominal value for each of the control types. For example in V^2 control you must set Nominal PV to the nominal value you expect for V^2 this could be VloadNominal x VloadNominal.
		4	BOOL	Control Limit Enabled		This is used to enable the threshold limit feature for current limit. Only if limit feature supported.
		5	BOOL	Control Transfer Enabled		This is used to enable the transfer (proportional limit) to I^2. Only if Transfer feature supported
		7	REAL	Control Transfer Span		This is the span of operation for the transfer in the units of I^2. The transfer control point will be proportional to the MainSP, so for example if TransferSpan is set to $100A^2$ and the MainSP is set to 50% then the transfer control point will be $50A^2$. Only if Transfer feature supported.
		8	UINT8	Control Safe State Action		The control behavior in the safe state: 0: Control Output (0x6nn2 SI 0x0A) = 0, 1: Control Output (0x6nn2 SI 0x0A) normal processing, 2-255: Reserved
0x8004	RECORD			**Modulator Settings**		
		1	UINT8	Modulator Mode		Defines the mode of modulation in which to operate: 0: Intelligent half cycle (optional) In this mode, the minimum "on" time is half mains period. The modulator will eliminate the DC component. 1: Variable period modulation in burst firing (minimum on time) In this mode, the modulation period is variable with the "on" time being fixed to the minimum "on" time setting. This mode will run in full mains cycles only. 2: Fixed period modulation in burst firing (cycle time) In this mode, the modulation period is fixed with the "on" time being variable. This mode will run in full mains cycles only. 3: Logic firing In this mode, the output will switch according to the state of the input. The output will switch at the next zero-crossing or the next full cycle zero-crossing depending upon the logic mode setting. A hysteresis is applied to the input. An input signal greater than 50% will apply a logic 1, an input signal less than 25% will set a logic zero. 4: Phase angle (Bypass modulation) In this mode, no modulation is applied, the firing is phase angle. 5-255: Reserved
		2	BOOL	Modulator Logic Mode Cycle Selection		Determines when the output from the modulator block is stopped. This can be at the next full cycle or half cycle. 0: Half cycle logic mode Logic mode stop on the next zero crossing 1: Full cycle logic mode Logic Mode stop at the zero crossing of the next full cycle If Logic modulation selected
0x8005	RECORD			**Firing Settings**		
		1	USINT	Firing Safety Ramp		Defines the duration of the safety ramp, this only applies at startup. This is defined in mains periods from 0 to 255. The ramp is a phase angle ramp from 0 to the requested target phase angle or to 100% in burst firing. Safety ramp is not applicable to IHC (Intelligent Half Cycle). 0: Off Only if Safety Ramp feature supported
		2	BOOL	Firing Load Type		Define the type of load that is being fired into, for example this could be resistive or transformer coupled. 0: Resistive With this mode, only resistive loads should be connected directly to the power module 1: Transformer With this configuration, the load is connected to the power module through a transformer. Only if transformer load supported

Information Data of the Module (0x9000 - 0x9FFF)

Index	ObjectCode	SI	DataType	Name	Default	Description
0x9000	RECORD			**Power Module Configuration**		
		1	USINT	Power Module Type		Power Module Type identification: max current supported by HW (SCR/heatsink)
						units: [A]
						0-255
		2	USINT	Maximum Current Rating Option		Factory configured to indicate the maximum current supported by SW (chargeable option):
						units: [A]
						0-255
	Diagnosis Data of the Module (0xA000 - 0xAFFF)					
0xA000	RECORD			**Strategy Status**		
		1	UINT	Strategy Status Word		This is a bitmap parameter that indicates the status of the
						strategy. The description of each bit and its meaning when it is
						set is as follows:
						Bit 0 : Network is not firing
						Bit 1 : Network is not syncronised
						Bit 2-7 : Reserved
						Bit 8 : Strategy is in Standby Mode
						Bit 9 : Strategy is in Telemetry Mode
						Bit 10 : Strategy is in Calibration Mode
						Bit 11-15 : Reserved
Object area of the device						
	Semiconductor Device Profile Area					
0xF000	RECORD			**Semiconductor Device Profile**		
		1	UINT	Index distance	0x10	Index offset between PDO entries of two consecutive modules (for ETG.5003 = 0x10), e.g. 0x7000, 0x7010
		2	UINT	Maximum number of modules	0x01	Up to 255 modules are possible. A device can support less than this. This entry described the supported number of modules
0xF010	ARRAY			**Module Profile List**		
		1	UDINT		0x00000001	Each sub-index lists the profile-number of the corresponding module (hexadecimal representation, i.e. SDP 2000 is 0x07D0)Bit 15...0: SDP NumberBit 31...16:
						0x0000
						0x00000001 = Common device profile
						0x0000080C = Temperature controller
	Exception Handling Data					
0xF380	VAR		USINT	**Active Exception Status**		A condensed summary byte describing the collection of active device exceptions after corresponding masks (0xF3Ax) were applied. See CDP for additional
						information.
						Bit 0: Device Warning
						Bit 1: Manufacturer Warning
						Bit 2: Device Error
						Bit 3: Manufacturer Error
						Bit 4...7: Reserved
0xF381	RECORD			**Active Device Warning Details**		
		1	UDINT	Active Device Warning Details		Bit 0-4 : Reserved
						Bit 5 : Network TLF (Total Load Failure)
						Bit 6 : Reserved
						Bit 7 : Network PLF (Partial Load Failure)
						Bit 8 : Reserved
						Bit 9 : Network Over Volt
						Bit 10 : Network Under Volt
						Bit 11 : Network Pre Temp: Reserved
						Bit 12 : Network Over Current
						Bit 13-14 : Reserved
						Bit 15 : FaultDet External Input
						Bit 16 : Control Closed Loop
						Bit 17 : Control Transfer active
						Bit 18 : Control Limit active
						Bit 19-31 : Reserved
0xF383	RECORD			**Active Device Error Details**		

Index	ObjectCode	SI	DataType	Name	Default	Description
		1	UDINT	Active Device Error Details		Bit 0 : Network Missing mains
						Bit 1 : Network Thyristor Shot Circuit
						Bit 2 : Network Over Temp: Reserved
						Bit 3 : Network Dips
						Bit 4 : Network Frequency Fault
						Bit 5 : Reserved
						Bit 6 : Network Chop Off
						Bit 7-31 : Reserved
0xF387	RECORD			**Active Global Device Error Details**		
		1	UDINT	Active Global Device Error Details		Bit 0-13 : Reserved
						Bit 14 : AnalogIP Over Current
						Bit 15-23 : Reserved
						Bit 24 : Any bit in Global Status word 0 (FA07.1)
						Bit 25 : Any bit in Global Status word 1 (FA07.2)
						Bit 26 : Any bit in Global Status word 2 (FA07.3)
						Bit 27-31 : Reserved
0xF390	VARIABLE		USINT	**Latched Exception Status**		A condensed summary byte describing the collection of device exceptions after corresponding masks (0xF3Ax) were applied. See CDP for additional information.
						Bit 0 : Device Warning
						Bit 1: Manufacturer Warning
						Bit 2: Device Error
						Bit 3: Manufacturer Error
						Bit 4...7: Reserved
0xF391	RECORD			**Latched Device Warning Details**		
		1	UDINT	Latched Device Warning Details		Bit 0-4 : Reserved
						Bit 5 : Network TLF (Total Load Failure)
						Bit 6 : Reserved
						Bit 7 : Network PLF (Partial Load Failure)
						Bit 8 : Reserved
						Bit 9 : Network Over Volt
						Bit 10 : Network Under Volt
						Bit 11 : Network Pre Temp: Reserved
						Bit 12 : Network Over Current
						Bit 13-14 : Reserved
						Bit 15 : FaultDet External Input
						Bit 16 : Control Closed Loop
						Bit 17 : Control Transfer active
						Bit 18 : Control Limit active
						Bit 19-31 : Reserved
0xF393	RECORD			**Latched Device Error Details**		
		1	UDINT	Latched Device Error Details		Bit 0 : Network Missing mains
						Bit 1 : Network Thyristor Shot Circuit
						Bit 2 : Network Over Temp: Reserved
						Bit 3 : Network Dips
						Bit 4 : Network Frequency Fault
						Bit 5 : Reserved
						Bit 6 : Network Chop Off
						Bit 7-31 : Reserved
0xF397	RECORD			**Latched Global Device Error Details**		
		1	UDINT	Latched Global Device Error Details		Bit 0-13 : Reserved
						Bit 14 : AnalogIP Over Current
						Bit 15-23 : Reserved
						Bit 24 : Any bit in Global Status word 0 (FA07.1)
						Bit 25 : Any bit in Global Status word 1 (FA07.2)
						Bit 26 : Any bit in Global Status word 2 (FA07.3)
						Bit 27-31 : Reserved
0xF3A1	RECORD			**Device Warning Mask**		

Index	ObjectCode	SI	DataType	Name	Default	Description
		1	UDINT	Device Warning Mask	0x000716A0	Bitmask to include the corresponding device warning exception bits in the active and latched exception status objects (0xF380 bit 0 and 0xF390 bit 0), if the corresponding bit is TRUE.
						Bit 0-4 : Reserved
						Bit 5 : Network TLF (Total Load Failure)
						Bit 6 : Reserved
						Bit 7 : Network PLF (Partial Load Failure)
						Bit 8 : Reserved
						Bit 9 : Network Over Volt
						Bit 10 : Network Under Volt
						Bit 11 : Network Pre Temp: Reserved
						Bit 12 : Network Over Current
						Bit 13-14 : Reserved
						Bit 15 : FaultDet External Input
						Bit 16 : Control Closed Loop
						Bit 17 : Control Transfer active
						Bit 18 : Control Limit active
						Bit 19-31 : Reserved
0xF3A3	RECORD			**Device Error Mask**		
		1	UDINT	Device Error Mask	0x0000005F	Bitmask to include the corresponding device error exception bits in the active and latched exception status objects (0xF380 bit 2 and 0xF390 bit 2), if the corresponding bit is TRUE.
						Bit 0 : Network Missing mains
						Bit 1 : Network Thyristor Shot Circuit
						Bit 2 : Network Over Temp: Reserved
						Bit 3 : Network Dips
						Bit 4 : Network Frequency Fault
						Bit 5 : Reserved
						Bit 6 : Network Chop Off
						Bit 7-31 : Reserved
						Note: modifiying this mask can lead to unexpected behaviour of Power Controller
0xF3A7	RECORD			**Global Device Error Mask**		
		1	UDINT	Global Device Error Mask	0x07004000	Bitmask to include the corresponding device error exception bits in the active and latched exception status objects (0xF380 bit 2 and 0xF390 bit 2), always TRUE (no maskable).
						Bit 0-13 : Reserved
						Bit 14 : AnalogIP Over Current
						Bit 15-23 : Reserved
						Bit 24 : Config Error, i.e. any bit in Global Status word 0 (FA07.1) (non maskable)
						Bit 25 : Hardware Error, i.e. any bit in Global Status word 1 (FA07.2) (non maskable)
						Bit 26 : Data Error, i.e. any bit in Global Status word 2 (FA07.3) (non maskable)
						Bit 27-31 : Reserved
	Manufacturer Specific Device Data					
0xF500	RECORD			**User Value (real)**		
		1	REAL	UserVal1 value		
		2	REAL	UserVal2 value		
		3	REAL	UserVal3 value		
		4	REAL	UserVal4 value		
0xF501	RECORD			**User Value (integer)**		
		1	UINT	UserVal1 value		
		2	UINT	UserVal2 value		
		3	UINT	UserVal3 value		
		4	UINT	UserVal4 value		
	SDP Device Specific Inputs					
0xF600	RECORD			**Analog Interface**		Analog input of the device
		1	REAL	Analog Input Measured value in true units		Value measured at the instrument terminals and displayed in electrical units.
						Only if Analog Input supported
		2	REAL	Analog Input Scaled output value in process units		Scaled output value in process units. PV is clipped to RangeHigh on input going Over Range and to RangeLow on input going Under Range.
						Only if Analog Input supported
0xF601	RECORD			**Digital Interface**		Digital input of the device

Index	ObjectCode	SI	DataType	Name	Default	Description
		1	BOOL	Digital Input 1 Measured value		Value measured at the instrument terminals.
						When configured in "volt", a voltage higher than 4.4V is considered as an active level voltage , and a voltage lower than 2.2V is considered as a non-active level voltage.
						Only if Digital Input Supported
		2	BOOL	Digital Input 1 Current state		The current state of the digital input (after any inversion has been applied)
						Only if Digital Input Supported
		3	BOOL	Digital Input 2 Measured value		Value measured at the instrument terminals.
						When configured in "volt", a voltage higher than 4.4V is considered as an active level voltage , and a voltage lower than 2.2V is considered as a non-active level voltage.
						Only if Digital Input Supported
		4	BOOL	Digital Input 2 current state		The current state of the digital input (after any inversion has been applied)
						Only if Digital Input Supported
0xF602	RECORD			**Relay Interface**		
		1	BOOL	Relay Measured value		The measured value reflects the state of the relay coil, as follows:
						0 = not energised
						1 = energised
	CDP Device Specific Inputs					
0xF6F0	RECORD			**Input Latch Local Timestamp**		
		1	UDINT	Input Latch Local Timestamp		Local controller time corresponding to the input latch time in microseconds. It starts at zero on device power-up.
						If device has physical inputs: time of latching those inputs
						If device has no physical inputs: time immediately prior to writing to input SyncManager
	SDP Device Specific Outputs					
0xF700	RECORD			**Relay**		
		1	BOOL	Relay Process value		This is the desired value. The relay is configured as a fail-safe output.
						This means that the relay is energised when the PV is set to zero.
	SDP Device Specific Configuration Data					
0xF800	RECORD			**Analog Interfaces Settings**		
		1	UINT8	Analog Input Type		Specify input type in terms of volts or current and the range in which it is to be scaled.
						0: 0-10V
						1: 1-5V
						2: 2-10V
						3: 0-5V
						4: 0-20mA
						5: 4-20mA
						6-255: Reserved
						Only if Analog Input supported
		3	REAL	Analog Input Range High		High input range for scaling to process units used to scale the electrical value to a PV in process units. The PV is clipped to RangeHigh on the input going over range.
						Only if Analog Input supported
		4	REAL	Analog Input Range Low		Low input range for scaling to process units used to scale the electrical value to a PV in process units. The PV is clipped to RangeLow on the input going under range.
						Only if Analog Input supported
0xF801	RECORD			**Digital Interfaces Settings**		
		1	UINT8	Digital Input 1 Type		Specify the digital IO type, this can be input volts or contact closure.
						0: Logic Input
						1: Contact Input
						2-255: Reserved
						Only if Digital Input Supported
		2	BOOL	Digital Input 1 Invert		Invert the sense of the digital IO
						The PV is inverted relative to the electrical signal present on the instrument terminals (Measured Value).
						0: No
						1: Yes
						Only if Digital Input Supported
		4	UINT8	Digital Input 2 Type		Specify the digital IO type, this can be input volts or contact closure.
						0: Logic Input
						1: Contact Input
						2-255: Reserved
						Only if Digital Input Supported

Index	ObjectCode	SI	DataType	Name	Default	Description
		5	BOOL	Digital Input 2 Invert		Invert the sense of the digital IO
						The PV is inverted relative to the electrical signal present on the instrument terminals (Measured Value).
						0: No
						1: Yes
						Only if Digital Input Supported
0xF802	RECORD			**Relay Interface Settings**		
		1	UINT8	Relay Safe State Action		The relay behavior in the safe state:
						0: Relay not energised
						1: Relay normal processing
						2-255: Reserved
						Only if Relay supported
	SDP Device Specific Information Data					
0xF907	RECORD			**Device Configuration**		
		1	UINT8	Auxiliary Power Supply Type		Type of Auxiliary Power Supply:
						0: 24V
						1: 500V
						2-255: Reserved
		2	USINT	Feature Option		This is a bitmap parameter that indicates the feature option available:
						Bit 0: Current Limit
						Bit 1: Transfer
						Bit 2: Power Control
						Bit 3: Energy
						Bit 4: Graphical Wiring Editor
						Bit 5: Reserved
						Bit 6: OEM Security
						Bit 7: Reserved
						Only if feature option supported
		3	STRING(3)	FoE Configuration file version		Version of configuration file compatible for this device
						Format is "Vxx" where xx represents version digit (e.g. V01)
						Only if CFG file over FoE supported
	CDP Device Specific Information Data					
0xF9F0	VARIABLE		STRING(10)	**Manufacturer Serial Number**		A string representing the manufacturer's serial number for the device.NOTE: This may have the same value as 0x1018:04.
0xF9F1	ARRAY			**CDP Functional Generation Number**		
		1	UDINT		0x00000002	Common Device Profile Functional Generation Number
0xF9F2	ARRAY			**SDP Functional Generation Number**		
		1	UDINT		0x00000000	SDP functional generation number off nn-th module
						It shall be specified by each SDP.
0xF9F3	VARIABLE		STRING(17)	**Vendor Name**	Eurotherm Limited	This string identifies the supplier of the device.
0xF9F4	RECORD			**Semiconductor SDP Device Name**		
		1	STRING(3)	Semiconductor SDP Device Name	N/A	String identifying the device type of nn-th module as defined by the SDP.
0xF9F5	RECORD			**Output Identifier**		
		1	USINT	Output Identifier		Output identifier of nn-th module, This value can be mapped to both the RxPDO and TxPDO. The required function of the slave device is to store the value in memory as written by the host. The master can then read this value back through the TxPDO to ensure the RxPDO was received.
0xF9F6	VARIABLE		UDINT	**Time since power on**		This is the time the device has been currently powered on, in seconds, regardless of communication presence.
0xF9F8	VARIABLE		UDINT	**Firmware Update Functional Generation Number**	0x00000001	Firmware Update Functional Generation Number supported by the device.
						Value shall be specified by the Firmware Update Profile (ETG.5003-2)
						0x00000000: FW Update according to ETG.5003-2 not supported. A device cannot return this value and still be compliant with ETG.5003.1, as ETG.5003-2 compliance is mandatory.
	SDP Device Specific Diagnosis					
0xFA00	RECORD			**Analog Interface Diagnosis**		
		1	UINT	Analog input over current status		Analog Input over current bitfield
						bit 0: Analog Input 1 over current
						bit 1-15: Reserved
0xFA07	RECORD			**Global Status**		
		1	UDINT	Config Global Status		Config error bitfield (manufacturer specific)
		2	UDINT	Hardware Global Status		Hardware error bitfield (manufacturer specific)
		3	UDINT	Data Global Status		Data error bitfield (manufacturer specific)

Index	ObjectCode	SI	DataType	Name	Default	Description
	CDP Command Objects					
0xFBF0	RECORD			**Device Reset Command**		Execution of this command causes the device to emulate a complete power cycle. This includes an ESC reset. Some devices may require this reset to maintain a specific state not matching power cycle behavior for proper operation, per the SDP.
						NOTE: As a consequence of an ESC reset all of the subsequent devices are disconnected from the network.
						There are two versions of this command:
						Device Reset: Backup parameters will not change as a result of this reset. All setting parameters will revert to power-on defaults as a result of the reset.
						Factory Reset: All backup parameters will be changed to their as-shipped defaults. All setting parameters will revert to power-on defaults as a result of the reset.
		1	ARRAY [0..5] OF BYTE	Command		A device reset is initiated when the following byte sequence is sent:
						Byte 0: 0x74
						Byte 1: 0x65
						Byte 2: 0x73
						Byte 3: 0x65
						Byte 4: 0x72
						Byte 5: Device Standard Reset = 0x00, Factory Reset = 0x66
		2	USINT	Status		Supported values:
						0: Default value if the command has not been initiated. Not a supported value otherwise.
						1: Reserved
						2: last command completed, error, no response
						3: Reserved
						3-99: Reserved,
						100-200: indicates how much of the command has been executed (in %, 100 = 0%, 200 = 100%)
						201-254: Reserved,
						255: command is executing (if the percentage display is not supported)
		4	ARRAY [0..1] OF BYTE	Response		Byte 0: see Subindex 2
						Byte 1: Unused - Shall be zero
0xFBF1	RECORD			**Exception Reset Command**		Execution of this command clears the latched exceptions. Execution of this command may also optionally acknowledge device or SDP-specific exceptions (if specified) that would otherwise require a separate acknowledgement action to resume normal operation. If this is required, it shall be noted in the SDP or device documentation.
		1	ARRAY [0..4] OF BYTE	Command		A Latched Exception Reset is initiated when the following byte sequence is sent:
						Byte 0: 0x74
						Byte 1: 0x65
						Byte 2: 0x73
						Byte 3: 0x65
						Byte 4: 0x72
		2	USINT	Status		Supported values:
						0: last command completed, no error, no response
						1: Reserved
						2: last command completed, error, no response
						3: Reserved
						3-99: Reserved,
						100-200: indicates how much of the command has been executed (in %, 100 = 0%, 200 = 100%)
						201-254: Reserved,
						255: command is executing (if the percentage display is not supported)
		3	ARRAY [0..1] OF BYTE	Response		Byte 0: see Subindex 2
						Byte 1: Unused - Shall be zero
0xFBF2	RECORD			**Store Parameters Command**		Execution of this command will store all parameters to non-volatile memory. If a device automatically saves all non-volatile parameters at the time they are written, this command will not take any action. In the event that this command may interfere with the safe or expected functional operation of a device, it may be optionally restricted to functioning only in certain functional conditions while in OPERATIONAL state. If the command cannot be performed due to this operating condition, the Abort Code "0x08 00 00 21" shall be returned. In this case, documentation shall be supplied detailing the proper condition to execute this command. All devices shall be able to execute this command in PREOP without restriction.

Index	ObjectCode	SI	DataType	Name	Default	Description
		1	ARRAY [0..3] OF BYTE	Command		Read: Bit 0 = 1: slave saves the non-volatile parameters when writing 0xFBF2:01 with 0x65766173 Bit 1 = 1: slave saves the non-volatile parameters automatically when they are written Bit 2-31: reserved, shall be 0 Write: All writable, non-volatile values will be stored in non-volatile memory when the following is sent: Byte 0: 0x73 Byte 1: 0x61 Byte 2: 0x76 Byte 3: 0x65 If other values are written the Abort Code "0x06040043 General parameter incompatibility reason" shall be returned.
		2	USINT	Status		Supported values: 0: last command completed, no error, no response 1: Reserved 2: last command completed, error, no response 3: Reserved 3-99: Reserved, 100-200: indicates how much of the command has been executed (in %, 100 = 0%, 200 = 100%) 201-254: Reserved, 255: command is executing (if the percentage display is not supported)
		4	ARRAY [0..1] OF BYTE	Response		Byte 0: see Subindex 2 Byte 1: Unused - Shall be zero
0xFBF3	RECORD			**Calculate Checksum Command**		Execution of this command will calculate a checksum for all writable, non-volatile parameters as currently stored in non-volatile memory. In the event that this calculation may interfere with the safe or expected functional operation of a device, it may be optionally restricted to functioning only in certain functional conditions while in OPERATIONAL state. If the Checksum cannot be calculated the Abort Code "0x08 00 00 21" shall be returned. In this case, documentation shall be supplied detailing the proper condition to execute this command. All devices shall be able to calculate the checksum in PREOP without restriction.Even if the manufacturer chooses to store the checksum itself in non-voltile or volatile memory, the device shall perform the calcaulation at the time of executing this command and return this calculated value. This command shall therefore not return a value calculated prior to executing this command.
		1	ARRAY [0..3] OF BYTE	Command		Read: Returns information about the supported checksum type Bit 0 = 0: no non-volatile parameters supported Bit 0 = 1: non-volatile parameters supported, at least 1 of the defined bits 1-7 shall be set Bit 1 = 1: CRC-32 Bit 2 = 1: MD5 Bit 3 = 1: SHA-1 Bit 4-6: Reserved, shall be 0 Bit 7 = 1: other algorithm Bit 8...31: Reserved, shall be 0 Write: Checksum Type Selection and Start Calculation A write access to this subindex shall only set one bit true in Bit[0...7]. If other values are written the Abort Code "0x06040043 Parameter is incompatible" shall be returned. Bit 0 = 1: Use default checksum algorithm of the slave Bit 1 = 1: CRC-32 Bit 2 = 1: MD5 Bit 3 = 1: SHA-1 Bit 4-6: Reserved, shall be 0 Bit 7 = 1: other algorithm Bit 8...31: Reserved, shall be 0

Index	ObjectCode	SI	DataType	Name	Default	Description
		2	USINT	Status		Supported values:
						0: Default value if the command has not been initiated. Not a supported value otherwise.
						1: last command completed, no error, reply there
						2: last command completed, error, no response
						3: Reserved
						3-99: Reserved,
						100-200: indicates how much of the command has been executed (in %, 100 = 0%, 200 = 100%)
						201-254: Reserved,
						255: command is executing (if the percentage display is not supported)
		4	ARRAY [0..5] OF BYTE	Response		Byte 0: see Subindex 2
						Byte 1: Unused - Shall be zero
						Byte 2-n: Checksum return value. Size varies depending on checksum type used. The maximum length shall be 64 bytes.
0xFBF4	RECORD			**Load Parameters Command**		Execution of this command will load all parameters from non-volatile memory. If a device automatically saves all non-volatile parameters at the time they are written, this command will not take any action. In the event that this command may interfere with the safe or expected functional operation of a device, it may be optionally restricted to functioning only in certain functional conditions while in OPERATIONAL state. If the command cannot be performed due to this operating condition, the Abort Code "0x08 00 00 21" shall be returned. In this case, documentation shall be supplied detailing the proper condition to execute this command. All devices shall be able to execute this command in PREOP without restriction.
		1	ARRAY [0..3] OF BYTE	Command		Read:
						Bit 0 = 1: slave loads the non-volatile parameters when writing 0xFBF4:01 with 0x64616F6C
						Bit 1 = 1: slave saves the non-volatile parameters automatically when they are written
						Bit 2-31: reserved, shall be 0
						Write:
						All writable, non-volatile parameters will loaded from non-volatile memory when the following is sent:
						Byte 0: 0x6C
						Byte 1: 0x6F
						Byte 2: 0x61
						Byte 3: 0x64
						If other values are written the Abort Code "0x06040043 General parameter incompatibility reason" shall be returned.
		2	USINT	Status		Supported values:
						0: last command completed, no error, no response
						1: Reserved
						2: last command completed, error, no response
						3: Reserved
						3-99: Reserved,
						100-200: indicates how much of the command has been executed (in %, 100 = 0%, 200 = 100%)
						201-254: Reserved,
						255: command is executing (if the percentage display is not supported)
		4	ARRAY [0..1] OF BYTE	Response		Byte 0: see Subindex 2
						Byte 1: Unused - Shall be zero