TeSys® U Communication Variables

User's Manual

03/2009

1744082

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Failure to observe this information can result in injury or equipment damage.

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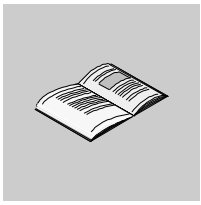

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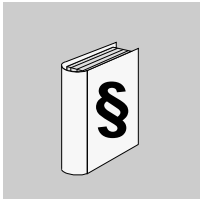
Safety Information



Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

CAUTION

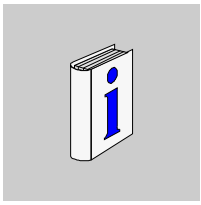
CAUTION, used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, **can result in** equipment damage.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and the installation, and has received safety training to recognize and avoid the hazards involved.

About the Book



At a Glance

Document Scope

This manual describes the communication variables of the TeSys U motor starters.

Communication variables are grouped according to the following criteria:
- Identification variables
- Statistics variables
- Monitoring variables
- Configuration variables
- Setting variables
- Control variables
- HMI variables

Each variable is described individually (definition, range of values, default value, etc.) and the variable address is provided for each available protocol.

Communication variables are either related to:
- a Power base (LUB••, LU2B••, LUS••, LU2S••), or
- a Controller base (LUTM••).

Available protocols and associated TeSys U communication modules are listed below:

Protocol	**TeSys U communication module (LULC••)**
Advantys STB	LULC15
CANopen	LULC08
DeviceNet	LULC09
Modbus	LULC032-033
Profibus DP	LULC07

Validity Note

This manual should be used in addition to the specific documentation provided for the communication modules, which may form part of the motor starter. These specific documents should be referred to when setting up hardware and software.

Related Documents

Title of Documentation	Reference Number
LULC032-LULC033 Modbus Module - User's Manual	1743234
LULC07 Profibus DP Module - User's Manual	1672610
LULC08 CANopen Module - User's Manual	1744084
LULC09 DeviceNet Module - User's Manual	1744085
LULC15 Advantys STB Module - User's Manual	1744083
LU•B/LU•S• TeSys U Starters - Instruction Sheet	1629984
LUTM• TeSys U Controller - User's Manual	1743233
LUTM• TeSys U Controller - Instruction Sheet	1743236
LUCM/LUCMT Multifunction Control Units - User's Manual	1743237
LUCM/LUCMT/LUCBT/LUCDT Control Units - Instruction Sheet	AAV40504
LUCA/LUCB/LUCC/LUCD Control Units - Instruction Sheet	AAV40503

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User Comments

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Communication Variables with a TeSys U Power Base

1

Introduction

Communication variables are listed in tables. Each one belongs to a group (such as, identification, statistics, or monitoring) and is associated to a power base with a control unit attached.

The associated TeSys U Power bases can be:
- LUB••
- LU2B••
- LUS••
- LU2S••

What's in this Chapter?

This chapter contains the following topics:

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Table Structure with a TeSys U Power Base

Table Format (Columns 1-6)

Variables are described in 6-column tables (from left to right):

1. Protocols addresses
2. Object types
3. Description/possible values
4. Control unit: LUCA
5. Control unit: LUCB, LUCC, LUCD
6. Control unit: LUCM

Column 1: Protocols Addresses

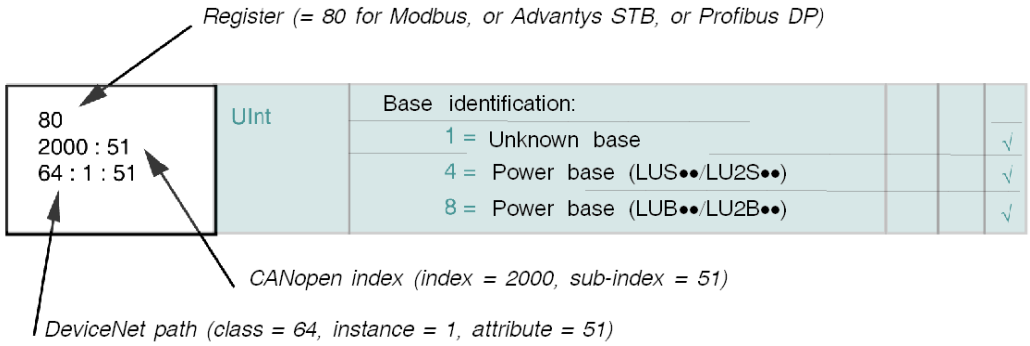
Logic addresses of protocols, for each communication variable, are:

- **Register** (format = decimal)
  → Modbus, with direct addressing.
  → Advantys STB, through PKW addressing.
  → Profibus DP, through PKW or DP V1 cyclic exchange. For Profibus DP V1 Acyclic Data Read/Write, the addressing is done block by block.
  For more information, see *LULC07 Profibus DP Communication Module User Manual*.
- **CANopen index** (format = Index : sub-index), with direct addressing or through PKW.
- **DeviceNet path** (format = Class : instance : attribute), with direct addressing or through PKW

NOTE:

- CANopen mappable objects are identified by the character **"M"** beside each address.
- Registers marked with a **"P"** denote Profibus parameters that are automatically transmitted by the master on network connection, if the local configuration is not preserved (that is, bit 601.7 = 0)

Example with variable 80:

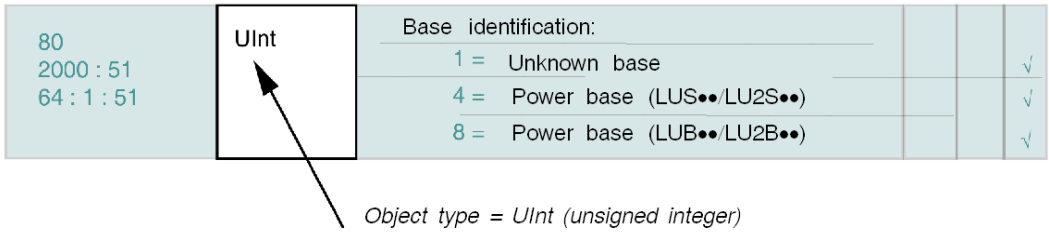


Column 2: Object Types

Object types can be:

- **Int**: signed integer using one register (16 bits)
- **UInt**: unsigned integer using one register (16 bits)
- **Word**: Set of 16 bits.

Example with variable 80:

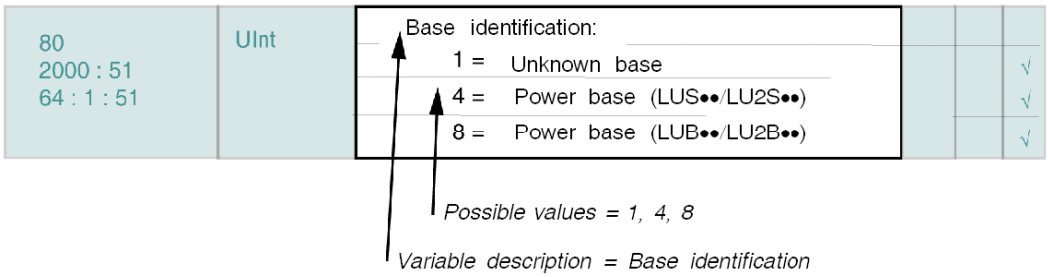


Column 3: Description / Values

The short description of the register can include:

- range of values,
- default value,
- minimum / maximum values.

Example with variable 80:



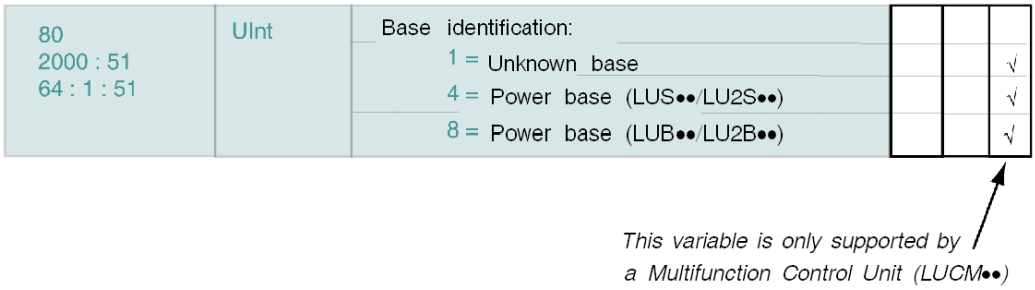
Columns 4 to 6: Control Units

The three possible Control unit types are:

- Column 4: Standard (LUCA••)
- Column 5: Advanced (LUCB••, LUCC••, LUCD••)
- Column 6: Multifunction (LUCM••).

If a feature or function is supported by the control unit, there is a checkmark in the corresponding cell. If not, the cell is empty.

Example with variable 80:



Group 1. Identification Variables with a TeSys U Power Base

Identification Variables

Group 1 Identification variables are described below.

Identification registers are divided into sub-groups:
- Module identification
- Control unit identification
- Base identification
- Current range

Registers

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Module identification - Read only					
50 2000 : 33 64 : 1 : 33	Word	Module commercial reference: MSB ASCII char 1, LSB ASCII char 2	√	√	√
51 2000 : 34 64 : 1 : 34	Word	Module commercial reference: MSB ASCII char 3, LSB ASCII char 4	√	√	√
52 2000 : 35 64 : 1 : 35	Word	Module commercial reference: MSB ASCII char 5, LSB ASCII char 6	√	√	√
53 2000 : 36 64 : 1 : 36	Word	Module commercial reference: MSB ASCII char 7, LSB ASCII char 8	√	√	√
54 2000 : 37 64 : 1 : 37	Word	Module commercial reference: MSB ASCII char 9, LSB ASCII char 10	√	√	√
55 2000 : 38 64 : 1 : 38	Word	Module commercial reference: MSB ASCII char 11, LSB ASCII char 12	√	√	√
61 2000 : 3E 64 : 1 : 3E	UInt	Module identification code: 0 = optional module unknown 1 = no optional module installed Other values = module identification code	√	√	√
62 2000 : 3F 64 : 1 : 3F	UInt	Module firmware revision: 1st version: XY, all other versions: XY000 X = major revision, Y = minor revision	√	√	√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Control unit identification - Read only					
64 2000 : 41 64 : 1 : 41	Word	Control unit commercial reference: MSB ASCII char 1, LSB ASCII char 2			√
65 2000 : 42 64 : 1 : 42	Word	Control unit commercial reference: MSB ASCII char 3, LSB ASCII char 4			√
66 2000 : 43 64 : 1 : 43	Word	Control unit commercial reference: MSB ASCII char 5, LSB ASCII char 6			√
67 2000 : 44 64 : 1 : 44	Word	Control unit commercial reference: MSB ASCII char 7, LSB ASCII char 8			√
68 2000 : 45 64 : 1 : 45	Word	Control unit commercial reference: MSB ASCII char 9, LSB ASCII char 10			√
69 2000 : 46 64 : 1 : 46	Word	Control unit commercial reference: MSB ASCII char 11, LSB ASCII char 12			√
70 2000 : 47 64 : 1 : 47	Word	Control unit serial number, register 1 *(Internal use only)*			√
71 2000 : 48 64 : 1 : 48	Word	Control unit serial number, register 2 *(Internal use only)*			√
72 2000 : 49 64 : 1 : 49	Word	Control unit serial number, register 3 *(Internal use only)*			√
73 2000 : 4A 64 : 1 : 4A	Word	Control unit serial number, register 4 *(Internal use only)*			√
74 2000 : 4B 64 : 1 : 4B	Word	Control unit serial number, register 5 *(Internal use only)*			√
75 2000 : 4C 64 : 1 : 4C	UInt	Control unit type:			
		1 = Unknown control unit	√	√	√
		2 = Standard control unit (LUCA)	√		
		4 = Advanced control unit (LUCB/C/D)		√	
		16 = Multifunction control unit (LUCM)			√
76 2000 : 4D 64 : 1 : 4D	UInt	Control unit firmware revision (XY): X = major revision, Y = minor revision			√
78 2000 : 4F 64 : 1 : 4F	UInt	Control unit sensor scale (x 0.1%)			√
79 2000 : 50 64 : 1 : 50	UInt	Control unit sensor maximum current (x 0.1A):			√
		6 = Adjustment range 0.15 to 0.6 A			
		14 = Adjustment range 0.35 to 1.4 A			
		50 = Adjustment range 1.25 to 5 A			
		120 = Adjustment range 3 to 12 A			
		180 = Adjustment range 4.5 to 18 A			
		320 = Adjustment range 8 to 32 A			

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Base identification - Read only					
80 2000 : 51 64 : 1 : 51	UInt	Base identification:			
		1 = Unknown base			√
		4 = Power base (LUS••/LU2S••)			√
		8 = Power base (LUB••/LU2B••)			√
81 2000 : 52 64 : 1 : 52	UInt	Power base range (x 0.1A):			
		120 = Power base 12A			√
		320 = Power base 32A			√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Current range - Read only					
96 2000 : 61 64 : 1 : 61	UInt	FLAmax (maximum FLA range, with FLA = Full Load Amps)			√

Group 2. Statistics Variables with a TeSys U Power Base

Statistics Variables

Group 2 Statistics variables are described below.

Statistics registers are divided into sub-groups:
- Global statistics
- Last trip statistics
- Trip N-1 statistics
- Trip N-2 statistics
- Trip N-3 statistics
- Trip N-4 statistics

Registers

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Global statistics - Read only					
100 2001 : 01 65 : 1 : 01	UInt	Short-circuit faults count			√
101 2001 : 02 65 : 1 : 02	UInt	Magnetic faults count			√
102 2001 : 03 65 : 1 : 03	UInt	Ground faults count			√
103 2001 : 04 65 : 1 : 04	UInt	Thermal faults count			√
104 2001 : 05 65 : 1 : 05	UInt	Long start faults count			√
105 2001 : 06 65 : 1 : 06	UInt	Jam faults count			√
106 2001 : 07 65 : 1 : 07	UInt	Phase imbalance faults count			√
107 2001 : 08 65 : 1 : 08	UInt	Under-current faults count			√
108 2001 : 09 65 : 1 : 09	UInt	Shunt faults count			√
109 2001 : 0A 65 : 1 : 0A	UInt	Communication loss on LUCM Modbus port faults count			√
110 2001 : 0B 65 : 1 : 0B	UInt	Control unit internal faults count			√
111 2001 : 0C 65 : 1 : 0C	UInt	Module identification faults count			√
112 2001 : 0D 65 : 1 : 0D	UInt	Module internal faults count			√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Global statistics - Read only					
113 2001 : 0E 65 : 1 : 0E	UInt	Module trip faults count			√
114 2001 : 0F 65 : 1 : 0F	UInt	Module drop-out faults count			√
115 2001 : 10 65 : 1 : 10	UInt	Auto-resets count			√
116 2001 : 11 65 : 1 : 11	UInt	Thermal warnings count			√
117 2001 : 12 65 : 1 : 12	UInt	Starts count (LSB)			√
118 2001 : 13 65 : 1 : 13	UInt	Starts count (MSB)			√
119 2001 : 14 65 : 1 : 14	UInt	Operating time (LSB)			√
120 2001 : 15 65 : 1 : 15	UInt	Operating time (MSB)			√
121 2001 : 16 65 : 1 : 17	Int	Maximum internal temperature (°C)			√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Last trip statistics - Read only					
150 2002 : 01 66 : 1 : 01	UInt	Last trip fault number			√
151 2002 : 02 66 : 1 : 02	UInt	Last trip FLA setting (%SensorMax)			√
152 2002 : 03 66 : 1 : 03	UInt	Last trip thermal level (%TripLevel)			√
153 2002 : 04 66 : 1 : 04	UInt	Last trip average current (%FLA)			√
154 2002 : 05 66 : 1 : 05	UInt	Last trip L1 current (%FLA)			√
155 2002 : 06 66 : 1 : 06	UInt	Last trip L2 current (%FLA)			√
156 2002 : 07 66 : 1 : 07	UInt	Last trip L3 current (%FLA)			√
157 2002 : 08 66 : 1 : 08	UInt	Last trip ground current (%FLAmin)			√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Trip N-1 statistics - Read only					
180 2002 : 1F 66 : 1 : 1F	UInt	N-1 trip fault number			√
181 2002 : 20 66 : 1 : 20	UInt	N-1 trip FLA setting (%SensorMax)			√
182 2002 : 21 66 : 1 : 21	UInt	N-1 trip thermal level (%TripLevel)			√
183 2002 : 22 66 : 1 : 22	UInt	N-1 trip average current (%FLA)			√
184 2002 : 23 66 : 1 : 23	UInt	N-1 trip L1 current (%FLA)			√
185 2002 : 24 66 : 1 : 24	UInt	N-1 trip L2 current (%FLA)			√
186 2002 : 25 66 : 1 : 25	UInt	N-1 trip L3 current (%FLA)			√
187 2002 : 26 66 : 1 : 26	UInt	N-1 trip ground current (%FLAmin)			√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Trip N-2 statistics - Read only					
210 2002 : 3D 66 : 1 : 3D	UInt	N-2 trip fault number			√
211 2002 : 3E 66 : 1 : 3E	UInt	N-2 trip FLA setting (%SensorMax)			√
212 2002 : 3F 66 : 1 : 3F	UInt	N-2 trip thermal level (%TripLevel)			√
213 2002 : 40 66 : 1 : 40	UInt	N-2 trip average current (%FLA)			√
214 2002 : 41 66 : 1 : 41	UInt	N-2 trip L1 current (%FLA)			√
215 2002 : 42 66 : 1 : 42	UInt	N-2 trip L2 current (%FLA)			√
216 2002 : 43 66 : 1 : 43	UInt	N-2 trip L3 current (%FLA)			√
217 2002 : 44 66 : 1 : 44	UInt	N-2 trip ground current (%FLAmin)			√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Trip N-3 statistics - Read only					
240 2002 : 5B 66 : 1 : 5B	UInt	N-3 trip fault number			√
241 2002 : 5C 66 : 1 : 5C	UInt	N-3 trip FLA setting (%SensorMax)			√
242 2002 : 5D 66 : 1 : 5D	UInt	N-3 trip thermal level (%TripLevel)			√
243 2002 : 5E 66 : 1 : 5E	UInt	N-3 trip average current (%FLA)			√
244 2002 : 5F 66 : 1 : 5F	UInt	N-3 trip L1 current (%FLA)			√
24 2002 : 60 66 : 1 : 60	UInt	N-3 trip L2 current (%FLA)			√
246 2002 : 61 66 : 1 : 61	UInt	N-3 trip L3 current (%FLA)			√
247 2002 : 62 66 : 1 : 62	UInt	N-3 trip ground current (%FLAmin)			√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Trip N-4 statistics - Read only					
270 2002 : 79 66 : 1 : 79	UInt	N-4 trip fault number			√
271 2002 : 7A 66 : 1 : 7A	UInt	N-4 trip FLA setting (%SensorMax)			√
272 2002 : 7B 66 : 1 : 7B	UInt	N-4 trip thermal level (%TripLevel)			√
273 2002 : 7C 66 : 1 : 7C	UInt	N-4 trip average current (%FLA)			√
274 2002 : 7D 66 : 1 : 7D	UInt	N-4 trip L1 current (%FLA)			√
275 2002 : 7E 66 : 1 : 7E	UInt	N-4 trip L2 current (%FLA)			√
276 2002 : 7F 66 : 1 : 7F	UInt	N-4 trip L3 current (%FLA)			√
277 2002 : 80 66 : 1 : 80	UInt	N-4 trip ground current (%FLAmin)			√

Group 3. Monitoring Variables with a TeSys U Power Base

Monitoring Variables

Group 3 Monitoring variables are described below.

Monitoring registers are divided into sub-groups:
- Monitoring of faults
- Monitoring of status
- Monitoring of communication module status
- Monitoring of warnings
- Monitoring of measurements

Registers

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Monitoring of faults - Read only					
450 2004 : 01 **M** 68 : 1 : 01	UInt	Time to automatically reset on a thermal fault (s)			√
451 2004 : 02 **M** 68 : 1 : 02	UInt	Code of the last fault, or of the fault that takes priority:	√	√	√
		0 = no fault			
		1 = short-circuit trip			
		2 = magnetic trip			
		3 = ground fault trip			
		4 = thermal overload fault			
		5 = long start fault			
		6 = mechanical locking (jam) fault			
		7 = phase imbalance fault			
		8 = underload fault			
		9 = shunt trip			
		10 = test trip (simulates thermal overload)			
		11 = communication loss on LUCM Modbus port fault (drop-out)			
		12 = communication loss on LUCM Modbus port fault (tripped)			
		13 = reserved			
		14 = module identification fault			
		15 = module not installed or not powered up			
		51 = LUCM internal temperature fault or broken sensor			
		52, 53, 54, 55, 56, 57, 58 = internal fault			
		59 = current flows while coil signal is off			
		60 = (L2 current) detected in 1-phase mode			
		61 = base trip not detected			
		62 = control wiring fault			
		63 = control overvoltage			
		100 = communication module internal fault			
		101 = communication fault with the LUCM multifunction control unit			
		102 = communication module internal fault			
		104 = communication module internal fault			
		105 = communication fault with the LUTM controller base			

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Monitoring of faults - Read only					
452 2004 : 03 **M** 68 : 1 : 03	Word	Fault register:			
	bit 0	Short-circuit fault		√	√
	bit 1	Magnetic fault		√	√
	bit 2	Ground fault			√
	bit 3	Thermal fault		√	√
	bit 4	Long start fault			√
	bit 5	Jam fault			√
	bit 6	Phase imbalance fault			√
	bit 7	Underload fault			√
	bit 8	Shunt trip fault			√
	bit 9	Test trip fault			√
	bit 10	Communication loss fault on LUCM Modbus port			√
	bit 11	Control unit internal fault		√	√
	bit 12	Module identification or internal communication fault			√
	bit 13	Module internal fault	√	√	√
	bit 14	Module trip fault	√	√	√
	bit 15	Module drop-out fault	√	√	√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Monitoring of status - Read only					
455 2004 : 06 **M** 68 : 1 : 06	Word	Status register:			
	bit 0	Ready: TeSys U product is ready to operate on command request. LUB••/2B•• = the rotary handle is turned to 'On' position, there is no fault (register 451 = 0), the LUCM - if associated - is not in 'configuration mode'. LUS••/2S•• = the push-button is pressed, there is no fault (register 451 = 0), the LUCM - if associated - is not in 'configuration mode'.	√	√	√
	bit 1	Pole status: closed	√	√	√
	bit 2	All faults	√	√	√
	bit 3	All warnings: When a fault related to current problems (such as ground fault, phase imbalance, long start,...) occurs, the corresponding warnings related to current information are reset.	√	√	√
	bit 4	Tripped: LUB••/2B•• = the rotary handle is turned to "Trip" position. LUS••/2S•• = the push-button is depressed.	√	√	√
	bit 5	Fault reset authorized		√	√
	bit 6	A1/A2 terminals powered up			√
	bit 7	Motor running with detection of current, if greater than 10% FLA		√	√
	bits 8-13	Average motor current: 32 = 100% FLA 63 = 200% FLA		√	√
	bit 14	*(not significant)*	√	√	√
	bit 15	Start in progress: 1 = ascending current is greater than 10% FLA 0 = descending current is lower than 150% FLA		√	√
456 2004 : 07 **M** 68 : 1 : 07	Word	Complementary status register:			
	bit 0	Fault will be auto-reset		√	√
	bit 1	Contactor paused, according to the product version (LUCM < V3.x)			√
	bits 2-15	*(not significant)*			

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Monitoring of communication module status - Read only					
457 2004 : 08 **M** 68 : 1 : 08	Word	Mechanical and power supply status register:			
	bit 0	Button position 'On' (0 = 'Off')	√	√	√
	bit 1	Button position 'Trip' (0 = 'Not tripped')	√	√	√
	bit 2	Contactor state 'On'	√	√	√
	bit 3	24Vdc power supply present on outputs	√	√	√
	bits 4-15	*(Not significant)*			
458 2004 : 09 **M** 68 : 1 : 09	Word	I/O Module status register:			
	bit 0	OA1 status	√	√	√
	bit 1	OA3 status	√	√	√
	bit 2	LO1 status	√	√	√
	bits 3-7	*(Not significant)*			
	bit 8	LI1 status	√	√	√
	bit 9	LI2 status	√	√	√
	bits 10-15	*(Not significant)*			

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Monitoring of warnings - Read only					
460 2004 : 0B **M** 68 : 1 : 0B	UInt	Warning number: When a fault related to current problems (such as ground fault, phase imbalance, long start,...) occurs, the corresponding warnings related to current information are reset.	√	√	√
		0 = no warning			
		1 = reserved			
		2 = reserved			
		3 = ground fault warning			
		4 = thermal overload warning			
		5 = long start warning			
		6 = mechanical locking (jam) warning			
		7 = phase imbalance warning			
		8 = underload warning			
		9 = reserved			
		10 = warning on communication loss on LUCM Modbus port			
		11 = warning on LUCM internal temperature			
		12 = module identification warning			
		13 = reserved			
		109 = warning on communication loss with the master			
		555 = communication module configuration warning			
461 2004 : 0C **M** 68 : 1 : 0C	Word	Warning register: When a fault related to current problems (such as ground fault, phase imbalance, long start,...) occurs, the corresponding warnings related to current information are reset.			
	bits 0-1	*(Not significant)*			
	bit 2	Ground fault warning			√
	bit 3	Thermal warning		√	√
	bit 4	Long start warning			√
	bit 5	Jam warning			√
	bit 6	Phase imbalance warning			√
	bit 7	Under-current warning			√
	bits 8-9	*(Not significant)*			
	bit 10	Communication loss on LUCM Modbus port			√
	bit 11	Internal temperature warning			√
	bit 12	Module identification or internal communication warning			√
	bits 13-14	*(Not significant)*			
	bit 15	Module warning	√	√	√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Monitoring of measurements - Read only					
465 2004 : 10 **M** 68 : 1 : 10	UInt	Thermal capacity level (%)			√
466 2004 : 11 **M** 68 : 1 : 11	UInt	Average motor current (x 0.1%FLA)		√	√
467 2004 : 12 **M** 68 : 1 : 12	UInt	L1 current (%FLA)			√
468 2004 : 13 **M** 68 : 1 : 13	UInt	L2 current (%FLA)			√
469 2004 : 14 **M** 68 1 : 14	UInt	L3 current (%FLA)			√
470 2004 : 15 **M** 68 : 1 : 15	UInt	Ground current (%FLAmin)			√
471 2004 : 16 **M** 68 : 1 : 16	UInt	Current imbalance coefficient (%)			√
472 2004 : 17 **M** 68 : 1 : 17	Int	Control unit internal temperature (°C)			√
473 2004 : 18 **M** 68 : 1 : 18	UInt	Configuration checksum	√	√	√

Group 4. Configuration Variables with a TeSys U Power Base

Configuration Variables

Group 4 Configuration variables are described below.

Registers

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
General configuration - Read/Write with motor stopped, main poles open					
600 2006 : 01 6A : 1 : 01	UInt	Define access code to lock LUCM keypad: 0000 = keypad not protected (default) 0001-9999 = keypad protected *Note: Perform this action once only. Refer to LUCM/LUCMT Multifunction Control Unit User's Guide, 8_Password menu.*			√
601 2006 : 02 6A : 1 : 02	Word	Configuration:			
	bit 0	Configuration menu: 0 = exit the configuration menu 1 = go to the configuration menu			√
	bit 1	*(Reserved)*			
	bit 2	TeSys U power base: 0 = Starter (LUS./LU2S.) 1 = Starter-controller (LUB./LU2B.)			√
	bit 3	TeSys U power base 12A			√
	bit 4	TeSys U power base 32A			√
	bits 5-6	*(Reserved)*			
	bit 7	Preserve local configuration, preventing network overwrite (LUCM ≥ V3.x)			√
	bits 8-12	*(Reserved)*			
	Motor type, bits 13-14 (one bit is set to 1):				
	bit 13	3-phase (default = 1)			√
	bit 14	1-phase			√
	bit 15	Auxiliary fan cooled (default = 0)			√
602 **P** 2006 : 03 6A : 1 : 03	Word	Control configuration:			
	Reset mode after thermal overload fault, bits 0-2 (one bit is set to 1):				
	bit 0	Manual (default value = 1)		√	√
	bit 1	Remote (or control unit keypad with LUCM)		√	√
	bit 2	Automatic		√	√
	bit 3	Control unit communication parity: 0 = none (default) - 1 = even			√
	bit 4	Communication control enabled/disabled: 0 = disabled - 1 = enabled (default)			√
	LUCM Modbus port watchdog, bits 5-8 (one bit is set to 1):				
	bit 5	Ignored (default value = 1)			√
	bit 6	Warning			√
	bit 7	Drop-out			√
	bit 8	Trip			√
	bits 9-15	*(Reserved)*			
603 2006 : 04 6A : 1 : 04	UInt	Control unit communication on LUCM Modbus port address min = 1 (default) - max = 247			√
604 2006 : 05 6A : 1 : 05	UInt	Control unit communication on LUCM Modbus port baud rate values = 1,200 - 4,800 - 9,600 - 19,200 (default)			√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
General configuration - Read/Write with motor stopped, main poles open					
605 2006 : 06 6A : 1 : 06	UInt	Overcurrent trip threshold (%FLA) min = 300 - max = 1,700 - step = 20 default value = 1,420			√
606 **P** 2006 : 07 6A : 1 : 07	UInt	Trip class (s) min = 5 (default) - max = 30 - step = 5			√
607 **P** 2006 : 08 6A : 1 : 08	UInt	Thermal reset time (s) min = 0 - max = 1,000 default value = 120			√
608 **P** 2006 : 09 6A : 1 : 09	UInt	Thermal reset threshold (%capacity) min = 35 - max = 95 - step = 5 default value = 75			√
609 **P** 2006 : 0A 6A : 1 : 0A	UInt	Thermal warning threshold (%capacity) min = 10 - max = 100 default value = 85 - disable value = 0			√
610 **P** 2006 : 0B 6A : 1 : 0B	UInt	Ground fault trip timeout (0.1s) min = 1 - max = 12 default value = 10			√
611 **P** 2006 : 0C 6A : 1 : 0C	UInt	Ground fault trip threshold (%FLAmin) min = 20 - max = 500 - step = 10 default value = 30 - disable value = 0			√
612 **P** 2006 : 0D 6A : 1 : 0D	UInt	Ground fault warning threshold (%FLAmin) min = 20 - max = 500 - step = 10 default value = 30 - disable value = 0			√
613 **P** 2006 : 0E 6A : 1 : 0E	UInt	Phase imbalance trip timeout at start-up (0.1s) min = 2 - max = 200 default value = 7			√
614 **P** 2006 : 0F 6A : 1 : 0F	UInt	Phase imbalance trip timeout while running (0.1s) min = 2 - max = 200 default value = 50			√
615 **P** 2006 : 10 6A : 1 : 10	UInt	Phase imbalance trip threshold (%) min = 10 - max = 30 default value = 10 - disable value = 0			√
616 **P** 2006 : 11 6A : 1 : 11	UInt	Phase imbalance warning threshold (%) min = 10 - max = 30 default value = 10 - disable value = 0			√
617 **P** 2006 : 12 6A : 1 : 12	UInt	Jam trip timeout (s) min = 1 - max = 30 default value = 5			√
618 **P** 2006 : 13 6A : 1 : 13	UInt	Jam trip threshold (%FLA) min = 100 - max = 800 - step = 10 default value = 200 - disable value = 0			√
619 **P** 2006 : 14 6A : 1 : 14	UInt	Jam warning threshold (%FLA) min = 100 - max = 800 - step = 10 default value = 200 - disable value = 0			√
620 **P** 2006 : 15 6A : 1 : 15	UInt	Undercurrent trip timeout (s) min = 1 - max = 200 default value = 10			√
621 **P** 2006 : 16 6A : 1 : 16	UInt	Undercurrent trip threshold (%FLA) min = 30 - max = 100 default value = 50 - disable value = 0			√
622 **P** 2006 : 17 6A : 1 : 17	UInt	Undercurrent warning threshold (%FLA) min = 30 - max = 100 default value = 50 - disable value = 0			√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
General configuration - Read/Write with motor stopped, main poles open					
623 **P** 2006 : 18 6A : 1 : 18	UInt	Long start trip timeout (s) min = 1 - max = 200 default value = 10			√
624 **P** 2006 : 19 6A : 1 : 19	UInt	Long start trip threshold (%FLA) min = 100 - max = 800 - step = 10 default value = 0 (disable)			√
625 2006 : 1A 6A : 1 : 1A	UInt	Long start warning threshold (%FLA) min = 100 - max = 800 - step = 10 default value = 100			√

Group 5. Setting Variables with a TeSys U Power Base

Setting Variables

Group 5 Setting variables are described below.

Setting registers are divided into sub-groups:

- Control unit setting
- Communication module code setting
- Communication module setting

Registers

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Control unit setting - Read / Write					
650 2007 : 01 **M** 6B : 1 : 01	Word	Display language: 1 = English (default value = 1) 2 = Français 3 = Español 4 = Deutsch 5 = Italiano			√
651 2007 : 02 **M** 6B : 1 : 02	Word	Display of running items:			
	bit 0	Display of average current (default = 1)			√
	bit 1	Display of thermal level (default = 1)			√
	bit 2	Display of L1 current			√
	bit 3	Display of L2 current			√
	bit 4	Display of L3 current			√
	bit 5	Display of ground current			√
	bit 6	Display of last trip			√
	bit 7	Display of phase imbalance (default = 1)			√
	bit 8	Display of operating time			√
	bits 9-15	*(Reserved)*			
652 **P** 2007 : 03 **M** 6B : 1 : 03	UInt	Full load amps setting (%FLAmax) min. 25 (default) - max. 100			√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Communication module code setting - Read / Write					
680 (Modbus only)	UInt	Communication module identification code setting: 0 = force automatic identification 1 = no communication module other = communication module identification code			√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Communication module setting - Read / Write					
681 2007 : 20 **M** 6B : 1 : 20	UInt	Communication module watchdog timeout (x 0.01s) min. = 1 - max. = 65,535 default value = 6,000	√	√	√
682 **P** 2007 : 21 **M** 6B : 1 : 21	UInt	Communication loss fallback strategy, 0-5: 0 = fallback mode disabled, communication loss not detected 1 = fallback mode frozen, no change in control state authorized when communication loss is detected, new command only taken into account after acknowledgment 2 = forced stop, outputs OA1=0 and OA3=0 (default) 3 = fallback mode unchanged, no change in control state authorized when communication loss is detected, new command can be taken into account before acknowledgment (703.3) 4 = forced operation forward, output OA1=1 (forward) and OA3=0 5 = forced operation reverse, output OA1=0 and OA3=1 (reverse)	√	√	√
684 **P** 2007 : 23 **M** 6B : 1 : 23	UInt	Inversion of output configuration:			
	bit 0	Invert output OA1	√	√	√
	bit 1	Invert output OA3	√	√	√
	bit 2	Invert output LO1	√	√	√
	bits 3-15	*(Reserved)*			
685 2007 : 24 **M** 6B : 1 : 24	UInt	Output LO1 configuration:			
	bits 0-7	Output LO1 assignment min. 0 - max. 45 default value = 2 *See Assignment of Outputs LO1, OA1, OA3, page 31*	√	√	√
	bits 8-15	*(Reserved)*			
686 2007 : 25 **M** 6B : 1 : 25	UInt	Outputs OA1 and OA3 configuration:			
	bits 0-7	Output OA1 assignment min. 0 - max. 45 default value = 12 See *Assignment of Outputs LO1, OA1, OA3, page 31*	√	√	√
	bits 8-15	Output OA3 assignment min. 0 - max. 45 default value = 13 See *Assignment of Outputs LO1, OA1, OA3, page 31*	√	√	√
688 2007 : 27 **M** 6B : 1 : 27	UInt	Recovery mode after a stop:			
	bit 0	In recovery mode, to avoid any unwanted motor restart after an event has generated a stop: - 24VDC cuts out then resumes (outputs OA1-OA3-LO1), - rotary button on the power base changes position then returns to Ready position, - loss then return of communication (according to fallback mode, reg. 682 = 2, 4 or 5). 0 = disabled 1 = enabled	√	√	√
	bits 1-15	*(Reserved)*			
690 2007 : 29 **M** 6B : 1 : 29	UInt	Control unit identification: 0 = automatic identification 1 = forced to LUB/C/D 2 = forced to LUCM		√	√

Assignment of Outputs LO1, OA1, OA3

Register 685 (for output LO1) and register 686 (for outputs OA1 and OA3) assign values. An output copies the state of a register bit.

Value	Description of assigned value	LUCA	LUCB/C/D	LUCM
0	The corresponding output is forced to 0 (0V)	√	√	√
1	The corresponding output is forced to 1 (24V)	√	√	√
2	State of register 700, bits 0-2: - 700.0 --> LO1 - 700.1 --> OA1 - 700.2 --> OA3	√	√	√
3	452.3 (Thermal overload fault)		√	√
4	461.3 (Thermal overload warning)		√	√
5	457.0 (System ready)	√	√	√
6	457.1	√	√	√
7	State of bit 457.2	√	√	√
8	The corresponding output copies the result of "Reflex stop 1: forward"	√	√	√
9	The corresponding output copies the result of "Reflex stop 1: reverse"	√	√	√
10	The corresponding output copies the result of "Reflex stop 2: forward"	√	√	√
11	The corresponding output copies the result of "Reflex stop 2: reverse"	√	√	√
12	The corresponding output copies the result of "Forward direction" (default OA1 value)	√	√	√
13	The corresponding output copies the result of "Reverse direction" (default OA3 value)	√	√	√
14	452.0 (Short-circuit fault)		√	√
15	452.1 (Overcurrent fault)		√	√
16	452.2 (Ground fault)			√
17	452.3 (Thermal overload fault)		√	√
18	452.4 (Long start fault)			√
19	452.5 (Mechanical locking (jam) fault)			√
20	452.6 (Phase imbalance fault)			√
21	452.7 (Underload fault)			√
22	452.8 (Shunt trip)			√
23	452.9 (Test trip)			√
24	452.10 (Communication loss fault on LUCM Modbus port)			√
25	452.11 (Control unit internal fault)		√	√
26	452.12 (Module identification or internal communication fault)			√
27	452.13 (Module internal fault)	√	√	√
28-31	*(Reserved)*			
32	461.2 (Ground fault warning)			√
33	461.3 (Thermal overload warning)		√	√
34	461.4 (Long start warning)			√
35	461.5 (Mechanical locking (jam) warning)			√
36	461.6 (Phase imbalance warning)			√
37	461.7 (Under-current warning)			√
38-39	*(Reserved)*			
40	461.10 (Communication loss on LUCM Modbus port)			√
41	461.11 (Internal temperature warning)			√
42	461.12 (Module identification or internal communication warning)			√
43-44	*(Reserved)*			
45	461.15 (Module warning)	√	√	√

Group 6. Control Variables with a TeSys U Power Base

Control Variables

Group 6 Control variables are described below.

Control registers are divided into sub-groups:
- Control of the communication module
- Control of the system and control unit

Registers

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Control of the communication module - Read / Write					
700 2008 : 01 **M** 6C : 1 : 01	Word	Output control:			
	bit 0	Control of output LO1 (if 685=2)	√	√	√
	bit 1	Control of output OA1 (if 686 LSB=2)	√	√	√
	bit 2	Control of output OA3 (if 686 MSB=2)	√	√	√
	bits 3-15	*(Reserved)*			
703 2008 : 04 **M** 6C : 1 : 04	Word	Control of communication module:			
	bits 0-2	*(Reserved)*			
	bit 3	Reset warning (for example, communication loss)	√	√	√
	bits 4-15	*(Reserved)*			

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Control of the system and control unit - Read / Write					
704 2008 : 05 **M** 6C : 1 : 05	Word	Control of the system:			
	bit 0	Run forward	√	√	√
	bit 1	Run reverse	√	√	√
	bit 2	*(Reserved)*			
	bit 3	Fault reset: if register 451=102 or 104, fault acknowledgment causes a return to communication module factory settings	√	√	√
	bit 4	*(Reserved)*			
	bit 5	Launch automatic thermal overload fault test: This test simulates a thermal overload. Bit 9 of Fault register 452 is set to 1 indicating "Test trip fault" and bit 3 of Warning register 461 is set to 1 indicating "Thermal warning".			√
	bits 6-11	*(Reserved)*			
	bit 12	Launch trip test via communication bus This test simulates a short circuit. Bit 8 of Fault register 452 is set to 1 indicating "Shunt trip fault".			√
	bits 13-15	*(Reserved)*			
705 2008 : 06 **M** 6C : 1 : 06	Word	Control of the control unit:			
	bit 0	Return to factory setting	√	√	√
	bit 1	Clear all statistics (counters included)			√
	bit 2	Reset thermal memory *Note: If you reset the thermal memory, the motor will not be properly thermally-protected.*			√
	bits 3-15	*(Reserved)*			

⚠ WARNING

AUTOMATIC RESTART OF THE MOTOR

The motor will automatically restart if the control bits 704.0 and 704.1 were not previously overwritten to zero by the PLC application, in case of a cyclic writing to register 704 and on the occurrence of one of the following events:

- Loss followed by restoration of the outputs power supply 24 VDC.
- Change in position of rotary knob on power base followed by return to Ready position.
- Communication break followed by restoration.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Group 7. HMI Monitoring Variables with a TeSys U Power Base

HMI Monitoring Variables

Group 7 HMI monitoring variables are described below.

HMI monitoring registers are divided into sub-groups:
- Monitoring of control unit
- Controlling of control unit keypad

Registers

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Monitoring of control unit - Read only					
1000 200B : 01 **M** 6F : 1 : 01	Word	Monitoring the keypad:			
	bit 0	Escape key			√
	bit 1	Up key			√
	bit 2	Down key			√
	bit 3	Enter key			√
	bits 4-15	*(Reserved)*			
1001 200B : 02 **M** 6F : 1 : 02	Word	Display content: MSB ASCII = char1 - LSB ASCII = char2			√
1002 200B : 03 **M** 6F : 1 : 03	Word	Display content: MSB ASCII = char3 - LSB ASCII = char4			√
1003 200B : 04 **M** 6F : 1 : 04	Word	Display content: MSB ASCII = char5 - LSB ASCII = char6			√
1004 200B : 05 **M** 6F : 1 : 05	Word	Display content: MSB ASCII = char7 - LSB ASCII = char8			√
1005 200B : 06 **M** 6F : 1 : 06	Word	Display content: MSB ASCII = char9 - LSB ASCII = char10			√
1006 200B : 07 **M** 6F : 1 : 07	Word	Display content: MSB ASCII = char11 - LSB ASCII = char12			√
1007 200B : 08 **M** 6F : 1 : 08	Word	Display content: MSB ASCII = char13 - LSB ASCII = char14			√
1008 200B : 09 **M** 6F : 1 : 09	Word	Display content: MSB ASCII = char15 - LSB ASCII = char16			√
1009 200B : 0A **M** 6F : 1 : 0A	Word	Display content: MSB ASCII = char17 - LSB ASCII = char18			√
1010 200B : 0B **M** 6F : 1 : 0B	Word	Display content: MSB ASCII = char19 - LSB ASCII = char20			√
1011 200B : 0C **M** 6F : 1 : 0C	Word	Display content: MSB ASCII = char21 - LSB ASCII = char22			√
1012 200B : 0D **M** 6F : 1 : 0D	Word	Display content: MSB ASCII = char23 - LSB ASCII = char24			√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCA	LUCB/C/D	LUCM
Controlling of control unit keypad - Read / Write					
1100 200C : 01 **M** 70 : 1 : 01	Word	Controlling the keypad:			
	bit 0	Escape key			√
	bit 1	Up key			√
	bit 2	Down key			√
	bit 3	Enter key			√
	bits 4-15	*(Reserved)*			

Communication Variables with a TeSys U Controller Base

2

Introduction

Communication variables are listed in tables. Each one belongs to a group (such as, identification, statistics, or monitoring) and is associated to a controller base, with a control unit attached.

The associated TeSys U Controller base is LUTM••.

What's in this Chapter?

This chapter contains the following topics:

Topic	Page
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Table Structure with a TeSys U Controller Base

Table Format (Columns 1-5)

Variables are described in 5-column tables (from left to right):

1. Protocol addresses
2. Object types
3. Description/possible values
4. Control unit: LUCBT, LUCDT
5. Control unit: LUCMT

Column 1: Protocols Addresses

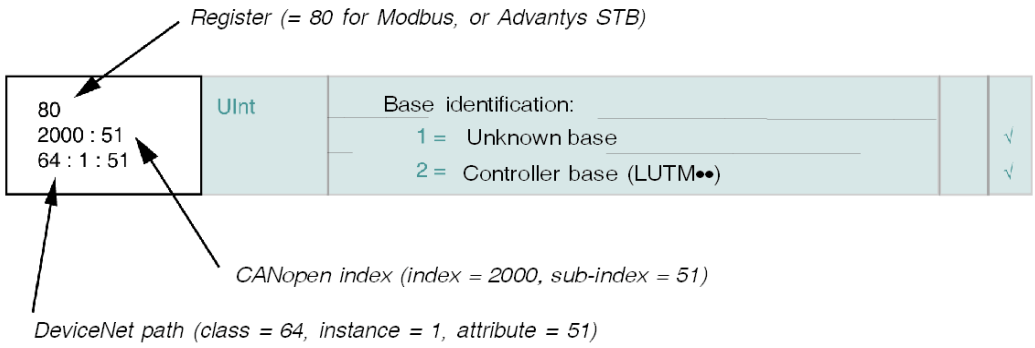
Logic addresses of protocols, for each communication variable, are:

- **Register** (format = decimal)
  → Modbus, with direct addressing.
  → Advantys STB, through PKW addressing.
- **CANopen index** (format = Index : sub-index), with direct addressing or through PKW.
- **DeviceNet path** (format = Class : instance : attribute), with direct addressing or through PKW

NOTE:

- CANopen mappable objects are identified by the character **"M"** beside each address.

Example with variable 80:

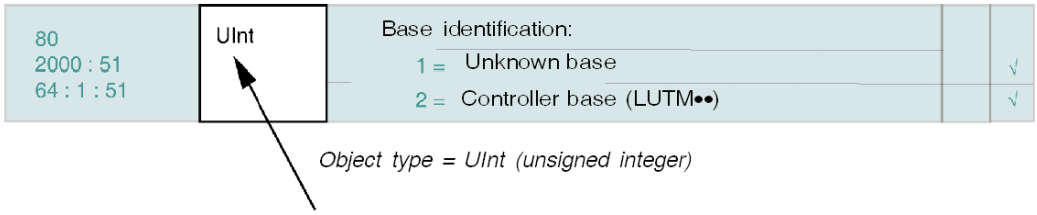


Column 2: Object Types

Object types can be:

- **Int**: signed integer using one register (16 bits)
- **UInt**: unsigned integer using one register (16 bits)
- **Word**: Set of 16 bits.

Example with variable 80:

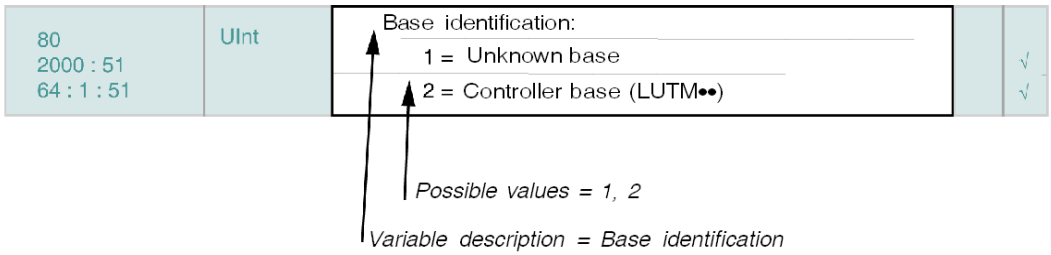


Column 3: Description / Values

The short description of the register can include:

- range of values,
- default value,
- minimum / maximum values.

Example with variable 80:



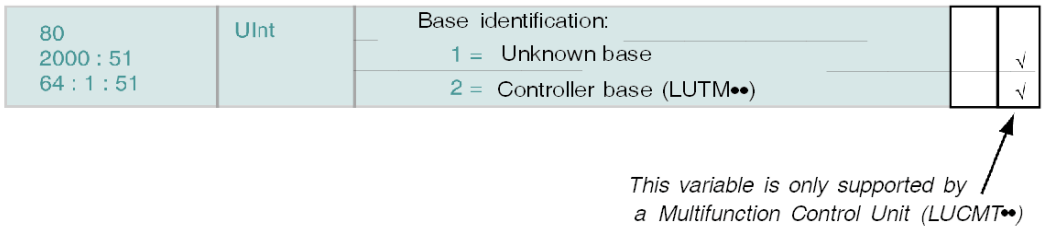
Columns 4 to 5: Control Units

The two possible Control unit types are:

- Column 4: Advanced (LUCBT••, LUCDT••)
- Column 5: Multifunction (LUCMT••)

If a feature or function is supported by the control unit, there is a checkmark in the corresponding cell. If not, the cell is empty.

Example with variable 80:



Group 1. Identification Variables with a TeSys U Controller Base

Identification Variables

Group 1 Identification variables are described below.

Identification registers are divided into sub-groups:
- Module identification
- Control unit identification
- Base identification
- Motor controller identification

Registers

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Module identification - Read only				
50 2000 : 33 64 : 1 : 33	Word	Module commercial reference: MSB ASCII char 1, LSB ASCII char 2	√	√
51 2000 : 34 64 : 1 : 34	Word	Module commercial reference: MSB ASCII char 3, LSB ASCII char 4	√	√
52 2000 : 35 64 : 1 : 35	Word	Module commercial reference: MSB ASCII char 5, LSB ASCII char 6	√	√
53 2000 : 36 64 : 1 : 36	Word	Module commercial reference: MSB ASCII char 7, LSB ASCII char 8	√	√
54 2000 : 37 64 : 1 : 37	Word	Module commercial reference: MSB ASCII char 9, LSB ASCII char 10	√	√
55 2000 : 38 64 : 1 : 38	Word	Module commercial reference: MSB ASCII char 11, LSB ASCII char 12	√	√
61 2000 : 3E 64 : 1 : 3E	UInt	Module identification code: 0 = optional module unknown 1 = no optional module installed Other values = module identification code	√	√
62 2000 : 3F 64 : 1 : 3F	UInt	Module firmware revision (XY000): X = major revision, Y = minor revision	√	√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Control unit identification - Read only				
64 2000 : 41 64 : 1 : 41	Word	Control unit commercial reference: MSB ASCII char 1, LSB ASCII char 2		√
65 2000 : 42 64 : 1 : 42	Word	Control unit commercial reference: MSB ASCII char 3, LSB ASCII char 4		√
66 2000 : 43 64 : 1 : 43	Word	Control unit commercial reference: MSB ASCII char 5, LSB ASCII char 6		√
67 2000 : 44 64 : 1 : 44	Word	Control unit commercial reference: MSB ASCII char 7, LSB ASCII char 8		√
68 2000 : 45 64 : 1 : 45	Word	Control unit commercial reference: MSB ASCII char 9, LSB ASCII char 10		√
69 2000 : 46 64 : 1 : 46	Word	Control unit commercial reference: MSB ASCII char 11, LSB ASCII char 12		√
70 2000 : 47 64 : 1 : 47	Word	Control unit serial number, register 1 *(Internal use only)*		√
71 2000 : 48 64 : 1 : 48	Word	Control unit serial number, register 2 *(Internal use only)*		√
72 2000 : 49 64 : 1 : 49	Word	Control unit serial number, register 3 *(Internal use only)*		√
73 2000 : 4A 64 : 1 : 4A	Word	Control unit serial number, register 4 *(Internal use only)*		√
74 2000 : 4B 64 : 1 : 4B	Word	Control unit serial number, register 5 *(Internal use only)*		√
75 2000 : 4C 64 : 1 : 4C	UInt	Control unit type:		
		1 = Unknown control unit	√	√
		4 = Advanced control unit (LUCBT/DT)	√	
		16 = Multifunction control unit (LUCMT)		√
76 2000 : 4D 64 : 1 : 4D	UInt	Control unit firmware revision: 1st version: XY, All other versions: XY000 X = major revision, Y = minor revision		√
78 2000 : 4F 64 : 1 : 4F	UInt	Control unit sensor scale ratio (x 0.1%)		√
79 2000 : 50 64 : 1 : 50	UInt	Control unit sensor maximum current (x 0.1A):		√
		105 = Adjustment range 3.5 to 10.5 A		
		157 = Adjustment range 5.2 to 15.7 A		
		315 = Adjustment range 10.5 to 31.5 A		
		525 = Adjustment range 17.5 to 52.5 A		
		1050 = Adjustment range 35 to 105 A		
		2100 = Adjustment range 70 to 210 A		
		4200 = Adjustment range 140 to 420 A		
		8400 = Adjustment range 280 to 840 A		

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Base identification - Read only				
80 2000 : 51 64 : 1 : 51	UInt	Base identification :		
		1 = Unknown base		√
		2 = Controller base (LUTM••)		√
81 2000 : 52 64 : 1 : 52	UInt	Controller base range (x 0.1A):		
		8400 = Controller base		√
82 2000 : 53 64 : 1 : 53	Word	Base commercial reference: MSB ASCII char 1, LSB ASCII char 2	√	√
83 2000 : 54 64 : 1 : 54	Word	Base commercial reference: MSB ASCII char 3, LSB ASCII char 4	√	√
84 2000 : 55 64 : 1 : 55	Word	Base commercial reference: MSB ASCII char 5, LSB ASCII char 6	√	√
85 2000 : 56 64 : 1 : 56	Word	Base commercial reference: MSB ASCII char 7, LSB ASCII char 8	√	√
86 2000 : 57 64 : 1 : 57	Word	Base commercial reference: MSB ASCII char 9, LSB ASCII char 10	√	√
87 2000 : 58 64 : 1 : 58	Word	Base commercial reference: MSB ASCII char 11, LSB ASCII char 12	√	√
93 2000 : 5E 64 : 1 : 5E	UInt	Base firmware revision (XY000): X = major revision, Y = minor revision	√	√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Motor controller identification - Read only				
95 2000 : 60 64 : 1 : 60	UInt	Current transformer (CT) ratio: min. =10 - max. = 62000		√
96 2000 : 61 64 : 1 : 61	UInt	FLAmax (maximum FLA range, with FLA = Full Load Amps)		√

Group 2. Statistics Variables with a TeSys U Controller Base

Statistics Variables

Group 2 Statistics variables are described below.

Statistics registers are divided into sub-groups:
- Global statistics
- Last trip statistics
- Trip N-1 statistics
- Trip N-2 statistics
- Trip N-3 statistics
- Trip N-4 statistics

Registers

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Global statistics - Read only				
100 2001 : 01 65 : 1 : 01	UInt	Short-circuit faults count		√
101 2001 : 02 65 : 1 : 02	UInt	Magnetic faults count		√
102 2001 : 03 65 : 1 : 03	UInt	Ground faults count		√
103 2001 : 04 65 : 1 : 04	UInt	Thermal faults count		√
104 2001 : 05 65 : 1 : 05	UInt	Long start faults count		√
105 2001 : 06 65 : 1 : 06	UInt	Jam faults count		√
106 2001 : 07 65 : 1 : 07	UInt	Phase imbalance faults count		√
107 2001 : 08 65 : 1 : 08	UInt	Under-current faults count		√
108 2001 : 09 65 : 1 : 09	UInt	Shunt faults count		√
109 2001 : 0A 65 : 1 : 0A	UInt	Communication loss on LUCMT Modbus port faults count		√
110 2001 : 0B 65 : 1 : 0B	UInt	Control unit internal faults count		√
111 2001 : 0C 65 : 1 : 0C	UInt	Module identification faults count		√
112 2001 : 0D 65 : 1 : 0D	UInt	Module internal faults count		√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Global statistics - Read only				
113 2001 : 0E 65 : 1 : 0E	UInt	Module trip faults count		√
114 2001 : 0F 65 : 1 : 0F	UInt	Module drop-out faults count		√
115 2001 : 10 65 : 1 : 10	UInt	Auto-resets count		√
116 2001 : 11 65 : 1 : 11	UInt	Thermal warnings count		√
117 2001 : 12 65 : 1 : 12	UInt	Starts count (LSB)		√
118 2001 : 13 65 : 1 : 13	UInt	Starts count (MSB)		√
119 2001 : 14 65 : 1 : 14	UInt	Operating time (LSB)		√
120 2001 : 15 65 : 1 : 15	UInt	Operating time (MSB)		√
121 2001 : 16 65 : 1 : 17	Int	Maximum internal temperature (°C)		√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Last trip statistics - Read only				
150 2002 : 01 66 : 1 : 01	UInt	Last trip fault number		√
151 2002 : 02 66 : 1 : 02	UInt	Last trip FLA setting (%SensorMax)		√
152 2002 : 03 66 : 1 : 03	UInt	Last trip thermal level (%TripLevel)		√
153 2002 : 04 66 : 1 : 04	UInt	Last trip average current (%FLA)		√
154 2002 : 05 66 : 1 : 05	UInt	Last trip L1 current (%FLA)		√
155 2002 : 06 66 : 1 : 06	UInt	Last trip L2 current (%FLA)		√
156 2002 : 07 66 : 1 : 07	UInt	Last trip L3 current (%FLA)		√
157 2002 : 08 66 : 1 : 08	UInt	Last trip ground current (%FLAmin)		√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Trip N-1 statistics - Read only				
180 2002 : 1F 66 : 1 : 1F	UInt	N-1 trip fault number		√
181 2002 : 20 66 : 1 : 20	UInt	N-1 trip FLA setting (%SensorMax)		√
182 2002 : 21 66 : 1 : 21	UInt	N-1 trip thermal level (%TripLevel)		√
183 2002 : 22 66 : 1 : 22	UInt	N-1 trip average current (%FLA)		√
184 2002 : 23 66 : 1 : 23	UInt	N-1 trip L1 current (%FLA)		√
185 2002 : 24 66 : 1 : 24	UInt	N-1 trip L2 current (%FLA)		√
186 2002 : 25 66 : 1 : 25	UInt	N-1 trip L3 current (%FLA)		√
187 2002 : 26 66 : 1 : 26	UInt	N-1 trip ground current (%FLAmin)		√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Trip N-2 statistics - Read only				
210 2002 : 3D 66 : 1 : 3D	UInt	N-2 trip fault number		√
211 2002 : 3E 66 : 1 : 3E	UInt	N-2 trip FLA setting (%SensorMax)		√
212 2002 : 3F 66 : 1 : 3F	UInt	N-2 trip thermal level (%TripLevel)		√
213 2002 : 40 66 : 1 : 40	UInt	N-2 trip average current (%FLA)		√
214 2002 : 41 66 : 1 : 41	UInt	N-2 trip L1 current (%FLA)		√
215 2002 : 42 66 : 1 : 42	UInt	N-2 trip L2 current (%FLA)		√
216 2002 : 43 66 : 1 : 43	UInt	N-2 trip L3 current (%FLA)		√
217 2002 : 44 66 : 1 : 44	UInt	N-2 trip ground current (%FLAmin)		√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Trip N-3 statistics - Read only				
240 2002 : 5B 66 : 1 : 5B	UInt	N-3 trip fault number		√
241 2002 : 5C 66 : 1 : 5C	UInt	N-3 trip FLA setting (%SensorMax)		√
242 2002 : 5D 66 : 1 : 5D	UInt	N-3 trip thermal level (%TripLevel)		√
243 2002 : 5E 66 : 1 : 5E	UInt	N-3 trip average current (%FLA)		√
244 2002 : 5F 66 : 1 : 5F	UInt	N-3 trip L1 current (%FLA)		√
245 2002 : 60 66 : 1 : 60	UInt	N-3 trip L2 current (%FLA)		√
246 2002 : 61 66 : 1 : 61	UInt	N-3 trip L3 current (%FLA)		√
247 2002 : 62 66 : 1 : 62	UInt	N-3 trip ground current (%FLAmin)		√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Trip N-4 statistics - Read only				
270 2002 : 79 66 : 1 : 79	UInt	N-4 trip fault number		√
271 2002 : 7A 66 : 1 : 7A	UInt	N-4 trip FLA setting (%SensorMax)		√
272 2002 : 7B 66 : 1 : 7B	UInt	N-4 trip thermal level (%TripLevel)		√
273 2002 : 7C 66 : 1 : 7C	UInt	N-4 trip average current (%FLA)		√
274 2002 : 7D 66 : 1 : 7D	UInt	N-4 trip L1 current (%FLA)		√
275 2002 : 7E 66 : 1 : 7E	UInt	N-4 trip L2 current (%FLA)		√
276 2002 : 7F 66 : 1 : 7F	UInt	N-4 trip L3 current (%FLA)		√
277 2002 : 80 66 : 1 : 80	UInt	N-4 trip ground current (%FLAmin)		√

Group 3. Monitoring Variables with a TeSys U Controller Base

Monitoring Variables

Group 3 Monitoring variables are described below.

Monitoring registers are divided into sub-groups:
- Monitoring of faults
- Monitoring of status
- Monitoring of communication module status
- Monitoring of warnings
- Monitoring of measurements

Registers

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Monitoring of faults - Read only				
450 2004 : 01 **M** 68 : 1 : 01	UInt	Time to automatically reset on a thermal fault (s)		√
451 2004 : 02 **M** 68 : 1 : 02	UInt	Code of the last fault, or of the fault that takes priority:	√	√
		0 = no fault		
		1 = short-circuit trip		
		2 = magnetic trip		
		3 = ground fault trip		
		4 = thermal overload fault		
		5 = long start fault		
		6 = mechanical locking (jam) fault		
		7 = phase imbalance fault		
		8 = underload fault		
		9 = shunt trip		
		10 = test trip (simulates thermal overload)		
		11 = communication loss on LUCMT Modbus port fault (drop-out)		
		12 = communication loss on LUCMT Modbus port fault (tripped)		
		13 = Reserved		
		14 = module identification fault		
		15 = module not installed or not powered up		
		51 = LUCMT internal temperature fault or broken sensor		
		52, 53, 54, 55, 56, 57, 58 = internal faults		
		60 = (L2 current) detected in 1-phase mode		
		61 = base trip not detected		
		62 = control wiring fault		
		63 = control overvoltage		
		100 = communication module internal fault		
		101 = communication fault with the LUCMT multifunction control unit		
		102 = communication module internal fault		
		104 = communication module internal fault		
		105 = communication fault with the LUTM controller base		
		110 = error identifying the control unit by the communication module		
		200 = LUTM internal fault		
		205 = internal communication fault between LUTM and communication module		
		206 = no control unit detected by the LUTM		

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Monitoring of faults - Read only				
452 2004 : 03 **M** 68 : 1 : 03	Word	Fault register:		
	bit 0	Short-circuit fault	√	√
	bit 1	Magnetic fault	√	√
	bit 2	Ground fault		√
	bit 3	Thermal fault	√	√
	bit 4	Long start fault		√
	bit 5	Jam fault		√
	bit 6	Phase imbalance fault		√
	bit 7	Underload fault		√
	bit 8	Shunt trip fault		√
	bit 9	Test trip fault		√
	bit 10	Communication loss fault on LUCMT Modbus port		√
	bit 11	Control unit internal fault	√	√
	bit 12	Module identification or internal communication fault		√
	bit 13	Module internal fault	√	√
	bit 14	Module trip fault	√	√
	bit 15	Module drop-out fault	√	√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Monitoring of status - Read only				
455 2004 : 06 **M** 68 : 1 : 06	Word	Status register:		
	bit 0	Ready: TeSys U product is ready to operate on command request. LUTM is powered-on, there is no fault (register 451 = 0), inputs I.6 (System fault) and I.7 (System ready) are set to 1, the LUCMT - if associated - is not in 'configuration mode'.	√	√
	bit 1	Input I.3 or I.4 powered-on	√	√
	bit 2	All faults	√	√
	bit 3	All warnings: When a fault related to current problems (such as ground fault, phase imbalance, long start,...) occurs, the corresponding warnings related to current information are reset.	√	√
	bit 4	Tripped, if thermal overload fault reset mode = manual	√	√
	bit 5	Fault reset authorized	√	√
	bit 6	I.1 and I.2 powered-on		√
	bit 7	Motor running with detection of a current, if greater than 10% FLA	√	√
	bits 8-13	Average motor current: 32 = 100% FLA 63 = 200% FLA	√	√
	bit 14	In local control	√	√
	bit 15	Start in progress: 1 = ascending current is greater than 10% FLA 0 = descending current is lower than 150% FLA For LUCBT/DT, timeout is 10s. For LUCMT, refer to LUCM/MT User's Guide.	√	√
456 2004 : 07 **M** 68 : 1 : 07	Word	Complementary status register:		
	bit 0	Fault will be auto-reset	√	√
	bit 1	Contactor paused (only if the product version of LUCMT < V3.x)		√
	bits 2-15	*(Not significant)*		

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Monitoring of communication module status - Read only				
457 2004 : 08 **M** 68 : 1 : 08	Word	Mechanical and power supply status register:		
	bit 0	System ready (I.7 = 1)	√	√
	bit 1	I.6 status	√	√
	bit 2	Contactor state 'On' (I.3 = 1 or I.4 = 1)	√	√
	bit 3	24 VDC power supply present on output	√	√
	bits 4-15	*(Not significant)*		
458 2004 : 09 **M** 68 : 1 : 09	Word	I/O Module status register:		
	bit 0	OA1 status	√	√
	bit 1	OA3 status	√	√
	bit 2	LO1 status	√	√
	bits 3-7	*(Reserved)*		
	bit 8	LI1 status	√	√
	bit 9	LI2 status	√	√
	bits 10-15	*(Not significant)*		
459 2004 : 0A **M** 68 : 1 : 0A	Word	I/O status on a controller base:		
	bit 0	I.1 = local control of output 13	√	√
	bit 1	I.2 = local control of output 23	√	√
	bit 2	I.3 = contactor status on output 13	√	√
	bit 3	I.4 = contactor status on output 23	√	√
	bit 4	I.5 = input status (reset)	√	√
	bit 5	I.6 = input status (external fault)	√	√
	bit 6	I.7 = input status (system ready)	√	√
	bit 7	I.8 = input status (free)	√	√
	bit 8	I.9 = input status (free)	√	√
	bit 9	I.10 = input status in local/remote mixed mode if 683=2 only	√	√
	bits 10-11	*(Not significant)*		
	bit 12	Output 13 status (1=O1 closed)	√	√
	bit 13	Output 23 status (1=O2 closed)	√	√
	bit 14	Outputs 95-96 and 97-98 status (1=95-96 closed and 97-98 opened)	√	√
	bit 15	Output 05-06 status (1=05-06 closed)	√	√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Monitoring of warnings - Read only				
460 2004 : 0B **M** 68 : 1 : 0B	UInt	Warning number: When a fault related to current problems (such as ground fault, phase imbalance, long start, ...) occurs, the corresponding warnings related to current information are reset.	√	√
		0 = no warning		
		1 = reserved		
		2 = reserved		
		3 = ground fault warning		
		4 = thermal overload warning		
		5 = long start warning		
		6 = mechanical locking (jam) warning		
		7 = phase imbalance warning		
		8 = underload warning		
		9 = reserved		
		10 = warning on communication loss on LUCMT Modbus port		
		11 = warning on LUCMT internal temperature		
		12 = module identification warning		
		13 = reserved		
		109 = warning on communication loss with the master		
		200 = LUTM internal fault		
		201 = LUTM external fault indicated by I.6 changing to 0		
		555 = communication module configuration warning		
461 2004 : 0C **M** 68 :1 : 0C	Word	Warning register: When a fault related to current problems (such as ground fault, phase imbalance, long start, ...) occurs, the corresponding warnings related to current information are reset.		
	bits 0-1	*(Not significant)*		
	bit 2	Ground fault warning		√
	bit 3	Thermal warning	√	√
	bit 4	Long start warning		√
	bit 5	Jam warning		√
	bit 6	Phase imbalance warning		√
	bit 7	Under-current warning		√
	bits 8-9	*(Not significant)*		
	bit 10	Communication loss on LUCMT Modbus port		√
	bit 11	Internal temperature warning		√
	bit 12	Module identification or internal communication warning		√
	bits 13-14	*(Not significant)*		
	bit 15	Module warning	√	√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Monitoring of measurements - Read only				
465 2004 : 10 **M** 68 : 1 : 10	UInt	Thermal capacity level (%)		√
466 2004 : 11 **M** 68 : 1 : 11	UInt	Average motor current (x 0.1%FLA)	√	√
467 2004 : 12 **M** 68 : 1 : 12	UInt	L1 current (%FLA)		√
468 2004 : 13 **M** 68 : 1 : 13	UInt	L2 current (%FLA)		√
469 2004 : 14 **M** 68 : 1 : 14	UInt	L3 current (%FLA)		√
470 2004 : 15 **M** 68 : 1 : 15	UInt	Ground current (%FLAmin)		√
471 2004 : 16 **M** 68 : 1 : 16	UInt	Current imbalance coefficient (%)		√
472 2004 : 17 **M** 68 : 1 : 17	Int	Control unit internal temperature (°C)		√
473 2004 : 18 **M** 68 : 1 : 18	UInt	Configuration checksum	√	√

Group 4. Configuration Variables with a TeSys U Controller Base

Configuration Variables

Group 4 Configuration variables are described below.

Registers

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
General configuration - Read/Write with motor stopped, main poles open				
600 2006 : 01 6A : 1 : 01	UInt	Define an access code to lock LUCMT keypad: 0000 = keypad not protected (default) 0001-9999 = keypad protected *Note: Perform the action once only. Refer to LUCM/LUCMT Multifunction Control Unit User's Guide, 8_Password menu.*		√
601 2006 : 02 6A : 1 : 02	Word	Configuration:		
	bit 0	Configuration menu: 0 = exit the configuration menu 1 = go to the configuration menu		√
	bit 1	TeSys U base type: 1 = controller base		√
	bits 2-6	*(Reserved)*		√
	bit 7	Preserve local configuration, preventing network overwrite (LUCMT ≥ V3.x)		√
	bits 8-12	*(Reserved)*		
	Motor type, bits 13-14 (one bit is set to 1):			
	bit 13	3-phase (default = 1)		√
	bit 14	1-phase		√
	bit 15	Auxiliary fan cooled (default = 0)		√
602 2006 : 03 6A : 1 : 03	Word	Control configuration:		
	Reset mode after thermal overload fault, bits 0-2 (one bit is set to 1):			
	bit 0	Manual (default value = 1)	√	√
	bit 1	Remote (or control unit keypad with LUCMT)	√	√
	bit 2	Automatic	√	√
	bit 3	Control unit communication parity: 0 = none (default) - 1 = even		√
	bit 4	Communication control enabled/disabled: 0 = disabled - 1 = enabled (default)		√
	LUCMT Modbus port watchdog, bits 5-8 (one bit is set to 1):			
	bit 5	Ignored (default value = 1)		√
	bit 6	Warning		√
	bit 7	Drop-out		√
	bit 8	Trip		√
	bits 9-15	*(Reserved)*		
603 2006 : 04 6A : 1 : 04	UInt	Control unit communication on LUCMT Modbus port address min = 1 (default) - max = 247		√
604 2006 : 05 6A : 1 : 05	UInt	Control unit communication on LUCMT Modbus port baud rate values = 1,200 - 4,800 - 9,600 - 19,200 (default)		√
605 2006 : 06 6A : 1 : 06	UInt	Overcurrent trip threshold (%FLA) min = 300 - max = 1,700 - step = 20 default value = 1,420		√
606 2006 : 07 6A : 1 : 07	UInt	Trip class (s) min = 5 (default) - max = 30 - step = 5		√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
General configuration - Read/Write with motor stopped, main poles open				
607 2006 : 08 6A : 1 : 08	UInt	Thermal reset time (s) min = 0 - max = 1,000 default value = 120		√
608 2006 : 09 6A : 1 : 09	UInt	Thermal reset threshold (%capacity) min = 35 - max = 95 - step = 5 default value = 75		√
609 2006 : 0A 6A : 1 : 0A	UInt	Thermal warning threshold (%capacity) min = 10 - max = 100 default value = 85 - disable value = 0		√
610 2006 : 0B 6A : 1 : 0B	UInt	Ground fault trip timeout (0.1s) min = 1 - max = 12 default value = 10		√
611 2006 : 0C 6A : 1 : 0C	UInt	Ground fault trip threshold (%FLAmin) min = 20 - max = 500 - step = 10 default value = 30 - disable value = 0		√
612 2006 : 0D 6A : 1 : 0D	UInt	Ground fault warning threshold (%FLAmin) min = 20 - max = 500 - step = 10 default value = 30 - disable value = 0		√
613 2006 : 0E 6A : 1 : 0E	UInt	Phase imbalance trip timeout at start-up (0.1s) min = 2 - max = 200 default value = 7		√
614 2006 : 0F 6A : 1 : 0F	UInt	Phase imbalance trip timeout while running (0.1s) min = 2 - max = 200 default value = 50		√
615 2006 : 10 6A : 1 : 10	UInt	Phase imbalance trip threshold (%) min = 10 - max = 30 default value = 10 - disable value = 0		√
616 2006 : 11 6A : 1 : 11	UInt	Phase imbalance warning threshold (%) min = 10 - max = 30 default value = 10 - disable value = 0		√
617 2006 : 12 6A : 1 : 12	UInt	Jam trip timeout (s) min = 1 - max = 30 default value = 5		√
618 2006 : 13 6A : 1 : 13	UInt	Jam trip threshold (%FLA) min = 100 - max = 800 - step = 10 default value = 200 - disable value = 0		√
619 2006 : 14 6A : 1 : 14	UInt	Jam warning threshold (%FLA) min = 100 - max = 800 - step = 10 default value = 200 - disable value =		√
620 2006 : 15 6A : 1 : 15	UInt	Undercurrent trip timeout (s) min = 1 - max = 200 default value = 10		√
621 2006 : 16 6A : 1 : 16	UInt	Undercurrent trip threshold (%FLA) min = 30 - max = 100 default value = 50 - disable value = 0		√
622 2006 : 17 6A : 1 : 17	UInt	Undercurrent warning threshold (%FLA) min = 30 - max = 100 default value = 50 - disable value = 0		√
623 2006 : 18 6A : 1 : 18	UInt	Long start trip timeout (s) min = 1 - max = 200 default value = 10		√
624 2006 : 19 6A : 1 : 19	UInt	Long start trip threshold (%FLA) min = 100 - max = 800 - step = 10 default value = 0 (disable)		√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
General configuration - Read/Write with motor stopped, main poles open				
625 2006 : 1A 6A : 1 : 1A	UInt	Long start warning threshold (%FLA) min = 100 - max = 800 - step = 10 default value = 100		√
626-27 2006 : 1B-C 6A : 1 : 1B-C	UInt	*(Reserved)*		√
628 2006 : 1D 6A : 1 : 1D	UInt	Current transformer (CT) primary min = 1 - max = 65,535		√
629 2006 : 1E 6A : 1 : 1E	UInt	Current transformer (CT) secondary min = 1 (default) - max = 500		√
630 2006 : 1F 6A : 1 : 1F	UInt	Current transformer (CT) external passes min = 1 (default) - max = 100		√

Group 5. Setting Variables with a TeSys U Controller Base

Setting Variables

Group 5 Setting variables are described below.

Setting registers are divided into sub-groups:
- Control unit setting
- Communication module code setting
- Communication module setting

Registers

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Control unit setting - Read / Write				
650 2007 : 01 **M** 6B : 1 : 01	Word	Display language: 1 = English (default) 2 = Français 3 = Español 4 = Deutsch 5 = Italiano		√
651 2007 : 02 **M** 6B : 1 : 02	Word	Display of running items:		
	bit 0	Display of average current (default = 1)		√
	bit 1	Display of thermal level (default = 1)		√
	bit 2	Display of L1 current		√
	bit 3	Display of L2 current		√
	bit 4	Display of L3 current		√
	bit 5	Display of ground current		√
	bit 6	Display of last trip		√
	bit 7	Display of phase imbalance (default = 1)		√
	bit 8	Display of operating time		√
	bits 9-15	*(Reserved)*		
652 2007 : 03 **M** 6B : 1 : 03	UInt	Full load amps setting (%FLAmax) min. 33 (default) - max. 100		√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Communication module code setting - Read / Write				
680 (Modbus only)	UInt	Communication module identification code setting: 0 = force automatic identification 1 = no communication module other = communication module identification code		√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Communication module setting - Read / Write				
681 2007 : 20 **M** 6B : 1 : 20	UInt	Communication module watchdog timeout (s) min. 1 - max. 65,531 default value = 6,000	√	√
682 2007 : 21 **M** 6B : 1 : 21	UInt	Communication loss fallback strategy, 0-5: 0 = fallback mode disabled, communication loss not detected 1 = fallback mode frozen, no change in control state authorized when communication loss is detected, new command only taken into account after acknowledgment 2 = forced stop, outputs OA1=0 and OA3=0 (default) 3 = fallback mode unchanged, no change in control state authorized when communication loss is detected, new command can be taken into account before acknowledgment (703.3) 4 = forced operation forward, output OA1=1 (forward) and OA3=0 5 = forced operation reverse, output OA1=0 and OA3=1 (reverse)	√	√
683 2007 : 22 **M** 6B : 1 : 22	UInt	Local / remote control: 0 = remote mode (via the bus) 1 = local mode (default) 2 = remote/local mode managed by I.10: - remote if I.10=0 - local if I.10=1	√	√
684 2007 : 23 **M** 6B 1 : 23	UInt	Inversion of output configuration:		
	bit 0	Invert output OA1	√	√
	bit 1	Invert output OA3	√	√
	bit 2	Invert output LO1	√	√
	bits 3-15	*(Reserved)*		
685 2007 : 24 **M** 6B : 1 : 24	UInt	Output LO1 configuration:		
	bits 0-7	Output LO1 assignment min. 0 - max. 45 default value = 2 *See Assignment of outputs LO1, OA1, OA3, 13, 23, page 59*	√	√
	bits 8-15	*(Reserved)*		
686 2007 : 25 **M** 6B : 1 : 25	UInt	Outputs OA1 and OA3 configuration:		
	bits 0-7	Output OA1 assignment min. 0 - max. 45 default value = 12 *See Assignment of outputs LO1, OA1, OA3, 13, 23, page 59*	√	√
	bits 8-15	Output OA3 assignment min. 0 - max. 45 default value = 13 *See Assignment of outputs LO1, OA1, OA3, 13, 23, page 59*	√	√
687 2007 : 26 **M** 6B : 1 : 26	UInt	Outputs13 and 23 configuration:		
	bits 0-7	Output 13 assignment min. 0 - max. 45 default value = 12 *See Assignment of outputs LO1, OA1, OA3, 13, 23, page 59*	√	√
	bits 8-15	Output 23 assignment min. 0 - max. 45 default value = 13 *See Assignment of outputs LO1, OA1, OA3, 13, 23, page 59*	√	√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Communication module setting - Read / Write				
688 2007 : 27 **M** 6B : 1 : 27	UInt	Recovery mode after a stop:		
	bit 0	In recovery mode, to avoid any unwanted motor restart after an event has generated a stop: - 24VDC cuts out then resumes (output power), - return to Ready position (457.0-17 = 1), 0 = disabled 1 = enabled	√	√
	bits 1-15	*(Reserved)*		
690 2007 : 29 **M** 6B : 1 : 29	UInt	Control unit identification 0 = automatic identification 1 = forced to LUCB/C/D 2 = forced to LUCMT	√	√

Assignment of outputs LO1, OA1, OA3, 13, 23

Register 685 (for output LO1), register 686 (for outputs OA1 and OA3), and register 687 (for outputs 13 and 23) assign values. An output copies the state of a register bit.

Value	Description of assigned value	LUCBT/DT	LUCMT
0	The corresponding output is forced to 0 (0V)	√	√
1	The corresponding output is forced to 1 (24V)	√	√
2	State of register 700, bits 0-4: - 700.0 --> LO1 - 700.1 --> OA1 - 700.2 --> OA3 - 700.3 --> 13 - 700.4 --> 23	√	√
3	452.3 (Thermal overload fault)	√	√
4	461.3 (Thermal overload warning)	√	√
5	457.0 (System ready)	√	√
6	457.1	√	√
7	State of bit 457.2	√	√
8	The corresponding output copies the result of "Reflex stop 1: forward"	√	√
9	The corresponding output copies the result of "Reflex stop 1: reverse"	√	√
10	The corresponding output copies the result of "Reflex stop 2: forward"	√	√
11	The corresponding output copies the result of "Reflex stop 2: reverse"	√	√
12	The corresponding output copies the result of "Forward direction" (default OA1 value)	√	√
13	The corresponding output copies the result of "Reverse direction" (default OA3 value)	√	√
14	452.0 (Short-circuit fault)	√	√
15	452.1 (Overcurrent fault)	√	√
16	452.2 (Ground fault)		√
17	452.3 (Thermal overload fault)	√	√
18	452.4 (Long start fault)		√
19	452.5 (Mechanical locking (jam) fault)		√
20	452.6 (Phase imbalance fault)		√
21	452.7 (Underload fault)		√
22	452.8 (Shunt trip)		√
23	452.9 (Test trip)		√
24	452.10 (Communication loss fault on LUCMT Modbus port)		√
25	452.11 (Control unit internal fault)	√	√
26	452.12 (Module identification or internal communication fault)		√
27	452.13 (Module internal fault)	√	√
28-31	*(Reserved)*		
32	461.2 (Ground fault warning)		√
33	461.3 (Thermal overload warning)	√	√
34	461.4 (Long start warning)		√
35	461.5 (Mechanical locking (jam) warning)		√
36	461.6 (Phase imbalance warning)		√
37	461.7 (Under-current warning)		√
38-39	*(Reserved)*		
40	461.10 (Communication loss on LUCMT Modbus port)		√
41	461.11 (Internal temperature warning)		√
42	461.12 (Module identification or internal communication warning)		√
43-44	*(Reserved)*		
45	461.15 (Module warning)	√	√

Group 6. Control Variables with a TeSys U Controller Base

Control Variables

Group 6 Control variables are described below.

Control registers are divided into sub-groups:
- Control of the communication module
- Control of the system and control unit

Registers

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Control of the communication module - Read / Write				
700 2008 : 01 **M** 6C : 1 : 01	Word	Output control:		
	bit 0	Control of output LO1 (if 685=2)	√	√
	bit 1	Control of output OA1 (if 686 LSB=2)	√	√
	bit 2	Control of output OA3 (if 686 MSB=2)	√	√
	bit 3	Control of output 13 (if 687LSB=2)	√	√
	bit 4	Control of output 23 (if 687 MSB=2)	√	√
	bits 5-15	*(Reserved)*		
703 2008 : 04 **M** 6C : 1 : 04	Word	Control of communication module:		
	bits 0-2	*(Reserved)*		
	bit 3	Reset warning (for example, communication loss)	√	√
	bits 4-15	*(Reserved)*		

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Control of the system and control unit (704-705) - Read / Write				
704 2008 : 05 **M** 6C : 1 : 05	Word	Control of the system:		
	bit 0	Run forward	√	√
	bit 1	Run reverse	√	√
	bit 2	*(Reserved)*		
	bit 3	Fault reset: if register 451=102 or 104, fault acknowledgment causes a return to communication module factory settings	√	√
	bit 4	*(Reserved)*		
	bit 5	Launch automatic thermal overload fault test: This test simulates a thermal overload. Bit 9 of Fault register 452 is set to 1 indicating "Test trip fault" and bit 3 of Warning register 461 is set to 1 indicating "Thermal warning".		√
	bits 6-11	*(Reserved)*		
	bit 12	Launch trip test via communication bus: This test simulates a short circuit. Bit 8 of Fault register 452 is set to 1 indicating "Shunt trip fault".		√
	bit 13-15	*(Reserved)*		√
705 2008 : 06 **M** 6C : 1 : 06	Word	Control of the control unit:		
	bit 0	Return to factory setting	√	√
	bit 1	Clear all statistics (counters included)		√
	bit 2	Reset thermal memory *Note: If you reset the thermal memory, the motor will not be properly thermally-protected.*		√
	bits 3-15	*(Reserved)*		

⚠ WARNING

AUTOMATIC RESTART OF THE MOTOR

The motor will automatically restart if the control bits 704.0 and 704.1 were not previously overwritten to zero by the PLC application, in case of a cyclic writing to register 704 and on the occurrence of one of the following events:

- Loss followed by restoration of the outputs power supply 24 VDC.
- Change in position of rotary knob on power base followed by return to Ready position.
- Communication break followed by restoration.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Group 7. HMI Monitoring Variables with a TeSys U Controller Base

HMI Monitoring Variables

Group 7 HMI monitoring variables are described below.

HMI monitoring registers are divided into sub-groups:
- Monitoring of control unit
- Controlling of control unit keypad

Registers

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Monitoring of control unit - Read only				
1000 200B : 01 **M** 6F : 1 : 01	Word	Monitoring the keypad:		
	bit 0	Escape key		√
	bit 1	Up key		√
	bit 2	Down key		√
	bit 3	Enter key		√
	bits 4-15	*(Reserved)*		
1001 200B : 02 **M** 6F : 1 : 02	Word	Display content: MSB ASCII ASCII = char1 - LSB ASCII = char2		√
1002 200B : 03 **M** 6F : 1 : 03	Word	Display content: MSB ASCII = char3 - LSB ASCII = char4		√
1003 200B : 04 **M** 6F : 1 : 04	Word	Display content: MSB ASCII = char5 - LSB ASCII = char6		√
1004 200B : 05 **M** 6F : 1 : 05	Word	Display content: MSB ASCII = char7 - LSB ASCII = char8		√
1005 200B : 06 **M** 6F : 1 : 06	Word	Display content: MSB ASCII = char9 - LSB ASCII = char10		√
1006 200B : 07 **M** 6F : 1 : 07	Word	Display content: MSB ASCII = char11 - LSB ASCII = char12		√
1007 200B : 08 **M** 6F : 1 : 08	Word	Display content: MSB ASCII = char13 - LSB ASCII = char14		√
1008 200B : 09 **M** 6F : 1 : 09	Word	Display content: MSB ASCII = char15 - LSB ASCII = char16		√
1009 200B : 0A **M** 6F : 1 : 0A	Word	Display content: MSB ASCII = char17 - LSB ASCII = char18		√
1010 200B : 0B **M** 6F : 1 : 0B	Word	Display content: MSB ASCII = char19 - LSB ASCII = char20		√
1011 200B : 0C **M** 6F : 1 : 0C	Word	Display content: MSB ASCII = char21 - LSB ASCII = char22		√
1012 200B : 0D **M** 6F : 1 : 0D	Word	Display content: MSB ASCII = char23 - LSB ASCII = char24		√

Register CANopen index DeviceNet path	Object type	Description / Possible values	LUCBT/DT	LUCMT
Controlling of control unit keypad - Read / Write				
1100 200C : 01 **M** 70 : 1 : 01	Word	Controlling the keypad:		
	bit 0	Escape key		√
	bit 1	Up key		√
	bit 2	Down key		√
	bit 3	Enter key		√
	bits 4-15	*(Reserved)*		