TeSys

TeSys Active - Tera Motor Management System
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Schneider Electric

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TeSys Tera Motor Management System

Intelligent and connected to manage your processes more efficiently

Offering enhanced protection for your business

TeSys Tera is a Motor Management System that provides protection, monitoring and control for low voltage motors in the process industries while maintaining high performance, efficiency, and connectivity to meet the most demanding requirements.

Smarter Motor Control

TeSys Tera system collects more information including current, voltage, power, digital inputs and outputs, and temperature inputs for your applications. **TeSys** Tera makes your plant smarter with anticipated trips and pre alarms that help you to take appropriate measures before process stops, and subsequent production losses occur. If a mechanical component gets stuck by a falling wrench, a broken shaft will result in weeks of repair, and whilst Standard Overload Protection may not react in time, our smart **TeSys** Tera Main Unit comes with embedded Stalled Rotor Protection that can detect a sudden current increase and will stop the motor before a mechanical failure occurs.

Key features and benefits

- Advanced motor protection from basic to critical applications up to 810 A
- Helps to reduce operating costs and downtime with advanced diagnostics and analytics
- Advance notice of potential issues through intuitive pre-trip alarming
- Integral Sensor Module up to 100 A
- Reduced panel size
- Maximum flexibility with expandable I/O
- Connectivity to your automation system through multiple industrial protocols
- Modular design optimized for in-drawer installations
- Energy, current, voltage and harmoincs measurement to enable more insight of power quality and consumption patterns.

Communication

TeSys Tera is a flexible motor management system that supports major communication protocols, Modbus RTU, PROFIBUS DP, Ethernet IP/Modbus TCP. These communication protocols allow the **TeSys** Tera Main Unit to integrate seamlessly into your automation system.

High performance

TeSys Tera system covers monitoring and protection needs of load, from feeders to critical process automation. Your equipment is protected, while advanced diagnostics, analytics, and alarms help you anticipate unexpected production halts and minimize downtime. **TeSys** Tera is a compact, natural fit for control panels occupying IEC or UL standards. The system's connectivity and access to real-time data provide critical information so you can enhance the operation and continuity of your processes.

Proven solutions and support

The Schneider Electric™ library of tested, validated, documented architecture (TVDA) solutions optimize integration and commissioning time.
We also support the whole project life cycle with network architectures, wiring and design guides, and more.

TeSys Tera Main Unit

Reference

LTMT	M	FM

Network Protocol		
Modbus RTU	M	
PROFIBUS DP	P	
Ethernet IP/Modbus TCP	E	

Control Voltage	
100…240 V AC/DC	FM
24 V DC	BD

Motor Control Functions

While TeSys Tera offers 4 easily configurable control stations, it allows user to control motors from:

- Local DI's available on product via Panel door
- Remote LCS
- Panel mounted HMI
- Network via PLC/DCS.

The below predefined motor control modes are incorporated into the Main Unit with a choice of Maintained or Momentary Input signal (two or three wire):

- Overload: monitoring of motors whose control is not managed by the Main Unit
- Direct online (DOL): starting of non-reversing motors
- Reverse Direct Online (RDOL): starting of reversing motors
- Star-Delta: two-step starting of motors
- Single Phase DOL: starting of single phase motors
- Heater Starter: heater 3-phase or single phase application.

A Custom logic mode is available allowing for user created specific control schemes.

TeSys Tera Accessories

Sensor

Reference	Current Range	Voltage Range	Position
LTMTCT3T	0.3…3 A		Horizontal
LTMTCT25T	2.5…25 A		Horizontal
LTMTCT100T	10…100 A		Horizontal
LTMTCTV3T	0.3…3 A	60…690 V AC	Horizontal
LTMTCTV25T	2.5…25 A	60…690 V AC	Horizontal
LTMTCTV100T	10…100 A	60…690 V AC	Horizontal
LTMTCTV3UT	0.3…3 A	60…600 V AC	Horizontal, SIDE Connections
LTMTCTV25UT	2.5…25 A	60…600 V AC	Horizontal, SIDE Connections
LTMTCTV100UT	10…100 A	60…600 V AC	Horizontal, SIDE Connections

Expansion & Display

Reference	Features	Voltage range
LTMTIN42FM	4 DI + 2 DO	100…240 V AC/DC
LTMTIN42BD	4 DI + 2 DO	24 V DC
LTMTAN21	2 AI + 1 AO	
LTMTCUF	Control Operator Unit	

Innovative features that help you do more with less:

Protection functions

- Thermal overload
- Locked Rotor & Stall Rotor
- Thermal motor protection via temperature sensor
- Current and Voltage Phase imbalance and Phase loss
- Current and Voltage Phase reversal
- Ground fault - measured and calculated
- Overcurrent and Under Current - Definite Time, Normal Inverse and Short Time
- Over Voltage and Under Voltage
- Over Power and Under Power
- Over Frequency and Under Frequency
- Under Power Factor
- Voltage Dip management
- Maximum Number of Starts
- Excessive start time
- Motor Stop Error Detection
- DI interlocks
- Anti back spin.

Metering Functions

- Thermal memory
- Line, Phase and Average Current
- Line to Line and Average Voltage
- Motor temperature input
- Ground Current
- Active, Reactive and Apparent Power
- Active, Reactive and Apparent Energy
- Power factor
- Frequency
- THD measurement (Current and Voltage)
- Analog Input measurement
- Current and Voltage Phase sequence
- Current and Voltage Imbalance.

Statistical and Diagnostic Functions

- 100 events and 20 trip records
- Motor statistics - Running hours, Stop hours, No. of starts and stops
- Motor status
- Start Curve showing motor start record
- Trip Counters.

TeSys Active
Tera Motor Management System

TeSys Tera Motor Management System

Product References

LTMT Main Units have the following common features:
- ■ Current and voltage-based protections
- ■ Motor parameters monitoring and protection
- ■ Records:
- □ Trip record
- □ Event record
- □ Detected internal malfunctions record

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LTMTMFM

Main Unit

Modbus RTU protocol

Features	Supply voltage	Reference
	V	
Modbus RTU Communication Baud Rate: 4800 to 115200 bit/s Read/Write function code Device Diagnosis	∿ / ⎓ 100…240	**LTMTMFM**
	⎓ 24	**LTMTMBD**

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LTMTPFM

PROFIBUS DP protocol

Features	Supply voltage	Reference
	V	
PROFIBUS DP Communication DP0 cyclic services DP1 acyclic services Time synchronisation Configuration Automatic baud rate detection 12 Mbit/s on D-Type connector and 1.5 Mbit/s on terminal	∿ / ⎓ 100…240	**LTMTPFM**
	⎓ 24	**LTMTPBD**

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LTMTEFM

Ethernet TCP/IP protocol (Ethernet IP/Modbus TCP)

Features	Supply voltage	Reference
	V	
Ethernet IP/Modbus TCP Communication SNTP 10/100 Mbit/s Auto negotiation	∿ / ⎓ 100…240	**LTMTEFM**
	⎓ 24	**LTMTEBD**

Product References

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LTMTCT3T

The **LTMTCT** or **LTMTCTV** Sensor Module measures the electrical parameters of the energy feeding a motor.
LTMTCT Sensor Module features are the following:
- Current based protection and monitoring
- Current imbalance calculation
- Ground current calculation
- Ground current metering using an external Ground Fault Toroid (please refer to page 7)
- Phase loss and phase reversal detection based on current
- THD.

LTMTCT••T Horizontal Sensor Modules with current transformers

Frame	Current range	Frequency	Reference
	A	Hz	
Frame 1	0.3…3	50 / 60	**LTMTCT3T**
	2.5…25		**LTMTCT25T**
	10…100		**LTMTCT100T**

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LTMTCTV25T

LTMTCTV Sensor Module features are the following:
- Current and voltage based protection and monitoring
- Current and voltage imbalance calculation
- Ground current calculation
- Ground current metering using an external Ground Fault Toroid (please refer to page 7)
- Phase loss and phase reversal detection based on current and voltage
- Frequency measurement
- Power, energy and power factor calculation
- THD.

LTMTCTV••T Horizontal Sensor Modules with current and voltage transformers

Frame	Current range	Voltage range	Frequency	PF range	Reference
	A	V	Hz		
Frame 1	0.3...3	∿ 60...690	50 / 60	0.4 …1.0	**LTMTCTV3T**
	2.5...25				**LTMTCTV25T**
	10...100				**LTMTCTV100T**

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LTMTCTV25UT

LTMTCTV••UT Horizontal Sensor Modules with current and voltage transformers, SIDE Connectors

Frame	Current range	Voltage range	Frequency	PF range	Reference
	A	V	Hz		
Frame 1	0.3...3	∿ 60...600	50 / 60	0.4 …1.0	**LTMTCTV3UT**
	2.5...25				**LTMTCTV25UT**
	10...100				**LTMTCTV100UT**

Product References

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LTMTIN42FM

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LTMTAN21

LTMT Expansion Modules

4 Digital inputs and 2 Digital outputs

Features	Digital inputs rating	Max. number	Reference
	V		
Four isolated digital inputs Two 'NO' contacts with common 'COM' Status LED indication Powered from main unit	~/ ⎓ 100...240	5	**LTMTIN42FM**
	⎓ 24	5	**LTMTIN42BD**

2 Analog inputs and 1 Analog output

Features	Max. number	Reference
4-20 mA measurement Two analog inputs One analog output Status LED indication Powered from main unit	2	**LTMTAN21**

Note: *Maximum five Expansion Modules can be connected to one Main Unit.*

Product References

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LTMTCUF

LTMTCUF Control Operator Unit

Functional description	Reference
Powered from LTMT Main Unit Liquid crystal LTMTCUF Control Operator Unit Contextual navigation keys Configures the system through menu entries Displays parameters, alarms and trip Controls the motor Provides the FDR (Fast Device Replacement) service	**LTMTCUF**

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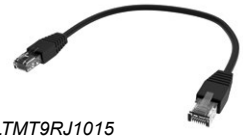

LTMT9RJ1015

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LTMT9CU10S

Cables

Description	Number and type of connectors	Length	Reference
		m	
Connecting cables For connecting the Main Controller to the Sensor Module	2 x RJ11	0.15	**LTMT9RJ1015**
		0.2	**LTMT9RJ102**
		0.5	**LTMT9RJ105**
Connecting cables For connecting the Main Controller to the LTMTCUF Control Operator Unit	2 x RJ45	1	**LTMT9CU10S**
		3	**LTMT9CU30S**
Connecting cables For connecting the Main Controller to the Expansion Module	2 x RJ45	0.1	**LTMT9RJ401**
		1	**LTMT9EX10**

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LT6CT4001

Current Transformers

Operational current		Reference
Primary	Secondary	
A	A	
100	1	**LT6CT1001**
200	1	**LT6CT2001**
400	1	**LT6CT4001**
800	1	**LT6CT8001**

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Ground Fault Toroids (marketed under the Schneider Electric brand)

Rated operational current Ie	Internal Ø of toroid	Reference
A	mm	
Closed toroids, type A		
65	30	**50437**
85	50	**50438**
160	80	**50439**
250	120	**50440**
400	200	**50441**
630	300	**50442**

Product References

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TCSMCNAM3M002P

Cables

Description	Composition	Length	Reference	Weight
		m		kg
Connection cable for PC	USB to RJ45 cable	2.5	**TCSMCNAM3M002P**	0.200

Connection accessories

Description		Length	Reference	Weight
		m		kg
For PROFIBUS DP connection (1)				
Cables		100	**TSXPBSCA100**	–
		400	**TSXPBSCA400**	–
For Modbus connection				
Cables fitted with 2 x RJ45 connectors		0.3	**VW3A8306R03**	0.045
		1	**VW3A8306R10**	0.065
		3	**VW3A8306R30**	0.125
T-junctions		0.3	**VW3A8306TF03**	0.032
		1	**VW3A8306TF10**	0.032
RS 485 line terminator		–	**VW3A8306R**	0.012
For Ethernet IP/Modbus TCP connection				
Shielded twisted pair cables to standard EIA/TIA568				
Cables fitted with 2 x RJ45 connectors for connection to terminal equipment	Straight	2	**490NTW00002**	–
		5	**490NTW00005**	–
		12	**490NTW00012**	–
		40	**490NTW00040**	–
		80	**490NTW00080**	–
Ethernet Connector	Elbowed 180°		**LTM9CE180T** (2)	0.180

(1) To order other connectors and cables (UL cables for harsh environments, etc.), please consult our Customer Care Center.
(2) Sold in packs of 6.

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490NTW000●●

TeSys Tera DTM

TeSys Tera DTM is a software module installed in a FDT container that uses the open FDT/DTM technology. For example, SoMove software.
SoMove contains DTMs for different devices. A specific DTM exists for the TeSys Tera System: TeSys Tera DTM Library, that enables the configuration, monitoring, control, and customization of the control functions of the LTMT Main Unit, as part of the TeSys Tera Motor Management System.

Functional description

- Configure the system through menu entries
- Display parameters, alarms, and trips
- Enable customization of operating modes.

Additional components required for the SoMove FDT container:

- A PC
- Connecting cable between PC and LTMT Main Unit /LTMTCUF Control Operator Unit.

Coordination: Fuse (NFC, DIN aM type) + Contactor + Tera Main Unit

0.37 to 355 kW at 400/415 V: type 2 coordination

With switch-disconnector, contactor and class 10 Main Unit

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 400/415 V		Switch-disconnector	aM fuses		Contactor	Tera Main Unit	Tera Sensor	External current transformer
P	Ie	Reference (1)	Size	Rating	Reference (2)	Reference (3)	Reference	Reference
kW	A			A				
0,37	1,1	GS1DD	10 x 38	2	LC1D09	LTMT●●●	LTMTCT3T LTMTCTV3T LTMTCTV3UT	–
0,55	1,5	GS1DD	10 x 38	2	LC1D09	LTMT●●●		–
0,75	1,9	GS1DD	10 x 38	4	LC1D09	LTMT●●●		–
1,1	2,7	GS1DD	10 x 38	4	LC1D09	LTMT●●●		–
1,5	3,6	GS1DD	10 x 38	4	LC1D09	LTMT●●●	LTMTCT25T LTMTCTV25T LTMTCTV25UT	–
2,2	4,9	GS1DD	10 x 38	6	LC1D09	LTMT●●●		–
3	6,5	GS1DD	10 x 38	8	LC1D09	LTMT●●●		–
4	8,5	GS1DD	10 x 38	10	LC1D09	LTMT●●●		–
5,5	11,5	GS1DD	10 x 38	16	LC1D12	LTMT●●●		–
7,5	15,5	GS1DD	10 x 38	16	LC1D25	LTMT●●●		–
10	19	GS●F	14 x 51	25	LC1D25	LTMT●●●		–
11	22	GS●F	14 x 51	25	LC1D25	LTMT●●●		–
15	29	GS●F	14 x 51	32	LC1D32	LTMT●●●	LTMTCT100T LTMTCTV100T LTMTCTV100UT	–
18,5	35	GS●F	14 x 51	40	LC1D40A	LTMT●●●		–
22	41	GS●J	22 x 58	50	LC1D50A	LTMT●●●		–
30	55	GS●J	22 x 58	80	LC1D65A	LTMT●●●		–
37	66	GS●J	22 x 58	100	LC1D80	LTMT●●●		–
45	80	GS●J	22 x 58	100	LC1D95	LTMT●●●	LTMTCT100T LTMTCTV100T LTMTCTV100UT	–
55	97	GS●K	T00	125	LC1D115	LTMT●●●	LTMTCT3T LTMTCTV3T LTMTCTV3UT	LT6CT2001
75	132	GS●L	T0	160	LC1D150	LTMT●●●		LT6CT2001
90	160	GS●N	T1	200	LC1G185	LTMT●●●		LT6CT2001
110	195	GS●N	T1	250	LC1G225	LTMT●●●		LT6CT4001
132	230	GS●QQ	T2	315	LC1G265	LTMT●●●		LT6CT4001
160	280	GS●QQ	T2	355	LC1G330	LTMT●●●		LT6CT4001
200	350	GS2S	T3	500	LC1G400	LTMT●●●		LT6CT8001
250	430	GS2S	T3	500	LC1G500	LTMT●●●		LT6CT8001
315	540	GS2S	T3	630	LC1G630	LTMT●●●		LT6CT8001
355	610	GS2V	T4	800	LC1G630	LTMT●●●		LT6CT8001

(1) GS●: GS1 for direct operator, GS2 for external operator.
(2) For reversing operation, replace the prefix LC1 with LC2 for TeSys Deca range (LC1D). For TeSys Giga range (LC1G), reverser contactor to be assembled by the customer.
(3) Refer to page 4 for the complete reference of TeSys Tera Main Unit.

Coordination: Magnetic Circuit Breaker + Contactor + Tera Main Unit

0.06 to 45 kW at 400/415 V: type 2 coordination

With Circuit breaker, contactor and class 10 Main Unit

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 400/415 V			Circuit breaker	Contactor	Tera Main Unit	Tera Sensor	External current transformer
P	Ie	Icc	Reference or product type	Reference [1]	Reference [2]	Reference	Reference
kW	A	kA					
0.06	0.2	130	**GV2L03**	**LC1D09**	**LTMT●●●**	**LTMTCT3T** **LTMTCTV3T** **LTMTCTV3UT**	–
0.09	0.3	130	**GV2L03**	**LC1D09**	**LTMT●●●**		–
0.12	0.44	130	**GV2L04**	**LC1D09**	**LTMT●●●**		–
0.18	0.6	130	**GV2L04**	**LC1D09**	**LTMT●●●**		–
0.25	0.85	130	**GV2L05**	**LC1D09**	**LTMT●●●**		–
0.37	1.1	130	**GV2L05**	**LC1D09**	**LTMT●●●**		–
0.55	1.5	130	**GV2L06**	**LC1D09**	**LTMT●●●**		–
0.75	1.9	130	**GV2L07**	**LC1D09**	**LTMT●●●**		–
1.1	2.7	130	**GV2L07**	**LC1D18**	**LTMT●●●**		–
1.5	3.6	130	**GV2L08**	**LC1D18**	**LTMT●●●**	**LTMTCT25T** **LTMTCTV25T** **LTMTCTV25UT**	–
2.2	4.9	130	**GV2L10**	**LC1D18**	**LTMT●●●**		–
3	6.5	130	**GV2L14**	**LC1D18**	**LTMT●●●**		–
4	8.5	130	**GV2L14**	**LC1D18**	**LTMT●●●**		–
5.5	11.5	130	**GV2L16**	**LC1D25**	**LTMT●●●**		–
7.5	15.5	50	**GV2L20**	**LC1D25**	**LTMT●●●**		–
9	18.1	50	**GV2L22**	**LC1D25**	**LTMT●●●**		–
11	22	50	**GV2L22**	**LC1D25**	**LTMT●●●**		–
15	29	50	**GV3L32**	**LC1D40A**	**LTMT●●●**	**LTMTCT100T** **LTMTCTV100T** **LTMTCTV100UT**	–
18.5	35	50	**GV3L40**	**LC1D50A**	**LTMT●●●**		–
22	41	50	**GV3L50**	**LC1D50A**	**LTMT●●●**		–
30	55	50	**GV3L65**	**LC1D65A**	**LTMT●●●**		–
37	66	70	**GV4LE80S**	**LC1D80**	**LTMT●●●**		–
45	80	70	**NSX100H + MA**	**LC1D115**	**LTMT●●●**	**LTMTCT100T** **LTMTCTV100T** **LTMTCTV100UT**	–

(1) For reversing operation, replace the prefix LC1 with LC2 for TeSys Deca range (LC1D). For TeSys Giga range (LC1G), reverser contactor to be assembled by the customer.
(2) Refer to page 4 for the complete reference of TeSys Tera Main Unit.

Coordination: Magnetic Circuit Breaker + Contactor + Tera Main Unit

55 to 250 kW at 400/415 V: type 2 coordination

With Circuit breaker, contactor and class 10 Main Unit

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3 400/415 V			Circuit breaker	Contactor	Tera Main Unit	Tera Sensor	External current transformer
P	Ie	Icc	Product type	Reference [1]	Reference [2]	Reference	Reference
kW	A	kA					
55	97	50	**NSX160N + MA**	**LC1D115**	**LTMT●●●**	**LTMTCT3T** **LTMTCTV3T** **LTMTCTV3UT**	**LT6CT2001**
55	97	70	**NSX160H + MA**	**LC1D115**	**LTMT●●●**		**LT6CT2001**
75	132	50	**NSX160N + MA**	**LC1D150**	**LTMT●●●**		**LT6CT2001**
75	132	70	**NSX160H + MA**	**LC1D150**	**LTMT●●●**		**LT6CT2001**
90	160	50	**NSX250N + MA**	**LC1G185**	**LTMT●●●**		**LT6CT2001**
90	160	70	**NSX250H + MA**	**LC1G185**	**LTMT●●●**		**LT6CT2001**
110	195	50	**NSX250N + MA**	**LC1G225**	**LTMT●●●**		**LT6CT2001**
110	195	70	**NSX250H + MA**	**LC1G225**	**LTMT●●●**		**LT6CT2001**
132	230	70	**NSX400H + MicroLogic 1.3 M**	**LC1G265**	**LTMT●●●**		**LT6CT4001**
132	230	130	**NSX400L + MicroLogic 1.3 M**	**LC1G265**	**LTMT●●●**		**LT6CT4001**
160	280	70	**NSX400H + MicroLogic 1.3 M**	**LC1G330**	**LTMT●●●**		**LT6CT4001**
160	280	130	**NSX400L + MicroLogic 1.3 M**	**LC1G330**	**LTMT●●●**		**LT6CT4001**
200	350	70	**NSX630H + MicroLogic 1.3 M**	**LC1G400**	**LTMT●●●**		**LT6CT4001**
200	350	130	**NSX630L + MicroLogic 1.3 M**	**LC1G400**	**LTMT●●●**		**LT6CT4001**
220	388	70	**NSX630H + MicroLogic 1.3 M**	**LC1G500**	**LTMT●●●**		**LT6CT4001**
220	388	130	**NSX630L + MicroLogic 1.3 M**	**LC1G500**	**LTMT●●●**		**LT6CT4001**
250	430	70	**NSX630H + MicroLogic 1.3 M**	**LC1G500**	**LTMT●●●**		**LT6CT8001**
250	430	130	**NSX630L + MicroLogic 1.3 M**	**LC1G500**	**LTMT●●●**		**LT6CT8001**

(1) For reversing operation, replace the prefix LC1 with LC2 for TeSys Deca range (LC1D). For TeSys Giga range (LC1G), reverser contactor to be assembled by the customer.

(2) Refer to page 4 for the complete reference of TeSys Tera Main Unit.

Coordination: Magnetic Circuit Breaker + Contactor + Tera Main Unit

0.37 to 400 kW at 690 V: type 2 coordination

With switch-disconnector, contactor and class 10 Main Unit

Standard power ratings of 3-phase motors 50/60 Hz in category AC-3		Switch-disconnector	aM fuses		Contactor	Tera Main Unit	Tera Sensor	External current tranformer
P	Ie	Reference (1)	Size	Rating	Reference (2)	Reference (3)	Reference	Reference
kW	A			A				
0.37	0.64	GS●F	14 x 51	1	LC1D09	LTMT●●●	LTMTCT3T LTMTCTV3T LTMTCTV3UT	–
0.55	0.87	GS●F	14 x 51	2	LC1D09	LTMT●●●		–
0.75	1.1	GS●F	14 x 51	2	LC1D09	LTMT●●●		–
1.1	1.6	GS●F	14 x 51	2	LC1D09	LTMT●●●		–
1.5	2.1	GS●F	14 x 51	4	LC1D09	LTMT●●●		–
2.2	2.8	GS●F	14 x 51	4	LC1D09	LTMT●●●		–
3	3.8	GS●F	14 x 51	6	LC1D09	LTMT●●●	LTMTCT25T LTMTCTV25T LTMTCTV25UT	–
4	4.9	GS●F	14 x 51	6	LC1D09	LTMT●●●		–
5.5	6.7	GS●F	14 x 51	8	LC1D25	LTMT●●●		–
7.5	8.9	GS●F	14 x 51	10	LC1D25	LTMT●●●		–
11	12.8	GS●F	14 x 51	16	LC1D25	LTMT●●●		–
15	17	GS●G	T000	20	LC1D32	LTMT●●●		–
18.5	21	GS●G	T000	25	LC1D32	LTMT●●●		–
22	24	GS●G	T000	32	LC1D40A	LTMT●●●		
30	32	GS●G	T000	40	LC1D50A	LTMT●●●	LTMTCT100T LTMTCTV100T LTMTCTV100UT	
37	39	GS●J	22 x 58	50	LC1D65A	LTMT●●●		
45	47	GS●J	22 x 58	63	LC1D80	LTMT●●●		
55	57	GS●J	22 x 58	80	LC1D115	LTMT●●●		
75	77	GS●KK	T00	100	LC1D115	LTMT●●●	LTMTCT100T LTMTCTV100T LTMTCTV100UT	
90	93	GS●KK	T00	125	LC1G150	LTMT●●●	LTMTCT3T LTMTCTV3T LTMTCTV3UT	LT6CT2001
110	113	GS●KK	T00	125	LC1G185	LTMT●●●		LT6CT2001
132	134	GS●L	T0	160	LC1G265	LTMT●●●		LT6CT2001
160	162	GS●N	T1	200	LC1G265	LTMT●●●		LT6CT2001
200	203	GS●N	T1	250	LC1G330	LTMT●●●		LT6CT4001
220	224	GS●QQ	T2	250	LC1G400	LTMT●●●		LT6CT4001
250	250	GS●QQ	T2	315	LC1G400	LTMT●●●		LT6CT4001
290	292	GS●QQ	T2	355	LC1G500	LTMT●●●		LT6CT4001
315	313	GS●QQ	T2	355	LC1G500	LTMT●●●		LT6CT4001
355	354	GS2S	T3	400	LC1G630	LTMT●●●		LT6CT4001
400	400	GS2S	T3	500	LC1G630	LTMT●●●		LT6CT8001

(1) GS●: GS1 for direct operator, GS2 for external operator.
(2) For reversing operation, replace the prefix LC1 with LC2 for TeSys Deca range (LC1D). For TeSys Giga range (LC1G), reverser contactor to be assembled by the customer.
(3) Refer to page 4 for the complete reference of TeSys Tera Main Unit.

Product references

50437	LTMT9EX10	LTMTCTV3T	VW3A8306R
50438	LTMT9RJ1015	LTMTCTV3UT	VW3A8306R03
50439	LTMT9RJ102	LTMTCUF	VW3A8306R10
50440	LTMT9RJ105	LTMTEBD	VW3A8306R30
50441	LTMT9RJ401	LTMTEFM	VW3A8306TF03
50442	LTMT9RJ401	LTMTIN42BD	VW3A8306TF10
LT6CT1001	LTMTAN21	LTMTIN42FM	
LT6CT2001	LTMTCT100T	LTMTMBD	
LT6CT4001	LTMTCT25T	LTMTMFM	
LT6CT8001	LTMTCT3T	LTMTPBD	
LTM9BPS	LTMTCTV100T	LTMTPFM	
LTM9CE180T	LTMTCTV100UT	TCSMCNAM3M002P	
LTMT9CU10S	LTMTCTV25T	TSXPBSCA100	
LTMT9CU30S	LTMTCTV25UT	TSXPBSCA400	

Tera Motor management devices

Technical Data for Designers

Contents

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LTMTEFM

Introduction

The TeSys Tera system manages:
- Single-phase or 3-phase AC induction motors up to 100 A with integral Sensor Module.
- Single-phase or 3-phase AC induction motors up to 810 A when using external current transformers.

Suitable for electro intensive industry, this product range offers:
- High-performance multifunction protection, independent of the automation system
- A local HMI Control Operator Unit for reading, displaying and modifying the parameters monitored, diagnostics, etc.
- Configuration using SoMove software
- Connection to the automation system via a communication network (selection according to various protocols).

Application

The TeSys Tera motor management system is used for motor control and protection in industrial applications, in which downtime should be avoided because it is very costly: Oil & Gas, chemical industry, water treatment, metal, minerals and mining, pharmaceutical industry, microelectronics, tunnels, airports etc.

With TeSys Tera motor management system, unexpected stops of a process or manufacturing, associated with a motor, are anticipated via preventive, predictive and prescriptive analysis of fault situations. Fault tripping is therefore reduced to a minimum.

Its use in motor control panels makes it possible to:
- Increase the operational availability of installations
- Improve flexibility from project design through to implementation
- Increase productivity by making available all information needed to run the system.

The motor management system integrates perfectly with Schneider Electric low voltage equipment, such as Okken, BlokSet and PrismaSet.

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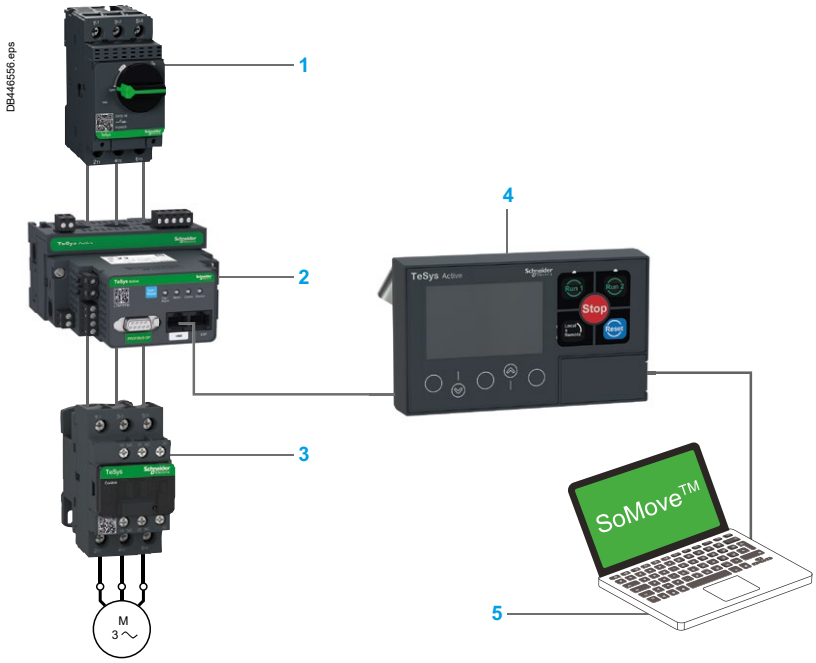
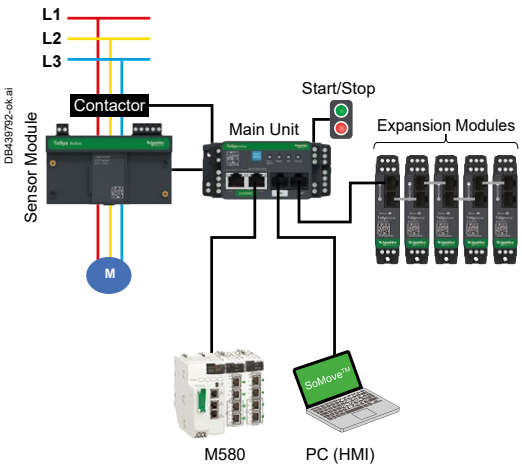


1 Magnetic Circuit Breaker
2 Main Unit with current and voltage Sensor Module
3 Contactor
4 Operator Control Unit
5 Laptop with SoMove DTM



TeSys Tera System

Introduction

Composition of the motor management system

The system comprises:
- A LTMT motor management Main Unit
- A LTMT Sensor Module up to 100 A
- Above 100 A, an external current transformer up to 810 A
- Optional Expansion Modules
- A LTMTCUF Operator Control Unit
- Configuration software incorporated in the SoMove software application
- Accessories for system set-up.

Communication

The LTMT Main Unit is equipped with a communication interface to allow remote monitoring and control of the motor. All motor information is then available at automation system level.

The following networks are available:
- Modbus RTU, PROFIBUS DP, Ethernet IP/Modbus TCP.

TeSys Tera system functions

Protection functions

- Thermal overload
- Locked Rotor & Stall Rotor
- Thermal motor protection via temperature sensor
- Current and Voltage Phase imbalance and Phase loss
- Current and Voltage Phase reversal
- Ground fault - measured and calculated
- Overcurrent and Under Current - Definite Time, Normal Inverse and Short Time
- Over Voltage and Under Voltage
- Over Power and Under Power
- Over Frequency and Under Frequency
- Under Power Factor
- Voltage Dip management
- Maximum Number of Starts
- Excessive start time
- Motor Stop Error Detection
- DI interlocks
- Anti back spin.

Metering functions

- Thermal memory
- Line, Phase and Average Current
- Line to Line and Average Voltage
- Motor temperature input
- Ground Current
- Active & Reactive Power
- Active & Reactive Energy
- Power factor
- Frequency
- THD measurement
- Analog Input measurement
- Current and Voltage Phase sequence
- Current and Voltage Imbalance.

Motor control functions

A motor managed by TeSys Tera motor management system can be controlled from:
- Local DI's on product via Panel door
- Remote LCS
- Panel mounted HMI
- PLC/DCS.

Motor control modes

The below predefined motor control modes are incorporated in the Main Unit:
- Overload: monitoring of motors whose control is not managed by the Main Unit
- Direct Online (DOL): starting of non-reversing motors
- Reverse Direct Online (RDOL): starting of reversing motors
- Star-Delta: two-step starting of motors
- Single Phase DOL: starting of single phase motors
- Heater Starter: heater 3-phase or single phase application.

A “Custom” mode is available to allow the user to create a specific motor control mode that is not predefined in the Main Unit.

Statistical and diagnostic functions

- 100 events and 20 Trip records
- Motor statistics - Running hours, Stop hours, No. of starts and stops
- Motor status
- Start Curve showing motor start record
- Trip counters.

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LTMTEFM

LTMT Main Unit

The Main Unit is the central component in the motor management system.
It manages the basic functions such as:
- Processing protections algorithms
- Measurement of motor temperature by PTC probe or PT100
- Status LEDs and Reset Key
- Inputs and outputs for the various motor control modes, event management and associated functions
- Connection via a communication network.

Characteristics

Supply
- **Main Unit power supply:**
  ∿ / ⎓ 100…240 V
  ⎓ 24 V

Inputs
- 4 digital inputs.

Outputs
- 2 relay logic outputs.
- 1 relay output for fault signalling (1N/O + 1N/C).

Measurements
- Connections for a temperature sensor probe.

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LTMTCTV25T

Sensor Module for LTMT

The Sensor Module is necessary to the Main Unit for providing current and voltage measurement.
The Main Unit can be mounted on top of it or on the side.
It includes:
- Measurement of 3-phase current via integral Sensor Modules from 0.3 to 100 A (up to 810 A by external current transformers)
- Measurement of 3-phase voltage up to 690 V (up to 600 V for the "UT" Sensor Modules).

Characteristics

Current ranges
3 current ranges allow measurement of motor current from 0.3 to 100 A:
- 0.3…3 A
- 2.5…25 A
- 10…100 A (1).

For use with external current transformers, choose the 0.3…3 A integral Sensor Module (1 A current transformer secondary).

Ground Current Metering
Ground current metering (20 mA to 20 A) using an external Ground Fault Toroid (please refer to page 7).

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LTMTIN42FM

LTMT Expansion Modules

Expansion Modules enable the addition of extra functions to the Main Unit. The following types of Expansion Modules are available:
- **Digital Module:** 4 Additional isolated inputs and 2 outputs 'NO' contact
- **Analog Module:** 2 Analog inputs and 1 Analog output.

Characteristics

Power supplies
- Powered by Main Unit.

Digital Module
- **Input voltage:**
  ∿ / ⎓ 100…240 V
  ⎓ 24 V
- **2 Relay outputs - Output contact load:**
  ∿ / ⎓ 250 V / 10 A
  ⎓ 30 V / 5 A

Analog Module
- **Input current:**
  4 - 20 mA
- **Output current:**
  4 - 20 mA

(1) Applicable for Horizontal Sensor Modules only.

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LTMTCUF

LTMTCUF Control Operator Unit

The LTMTCUF Control Operator Unit is the HMI designed to be used for the control and monitoring of an LTMT Main Unit. LTMTCUF makes it possible to:

- Configure the parameters of the LTMT Main Unit
- Display information on Main Unit configuration and operation
- Monitor the alarms and trips generated by the Main Unit
- Local control of the motor via the local control interface (keys can be customised). Three different languages can be loaded into the LTMTCUF control unit at the same time.

By default, these 3 languages are:

- LTMTCUF: English, French and Spanish.

Note: *English is the only compulsory language.*

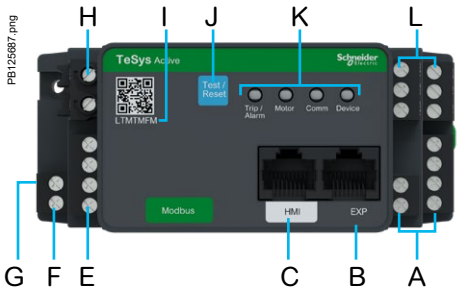
For LTMTCUF HMI Control Operator Unit language upgrade please contact your Schneider Electric Technical Support.

The LTMTCUF HMI Control Operator Unit has an RJ45 port, protected by a flexible cover to provide a good level of protection (IP54).
This port on the front panel allows connection to a PC, via a connecting cable, in order to use DTM connection via SoMove software.
In this case, the Control Operator Unit acts as a transmitter and all information can then be viewed in SoMove.

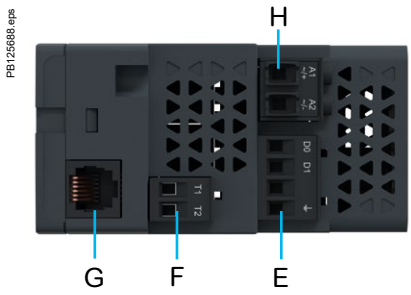
LTMT Main Units

Modbus RTU

Front view



Left side view

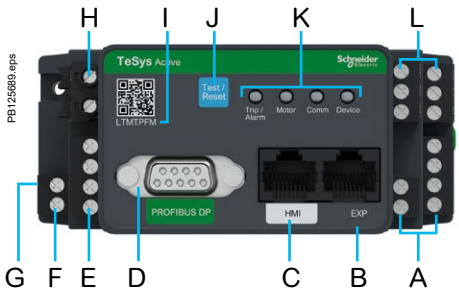


Modbus RTU Main Units feature the following on their front or side panels:

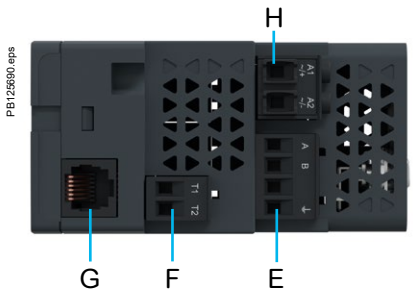
A. Digital input terminals
B. Expansion Module connector
C. RJ45 port for HMI
E. Input terminals for connection to the Modbus RTU network
F. Temperature input terminals
G. RJ11 for connection to Sensor Module
H. Auxiliary Supply
I. Commercial reference
J. Reset or Test button
K. Diagnostic Leds
L. Digital output terminals

PROFIBUS DP

Front view



Left side view

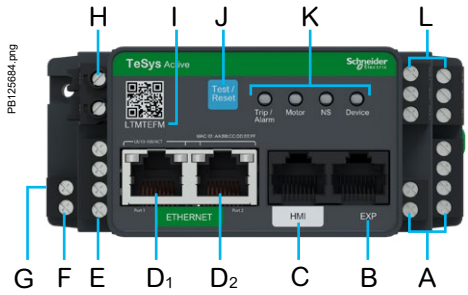


PROFIBUS DP Main Units feature the following on their front or side panels:

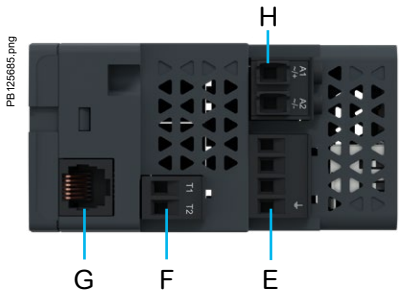
A. Digital input terminals
B. Expansion Module connector
C. RJ45 port for HMI
D. PROFIBUS 12 Mbits/sec
E. PROFIBUS 1.5 Mbits/sec
F. Temperature input terminals
G. RJ11 for connection to Sensor Module
H. Auxiliary Supply
I. Commercial reference
J. Reset or Test button
K. Diagnostic Leds
L. Digital output terminals

Ethernet TCP/IP (Ethernet IP/Modbus TCP)

Front view



Left side view



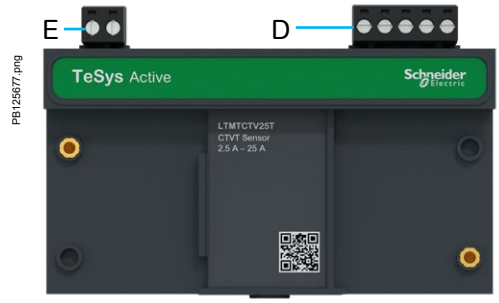
Ethernet TCP/IP Main Units feature the following on their front or side panels:

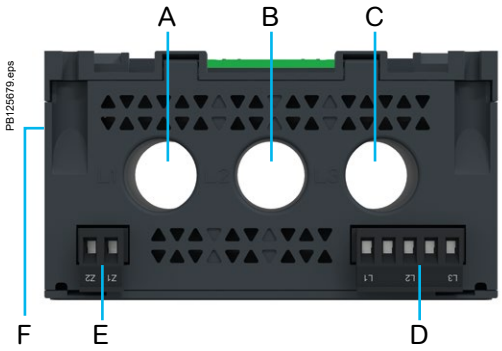
A. Digital input terminals
B. Expansion Module connector
C. RJ45 port for HMI
D1. Ethernet port 1
D2. Ethernet port 2
E. Shield Ground terminals
F. Temperature input terminals
G. RJ11 for connection to Sensor Module
H. Auxiliary Supply
I. Commercial reference
J. Reset or Test button
K. Status/Diagnostic Leds
L. Digital output terminals

LTMT Sensor Modules

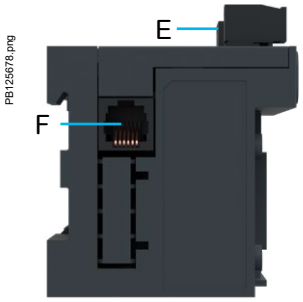
LTMTCT••T / LTMTCTV••T Horizontal Sensor Modules

Front view and top view





Left side view

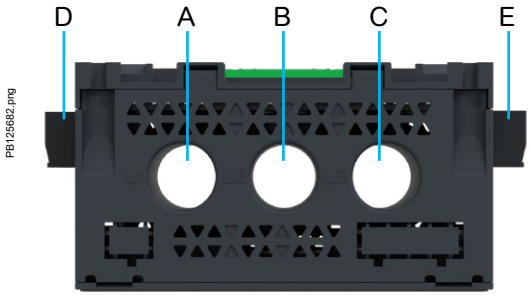


Horizontal Sensor Modules feature the following connection capabilities:

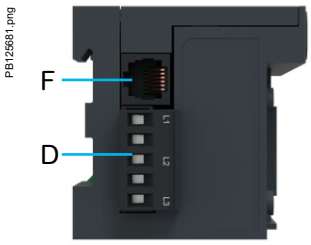
A. Window for Phase 1 current measurement
B. Window for Phase 2 current measurement
C. Window for Phase 3 current measurement
D. Phase voltage input connector (on LTMTCTV modules only)
E. Ground current measurement input connector
F. RJ11 port for connection to the Main Unit

LTMTCTV••UT Horizontal Sensor Modules SIDE Connector

Front view and top view



Left side view

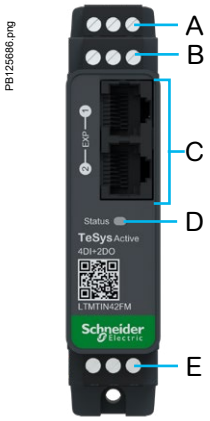


Horizontal Sensor Modules SIDE Connector feature the following connection capabilities:

A. Window for Phase 1 current measurement
B. Window for Phase 2 current measurement
C. Window for Phase 3 current measurement
D. Phase voltage input connector
E. Ground current measurement input connector
F. RJ11 port for connection to the Main Unit

LTMT Expansion Modules

The LTMT Expansion Module front face includes the following features, by type of module:



LTMTIN42••

4 Digital inputs and 2 Digital outputs

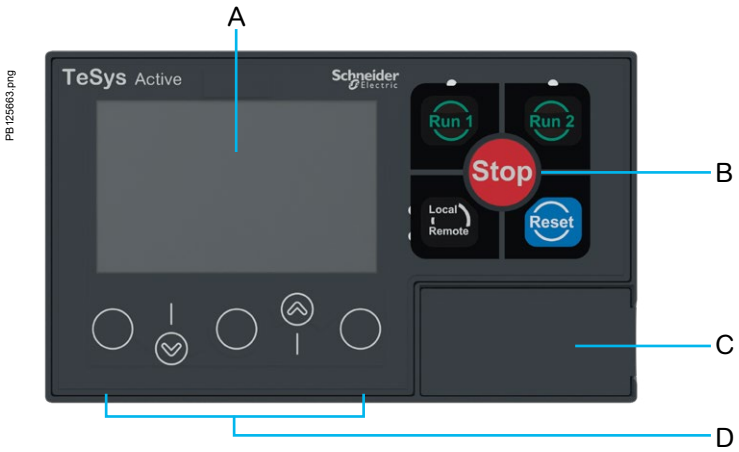
A. 2 Digital inputs (I5, I6 and Common) connector
B. 2 Digital inputs (I7 and I8) connector
C. 2 RJ45 ports for connection of the module to the Main Unit or to other Expansion Modules
D. Status LED
E. 2 Digital outputs (O1, O2 and Common) connector

LTMTAN21

2 Analog inputs and 1 Analog output

A. Analog input AI1 connector
B. Analog input AI2 connector
C. 2 RJ45 ports for connection of the module to the Main Unit or to other Expansion Modules
D. Status LED
E. Analog output AO connector

Operator Control Unit LTMTCUF



The operator control unit has the following on its front face:
A. Screen LCD display
B. Local control interface including 5 control keys and 4 LEDs
C. RJ45 port on front panel for connection to a PC (protected by a cover)
D. Contextual navigation keys

Thermal and current protection functions

Functions Description	Setting range	LTMT Main Unit and LTMTCT current Sensor Module	LTMT Main Unit and LTMTCTV current and voltage Sensor Module	Alarm threshold	Trip threshold
Thermal overload: Thermal protection of motor by monitoring current consumption	Class: 5, 10, 15, 20, 25, 30, 35, 40				
Temperature protection: Thermal monitoring of the motor using temperature probes	Binary PTC: 2700…4000 Ohm PT100: 25…180 °C				
Current Phase imbalance: monitors the symmetry of current between phases	5…100 % imbalance current 0.1…6000.0 s				
Current Phase Loss: monitors the symmetry of current between phases.	0.1…6000.0 s			(1)	(1)
Current Phase Reversal: signals when the phase sequence is different from the defined	0.1…6000.0 s			(1)	(1)
Stall rotor stalled rotor of motor by monitoring current in motor running state	50…1000 % of IFLC 0.1…6000.0 s				
Locked rotor: locked rotor of motor by monitoring current in motor starting state	150…1000 % of IFLC 0.1…6000.0 s				
Overcurrent: Monitors the phase overcurrent for set pickup This function has two separate time delays for motor starting and running state	20…1000 % of IFLC Time delay at starting: 0.1…6000.0 s Time delay at running: 0.1…6000.0 s				
Normal Inverse overcurrent	20…1000 % of IFLC TMS - 0.1 s to 20 s				
Short Time overcurrent	100…1000 % of IFLC 0.05…10 s				
Excessive start time	80…300 % of IFLC 0.1...6000.0 s				
Ground fault: Signals internal insulation faults, calculated by vectorial summing of external currents or measured via CBCT.	Calculated 10...500 % of IFLC 0.05...600.0 s Measured 0.02...20 A 0.1...6000.0 s				
Under current: Monitors the phase under current for set pickup	15…100 % of IFLC 0.1…6000.0 s				
Voltage and power protection functions					
Voltage imbalance: monitors the symmetry of voltage between phases.	5…50 % imbalance voltage 0.1…6000.0 s				
Voltage Phase Loss: monitors the symmetry of voltage between phases.	0.1…6000.0 s			(1)	(1)
Voltage Phase Reversal: signals when the phase sequence is different from the defined	0.1…6000.0 s			(1)	(1)
Over Voltage	101…130 % of Vnominal 0.1…6000.0 s				
Under Voltage	20…100 % of Vnominal 0.1…6000.0 s				
Over Power	20…1000 % of Pnominal 0.1…6000.0 s				
Under Power	20…1000 % of Pnominal 0.1…6000.0 s				
Under PF	0.4…1.0 0.1…6000.0 s				
Over Frequency of system frequency	100…110 % 0.100 – 6000.0 s				
Under Frequency of system frequency	90…100 % 0.100 – 6000.0 s				

Function performed.

(1) Fixed threshold.

Characteristics

Motor control functions

Functions	Description	With Main Unit LTMT and current Sensor Module LTMTCT	With Main Unit LTMT and current and voltage Sensor Module LTMTCTV
Control modes	HMI - control motor start/stop by HMI (1)	■	■
	Local DI - Local control motor start/stop by digital inputs	■	■
	Remote DI - Remote control motor start/stop by digital inputs	■	■
	Communication - Communication control for motor start/stop	■	■
Starter types	Overload	■	■
	Direct Online	■	■
	Reverse Direct Online	■	■
	Star-Delta	■	■
	Heater Starter	■	■
Trip reset modes	HMI reset button or Test/Reset button on Main Unit	■	■
	Trip reset digital input	■	■
	Communication - Trip reset command over communication	■	■
	Auto - Automatic reset	■	■

Metering functions and statistics

Functions	Description	Measurement range	With Main Unit LTMT and current Sensor Module LTMTCT	With Main Unit LTMT and current and voltage Sensor Module LTMTCTV
Measurements (2)	Phase current	10 % to 1000 % of Sensor Module Nominal current	■	■
	Calculated ground current	10 % to 1000 % of Sensor Module Nominal current	■	■
	Ground current metering using an external Ground Fault Toroid (please refer to page 7)	20 mA to 20 A	■	■
	Average current	10 % to 1000 % of Sensor Module Nominal current	■	■
	Phase current detection	15% of IFLC onwards	■	■
	Thermal capacity level	0…999 %	■	■
	Motor temperature rise	PT100: 0 to 180 °C Binary PTC: 0…4000 Ohm	■	■
	Frequency	45 to 65 Hz	■	■
	Voltage between phases	60…690 V(5)		■
	Active power	0…55 MW		■
	Reactive power	0…55 MVAR		■
	Cos φ (power factor)	0…1.00		■
	Active energy	0…4 GWh		■
	Reactive energy	0…4 GVARh		■
	THD for current and voltage	1% up to 7th harmonic	■ (3)	■ (4)
	Temperature	0...200°C (PT 100/1000), 0...4000 Ohm (PTC/NTC)		
Trip statistics	Protection trip counters		■	■
	Trip records		■	■
Diagnostics	Internal Watchdog Error		■	■
	Internal Temperature Error			■
	Sensor Module Watchdog		■	■
	Configuration Error		■	■
	Sensor and HMI Communication Error		■	■
Motor statistics	Motor run hours		■	■
	Number of starts/hour		■	■
	Motor start I max.		■	■
	Motor starting time		■	■
	Motor start / Stop counters		■	■
Thermal overload statistics	Time to trip		■	■
	Time to cool		■	■
System operating statistics	Inhibit, Stop, Start, RUN, Alarm, Pickup, Trip		■	■

(1) HMI: Human Machine Interface.
(2) See measurement details page 28.
(3) Current THD.
(4) Current THD and Voltage THD.
(5) 60...600 V for the "UT" Sensor Modules.

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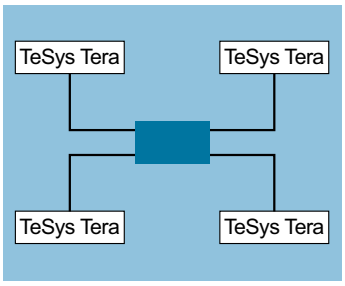

Star topology

Ethernet: network topology

Star topology

In a star topology, all the peripherals are linked via an intermediate peripheral (hub or switch).

In industrial Ethernet applications, the use of full duplex switches (instead of hubs) as central peripherals is strongly recommended.

Ethernet: different communication protocols

LTMR Main Units communicating over an Ethernet network can communicate either using the Modbus/TCP communication protocol or using the EtherNet/IP communication protocol. Both protocols are loaded in the Main Unit.
One must be selected for the operation.

Services available on Ethernet TCP/IP version		
	On Modbus/TCP	**On Ethernet/IP**
Web Server		
Modbus messaging	■	
IO Messaging		■
Explicit Messaging		■
SNTP/NTP	■	■

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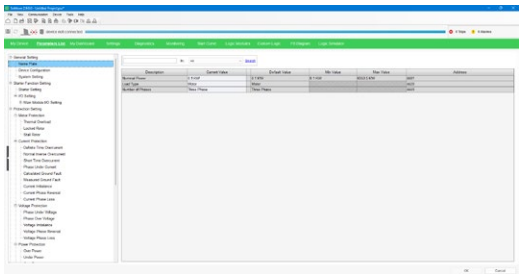


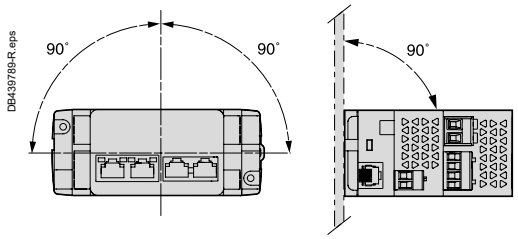
Example of Tera configurator setup screen

Configuration with SoMove

The configurator is incorporated in the SoMove software application, as posted on se.com website.
It allows configuration, commissioning and maintenance of motor starters protected by TeSys Tera motor management system.

A library containing predefined motor control mode functions is available in order to:
- allow standardisation
- avoid programming errors
- reduce motor starter setup times.

Environmental Characteristics

Product type			LTMT Main Units LTMTCT Sensors LTMTCTV Sensors	LTMT Expansion Modules
Conforming to standards			IEC/EN 60947-4-1, UL/CSA 60947-4-1	
Product certifications			IEC, UL, cUL	
Rated insulation voltage (Ui)	Conforming to IEC/EN 60947-1, overvoltage category III, degree of pollution 3	**V**	690 (4)	
Rated impulse withstand voltage (Uimp)	Conforming to IEC/EN 60947-4-1			
	∼ / ⎓ 100…240 V supply, digital inputs and digital outputs	**kV**	4	2
	⎓ 24 V supply, digital inputs and digital outputs	**kV**	0.8	0.8
	Communication circuits	**kV**	0.8	–
	Current or voltage measurement circuit	**kV**	6	–
Short-circuit withstand	Conforming to IEC/EN 60947-4-1	**kA**	100	
Climatic withstand	Conforming to IEC/EN 60068-2-30		12 x 24 hour cycles	
	Conforming to IEC/EN 60070-2-11	**h**	48	
Ambient air temperature around the device	Storage	**°C**	- 40…+80	
	Operation	**°C**	- 20…+70	
Operating position without derating	In relation to normal vertical mounting plate		±30° in relation to mounting plate, ±90° 	
Flame resistance	Conforming to UL 94	**°C**	960 (for parts supporting live components)	
	Conforming to IEC/EN 60695-2-12	**°C**	650 (for other parts)	
Shock resistance (1/2 sine wave, 11 ms)	Conforming to IEC/EN 60068-2-27 (1)		15 gn	
Vibration resistance	Conforming to IEC/EN 60068-2-6 (1) 5…300 Hz		4 gn (plate mounted) 1 gn (mounted on ⊔ rail)	
Resistance to electrostatic discharge	Conforming to IEC/EN 61000-4-2	**kV**	In open air: 8 kV - Level 3 On contact: 6 kV - Level 3	
Immunity to radiated electromagnetic interference	Conforming to IEC 61000-4-3	**V/m**	10 - Level 3	
Immunity to fast transient bursts	Conforming to IEC 61000-4-4	**kV**	On supply and digital outputs: 2 kV - Level 2 Other circuits: 2 kV - Level 1	
Immunity to radioelectric fields (2)	Conforming to IEC/EN 61000-4-6	**V**	10 V - Level 3	

Immunity to dissipated shock waves	Conforming to IEC/EN 61000-4-5		**Common mode**	**Differential mode**	**Common mode**	**Differential mode**
	Digital outputs and supply	**kV**	2	1	2	1
	⎓ 24 V inputs	**kV**	2	1	1	1
	∼ 100…240 V inputs	**kV**	–	–	2	1
	Voltage inputs	**kV**	2	1	–	–
	Communication	**kV**	2	–	–	–
	Temperature sensor (T1/T2) (3)	**kV**	–	1	–	–

Altitude derating			**2000 m**	**3000 m**	**3500 m**	**4000 m**	**4500 m**
	Rated operational voltage (Ui)		1	0.93	0.87	0.8	0.7
	Max. operating temperature		1	0.93	0.92	0.9	0.88

(1) Without modifying the contact states, in the most unfavorable direction.
(2) This product has been designed for use in environment A and in B, it may cause unwanted electromagnetic disturbance to other devices, which may require the implementation of adequate mitigation measures.
(3) For LTMTPTC Expansion Module.
(4) 600 V for the "UT" Sensor Modules.

Main Unit and Expansion Module characteristics

Product type				Main Units		Expansion Modules	
				LTMT…FM	LTMT…BD	Digital Module	Analog Module
Control supply							
Supply voltage (U)	Conforming to IEC/EN 60947-1		V	∿ / ⎓ 100…240	⎓ 24	–	
Resistance to voltage dips	Conforming to IEC/EN 61000-4-11		V	0 for 3 ms 70 % of U for 500 ms		–	
Associated protection			A	gG fuse, 0.5		–	
Supply voltage	Supply voltage limits		V	∿ / ⎓ 85...265	⎓ 18...30	–	
Current consumption	50/60 Hz or DC		mA	∿ / ⎓ 40…100	⎓ 150…350	–	
Connectors	Pitch		mm	7.25 for Supply Voltage 5.00 for Others		5.0	
Flexible cable without cable end	1 conductor		mm²	0.2…2.5		0.2…2.5	
	2 identical conductors		mm²	0.2…1.5		0.2…1.5	
Flexible cable with cable end							
Without insulated ferrule	1 conductor		mm²	0.25…2.5		0.25…2.5	
	2 identical conductors		mm²	0.5…1.5		0.5…1.5	
With insulated ferrule	1 conductor		mm²	0.25…2.5		0.25…2.5	
	2 identical conductors		mm²	0.2…1		0.2…1	
Solid cable without cable end	1 conductor		mm²	0.2…2.5		0.2…2.5	
	2 identical conductors		mm²	0.2…1		0.2…1	
Conductor size				24 AWG to 14 AWG		24 AWG to 14 AWG	Twisted Pair cable: 24 AWG to 16 AWG
Tightening torque			lbf-in	4.4		4.4	
Flat screwdriver			mm	3		3	
Input characteristics							
Nominal values	Conforming to IEC/EN 61131-1			Type 1 positive logic (⎓: resistive, ∿: capacitive)			–
	Voltage		V	⎓ 24		∿ / ⎓ 100…240	⎓ 24 –
	Current		mA	DC 7		AC/DC 3	DC 7 4 - 20
Digital inputs	Logic state 1	Voltage	V	18 < U < 30		85 < U < 265	18 < U < 30 –
		Current	mA	5 max		5 max	5 max –
	Logic state 0	Voltage	V	0 < U < 12		0 < U < 60	0 < U < 12 –
		Current	mA	5 max		5 max	5 max –
Response time	Change to state 1		ms	10		10	10 –
	Change to state 0		ms	10		10	10 –
Output characteristics							
Type				Volt free, single break			–
Load	∿ / ⎓			250 V / 10 A			–
	⎓			30 V / 5 A			4 - 20 mA
Permissible power in cat. AC-15	For 500 000 operating cycles		VA	480 / Ie max: 2 A			–
Permissible power in cat. DC-13	For 500 000 operating cycles		W	30 / Ie max: 1.25 A			–
Associated protection			A	gG fuse, 4			–
Max. frequency			Hz	2			–
Max. operating level			op. cycles/h	1800			–
Response time	Change to state 1		ms	10 max			–
	Change to state 0		ms	10 max			–
Measurement details							
Current				1 % for the 0.3…3 A and 2.5…25 A ranges 3 % for the 7…70 A and 10…100 A range		–	
Voltage				1 % from 110 to 690 V		–	
Ground fault current	Internal measurement without earth fault toroid			±3...5 % for current > 0.03 A in the 0.3…3 A range current > 0.25 A in the 2.5...25 A range current > 0.7 A in the 7...70 A range current > 1 A in the 10...100 A range		–	
	External measurement with earth fault toroid			±2.5%		–	
Temperature measurement				±2 %		–	
THD measurement				±5%		–	
Power factor				±3...6 % (1)		–	
Active and reactive power				±2...5 % (1)		–	
Internal clock				±30 min / year		–	

(1) Accuracy valid under balanced conditions.

Characteristics

Bus and network characteristics

Type of bus/network	Modbus	PROFIBUS DP	Ethernet
Physical interface	2-wire RS 485	polarised 2-wire RS 485	IEEE 802.3
Addressing	1 to 247	1 to 125	0 to 159 (1)
Transmission speeds	0.24 to 115.2 kb/s	9.6 kb to 12 Mb/s	10/100 Mb/s, with automatic recognition
Connections	RJ45/terminal block	9-way SUB-D/terminal block	RJ45
Cables	2 shielded twisted pairs	2 shielded twisted pairs, type A	2 shielded twisted pairs

LTMTCUF operator control unit

Environment

Conforming to standards			IEC/EN 61131-2, UL60947-4-1A, CSA 22-2 n°60947-4-1
Product certifications			UL, CSA, CE, EAC/GOST, RCM/CTIC'K
Ambient air temperature around the device	Storage	**°C**	-40…+80
	Operation	**°C**	-20…+60
Relative humidity			15…95 % without condensation
Climatic withstand	Conforming to IEC/EN 60068-2-30		12 x 24 hour cycles
Degree of protection	Conforming to IEC 60947-1		IP54
Shock resistance	Conforming to IEC/EN 60068-2-27		15 gn / 11 ms
Vibration resistance	Conforming to IEC/EN 60068-2-6 5…300 Hz		4 gn
Flame resistance	Conforming to IEC 60947-1	**°C**	650
	Conforming to UL 94		V2

Electrical characteristics

Supply to the product			Powered via the Main Unit
Maximum current		**mA**	140
Maximum power dissipated		**W**	1
Resistance to electromagnetic discharge	Conforming to IEC/EN 61000-4-2	**kV**	In open air: 8. Level 3 On contact: 4. Level 3
Immunity to radiated electromagnetic interference	Conforming to IEC/EN 61000-4-3	**V/m**	10 - Level 3
Immunity to fast transient bursts	Conforming to IEC/EN 61000-4-4	**kV**	2, shielded access. Level 3
Immunity to radioelectric fields	Conforming to IEC/EN 61000-4-6	**V**	10. Level 3
Immunity to shock waves	Conforming to IEC/EN 61000-4-5	**kV**	2, shielded access. Level 3

Physical characteristics

Mounting		Flush mounted
Display		Backlit LCD
Signalling		By 4 LEDs
Cabling		RJ45

(1) For DHCP, stored IP, addressing limited by subnet mask.

Characteristics

LT6CT●●●● external current transformer characteristics

Conforming to standards		IEC 60185, BS 7626			
Precision		Class 5P			
Precision limit factor		15			
Rated insulation voltage (Ui)		690			
Maximum operating temperature	**°C**	50			
Transformer ratio	**A**	100/1	200/1	400/1	800/1
Diameter of conductor passage hole	**mm²**	35	35	35	35
Maximum cabling c.s.a.	**mm²**	30 x10	30 x 10	30 x 10	incorporated (1)

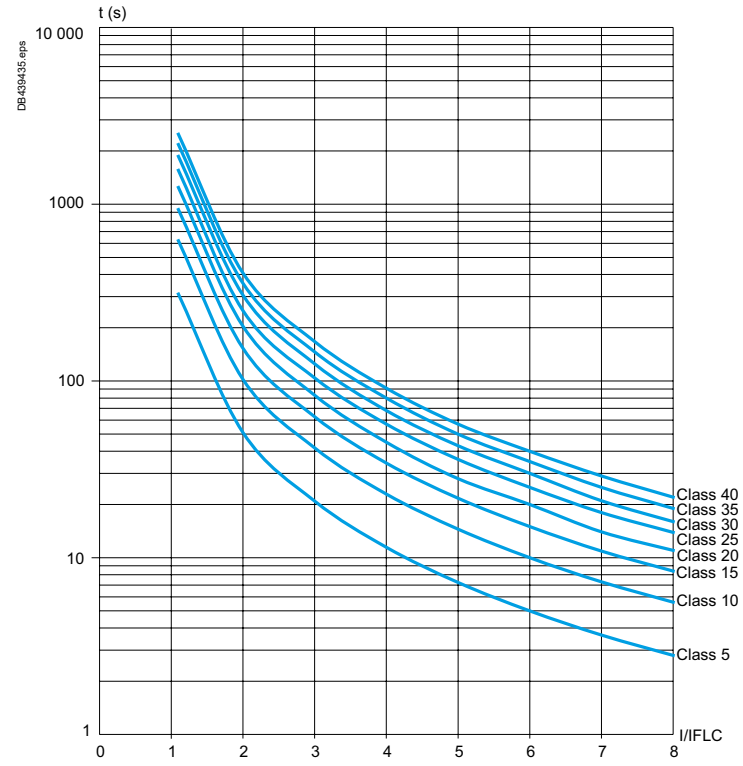
Ground fault toroid characteristics

Toroid type		**50437**	**50438**	**50439**	**50440**	**50441**	**50442**	**50485**	**50486**
Rated insulation voltage Ui	**V**	1000							
Operating temperature	**°C**	- 35…+ 70							
Protection index		IP30 (connections IP20)							
Transformer ratio		1/1000							
Rated operational current Ie	**A**	65	85	160	250	400	630	85	250
Max. conductor c.s.a. per phase	**mm²**	25	50	95	240	2 x 185	2 x 240	50	240

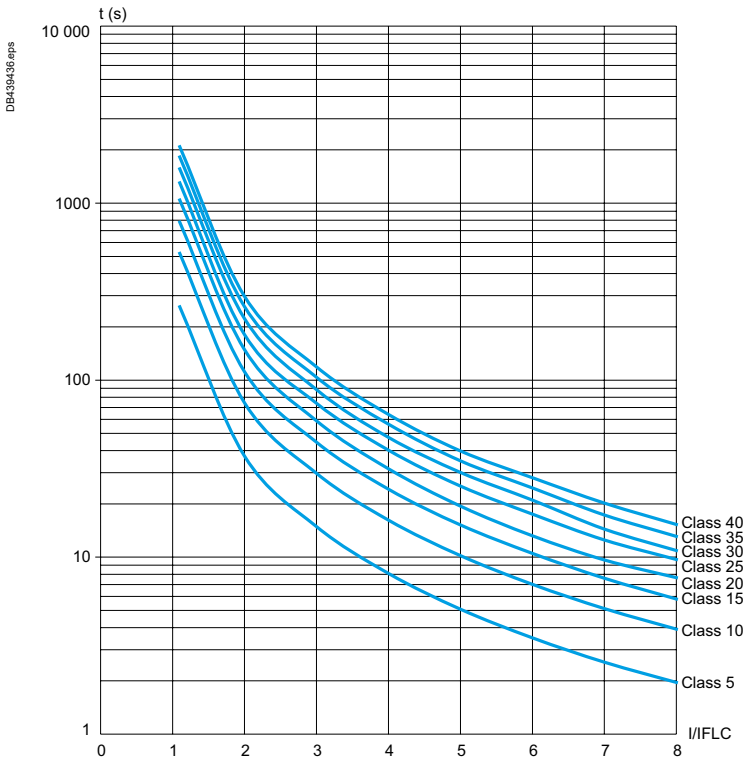
(1) Electrical connection to be made using M10 bolt.

Tripping curves

Cold state curves



Hot state curves

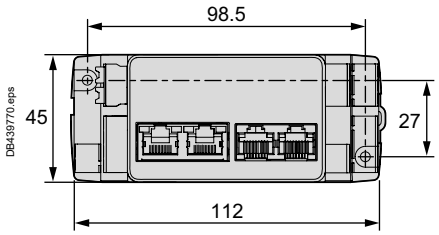


Dimensions, mounting

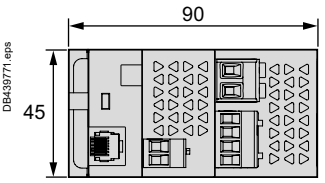
All dimensions on this page are in mm.

LTMT Main Units

Front view

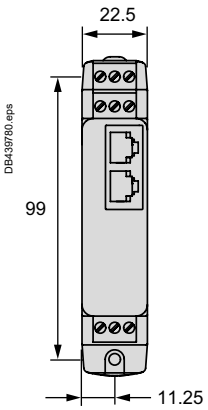


Left side view

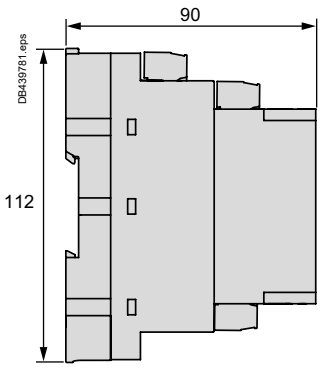


LTMT Expansion Modules

Front view



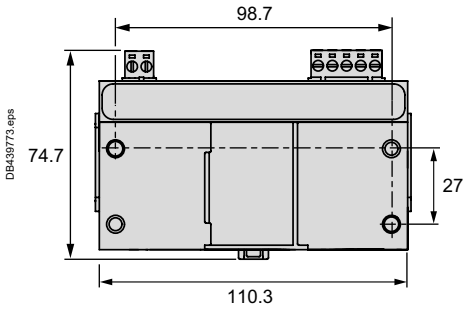
Side view



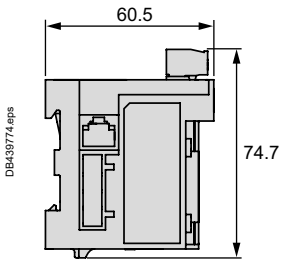
LTMT Sensor Modules

LTMTCT••T / LTMTCTV••T Horizontal Sensor Modules

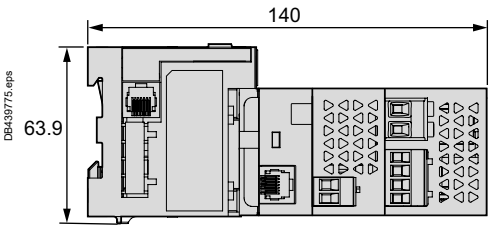
Front view



Left side view

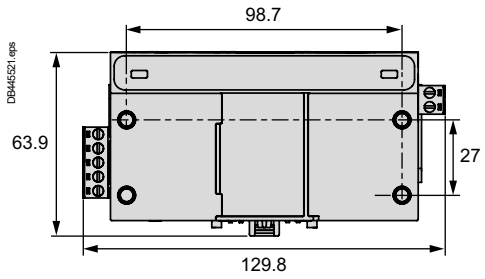


Horizontal Sensor Module with Main Unit - Left side view

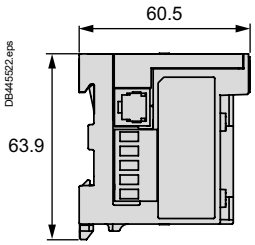


LTMTCTV••UT Horizontal Sensor Modules, SIDE Connectors

Front view



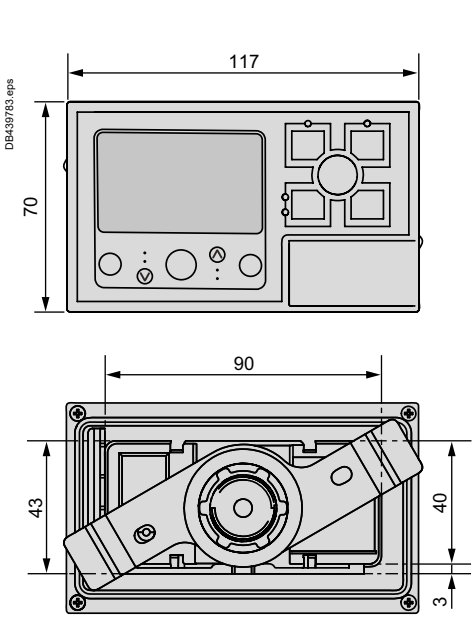
Left side view



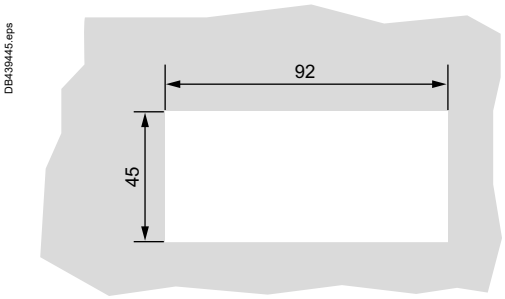
Dimensions

All dimensions on this page are in mm.

LTMTCUF Operator Control Unit

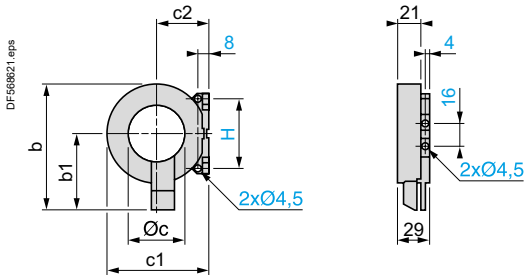


Panel mounting, cut-out



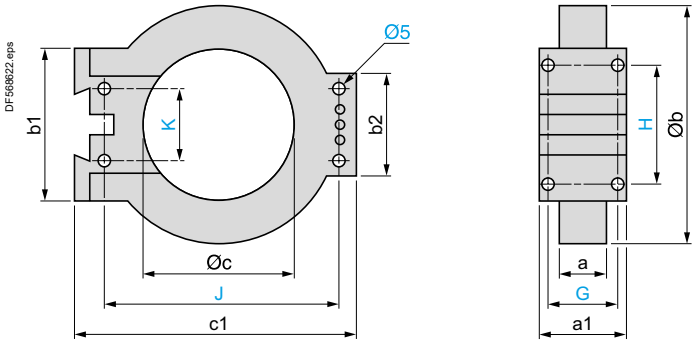
Ground fault toroids (1)

50437 and 50438



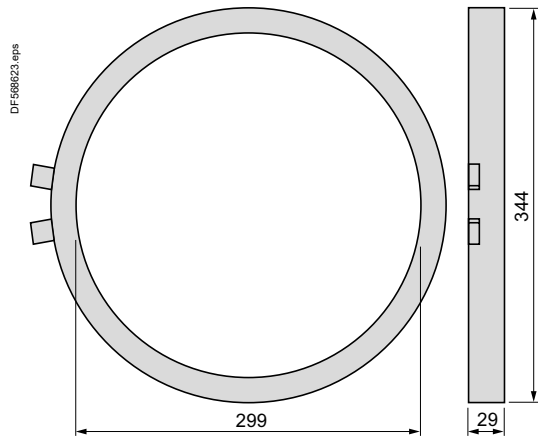
Type	b	b1	Øc	c1	c2	H
50437	83	53	30	60	31	50
50438	109	66	50	87	45	60

50439, 50440 and 50441



Type	a	a1	Øb	b1	b2	Øc	c1	G	H	J	K
50439	26.5	44	122	80	55	80	150	35	65	126	40
50440	26.5	44	164	80	55	120	190	35	65	166	40
50441	29	46	256	120	90	196	274	37	104	254	60

50442

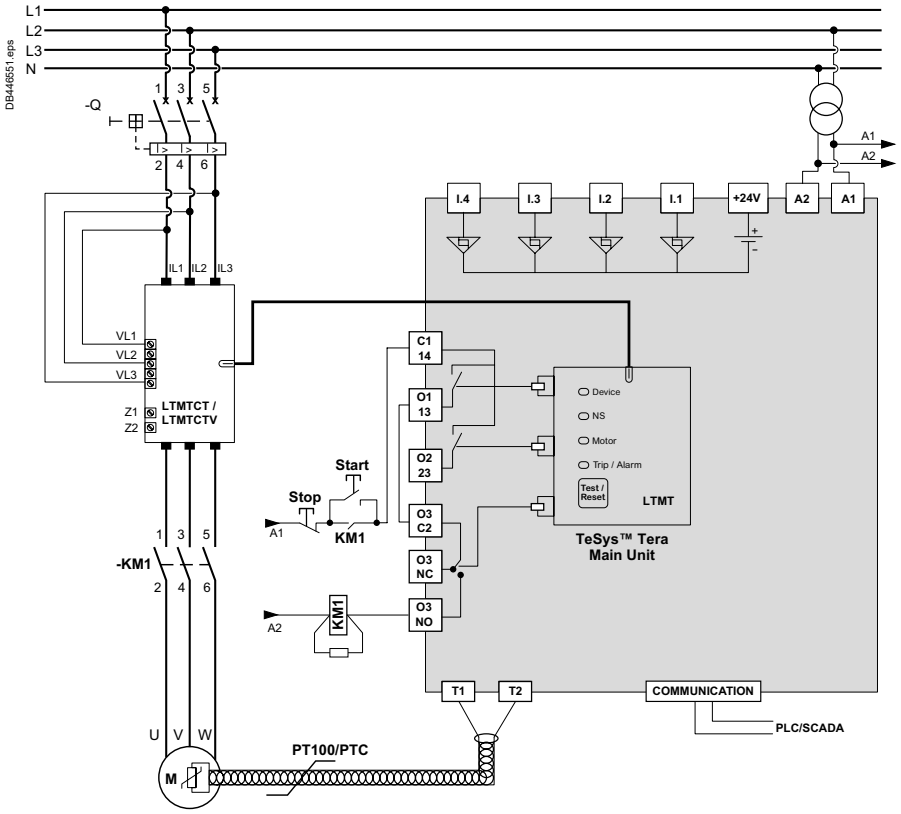


*(1) Can be used with **LTMT** Expansion Module **LTMTZCT22FM***

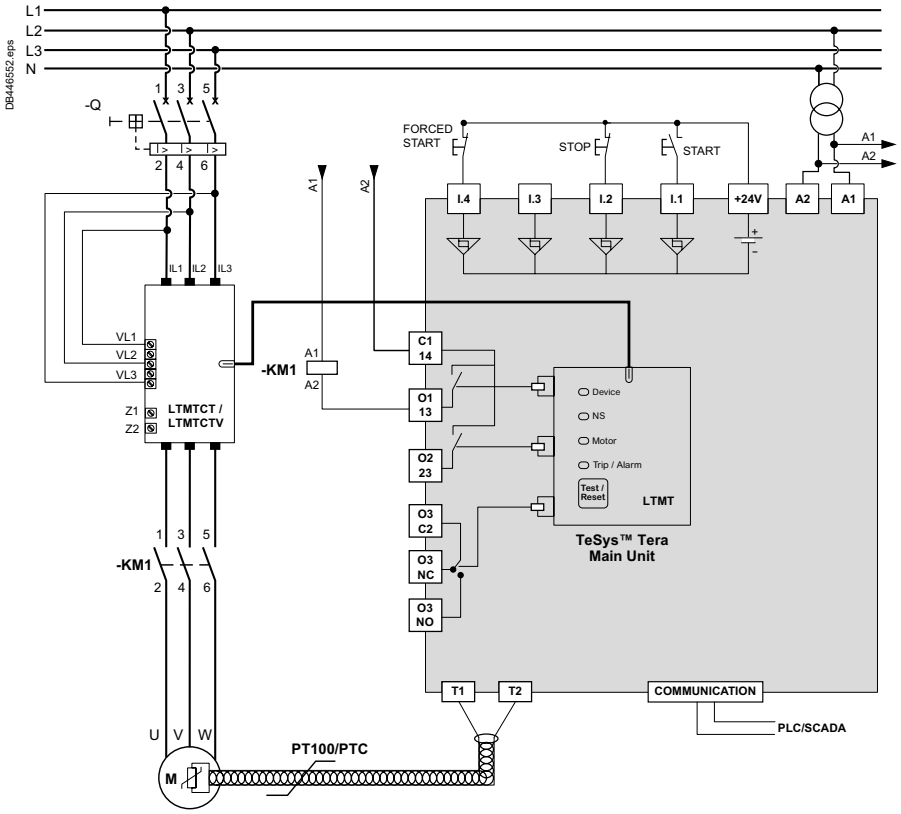
Schemes (1)

Schemes (1)

Overload Starter



Direct Online Starter

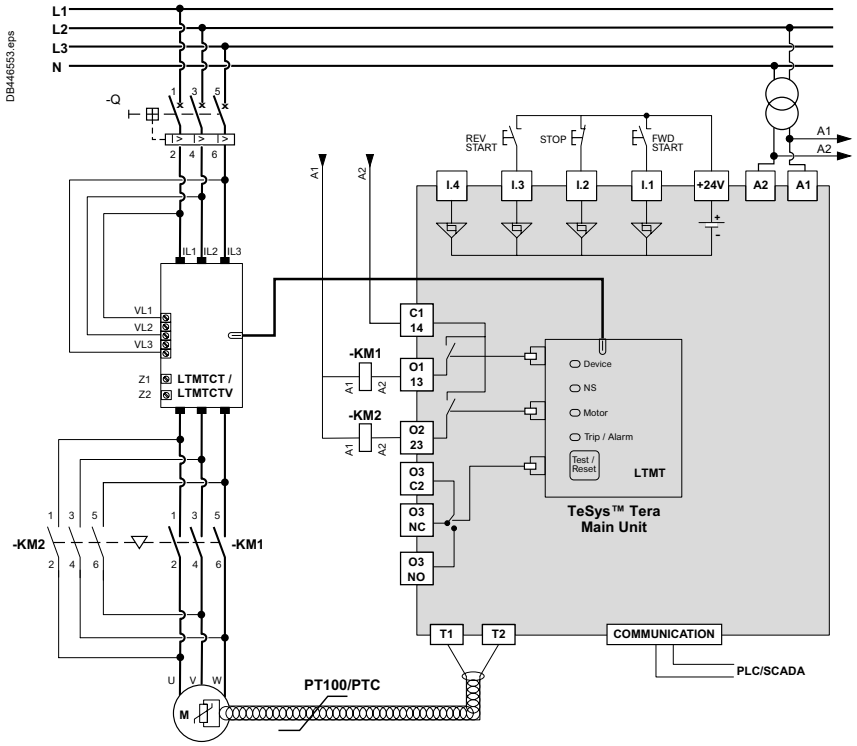


Note: Input I.4 can be configured for Forced Start function for all the other starter schemes.

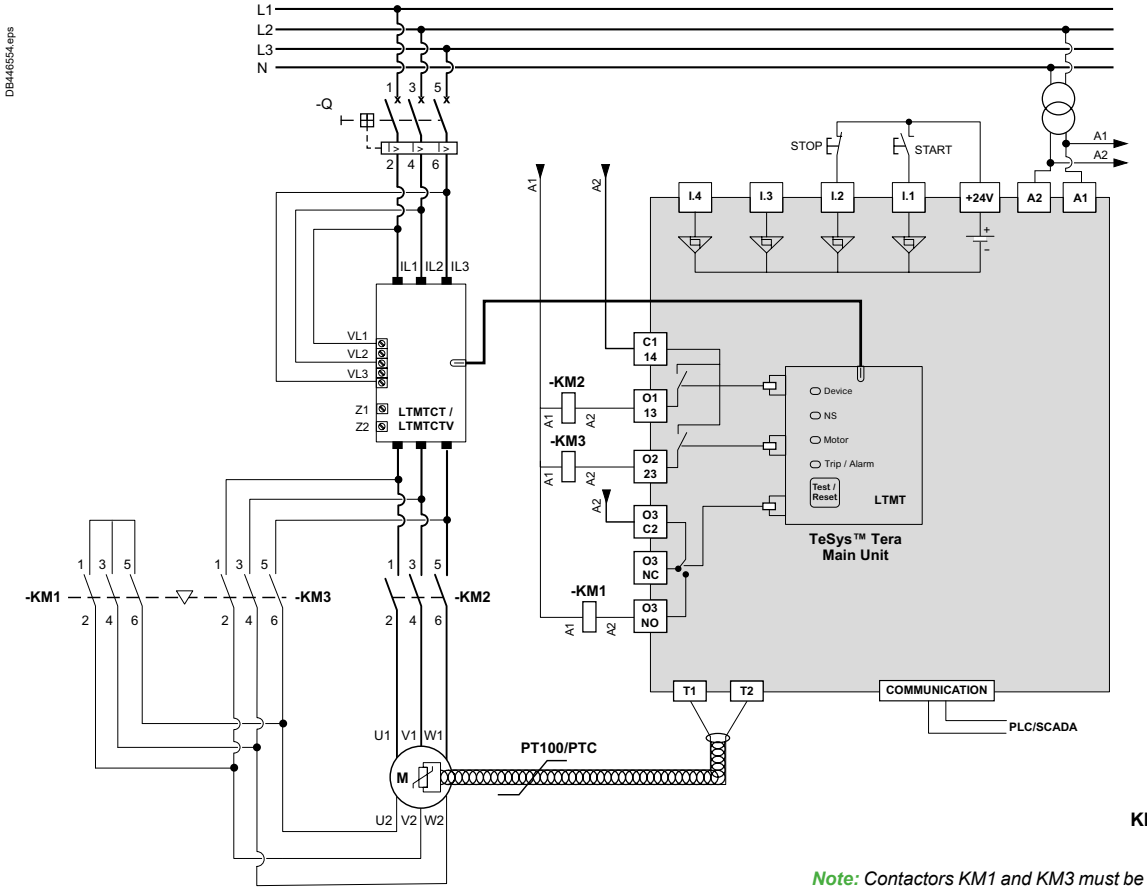
(1) For more details, please refer to the TeSys Tera Motor Management Controller User Guide - DOCA0257EN.

Schemes (1)

Reverse Direct Online Starter



Star-Delta Starter



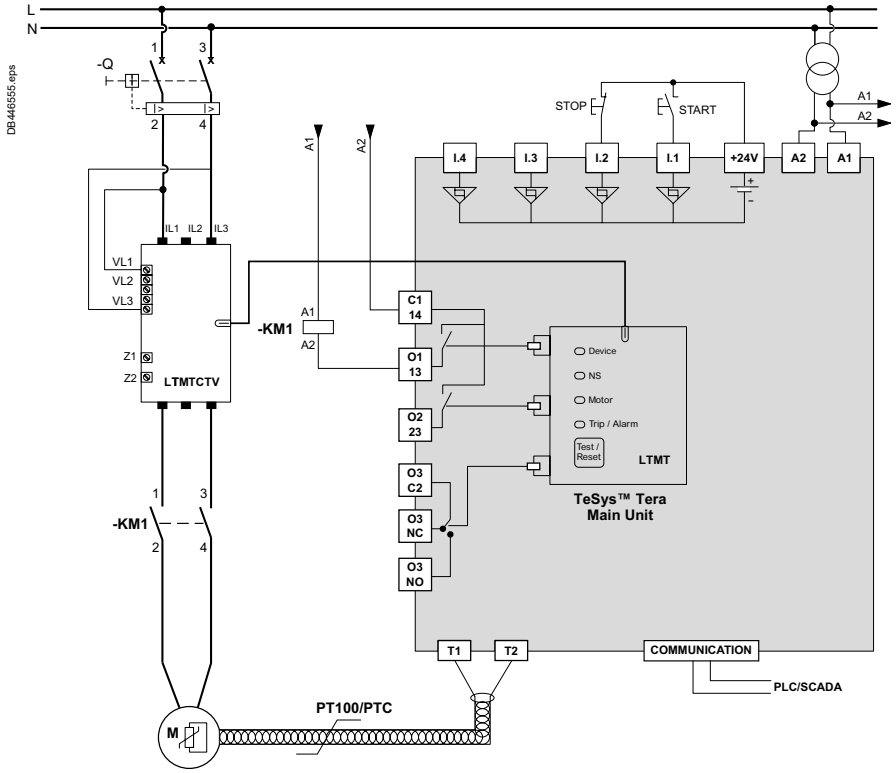
KM1: Star contactor
KM2: Main / Line contactor
KM3: Delta contactor

Note: Contactors KM1 and KM3 must be mechanically interlocked.

(1) For more details, please refer to the TeSys Tera Motor Management Controller User Guide - DOCA0257EN.

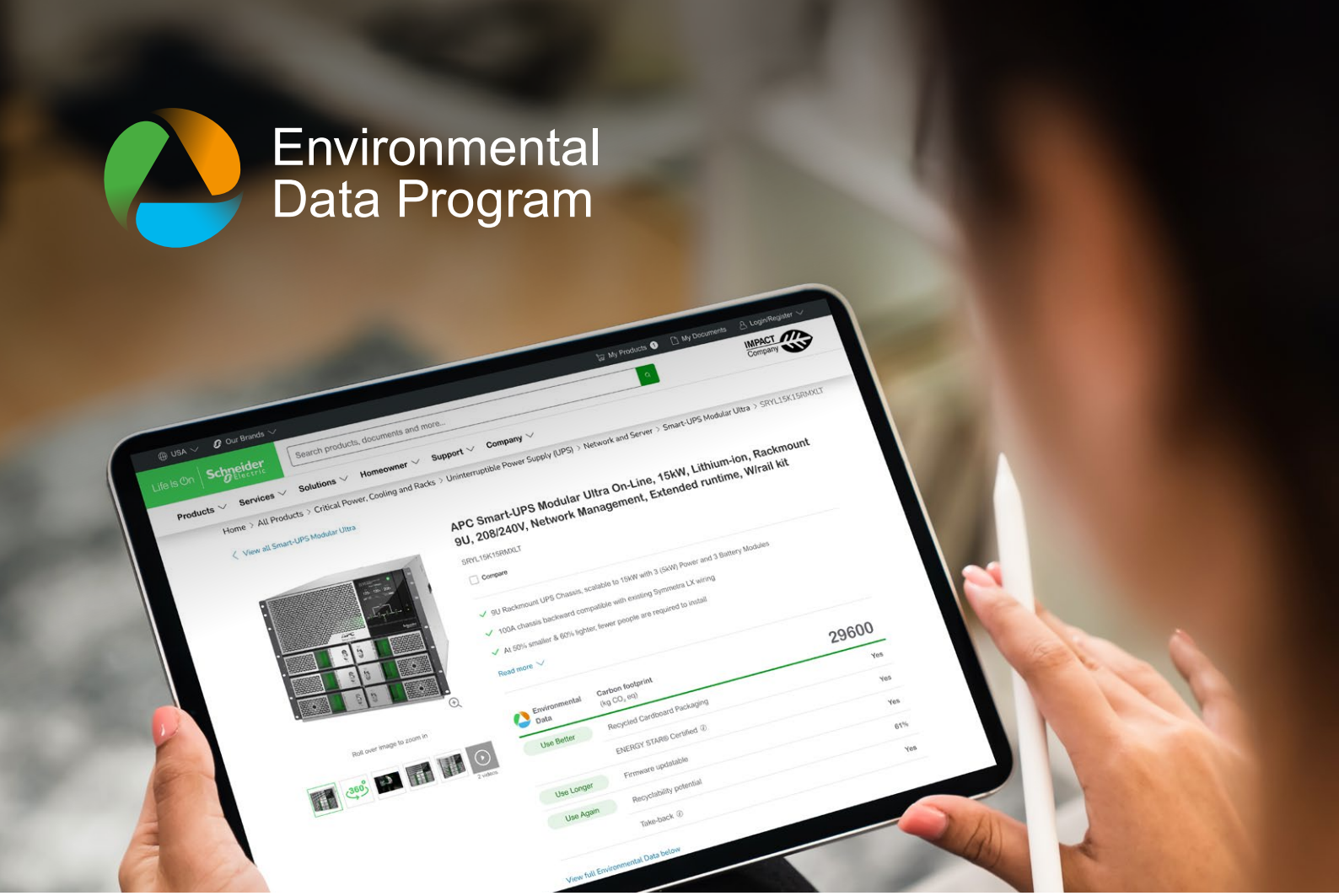
Schemes (1)

Single Phase Direct Online Starter



(1) For more details, please refer to the TeSys Tera Motor Management Controller User Guide - DOCA0257EN.

Environmental Data Program

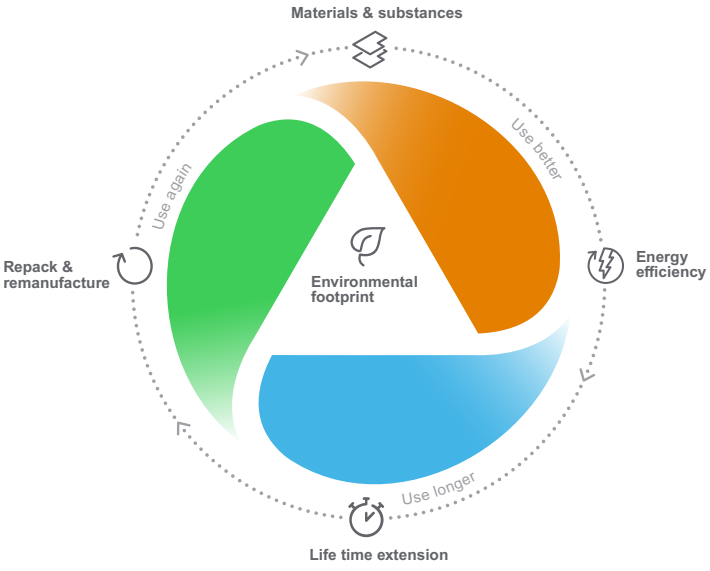


Next-level transparency for better-informed product choices

The Environmental Data Program is a framework for how we measure, categorize, and compare the environmental attributes and footprint of our products.

Using a rigorous, fact-based methodology, the program provides environmental data from across the product lifecycle.

Five data categories across the product lifecycle



Use Better: How sustainable a product is, including environmental footprint, materials and substances, packaging, and energy efficiency.

Use Longer: How a product's life time can be effectively extended in terms of repairability and updatability.

Use Again: How a product can be reused, from dismantling and remanufacturing to recyclability and manufacturer take back.

With this transparent, verified data, customers and partners are empowered to make conscious environmental choices and accurately evaluate and report on sustainability performance.

All our hardware offers have an associated environmental data available on se.com product pages.

Learn more about the Environmental Data Program

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