

Защита кабеля LCOS CCI

Технические характеристики

По вопросам продаж и поддержки обращайтесь:

Алматы (727)345-47-04
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Владикавказ (8672)28-90-48
Владимир (4922)49-43-18
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89

Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Курган (3522)50-90-47
Липецк (4742)52-20-81

Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Новокузнецк (3843)20-46-81
Ноябрьск (3496)41-32-12
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Петрозаводск (8142)55-98-37
Псков (8112)59-10-37
Пермь (342)205-81-47

Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Саранск (8342)22-96-24
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Сыктывкар (8212)25-95-17
Тамбов (4752)50-40-97
Тверь (4822)63-31-35

Тольятти (8482)63-91-07
Томск (3822)98-41-53
Тула (4872)33-79-87
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Улан-Удэ (3012)59-97-51
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Чебоксары (8352)28-53-07
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Чита (3022)38-34-83
Якутск (4112)23-90-97
Ярославль (4852)69-52-93

Россия +7(495)268-04-70

Казахстан +7(727)345-47-04

Беларусь +(375)257-127-884

Узбекистан +998(71)205-18-59

Киргизия +996(312)96-26-47

эл.почта: ezd@nt-rt.ru || сайт: <https://lutze.nt-rt.ru/>

Technical data sheet

Load monitoring · LCOS CCI

Electronic load monitoring up to DC 16 A

1-channel version, single pole switching, DC 2 A – DC 16 A, adjustable characteristic

Collective fault message: single/90% message, Remote Control input



Identification

Type	LCOS-CC-I-1K-1P16-DC24V-PB
Part No.	773100.1121

Product version

Hardware revision	1.0
Software version	1.4
Datasheet version	05

Input

Type of function	1-channel 1 pin switching
Technology	Powerbus and terminal strip
Rated voltage U_N	DC 24 V
Operation voltage range	DC 20.4–28.8 V
Supply current	DC 16 A via LCOS Powerbus
Reverse voltage protection	internal electronics

Control input (Set / Reset)

Signal level	DC 24 V acc. to EN 61131
OFF	Pulse with falling edge >100 ms, <800 ms
ON	Pulse with falling edge > 1 s
Isolation voltage	AC 1.5 kV, 1 min.

Communication internal

Communication	internal data bus
---------------	-------------------

Technical data sheet

Load monitoring · LCOS CCI

BUS physics	CANopen acc. to ISO 11898-1, 11898-2
Participants	64 units
BUS topology	Line
Bus length	Max. 25 m
Galvanic isolation	500 V

Output

Switching element	MOSFET
Output current	max. DC 16 A
Voltage drop	<170 mV (10 A)
Status display output	LED green: no error, LED green flashing: 90 % utilisation LED red flashing: triggered, LED red: unit off
Switch-on capacity	>10000 µF
Current range	2 A – 16 A (can be set via switch in 2 A steps)
Characteristic	fast (1), medium (2), slow 1 (3), slow 2 (4), slow 3 (5), adjustable via switch

Signal output

Switching element	Transistor, open collector with pull-up resistor
Single channel message	Acc. to IEC 61131-2: High level: no errors, low level: there are errors
90 % of the rated current I_B	Acc. to IEC 61131-2: High level <90 %, low level >90 %

General

Dimensions (w × h × d)	22.5 mm × 144.0 mm × 102.0 mm (including function carrier, without plug-in terminals on the side)
Housing material	PA 6.6 (UL 94 V-0, NFF I2, F2)
Color of the housing	RAL 7012 basalt grey
Mounting	plug-in on LCOS function carrier 22.5 mm (Accessories) DIN rail mounting (EN 60715)
Installation position	Vertical
MTBF	690000 h @ 40 °C, 100 operations button, 30 revolutions coding switch
Degree of protection	IP20 (EN 60529)
Connection type load side	X1: 8-pin multi-point plug, RM 5.08
Connection type control side	X2: 12-pin multi-point plug, RM 3.5
Weight/unit	0.2 kg
PU (units)	1

General ambient conditions

Operation temperature range	-25 °C ... +55 °C
Storage temperature range	-40 °C ... +70 °C
Relative air humidity	10 % – 95 %, without condensation
Vibration resistance	0.7 g acc. to EN 60068-2-6
Shock resistance	15 g acc. EN 60068-2-27

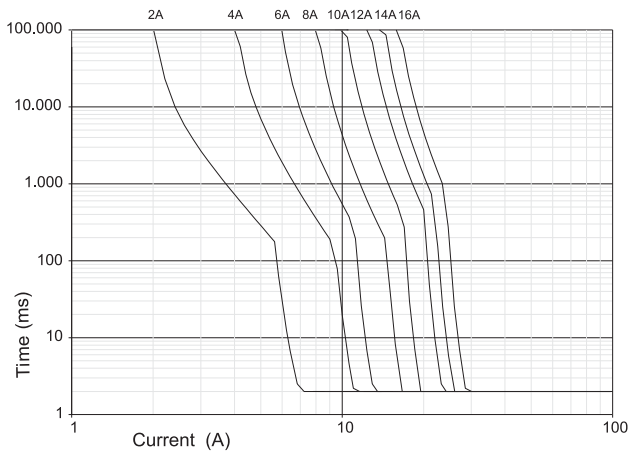
Load monitoring · LCOS CCI

Conformity	CE UKCA
Certifications	cULus (E170585) DNV (TAA00002SY)
Standards	EN 61000-6-2 EN 61000-6-4 UL 61010-1 UL 61010-2-201 DNV-CG-0339

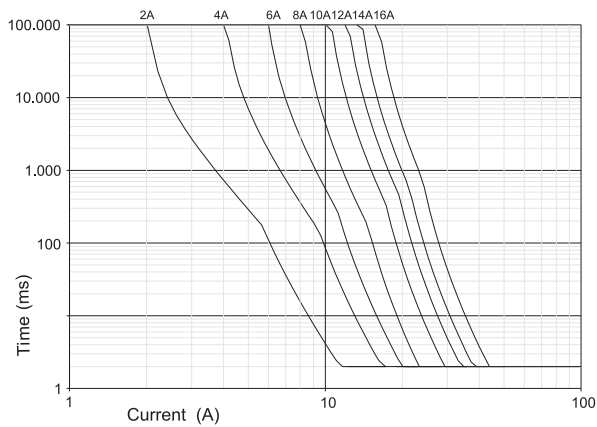
Included in the delivery	Plug-in terminals : CS 5.08 and CS 3.50
Not included in the delivery	Function carrier and other accessories

[illegible]

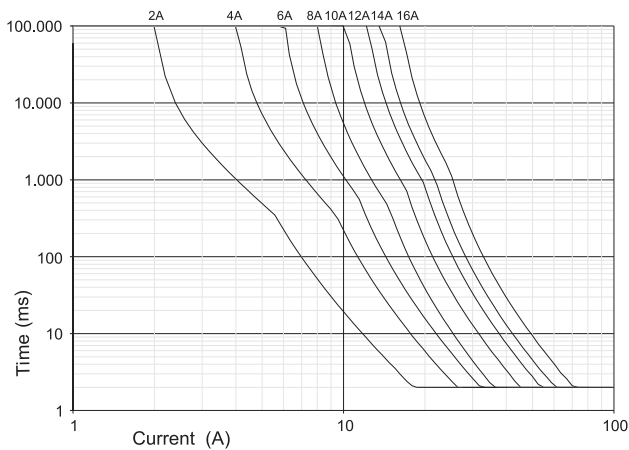
1: Characteristic fast



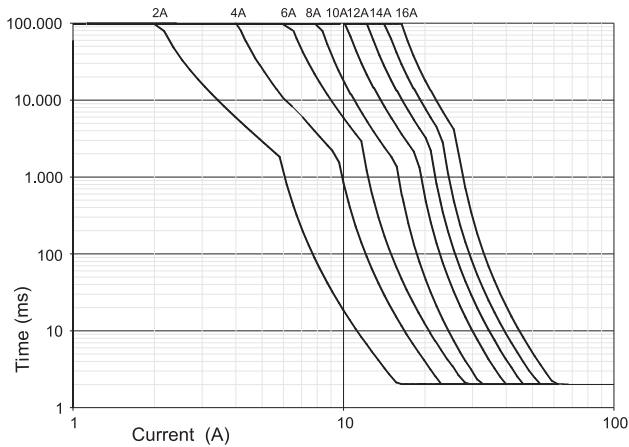
2: Characteristic medium



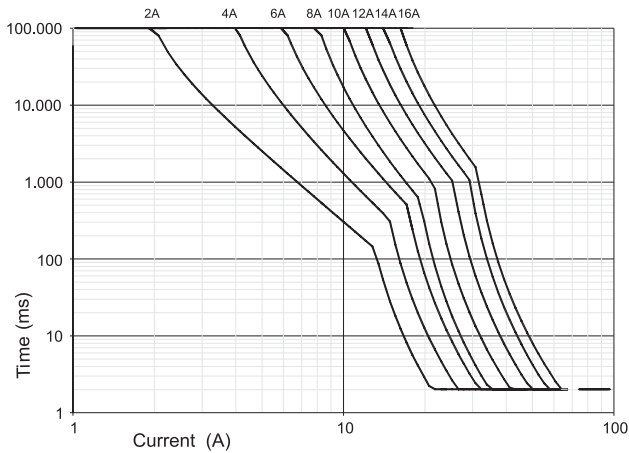
3: Characteristic slow-1



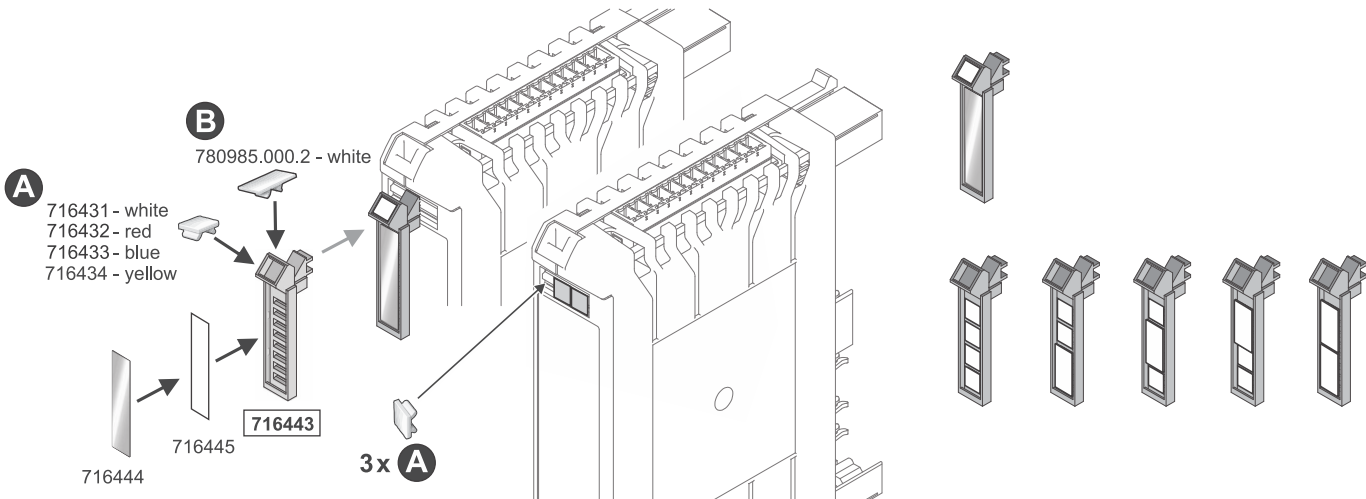
4: Characteristic slow-2



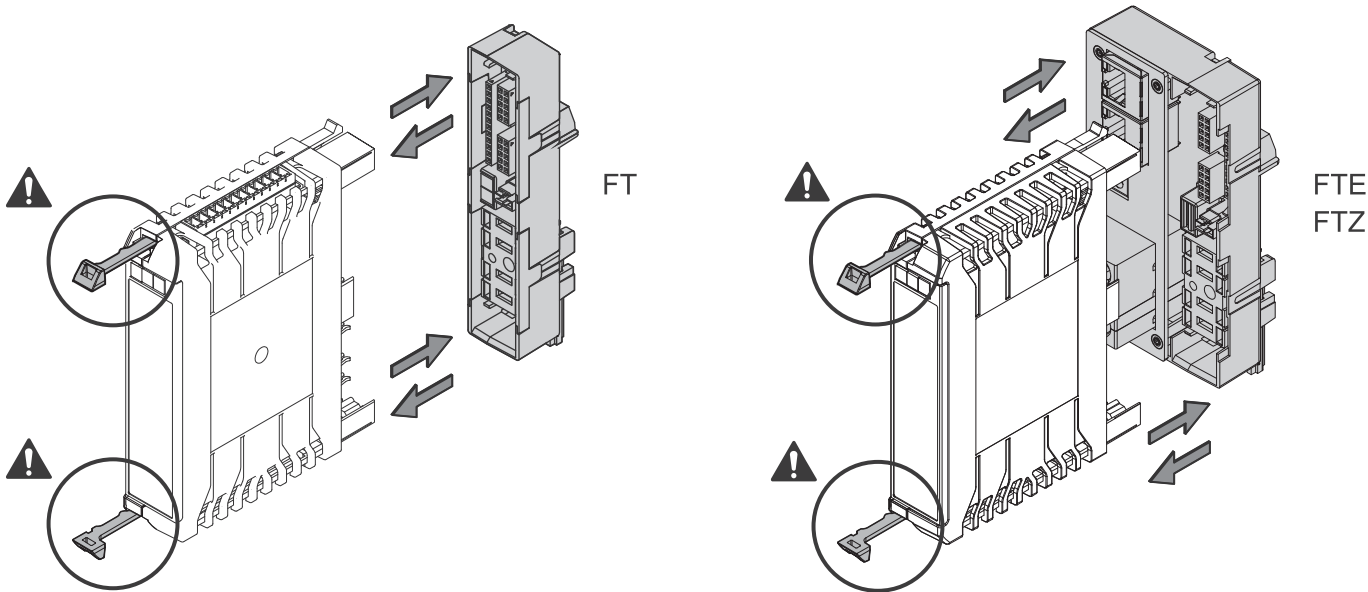
5: Characteristic slow-3



Use

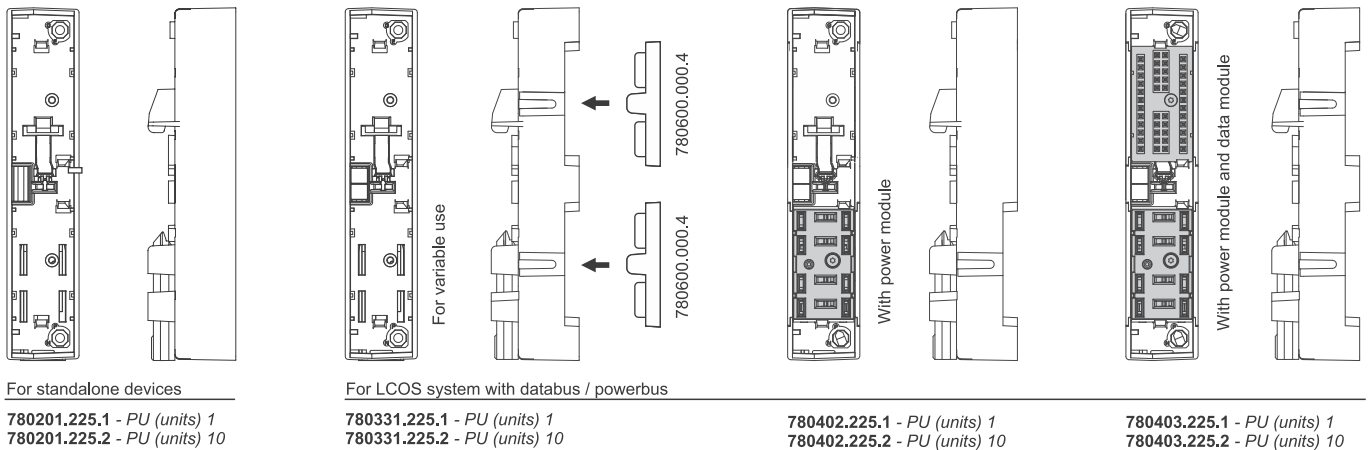


Use



Use

FT, without supply - LCOS function carriers, 22.5 mm - overview



Technical data sheet

Load monitoring · LCOS CCI

Electronic load monitoring up to DC 16 A
1-channel version, single pole switching, DC 2 A – DC 16 A, adjustable characteristic



Identification

Type	LCOS-CC-I-1K-1P16-DC24V
Part No.	773101.1121

Product version

Hardware revision	1.0
Software version	1.4
Datasheet version	01

Input

Type of function	1-channel 1 pin switching
Technology	Powerbus and terminal strip
Rated voltage U_N	DC 24 V
Operation voltage range	DC 20.4–28.8 V
Supply current	DC 16 A via LCOS Powerbus
Reverse voltage protection	Internal electronics

Communication internal

Communication	internal data bus
BUS physics	CANopen acc. to ISO 11898-1, 11898-2
Participants	64 units
BUS topology	Line
Bus length	Max. 25 m
Galvanic isolation	500 V

Technical data sheet

Load monitoring · LCOS CCI

Output

Switching element	MOSFET
Output current	Max. DC 16 A
Voltage drop	<170 mV (10 A)
Status display output	LED green: no error, LED green flashing: 90 % utilisation LED red flashing: triggered, LED red: unit off
Switch-on capacity	>10000 µF
Current range	2 A – 16 A (can be set via switch in 2 A steps)
Characteristic	Fast (1), medium (2), slow 1 (3), slow 2 (4), slow 3 (5), adjustable via switch

General

Dimensions (w × h × d)	22.5 mm × 129.0 mm × 102.0 mm (including function carrier, without plug-in terminals on the side)
Housing material	PA 6.6 (UL 94 V-0, NFF I2, F2)
Color of the housing	RAL 7012 Basalt grey
Mounting	Plug-in On LCOS function carrier 22.5 mm (Accessories) DIN rail mounting (EN 60715)
Installation position	Vertical
MTBF	690000 h @ 40 °C, 100 operations button, 30 revolutions coding switch
Degree of protection	IP20 (EN 60529)
Connection type load side	X1: 8-pin multi-point plug, RM 5.08
Weight/unit	0.2 kg
PU (units)	1

General ambient conditions

Operation temperature range	-25 °C ... +55 °C
Storage temperature range	-40 °C ... +70 °C
Relative air humidity	10 % – 95 %, without condensation
Vibration resistance	0.7 g acc. to EN 60068-2-6
Shock resistance	15 g acc. EN 60068-2-27

Certifications/Standards

Conformity	CE UKCA
Certifications	cULus (E170585) DNV (TAA00002SY)
Standards	EN 61000-6-2 EN 61000-6-4 UL 61010-1 UL 61010-2-201 DNV-CG-0339

Technical data sheet

Load monitoring · LCOS CCI

Notes and Comments

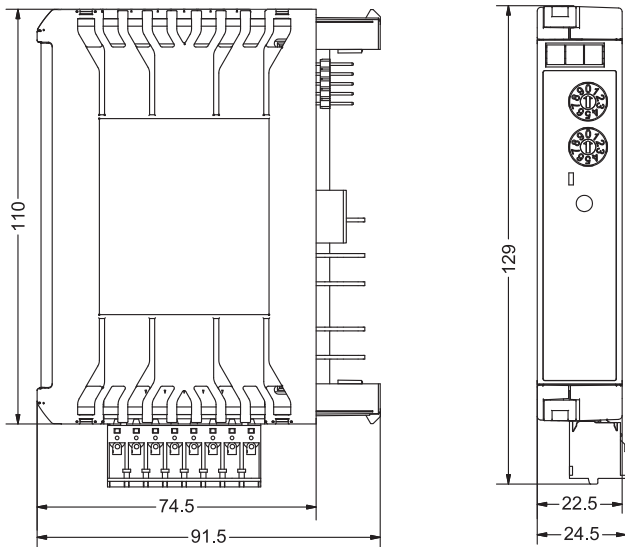
Included in the delivery

Not included in the delivery

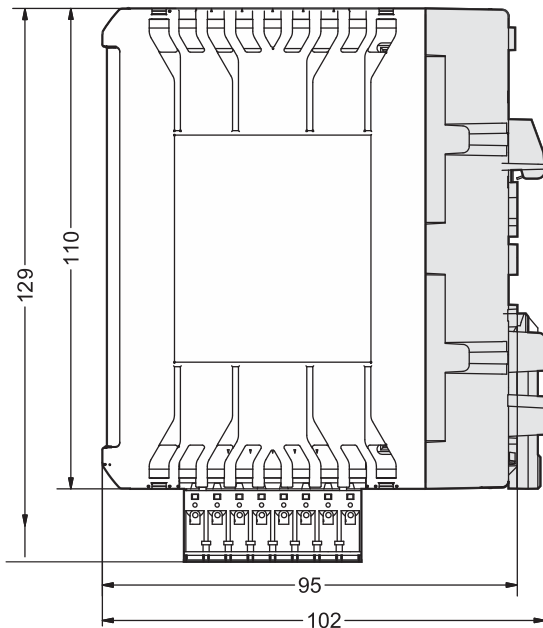
Plug-in terminal: RM 5.08

Function carrier and other accessories

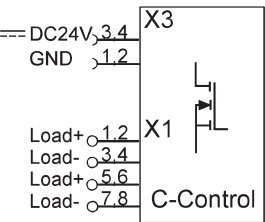
Dimensions



Dimensions



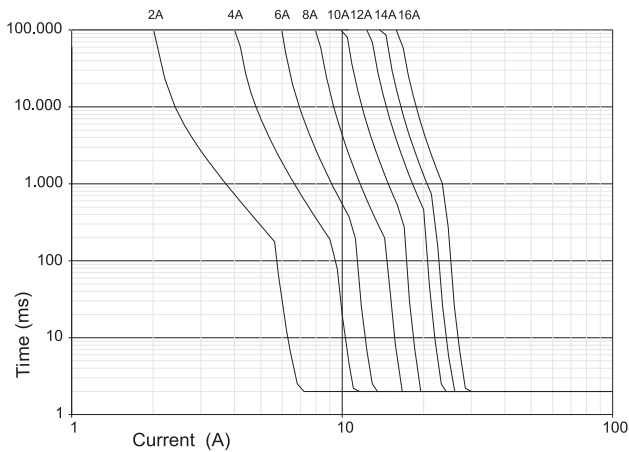
PIN assignment



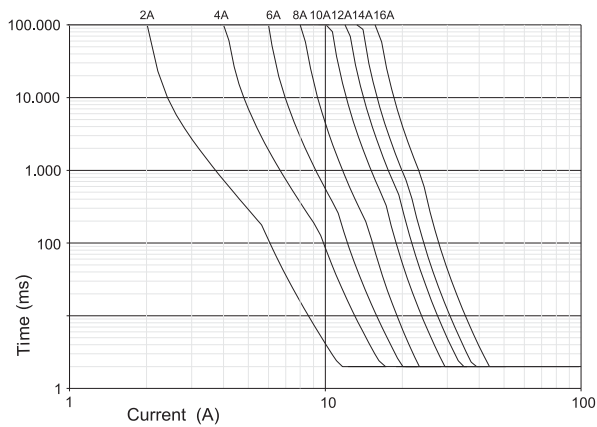
X3 Powerbus		
PIN/ Broches	Signal	
1	GND	
2	GND	
3	DC24V	
4	DC24V	

X1		
PIN/ Broches	Signal	
1	Load +	
2	Load +	
3	Load -	
4	Load -	
5	Load +	
6	Load +	
7	Load -	
8	Load -	

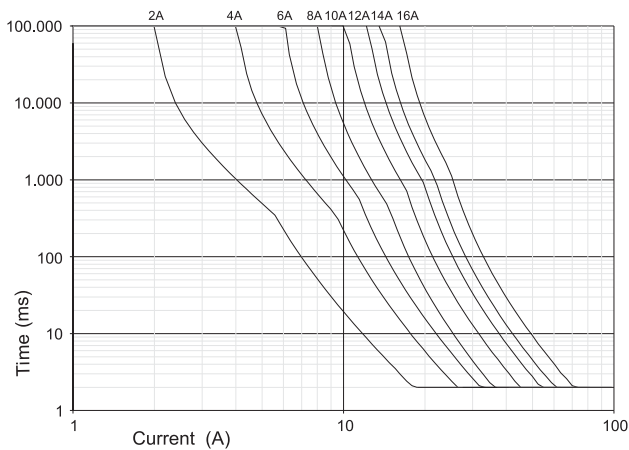
1: Characteristic fast



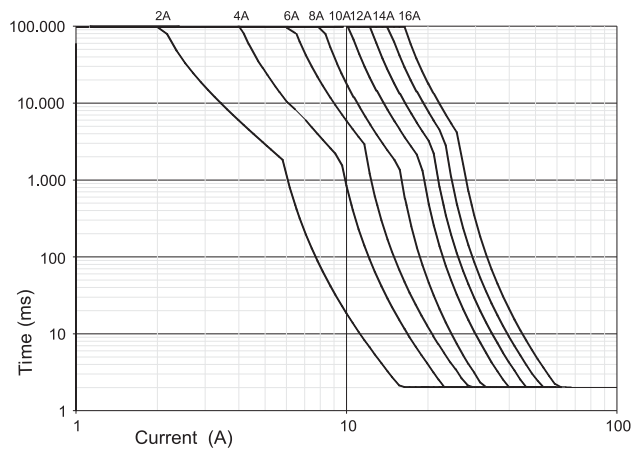
2: Characteristic medium



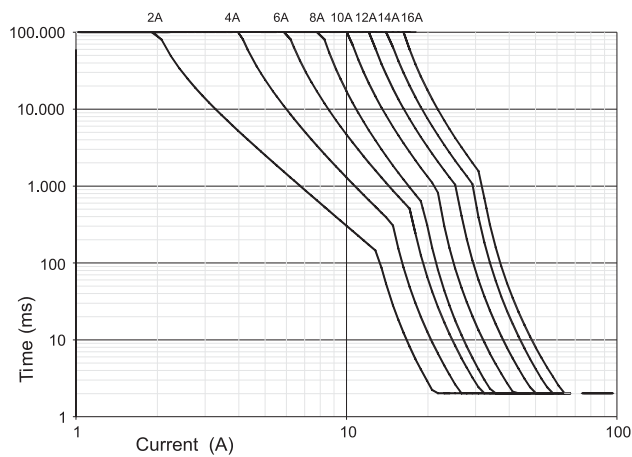
3: Characteristic slow-1



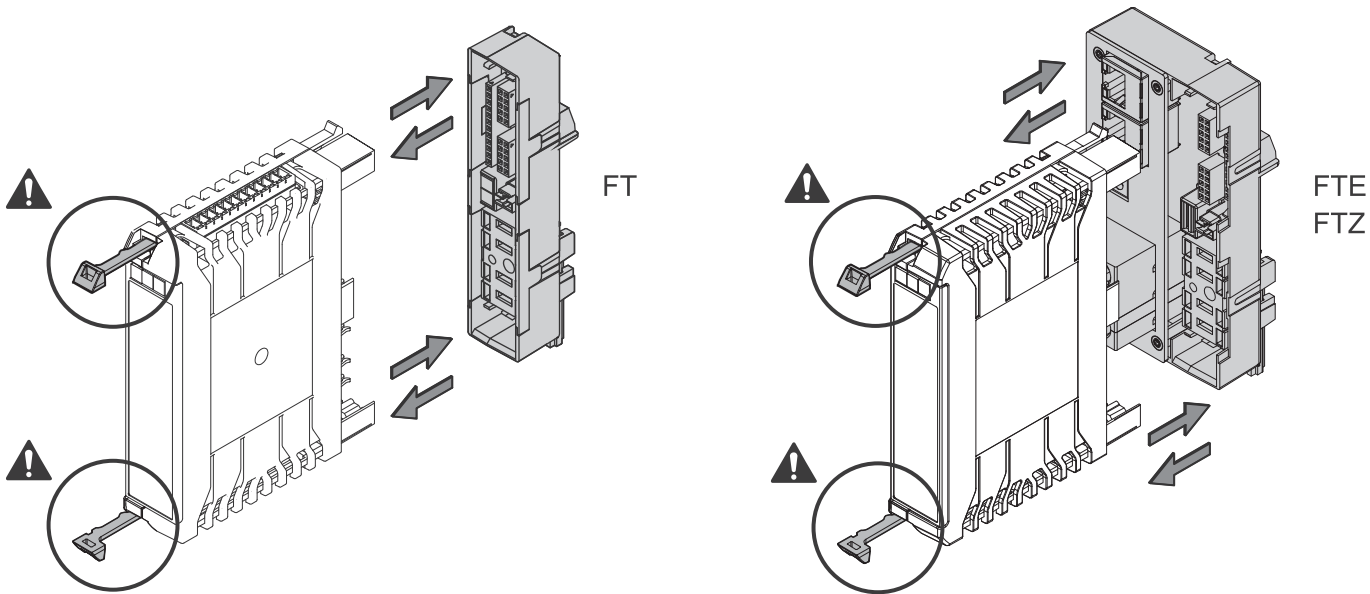
4: Characteristic slow-2



5: Characteristic slow-3

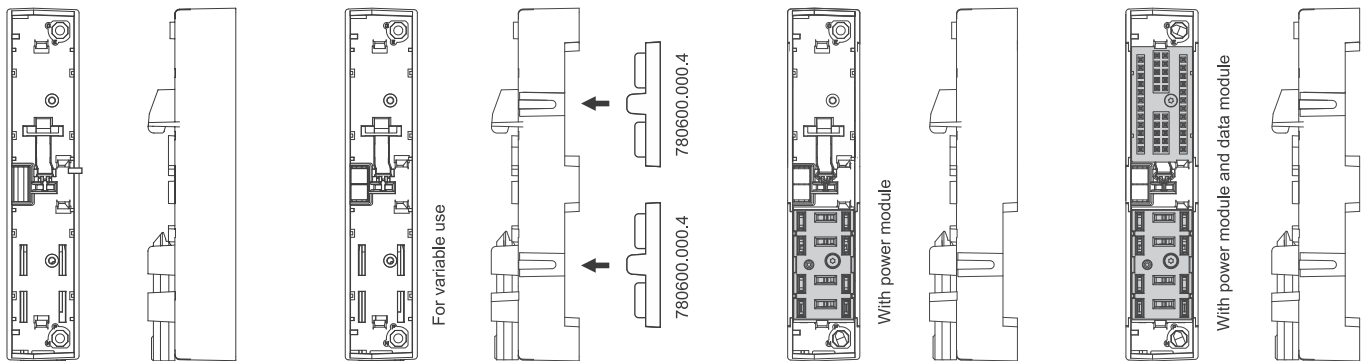


Use



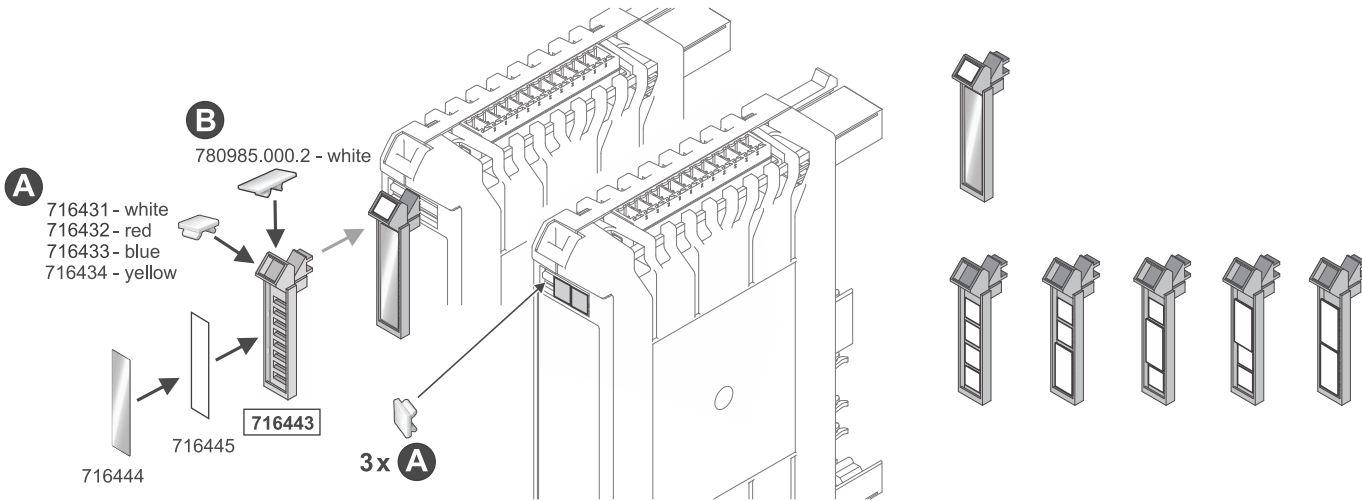
Use

FT, without supply - LCOS function carriers, 22.5 mm - overview



For standalone devices	For LCOS system with databus / powerbus		
780201.225.1 - PU (units) 1	780331.225.1 - PU (units) 1	780402.225.1 - PU (units) 1	780403.225.1 - PU (units) 1
780201.225.2 - PU (units) 10	780331.225.2 - PU (units) 10	780402.225.2 - PU (units) 10	780403.225.2 - PU (units) 10

Use



Technical data sheet

Load monitoring · LCOS CCI

Electronic load monitoring up to DC 10 A, with communication via field bus
2-channel version, one-pole switching, DC 1 A – DC 10 A, adjustable characteristic
Fault messages: single/collective/90% message, Remote Control input



Identification

Type	LCOS-CC-I-2K-1P-DC24V
Part No.	773100.2111

Product version

Hardware revision	1.0
Software version	1.4
Datasheet version	04

Input

Type of function	2-channel 1 pin switching
Rated voltage U_N	DC 24 V
Operation voltage range	DC 20.4–28.8 V
Rated current I_N	DC 10 A
Supply current	DC 16 A via LCOS Powerbus
Reverse voltage protection	internal electronics

Control input (Set / Reset)

Signal level	DC 24 V acc. to EN 61131
OFF	Pulse with falling edge >100 ms, <800 ms
ON	Pulse with falling edge > 1 s
Isolation voltage	1.5 kV

Communication internal

BUS physics	CANopen acc. to ISO 11898-1, 11898-2
-------------	--------------------------------------

Technical data sheet

Load monitoring · LCOS CCI

Participants	max. 64 units
BUS topology	Line
Bus length	Max. 25 m
Galvanic isolation	500 V

Output

Switching element	MOSFET
Output current	max. DC 10 A
Voltage drop	<170 mV (10 A)
Status display output	LED green: no error, LED green flashing: 90 % utilisation LED red flashing: triggered, LED red: unit off
Switch-on capacity	>10000 µF
Current range	1 A – 10 A (adjustable via switch in 1 A steps)
Characteristic	fast (1), medium (2), slow 1 (3), slow 2 (4), slow 3 (5), adjustable via switch, see 'characteristic curves'

Signal output

Switching element	Transistor, open collector with pull-up resistor
Single channel message	Acc. to IEC 61131-2: High level: no errors, low level: there are errors
90 % of the rated current I_B	Acc. to IEC 61131-2: High level <90 %, low level >90 %
centralised fault signalling	Acc. to IEC 61131-2: High level: no errors, low level: there are errors

General

Dimensions (w × h × d)	22.5 mm × 144.0 mm × 102.0 mm (including function carrier, without plug-in terminals on the side)
Housing material	PA 6.6 (UL 94 V-0, NFF I2, F2)
Mounting	plug-in on LCOS function carrier 22.5 mm (Accessories) DIN rail mounting (EN 60715)
Installation position	Any
Degree of protection	IP20 (EN 60529)
Climatic conditions	Acc. to EN 60721 Stationary use at weather protected locations
Connection type load side	X1: 8-pin multi-point plug, RM 5.08, RM 5,08, Push-In
Connection type control side	X2: 12-pin multi-point plug, RM 3.5, Push-In
Connection type	single wire 0.08 mm ² – 1.5 mm ² / AWG 28–16
Strip length	RM 3.5: 9 mm, RM 5.08: 10 mm
Weight/unit	0.2 kg
PU (units)	1

General ambient conditions

Operation temperature range	0 °C ... +55 °C
Storage temperature range	-40 °C ... +70 °C
Over voltage category	II

Technical data sheet
Load monitoring · LCOS CCI

Degree of pollution	2
Relative air humidity	10 % – 95 %, without condensation
Vibration resistance	0.7 g acc. to EN 60068-2-6
Shock resistance	15 g acc. EN 60068-2-27

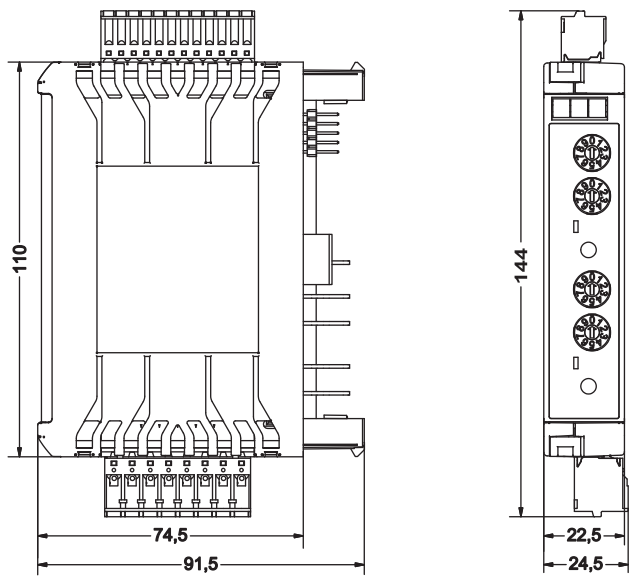
Certifications/Standards

Conformity	CE UKCA
Certifications	cULus (E170585) DNV (TAA00002SY)
Standards	EN 61000-6-2 EN 61000-6-4 UL 61010-1 UL 61010-2-201 DNV-CG-0339

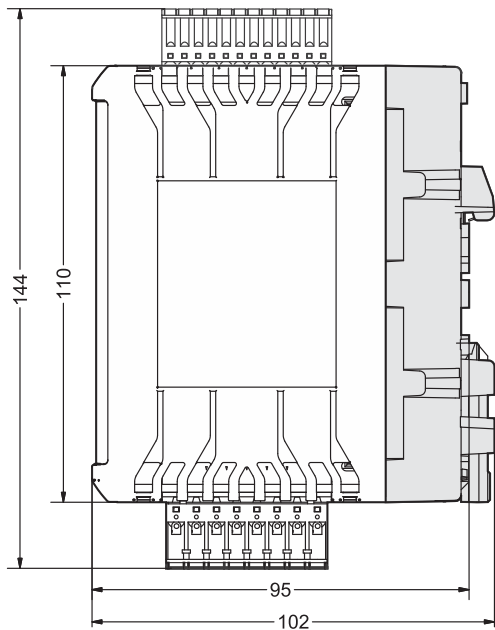
Notes and Comments

Included in the delivery	Plug-in terminals : CS 5.08 and CS 3.50
Not included in the delivery	Function carrier and other accessories

Dimensions



Dimensions



PIN assignment

X3 Powerbus

PIN/	Signal
PIN/ PIN	Signal
1	GND
2	GND
3	DC 24V
4	DC 24V

DC24V 3.4
GND 1.2

Load+ CH2 1.2
Load- CH2 3.4
Load+ CH1 5.6
Load- CH1 7.8

X1

C-Control

X2

PIN/	Signal/
Broches	Signal
1	Status CH1 / État CH1
2	Status CH2 / État CH2
3	GND
4	Status CH1 90% / État CH1 90%
5	Status CH2 90% / État CH2 90%
6	Status Out 1+2 / État Out 1+2
7	Status Out 1+2 / État Out 1+2
8	DC 24 V I _{max} = 100 mA
9	GND
10	Remote R/S+ CH1/ R/S à distance + CH1
11	Remote R/S+ CH2/ R/S à distance + CH2
12	Remote R/S- CH1/CH2 / R/S à distance - CH1/CH2

Output

Input

X1

PIN/	Signal/
Broches	Signal
1	Load + CH2
2	Load + CH2
3	Load - CH2
4	Load - CH2
5	Load + CH1
6	Load + CH1
7	Load - CH1
8	Load - CH1

X3

DC24V 3.4
GND 1.2

Load+ CH2 1.2
Load- CH2 3.4
Load+ CH1 5.6
Load- CH1 7.8

X1

C-Control

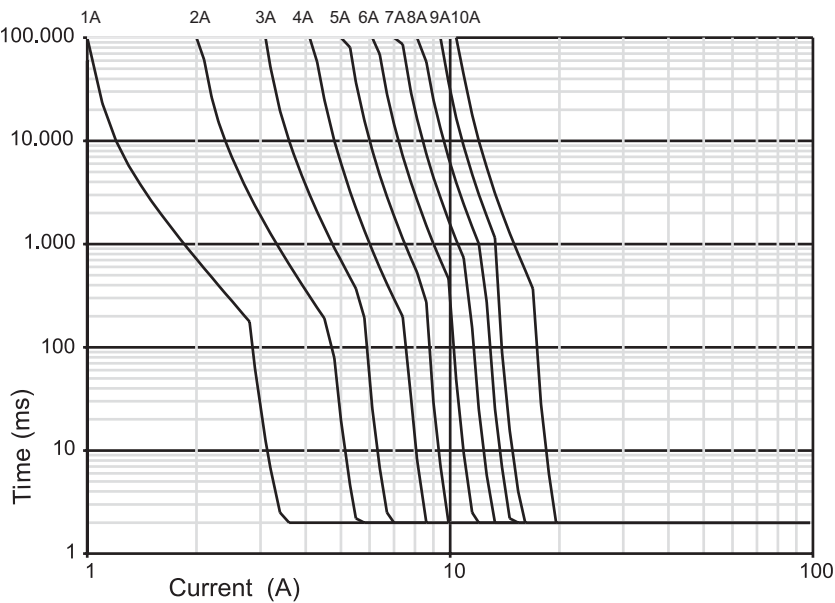
X2

PIN/	Signal/
Broches	Signal
1	Status CH1 / État CH1
2	Status CH2 / État CH2
3	GND
4	Status CH1 90% / État CH1 90%
5	Status CH2 90% / État CH2 90%
6	Status Out 1+2 / État Out 1+2
7	Status Out 1+2 / État Out 1+2
8	DC 24 V I _{max} = 100 mA
9	GND
10	Remote R/S+ CH1/ R/S à distance + CH1
11	Remote R/S+ CH2/ R/S à distance + CH2
12	Remote R/S- CH1/CH2 / R/S à distance - CH1/CH2

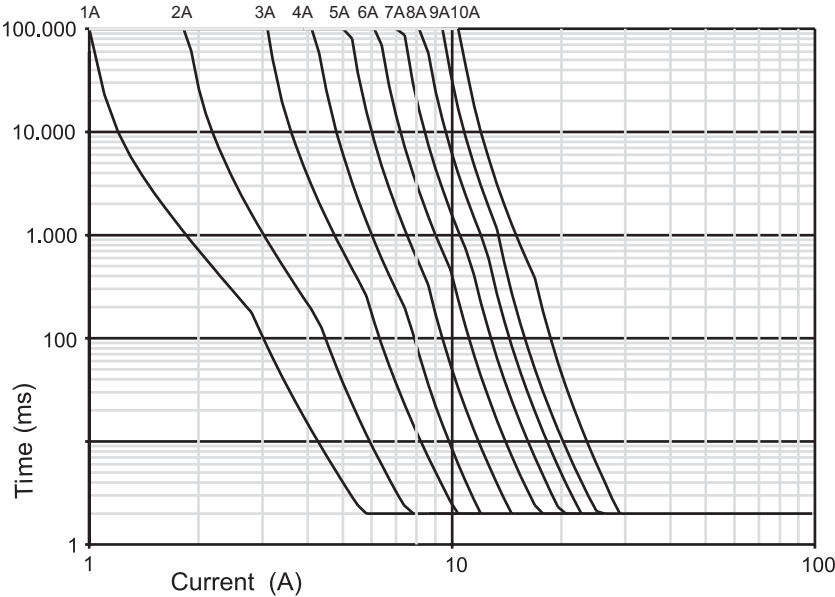
Output

Input

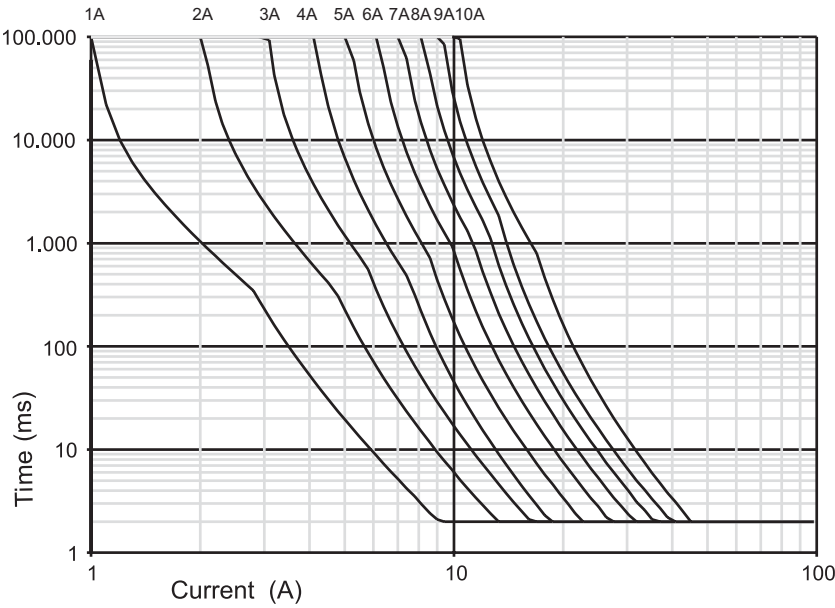
1: Characteristic fast



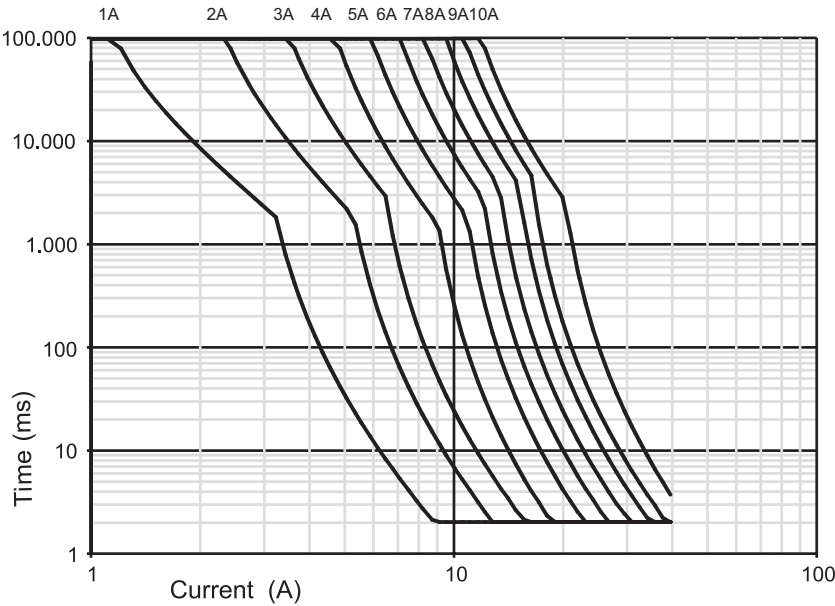
2: Characteristic medium



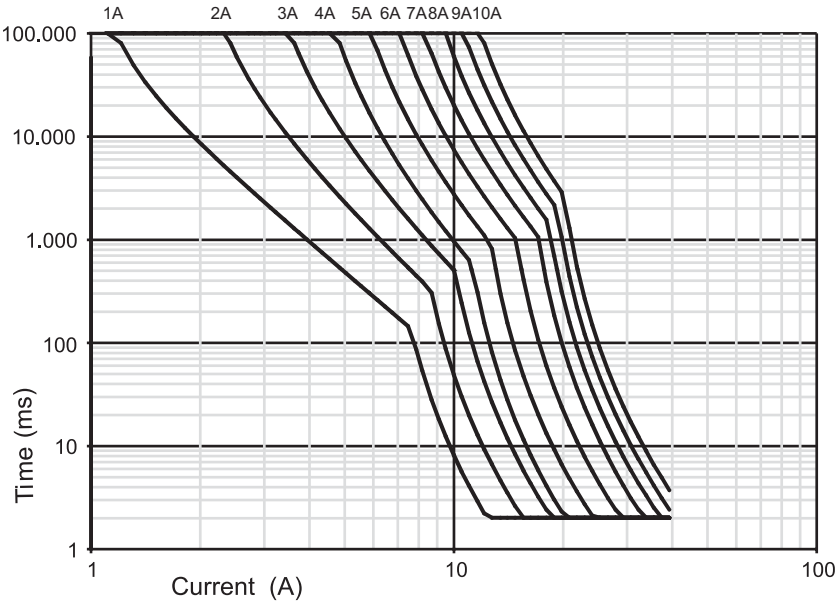
3: Characteristic slow-1



4: Characteristic slow-2



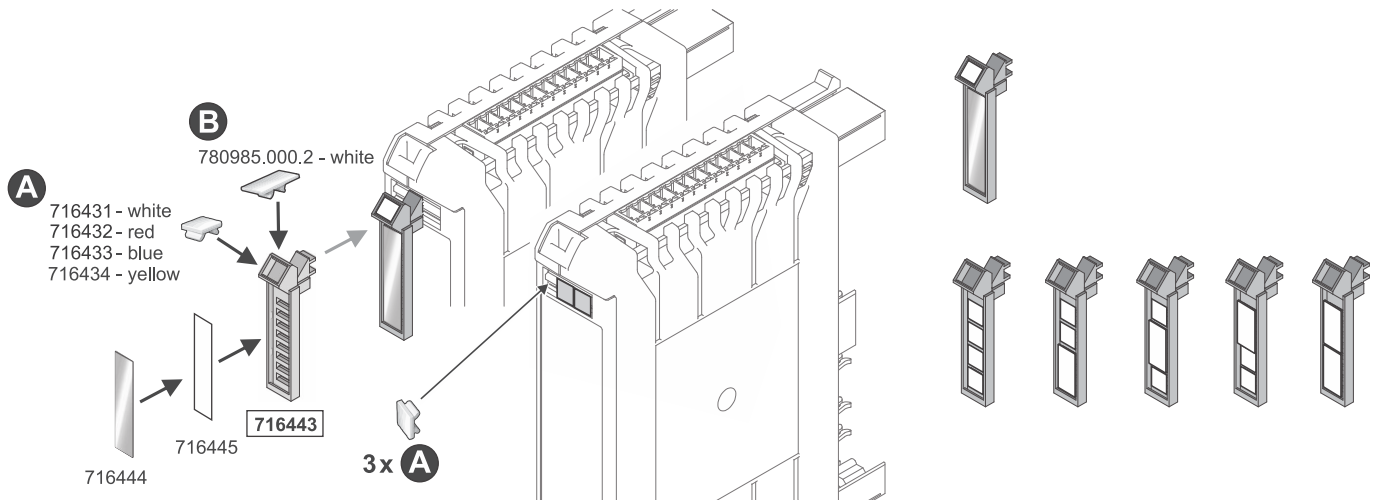
5: Characteristic slow-3



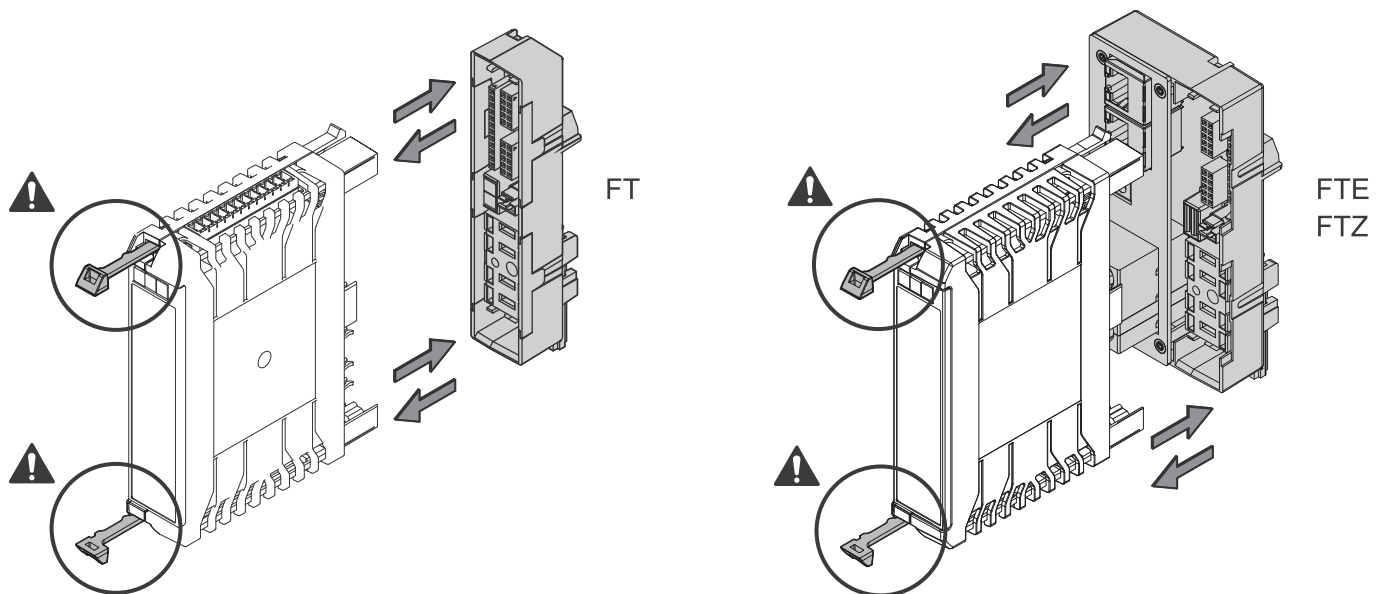
Technical data sheet

Load monitoring · LCOS CCI

Use

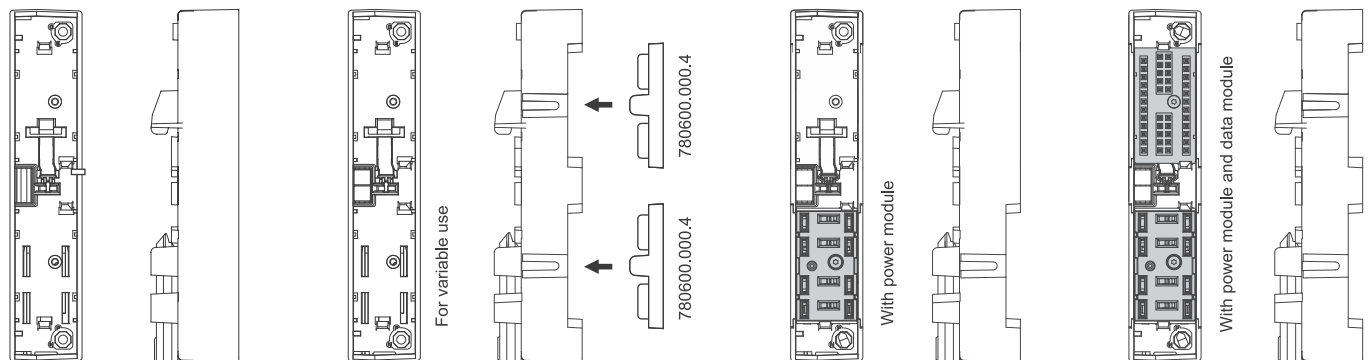


Use



Use

FT, without supply - LCOS function carriers, 22.5 mm - overview



For standalone devices

780201.225.1 - PU (units) 1
780201.225.2 - PU (units) 10

For LCOS system with databus / powerbus

780331.225.1 - PU (units) 1
780331.225.2 - PU (units) 10

780402.225.1 - PU (units) 1
780402.225.2 - PU (units) 10

780403.225.1 - PU (units) 1
780403.225.2 - PU (units) 10

Technical data sheet

Load monitoring · LCOS CCI

Electronic load monitoring up to DC 10 A, with communication via field bus

1-channel version, two-pole switching, DC 1 A – DC 10 A, adjustable characteristic

Fault messages: single/90% message, Remote Control input



Identification

Type	LCOS-CC-I-1K-2P-DC24V
Part No.	773100.1211

Product version

Hardware revision	1.0
Software version	1.4
Datasheet version	06

Input

Type of function	1-channel 2 pin switching
Rated voltage U_N	DC 24 V
Operation voltage range	DC 20.4–28.8 V
Rated current I_N	DC 10 A
Supply current	DC 16 A via LCOS Powerbus
Reverse voltage protection	internal electronics

Control input (Set / Reset)

Signal level	DC 24 V acc. to EN 61131
OFF	Pulse with falling edge >100 ms, <800 ms
ON	Pulse with falling edge > 1 s
Isolation voltage	1.5 kV

Communication internal

BUS physics	CANopen acc. to ISO 11898-1, 11898-2
-------------	--------------------------------------

Technical data sheet

Load monitoring · LCOS CCI

Participants	max. 64 units
BUS topology	Line
Bus length	Max. 25 m
Galvanic isolation	500 V

Output

Switching element	MOSFET and relay (galvanic separation: 500 V)
Output current	max. DC 10 A
Voltage drop	<170 mV (10 A)
Status display output	LED green: no error, LED green flashing: 90 % utilisation LED red flashing: triggered, LED red: unit off
Switch-on capacity	>10000 µF
Current range	1 A – 10 A (adjustable via switch in 1 A steps)
Characteristic	fast (1), medium (2), slow 1 (3), slow 2 (4), slow 3 (5), adjustable via switch, see 'characteristic curves'

Signal output

Switching element	Relay, N/O contact, AC/DC 250 V, 1 A
Single channel message	Contact closed: error, Contact open: no error
90 % of the rated current I _B	Contact closed: >90 %, Contact open: <90 %

General

Dimensions (w × h × d)	22.5 mm × 144.0 mm × 102.0 mm (including function carrier, without plug-in terminals on the side)
Housing material	PA 6.6 (UL 94 V-0, NFF I2, F2)
Mounting	plug-in on LCOS function carrier 22.5 mm (Accessories) DIN rail mounting (EN 60715)
Installation position	Any
Degree of protection	IP20 (EN 60529)
Climatic conditions	Acc. to EN 60721 Stationary use at weather protected locations
Connection type load side	X1: 8-pin multi-point plug, RM 5.08, RM 5.08, Push-In
Connection type control side	X2: 12-pin multi-point plug, RM 3.5
Connection type	single wire 0.08 mm ² – 1.5 mm ² / AWG 28–16
Strip length	RM 3.5: 9 mm, RM 5.08: 10 mm
Weight/unit	0.2 kg
PU (units)	1

General ambient conditions

Operation temperature range	0 °C ... +55 °C
Storage temperature range	-40 °C ... +70 °C
Over voltage category	II
Degree of pollution	2

Technical data sheet
Load monitoring · LCOS CCI

Relative air humidity	10 % – 95 %, without condensation
Vibration resistance	0.7 g acc. to EN 60068-2-6
Shock resistance	15 g acc. EN 60068-2-27

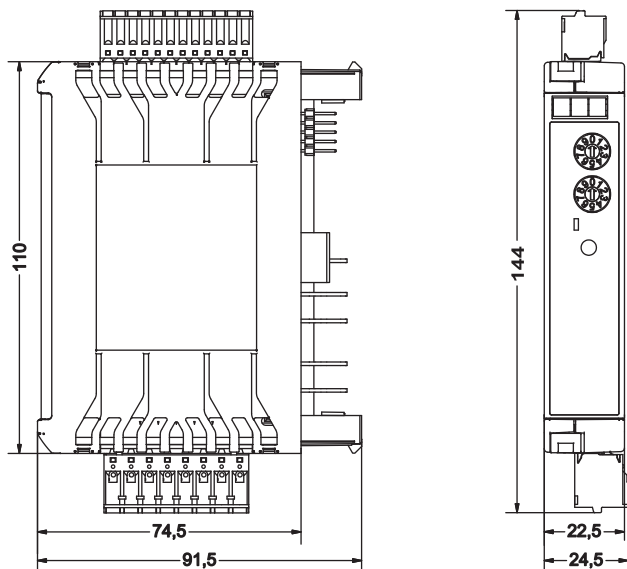
Certifications/Standards

Conformity	CE UKCA
Certifications	cULus (E170585) DNV (TAA00002SY)
Standards	EN 61000-6-2 EN 61000-6-4 UL 61010-1 UL 61010-2-201 DNV-CG-0339

Notes and Comments

Included in the delivery	Plug-in terminals : CS 5.08 and CS 3.50
Not included in the delivery	Function carrier and other accessories

Dimensions



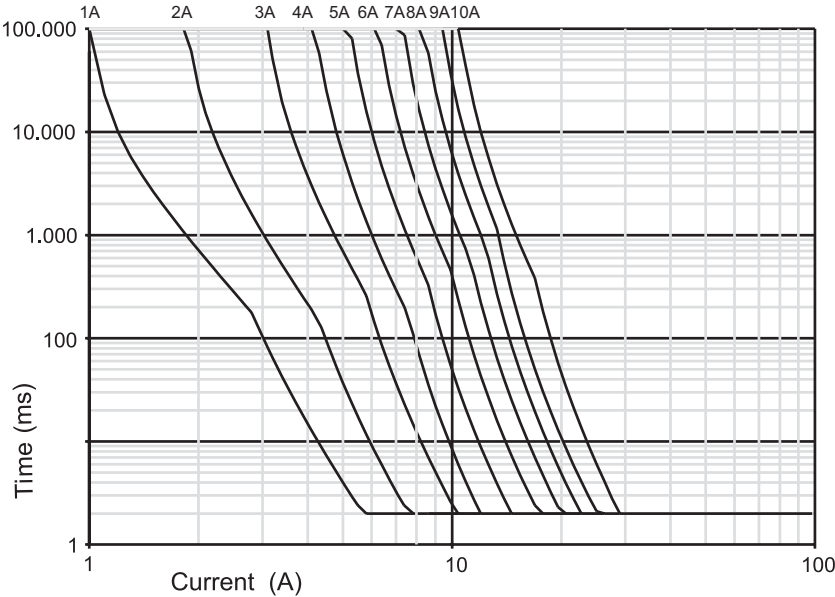
Load monitoring · LCOS CCI

Technical drawing showing the front view of the 800-600-0000 module. The drawing includes dimensions:

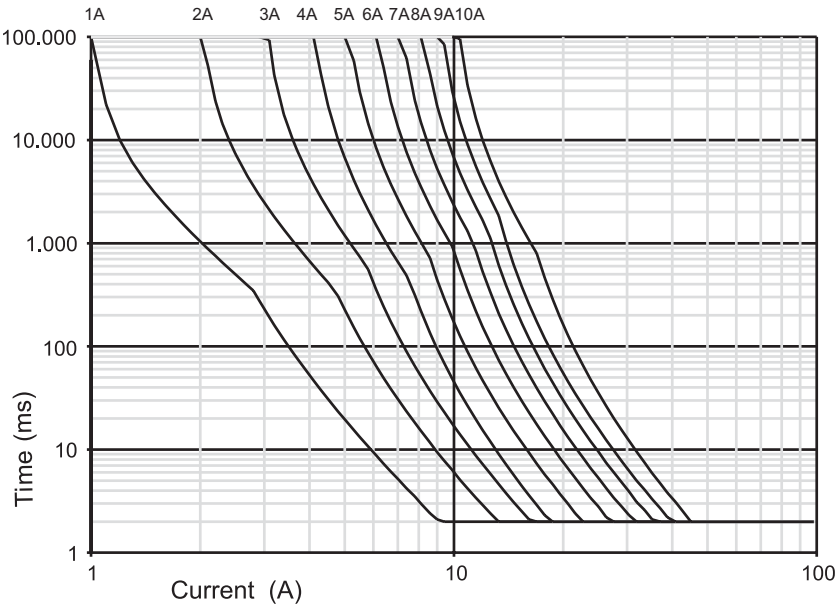
- Overall height: 144
- Mounting hole distance: 110
- Width: 95
- Mounting bracket width: 102

+ Input

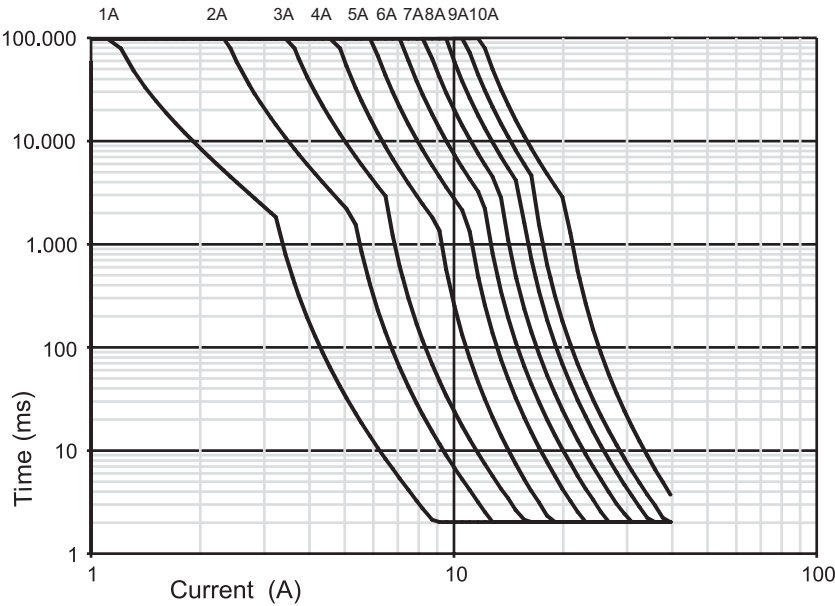
2: Characteristic medium



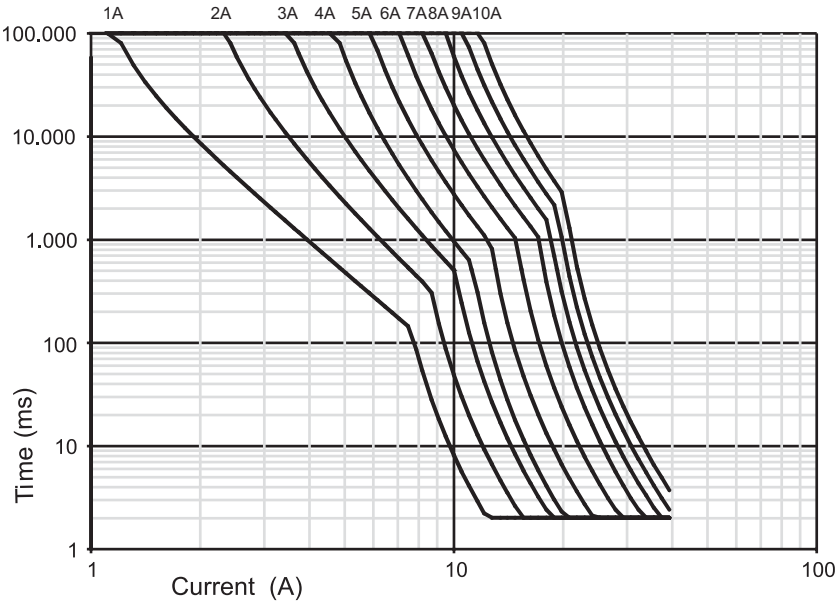
3: Characteristic slow-1



4: Characteristic slow-2



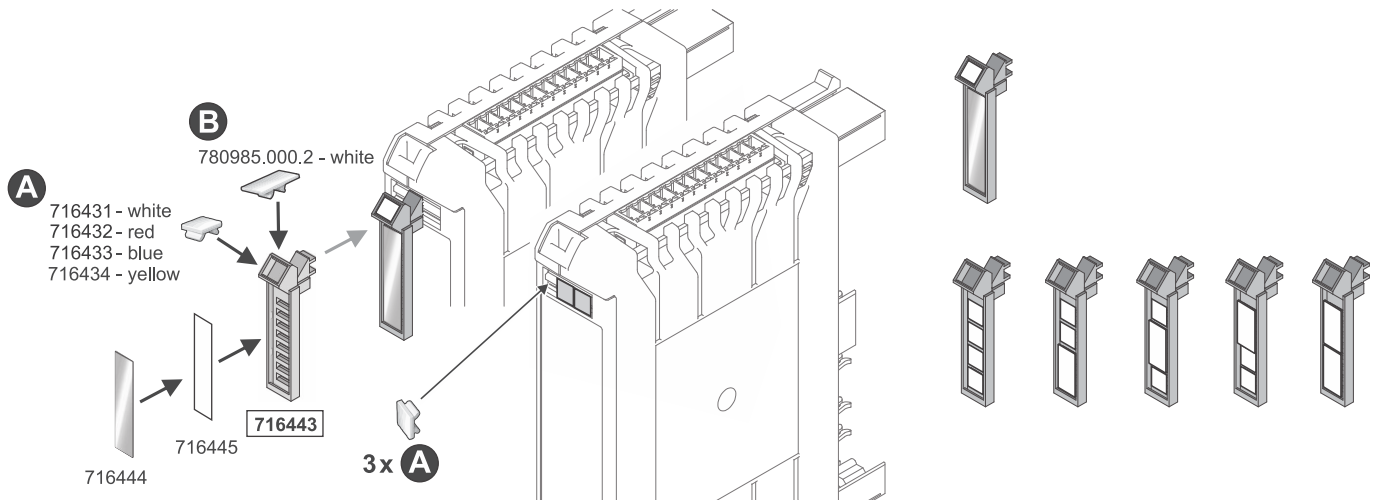
5: Characteristic slow-3



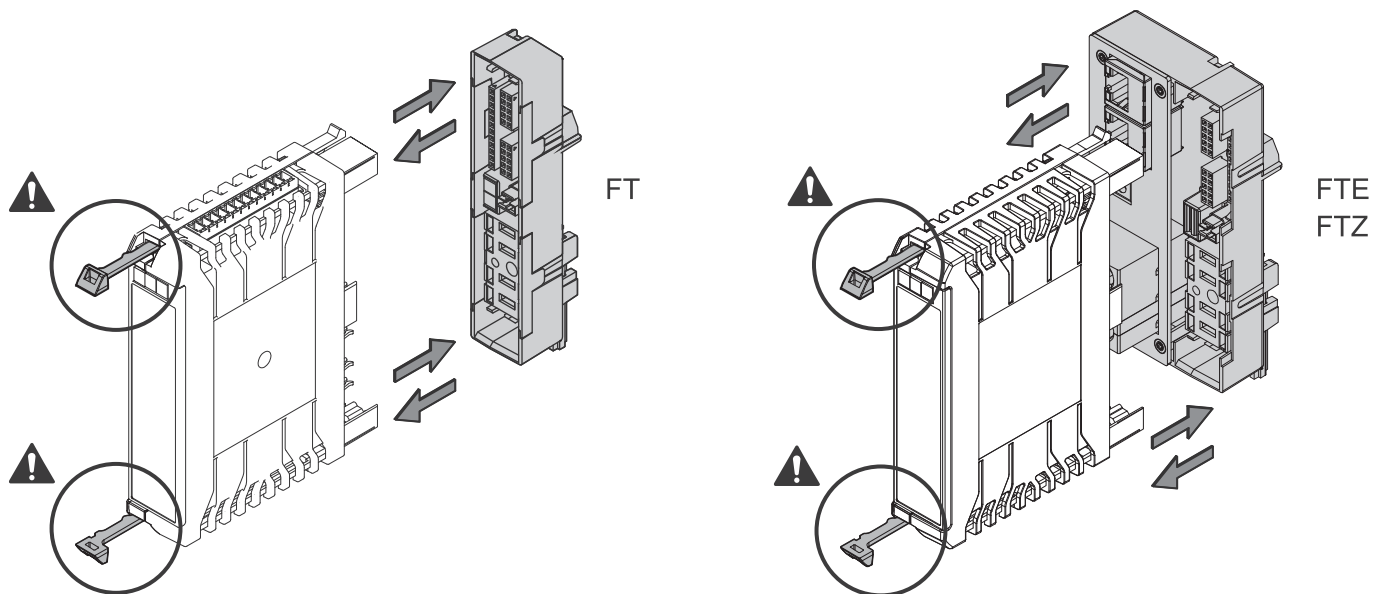
Technical data sheet

Load monitoring · LCOS CCI

Use

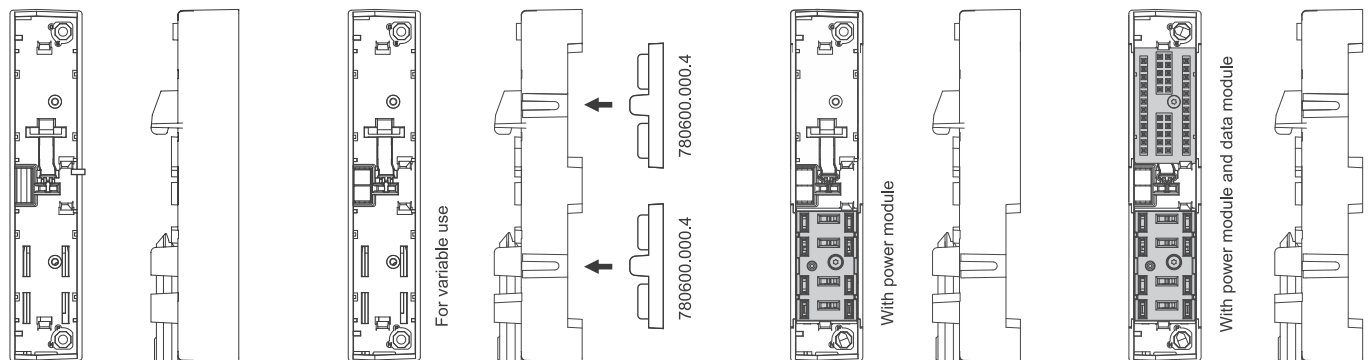


Use



Use

FT, without supply - LCOS function carriers, 22.5 mm - overview



For standalone devices

780201.225.1 - PU (units) 1
780201.225.2 - PU (units) 10

For LCOS system with databus / powerbus

780331.225.1 - PU (units) 1
780331.225.2 - PU (units) 10

780402.225.1 - PU (units) 1
780402.225.2 - PU (units) 10

780403.225.1 - PU (units) 1
780403.225.2 - PU (units) 10

По вопросам продаж и поддержки обращайтесь:

Алматы (727)345-47-04
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Владикавказ (8672)28-90-48
Владимир (4922)49-43-18
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89

Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Курган (3522)50-90-47
Липецк (4742)52-20-81

Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Новокузнецк (3843)20-46-81
Ноябрьск (3496)41-32-12
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Петрозаводск (8142)55-98-37
Псков (8112)59-10-37
Пермь (342)205-81-47

Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Саранск (8342)22-96-24
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Сыктывкар (8212)25-95-17
Тамбов (4752)50-40-97
Тверь (4822)63-31-35

Тольятти (8482)63-91-07
Томск (3822)98-41-53
Тула (4872)33-79-87
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Улан-Удэ (3012)59-97-51
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Чебоксары (8352)28-53-07
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Чита (3022)38-34-83
Якутск (4112)23-90-97
Ярославль (4852)69-52-93

Россия +7(495)268-04-70

Казахстан +7(727)345-47-04

Беларусь +(375)257-127-884

Узбекистан +998(71)205-18-59

Киргизия +996(312)96-26-47

эл.почта: ezd@nt-rt.ru || сайт: <https://lutze.nt-rt.ru/>