

Hybrid Load Switch

L740

Technical Data



The Hybrid Load Switch L740 supports all standard ripple control protocols and 2-way power line technology PLAN with DLMS. The L740 can be operated in existing ripple control systems or a Gridstream AIM Smart Metering System.

New functions are also made available when used in combination with the FPS LM Load Manager. Intelligent status information leads to an efficient customer service and load objects distributed throughout the network can be systematically controlled by real-time commands.



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Technical Data

Power Supply

Operating Voltage	
Mains voltage U_n	230 V (+15 / -20%)
Mains frequency f_n	50 Hz ($\pm 2\%$)

Power

Consumption (50 Hz), typical	1.5 W / 5.8 VA
Consumption (50 Hz), maximum	2.5 W / 7.2 VA

Communication

Type	Power Line via terminals L and N
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Ripple Control Signals

Nominal function voltage U_f	0,3 ... 2,5% U_n
Ripple control frequency f_s	110 ... 2000 Hz
Filter bandwidth	0,6 ... 6% of f_s

Supported ripple control protocols:

Decabit, Semagyr, Ricontic and further pulse codes.
Message length, pulse length and pulse position are programmable.

Power Line Communication (PLC)

Spread-FSK Modulation	IEC 61334-5-1
Baud rate	300 ... 2400 Baud
Link Layer	IEC 61334-4-32
Application layer, DLMS	IEC 61333-4-41
Signal level	EN 50065-1/A1
Signal Interference withstand	EN 50065-2-3

Load Relays

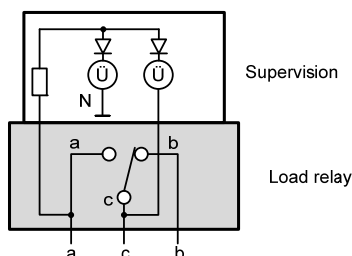
Type	
Maximum number of plug-in units	3
Relay type, rated current I_L	SPDT, 25 A SPST, 40 A

Switching Capacity

Switch current for $\cos\varphi = 1$	100% I_L
Switch current for $\cos\varphi = 0.4$ (25 A)	60% I_L
Switch current for $\cos\varphi = 0.3$ (40 A)	62% I_L
Total switching current	$I_{tot} = 50$ A

Supervision Option

Supervision per relays	Supply and load
Operating range of relay supervision	230 V (+15 / -20%)
Load impedance Z	< 40 k Ω
Load impedances > 40 k Ω	see operating instructions
Block diagram 25A relays	



Functionality

Internal clock, astronomical calendar

- Intelligent perennial time switch with synchronisation via PLC and ripple control commands
- Astronomical calendar for lighting control
- Optional backup clock: Supercap buffered real time clock with 36 hours reserve

Operating Modes

- Independent time switch with holiday calendar and summer/winter time change over.
- Ripple control or PLC communication
- Ripple control and PLC communication, where the ripple control has priority.
- PLC communication
 - Direct commands (Broadcast)
 - Programming commands
 - Individual direct switching commands e.g. for a relay
 - Relay supervision and status information
 - Tamper detection
 - Operational system information
 - PLC repeater function
 - Software download
- Ripple Control communication
 - Direct commands (Broadcast)
 - Ripple control frequency change over

Remote programmable functions (only via PLC)

- Add, change and remove time line entries
- Allocation of up to 65536 individual profiles
- Relay supervision

Local Programming Features

- Ripple control frequency change over.
- Time lines and memo lines for independent switching.
- Learn function: Remembering the switching times for autonomous execution (for example during a communication outage).
- Communication outage detection (Failsafe), Detection time freely programmable (between 15 min ... 63h 45 min.)
- Interpreter programs allow any allocation of addresses and commands to the relays.
- Up to 24 interpreter programs can run in parallel, 4 programs with any timer function (delays, wiper, loop, etc.)
- Programmable relay confirmation in intervals of 5 to 30 minutes
- Programmable mains supervision including power loss, power return and under frequency detection
- Programmable functions for the test button

Further Functionality

- Automatic correction of the ripple control pulse distortion
- Signal level storage of the last ripple control message
- Event log book with up to 2'500 entries

Status Display**LED Display**

	Operation	New	Supervision
Colour	Green	Green	Red
Status: LED dark	No power, faulty	Connected to the PLC system	No Fault
Status: LED on	Normal operation, receiving data	Ready for connection to PLC system	
Status: LED blinking	Normal operation		Load faulty, power supply faulty

Parameter Entry Interface**Optical Interface**

Type Serial bidirectional interface
Protocol IEC 62056-21

Connections

Power supply Terminals 1 and 2
Wiring size 0,5 mm² ... 10 mm²

Relays 25A Terminals 3-11
Wiring size 0.5 mm² ... 6 mm²

Relays 40A Terminals 3-10
Wiring size 0.5 mm² ... 10 mm²

Environment**Temperature**

Operating temperature -20 ... +60°C
Storage temperature -30 ... +70°C

Enclosure Protection IEC 60529

Standard mounting IP 52 without suction
Landscape mounting IP 50

Shock and vibration IEC 62054-11

Damp heat cyclic IEC 60068-2-30

Insulation

AC voltage withstand IEC 62052-11
All current and signal circuits 4 kV 50 Hz; 1 min.

Impulse voltage withstand IEC 62052-11
All current and signal circuits 6 kV; 1.2/50 us

Insulation of the current circuits IEC60060-1

Electromagnetic Compatibility

Electrostatic Discharge IEC 61000-4-2
Air discharge 15 kV
Contact discharge 8 kV

Immunity to RF Fields IEC 61000-4-3
80Mhz to 2.7GHz 10 and 30 V/m

Power line transients (Burst) IEC 61000-4-4
All current and signal circuits 4 kV

Power line transients (Surge) IEC 61000-4-5
All current and signal circuits 4 kV

Immunity, power line interference IEC 61000-4-6
Voltage dips and variations IEC 61000-4-11
Emission IEC55022/CISPR 22 Class B

Generic Product Standards**Hybrid Load Switch and Ripple Control Receivers**

General requirements and tests IEC 62052-21
Detailed requirements ripple control receiver IEC 62054-11
Detailed requirements time switch IEC 62054-21

Conformity

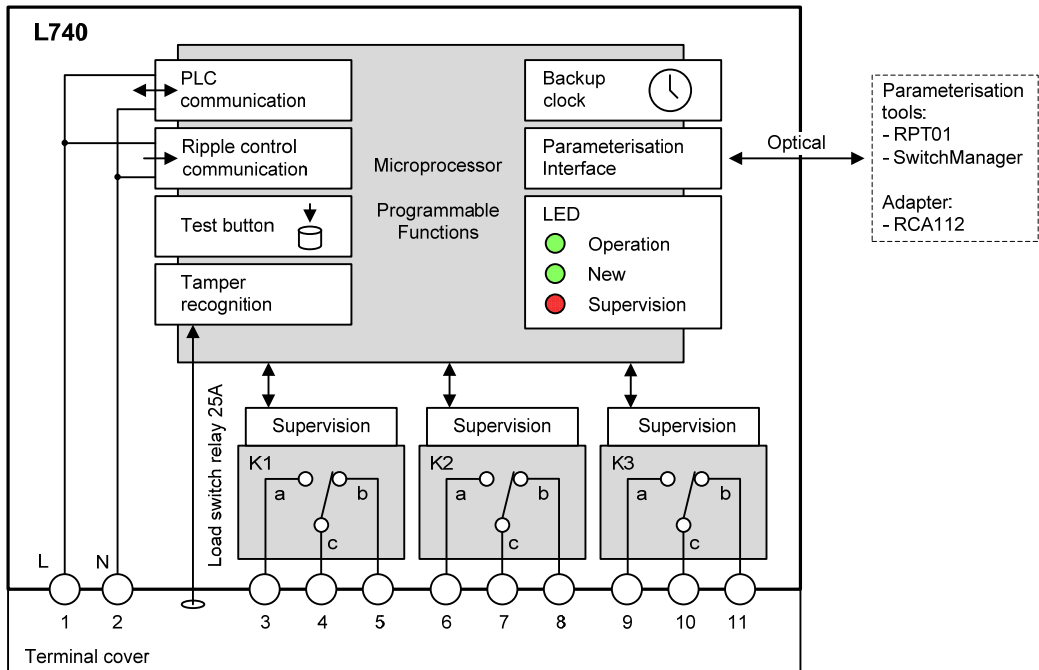
Europe CE

Weight

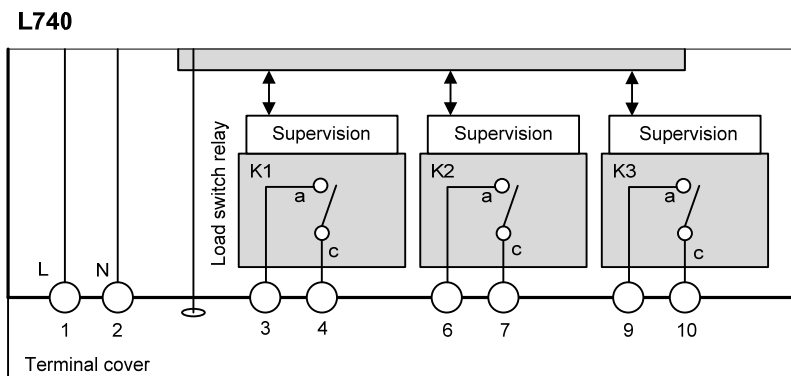
Weight (fully equipped) 0,43 kg

Functional Block Diagram

L740 with 3 x 25A Relays and Supervision

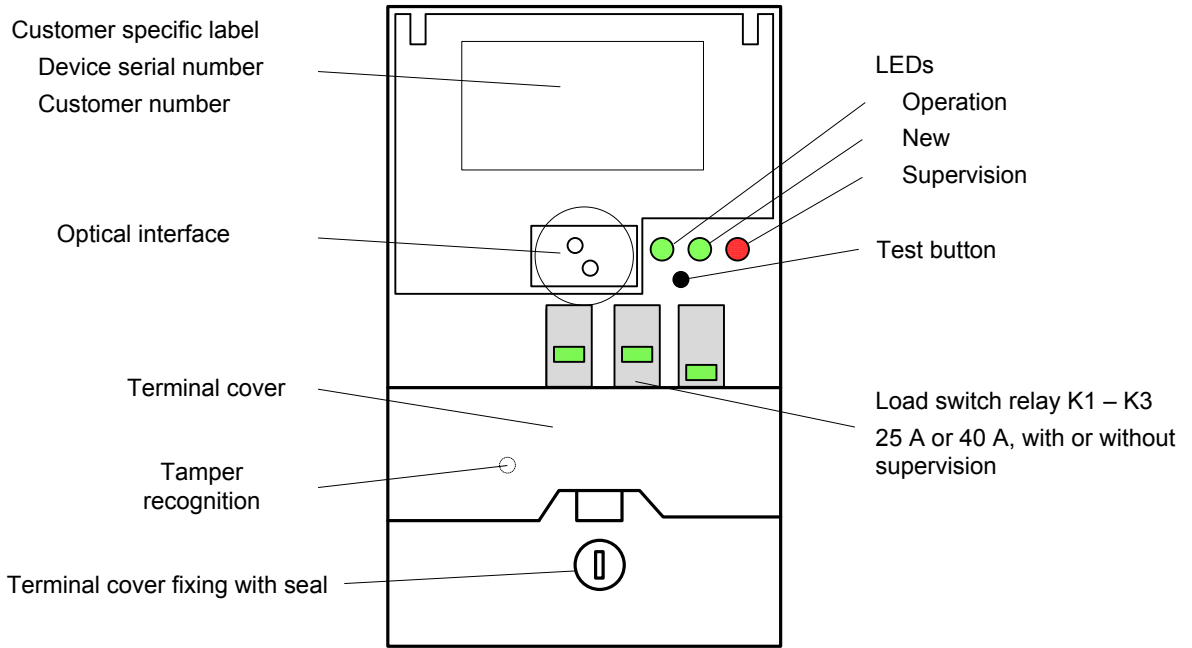


L740 with 3 x 40A Relays and Supervision



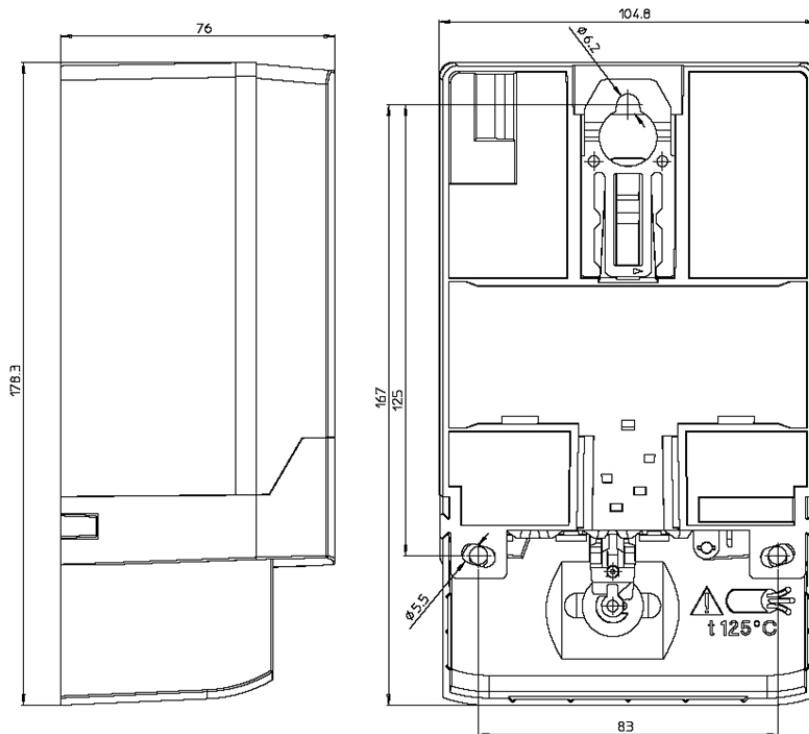
Functional Overview

Arrangement of operating elements, displays and programming

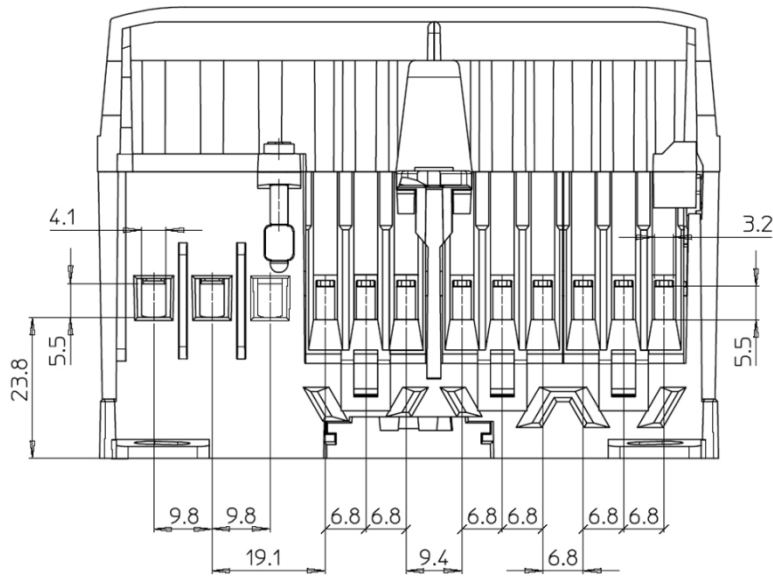


Dimension Drawing

Dimensions and Mounting Points



Connection Terminals, for 3 x 25A Relays



Accessories

L740 Components

Description	Ordering Number
Relays 25 A, change-over contact, with supervision	6041.000.00001
Relays 25 A, change-over contact, without supervision	6041.000.00002
Relays 40 A, make contact, with supervision	6041.000.00003
Relays 40 A, make contact, without supervision	6041.000.00004

Programming Tools and Adapter for L740

Description	Ordering Number
RPT01, PC Programming software	7RZR0101XXXX
Switch Manager, Service software for load relays	Available Autumn 2010
RCA112, USB Optical connection L740 – RPT01	Available Autumn 2010

Testing Tools and Analyser

Description	Ordering Number
PLC PLAN Analyser	PLANANA-001
RCI100, Ripple control test transmitter	72-RCI100

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